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Carbon Dioxide, Hydrographic, and Chemical Data Obtained in the South Pacific Ocean (WOCE Sections P16A/P17A, P17E/P19S, and P19C, R/V Knorr, October 1992 - April 1993)

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Information Analysis Center
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ABSTRACT

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This data documentation discusses the procedures and methods used to measure total carbon dioxide concentration (TCO_2) and partial pressure of CO_2 (pCO_2) in discrete water samples collected during three expeditions of the Research Vessel (R/V) *Knorr* in the South Pacific Ocean. Conducted as part of the World Ocean Circulation Experiment (WOCE), the first cruise (WOCE Section P16A/P17A) began in Papeete, Tahiti, French Polynesia, on October 6, 1992, and returned to Papeete on November 25, 1992. The second cruise (WOCE Section P17E/P19S) began in Papeete on December 4, 1992, and finished in Punta Arenas, Chile, on January 22, 1993. The third expedition (WOCE Section P19C) started in Punta Arenas, on February 22 and finished in Panama City, Panama, on April 13, 1993. During the three expeditions, 422 hydrographic stations were occupied. Hydrographic and chemical measurements made along WOCE Sections P16A/P17A, P17E/P19S, and P19C included pressure, temperature, salinity, and oxygen [measured by conductivity, temperature, and depth (CTD) sensor], as well as discrete measurements of salinity, oxygen, phosphate, nitrate, nitrite, silicate, chlorofluorocarbons (CFC-11, CFC-12), TCO_2, and pCO_2 measured at 4 and 20°C. In addition, potential temperatures were calculated from the measured variables.

The TCO_2 concentration in 4419 seawater samples was determined with a coulometric analysis system; the pCO_2 in 4419 discrete water samples was determined with an equilibrator/gas chromatograph system. At 114 stations, complete vertical profiles from the surface to the ocean floor were obtained, whereas at the remainder of stations only surface mixed layer samples were taken. In addition, 758 coulometric measurements for the Certified Reference Material (CRM) (batch nos. 12 and 13) were made. The shipboard analyses of CRM agreed with the Scripps Institution of Oceanography (SIO) manometric values within 1.2 μmol/kg. The overall precision of TCO_2 measurements is estimated to be ~±2 μmol/kg. The shipboard TCO_2 measurements listed in this data report **have not** been corrected for the differences with the SIO manometric values.

The data set is available free of charge as a numeric data package (NDP) from the Carbon Dioxide Information Analysis Center. The NDP consists of six oceanographic data files, two FORTRAN 77 data-retrieval routine files, a documentation file, and this printed report, which describes the contents and format of all files and the procedures and methods used to obtain the data.

Keywords: total carbon dioxide; partial pressure of carbon dioxide; World Ocean Circulation Experiment; South Pacific Ocean; hydrographic measurements; carbon cycle; carbonate chemistry; coulometer; equilibrator

PART 1:

OVERVIEW

1. BACKGROUND INFORMATION

The World Ocean plays a dynamic role in the Earth's climate: it captures heat from the sun, transports it, and releases it thousands of miles away. These oceanic-solar-atmospheric interactions affect winds, rainfall patterns, and temperatures on a global scale. The oceans also play a major role in global carbon-cycle processes. Carbon is unevenly distributed in the oceans because of complex circulation patterns and biogeochemical cycles that include the biological processes of photosynthesis in upper layers and respiration in deep oceans. The oceans are estimated to hold 38,000 gigatons of carbon, 50 times more than the amount in the atmosphere and 20 times more than the amount held by plants, animals, and the soil. If only 2% of the carbon stored in the oceans was released, the level of atmospheric carbon dioxide (CO_2) would double. Every year, the amount of CO_2 exchanged across the sea surface is 15 times greater than the amount produced by burning of fossil fuels, deforestation, and other human activities (Williams 1990).

To better understand the ocean's role in climate and climatic changes, several large experiments have already been conducted, and others are currently under way. The largest oceanographic experiment ever attempted is the World Ocean Circulation Experiment (WOCE). A major component of the World Climate Research Program, WOCE brings together the expertise of scientists and technicians from more than 30 nations. In the United States, WOCE is supported by the federal government under the Global Change Research Program. The multiagency U.S. effort is led by the National Science Foundation and supported by major contributions from the National Oceanic and Atmospheric Administration, the U.S. Department of Energy (DOE), the Office of Naval Research, and the National Aeronautics and Space Administration. Although total carbon dioxide concentration (TCO_2) is not an official WOCE measurement, a coordinated effort, supported in the United States by the DOE, is being made on WOCE cruises (through 1998) to measure the global, spatial, and temporal distributions of TCO_2 and other carbon-related parameters. The goals of the CO_2 survey include estimation of the meridional transport of inorganic carbon in the Pacific Ocean in a manner analogous to the oceanic heat transport estimates (Bryden and Hall 1980; Brewer et al. 1989; Roemmich and Wunsch 1985), evaluation of the exchange of CO_2 between the atmosphere and the ocean, and preparation of a database suitable for carbon-cycle modeling and the subsequent assessment of the anthropogenic CO_2 increase in the oceans. The final data set is expected to cover ~23,000 stations.

This report presents CO_2-related measurements obtained during the 152-day expedition of the Research Vessel (R/V) *Knorr* along the WOCE Sections P16A/P17A, P17E/P19S, and P19C which are located in the South Pacific Ocean (Fig. 1).

In addition to TCO_2, parameters measured in discrete water samples include partial pressure of CO_2 (pCO_2) measured at 4 and 20°C, salinity, oxygen, nutrients, and chlorofluorocarbons (CFCs). In addition, pressure, temperature, salinity, and oxygen were measured continuously with water depth on each station using an *in situ* sensor.

The CO_2 investigation during the three R/V *Knorr* expeditions was supported by a grant (No. DE-FGO2-90-ER60983) from the U.S. DOE.

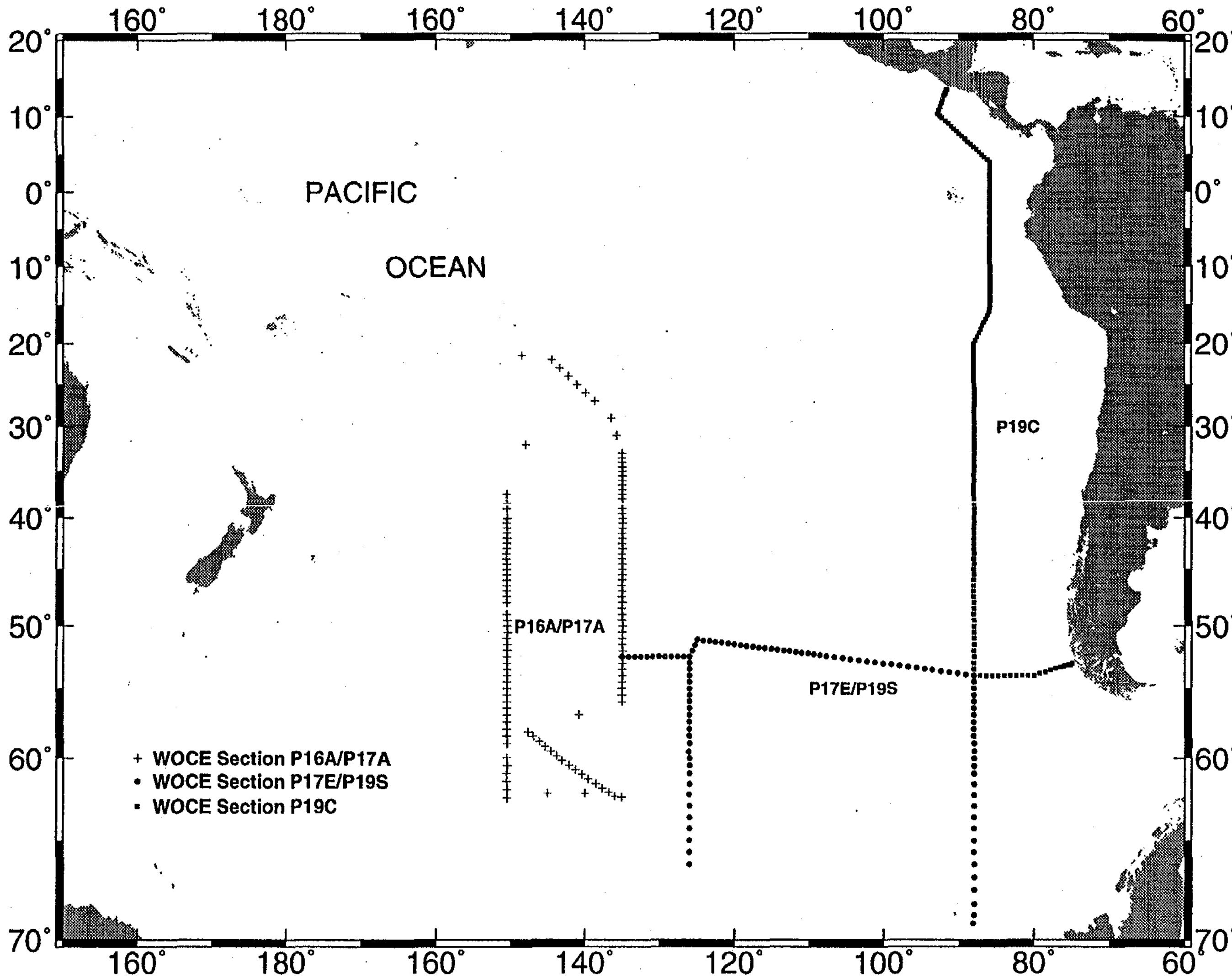

Figure 1. Station locations during R/V *Knorr* expeditions in the South Pacific Ocean

2. DESCRIPTION OF THE EXPEDITIONS

2.1 WOCE Section P16A/P17A

R/V *Knorr* expedition along WOCE Sections P16A/P17A information is as follows:

Ship name	*Knorr*
Cruise/leg	138/9
Expocode	316N138/9
WOCE Sections	P16A/P17A
Ports of call	Papeete, Tahiti, French Polynesia (round trip)
Dates	October 6–November 25, 1992
Chief Scientist	Joseph L. Reid (SIO)

Parameters measured	**Institution**	**Principal investigators**
CTD, oxygen, and nutrients	SIO	J. Reid and J. Swift
Bathymetry	SIO	S. Smith
ADCP[1]	UH	E. Firing
ALACE[2] floats	SIO	R. Davis
Nutrient support	OSU	L. Gordon
Tritium and helium	WHOI	W. Jenkins
TCO_2 and pCO_2 (shipboard)	LDEO	D. Chipman and T. Takahashi
TCO_2 and TALK[3] (shore)	SIO	C. Keeling
pCO_2 and N_2O (underway)	SIO	R. Weiss
CFCs	PMEL	J. Bullister
CFCs	LDEO	W. Smethie
Carbon-14 (^{14}C)	PU	R. Key
Transmissometer	TAMU	W. Gardner
Helium (deep)	PMEL	J. Lupton

Participating Institutions

SIO	Scripps Institution of Oceanography (University of California, San Diego)
UH	University of Hawaii
OSU	Oregon State University
WHOI	Woods Hole Oceanographic Institution
LDEO	Lamont-Doherty Earth Observatory (Columbia University)
PMEL	Pacific Marine Environmental Laboratory
PU	Princeton University
TAMU	Texas A&M University

[1]Acoustic Dopler Current Profiler.
[2]Autonomous Lagrangian Circulation Explorer.
[3]Total alkalinity.

2.2 WOCE Section P17E/P19S

R/V *Knorr* expedition along WOCE Sections P17E/P19S information is as follows:

Ship name	*Knorr*
Cruise/leg	138/10
Expocode	316N138/10
WOCE Sections	P17E/P19S
Ports of call	Papeete, Tahiti, French Polynesia, to Punta Arenas, Chile
Dates	December 4, 1992–January 22, 1993
Chief Scientist	James H. Swift (SIO)

Parameters measured	**Institution**	**Principal investigators**
CTD, oxygen, and nutrients	SIO	J. Reid and J. Swift
Bathymetry	SIO	S. Smith
ADCP	UH	E. Firing and P. Hacker
ALACE floats	SIO	R. Davis
Nutrient support	OSU	L. Gordon
Tritium and helium	WHOI	W. Jenkins
Tritium and helium	LDEO	P. Schlosser
TCO_2 and pCO_2 (shipboard)	LDEO	D. Chipman and T. Takahashi
TCO_2 and TALK (shore)	SIO	C. Keeling
pCO_2 and N_2O (underway)	SIO	R. Weiss
pCO_2 (underway)	PU	C. Sabine
CFCs	LDEO	W. Smethie
^{14}C	PU	R. Key
Carbon-13 (^{13}C)	UCSC	G. Rau
Transmissometer	TAMU	W. Gardner
Helium (deep)	PMEL	J. Lupton
Meteorology	WHOI	B. Walden

Participating Institutions

SIO	Scripps Institution of Oceanography (University of California, San Diego)
UH	University of Hawaii
OSU	Oregon State University
WHOI	Woods Hole Oceanographic Institution
LDEO	Lamont-Doherty Earth Observatory (Columbia University)
PU	Princeton University
UCSC	University of California, Santa Cruz
TAMU	Texas A&M University
PMEL	Pacific Marine Environmental Laboratory

2.3 WOCE Section P19C

R/V *Knorr* expedition along WOCE Section P19C information is as follows:

Ship name	*Knorr*
Cruise/leg	138/12
Expocode	316N138/12
WOCE Sections	P19C
Ports of call	Punta Arenas, Chile, to Panama City, Panama
Dates	February 22–April 13, 1993
Chief Scientist	Lynne D. Talley (SIO)

Parameters measured	**Institution**	**Principal investigators**
CTD, oxygen, and nutrients	SIO	L. Talley, J. Swift, and M. Tsuchiya
Bathymetry	SIO	S. Smith
ADCP	UH	E. Firing
ALACE floats	SIO	R. Davis
Surface drifters	SIO	P. Niiler
Nutrient support	OSU	L. Gordon
Tritium and helium	WHOI	W. Jenkins
TCO_2 and pCO_2 (shipboard)	LDEO	D. Chipman and T. Takahashi
TCO_2 and TALK (shore)	SIO	C. Keeling
pCO_2 and N_2O (underway)	SIO	R. Weiss
CFCs	RSMAS	R. Fine
^{14}C	PU	R. Key
^{13}C	UCSC	G. Rau
Transmissometer	TAMU	W. Gardner
Helium (deep)	PMEL	J. Lupton
Bio-optics	LDEO	J. Marra

Participating Institutions

SIO	Scripps Institution of Oceanography (University of California, San Diego)
UH	University of Hawaii
OSU	Oregon State University
WHOI	Woods Hole Oceanographic Institution
LDEO	Lamont-Doherty Earth Observatory (Columbia University)
RSMAS	Rosenstiel School of Marine and Atmospheric Science (University of Miami)
PU	Princeton University
UCSC	University of California, Santa Cruz
TAMU	Texas A&M University
PMEL	Pacific Marine Environmental Laboratory

3. BRIEF SUMMARY OF EXPEDITIONS

3.1 WOCE Section P16A/P17A

R/V *Knorr* departed Papeete, Tahiti, on October 6, 1992, to extend southward the WOCE Pacific Sections P16 and P17 completed by the R/V *Thomas Washington* TUNES-2 expedition during July–August, 1991. Two equipment checkout/training stations were done enroute to the first scheduled station at 37.5° S, 150.5° W, a reoccupation of TUNES-2 station no. 180. Both training stations were done by 36-place 10-L bottle rosette/CTD casts to the bottom with duplicate sampling of the standard hydrographic water samples. Station no. 2 was occupied at 32° S, near the WOCE P6 line completed in June 1992 as part of this R/V *Knorr* voyage in the South Pacific Ocean.

From station no. 3 the cruise track ran south taking stations at 30-nautical mile (30-nm) intervals (i.e., ~55-km) along 150.5° W (see Fig. 1), intending to reach the vicinity of WOCE line S4P at 67° S, which was completed by the Russian R/V *Akademik Ioffe* in March 1992. However, the ice pack was still near its maximum seasonal extent during the austral early spring. Large icebergs were first seen at about 58° S, and streamers of pancake sea ice 4 miles south of station no. 53 at 62.5° S forced the captain to turn around for safety reasons. The ship hove to during the short nights while it was in the vicinity of ice and icebergs for the next week. From station no. 53, the ship steamed eastward, taking two small volume stations on the deadhead run to the corner stations at 62.5° S, 135.0° W in the Amundsen Basin. The Gerard and rosette casts were unusually far apart on station no. 56 because the ship had to move to avoid a rampaging iceberg; the iceberg was 5 miles away at the start of the deep Gerard cast and had closed to within 2 miles by the end of the cast. From station no. 56, an arc of station positions was laid out roughly normal to the trend of the Pacific Antarctic Ridge. Station no. 71 was at the crest of the ridge. The rationale for this line of stations was two-fold: to examine any possible Ross Sea bottom-water flow along the flanks of the rise upstream of the Udintsev and Eltanin Fracture Zone systems and to have a line of stations underneath the 10-day repeat satellite track to compare geostrophic sea-surface elevation and satellite altimetry. Earlier satellite-tracked drifter tracks and sea-level elevations from satellite altimetry have indicated the presence of recurrent eddies near the ridge. From station no. 71, a single station was done to the bottom of the Udintsev Fracture Zone on the long deadhead run starting the WOCE P17 Section at 56° S and running northward along 135° W. Station spacing of 30-nm intervals was resumed until the TUNES-2 repeat station no. 179 was reached at 33° S. During the northward run, the ship discovered that it had a 50% greater speed capability than it had on the southward run; as a result the planned WOCE work was completed 3 days ahead of schedule. The extra available ship time was used to flesh out the historical deep station array by taking a few deep stations in the data-sparse regions in the deep trough between the Austral Islands and the Tuamotu Archipelago, avoiding areas covered by P6, SCORPIO, TUNES, GEOSECS, and PHOENIX expeditions. Having completed 127 stations, the number originally planned prior to the cruise, the ship arrived ahead of schedule in Papeete on the afternoon of November 25, 1992 local time.

All 127 CTD/rosette stations were occupied close to the bottom. Large-volume casts were done at 14 stations; most were single deep casts because extraction reagents were limited by a misplaced replacement shipment.

3.2 WOCE Section P17E/P19S

R/V *Knorr* departed Papeete, Tahiti, on December 4, 1992, and headed toward the first station of the WOCE Section P17E/P19S (see Fig. 1). On the afternoons of December 5, 6, and

7, the vessel stopped for station tests and training. No reportable data were collected. WOCE stations began at 52.5° S, 135.0° W on December 13 (local time) and continued on the planned track until the Antarctic ice edge was reached at 66.3° S, 126° W on December 25. After a 3-day run north to 52° S, 125.3° W, WOCE P17E stations resumed on December 29 along a track slightly south of the originally planned line, ending at 54° S, 88° W on January 9. At this point the track turned south to follow the originally planned P19S line south to 69.3° S, 88° W when station work was terminated short of the ice edge because of the need to begin the run into port. However, the track exceeded the planned minimum southward goal of 67° S, which was the latitude of the R/V *Akademik Ioffe* crossing of the S4P line. The R/V *Knorr* arrived in port on schedule January 22, 1993. The total number of stations was slightly less than planned, but a preliminary examination of the isopleths suggests no serious data loss was generated by the use of 40-nm spacing over three "deep basin" portions of the expedition.

The principal sampling program consisted of full-depth CTD profiles with a maximum of 36 small-volume water samples per cast. Water samples were collected for salinity, dissolved oxygen, silicate, phosphate, nitrate, and nitrite from all sampled levels at all stations and for CFC-11, CFC-12, CFC-113, CCl_4, ^3He, tritium, ^{14}C, and CO_2 system parameters at selected levels and stations. Large-volume sampling for ^{14}C was carried out at 7 stations with 270-L Gerard barrels, with up to 18 samples per station in 2 casts. Check samples for salinity and silicate were analyzed from the Gerard barrels and their piggyback Niskin bottles. Separate surface-water samples were taken approximately one each day for analyses of ^{226}Ra and ^{228}Ra. Separate surface samples were filtered at each station for shore analyses of ^{13}C in dissolved CO_2.

Rosette water samples were collected by the SIO Oceanographic Data Facility (ODF) from ODF-constructed 10-L sample bottles mounted on an ODF-constructed 36-bottle rosette sampler that used General Oceanics 24- and 12-place pylons. The rosette was equipped with an ODF-modified Neil Brown Instrument Systems (NBIS) Mark IIIb CTD for *in-situ* measurement of conductivity, temperature, pressure, and dissolved oxygen. A transmissometer belonging to Dr. Wilf Gardner, TAMU, was installed on the rosette and used at every station. A short-range (100 m) altimeter was mounted on the rosette frame and its data fed into the CTD data stream. A pinger on the rosette frame gave height-above-bottom throughout the water column. In every case the bottles were closed at selected depths during the up cast, after the winch had stopped at that depth. There were 106 CTD/rosette stations, each close to the bottom. Seven included one deep and one intermediate depth cast with Gerard barrels.

While on station and underway a shipboard ADCP system was operated. Underway surface measurements were also obtained for temperature, pCO_2, and atmospheric CFCs. Sonic depth and position were recorded at 5-minute intervals between most stations and along selected portions of the long runs. Routine weather observations were collected at 4-hour intervals by the ship's officers, and an Improved Meteorological (IMET) system was operated by the R/V *Knorr*'s resident technician.

The sea work was occasionally affected by high seas and swells generated by low-pressure cells in the region.

3.3 WOCE Section P19C

R/V *Knorr* departed Punta Arenas, Chile, for its twelfth leg of Cruise 138 on February 22, 1993. This was the seventh WOCE hydrographic leg on the R/V *Knorr* in the South Pacific since the beginning of 1992. WOCE Section P19C was supported by the National Science Foundation's Ocean Sciences Division. P19C was the fourth WOCE hydrographic leg on the R/V *Knorr* with basic technical support from SIO ODF. Because of the extensive use of the ship for this sort of work prior to the P19C leg, the expedition was fortunate in having very few problems with equipment. The weather in general was good, and the expedition encountered only two storms, which affected stations no. 257 and 274.

Stations were numbered consecutively from the beginning of the R/V *Knorr* work on WOCE Section P16A/P17A starting south of Tahiti in October 1992. The first station on P19C was numbered 234. On 20 days a separate Joint Global Ocean Flux Study (JGOFS) bio-optics station was made within several hours of noon. These stations extended to 200 m.

The original cruise plan was for sampling along 54° S westward until 88° W and then exclusively along 88° W until ~4° N, where the track jogged westward and then eastward into Central America (see Fig. 1). Because of clearance questions and also because of rethinking based on the topography between the Galapagos and South America, it was decided to bend the section northeastward to 85.8° W north of 20° S, thereby passing through the deeper part of the equatorial ocean east of the Galapagos. The last station, no. 422, was occupied on April 10, 1993, and on April 13 the R/V *Knorr* arrived in Panama City.

All 189 CTD/rosette stations were occupied close to the bottom.

4. DESCRIPTION OF VARIABLES AND METHODS

The data files **p16ap17a.dat, p17ep19s.dat,** and **p19c.dat** (see description in Part 2) in this numeric data package (NDP) contain the following variables: station number, cast number, sample number, bottle number, CTD pressure, CTD temperature, CTD salinity, CTD oxygen, potential temperature, bottle salinity, concentration of dissolved oxygen, silicate, nitrate, nitrite, phosphate, CFC-11, CFC-12, TCO_2, pCO_2 measured at 4 and 20°C, and data-quality flags. The station inventory files **p16ap17a.sta, p17ep19s.sta,** and **p19c.sta** (see Part 2) contain the expocode, section number, station number, cast number, latitude, longitude, sampling date (i.e., month, day, year), sampling time, and sounding bottom depth for each station.

4.1 Hydrographic Measurements

The ODF CTD/rosette casts were carried out with a 36-bottle rosette sampler of ODF manufacture using General Oceanics pylons. An ODF-modified NBIS Mark 3 CTD, a Benthos altimeter, a SensorMedics oxygen sensor, and a SeaTech transmissometer provided by Texas A&M University were mounted on the rosette frame. Seawater samples were collected in 10-L PVC Niskin and ODF bottles mounted on the rosette frame. A Benthos pinger was mounted separately on the rosette frame; its signal was displayed on the precision depth recorder (PDR) in the ship's laboratory. The rosette/CTD was suspended from a three-conductor electromagnetic cable that provided power to the CTD and relayed the CTD signal to the laboratory.

Each CTD cast extended to within approximately 10 m of the bottom unless the bottom returns from both the pinger and the altimeter were extremely poor. Subsets of CTD data taken at the time of water sample collection were transmitted to the bottle data files immediately after each cast in order to provide pressure and temperature at the sampling depth and to facilitate the examination and quality control of the bottle data as the laboratory analyses were completed.

After each rosette cast was brought on board, water samples were drawn in the following order: CFC-11 and CFC-12, helium-3, oxygen, pCO_2, TCO_2, and ^{14}C. Tritium, nutrients (silicate, phosphate, nitrate and nitrite), and salinity were drawn next and could be sampled in arbitrary order.

All CTD pressures, temperatures, salinities, and oxygen concentrations for the bottle data tabulations on the rosette casts were obtained by averaging CTD data for a brief interval at the time the bottle was closed on the rosette.

A single ODF-modified Guildline Autosal Model 8400A salinometer (Serial Number 57-396), located in a temperature-controlled laboratory, was used to measure salinities. Analyses and data acquisition were controlled by a small computer through an interface board designed by ODF. The salinometer cell was flushed until successive readings met software criteria, then two successive measurements were made and averaged for a final result.

Salinity samples were analyzed for the rosette casts and the large-volume casts from both the piggyback bottle and the Gerard barrel. Salinity samples were drawn into 200-mL Kimax® high alumina borosilicate bottles, after 3 rinses, and were sealed with custom-made plastic insert thimbles and Nalgene screw caps. This assembly provides very low container dissolution and sample evaporation. If loose inserts were found, they were replaced to ensure an airtight seal. Salinity was determined after sample equilibration to laboratory temperature, usually within 8–36 hours of collection. Salinity was calculated according to the equations of the Practical Salinity Scale of 1978 (UNESCO 1981).

The salinometer was standardized for each cast with IAPSO standard seawater using at least one fresh vial per cast.

The estimated accuracy of bottle salinities run at sea is usually better than 0.002 relative to the particular standard seawater batch used. Although the laboratory precision of the Autosal can be as small as 0.0002 when running replicate samples under ideal conditions, at sea the expected precision is about 0.001 under normal conditions, with a stable lab temperature.

Dissolved oxygen analyses were performed with an SIO-designed automated oxygen titrator using photometric end-point detection based on the absorption of 365-nanometer wavelength ultraviolet light. Thiosulfate was dispensed by a Dosimat 665 buret driver fitted with a 1.0-mL buret. ODF used a whole-bottle Winkler titration following the technique of Carpenter (1965) with modifications by Culberson and Williams (1991), but with higher concentrations of potassium iodate standard (approximately 0.012N) and thiosulfate solution (50 gm/L). Standard solutions prepared from pre-weighed potassium iodate crystals were run at the beginning of each session of analyses, which typically included from one to three stations. Several standards were made up during each cruise and compared to assure that the results were reproducible and to preclude the possibility of a weighing error. Reagent/distilled water blanks were determined to account for oxidizing or reducing materials in the reagents. The auto-titrator generally performed very well. A decrease in voltage output led to changing the UV source lamp during the cruise.

Samples were collected for dissolved oxygen analyses soon after the rosette sampler was brought on board and after CFCs and helium were drawn. Nominal 125-mL volume-calibrated iodine flasks were rinsed twice with minimal agitation, then filled via a drawing tube, and allowed to overflow for at least 3 flask volumes. The sample temperature was measured with a small platinum resistance thermometer embedded in the drawing tube. Reagents were added to fix the oxygen before stoppering. The flasks were shaken twice (immediately after drawing and then again after 20 minutes), to assure thorough dispersion of the $MnO(OH)_2$ precipitate. The samples were analyzed within 4–36 hours of collection. Oxygen data were converted from milliliters per liter to micromoles per kilogram using the *in-situ* temperature.

Nutrient analyses (phosphate, silicate, nitrate, and nitrite) were performed on an ODF-modified AutoAnalyzer II, generally within a few hours of the cast, although some samples may have been refrigerated at 2–6°C for a maximum of 12 hours. The procedures used are described in Gordon et al. (1992).

Silicate is analyzed using the basic method of Armstrong et al. (1967). Ammonium molybdate is added to a seawater sample to produce silicomolybdic acid which is then reduced to silicomolybdous acid (a blue compound) following the addition of stannous chloride. The sample is passed through a 15-mm flow cell and measured at 820 nanometers. This response is known to be nonlinear at high silicate concentrations; this nonlinearity is included in ODF's software.

A modification of the Armstrong et al. (1967) procedure is used for the analysis of nitrate and nitrite. For nitrate analysis, a seawater sample is passed through a cadmium column where the nitrate is reduced to nitrite. This nitrite is then diazotized with sulfanilamide and coupled with N-(1-naphthyl)-ethylenediamine to form an azo dye. The sample is then passed through a 15-mm flow cell and measured at 540 nanometers. A 50-mm flow cell is required for nitrite. The procedure is the same for the nitrite analysis less the cadmium column.

Phosphate is analyzed using a modification of the Bernhardt and Wilhelms (1967) method. Ammonium molybdate is added to a seawater sample to produce phosphomolybdic acid, which is then reduced to phosphomolybdous acid (a blue compound) following the addition of dihydrazine sulfate. The sample is passed through a 50-mm flow cell and measured at 820 nanometers.

Nutrient samples were drawn into 45-mL high-density polypropylene, narrow mouth, screw-capped centrifuge tubes that were rinsed three times before filling. Standardizations were performed at the beginning and end of each group of analyses (one cast, usually 36 samples) with a set of an intermediate concentration standard prepared for each run from secondary standards. These secondary standards were in turn prepared aboard ship by dilution from dry, pre-weighed standards. Sets of 4 to 6 different concentrations of shipboard standards were analyzed periodically to determine the deviation from linearity as a function of concentration for each nutrient.

Nutrients, reported in micromoles per kilogram, were converted from micromoles per liter by dividing by sample density calculated at zero pressure, *in-situ* salinity, and an assumed laboratory temperature of 25°C.

4.2 Carbon Measurements

To measure the TCO_2 concentration in seawater, a coulometric analysis system was used during all cruises. This system has been described by Chipman et al. (1993) and consists of a coulometer (Model 5011), manufactured by UIC, Inc. (Jolliet, Ill.), and a sample introduction/CO_2 extraction system of LDEO design. The TCO_2 concentration in 4419 water samples was analyzed. In addition, 758 determinations were made at sea for 260 bottles of the Certified Reference Material (CRM) (batch nos. 12 and 13) yielding an average value of 1983.0 ± 1.5 μmol/kg for 166 analyses during leg P16A/P17A, 2013.7 ± 2.1 μmol/kg for 233 analyses during leg P17E/P19S, and 2015.3 ± 1.9 μmol/kg for 359 analyses during leg P19C. These compare with the SIO manometric values of 1984.0 ± 0.7 μmol/kg (N=7), 2015.1 ± 0.6 μmol/kg (N=7), and 2015.1 ± 0.6 μmol/kg (N=7) respectively. The CRMs were prepared by Dr. Andrew Dikson of SIO and analyzed manometrically by Dr. C. D. Keeling of SIO. The mean difference between the shipboard analyses by the LDEO group and the manometric analyses by SIO (LDEO – SIO) for CRM has been estimated to be −1.0 ± 1.7 μmol/kg for Section P16A/P17A, −1.4 ± 2.2 μmol/kg for P17E/P19S, and 0.2 ± 2.0 μmol/kg for P19C. The overall precision of all TCO_2 measurements is estimated to be ~±2 μmol/kg.

To measure the pCO_2 in seawater, a fully automated equilibrator–gas chromatograph system was used during the cruises. This system has been described by Chipman et al. (1993). The pCO_2 in 4419 water samples was measured. Because pCO_2 is strongly affected by temperature changes, the equilibration flasks were kept in a constant-temperature water bath of 20 or 4°C depending on latitude of sampling. The precision of the pCO_2 measurements has been estimated to be ~±0.12% for a single station based on the reproducibility of replicate equilibrations. However, the station-to-station reproducibility was about ±0.5%.

A full description of methods and instrumentation used to perform the TCO_2 and pCO_2 measurements during the R/V *Knorr* expeditions along WOCE Sections P16A/P17A, P17E/P19S, and P19C is provided in Takahashi et al. (1998), which is reprinted in the Appendix of this documentation.

Figures 2, 3, and 4 show the sampling density and depth along the WOCE Sections P16A/P17A, P17E/P19S, and P19C.

4.3 Shore-Based Replicate Measurements

The replicate samples from 16 Niskin bottles at 8 stations were collected for shore-based reference analyses during Section P16A/P17A, from only 2 bottles at 1 station during Section P17E/P19S, and from 18 Niskin bottles at 10 stations during Section P19C. The analyses were performed at the laboratory of Dr. C. D. Keeling of SIO. The TCO_2 measurements were produced by vacuum extraction/manometric analysis in controlled laboratory conditions using standards. Samples were collected from the same Niskin bottles used to collect samples for shipboard analyses of TCO_2. The shore-based analyses employed a precise and proven methodology to provide information on the quality of shipboard analyses (Guenther et al. 1994).

For all shore-based analyses during Section P16A/P17A, a replicate σ (standard deviation of shore-based analyses calculated from bottle pair agreement) of 1.19 µmol/kg for 14 unflagged pairs was calculated, with no deltas greater then 3σ. The average difference for 14 comparisons of single replicate samples comparing ship and shore TCO_2 values (LDEO–SIO) was -3.4 ± 1.8 µmol/kg (Table 1) (Fig. 5). This compares with the (LDEO – SIO) difference for the CRM analyses of -1.0 ± 1.7 µmol/kg. The observed difference of 2.4 µmol/kg is somewhat greater than the standard deviations for the respective measurements, and suggests an addition of CO_2 during the storage period of the SIO seawater samples.

For all shore-based analyses during Section P19C, a replicate σ of 0.48 µmol/kg for 17 unflagged pairs was calculated, with no deltas greater than 3σ. The average difference for 15 comparisons of single replicate samples comparing ship and shore TCO_2 values (LDEO–SIO) was -1.1 ± 1.9 µmol/kg (Table 2) (Fig 6). This compares with the (LDEO – SIO) difference for the CRM analyses of 0.2 ± 2.0 µmol/kg. The observed difference is within the standard deviations for the respective analytical methods. Hence, the results of the SIO analyses of the stored samples are in agreement with the shipboard TCO_2 data measured by LDEO.

Only two water samples were compared for Section P17E/P19S. These represent too few data points for meaningful comparative analyses.

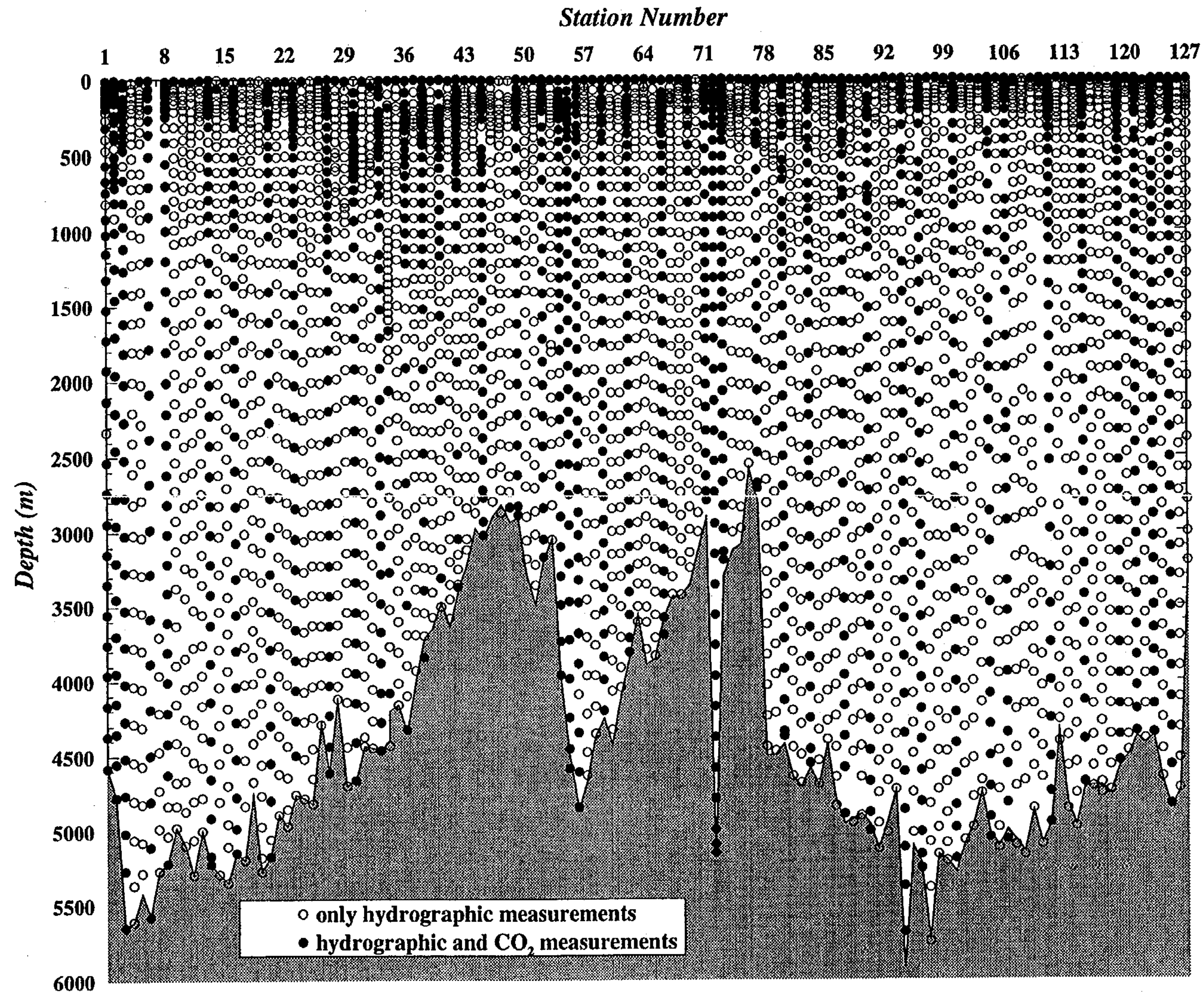

Figure 2. Sampling depths at all hydrographic stations occupied during R/V *Knorr* expedition along WOCE Section P16A/P17A.

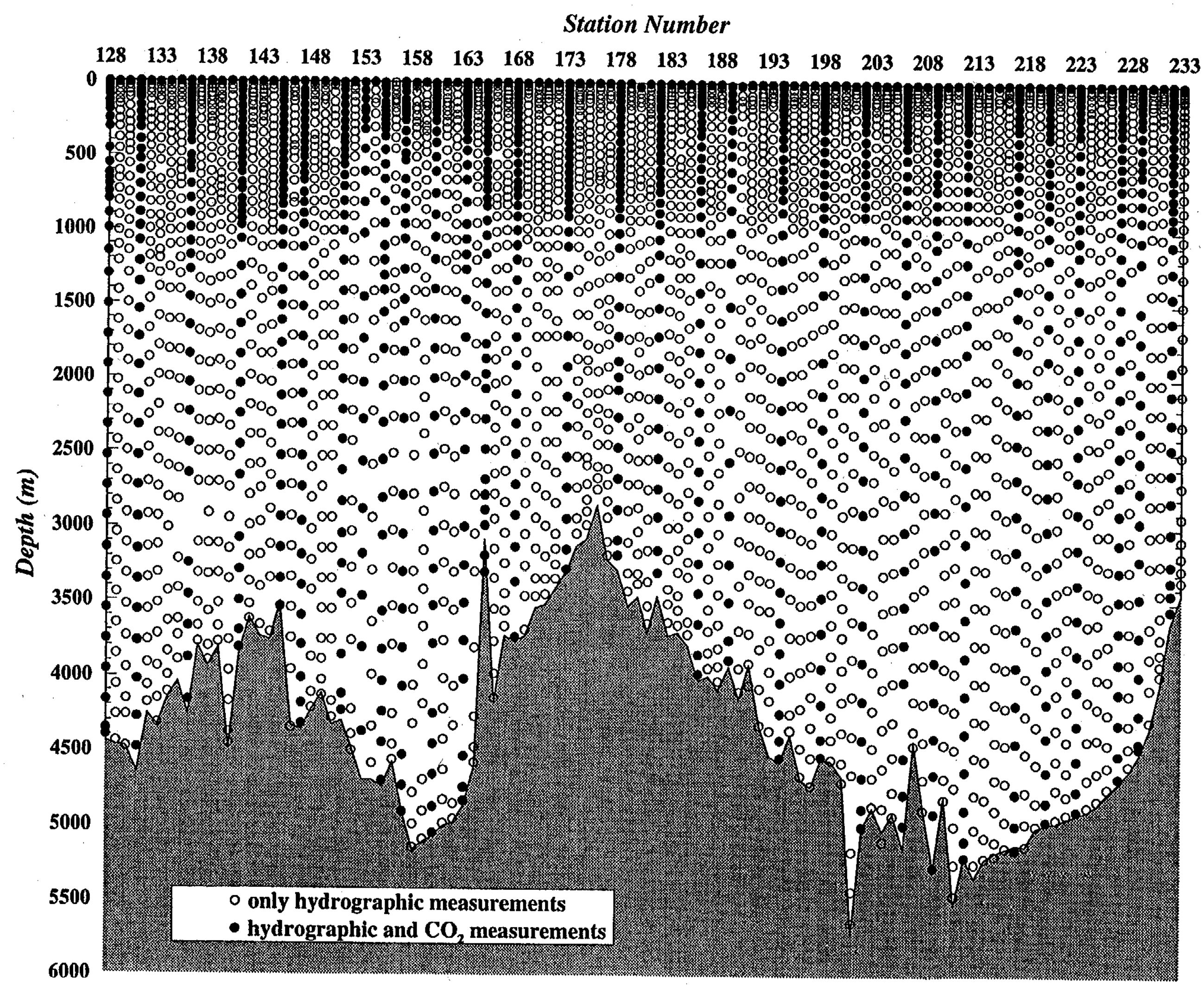

Figure 3. Sampling depths at all hydrographic stations occupied during R/V *Knorr* expedition along WOCE Section P17E/P19S.

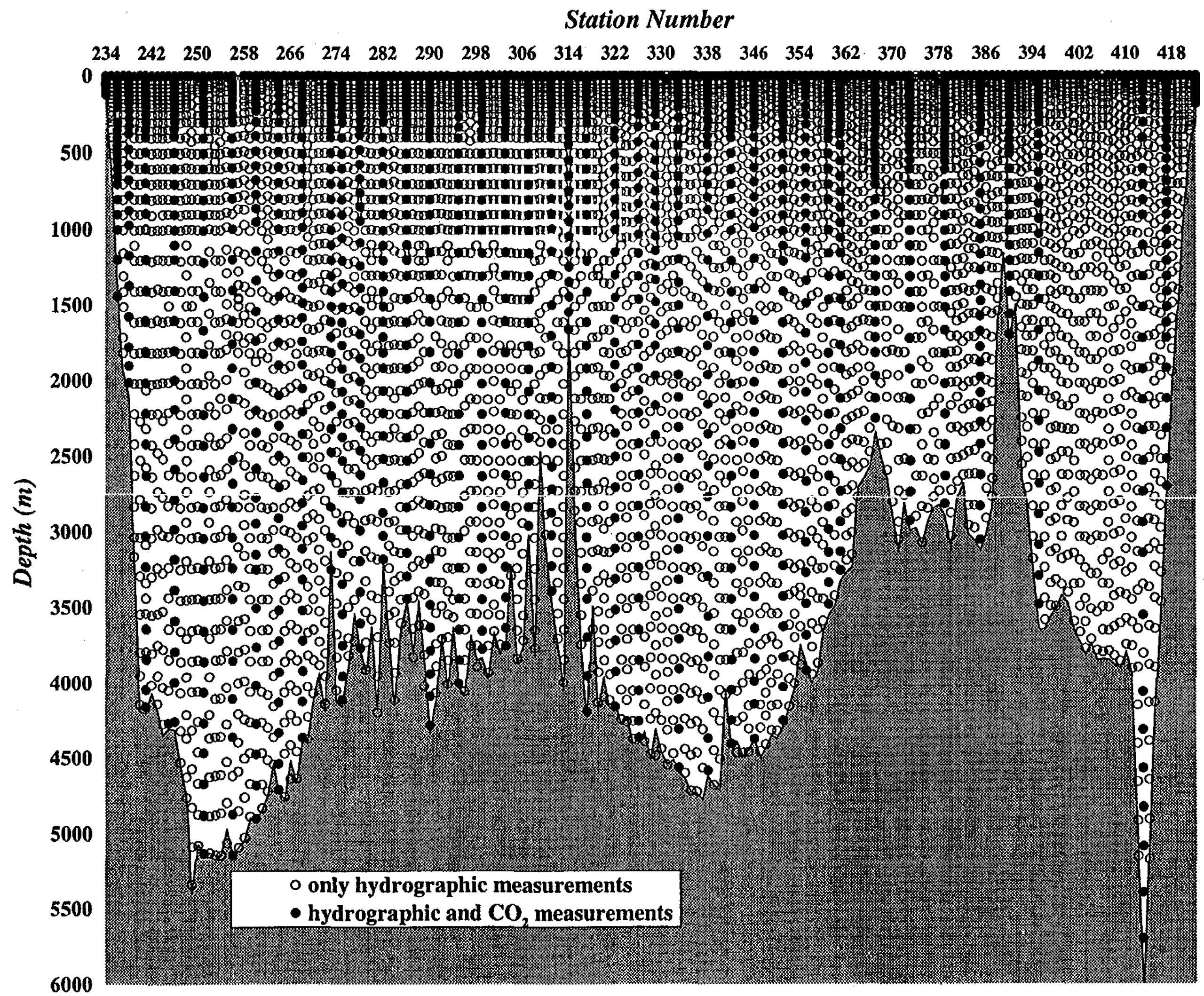

Figure 4. Sampling depths at all hydrographic stations occupied during R/V *Knorr* expedition along WOCE Section P19C.

Table 1. Summary of total CO_2 replicate data collected during R/V *Knorr* expedition along WOCE Section P16A/P17A

THE CARBON DIOXIDE PROJECT OF THE SCRIPPS INSTITUTION OF OCEANOGRAPHY
Knorr 138 Leg 9 WOCE Lines P16A and P17A

SUMMARY OF DISSOLVED INORGANIC CARBON DATA

LEG STN	LAT. LONG.	CAST NISK	DEPTH (M)	SAMPLE DATE	EXTRAC DATE	ANALYSIS DATE	MANO TYPE	SAMPLE BOTTLE	RUN	FLAG	S.I.O. RUN	RUN DELTA	BOTTLE DIC	BOTTLE DELTA	"NISKIN" AVG	LDEO DIC	LDEO -S.I.O.
											(μmol/kg SW)						
9	44- 0S	1 1	11	16OCT92	03FEB93	04FEB93	M	R5612	001	F	2081.21		2081.21				
16	150-30W				03FEB93	04FEB93	M	R5613	001		2072.49		2072.49	-8.72	2076.85	2107.40	30.55
		1 26	2790		03FEB93	04FEB93	M	R5610	001		2303.47		2303.47				
					03FEB93	04FEB93	M	R5611	001		2304.50		2304.50	+1.03	2303.99	2297.40	-6.59
9	57- 0S	1 1	3	25OCT92	16FEB93	18FEB93	M	R5620	001		2146.25		2146.25				
42	150-30W				16FEB93	18FEB93	M	R5621	001		2147.40		2147.40	+1.15	2146.82	2146.90	0.08
		1 32	2998		16FEB93	18FEB93	M	R5618	001		2262.44		2262.44				
					16FEB93	18FEB93	M	R5619	001		2264.04		2264.04	+1.60	2263.24	2258.50	-4.74
9	62-14S	1 12	7	30OCT92	30MAR94	05APR94	E	R5624	001		2167.84		2167.84				
55	140- 0W				30MAR94	05APR94	E	R5625	001		2168.44		2168.44	+0.60	2168.14	2166.70	-1.44
		1 27	2512		28MAR94	05APR94	E	R5622	001		2261.50		2261.50				
					28MAR94	05APR94	E	R5623	001		2262.01		2262.01	+0.51	2261.76	2256.90	-4.86
9	52-30S	2 1	8	09NOV92	30MAR93	11MAY93	E	R5672	001		2092.99		2092.99				
80	135- 0W				30MAR93	11MAY93	E	R5673	001		2095.12		2095.12	+2.13	2094.06	2091.40	-2.66
		2 29	3053		29MAR93	11MAY93	E	R5670	001		2262.93		2262.93				
					29MAR93	11MAY93	E	R5671	001		2262.53		2262.53	-0.40	2262.73	2260.00	-2.73
9	45-30S	1 1	3	13NOV92	04MAR93	05MAR93	M	R5676	001	F	2069.36		2069.36				
94	135- 0W				04MAR93	05MAR93	M	R5677	001		2075.17		2075.17	+5.81	2072.27	2068.70	-3.57
		1 24	3037		04MAR93	05MAR93	M	R5674	001		2298.86		2298.86				
					04MAR93	05MAR93	M	R5675	001		2296.80		2296.80	-2.06	2297.83	2295.40	-2.43
9	40-31S	1 1	2	16NOV92	07APR93	09APR93	E	R5680	001		2041.61		2041.61				
104	135- 0W				07APR93	09APR93	E	R5681	001		2042.88		2042.88	+1.27	2042.24	2038.80	-3.44
		1 26	3027		06APR93	09APR93	E	R5678	B001		2297.91		2297.91				
					06APR93	09APR93	E	R5679	001		2299.60		2299.60	+1.69	2298.76	2296.30	-2.46
9	35- 0S	1 1	1	19NOV92	19OCT93	22OCT93	E	R5614	001		2033.62		2033.62				
115	135- 0W				19OCT93	22OCT93	E	R5615	001		2031.89		2031.89	-1.73	2032.76	2029.40	-3.36
		1 29	2980		20OCT93	22OCT93	E	R5616	001		2309.01		2309.01				
					20OCT93	22OCT93	E	R5617	001		2307.36		2307.36	-1.65	2308.19	2305.00	-3.19

MANOMETER TYPE:
M = CONSTANT VOLUME MERCURY MANOMETER DATUM
E = ELECTRONIC CONSTANT-VOLUME MANOMETER DATUM
BOTTLE TYPE: R = RODAVISS

FLAGS:
F: Pair data excluded from comparison due to delta > 4 umol/kg.

Table 1 (continued)

THE CARBON DIOXIDE PROJECT OF THE SCRIPPS INSTITUTION OF OCEANOGRAPHY
Knorr 138 Leg 9 WOCE Lines P16A and P17A

SUMMARY OF DISSOLVED INORGANIC CARBON DATA (cont)

LEG STN	LAT. LONG.	CAST	NISK	DEPTH (M)	SAMPLE DATE	EXTRAC DATE	ANALYSIS DATE	MANO TYPE	SAMPLE BOTTLE	RUN	FLAG	S.I.O. RUN	RUN DELTA	BOTTLE DIC	BOTTLE DELTA	"NISKIN" AVG	LDEO DIC	LDEO -S.I.O.
												(μmol/kg SW)						
9	33- 0S	2	2	23	20NOV92	15JUN93	17JUN93	E	R5684	001		2031.07		2031.07				
119	135- 0W					15JUN93	17JUN93	E	R5685	001		2033.31		2033.31	+2.24	2032.19	2028.60	-3.59
		2	28	2901		15JUN93	17JUN93	E	R5682	001		2303.94		2303.94				
						15JUN93	17JUN93	E	R5683	001		2300.83		2300.83	-3.11	2302.39	2295.80	-6.59

MANOMETER TYPE:
M = CONSTANT VOLUME MERCURY MANOMETER DATUM
E = ELECTRONIC CONSTANT-VOLUME MANOMETER DATUM
BOTTLE TYPE: R = RODAVISS
NOTE: Dilution factor of 1.000340 has been applied.

FLAGS:
F: Pair data excluded from comparison due to delta > 4 μmol/kg.

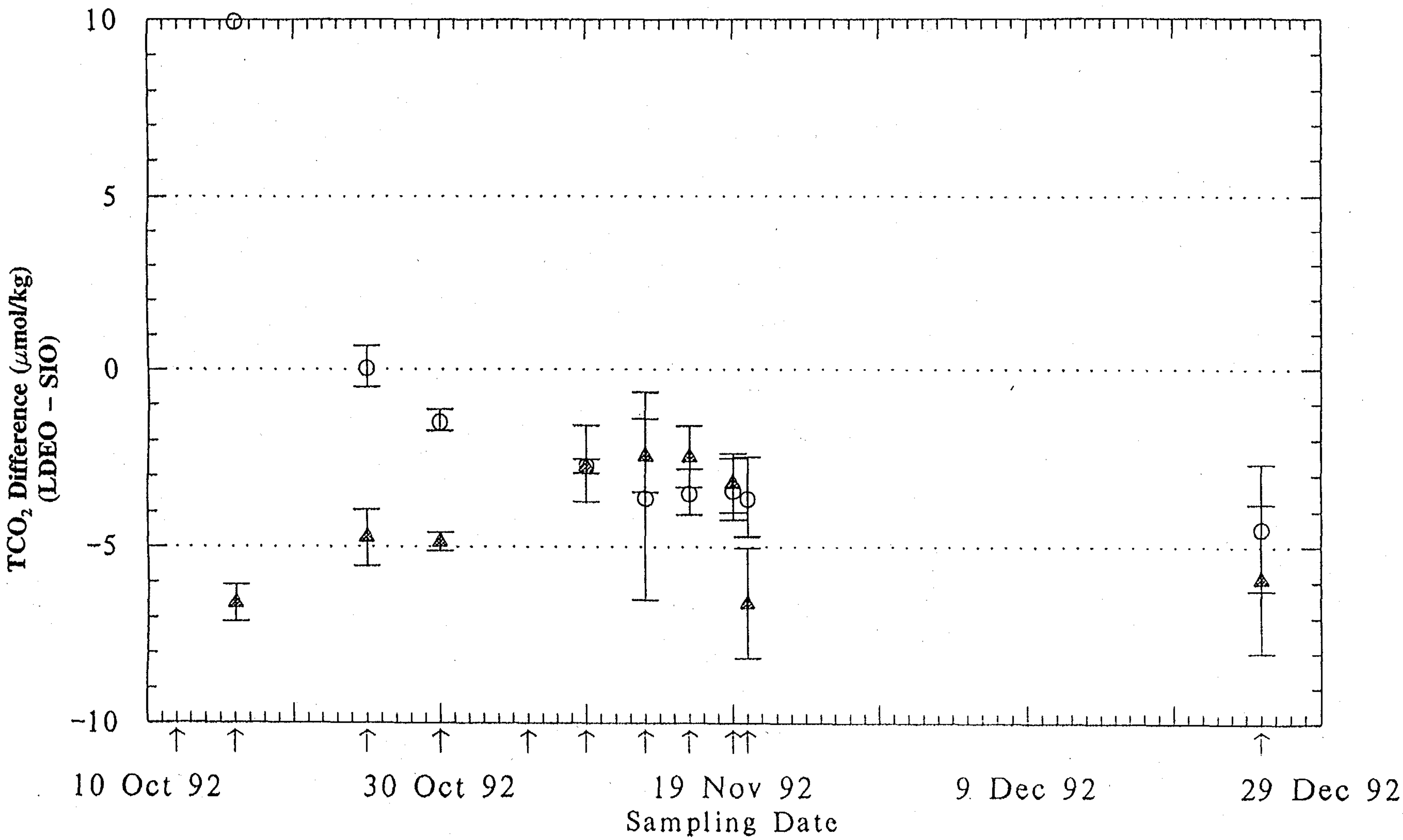

Figure 5. **Shipboard minus shore-based TCO_2 measurements vs date of surface and deep samples for WOCE Section P16A/P17A.** Circles represent near-surface samples; triangles represent deep samples; vertical bracketed lines represent replicate pair deltas; and arrows indicate dates replicate samples were collected.

Table 2. Summary of total CO_2 replicate data collected during R/V *Knorr* expedition along WOCE Section P19C

THE CARBON DIOXIDE PROJECT OF THE SCRIPPS INSTITUTION OF OCEANOGRAPHY
Knorr 138 Leg 12 WOCE Line P19C

SUMMARY OF DISSOLVED INORGANIC CARBON DATA

LEG STN	LAT. LONG.	CAST NISK	DEPTH (M)	SAMPLE DATE	EXTRAC DATE	ANALYSIS DATE	MANO TYPE	SAMPLE BOTTLE	RUN	FLAG	S.I.O. RUN	RUN DELTA	BOTTLE DIC	BOTTLE DELTA	"NISKIN" AVG	LDEO DIC	LDEO -S.I.O.
											(µmol/kg SW)						
12	52- 0S	1 36	0	02MAR93	11OCT93	12OCT93	E	R5628	001		2087.35		2087.35				
260	88- 0W				11OCT93	12OCT93	E	R5629	001		2088.28		2088.28	+0.93	2087.82	2085.70	-2.12
		1 10	2904		19OCT93	22OCT93	E	R5626	001		2276.01		2276.01				
					19OCT93	22OCT93	E	R5627	001		2276.03		2276.03	+0.02	2276.02	2271.90	-4.12
12	45-30S	1 36	2	05MAR93	05MAY94	16MAY94	E	R5632	001	EX	2085.25						
273	88- 0W				05MAY94	16MAY94	E	R5633	001		2064.20		2064.20		2064.20	2061.80	-2.40
12	34-30S	1 36	0	12MAR93	12JUL93	14JUL93	E	R5636	001		2001.64		2001.64				
295	88- 0W				12JUL93	14JUL93	E	R5637	001		2001.79		2001.79	+0.15	2001.72	1999.30	-2.42
		1 6	2997		09JUL93	14JUL93	E	R5634	001		2296.93		2296.93				
					09JUL93	14JUL93	E	R5635	001		2296.83		2296.83	-0.10	2296.88	2294.20	-2.68
12	28-30S	1 36	0	14MAR93	05MAY94	16MAY94	E	R5640	001		2050.78		2050.78				
307	88- 0W				05MAY94	16MAY94	E	R5641	001		2051.98		2051.98	+1.20	2051.38	2049.00	-2.38
12	24-20S	2 36	0	17MAR93	11JUN93	17JUN93	E	R5644	001		2058.93		2058.93				
317	88- 0W				11JUN93	17JUN93	E	R5645	001		2059.14		2059.14	+0.21	2059.03	2058.00	-1.03
		2 6	2999		11JUN93	17JUN93	E	R5642	001		2308.00		2308.00				
					11JUN93	17JUN93	E	R5643	001		2308.27		2308.27	+0.27	2308.14	2310.60	2.46
12	16-51S	1 36	0	21MAR93	06MAY94	16MAY94	E	R5654	001		2046.24		2046.24				
333	86-24W				06MAY94	16MAY94	E	R5655	001		2046.08		2046.08	-0.16	2046.16	2043.40	-2.76
		1 9	2878		06MAY94	16MAY94	E	R5652	001		2325.50		2325.50				
					06MAY94	16MAY94	E	R5653	001		2326.10		2326.10	+0.60	2325.80	2325.30	-0.50
12	12-30S	2 36	0	23MAR93	09JUN93	10JUN93	E	R5658	001		2032.78		2032.78				
342	85-50W				09JUN93	10JUN93	E	R5659	001		2033.96		2033.96	+1.18	2033.37	2031.60	-1.77
		2 8	2999		09JUN93	10JUN93	E	R5656	001		2334.52		2334.52				
					09JUN93	10JUN93	E	R5657	001		2334.51		2334.51	-0.01	2334.52	2336.10	1.58
12	6- 0S	1 36	0	27MAR93	15NOV93	17NOV93	E	R5662	001		1908.79		1908.79				
355	85-50W				15NOV93	17NOV93	E	R5663	001		1908.44		1908.44	-0.35	1908.61	1908.30	-0.31
		1 7	2834		09NOV93	10NOV93	E	R5660	001		2347.12		2347.12				
					09NOV93	10NOV93	E	R5661	001		2346.74		2346.74	-0.38	2346.93	2346.70	-0.23

MANOMETER TYPE:
E = ELECTRONIC CONSTANT-VOLUME MANOMETER DATUM
BOTTLE TYPE: R = RODAVISS

FLAGS:
EX: Data excluded from analysis for cause.

Table 2 (continued)

THE CARBON DIOXIDE PROJECT OF THE SCRIPPS INSTITUTION OF OCEANOGRAPHY
Knorr 138 Leg 12 WOCE Line P19C

SUMMARY OF DISSOLVED INORGANIC CARBON DATA (cont)

LEG STN	LAT. LONG.	CAST NISK	DEPTH (M)	SAMPLE DATE	EXTRAC DATE	ANALYSIS DATE	MANO TYPE	SAMPLE BOTTLE	RUN	FLAG	S.I.O. RUN	RUN DELTA	BOTTLE DIC	BOTTLE DELTA	"NISKIN" AVG	LDEO DIC	LDEO -S.I.O.
											(µmol/kg SW)						
12	13- 2N	2 36	1	09APR93	19MAY93	20MAY93	E	R5588	001		1895.14		1895.14				
413	91-45W				19MAY93	20MAY93	E	R5589	001		1895.91		1895.91	+0.77	1895.53	1894.80	-0.73
		2 10	3752		19MAY93	20MAY93	E	R5586	001		2361.26		2361.26				
					19MAY93	20MAY93	E	R5587	001		2361.87		2361.87	+0.61	2361.57		
12	13-19N	1 31	0	09APR93	18MAY93	20MAY93	E	R5592	001		1912.19		1912.19				
417	91-40W				18MAY93	20MAY93	E	R5593	001		1910.63		1910.63	-1.56	1911.41	1913.00	1.59
		1 71	2667		17MAY93	20MAY93	E	R5590	001		2364.16		2364.16				
					17MAY93	20MAY93	E	R5591	001	R	2364.18		2364.18	+0.02	2364.17	2376.80	12.63

MANOMETER TYPE:
E = ELECTRONIC CONSTANT-VOLUME MANOMETER DATUM

BOTTLE TYPE: R = RODAVISS

NOTE: Dilution factor of 1.000340 has been applied.

FLAGS:
R: Comparison excluded from analysis because >3s from average.
EX: Data excluded from analysis for cause.

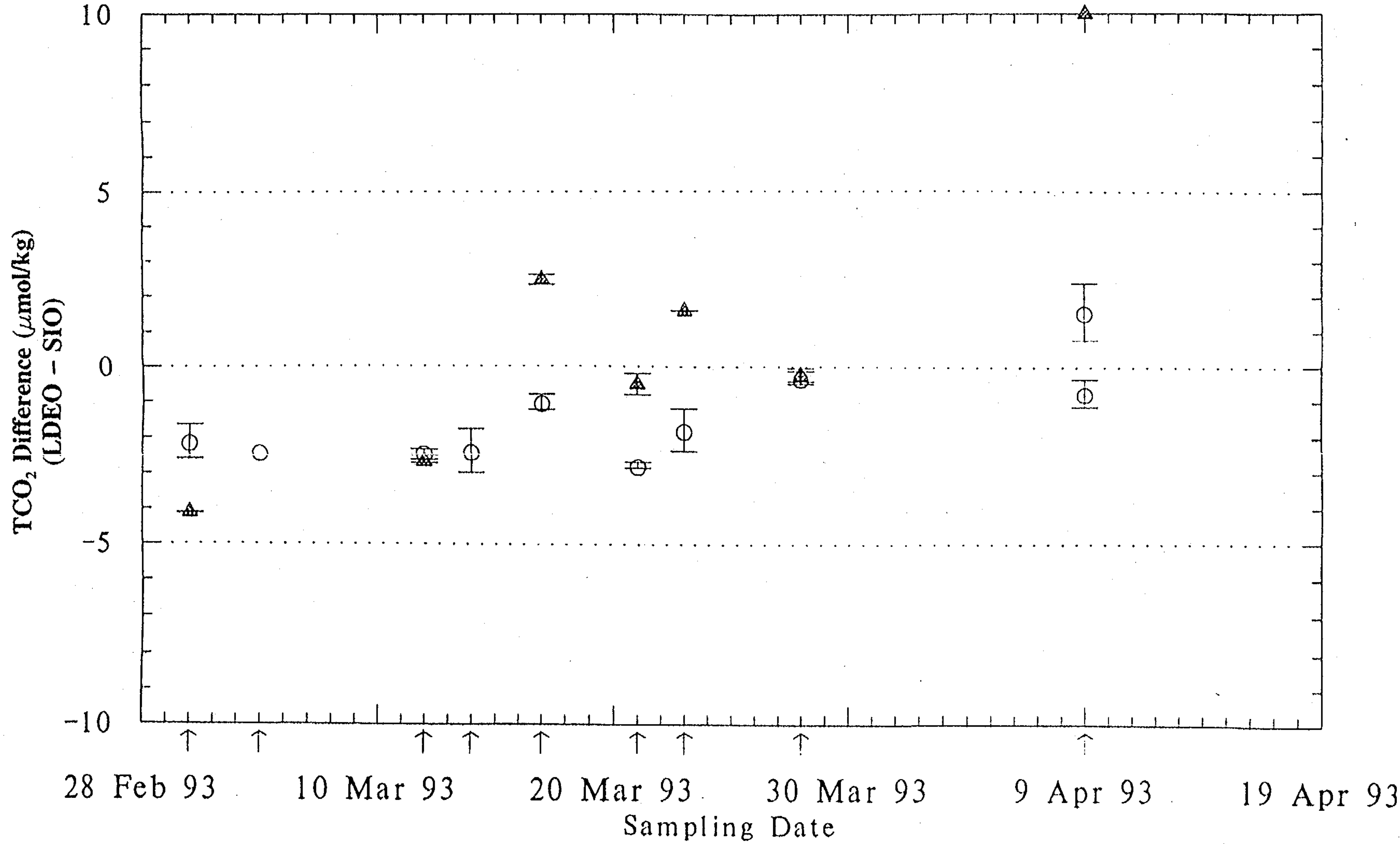

Figure 6. **Shipboard minus shore-based TCO_2 measurements vs date of surface and deep samples for WOCE Section P19C**. Circles represent near-surface samples; triangles represent deep samples; vertical bracketed lines represent replicate pair deltas; and arrows indicate dates replicate samples were collected.

5. DATA CHECKS AND PROCESSING PERFORMED BY CDIAC

An important part of the NDP process at the Carbon Dioxide Information Analysis Center (CDIAC) involves the quality assurance (QA) of data before distribution. Data received at CDIAC are rarely in a condition that would permit immediate distribution, regardless of the source. To guarantee data of the highest possible quality, CDIAC conducts extensive QA reviews that involve examining the data for completeness, reasonableness, and accuracy. Although they have common objectives, these reviews are tailored to each data set and often require extensive programming efforts. In short, the QA process is a critical component in the value-added concept of supplying accurate, usable data for researchers.

The following information summarizes the data processing and QA checks performed by CDIAC on the data obtained during the three R/V *Knorr* cruises in the South Pacific Ocean (WOCE Sections P16A/P17A, P17E/P19S, and P19C).

1. Carbon-related data and preliminary hydrographic measurements were provided to CDIAC by Taro Takahashi and Stewart Sutherland of LDEO. The final hydrographic and chemical measurements and the station information files were provided by the WOCE Hydrographic Program Office after quality evaluation. A FORTRAN 77 retrieval code was written and used to merge and reformat all data files.

2. The designation for missing values, given as −9.0 in the original files, was changed to −999.9.

3. To check for obvious outliers, all data were plotted with a PLOTNEST.C program written by Stewart C. Sutherland (LDEO). The program plots a series of nested profiles, using the station number as an offset; the first station is defined at the beginning, and subsequent stations are offset by a fixed interval (Figs. 7–12). Several outliers were identified and removed after consultation with the principal investigators.

4. To identify "noisy" data and possible systematic, methodological errors, property-property plots for all parameters were generated, carefully examined, and compared with plots from previous expeditions in the South Pacific Ocean.

5. All variables were checked for values exceeding physical limits, such as sampling depth values that are greater than the given bottom depths.

6. Dates and times were checked for bogus values (e.g., values of MONTH < 1 or > 12, DAY < 1 or > 31, YEAR < or > 1992 or 1993, TIME < 0000 or > 2400.

7. Station locations (latitudes and longitudes) and sampling times were examined for consistency with maps and cruise information supplied by Takahashi et al. (1998).

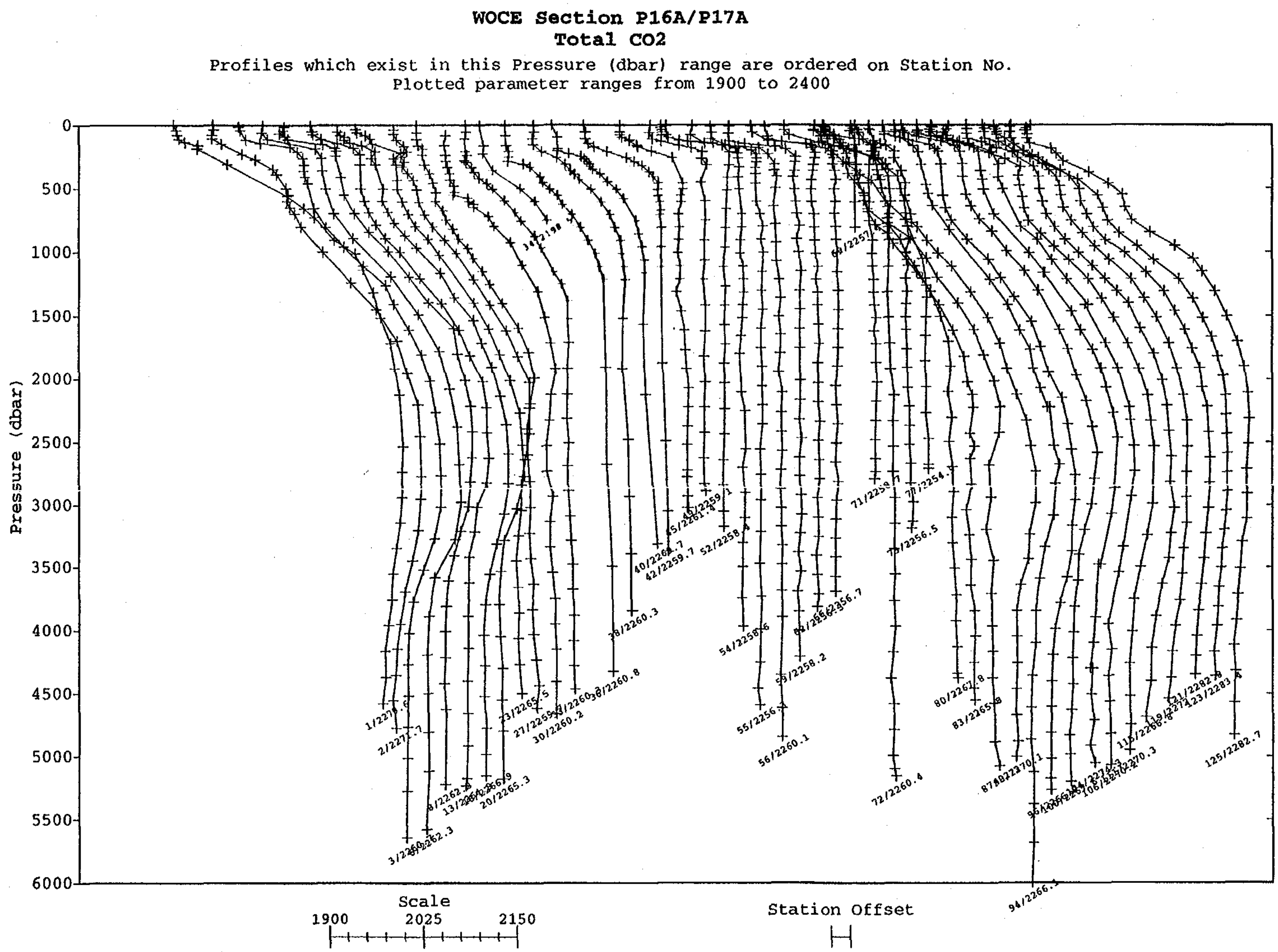

Figure 7. Nested profiles: total carbon dioxide (μmol/kg) vs pressure (dbar) for all stations of WOCE Section P16A/P17A.

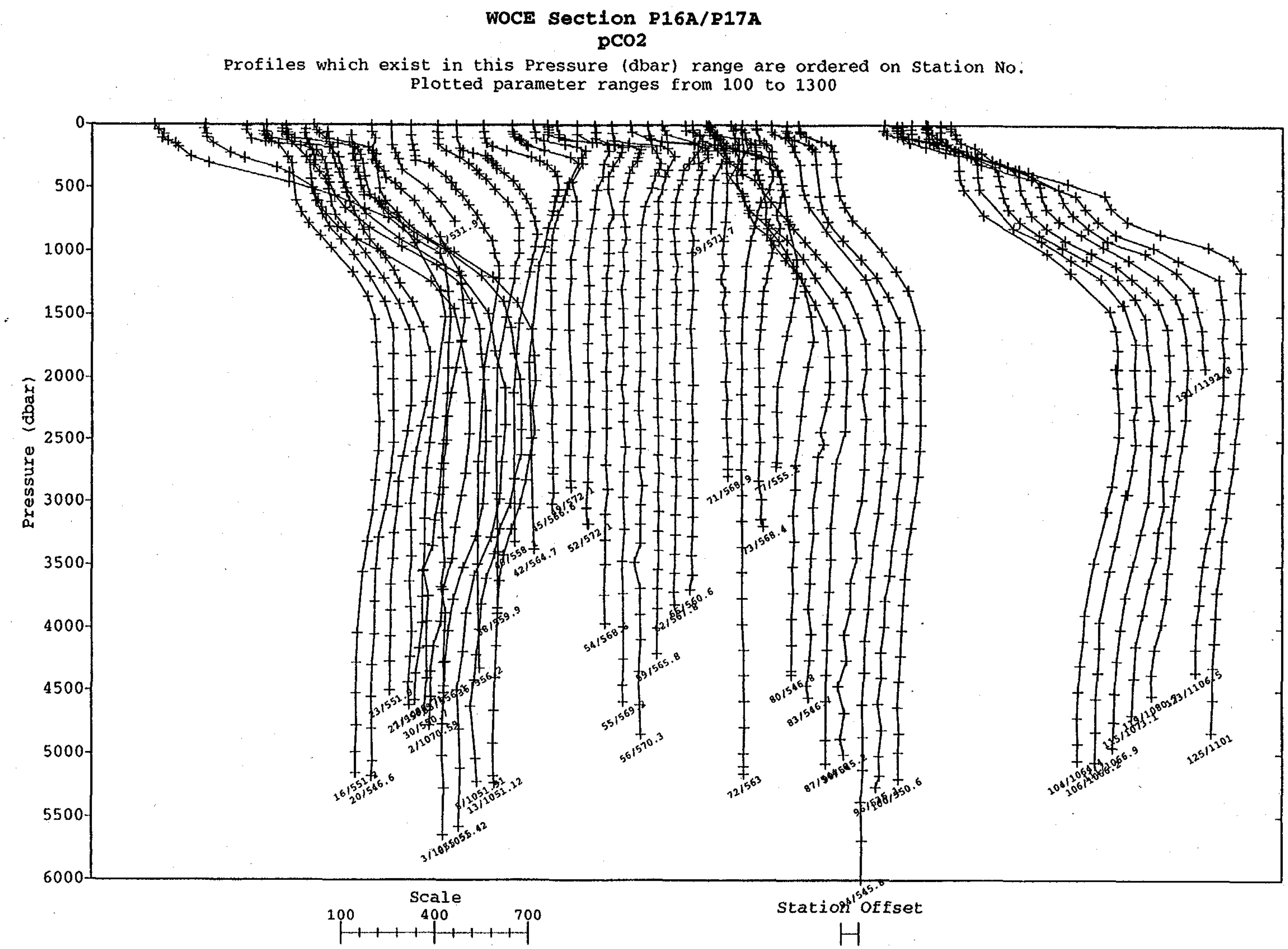

Figure 8. Nested profiles: partial pressure of carbon dioxide (μatm) vs pressure (dbar) for all stations of WOCE Section P16A/P17A.

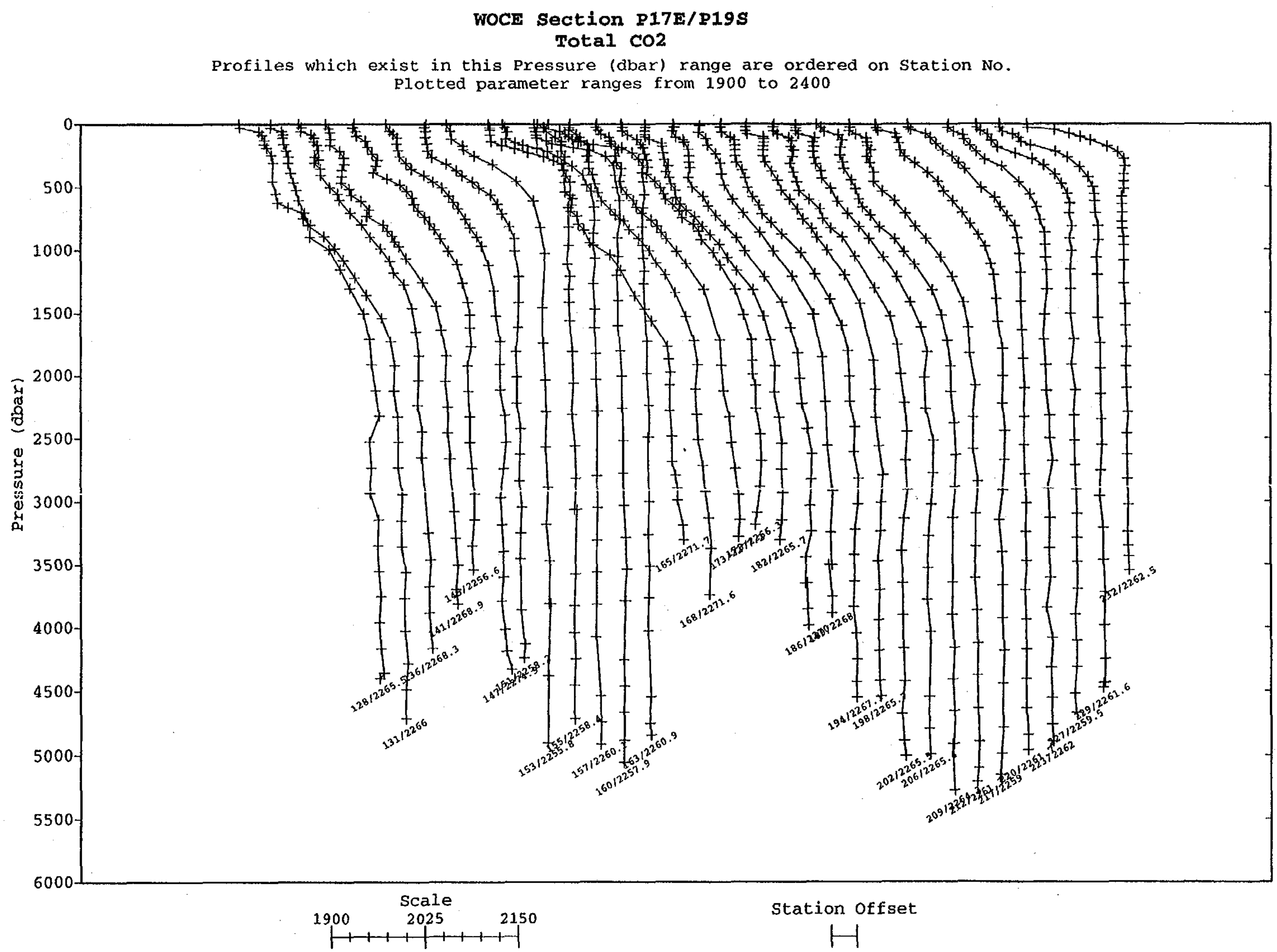

Figure 9. Nested profiles: total carbon dioxide (μmol/kg) vs pressure (dbar) for all stations of WOCE Section P17E/P19S.

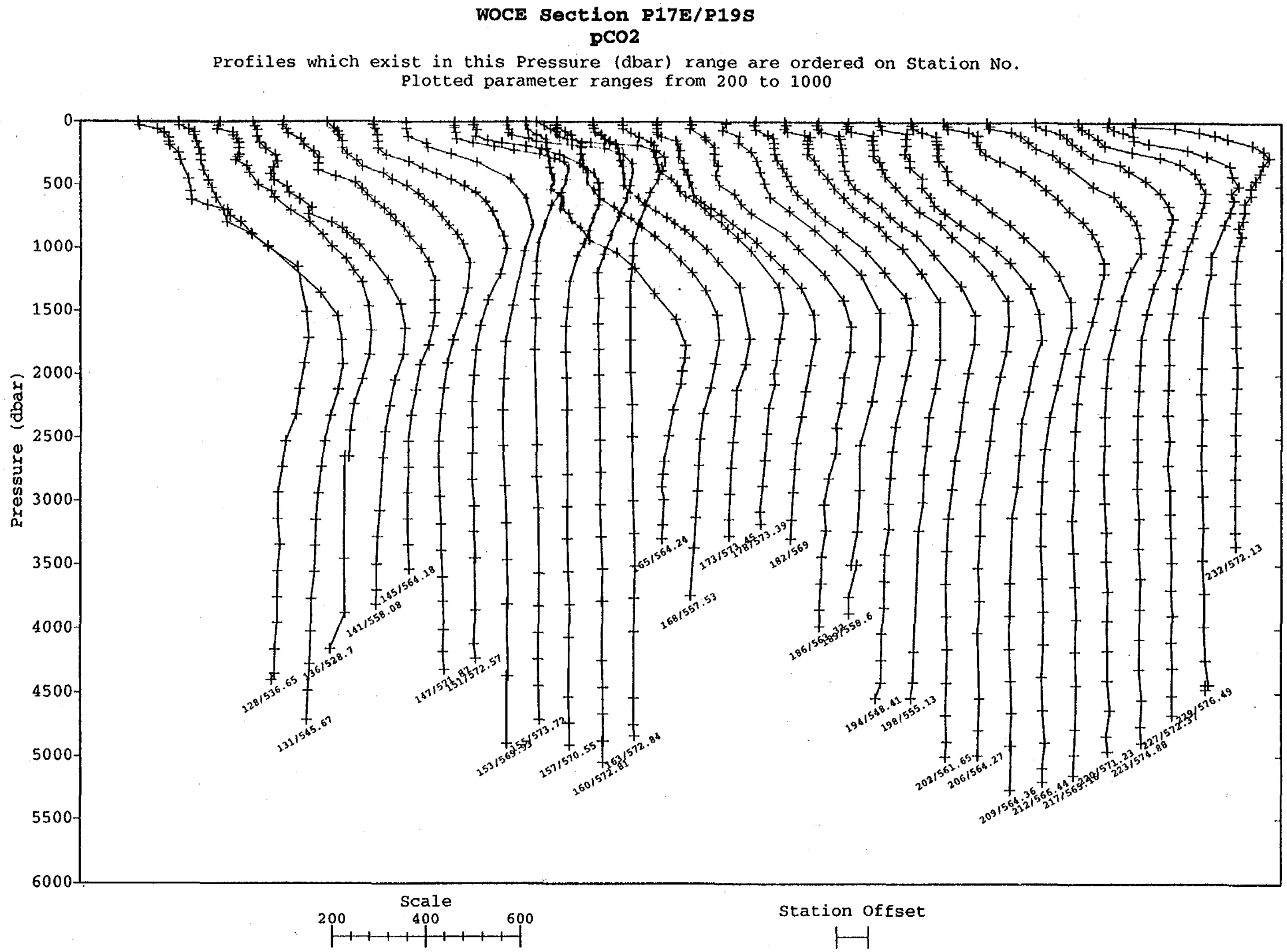

Figure 10. Nested profiles: partial pressure of carbon dioxide (μatm) vs pressure (dbar) for all stations of WOCE Section P17E/P19S.

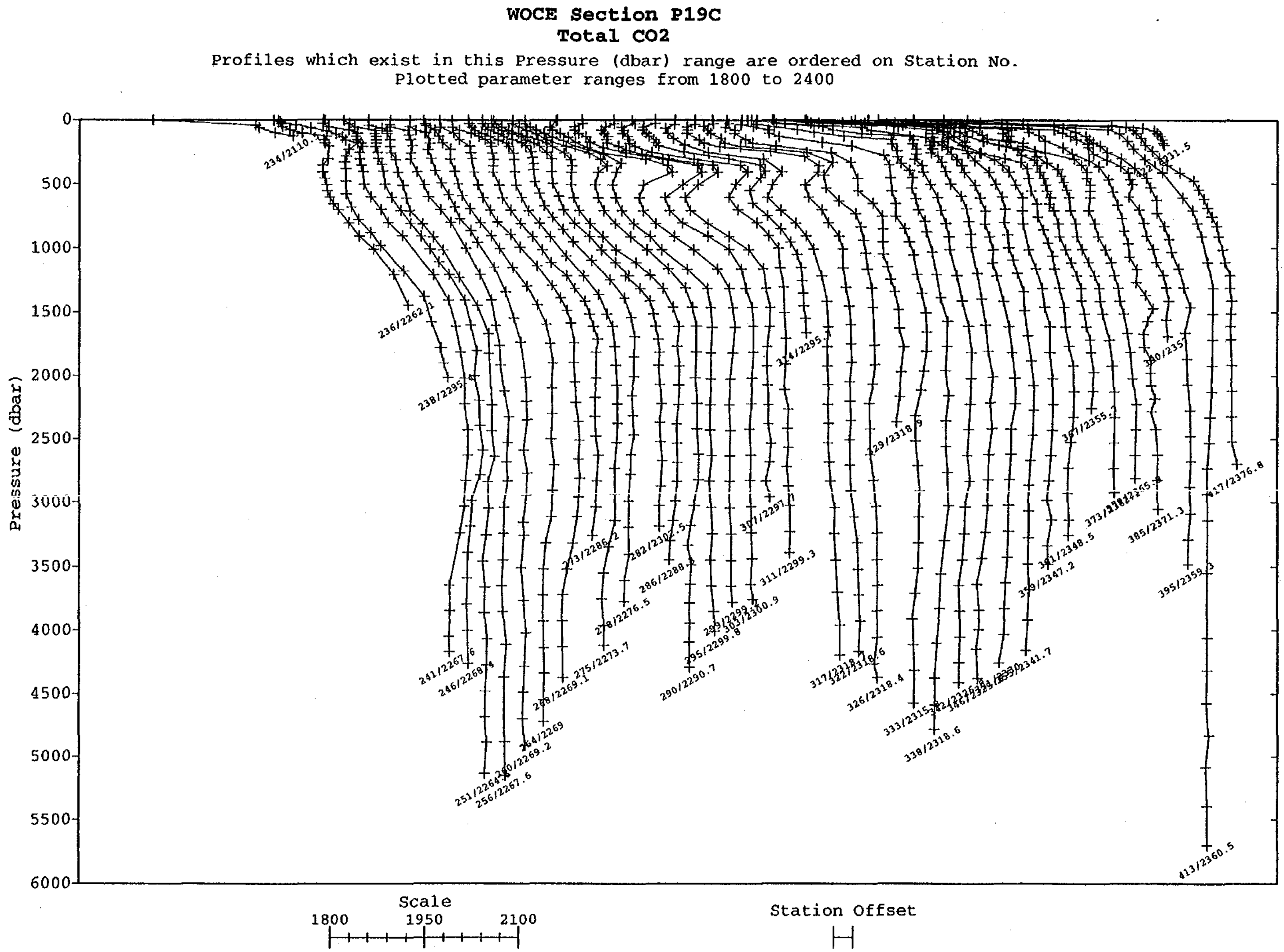

Figure 11. Nested profiles: total carbon dioxide (μmol/kg) vs pressure (dbar) for all stations of WOCE Section P19C.

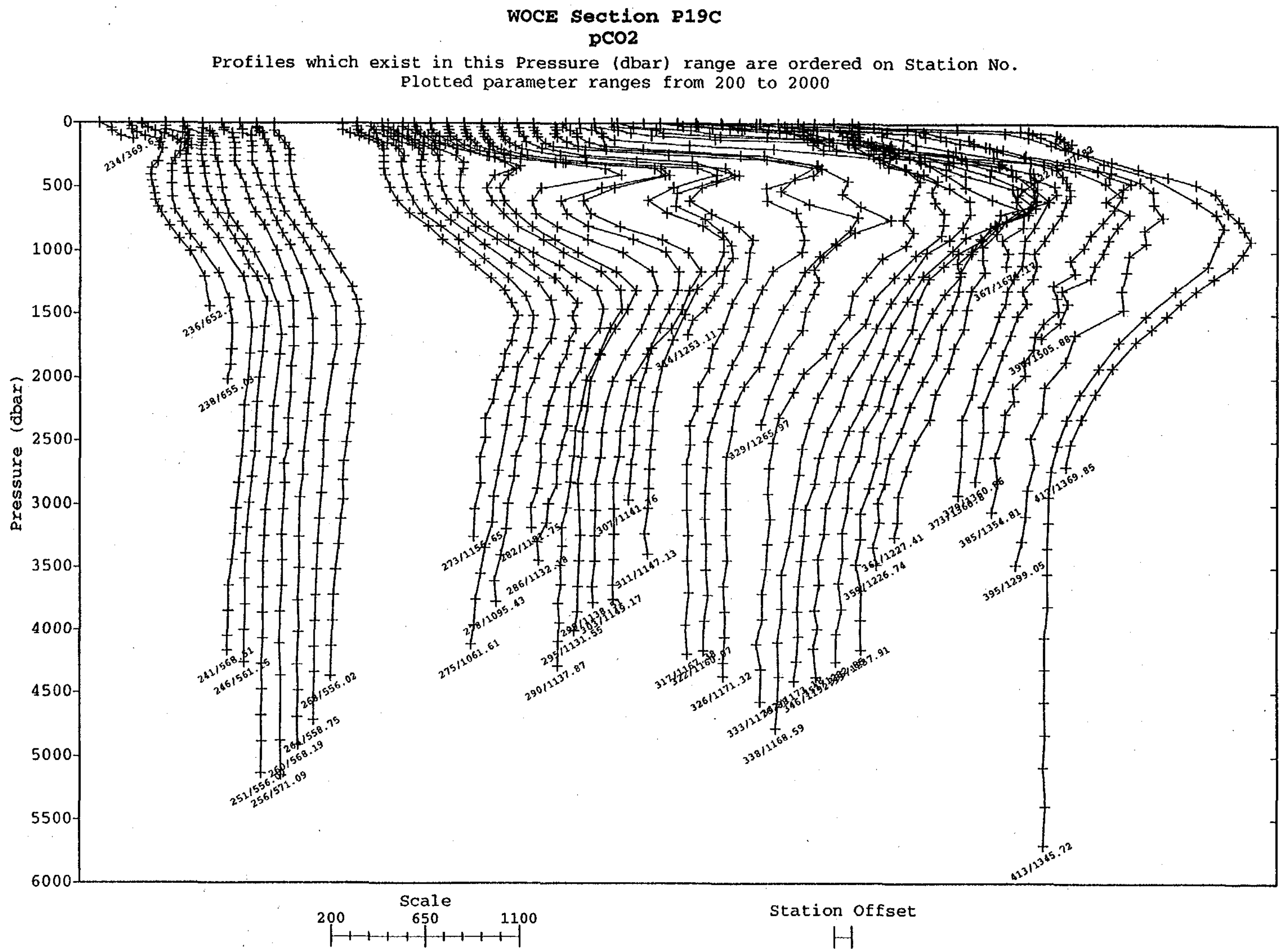

Figure 12. Nested profiles: partial pressure of carbon dioxide (μatm) vs pressure (dbar) for all stations of WOCE Section P19C.

6. HOW TO OBTAIN THE DATA AND DOCUMENTATION

This database is available on request in machine-readable form, without charge, from CDIAC. CDIAC will also distribute subsets of the database as needed. It can be acquired on 8-mm tape; on 150-mB, ¼-in. tape cartridge; on MAC- or IBM-formatted floppy diskettes; or from CDIAC's anonymous File Transfer Protocol (FTP) area through the Internet (see FTP address below). Requests should include any specific media instructions required by the user to access the data (e.g., 3.5- or 5.25-in. floppy diskettes, high or low density; and 8200 or 8500 format, 8-mm tape). Requests should be addressed to

Carbon Dioxide Information Analysis Center
Oak Ridge National Laboratory
Post Office Box 2008
Oak Ridge, Tennessee 37831-6335
U.S.A.

Telephone:	(423) 574-0390 or (423) 574-3645
Fax:	(423) 574-2232

Electronic Mail: cdiac@ornl.gov

The data files can also be acquired from CDIAC's anonymous FTP account via Internet:

- FTP to cdiac.esd.ornl.gov (128.219.24.36),
- Enter "ftp" or "anonymous" as the user ID,
- Enter your electronic mail address as the password (e.g.,"alex@alex.esd.ornl.gov"),[1]
- Change to the directory "/pub/ndp065", and
- Acquire the files using the FTP "get" or "mget" command.

As an alternative, you can access the following World Wide Webb URL:
http://cdiac.esd.ornl.gov/oceans/home.html

[1]Please enter your correct address. This address is used by CDIAC to inform data recipients of data revisions and updates.

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PART 2:

CONTENT AND FORMAT OF DATA FILES

8. FILE DESCRIPTIONS

This section describes the content and format of each of the nine files that comprise this NDP (see Table 3). Because CDIAC distributes the data set in several ways (e.g., via anonymous FTP and on floppy diskette), each of the nine files is referenced by both an ASCII file name, which is given in lower-case, bold-faced type (e.g., **ndp065.txt**), and a file number. The remainder of this section describes (or lists, where appropriate) the contents of each file.

Table 3. Content, size, and format of data files

File number, name, and description	Logical records	File size in bytes
1. **ndp065.txt**: a detailed description of the cruise network, the two FORTRAN 77 data retrieval routines, and the six oceanographic data files	2,081	110,914
2. **stainv.for**: a FORTRAN 77 data retrieval routine to read and print the three station inventory files: **p16ap17a.sta** (File 4), **p17ep19s.sta** (File 5), and **p19c.sta** (File 6)	46	1,387
3. **data.for**: a FORTRAN 77 data retrieval routine to read and print the three data files: **p16ap17a.dat** (File 7), **p17ep19s.dat** (File 8), and **p19c.dat** (File 9)	56	2,282
4. **p16ap17a.sta**: a listing of the station locations, sampling dates, and sounding bottom depths for each of the 127 stations of WOCE Section P16A/P17A	138	11,271
5. **p17ep19s.sta**: a listing of the station locations, sampling dates, and sounding bottom depths for each of the 106 stations of WOCE Section P17E/P19S	116	9,489
6. **p19c.sta**: a listing of the station locations, sampling dates, and sounding bottom depths for each of the 189 stations of WOCE Section P19C	200	16,293

Table 3. (continued)

File number, name, and description	Logical records	File size in bytes
7. **p16ap17a.dat**: hydrographic, carbon dioxide, and chemical data from 127 stations of WOCE Section P16A/P17A	4,426	791,641
8. **p17ep19s.dat**: hydrographic, carbon dioxide, and chemical data from 106 stations of WOCE Section P17E/P19S	3,765	673,332
9. **p19c.dat**: hydrographic, carbon dioxide, and chemical data from 189 stations of WOCE Section P19C	6,356	1,137,111
Total	17,184	2,753,720

8.1 ndp065.txt (File 1)

This file contains a detailed description of: the data set, the two FORTRAN 77 data retrieval routines, and the six oceanographic data files. It exists primarily for the benefit of individuals who acquire this database as machine-readable data files from CDIAC.

8.2 stainv.for (File 2)

This file contains a FORTRAN 77 data retrieval routine to read and print three station inventory files: **p16ap17a.sta** (File 4), **p17e19s.sta** (File 5), and **p19c.sta** (File 6). The following is a listing of this program. For additional information regarding variable definitions, variable lengths, variable types, units, and codes, please see the description for files 4, 5, and 6 on page 38.

```
c*********************************************************************
c* FORTRAN 77 data retrieval routine to read and print the files    *
c* named "p16ap17a.sta", p17ep19s.sta, and p19c.sta (Files 4, 5, 6) *
c*********************************************************************

c*Defines variables*

      INTEGER  stat, cast, depth
```

```
      REAL latdcm, londcm
      CHARACTER expo*10, sect*9, date*10, time*4
      OPEN (unit=1, file='input.sta')
      OPEN (unit=2, file='output.sta')
      write (2, 5)

c*Writes out column labels*

 5    format (1X, 'STATION INVENTORY: R/V KNORR',/,
     1 1X,'EXPOCODE',3X,'SECT',6X,'STNBR',2X,'CAST',9X,
     2 'DATE',2X,'TIME',2X,'LATITUDE',2X,'LONGITUDE',2X,
     3 'DEPTH',/)

c*Sets up a loop to read and format all the data in the file*

      read (1, 6)
 6    format (//////////)

 7    CONTINUE
      read (1, 10, end=999) expo, sect, stat, cast, date, time,
     1 latdcm, londcm, depth

 10   format (A10, 2X, A9, 3X, I3, 5X, I1, 3X, A10, 2X, A4, 3X,
     1 F7.3, 3X, F8.3, 3X, I4)

      write (2, 20) expo, sect, stat, cast, date, time,
     1 latdcm, londcm, depth

 20   format (A10, 2X, A9, 3X, I3, 5X, I1, 3X, A10, 2X, A4, 3X,
     1 F7.3, 3X, F8.3, 3X, I4)

      GOTO 7
 999  close(unit=5)
      close(unit=2)
      stop
      end
```

8.3 data.for (File 3)

This file contains a FORTRAN 77 data retrieval routine to read and print three data files: **p16ap17a.dat** (File 7), **p17ep19s.dat** (File 8), and **p19c.dat** (File 9). The following is a listing of this program. For additional information regarding variable definitions, variable lengths, variable types, units, and codes, please see the description for files 7, 8, and 9 on page 40.

```
c*********************************************************************
c* FORTRAN 77 data retrieval routine to read and print the files    *
c* named "p16ap17a.dat", p17ep19s.dat, and p19c.dat (Files 7, 8, 9) *
c*********************************************************************

      CHARACTER qualt*13
      INTEGER sta, cast, samp, bot
      REAL pre, ctdtmp, ctdsal, ctdoxy, theta, sal, oxy, silca
      REAL nitrat, nitrit, phspht, cfc11, cfc12, tcarb, pco2
      REAL pco2tmp
      OPEN (unit=1, file='input.dat')
      OPEN (unit=2, file='output.dat')
```

```
      write (2, 5)

c*Writes out column labels*

 5    format (2X,'STNNBR',2X,'CASTNO',2X,'SAMPNO',2X,'BTLNBR',2X,
     1 'CTDPRS',2X,'CTDTMP',2X,'CTDSAL',2X,'CTDOXY',3X,'THETA',4X,
     2 'SALNTY',2X,'OXYGEN',2X,'SILCAT',2X,'NITRAT',2X,'NITRIT',2X,
     3 'PHSPHT',3X,'CFC-11',3X,'CFC-12',2X,'TCARBN',4X,'PCO2',1X,
     4 'PCO2TMP', 8X,'QUALT1',/,
     5 36X,'DBAR',2X,'ITS-90',2X,'PSS-78',1X,'UMOL/KG',3X,'DEG_C',
     6 4X,'PSS-78',1X,5('UMOL/KG',1X),1X,'PMOL/KG',2X,'PMOL/KG',
     7 1X,'UMOL/KG',4X,'UATM',3X,'DEG_C',13X,'*',/,
     8 25X,'*******',17X,2('*******',1X),10X,6('*******',1X),1X,
     9 '*******',2X,3('*******',1X),20X,'*')

c*Sets up a loop to read and format all the data in the file*

      read (1, 6)
 6    format (////////////)

 7    CONTINUE
      read (1, 10, end=999) sta, cast, samp, bot, pre, ctdtmp,
     1 ctdsal, ctdoxy, theta, sal, oxy, silca, nitrat, nitrit,
     2 phspht, cfc11, cfc12, tcarb, pco2, pco2tmp, qualt

 10   format (5X, I3, 7X, I1, 6X, I2, 6X, I2, 1X, F7.1, 1X, F7.4,
     1 1X, F7.4, 1X, F7.1, 1X, F7.4, 1X, F9.4, 1X, F7.1, 1X, F7.2,
     2 1X, F7.2, 1X, F7.2, 1X, F7.2, 1X, F8.3, 1X, F8.3, 1X, F7.1,
     3 1X, F7.2, 1X, F7.2, 1X, A13)

      write (2, 20) sta, cast, samp, bot, pre, ctdtmp,
     1 ctdsal, ctdoxy, theta, sal, oxy, silca, nitrat, nitrit,
     2 phspht, cfc11, cfc12, tcarb, pco2, pco2tmp, qualt

 20   format (5X, I3, 7X, I1, 6X, I2, 6X, I2, 1X, F7.1, 1X, F7.4,
     1 1X, F7.4, 1X, F7.1, 1X, F7.4, 1X, F9.4, 1X, F7.1, 1X, F7.2,
     2 1X, F7.2, 1X, F7.2, 1X, F7.2, 1X, F8.3, 1X, F8.3, 1X, F7.1,
     3 1X, F7.2, 1X, F7.2, 1X, A13)

      GOTO 7
 999  close(unit=1)
      close(unit=2)
      stop
      end
```

8.4 p16ap17a.sta (File 4), p17ep19s.sta (File 5), and p19c.sta (File 6)

These files provide station inventory information for each of the 422 stations occupied during the R/V *Knorr* expeditions along WOCE Sections P16A/P17A, P17E/P19S, and P19C Each record of the files contains an expocode, section number, station number, cast number, sampling date, sampling time, latitude, longitude, and sounding bottom depth. The files are sorted by station number and can be read by using the following FORTRAN 77 code [contained in **stainv.for** (File 2)]:

```
      INTEGER stat, cast, depth
      REAL latdcm, londcm
      CHARACTER expo*10, sect*9, date*6, time*4
```

```
      read (1, 10, end=999) expo, sect, stat, cast, date, time,
     1 latdcm, londcm, depth

 10   format (A10, 2X, A9, 3X, I3, 5X, I1, 3X, A10, 2X, A4, 3X,
     1 F7.3, 3X, F8.3, 3X, I4)
```

Stated in tabular form, the contents include the following:

Variable	Variable type	Variable width	Starting column	Ending column
expo	Character	10	1	10
sect	Character	9	13	21
stat	Numeric	3	25	27
cast	Numeric	1	33	33
date	Character	6	37	46
time	Character	4	49	52
latdcm	Numeric	7	56	62
londcm	Numeric	8	66	73
depth	Numeric	4	77	80

The variables are defined as follows:

expo is the expocode of the cruise;

sect is the WOCE section number;

stat is the station number;

cast is the cast number;

date is the sampling date (month/day/year);

time is the sampling time (Greenwich mean time);

lat is the latitude of the station (in decimal degrees; negative values indicate the Southern Hemisphere);

lon is the longitude of the station (in decimal degrees; negative values indicate the Western Hemisphere);

depth is the sounding depth of the station (in meters).

8.5 p16ap17a.dat (File 7), p17ep19s.dat (File 8), and p19c.dat (File 9)

These files provide hydrographic, carbon dioxide, and chemical data for the all stations occupied during the R/V *Knorr* expeditions along WOCE Sections P16A/P17A, P17E/P19S, and P19C. Each record contains a station number, cast number, sample number, bottle number, CTD pressure, CTD temperature, CTD salinity, CTD oxygen, potential temperature, bottle salinity, oxygen, silicate, nitrate, nitrite, phosphate, CFC-11, CFC-12, TCO_2, pCO_2, pCO_2 temperature, and data-quality flags. The files are sorted by station number and pressure and can be read by using the following FORTRAN 77 code [contained in **data.for** (File 3)]:

```
      CHARACTER qualt*13
      INTEGER sta, cast, samp, bot
      REAL pre, ctdtmp, ctdsal, ctdoxy, theta, sal, oxy, silca
      REAL nitrat, nitrit, phspht, cfc11, cfc12, tcarb, pco2
      REAL pco2tmp

     read (1, 10, end=999) sta, cast, samp, bot, pre, ctdtmp,
    1 ctdsal, ctdoxy, theta, sal, oxy, silca, nitrat, nitrit,
    2 phspht, cfc11, cfc12, tcarb, pco2, pco2tmp, qualt

 10   format (5X, I3, 7X, I1, 6X, I2, 6X, I2, 1X, F7.1, 1X, F7.4,
    1 1X, F7.4, 1X, F7.1, 1X, F7.4, 1X, F9.4, 1X, F7.1, 1X, F7.2,
    2 1X, F7.2, 1X, F7.2, 1X, F7.2, 1X, F8.3, 1X, F8.3, 1X, F7.1,
    3 1X, F7.2, 1X, F7.2, 1X, A13)
```

Stated in tabular form, the contents include the following:

Variable	Variable type	Variable width	Starting column	Ending column
sta	Numeric	3	6	8
cast	Numeric	1	16	16
samp	Numeric	2	23	24
bot	Numeric	2	31	32
pre	Numeric	7	34	40
ctdtmp	Numeric	7	42	48
ctdsal	Numeric	7	50	56
ctdoxy	Numeric	7	58	64
theta	Numeric	7	66	72
sal	Numeric	9	74	82
oxy	Numeric	7	84	90
silca	Numeric	7	92	98
nitrat	Numeric	7	100	106
nitrit	Numeric	7	108	114
phspht	Numeric	7	116	122
cfc11	Numeric	8	124	131
cfc12	Numeric	8	133	140
tcarb	Numeric	7	142	148

pco2	Numeric	7	150	156
pco2tmp	Numeric	7	158	164
qualt	Character	14	166	178

The variables defined as follows:

sta is the station number;

cast is the cast number;

samp is the sample number;

bot[a] is the bottle number;

pre is the CTD pressure (in dbar);

ctdtmp is the CTD temperature (in °C);

ctdsal[a] is the CTD salinity [on the Practical Salinity Scale (PSS)];

ctdoxy[a] is the CTD oxygen concentration (in μmol/kg);

theta is the potential temperature (in °C);

sal[a] is the bottle salinity (on the PSS);

oxy[a] is the oxygen concentration (in μmol/kg);

silca[a] is the silicate concentration (in μmol/kg);

nitrat[a] is the nitrate concentration (in μmol/kg);

nitrit[a] is the nitrite concentration (in μmol/kg);

phspht[a] is the phosphate concentration (in μmol/kg);

cfc11[a] is the trichlorofluoromethane-11 concentration (CCl_3F) (in pmol/kg);

cfc12[a] is the dichlorodifluoromethane-12 concentration (CCl_2F_2) (in pmol/kg);

tcarb[a] is the total carbon dioxide concentration (in μmol/kg);

pco2[a] is the partial pressure of CO_2 (in μatm and measured at **pco2tmp**);

pco2tmp is the temperature of equilibration of the pCO_2 samples in the equilibrator (in °C);

`qualt` is a 13-digit character variable that contains data-quality flag codes for parameters marked with an asterisk (*) in the output file.

---

[a]Variables that are underlined with asterisks in the data files to indicate they have a data-quality flag. Data-quality flags are defined as follows:

1 = sample for this measurement was drawn from water bottle, but results of analyses were not received;
2 = acceptable measurement;
3 = questionable measurement;
4 = bad measurement;
5 = not reported;
6 = mean of replicate measurements;
7 = manual chromatographic peak measurement;
8 = irregular digital chromatographic peak integration;
9 = sample was not drawn for this measurement from this bottle.

9. VERIFICATION OF DATA TRANSPORT

The data files contained in this numeric data package can be read by using the FORTRAN 77 data retrieval programs provided. Users should visually examine each data file to verify that the data were correctly transported to their systems. To facilitate the visual inspection process, partial listings of each data file are provided in Tables 4–9. Each of these tables contains the first and last five lines of a data file.

Table 4. Partial listing of p16ap17a.sta (File 4)

First five lines of the file:

316N138/9	P16A/P17A	1	1	10/08/1992	0402	-21.493	-148.494	4445
316N138/9	P16A/P17A	2	1	10/10/1992	2220	-31.989	-147.980	4680
316N138/9	P16A/P17A	3	1	10/12/1992	0946	-37.496	-150.484	5491
316N138/9	P16A/P17A	4	1	10/12/1992	1613	-37.987	-150.500	5488
316N138/9	P16A/P17A	5	1	10/12/1992	2311	-38.494	-150.495	5420

Last five lines of the file:

316N138/9	P16A/P17A	123	1	11/23/1992	0116	-25.995	-139.917	4276
316N138/9	P16A/P17A	124	1	11/23/1992	1045	-25.000	-141.085	4565
316N138/9	P16A/P17A	125	1	11/23/1992	2027	-23.986	-142.154	4757
316N138/9	P16A/P17A	126	1	11/24/1992	0603	-22.997	-143.335	4638
316N138/9	P16A/P17A	127	1	11/24/1992	1454	-21.989	-144.411	3184

Table 5. Partial listing of p17ep19s.sta (File 5)

First five lines of the file:

316N138/10	P17E/P19S	128	1	12/14/1992	0602	-52.500	-134.993	4340
316N138/10	P17E/P19S	129	1	12/14/1992	1150	-52.490	-134.161	4365
316N138/10	P17E/P19S	130	1	12/14/1992	1755	-52.504	-133.350	4376
316N138/10	P17E/P19S	131	1	12/14/1992	2334	-52.521	-132.540	4550
316N138/10	P17E/P19S	132	1	12/15/1992	0546	-52.512	-131.713	4151

Last five lines of the file:

316N138/10	P17E/P19S	229	2	01/17/1993	0055	-67.019	-87.994	4417
316N138/10	P17E/P19S	230	1	01/17/1993	1154	-67.671	-87.981	4240
316N138/10	P17E/P19S	231	1	01/17/1993	1840	-68.333	-87.977	3946
316N138/10	P17E/P19S	232	1	01/17/1993	2354	-68.871	-87.976	3534
316N138/10	P17E/P19S	233	1	01/18/1993	0410	-69.262	-88.108	3338

Table 6. Partial listing of p19c.sta (File 6)

First five lines of the file:

316N138/12	P19C	234	1	02/23/1993	1609	-53.037	-74.914	126
316N138/12	P19C	235	1	02/23/1993	1844	-53.083	-74.963	486
316N138/12	P19C	236	1	02/23/1993	2124	-53.111	-75.024	1290
316N138/12	P19C	237	1	02/24/1993	0034	-53.139	-75.185	1830
316N138/12	P19C	238	1	02/24/1993	0350	-53.200	-75.494	2011

Last five lines of the file:

316N138/12	P19C	418	1	04/10/1993	0155	13.395	-91.639	1929
316N138/12	P19C	419	1	04/10/1993	0345	13.441	-91.615	1394
316N138/12	P19C	420	1	04/10/1993	0502	13.488	-91.596	790
316N138/12	P19C	421	1	04/10/1993	0633	13.516	-91.584	375
316N138/12	P19C	422	1	04/10/1993	0722	13.536	-91.576	200

Table 7. Partial listing of p16ap17a.dat (File 7)

First five lines of the file:

```
        1        1        1        1      3.9 26.2661 36.1059    207.6 26.2652   36.1057   204.6     2.79     0.12
0.00     0.19    1.750    0.965  2001.2  244.96   20.00 2222222226222
        1        1        2        2     43.9 25.8404 36.0964    200.9 25.8307   36.0968   205.0     2.78     0.07
0.00     0.18    1.763    0.963  2005.3  258.04   20.00 2222222223322
        1        1        3        3     78.2 24.6714 35.9992    207.9 24.6545   35.9951   208.5     2.53     0.06
0.00     0.14    1.880    1.010  2006.5  275.24   20.00 2222222222322
        1        1        4        4    109.5 23.5618 35.9274    203.5 23.5390   35.9286   211.3     2.28     0.06
0.00     0.15    1.933    1.044  2008.7  269.24   20.00 2222222222322
        1        1        5        5    134.3 22.9436 35.8547    204.0 22.9161   35.8491   204.4     2.27     0.05
0.00     0.19 -999.900 -999.900  2016.2  287.92   20.00 2222222221122
```

Last five lines of the file:

```
      127        1       32       32  2383.4  1.8942 34.6526    157.2  1.7263   34.6540   156.7  123.44    35.31
0.00     2.43 -999.900 -999.900  -999.9 -999.90 -999.90 2222222221199
      127        1       33       33  2585.5  1.8304 34.6589    160.0  1.6455   34.6601   159.8  124.06    35.19
0.00     2.43 -999.900 -999.900  -999.9 -999.90 -999.90 2222222221199
      127        1       34       34  2796.2  1.7526 34.6664    162.3  1.5498   34.6670   162.2  125.32    35.18
0.00     2.40 -999.900 -999.900  -999.9 -999.90 -999.90 2222222221199
      127        1       35       35  3005.5  1.7037 34.6711    164.9  1.4819   34.6713   164.4  125.94    35.39
0.00     2.38 -999.900 -999.900  -999.9 -999.90 -999.90 2222222221199
      127        1       36       36  3202.9  1.6142 34.6785    167.3  1.3751   34.6786   168.1  126.13    35.27
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Table 8. Partial listing of p17ep19s.dat (File 8)

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     128        1        1        1      3.1  7.5993 34.3657    389.9  7.5990    34.3660   317.7     1.51    13.22
0.19     0.90 -999.900 -999.900  2076.5  255.10    4.00 2232222229922
     128        1        2        2     29.8  7.4724 34.3706    376.5  7.4695    34.3704   317.9     1.51    13.27
0.18     0.91    4.126    2.090  2078.1  258.75    4.00 2232222226622
     128        1        3        3     59.6  7.1725 34.3946    308.5  7.1670    34.3951   296.4     2.16    15.28
0.19     1.16    4.058    2.121  2104.1  296.33    4.00 2232222223222
     128        1        4        4     89.3  6.9500 34.3988    291.2  6.9418    34.3982   292.6     4.53    16.49
0.19     1.25 -999.900 -999.900  2108.0  310.09    4.00 2232222229922
     128        1        5        5    129.9  6.8629 34.4022    285.0  6.8511    34.4016   288.1     6.03    17.09
0.22     1.31    3.997    2.018  2111.6  320.31    4.00 2222222222222
```

Last five lines of the file:

```
     233        1       30       30  2920.1  0.4277 34.7037    211.1  0.2415    34.7050   211.0   136.27    32.53
0.00     2.25 -999.900    0.011  -999.9 -999.90 -999.90 2222222225299
     233        1       31       31  3074.3  0.4143 34.7038    212.1  0.2149    34.7042   211.7   137.01    32.57
0.00     2.25    0.021    0.012  -999.9 -999.90 -999.90 2222222222299
     233        1       32       32  3180.8  0.4081 34.7042    211.9  0.1992    34.7046   210.9   138.14    32.57
0.00     2.25    0.019    0.014  -999.9 -999.90 -999.90 2222222222299
     233        1       35       35  3264.7  0.3988 34.7045    213.0  0.1825    34.7044   211.5   138.89    32.57
0.00     2.25    0.015    0.008  -999.9 -999.90 -999.90 2222222222299
     233        1       36       36  3343.6  0.3975 34.7043    211.8  0.1739    34.7048   211.3   140.03    32.57
0.00     2.26    0.018    0.013  -999.9 -999.90 -999.90 2222222222299
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Table 9. Partial listing of p19c.dat (File 9)

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     234       1      76      76     2.4 11.4133 31.3495    304.0 11.4130   31.2499   288.4    1.30    2.74
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     234       1      75      75    27.3 10.3959 33.6062    290.8 10.3927   33.6051   271.5    1.87    9.58
0.24     0.93 -999.900 -999.900   -999.9 -999.90 -999.90 2222222229999
     234       1      70      70    44.0 10.0031 33.6981    287.9  9.9981   33.6982   270.8    1.89   11.06
0.22     0.99 -999.900 -999.900  2050.4  265.94    4.00 2222222229922
     234       1      71      71    44.4 10.0031 33.6979    288.1  9.9981 -999.9000   270.7 -999.90 -999.90
-999.90 -999.90 -999.900 -999.900   -999.9 -999.90 -999.90 2229299999999
     234       1      72      72    45.7  9.9931 33.7005    288.1  9.9879 -999.9000   270.8 -999.90 -999.90
-999.90 -999.90 -999.900 -999.900   -999.9 -999.90 -999.90 2229299999999
```

Last five lines of the file:

```
     422       1       5       5   101.2 14.5603 34.8300     17.1 14.5453   34.8288    17.5   23.29   28.97
0.03     2.26    0.696    0.337  2220.6 1255.93   20.00 2222222222222
     422       1       4       4   125.2 14.2717 34.8336     17.6 14.2534   34.8330    17.6   23.49   29.34
0.05     2.26    0.658    0.302  2225.2 1275.83   20.00 2222222222222
     422       1       3       3   149.2 13.8454 34.8359     15.5 13.8240   34.8318    14.7   24.50   30.08
0.05     2.33    0.576    0.252  2227.9 1313.08   20.00 2222222222222
     422       1      70      70   174.0 13.6643 34.8415     15.6 13.6396   34.8336    15.5   25.30   29.96
0.02     2.29    0.571    0.274  2229.7 1294.89   20.00 2222222222222
     422       1      71      71   189.2 13.6170 34.8372     15.0 13.5902   34.8365    15.4   25.31   30.01
0.02     2.30    0.568    0.247  2231.5 1277.82   20.00 2222222222222
```

APPENDIX:

REPRINT OF PERTINENT LITERATURE

Final Technical Report

of

Grant No. DE-FGO2-93ER61539

submitted to

the Office of Health and Environmental Research,

U. S. Department of Energy

Measurements of the Total CO_2 Concentration and Partial Pressure of CO_2 in Seawater during WOCE Expeditions P-16, P-17 and P-19 in the South Pacific Ocean, October, 1992-April, 1993

by

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Lamont-Doherty Earth Observatory of Columbia University,

Palisades, NY 10964

February 1, 1998

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Abstract

This report summarizes the measurements of the total CO_2 concentration and pCO_2 in discrete water samples made by the LDEO group during the expeditions for the WOCE sections P-16S, P-17S, P-17A, P-17E, P-19C and P-19S conducted from October, 1992, through April, 1993, in the South Pacific Ocean. The methods employed for the measurements of these two quantities as well as the computational schemes used for obtaining the alkalinity and the apparent oxygen utilization are described. These data are listed along with the standard hydrographic data provided by the WOCE Hydrographic Project Office.

During this investigation, hydrographic and chemical measurements were repeated at five locations about a month to a year apart. An analysis of these repeat station data for total CO_2 and pCO_2 indicates that the expedition-to-expedition precision is about twice as large as the precision estimated for a single station. The expedition-to-expedition precision for oxygen measurements is excellent and is comparable to the single station precision. While the single station precision for the nutrient data is excellent, the data suffer from systematic offsets from one expedition to another due likely to calibration problems.

The meridional sections drawn for the total CO_2 concentration in the South Pacific show the presence of a CO_2 maximum centered around a depth about 2600 meters, representing a southward return flow from the North Pacific. The flow patterns of this high CO_2 water are affected by the sea floor topography, namely the East Pacific Rise and Tuamotu Archipelago. This return water from the north is undercut by northward flowing Southern Ocean waters which have lower CO_2 concentrations. The surface water pCO_2 data indicate that, in austral summer, the eastern half of the South Pacific is a source for atmospheric CO_2, whereas the western half is a sink. Since the sea-air pCO_2 difference in the eastern half has a similar magnitude as that in the western half but has an opposite sign, the source flux tends to cancel with the sink flux. Hence, the South Pacific as a whole appears to have a small net CO_2 flux.

Acknowledgments

We thank the entire WOCE organization for supporting the CO_2 program. We are especially grateful to Dr. James Swift of the Scripps Institution of Oceanography for providing valuable assistance to us at sea and on shore; and Drs. Joe Reid, James Swift, Bob Key, Arnold Mantyla, Lynne Talley and M. Tsuchiya, who helped and guided us at sea as Chief Scientists aboard the R/V Knorr during the JUNO 9, 10 and 12 cruises.

The hydrographic data including oxygen and nutrients were measured by the Scripps Ocean Data Facility Group. These data have been merged with our CO_2 data and listed in the data tables of this report. We thank those shipboard personnel,who produced these data with their high degree of dedication and professionalism. They are to be credited for the high quality hydrographic data listed in this report. We also thank Dr. Andrew Dickson, Scripps Institution of Oceanography, who prepared and supplied for us a large number of the bottled Standard Certified Water samples which were used for the total CO_2 measurements.

We gratefully acknowledge support provided by the U. S. Department of Energy. Counsel and advice offered generously by Dr. Michael R. Riches, Environmental Science Division, Office of Health and Environmental Research, Department of Energy; and support and encouragements provided by Dr. Douglas Wallace, Oceanographic and Atmospheric Sciences Division, Department of Applied Science, Brookhaven National Laboratory, and by Dr. John Downing, Marine Sciences Laboratory, Battelle Northwest Laboratories are deeply appreciated.

1. INTRODUCTION

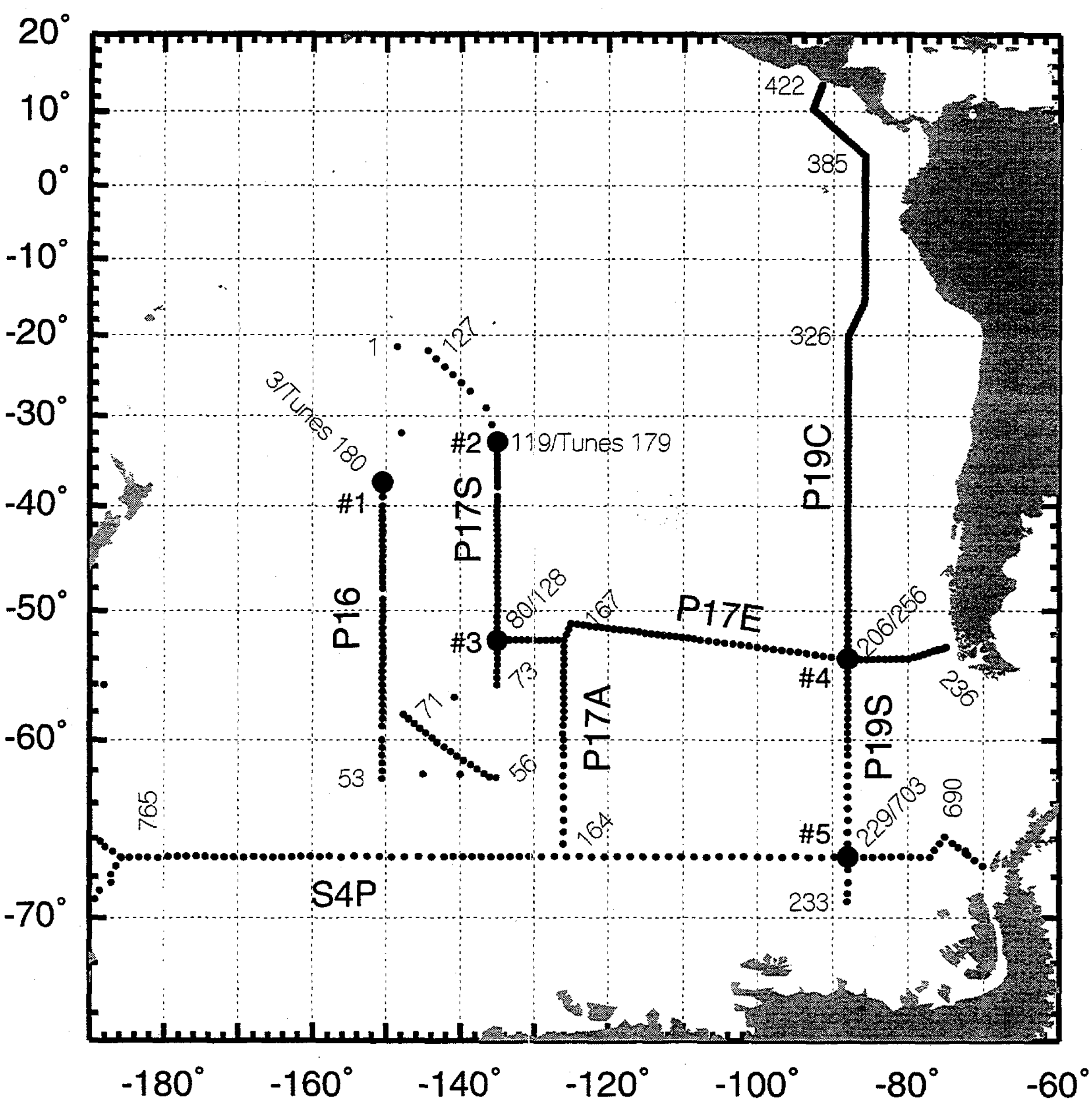
A measurement program for oceanic CO_2 was initiated in 1989 by the Department of Energy (DOE) in order to obtain an extensive CO_2 data base needed for the assessment of the uptake of fossil fuel CO_2 by the global oceans. Since the initiation of the program, measurements have been made at sea in close association with the U. S. WOCE program by several participating members of the DOE CO_2 Science Team. The CO_2 survey along the following WOCE sections has been completed; Section A-1E in the North Atlantic Ocean in September, 1991 (Johnson et al., 1996); Section A-9 in the South Atlantic in February-March, 1991 (Johnson et al., 1995); Sections A-12 and A-21 in the South Atlantic and Weddell Sea in January-March, 1990 (Chipman et al., 1992); P-16 and P-17C in the central and South Pacific in July-August, 1991 (Takahashi et al., 1993); P-16C in the tropical Pacific in September, 1991 (Goyet et al., 1996) and S-4P in the Pacific sector of the Southern Ocean in February-April, 1992 (Chipman et al., 1996). Other WOCE sections in the Pacific Ocean, including P-6, P-10, P-12, P-13, P-14, P-21, P-31, have been completed by the DOE CO_2 Science Team and the data reports will soon become available. The NOAA group has completed the northern section of P-16, P-15S (Lamb et al., 1995) and P-18 (Lamb et al., 1997). The Indian Ocean has been investigated in 1995-96 by the DOE CO_2 Science Team and the results have been summarized recently by Sabine et al. (1997).

This report summarizes the measurements of the total CO_2 concentration and pCO_2 in discrete water samples made by the LDEO group during the WOCE expeditions, P-16S, P-17S & E and P-19C & S from October, 1992, through April, 1993, in the South Pacific Ocean.

2. FIELD PROGRAM

Ocean water samples were collected and analyzed at sea for the total CO_2 concentration and pCO_2 during a total of 152 days of the three WOCE expeditions, P-16S/P-17S, P-17A/P-17E/P-19S and P-19C, in the South Pacific Ocean, October, 1992 through April, 1993. The locations of 422 stations where samples were collected in the South Pacific Ocean by our group are shown in Fig. 1. In addition, the locations of CO_2

Fig. 1 Locations of the hydrographic stations occupied during this investigation in the South Pacific and the Southern Ocean. The designations for the WOCE sections are indicated in bold letters, and selected station numbers (some with cruise names) are indicated in thin letters. At five locations, hydrographic stations were repeated during different legs, and these locations are indicated by the letters #1 through #5. The data obtained at these repeat stations are summarized in Table 4.



measurements made by our group during these expeditions are also indicated in the figure. The total CO_2 concentration in discrete water samples was determined using a coulometer, and the pCO_2 using an equilibrator-gas chromatograph system. At 114 stations, complete vertical profiles from the surface to the ocean floor were obtained, while at the remainder of stations the measurements were made only in the surface mixed layer. A total of 4,419 water samples was obtained during the field phase of the investigation. The distribution of the measurements is summarized in Table 1.

Table 1 - Summary of CO_2 Determinations Made at Sea

Expedition Designations	No. of Days at Sea		No. of Seawater Samples	Total Number of Analyses
P-16S/P-17S	51 days	TCO_2	1,549	~1,700
		pCO_2	1,549	~4,700
P-17A/P-17E/P-19S	50 days	TCO_2	1,282	~1,440
		pCO_2	1,280	~3,900
P-19C	51 days	TCO_2	1,588	~1,850
		pCO_2	1,590	~4,800
TOTAL	152 days	TCO_2	4,419	~4,990
		pCO_2	4,419	~13,400

3. METHODS FOR THE MEASUREMENTS AND COMPUTATION

The methods used for the determinations of the total CO_2 concentration and pCO_2 in discrete water samples and those for computation of the total alkalinity and apparent oxygen utilization (AOU) are described in this section.

3-a) Measurements of the Total CO_2 Concentration in Seawater:

The coulometric analysis system which was used to measure the total CO_2 concentration in seawater samples (TCO_2) during the expedition is described by Chipman et al. (1993) and is summarized below. This system consists of a coulometer (Model 5011) manufactured by UIC Inc. (Jolliet, IL) and a sample introduction/CO_2 extraction system of the LDEO design, which differs from the Single Operator Multiparameter Metabolic Analyzer (SOMMA) system used by most of the other participants of the DOE/CO_2 program. In the LDEO system, a precisely known volume of seawater sample is introduced manually into a CO_2 extraction vessel using a calibrated syringe instead of the automated pipette used by the SOMMA system.

Samples for TCO_2 analysis were drawn from the Niskin bottles of the rosette casts directly into 250 ml glass reagent bottles with ground standard-taper stoppers, sealed with silicone vacuum grease. Immediately after sample collection, 200 µl of 50% saturated mercuric chloride solution was added to prevent biological alteration of the TCO_2, and samples were analyzed within 24 hours of collection. For analysis, a calibrated volume (ranging between 19 and 20 ml) of water sample was introduced into a CO_2 extraction chamber through a rubber septum. The mass of the seawater sample delivered was determined from the density of seawater calculated at the temperature of injection using the International Equation of State of Seawater (Millero et al., 1980). Prior to the expedition, the volume of each sampling syringe between two reference stops was determined by repeatedly weighing aliquots of double distilled water dispensed. The measurements were corrected for the buoyancy of air displaced by the water, which amounted to approximately 0.1% of the weight of the water, and the volume was computed using the density of pure water at the temperature of the measurement. Repeated measurements yielded a precision of $\pm$0.03%.

The seawater sample in the extraction vessel was acidified with ~1 ml of 8.5% phosphoric acid introduced through a sidearm of the extraction chamber. The evolved CO_2 was stripped from the sample and transferred into the electrochemical cell of the CO_2 coulometer by a stream of CO_2-free air. In the coulometer cell, the CO_2 was quantitatively absorbed by a solution of ethanolamine in dimethylsulfoxide (DMSO). Reaction between the

CO_2 and the ethanolamine formed the weak hydroxyethylcarbamic acid. The pH change of the solution associated with the formation of this acid resulted in a color change of the thymolphthalein pH indicator in the solution. The color change, from deep blue to colorless, was detected by a photodiode, which continually monitored the transmissivity of the solution. The electronic circuitry of the coulometer, on detecting the change in the color of the pH indicator, caused a current to be passed through the cell, electro-generating hydroxyl (OH^-) ions from a small amount of water in the solution. The OH^- generated titrated the acid, returning the solution to its original pH (and hence color), at which point the circuitry interrupted the current flow. The product of current passed through the cell and time was related by the Faraday constant to the number of moles of OH^- generated to titrate the acid and hence to the number of moles of CO_2 absorbed to form the acid. A thermostated double walled titration cell was used to extract the heat generated in the cell during titration, to eliminate the shifting of the endpoint of the titration due to change in temperature of the cell solutions.

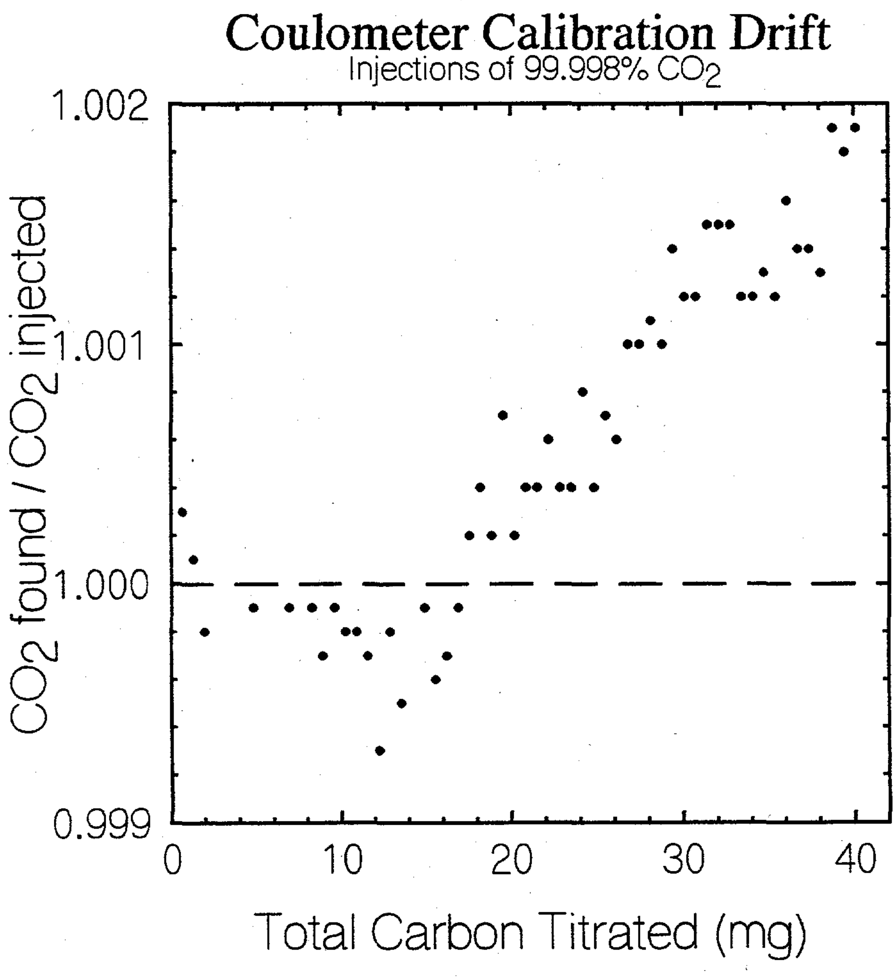
The coulometer was calibrated using research grade CO_2 gas (99.998% pure) introduced into the carrier gas line upstream of the extraction chamber, alternately using two fixed-volume sample loops on a gas sampling valve. The loops were vented to the atmosphere, of which the pressure was measured using a high precision electronic barometer used with the pCO_2 system; the loop temperatures were measured to ± 0.05 °C with a thermometer calibrated against one traceable to the NIST, and the non-ideality of CO_2 was incorporated in the computation of the loop contents. Prior to the expedition, the volume of the loops was determined by the weight difference between the loop/injection valve assembly empty and filled with water. Repeated measurements indicated that the volumes of the loops were precise to ± 0.02%. During the expedition, the coulometer was calibrated several times daily using the gas sampling system described above.

The calibration factor, which represents the ratio between the number of moles of CO_2 in the loop and the reading of the coulometer, changes during the use of a titration cell. Depending upon the condition of the coulometric solution in the titration cell, the calibration factor varies around the ideal ratio of unity by a few tenths of percent. Fig. 2 shows the typical variation of the calibration factor as a function of the cumulative amount of CO_2 titrated by a cell and indicates that it may be represented by a quadratic form. If changes in the calibration factor were not taken into consideration, a systematic error of as much as 4 to 5 μmol/kg would be introduced between the samples analyzed in the early and late stages of a single coulometric solution. Accordingly, the CO_2 concentration in each seawater sample was determined using a calibration factor estimated from an equation fit to the calibration data obtained for each titration cell. Generally, a titration cell had to be cleaned and filled with new solution after about 40 samples were analyzed. Beyond this number of analyses, the cell began to behave erratically yielding unreliable analytical results. The working equation used for computing the coulometer/cell calibration factor (CF) is as follows.

$$CF = (12.011*10^6)*PA*[LPV*(1+3*\alpha)*(TK(calib)-TK(lp))] / \{MV(CO_2)*[RD-(TM*BL)]\}$$

where	$12.011*10^6$	=	Atomic weight (in μgrams) of carbon,
	PA	=	Pressure (in atm) of CO_2 gas in loop at time of calibration,
	LPV	=	Volume of calibration valve loop (in ml) at TK(lp),
	α	=	Linear thermal expansion coefficient of stainless steel, $1.73*10^{-5}$ °K^{-1},
	TK(lp)	=	Temperature (in °K) at which loop volume was determined,
	TK(calib)	=	Temperature (in °K) of CO_2 in loop at time of calibration,
	$MV(CO_2)$	=	Molar volume of CO_2 (in ml) at temperature at which loop volume was determined,
	RD	=	Coulometer reading (in μgrams-carbon),
	TM	=	Length of calibration run (in minutes), and
	BL	=	Instrumental blank (or background) rate (in μgrams of carbon/min).

Fig. 2 Change in the coulometer calibration factor as a function of the amount of CO_2 titrated. The change is expressed in terms of the ratio (Moles of CO_2 detected by coulometer) / (Expected number of moles of CO_2 injected into coulometer).



The following relationships were used for the computation of the total CO_2 concentration in seawater samples using the coulometer;

$$TCO_2\ (\mu mol/kg) = CF*DF*[RD-AB-(TM*BL)]/(12.011*VL*RHO)$$

where CF = Calibration factor of coulometer/cell combination interpolated to the time when the measurement was made,

DF = Dilution factor to account for dilution of seawater sample by CO_2-free mercuric chloride poisoning solution, DF = [(sample volume) + (poison volume)]/(sample volume) = 1.0008 for 200 µl of mercuric chloride solution in 250 ml sample,

RD = Coulometer reading (in µgrams of carbon),

AB = Acid blank (in µgrams) of carbon to account for a small amount of CO_2 in phosphoric acid solution added to sample; determined by measuring CO_2 stripped from larger volume of acid, typically less than 0.03% of amount of CO_2 in seawater sample.

TM = Length of analytical run (in minutes),

BL = Instrumental blank rate (in µgrams of carbon/min.), typical blank rate being 0.01 to 0.02 µgrams of carbon/min.; the maximum acceptable blank rate of 0.05 grams of carbon/min results in a correction of about 0.1 % over the normal length of an analytical run,

VL = Volume of seawater sample (in liters) injected into stripping chamber, determined by use of pre-calibrated fixed-volume syringes, typical sample volume being 0.019 to 0.020 liters,

RHO = Density of seawater sample at the temperature of injection into stripping chamber, calculated using the UNESCO equation of state for seawater (Millero et al., 1980), the salinity, and the temperature measured on the water remaining in the syringe immediately after injecting sample,

12.011 = Atomic weight (in grams) of carbon.

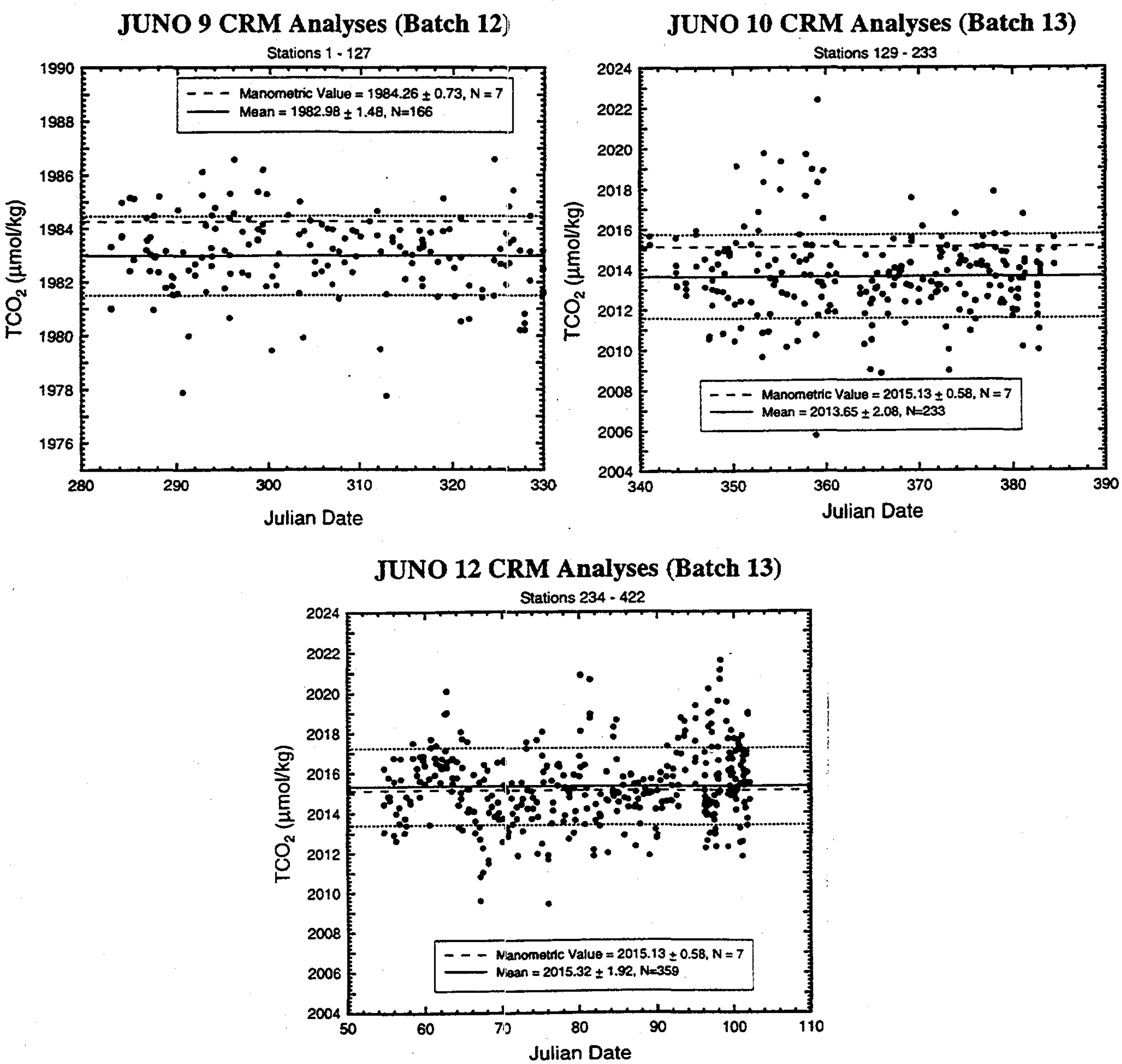
3-b) Analyses of Certified Reference Solutions:

For the purpose of quality control of total CO_2 determinations, SIO Reference Solutions (Batches # 12 and 13) were determined 758 times during the expeditions using the coulometer. Our shipboard analyses agreed with the SIO manometric values within 1.2 µmol/kg. Based upon this observation and the consistency of the results of this investigation and our previous expeditions, the overall precision of our total CO_2 data is estimated to be about ± 2 µmol/kg. The results of our coulometric determinations of the total CO_2 concentration in the SIO Reference solutions are summarized and compared, in Fig. 3 and Table 2, with those of the manometric determinations made by C. D. Keeling of SIO. The difference between the mean values for these two independent sets of measurements ranges between -1.4 and +0.2 µmol/kg. The shipboard TCO_2 measurements listed in this report have not been corrected for the differences to conform to the SIO manometric values.

Table 2 - Results of Analyses for the SIO Reference Solutions

WOCE Sections	No. of SRM Bottles and Batch No.	No. of Analyses (N)	LDEO-Shipboard TCO_2 Analyses (µmol/kg)	SIO-Manometric TCO_2 Analyses (µmol/kg)	Difference (µmol/kg)
P-16S/P-17A	73 (Batch #12)	166	1983.0 ± 1.5	1984.3 ± 0.7 (N=7)	-1.3
P-17E/P-19S	90 (Batch #13)	233	2013.7 ± 2.1	2015.1 ± 0.6 (N=7)	-1.4
P-19C	97 (Batch #13)	359	2015.3 ± 1.9	2015.1 ± 0.6 (N=7)	+0.2
TOTAL	260	758		Mean Difference =	-0.8

Fig. 3 The results of the coulometric determination of total CO_2 concentration in the SIO Certified Reference Solutions made at sea are compared with the mean value determined manometrically at the Scripps Institution of Oceanography. JUNO 9 cruise corresponds to the WOCE sections P-16S and P-17A; JUNO 10 cruise to the WOCE sections P-17E and P-19S; and JUNO 12 cruise to the WOCE section P-19C.



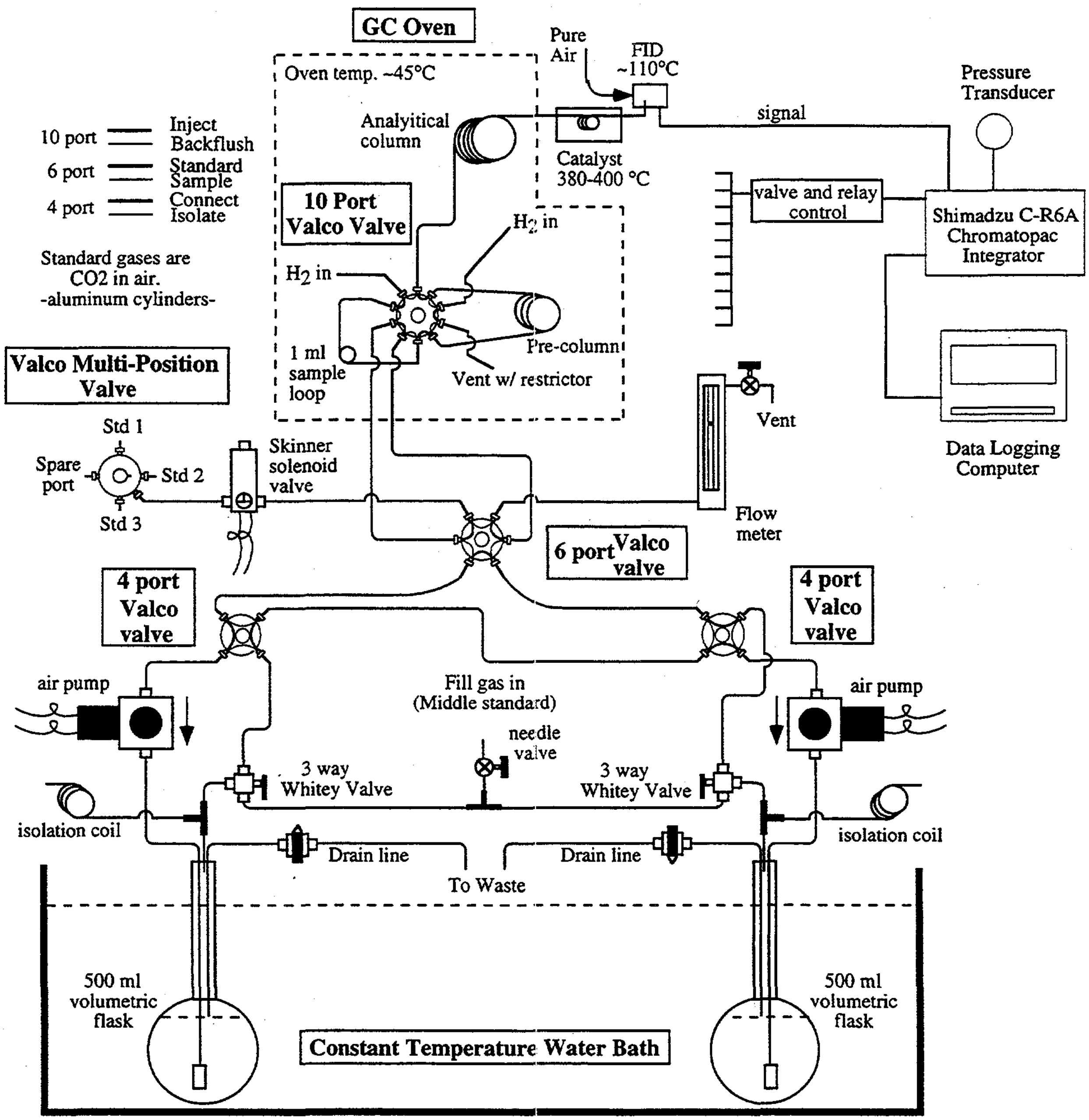
3-c) Determination of pCO_2 in Discrete Seawater Samples:

A fully automated equilibrator-gas chromatograph system was used during the expedition for the determination of partial pressure of CO_2 exerted by the seawater samples, and its design has been described by Chipman et al. (1993). Fig. 4 gives a schematic diagram of this system.

The system consists of a pair of air circulation pumps (Spectrex Model AS-300-SS) plumbed to recirculate air through porous plastic gas dispersers which are immersed in two separate seawater samples. Electrically driven Valco 4-port valves were used to isolate each of the equilibrators during the initial equilibration prior to analysis of the equilibrated air. Manually operated 2-way and 3-way Whitey valves allowed part of the water in each equilibrator to be replaced with air of known initial CO_2 concentration, to create the necessary headspace for equilibration. A drain line in each equilibrator insured that the ratio of water to air in each equilibrator was constant, allowing accurate corrections to be made for the effect of the perturbation of the sample seawater by the headspace air. Diaphragms (thin rubber balloons) were plumbed to each equilibrator to provide "soft walls" to the system, so that the pressure in the equilibrators was kept close to the ambient laboratory atmospheric pressure, which was measured with a high precision electronic barometer. Since the partial pressure of CO_2 is strongly affected by temperature changes, the equilibration flasks were kept immersed in a constant temperature water bath. A constant bath temperature of 4 °C was used during the expedition. An electrically driven Valco 6-port valve allowed the entire equilibration system to be isolated, simultaneously connecting a calibration gas selection valve (an electrically driven Valco, Model 4SD, with 4 input ports and 8-position driver). A 2-way normally-closed Skinner solenoid valve on the output of the calibration selection valve allowed the gas flows to be controlled by the system controller, and provided a necessary second means of stopping the flow of the calibration gases to prevent the accidental loss of calibration gases in the event of control malfunction.

The analysis of the CO_2 in the equilibrated air or calibration gases was performed using a Shimadzu Mini-2 gas chromatograph, which was equipped with a flame ionization detector. A one-ml sample loop and a pre-column and analytical column (both packed with Chromosorb

Fig. 4 Schematic diagram of the automated GC/equilibrator system used for the pCO_2 measurements in discrete seawater samples (500 ml) during this investigation. Modified from Chipman et al. (1993).



102, of 0.2 and 2.0 m lengths respectively) were attached to an electrically driven Valco 10-port valve within the column oven of the gas chromatograph. Ultra-high purity hydrogen gas (electrolytically generated by an Aadco hydrogen generator and purified by means of diffusion through a palladium foil using an Aadco hydrogen purifier) served as the carrier gas for the chromatographic separation of CO_2 from the other components of the air. The use of hydrogen as a carrier gas also allowed the CO_2 to be converted to methane in an attached catalytic converter prior to quantification by the flame ionization detector. Unlike the method described by Weiss (1981), our system used a catalyst of ruthenium metal on Chromosorb W support and did not require a palladium pre-catalyst to remove oxygen from the carrier gas stream. Hydrocarbon-free air to support the combustion in the flame ionization detector was provided by means of a chromatographic air purifier (Aadco Model 737).

Integration of the output signal from the gas chromatograph and control of the entire equilibration and calibration procedure was provided by means of a Shimadzu Chromatopac (Model C-R6A) computing integrator.

The analytical procedure is as follows. Water samples for analysis were drawn from the 10-liter Niskin bottles of a rosette cast directly into 500-ml narrow-necked volumetric Pyrex flasks which served both as sample containers and equilibration vessels. The samples were poisoned with 200 μl of 50% saturated mercuric chloride solution to prevent biological modification of the pCO_2, and were stored in the dark until measurement, which normally was performed within 24 hours of sampling. A headspace of 3 to 5 ml was left above the water in the flask to allow for thermal expansion during storage. The flasks were sealed air-tight using screw-caps with conical plastic liners. Prior to analysis, the sample flasks were brought to the water bath temperature (either 4.0 °C or 20.0 °C) in the constant temperature bath, and about 45 ml of water is displaced with air of known CO_2 concentration. The air in the flasks and in the tubing connecting the flasks to the gas chromatograph sampling loop was recirculated continuously for about 20 minutes through the gas disperser immersed in the water. This provided large surface contact areas for gas exchange between the sample water and the recirculating air, and equilibrium for CO_2 between these two phases was attained in 15 minutes.

The equilibrated air samples taken from the headspace of the flasks were saturated with water-vapor at the temperature of equilibration and had the same pCO_2 as the water sample. By injecting the air aliquot without removal of the water vapor, the partial pressure of CO_2 was determined directly using the relationship below (Takahashi et al., 1982):

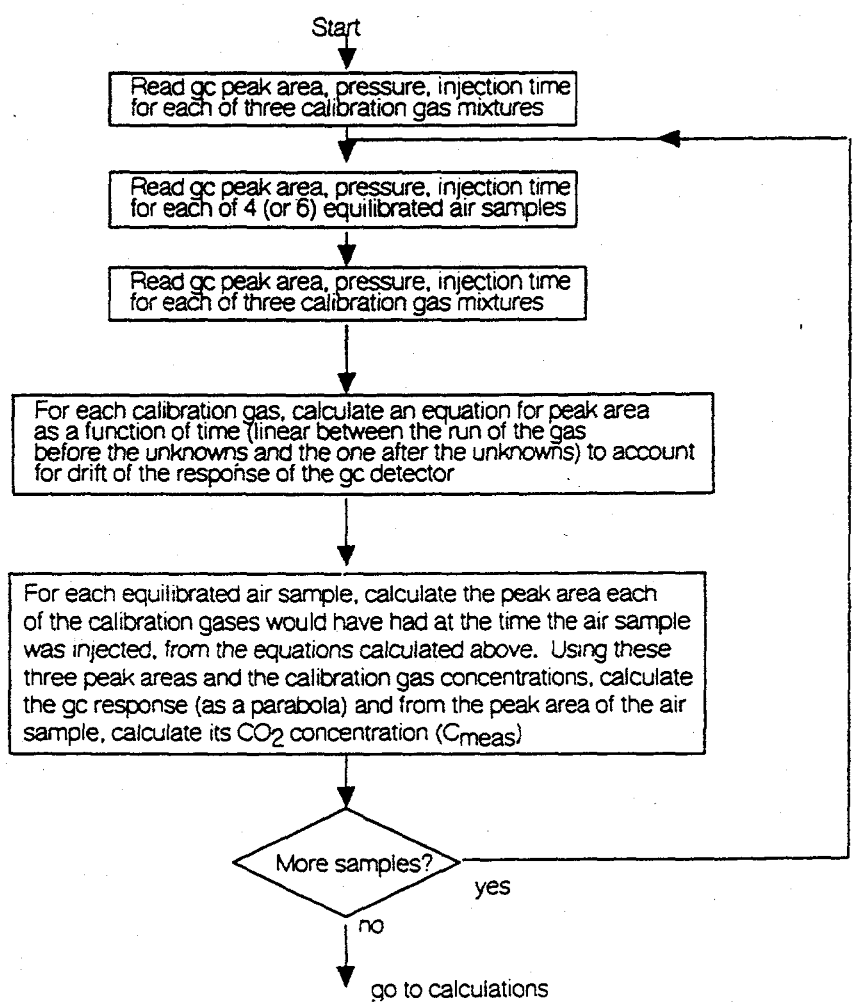
$$pCO_2\ (\mu atm) = [Cmeas\ (ppm)]*[Total\ pressure\ of\ equilibration\ (atm)],$$

where Cmeas is the mole fraction concentration of CO_2 in equilibrated moist air. The total pressure of the equilibrated air was measured by having the head space in the equilibrator flask always at atmospheric pressure which was, in turn, measured with an electronic barometer at the time each equilibrated air sample was injected into the gas chromatograph. Since water vapor was not removed from the sample, it is not needed to know the water vapor pressure .

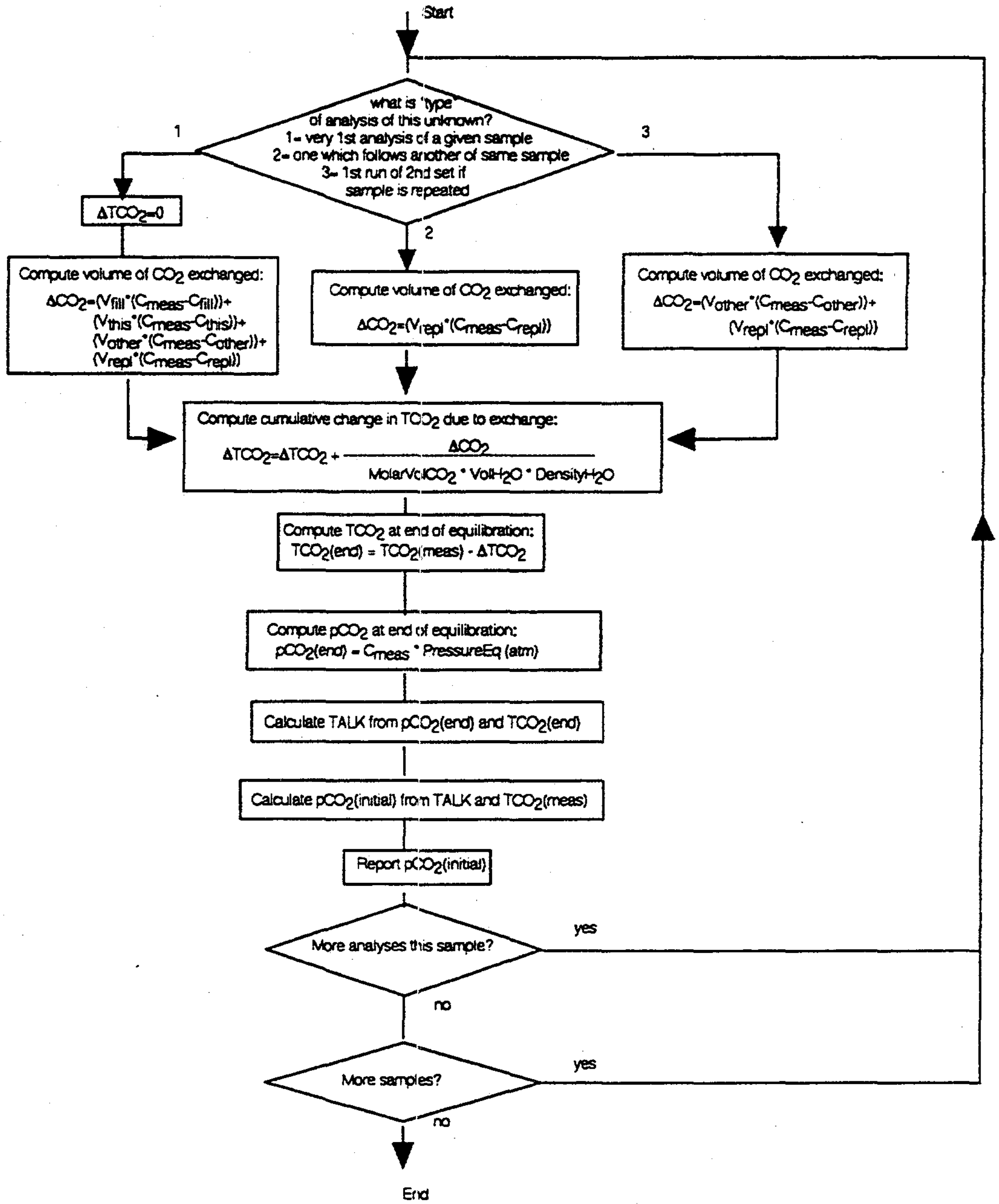
Corrections were made to account for the change in pCO_2 of the sample water due to the transfer of CO_2 to or from the water during equilibration with the recirculating air. The analytical steps yielding Cmeas, which have been programmed in the on-line computer, are schematically shown in Fig. 5-A; the pCO_2 correction routines in Fig. 5-B; and a list of variables in Fig. 5-C. The precision of the pCO_2 measurement for a single hydrographic station (i.e. for an order of a day) has been estimated to be about $\pm$0.15 % based on the reproducibility of replicate equilibrations. However, the station-to-station reproducibility has been about $\pm$ 0.5%.

Fig. 5 - Analytical steps for (A) the measurement of pCO_2 in discrete seawater samples using the LDEO GC/equilibrator system, (B) the correction procedures and equations and (C) a list of variables used in (A) and (B).

5(A)



5(B)


Start
what is 'type' of analysis of this unknown?
1= very 1st analysis of a given sample
2= one which follows another of same sample
3= 1st run of 2nd set if sample is repeated
1
2
3
ΔTCO2=0
Compute volume of CO2 exchanged:
ΔCO2=(Vfill*(Cmeas-Cfill))+(Vthis*(Cmeas-Cthis))+(Vother*(Cmeas-Cother))+(Vrepl*(Cmeas-Crepl))
Compute volume of CO2 exchanged:
ΔCO2=(Vrepl*(Cmeas-Crepl))
Compute volume of CO2 exchanged:
ΔCO2=(Vother*(Cmeas-Cother))+(Vrepl*(Cmeas-Crepl))
Compute cumulative change in TCO2 due to exchange:
ΔTCO2=ΔTCO2 + ΔCO2 / MolarVolCO2 * VolH2O * DensityH2O
Compute TCO2 at end of equilibration:
TCO2(end) = TCO2(meas) - ΔTCO2
Compute pCO2 at end of equilibration:
pCO2(end) = Cmeas * PressureEq (atm)
Calculate TALK from pCO2(end) and TCO2(end)
Calculate pCO2(initial) from TALK and TCO2(meas)
Report pCO2(initial)
More analyses this sample?
yes
no
More samples?
yes
no
End

5(C)

ΔTCO_2 = change in TCO_2 concentration due to equilibration

ΔCO_2 = volume of CO_2 exchanged between water and headspace

C_{meas} = mole fraction of CO_2 in equilibrated air

V_{fill} = Volume of headspace created by displacing water in equilibrator

V_{this} = Volume of tubing & pump not swept while creating headspace

V_{other} = Volume of tubing connecting equilibrator to 6-port valve (filled with air from "other" equilibrator)

V_{repl} = Volume of tubing connecting 6-port and 10-port valves & sample loop (air "replaced" with calibration gas before each analysis)

C_{fill} = mole fraction of CO_2 in air used to create headspace

C_{this} = mole fraction of CO_2 in residual air in tubing & pump

C_{other} = mole fraction of CO_2 in preceeding sample in "other" equilibrator

C_{repl} = mole fraction of CO_2 in "replacement" air

$MolarVolCO_2$ = molar volume of CO_2 at temperature of equilibration

$VolH_2O$ = volume of water sample in equilibrator

$DensityH_2O$ = density of water sample at temperature of equilibrator

$TCO_2(end)$ = concentration of TCO_2 in sample after equilibrating with headspace

$TCO_2(meas)$ = concentration of TCO_2 measured colulometrically in fresh sample

$pCO_2(end)$ = partial pressure of CO_2 measured after equilibration

PressureEq = pressure of equilibration (in atmospheres)

TALK = Total alkalinity of sample (unchanged during equilibration)

$pCO_2(initial)$ = partial pressure of CO2 of sample water PRIOR TO equilibration (at temperature of equilibration)

3-d) Computation of the Alkalinity in Seawater:

The alkalinity of seawater has been computed using the observed values of temperature, salinity, pCO_2 and the concentrations of total CO_2, silicate, and phosphate. For our computation, the total alkalinity (TALK) in seawater is defined by:

$$TALK = Ac + Ab + Asi + Ap + Aw$$

where Ac = Carbonate alkalinity = $[HCO_3^-] + 2[CO_3^=]$

Ab = Borate alkalinity = $[H_2BO_3^-]$,

Asi = Silicate alkalinity = $[H_3SiO_4^-]$,

Ap = Phosphate alkalinity = $[H_2PO_4^-] + 2[HPO_4^=] + 3[PO_4^{-3}]$,

Aw = Water alkalinity = $[OH^-] - [H^+]$.

The total concentration of borate (TB) has been assumed to be proportional to salinity: TB (μmol/kg) = 410.6*(Sal/35). The borate alkalinity ranges between about 40 μeq/kg for deep waters and 100 μeq/kg for surface waters. Since the silicate concentration may be as high as 150 μmol/kg in deep waters, the silicate alkalinity is as high as 6 μeq/kg for deep water but it is negligibly small for surface waters. The phosphate alkalinity ranges from 0.5 μeq/kg for surface waters to about 5 μeq/kg in deep waters. The following apparent dissociation constants of acid in seawater were used; Merhbach et al. (1973) for carbonic acid; Lyman (1956) for boric acid; Kester and Pytkowicz (1967) for phosphoric acid; Ingri (1959) for silicic acid; and Millero (1979) and Culberson and Pytkowicz (1973) for water. The expressions used to compute these constants as a function of temperature and salinity and the computational scheme are described in Peng et al. (1987).

3-e) Computation of Apparent Oxygen Utilization (AOU):

The Apparent Oxygen Utilization (AOU) value was obtained by subtracting the measured value from the saturation value computed at the potential temperature of water and

1 atm total pressure using the following expression based on the data of Murray and Riley (1969):

$$\begin{aligned}\ln(O_2 \text{ in } \mu mol/kg) = &- 173.9894 + 255.5907(100/TK) + 146.4813 \ln(TK/100) \\ &- 22.2040(TK/100) + Sal\,[-0.037362 + 0.016504(TK/100) \\ &- 0.0020564(TK/100)^2],\end{aligned}$$

where TK is temperature in °K and Sal in the Practical Salinity (PS) scale.

4. CRITICAL EVALUATION OF THE REPEAT STATION DATA

When the ship's tracks of the present WOCE expeditions intersected previous WOCE stations, measurements were repeated at the crossover locations. The time intervals between pairs of repeat stations varied from about two months to about a year. This allowed us to evaluate reproducibility of measurements made for deep waters below about 2000 meters, where variabilities are expected to be small or negligible. In this section, the following nine properties measured at five pairs of repeat hydrographic stations are compared in deep waters below about 2000 meters or sigma-4 density exceeding 45.5: potential temperature, salinity, pCO_2, alkalinity and the concentrations of oxygen, total CO_2, silicate, nitrate and phosphate. The pCO_2 values were measured at a constant temperature of either 4°C or 20°C, and hence only pairs of repeat station data for pCO_2 obtained at the same temperature are compared. The alkalinity values were computed using the pCO_2 and total CO_2 concentration values according to the scheme described in Section 3-d. The locations of these five pairs of stations are indicated in Fig. 1 with large filled circles and the data are presented in Figs 6 - 10. In each figure, the potential temperature (Θ) vs salinity relationship is shown in the top left panel, and other seven properties are plotted against the sigma-4 density (potential density computed at 4000 db). The position of the repeat stations and dates of observations are listed in Table 3.

Fig. 6 A comparison of nine parameters measured at Crossover #1 at 37.5°S and 150.5°W. The filled circles indicate the data obtained at Station 3 during the JUNO cruise and the open circles indicate those obtained at Station 180 during the TUNES cruise. The location is marked in Fig. 1 with a large filled circle.

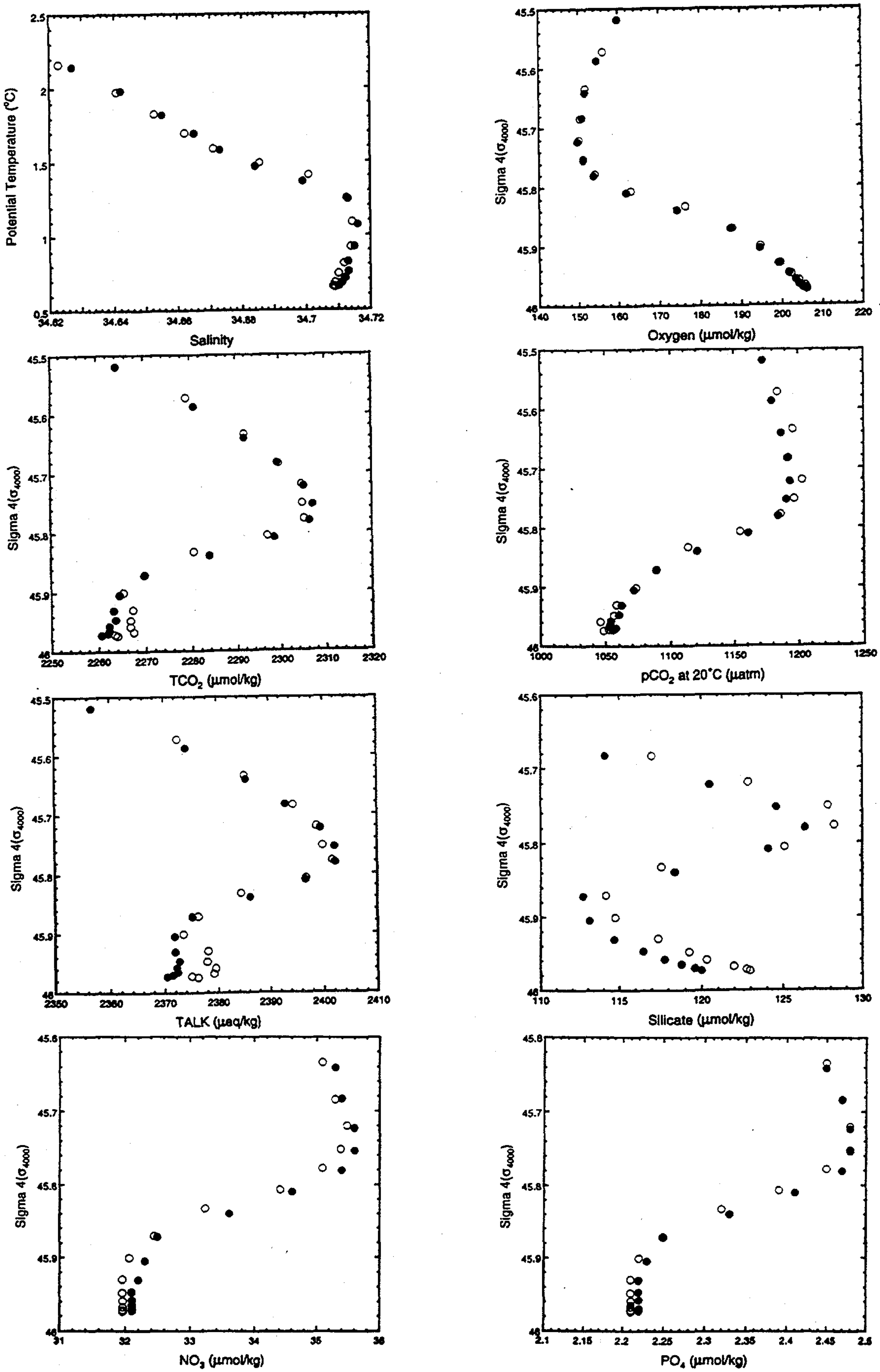


Fig. 7 A comparison of nine parameters measured at Crossover #2 at 33.0°S and 135.0°W. The filled circles indicate the data obtained at Station 119 during the *JUNO* cruise and the open circles indicate those obtained at Station 179 during the TUNES cruise. The location is marked in Fig. 1 with a large filled circle.

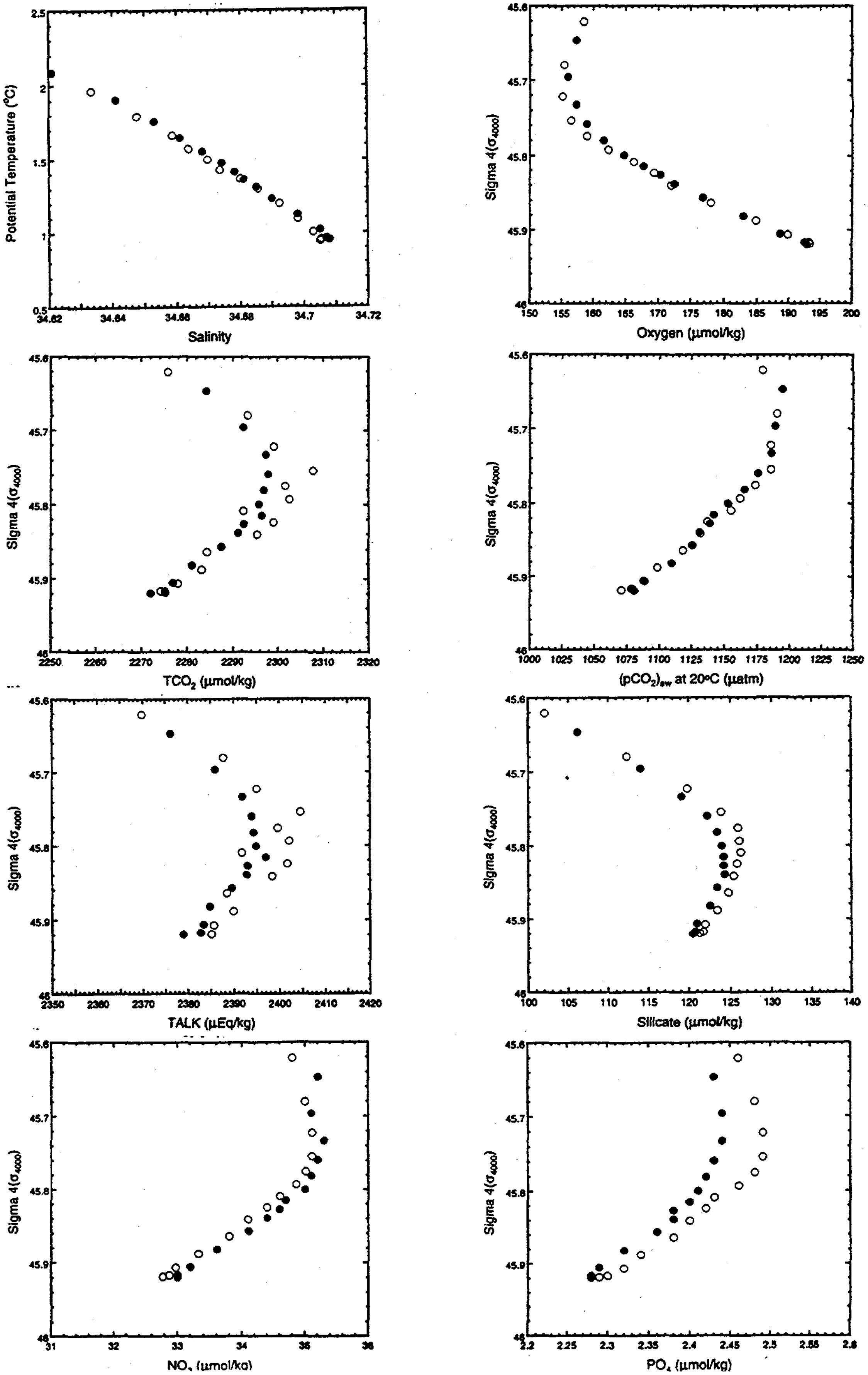


Fig. 8 A comparison of nine parameters measured at Crossover #3 at 52.5°S and 135.0°W. The filled circles indicate the data obtained at Station 80 during the JUNO cruise and the open circles indicate those obtained at Station 128 during the JUNO cruise. The location is marked in Fig. 1 with a large filled circle.

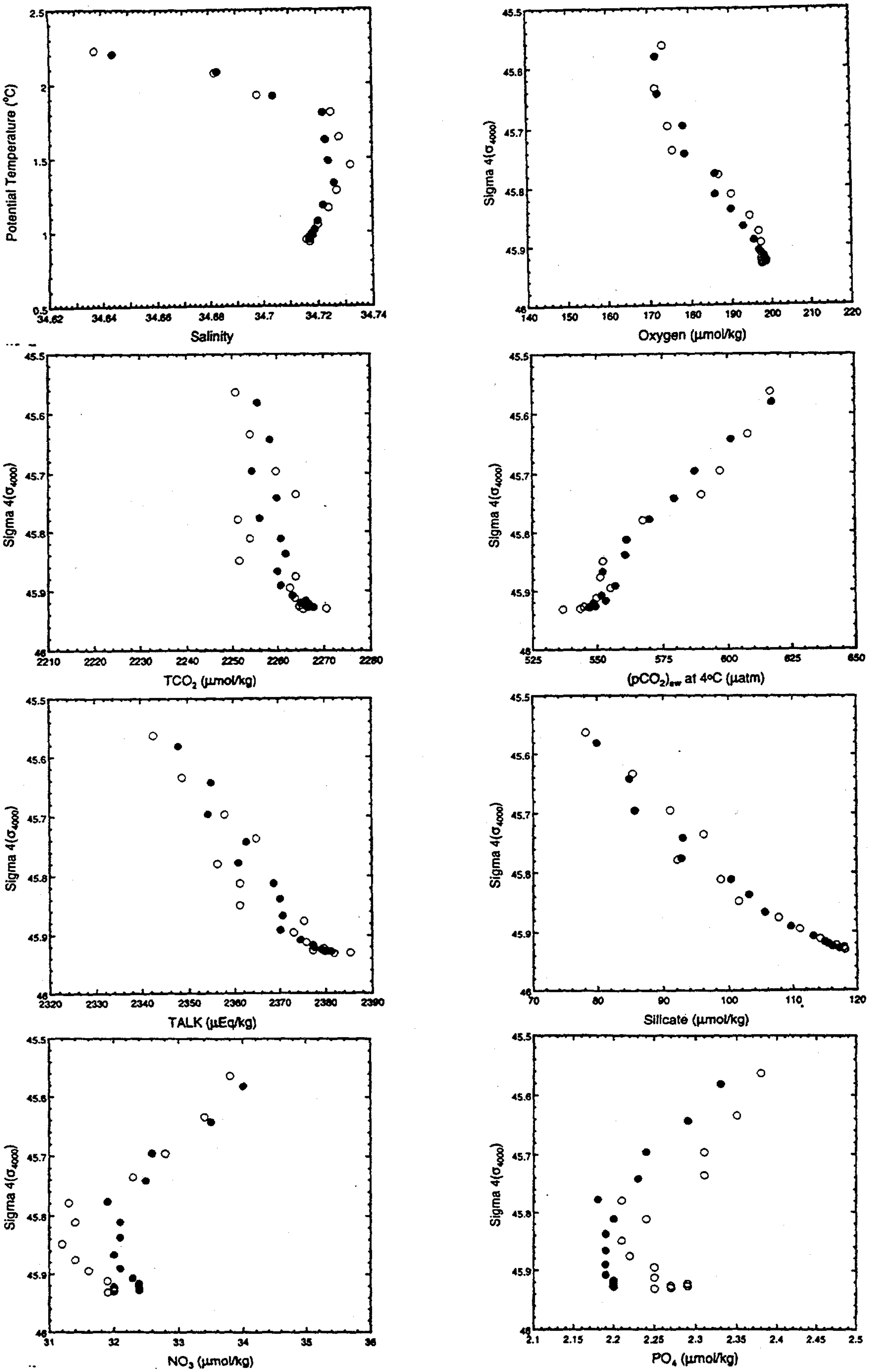


Fig. 9 A comparison of nine parameters measured at Crossover #4 at 54.0°S and 88.0°W. The filled circles indicate the data obtained at Station 206 during the JUNO cruise and the open circles indicate those obtained at Station 256 during the JUNO cruise. The location is marked in Fig. 1 with a large filled circle.

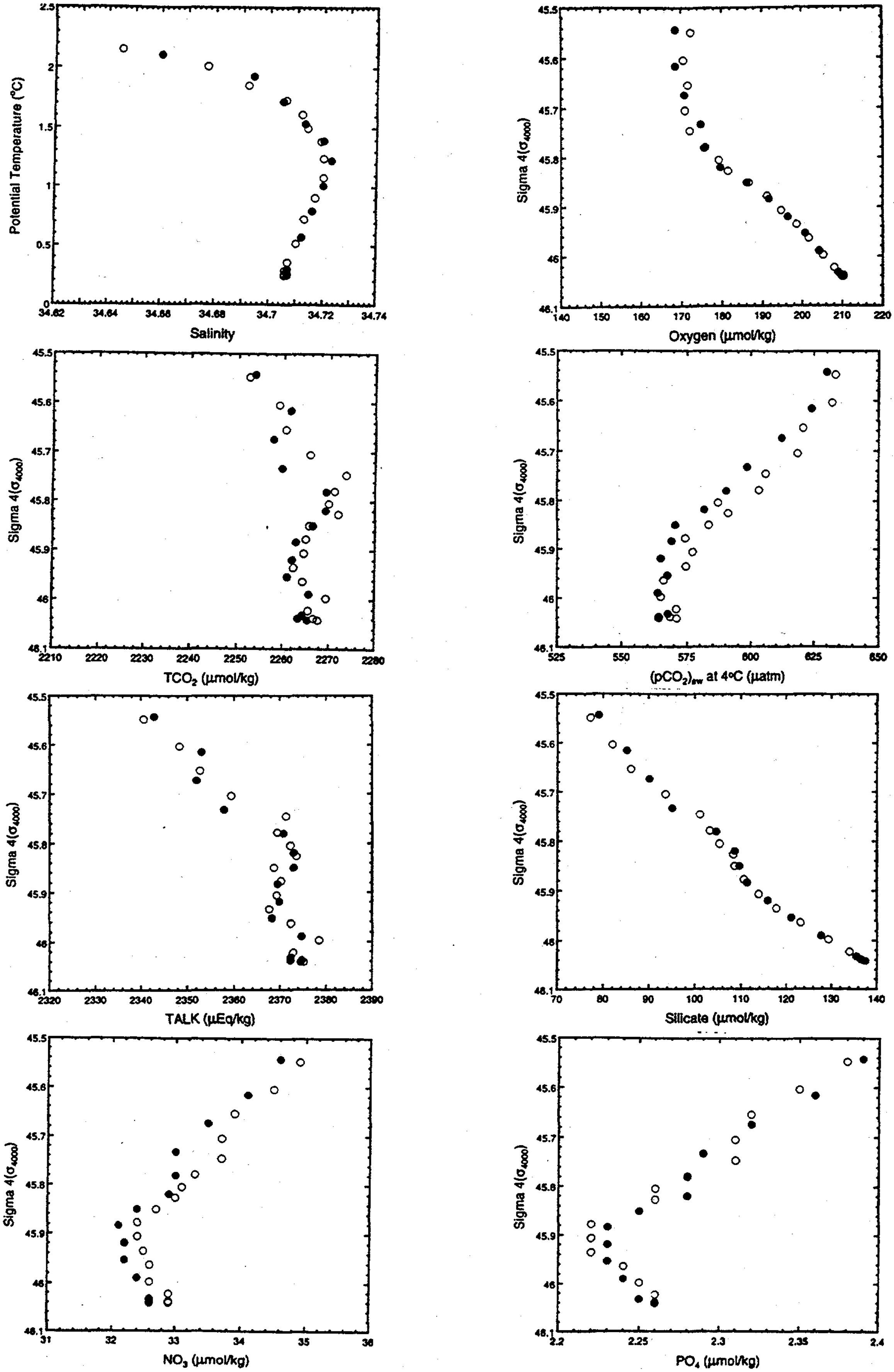


Fig. 10 A comparison of nine parameters measured at Crossover #5 at 67.0°S and 88.0°W. The filled circles indicate the data obtained at JUNO Station 229 and the open circles indicate those obtained at S-4P Station 703 aboard the Russian Research Ship IOFFE. The location is marked in Fig. 1 with a large filled circle.

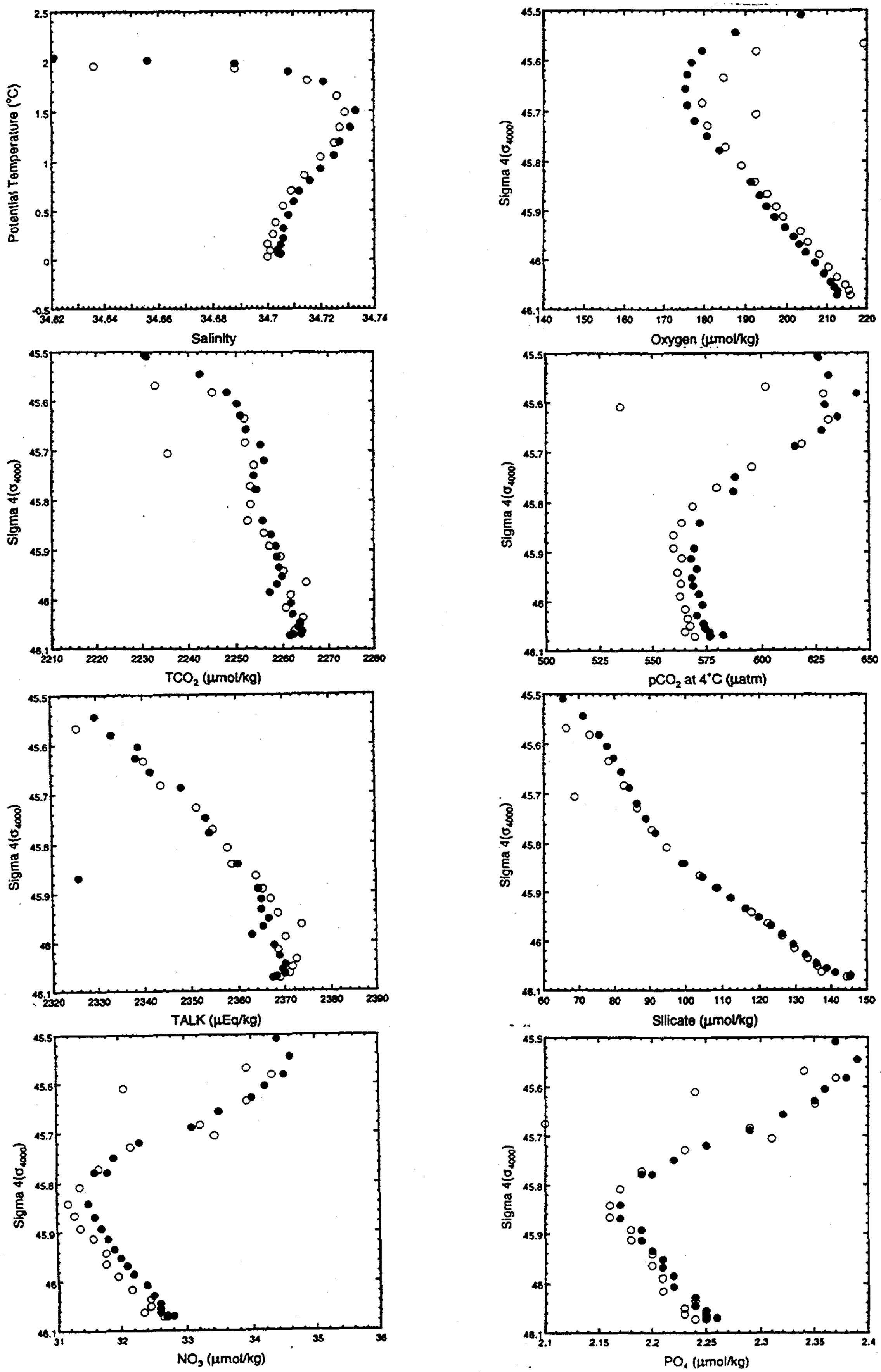


Table - 3 The positions and dates of repeat stations.

Crossover	Cruise/Station	Positions		Dates
1	JUNO/3	37°29.7'S,	150°20.0'W	10/12/92
	TUNES/180	37°29.9'S,	150°30.1'W	08/12/91
2	JUNO/119	33°00.0'S,	135°00.0'W	11/20/92
	TUNES/179	33°00.6'S,	135°01.3'W	08/08/91
3	JUNO/80	52°31.2'S,	135°00.0'W	11/09/92
	JUNO/128	52°29.8'S,	135°00.0'W	12/14/92
4	JUNO/206	54°00.0'S,	87°59.0'W	01/10/93
	JUNO/256	53°59.9'S,	88°00.0'W	03/01/93
5	JUNO/229	67°00.0'S,	87°59.8'W	01/16/93
	S-4P/703	67°00.0'S,	88°32.0'W	02/28/92

In Table 4, listed are the precision of measurements (expressed in terms of one standard deviation) estimated for a single station at sigma-4 densities greater than about 45.6. The precision for salinity measurements have been estimated assuming that temperatures are known, and the precision for all other properties have been estimated assuming that the sigma-4 density values are know. If the data for each pair of stations are indistinguishable, the standard deviation for combined stations are given. If systematic differences are observed between a pair of station data sets, the mean difference (the top station in the table minus the bottom station) is shown in the parentheses. The $\pm$ values listed in the column "MEAN" indicate the mean of precisions observed at five pairs of stations and represent the mean precision of measurements made at a single station. The mean precision of single-station measurements for the eight properties listed are considered to be at the state-of-the-art level. On the other hand, nagging systematic differences between pairs of measurements are observed more often in nitrate (5 out of 5 crossovers) and phosphate (4 out of 4 crossovers) than the others. These station-to-station differences often exceed single-station precisions by several folds. Since these systematic differences do not always correspond to those observed for the concentrations of oxygen and CO_2 and salinity, and since the deviations observed for

Table 4 - Comparison between hydrographic and chemical data obtained at pairs of repeat stations. The ± values in top two rows for each property indicate the observed precision of measurements at each station (expressed in terms of one standard deviation). The ± values in the third row indicate standard deviation for two stations together when two station data are indistinguishable, whereas those in the parentheses indicate the mean systematic difference between the two stations (the top station - the bottom station). The values in the MEAN column indicate the mean precision of the measurements for all stations. "J", "T" and "S" in front of the station numbers indicate respectively the JUNO, TUNES and S-4P expeditions.

Crossover No.	#1	#2	#3	#4	#5	MEAN
Station. No.	J-3	J-119	J-80	J-206	J-229	
Station. No.	T-180	T-179	J-128	J-256	S-703	
Salinity	±0.001	±0.001	±0.001	±0.001	±0.001	**±0.001**
	±0.001	±0.001	±0.002	±0.001	±0.001	
combined	**±0.002**	**(+0.002)**	**±0.004**	**±0.002**	**(+0.003)**	
Oxygen	±0.2	±0.2	±1	±0.5	±0.2	**±0.4**
(μmol/kg)	±0.2	±0.2	±1	±0.5	±0.2	
combined	**±0.5**	**±1**	**±2**	**±1**	**(-2)**	
TCO_2	±1	±1	±2	±1	±1.5	**±1.6**
(μmol/kg)	±1.5	±2	±2.5	±1.5	±1.5	
combined	**±2.0**	**(-4)**	**±2.5**	**(-2)**	**±2**	
pCO_2	±2	±3	±2	±2	±2	**±2.5**
(μatm)	±2	±3	±3	±3	±2	
combined	**±4**	**±4**	**±3**	**(-7)**	**(+6)**	
Alkalinity	±1	±1	±2	±1.5	±1	**±1.8**
(μeq/kg)	±2	±3	±3	±2	±1.5	
combined	**±3**	**(-5)**	**±3**	**±2**	**±2**	
Silicate	±0.2	±0.2	±1	±0.5	±0.2	**±0.4**
(μmol/kg)	±0.2	±0.2	±1	±0.5	±0.2	
combined	**(-3)**	**(-1.5)**	**±1.5**	**±0.7**	**±0.2**	
Nitrate	±0.05	±0.07	±0.1	±0.05	±0.05	**±0.06**
(μmol/kg)	±0.05	±0.05	±0.1	±0.05	±0.05	
combined	**(+0.2)**	**(+0.2)**	**(+0.6)**	**(-0.3)**	**(+0.2)**	
Phosphate	±0.002	±0.005	±0.007	±0.006	±0.005	**±0.006**
(μmol/kg)	±0.002	±0.005	±0.02	±0.005	±0.005	
combined	**(+0.01)**	**(-0.03)**	**(-0.05)**	**±0.005**	**(+0.01)**	

nitrate are not always to the same sign as those observed for phosphate, the observed systematic differences are most likely to be due to expedition-to-expedition calibration problems.

Several features shown in Figs. 6 - 10 deserve additional comments. First, the nine quantities measured at each pair of stations a month to a year apart at a given location do not always agree each other. When temperature and/or salinity values, the two quantities measured most reproducibly and precisely, differ beyond the estimated errors for each station data, we are inclined to conclude that the characteristics of deep waters have changed with respect to a fixed geographical position on the earth. On the basis of the estimated errors of $\pm$ 0.001°C for temperature and $\pm$0.001 for salinity (these correspond to the size of data points shown in Figs. 6 - 10), it appears that three of the five pairs of repeat stations remained unchanged (Crossovers 1, 3 and 4), one changed partially (Crossover 3) and one changed (Crossover 5) clearly. The oxygen data appear to be most consistent with the temperature-salinity data. At Crossover 3 (Fig. 8), the salinity changed by about 0.005 in a temperatures range between 1.3 and 1.8 °C or in a sigma-4 range between 45.8 and 45.9. The oxygen data as well as other chemical data appear to reflect this change. However, it is not clear whether the observed changes represent a real change or malfunction of the Rosette CTD samplers.

Secondly, while no systematic differences between 4 out of 5 pairs of stations have been observed, they are observed only at Crossover 2 (Fig. 7). However, it should be noted that the TCO_2 values observed at the both stations at densities greater than about 45.85 are indistinguishable, whereas those obtained at TUNES 179 are considerably greater than those at JUNO 119 in waters with densities between 45.72 and 45.85. The salinity, oxygen, silicate and phosphate data appear to suggest that these waters had changed, whereas the pCO_2 and phosphate data show no changes. Hence, no clear conclusion can be made. In Table 4, a mean difference in TCO_2 of 4 μmol/kg is listed for a density range from 45.70 to 45.91.

Thirdly, at Crossover 5 (Fig. 10), the salinity values observed at S-4P Station 703 (Feb. 28, 1992) and JUNO Station 229 (Jan. 16, 1993) about a year later differ systematically by about 0.003, about 3 times the precision obtained at each station. The oxygen, pCO_2, nitrate and phosphate data also change consistently with each other. On the other hand, TCO_2 and silicate data show no change. Again, it is not clear whether the properties of deep ocean waters changed or the calibrations of instruments slipped.

5. DISTRIBUTION OF THE MEASURED PROPERTIES

Distributions of the total CO_2 and pCO_2 in the South Pacific Ocean are discussed in this section. The observations made during previous expeditions are combined with the results of this study to obtain an improved understanding of the distribution of CO_2 in the ocean.

5-a) Meridional Distribution of the Total CO_2 Concentration:

The distribution of the total CO_2 concentration along the WOCE sections P-16 (150.5°W), P-17 (135.0°W) and P-19 (88°W) are shown in Figs. 11, 12 and 13 respectively. The deep water data indicate that there is a CO_2 maximum centered about 2600 meters deep representing a southward return flow of the Antarctic Deep Water from the North Pacific. The maximum intensifies northward and weakens southward disappearing in the vicinity of 50°S. It extends further south more to the east as illustrated by the 2270 umol/kg contour, which is located at about 47°S along 150.5°W (Fig. 11), 49°S along 135°W (Fig. 12) and 54°S along 88°W (Fig. 13).

The distribution of the CO_2 maximum observed along the 150.5°W (Fig. 11, WOCE P-16 section) weakens to the north as well as to the south as evidenced by closures of the 2300 and 2310 μmol/kg contours at both ends. On the other hand, along the 135.0°W (Fig. 12) and 88°W (Fig. 13) sections, the deep water CO_2 maximum increases northward as far north as the edge of the plot. This difference appears to be due to the Tuamotu Archipelago, a topographic high, which largely blocks the southward path of the return flow from the north (Takahashi et al., 1993). Below the CO_2 maximum water, the Southern Ocean waters with lower CO_2 concentrations are found. These waters of the Southern Ocean which have relatively uniform TCO_2 concentrations between 2250 and 2260 umol/kg south of about 50°S

Fig. 11 A meridional section for the total CO_2 concentration (μmol/kg) in seawater along the WOCE Section P-16, 150.5°W. The results north of 37°S represent those obtained in July, 1991, and those south of it in November, 1992.

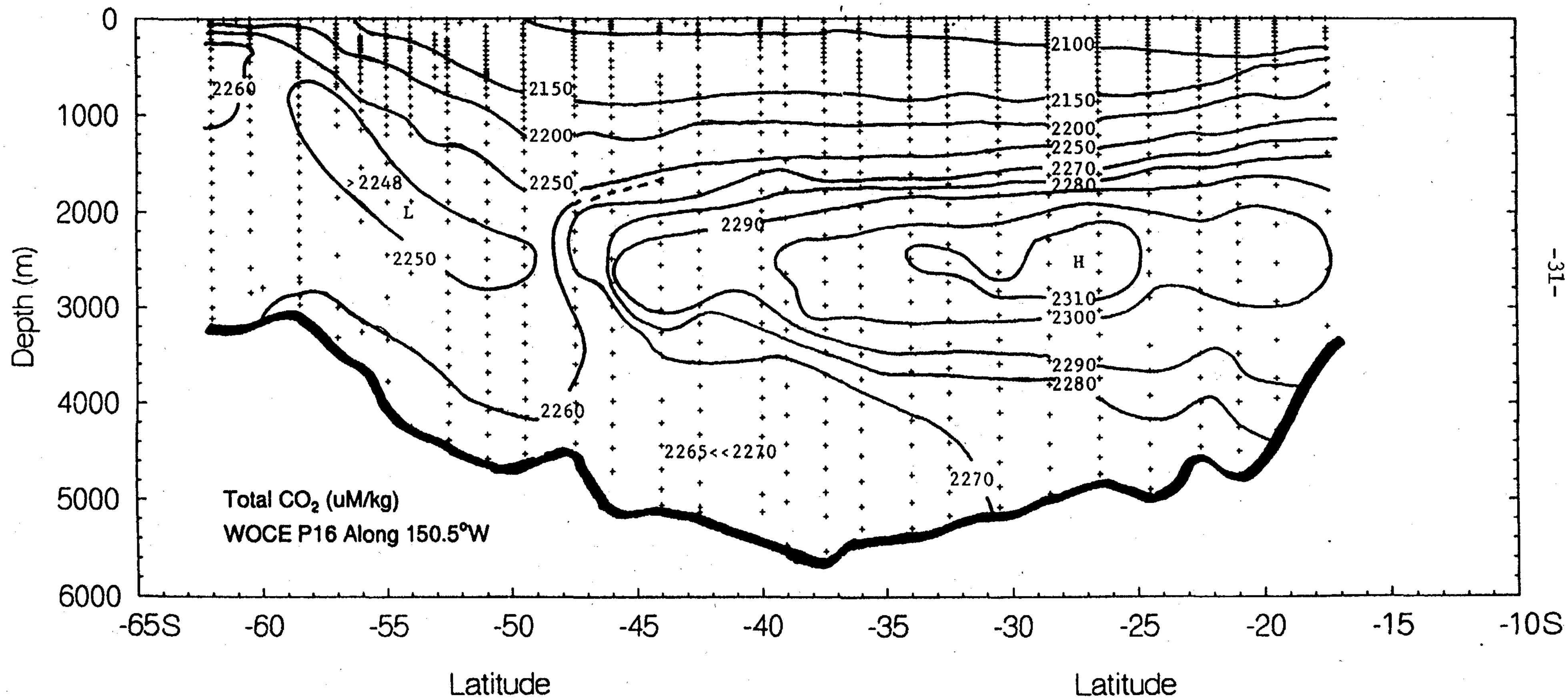


Fig. 12 A meridional section for the total CO_2 concentration (μmol/kg) in seawater along the WOCE Section P-17, 135°W. The results north of 33°S represent those obtained in August, 1991, during P-17C, and those south of it in December, 1992, during P-17S.

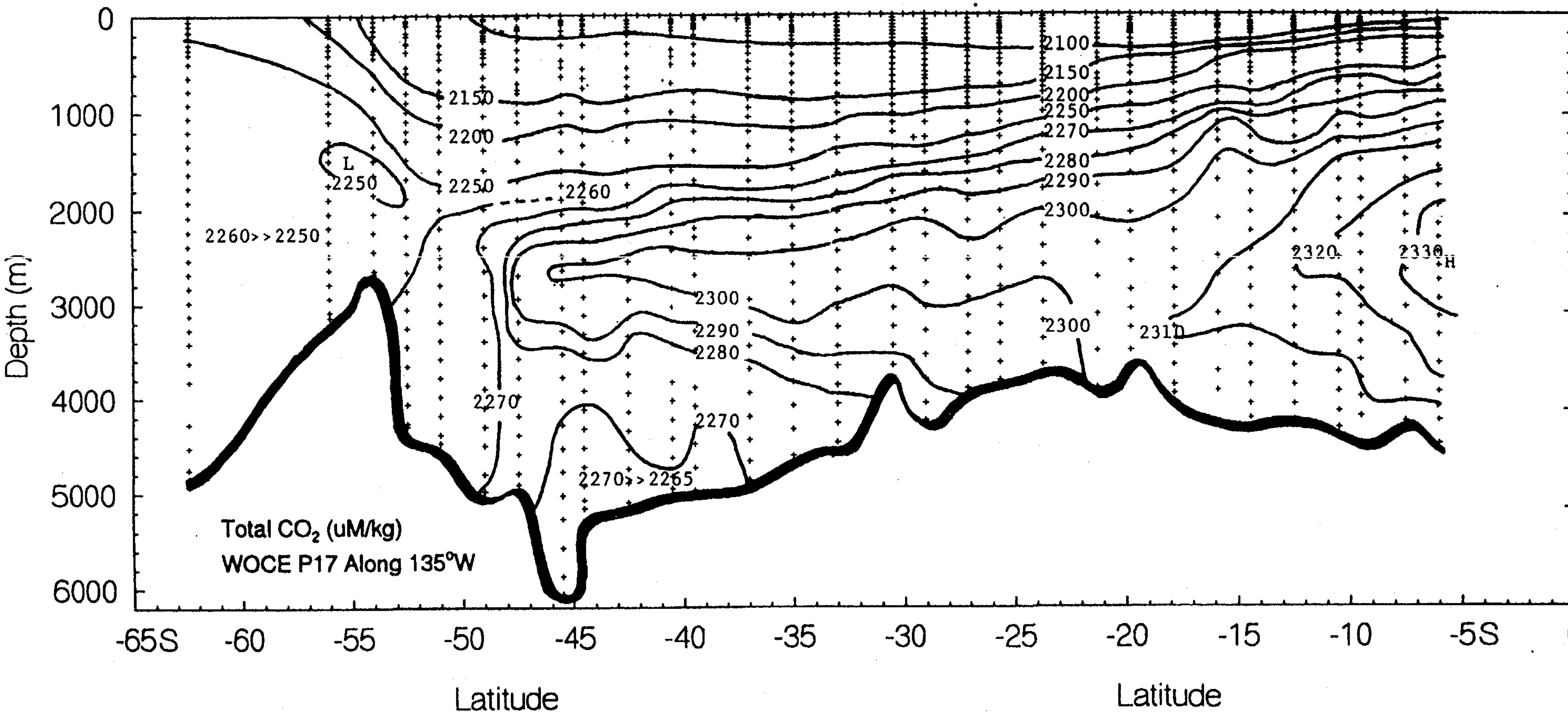
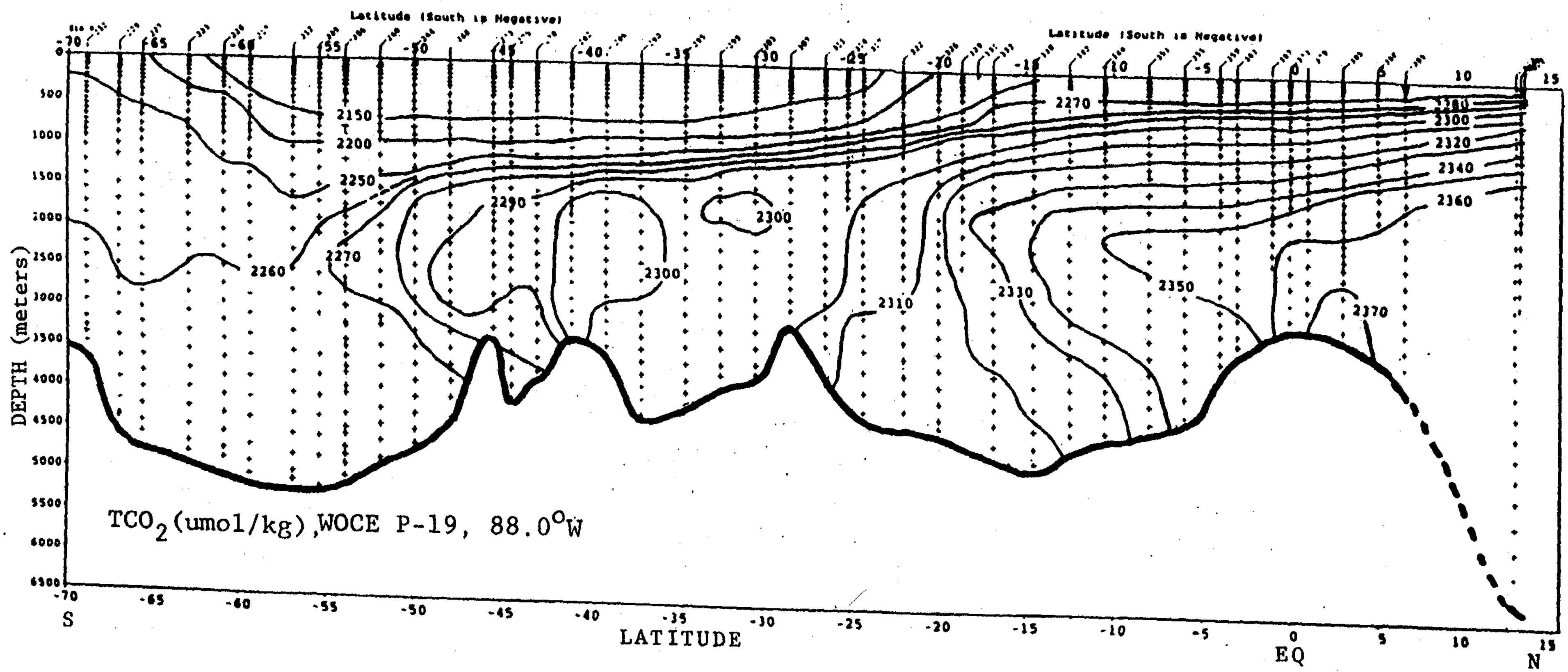


Fig. 13 A meridional section for the total CO_2 concentration (μmol/kg) in seawater along the WOCE Section P-19, 88.0°W. The measurements were made in January through April, 1993, during P-19S and P-19C.



appear to flow northward and mix with the overlying high-CO_2 North Pacific waters thus forming negative CO_2 gradients with increasing depth.

5-b) Total CO_2 Concentration along the 88°W Section:

The distribution of total CO_2 concentration in deep water along the 88°W meridian (P-19 section) is shown in Fig. 13. Along this section, a CO_2 maximum layer is observed at depths centered around about 2000 to 2500 meters, which is somewhat shallower than the corresponding maxima observed along the 135°W and 150°W sections. Since the section extends to the northern hemisphere, 13°N, the maximum CO_2 concentration is greater along this section (i. e. up to 2370 μmol/kg) than that found along the other sections. However, the CO_2 concentrations for the CO_2 maximum layer at corresponding latitudes are similar to those along the 135°W and 150°W sections. While a single tongue of the CO_2 maximum water is observed continuously from 5°S to 48°S along the 135°W section, the CO_2-maximum tongue along the 88°W section is split into two segments as shown by the 2300 μmol/kg contour located at about 30°S. The northern segment of this section is in the Peru Basin while the southern segment is in the Southeast Pacific Basin of the Southern Ocean, and these basins are separated by the Chile Rise. It appears, therefore, that flow paths of deep waters and hence the distribution of CO_2 in deep waters are affected critically by the sea floor topography which influences the circulation pattern.

5-c) Total CO_2 Concentration and pCO_2 along 53°S:

An east-west section along about 53°S between 74°W and 135°W is shown in Fig. 14. The eastern extreme (on the right hand side) of this section is located on the continental slope of South America. A CO_2 maximum (as high as 2300 μmol/kg) centered at a depth of approximately 2600 meters is seen east of about 128°W. This water contains low concentrations of oxygen and can be traced across the Drake Passage (Chipman et al., 1992). It shoals southward across the Passage and is found near the southern end of the Drake Passage at depths less than 200 meters deep, where it is ventilated with the atmosphere. The high CO_2 and low oxygen water may be formed locally by the oxidation of biogenic debris

Fig. 14 An east-west section for the total CO_2 concentration (μmol/kg) in seawater along the WOCE Section P-17E, 53°S. The measurements were made in November-December, 1992.

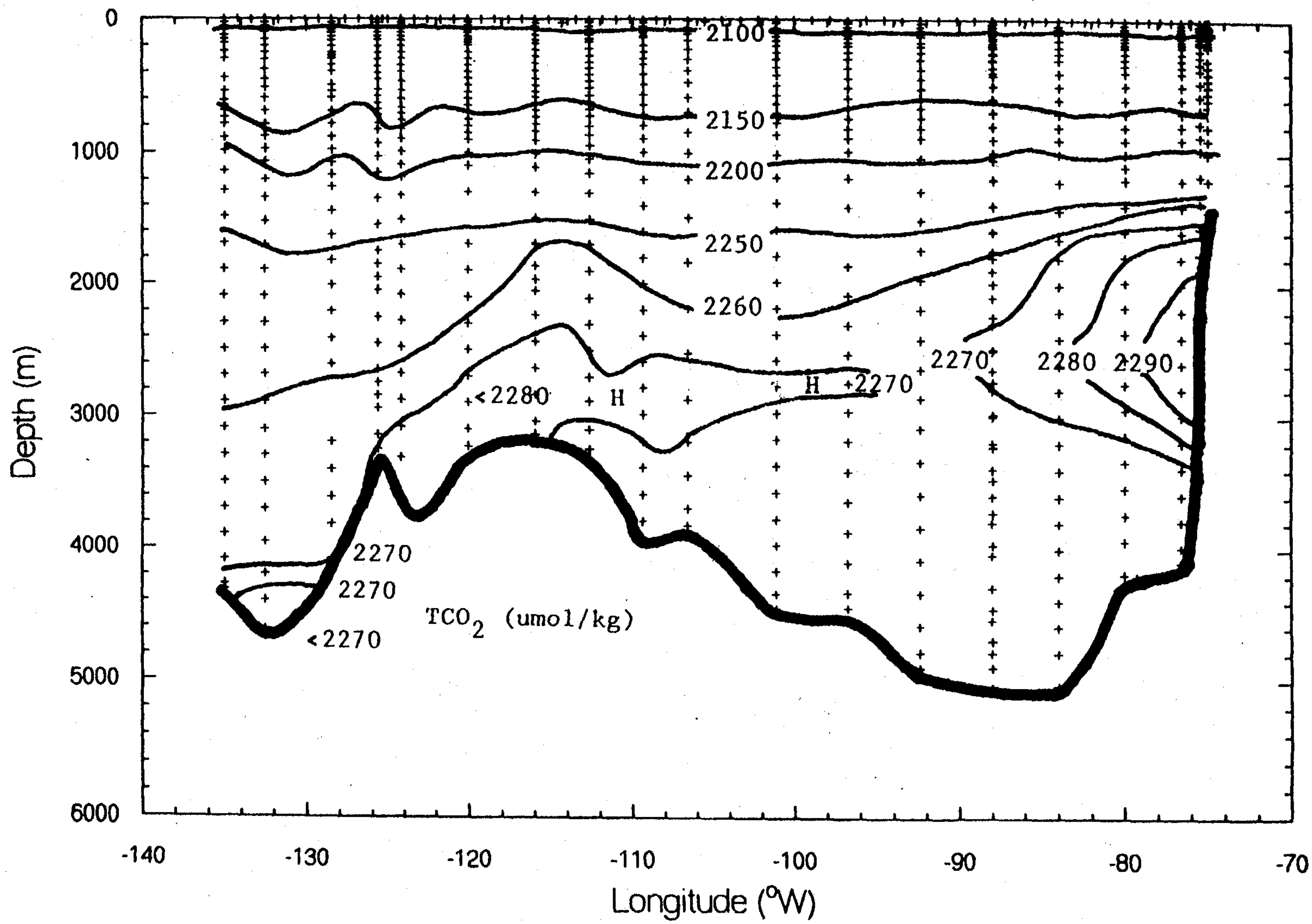
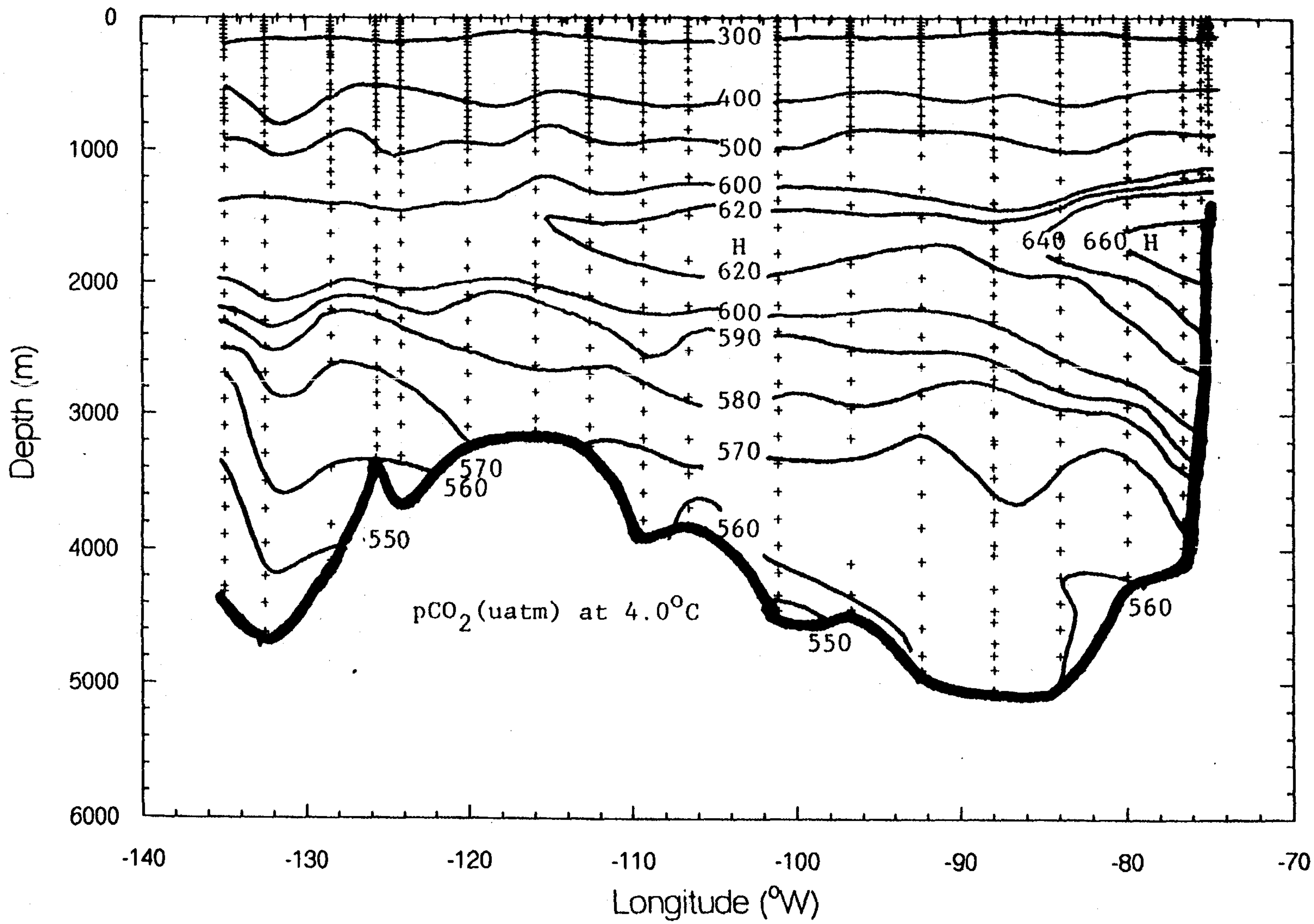


Fig. 15 An east-west section for the pCO_2 (μatm) in seawater at a constant temperature of 4.0°C along the WOCE Section P-17E, 53°S. The measurements were made in November-December, 1992.



falling through the continental slope waters or accumulated as sedimented on the slope. Alternatively, it may represent a narrow strip of the North Pacific water flowing southward as a boundary current. The origin of this water is being investigated.

The distribution along 53°S of pCO_2 in seawater at 4.0°C is shown in Fig. 15. In contrast to the distribution of TCO_2 (Fig. 14), the pCO_2 maximum layer is located at about 1700 meters, and continues across the section at this depth. Although the high pCO_2 zone becomes broader and deeper (down to about 3000 meters) toward the continental slope and overlaps with the high TCO_2 zone east of about 90°W, the TCO_2 maximum lies about 1000 meters deeper than the pCO_2 maximum. This may be explained by the dissolution of calcium carbonate, which starts at a depth of about 2000 meters. This would reduce the pCO_2 (due to increased alkalinity) below this depth while it adds extra CO_2 to that produced by the oxidation of organic debris. Thus, the total CO_2 maximum centered around 2600 meters may be attributed to the combined effects of the oxidation of organic debris and dissolution of calcium carbonate.

5-d) pCO_2 and Total CO_2 Concentration in Surface Waters:

The meridional distribution of eight properties in surface mixed-layer waters are shown in Figs. 16, 17 and 18 along the 150.5°W (P-16), 135°W (P-17) and 88°W (P-19) sections. The polar waters, which are located south of about 60°S, are characterized by sub-zero temperatures, lower salinity and high concentrations of total CO_2, oxygen and nutrients. The concentrations of nitrate, phosphate and silicate are as high as 30 μmol/kg, 2.1 μmol/kg and 65 μmol/kg respectively. The concentration of silicate decreases rapidly northward to nearly zero between 55°S and 65°S, and it remains nearly zero to the north. In contrast to the behavior of silicate, the concentrations of total CO_2, nitrate and phosphate tend to decrease gradually but remain to high to about 35°S. Since these quantities decrease together with a proportion similar to the Redfield P/N/C ratio of 1/15/106, the observed decreases are attributed to biological utilization. From the polar front to about 35°S, the temperature increases gradually northward signifying the sub-Antarctic zone. The surface

Fig. 16 Eight properties in surface mixed-layer waters along the WOCE P-16 section, 150.5°W meridian.
A) Observations made in October-November, 1992, during this study (JUNO cruise); and B) Observations made in July-August, 1991, during the WOCE P-16C Expedition (TUNES cruise) aboard the R/V Thomas Washington.

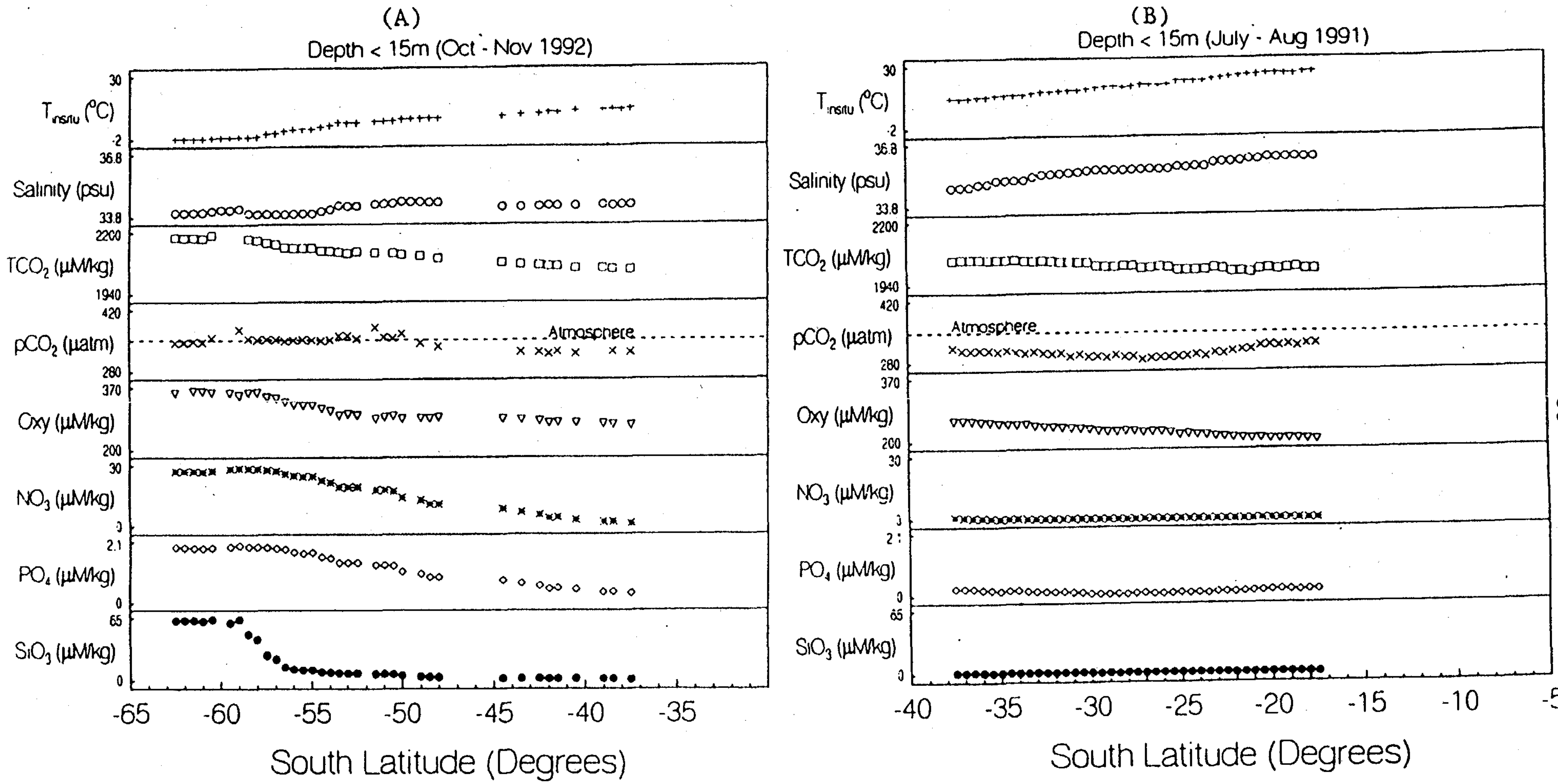


Fig. 17 Eight properties in surface mixed-layer waters along the WOCE P-17 section, 135.0°W meridian. A) Observations made in October-November, 1992, during this study (JUNO cruise); and B) Observations made in July-August, 1991, during the WOCE P-17C Expedition (TUNES cruise) aboard the R/V Thomas Washington.

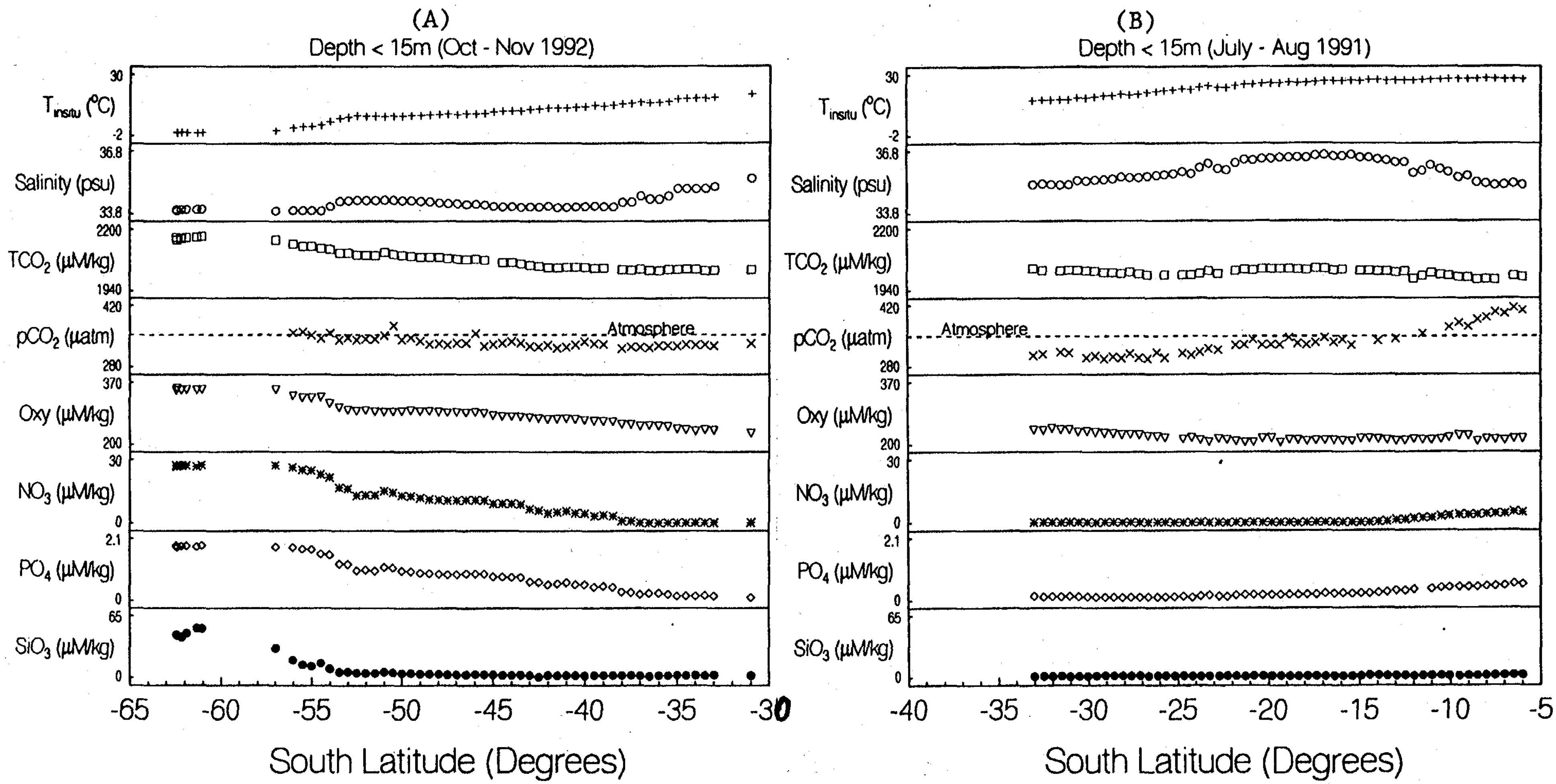
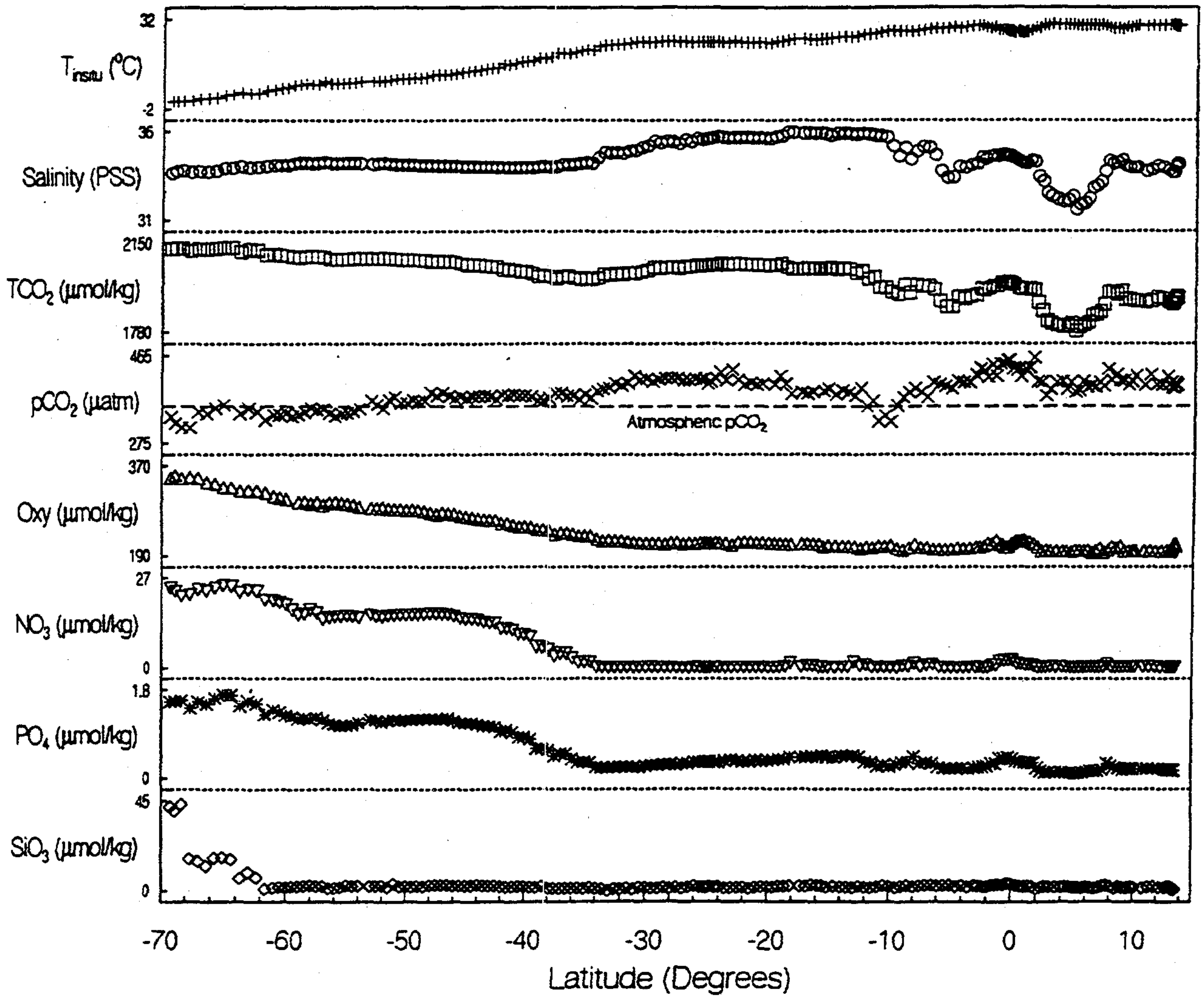


Fig. 18 Eight properties in surface mixed-layer waters along the WOCE P-19 section, 88°W meridian, between 14°N and 70°S. Extremely low TCO_2 values which are associated with low salinity values but with no pCO_2 anomalies, are observed between 2°N and 8°N in the Panama Basin area. This may be attributed to dilution by rain water.

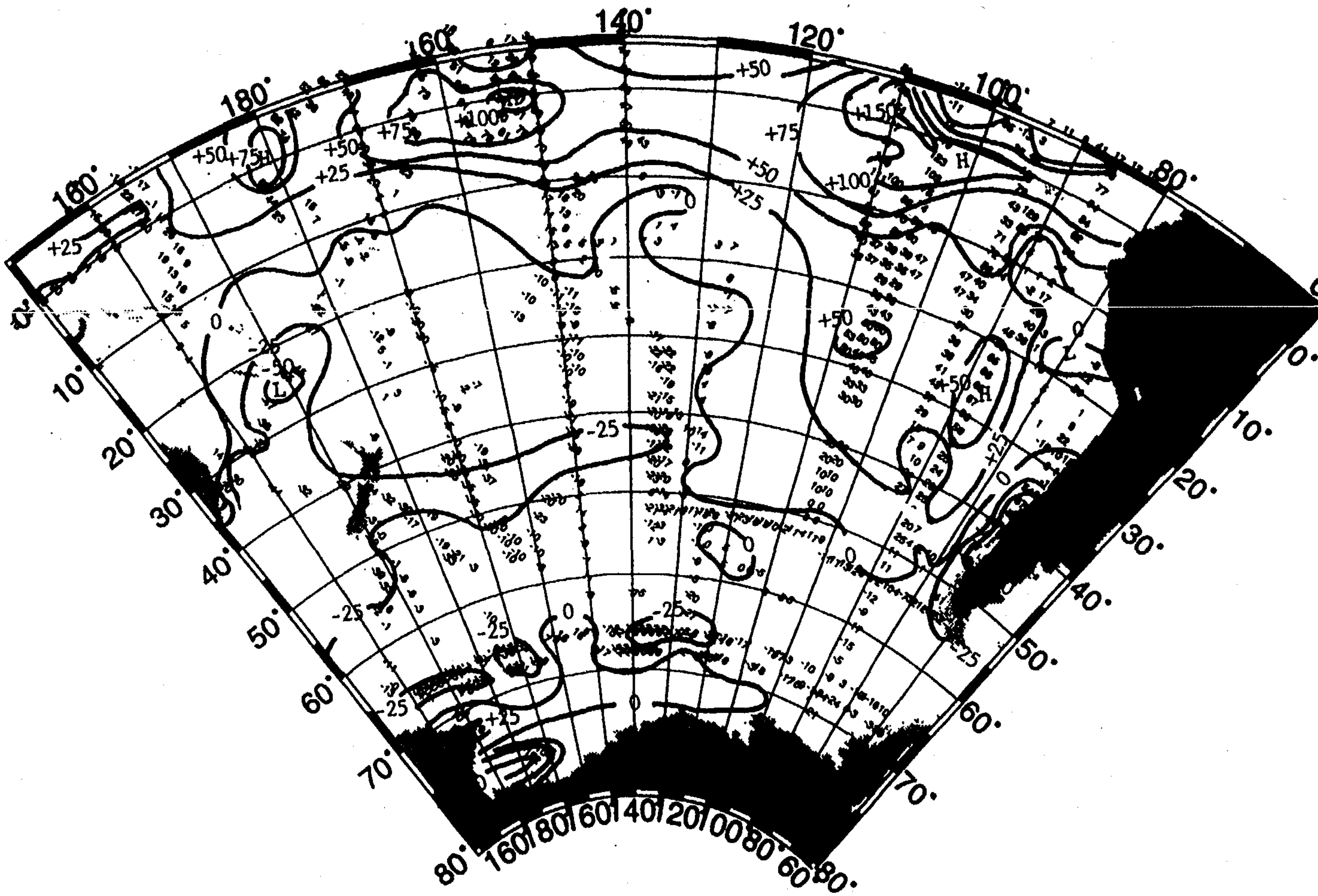


water pCO_2 values remain close to the atmospheric value of about 350 μatm through out the polar and sub-polar waters. This may be due to the fact that the effect of warming to the north is compensated by the effect of the northward decrease in the total CO_2 concentration. Further north in the vicinity of 35°S, the concentrations of nitrate and phosphate are decreased to nearly zero and the temperature increases rapidly. These features signify the sub-tropical convergence, where the warm subtropical waters depleted of nutrients meet with the colder sub-Antarctic waters rich in nitrate and phosphate (but depleted in silicates). The surface water pCO_2 increases north of the convergence in response to the increase in temperature.

An interesting feature is observed in the equatorial area along the 88°W meridian (P-19 section) (see Fig. 18). A pronounced minimum in salinity (as low as 31 PSU) and total CO_2 concentration (as low as 1780 μmol/kg) is observed between 2°N and 8°N in the Panama Basin area. On the other hand, all other properties change none or very little. Since this area receives over 100 cm/yr of rain fall, the low salinity and low CO_2 concentration may be attributed to the effect of dilution by rain water. Since both the total CO_2 and the alkalinity are proportionally reduced by dilution, the pCO_2 should be affected only by the effect of salinity changes on the dissociation constants and solubility of CO_2 in seawater. For a reduction of salinity from 35 to 31, the pCO_2 in seawater should be reduced by 14% or about 50 uatm. This is consistent with the observations made in the Panama Basin area (Fig. 18).

Using the data obtained during this investigation and others obtained since 1973 (e. g. Murphy et al., 1991; Rubin et al, 1996), distribution maps for the pCO_2 and total CO_2 concentration data in surface waters of the South Pacific and the Pacific sector of the Southern Ocean have been prepared. In Fig. 19, the surface water pCO_2 values are expressed as sea-air pCO_2 differences, and represent mean austral summer values between October and April during the twenty-year period, 1973 through 1993. Positive values indicate that the ocean water is a source for atmospheric CO_2, whereas negative values indicate that the ocean is a CO_2 sink. Fig. 19 shows that the equatorial belt (5°N-10°S) is a strong source for atmospheric CO_2 as has been documented before by many others, and that the high latitude

Fig. 19 Mean summer distribution of the sea-air pCO_2 difference (μatm) during mid-October through April. This map represents a composite of the observations made during the twenty year period, 1973 through 1993 by the LDEO CO_2 group.

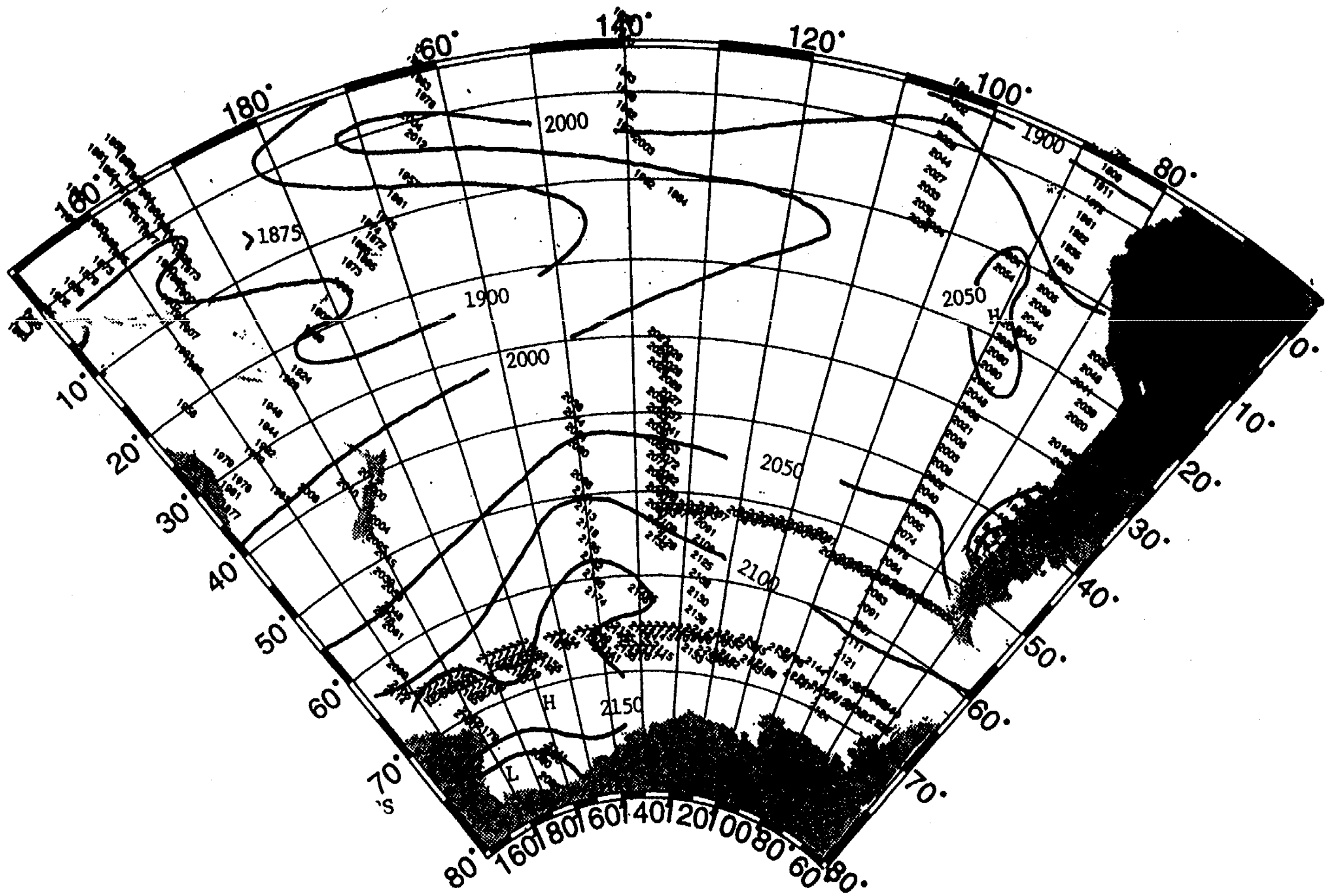


Southern Ocean areas south of 50°S are strong CO_2 sinks. Over the temperate and subtropical gyres between 10°S and 50°S, the areas east of about 130°W are CO_2 sources as first pointed out by Murphy et al. (1991), whereas those west of this longitude are CO_2 sinks. Since these two areas are similar in the area and have similar magnitude but opposite signs of sea-air pCO_2 values, the temperate-subtropical South Pacific Ocean as a whole is a neutral reservoir for atmospheric CO_2 during the austral summer months.

Fig. 20 represents the mean distribution of the total CO_2 concentration in surface waters during the austral summer months, mid-October through April. The highest values (greater than 2150 μmol/kg associated with 30 μmol/kg nitrate and 34.0 salinity) are found in the Antarctic and sub-Antarctic waters south of about 60°S. This is attributed to the upward mixing of deep waters rich in CO_2. On the other hand, surface waters located just north of the subtropical convergence have a total CO_2 concentration of about 2000 μmol/kg with nearly zero nitrate and a salinity of about 35.0. Normalizing the total CO_2 value for the polar water to a constant salinity of 35.0 and taking the difference from the subtropical water value, we obtain that the total CO_2 concentration in the polar water was reduced by about 213 μmol/kg as 30 μmol/kg nitrate was totally utilized. The total CO_2/nitrate ratio of 7.1 (= 213/30) thus estimated for the changes observed in the polar and subtropical waters is consistent with the classic Redfield ratio of 7.1 (= 106/15).

Consistent with the greater pCO_2 values in the temperate and sub-tropical gyre areas, the total CO_2 concentrations in the eastern half of the areas are greater than those in the western half by about 50 μmol/kg. This may be attributed to the fact that the western areas are supplied by the southward flow of the western equatorial waters depleted of nutrients and low in CO_2, whereas the eastern areas are supplied by the northward flow of the sub-Antarctic waters rich in nutrients and CO_2.

Fig. 20 Mean summer distribution of the total CO_2 concentration (μmol/kg) in surface seawaters during mid-October through April. This map represents a composite of the observations made during the nine year period, 1984 through 1993 by the LDEO CO_2 group.



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7. DATA TABLES

7-a) Surface Data

The following quantities are given in this table. The salinity, temperature, the concentrations of oxygen, phosphate, nitrate and silicates were measured by the staff of ODF/SIO.

Station No.	=	The WOCE station number.
WOCE LINE	=	Designation of WOCE lines.
Date	=	Sampling date given in MM/DD/YY.
Lat	=	Latitude in degrees and minutes.
Long	=	Longitude in degrees and minutes.
InSitu Temp	=	The in situ temperature of water in °C.
Sal	=	Salinity in PS scale (o/oo).
Seawater pCO2 20 Deg.	=	pCO_2 (µatm) in seawater measured at 20.0°C.
Seawater pCO2 inSitu	=	pCO_2 (µatm) in seawater corrected to the in situ temperature.
Atmosphere VCO2	=	Mole fraction concentration (ppm) of CO_2 in dry air.
Atmosphere pCO2	=	Partial pressure of CO_2 (µatm) in the atmosphere saturated with water vapor at the seawater temperature under the barometric pressure of 990 mb.
Delta pCO2 sw-air	=	Difference between the pCO_2 in seawater and that in the overlying atmosphere (µatm). Positive values indicate that the seawater is supersaturated with respect to atmospheric CO_2, and negative values indicate that the seawater is undersaturated.
TCO2	=	The total CO_2 concentration in seawater (µmol/kg).
Oxy, PO4, NO3, SiO3	=	The concentrations (µmol/kg) of dissolved oxygen, phosphate, nitrate and silicate in seawater.
Alkalinity Total	=	Total alkalinity (µeq/kg) computed using the total CO_2 concentration and pCO_2 data.
Alkalinity Pot.	=	Potential alkalinity (µeq/kg), [Total alkalinity]+[Nitrate].

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Source File = JUNOSFC
Leg 9 WOCE P16/P17 RV Knorr

Alk)s=35 = TALK * (35/sal)
Pot. Alkalinity = Total Alkalinity + NO3

pCO2 of air calculated from VCO2 of dry air at 100% relative humidity using the mean for this leg.

Sta No.	WOCE LINE	Date MM/DD/YY	Lat DD-MM	Long DDD-MM	InSitu Temp Deg C	Sal o/oo	Seawater pCO2 (uatm) InSitu	Seawater pCO2 (uatm) 20 Deg	Atmosphere VCO2 ppm	Atmosphere pCO2 uatm	Delta pCO2 sw-air uatm	TCO2 (umol/kg)	Oxy (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	Alkalinity (ueq/kg) Total	Alkalinity (ueq/kg) Pot.	Alkalinity (ueq/kg) s=35
1	P16	10/ 8/92	21-30S	148-30W	26.27	36.106	319	245	355	343	-24	2001	205	0.19	0.1	2.8	2393	2393	2320
2	P16	10/10/92	31-59S	147-59W	17.31	35.301	314	352	355	349	-35	2029	240	0.12	0.0	1.6	2322		2302
3	P16	10/12/92	37-30S	150-29W	12.79	34.355	317	430	355	350	-33	2037	266	0.33	1.3	1.1	2279	2280	2322
5	P16	10/12/92	38-30S	150-30W	12.50	34.314			355			2039	268	0.37	2.0	1.6			
6	P16	10/14/92	39- 2S	150-32W	12.28	34.357	314	436	355	350	-36	2045	270	0.36	1.9	1.7	2285	2287	2328
8	P16	10/14/92	40- 1S	150-31W	11.84	34.342	313	442	355	350	-37	2048	271	0.41	2.5	1.8	2285	2287	2328
9	P16	10/14/92	40-31S	150-31W	11.74	34.309	313	444	355	351	-38	2044	272	0.47	3.1	2.0	2280	2283	2326
10	P16	10/15/92	41- 0S	150-30W	11.48	34.280	316	454	355	351	-34	2040	274	0.50	3.7	2.0	2270	2274	2318
11	P16	10/15/92	41-30S	150-31W	11.05	34.306	318	464	355	351	-33	2052	274	0.51	4.4	1.8	2279	2283	2325
12	P16	10/15/92	41-60S	150-30W	11.12	34.323	314	457	355	351	-37	2053	272	0.49	3.9	1.8	2284	2288	2329
13	P16	10/15/92	42-30S	150-30W	10.47	34.279	317	475	355	351	-33	2058	278	0.60	5.7	2.2	2281	2287	2329
14	P16	10/16/92	42-60S	150-30W	9.84	34.056			355					0.71	7.6	2.2			
15	P16	10/16/92	43-30S	150-32W	10.06	34.257	324	493	355	351	-27	2060	281	0.68	7.0	2.1	2275	2282	2324
16	P16	10/16/92	44- 2S	150-31W	9.56	34.278			355										
17	P16	10/17/92	44-30S	150-30W	9.39	34.269	325	508	355	351	-27	2069	284	0.78	8.6	2.2	2280	2288	2328
18	P16	10/17/92	45- 2S	150-29W	9.51	34.272			355										
19	P16	10/17/92	45-30S	150-30W	9.44	34.265			355										
20	P16	10/17/92	46- 0S	150-30W	9.27	34.302			355										
21	P16	10/18/92	46-30S	150-29W	9.04	34.270			355			2080							
22	P16	10/18/92	47- 0S	150-29W	8.99	34.289			355			2085							
23	P16	10/19/92	47-30S	150-29W	8.38	34.457			355										
24	P16	10/19/92	48- 1S	150-29W	8.35	34.467	336	550	355	351	-15	2086	288	0.89	10.9	3.6	2285	2296	2320
26	P16	10/19/92	49- 0S	150-29W	8.16	34.489	344	568	355	351	-7	2096	286	1.01	12.9	4.4	2291	2304	2325
27	P16	10/20/92	49-31S	150-30W	8.03	34.497			355			2099							
28	P16	10/20/92	50- 1S	150-29W	7.93	34.507	365	608	355	351	14	2102	284	1.09	14.2	5.4	2285	2299	2317
29	P16	10/21/92	50-31S	150-26W	7.06	34.419	355	614	355	352	3	2109	291	1.29	17.1	7.0	2291	2308	2329
30	P16	10/21/92	50-60S	150-31W	6.98	34.400			355				289	1.31	17.8	7.1			
31	P16	10/21/92	51-29S	150-30W	6.85	34.395	380	663	355	352	28	2111	284	1.32	17.8	7.1	2279	2297	2319
32	P16	10/22/92	51-59S	150-29W	7.36	34.453			355										
33	P16	10/22/92	52-31S	150-28W	6.16	34.308	354	636	355	352	2	2115	294	1.39	19.2	7.8	2291	2310	2337
34	P16	10/23/92	53- 2S	150-29W	6.05	34.301	361	652	355	352	9	2108	297	1.39	19.1	7.7	2279	2298	2326
35	P16	10/23/92	53-30S	150-29W	6.25	34.326	361	645	355	352	9	2114	293	1.38	19.1	8.0	2288	2307	2333
36	P16	10/23/92	53-60S	150-29W	4.85	34.146	351	667	355	352	-1	2118	305	1.54	21.3	8.5	2285	2306	2342
37	P16	10/24/92	54-29S	150-30W	4.15	34.065	349	682	355	352	-3	2118	311	1.58	22.3	8.9	2281	2303	2344
38	P16	10/24/92	54-59S	150-30W	2.86	33.959	351	725	355	353	-1	2130	320	1.74	24.4	11.4	2284	2309	2354
39	P16	10/25/92	55-30S	150-30W	3.04	33.968	352	721	355	353	-1	2130	320	1.71	24.3	11.4	2285	2309	2354
40	P16	10/25/92	56- 1S	150-30W	2.71	33.953	351	729	355	353	-2	2130	322	1.75	24.8	11.9	2283	2308	2354
41	P16	10/25/92	56-30S	150-29W	2.05	33.925	349	745	355	353	-4	2133	329	1.85	25.6	14.2	2283	2309	2356
42	P16	10/25/92	56-60S	150-29W	0.87	33.923	352	791	355	353	-1	2147	338	1.88	27.0	22.2	2289	2316	2362

Source File = JUNOSFC
Leg 9 WOCE P16/P17 RV Knorr

Alk)s=35 = TALK * (35/sal)
Pot. Alkalinity = Total Alkalinity + NO3

pCO2 of air calculated from VCO2 of dry air at 100% relative humidity using the mean for this leg.

Sta No.	WOCE LINE	Date MM/DD/YY	Lat DD-MM	Long DDD-MM	InSitu Temp Deg C	Sal o/oo	Seawater pCO2 (uatm) InSitu	Seawater pCO2 (uatm) 20 Deg	Atmosphere VCO2 ppm	Atmosphere pCO2 uatm	Delta pCO2 sw-air uatm	TCO2 (umol/kg)	Oxy (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	Alkalinity (ueq/kg) Total	Alkalinity (ueq/kg) Pot.	Alkalinity (ueq/kg) s=35
43	P16	10/26/92	57-30S	150-30W	0.55	33.940	353	803	355	353	0	2153	342	1.91	27.5	26.2	2294	2322	2366
44	P16	10/26/92	58- 0S	150-30W	-0.71	33.946	352	845	355	353	-1	2163	354	1.93	28.2	42.4	2298	2326	2369
45	P16	10/26/92	58-30S	150-29W	-1.01	33.984	354	861	355	353	1	2170	354	1.94	28.4	47.7	2303	2331	2372
46	P16	10/26/92	59- 1S	150-30W	-1.09	34.202	375	915	355	353	22	2189	346	1.98	28.6	63.2	2316	2344	2370
48	P16	10/27/92	59-59S	150-32W	-1.25	34.156			355										
49	P16	10/27/92	60-30S	150-30W	-1.48	34.093	356	884	355	353	3	2186	355	1.91	27.3	63.4	2317	2344	2378
50	P16	10/27/92	61- 0S	150-32W	-1.55	34.025	347	863	355	353	-6	2172	357	1.89	26.8	61.5	2306	2332	2372
51	P16	10/28/92	61-30S	150-31W	-1.59	34.016	349	869	355	353	-5	2174	358	1.90	27.0	62.3	2307	2334	2373
52	P16	10/28/92	62- 0S	150-30W	-1.68	34.001	347	868	355	353	-6	2175	357	1.91	27.0	62.3	2307	2334	2375
53	P16	10/28/92	62-30S	150-30W	-1.78	34.003	350	878	355	353	-4	2176	354	1.92	27.1	62.1	2307	2334	2374
54	P16A	10/30/92	62-14S	145- 2W	-1.74	33.812	325	815	355	353	-28	2157	359	1.76	25.3	51.6	2296	2321	2376
55	P16A	10/30/92	62-15S	140- 1W	-0.48	34.003	350	832	355	353	-3	2167	348	1.86	27.0	49.1	2305	2332	2372
56	P16A	11/ 1/92	62-27S	135- 6W	-0.28	33.997	353	833	355	353	0	2165	348	1.86	27.2	45.0	2302	2330	2370
57	P16A	11/ 1/92	62-24S	136- 0W	-0.51	33.926	338	806	355	353	-15	2155	353	1.79	26.5	44.3	2296	2322	2368
58	P16A	11/ 1/92	62-11S	136-48W	-0.25	33.985	344	811	355	353	-9	2161	348	1.84	27.0	42.6	2302	2329	2371
59	P16A	11/ 2/92	61-54S	137-44W	-0.32	33.995	349	825	355	353	-4	2165	350	1.85	27.1	46.6	2304	2331	2372
60	P16A	11/ 2/92	61-37S	138-34W	-0.36	33.983	351	832	355	353	-1	2163	351	1.85	27.3	46.8	2300	2327	2369
61	P16A	11/ 2/92	61-21S	139-34W	-0.62	34.005	345	826	355	353	-8	2166	349	1.82	26.6	51.7	2305	2332	2372
62	P16A	11/ 2/92	61- 4S	140-27W	-0.42	34.013	352	836	355	353	-1	2169	350	1.86	27.3	51.3	2307	2334	2374
63	P16A	11/ 3/92	60-46S	141-18W	-0.27	33.985	352	829	355	353	-1	2161	350	1.82	27.0	47.7	2299	2326	2367
64	P16A	11/ 3/92	60-27S	142- 8W	-0.73	33.923	340	816	355	353	-13	2159	357	1.76	25.8	50.9	2298	2324	2371
65	P16A	11/ 3/92	60-10S	143- 6W	-0.64	33.989	345	826	355	353	-8	2164	353	1.80	26.6	51.9	2302	2329	2371
66	P16A	11/ 3/92	59-50S	143-48W	-0.62	33.971	349	835	355	353	-4	2163	356	1.82	26.7	53.7	2300	2327	2370
67	P16A	11/ 4/92	59-31S	144-38W	-0.59	33.975	345	825	355	353	-8	2166	357	1.78	26.2	54.4	2305	2331	2374
68	P16A	11/ 4/92	59-12S	145-24W	-0.70	33.933	342	821	355	353	-11	2163	359	1.77	25.7	55.2	2302	2328	2374
69	P16A	11/ 4/92	58-53S	146-11W	-0.71	33.924	340	816	355	353	-13	2164	359	1.76	25.8	55.3	2304	2330	2377
70	P16A	11/ 4/92	58-31S	146-58W	-0.80	33.905	338	814	355	353	-15		360	1.74	25.6	55.0			
71	P16A	11/ 5/92	58-12S	147-39W	-0.67	34.120	356	854	355	353	3	2179	357	1.86	27.5	58.8	2315	2342	2374
72	P16A	11/ 6/92	56-58S	140-49W	0.66	33.935	347	787	355	353	-6	2154	350	1.81	27.2	31.1	2299	2326	2371
73	P17	11/ 7/92	56- 2S	135- 2W	1.95	33.952	356	764	355	353	4	2139	333	1.79	26.2	18.6	2286	2312	2356
74	P17	11/ 7/92	55-30S	135- 1W	2.55	33.945	358	749	355	352	6	2128	328	1.73	25.0	13.5	2277	2302	2347
75	P17	11/ 7/92	55- 0S	135- 0W	2.77	33.939	351	727	355	352	-2	2128	327	1.72	24.7	12.2	2282	2306	2353
76	P17	11/ 7/92	54-30S	135- 0W	3.17	33.921	343	692	355	352	-9	2121	330	1.58	23.0	16.2	2281	2304	2354
77	P17	11/ 8/92	54- 0S	134-59W	5.04	34.152	353	665	355	352	1	2115	312	1.52	21.5	9.3	2283	2304	2339
78	P17	11/ 8/92	53-30S	135- 1W	7.01	34.391	340	589	355	352	-12	2100	301	1.22	16.7	5.8	2289	2305	2329
79	P17	11/ 8/92	53- 0S	134-59W	7.29	34.422	345	590	355	351	-7	2100	294	1.21	16.1	6.0	2289	2305	2327
80	P17	11/ 9/92	52-31S	135- 0W	8.03	34.439	341	566	355	351	-10	2092	292	1.01	13.0	4.6	2286	2299	2323
81	P17	11/ 9/92	52- 1S	134-59W	7.91	34.432	342	570	355	351	-10	2091	293	1.02	13.1	4.6	2284	2297	2322
82	P17	11/ 9/92	51-31S	135- 0W	7.97	34.427	341	567	355	351	-11	2090	290	0.99	13.1	4.5	2283	2297	2321

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Leg 9 WOCE P16/P17 RV Knorr

Alk)s=35 = TALK * (35/sal)

Pot. Alkalinity = Total Alkalinity + NO3

pCO2 of air calculated from VCO2 of dry air at 100% relative humidity using the mean for this leg.

Sta No.	WOCE LINE	Date MM/DD/YY	Lat DD-MM	Long DDD-MM	InSitu Temp Deg C	Sal o/oo	Seawater pCO2 (uatm) InSitu	Seawater pCO2 (uatm) 20 Deg	Atmosphere VCO2 ppm	Atmosphere pCO2 uatm	Delta pCO2 sw-air uatm	TCO2 (umol/kg)	Oxy (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	Alkalinity (ueq/kg) Total	Alkalinity (ueq/kg) Pot.	Alkalinity (ueq/kg) s=35
83	P17	11/10/92	51- 0S	135- 0W	7.70	34.441	350	588	355	351	-2	2101	289	1.11	15.0	5.7	2290	2305	2327
84	P17	11/10/92	50-30S	135- 1W	7.88	34.437	372	621	355	351	20	2094	289	1.09	14.3	5.1	2271	2286	2308
85	P17	11/10/92	50- 0S	134-60W	8.01	34.423	340	565	355	351	-11	2090	290	0.99	12.9	4.2	2284	2297	2322
86	P17	11/10/92	49-30S	135- 0W	8.27	34.415	345	566	355	351	-7	2085	293	0.97	12.6	4.3	2279	2291	2317
87	P17	11/11/92	49- 0S	134-57W	8.40	34.390	337	550	355	351	-14	2082	290	0.92	11.8	3.6	2280	2292	2320
88	P17	11/11/92	48-30S	135- 0W	8.55	34.365	329	535	355	351	-22	2083	291	0.90	11.1	3.5	2286	2298	2329
89	P17	11/11/92	47-59S	134-59W	8.86	34.305	331	530	355	351	-20	2081	288	0.88	10.9	3.3	2285	2296	2331
90	P17	11/12/92	47-30S	135- 0W	8.96	34.277	328	524	355	351	-23	2076	287	0.86	10.5	2.7	2282	2293	2330
91	P17	11/12/92	46-59S	134-60W	8.83	34.281	332	532	355	351	-19	2075	288	0.87	10.6	2.7	2277	2288	2325
92	P17	11/12/92	46-29S	135- 1W	9.19	34.229	332	525	355	351	-19	2071	286	0.89	10.8	2.7	2275	2286	2327
93	P17	11/12/92	45-60S	134-60W	9.11	34.255	354	561	355	351	3	2073	288	0.89	10.8	3.3	2265	2276	2315
94	P17	11/13/92	45-30S	134-59W	9.30	34.214	325	511	355	351	-26	2069	285	0.89	10.7	2.9	2278	2289	2330
95	P17	11/13/92	45- 0S	134-59W	10.18	34.148	330	500	355	351	-21		279	0.80	9.1	2.6			
96	P17	11/14/92	44-30S	134-59W	10.46	34.118	333	498	355	351	-18	2059	277	0.79	9.1	2.2	2271	2280	2330
97	P17	11/14/92	44- 0S	135- 0W	10.46	34.125	336	503	355	351	-15	2059	276	0.78	9.1	2.1	2269	2278	2327
98	P17	11/14/92	43-30S	135- 0W	10.58	34.106	332	495	355	351	-19	2054	276	0.78	8.8	2.5	2267	2276	2326
99	P17	11/14/92	43- 0S	134-59W	11.26	34.120	325	470	355	350	-25	2047	274	0.64	6.6	2.2	2269	2275	2327
100	P17	11/15/92	42-30S	135- 0W	11.61	34.114	323	461	355	350	-27	2043	271	0.61	5.9	0.5	2268	2274	2326
101	P17	11/15/92	42- 1S	134-60W	12.02	34.155	328	459	355	350	-23	2038	268	0.53	4.6	2.1	2263	2267	2319
102	P17	11/15/92	41-30S	135- 0W	12.04	34.092	321	449	355	350	-29	2036	269	0.56	5.1	1.9	2264	2270	2325
103	P17	11/15/92	41- 0S	134-60W	12.09	34.098	323	451	355	350	-27	2039	270	0.60	5.6	2.0	2268	2273	2327
104	P17	11/16/92	40-31S	134-60W	12.42	34.114	328	453	355	350	-22	2039	268	0.53	4.6	1.8	2268	2273	2327
105	P17	11/16/92	40- 0S	134-59W	12.90	34.146	336	454	355	350	-14	2039	266	0.53	4.5	1.6	2268	2273	2325
106	P17	11/17/92	39-29S	135- 0W	13.33	34.158	329	436	355	350	-21	2034	264	0.44	3.3	1.7	2270	2274	2326
107	P17	11/17/92	38-59S	135- 0W	13.08	34.134	330	442	355	350	-20	2036	262	0.47	3.7	2.0	2270	2274	2327
109	P17	11/18/92	37-60S	134-60W	14.29	34.337	326	415	355	349	-24	2028	255	0.28	1.0	1.8	2276	2277	2320
110	P17	11/18/92	37-30S	134-59W	14.36	34.352	324	412	355	349	-25	2026	254	0.26	0.9	2.0	2275	2276	2318
111	P17	11/18/92	36-60S	134-60W	15.29	34.635	324	395	355	349	-25	2031	249	0.19	0.1	1.5	2292	2292	2316
112	P17	11/18/92	36-30S	134-60W	14.97	34.505	322	399	355	349	-27	2026	252	0.24	0.2	1.2	2283	2283	2315
113	P17	11/19/92	35-60S	134-60W	15.16	34.495	327	401	355	349	-22	2025	251	0.24	0.1	2.0	2280	2281	2314
114	P17	11/19/92	35-30S	134-59W	15.44	34.643	327	396	355	349	-22	2029	249	0.20	0.1	1.9	2289	2289	2313
115	P17	11/19/92	35- 0S	134-59W	16.94	34.992	326	371	355	348	-23	2029	242	0.14	0.1	2.3	2308	2308	2308
116	P17	11/20/92	34-30S	134-60W	16.91	35.009	329	372	355	348	-19	2031	241	0.15	0.1	1.9	2308	2308	2308
117	P17	11/20/92	33-60S	135- 0W	17.18	35.030	328	368	355	348	-21	2029	239	0.14	0.1	2.2	2309	2310	2307
118	P17	11/20/92	33-30S	135- 0W	17.30	35.063	329	369	355	348	-19	2024	240	0.14	0.1	2.0	2302	2303	2298
119	P17	11/20/92	33- 0S	135- 0W	17.56	35.120	323	359	355	348	-25	2027	239	0.14	0.2	2.4	2314	2314	2306
120	P17	11/21/92	30-60S	135-45W	19.26	35.466	327	338	355	347	-20	2024	231	0.10	0.1	1.8	2328	2328	2297
121	P16	11/21/92	28-59S	136-30W	20.87	35.636	319	308	355	346	-27	2016	225	0.11	0.1	2.5	2343	2343	2301
122	P16	11/22/92	27- 0S	138-45W	20.91	35.696	323	311	355	346	-23	2016	222	0.10	0.1	3.9	2341	2342	2296

Source File = JUNOSFC
Leg 9 WOCE P16/P17 RV Knorr

Alk)s=35 = TALK * (35/sal)
Pot. Alkalinity = Total Alkalinity + NO3

pCO2 of air calculated from VCO2 of dry air at 100% relative humidity using the mean for this leg.

Sta No.	WOCE LINE	Date MM/DD/YY	Lat DD-MM	Long DDD-MM	InSitu Temp Deg C	Sal o/oo	Seawater pCO2 (uatm) InSitu	Seawater pCO2 (uatm) 20 Deg	Atmosphere VCO2 ppm	Atmosphere pCO2 uatm	Delta pCO2 sw-air uatm	TCO2 (umol/kg)	Oxy (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	Alkalinity (ueq/kg) Total	Alkalinity (ueq/kg) Pot.	Alkalinity (ueq/kg) s=35
123	P16	11/23/92	25-60S	139-55W	21.95	35.774	320	295	355	346	-25	2013	220	0.11	0.1	3.2	2352	2352	2301
124	P16	11/23/92	25- 0S	141- 5W	23.15	35.967	322	281	355	345	-24	2011	213	0.12	0.1	3.7	2365	2365	2301
125	P16	11/23/92	23-59S	142- 9W	23.74	36.014	318	271	355	345	-27	2012	212	0.14	0.0	3.2	2377		2310
126	P16	11/24/92	22-60S	143-20W	25.14	36.162	331	263	355	344	-13	2007	207	0.16	0.1	3.3	2380	2380	2303
127	P16	11/24/92	21-59S	144-25W	24.55	36.046	323	267	355	344	-21	2005	208	0.15	0.1	3.9	2372	2372	2303

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Source File = JUNOSFC
Leg 10 WOCE P17E/P19S R/V Knorr

Alk)s=35 = TALK * (35/sal)
Pot. Alkalinity = Total Alkalinity + NO3

pCO2 of air calculated from VCO2 of dry air at 100% relative humidity using the mean for this leg.

Sta No.	WOCE LINE	Date MM/DD/YY	Lat DD-MM	Long DDD-MM	InSitu Temp Deg C	Sal o/oo	Seawater pCO2 (uatm) InSitu	Seawater pCO2 (uatm) 20 Deg	Atmosphere VCO2 ppm	Atmosphere pCO2 uatm	Delta pCO2 sw-air uatm	TCO2 (umol/kg)	Oxy (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	Alkalinity (ueq/kg) Total	Alkalinity (ueq/kg) Pot.	Alkalinity (ueq/kg) s=35
128	P17E	12/14/92	52-30S	135- 0W	7.60	34.366	297	502	355	351	-54	2077	318	0.90	13.2	1.5	2292	2305	2334
129	P17E	12/14/92	52-30S	134-11W	7.76	34.405	314	526	355	351	-38	2079	310	0.92	13.1	2.0	2285	2298	2325
130	P17E	12/14/92	52-30S	133-21W	7.64	34.387	305	514	355	351	-46	2079	311	0.94	9.9	2.5	2290	2300	2331
131	P17E	12/14/92	52-30S	132-32W	8.29	34.456	330	542	355	351	-21	2086	297	0.95	8.2	1.8	2288	2296	2324
132	P17E	12/15/92	52-30S	131-43W	8.04	34.447	335	555	355	351	-16	2087	299	1.01	11.6	1.7	2285	2296	2321
133	P17E	12/15/92	52-30S	130-54W	7.72	34.447	351	590	355	351	0	2094	291	1.11	13.9	4.4	2281	2295	2318
134	P17E	12/16/92	52-29S	130- 4W	7.74	34.446	349	586	355	351	-2	2093	292	1.01	14.0	3.2	2281	2295	2318
135	P17E	12/16/92	52-30S	129-15W	7.38	34.410			355			2093	297	1.04	15.0	1.4			
136	P17E	12/16/92	52-30S	128-26W	7.40	34.407	342	582	355	351	-10	2090	300	1.08	14.7	1.4	2278	2293	2318
137	P17E	12/16/92	52-30S	127-36W	7.48	34.410	345	585	355	351	-6	2096	298	1.09	15.0	1.5	2285	2300	2324
138	P17E	12/17/92	52-30S	126-47W	7.72	34.432			355			2092	295	1.06	14.6	2.2			
139	P17E	12/17/92	52-30S	125-59W	7.78	34.420	345	579	355	351	-6	2103	295	1.04	14.0	1.5	2294	2308	2333
140	P17A	12/17/92	53- 0S	126- 0W	7.40	34.361	327	558	355	351	-24	2088	302	1.03	14.5	0.7	2284	2298	2326
141	P17A	12/17/92	53-30S	126- 0W	7.30	34.391	342	585	355	351	-9	2093	300	1.12	15.7	0.0	2281	2296	2321
142	P17A	12/18/92	54- 0S	125-60W	7.30	34.384	343	587	355	351	-8	2091	301	1.14	15.2	1.7	2279	2294	2319
143	P17A	12/18/92	54-30S	126- 0W	7.17	34.403	351	603	355	351	-1	2093	298	1.14	15.6	2.6	2276	2291	2315
144	P17A	12/18/92	55- 2S	125-60W	7.01	34.396	349	604	355	351	-3	2100	296	1.17	15.9	2.7	2284	2300	2324
145	P17A	12/18/92	55-30S	125-60W	6.47	34.291	330	585	355	351	-21	2097	307	1.20	16.4	2.8	2286	2302	2333
146	P17A	12/19/92	56- 0S	125-60W	4.43	34.004	347	671	355	352	-4	2114	319	1.54	21.9	5.7	2279	2301	2345
147	P17A	12/19/92	56-30S	125-60W	4.33	34.090	328	636	355	352	-24	2106	326	1.39	20.3	6.3	2280	2300	2341
148	P17A	12/19/92	56-60S	125-60W	4.64	34.153	334	639	355	352	-18	2112	321	1.36	20.0	7.1	2286	2306	2342
149	P17A	12/20/92	57-30S	125-60W	4.06	34.089	341	669	355	352	-11	2125	319	1.53	21.4	7.5	2293	2314	2354
150	P17A	12/20/92	57-60S	126- 0W	3.51	34.075	347	697	355	352	-4	2129	319	1.59	22.3	8.8	2289	2312	2351
151	P17A	12/20/92	58-30S	126- 0W	3.40	34.069	346	698	355	352	-6	2126	321	1.60	22.5	8.7	2286	2308	2348
152	P17A	12/20/92	58-59S	126- 0W	3.50	34.072	348	700	355	352	-3	2120	320	1.53	21.7	6.6	2279	2300	2341
153	P17A	12/22/92	59-35S	126- 6W	3.07	34.014	345	706	355	352	-7	2120	321	1.60	23.0	8.6	2278	2301	2344
154	P17A	12/22/92	60- 0S	126- 0W	1.10	33.928	348	774	355	352	-4	2143	339	1.78	25.5	22.4	2288	2314	2360
155	P17A	12/22/92	60-30S	126- 0W	1.08	33.923	349	776	355	352	-4	2144	340	1.78	25.6	27.2	2289	2314	2361
156	P17A	12/23/92	60-60S	126- 0W	1.63	33.969			355				337	1.65	26.5	15.1			
157	P17A	12/23/92	61-40S	126- 0W	1.93	33.960	338	726	355	352	-14	2129	336	1.63	24.4	13.1	2283	2307	2353
158	P17A	12/24/92	62-20S	126- 5W	1.88	33.980	332	714	355	352	-20	2128	337	1.61	23.9	12.7	2284	2308	2353
159	P17A	12/24/92	62-59S	126- 0W	1.90	34.001	333	716	355	352	-19	2132	337	1.62	24.1	13.5	2289	2313	2356
160	P17A	12/24/92	63-40S	126- 0W	0.93	33.915	327	732	355	352	-26	2138	345	1.60	24.0	18.9	2292	2316	2365
161	P17A	12/25/92	64-20S	126- 0W	1.21	33.935	332	734	355	352	-21	2136	341	1.65	24.6	17.1	2288	2313	2360
162	P17A	12/25/92	65- 0S	125-60W	0.99	33.933	325	726	355	352	-27	2133	344	1.62	24.2	15.5	2287	2311	2359
163	P17A	12/25/92	65-39S	125-60W	-0.64	33.375	303	725	355	353	-50	2109	359	1.54	23.0	25.0	2258	2281	2368
164	P17A	12/26/92	66-20S	126- 3W	-1.52	32.938	277	689	355	353	-76	2076	366	1.41	21.2	22.4	2228	2249	2367
165	P17E	12/29/92	52- 2S	125-38W	8.04	34.424	331	549	355	351	-20	2091	297	1.03	13.4	1.4	2291	2304	2329
166	P17E	12/29/92	51-35S	125-18W	7.92	34.406	329	548	355	351	-22	2087	296	1.06	13.4	1.5	2286	2300	2326

Source File = JUNOSFC
Leg 10 WOCE P17E/P19S R/V Knorr

Alk)s=35 = TALK * (35/sal)
Pot. Alkalinity = Total Alkalinity + NO3

pCO2 of air calculated from VCO2 of dry air at 100% relative humidity using the mean for this leg.

Sta No.	WOCE LINE	Date MM/DD/YY	Lat DD-MM	Long DDD-MM	InSitu Temp Deg C	Sal o/oo	Seawater pCO2 (uatm) InSitu	Seawater pCO2 (uatm) 20 Deg	Atmosphere VCO2 ppm	Atmosphere pCO2 uatm	Delta pCO2 sw-air uatm	TCO2 umol/kg	Oxy umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	Alkalinity ueq/kg Total	Alkalinity ueq/kg Pot.	Alkalinity ueq/kg s=35
167	P17E	12/29/92	51- 7S	124-59W	7.65	34.387	322	542	355	351	-28	2084	303	1.08	14.2	1.2	2285	2299	2326
168	P17E	12/30/92	51-11S	124- 9W	7.73	34.398	325	546	355	351	-26	2085	301	1.07	13.9	1.0	2285	2299	2325
169	P17E	12/30/92	51-15S	123-20W	7.77	34.395	334	560	355	351	-17	2092	298	1.06	13.8	1.9	2288	2302	2329
170	P17E	12/30/92	51-18S	122-31W	8.35	34.362			355			2084	292	1.03	12.8	1.8			
171	P17E	12/30/92	51-22S	121-41W	7.91	34.369			355			2087	296	1.03	13.3	1.0			
172	P17E	12/31/92	51-26S	120-52W	7.82	34.343	333	558	355	351	-18	2085	296	1.09	14.0	1.0	2280	2294	2324
173	P17E	12/31/92	51-30S	120- 3W	7.68	34.325	334	563	355	351	-17	2088	295	1.13	14.2	1.9	2282	2296	2327
174	P17E	12/31/92	51-34S	119-14W	6.75	34.213	331	580	355	351	-20	2091	306	1.20	16.2	2.1	2280	2296	2332
175	P17E	12/31/92	51-38S	118-24W	6.88	34.199	337	583	355	351	-14	2090	303	1.24	15.9	1.7	2277	2293	2330
176	P17E	12/31/92	51-41S	117-35W	7.18	34.332	325	557	355	351	-26	2087	306	1.14	15.3	1.0	2283	2299	2328
177	P17E	1/ 1/93	51-45S	116-46W	7.89	34.296	338	564	355	351	-13	2089	290	1.15	14.0	1.2	2284	2298	2330
178	P17E	1/ 1/93	51-49S	115-56W	7.90	34.310	332	555	355	351	-18	2088	292	1.13	14.0	2.6	2285	2299	2331
179	P17E	1/ 1/93	51-53S	115- 7W	7.72	34.332	344	578	355	351	-7	2089	292	1.13	14.2	1.6	2279	2293	2323
180	P17E	1/ 1/93	51-57S	114-18W	7.64				355										
181	P17E	1/ 2/93	52- 1S	113-28W	8.07	34.332	335	555	355	351	-16	2084	291	1.06	13.4	1.8	2281	2294	2325
182	P17E	1/ 2/93	52- 5S	112-39W	7.92	34.331	339	565	355	351	-12	2087	291	1.08	13.7	2.1	2280	2294	2324
183	P17E	1/ 2/93	52- 8S	111-50W	7.87	34.336	343	574	355	351	-7	2088	290	1.09	13.8	2.2	2279	2293	2323
184	P17E	1/ 2/93	52-12S	111- 1W	7.44	34.319	346	589	355	351	-5	2093	293	1.17	14.8	1.7	2280	2295	2325
185	P17E	1/ 3/93	52-16S	110-11W	7.67	34.315	343	578	355	351	-7	2092	292	1.17	14.6	2.0	2282	2296	2327
186	P17E	1/ 3/93	52-20S	109-22W	7.62	34.298	341	576	355	351	-10	2092	291	1.16	14.5	2.1	2282	2297	2329
187	P17E	1/ 3/93	52-23S	108-33W	7.75	34.294	343	575	355	351	-8	2088	291	1.12	14.1	1.4	2279	2293	2325
188	P17E	1/ 4/93	52-28S	107-43W	7.27	34.318	343	588	354	351	-8	2092	293	1.16	14.9	2.8	2279	2294	2324
189	P17E	1/ 4/93	52-32S	106-36W	7.44	34.305	348	592	354	351	-3	2092	292	1.14	14.8	2.4	2278	2293	2324
190	P17E	1/ 4/93	52-38S	105-32W	7.77	34.300	351	589	354	351	0	2086	290	1.12	14.3	2.1	2272	2286	2318
191	P17E	1/ 5/93	52-44S	104-29W	7.60	34.295	344	582	354	351	-7	2088	292	1.15	14.6	2.3	2276	2291	2323
192	P17E	1/ 5/93	52-48S	103-20W	7.50	34.281	340	577	354	351	-11	2088	295	1.17	15.0	3.1	2277	2292	2325
193	P17E	1/ 5/93	52-53S	102-15W	7.65	34.278	343	578	354	351	-8	2087	296	1.14	14.6	2.4	2276	2291	2324
194	P17E	1/ 6/93	52-58S	101- 9W	7.67	34.259	344	579	354	351	-7	2087	299	1.15	14.6	2.6	2276	2290	2325
195	P17E	1/ 6/93	53- 3S	100- 3W	7.59	34.279	342	578	354	351	-9	2089	291	1.14	14.6	2.3	2278	2292	2326
196	P17E	1/ 6/93	53- 9S	98-57W	7.55	34.271	338	571	354	351	-13	2088	292	1.14	14.7	3.7	2280	2295	2328
197	P17E	1/ 6/93	53-14S	97-52W	7.84	34.229	348	581	354	351	-3	2087	289	1.15		2.7	2275		2326
198	P17E	1/ 7/93	53-19S	96-46W	7.77	34.238	343	575	354	351	-8	2087	291	1.14	14.2	2.6	2277	2291	2327
199	P17E	1/ 7/93	53-24S	95-40W	7.73	34.256	340	571	354	351	-11	2087	291	1.16	14.6	4.7	2278	2293	2328
200	P17E	1/ 7/93	53-29S	94-34W	7.84	34.235	340	569	354	351	-11	2088	290	1.12	14.8	2.7	2280	2295	2331
201	P17E	1/ 8/93	53-34S	93-29W	7.65	34.235	343	578	354	351	-8	2092	291	1.12	15.2	2.2	2281	2296	2332
202	P17E	1/ 8/93	53-40S	92-23W	7.77	34.241	345	579	354	351	-6	2091	290	1.15	15.0	2.1	2281	2296	2331
203	P17E	1/ 9/93	53-45S	91-17W	7.93	34.224	345	575	354	351	-6	2086	289	1.13	14.9	2.5	2276	2290	2327
204	P17E	1/ 9/93	53-50S	90-11W	7.95	34.227	345	574	354	351	-6	2086	290	1.15	15.0	2.9	2276	2291	2328
205	P17E	1/ 9/93	53-55S	89- 6W	7.75	34.227	346	580	354	351	-5	2090	291	1.14	15.3	2.4	2278	2293	2329

Source File = JUNOSFC
Leg 10 WOCE P17E/P19S R/V Knorr

Alk)s=35 = TALK * (35/sal)
Pot. Alkalinity = Total Alkalinity + NO3

pCO2 of air calculated from VCO2 of dry air at 100% relative humidity using the mean for this leg.

Sta No.	WOCE LINE	Date MM/DD/YY	Lat DD-MM	Long DDD-MM	InSitu Temp Deg C	Sal o/oo	Seawater pCO2 (uatm) InSitu	Seawater pCO2 (uatm) 20 Deg	Atmosphere VCO2 ppm	Atmosphere pCO2 uatm	Delta pCO2 sw-air uatm	TCO2 (umol/kg)	Oxy (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	Alkalinity (ueq/kg) Total	Alkalinity (ueq/kg) Pot.	Alkalinity (ueq/kg) s=35
206	P19	1/10/93	54- 0S	87-59W	7.90	34.212	344	575	354	351	-6	2086	290	1.11	15.4	1.7	2276	2291	2328
207	P19	1/10/93	54-30S	88- 0W	7.97	34.199	345	572	354	351	-6	2085	291	1.08	15.4	2.7	2276	2291	2329
208	P19	1/10/93	55- 0S	88- 0W	8.11	34.198	342	565	354	351	-9	2082	293	1.07	15.6	2.9	2274	2289	2327
209	P19	1/11/93	55-30S	88- 0W	7.94	34.195	340	566	354	351	-11	2080	295	1.06	15.4	1.8	2272	2287	2325
210	P19	1/11/93	56- 0S	88- 0W	7.89	34.189	334	558	354	351	-16	2081	298	1.08	15.4	1.4	2275	2290	2328
211	P19	1/11/93	56-30S	87-60W	7.98	34.195	340	566	354	351	-10	2082	295	1.11	14.9	1.0	2274	2289	2328
212	P19	1/11/93	56-60S	87-60W	8.00	34.239	345	573	354	351	-6	2090	292	1.18	14.4	2.1	2281	2296	2332
213	P19	1/12/93	57-30S	88- 0W	7.43	34.176	347	591	354	351	-3	2092	297	1.24	16.4	2.2	2277	2294	2332
214	P19	1/12/93	58- 0S	88- 0W	7.42	34.154	352	599	354	351	1	2093	294	1.20	17.3	2.7	2276	2293	2332
215	P19	1/12/93	58-30S	88- 0W	7.67	34.203	343	577	354	351	-8	2091	297	1.22	16.1	2.4	2281	2297	2334
216	P19	1/12/93	58-60S	87-60W	7.44	34.215	338	575	354	351	-13	2088	297	1.20	15.7	2.2	2278	2294	2330
217	P19	1/13/93	59-30S	87-60W	7.09	34.160	334	577	354	351	-17	2092		1.25	17.3	2.2	2282	2299	2338
218	P19	1/13/93	60- 0S	88- 0W	6.27	34.075	341	610	354	351	-10	2097	302	1.28	18.8	1.6	2276	2295	2338
219	P19	1/14/93	60-31S	88- 0W	5.88	34.056	337	611	354	351	-14	2098	306	1.35	19.6	1.9	2278	2298	2341
220	P19	1/14/93	61- 0S	88- 0W	5.50	34.059	337	622	354	351	-14	2102	308	1.39	20.1	1.6	2278	2298	2341
221	P19	1/14/93	61-40S	87-60W	4.97	34.009	327	617	354	351	-24	2101	315	1.30	20.3	1.0	2278	2298	2344
222	P19	1/14/93	62-20S	88- 0W	4.16	33.965	344	671	354	351	-8	2118	320	1.52	22.9	6.7	2283	2306	2352
223	P19	1/15/93	62-60S	88- 0W	4.00	33.937	351	691	354	351	0	2123	321	1.57	23.3	9.4	2284	2307	2355
224	P19	1/15/93	63-40S	87-60W	4.36	33.992	340	659	354	351	-12	2112	319	1.47	22.5	6.4	2280	2303	2348
225	P19	1/15/93	64-20S	87-60W	3.47	33.907			354			2129	325	1.69	24.3	15.7			
226	P19	1/15/93	64-60S	88- 0W	3.26	33.894	358	728	354	352	7	2129	327	1.70	24.6	16.7	2282	2307	2357
227	P19	1/16/93	65-40S	87-60W	2.42	33.744	351	740	354	352	0	2126	334	1.63	23.9	16.5	2275	2299	2360
228	P19	1/16/93	66-20S	88- 0W	2.13	33.693	339	723	354	352	-12	2122	336	1.51	22.9	12.4	2274	2297	2362
229	P19	1/16/93	67- 0S	87-60W	1.93	33.716	343	737	354	352	-9	2124	345	1.56	23.4	14.8	2274	2297	2360
230	P19	1/17/93	67-40S	87-60W	1.29	33.673	310	682	354	352	-42	2117	347	1.44	21.9	16.7	2279	2301	2369
231	P19	1/17/93	68-20S	88- 0W	1.16	33.771	311	690	354	352	-41	2127	345	1.59	21.5	43.3	2290	2312	2373
232	P19	1/17/93	68-52S	88- 2W	1.03	33.734	320	713	354	352	-32	2127	351	1.57	23.0	40.0	2284	2307	2370
233	P19	1/18/93	69-15S	88- 7W	0.94	33.687	334	740	354	352	-18	2124	348	1.60	24.2	43.1	2274	2298	2363

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Source File = JUNOSFC
Leg 12 WOCE P19C R/V Knorr

Alk)s=35 = TALK * (35/sal)
Pot. Alkalinity = Total Alkalinity + NO3

pCO2 of air calculated from VCO2 of dry air at 100% relative humidity using the mean for this leg.

Sta No.	WOCE LINE	Date MM/DD/YY	Lat DD-MM	Long DDD-MM	InSitu Temp Deg C	Sal o/oo	Seawater pCO2 (uatm) InSitu	Seawater pCO2 (uatm) 20 Deg	Atmosphere VCO2 ppm	Atmosphere pCO2 uatm	Delta pCO2 sw-air uatm	TCO2 (umol/kg)	Oxy (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	Alkalinity (ueq/kg) Total	Alkalinity (ueq/kg) Pot.	Alkalinity (ueq/kg) s=35
234	P17E	2/23/93	53- 2S	74-55W	11.42	31.250	286	411	354	349	-64	1887	289	0.61	2.7	1.3	2092	2094	2343
235	P17E	2/23/93	53- 5S	74-58W	10.62	33.440	317	471	354	350	-33	2023	281	0.88	8.7	2.0	2237	2246	2341
236	P17E	2/23/93	53- 7S	75- 1W	9.92	33.745	343	526	354	350	-7	2049	280	0.99	11.5	2.3	2248	2259	2331
237	P17E	2/24/93	53- 8S	75-11W	9.73	33.820	340	524	354	350	-10	2055	282	1.04	12.6	1.9	2255	2268	2334
238	P17E	2/24/93	53-12S	75-30W	10.53	33.594	320	478	354	350	-30	2028	281	0.85	8.6	1.8	2240	2249	2334
239	P17E	2/24/93	53-14S	75-58W	9.90	33.786	335	514	354	350	-15	2052	279	1.00	12.0	2.2	2255	2267	2336
240	P17E	2/24/93	53-17S	76- 6W	9.94	33.779			354			2050	279	1.00	12.0	1.9			
241	P17E	2/25/93	53-20S	76-35W	9.48	33.976	347	541	354	350	-3	2070	284	1.12	14.9	1.6	2267	2282	2335
241	P17E	2/25/93	53-21S	76-35W	9.48	33.976	347	541	354	350	-3	2070	284	1.12	14.9	1.6	2267	2282	2335
242	P17E	2/25/93	53-27S	77-10W	9.92	33.811	336	515	354	350	-14	2049	281	0.99	12.0	1.2	2252	2264	2331
243	P17E	2/25/93	53-36S	77-52W	9.80	33.851	343	528	354	350	-7	2057	282	1.05	13.1	1.6	2256	2269	2333
244	P17E	2/25/93	53-43S	78-32W	9.18	33.956	346	547	354	350	-4	2066	285	1.15	14.9	1.9	2261	2276	2330
245	P17E	2/26/93	53-51S	79-15W	9.08	33.987	412	655	354	350	62	2104							
246	P17E	2/26/93	54- 1S	79-60W	9.42	33.981	343	537	354	350	-7	2070	282	1.14	14.6	1.3	2269	2283	2337
247	P17E	2/26/93	53-60S	80-48W	9.08	34.018	403	640	354	350	53	2096							
248	P17E	2/26/93	53-60S	81-35W	9.16	34.049	342	542	354	350	-8	2064	284	1.18	15.7	2.0	2261	2276	2324
249	P17E	2/27/93	54- 0S	82-23W	9.07	34.070	351	558	354	350	1	2079	284	1.20	16.0	1.7	2273	2289	2335
250	P17E	2/27/93	54- 0S	83-11W	8.91	34.058	348	556	354	350	-3	2081	284	1.21	15.9	1.8	2276	2292	2339
251	P17E	2/27/93	53-60S	83-59W	9.12	34.046	350	555	354	350	0	2080	284	1.22	16.2	1.8	2275	2291	2338
252	P17E	2/27/93	54- 0S	84-46W	9.05	34.042	353	561	354	350	3	2081	285	1.22	16.2	1.9	2274	2290	2338
253	P17E	2/28/93	54- 0S	85-33W	8.88	34.093	345	552	354	350	-6	2078	285	1.18	15.7	2.0	2273	2289	2334
254	P17E	2/28/93	54- 0S	86-21W	8.58	34.134	344	558	354	350	-6	2086	286	1.17	15.8	2.5	2280	2296	2338
255	P17E	2/28/93	53-60S	87-10W	8.76	34.112	359	577	354	350	9	2084	285	1.17	15.1	2.1	2272	2287	2331
256	P19	3/ 1/93	53-60S	88- 0W	8.55	34.165	350	569	354	350	0	2084	287	1.13	14.9	2.5	2275	2290	2331
257	P19	3/ 1/93	53-30S	88- 1W					354										
258	P19	3/ 1/93	53- 0S	88- 1W	8.70	34.123	368	593	354	350	18	2085	285	1.19	15.9	2.2	2268	2284	2326
259	P19	3/ 2/93	52-30S	87-59W	8.87	34.165	360	576	354	350	9	2086	285	1.17	15.4	2.5	2276	2291	2331
260	P19	3/ 2/93	52- 0S	88- 2W	8.65	34.191	351	567	354	350	0	2086	287	1.13	15.2	2.8	2278	2293	2332
261	P19	3/ 2/93	51-30S	87-60W	9.16	34.135	370	585	354	350	20	2084	283	1.17	15.6	1.7	2270	2286	2327
262	P19	3/ 2/93	51- 0S	88- 2W	9.54	34.097	375	584	354	350	25	2080	283	1.19	15.7	3.4	2266	2282	2326
263	P19	3/ 3/93	50-30S	88- 0W	9.58	34.089	362	563	354	350	12	2079	282	1.16	15.8	2.1	2271	2287	2332
264	P19	3/ 3/93	50- 0S	88- 0W	9.67	34.084	362	560	354	350	12	2077	282	1.18	15.8	2.3	2270	2286	2331
265	P19	3/ 4/93	49-30S	87-60W	9.86	34.078	369	567	354	350	19	2080	281	1.18	15.9	2.1	2271	2287	2332
266	P19	3/ 4/93	49- 0S	88- 1W	9.94	34.076	367	561	354	350	17	2077	281	1.20	16.0	2.4	2269	2285	2331
267	P19	3/ 4/93	48-30S	87-59W	10.26	34.063	367	554	354	350	17	2077	279	1.21	16.1	2.2	2272	2288	2334
268	P19	3/ 4/93	48- 0S	87-59W	10.97	34.047	384	563	354	350	35	2072	275	1.21	16.3	2.9	2263	2279	2326
269	P19	3/ 4/93	47-31S	88- 1W	11.11	34.040	378	551	354	350	28	2074	272	1.20	16.2	3.0	2269	2286	2333
270	P19	3/ 5/93	47- 0S	88- 0W	11.03	34.034	384	562	354	350	35	2072	276	1.20	16.1	3.0	2263	2279	2327
271	P19	3/ 5/93	46-30S	88- 0W	11.22	34.031	377	547	354	350	28	2072	275	1.22	16.0	3.0	2268	2284	2333

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Source File = JUNOSFC
Leg 12 WOCE P19C R/V Knorr

Alk)s=35 = TALK * (35/sal)
Pot. Alkalinity = Total Alkalinity + NO3

pCO2 of air calculated from VCO2 of dry air at 100% relative humidity using the mean for this leg.

Sta No.	WOCE LINE	Date MM/DD/YY	Lat DD-MM	Long DDD-MM	InSitu Temp Deg C	Sal o/oo	Seawater pCO2 (uatm) InSitu	Seawater pCO2 (uatm) 20 Deg	Atmosphere VCO2 ppm	Atmosphere pCO2 uatm	Delta pCO2 sw-air uatm	TCO2 (umol/kg)	Oxy (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	Alkalinity (ueq/kg) Total	Alkalinity (ueq/kg) Pot.	Alkalinity (ueq/kg) s=35
272	P19	3/ 5/93	46- 0S	88- 1W	11.47	34.022	373	535	354	350	23	2068	273	1.16	15.6	2.6	2268	2283	2333
273	P19	3/ 6/93	45-30S	87-59W	12.13	33.996	377	526	354	349	27	2062	269	1.13	14.9	2.6	2265	2280	2331
274	P19	3/ 6/93	45- 1S	88- 0W	12.37	33.984	372	514	354	349	23	2058	268	1.12	14.7	2.5	2264	2279	2332
275	P19	3/ 6/93	44-30S	87-60W	12.59	33.987	376	515	354	349	27	2058	266	1.12	14.6	2.5	2264	2279	2331
276	P19	3/ 7/93	44- 0S	88- 1W	12.91	33.968	378	510	354	349	29	2057	264	1.09	14.3	3.0	2265	2280	2334
277	P19	3/ 7/93	43-30S	87-60W	13.22	33.958	378	503	354	349	29	2052	263	1.06	13.7	2.6	2261	2275	2331
278	P19	3/ 7/93	43- 0S	88- 0W	13.38	33.954	376	498	354	349	27	2050	262	1.05	13.4	2.4	2262	2275	2332
279	P19	3/ 7/93	42-31S	88- 0W	13.56	33.929	370	486	354	349	21	2048	261	1.03	13.3	2.5	2263	2277	2335
280	P19	3/ 8/93	42- 0S	88- 0W	14.90	33.931	379	470	354	349	30	2035	254	0.94	11.5	2.0	2256	2267	2327
281	P19	3/ 8/93	41-31S	88- 0W	14.70	33.933	377	472	354	349	29	2041	255	0.97	11.8	1.8	2262	2273	2333
282	P19	3/ 8/93	41- 0S	88- 0W	15.27	33.932	380	465	354	348	32	2035	252	0.92	11.2	1.9	2258	2269	2329
283	P19	3/ 8/93	40-30S	87-60W	15.98	33.928	379	449	354	348	31	2028	248	0.82	9.9	2.1	2257	2267	2329
284	P19	3/ 9/93	40- 0S	88- 0W	16.04	33.919	378	447	354	348	30	2029	248	0.83	9.8	2.0	2259	2268	2331
285	P19	3/ 9/93	39-30S	87-59W	16.37	33.902	376	438	354	348	28	2022	247	0.78	9.0	1.7	2255	2264	2328
286	P19	3/10/93	38-60S	87-60W	17.32	33.953	367	411	354	348	19	2008	242	0.59	6.1	1.6	2253	2259	2322
287	P19	3/10/93	38-30S	88- 0W	17.31	33.968	368	412	355	348	20	2012	242	0.59	6.0	2.2	2257	2263	2325
288	P19	3/10/93	37-60S	87-60W	17.88	33.963	373	408	355	347	25	2009	241	0.56	5.4	1.2	2255	2260	2324
289	P19	3/10/93	37-30S	88- 0W	19.36	33.982	383	394	355	347	36	2000	233	0.44	3.5	1.2	2252	2256	2320
290	P19	3/10/93	37- 1S	88- 0W	19.19	34.090	384	397	355	347	37	2009	236	0.49	4.3	1.1	2262	2267	2323
291	P19	3/11/93	36-30S	88- 0W	19.04	34.104	377	393	355	347	30	2011	236	0.49	4.2	1.2	2267	2271	2326
292	P19	3/11/93	36- 0S	87-60W	19.55	34.095	378	385	355	347	31	2002	233	0.38	2.8	1.2	2260	2263	2320
293	P19	3/11/93	35-30S	88- 0W	20.17	34.156	370	368	355	346	24	1998	229	0.32	1.6	1.3	2266	2268	2322
294	P19	3/11/93	34-60S	87-60W	20.56	34.203	380	371	355	346	34	2000	230	0.32	1.6	0.9	2267	2268	2319
295	P19	3/12/93	34-30S	87-60W	20.51	34.180	373	365	355	346	27	1999	230	0.32	1.7	1.6	2270	2272	2324
296	P19	3/12/93	34- 0S	87-60W	22.01	34.516	388	357	355	346	43	2005	223	0.22	0.3	1.3	2284	2285	2316
297	P19	3/12/93	33-30S	87-60W	22.32	34.801	393	356	355	345	47	2020	220	0.22	0.1	1.0	2304	2305	2318
298	P19	3/12/93	33- 0S	87-60W	22.34	34.760	395	358	355	345	50	2016	221	0.21	0.0	0.0	2298		2314
299	P19	3/13/93	32-30S	87-60W	22.57	34.783	403	362	355	345	58	2019	221	0.22	0.1	0.9	2300	2300	2315
300	P19	3/13/93	32- 0S	87-60W	22.60	34.749	399	358	355	345	54	2018	220	0.23	0.1	0.8	2301	2301	2317
301	P19	3/13/93	31-30S	87-60W	22.94	34.880	404	357	355	345	59	2023	218	0.22	0.1	1.3	2308	2308	2316
302	P19	3/13/93	31- 0S	87-60W	23.50	34.931	421	363	355	345	76	2023	216	0.22	0.0	0.5	2305		2310
303	P19	3/14/93	30-30S	87-60W	23.44	35.093	413	357	355	345	68	2030	216	0.22	0.2	1.8	2319	2319	2313
304	P19	3/14/93	29-60S	87-60W	23.36	35.198	414	359	355	345	69	2036	216	0.25	0.2	1.6	2325	2325	2312
305	P19	3/14/93	29-30S	87-60W	23.38	35.442	408	354	355	345	63	2048	215	0.27	0.2	1.2	2346	2346	2316
306	P19	3/14/93	29- 0S	88- 0W	23.69	35.354	413	353	355	345	68	2044	215	0.26	0.1	1.3	2341	2341	2317
307	P19	3/14/93	28-30S	88- 0W	23.71	35.445	416	356	355	345	72	2049	213	0.28	0.1	1.7	2345	2345	2315
308	P19	3/15/93	28- 0S	88- 0W	23.74	35.401	416	355	355	345	71	2048	216	0.28	0.0	1.1	2344		2317
309	P19	3/15/93	27-30S	87-60W	23.37	35.429	416	359	355	345	71	2043	217	0.29	0.0	1.7	2335		2306
310	P19	3/15/93	26-60S	87-60W	23.42	35.506	411	352	355	345	65	2052	215	0.30	0.1	1.3	2352	2352	2318

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Leg 12 WOCE P19C R/V Knorr

Alk)s=35 = TALK * (35/sal)
Pot. Alkalinity = Total Alkalinity + NO3

pCO2 of air calculated from VCO2 of dry air at 100% relative humidity using the mean for this leg.

Sta No.	WOCE LINE	Date MM/DD/YY	Lat DD-MM	Long DDD-MM	InSitu Temp Deg C	Sal o/oo	Seawater pCO2 (uatm) InSitu	Seawater pCO2 (uatm) 20 Deg	Atmosphere VCO2 ppm	Atmosphere pCO2 uatm	Delta pCO2 sw-air uatm	TCO2 (umol/kg)	Oxy (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	Alkalinity (ueq/kg) Total	Alkalinity (ueq/kg) Pot.	Alkalinity (ueq/kg) s=35
311	P19	3/15/93	26-30S	87-60W	23.30	35.421	411	357	355	345	66	2050	215	0.29	0.0	1.9	2345		2317
312	P19	3/16/93	26- 0S	87-60W	23.61	35.605	414	356	355	345	70	2058	215	0.33	0.2	2.5	2357	2357	2316
313	P19	3/16/93	25-35S	87-60W	23.48	35.533	413	356	355	345	68	2055	215	0.32	0.1	1.8	2352	2352	2317
314	P19	3/16/93	25-15S	88- 0W	23.61	35.566	415	357	355	345	71	2056	216	0.33	0.1	1.8	2353	2354	2316
315	P19	3/16/93	24-60S	88- 0W	23.34	35.595	404	351	355	345	59	2058	215	0.33	0.0	1.5	2360		2321
316	P19	3/16/93	24-45S	88- 0W	23.43	35.634	409	354	355	345	63	2059	215	0.34	0.1	2.3	2360	2360	2318
317	P19	3/17/93	24-20S	88- 0W	23.65	35.699	416	356	355	345	71	2058	217	0.31	0.1	1.7	2357	2358	2311
318	P19	3/17/93	23-60S	88- 0W	23.61	35.687	428	368	355	345	83	2065	215	0.31	0.1	1.9	2358	2358	2313
319	P19	3/17/93	23-29S	88- 0W	23.28	35.624	411	358	355	345	66	2059	215	0.35	0.1	1.4	2357	2357	2316
320	P19	3/17/93	22-60S	88- 0W	23.92	35.643	434	368	355	345	89	2062	211	0.37	0.1	1.5	2354	2354	2311
321	P19	3/18/93	22-29S	88- 0W	23.30	35.636	411	358	355	345	66	2062	217	0.35	0.1	1.6	2361	2361	2319
322	P19	3/18/93	21-59S	88- 0W	23.14	35.648	401	351	355	346	55	2059	217	0.33	0.1	1.7	2362	2362	2319
323	P19	3/18/93	21-30S	88- 0W	23.14	35.612	405	355	355	346	60	2058	217	0.33	0.0	0.9	2358		2317
324	P19	3/18/93	20-60S	88- 0W	23.29	35.622	401	349	355	345	56	2058	216	0.36	0.0	1.6	2362		2321
325	P19	3/18/93	20-30S	88- 0W	23.29	35.609	404	352	355	345	59	2057	216	0.34	0.1	1.9	2359	2359	2319
326	P19	3/19/93	19-60S	88- 0W	23.03	35.587			355			2056	216	0.35	0.1	1.9			
327	P19	3/19/93	19-32S	87-46W	23.69	35.700	401	344	355	345	56	2057	214	0.36	0.0	1.7	2366		2320
328	P19	3/20/93	19- 6S	87-32W	23.70	35.728	421	360	355	345	75	2062	214	0.38	0.1	2.2	2360	2360	2312
329	P19	3/20/93	18-38S	87-18W	24.24	35.942	403	337	356	345	58	2049	213	0.37	0.4	2.1	2363	2363	2301
330	P19	3/20/93	18-12S	87- 5W	24.61	35.930	382	314	356	345	37	2039	213	0.42	1.5	2.4	2370	2371	2308
331	P19	3/20/93	17-44S	86-52W	24.76	35.929			356										
332	P19	3/21/93	17-18S	86-38W	24.59	35.858	385	317	356	345	40	2040	214	0.41	0.1	2.3	2368	2368	2311
333	P19	3/21/93	16-51S	86-23W	24.40	35.910	382	317	356	345	37	2043	214	0.42	0.6	2.1	2372	2372	2312
334	P19	3/21/93	16-23S	86-11W	24.27	35.882	387	323	356	345	42	2043	214	0.44	0.7	3.1	2366	2367	2308
335	P19	3/21/93	15-55S	85-57W	24.67	35.895			356			2040	213	0.42	0.2	2.7			
336	P19	3/22/93	15-33S	85-53W	24.67	35.835	388	319	356	345	43	2045	208	0.46	0.2	2.6	2372	2372	2317
337	P19	3/22/93	15- 8S	85-50W	24.79	35.747	393	321	356	345	48	2046	211	0.42	0.1	1.7	2371	2371	2322
338	P19	3/22/93	14-33S	85-50W	25.35	35.841	380	303	356	345	36	2037	209	0.41	0.1	2.2	2375	2376	2320
339	P19	3/23/93	13-59S	85-50W	25.31	35.842	389	311	356	345	44	2041	209	0.44	0.2	1.9	2375	2375	2319
340	P19	3/23/93	13-30S	85-50W	25.31	35.834	385	307	356	345	40	2040	208	0.44	0.2	1.7	2375	2375	2320
341	P19	3/23/93	12-60S	85-50W	25.60	35.799	377	297	356	345	32	2024	208	0.46	1.8	1.6	2364	2366	2312
342	P19	3/23/93	12-29S	85-50W	26.20	35.845	394	303	356	344	50	2032	204	0.43	0.6	2.4	2369	2370	2313
343	P19	3/24/93	11-60S	85-50W	26.44	35.811	356	271	356	344	12	1998	208	0.33	1.0	1.8	2358	2359	2305
344	P19	3/24/93	11-29S	85-50W	26.43	35.728	366	279	356	344	22	2008	206	0.32	0.1	1.6	2361	2361	2313
345	P19	3/24/93	11- 0S	85-50W	27.02	35.696	323	240	356	344	-21	1963	210	0.24	0.3	2.0	2347	2348	2302
346	P19	3/24/93	10-30S	85-50W	27.39	35.623	335	245	356	343	-8	1962	208	0.27	0.1	2.7	2339	2339	2298
347	P19	3/25/93	9-60S	85-50W	27.50	35.140	323	235	356	344	-21	1944	211	0.23	0.1	2.1	2324	2324	2314
348	P19	3/25/93	9-30S	85-50W	27.38	34.565	357	261	356	344	13	1935	204	0.28	0.0	1.5	2279		2308
349	P19	3/25/93	9- 0S	85-50W	24.65	35.331	375	274	356	346	29	1974	209	0.53	2.9	2.5	2318	2321	2297
350	P19	3/25/93	8-30S	85-51W	27.14	34.376	384	284	356	344	41	1941	206	0.32	0.5	2.7	2263	2263	2304

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Leg 12 WOCE P19C R/V Knorr

Alk)s=35 = TALK * (35/sal)
Pot. Alkalinity = Total Alkalinity + NO3

pCO2 of air calculated from VCO2 of dry air at 100% relative humidity using the mean for this leg.

Sta No.	WOCE LINE	Date MM/DD/YY	Lat DD-MM	Long DDD-MM	InSitu Temp Deg C	Sal o/oo	Seawater pCO2 (uatm) InSitu	Seawater pCO2 (uatm) 20 Deg	Atmosphere VCO2 ppm	Atmosphere pCO2 uatm	Delta pCO2 sw-air uatm	TCO2 (umol/kg)	Oxy (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	Alkalinity (ueq/kg) Total	Alkalinity (ueq/kg) Pot.	Alkalinity (ueq/kg) s=35
351	P19	3/26/93	8- 0S	85-50W	27.52	34.833	394	287	356	344	51	1974	213	0.43	1.5	2.0	2305	2306	2316
352	P19	3/26/93	7-30S	85-49W	24.21	35.221	385	275	356	346	39	1968	176	0.71	5.6	3.6	2309	2315	2295
353	P19	3/26/93	7- 0S	85-50W	25.80	35.193	374	266	357	345	29	1968	188	0.58	4.4	3.4	2318	2323	2306
354	P19	3/27/93	6-30S	85-50W	28.47	34.631	407	284	357	343	64	1955	202	0.29	1.0	2.7	2282	2283	2306
355	P19	3/27/93	6- 0S	85-50W	26.32	34.585	432	334	357	345	87	1981	211	0.51	3.8	3.0	2275	2279	2302
356	P19	3/27/93	5-31S	85-50W	26.09	34.321	398	277	357	345	53	1885	206	0.59	5.5	4.0	2191	2197	2235
357	P19	3/28/93	5- 0S	85-50W	28.99	33.368	392	268	357	343	50	1885	203	0.18	0.0	2.9	2200		2308
358	P19	3/28/93	4-30S	85-50W	27.23	34.195	410	286	357	344	66	1924	222	0.26	0.3	2.3	2237	2237	2289
359	P19	3/28/93	4- 0S	85-50W	27.61	34.235	404	293	357	344	60	1944	222	0.23	0.0	2.8	2257		2307
360	P19	3/28/93	3-30S	85-50W	28.52	34.152	405	275	357	343	62	1926	213	0.19	0.1	1.8	2250	2250	2306
361	P19	3/29/93	2-60S	85-50W	28.56	34.258	417	290	357	343	73	1942	214	0.20	0.0	2.6	2257		2306
362	P19	3/29/93	2-40S	85-50W	28.89	34.511	435	290	357	343	92	1956	213	0.22	0.2	2.3	2277	2277	2309
363	P19	3/29/93	2-20S	85-49W	28.19	34.450	432	298	357	344	88	1953	216	0.23	0.1	2.1	2266	2266	2302
364	P19	3/29/93	1-60S	85-50W	28.41	34.544	418	293	357	343	74	1962	215	0.24	0.1	2.1	2282	2282	2312
365	P19	3/29/93	1-40S	85-50W	27.05	34.600	444	304	357	345	100	1970	216	0.37	2.1	3.3	2282	2284	2309
366	P19	3/30/93	1-20S	85-50W	25.78	34.685	420	303	357	346	75	1969	209	0.46	3.6	3.8	2281	2285	2302
367	P19	3/30/93	1- 0S	85-50W	26.92	34.568	434	324	357	345	89	1980	216	0.40	2.2	3.2	2279	2281	2308
368	P19	3/30/93	0-50S	85-50W	26.25	34.610			357			1984	209						
369	P19	3/30/93	0-40S	85-50W	25.62	34.611	446	327	357	346	100	1983	199	0.49	3.9	3.9	2280	2284	2305
370	P19	3/30/93	0-30S	85-50W	25.78	34.584	453	336	357	346	107	1986	201						
371	P19	3/30/93	0-20S	85-50W	26.27	34.580	453	330	357	345	108	1983	203	0.47	3.5	4.1	2278	2282	2306
372	P19	3/30/93	0-10S	85-50W	26.75	34.475			357			1976	213						
373	P19	3/30/93	0- 0N	85-50W	26.83	34.430	436	326	357	345	91	1974	215	0.38	2.3	3.3	2269	2271	2306
374	P19	3/31/93	0-10N	85-50W	27.42	34.336			357				219						
375	P19	3/31/93	0-20N	85-50W	27.10	34.266	433	320	357	345	88	1960	219	0.33	1.3	2.8	2255	2256	2303
376	P19	3/31/93	0-30N	85-50W	26.82	34.244	437	328	357	345	92	1960	218						
377	P19	3/31/93	0-40N	85-50W	26.78	34.185	419	315	357	345	74	1956	220	0.32	1.2	2.2	2253	2254	2307
378	P19	3/31/93	0-50N	85-50W	27.45	34.213			357				220						
379	P19	3/31/93	1- 0N	85-50W	27.26	34.189	436	321	357	345	91	1959	220	0.31	0.9	2.0	2253	2254	2306
380	P19	3/31/93	1-20N	85-50W	27.94	34.345	438	313	357	344	94	1960	217	0.30	1.0	2.7	2261	2262	2304
381	P19	4/ 1/93	1-40N	85-50W	28.88	34.270	460	316	358	344	116	1952	213	0.31	0.7	2.2	2249	2250	2297
382	P19	4/ 1/93	2- 0N	85-50W	28.09	33.659	409	283	358	344	64	1901	215	0.22	0.2	1.0	2206	2206	2294
383	P19	4/ 1/93	2-20N	85-50W	29.83	33.152	407	269	358	343	64	1867	199	0.14	0.3	1.7	2175	2176	2297
384	P19	4/ 1/93	2-40N	85-50W	29.04	32.877	378	251	358	344	34	1826	203	0.13	0.3	2.3	2137	2137	2275
385	P19	4/ 1/93	3- 0N	85-50W	30.14	32.328	391	255	358	343	48	1816	199	0.12	0.4	2.0	2119	2119	2294
386	P19	4/ 2/93	3-30N	85-51W	29.71	32.331	406	269	358	343	63	1808	200	0.11	0.2	1.8	2095	2095	2268
387	P19	4/ 2/93	3-60N	85-50W	29.69	32.248	409	271	358	343	66	1801	200	0.13	0.3	1.8	2084	2084	2262
388	P19	4/ 2/93	4-20N	86-12W	29.90	32.167	391	256	358	343	48	1806	198	0.10	0.2	1.9	2105	2105	2290
389	P19	4/ 2/93	4-41N	86-34W	29.73	32.414	407	266	358	343	63	1816	200	0.12	0.3	1.9	2109	2109	2277
390	P19	4/ 3/93	5- 1N	86-56W	28.63	32.366	393	273	358	344	48	1832	207	0.14	0.2	1.5	2122	2122	2295

Source File = JUNOSFC
Leg 12 WOCE P19C R/V Knorr

Alk)s=35 = TALK * (35/sal)
Pot. Alkalinity = Total Alkalinity + NO3

pCO2 of air calculated from VCO2 of dry air at 100% relative humidity using the mean for this leg.

Sta No.	WOCE LINE	Date MM/DD/YY	Lat DD-MM	Long DDD-MM	InSitu Temp Deg C	Sal o/oo	Seawater pCO2 (uatm) InSitu	Seawater pCO2 (uatm) 20 Deg	Atmosphere VCO2 ppm	Atmosphere pCO2 uatm	Delta pCO2 sw-air uatm	TCO2 (umol/kg)	Oxy (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	Alkalinity (ueq/kg) Total	Alkalinity (ueq/kg) Pot.	Alkalinity (ueq/kg) s=35
391	P19	4/ 3/93	5-21N	87-18W	29.41	31.903	388	258	358	344	45	1802	202	0.11	0.2	1.5	2095	2096	2299
392	P19	4/ 3/93	5-42N	87-41W	29.57	31.945	409	273	358	344	65	1810	199	0.11	0.2	1.3	2093	2093	2293
393	P19	4/ 3/93	6- 2N	88- 3W	29.77	32.182	395	262	358	343	52	1820	200	0.13	0.2	1.7	2117	2117	2302
394	P19	4/ 4/93	6-22N	88-25W	29.87	32.792	400	263	358	343	57	1849	196	0.15	0.2	1.4	2156	2156	2301
395	P19	4/ 4/93	6-43N	88-47W	28.99	33.218	410	280	358	344	66	1875	205	0.15	0.2	1.0	2175	2175	2291
396	P19	4/ 4/93	7- 3N	89- 9W	29.77	33.106	407	269	358	343	63	1864	205	0.14	0.2	1.4	2171	2171	2295
397	P19	4/ 5/93	7-23N	89-32W	27.72	34.032	398	268	359	345	52	1893	212	0.35	1.9	2.1	2212	2214	2275
398	P19	4/ 5/93	7-44N	89-54W	26.62	34.393	435	301	359	346	88	1943	200	0.58	5.2	4.3	2250	2255	2289
399	P19	4/ 5/93	8- 4N	90-16W	25.90	34.236	411	289	359	347	64	1945	184	0.57	4.4	3.2	2261	2266	2312
400	P19	4/ 5/93	8-24N	90-38W	26.01	34.281	424	294	359	347	77	1936	170	0.63	5.5	3.2	2247	2252	2294
401	P19	4/ 6/93	8-45N	91- 1W	26.47	34.396	411	289	359	347	64	1948	204	0.49	4.0	3.5	2266	2270	2306
402	P19	4/ 6/93	9- 5N	91-23W	27.61	34.059	411	279	359	346	65	1913	188	0.42	2.9	2.4	2229	2232	2291
403	P19	4/ 6/93	9-26N	91-45W	28.76	33.916	402	276	359	345	57	1915	199	0.20	0.2	1.4	2234	2234	2306
404	P19	4/ 6/93	9-46N	92- 9W	29.31	33.928	408	275	359	344	63	1909	200	0.19	0.2	1.8	2227	2227	2297
405	P19	4/ 7/93	10- 3N	92-27W	29.67	33.933	420	279	359	344	76	1908	200	0.18	0.3	1.6	2222	2222	2292
406	P19	4/ 7/93	10-20N	92-45W	29.61	33.987			359										
407	P19	4/ 7/93	10-48N	92-35W	29.28	33.703	401	271	359	345	56	1903	199	0.19	0.2	1.3	2222	2223	2308
408	P19	4/ 7/93	11-16N	92-24W	29.53	33.811	423	283	359	345	78	1909	199	0.19	0.2	1.9	2220	2220	2298
409	P19	4/ 8/93	11-46N	92-14W	29.57	34.013	402	268	359	344	57	1922	198	0.19	0.3	1.9	2251	2252	2317
410	P19	4/ 8/93	12-13N	92- 4W	28.80	33.960	401	268	359	345	56	1916	203	0.19	0.1	1.7	2244	2244	2312
411	P19	4/ 8/93	12-41N	91-53W	29.54	33.743	419	280	359	345	74	1904	200	0.17	0.2	1.6	2216	2216	2298
412	P19	4/ 8/93	12-55N	91-48W	29.76	33.637	404	267	359	344	60	1900	200	0.17	0.2	1.8	2222	2222	2312
413	P19	4/ 9/93	13- 2N	91-46W	29.74	33.670	395	262	359	345	51	1895	201	0.17	0.2	2.0	2221	2221	2308
414	P19	4/ 9/93	13- 7N	91-44W	29.59	33.652	408	272	359	345	63	1901	198	0.18	0.2	1.5	2219	2219	2308
415	P19	4/ 9/93	13-12N	91-42W	29.58	33.656	395	264	359	345	50	1901	200	0.17	0.2	2.1	2226	2227	2315
416	P19	4/ 9/93	13-15N	91-40W	28.99	34.043	395	266	359	345	50	1911	211	0.17	0.3	1.6	2239	2239	2302
417	P19	4/ 9/93	13-19N	91-40W	29.19	34.023	394	267	359	345	49	1913	212	0.16	0.2	0.7	2241	2241	2305
418	P19	4/10/93	13-24N	91-38W	29.45	34.177	405	272	359	345	60	1928	209	0.17	0.2	1.1	2256	2257	2311
419	P19	4/10/93	13-26N	91-37W	29.49	34.100	398	267	359	345	53	1921	209	0.15	0.2	1.0	2251	2252	2311
420	P19	4/10/93	13-29N	91-36W	27.98	34.139	400	268	359	346	54	1919	220	0.19	0.2	1.1	2247	2247	2303
421	P19	4/10/93	13-31N	91-35W	29.33	34.103			359			1922	214	0.16	0.1	0.9			
422	P19	4/10/93	13-32N	91-35W	27.97	34.145	400	286	359	346	54	1930	217	0.20	0.2	0.9	2245	2245	2301

7-b) Station Data

The following hydrographic and CO_2 chemistry data are listed in this table for each station. The station number, positions, date of station occupation and the sea floor depth (m) are listed in each heading. The temperature, salinity and the concentrations of dissolved oxygen, phosphate, nitrate and silicate were measured by the staff of ODF/SIO.

Bot No.	=	Niskin bottle number of each sample.
Depth m	=	Depth (meters) of sample computed from the measured pressure.
Temp deg C	=	In situ temperature of water (°C).
Pot Temp deg C	=	Potential temperature of water (°C) computed for the sea surface.
Salinity o/oo	=	Measured salinity (PS scale).
Sigma Theta	=	Potential density (ppt) of seawater at sea surface.
Sigma 2000	=	Potential density (ppt) of seawater computed at 2000 db.
Sigma 4000	=	Potential density (ppt) of seawater computed at 4000 db.
Oxy, PO4, NO3, SiO3	=	Measured concentrations (µmol/kg) of oxygen, phosphate, nitrate and silicate dissolved in seawater.
AOU	=	Apparent oxygen utilization (µmol/kg) computed for the potential temperature.
TCO2	=	The total CO_2 concentration (µmol/kg) dissolved in seawater measured using a coulometer.
pCO2 @Teq	=	pCO_2 in seawater (µatm) measured at the temperature of equilibration specified in the next column.
Teq Deg C	=	Temperature (°C) at which seawater samples were equilibrated for pCO_2 measurements.
pCO2@Theta	=	pCO_2 in seawater (µatm) corrected to the potential temperature.
Calc Total Alk.	=	Total alkalinity (µeq/kg) computed using the measured total CO_2 concentration and pCO_2 at equlibration temperature.

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JUNO - 9 WOCE Line P16

Station 1 Latitude 21-29.5S Longitude 148-29.6W Date 10/ 8/92 Bottom Depth 4454 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy (umol/kg)	AOU (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	TCO2 (umol/kg)	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	2	26.272	26.272	36.106	23.784	32.049	39.962	205	-4	0.19	0.1	2.8	2001	245	20.00	319	2393
102	41	25.847	25.838	36.097	23.914	32.189	40.112	205	-3	0.18	0.1	2.8	2005	258	20.00	330	2383
103	75	24.677	24.661	35.995	24.198	32.505	40.457	209	-2	0.14	0.1	2.5	2007	275	20.00	335	2365
104	106	23.568	23.545	35.929	24.481	32.818	40.798	212	-1	0.15	0.1	2.3	2009	269	20.00	313	2374
105	131	22.949	22.922	35.849	24.602	32.957	40.954	205	8	0.19	0.1	2.3	2016	288	20.00	326	2364
106	156	21.826	21.795	35.800	24.885	33.272	41.300	195	22	0.25	0.8	2.3	2033	312	20.00	336	2363
107	180	21.107	21.072	35.714	25.019	33.429	41.477	198	22	0.23	0.8	2.3	2032	321	20.00	335	2353
108	206	20.058	20.020	35.626	25.236	33.677	41.756	198	26	0.24	1.3	2.2					
109	255	18.528	18.483	35.553	25.577	34.067	42.191	197	34	0.30	2.1	2.2		361	20.00	339	
110	305	16.764	16.713	35.358	25.858	34.410	42.591	191	48	0.52	4.9	2.7	2072	417	20.00	363	2334
111	381	13.824	13.769	35.065	26.287	34.947	43.230										
112	456	10.344	10.290	34.666	26.642	35.445	43.862	183	91	1.31	17.3	7.5		675	20.00	448	
113	555	7.490	7.435	34.419	26.900	35.833	44.371	195	98	1.70	24.0	11.5	2151	820	20.00	482	2287
114	655	5.940	5.882	34.346	27.051	36.058	44.666	192	111	1.98	28.4	19.4	2174	916	20.00	504	2294
115	730	5.450	5.388	34.355	27.119	36.150	44.780	180	127	2.13	30.6	27.5	2188	993	20.00	535	2297
116	805	4.910	4.845	34.370	27.194	36.252	44.907	172	139	2.23	32.1	36.0					
117	904	4.462	4.390	34.389	27.259	36.339	45.016	166	148	2.30	33.2	44.3	2214	1085	20.00	561	2313
118	1005	4.003	3.927	34.451	27.357	36.461	45.159	153	164	2.41	34.5	60.5	2243	1159	20.00	587	2335
119	1130	3.573	3.490	34.498	27.438	36.563	45.282	149	172	2.45	35.0	73.4	2252	1176	20.00	585	2343
120	1305	3.037	2.944	34.543	27.526	36.679	45.424	149	176	2.45	35.2	88.5	2266	1184	20.00	575	2358
121	1505	2.700	2.595	34.578	27.585	36.756	45.518	149	179	2.46	35.3	99.2	2276	1191	20.00	571	2369
122	1704	2.436	2.317	34.604	27.629	36.815	45.591	149	181	2.47	35.3	107.8	2290	1185	20.00	561	2384
123	1903	2.258	2.125	34.622	27.659	36.855	45.641	150	182	2.48	35.3	112.6	2296	1185	20.00	556	2391
124	2104	2.089	1.940	34.639	27.687	36.893	45.688	151	183	2.47	35.3	118.6	2302	1182	20.00	551	2398
125	2304	1.986	1.822	34.648	27.703	36.916	45.717										
126	2505	1.891	1.710	34.657	27.720	36.938	45.745	153	182	2.47	35.2	124.3	2307	1169	20.00	539	2406
127	2705	1.822	1.624	34.662	27.730	36.954	45.765	156	180	2.45	35.1	126.0	2305	1164	20.00	535	2405
128	2904	1.732	1.516	34.670	27.744	36.974	45.790	159	178	2.44	34.9	126.9	2305	1156	20.00	529	2406
129	3104	1.677	1.442	34.676	27.754	36.988	45.808	162	176	2.41	34.8	127.4	2302	1143	20.00	521	2405
130	3304	1.605	1.351	34.681	27.765	37.003	45.828	167	172	2.40	34.4	126.6	2298	1136	20.00	516	2401
131	3503	1.551	1.278	34.686	27.774	37.016	45.845	171	168	2.37	34.1	125.9	2293	1105	20.00	501	2400
132	3702	1.486	1.193	34.691	27.784	37.031	45.864	176	163	2.34	33.7	125.1	2291	1103	20.00	498	2398
133	3902	1.449	1.136	34.693	27.790	37.040	45.876	180	160	2.32	33.4	124.3	2287	1103	20.00	497	2394
134	4103	1.428	1.093	34.697	27.795	37.048	45.886	183	158	2.30	33.2	123.4	2282	1094	20.00	492	2390
135	4301	1.407	1.049	34.699	27.800	37.055	45.896	186	155	2.29	33.2	123.1	2284	1081	20.00	485	2393
136	4506	1.417	1.035	34.700	27.802	37.058	45.899	187	155	2.29	33.0	122.8	2280	1081	20.00	485	2389

Station 2 Latitude 31-59.3S Longitude 147-58.7W Date 10/10/92 Bottom Depth 4690 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy (umol/kg)	AOU (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	TCO2 (umol/kg)	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	0	17.313	17.313	35.301	25.671	34.203	42.366	240	-3	0.12	0.0	1.6	2029	352	20.00	314	2322
102	36	17.119	17.113	35.299	25.718	34.256	42.425	240	-2	0.12	0.0	1.5	2030	347	20.00	307	2327
103	76	16.912	16.899	35.298	25.768	34.314	42.490	239	-1	0.12	0.0	1.5	2028	354	20.00	310	2319
104	104	16.901	16.884	35.299	25.772	34.319	42.495	239	0	0.12	0.0	1.5	2028	356	20.00	312	2318
105	145	16.336	16.313	35.256	25.873	34.439	42.635	232	9	0.19	0.3	1.5	2040	376	20.00	322	2319
106	184	15.487	15.458	35.202	26.026	34.623	42.847										
107	224	14.986	14.952	35.186	26.127	34.742	42.982	218	30	0.39	3.1	2.0	2067	431	20.00	348	2318
108	264	13.966	13.928	35.099	26.279	34.933	43.210	207	46	0.58	6.3	2.6	2084	476	20.00	368	2317
109	304	12.679	12.637	34.981	26.451	35.155	43.480										
110	343	11.512	11.468	34.855	26.577	35.330	43.699	202	65	0.96	12.4	3.9	2108	580	20.00	404	2302
111	382	10.510	10.464	34.752	26.678	35.473	43.882	205	68	1.08	14.6	4.4	2112	620	20.00	414	2294
112	439	8.800	8.752	34.560	26.813	35.684	44.164										
113	498	7.858	7.808	34.478	26.893	35.807	44.328	231	59	1.39	19.4	6.3	2125	695	20.00	415	2286
114	548	7.417	7.362	34.441	26.928	35.864	44.404	238	55	1.44	20.2	6.7	2128	702	20.00	412	2288
115	598	7.080	7.022	34.415	26.955	35.906	44.462	240	56	1.49	21.2	7.4	2126	712	20.00	411	2283
116	649	6.743	6.682	34.385	26.978	35.946	44.518	240	57	1.55	22.0	8.3	2130	722	20.00	411	2285
117	699	6.486	6.421	34.365	26.997	35.977	44.561	240	60	1.60	22.8	9.5	2136	736	20.00	414	2289
118	799	5.909	5.838	34.327	27.041	36.051	44.661	233	70	1.74	24.8	12.7	2145	776	20.00	426	2289
119	897	5.380	5.303	34.313	27.096	36.132	44.766	222	85	1.88	27.0	17.8		836	20.00	449	
120	993	4.842	4.760	34.318	27.162	36.225	44.885	209	103	2.03	29.2	25.5	2174	912	20.00	479	2296
121	1230	3.614	3.522	34.391	27.350	36.475	45.194	183	138	2.30	33.0	49.0	2212	1073	20.00	535	2313
122	1438	2.904	2.802	34.496	27.501	36.663	45.416	169	158	2.39	34.1	71.1	2246	1146	20.00	554	2340
123	1684	2.523	2.404	34.576	27.599	36.781	45.553	159	171	2.44	34.6	91.1	2274	1170	20.00	556	2368
124	1933	2.228	2.092	34.624	27.663	36.861	45.648	153	179	2.48	34.9	107.3	2287	1188	20.00	557	2381
125	2178	2.021	1.867	34.646	27.699	36.909	45.707	150	184	2.50	35.2	117.1	2301	1198	20.00	556	2396
126	2421	1.909	1.735	34.657	27.718	36.935	45.740	151	184	2.51	35.4	120.5	2304	1196	20.00	552	2399
127	2736	1.787	1.586	34.667	27.737	36.962	45.775	153	183	2.49	35.1	122.0	2306	1185	20.00	544	2403
128	2912	1.728	1.511	34.673	27.747	36.976	45.793	157	180	2.47	35.0	122.8	2305	1171	20.00	536	2403
129	3157	1.636	1.397	34.681	27.762	36.998	45.820	163	175	2.44	34.5	122.6	2302	1150	20.00	523	2403
130	3399	1.545	1.283	34.690	27.777	37.019	45.847	171	168	2.40	33.9	121.2	2295	1141	20.00	517	2396
131	3642	1.456	1.171	34.697	27.790	37.038	45.873	179	161	2.35	33.4	120.1	2285	1113	20.00	502	2389
132	3887	1.356	1.047	34.703	27.803	37.059	45.899	186	155	2.32	33.0	119.3	2278	1105	20.00	496	2383
133	4082	1.292	0.963	34.706	27.812	37.072	45.917	191	151	2.29	32.7	118.7	2274	1083	20.00	484	2382
134	4280	1.258	0.908	34.708	27.817	37.080	45.928	194	148	2.27	32.5	117.9	2272	1073	20.00	478	2381
135	4477	1.256	0.883	34.708	27.819	37.083	45.933	196	147	2.26	32.2	117.9	2268	1075	20.00	479	2377
136	4693	1.271	0.871	34.709	27.820	37.085	45.935	196	146	2.26	32.3	118.1	2272	1071	20.00	477	2381

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JUNO - 9 WOCE Line P16

Station 3 Latitude 37-29.7S Longitude 150-29.0W Date 10/12/92 Bottom Depth 5521 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	13	12.787	12.785	34.355	25.937	34.644	42.971	266	-6	0.33	1.3	1.1	2037	430	20.00	317	2279
102	41	12.761	12.755	34.354	25.941	34.650	42.978	266	-5	0.33	1.4	1.1	2040	427	20.00	314	2283
103	76	12.190	12.180	34.368	26.064	34.795	43.144										
104	113	11.902	11.887	34.376	26.126	34.868	43.228	263	2	0.40	2.4	1.2	2048	443	20.00	315	2284
105	138	11.422	11.405	34.446	26.271	35.031	43.408	250	18	0.60	5.8	1.4	2066	487	20.00	339	2287
106	168	9.877	9.857	34.539	26.617	35.440	43.876	229	48	1.02	13.3	2.8	2105	600	20.00	391	2290
107	207	8.897	8.875	34.507	26.753	35.619	44.095	231	51	1.17	16.1	3.6	2115	651	20.00	407	2286
108	254	8.255	8.229	34.491	26.840	35.735	44.238	237	50	1.26	17.7	4.4	2122	669	20.00	407	2289
109	305	7.786	7.756	34.466	26.891	35.808	44.331	243	47	1.32	18.8	5.4	2124	680	20.00	405	2289
110	354	7.592	7.556	34.453	26.909	35.835	44.368	246	46	1.35	19.3	5.6	2123	683	20.00	404	2287
111	404	7.427	7.387	34.441	26.924	35.858	44.398	247	46	1.38	19.8	6.0	2125	688	20.00	404	2288
112	454	7.269	7.225	34.427	26.936	35.878	44.425	248	46	1.41	20.3	6.6	2129	691	20.00	403	2291
113	553	6.935	6.882	34.400	26.962	35.921	44.483	245	51	1.49	21.5	7.6		709	20.00	407	
114	652	6.467	6.407	34.364	26.997	35.979	44.563	239	61	1.61	23.4	10.0	2137	742	20.00	417	2288
115	802	5.713	5.642	34.326	27.065	36.084	44.703	225	80	1.82	26.4	16.2	2153	821	20.00	447	2289
116	953	4.824	4.746	34.327	27.171	36.234	44.895	208	104	2.02	29.5	26.8	2177	925	20.00	485	2297
117	1099	3.844	3.760	34.365	27.306	36.419	45.126	192	127	2.21	32.3	42.4	2203	1036	20.00	521	2308
118	1248	3.233	3.143	34.434	27.420	36.565	45.302	179	145	2.32	33.8	57.4	2233	1114	20.00	546	2330
119	1395	2.943	2.844	34.502	27.502	36.661	45.412	169	158	2.37	34.4	70.8	2244	1147	20.00	555	2338
120	1594	2.655	2.543	34.566	27.579	36.754	45.519	160	169	2.41	34.7	86.2	2264	1173	20.00	560	2357
121	1791	2.463	2.335	34.603	27.627	36.812	45.587	155	175	2.43	35.1	98.3	2281	1180	20.00	559	2375
122	1991	2.288	2.146	34.627	27.661	36.857	45.641	152	180	2.45	35.3	107.6	2292	1187	20.00	558	2386
123	2238	2.140	1.978	34.642	27.686	36.890	45.683	151	182	2.47	35.4	114.1	2299	1192	20.00	556	2394
124	2483	1.997	1.815	34.655	27.709	36.922	45.723	150	185	2.48	35.6	120.5	2305	1194	20.00	553	2400
125	2733	1.892	1.689	34.665	27.727	36.947	45.754	151	184	2.48	35.6	124.6	2307	1191	20.00	549	2403
126	2977	1.801	1.576	34.673	27.742	36.968	45.781	154	183	2.47	35.4	126.4	2306	1184	20.00	543	2403
127	3224	1.715	1.467	34.684	27.759	36.991	45.810	162	175	2.41	34.6	124.1	2299	1161	20.00	530	2398
128	3469	1.637	1.365	34.699	27.778	37.016	45.840	174	164	2.33	33.6	118.4	2284	1120	20.00	509	2387
129	3713	1.538	1.243	34.713	27.798	37.042	45.872	187	152	2.25	32.5	112.7	2270	1089	20.00	493	2376
130	3956	1.388	1.070	34.716	27.812	37.066	45.905	195	146	2.23	32.3	113.1	2264	1072	20.00	481	2373
131	4198	1.264	0.923	34.715	27.822	37.084	45.931	199	143	2.22	32.2	114.7	2263	1062	20.00	474	2373
132	4439	1.189	0.821	34.713	27.827	37.095	45.947	202	141	2.22	32.1	116.5	2264	1060	20.00	471	2374
133	4680	1.150	0.755	34.713	27.830	37.102	45.958	203	140	2.22	32.1	117.8	2262	1054	20.00	467	2373
134	4924	1.135	0.711	34.712	27.832	37.107	45.965	204	140	2.21	32.1	118.8	2262	1053	20.00	466	2374
135	5173	1.134	0.679	34.711	27.833	37.110	45.970	205	139	2.22	32.1	119.6	2262	1058	20.00	467	2373
136	5533	1.161	0.658	34.710	27.834	37.112	45.973	206	139	2.22	32.1	120.0	2261	1056	20.00	466	2371

Station 6 Latitude 39-01.8S Longitude 150-31.6W Date 10/14/92 Bottom Depth 5497 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
113	2	12.281	12.281	34.357	26.037	34.763	43.109	270	-7	0.36	1.9	1.7	2045	436	20.00	314	2285
114	59	12.219	12.211	34.355	26.048	34.778	43.126	269	-6	0.36	1.9	1.7	2043	435	20.00	313	2283
115	109	11.596	11.582	34.350	26.163	34.918	43.289	266	1	0.44	2.9	1.7	2051	452	20.00	317	2284
116	183	9.126	9.106	34.483	26.696	35.553	44.020	235	47	1.12	15.2	3.7	2114	638	20.00	402	2289
117	257	8.198	8.171	34.488	26.847	35.744	44.250	240	47	1.24	17.5	4.9	2122	666	20.00	404	2290
118	354	7.632	7.597	34.455	26.906	35.830	44.360	248	43	1.33	18.9	5.9	2123	678	20.00	401	2288
119	499	7.175	7.126	34.418	26.943	35.890	44.441	251	44	1.41	20.2	7.3	2127	689	20.00	400	2290
120	695	6.336	6.273	34.354	27.008	35.996	44.586	237	63	1.64	23.8	11.7	2139	753	20.00	421	2288
121	889	5.355	5.278	34.326	27.108	36.145	44.781	216	92	1.90	27.7	21.2	2165	861	20.00	462	2295
122	1180	3.645	3.557	34.380	27.337	36.461	45.178	190	131	2.24	32.6	47.2	2215	1058	20.00	528	2318
123	1473	2.873	2.768	34.518	27.522	36.685	45.439	168	159	2.37	34.2	75.5	2252	1145	20.00	553	2347
124	1765	2.520	2.395	34.598	27.618	36.800	45.572	156	174	2.41	34.8	98.2	2280	1168	20.00	555	2375
125	2057	2.267	2.120	34.630	27.666	36.862	45.648	152	180	2.45	35.1	111.5	2293	1200	20.00	563	2386
126	2349	2.076	1.906	34.649	27.698	36.906	45.702	151	183	2.46	35.4	119.5	2303	1200	20.00	558	2398
127	2643	1.926	1.730	34.662	27.722	36.939	45.745	151	184	2.45	35.4	125.6	2306	1190	20.00	549	2402
128	2938	1.804	1.582	34.672	27.741	36.966	45.779	154	183	2.44	35.3	129.1	2308	1182	20.00	542	2406
129	3232	1.721	1.471	34.685	27.760	36.991	45.810	163	174	2.38	34.4	126.0	2301	1154	20.00	527	2401
130	3528	1.650	1.371	34.711	27.787	37.024	45.847	182	156	2.25	32.7	113.8	2274	1101	20.00	501	2379
131	3824	1.491	1.185	34.717	27.806	37.053	45.886	192	148	2.17	32.2	113.2	2266	1074	20.00	485	2374
132	4122	1.307	0.973	34.718	27.820	37.079	45.924	199	143	2.19	31.8	115.4	2264	1063	20.00	475	2373
133	4420	1.199	0.833	34.715	27.827	37.095	45.947	202	141	2.20	32.1	118.9	2265	1045	20.00	465	2378
134	4720	1.169	0.769	34.714	27.831	37.102	45.957	203	141	2.20	32.2	120.1	2265	1051	20.00	466	2377
135	5019	1.165	0.728	34.713	27.832	37.105	45.963	204	140	2.20	32.2	120.7	2266	1055	20.00	467	2378
136	5468	1.167	0.672	34.711	27.834	37.111	45.972	206	138	2.20	32.1	121.7	2262	1051	20.00	464	2374

Lamont-Doherty Earth Observatory of Columbia University
JUNO - 9 WOCE Line P16

Station 8 Latitude 40-00.8S Longitude 150-30.9W Date 10/14/92 Bottom Depth 5111 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	---------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								--------------	umol/kg	--------------							
101	15	11.840	11.838	34.342	26.109	34.853	43.215	271	-6	0.41	2.5	1.8	2048	442	20.00	313	2285
102	40	11.849	11.844	34.343	26.109	34.853	43.215	271	-6	0.41	2.5	1.7	2046	444	20.00	314	2282
103	65	11.820	11.812	34.358	26.127	34.872	43.235	271	-6	0.41	2.5	1.7	2041	448	20.00	317	2275
104	85	11.492	11.481	34.360	26.190	34.948	43.323	270	-2	0.45	2.9	1.7	2049	451	20.00	314	2282
105	110	10.904	10.891	34.345	26.285	35.068	43.466	268	3	0.53	4.1	1.7	2053	469	20.00	319	2278
106	149	9.901	9.884	34.472	26.559	35.383	43.818	236	40	1.01	13.0	2.9	2099	607	20.10	394	2282
107	179	8.941	8.921	34.499	26.738	35.603	44.077	232	51	1.18	16.1	4.1	2114	660	20.10	411	2284
108	199	8.605	8.584	34.494	26.788	35.667	44.155	234	51	1.22	16.9	4.5	2117	671	20.10	412	2284
109	239	8.146	8.122	34.481	26.848	35.748	44.256	240	48	1.27	17.9	5.1	2115	679	20.10	409	2280
110	308	7.713	7.682	34.460	26.897	35.817	44.344	245	45	1.34	19.0	6.1		688	20.10	407	
111	405	7.326	7.286	34.430	26.930	35.869	44.413	249	45	1.40	20.1	6.9	2123	693	20.10	403	2285
112	548	6.772	6.721	34.382	26.970	35.936	44.506	251	47	1.51	21.7	8.8	2128	708	20.10	402	2287
113	695	6.246	6.183	34.349	27.015	36.008	44.602	234	67	1.68	24.5	12.6	2142	768	20.10	426	2288
114	840	5.450	5.377	34.327	27.098	36.129	44.761	218	89	1.90	27.7	20.1	2160	852	20.10	457	2292
115	987	4.604	4.524	34.337	27.203	36.277	44.948	203	110	2.09	30.4	31.3	2187	959	20.10	496	2303
116	1184	3.629	3.541	34.385	27.343	36.468	45.186	189	132	2.27	33.0	48.4	2215	1067	20.10	530	2317
117	1382	3.064	2.964	34.469	27.464	36.618	45.363	174	152	2.36	34.3	65.6	2240	1138	20.10	551	2336
118	1584	2.753	2.640	34.553	27.560	36.730	45.490	162	166	2.40	34.8	84.2	2274	1161	20.10	555	2370
119	1786	2.527	2.399	34.598	27.617	36.799	45.571	156	174	2.44	35.1	98.6	2279	1175	20.10	556	2374
120	1987	2.351	2.208	34.622	27.652	36.844	45.626	153	178	2.46	35.3	108.0	2289	1192	20.10	559	2383
121	2188	2.216	2.058	34.637	27.676	36.876	45.665	152	181	2.48	35.5	114.0	2297	1197	20.10	558	2391
122	2387	2.109	1.934	34.649	27.696	36.902	45.697	151	182	2.48	35.5	118.1	2299	1197	20.10	555	2394
123	2586	2.014	1.822	34.658	27.712	36.924	45.725	152	182	2.48	35.5	121.1	2299	1196	20.10	552	2394
124	2780	1.929	1.721	34.671	27.730	36.948	45.753	156	179	2.45	35.2	122.0	2297	1174	20.10	539	2395
125	2973	1.850	1.624	34.686	27.749	36.972	45.783	163	173	2.40	34.5	119.8	2294	1160	20.10	531	2393
126	3166	1.771	1.527	34.699	27.767	36.995	45.810	172	165	2.33	33.7	116.1	2283	1125	20.10	513	2387
127	3360	1.682	1.420	34.709	27.782	37.016	45.837	180	158	2.29	33.1	113.6	2275	1108	20.10	503	2379
128	3553	1.551	1.272	34.716	27.798	37.041	45.869	188	151	2.26	32.6	112.8	2267	1084	20.10	489	2374
129	3751	1.434	1.137	34.718	27.809	37.059	45.895	193	147	2.24	32.3	113.5	2264	1068	20.10	479	2373
130	3947	1.330	1.014	34.718	27.817	37.074	45.917	198	144	2.23	32.2	114.5	2262	1062	20.10	474	2373
131	4146	1.242	0.907	34.717	27.824	37.087	45.935	200	142	2.23	32.1	116.5	2262	1050	20.10	466	2375
132	4346	1.188	0.831	34.715	27.827	37.095	45.947	202	141	2.23	32.2	118.7	2261	1044	20.10	462	2374
133	4545	1.161	0.782	34.714	27.830	37.100	45.955	202	141	2.23	32.1	120.1	2264	1032	20.10	456	2379
134	4747	1.168	0.764	34.713	27.830	37.101	45.957										
135	4947	1.161	0.733	34.713	27.832	37.105	45.963	203	141	2.24	32.2	120.6		1048	20.10	462	
136	5125	1.161	0.711	34.713	27.834	37.108	45.967	204	140	2.23	32.2	121.2	2262	1052	20.10	463	2374

Station 13 Latitude 42-29.5S Longitude 150-29.5W Date 10/15/92 Bottom Depth 5131 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	---------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								--------------	umol/kg	--------------							
101	4	10.466	10.466	34.279	26.309	35.110	43.526	278	-5	0.60	5.7	2.2	2058	475	20.00	317	2281
102	49	10.141	10.135	34.266	26.356	35.171	43.600	280	-4	0.66	6.8	2.2	2060	484	20.00	319	2280
103	69	10.041	10.033	34.277	26.382	35.202	43.634	276	0	0.67	6.7	2.1	2062	493	20.00	323	2278
104	80	9.922	9.913	34.294	26.416	35.240	43.677										
105	109	9.506	9.494	34.316	26.503	35.345	43.799	271	8	0.76	8.3	2.1	2072	516	20.00	331	2281
106	140	9.085	9.070	34.410	26.645	35.504	43.974	252	30	0.99	12.6	3.3	2093	588	20.00	370	2280
107	178	8.441	8.422	34.479	26.801	35.688	44.183	244	42	1.18	16.2	4.3	2115	648	20.00	397	2287
108	227	7.987	7.964	34.473	26.865	35.773	44.287	247	42	1.27	17.7	5.3	2123	664	20.00	399	2293
109	305	7.593	7.563	34.446	26.903	35.829	44.361	249	42	1.34	19.0	6.1	2124	676	20.00	399	2290
110	403	7.311	7.272	34.425	26.928	35.868	44.413										
111	501	7.078	7.030	34.408	26.948	35.900	44.455	252	43	1.45	20.5	7.7	2125	686	20.00	396	2289
112	595	6.781	6.724	34.382	26.970	35.936	44.506	248	49	1.52	21.7	9.3	2130	703	20.00	401	2290
113	689	6.445	6.381	34.357	26.995	35.978	44.563	242	58	1.61	23.1	11.3	2135	740	20.00	416	2287
114	785	5.936	5.865	34.325	27.037	36.045	44.654	235	68	1.74	24.9	14.4	2145	780	20.00	429	2289
115	886	5.472	5.395	34.318	27.088	36.119	44.750	224	83	1.87	26.7	19.4	2158	841	20.00	453	2291
116	993	4.774	4.693	34.324	27.174	36.241	44.904	211	101	2.03	29.2	28.1	2178	922	20.00	483	2298
117	1194	3.757	3.667	34.369	27.318	36.436	45.148	194	126	2.23	31.9	45.0	2204	1047	20.00	525	2307
118	1393	3.120	3.019	34.452	27.446	36.597	45.340	178	147	2.33	33.5	62.1	2233	1127	20.00	549	2328
119	1598	2.736	2.622	34.542	27.554	36.724	45.486	166	162	2.38	34.0	79.3	2256	1172	20.00	562	2348
120	1800	2.540	2.411	34.593	27.612	36.793	45.565	160	170	2.40	34.4	92.7	2271	1182	20.00	561	2364
121	1998	2.373	2.229	34.622	27.650	36.841	45.621	154	177	2.44	34.6	105.8	2287	1186	20.00	559	2382
122	2198	2.231	2.071	34.640	27.677	36.876	45.664	153	179	2.45	34.8	111.5	2293	1176	20.00	551	2389
123	2394	2.099	1.924	34.654	27.701	36.907	45.703	154	180	2.45	34.8	115.3	2293	1182	20.00	550	2389
124	2591	1.996	1.804	34.669	27.722	36.935	45.736	157	177	2.42	34.4	117.1	2296	1168	20.00	541	2394
125	2785	1.907	1.698	34.680	27.739	36.958	45.764	162	174	2.39	34.3	117.5	2293	1156	20.00	533	2393
126	2975	1.817	1.591	34.692	27.756	36.981	45.793	167	169	2.37	33.6	116.7	2280	1136	20.00	521	2381
127	3169	1.726	1.482	34.706	27.775	37.006	45.824	177	160	2.31	32.9	113.2	2277	1108	20.00	506	2382
128	3368	1.623	1.362	34.715	27.792	37.029	45.853	186	152	2.25	32.2	110.6	2270	1082	20.00	492	2377
129	3571	1.517	1.238	34.720	27.804	37.048	45.879	192	147	2.22	31.8	110.3	2270	1070	20.00	484	2379
130	3822	1.343	1.041	34.719	27.817	37.072	45.913	198	143	2.22	31.7	113.4	2268	1063	20.00	477	2378
131	4072	1.227	0.900	34.716	27.823	37.087	45.935	201	142	2.23	31.8	116.8	2269	1059	20.00	472	2380
132	4325	1.172	0.818	34.715	27.828	37.096	45.949	202	141	2.23	31.9	118.8	2267	1054	20.00	468	2379
133	4574	1.165	0.783	34.713	27.829	37.099	45.954	202	141	2.23	31.9	119.4	2267	1051	20.00	466	2380
134	4826	1.180	0.766	34.713	27.830	37.101	45.957	202	141	2.24	32.0	120.0	2267	1047	20.00	464	2380
135	5074	1.199	0.754	34.713	27.830	37.102	45.959	203	141	2.24	32.1	120.6	2266	1049	20.00	465	2378
136	5129	1.205	0.753	34.712	27.830	37.102	45.958	203	141	2.25	32.1	120.4	2265	1051	20.00	466	2377

Lamont-Doherty Earth Observatory of Columbia University

JUNO - 9 WOCE Line P16

Station 16 Latitude 44-01.6S Longitude 150-31.3W Date 10/16/92 Bottom Depth 5080 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								umol/kg									
101	11	9.558	9.556	34.278	26.463	35.303	43.754										
102	53	9.496	9.490	34.280	26.475	35.318	43.772	284	-5	0.76	8.2	2.6	2068	258	4.00	326	2279
103	78	9.131	9.122	34.311	26.559	35.418	43.886	283	-1	0.80	8.7	2.3	2072	261	4.00	325	2282
104	93	8.822	8.812	34.369	26.654	35.525	44.006	281	3	0.82	9.0	2.5	2078	266	4.00	327	2285
105	118	8.768	8.755	34.392	26.681	35.554	44.037	279	5	0.84	9.2	2.5	2078	273	4.00	333	2280
106	138	8.708	8.693	34.430	26.721	35.596	44.081	272	12	0.90	10.7	2.9	2086	281	4.00	343	2284
107	157	8.571	8.555	34.479	26.781	35.661	44.151	262	23	1.05	13.4	3.7	2101	305	4.00	370	2286
108	206	8.331	8.310	34.500	26.835	35.726	44.226						2119				
109	257	7.953	7.927	34.466	26.866	35.775	44.291	257	32	1.27	17.3	5.4	2113	335	4.00	396	2283
110	306	7.703	7.673	34.443	26.885	35.806	44.333	255	36	1.34	18.4	6.2	2119	348	4.00	406	2283
111	404	7.336	7.296	34.421	26.921	35.860	44.404										
112	500	7.025	6.977	34.396	26.946	35.900	44.459						2129				
113	594	6.731	6.675	34.375	26.971	35.939	44.511	257	41	1.52	21.2	8.7	2128	361	4.00	405	2287
114	684	6.332	6.269	34.343	26.999	35.987	44.578	251	49	1.62	22.8	10.9	2136	378	4.00	416	2288
115	771	5.947	5.878	34.322	27.032	36.040	44.648	241	63	1.74	24.6	14.0	2145	401	4.00	434	2288
116	866	5.528	5.452	34.324	27.086	36.114	44.742	224	83	1.89	26.8	19.8	2159	441	4.00	469	2289
117	960	4.962	4.882	34.327	27.155	36.212	44.866	214	97	2.03	28.8	26.5	2175	474	4.00	492	2296
118	1156	3.830	3.742	34.358	27.302	36.416	45.125	197	122	2.25	31.9	42.9	2206	542	4.00	536	2311
119	1344	3.180	3.082	34.423	27.417	36.565	45.305	184	141	2.35	33.5	57.6	2224	591	4.00	568	2319
120	1522	2.805	2.697	34.509	27.520	36.688	45.446	171	156	2.40	34.1	72.5	2250	614	4.00	581	2343
121	1700	2.609	2.488	34.569	27.586	36.764	45.532	164	165	2.42	34.3	84.6	2261	619	4.00	581	2354
122	1886	2.451	2.315	34.608	27.632	36.818	45.594	159	172	2.44	34.7	96.5	2275	624	4.00	581	2368
123	2109	2.271	2.118	34.635	27.670	36.866	45.652	155	177	2.47	34.9	106.8	2286	624	4.00	577	2381
124	2327	2.118	1.948	34.652	27.697	36.903	45.697	155	179	2.47	35.1	113.7	2295	630	4.00	578	2389
125	2555	1.991	1.803	34.665	27.719	36.932	45.734	155	179	2.49	35.0	118.5	2297	626	4.00	571	2393
126	2790	1.889	1.680	34.677	27.738	36.958	45.765	159	177	2.46	34.6	120.2	2297	616	4.00	559	2396
127	3024	1.795	1.565	34.690	27.757	36.983	45.796	167	170	2.40	34.0	118.2	2292	609	4.00	549	2391
128	3263	1.696	1.444	34.704	27.777	37.010	45.829	177	161	2.35	33.0	114.7	2282	590	4.00	530	2385
129	3500	1.581	1.307	34.713	27.794	37.034	45.861	186	153	2.29	32.4	113.0	2272	576	4.00	514	2378
130	3735	1.418	1.123	34.716	27.809	37.060	45.896						2266				
131	3972	1.300	0.983	34.716	27.818	37.077	45.921	198	143	2.25	32.1	115.7	2264	558	4.00	491	2374
132	4203	1.223	0.881	34.715	27.824	37.089	45.938	201	142	2.25	32.1	117.9	2265	553	4.00	485	2377
133	4442	1.186	0.818	34.714	27.827	37.096	45.948	202	141	2.26	32.1	119.1	2265	554	4.00	484	2376
134	4689	1.174	0.777	34.713	27.829	37.100	45.955	203	141	2.28	32.2	120.3	2267	555	4.00	484	2379
135	4893	1.181	0.758	34.712	27.830	37.101	45.957	203	141	2.26	32.2	120.7	2267	551	4.00	480	2379
136	5054	1.190	0.747	34.712	27.830	37.103	45.959	203	141	2.26	32.2	120.7	2267	551	4.00	480	2379

Station 20 Latitude 46-00.3S Longitude 150-29.6W Date 10/17/92 Bottom Depth 5083 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								umol/kg									
138	12	9.274	9.273	34.302	26.528	35.380	43.842										
102	34	9.138	9.134	34.306	26.554	35.411	43.880	285	-3	0.77	8.7	3.0	2068	262	4.00	325	2276
103	58	9.053	9.047	34.320	26.578	35.440	43.911	286	-4	0.78	8.8	2.4	2070	261	4.00	323	2279
104	84	8.544	8.535	34.423	26.740	35.622	44.114	281	4	0.85	10.0	3.0	2081	275	4.00	334	2282
105	108	8.451	8.440	34.447	26.773	35.659	44.154	279	7	0.88	10.5	3.2	2087	277	4.00	335	2288
106	145	8.473	8.458	34.483	26.799	35.684	44.177	271	14	0.97	12.3	3.6	2090	292	4.00	352	2282
107	179	8.318	8.300	34.504	26.839	35.731	44.231										
108	216	7.991	7.969	34.470	26.862	35.769	44.284						2128				
109	257	7.745	7.720	34.445	26.879	35.798	44.324	256	35	1.31	18.0	5.9	2118	339	4.00	397	2287
110	308	7.528	7.497	34.431	26.901	35.830	44.366	254	38	1.36	18.9	6.1	2122	349	4.00	404	2286
111	357	7.392	7.357	34.427	26.918	35.854	44.395										
112	431	7.197	7.155	34.412	26.934	35.880	44.430	255	39	1.43	19.9	7.8	2124	353	4.00	404	2286
113	504	6.973	6.925	34.395	26.953	35.909	44.470	255	41	1.47	20.5	8.2	2124	357	4.00	404	2284
114	603	6.686	6.629	34.372	26.975	35.946	44.519	251	47	1.55	21.8	9.8	2131	369	4.00	413	2286
115	701	6.324	6.260	34.348	27.005	35.993	44.584	242	59	1.66	23.6	12.1	2139	389	4.00	428	2286
116	796	5.818	5.748	34.319	27.047	36.060	44.675	236	69	1.77	25.2	15.3	2148	412	4.00	443	2288
117	895	5.311	5.234	34.319	27.109	36.148	44.786	221	87	1.92	27.5	21.4	2165	451	4.00	475	2292
118	1019	4.606	4.524	34.322	27.192	36.266	44.938	211	103	2.10	29.7	29.8	2180	491	4.00	502	2296
119	1190	3.759	3.668	34.354	27.306	36.424	45.136	199	121	2.22	31.8	42.8		542	4.00	535	
120	1386	3.095	2.995	34.429	27.430	36.582	45.327	184	141	2.35	33.5	58.7	2226	591	4.00	566	2321
121	1585	2.754	2.641	34.512	27.528	36.698	45.459	172	156	2.39	34.2	72.1	2246	616	4.00	582	2337
122	1789	2.541	2.412	34.584	27.605	36.786	45.558	164	165	2.40	34.3	85.7	2261	619	4.00	579	2354
123	1987	2.388	2.244	34.621	27.648	36.838	45.617	159	172	2.43	34.4	97.5	2274	617	4.00	573	2369
124	2239	2.208	2.045	34.647	27.685	36.886	45.675	157	176	2.46	34.6	107.6	2287	618	4.00	569	2383
125	2487	2.057	1.874	34.664	27.712	36.922	45.720	157	177	2.45	34.5	113.5	2291	619	4.00	566	2388
126	2734	1.918	1.714	34.678	27.736	36.954	45.760	161	175	2.43	34.4	117.3	2294	611	4.00	554	2393
127	2984	1.824	1.597	34.695	27.758	36.983	45.795	170	166	2.36	33.5	114.3	2283	595	4.00	538	2385
128	3231	1.752	1.502	34.716	27.782	37.011	45.828	184	153	2.27	32.2	107.8	2267	572	4.00	515	2373
129	3480	1.591	1.319	34.722	27.800	37.039	45.865	191	148	2.24	31.8	109.0	2263	562	4.00	502	2371
130	3730	1.421	1.127	34.720	27.812	37.062	45.898	196	144	2.23	31.8	112.2	2260	559	4.00	495	2369
131	3979	1.280	0.962	34.717	27.821	37.080	45.925	200	142	2.23	31.9	115.6	2261	557	4.00	490	2371
132	4223	1.206	0.862	34.715	27.826	37.091	45.942	201	141	2.25	31.9	117.9	2264	549	4.00	480	2377
133	4466	1.179	0.808	34.714	27.828	37.096	45.950	203	141	2.25	32.1	119.5	2264	548	4.00	479	2377
134	4709	1.179	0.779	34.713	27.829	37.100	45.955	203	141	2.25	32.1	120.1	2264	548	4.00	478	2377
135	4962	1.201	0.769	34.714	27.831	37.102	45.957	203	140	2.26	32.2	120.7		550	4.00	480	
136	5079	1.207	0.760	34.713	27.831	37.102	45.958	203	141	2.26	32.2	120.9	2265	547	4.00	477	2379

Lamont-Doherty Earth Observatory of Columbia University
JUNO - 9 WOCE Line P16

Station 23 Latitude 47-29.7S Longitude 150-29.4W Date 10/19/92 Bottom Depth 4650 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								-------------	-------------	--umol/kg--	-------------	-------------	-------------				
113	11	8.382	8.381	34.457	26.790	35.679	44.176										
114	38	8.381	8.377	34.458	26.791	35.680	44.178	288	-2	0.89	10.9	3.4	2094	280	4.00	337	2294
115	68	8.374	8.367	34.459	26.794	35.683	44.181	288	-1	0.89	10.9	3.2	2094	277	4.00	333	2296
116	117	8.354	8.342	34.466	26.803	35.693	44.192	287	0	0.90	11.2	3.4	2098	283	4.00	341	2296
117	167	8.211	8.194	34.493	26.847	35.744	44.248	282	6	0.99	12.6	3.9	2107	291	4.00	348	2302
118	205	8.154	8.133	34.494	26.857	35.757	44.264	274	13	1.06	13.8	4.3	2111	302	4.00	359	2300
119	245	8.132	8.107	34.504	26.868	35.769	44.277	271	16	1.08	14.4	4.4	2104	307	4.00	365	2288
120	286	8.042	8.013	34.493	26.874	35.779	44.291	269	19	1.13	15.2	4.6	2108	313	4.00	371	2289
121	325	7.974	7.941	34.493	26.885	35.793	44.308	278	11	1.12	14.8	4.8	2105	306	4.00	362	2290
122	377	7.792	7.754	34.475	26.898	35.815	44.338	266	24	1.22	16.8	5.5	2113	326	4.00	382	2287
123	430	7.441	7.398	34.424	26.910	35.844	44.383	256	37	1.37	19.2	6.6	2120	344	4.00	398	2286
124	506	7.245	7.195	34.416	26.932	35.875	44.424	254	40	1.42	20.1	7.2	2125	353	4.00	404	2287
125	605	6.988	6.930	34.395	26.952	35.908	44.468	254	42	1.47	20.7	8.3	2128	361	4.00	409	2287
126	705	6.594	6.528	34.368	26.985	35.961	44.539	248	51	1.58	22.5	10.2	2135	375	4.00	417	2288
127	802	6.120	6.047	34.347	27.031	36.030	44.630	233	69	1.72	24.8	14.5	2146	408	4.00	445	2287
128	903	5.552	5.473	34.331	27.089	36.116	44.743	223	84	1.86	26.9	19.9	2162	441	4.00	470	2292
129	1003	5.040	4.955	34.338	27.155	36.208	44.859	212	98	1.99	28.9	26.8	2178	473	4.00	492	2299
130	1202	3.923	3.830	34.351	27.287	36.397	45.101	201	117	2.18	31.5	40.4	2200	532	4.00	529	2307
131	1403	3.235	3.132	34.416	27.407	36.552	45.290	187	138	2.32	33.3	56.3	2223	581	4.00	560	2320
132	1601	2.868	2.752	34.493	27.503	36.667	45.423	175	152	2.37	34.1	69.7	2244	612	4.00	581	2336
133	1801	2.668	2.538	34.566	27.579	36.754	45.520	165	164	2.40	34.2	84.1	2260	619	4.00	582	2353
134	2000	2.461	2.315	34.612	27.635	36.821	45.597	160	170	2.43	34.5	95.8	2275	620	4.00	577	2370
135	2200	2.320	2.158	34.642	27.672	36.866	45.650	162	169	2.40	34.2	99.7	2275	618	4.00	572	2370
136	2398	2.190	2.012	34.668	27.704	36.906	45.697	166	167	2.37	33.8	101.9	2275	607	4.00	558	2373
101	2400	2.188	2.010	34.667	27.704	36.906	45.697										
102	2601	2.092	1.897	34.693	27.734	36.942	45.738	173	161	2.31	33.0	100.1	2270	593	4.00	543	2370
103	2800	1.982	1.770	34.711	27.758	36.973	45.775	179	155	2.26	32.5	100.0	2265	579	4.00	527	2369
104	2999	1.859	1.630	34.717	27.773	36.996	45.805	183	153	2.24	32.2	101.4	2264	575	4.00	520	2369
105	3198	1.744	1.497	34.727	27.791	37.021	45.837	190	147	2.19	31.7	102.9	2261	564	4.00	508	2368
106	3398	1.594	1.330	34.727	27.804	37.042	45.868	194	145	2.19	31.7	106.3	2258	560	4.00	500	2366
107	3597	1.465	1.184	34.726	27.813	37.060	45.893	197	143	2.20	31.7	109.0	2260	555	4.00	492	2370
108	3797	1.327	1.028	34.721	27.819	37.075	45.917	200	141	2.20	31.8	113.0	2261	555	4.00	489	2371
109	3995	1.228	0.909	34.718	27.824	37.087	45.935	202	141	2.22	32.1	116.3	2260	553	4.00	486	2371
110	4195	1.182	0.842	34.716	27.828	37.094	45.946	203	140	2.23	32.1	118.1	2262	550	4.00	481	2374
111	4418	1.172	0.807	34.716	27.830	37.098	45.952	203	140	2.23	32.1	119.2	2266	552	4.00	482	2377
112	4672	1.188	0.792	34.715	27.830	37.099	45.954										

Station 27 Latitude 49-30.8S Longitude 150-29.5W Date 10/20/92 Bottom Depth 4555 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								-------------	-------------	--umol/kg--	-------------	-------------	-------------				
101	2	8.027	8.027	34.497	26.875	35.779	44.291						2099				
102	57	8.032	8.027	34.497	26.875	35.779	44.291	285	4	1.06	13.6	4.8	2099	295	4.00	350	2291
103	109	8.027	8.016	34.497	26.877	35.781	44.293	284	5	1.06	13.6	4.5	2100	300	4.00	355	2288
104	158	8.020	8.004	34.496	26.878	35.783	44.295	281	7	1.07	14.0	4.5	2101	299	4.00	355	2290
105	182	7.925	7.907	34.493	26.890	35.799	44.316	273	16	1.14	15.2	4.9	2107	312	4.00	368	2289
106	232	7.894	7.871	34.493	26.895	35.806	44.325	271	18	1.16	15.5	5.1	2107	311	4.00	366	2289
107	306	7.818	7.788	34.484	26.900	35.816	44.337	268	22	1.20	16.3	5.3	2110	319	4.00	374	2288
108	380	7.648	7.610	34.464	26.911	35.834	44.364	264	28	1.27	17.6	6.1	2117	333	4.00	388	2288
109	456	7.394	7.349	34.432	26.923	35.859	44.400	258	35	1.38	19.3	7.0	2121	344	4.00	397	2287
110	529	7.215	7.163	34.414	26.935	35.880	44.430	254	40	1.44	20.1	7.5	2125	355	4.00	406	2286
111	602	6.981	6.923	34.395	26.953	35.910	44.470	251	45	1.53	20.9	8.7	2125	364	4.00	411	2282
112	674	6.771	6.707	34.381	26.971	35.938	44.509	245	53	1.56	22.2	10.3	2134	378	4.00	424	2286
113	746	6.512	6.442	34.365	26.994	35.974	44.556	238	61	1.64	23.4	12.2	2138	394	4.00	437	2284
114	819	6.219	6.144	34.354	27.024	36.018	44.614	231	71	1.73	24.6	14.7	2148	410	4.00	449	2288
115	894	5.870	5.790	34.346	27.062	36.074	44.686	224	80	1.81	26.1	18.2	2155	431	4.00	465	2289
116	968	5.478	5.393	34.344	27.109	36.140	44.770	217	90	1.91	27.5	22.4	2168	457	4.00	484	2294
117	1042	5.042	4.954	34.342	27.159	36.212	44.863	211	99	1.99	28.8	27.3	2175	481	4.00	501	2294
118	1140	4.436	4.344	34.342	27.227	36.310	44.990	207	108	2.09	30.3	34.0	2187	508	4.00	515	2300
119	1242	4.008	3.910	34.348	27.277	36.382	45.083	204	114	2.16	31.3	39.7	2197	527	4.00	525	2305
120	1386	3.483	3.378	34.385	27.359	36.492	45.218	195	127	2.26	32.6	49.8	2214	566	4.00	552	2314
121	1580	2.989	2.874	34.458	27.464	36.622	45.372	181	145	2.34	33.6	63.3	2235	601	4.00	573	2329
122	1772	2.687	2.559	34.529	27.548	36.723	45.487	175	154	2.36	33.9	73.3	2249	624	4.00	587	2339
123	1967	2.531	2.387	34.587	27.609	36.792	45.565	170	159	2.35	33.8	81.1	2256	625	4.00	584	2347
124	2166	2.376	2.216	34.644	27.669	36.860	45.641	175	156	2.28	33.0	81.9	2252	612	4.00	568	2345
125	2362	2.259	2.083	34.687	27.714	36.912	45.699	180	152	2.23	32.3	82.1	2247	595	4.00	549	2345
126	2560	2.147	1.955	34.714	27.746	36.950	45.743	185	148	2.18	31.6	86.4	2248	579	4.00	531	2349
127	2767	2.006	1.796	34.730	27.771	36.984	45.785	190	144	2.14	31.2	90.1	2251	570	4.00	519	2355
128	2973	1.856	1.629	34.736	27.789	37.011	45.820	194	142	2.14	31.0	94.4	2251	561	4.00	507	2358
129	3176	1.704	1.460	34.736	27.801	37.033	45.851	196	141	2.15	31.1	99.1	2250	562	4.00	505	2357
130	3378	1.525	1.265	34.732	27.812	37.054	45.883	199	140	2.16	31.3	104.4	2252	564	4.00	502	2358
131	3573	1.353	1.077	34.726	27.820	37.073	45.912	201	139	2.17	31.5	109.6	2256	558	4.00	493	2365
132	3769	1.222	0.928	34.720	27.825	37.087	45.934	203	139	2.19	31.8	114.4	2253	563	4.00	494	2361
133	3962	1.148	0.835	34.716	27.828	37.095	45.947	204	139	2.21	31.9	117.7	2256	566	4.00	495	2363
134	4158	1.114	0.780	34.714	27.830	37.100	45.955	205	139	2.21	32.0	119.7	2259	559	4.00	488	2368
135	4357	1.117	0.760	34.714	27.831	37.102	45.958	205	139	2.21	32.1	120.3	2263	553	4.00	482	2374
136	4528	1.124	0.747	34.713	27.831	37.103	45.960	205	138	2.21	32.1	120.6	2260	557	4.00	485	2370

Station 30 Latitude 50-59.7S Longitude 150-31.0W Date 10/21/92 Bottom Depth 4557 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy (umol/kg)	AOU (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	TCO2 (umol/kg)	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	9	6.982	6.982	34.400	26.949	35.903	44.461	289	7	1.31	17.8	7.1					
102	83	6.975	6.968	34.409	26.958	35.912	44.470	289	6	1.29	17.5	6.9	2113	315	4.00	357	2294
103	159	6.929	6.915	34.405	26.962	35.919	44.480	289	7	1.30	17.6	6.9	2111	317	4.00	359	2290
104	233	6.877	6.856	34.398	26.965	35.924	44.488	288	8	1.32	17.7	6.9	2112	319	4.00	360	2290
105	281	6.856	6.830	34.397	26.968	35.928	44.493	288	9	1.31	17.8	6.9	2113	327	4.00	368	2287
106	329	6.667	6.636	34.367	26.970	35.940	44.514	283	15	1.38	18.9	7.3	2115	326	4.00	365	2290
107	380	6.404	6.370	34.334	26.979	35.963	44.549	281	19	1.42	19.6	7.6	2118	336	4.00	372	2288
108	429	6.115	6.077	34.299	26.989	35.988	44.587	284	18	1.46	20.1	8.0	2119	343	4.00	374	2285
109	477	5.904	5.862	34.276	26.998	36.007	44.617	281	23	1.51	21.0	9.0	2124	346	4.00	374	2289
110	527	5.626	5.581	34.243	27.006	36.030	44.653	282	24	1.55	21.6	9.4	2125	354	4.00	378	2286
111	551	5.380	5.334	34.214	27.013	36.049	44.684	286	22	1.55	21.8	9.2	2123	354	4.00	375	2283
112	576	5.692	5.642	34.278	27.027	36.047	44.667	253	52	1.69	24.1	13.6	2143	390	4.00	418	2291
113	601	5.652	5.601	34.281	27.034	36.056	44.677	249	57	1.72	24.5	14.5	2144	403	4.00	431	2286
114	623	5.685	5.631	34.307	27.051	36.071	44.691	237	68	1.77	25.5	16.6	2151	411	4.00	441	2291
115	647	5.257	5.203	34.258	27.064	36.106	44.746	246	63	1.80	25.8	16.6	2151	417	4.00	438	2289
116	721	5.080	5.021	34.321	27.135	36.184	44.832	220	89	1.96	28.1	24.5	2170	466	4.00	486	2293
117	797	4.731	4.667	34.328	27.180	36.248	44.912	215	98	2.04	29.2	28.7	2178	482	4.00	495	2297
118	920	4.090	4.020	34.341	27.260	36.360	45.055	207	110	2.14	30.8	37.8	2200	519	4.00	519	2311
119	1093	3.320	3.242	34.368	27.358	36.499	45.232	199	124	2.27	32.5	48.9	2215				
120	1294	2.905	2.814	34.460	27.470	36.632	45.385	183	143	2.36	33.7	63.2	2236	601	4.00	572	2330
121	1497	2.653	2.548	34.529	27.549	36.724	45.490	176	153	2.37	33.9	72.8	2246	614	4.00	578	2337
122	1696	2.475	2.356	34.597	27.620	36.804	45.578	172	158	2.35	33.6	80.4	2254				
123	1895	2.335	2.200	34.653	27.678	36.870	45.651	175	157	2.30	33.0	83.8	2260				
124	2094	2.227	2.077	34.687	27.715	36.912	45.700	180	153	2.25	32.3	85.6	2253				
125	2292	2.137	1.970	34.711	27.743	36.946	45.738	185	148	2.21	31.6	86.7	2251	576	4.00	528	2354
126	2490	2.017	1.833	34.728	27.767	36.977	45.776	190	144	2.17	31.2	89.4	2248	566	4.00	517	2353
127	2690	1.885	1.686	34.735	27.784	37.003	45.809	193	143	2.16	31.0	93.3	2248	557	4.00	505	2356
128	2888	1.715	1.500	34.736	27.798	37.028	45.844	196	141	2.16	31.1	98.2	2256	555	4.00	500	2365
129	3085	1.596	1.364	34.735	27.808	37.045	45.868	198	140	2.17	31.2	101.9	2252	551	4.00	493	2362
130	3284	1.454	1.205	34.731	27.815	37.061	45.893	201	139	2.18	31.3	106.0	2253	550	4.00	489	2363
131	3485	1.298	1.032	34.725	27.822	37.078	45.919	203	139	2.20	31.4	111.1	2256	548	4.00	483	2367
132	3683	1.180	0.897	34.720	27.827	37.090	45.939	204	138	2.21	31.7	115.3	2259	564	4.00	494	2367
133	3880	1.107	0.805	34.719	27.832	37.101	45.954	205	138	2.21	31.8	119.0	2259	557	4.00	487	2369
134	4077	1.087	0.763	34.717	27.833	37.104	45.960	206	137	2.22	31.9	120.4	2261	556	4.00	485	2371
135	4328	1.095	0.743	34.714	27.832	37.104	45.961	206	138	2.22	32.0	121.0	2260	557	4.00	486	2370
136	4577	1.084	0.703	34.713	27.834	37.109	45.968	207	137	2.25	32.0	121.9	2260	551	4.00	479	2372

Station 33 Latitude 52-30.9S Longitude 150-28.4W Date 10/22/92 Bottom Depth 4325 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy (umol/kg)	AOU (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	TCO2 (umol/kg)	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	7	6.155	6.155	34.308	26.986	35.981	44.577	294	7	1.39	19.2	7.8	2115	323	4.00	354	2291
102	57	6.175	6.170	34.310	26.986	35.979	44.575	295	6	1.39	19.1	7.8	2116	325	4.00	357	2291
103	107	6.122	6.113	34.304	26.988	35.985	44.583	295	7	1.39	19.1	7.6	2114	336	4.00	368	2283
104	207	6.120	6.102	34.303	26.989	35.986	44.584	295	7	1.40	19.2	7.6	2114	326	4.00	356	2288
105	235	6.127	6.107	34.303	26.988	35.985	44.583	295	7	1.39	19.2	7.6	2116	339	4.00	371	2284
106	274	6.131	6.107	34.302	26.988	35.984	44.583	295	7	1.40	19.2	7.6	2113	326	4.00	356	2287
107	289	6.129	6.104	34.303	26.989	35.986	44.584	294	8	1.40	19.2	7.6	2115	337	4.00	368	2284
108	333	5.782	5.754	34.264	27.002	36.016	44.631	281	24	1.52	21.2	9.2	2122	347	4.00	374	2287
109	368	5.434	5.403	34.226	27.015	36.047	44.678	281	26	1.56	22.0	10.0	2126	364	4.00	386	2283
110	421	5.322	5.287	34.220	27.024	36.062	44.699	273	35	1.64	23.2	11.3	2133	369	4.00	390	2288
111	460	5.115	5.078	34.222	27.050	36.098	44.745	259	51	1.75	24.8	14.7	2143	398	4.00	417	2287
112	504	5.134	5.093	34.254	27.073	36.120	44.766	246	63	1.81	25.9	17.3	2151	417	4.00	436	2289
113	596	4.733	4.686	34.280	27.140	36.207	44.871	230	83	1.97	28.2	24.1	2167	460	4.00	474	2292
114	689	4.386	4.333	34.309	27.202	36.286	44.967	218	97	2.06	29.6	30.6	2181	489	4.00	496	2298
115	756	3.869	3.813	34.300	27.248	36.360	45.066	218	101	2.14	30.7	34.9	2189	511	4.00	507	2301
116	874	3.601	3.538	34.360	27.324	36.448	45.167	202	119	2.24	32.0	45.2	2207	544	4.00	533	2312
117	962	3.285	3.217	34.372	27.364	36.505	45.240	198	125	2.29	32.7	49.7	2216	562	4.00	543	2317
118	1144	2.794	2.716	34.431	27.456	36.624	45.382	188	140	2.37	33.7	60.2	2231	603	4.00	571	2324
119	1236	2.769	2.684	34.495	27.510	36.678	45.437	178	149	2.36	33.8	69.0	2243	610	4.00	577	2336
120	1366	2.638	2.544	34.543	27.561	36.736	45.501	173	155	2.38	33.9	75.5	2251	615	4.00	578	2343
121	1505	2.489	2.385	34.580	27.604	36.787	45.560	174	156	2.35	33.8	77.4	2251	621	4.00	580	2342
122	1692	2.367	2.249	34.633	27.658	36.847	45.626	176	155	2.31	33.2	80.1	2253	612	4.00	568	2346
123	1893	2.263	2.129	34.677	27.703	36.898	45.682	179	152	2.26	32.4	83.0	2251	594	4.00	549	2349
124	2091	2.160	2.010	34.707	27.736	36.937	45.728	185	148	2.22	31.7	85.3	2250	578	4.00	531	2352
125	2279	2.038	1.874	34.726	27.762	36.971	45.768			2.19	31.2	88.8	2250	566	4.00	517	2355
126	2468	1.886	1.707	34.732	27.780	36.997	45.803	191	145	2.18	31.3	95.0	2253	563	4.00	511	2359
127	2649	1.772	1.579	34.738	27.794	37.019	45.831	194	142	2.17	31.1	97.0	2251	554	4.00	500	2360
128	2841	1.635	1.426	34.737	27.805	37.038	45.858	198	140	2.18	31.1	101.1	2252	553	4.00	496	2361
129	3039	1.482	1.257	34.733	27.813	37.056	45.885	199	140	2.19	31.2	105.5	2254	549	4.00	489	2365
130	3229	1.341	1.101	34.729	27.821	37.073	45.910	202	139	2.22	31.6	109.7	2256	552	4.00	488	2366
131	3423	1.197	0.940	34.722	27.826	37.087	45.933	203	139	2.23	31.7	115.0	2258	557	4.00	489	2368
132	3613	1.118	0.843	34.718	27.829	37.096	45.947	204	138	2.23	31.8	118.8	2258	548	4.00	479	2371
133	3813	1.081	0.786	34.716	27.831	37.101	45.956	206	138	2.23	32.0	120.6	2259	560	4.00	489	2368
134	4009	1.071	0.755	34.715	27.832	37.104	45.960	206	138	2.23	32.1	121.4	2258				
135	4202	1.065	0.728	34.714	27.833	37.106	45.964	206	138	2.25	32.1	122.6	2259	553	4.00	482	2370
136	4383	1.084	0.725	34.713	27.833	37.106	45.964	206	138	2.24	32.0	122.6	2260	556	4.00	484	2371

Lamont-Doherty Earth Observatory of Columbia University
JUNO - 9 WOCE Line P16

Station 34 Latitude 53-01.9S Longitude 150-29.2W Date 10/23/92 Bottom Depth 4383 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								umol/kg									
401	9	6.045	6.044	34.301	26.995	35.994	44.596	297	6	1.39	19.1	7.7	2108	331	4.00	361	2279
402	95	5.894	5.886	34.273	26.993	36.001	44.609	298	5	1.42	19.5	7.6					
403	163	5.773	5.759	34.257	26.996	36.010	44.625	299	5	1.43	19.6	7.8	2114	333	4.00	358	2284
404	184	5.731	5.715	34.252	26.997	36.014	44.630	298	6	1.44	19.9	7.8					
405	225	5.696	5.677	34.252	27.002	36.020	44.639	288	17	1.50	20.9	8.6	2113	344	4.00	369	2278
406	273	5.343	5.321	34.210	27.011	36.048	44.683	289	19	1.53	21.6	8.8		354	4.00	374	
407	305	5.063	5.039	34.172	27.015	36.066	44.715	294	16	1.55	21.7	8.6					
408	353	4.729	4.702	34.137	27.025	36.093	44.759	290	22	1.62	23.0	9.7	2126	364	4.00	375	2282
409	400	4.808	4.777	34.184	27.053	36.117	44.779	266	46	1.76	25.2	13.9					
410	451	4.743	4.708	34.211	27.083	36.150	44.815	253	59	1.84	26.5	17.4					
411	502	4.463	4.425	34.222	27.123	36.204	44.882	245	69	1.92	27.7	20.8	2163	448	4.00	456	2291
412	553	4.375	4.333	34.249	27.154	36.239	44.921										
413	601	4.188	4.144	34.269	27.190	36.285	44.976	228	88	2.05	29.5	28.1	2182	489	4.00	492	2299
414	650	3.894	3.846	34.276	27.226	36.336	45.041	224	95	2.11	30.3	32.0					
415	698	3.653	3.604	34.283	27.256	36.379	45.095	221	99	2.16	31.0	35.2					
416	749	3.571	3.518	34.310	27.286	36.413	45.133	214	108	2.19	31.4	39.0	2199	532	4.00	521	2305
417	798	3.422	3.366	34.332	27.318	36.452	45.180	208	115	2.22	32.0	43.3					
418	896	3.153	3.091	34.368	27.372	36.521	45.261	200	125	2.29	32.8	50.0					
419	999	2.868	2.800	34.405	27.428	36.592	45.346	192	135	2.34	33.6	56.7					
420	1048	2.809	2.739	34.436	27.458	36.624	45.381	187	140	2.34	33.8	60.5					
421	1096	2.736	2.662	34.457	27.482	36.652	45.413	184	143	2.36	33.9	63.0					
422	1146	2.689	2.612	34.482	27.506	36.678	45.441	181	147	2.36	34.0	66.3					
423	1194	2.658	2.578	34.507	27.529	36.703	45.467	179	150	2.37	34.0	69.2					
424	1242	2.605	2.521	34.525	27.548	36.725	45.491	177	152	2.37	34.0	71.5					
425	1289	2.576	2.488	34.544	27.566	36.744	45.512	176	153	2.37	33.9	73.6					
426	1337	2.535	2.444	34.561	27.584	36.764	45.534	175	155	2.36	33.9	75.7					
427	1384	2.490	2.396	34.576	27.600	36.782	45.555	174	155	2.35	33.7	76.4					
428	1430	2.461	2.363	34.591	27.615	36.799	45.572	174	156	2.35	33.6	78.4					
429	1477	2.422	2.321	34.605	27.629	36.815	45.591	174	156	2.33	33.4	78.5					
430	1525	2.392	2.288	34.618	27.643	36.830	45.607	175	156	2.33	33.4	79.7					
431	1573	2.360	2.252	34.632	27.657	36.846	45.625	175	156	2.30	33.1	80.3					
432	1573	2.360	2.252	34.632	27.656	36.846	45.625	175	156	2.30	33.1	80.4					
101	1641	2.324	2.211	34.648	27.673	36.864	45.645	175	156	2.29	32.9	82.4					
433	1673	2.302	2.186	34.652	27.678	36.871	45.652	175	156	2.30	33.0	84.9					
434	1673	2.302	2.187	34.652	27.678	36.871	45.653	175	156	2.30	32.9	84.7					
435	1773	2.249	2.125	34.676	27.702	36.898	45.682	179	153	2.25	32.4	83.5					
436	1773	2.248	2.125	34.676	27.702	36.898	45.682	178	154	2.25	32.4	83.5					
102	1833	2.222	2.094	34.689	27.715	36.912	45.698	180	152	2.25	32.2	84.6					
103	2037	2.102	1.959	34.713	27.745	36.949	45.742	184	149	2.20	31.7	87.9					
104	2231	1.991	1.832	34.725	27.765	36.976	45.775	188	147	2.19	31.4	91.4					
105	2480	1.831	1.652	34.738	27.788	37.009	45.817	193	143	2.16	31.1	95.4					
106	2727	1.669	1.471	34.737	27.802	37.032	45.850	197	141	2.16	31.0	99.7					
107	2971	1.473	1.255	34.733	27.814	37.057	45.886	200	139	2.17	31.2	105.1					
108	3219	1.304	1.065	34.727	27.822	37.075	45.915	202	139	2.19	31.5	110.2					
109	3463	1.139	0.880	34.720	27.828	37.093	45.942	204	138	2.21	31.8	116.6					
110	3705	1.082	0.799	34.716	27.831	37.100	45.954	205	138	2.22	32.0	119.6					
111	4007	1.059	0.743	34.714	27.833	37.105	45.962	206	138	2.22	32.0	120.8					
112	4347	1.084	0.730	34.714	27.833	37.106	45.964	206	138	2.22	32.0	121.8					

Station 36 Latitude 53-59.9S Longitude 150-28.5W Date 10/23/92 Bottom Depth 4220 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								umol/kg									
101	8	4.845	4.844	34.146	27.016	36.077	44.736	305	7	1.54	21.3	8.5	2118	339	4.00	351	2285
102	82	4.694	4.688	34.125	27.016	36.086	44.752	306	6	1.55	21.5	8.3	2118	339	4.00	349	2286
103	157	4.476	4.465	34.100	27.021	36.103	44.780	308	7	1.58	21.7	8.5	2119	342	4.00	349	2285
104	206	4.101	4.087	34.056	27.026	36.127	44.824	312	6	1.62	22.4	8.8	2122	348	4.00	349	2285
105	246	4.008	3.990	34.045	27.027	36.134	44.835	312	6	1.63	22.7	9.0	2123	351	4.00	351	2284
106	281	4.010	3.990	34.042	27.025	36.132	44.833	311	8	1.64	22.8	9.4	2121	353	4.00	352	2282
107	306	4.673	4.650	34.168	27.055	36.126	44.794	270	43	1.78	25.2	14.1	2142	397	4.00	408	2287
108	331	4.616	4.591	34.181	27.072	36.145	44.816	263	50	1.81	25.8	15.6	2151	408	4.00	418	2292
109	355	4.522	4.496	34.205	27.101	36.179	44.854										
110	405	4.430	4.400	34.224	27.127	36.210	44.888	245	70	1.93	27.8	21.5	2164	448	4.00	455	2292
111	454	4.243	4.210	34.236	27.157	36.249	44.937	238	78	1.99	28.5	23.9	2167	466	4.00	470	2290
112	505	4.101	4.065	34.255	27.187	36.286	44.981	232	85	2.05	29.4	27.5	2177	480	4.00	481	2296
113	555	3.783	3.743	34.268	27.230	36.346	45.056	226	93	2.11	30.3	31.5	2187	502	4.00	497	2301
114	627	3.536	3.492	34.292	27.274	36.402	45.124	218	103	2.17	31.2	37.0	2194	521	4.00	510	2303
115	704	3.320	3.272	34.325	27.321	36.461	45.193	209	114	2.23	32.1	42.9	2207	548	4.00	532	2310
116	804	3.030	2.976	34.364	27.380	36.534	45.281	200	126	2.30	33.0	50.3	2218	571	4.00	547	2317
117	903	2.840	2.780	34.417	27.440	36.604	45.359	190	137	2.34	33.6	57.8	2228	598	4.00	568	2321
118	1001	2.711	2.645	34.467	27.491	36.662	45.423	183	145	2.35	33.7	63.9	2237	605	4.00	571	2330
119	1102	2.596	2.523	34.505	27.532	36.709	45.476	180	149	2.37	33.9	68.5	2242	618	4.00	581	2333
120	1200	2.507	2.427	34.549	27.575	36.757	45.528	177	153	2.36	33.7	72.7	2248	620	4.00	580	2338
121	1324	2.420	2.331	34.596	27.621	36.807	45.582	175	155	2.33	33.5	77.5					
122	1497	2.316	2.214	34.646	27.671	36.862	45.642	176	155	2.28	32.8	80.6					
123	1694	2.202	2.086	34.694	27.720	36.917	45.703	181	151	2.22	32.0	82.5					
124	1887	2.086	1.955	34.717	27.748	36.953	45.745	186	147	2.18	31.4	85.5	2251	572	4.00	525	2355
125	2074	1.975	1.830	34.730	27.769	36.980	45.779	190	144	2.16	31.1	88.6					
126	2259	1.847	1.688	34.736	27.784	37.003	45.810	193	142	2.15	30.9	92.5					
127	2445	1.675	1.502	34.738	27.800	37.029	45.845	197	140	2.15	30.9	97.7					
128	2633	1.530	1.343	34.735	27.809	37.047	45.871	199	139	2.16	31.0	102.2	2253	554	4.00	495	2362
129	2834	1.399	1.196	34.731	27.816	37.062	45.895	201	139	2.17	31.1	106.3					
130	3035	1.282	1.062	34.727	27.822	37.076	45.915	202	139	2.17	31.3	110.0					
131	3238	1.148	0.911	34.721	27.827	37.089	45.937	204	138	2.20	31.5	113.9					
132	3435	1.050	0.795	34.716	27.830	37.100	45.954	205	138	2.21	31.7	118.8	2260	550	4.00	480	2372
133	3630	1.022	0.748	34.714	27.832	37.104	45.961	206	137	2.21	31.7	120.4					
134	3831	1.012	0.717	34.712	27.832	37.106	45.964	206	138	2.21	31.9	121.7					
135	4027	1.015	0.699	34.712	27.833	37.108	45.967	207	137	2.21	31.9	123.1					
136	4243	1.024	0.683	34.712	27.834	37.110	45.970	207	137	2.22	31.9	123.7	2261	556	4.00	483	2371

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Station 38 Latitude 54-58.9S Longitude 150-30.5W Date 10/24/92 Bottom Depth 3588 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								-------------	------------	-------umol/kg	--------------	--------------	-----				
201	7	2.861	2.861	33.959	27.067	36.234	44.992	320	7	1.74	24.4	11.4	2130	369	4.00	351	2284
202	56	2.779	2.776	33.955	27.071	36.243	45.005	322	6	1.73	24.4	11.4	2131	368	4.00	349	2286
203	106	2.764	2.758	33.956	27.073	36.246	45.010	321	7	1.74	24.4	11.4	2129	369	4.00	350	2283
204	156	2.766	2.757	33.958	27.075	36.248	45.011	321	7	1.74	24.4	11.3	2130	368	4.00	349	2285
205	205	2.839	2.827	34.000	27.102	36.271	45.030	300	27	1.83	25.9	13.7	2141	394	4.00	375	2286
206	255	3.728	3.710	34.148	27.138	36.257	44.970	261	59	1.94	27.7	19.9	2161	437	4.00	431	2292
207	306	3.692	3.671	34.193	27.177	36.298	45.013	250	70	2.02	29.0	25.3	2173	466	4.00	460	2296
208	356	3.426	3.402	34.221	27.226	36.360	45.087	239	84	2.09	30.0	29.6	2180	491	4.00	479	2296
209	386	3.145	3.120	34.213	27.246	36.395	45.137	240	85	2.13	30.5	32.3	2185	499	4.00	481	2299
210	426	2.920	2.894	34.230	27.280	36.441	45.194	234	93	2.18	31.4	36.6	2191	522	4.00	498	2299
211	505	3.040	3.008	34.310	27.334	36.487	45.233	217	108	2.27	32.5	44.3	2206	548	4.00	526	2309
212	605	2.721	2.683	34.348	27.393	36.563	45.325	203	125	2.34	33.5	52.1	2220	591	4.00	559	2314
213	705	2.594	2.550	34.409	27.453	36.630	45.397	190	139	2.39	34.2	59.8	2232	617	4.00	580	2321
214	804	2.516	2.465	34.468	27.508	36.688	45.458	182	147	2.40	34.3	65.7	2239	629	4.00	589	2326
215	903	2.431	2.373	34.537	27.570	36.755	45.529	177	154	2.39	34.1	71.9	2247	628	4.00	586	2336
216	1003	2.384	2.319	34.576	27.606	36.793	45.569	176	155	2.36	33.8	74.7	2248	629	4.00	586	2337
217	1102	2.348	2.276	34.613	27.639	36.828	45.605	176	155	2.33	33.2	77.6	2250	616	4.00	573	2342
218	1202	2.288	2.210	34.641	27.667	36.859	45.640	176	155	2.31	33.0	79.6	2252	613	4.00	569	2346
219	1302	2.237	2.151	34.662	27.689	36.883	45.667	177	154	2.29	32.7	80.9					
220	1402	2.177	2.084	34.684	27.712	36.909	45.696	180	152	2.26	32.3	82.1					
221	1501	2.120	2.020	34.703	27.732	36.933	45.723	183	150	2.22	31.7	83.9	2250	586	4.00	539	2349
222	1599	2.034	1.928	34.717	27.751	36.956	45.751	185	148	2.21	31.6	86.0					
223	1748	1.930	1.813	34.731	27.771	36.983	45.783	190	145	2.19	31.1	89.3					
224	1895	1.782	1.655	34.737	27.788	37.008	45.816	193	142	2.16	30.8	93.4	2249	558	4.00	505	2356
225	2143	1.601	1.456	34.737	27.802	37.034	45.852	197	141	2.16	31.0	98.7					
226	2292	1.465	1.310	34.733	27.810	37.049	45.876	199	140	2.18	31.2	102.5					
227	2441	1.350	1.184	34.730	27.816	37.063	45.896	201	139	2.18	31.3	106.6	2256	555	4.00	492	2366
228	2591	1.231	1.054	34.726	27.822	37.076	45.916	202	139	2.20	31.5	110.2					
229	2738	1.128	0.939	34.721	27.825	37.086	45.933	203	139	2.21	31.6	113.4					
230	2887	0.996	0.796	34.716	27.830	37.100	45.954	205	138	2.22	31.8	118.9	2258	558	4.00	487	2367
231	3038	0.913	0.701	34.712	27.833	37.108	45.967	207	137	2.23	31.9	123.6					
232	3187	0.883	0.657	34.710	27.834	37.112	45.973	207	137	2.24	32.0	126.7					
233	3337	0.860	0.620	34.709	27.836	37.115	45.979	208	137	2.24	32.1	127.8	2260	561	4.00	486	2370
234	3486	0.863	0.608	34.709	27.837	37.117	45.981	208	137	2.24	32.1	128.6					
235	3636	0.879	0.608	34.709	27.837	37.117	45.981	208	137	2.24	32.1	129.0					
236	3775	0.893	0.607	34.709	27.837	37.117	45.981	207	138	2.24	32.1	129.0	2260	560	4.00	485	2370

Station 40 Latitude 56-00.6S Longitude 150-30.4W Date 10/25/92 Bottom Depth 3337 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								-------------	------------	-------umol/kg	--------------	--------------	-----				
101	2	2.709	2.709	33.953	27.075	36.251	45.017	322	6	1.75	24.8	11.9	2130	370	4.00	351	2283
102	95	2.674	2.669	33.955	27.080	36.257	45.026	322	7	1.75	24.8	11.9	2137	372	4.00	351	2291
103	185	2.357	2.346	33.948	27.102	36.297	45.082	319	12	1.79	25.5	13.1	2138	382	4.00	356	2287
104	204	2.534	2.522	33.973	27.107	36.292	45.067	313	17	1.82	25.9	14.0	2137	392	4.00	368	2282
105	224	3.394	3.380	34.099	27.131	36.268	44.999	276	47	1.88	27.2	18.1	2152	423	4.00	412	2287
106	244	4.122	4.104	34.222	27.156	36.254	44.947	241	76	1.99	28.8	23.7	2168	464	4.00	466	2291
107	265	3.970	3.951	34.223	27.173	36.279	44.979	240	78	2.01	29.3	25.4	2172	471	4.00	470	2293
108	284	3.866	3.846	34.225	27.185	36.296	45.002	239	80	2.03	29.6	26.7	2176	483	4.00	480	2294
109	304	3.647	3.626	34.224	27.207	36.329	45.045	238	82	2.07	30.0	28.6	2179	488	4.00	480	2295
110	323	3.513	3.491	34.225	27.220	36.350	45.073	237	84	2.10	30.3	30.0	2181	498	4.00	487	2295
111	344	3.290	3.268	34.221	27.238	36.380	45.114	238	85	2.12	30.7	31.5	2184	499	4.00	484	2298
112	383	3.206	3.181	34.254	27.273	36.419	45.157	228	96	2.18	31.5	36.1	2193	523	4.00	505	2301
113	444	2.958	2.930	34.288	27.323	36.481	45.231	217	109	2.24	32.5	42.5	2203	553	4.00	528	2305
114	504	2.848	2.816	34.338	27.374	36.537	45.292	206	121	2.30	33.3	49.0	2215	573	4.00	545	2313
115	578	2.796	2.759	34.389	27.419	36.584	45.341	194	133	2.34	33.8	55.1	2225	596	4.00	565	2319
116	652	2.697	2.655	34.429	27.460	36.631	45.393	187	141	2.36	34.2	60.0		610	4.00	576	
117	752	2.559	2.512	34.483	27.516	36.693	45.461	181	148	2.37	34.3	65.9	2242	622	4.00	584	2331
118	851	2.433	2.380	34.524	27.559	36.743	45.517	177	153	2.38	34.4	70.3	2246	632	4.00	591	2333
119	951	2.380	2.320	34.580	27.609	36.796	45.572	175	155	2.34	33.9	74.6	2250	625	4.00	582	2340
120	1050	2.337	2.270	34.617	27.643	36.832	45.610	176	155	2.31	33.6	77.1	2252	615	4.00	572	2345
121	1149	2.277	2.203	34.648	27.674	36.865	45.646	177	154	2.29	33.1	78.8	2254	608	4.00	563	2348
122	1249	2.217	2.136	34.675	27.700	36.895	45.679	180	152	2.25	32.6	80.9					
123	1348	2.161	2.073	34.693	27.720	36.918	45.705	182	150	2.22	32.2	82.5					
124	1448	2.099	2.004	34.710	27.739	36.941	45.731	185	148	2.20	31.8	84.2					
125	1547	2.034	1.931	34.721	27.754	36.959	45.753	187	146	2.18	31.5	86.1	2251	573	4.00	525	2355
126	1647	1.961	1.851	34.728	27.765	36.975	45.773	189	145	2.17	31.3	88.1					
127	1796	1.851	1.732	34.735	27.780	36.996	45.801	192	143	2.16	31.2	91.3					
128	1944	1.763	1.632	34.738	27.790	37.012	45.821	194	142	2.16	31.2	93.7					
129	2094	1.630	1.489	34.738	27.801	37.031	45.847	196	141	2.15	31.1	97.7	2254	555	4.00	499	2363
130	2291	1.463	1.308	34.734	27.810	37.050	45.877	199	140	2.17	31.4	102.4					
131	2485	1.311	1.142	34.729	27.818	37.067	45.903	201	139	2.18	31.5	107.1					
132	2680	1.159	0.975	34.723	27.824	37.083	45.928	203	139	2.19	31.7	111.6					
133	2877	1.018	0.819	34.717	27.830	37.098	45.950	205	138	2.21	31.9	117.3					
134	3064	0.920	0.705	34.713	27.834	37.108	45.967	206	138	2.21	32.2	123.1					
135	3258	0.878	0.645	34.710	27.835	37.113	45.975	207	137	2.21	32.3	125.8	2270	558	4.00	484	2380
136	3444	0.874	0.623	34.709	27.835	37.115	45.978	207	137	2.22	32.3	127.0					

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Station 42 Latitude 56-59.6S Longitude 150-29.4W Date 10/25/92 Bottom Depth 3263 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	3	0.866	0.866	33.923	27.188	36.467	45.330	338	6	1.88	27.0	22.2	2147	402	4.00	352	2289
102	56	0.658	0.656	33.924	27.202	36.493	45.367			1.91	27.1	23.4	2149	404	4.00	351	2291
103	106	0.623	0.619	33.940	27.216	36.509	45.385	339	8	1.90	27.4	24.7	2149	406	4.00	352	2290
104	146	0.592	0.586	33.943	27.221	36.516	45.393	337	10	1.92	27.6	25.6	2153	412	4.00	356	2292
105	171	0.547	0.540	33.975	27.249	36.546	45.426	329	19	1.98	28.5	29.1	2160	430	4.00	372	2294
106	206	1.234	1.225	34.077	27.288	36.544	45.385	287	54	2.11	30.4	35.4	2177	476	4.00	423	2298
107	255	1.914	1.900	34.220	27.355	36.570	45.374	235	100	2.29	32.9	46.3	2204	556	4.00	508	2305
108	284	2.177	2.161	34.280	27.382	36.582	45.372	217	115	2.33	33.6	50.7	2214	583	4.00	539	2309
109	316	2.272	2.254	34.331	27.415	36.610	45.393	204	127	2.36	34.2	55.1	2225	606	4.00	563	2315
110	365	2.350	2.329	34.392	27.458	36.647	45.426	191	140	2.40	34.6	60.7	2234	629	4.00	586	2320
111	404	2.352	2.328	34.436	27.493	36.682	45.460	184	147	2.41	34.8	64.3	2239	639	4.00	595	2324
112	454	2.373	2.346	34.483	27.529	36.716	45.492						2246				
113	504	2.351	2.321	34.515	27.557	36.745	45.522	176	155	2.40	34.7	70.7	2245	642	4.00	598	2331
114	554	2.349	2.315	34.548	27.584	36.771	45.548	175	156	2.38	34.3	72.8	2246	637	4.00	593	2333
115	603	2.336	2.299	34.569	27.602	36.790	45.568	174	157	2.37	34.2	74.3	2248	630	4.00	586	2337
116	672	2.300	2.259	34.604	27.633	36.823	45.602	174	157	2.34	33.8	76.6	2250	626	4.00	581	2339
117	703	2.284	2.241	34.616	27.645	36.835	45.615	174	157	2.33	33.7	77.4	2248	621	4.00	577	2339
118	803	2.235	2.186	34.651	27.677	36.870	45.652			2.29	33.2	79.3	2250	611	4.00	566	2344
119	952	2.125	2.066	34.686	27.715	36.913	45.701	179	154	2.25	32.5	82.4	2250	599	4.00	552	2347
120	1103	2.031	1.962	34.714	27.746	36.949	45.742	184	149	2.21	31.8	85.1	2250	580	4.00	532	2351
121	1251	1.940	1.861	34.731	27.767	36.976	45.774	188	146	2.17	31.3	88.0					
122	1400	1.813	1.725	34.737	27.782	36.999	45.804	191	144	2.16	31.2	91.6					
123	1551	1.672	1.574	34.740	27.796	37.021	45.833	194	142	2.16	31.1	95.5					
124	1701	1.541	1.433	34.738	27.805	37.038	45.857	196	141	2.17	31.2	99.8					
125	1850	1.435	1.317	34.735	27.810	37.050	45.876	198	141	2.17	31.3	103.1	2252	549	4.00	490	2363
126	2000	1.299	1.171	34.730	27.817	37.065	45.899	200	140	2.17	31.4	106.8					
127	2149	1.214	1.074	34.727	27.821	37.074	45.913	201	140	2.19	31.5	109.3					
128	2299	1.108	0.958	34.723	27.826	37.086	45.931	203	139	2.20	31.7	112.2					
129	2449	1.015	0.854	34.719	27.829	37.095	45.946	204	139	2.20	31.8	115.4	2256	557	4.00	488	2366
130	2599	0.916	0.744	34.714	27.832	37.104	45.961	205	138	2.21	31.9	119.3					
131	2749	0.858	0.674	34.711	27.834	37.111	45.971	206	138	2.23	32.0	123.7					
132	2998	0.809	0.603	34.709	27.837	37.118	45.982	206	139	2.24	32.3	129.0	2259	561	4.00	486	2368
133	3098	0.804	0.589	34.707	27.836	37.118	45.983	207	138	2.24	32.4	130.4					
134	3197	0.808	0.583	34.707	27.837	37.118	45.984	207	139	2.24	32.4	131.0					
135	3297	0.818	0.583	34.708	27.837	37.119	45.984	207	138	2.24	32.4	130.9					
136	3314	0.820	0.583	34.708	27.837	37.119	45.984	207	138	2.24	32.4	130.7	2260	565	4.00	489	2368

Station 45 Latitude 58-29.7S Longitude 150-29.4W Date 10/26/92 Bottom Depth 2909 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	8	-1.006	-1.006	33.984	27.330	36.719	45.685	354	8	1.94	28.4	47.7	2170	438	4.00	354	2303
102	55	-1.006	-1.007	33.984	27.330	36.719	45.685	354	8	1.94	28.4	47.9	2170	439	4.00	355	2303
103	75	-1.002	-1.004	33.990	27.335	36.723	45.689	352	10	1.94	28.5	48.1	2171	443	4.00	358	2302
104	95	-1.001	-1.003	34.003	27.345	36.733	45.699	350	12	1.96	28.6	49.1	2173	446	4.00	361	2303
105	115	-0.907	-0.910	34.058	27.386	36.768	45.727	340	21	2.02	29.1	52.7	2184	462	4.00	375	2310
106	126	-0.904	-0.907	34.081	27.405	36.786	45.745	337	24	2.03	29.3	54.3	2183	467	4.00	380	2307
107	146	-0.747	-0.751	34.134	27.441	36.812	45.761										
108	160	-0.888	-0.892	34.144	27.455	36.834	45.791	332	29	2.06	29.6	58.7	2193	483	4.00	393	2313
109	170	-0.942	-0.946	34.161	27.471	36.853	45.813	332	29	2.06	29.7	59.8	2194	489	4.00	397	2313
110	204	-0.011	-0.018	34.263	27.512	36.837	45.742	279	73	2.20	31.7	63.6	2212	542	4.00	458	2318
111	255	1.383	1.371	34.432	27.564	36.805	45.633	206	133	2.38	34.2	70.7	2239	626	4.00	560	2328
112	303	1.924	1.908	34.537	27.608	36.818	45.616	180	154	2.41	34.6	76.0		650	4.00	595	
193	304	1.931	1.914	34.540	27.610	36.819	45.617										
114	453	2.056	2.030	34.668	27.703	36.904	45.694	178	155	2.31	33.0	83.3	2254	621	4.00	571	2345
115	502	2.011	1.982	34.680	27.717	36.920	45.712	178	155	2.29	32.7	84.4	2254	614	4.00	564	2347
116	551	1.985	1.953	34.692	27.729	36.933	45.727	180	153	2.27	32.5	85.0	2251	608	4.00	557	2346
117	602	1.936	1.902	34.702	27.741	36.948	45.744	182	152	2.25	32.3	86.2	2252	602	4.00	551	2348
118	700	1.893	1.853	34.720	27.759	36.969	45.767	186	148	2.21	31.7	88.5	2248	583	4.00	533	2349
119	802	1.837	1.790	34.730	27.772	36.985	45.786	190	145	2.19	31.4	90.2	2249	572	4.00	521	2353
120	897	1.774	1.722	34.735	27.781	36.998	45.803	191	144	2.18	31.2	91.8	2248	567	4.00	515	2353
121	996	1.707	1.649	34.736	27.787	37.008	45.817	195	141	2.17	31.1	93.5	2248	564	4.00	510	2354
122	1094	1.609	1.545	34.737	27.796	37.022	45.836	196	141	2.17	31.1	96.1	2250	562	4.00	507	2357
123	1193	1.521	1.451	34.737	27.803	37.035	45.853	196	141	2.17	31.1	98.8	2250	562	4.00	504	2357
124	1293	1.400	1.324	34.734	27.809	37.048	45.874	198	141	2.18	31.3	102.3	2245	564	4.00	503	2351
125	1443	1.262	1.177	34.730	27.816	37.064	45.897	199	140	2.19	31.4	106.0	2252	563	4.00	500	2358
126	1592	1.151	1.056	34.725	27.821	37.075	45.915	201	140	2.21	31.9	110.0	2256	566	4.00	499	2363
127	1744	1.050	0.945	34.721	27.825	37.086	45.931	203	139	2.21	31.9	113.5	2257	564	4.00	495	2365
128	1893	0.950	0.835	34.717	27.829	37.096	45.948	204	139	2.23	32.0	116.0	2259	562	4.00	492	2367
129	2041	0.847	0.722	34.713	27.833	37.106	45.964	206	138	2.23	32.2	120.2	2261	564	4.00	491	2369
130	2188	0.794	0.659	34.713	27.837	37.114	45.975	206	138	2.24	32.3	123.3	2261	568	4.00	493	2368
131	2336	0.752	0.605	34.708	27.836	37.116	45.981	207	138	2.24	32.4	127.0	2260	566	4.00	490	2368
132	2481	0.727	0.569	34.707	27.837	37.120	45.986	207	138	2.25	32.4	128.3	2259	569	4.00	492	2367
133	2681	0.690	0.515	34.705	27.839	37.125	45.994	209	136	2.26	32.4	130.9	2260	571	4.00	493	2367
134	2731	0.689	0.510	34.705	27.839	37.125	45.995	209	137	2.26	32.4	130.7	2260	570	4.00	492	2367
135	2882	0.691	0.498	34.705	27.840	37.127	45.997	209	137	2.26	32.4	131.1	2260	572	4.00	493	2366
113	2971	0.699	0.498	34.704	27.839	37.126	45.996	208	138	2.25	32.3	131.4	2261	567	4.00	489	2369
136	2971	0.699	0.498	34.705	27.840	37.127	45.997	209	137	2.26	32.4	130.8	2259	567	4.00	489	2366

Station 49 Latitude 60-29.5S Longitude 150-29.8W Date 10/27/92 Bottom Depth 2767 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
113	3	-1.483	-1.483	34.093	27.435	36.851	45.843	355	12	1.91	27.3	63.4	2186	449	4.00	356	2317
114	58	-1.495	-1.497	34.092	27.434	36.851	45.844	354	12	1.91	27.3	63.5	2184	455	4.00	361	2313
115	107	-1.468	-1.471	34.139	27.471	36.886	45.876	347	19	1.95	27.7	65.1	2188	459	4.00	364	2317
116	128	-1.165	-1.168	34.208	27.517	36.912	45.884	325	38	2.01	28.4	68.5	2200	485	4.00	390	2321
117	157	-0.062	-0.068	34.414	27.637	36.962	45.868	254	98	2.17	30.8	80.0	2223	552	4.00	465	2328
118	177	0.447	0.440	34.531	27.703	36.996	45.872	221	126	2.23	31.9	87.4	2240	589	4.00	507	2338
119	206	1.004	0.994	34.641	27.757	37.017	45.861	194	148	2.27	32.5	94.2	2254	617	4.00	544	2347
120	257	1.338	1.326	34.704	27.785	37.025	45.851	187	152	2.26	32.4	97.9	2253	606	4.00	541	2349
121	305	1.345	1.330	34.720	27.798	37.037	45.862	190	149	2.26	32.4	101.4	2260	608	4.00	543	2356
122	447	1.267	1.245	34.728	27.810	37.054	45.883	194	145	2.21	31.7	103.9	2252	574	4.00	511	2356
123	595	1.140	1.109	34.725	27.817	37.068	45.905	193	148	2.24	32.1	110.0	2259	588	4.00	520	2360
124	747	1.043	1.004	34.722	27.822	37.079	45.922	194	148	2.25	32.4	113.8	2259	589	4.00	518	2361
125	901	0.939	0.892	34.718	27.826	37.090	45.939	197	145	2.25	32.2	116.5	2258	581	4.00	510	2361
126	1050	0.835	0.780	34.714	27.830	37.100	45.955	202	141	2.23	32.1	118.1	2258	571	4.00	498	2363
127	1197	0.746	0.683	34.710	27.833	37.109	45.969	205	139	2.23	32.1	121.0	2256	572	4.00	497	2361
128	1398	0.673	0.597	34.706	27.835	37.116	45.981	207	138	2.24	32.4	124.2	2259	566	4.00	490	2366
129	1598	0.598	0.510	34.705	27.839	37.125	45.995	208	138	2.25	32.4	125.8	2259	565	4.00	488	2367
130	1796	0.519	0.418	34.702	27.843	37.134	46.009						2257				
131	1991	0.440	0.326	34.702	27.847	37.144	46.024	211	136	2.26	32.5	127.3	2258	574	4.00	491	2364
132	2188	0.364	0.236	34.701	27.852	37.154	46.038	214	135	2.24	32.5	127.3	2257	572	4.00	487	2363
133	2386	0.317	0.175	34.700	27.854	37.160	46.048			2.26	32.5	127.4	2258	572	4.00	487	2363
134	2584	0.267	0.109	34.699	27.858	37.167	46.059	216	133	2.26	32.5	127.2	2257	569	4.00	483	2363
135	2785	0.228	0.054	34.699	27.860	37.173	46.068			2.25	32.5	127.0	2258	571	4.00	483	2364
136	2841	0.227	0.048	34.699	27.861	37.174	46.069	218	132	2.25	32.5	126.9	2259	572	4.00	484	2365

Station 52 Latitude 62-00.3S Longitude 150-30.0W Date 10/28/92 Bottom Depth 3042 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
111	4	-1.681	-1.681	34.001	27.366	36.795	45.801			1.91	27.0	62.3	2175	441	4.00	346	2308
112	19	-1.682	-1.682	34.001	27.366	36.796	45.801	357	11	1.91	27.0	62.2	2174	442	4.00	347	2307
101	39	-1.682	-1.683	34.002	27.366	36.796	45.802	357	11	1.91	27.0	62.2	2176	443	4.00	349	2308
102	59	-1.680	-1.681	34.001	27.366	36.795	45.801	357	12	1.91	27.0	62.0	2176	444	4.00	349	2308
103	80	-1.679	-1.681	34.002	27.366	36.796	45.801	357	12	1.92	27.0	62.0	2176	442	4.00	347	2308
193	99	-1.662	-1.664	34.016	27.378	36.806	45.810										
114	119	-1.153	-1.156	34.184	27.498	36.892	45.863	313	50	2.05	29.0	71.3	2199	496	4.00	399	2317
115	139	0.169	0.164	34.496	27.691	37.000	45.892	225	124	2.27	32.4	89.5	2244	597	4.00	508	2340
116	159	0.706	0.699	34.612	27.753	37.029	45.890	196	148	2.34	33.3	97.1	2256	631	4.00	549	2346
117	209	1.206	1.196	34.707	27.797	37.043	45.876	179	161	2.34	33.6	104.2	2266	637	4.00	566	2355
118	309	1.240	1.225	34.729	27.812	37.057	45.888	182	158	2.30	33.2	108.7	2265	619	4.00	550	2360
119	408	1.177	1.156	34.726	27.815	37.063	45.898	185	155	2.27	32.9	110.8	2263	616	4.00	547	2358
120	508	1.085	1.060	34.724	27.820	37.074	45.914	190	151	2.27	32.7	113.2	2263	596	4.00	527	2363
121	656	0.979	0.946	34.720	27.824	37.085	45.931	194	148	2.27	32.7	116.2	2262	589	4.00	518	2363
122	805	0.882	0.841	34.717	27.828	37.095	45.947	198	145	2.27	32.6	118.9	2261	581	4.00	508	2365
123	955	0.803	0.754	34.714	27.832	37.103	45.960	201	143	2.26	32.5	120.9	2261	574	4.00	500	2366
124	1102	0.722	0.665	34.712	27.835	37.112	45.974	203	141	2.26	32.5	123.1	2257	571	4.00	496	2364
125	1251	0.656	0.590	34.709	27.838	37.119	45.984	205	140	2.26	32.5	125.1	2260	574	4.00	496	2366
126	1398	0.593	0.518	34.706	27.840	37.125	45.994	206	139	2.26	32.5	126.5	2260	575	4.00	496	2365
127	1550	0.530	0.446	34.705	27.843	37.133	46.006	208	138	2.26	32.5	127.5	2259	571	4.00	491	2366
128	1699	0.464	0.371	34.704	27.847	37.141	46.018	210	137	2.26	32.6	128.4	2261	570	4.00	489	2367
129	1848	0.399	0.296	34.707	27.853	37.152	46.033	211	137	2.26	32.6	128.9	2259	571	4.00	488	2366
130	1998	0.345	0.232	34.703	27.854	37.156	46.041	213	136	2.27	32.6	130.1	2259	575	4.00	490	2365
131	2199	0.277	0.150	34.702	27.858	37.165	46.054	215	134	2.26	32.6	129.5	2260	573	4.00	486	2366
132	2395	0.198	0.057	34.700	27.861	37.173	46.068	218	132	2.26	32.5	126.9	2259	576	4.00	487	2364
133	2597	0.164	0.007	34.700	27.864	37.179	46.076	220	131	2.26	32.6	125.8	2258	572	4.00	483	2364
134	2797	0.148	-0.025	34.699	27.865	37.182	46.081	220	131	2.25	32.5	125.3	2258	570	4.00	481	2364
135	2999	0.164	-0.027	34.699	27.865	37.182	46.081	221	130	2.24	32.6	125.1	2258	565	4.00	476	2366
113	3116	0.173	-0.029	34.698	27.864	37.182	46.081	221	130	2.27	32.4	125.3		572	4.00	482	
136	3116	0.173	-0.029	34.699	27.865	37.182	46.082	221	130	2.25	32.6	125.0	2258	567	4.00	478	2366

Lamont-Doherty Earth Observatory of Columbia University

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Station 54 Latitude 62-14.2S Longitude 145-01.7W Date 10/30/92 Bottom Depth 3840 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	---------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3 ------------umol/kg	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
102	7	-1.739	-1.739	33.811	27.213	36.650	45.662	359	11	1.76	25.3	51.5	2156	415	4.00	326	2295
101	8	-1.738	-1.738	33.812	27.213	36.650	45.662	359	11	1.76	25.3	51.7	2157	413	4.00	324	2297
103	76	-1.746	-1.748	33.838	27.235	36.672	45.684	356	14	1.80	25.4	52.6	2158	422	4.00	331	2294
104	96	-1.696	-1.698	33.852	27.245	36.679	45.687	355	15	1.81	25.5	52.8	2160	421	4.00	330	2297
105	126	-1.094	-1.097	34.077	27.409	36.801	45.771	314	49	2.00	28.4	62.6	2186	478	4.00	385	2307
106	156	0.580	0.574	34.463	27.641	36.927	45.797	231	115	2.29	32.7	80.5	2236	594	4.00	513	2332
107	180	1.171	1.162	34.579	27.696	36.947	45.783	199	141	2.32	33.2	85.2	2248	622	4.00	551	2339
108	216	1.469	1.459	34.640	27.724	36.957	45.777	188	150	2.31	33.0	87.6	2251	619	4.00	556	2342
109	256	1.577	1.564	34.675	27.745	36.971	45.785	186	151	2.27	32.6	89.5	2252	611	4.00	551	2346
110	325	1.602	1.585	34.705	27.767	36.992	45.804	186	150	2.23	32.2	92.7	2253	592	4.00	535	2352
111	405	1.571	1.550	34.721	27.783	37.009	45.823	190	147	2.20	31.8	95.4	2253	578	4.00	521	2355
112	502	1.479	1.453	34.727	27.795	37.026	45.845	191	146	2.20	31.6	99.2	2253	577	4.00	518	2356
113	599	1.390	1.359	34.729	27.803	37.040	45.864										
114	698	1.278	1.242	34.728	27.810	37.054	45.884	190	149	2.23	32.2	107.2	2257	592	4.00	527	2357
115	800	1.195	1.152	34.726	27.815	37.064	45.899	194	147	2.22	32.0	110.4	2258	578	4.00	513	2361
116	900	1.118	1.070	34.723	27.818	37.072	45.911	195	146	2.23	32.2	112.8	2256	580	4.00	512	2359
117	999	1.053	0.999	34.721	27.821	37.079	45.922	197	145	2.23	32.0	114.7	2255	579	4.00	510	2358
118	1097	0.982	0.923	34.720	27.825	37.087	45.935	199	143	2.23	32.2	117.1	2259	578	4.00	508	2363
119	1194	0.918	0.853	34.718	27.828	37.094	45.945	200	143	2.24	32.2	119.1	2259	573	4.00	502	2365
120	1296	0.843	0.772	34.713	27.830	37.100	45.956	202	141	2.23	32.3	121.5	2260	574	4.00	500	2365
121	1396	0.794	0.717	34.712	27.832	37.106	45.964	203	141	2.23	32.3	123.1	2258	570	4.00	496	2365
122	1493	0.751	0.668	34.709	27.833	37.110	45.971	204	140	2.23	32.3	124.6	2258	569	4.00	494	2365
123	1635	0.689	0.597	34.708	27.836	37.117	45.982	205	140	2.24	32.3	127.0	2256	572	4.00	495	2362
124	1773	0.640	0.539	34.706	27.838	37.123	45.991	207	139	2.25	32.4	128.3	2255	576	4.00	497	2359
125	1922	0.584	0.473	34.705	27.842	37.130	46.001	208	138	2.25	32.4	128.9		571	4.00	492	
126	2069	0.532	0.411	34.704	27.844	37.136	46.011	209	138	2.25	32.4	129.9	2256	574	4.00	493	2362
127	2217	0.474	0.342	34.703	27.848	37.143	46.022	210	138	2.26	32.5	130.6	2261	572	4.00	490	2367
128	2365	0.407	0.264	34.702	27.851	37.151	46.035	211	137	2.26	32.5	132.2		572	4.00	489	
129	2511	0.362	0.208	34.703	27.855	37.159	46.045	212	136	2.26	32.5	132.9	2263				
130	2656	0.316	0.151	34.702	27.858	37.164	46.054	214	135	2.26	32.5	132.9	2259	571	4.00	485	2365
131	2852	0.237	0.057	34.702	27.863	37.175	46.070	216	134	2.26	32.4	131.8	2262	577	4.00	488	2367
132	3046	0.175	-0.021	34.702	27.867	37.184	46.083	220	131	2.25	32.4	127.8	2261	569	4.00	480	2368
133	3242	0.153	-0.060	34.700	27.867	37.187	46.088	221	130	2.25	32.4	125.5	2259	569	4.00	479	2366
134	3432	0.152	-0.079	34.700	27.868	37.189	46.091	222	129	2.25	32.4	125.2	2259	568	4.00	478	2366
135	3671	0.168	-0.087	34.700	27.869	37.190	46.092	222	129	2.25	32.4	126.2	2257	565	4.00	476	2365
136	3894	0.189	-0.089	34.700	27.869	37.190	46.092	222	129	2.24	32.4	125.9	2259	569	4.00	478	2365

Station 55 Latitude 62-14.5S Longitude 140-01.0W Date 10/30/92 Bottom Depth 4470 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	---------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3 ------------umol/kg	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
112	7	-0.476	-0.476	34.003	27.324	36.680	45.616	348	9	1.86	27.0	49.1	2167	423	4.00	350	2305
102	75	-0.543	-0.545	34.002	27.326	36.687	45.626	348	9	1.86	27.1	49.1	2164	423	4.00	349	2302
103	140	-0.293	-0.298	34.093	27.389	36.733	45.657	321	34	1.99	28.6	56.7	2183	470	4.00	392	2306
104	165	0.649	0.642	34.387	27.575	36.859	45.726	236	110	2.28	32.6	73.2	2228	584	4.00	507	2325
105	195	1.444	1.435	34.577	27.675	36.911	45.733	192	146	2.35	33.5	82.1	2245	626	4.00	561	2334
106	225	1.609	1.598	34.626	27.703	36.928	45.741	186	151	2.32	33.3	84.6	2251	621	4.00	561	2342
107	254	1.748	1.735	34.661	27.721	36.938	45.743	182	153	2.30	32.9	86.0	2252	617	4.00	561	2344
108	284	1.769	1.754	34.681	27.735	36.951	45.755	183	152	2.27	32.6	87.4	2252	613	4.00	558	2345
109	329	1.691	1.674	34.695	27.752	36.972	45.780	185	151	2.25	32.4	89.3	2250	599	4.00	543	2347
110	378	1.715	1.695	34.712	27.765	36.983	45.790	186	149	2.22	32.0	90.9	2250	589	4.00	534	2350
111	452	1.642	1.618	34.722	27.778	37.001	45.811	188	148	2.21	31.8	92.9	2250	583	4.00	527	2351
101	526	1.553	1.525	34.723	27.786	37.014	45.829										
113	599	1.511	1.479	34.727	27.792	37.023	45.840	191	146	2.19	31.7	97.8	2252	571	4.00	514	2356
114	697	1.415	1.378	34.729	27.801	37.037	45.860	193	146	2.19	31.7	100.8	2257	568	4.00	508	2363
115	794	1.332	1.289	34.728	27.807	37.048	45.876	193	146	2.21	31.9	104.4	2261	574	4.00	512	2366
116	893	1.259	1.211	34.727	27.811	37.057	45.889	194	146	2.21	31.9	106.9	2258	579	4.00	514	2361
117	990	1.179	1.125	34.725	27.816	37.066	45.903	195	145	2.21	32.0	109.8	2261	568	4.00	503	2368
118	1137	1.063	1.000	34.721	27.821	37.079	45.922	198	144	2.21	32.1	113.4	2259	572	4.00	504	2365
119	1284	0.960	0.889	34.717	27.825	37.089	45.938	199	143	2.23	32.2	116.9	2259	565	4.00	495	2366
120	1431	0.865	0.785	34.713	27.829	37.099	45.954	202	142	2.23	32.3	119.9	2261	567	4.00	495	2368
121	1578	0.798	0.709	34.711	27.832	37.106	45.965	204	140	2.23	32.2	122.2	2258	569	4.00	495	2365
122	1725	0.724	0.625	34.709	27.836	37.115	45.978	206	139	2.24	32.3	125.4	2258	569	4.00	493	2365
123	1874	0.670	0.561	34.705	27.837	37.120	45.986	206	139	2.24	32.4	127.4	2260	571	4.00	494	2366
124	2024	0.616	0.497	34.704	27.839	37.126	45.996	208	138	2.25	32.4	128.1	2259	564	4.00	486	2367
125	2170	0.555	0.425	34.703	27.843	37.134	46.008	209	138	2.25	32.4	128.5	2260	571	4.00	490	2366
126	2318	0.495	0.355	34.701	27.845	37.140	46.019	210	137	2.25	32.4	129.2	2260	570	4.00	488	2366
127	2512	0.428	0.273	34.701	27.850	37.150	46.032	212	136	2.25	32.4	130.0	2257	577	4.00	492	2362
128	2709	0.364	0.194	34.700	27.854	37.158	46.045	213	136	2.26	32.5	131.0	2258	572	4.00	487	2364
129	2909	0.293	0.107	34.701	27.859	37.168	46.060	215	134	2.26	32.5	131.9	2257	570	4.00	483	2364
130	3159	0.226	0.019	34.701	27.864	37.178	46.075	221	130	2.26	32.5	130.3	2258	574	4.00	485	2363
131	3409	0.183	-0.047	34.700	27.866	37.185	46.085	220	131	2.25	32.5	127.6	2256	566	4.00	477	2364
132	3660	0.180	-0.074	34.700	27.868	37.188	46.090	221	130	2.26	32.4	127.6	2258	570	4.00	479	2365
133	3914	0.195	-0.085	34.699	27.868	37.189	46.091	221	130	2.26	32.4	127.3	2257	569	4.00	479	2364
134	4167	0.215	-0.093	34.700	27.869	37.190	46.093	222	129	2.26	32.4	126.6	2256	569	4.00	478	2363
135	4369	0.236	-0.094	34.699	27.868	37.189	46.092	222	130	2.26	32.4	126.8	2254	568	4.00	477	2360
136	4497	0.250	-0.095	34.700	27.869	37.190	46.093	222	129	2.26	32.4	127.0	2256	569	4.00	479	2363

Lamont-Doherty Earth Observatory of Columbia University
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Station 56 Latitude 62-26.6S Longitude 135-05.8W Date 11/ 1/92 Bottom Depth 4730 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
212	9	-0.276	-0.277	33.997	27.310	36.654	45.579	348	7	1.86	27.2	45.0	2165	423	4.00	353	2302
201	57	-0.375	-0.377	33.998	27.316	36.666	45.596	347	9	1.86	27.3	45.1	2167	427	4.00	355	2303
202	107	-0.389	-0.393	33.998	27.316	36.667	45.599	346	10	1.87	27.4	45.1	2166	425	4.00	353	2303
203	161	0.266	0.260	34.128	27.388	36.699	45.591	299	51	2.07	30.0	55.1	2191	485	4.00	414	2310
204	175	1.341	1.333	34.371	27.517	36.762	45.593	220	119	2.34	33.9	67.2	2230	604	4.00	540	2322
205	224	1.436	1.425	34.488	27.605	36.842	45.666	202	137	2.37	34.4	75:3	2242	621	4.00	557	2332
206	302	1.907	1.891	34.605	27.664	36.873	45.671	179	155	2.36	34.2	80.8	2251	634	4.00	580	2339
207	349	1.967	1.948	34.633	27.682	36.888	45.682	177	156	2.34	33.8	82.7	2250	628	4.00	575	2340
208	398	1.965	1.943	34.657	27.701	36.907	45.702	179	155	2.31	33.4	83.7	2254	615	4.00	564	2347
209	491	1.925	1.897	34.690	27.731	36.939	45.735	181	152	2.26	32.7	86.4	2252	605	4.00	554	2348
210	635	1.814	1.778	34.714	27.760	36.974	45.776	186	149	2.22	32.2	89.6	2250	583	4.00	531	2351
211	774	1.694	1.650	34.724	27.778	36.999	45.807	189	146	2.19	31.8	93.0	2252	573	4.00	519	2356
213	915	1.576	1.524	34.730	27.792	37.020	45.835	192	145	2.19	31.7	97.1	2253	570	4.00	513	2358
214	1057	1.440	1.380	34.730	27.802	37.038	45.861	194	144	2.19	31.9	101.6	2253	570	4.00	510	2358
215	1198	1.316	1.248	34.729	27.811	37.054	45.884	195	144	2.21	32.0	106.3	2257	568	4.00	505	2363
216	1340	1.214	1.136	34.727	27.817	37.067	45.902	196	144	2.22	32.0	109.4	2259	568	4.00	503	2365
217	1483	1.115	1.028	34.723	27.821	37.077	45.918	198	143	2.22	32.2	112.8	2257	564	4.00	498	2364
218	1624	1.021	0.925	34.719	27.825	37.086	45.933	200	142	2.22	32.3	115.6	2259	566	4.00	497	2366
219	1768	0.941	0.836	34.716	27.828	37.095	45.947	202	141	2.22	32.4	118.5	2259	571	4.00	499	2365
220	1917	0.870	0.755	34.713	27.831	37.102	45.959	204	140	2.25	32.4	120.9	2257	569	4.00	496	2363
221	2074	0.801	0.675	34.710	27.833	37.110	45.970	206	139	2.26	32.4	123.9	2261	564	4.00	490	2369
222	2228	0.746	0.608	34.707	27.835	37.115	45.979	207	138	2.24	32.5	126.0	2260	563	4.00	488	2368
223	2377	0.699	0.550	34.706	27.838	37.121	45.989	208	138	2.26	32.5	127.6	2260	570	4.00	492	2367
224	2526	0.645	0.484	34.704	27.840	37.127	45.999	209	137	2.26	32.6	128.8	2261	569	4.00	491	2368
225	2675	0.576	0.404	34.703	27.844	37.136	46.012	209	137	2.26	32.7	129.0	2259	567	4.00	487	2367
226	2823	0.515	0.331	34.702	27.847	37.144	46.023	211	137	2.26	32.8	129.6	2258	575	4.00	493	2364
227	2971	0.456	0.261	34.701	27.851	37.151	46.034	212	136	2.27	32.8	130.7	2259	571	4.00	487	2366
228	3118	0.410	0.202	34.700	27.853	37.157	46.044	214	134	2.27	32.7	131.5	2260	569	4.00	485	2367
229	3268	0.364	0.143	34.701	27.857	37.165	46.054	214	135	2.27	32.8	132.0	2261	570	4.00	484	2369
230	3417	0.316	0.082	34.701	27.860	37.171	46.065	216	134	2.26	32.8	133.1	2261	549	4.00	465	2374
231	3619	0.257	0.005	34.702	27.865	37.181	46.078	218	132	2.26	32.8	132.2	2261	570	4.00	481	2368
232	3817	0.225	-0.046	34.702	27.868	37.187	46.087	220	131	2.27	32.8	130.4	2261	569	4.00	480	2368
233	4015	0.222	-0.070	34.701	27.869	37.188	46.090	221	130	2.26	32.7	130.6		571	4.00	480	
234	4265	0.231	-0.088	34.701	27.870	37.190	46.093	221	130	2.25	32.8	130.0	2258	563	4.00	473	2367
235	4518	0.253	-0.095	34.702	27.871	37.192	46.095	222	130	2.26	32.7	129.7	2261	568	4.00	477	2368
236	4745	0.280	-0.095	34.702	27.871	37.192	46.095	222	129	2.27	32.8	130.3	2260	570	4.00	480	2367

Station 59 Latitude 61-54.3S Longitude 137-43.5W Date 11/ 2/92 Bottom Depth 4114 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	9	-0.320	-0.320	33.995	27.311	36.657	45.585	350	5	1.85	27.1	46.6	2165	419	4.00	349	2304
102	66	-0.398	-0.400	33.996	27.315	36.667	45.598	349	8	1.85	27.0	46.7	2165	422	4.00	351	2302
103	125	-0.475	-0.479	34.000	27.321	36.678	45.614	346	11	1.88	27.2	48.3	2166	429	4.00	355	2302
104	146	-0.174	-0.179	34.117	27.403	36.739	45.656	313	41	2.03	29.1	56.5	2187	477	4.00	399	2308
105	166	0.464	0.457	34.377	27.578	36.873	45.751	246	101	2.26	32.3	72.5	2227	577	4.00	497	2325
106	185	0.919	0.911	34.488	27.640	36.906	45.758	217	126	2.32	33.3	78.0	2241	600	4.00	527	2335
107	245	1.744	1.731	34.642	27.706	36.923	45.729	182	153	2.30	33.3	83.7	2253	623	4.00	566	2344
108	284	1.748	1.733	34.665	27.724	36.941	45.746	183	152	2.28	32.8	85.2	2253				
109	353	1.792	1.773	34.696	27.746	36.960	45.763	184	151	2.25	32.2	87.0	2252	601	4.00	547	2349
110	402	1.790	1.768	34.708	27.756	36.971	45.773	184	150	2.22	32.0	87.9	2251	592	4.00	538	2349
111	501	1.684	1.656	34.718	27.773	36.993	45.802	188	148	2.20	31.7	90.7	2252	582	4.00	527	2353
112	599	1.588	1.556	34.728	27.788	37.014	45.828	191	146	2.18	31.4	94.4	2254	568	4.00	512	2359
113	695	1.505	1.467	34.731	27.797	37.028	45.846	193	145	2.18	31.5	97.4	2256	571	4.00	513	2361
114	791	1.406	1.363	34.731	27.804	37.041	45.865	194	144	2.18	31.5	100.3	2259	566	4.00	506	2366
115	890	1.332	1.283	34.731	27.810	37.051	45.879	194	145	2.19	31.4	100.3	2256	569	4.00	507	2361
116	987	1.241	1.186	34.728	27.814	37.061	45.894	196	144	2.19	31.6	105.9	2258	566	4.00	503	2364
117	1136	1.161	1.098	34.726	27.818	37.070	45.908	197	143	2.20	31.7	108.8	2261	569	4.00	504	2367
118	1284	1.059	0.987	34.723	27.823	37.082	45.925	199	142	2.20	31.9	112.0	2259	565	4.00	498	2366
119	1431	0.968	0.887	34.718	27.826	37.090	45.939	201	141	2.20	31.9	115.2	2259	565	4.00	495	2367
120	1580	0.887	0.796	34.715	27.830	37.099	45.953	203	140	2.21	31.8	117.8	2259	566	4.00	494	2366
121	1729	0.806	0.706	34.712	27.833	37.107	45.966	205	139	2.22	32.1	121.2	2259	569	4.00	495	2366
122	1980	0.690	0.572	34.710	27.840	37.122	45.988	205	140	2.22	32.1	122.0	2260	565	4.00	489	2367
123	2131	0.643	0.515	34.709	27.842	37.128	45.997	208	138	2.23	32.2	126.4	2260	569	4.00	491	2367
124	2281	0.587	0.448	34.708	27.845	37.135	46.008	209	137	2.24	32.3	127.0	2259	568	4.00	489	2366
125	2430	0.509	0.359	34.704	27.847	37.142	46.020	210	137	2.23	32.3	127.3	2261	571	4.00	489	2368
126	2576	0.453	0.292	34.702	27.850	37.148	46.030	212	136	2.23	32.3	127.7	2259	570	4.00	488	2366
127	2724	0.403	0.230	34.702	27.853	37.155	46.040	213	136	2.24	32.4	129.1	2259	573	4.00	489	2365
128	2873	0.349	0.165	34.701	27.856	37.162	46.051	214	135	2.24	32.4	130.3	2261	570	4.00	485	2368
129	3022	0.303	0.106	34.702	27.860	37.169	46.061	215	134	2.24	32.3	130.4	2261	572	4.00	485	2368
130	3171	0.252	0.043	34.702	27.864	37.177	46.072	217	133	2.24	32.4	129.6	2259	570	4.00	482	2366
131	3320	0.217	-0.006	34.702	27.866	37.182	46.080	219	132	2.23	32.4	128.3	2257	572	4.00	483	2363
132	3470	0.181	-0.055	34.701	27.868	37.187	46.088	220	131	2.24	32.4	126.9	2261	569	4.00	480	2368
133	3622	0.175	-0.076	34.702	27.869	37.190	46.091	221	130	2.23	32.4	126.2	2257	568	4.00	478	2364
134	3774	0.183	-0.083	34.701	27.869	37.190	46.092	221	130	2.23	32.4	126.6	2257	568	4.00	478	2364
135	3922	0.194	-0.088	34.701	27.869	37.190	46.093	221	130	2.23	32.4	126.9	2258	568	4.00	477	2365
136	4125	0.215	-0.088	34.701	27.870	37.191	46.093	222	129	2.23	32.4	126.9	2258	566	4.00	476	2366

Station 62 Latitude 61-03.8S Longitude 140-27.1W Date 11/ 2/92 Bottom Depth 3709 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3 -------------umol/kg-------------	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	7	-0.419	-0.419	34.013	27.330	36.682	45.615	350	7	1.86	27.3	51.3	2169	425	4.00	352	2307
102	55	-0.590	-0.591	34.014	27.338	36.700	45.642	350	8	1.87	27.3	52.1	2171	431	4.00	355	2307
103	120	0.034	0.029	34.136	27.407	36.731	45.636	300	52	2.07	29.8	58.0	2193	491	4.00	415	2311
104	144	1.428	1.421	34.455	27.578	36.817	45.642	201	137	2.37	34.4	72.4	2243	630	4.00	565	2330
105	175	1.911	1.902	34.556	27.623	36.833	45.631	177	157	2.40	34.7	78.2	2251	654	4.00	598	2335
106	214	1.989	1.977	34.620	27.669	36.874	45.667	175	159	2.35	34.0	81.3	2254	640	4.00	587	2342
107	254	1.904	1.890	34.640	27.692	36.901	45.699	178	156	2.33	33.5	82.9	2254	628	4.00	574	2343
108	304	1.875	1.858	34.670	27.718	36.929	45.727	181	154	2.28	32.8	84.9	2252	612	4.00	559	2345
109	354	1.919	1.900	34.700	27.740	36.947	45.743	182	152	2.24	32.3	86.5	2251	594	4.00	544	2349
110	429	1.802	1.779	34.709	27.756	36.970	45.772	185	150	2.22	32.1	88.9	2250	590	4.00	537	2349
111	503	1.738	1.711	34.721	27.771	36.988	45.794	188	148	2.20	31.8	90.8	2249	578	4.00	525	2351
112	602	1.625	1.592	34.728	27.785	37.009	45.821	191	146	2.18	31.6	94.2	2249	569	4.00	514	2354
113	702	1.555	1.516	34.732	27.794	37.022	45.838	193	144	2.18	31.5	96.6	2253	567	4.00	510	2358
114	802	1.460	1.415	34.732	27.801	37.035	45.856	194	143	2.17	31.6	99.8	2253	564	4.00	506	2360
115	901	1.344	1.294	34.730	27.808	37.049	45.876	194	144	2.20	31.7	103.4	2254	567	4.00	506	2360
116	1001	1.258	1.203	34.728	27.813	37.059	45.891	196	144	2.20	31.8	106.2	2256	569	4.00	506	2361
117	1101	1.151	1.090	34.725	27.818	37.071	45.909	195	145	2.21	32.0	110.2	2258	577	4.00	510	2362
118	1201	1.094	1.027	34.724	27.821	37.077	45.919	198	143	2.21	32.0	111.8	2256	569	4.00	502	2362
119	1300	0.999	0.926	34.719	27.825	37.087	45.934	197	145	2.21	32.2	115.4	2258	573	4.00	503	2363
120	1400	0.928	0.850	34.716	27.827	37.093	45.945	200	142	2.21	32.2	117.9	2258	571	4.00	499	2364
121	1550	0.823	0.735	34.712	27.831	37.104	45.961	203	141	2.21	32.2	121.3	2259	569	4.00	496	2365
122	1699	0.754	0.657	34.710	27.834	37.112	45.973	204	140	2.22	32.3	123.9	2260	570	4.00	495	2367
123	1850	0.695	0.588	34.707	27.836	37.118	45.983	206	139	2.22	32.3	126.3	2258	567	4.00	491	2366
124	1999	0.631	0.513	34.705	27.839	37.125	45.994	207	139	2.22	32.4	127.6	2258	568	4.00	490	2365
125	2150	0.571	0.443	34.704	27.843	37.133	46.006	208	138	2.22	32.3	127.9	2258	571	4.00	491	2364
126	2299	0.504	0.365	34.703	27.846	37.140	46.018	210	137	2.23	32.4	128.3	2261	571	4.00	489	2367
127	2449	0.431	0.281	34.702	27.850	37.149	46.031	212	136	2.23	32.5	129.3	2259	571	4.00	488	2365
128	2599	0.389	0.228	34.702	27.853	37.155	46.041	213	136	2.24	32.5	130.1	2260	571	4.00	487	2367
129	2748	0.329	0.156	34.701	27.857	37.163	46.052	214	135	2.24	32.6	130.3	2261	573	4.00	487	2367
130	2898	0.294	0.108	34.701	27.859	37.168	46.060	216	134	2.23	32.6	130.3	2257	573	4.00	486	2363
131	3047	0.239	0.042	34.701	27.863	37.176	46.071	218	132	2.24	32.5	129.9	2258	569	4.00	481	2365
132	3198	0.206	-0.004	34.701	27.865	37.181	46.079	219	132	2.23	32.5	128.8	2259	569	4.00	481	2365
133	3347	0.183	-0.041	34.700	27.867	37.185	46.085	220	131	2.23	32.4	128.0	2256	568	4.00	479	2363
134	3498	0.174	-0.065	34.701	27.868	37.188	46.089	221	130	2.23	32.5	128.0	2258	568	4.00	478	2364
135	3647	0.176	-0.077	34.701	27.869	37.189	46.091	221	130	2.23	32.5	128.2	2259	566	4.00	476	2367
136	3741	0.182	-0.080	34.701	27.869	37.189	46.091	221	130	2.23	32.5	128.2	2256	568	4.00	478	2363

Station 66 Latitude 59-50.3S Longitude 143-47.8W Date 11/ 3/92 Bottom Depth 3430 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3 -------------umol/kg-------------	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	9	-0.615	-0.615	33.971	27.304	36.669	45.613	356	2	1.82	26.7	53.7	2163	424	4.00	349	2300
102	85	-0.868	-0.870	33.976	27.318	36.699	45.657	355	5	1.82	26.7	54.9	2167	429	4.00	349	2302
103	106	-0.947	-0.950	33.990	27.333	36.718	45.681	353	9	1.84	26.8	55.9	2168	433	4.00	351	2302
104	130	-1.007	-1.010	34.096	27.421	36.808	45.773	326	36	1.97	28.3	63.4	2186	470	4.00	380	2310
105	156	0.250	0.244	34.388	27.599	36.906	45.795	241	108	2.22	32.1	74.6	2224	571	4.00	487	2324
106	181	0.614	0.606	34.543	27.703	36.986	45.853	213	133	2.27	32.9	86.3	2243	607	4.00	525	2337
107	204	0.875	0.866	34.607	27.738	37.005	45.857	199	144	2.28	33.0	91.3	2250	616	4.00	539	2343
108	230	1.040	1.029	34.640	27.754	37.011	45.854	193	148	2.28	33.1	92.8	2253	615	4.00	542	2346
109	254	1.118	1.106	34.655	27.761	37.014	45.852	190	150	2.27	33.1	94.4	2254	618	4.00	547	2347
110	304	1.419	1.404	34.708	27.782	37.017	45.839	188	150	2.22	32.3	95.6	2253	585	4.00	525	2353
111	354	1.386	1.368	34.713	27.789	37.026	45.850	187	151	2.22	32.4	98.0	2255	597	4.00	534	2353
112	427	1.379	1.358	34.725	27.800	37.037	45.861	189	149	2.21	32.2	100.7	2257	588	4.00	526	2358
113	501	1.346	1.321	34.728	27.805	37.044	45.870	191	148	2.20	32.1	102.3	2255	584	4.00	521	2356
114	600	1.272	1.241	34.728	27.810	37.054	45.884	192	148	2.20	32.1	105.3	2256	575	4.00	511	2361
115	698	1.193	1.156	34.727	27.816	37.064	45.899	196	144	2.19	31.9	107.7	2255	571	4.00	506	2361
116	797	1.142	1.100	34.725	27.818	37.070	45.907	198	142	2.19	31.9	109.5	2257	563	4.00	498	2364
117	895	1.068	1.020	34.723	27.821	37.078	45.920	198	143	2.20	32.0	112.1	2257	572	4.00	504	2363
118	994	0.978	0.925	34.720	27.826	37.088	45.935	200	142	2.21	32.2	114.7	2259	566	4.00	497	2367
119	1142	0.882	0.821	34.716	27.829	37.097	45.949	201	142	2.21	32.2	118.3	2258	569	4.00	498	2365
120	1288	0.797	0.727	34.712	27.831	37.105	45.963	203	141	2.22	32.3	120.9	2260	570	4.00	496	2367
121	1435	0.729	0.650	34.711	27.835	37.113	45.975	205	140	2.22	32.3	123.9	2261	566	4.00	492	2368
122	1583	0.664	0.576	34.707	27.837	37.119	45.985	206	139	2.22	32.4	126.7	2260	561	4.00	485	2369
123	1731	0.630	0.532	34.705	27.838	37.123	45.991	207	139	2.23	32.5	127.5	2260	567	4.00	489	2367
124	1877	0.559	0.452	34.705	27.843	37.132	46.005						2259				
125	2024	0.492	0.375	34.704	27.846	37.140	46.017	210	137	2.23	32.5	128.0	2256	570	4.00	489	2363
126	2173	0.438	0.310	34.702	27.848	37.146	46.027	211	137	2.23	32.6	128.8	2257	566	4.00	484	2365
127	2321	0.376	0.238	34.701	27.852	37.154	46.039	213	136	2.24	32.6	129.2	2259	569	4.00	486	2366
128	2470	0.324	0.175	34.701	27.855	37.161	46.049	214	135	2.24	32.6	129.0	2257	568	4.00	483	2364
129	2619	0.275	0.114	34.700	27.858	37.167	46.059	215	134	2.24	32.7	129.0	2257	569	4.00	482	2364
130	2770	0.236	0.063	34.700	27.861	37.173	46.067	217	133	2.24	32.6	127.9	2261	569	4.00	482	2368
131	2916	0.207	0.022	34.700	27.863	37.178	46.074	218	132	2.23	32.6	127.1	2258	570	4.00	481	2364
132	3065	0.188	-0.010	34.700	27.865	37.181	46.079	220	131	2.23	32.6	126.2	2257	569	4.00	480	2364
133	3213	0.176	-0.035	34.701	27.866	37.184	46.084	220	131	2.23	32.6	126.2	2256	567	4.00	478	2363
134	3363	0.174	-0.051	34.700	27.867	37.186	46.086	220	131	2.23	32.6	126.6	2257	565	4.00	476	2364
135	3514	0.180	-0.060	34.700	27.868	37.187	46.088	221	131	2.23	32.6	127.0	2256	569	4.00	479	2363
136	3626	0.191	-0.060	34.701	27.868	37.187	46.088	220	131	2.23	32.7	127.1	2257	561	4.00	472	2366

Lamont-Doherty Earth Observatory of Columbia University

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Station 69 Latitude 58-52.6S Longitude 146-10.9W Date 11/ 4/92 Bottom Depth 3205 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
104	8	-0.714	-0.714	33.924	27.270	36.642	45.592	359	0	1.76	25.8	55.3	2164	415	4.00	340	2304
105	41	-0.851	-0.852	33.931	27.281	36.661	45.620	361	0	1.77	25.8	55.6	2164	422	4.00	344	2301
106	76	-1.209	-1.210	33.979	27.333	36.734	45.713	355	9	1.83	26.6	58.0	2170	429	4.00	344	2307
107	106	-1.149	-1.152	34.052	27.390	36.786	45.760	346	18	1.90	27.5	60.2					
108	136	-0.477	-0.481	34.274	27.543	36.895	45.827	284	72	2.10	30.3	70.8	2210	521	4.00	431	2321
109	165	0.457	0.450	34.535	27.706	36.998	45.874	215	132	2.25	32.6	86.7					
110	205	0.986	0.977	34.639	27.757	37.017	45.863	192	150	2.27	33.1	94.2	2256	617	4.00	542	2349
111	234	1.235	1.224	34.686	27.778	37.023	45.855	185	154	2.27	33.0	97.2					
112	264	1.350	1.337	34.709	27.788	37.027	45.852	186	153	2.24	32.6	98.4					
113	304	1.346	1.331	34.720	27.798	37.036	45.862	185	154	2.24	32.8	101.0	2258	603	4.00	539	2355
114	355	1.333	1.316	34.725	27.803	37.042	45.869	186	152	2.23	32.5	102.6					
115	429	1.285	1.263	34.727	27.808	37.051	45.880	191	148	2.20	32.1	104.4	2256	578	4.00	515	2359
116	504	1.239	1.213	34.728	27.812	37.057	45.889	194	146	2.19	31.9	105.6					
117	603	1.155	1.124	34.726	27.817	37.067	45.904	195	145	2.19	32.0	108.2	2257	572	4.00	507	2362
118	703	1.072	1.036	34.724	27.821	37.076	45.917	195	147	2.22	32.4	112.1					
119	803	0.997	0.956	34.721	27.824	37.084	45.930	197	145	2.22	32.4	114.1	2257	572	4.00	503	2363
120	903	0.933	0.886	34.719	27.827	37.091	45.940	196	146	2.22	32.5	116.9					
121	1027	0.861	0.808	34.716	27.829	37.098	45.951	198	145	2.22	32.5	119.1					
122	1152	0.791	0.730	34.713	27.832	37.105	45.963	200	143	2.23	32.5	121.6					
123	1301	0.716	0.647	34.709	27.835	37.113	45.975	202	142	2.23	32.6	124.2					
124	1450	0.647	0.568	34.708	27.839	37.121	45.988	204	141	2.23	32.4	125.6					
125	1600	0.579	0.491	34.706	27.841	37.128	45.999	207	139	2.23	32.4	126.7					
126	1749	0.519	0.421	34.703	27.843	37.134	46.009	208	139	2.23	32.5	127.5					
127	1897	0.451	0.343	34.703	27.847	37.143	46.022	210	138	2.23	32.6	128.7					
128	2046	0.398	0.281	34.702	27.850	37.149	46.031	211	137	2.23	32.5	128.7					
129	2194	0.342	0.214	34.701	27.853	37.156	46.042	212	136	2.23	32.5	128.5					
130	2343	0.284	0.146	34.701	27.857	37.164	46.054	215	134	2.22	32.5	128.5					
131	2491	0.246	0.096	34.700	27.859	37.169	46.062	216	133	2.23	32.5	127.9					
132	2639	0.218	0.057	34.700	27.861	37.173	46.068	217	133	2.22	32.5	127.5					
133	2789	0.195	0.022	34.700	27.863	37.177	46.074	218	132	2.22	32.5	127.1					
134	2937	0.186	0.000	34.700	27.864	37.180	46.078	219	132	2.22	32.5	128.1					
135	3087	0.186	-0.014	34.700	27.865	37.182	46.080	218	133	2.22	32.5	128.1					
136	3189	0.195	-0.014	34.700	27.865	37.182	46.080	219	132	2.23	32.5	128.1					

Station 71 Latitude 58-12.3S Longitude 147-39.4W Date 11/ 5/92 Bottom Depth 2754 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	7	-0.672	-0.673	34.120	27.427	36.793	45.738	357	2	1.86	27.5	58.8	2179	434	4.00	356	2315
102	46	-0.674	-0.676	34.125	27.431	36.797	45.742	356	2	1.86	27.6	58.6	2177	435	4.00	357	2313
103	60	-0.775	-0.777	34.173	27.475	36.846	45.796	345	15	1.94	28.5	59.3	2187	457	4.00	373	2315
104	76	-0.827	-0.829	34.203	27.500	36.874	45.827	331	29	2.03	29.5	62.1	2195	477	4.00	389	2318
113	105	1.234	1.229	34.461	27.597	36.846	45.681	207	133	2.33	33.9	72.6	2238	616	4.00	548	2328
114	155	1.920	1.912	34.589	27.649	36.858	45.655	177	156	2.36	34.3	79.0	2253	642	4.00	588	2340
115	204	1.996	1.985	34.640	27.684	36.888	45.680	175	158	2.32	33.7	81.8	2254	631	4.00	579	2344
116	304	1.865	1.849	34.679	27.726	36.937	45.736	180	154	2.26	32.8	84.8	2251	601	4.00	549	2347
117	454	1.816	1.791	34.721	27.765	36.978	45.779	186	148	2.19	31.7	88.6	2251	566	4.00	515	2356
118	603	1.669	1.636	34.737	27.789	37.010	45.820	191	145	2.16	31.3	92.8	2251	564	4.00	510	2358
119	753	1.526	1.484	34.734	27.798	37.028	45.845	194	143	2.15	31.3	97.0	2251	559	4.00	503	2358
120	902	1.370	1.320	34.731	27.807	37.046	45.872	196	143	2.16	31.5	101.8	2256	556	4.00	496	2366
121	1001	1.284	1.228	34.730	27.813	37.057	45.888	198	141	2.16	31.5	104.6	2255	550	4.00	489	2365
122	1100	1.198	1.137	34.727	27.817	37.067	45.902	200	140	2.17	31.6	107.1	2255	555	4.00	492	2364
123	1199	1.133	1.066	34.728	27.822	37.076	45.915	201	140	2.17	31.6	109.1	2257	546	4.00	483	2369
124	1299	1.043	0.971	34.722	27.824	37.083	45.927	202	140	2.18	31.8	111.9	2257	560	4.00	492	2365
125	1398	0.969	0.890	34.718	27.826	37.090	45.939	203	139	2.19	31.8	114.4	2258	552	4.00	484	2369
126	1499	0.880	0.795	34.715	27.830	37.099	45.953	204	139	2.19	31.9	117.2	2260	559	4.00	488	2370
127	1600	0.823	0.732	34.713	27.832	37.105	45.962	206	138	2.20	32.2	119.5	2257	557	4.00	485	2367
128	1699	0.766	0.668	34.708	27.832	37.108	45.970	206	139	2.20	32.2	122.1	2260	561	4.00	487	2369
129	1848	0.701	0.594	34.707	27.836	37.117	45.982	206	139	2.21	32.3	125.0	2260	567	4.00	491	2368
130	1996	0.676	0.558	34.706	27.837	37.120	45.987	208	138	2.21	32.4	126.8	2262	561	4.00	485	2371
131	2143	0.635	0.506	34.705	27.839	37.125	45.995	209	137	2.21	32.4	128.1	2260	566	4.00	488	2368
132	2292	0.599	0.459	34.704	27.841	37.130	46.003	209	138	2.22	32.4	129.1	2260	563	4.00	485	2368
133	2443	0.524	0.373	34.703	27.845	37.139	46.016	211	136	2.22	32.5	128.9	2259	566	4.00	485	2367
134	2592	0.361	0.200	34.701	27.854	37.158	46.045	214	134	2.23	32.6	127.8	2260	570	4.00	485	2366
135	2691	0.356	0.187	34.700	27.854	37.159	46.046	214	135	2.23	32.5	127.8	2260	569	4.00	484	2367
136	2748	0.359	0.185	34.700	27.854	37.159	46.046	214	135	2.23	32.5	128.0	2259	569	4.00	484	2366

Station 72 Latitude 56-58.2S Longitude 140-48.6W Date 11/ 6/92 Bottom Depth 5049 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								-------------	-------------umol/kg	-------------							
101	3	0.660	0.660	33.935	27.210	36.501	45.375	350	-3	1.81	27.2	31.1	2154	400	4.00	347	2299
102	37	0.636	0.634	33.934	27.211	36.503	45.378	351	-4	1.81	27.2	31.3	2153	401	4.00	348	2296
103	87	-0.006	-0.009	33.943	27.253	36.583	45.493	346	7	1.90	28.1	35.1	2162	422	4.00	356	2299
104	126	-0.375	-0.379	33.936	27.266	36.617	45.549	345	11	1.93	28.1	39.8	2164	431	4.00	358	2298
105	157	0.348	0.342	34.041	27.314	36.621	45.511	304	45	2.06	30.0	41.6	2180	472	4.00	404	2301
106	206	1.269	1.259	34.193	27.380	36.631	45.469	251	89	2.23	32.5	49.5	2208	549	4.00	489	2310
107	255	2.169	2.155	34.353	27.441	36.640	45.429	201	131	2.36	34.6	58.8	2232	620	4.00	573	2320
108	305	2.265	2.248	34.425	27.491	36.684	45.467	186	146	2.39	35.0	64.7	2243	646	4.00	599	2327
109	403	2.194	2.171	34.491	27.550	36.746	45.531	178	154	2.40	35.0	70.9	2251	656	4.00	607	2333
110	502	2.257	2.228	34.569	27.608	36.800	45.581	173	158	2.35	34.4	75.5	2252	645	4.00	598	2338
111	601	2.260	2.225	34.626	27.654	36.845	45.626	175	156	2.28	33.3	78.6	2254	617	4.00	572	2346
112	700	2.202	2.160	34.661	27.687	36.881	45.664	178	154	2.24	32.7	80.8	2252	604	4.00	558	2348
113	800	2.136	2.088	34.683	27.711	36.908	45.695	179	153	2.23	32.4	82.8	2251	596	4.00	550	2348
114	901	2.096	2.041	34.697	27.725	36.925	45.714	182	151	2.20	32.1	84.4	2253	586	4.00	540	2353
115	1100	1.958	1.890	34.722	27.758	36.965	45.762	187	147	2.16	31.5	87.6	2251	572	4.00	523	2354
116	1297	1.819	1.739	34.732	27.777	36.993	45.797	190	144	2.15	31.3	90.8	2250	567	4.00	515	2355
117	1494	1.669	1.576	34.736	27.793	37.018	45.830	194	142	2.14	31.1	95.5	2252	559	4.00	504	2359
118	1696	1.510	1.403	34.733	27.803	37.038	45.859	196	142	2.15	31.3	100.1	2253	557	4.00	499	2362
119	1899	1.331	1.210	34.730	27.814	37.059	45.891	199	140	2.16	31.4	105.5	2254	560	4.00	497	2362
120	2099	1.182	1.048	34.724	27.820	37.075	45.915	202	139	2.17	31.6	110.8	2258	556	4.00	491	2368
121	*2297*	*1.076*	*0.927*	*34.720*	*27.825*	*37.087*	*45.934*	*203*	*139*	*2.19*	*31.8*	*115.3*	*2257*	*559*	*4.00*	*491*	*2366*
122	2494	0.988	0.824	34.715	27.828	37.096	45.948	204	139	2.19	31.9	118.9	2258	558	4.00	488	2367
123	2695	0.936	0.755	34.713	27.831	37.103	45.959	205	139	2.20	32.0	121.6	2257	557	4.00	486	2367
124	2898	0.950	0.750	34.713	27.831	37.103	45.959	205	139	2.19	32.0	121.6	2260	560	4.00	488	2369
125	3098	0.966	0.747	34.713	27.831	37.103	45.960	205	139	2.20	32.0	121.8	2260	558	4.00	487	2369
126	3298	0.981	0.742	34.712	27.831	37.103	45.960	205	139	2.20	32.0	122.0	2259	560	4.00	488	2368
127	3497	0.988	0.729	34.711	27.831	37.104	45.962	205	139	2.20	32.0	122.8	2260	559	4.00	487	2370
128	3698	0.973	0.693	34.712	27.833	37.109	45.968	206	138	2.21	32.0	123.4	2259	560	4.00	487	2368
129	3898	0.986	0.685	34.711	27.834	37.109	45.969	206	138	2.20	32.0	123.7	2260	560	4.00	487	2370
130	4096	0.976	0.653	34.710	27.835	37.112	45.974	206	139	2.20	32.1	124.3	2257	564	4.00	489	2365
131	4296	0.921	0.577	34.708	27.838	37.120	45.986	207	138	2.21	32.3	125.5	2254	564	4.00	488	2362
132	4495	0.916	0.550	34.708	27.839	37.123	45.990	208	138	2.20	32.3	126.3	2258	567	4.00	490	2366
133	4694	0.928	0.538	34.707	27.839	37.124	45.992	208	137	2.20	32.2	126.5	2258	566	4.00	489	2365
134	4895	0.950	0.535	34.706	27.839	37.123	45.992	208	137	2.20	32.2	126.6	2257	563	4.00	487	2365
135	4994	0.962	0.534	34.707	27.839	37.124	45.992	208	137	2.20	32.3	126.6	2259	564	4.00	487	2367
136	5050	0.966	0.531	34.708	27.840	37.125	45.993	208	138	2.21	32.3	127.0	2260	563	4.00	486	2369

Station 73 Latitude 56-02.0S Longitude 135-01.6W Date 11/ 7/92 Bottom Depth 3156 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								-------------	-------------umol/kg	-------------							
201	3	1.952	1.952	33.952	27.136	36.353	45.158	333	2	1.79	26.2	18.6	2139	389	4.00	356	2286
202	35	1.466	1.465	33.950	27.170	36.414	45.244	333	6	1.82	26.8	21.5	2144	397	4.00	357	2287
203	75	0.784	0.781	33.956	27.220	36.503	45.370	331	15	1.90	28.0	29.1	2155	421	4.00	367	2291
204	86	0.476	0.473	33.941	27.226	36.527	45.411			1.89	28.0	31.1	2155	420	4.00	362	2292
205	115	0.625	0.620	33.966	27.237	36.530	45.405	323	24	1.94	28.6	31.7	2162	432	4.00	375	2295
206	141	0.457	0.452	33.976	27.255	36.557	45.442	321	27	1.96	28.8	34.4	2164	443	4.00	381	2293
207	160	0.424	0.418	33.986	27.265	36.569	45.455	318	31	1.98	29.1	36.0	2167	452	4.00	388	2294
208	181	0.765	0.757	34.038	27.287	36.570	45.437	298	47	2.03	30.0	36.8	2174	473	4.00	412	2294
209	206	1.333	1.324	34.097	27.298	36.548	45.383	278	62	2.10	31.0	40.5	2184	506	4.00	452	2296
210	256	2.639	2.624	34.307	27.365	36.540	45.305	209	120	2.27	33.7	48.5	2213	588	4.00	555	2307
211	305	2.600	2.582	34.347	27.401	36.577	45.344	200	129	2.31	34.1	53.0	2222	592	4.00	558	2316
212	346	2.243	2.223	34.348	27.431	36.627	45.412	200	131	2.35	34.5	56.7	2226	614	4.00	570	2315
213	404	2.455	2.431	34.433	27.483	36.665	45.438	184	145	2.36	34.7	62.6	2238	623	4.00	583	2327
214	503	2.430	2.399	34.509	27.546	36.729	45.502	177	153	2.35	34.5	69.1	2242	632	4.00	590	2329
215	601	2.383	2.346	34.557	27.589	36.774	45.549	174	156	2.33	34.2	72.8	2248	623	4.00	581	2337
216	699	2.310	2.267	34.605	27.634	36.822	45.601	174	157	2.30	33.7	76.3	2249	612	4.00	568	2342
217	798	2.242	2.193	34.630	27.660	36.852	45.634	174	158	2.29	33.6	78.7	2251	623	4.00	577	2342
218	896	2.210	2.154	34.664	27.690	36.884	45.667	177	155	2.24	32.9	80.6	2253	594	4.00	550	2351
219	995	2.135	2.073	34.687	27.715	36.913	45.700	179	153	2.22	32.5	82.7	2249	599	4.00	552	2346
220	1095	2.085	2.016	34.701	27.731	36.932	45.722	182	151	2.19	32.2	84.1	2252	588	4.00	540	2351
221	1195	2.023	1.948	34.714	27.747	36.951	45.745			2.18	31.9	85.8	2248	581	4.00	533	2349
222	1292	1.968	1.886	34.723	27.759	36.967	45.763	186	147	2.15	31.6	87.4	2251	570	4.00	521	2355
223	1393	1.909	1.820	34.730	27.769	36.981	45.780	188	146	2.14	31.3	89.2	2249	566	4.00	516	2354
224	1491	1.835	1.740	34.734	27.779	36.995	45.799	190	145	2.13	31.3	91.0	2249	565	4.00	513	2354
225	1592	1.754	1.652	34.737	27.788	37.009	45.817	192	144	2.13	31.2	93.3	2249	559	4.00	506	2357
226	1740	1.622	1.510	34.737	27.798	37.027	45.843	195	142	2.13	31.2	97.7	2251	556	4.00	500	2359
227	1889	1.523	1.401	34.735	27.805	37.040	45.861	196	141	2.13	31.3	100.5	2251	556	4.00	498	2360
228	2037	1.394	1.262	34.733	27.813	37.055	45.884	199	140	2.14	31.5	104.5	2251	558	4.00	497	2359
229	2185	1.294	1.151	34.729	27.817	37.066	45.901	199	141	2.15	31.6	108.1	2254	558	4.00	495	2362
230	2333	1.201	1.046	34.725	27.821	37.076	45.916	200	141	2.17	31.7	110.9	2254	554	4.00	489	2364
231	2482	1.122	0.956	34.722	27.825	37.085	45.930	202	140	2.18	31.8	113.9	2254	559	4.00	491	2363
232	2631	1.068	0.890	34.720	27.827	37.091	45.940	203	140	2.18	31.9	116.3	2256	558	4.00	489	2365
233	2783	1.011	0.820	34.717	27.830	37.098	45.951	204	139	2.19	32.0	118.2	2256	555	4.00	485	2366
234	2932	0.935	0.732	34.714	27.833	37.106	45.964	205	139	2.19	32.2	121.0	2259	564	4.00	491	2367
235	3083	0.858	0.643	34.712	27.837	37.115	45.978	206	138	2.20	32.2	123.2	2258	562	4.00	488	2367
236	3138	0.836	0.616	34.712	27.838	37.118	45.982	206	139	2.20	32.3	123.8	2257	568	4.00	493	2363

Lamont-Doherty Earth Observatory of Columbia University
JUNO - 9 WOCE Line P17

Station 77 Latitude 54-00.3S Longitude 134-59.3W Date 11/ 8/92 Bottom Depth 2675 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy (umol/kg)	AOU (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	TCO2 (umol/kg)	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
113	5	5.173	5.172	34.146	26.979	36.024	44.667	312	-3	1.53	21.5	9.4	2115	339	4.00	356	2283
114	14	4.909	4.907	34.157	27.018	36.076	44.732	311	0	1.51	21.4	9.2	2115	338	4.00	351	2283
115	56	4.597	4.593	34.131	27.032	36.106	44.777	311	3	1.54	21.9	9.4	2117	341	4.00	350	2284
116	105	3.975	3.968	34.072	27.052	36.159	44.861	309	9	1.63	23.2	9.8	2122	357	4.00	356	2281
117	155	3.915	3.904	34.075	27.060	36.171	44.876	309	10	1.63	23.2	9.6	2122	356	4.00	355	2282
118	204	3.952	3.938	34.086	27.066	36.174	44.877	299	20	1.68	23.9	10.7	2127	367	4.00	366	2281
119	284	4.031	4.011	34.126	27.090	36.194	44.893	276	42	1.78	25.8	14.4	2141	398	4.00	398	2285
120	354	4.097	4.071	34.183	27.129	36.229	44.924	253	64	1.92	27.9	20.3	2159	442	4.00	443	2289
121	384	3.646	3.620	34.156	27.153	36.277	44.995	258	63	1.96	28.5	21.5	2163	448	4.00	440	2291
122	432	3.969	3.938	34.253	27.199	36.304	45.005	230	88	2.05	29.9	28.4	2179	484	4.00	483	2297
123	597	3.222	3.182	34.283	27.296	36.441	45.178	217	107	2.21	32.2	39.2	2198	537	4.00	519	2302
124	746	2.810	2.761	34.376	27.408	36.574	45.331	195	132	2.33	34.0	53.7	2223	590	4.00	560	2318
125	896	2.631	2.573	34.451	27.485	36.659	45.425										
126	1045	2.528	2.459	34.513	27.544	36.724	45.494	177	152	2.37	34.4	69.6	2246	620	4.00	581	2336
127	1194	2.403	2.324	34.583	27.611	36.798	45.574	174	156	2.34	34.0	76.1	2250	622	4.00	580	2341
128	1342	2.293	2.204	34.636	27.664	36.856	45.637	175	157	2.30	33.4	80.1	2252	612	4.00	567	2346
129	1491	2.227	2.127	34.669	27.696	36.892	45.677	177	155	2.26	32.9	82.4	2251	601	4.00	555	2347
130	1639	2.153	2.042	34.694	27.723	36.923	45.711	180	152	2.23	32.3	84.4	2251	588	4.00	541	2350
131	1839	2.015	1.889	34.717	27.754	36.961	45.758	185	149	2.19	31.6	87.8	2250	573	4.00	524	2353
132	2037	1.758	1.619	34.731	27.785	37.008	45.818	191	145	2.16	31.5	95.3	2251	560	4.00	506	2359
133	2237	1.564	1.412	34.731	27.800	37.034	45.855	195	143	2.16	31.5	101.1	2251	557	4.00	499	2359
134	2438	1.419	1.251	34.728	27.809	37.053	45.882	197	142	2.18	31.7	106.1	2255	560	4.00	499	2363
135	2639	1.370	1.186	34.726	27.813	37.060	45.893	198	142	2.18	31.8	108.1	2255	559	4.00	496	2363
136	2672	1.362	1.175	34.726	27.813	37.061	45.894	199	141	2.18	31.8	108.2	2255	555	4.00	493	2364

Station 80 Latitude 52-31.2S Longitude 135-00.0W Date 11/ 9/92 Bottom Depth 4321 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy (umol/kg)	AOU (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	TCO2 (umol/kg)	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
201	8	8.076	8.076	34.441	26.824	35.727	44.237	291	-3	1.00	12.9	4.8	2091	286	4.00	340	2287
202	17	7.980	7.979	34.437	26.835	35.742	44.257	293	-4	1.01	13.1	4.4	2092	290	4.00	343	2285
203	56	7.709	7.704	34.451	26.887	35.806	44.332	288	3	1.07	14.0	4.8	2099	296	4.00	346	2290
204	77	7.714	7.707	34.460	26.893	35.812	44.338	282	8	1.11	14.6	5.0	2100	303	4.00	354	2286
205	107	7.534	7.523	34.450	26.912	35.840	44.374	283	9	1.18	15.7	5.6	2107	312	4.00	362	2288
206	185	7.254	7.236	34.429	26.936	35.878	44.424	271	23	1.29	18.1	6.6	2117	330	4.00	378	2290
207	220	7.157	7.136	34.417	26.941	35.887	44.438	268	26	1.34	18.8	7.0	2121	337	4.00	385	2290
208	290	6.885	6.858	34.385	26.954	35.914	44.477	263	34	1.41	20.1	7.8	2124	350	4.00	395	2288
209	304	6.889	6.860	34.392	26.959	35.919	44.482	272	25	1.36	19.4	7.4	2120	339	4.00	382	2288
210	378	6.664	6.629	34.368	26.972	35.942	44.516	272	26	1.40	19.9	7.8	2123	341	4.00	381	2291
211	501	6.130	6.086	34.318	27.003	36.000	44.599										
212	533	6.075	6.028	34.327	27.017	36.018	44.619	245	58	1.65	24.0	13.1	2143	390	4.00	425	2291
213	594	5.445	5.395	34.253	27.037	36.069	44.701	253	54	1.71	24.9	14.1	2144	397	4.00	421	2288
214	660	5.188	5.133	34.261	27.074	36.119	44.763	245	64	1.78	26.0	16.7	2149	413	4.00	433	2288
215	802	4.688	4.624	34.307	27.168	36.238	44.905	219	94	1.99	29.2	27.7	2178	473	4.00	486	2300
216	901	4.149	4.080	34.323	27.239	36.337	45.029	211	106	2.10	30.8	34.3	2192	508	4.00	509	2305
217	1000	3.774	3.699	34.346	27.296	36.413	45.124	204	115	2.17	31.8	41.6	2199	534	4.00	527	2305
218	1098	3.380	3.301	34.367	27.352	36.489	45.219	199	124	2.23	32.7	47.9	2211	554	4.00	538	2313
219	1197	3.103	3.018	34.400	27.405	36.556	45.300	192	133	2.28	33.4	54.5	2221	580	4.00	556	2318
220	1293	2.976	2.885	34.452	27.458	36.616	45.366	182	144	2.32	33.9	62.4	2232	592	4.00	564	2327
221	1489	2.624	2.521	34.522	27.546	36.722	45.489	177	152	2.35	34.2	71.1	2245	609	4.00	572	2338
222	1684	2.458	2.339	34.596	27.620	36.806	45.581	172	158	2.33	34.0	79.9	2256	617	4.00	575	2348
223	1880	2.335	2.201	34.644	27.670	36.862	45.643	172	159	2.29	33.5	84.9	2258	601	4.00	557	2355
224	2075	2.232	2.083	34.683	27.711	36.909	45.696	178	154	2.24	32.6	85.7	2254	587	4.00	541	2354
225	2272	2.084	1.920	34.704	27.741	36.947	45.742	179	155	2.23	32.5	92.9	2260	579	4.00	531	2363
226	2462	1.986	1.806	34.722	27.764	36.977	45.777	186	148	2.18	31.9	92.7	2256	570	4.00	519	2361
227	2660	1.817	1.622	34.723	27.779	37.001	45.812	186	150	2.20	32.1	100.3	2261	561	4.00	508	2369
228	2855	1.693	1.482	34.724	27.790	37.020	45.838	190	147	2.19	32.1	103.1	2262	561	4.00	504	2370
229	3053	1.558	1.330	34.726	27.803	37.041	45.867	193	146	2.19	32.0	105.6	2260	552	4.00	493	2371
230	3255	1.425	1.180	34.722	27.810	37.057	45.891	196	144	2.19	32.1	109.7	2261	557	4.00	494	2370
231	3455	1.337	1.074	34.720	27.815	37.069	45.908	197	144	2.19	32.3	113.2	2263	552	4.00	487	2375
232	3658	1.302	1.018	34.719	27.818	37.075	45.917	198	143	2.20	32.4	115.0	2266	553	4.00	488	2377
233	3857	1.295	0.990	34.718	27.819	37.078	45.921	198	143	2.20	32.4	115.6	2265	549	4.00	483	2378
234	4061	1.292	0.965	34.717	27.820	37.080	45.925	199	143	2.20	32.4	116.2	2267	549	4.00	483	2379
235	4263	1.300	0.949	34.717	27.821	37.082	45.928	199	143	2.20	32.4	117.2	2267	547	4.00	481	2380
236	4295	1.304	0.949	34.717	27.821	37.082	45.928	199	143	2.20	32.4	117.2	2268	547	4.00	481	2381

Lamont-Doherty Earth Observatory of Columbia University

JUNO - 9 WOCE Line P17

Station 83 Latitude 51-00.4S Longitude 135-00.1W Date 11/10/92 Bottom Depth 4480 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	7	7.704	7.704	34.441	26.879	35.798	44.325	289	2	1.11	15.0	5.7	2101	299	4.00	350	2290
102	26	7.709	7.707	34.441	26.878	35.797	44.323	290	1	1.12	15.0	5.5	2104	315	4.00	368	2284
103	46	7.553	7.548	34.440	26.900	35.827	44.360	288	4	1.13	15.2	5.5	2101	306	4.00	356	2285
104	106	7.454	7.444	34.441	26.917	35.848	44.386	284	8	1.16	15.6	5.5	2107	312	4.00	360	2289
105	154	7.448	7.433	34.442	26.919	35.851	44.389	283	9	1.17	15.7	5.4	2107	325	4.00	375	2282
106	206	7.431	7.411	34.443	26.922	35.856	44.394	283	10	1.17	15.8	5.4	2108	313	4.00	362	2289
107	306	7.438	7.408	34.445	26.925	35.858	44.397	282	11	1.17	15.8	5.2	2109	335	4.00	387	2278
108	395	7.416	7.377	34.442	26.927	35.861	44.402	280	12	1.19	16.1	5.4	2109	316	4.00	364	2289
109	454	7.324	7.280	34.434	26.934	35.873	44.418	276	17	1.24	17.1	5.8	2112	319	4.00	367	2290
110	553	6.997	6.944	34.397	26.952	35.907	44.467	268	28	1.37	19.3	7.2	2119	337	4.00	382	2289
111	683	6.601	6.536	34.355	26.974	35.949	44.527	266	33	1.45	20.7	8.2	2125	353	4.00	393	2287
112	782	6.132	6.060	34.316	27.005	36.004	44.604	257	45	1.58	22.6	10.7	2134	373	4.00	407	2288
113	851	5.879	5.803	34.326	27.045	36.056	44.668	234	70	1.75	25.3	15.9	2150	413	4.00	446	2290
114	930	5.552	5.471	34.317	27.079	36.106	44.733	228	78	1.83	26.7	18.8	2158	435	4.00	463	2290
115	1051	4.967	4.879	34.330	27.158	36.214	44.869	214	97	1.98	29.0	26.7	2175	473	4.00	491	2297
116	1152	4.345	4.252	34.334	27.230	36.319	45.003	208	108	2.09	30.6	34.3	2189	507	4.00	513	2301
117	1251	3.789	3.693	34.350	27.300	36.417	45.128	202	118	2.18	31.8	41.4	2201	533	4.00	526	2308
118	1402	3.285	3.181	34.392	27.383	36.527	45.262	193	131	2.27	33.2	52.5	2218	568	4.00	548	2317
119	1601	2.862	2.746	34.471	27.486	36.651	45.407	181	146	2.34	34.2	65.8	2237	604	4.00	573	2330
120	1801	2.606	2.476	34.555	27.576	36.754	45.523	171	158	2.35	34.4	78.1	2251	614	4.00	575	2344
121	2000	2.433	2.288	34.615	27.640	36.827	45.605	169	161	2.33	34.1	85.3	2256	614	4.00	571	2349
122	2096	2.352	2.199	34.640	27.667	36.859	45.641	170	161	2.31	33.8	88.0	2262	611	4.00	567	2356
123	2196	2.295	2.134	34.656	27.685	36.880	45.665	169	162	2.30	33.6	91.3	2263	602	4.00	556	2361
124	2398	2.183	2.006	34.690	27.723	36.925	45.715	176	157	2.25	32.9	92.3	2259	584	4.00	537	2361
125	2498	2.098	1.913	34.694	27.733	36.940	45.736	174	160	2.26	33.1	98.1	2266	593	4.00	543	2366
126	2596	2.072	1.878	34.709	27.748	36.957	45.754	179	154	2.21	32.2	94.5	2260	577	4.00	528	2363
127	2796	1.919	1.709	34.718	27.768	36.986	45.792	183	153	2.21	32.4	99.6	2261	572	4.00	519	2366
128	2993	1.773	1.546	34.728	27.788	37.015	45.829	190	147	2.17	31.8	100.6	2254	560	4.00	505	2361
129	3191	1.613	1.370	34.725	27.799	37.035	45.859	191	147	2.19	32.0	106.2	2258	563	4.00	503	2366
130	3388	1.493	1.232	34.722	27.807	37.051	45.882	194	145	2.19	32.1	109.5	2261	553	4.00	492	2372
131	3584	1.376	1.098	34.720	27.814	37.066	45.904	196	144	2.20	32.2	113.3	2260	553	4.00	489	2371
132	3781	1.315	1.018	34.718	27.818	37.074	45.916	198	144	2.21	32.3	115.3	2265	547	4.00	482	2378
133	3977	1.301	0.982	34.718	27.820	37.078	45.922	198	144	2.21	32.4	116.5	2266	555	4.00	488	2377
134	4177	1.296	0.955	34.716	27.820	37.080	45.926	198	144	2.22	32.4	117.3	2264	549	4.00	483	2377
135	4378	1.303	0.939	34.717	27.822	37.083	45.929	198	144	2.21	32.4	117.6	2264	541	4.00	475	2379
136	4469	1.313	0.938	34.717	27.822	37.083	45.929	198	144	2.22	32.5	117.5	2266	547	4.00	480	2379

Station 87 Latitude 49-00.0S Longitude 134-57.4W Date 11/11/92 Bottom Depth 4862 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
201	3	8.404	8.404	34.390	26.734	35.623	44.120	290	-4	0.92	11.8	3.6	2082	280	4.00	337	2280
202	38	8.336	8.332	34.399	26.752	35.644	44.144	293	-7	0.94	12.1	3.4	2085	275	4.00	330	2287
203	58	7.959	7.954	34.414	26.821	35.730	44.245	293	-4	0.96	12.5	3.5	2087	286	4.00	338	2282
204	107	7.872	7.862	34.421	26.840	35.753	44.272	288	1	1.03	13.4	3.9	2093	290	4.00	341	2286
205	156	7.707	7.692	34.440	26.880	35.800	44.327	272	19	1.18	16.1	4.8	2106	318	4.00	372	2284
206	177	7.653	7.635	34.438	26.886	35.809	44.338	271	20	1.19	16.4	4.9	2109	320	4.00	374	2287
207	206	7.574	7.553	34.439	26.899	35.826	44.358	277	15	1.19	16.3	5.1	2107	320	4.00	372	2284
208	235	7.502	7.479	34.442	26.912	35.842	44.378	277	15	1.20	16.5	5.3	2108	322	4.00	373	2284
209	265	7.476	7.450	34.445	26.919	35.850	44.387	279	14	1.20	16.4	5.3	2109	321	4.00	371	2286
210	352	7.412	7.377	34.450	26.933	35.867	44.407	279	14	1.21	16.8	5.5	2111	320	4.00	369	2289
211	390	7.350	7.312	34.442	26.936	35.874	44.417	274	19	1.23	17.4	5.7	2113	329	4.00	378	2286
212	430	7.249	7.207	34.427	26.939	35.882	44.429	269	25	1.28	18.1	6.1	2116	332	4.00	380	2288
213	497	7.114	7.066	34.414	26.948	35.898	44.452	269	26	1.31	18.7	6.5	2117	342	4.00	389	2284
214	644	6.640	6.580	34.362	26.973	35.947	44.523	263	36	1.44	20.8	8.1	2126	354	4.00	395	2288
215	733	6.192	6.125	34.316	26.996	35.992	44.589	270	32	1.47	21.2	8.7	2125	351	4.00	384	2288
216	773	6.072	6.002	34.303	27.002	36.003	44.607	270	33	1.48	21.5	9.1	2125	363	4.00	395	2282
217	891	5.679	5.600	34.319	27.064	36.085	44.707	231	75	1.76	25.9	17.1	2156	421	4.00	451	2293
218	1041	4.861	4.774	34.324	27.165	36.227	44.887	215	97	1.95	28.9	26.7	2177	474	4.00	490	2298
219	1190	4.174	4.080	34.332	27.247	36.344	45.036	207	110	2.08	30.7	35.0	2191	511	4.00	513	2302
220	1389	3.341	3.238	34.396	27.381	36.521	45.254	191	132	2.24	33.0	51.6	2218	568	4.00	550	2318
221	1592	2.864	2.749	34.484	27.496	36.661	45.416	177	150	2.31	34.1	67.1	2240	605	4.00	574	2333
222	1791	2.642	2.513	34.551	27.570	36.746	45.513	169	160	2.34	34.3	78.0	2252	611	4.00	574	2346
223	1993	2.460	2.315	34.609	27.633	36.819	45.595	163	167	2.34	34.3	90.3	2266	612	4.00	570	2361
224	2194	2.332	2.171	34.638	27.668	36.862	45.645	163	169	2.35	34.3	97.3	2274	609	4.00	563	2371
225	2395	2.214	2.036	34.665	27.700	36.901	45.690	166	167	2.30	33.8	98.3	2273	605	4.00	557	2370
226	2647	2.118	1.918	34.703	27.740	36.947	45.742	178	156	2.21	32.4	93.4	2259	580	4.00	531	2362
227	2898	1.946	1.725	34.717	27.766	36.983	45.788	182	153	2.19	32.2	98.5	2262	571	4.00	518	2367
228	3149	1.791	1.548	34.728	27.788	37.015	45.829	190	147	2.15	31.7	100.2	2256	561	4.00	506	2363
229	3398	1.557	1.294	34.722	27.802	37.043	45.870	192	146	2.17	32.1	108.3	2266	561	4.00	500	2374
230	3649	1.386	1.101	34.718	27.812	37.064	45.901	194	146	2.19	32.2	113.2	2262	557	4.00	493	2372
231	3899	1.314	1.004	34.717	27.818	37.075	45.918	196	145	2.19	32.4	115.6	2263	551	4.00	485	2375
232	4098	1.288	0.957	34.716	27.820	37.080	45.926	197	145	2.19	32.4	117.1	2264	549	4.00	483	2376
233	4297	1.291	0.937	34.716	27.821	37.083	45.929	198	144	2.20	32.4	117.5	2263	546	4.00	480	2377
234	4498	1.296	0.918	34.715	27.822	37.084	45.932	198	144	2.20	32.5	117.9	2266	546	4.00	479	2379
235	4798	1.309	0.895	34.714	27.823	37.086	45.935	199	143	2.19	32.5	118.8	2267	544	4.00	477	2381
236	4980	1.328	0.890	34.714	27.823	37.087	45.936	198	144	2.20	32.5	118.8	2273	545	4.00	477	2388

Lamont-Doherty Earth Observatory of Columbia University
JUNO - 9 WOCE Line P17

Station 90 Latitude 47-29.6S Longitude 135-00.2W Date 11/12/92 Bottom Depth 4868 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								------------	------------	umol/kg	------------	------------	------------				
101	4	8.955	8.955	34.277	26.559	35.425	43.901	287	-4	0.86	10.5	2.7	2076	266	4.00	328	2282
102	28	8.837	8.834	34.276	26.578	35.449	43.930	289	-5	0.86	10.5	2.3	2075	267	4.00	327	2281
103	37	8.551	8.547	34.275	26.622	35.506	43.999	289	-4	0.87	10.7	2.1	2077	270	4.00	327	2281
104	119	8.361	8.349	34.317	26.685	35.577	44.078	286	0	0.92	11.4	2.3	2082	278	4.00	334	2281
105	144	8.097	8.083	34.350	26.751	35.655	44.167	277	11	1.00	12.8	2.9	2091	292	4.00	347	2282
106	158	8.039	8.023	34.384	26.787	35.693	44.206	273	16	1.04	13.7	3.5	2098	298	4.00	353	2286
107	207	7.805	7.784	34.437	26.864	35.780	44.303	268	22	1.17	16.1	4.6	2109	317	4.00	372	2288
108	258	7.759	7.733	34.442	26.875	35.794	44.319	270	20	1.18	16.3	4.8	2108	318	4.00	373	2287
109	359	7.380	7.345	34.405	26.902	35.839	44.381	265	29	1.30	18.4	6.0	2118	336	4.00	386	2288
110	457	7.205	7.061	34.389	26.929	35.879	44.434	261	34	1.38	19.7	6.9	2123	347	4.00	395	2288
111	556	6.816	6.764	34.371	26.956	35.920	44.488	261	36	1.43	20.6	7.9	2123	356	4.00	400	2283
112	706	6.398	6.332	34.342	26.990	35.976	44.563	258	42	1.52	22.0	9.8	2131	364	4.00	401	2289
113	767	6.209	6.139	34.333	27.008	36.003	44.600	257	45	1.56	22.6	10.4	2132	373	4.00	409	2286
114	805	6.017	5.945	34.320	27.022	36.027	44.632	250	53	1.63	23.7	12.3	2140	388	4.00	421	2288
115	907	5.501	5.423	34.303	27.074	36.104	44.733	235	71	1.79	26.2	17.1	2153	423	4.00	449	2289
116	1004	4.975	4.891	34.306	27.138	36.194	44.848	222	89	1.93	28.3	23.7	2168	456	4.00	474	2293
117	1104	4.450	4.361	34.315	27.203	36.286	44.966	213	102	2.05	30.0	30.8	2184	490	4.00	498	2301
118	1303	3.487	3.390	34.362	27.340	36.472	45.198	197	125	2.23	32.6	46.4	2210	552	4.00	538	2313
119	1501	2.966	2.858	34.444	27.454	36.613	45.365	182	144	2.32	34.0	61.0	2233	590	4.00	562	2329
120	1701	2.683	2.561	34.526	27.546	36.720	45.485	172	156	2.35	34.3	73.1	2249	615	4.00	579	2341
121	1901	2.500	2.363	34.593	27.616	36.800	45.574	167	163	2.35	34.3	84.6	2259	618	4.00	577	2351
122	2100	2.335	2.183	34.635	27.665	36.858	45.640	162	169	2.35	34.3	95.1	2271	606	4.00	561	2368
123	2296	2.187	2.019	34.657	27.696	36.897	45.688	160	172	2.38	34.5	103.7	2284	616	4.00	566	2381
124	2493	2.050	1.867	34.667	27.715	36.925	45.724	159	175	2.39	34.8	111.5	2290	612	4.00	559	2388
125	2693	1.935	1.735	34.674	27.731	36.948	45.753	159	176	2.40	34.8	117.0	2297	613	4.00	557	2396
126	2940	1.815	1.593	34.683	27.749	36.974	45.786	162	174	2.39	34.7	120.2	2296	604	4.00	545	2397
127	3187	1.726	1.481	34.693	27.766	36.996	45.814	169	168	2.34	34.2	118.9	2288	581	4.00	522	2394
128	3384	1.637	1.374	34.698	27.777	37.014	45.837	174	164	2.32	33.8	119.3	2287	587	4.00	525	2391
129	3581	1.569	1.287	34.708	27.791	37.033	45.861	183	156	2.27	33.1	115.6	2277	568	4.00	506	2385
130	3780	1.473	1.172	34.709	27.800	37.048	45.882	187	153	2.25	33.0	116.9	2271	567	4.00	503	2379
131	3980	1.391	1.069	34.712	27.810	37.063	45.903	192	149	2.24	32.6	116.6	2271	547	4.00	483	2385
132	4184	1.313	0.971	34.712	27.816	37.075	45.920	195	146	2.22	32.6	118.1	2272	554	4.00	487	2384
133	4387	1.283	0.918	34.713	27.820	37.083	45.930	197	145	2.22	32.6	118.7	2271	528	4.00	464	2390
134	4590	1.257	0.869	34.712	27.823	37.088	45.938	199	144	2.21	32.6	119.1	2271	548	4.00	480	2384
135	4791	1.252	0.840	34.712	27.825	37.092	45.943	200	143	2.21	32.5	119.3	2272	536	4.00	469	2390
136	4909	1.263	0.836	34.713	27.825	37.092	45.944	199	143	2.22	32.5	119.5	2270	545	4.00	477	2384

Station 94 Latitude 45-30.2S Longitude 134-59.4W Date 11/13/92 Bottom Depth 5966 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								------------	------------	umol/kg	------------	------------	------------				
101	3	9.303	9.303	34.214	26.455	35.306	43.769	285	-5	0.89	10.7	2.9	2069	260	4.00	325	2278
102	52	8.916	8.910	34.219	26.521	35.390	43.868	288	-5	0.89	10.8	2.6	2071	261	4.00	322	2279
103	73	8.767	8.759	34.233	26.556	35.431	43.916	288	-4	0.90	10.9	2.4	2071	270	4.00	330	2274
104	101	7.997	7.987	34.331	26.750	35.659	44.174	275	14	1.07	13.8	3.3	2091	303	4.00	359	2275
105	161	7.676	7.660	34.422	26.870	35.792	44.320	266	25	1.24	17.0	5.3	2109	326	4.00	380	2283
106	211	7.475	7.454	34.412	26.892	35.823	44.361	265	28	1.30	18.0	5.7	2115	333	4.00	386	2286
107	310	7.106	7.077	34.389	26.927	35.876	44.430	260	35	1.40	19.7	7.2	2120	350	4.00	399	2282
108	470	6.667	6.623	34.361	26.967	35.938	44.512	262	36	1.46	21.0	8.2	2126	357	4.00	398	2287
109	539	6.488	6.439	34.348	26.981	35.961	44.544	260	40	1.51	21.7	9.4	2129	364	4.00	403	2287
110	637	6.122	6.065	34.323	27.009	36.008	44.608	256	46	1.59	22.9	11.1	2135	378	4.00	413	2286
111	826	5.173	5.104	34.290	27.100	36.146	44.791	233	76	1.86	27.1	19.3	2157	435	4.00	456	2289
112	1007	4.250	4.171	34.315	27.224	36.316	45.005	211	105	2.09	30.6	32.5					
113	1204	3.433	3.344	34.364	27.346	36.481	45.209	196	127	2.25	32.9	46.9	2210	559	4.00	544	2311
114	1401	2.962	2.861	34.444	27.454	36.613	45.364	182	144	2.34	34.1	61.0	2234	595	4.00	567	2329
115	1599	2.629	2.516	34.541	27.561	36.738	45.505	171	158	2.36	34.5	75.5	2250	617	4.00	580	2342
116	1749	2.490	2.366	34.592	27.615	36.799	45.572	166	164	2.37	34.4	84.6	2265	617	4.00	576	2358
117	1899	2.366	2.231	34.629	27.656	36.846	45.626	162	169	2.38	34.5	92.9	2269	620	4.00	575	2362
118	2046	2.251	2.105	34.643	27.678	36.875	45.661	160	172	2.39	34.7	100.8	2278	620	4.00	572	2372
119	2193	2.119	1.961	34.656	27.699	36.904	45.697	157	176	2.41	35.0	109.0	2287	621	4.00	569	2383
120	2193	2.119	1.961	34.654	27.698	36.903	45.696	157	176	2.41	34.9	109.0	2290	617	4.00	566	2386
190	2341	2.030	1.861	34.663	27.712	36.922	45.721										
121	2491	1.957	1.775	34.666	27.722	36.937	45.740	156	179	2.43	35.3	118.1	2296	622	4.00	566	2393
122	2639	1.868	1.674	34.673	27.735	36.955	45.764	158	178	2.43	35.3	121.7	2303	615	4.00	558	2402
123	2790	1.803	1.596	34.677	27.744	36.969	45.781	159	177	2.42	35.1	122.3	2298	610	4.00	551	2398
124	3037	1.713	1.483	34.688	27.761	36.992	45.810	166	172	2.38	34.7	121.7	2295	601	4.00	540	2397
125	3287	1.636	1.383	34.702	27.780	37.016	45.839	174	164	2.34	34.0	119.3	2284	584	4.00	523	2389
126	3534	1.531	1.254	34.706	27.792	37.035	45.865	182	157	2.30	33.2	117.2	2277	575	4.00	512	2384
127	3782	1.423	1.122	34.710	27.804	37.055	45.891	190	151	2.26	32.9	116.8	2272	569	4.00	504	2379
128	4030	1.316	0.992	34.712	27.814	37.072	45.916	195	146	2.23	32.6	117.2	2271	557	4.00	490	2382
129	4282	1.243	0.892	34.712	27.821	37.085	45.934	198	144	2.23	32.6	118.0	2267	555	4.00	487	2378
130	4530	1.205	0.826	34.713	27.826	37.093	45.946	201	142	2.23	32.6	119.5	2265	550	4.00	481	2378
131	4776	1.210	0.801	34.712	27.827	37.096	45.950	201	142	2.23	32.6	119.5	2264	551	4.00	481	2376
132	5025	1.229	0.789	34.712	27.828	37.097	45.952	202	141	2.23	32.6	119.7	2269	551	4.00	481	2381
133	5273	1.256	0.783	34.712	27.828	37.098	45.953	202	142	2.23	32.6	119.7	2269	546	4.00	476	2383
134	5571	1.295	0.782	34.714	27.829	37.100	45.954	202	142	2.23	32.6	119.9	2268	547	4.00	478	2381
135	5872	1.337	0.782	34.712	27.828	37.098	45.953	202	142	2.22	32.6	119.9	2266	546	4.00	476	2380
136	6052	1.363	0.782	34.712	27.828	37.098	45.953	201	142	2.22	32.6	119.9	2268	549	4.00	479	2381

Lamont-Doherty Earth Observatory of Columbia University
JUNO - 9 WOCE Line P17

Station 96 Latitude 44-29.9S Longitude 134-59.3W Date 11/14/92 Bottom Depth 5145 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	8	10.463	10.462	34.118	26.185	34.988	43.406	277	-3	0.79	9.1	2.2	2059	253	4.00	333	2271
102	41	10.396	10.391	34.117	26.196	35.002	43.423	279	-4	0.79	9.1	2.0	2061	250	4.00	328	2276
103	56	9.986	9.979	34.122	26.270	35.095	43.531	280	-4	0.80	9.2	2.0	2059	255	4.00	328	2270
104	91	9.737	9.727	34.135	26.322	35.157	43.604	280	-2	0.83	9.4	2.0	2061	259	4.00	330	2269
105	116	9.033	9.020	34.208	26.495	35.360	43.834	274	8	0.96	11.8	2.0	2078	277	4.00	342	2276
106	156	7.974	7.958	34.325	26.750	35.660	44.177	262	27	1.21	16.6	3.2	2106	323	4.00	381	2280
107	186	7.682	7.664	34.363	26.823	35.746	44.275	260	31	1.26	17.6	4.2	2113	333	4.00	389	2283
108	206	7.600	7.580	34.388	26.855	35.781	44.314	256	35	1.29	18.2	4.6	2116	343	4.00	399	2282
109	306	7.136	7.107	34.383	26.918	35.866	44.419	261	34	1.37	19.5	6.1	2120	346	4.00	395	2285
110	554	6.569	6.518	34.357	26.977	35.954	44.533	264	35	1.46	21.1	8.2	2123	357	4.00	398	2283
111	653	6.285	6.225	34.336	27.000	35.990	44.582	263	38	1.50	21.9	8.8	2127	364	4.00	400	2284
112	752	5.902	5.836	34.308	27.027	36.037	44.647	255	49	1.63	23.7	11.7	2134	383	4.00	414	2284
113	898	5.154	5.078	34.289	27.103	36.150	44.796	234	76	1.84	27.1	18.9	2156	432	4.00	452	2289
114	1047	4.387	4.303	34.310	27.206	36.292	44.974	213	102	2.06	30.3	30.5	2183	490	4.00	496	2300
115	1194	3.664	3.574	34.346	27.309	36.432	45.149	200	120	2.20	32.4	42.4	2200	540	4.00	530	2304
116	1340	3.209	3.111	34.398	27.395	36.541	45.281	190	135	2.28	33.6	53.8	2218	575	4.00	553	2316
117	1533	2.783	2.674	34.492	27.508	36.677	45.437	176	152	2.34	34.5	68.3	2241	611	4.00	577	2333
118	1727	2.548	2.425	34.570	27.593	36.774	45.545	168	162	2.36	34.4	80.6	2253	616	4.00	577	2346
119	1926	2.365	2.227	34.622	27.651	36.841	45.622	163	168	2.36	34.7	92.5	2264	617	4.00	572	2358
120	2124	2.170	2.018	34.650	27.689	36.891	45.682	159	174	2.39	34.9	105.5	2281	620	4.00	570	2376
121	2323	2.043	1.875	34.659	27.709	36.918	45.716	157	177	2.41	35.2	113.1	2289	621	4.00	568	2385
122	2522	1.922	1.738	34.667	27.725	36.942	45.747	156	179	2.43	35.4	119.4	2294	616	4.00	560	2391
123	2722	1.829	1.628	34.672	27.738	36.961	45.772	158	178	2.42	35.3	123.0	2299	615	4.00	556	2397
124	2921	1.755	1.536	34.681	27.751	36.979	45.795	161	176	2.41	35.0	123.8	2298	605	4.00	545	2399
125	3121	1.676	1.438	34.689	27.765	36.998	45.818	167	171	2.37	34.6	123.2	2295	599	4.00	537	2397
126	3322	1.600	1.344	34.693	27.775	37.014	45.839	172	167	2.33	34.2	122.7	2294	587	4.00	524	2400
127	3523	1.531	1.256	34.699	27.786	37.029	45.859	178	161	2.30	33.8	121.0	2288	580	4.00	517	2395
128	3722	1.471	1.176	34.705	27.797	37.044	45.878	184	156	2.28	33.4	119.0	2279	566	4.00	502	2388
129	3922	1.386	1.072	34.710	27.807	37.061	45.900	190	151	2.25	33.0	118.2	2272	562	4.00	497	2381
130	4122	1.294	0.960	34.711	27.816	37.076	45.921	196	146	2.23	32.7	118.3	2269	551	4.00	485	2381
131	4323	1.223	0.868	34.712	27.823	37.088	45.938	199	144	2.22	32.6	118.9	2268	553	4.00	484	2380
132	4524	1.203	0.825	34.712	27.825	37.093	45.946	200	143	2.22	32.4	119.3	2267	543	4.00	474	2382
133	4724	1.207	0.805	34.712	27.827	37.096	45.949	201	143	2.22	32.6	119.3	2266	554	4.00	484	2378
134	4923	1.221	0.794	34.713	27.828	37.097	45.952	201	142	2.22	32.5	120.1	2267	545	4.00	476	2381
135	5073	1.232	0.786	34.713	27.828	37.098	45.953	201	142	2.22	32.5	120.1	2266	548	4.00	478	2379
136	5161	1.242	0.784	34.713	27.829	37.099	45.953	202	141	2.22	32.6	120.1	2267	535	4.00	467	2384

Station 100 Latitude 42-30.4S Longitude 135-00.1W Date 11/15/92 Bottom Depth 5202 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	3	11.605	11.605	34.114	25.975	34.732	43.106	271	-3	0.61	5.9	0.5	2043	235	4.00	323	2268
102	49	11.142	11.136	34.131	26.075	34.851	43.242	276	-6	0.65	6.5	0.5	2045	239	4.00	323	2267
103	63	10.935	10.927	34.130	26.112	34.896	43.295	276	-4	0.66	6.6	0.3	2048	241	4.00	323	2268
104	89	10.217	10.207	34.185	26.281	35.094	43.521	271	4	0.78	8.8	0.3	2064	258	4.00	335	2274
105	128	8.854	8.840	34.307	26.601	35.472	43.952	256	28	1.10	14.5	1.0	2096	307	4.00	377	2278
106	157	8.034	8.018	34.375	26.781	35.687	44.201	251	38	1.26	17.5	2.5	2113	338	4.00	400	2281
107	206	7.606	7.585	34.403	26.866	35.792	44.324	255	37	1.32	18.6	3.4	2120	347	4.00	404	2284
108	302	7.164	7.135	34.405	26.931	35.878	44.429	257	38	1.38	19.7	4.9	2123	354	4.00	404	2285
109	402	6.927	6.889	34.390	26.954	35.912	44.474	258	38	1.42	20.3	5.6	2124	355	4.00	401	2286
110	547	6.575	6.524	34.362	26.980	35.956	44.535	257	41	1.50	21.6	7.0	2129	363	4.00	404	2286
111	640	6.215	6.157	34.335	27.007	36.001	44.597	251	50	1.58	23.1	9.2	2136	380	4.00	416	2286
112	739	5.779	5.715	34.315	27.048	36.063	44.679	238	66	1.71	25.1	12.8	2147	404	4.00	434	2289
113	837	5.258	5.187	34.308	27.105	36.147	44.787	224	85	1.89	27.7	18.5	2164	447	4.00	470	2292
114	987	4.446	4.368	34.321	27.207	36.290	44.969	208	107	2.07	30.4	29.7	2183	498	4.00	506	2298
115	1138	3.714	3.628	34.355	27.311	36.431	45.145	197	124	2.21	32.4	41.7	2206	544	4.00	536	2311
116	1290	3.176	3.083	34.412	27.408	36.556	45.297	186	139	2.31	33.7	54.3	2224	582	4.00	560	2321
117	1290	3.176	3.083	34.412	27.409	36.557	45.297	186	139	2.32	33.7	54.3	2226	583	4.00	560	2322
197	1441	2.859	2.757	34.479	27.491	36.655	45.411										
118	1593	2.661	2.549	34.537	27.556	36.731	45.496	170	159	2.38	34.5	75.3	2253	619	4.00	582	2345
119	1744	2.509	2.385	34.588	27.610	36.793	45.565	164	165	2.39	34.5	85.4	2264	623	4.00	582	2356
120	1947	2.319	2.180	34.629	27.660	36.853	45.636	160	172	2.40	34.7	97.2	2275	621	4.00	575	2369
121	2147	2.164	2.010	34.648	27.689	36.891	45.682	157	176	2.42	35.0	107.7	2288	622	4.00	572	2384
122	2344	2.025	1.855	34.659	27.710	36.920	45.719	156	178	2.44	35.1	115.6	2297	622	4.00	568	2393
123	2547	1.914	1.728	34.667	27.726	36.944	45.749	156	180	2.45	35.4	121.5	2304	619	4.00	562	2402
124	2749	1.835	1.631	34.676	27.741	36.963	45.774	159	177	2.43	35.1	122.7	2300	615	4.00	556	2398
125	2950	1.753	1.531	34.687	27.756	36.985	45.800	165	172	2.39	34.5	121.8	2296	605	4.00	545	2397
126	3151	1.682	1.442	34.697	27.771	37.004	45.824	172	165	2.35	33.9	119.2	2286	592	4.00	531	2389
127	3349	1.596	1.338	34.704	27.784	37.023	45.848	179	159	2.31	33.4	117.5	2279	579	4.00	518	2384
128	3549	1.500	1.223	34.706	27.794	37.039	45.871	184	156	2.29	33.2	118.0	2277	573	4.00	510	2384
129	3749	1.401	1.105	34.707	27.803	37.055	45.893	189	151	2.28	32.9	118.5	2272	568	4.00	503	2380
130	3948	1.322	1.007	34.709	27.811	37.069	45.911	193	148	2.26	32.8	118.7	2271	562	4.00	496	2381
131	4148	1.257	0.921	34.710	27.817	37.080	45.927	196	146	2.25	32.6	119.5	2270	558	4.00	490	2381
132	4347	1.221	0.863	34.710	27.822	37.087	45.938	198	145	2.24	32.5	119.8	2270	554	4.00	485	2382
133	4545	1.212	0.831	34.711	27.824	37.092	45.944	200	143	2.24	32.5	120.2	2269	550	4.00	481	2382
134	4745	1.223	0.817	34.712	27.826	37.094	45.947	200	143	2.23	32.5	120.3	2266	554	4.00	484	2377
135	4895	1.234	0.810	34.711	27.826	37.094	45.948	201	142	2.22	32.6	120.3	2267	551	4.00	482	2379
136	5099	1.257	0.807	34.712	27.826	37.095	45.949	201	142	2.23	32.4	120.3	2268	551	4.00	481	2380

Lamont-Doherty Earth Observatory of Columbia University
JUNO - 9 WOCE Line P17

Station 104 Latitude 40-30.6S Longitude 134-59.9W Date 11/16/92 Bottom Depth 4936 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	2	12.418	12.417	34.114	25.821	34.546	42.889	268	-5	0.53	4.6	1.8	2039	453	20.00	328	2268
102	43	11.690	11.684	34.110	25.958	34.711	43.082	275	-8	0.56	5.1	1.6	2040	448	20.00	315	2272
103	58	11.692	11.684	34.136	25.978	34.731	43.102	273	-6	0.54	4.9	1.6	2039	458	20.00	322	2266
104	73	11.528	11.519	34.148	26.018	34.778	43.154	271	-4	0.57	5.2	1.6	2042	458	20.00	320	2269
105	88	10.854	10.843	34.173	26.160	34.947	43.349	269	3	0.72	7.5	1.6	2058	492	20.00	334	2274
106	128	9.641	9.626	34.366	26.520	35.356	43.803	243	36	1.02	13.3	2.0	2096	594	20.00	383	2281
107	158	8.821	8.804	34.396	26.677	35.548	44.028	239	44	1.18	16.1	2.6	2108	648	20.00	403	2279
108	208	7.919	7.899	34.413	26.828	35.739	44.257	242	47	1.30	18.5	4.1	2121	685	20.00	411	2284
109	357	7.114	7.080	34.403	26.938	35.887	44.441	257	38	1.38	19.9	6.0	2123	689	20.00	399	2285
110	427	6.933	6.893	34.392	26.955	35.913	44.475	259	37	1.41	20.4	6.6	2126	691	20.00	397	2288
111	506	6.718	6.671	34.374	26.971	35.940	44.512	258	40	1.46	21.0	7.8	2127	703	20.00	400	2286
112	704	6.031	5.968	34.325	27.024	36.027	44.631	244	59	1.66	24.1	12.0	2141	766	20.00	423	2287
173	853	5.284	5.211	34.310	27.104	36.144	44.783										
113	1001	4.364	4.285	34.325	27.220	36.307	44.989	207	108	2.09	30.8	31.5	2188	969	20.00	499	2302
114	1151	3.707	3.620	34.355	27.312	36.432	45.147	197	124	2.21	32.5	43.0	2209	1044	20.00	522	2313
115	1151	3.707	3.620	34.356	27.312	36.433	45.147	197	123	2.21	32.5	43.2	2207	1041	20.00	521	2311
175	1299	3.149	3.055	34.419	27.416	36.565	45.307										
116	1450	2.804	2.701	34.490	27.505	36.672	45.431	175	153	2.34	34.5	68.2	2244	1169	20.00	562	2335
117	1598	2.590	2.477	34.560	27.580	36.758	45.527	167	163	2.37	34.7	79.5	2256	1187	20.00	565	2347
118	1747	2.416	2.293	34.610	27.636	36.823	45.600	161	169	2.38	34.8	92.5	2272	1195	20.00	565	2364
119	1896	2.297	2.163	34.630	27.662	36.856	45.640	157	174	2.39	35.1	102.2	2284	1189	20.00	559	2377
120	1896	2.297	2.163	34.630	27.662	36.856	45.640	157	174	2.39	35.1	102.2	2282	1193	20.00	561	2375
121	2043	2.182	2.037	34.643	27.683	36.884	45.674	155	178	2.42	35.3	109.8	2290	1194	20.00	558	2383
122	2240	2.047	1.887	34.655	27.704	36.913	45.711	153	181	2.43	35.3	116.4	2299	1200	20.00	558	2393
123	2435	1.931	1.755	34.664	27.721	36.938	45.742	154	181	2.43	35.5	121.1	2304	1198	20.00	554	2399
193	2633	1.853	1.660	34.672	27.735	36.956	45.765										
124	2830	1.775	1.565	34.678	27.747	36.974	45.787	160	177	2.41	35.1	123.7	2300	1177	20.00	540	2398
125	3027	1.706	1.478	34.686	27.760	36.991	45.809	165	173	2.37	34.7	123.0	2297	1156	20.00	528	2396
126	3027	1.706	1.478	34.687	27.761	36.992	45.810	165	172	2.37	34.6	123.0	2296	1162	20.00	531	2395
196	3227	1.622	1.376	34.695	27.774	37.011	45.835										
127	3428	1.535	1.270	34.700	27.786	37.028	45.857	179	160	2.30	33.7	120.0	2283	1117	20.00	506	2386
128	3428	1.535	1.270	34.700	27.786	37.028	45.857	179	160	2.30	33.7	120.0	2280	1119	20.00	507	2383
198	3631	1.448	1.164	34.703	27.796	37.045	45.879										
129	3830	1.364	1.060	34.705	27.804	37.058	45.898	189	152	2.25	33.2	119.6	2275	1090	20.00	489	2382
130	4029	1.290	0.967	34.708	27.813	37.073	45.918	193	148	2.23	32.9	119.1	2273	1085	20.00	485	2380
131	4227	1.255	0.910	34.709	27.817	37.080	45.928	196	146	2.21	32.8	119.1	2269	1074	20.00	479	2378
132	4227	1.255	0.910	34.708	27.817	37.080	45.928	196	146	2.22	32.7	119.1	2272	1074	20.00	479	2381
133	4426	1.241	0.874	34.710	27.821	37.086	45.936	198	145	2.22	32.7	119.1	2270	1069	20.00	476	2380
134	4629	1.237	0.846	34.711	27.823	37.089	45.941	199	144	2.21	32.6	119.6	2273	1064	20.00	473	2384
135	4829	1.250	0.834	34.711	27.824	37.091	45.943	199	144	2.21	32.7	119.6	2268	1066	20.00	474	2378
136	4958	1.265	0.832	34.711	27.824	37.092	45.944	199	144	2.21	32.7	119.5	2274	1064	20.00	473	2385

Station 106 Latitude 39-29.2S Longitude 135-00.0W Date 11/17/92 Bottom Depth 4907 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	5	13.451	13.451	34.161	25.653	34.337	42.642	263	-6	0.44	3.3	1.8	2033	437	20.00	331	2270
102	16	13.213	13.211	34.155	25.697	34.390	42.704	264	-6	0.44	3.3	1.5	2034	435	20.00	327	2271
103	37	12.845	12.840	34.157	25.772	34.480	42.807	265	-5	0.45	3.4	1.5	2031	436	20.00	322	2267
104	56	12.404	12.397	34.167	25.867	34.591	42.935	269	-6	0.45	3.5	1.5	2033	438	20.00	317	2269
105	86	11.821	11.810	34.167	25.979	34.726	43.092	269	-3	0.54	4.7	1.5	2041	453	20.00	320	2271
106	104	11.313	11.300	34.176	26.080	34.848	43.233	266	3	0.63	6.0	1.2	2048	472	20.00	326	2271
107	125	10.648	10.633	34.243	26.252	35.047	43.456	257	16	0.75	8.0	1.4	2062	505	20.00	340	2274
108	145	9.936	9.919	34.316	26.432	35.256	43.692	248	29	0.93	11.6	1.8	2084	562	20.00	367	2278
109	205	8.422	8.401	34.395	26.738	35.627	44.125	240	46	1.19	16.7	3.2	2112	656	20.00	402	2281
110	305	7.361	7.332	34.406	26.905	35.842	44.385	251	42	1.35	19.4	5.3	2122	690	20.00	404	2284
111	405	6.997	6.958	34.389	26.943	35.898	44.458	257	39	1.39	20.1	6.6	2121	690	20.00	397	2283
112	504	6.759	6.712	34.373	26.964	35.931	44.501	259	38	1.44	20.8	7.1	2128	696	20.00	397	2289
193	654	6.349	6.289	34.346	26.999	35.987	44.576										
114	803	5.576	5.506	34.304	27.064	36.090	44.715	235	71	1.76	25.9	15.1	2152	806	20.00	437	2291
115	902	5.059	4.984	34.309	27.129	36.181	44.831	217	93	1.94	28.5	22.0	2174	895	20.00	474	2298
116	1052	4.228	4.146	34.326	27.235	36.329	45.018	204	112	2.10	30.9	33.7	2193	988	20.00	505	2304
117	1200	3.474	3.386	34.375	27.350	36.483	45.209	190	132	2.24	33.0	47.6	2212	1086	20.00	538	2311
118	1401	2.925	2.825	34.461	27.471	36.632	45.384	176	150	2.33	34.2	63.5	2241	1153	20.00	557	2334
119	1401	2.925	2.825	34.461	27.471	36.632	45.384	176	150	2.33	34.2	63.7	2237	1158	20.00	560	2328
199	1549	2.679	2.570	34.530	27.548	36.722	45.486										
120	1697	2.519	2.399	34.583	27.605	36.787	45.559	163	167	2.36	34.6	85.1	2264	1197	20.00	569	2354
121	1897	2.326	2.192	34.625	27.656	36.849	45.631	158	174	2.38	34.7	98.6	2280	1193	20.00	562	2373
122	2195	2.093	1.936	34.651	27.697	36.903	45.698	154	180	2.40	35.2	113.2	2295	1198	20.00	558	2389
123	2294	2.031	1.866	34.656	27.707	36.917	45.715	154	180	2.42	35.2	116.2	2297	1191	20.00	553	2392
124	2494	1.913	1.732	34.666	27.725	36.942	45.747	154	181	2.42	35.3	121.3	2302	1197	20.00	552	2396
125	2692	1.819	1.621	34.674	27.740	36.963	45.774	156	180	2.40	35.2	123.7	2303	1186	20.00	545	2399
126	2891	1.745	1.529	34.683	27.754	36.982	45.798	162	175	2.38	34.7	123.4	2297	1172	20.00	536	2395
127	2891	1.745	1.529	34.683	27.754	36.982	45.798	161	176	2.38	34.8	123.4	2298	1165	20.00	533	2396
197	3089	1.676	1.442	34.692	27.767	37.000	45.820										
128	3288	1.589	1.337	34.699	27.780	37.019	45.845	175	164	2.30	33.6	120.0	2287	1130	20.00	513	2389
129	3488	1.493	1.223	34.702	27.791	37.036	45.868	181	159	2.28	33.4	119.5	2282	1115	20.00	504	2385
130	3686	1.391	1.102	34.705	27.801	37.054	45.891	186	155	2.25	33.1	119.3					
131	3885	1.311	1.003	34.707	27.810	37.067	45.911	191	150	2.23	32.8	119.3	2267	1081	20.00	484	2374
132	4085	1.255	0.926	34.709	27.816	37.078	45.926	195	147	2.23	32.6	119.5	2271	1080	20.00	482	2379
133	4283	1.240	0.889	34.710	27.820	37.084	45.933	196	146	2.22	32.5	119.5	2268	1075	20.00	479	2376
134	4485	1.230	0.856	34.710	27.822	37.088	45.939	198	145	2.21	32.4	119.3	2269	1069	20.00	476	2379
135	4735	1.245	0.840	34.711	27.824	37.090	45.942	199	144	2.21	32.4	119.3	2270	1069	20.00	475	2379
113	4973	1.270	0.836	34.710	27.823	37.090	45.942	199	144	2.20	32.4	119.5					
136	4973	1.270	0.836	34.711	27.824	37.091	45.943	198	145	2.21	32.4	119.5	2270	1066	20.00	474	2380

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Station 107 Latitude 38-59.4S Longitude 135-00.4W Date 11/17/92 Bottom Depth 5032 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								-------------umol/kg--------------									
101	9	13.076	13.074	34.134	25.708	34.407	42.726	262	-3	0.47	3.7	2.0	2036	442	20.00	330	2270
102	33	12.866	12.861	34.131	25.748	34.455	42.782	266	-5	0.46	3.6	1.8	2033	436	20.00	323	2269
103	58	12.078	12.071	34.155	25.920	34.657	43.013	270	-5	0.49	4.1	1.8					
104	83	11.773	11.763	34.152	25.976	34.726	43.093	270	-3	0.54	4.8	1.8					
105	107	11.348	11.335	34.168	26.067	34.834	43.217	268	1	0.60	5.5	1.8					
106	127	10.848	10.832	34.251	26.222	35.009	43.410	254	17	0.77	8.4	1.8					
107	147	10.276	10.258	34.326	26.382	35.191	43.614	245	30	0.91	11.3	2.0					
108	177	9.229	9.210	34.399	26.614	35.468	43.931	238	43	1.10	14.8	2.6					
109	207	8.557	8.535	34.400	26.721	35.604	44.096	240	45	1.21	16.7	3.7					
110	245	7.806	7.782	34.406	26.840	35.756	44.280	243	47	1.31	18.6	4.5					
111	315	7.407	7.377	34.418	26.908	35.843	44.383	251	41	1.34	19.2	5.7					
112	402	7.066	7.028	34.400	26.942	35.894	44.450	256	39	1.39	20.0	6.6					
113	500	6.850	6.803	34.384	26.961	35.923	44.489	255	41	1.44	20.7	7.2					
114	597	6.559	6.503	34.361	26.983	35.960	44.539	253	46	1.51	21.8	8.7					
115	693	6.205	6.142	34.337	27.011	36.005	44.601	249	52	1.59	23.1	10.6					
116	791	5.694	5.624	34.308	27.053	36.073	44.693	237	68	1.74	25.3	14.3					
117	889	5.205	5.130	34.307	27.111	36.155	44.798	222	87	1.88	27.6	20.6					
118	987	4.625	4.545	34.319	27.186	36.260	44.930	210	103	2.03	29.7	28.4					
119	1135	3.785	3.699	34.346	27.296	36.413	45.124	193	122	2.17	31.9	40.8					
120	1284	3.234	3.141	34.410	27.401	36.547	45.284	184	140	2.28	33.4	54.5					
121	1485	2.809	2.704	34.498	27.511	36.678	45.436	173	155	2.33	34.2	68.9					
122	1681	2.537	2.418	34.578	27.599	36.780	45.551	164	166	2.36	34.3	84.1					
123	1881	2.325	2.192	34.625	27.656	36.848	45.630	157	174	2.38	34.6	100.0					
124	2127	2.106	1.954	34.649	27.694	36.899	45.693	153	180	2.41	35.0	112.8					
125	2379	1.956	1.785	34.662	27.718	36.932	45.735	152	182	2.43	35.2	120.6					
126	2628	1.834	1.642	34.674	27.738	36.960	45.770	155	181	2.42	35.0	123.8					
127	2884	1.711	1.497	34.683	27.756	36.986	45.803	163	174	2.38	34.6	123.3					
128	3132	1.620	1.383	34.690	27.770	37.006	45.829	170	169	2.34	33.9	122.2					
129	3381	1.543	1.282	34.698	27.783	37.025	45.853	176	163	2.31	33.5	120.7					
130	3631	1.435	1.151	34.703	27.796	37.046	45.881	184	156	2.27	33.1	119.6					
131	3879	1.343	1.034	34.706	27.807	37.063	45.904	190	152	2.24	32.7	119.6					
132	4131	1.273	0.939	34.708	27.815	37.076	45.923	194	148	2.21	32.5	119.5					
133	4379	1.247	0.885	34.709	27.819	37.084	45.933	197	146	2.20	32.4	119.7					
134	4628	1.248	0.856	34.710	27.822	37.087	45.938	198	145	2.20	32.4	120.1					
135	4628	1.248	0.856	34.710	27.822	37.088	45.939	198	145	2.20	32.4	119.9					
195	4832	1.263	0.846	34.710	27.822	37.089	45.940										
136	5012	1.284	0.844	34.711	27.823	37.090	45.941	198	144	2.19	32.4	119.9					

Station 110 Latitude 37-29.6S Longitude 134-59.2W Date 11/18/92 Bottom Depth 5003 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								-------------umol/kg--------------									
101	3	14.357	14.357	34.352	25.612	34.259	42.531	254	-2	0.26	0.9	2.0	2026	412	20.00	324	2275
102	42	14.360	14.354	34.352	25.612	34.260	42.532	256	-4	0.27	0.9	1.8	2026	410	20.00	323	2276
103	67	14.386	14.377	34.541	25.753	34.398	42.666	256	-5	0.22	0.2	1.8					
104	106	13.689	13.674	34.393	25.786	34.459	42.754	260	-4	0.27	1.0	1.7					
105	126	13.965	13.947	34.603	25.892	34.551	42.834	247	6	0.30	1.2	1.7					
106	156	12.863	12.841	34.595	26.111	34.813	43.135	239	21	0.50	4.4	1.5					
107	168	12.686	12.663	34.647	26.187	34.895	43.222	235	25	0.54	5.3	1.7					
108	206	11.363	11.337	34.607	26.409	35.169	43.547	222	46	0.82	10.4	2.1					
109	247	9.872	9.843	34.553	26.630	35.454	43.890	220	57	1.08	14.7	3.1					
110	307	8.340	8.308	34.463	26.806	35.698	44.198	231	56	1.27	18.1	4.1					
111	405	7.288	7.248	34.413	26.922	35.863	44.409	250	44	1.39	19.8	5.9					
112	484	7.014	6.968	34.396	26.948	35.902	44.461	252	43	1.42	20.5	6.5					
163	617	6.593	6.536	34.364	26.981	35.956	44.535										
164	765	5.971	5.903	34.327	27.034	36.040	44.647										
127	912	5.180	5.103	34.314	27.120	36.165	44.810	217	92	1.93	28.0	20.8					
166	1058	4.152	4.070	34.339	27.253	36.351	45.044										
167	1206	3.515	3.426	34.387	27.356	36.486	45.210										
168	1405	2.978	2.878	34.470	27.473	36.631	45.381										
169	1602	2.674	2.561	34.549	27.564	36.738	45.502										
170	1791	2.456	2.329	34.596	27.621	36.807	45.583										
171	1987	2.253	2.112	34.625	27.662	36.859	45.645										
172	2186	2.098	1.942	34.642	27.690	36.896	45.691										
173	2387	1.993	1.820	34.655	27.709	36.922	45.723										
174	2590	1.896	1.706	34.664	27.725	36.944	45.750										
128	2785	1.814	1.607	34.672	27.739	36.963	45.775	155	181	2.43	35.2	124.8					
176	2983	1.732	1.508	34.683	27.755	36.985	45.801										
129	3180	1.652	1.410	34.689	27.767	37.002	45.824	167	171	2.37	34.3	123.3					
130	3380	1.573	1.312	34.697	27.781	37.021	45.848	175	164	2.33	33.6	121.1					
179	3579	1.477	1.198	34.701	27.792	37.039	45.871										
131	3774	1.407	1.109	34.704	27.800	37.052	45.889	187	154	2.27	33.0	119.3					
191	3977	1.308	0.990	34.706	27.810	37.068	45.912										
132	4172	1.269	0.931	34.707	27.815	37.076	45.923	191	151	2.23	32.7	119.5					
133	4371	1.258	0.897	34.708	27.818	37.081	45.930	194	149	2.23	32.6	119.5					
134	4571	1.261	0.876	34.709	27.820	37.084	45.934	196	147	2.23	32.5	119.5					
135	4571	1.261	0.876	34.709	27.820	37.084	45.934	196	146	2.23	32.4	119.2					
195	4778	1.275	0.865	34.711	27.822	37.088	45.938										
136	5008	1.299	0.859	34.710	27.822	37.087	45.938	197	145	2.23	32.5	119.0					

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Station 111 Latitude 36-59.8S Longitude 134-59.6W Date 11/18/92 Bottom Depth 4873 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								------------	------------	------------umol/kg	------------	------------	------------				
101	9	15.287	15.286	34.635	25.629	34.239	42.475	249	-2	0.19	0.1	1.5	2031	395	20.00	324	2292
102	33	15.245	15.240	34.640	25.643	34.254	42.492	250	-3	0.19	0.1	1.2	2028	392	20.00	320	2290
103	57	14.511	14.503	34.543	25.728	34.368	42.632	256	-5	0.22	0.1	1.2	2024	399	20.00	316	2281
104	83	14.371	14.359	34.515	25.737	34.383	42.652	256	-4	0.23	0.2	1.2	2028	400	20.00	315	2284
105	108	14.312	14.296	34.570	25.793	34.440	42.711	252	0	0.25	0.4	1.2	2029	400	20.00	314	2287
106	137	13.930	13.911	34.632	25.922	34.582	42.866	243	10	0.35	1.7	1.2	2043	420	20.00	324	2292
107	177	13.264	13.240	34.736	26.140	34.825	43.131	231	27	0.51	4.7	1.2	2064	469	20.00	352	2294
108	217	11.969	11.941	34.645	26.325	35.061	43.415	222	43	0.75	8.9	1.8	2085	535	20.00	380	2290
109	266	9.883	9.853	34.508	26.594	35.417	43.854	222	54	1.09	14.6	2.9	2105	628	20.00	409	2282
110	327	8.179	8.145	34.440	26.812	35.712	44.220	233	55	1.31	18.6	4.6	2126	690	20.00	418	2288
111	397	7.445	7.406	34.423	26.907	35.841	44.380	244	48	1.38	19.8	5.5	2123	702	20.00	412	2282
112	477	7.082	7.036	34.401	26.942	35.893	44.449	246	49	1.43	20.8	6.7	2125	708	20.00	409	2283
113	565	6.748	6.695	34.378	26.970	35.938	44.509	248	49	1.49	21.7	7.6	2129	719	20.00	409	2285
114	657	6.426	6.365	34.352	26.994	35.977	44.563	246	54	1.55	22.7	8.9	2131	734	20.00	412	2284
115	755	5.977	5.909	34.323	27.030	36.036	44.642	240	63	1.67	24.4	11.4	2137	768	20.00	423	2283
116	856	5.420	5.347	34.306	27.085	36.118	44.751	228	79	1.82	26.7	16.7	2154	831	20.00	447	2288
117	954	4.895	4.816	34.310	27.149	36.209	44.867	215	97	1.96	28.7	23.8	2171	904	20.00	476	2294
118	1053	4.306	4.223	34.329	27.229	36.319	45.005	202	114	2.10	30.9	32.9	2190	984	20.00	505	2302
119	1202	3.525	3.436	34.382	27.351	36.481	45.204	187	134	2.25	33.0	48.1	2216	1082	20.00	537	2315
120	1351	3.064	2.967	34.449	27.448	36.602	45.348	177	149	2.33	33.8	61.5	2234	1138	20.00	554	2328
121	1501	2.784	2.678	34.516	27.528	36.696	45.455	168	160	2.36	34.2	73.7	2249	1171	20.00	563	2341
122	1703	2.508	2.387	34.578	27.602	36.785	45.558	161	169	2.38	34.6	89.6	2269	1177	20.00	559	2362
123	1902	2.308	2.173	34.616	27.650	36.844	45.627	156	175	2.42	34.8	102.5	2283	1189	20.00	559	2377
124	2103	2.140	1.990	34.639	27.683	36.887	45.679	154	179	2.44	35.0	111.6	2295	1187	20.00	554	2390
125	2301	2.017	1.852	34.650	27.703	36.914	45.713	154	181	2.44	35.2	116.4	2299	1198	20.00	556	2392
126	2501	1.914	1.732	34.660	27.720	36.937	45.743	153	182	2.45	35.2	121.2	2303	1189	20.00	549	2398
127	2501	1.914	1.732	34.659	27.719	36.937	45.742	154	182	2.45	35.2	121.2	2303	1193	20.00	551	2399
197	2699	1.828	1.629	34.669	27.735	36.958	45.769										
128	2948	1.734	1.513	34.677	27.750	36.979	45.796	159	178	2.42	34.8	125.4	2301	1181	20.00	540	2398
129	3197	1.636	1.393	34.687	27.767	37.002	45.825	166	172	2.38	34.3	124.8	2294	1156	20.00	526	2394
130	3445	1.540	1.273	34.694	27.781	37.024	45.853	175	164	2.33	33.7	122.4	2286	1132	20.00	513	2388
131	3693	1.431	1.141	34.702	27.796	37.046	45.882	184	156	2.28	33.0	120.0	2277	1109	20.00	499	2381
132	3942	1.329	1.014	34.706	27.808	37.065	45.907	191	151	2.25	32.7	119.3	2274	1092	20.00	489	2380
133	4191	1.271	0.930	34.708	27.815	37.077	45.924	195	147	2.24	32.6	118.9	2270	1079	20.00	481	2379
134	4440	1.263	0.894	34.709	27.818	37.082	45.931	196	146	2.22	32.5	118.9	2271	1073	20.00	478	2380
135	4663	1.275	0.878	34.709	27.820	37.084	45.934	197	146	2.22	32.5	119.1	2272	1071	20.00	477	2381
136	4862	1.292	0.870	34.710	27.821	37.086	45.936	197	146	2.22	32.5	119.1	2270	1067	20.00	475	2380

Station 114 Latitude 35-30.0S Longitude 134-59.2W Date 11/19/92 Bottom Depth 4882 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								------------	------------	------------umol/kg	------------	------------	------------				
101	8	15.438	15.437	34.643	25.601	34.206	42.437	249	-2	0.20	0.1	1.9	2029	396	20.00	327	2289
102	32	15.357	15.352	34.655	25.629	34.237	42.471	250	-4	0.20	0.1	1.9	2031	404	20.00	332	2287
103	56	14.814	14.806	34.701	25.785	34.411	42.663	253	-4	0.20	0.1	1.6					
104	81	14.682	14.670	34.697	25.811	34.443	42.699	253	-3	0.19	0.1	1.6					
105	106	14.665	14.650	34.703	25.820	34.453	42.710	252	-2	0.19	0.1	1.6					
106	142	14.000	13.979	34.673	25.939	34.596	42.877	246	8	0.30	1.3	1.6					
107	175	12.741	12.717	34.700	26.217	34.922	43.247	232	28	0.54	5.3	1.8					
108	206	11.755	11.728	34.642	26.363	35.107	43.470	224	42	0.74	8.9	2.0					
109	242	10.418	10.389	34.556	26.538	35.339	43.754	221	52	0.98	12.9	2.4					
110	275	9.486	9.455	34.542	26.686	35.526	43.978	219	60	1.15	15.8	3.9					
111	306	8.636	8.603	34.490	26.782	35.660	44.148	225	60	1.25	17.6	4.6					
112	346	7.848	7.813	34.445	26.866	35.780	44.302	236	54	1.33	19.1	5.6					
113	405	7.427	7.387	34.428	26.914	35.849	44.389	244	48	1.38	19.7	6.3					
114	503	7.052	7.003	34.404	26.949	35.901	44.458	250	46	1.43	20.6	7.1					
115	602	6.706	6.650	34.376	26.975	35.945	44.518	247	51	1.50	22.0	8.4					
116	699	6.232	6.169	34.342	27.012	36.005	44.600	242	60	1.60	23.6	10.5					
117	797	5.730	5.660	34.316	27.055	36.073	44.692	232	73	1.74	25.6	14.6					
118	896	5.202	5.127	34.310	27.114	36.158	44.801	220	89	1.89	27.9	20.8					
119	996	4.612	4.531	34.319	27.188	36.263	44.934	207	107	2.03	30.0	29.1					
120	1195	3.610	3.521	34.379	27.341	36.466	45.185	188	133	2.24	32.7	47.3					
121	1391	2.916	2.817	34.485	27.491	36.652	45.404	171	155	2.34	34.3	69.2					
122	1590	2.600	2.488	34.558	27.578	36.755	45.523	163	166	2.37	34.6	85.8					
123	1788	2.351	2.226	34.604	27.636	36.827	45.608	158	173	2.40	34.9	100.3					
124	1987	2.168	2.029	34.631	27.674	36.875	45.666	155	178	2.42	35.1	110.5					
125	2235	2.001	1.842	34.649	27.703	36.915	45.715	154	180	2.44	35.2	118.5					
126	2485	1.865	1.686	34.661	27.725	36.945	45.752	156	180	2.44	35.3	123.3					
127	2730	1.761	1.560	34.668	27.739	36.966	45.780	158	179	2.43	35.2	126.8					
128	2981	1.685	1.462	34.675	27.752	36.984	45.804	162	175	2.40	34.8	127.0					
129	3229	1.624	1.377	34.681	27.763	37.000	45.824	166	172	2.37	34.5	126.7					
130	3480	1.544	1.274	34.689	27.777	37.020	45.849	174	165	2.34	34.0	124.9					
131	3728	1.443	1.149	34.700	27.794	37.044	45.879	183	157	2.29	33.3	122.3					
132	3979	1.336	1.017	34.704	27.807	37.064	45.906	190	152	2.25	32.9	121.4					
133	4227	1.283	0.937	34.707	27.814	37.075	45.922	194	148	2.24	32.7	120.5					
134	4475	1.276	0.902	34.709	27.818	37.081	45.929	196	147	2.23	32.6	120.4					
135	4677	1.285	0.886	34.709	27.819	37.084	45.933	197	146	2.22	32.5	120.4					
136	4892	1.303	0.878	34.710	27.820	37.085	45.934	196	146	2.22	32.6	120.4					

Lamont-Doherty Earth Observatory of Columbia University
JUNO - 9 WOCE Line P17

Station 115 Latitude 35-00.0S Longitude 134-59.3W Date 11/19/92 Bottom Depth 4621 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	1	16.939	16.939	34.992	25.524	34.072	42.250	242	-3	0.14	0.1	2.3	2029	371	20.00	326	2308
102	30	16.736	16.731	35.024	25.597	34.152	42.337	243	-3	0.15	0.1	2.1	2030	368	20.00	320	2311
103	65	16.663	16.653	35.046	25.633	34.190	42.377	243	-3	0.14	0.1	2.1	2030	370	20.00	321	2309
104	104	16.082	16.065	35.030	25.757	34.335	42.541	245	-3	0.15	0.1	2.1	2031	370	20.00	313	2310
105	130	15.136	15.116	34.993	25.942	34.553	42.791	233	14	0.28	1.2	2.1	2050	415	20.00	338	2306
106	155	14.632	14.609	35.000	26.058	34.687	42.942	225	25	0.39	2.9	2.1	2061	438	20.00	348	2306
107	179	14.150	14.124	34.986	26.151	34.799	43.070	219	33	0.47	4.2	2.1	2070	456	20.00	356	2308
108	214	12.995	12.966	34.910	26.331	35.023	43.336	206	52	0.72	8.6	2.7	2091	519	20.00	385	2305
109	254	11.450	11.418	34.720	26.482	35.238	43.611	211	57	0.91	11.5	3.3	2098	576	20.00	401	2291
110	324	9.040	9.005	34.518	26.740	35.601	44.071	217	65	1.25	17.5	5.2	2119	675	20.00	424	2284
111	405	7.630	7.589	34.432	26.888	35.813	44.345	237	55	1.39	19.9	6.3	2126	709	20.00	420	2283
112	504	6.971	6.923	34.396	26.954	35.910	44.471	248	48	1.46	21.0	7.5	2127	713	20.00	410	2284
113	603	6.553	6.497	34.363	26.985	35.962	44.542	247	52	1.54	22.4	8.8	2131	731	20.00	413	2284
114	702	6.144	6.080	34.333	27.016	36.013	44.612	244	58	1.63	23.8	10.7	2136	750	20.00	416	2285
115	802	5.656	5.586	34.311	27.060	36.082	44.704	233	72	1.76	25.8	14.7	2147	800	20.00	435	2286
116	901	5.216	5.140	34.306	27.109	36.153	44.795	222	86	1.89	27.7	19.9	2161	858	20.00	457	2290
117	1000	4.642	4.561	34.317	27.184	36.256	44.926	208	105	2.04	29.9	28.5	2179	942	20.00	490	2296
118	1098	4.058	3.973	34.345	27.268	36.371	45.068	196	121	2.17	31.8	38.5	2197	1020	20.00	518	2303
119	1197	3.610	3.521	34.385	27.345	36.471	45.190	187	135	2.26	33.0	48.8	2213	1071	20.00	533	2314
120	1294	3.247	3.153	34.431	27.417	36.561	45.298	178	146	2.32	33.9	58.8	2228	1117	20.00	548	2325
121	1389	2.939	2.840	34.483	27.487	36.647	45.398	171	155	2.36	34.4	69.3	2244	1155	20.00	559	2337
122	1586	2.597	2.486	34.554	27.575	36.753	45.521	164	165	2.39	34.7	85.8	2260	1184	20.00	564	2351
123	1785	2.354	2.229	34.601	27.634	36.825	45.605	159	172	2.41	35.0	99.5	2278	1190	20.00	561	2370
124	1984	2.193	2.053	34.628	27.669	36.870	45.659	155	177	2.43	35.2	109.7	2289	1194	20.00	559	2382
125	2182	2.045	1.890	34.644	27.695	36.904	45.701	155	179	2.44	35.3	116.1	2295	1189	20.00	553	2390
126	2380	1.941	1.770	34.654	27.712	36.928	45.731	155	180	2.44	35.5	120.2	2298	1193	20.00	552	2393
127	2579	1.844	1.656	34.662	27.727	36.949	45.758	157	179	2.44	35.5	123.8	2301	1181	20.00	544	2398
128	2779	1.761	1.556	34.667	27.739	36.966	45.781	159	177	2.43	35.3	125.7	2300	1172	20.00	537	2398
129	2980	1.702	1.479	34.675	27.751	36.982	45.801	161	177	2.42	35.2	127.5	2305	1175	20.00	537	2403
130	3179	1.643	1.401	34.681	27.761	36.997	45.819	165	173	2.39	34.9	127.9	2300	1156	20.00	526	2400
131	3379	1.589	1.327	34.689	27.773	37.012	45.838	170	169	2.37	34.5	126.1	2298	1149	20.00	522	2399
132	3577	1.525	1.244	34.692	27.781	37.026	45.856	176	164	2.34	34.1	124.4	2289	1129	20.00	511	2391
133	3826	1.418	1.113	34.701	27.797	37.049	45.886	185	156	2.30	33.4	122.1	2280	1107	20.00	498	2385
134	4075	1.328	0.998	34.705	27.808	37.066	45.910	191	151	2.26	33.0	121.0	2274	1084	20.00	485	2382
135	4326	1.277	0.921	34.708	27.816	37.078	45.926	194	148	2.25	32.9	120.5	2274	1079	20.00	481	2382
136	4606	1.292	0.902	34.709	27.818	37.081	45.930	196	146	2.22	32.8	120.3	2267	1073	20.00	478	2375

Station 119 Latitude 33-00.0S Longitude 135-00.0W Date 11/20/92 Bottom Depth 4475 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
201	1	17.790	17.790	35.086	25.391	33.909	42.060	238	-3	0.14	0.2	2.5	2026	359	20.00	327	2312
202	23	17.324	17.320	35.153	25.556	34.090	42.254	240	-3	0.14	0.1	2.3	2029	358	20.00	320	2316
203	53	17.242	17.233	35.149	25.574	34.110	42.278	240	-4	0.14	0.1	2.1	2028	360	20.00	320	2314
204	103	16.367	16.351	35.057	25.712	34.279	42.475	243	-1	0.16	0.1	2.1	2029	367	20.00	315	2310
205	133	15.728	15.707	35.088	25.883	34.472	42.689	230	14	0.24	0.8	2.1	2047	396	20.00	330	2314
206	162	15.334	15.309	35.106	25.986	34.589	42.819	220	26	0.36	2.6	2.1	2057	423	20.00	347	2311
207	203	14.303	14.273	35.013	26.140	34.782	43.048	219	33	0.45	4.1	2.2	2069	448	20.00	352	2311
208	253	12.919	12.884	34.891	26.332	35.028	43.345	208	51	0.71	8.4	2.6	2089	522	20.00	386	2301
209	302	11.167	11.129	34.734	26.545	35.313	43.697	206	63	0.99	12.9	3.8	2106	595	20.00	409	2294
210	353	9.622	9.581	34.585	26.699	35.533	43.979	211	67	1.20	16.5	4.7	2114	655	20.00	421	2285
211	403	8.301	8.259	34.469	26.818	35.712	44.214	221	65	1.35	19.0	5.7	2124	699	20.00	425	2284
212	478	7.356	7.309	34.408	26.910	35.848	44.391	236	57	1.46	20.9	7.1	2128	721	20.00	421	2283
213	553	6.863	6.811	34.382	26.958	35.920	44.486	243	54	1.51	21.8	8.3	2130	725	20.00	415	2284
214	652	6.409	6.349	34.350	26.994	35.979	44.565	244	57	1.59	23.1	9.8	2133	740	20.00	416	2284
215	752	5.840	5.774	34.316	27.041	36.053	44.666	237	67	1.72	25.0	12.7	2144	781	20.00	428	2287
216	851	5.250	5.178	34.304	27.103	36.145	44.786	224	85	1.89	27.6	18.9	2159	853	20.00	456	2289
217	951	4.773	4.695	34.312	27.164	36.231	44.894	211	101	2.02	29.5	26.2	2175	923	20.00	483	2295
218	1051	4.210	4.128	34.338	27.246	36.341	45.031	197	119	2.16	31.6	36.6	2194	1006	20.00	514	2302
219	1201	3.530	3.441	34.395	27.361	36.490	45.213	183	138	2.30	33.5	51.4	2223	1099	20.00	545	2321
220	1350	3.020	2.924	34.469	27.468	36.624	45.371	173	153	2.37	34.4	66.7	2240	1155	20.00	561	2332
221	1501	2.710	2.605	34.529	27.544	36.716	45.479	167	162	2.39	34.7	79.4	2256	1177	20.00	564	2348
222	1700	2.415	2.296	34.589	27.618	36.806	45.583	160	170	2.41	35.0	95.4	2273	1189	20.00	562	2365
223	1901	2.220	2.087	34.621	27.661	36.860	45.647	157	175	2.43	35.2	106.2	2284	1195	20.00	560	2377
224	2100	2.053	1.905	34.641	27.692	36.900	45.696	156	178	2.44	35.1	114.0	2292	1189	20.00	553	2387
225	2301	1.922	1.759	34.653	27.712	36.929	45.733	157	178	2.44	35.3	119.1	2297	1186	20.00	548	2393
226	2501	1.826	1.646	34.661	27.727	36.950	45.759	159	177	2.43	35.2	122.2	2298	1176	20.00	541	2395
227	2701	1.752	1.555	34.668	27.740	36.967	45.781	162	175	2.42	35.1	123.4	2297	1166	20.00	534	2395
228	2901	1.692	1.477	34.674	27.750	36.982	45.800	165	173	2.41	35.0	124.0	2296	1153	20.00	527	2396
229	3101	1.647	1.413	34.678	27.758	36.993	45.815	168	170	2.40	34.7	124.2	2296	1142	20.00	520	2398
230	3301	1.614	1.361	34.681	27.764	37.002	45.827	170	168	2.38	34.6	124.2	2292	1139	20.00	518	2394
231	3500	1.583	1.310	34.685	27.771	37.012	45.839	173	166	2.38	34.4	124.3	2291	1131	20.00	513	2394
232	3700	1.525	1.232	34.690	27.781	37.025	45.857	177	163	2.36	34.1	123.4	2288	1126	20.00	509	2391
233	3900	1.436	1.123	34.698	27.794	37.045	45.882	183	157	2.32	33.6	122.6	2281	1110	20.00	499	2386
234	4101	1.354	1.021	34.705	27.807	37.064	45.906	189	153	2.29	33.2	121.0	2277	1088	20.00	487	2384
235	4300	1.320	0.965	34.707	27.812	37.072	45.917	193	149	2.28	33.0	120.8	2275	1078	20.00	482	2384
236	4464	1.326	0.952	34.708	27.814	37.074	45.920	193	149	2.28	33.0	120.5	2272	1081	20.00	483	2380

Lamont-Doherty Earth Observatory of Columbia University
JUNO - 9 WOCE Line P17

Station 120 Latitude 30-59.6S Longitude 135-45.0W Date 11/21/92 Bottom Depth 4410 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	4	19.410	19.409	35.478	25.282	33.744	41.842	230	-3	0.09	0.1	1.8	2027	339	20.00	331	2330
102	13	19.116	19.114	35.453	25.339	33.811	41.918	231	-3	0.10	0.1	1.8	2022	336	20.00	324	2326
103	42	18.685	18.678	35.425	25.429	33.915	42.035	233	-3	0.09	0.1	1.6					
104	63	18.638	18.627	35.446	25.458	33.946	42.067	233	-3	0.09	0.1	1.6					
105	83	18.500	18.485	35.450	25.497	33.988	42.114	234	-3	0.09	0.1	1.6					
106	102	18.037	18.019	35.380	25.559	34.067	42.207	234	-1	0.10	0.1	1.6					
107	152	17.186	17.161	35.319	25.722	34.259	42.426	224	13	0.17	0.4	1.5					
108	202	15.869	15.837	35.215	25.951	34.535	42.746	213	31	0.34	2.7	1.5					
109	301	13.007	12.965	34.967	26.375	35.067	43.379	196	63	0.80	10.2	2.6					
110	422	8.350	8.306	34.484	26.823	35.715	44.215	220	67	1.34	19.0	5.5					
111	502	7.258	7.209	34.415	26.929	35.872	44.419	237	57	1.44	20.9	6.5					
112	651	6.463	6.403	34.355	26.991	35.973	44.557										
113	801	5.609	5.539	34.307	27.062	36.086	44.710	232	74	1.76	25.8	14.0					
114	951	4.827	4.749	34.303	27.151	36.215	44.876	213	99	1.98	29.0	23.1					
115	1101	4.004	3.919	34.352	27.279	36.384	45.084	190	128	2.20	32.2	40.4					
116	1250	3.318	3.227	34.431	27.410	36.550	45.283	174	149	2.33	33.9	58.9					
117	1400	2.905	2.806	34.498	27.502	36.663	45.416	167	160	2.37	34.4	73.3					
118	1550	2.587	2.478	34.555	27.576	36.755	45.523	161	168	2.40	34.8	87.7					
119	1700	2.386	2.267	34.591	27.622	36.811	45.590	157	173	2.42	34.9	98.4					
120	1850	2.222	2.093	34.616	27.656	36.855	45.642	156	176	2.44	35.2	106.4					
121	2000	2.090	1.950	34.633	27.682	36.888	45.682	154	179	2.45	35.3	113.2					
122	2151	1.994	1.843	34.643	27.698	36.910	45.710	154	180	2.45	35.3	117.4					
123	2300	1.899	1.736	34.652	27.714	36.931	45.736	155	180	2.44	35.3	121.2					
124	2450	1.826	1.651	34.659	27.726	36.948	45.757	156	180	2.44	35.1	123.3					
125	2599	1.764	1.576	34.665	27.736	36.962	45.775	159	178	2.44	35.0	124.4					
126	2750	1.719	1.518	34.669	27.743	36.973	45.789	161	176	2.42	34.8	124.8					
127	2900	1.677	1.462	34.673	27.751	36.983	45.802	163	174	2.41	34.7	125.0					
128	3049	1.636	1.408	34.676	27.757	36.993	45.815	166	172	2.39	34.7	124.8					
129	3199	1.613	1.370	34.680	27.763	37.000	45.824	168	170	2.37	34.6	124.8					
130	3349	1.586	1.328	34.683	27.768	37.008	45.834	171	168	2.36	34.4	124.3					
131	3500	1.554	1.282	34.686	27.774	37.016	45.845	173	166	2.35	34.3	124.1					
132	3698	1.505	1.213	34.691	27.782	37.028	45.861	177	163	2.32	33.9	123.2					
133	3899	1.431	1.119	34.696	27.793	37.045	45.882	182	158	2.30	33.6	122.6					
134	4099	1.368	1.035	34.702	27.804	37.060	45.901	187	154	2.27	33.2	121.1					
135	4298	1.379	1.023	34.703	27.805	37.062	45.904	188	153	2.27	33.2	121.0					
136	4398	1.389	1.021	34.703	27.806	37.062	45.904	188	153	2.27	33.1	120.8					

Station 121 Latitude 28-59.1S Longitude 136-30.5W Date 11/21/92 Bottom Depth 4280 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
201	3	21.031	21.030	35.642	24.976	33.387	41.437	225	-4	0.12	0.1	2.6	2016	308	20.00	322	2343
202	14	20.698	20.695	35.630	25.057	33.479	41.538	226	-4	0.10	0.1	2.4	2016	307	20.00	316	2343
203	34	20.378	20.372	35.631	25.146	33.577	41.645	226	-4	0.11	0.1	2.2	2018	308	20.00	313	2345
204	54	19.620	19.610	35.612	25.332	33.787	41.877	229	-3	0.12	0.1	2.2	2020	310	20.00	305	2346
205	74	19.222	19.209	35.553	25.391	33.859	41.961	231	-3	0.11	0.1	2.2	2020	322	20.00	311	2336
206	104	18.725	18.706	35.505	25.483	33.967	42.085	221	9	0.16	0.2	2.0	2030	338	20.00	320	2335
207	154	17.619	17.593	35.413	25.689	34.210	42.363	213	22	0.25	1.3	2.0	2043	372	20.00	336	2326
208	203	16.753	16.719	35.352	25.852	34.403	42.584	208	31	0.34	2.7	2.0	2055	399	20.00	347	2323
209	234	15.732	15.695	35.243	26.005	34.593	42.808	202	42	0.46	4.3	1.9	2067	434	20.00	361	2317
210	354	11.701	11.655	34.817	26.513	35.258	43.621	197	69	1.01	13.1	4.0	2104	586	20.00	412	2296
211	404	10.301	10.253	34.686	26.664	35.468	43.886	200	74	1.18	16.0	4.8	2116	640	20.00	424	2292
212	504	7.667	7.616	34.438	26.889	35.813	44.343	226	66	1.46	20.8	6.7	2129	724	20.00	429	2284
213	602	6.795	6.738	34.378	26.965	35.931	44.500	237	60	1.56	22.4	8.4	2131	737	20.00	420	2282
214	702	6.144	6.080	34.332	27.015	36.012	44.611	237	65	1.66	24.3	10.6	2140	769	20.00	427	2285
215	802	5.597	5.527	34.306	27.063	36.088	44.713	229	77	1.81	26.6	15.2	2148	820	20.00	445	2284
216	902	5.150	5.074	34.303	27.114	36.161	44.807	217	92	1.93	28.5	20.6	2164	882	20.00	469	2290
217	1000	4.481	4.401	34.332	27.212	36.293	44.970	194	120	2.15	31.6	33.2	2190	1002	20.00	518	2298
218	1150	3.809	3.721	34.391	27.330	36.445	45.154	177	142	2.30	33.7	49.6	2217	1101	20.00	553	2314
219	1299	3.228	3.133	34.466	27.446	36.591	45.328	168	156	2.38	34.7	67.5	2241	1155	20.00	566	2334
220	1447	2.873	2.770	34.519	27.522	36.685	45.440	163	164	2.41	34.9	80.8	2256	1168	20.00	563	2348
221	1596	2.620	2.508	34.560	27.578	36.754	45.521	159	170	2.43	35.2	92.5	2270	1182	20.00	564	2362
222	1743	2.395	2.273	34.594	27.624	36.813	45.591	156	175	2.44	35.5	103.0	2279	1185	20.00	560	2373
223	1893	2.251	2.118	34.613	27.652	36.849	45.635	155	177	2.46	35.6	110.0	2289	1193	20.00	560	2382
224	2040	2.141	1.997	34.630	27.676	36.879	45.671	153	180	2.47	35.8	115.0	2292				
225	2190	2.023	1.868	34.642	27.695	36.905	45.704	153	181	2.47	35.8	120.1	2298				
226	2388	1.931	1.760	34.652	27.712	36.928	45.732	153	182	2.47	35.8	123.4	2300				
227	2586	1.837	1.650	34.661	27.727	36.949	45.759	155	181	2.46	35.7	126.2	2303				
228	2785	1.761	1.556	34.668	27.740	36.967	45.782	159	178	2.44	35.5	127.2	2302				
229	2983	1.690	1.467	34.674	27.751	36.983	45.802	163	174	2.42	35.1	126.9	2300				
230	3182	1.649	1.407	34.678	27.759	36.994	45.816	166	172	2.41	34.8	126.7	2296				
231	3381	1.593	1.332	34.682	27.767	37.007	45.833	170	169	2.39	34.6	126.2	2295				
232	3580	1.540	1.259	34.688	27.777	37.021	45.850	174	165	2.37	34.2	124.9	2291				
233	3780	1.493	1.191	34.693	27.786	37.033	45.866	178	161	2.35	34.1	124.2	2287				
234	3980	1.447	1.125	34.698	27.794	37.045	45.882	183	158	2.33	33.7	123.4	2284				
235	4131	1.438	1.099	34.700	27.797	37.050	45.888	184	157	2.31	33.6	122.9	2283				
236	4276	1.445	1.090	34.700	27.799	37.051	45.890	185	156	2.31	33.6	122.6	2283				

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Station 123 Latitude 25-59.7S Longitude 139-55.0W Date 11/23/92 Bottom Depth 4278 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	5	21.982	21.981	35.774	24.813	33.195	41.218	220	-4	0.11	0.1	3.3	2014	294	20.00	320	2354
102	14	21.920	21.917	35.773	24.830	33.214	41.239	220	-4	0.11	0.1	3.1	2012	296	20.00	321	2350
103	54	21.616	21.606	35.801	24.938	33.331	41.364	222	-5	0.11	0.1	2.9	2012	293	20.00	313	2353
104	103	21.161	21.141	35.778	25.049	33.456	41.501	224	-4	0.11	0.1	2.9	2015	296	20.00	311	2353
105	153	19.994	19.966	35.650	25.268	33.711	41.791	222	3	0.11	0.1	2.6	2019	312	20.00	312	2343
106	203	19.018	18.981	35.555	25.451	33.926	42.036	213	16	0.17	0.5	2.4	2031	342	20.00	328	2333
107	254	17.440	17.397	35.381	25.712	34.240	42.400	211	25	0.30	2.2	2.4	2050	390	20.00	349	2324
108	313	16.065	16.015	35.275	25.957	34.533	42.738	205	38	0.40	3.7	2.6	2062	423	20.00	358	2317
109	424	12.005	11.949	34.836	26.472	35.205	43.557	195	69	0.97	12.8	4.5	2102	582	20.00	414	2295
110	553	8.135	8.078	34.477	26.852	35.754	44.264	217	71	1.41	20.3	7.2	2128	722	20.00	436	2283
111	653	6.677	6.616	34.361	26.968	35.939	44.514	234	64	1.58	23.2	9.5	2136	754	20.00	428	2284
112	753	5.914	5.848	34.317	27.032	36.041	44.651	233	70	1.71	25.1	12.5	2142	794	20.00	436	2282
113	853	5.399	5.326	34.299	27.082	36.116	44.751	222	85	1.86	27.5	17.7	2157	852	20.00	458	2287
114	952	4.778	4.700	34.314	27.165	36.231	44.894	199	113	2.09	30.7	28.2	2181	972	20.00	509	2293
115	1053	4.307	4.224	34.349	27.245	36.334	45.020	185	131	2.22	32.7	39.4	2202	1051	20.00	539	2305
116	1203	3.636	3.546	34.432	27.380	36.503	45.221	161	160	2.40	35.2	60.4	2236	1180	20.00	588	2325
117	1352	3.060	2.963	34.501	27.490	36.643	45.388	159	166	2.42	35.3	77.1	2255	1187	20.00	577	2345
118	1502	2.708	2.603	34.552	27.563	36.734	45.497	158	170	2.43	35.4	91.1	2267	1195	20.00	573	2358
119	1653	2.422	2.307	34.589	27.618	36.805	45.581	156	175	2.44	35.6	102.8	2279	1190	20.00	563	2372
120	1802	2.248	2.123	34.613	27.652	36.848	45.634	154	178	2.45	35.6	111.1	2287	1197	20.00	562	2380
121	1953	2.126	1.990	34.629	27.675	36.879	45.671	155	178	2.45	35.6	116.2	2294	1194	20.00	557	2388
122	2103	2.040	1.892	34.639	27.691	36.900	45.697	153	180	2.46	35.6	119.8	2298	1194	20.00	555	2392
123	2254	1.959	1.799	34.647	27.705	36.918	45.721	155	180	2.45	35.6	122.4	2298	1188	20.00	550	2394
124	2403	1.889	1.717	34.656	27.718	36.936	45.743	157	178	2.45	35.6	124.3	2299	1181	20.00	545	2396
125	2554	1.830	1.645	34.661	27.727	36.950	45.760	158	177	2.44	35.4	125.5	2300	1178	20.00	542	2397
126	2704	1.785	1.587	34.665	27.735	36.960	45.773	160	176	2.44	35.2	126.4	2300	1169	20.00	536	2398
127	2852	1.731	1.520	34.671	27.745	36.974	45.790	163	174	2.43	35.1	126.8	2300	1168	20.00	535	2398
128	3002	1.687	1.462	34.674	27.751	36.984	45.803	165	172	2.41	35.0	127.0	2298	1155	20.00	527	2398
129	3152	1.645	1.406	34.678	27.759	36.994	45.816	167	171	2.40	34.8	126.7	2296	1152	20.00	525	2396
130	3301	1.607	1.354	34.682	27.766	37.004	45.829	170	169	2.39	34.6	126.7	2293	1138	20.00	517	2395
131	3451	1.565	1.298	34.687	27.774	37.015	45.843	172	167	2.37	34.5	126.7	2292	1130	20.00	512	2395
132	3602	1.522	1.240	34.689	27.779	37.024	45.854	176	164	2.35	34.3	126.2	2289	1123	20.00	508	2392
133	3751	1.498	1.200	34.692	27.784	37.031	45.864	178	162	2.34	34.2	125.7	2287	1120	20.00	505	2391
134	3900	1.482	1.168	34.695	27.789	37.037	45.872	180	160	2.33	34.1	124.6	2286	1111	20.00	501	2391
135	4102	1.484	1.148	34.697	27.792	37.042	45.877	182	159	2.32	33.9	124.4	2282	1106	20.00	498	2388
136	4285	1.491	1.133	34.698	27.794	37.044	45.880			2.31	33.8	124.1	2283	1107	20.00	498	2389

Station 125 Latitude 23-59.1S Longitude 142-09.2W Date 11/23/92 Bottom Depth 4769 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	5	24.137	24.136	36.086	24.425	32.745	40.709	211	-3	0.15	0.0	3.3	2015	271	20.00	323	2381
102	24	23.339	23.334	35.942	24.553	32.896	40.881	214	-3	0.12	0.0	3.1	2009	271	20.00	312	2372
103	44	23.144	23.135	35.928	24.600	32.948	40.939	214	-2	0.12	0.0	2.9	2007	271	20.00	309	2370
104	74	22.489	22.474	35.847	24.729	33.096	41.105	216	-2	0.11	0.0	2.9	2011	285	20.00	316	2360
105	104	21.826	21.806	35.776	24.864	33.251	41.278	219	-2	0.10	0.0	2.8	2010	290	20.00	312	2354
106	142	20.806	20.779	35.676	25.070	33.489	41.545	220	2	0.09	0.0	2.8	2014	302	20.00	312	2347
107	183	19.876	19.842	35.622	25.279	33.726	41.810	198	27	0.23	1.3	2.8	2042	347	20.00	344	2344
108	223	19.044	19.004	35.572	25.459	33.932	42.041	194	35	0.31	2.2	2.8	2049	369	20.00	353	2337
109	281	17.099	17.052	35.410	25.818	34.357	42.527	200	38	0.35	3.3	2.8	2058	401	20.00	354	2326
110	369	13.666	13.613	35.036	26.296	34.962	43.251	192	63	0.74	9.3	3.7	2092	515	20.00	393	2309
111	460	10.378	10.323	34.680	26.647	35.448	43.864	198	76	1.16	16.0	5.6	2118	641	20.00	426	2293
112	548	7.475	7.420	34.404	26.891	35.824	44.363	215	78	1.55	22.1	8.7	2136	760	20.00	446	2283
113	648	6.386	6.327	34.341	26.990	35.976	44.564	230	71	1.65	24.1	10.8	2140	780	20.00	437	2283
114	747	5.640	5.575	34.304	27.056	36.078	44.701	225	81	1.81	26.5	15.0	2149	832	20.00	452	2282
115	846	5.021	4.951	34.310	27.134	36.187	44.839	203	107	2.02	29.7	23.9	2173	938	20.00	496	2290
116	947	4.448	4.373	34.363	27.240	36.322	45.000	173	142	2.26	33.5	40.4	2206	1091	20.00	563	2303
141	1045	4.043	3.962	34.415	27.325	36.427	45.124	158	160	2.37	35.0	54.5	2230	1168	20.00	593	2320
118	1143	3.608	3.523	34.451	27.398	36.522	45.240	156	165	2.41	35.4	64.1	2241	1191	20.00	593	2329
119	1293	3.034	2.942	34.513	27.502	36.656	45.401	157	169	2.43	35.5	80.4	2258	1190	20.00	578	2348
120	1492	2.611	2.508	34.567	27.583	36.759	45.526	155	174	2.44	35.6	95.9	2274	1194	20.00	570	2366
121	1688	2.332	2.215	34.605	27.638	36.830	45.611	153	178	2.45	35.7	108.3	2288	1193	20.00	562	2382
122	1886	2.145	2.014	34.629	27.673	36.876	45.667	152	181	2.45	35.8	116.2	2297	1198	20.00	560	2391
123	2085	2.028	1.882	34.643	27.695	36.904	45.702	153	181	2.45	35.8	120.2	2301	1190	20.00	553	2397
124	2286	1.927	1.765	34.655	27.714	36.929	45.733	154	181	2.44	35.5	122.7	2303	1185	20.00	548	2400
125	2483	1.870	1.691	34.658	27.722	36.941	45.749	156	179	2.44	35.5	124.2	2302	1174	20.00	541	2400
126	2681	1.794	1.598	34.665	27.734	36.959	45.771	159	177	2.42	35.4	125.5	2300	1170	20.00	537	2398
127	2873	1.721	1.508	34.671	27.746	36.975	45.792	162	175	2.40	35.1	126.1	2300	1157	20.00	529	2400
128	3069	1.664	1.433	34.677	27.756	36.990	45.810	166	172	2.39	34.8	126.6	2300	1148	20.00	523	2401
129	3251	1.610	1.362	34.681	27.764	37.002	45.826	170	169	2.35	34.7	126.3	2294	1133	20.00	515	2396
130	3463	1.559	1.290	34.686	27.773	37.015	45.843	173	166	2.33	34.5	125.5	2292	1130	20.00	512	2395
131	3660	1.514	1.226	34.690	27.781	37.026	45.858	176	163	2.33	34.3	125.3	2289	1119	20.00	506	2393
132	3855	1.495	1.186	34.693	27.786	37.034	45.867	179	161	2.32	34.1	125.0	2286	1115	20.00	503	2391
133	4052	1.482	1.151	34.695	27.790	37.039	45.875	180	160	2.31	34.0	124.8	2283	1111	20.00	500	2388
134	4251	1.481	1.128	34.697	27.793	37.044	45.881	183	158	2.29	33.9	124.4	2285	1105	20.00	497	2391
135	4497	1.495	1.112	34.697	27.794	37.046	45.883	183	158	2.29	33.8	124.6	2284	1106	20.00	497	2390
136	4748	1.520	1.106	34.698	27.796	37.048	45.885			2.29	33.7	124.4	2283	1101	20.00	495	2389

Lamont-Doherty Earth Observatory of Columbia University
WOCE P17E/P19S R/V Knorr WOCE Line P17E

Station 128 Latitude 52-29.8S Longitude 135-00.0W Date 12/14/92 Bottom Depth 4326 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy (umol/kg)	AOU (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	TCO2 (umol/kg)	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	2	7.602	7.602	34.366	26.835	35.760	44.292	318	-27	0.90	13.2	1.5	2077	255	4.00	297	2292
102	28	7.476	7.473	34.370	26.856	35.788	44.325	318	-26	0.91	13.3	1.5	2078	259	4.00	300	2291
103	57	7.172	7.167	34.395	26.919	35.864	44.414	297	-3	1.16	15.3	2.2	2104	296	4.00	339	2295
104	87	6.951	6.943	34.398	26.953	35.908	44.468	293	3	1.25	16.5	4.5	2108	310	4.00	351	2291
105	127	6.865	6.853	34.402	26.968	35.928	44.491	289	8	1.31	17.1	6.0	2112	320	4.00	361	2289
106	157	6.761	6.747	34.391	26.974	35.939	44.507	288	10	1.34	17.6	6.7	2111	320	4.00	359	2289
107	186	6.712	6.695	34.386	26.977	35.944	44.515	288	9	1.35	17.8	7.3	2114	322	4.00	361	2291
108	245	6.505	6.483	34.355	26.981	35.959	44.539	273	26	1.47	20.2	8.4	2121	340	4.00	378	2289
109	302	6.425	6.398	34.349	26.987	35.969	44.554	271	28	1.48	20.5	9.0	2123	344	4.00	381	2289
110	449	5.950	5.911	34.295	27.007	36.013	44.621	273	30	1.56	21.5	9.9	2122	361	4.00	392	2280
111	546	5.476	5.430	34.235	27.018	36.049	44.679	274	33	1.62	22.6	11.0	2127	366	4.00	389	2283
112	615	5.045	4.995	34.197	27.039	36.092	44.743	280	30	1.66	23.1	12.0	2129	368	4.00	383	2284
113	653	5.205	5.151	34.242	27.057	36.101	44.744	255	54	1.77	24.9	15.7	2143	401	4.00	421	2286
114	690	5.490	5.431	34.331	27.094	36.124	44.752	222	84	1.91	27.1	21.2	2161	444	4.00	472	2290
115	740	5.101	5.040	34.298	27.114	36.163	44.811	228	82	1.94	27.5	22.7	2163	450	4.00	470	2290
116	788	5.051	4.986	34.336	27.151	36.202	44.851	214	96	2.01	28.6	27.0	2173	472	4.00	492	2294
117	888	4.320	4.251	34.316	27.216	36.305	44.989	215	101	2.11	29.9	33.0	2172	495	4.00	501	2286
118	988	3.913	3.838	34.345	27.282	36.391	45.095	206	112	2.21	31.3	40.4	2198	531	4.00	527	2304
119	1139	3.326	3.244	34.382	27.369	36.509	45.242	196	128	2.30	32.7	51.5	2212	593	4.00	574	2305
120	1286	3.007	2.916	34.442	27.447	36.604	45.352	185	140	2.38	33.6	61.8	2226				
121	1488	2.708	2.603	34.514	27.532	36.705	45.467	177	151	2.40	34.0	72.4	2244	612	4.00	577	2336
122	1693	2.485	2.366	34.580	27.605	36.789	45.563	174	156	2.38	33.8	78.2	2251	617	4.00	575	2343
123	1891	2.360	2.225	34.637	27.663	36.853	45.634	172	160	2.35	33.4	85.4	2254	608	4.00	564	2349
124	2090	2.225	2.075	34.682	27.711	36.909	45.696	175	158	2.31	32.8	91.0	2260	597	4.00	550	2358
125	2290	2.092	1.926	34.698	27.736	36.942	45.736	176	158	2.31	32.3	96.1	2264	590	4.00	540	2365
126	2493	1.993	1.810	34.725	27.766	36.978	45.779	187	147	2.21	31.3	92.1	2251	568	4.00	517	2356
127	2692	1.839	1.640	34.728	27.782	37.003	45.812	190	146	2.24	31.4	98.7	2254	561	4.00	508	2361
128	2891	1.668	1.453	34.732	27.799	37.030	45.849	195	143	2.21	31.2	101.5	2251	552	4.00	496	2361
129	3092	1.511	1.280	34.727	27.807	37.048	45.876	197	142	2.22	31.4	107.7	2264	551	4.00	491	2375
130	3293	1.414	1.165	34.724	27.812	37.061	45.895	197	143	2.25	31.6	111.1	2263	555	4.00	492	2373
131	3494	1.315	1.048	34.720	27.817	37.072	45.912	197	144	2.25	31.9	114.3	2264	550	4.00	485	2376
132	3692	1.264	0.977	34.718	27.820	37.079	45.923	197	144	2.29	32.0	116.8	2267	549	4.00	483	2380
133	3891	1.264	0.956	34.717	27.821	37.081	45.926	198	144	2.27	32.0	118.0	2265	549	4.00	483	2377
134	4089	1.278	0.947	34.716	27.821	37.081	45.927	198	144	2.29	32.0	118.0	2266	545	4.00	479	2380
135	4275	1.286	0.934	34.717	27.822	37.084	45.930	198	144	2.27	32.0	118.1	2271	543	4.00	477	2385
136	4318	1.290	0.933	34.717	27.822	37.084	45.931	198	144	2.25	31.9	118.1	2266	537	4.00	471	2382

Station 131 Latitude 52-30.0S Longitude 132-32.1W Date 12/14/92 Bottom Depth 4550 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy (umol/kg)	AOU (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	TCO2 (umol/kg)	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	2	8.294	8.294	34.456	26.803	35.695	44.196	297	-10	0.95	8.2	1.8	2086	275	4.00	330	2288
102	28	8.296	8.293	34.449	26.797	35.690	44.191	297	-11	0.95	8.2	1.8	2086	276	4.00	330	2287
103	57	7.777	7.771	34.458	26.882	35.799	44.322	288	3	1.12	10.1	3.9	2101	295	4.00	346	2292
104	84	7.580	7.572	34.447	26.903	35.828	44.360	281	10	1.20	11.1	4.8	2103	307	4.00	358	2287
105	107	7.547	7.537	34.451	26.911	35.838	44.371	282	9	1.21	11.2	5.0	2103	307	4.00	356	2287
106	159	7.509	7.493	34.452	26.918	35.847	44.382	281	11	1.22	11.9	5.0	2104	312	4.00	361	2285
107	208	7.449	7.429	34.449	26.925	35.857	44.395	278	14	1.26	12.9	5.4	2107	317	4.00	366	2286
108	258	7.405	7.380	34.445	26.929	35.863	44.403	277	16	1.28	13.3	5.6	2110	320	4.00	370	2287
109	308	7.369	7.339	34.441	26.931	35.868	44.409	277	16	1.28	13.6	5.8	2110	320	4.00	369	2287
110	385	7.278	7.241	34.437	26.942	35.883	44.429	274	20	1.33	14.8	6.2	2113	326	4.00	373	2288
111	462	7.134	7.089	34.421	26.951	35.899	44.452	273	22	1.44	15.3	6.8	2117	336	4.00	383	2287
112	521	6.896	6.846	34.388	26.958	35.918	44.482	267	29	1.49	16.9	7.7	2120	345	4.00	389	2286
113	599	6.649	6.593	34.361	26.971	35.943	44.519	262	36	1.52	18.4	8.7	2123	353	4.00	394	2285
114	694	6.323	6.259	34.337	26.996	35.985	44.576	254	46	1.67	20.5	10.6	2131	370	4.00	407	2287
115	791	5.720	5.651	34.280	27.027	36.047	44.666	258	47	1.74	21.8	12.2	2136	377	4.00	404	2289
116	881	5.480	5.404	34.311	27.082	36.113	44.743	229	78	1.89	25.6	18.7	2158	426	4.00	452	2293
117	974	5.007	4.925	34.320	27.145	36.199	44.852	217	93	2.04	28.0	25.4	2172	463	4.00	482	2296
118	1069	4.515	4.429	34.332	27.210	36.289	44.965	209	105	2.16	29.9	32.3	2184				
119	1206	3.870	3.777	34.348	27.290	36.403	45.110	202	117	2.29	31.8	41.3	2199				
120	1342	3.272	3.174	34.384	27.377	36.521	45.257	194	130	2.33	33.3	52.0	2214	576	4.00	556	2311
121	1526	2.847	2.738	34.464	27.481	36.646	45.403	181	146	2.41	34.6	65.0	2234	611	4.00	580	2326
122	1708	2.642	2.520	34.530	27.552	36.729	45.496	173	155	2.42	34.7	74.2	2246	620	4.00	582	2337
123	1898	2.486	2.349	34.588	27.613	36.798	45.573	173	158	2.45	34.5	79.2	2251	622	4.00	580	2342
124	2095	2.344	2.192	34.647	27.673	36.866	45.648	173	158	2.45	33.6	84.7	2251	612	4.00	567	2344
125	2294	2.228	2.059	34.683	27.713	36.912	45.700	177	155	2.33	32.9	88.7	2255	596	4.00	549	2353
126	2494	2.126	1.940	34.707	27.742	36.947	45.741	180	153	2.33	32.1	90.4	2256	584	4.00	535	2358
127	2689	1.972	1.771	34.720	27.765	36.980	45.782	184	151	2.28	32.0	96.1	2257	578	4.00	526	2360
128	2898	1.825	1.606	34.724	27.781	37.004	45.815	186	151	2.26	31.8	101.4	2262	570	4.00	515	2368
129	3103	1.658	1.423	34.726	27.796	37.030	45.850	190	148	2.25	31.7	105.6	2261	566	4.00	507	2368
130	3300	1.540	1.287	34.724	27.804	37.045	45.873	192	147	2.25	31.7	108.8	2261	564	4.00	503	2369
131	3503	1.440	1.169	34.721	27.810	37.058	45.892	193	146	2.30	31.8	112.5	2266	562	4.00	498	2375
132	3705	1.369	1.078	34.719	27.814	37.068	45.906	195	146	2.33	32.1	114.8	2265	554	4.00	490	2376
133	3956	1.340	1.023	34.717	27.816	37.073	45.915	196	146	2.28	32.1	116.3	2266	555	4.00	489	2377
134	4202	1.339	0.994	34.717	27.818	37.076	45.920	196	145	2.30	32.1	117.2	2269	552	4.00	486	2381
135	4402	1.353	0.984	34.716	27.818	37.077	45.921	196	145	2.27	32.1	117.4	2267	548	4.00	482	2380
136	4622	1.355	0.960	34.717	27.821	37.081	45.926	197	145	2.28	31.9	118.0	2266	546	4.00	480	2380

Lamont-Doherty Earth Observatory of Columbia University
WOCE P17E/P19S R/V Knorr WOCE Line P17E

Station 136 Latitude 52-30.0S Longitude 128-25.9W Date 12/16/92 Bottom Depth 4142 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	3	7.398	7.398	34.407	26.896	35.830	44.370	300	-7	1.08	14.7	1.4	2090	296	4.00	342	2278
102	27	7.395	7.392	34.408	26.898	35.832	44.372	299	-7	1.08	14.8	1.2	2094	293	4.00	338	2285
103	58	7.393	7.387	34.408	26.898	35.833	44.373	299	-6	1.10	14.9	1.2	2093	290	4.00	335	2286
104	82	7.190	7.182	34.421	26.938	35.882	44.431	285	9	1.24	16.3	4.9	2107	323	4.00	369	2283
105	108	7.065	7.055	34.414	26.950	35.900	44.454	284	11	1.28	16.7	5.3	2111	323	4.00	368	2286
106	137	6.953	6.940	34.405	26.959	35.914	44.474	282	14	1.32	17.4	5.7	2110	331	4.00	374	2282
107	166	6.838	6.823	34.391	26.964	35.925	44.490	279	18	1.37	18.1	6.6	2115	334	4.00	377	2285
108	207	6.729	6.710	34.380	26.970	35.937	44.507	279	18	1.38	18.5	6.8	2117	335	4.00	375	2288
109	257	6.673	6.650	34.377	26.976	35.946	44.519	284	14	1.37	18.1	6.6	2112	336	4.00	376	2281
110	279	6.604	6.579	34.369	26.979	35.952	44.528	282	17	1.40	18.6	6.8	2117	333	4.00	371	2288
111	303	6.603	6.575	34.371	26.981	35.954	44.531	287	11	1.37	17.9	6.3	2112	328	4.00	365	2285
112	352	6.370	6.338	34.348	26.994	35.979	44.566	277	23	1.46	19.7	7.9	2120	351	4.00	388	2282
113	401	6.128	6.093	34.312	26.997	35.995	44.593	275	27	1.51	20.5	8.7	2120	357	4.00	390	2279
114	500	5.661	5.618	34.269	27.023	36.044	44.665	264	42	1.65	22.8	11.3	2132	376	4.00	403	2284
115	548	5.620	5.573	34.282	27.038	36.061	44.684	249	57	1.75	24.3	14.2	2142	404	4.00	432	2284
116	594	5.450	5.400	34.278	27.056	36.088	44.719	244	63	1.80	24.9	15.6	2144	410	4.00	435	2284
117	693	4.965	4.909	34.276	27.112	36.168	44.822	232	78	1.93	27.0	20.9	2160	445	4.00	462	2288
118	787	4.692	4.629	34.315	27.174	36.244	44.910	216	97	2.05	28.9	27.9	2174	485	4.00	498	2292
119	886	4.142	4.074	34.324	27.241	36.338	45.031	209	108	2.15	30.2	35.3	2185	513	4.00	515	2296
120	980	3.781	3.708	34.346	27.296	36.412	45.122	202	118	2.23	31.3	41.7	2200	532	4.00	526	2306
121	1076	3.370	3.293	34.377	27.361	36.498	45.229	195	128	2.29	32.4	50.0	2212	562	4.00	545	2312
122	1166	3.109	3.026	34.402	27.405	36.557	45.300	189	136	2.34	32.9	55.5	2216	578	4.00	555	2314
123	1258	2.941	2.853	34.440	27.451	36.611	45.363	184	142	2.37	33.3	61.4	2230	597	4.00	569	2324
124	1444	2.689	2.588	34.517	27.536	36.709	45.473	174	154	2.40	33.7	72.3	2242	611	4.00	575	2334
125	1631	2.485	2.371	34.581	27.606	36.789	45.563	172	158	2.38	33.5	78.7	2247	616	4.00	575	2339
126	1823	2.343	2.214	34.636	27.663	36.854	45.635	173	158	2.33	32.8	80.9	2250	613	4.00	568	2343
127	2013	2.234	2.090	34.673	27.703	36.900	45.686	174	158	2.29	32.5	87.9	2251	597	4.00	550	2348
128	2208	2.128	1.969	34.703	27.736	36.940	45.732	179	154	2.24	31.8	89.5	2249	579	4.00	531	2351
129	2412	1.998	1.822	34.722	27.763	36.974	45.774	184	150	2.23	31.3	92.7	2255	571	4.00	521	2359
130	2610	1.864	1.672	34.727	27.778	36.998	45.805	187	149	2.22	31.3	96.6	2254	569	4.00	515	2359
131	2610	1.864	1.672	34.728	27.779	36.999	45.806	187	149	2.22	31.3	96.4	2255	559	4.00	507	2363
132	3196	1.392	1.154	34.721	27.811	37.060	45.894	194	146	2.24	31.7	111.7	2263				
133	3403	1.339	1.081	34.719	27.814	37.067	45.906	194	146	2.26	31.8	114.1	2267	558	4.00	493	2377
134	3612	1.312	1.033	34.717	27.816	37.072	45.913	195	146	2.26	31.8	115.5	2264				
135	3817	1.304	1.003	34.717	27.818	37.075	45.918	196	146	2.26	31.9	116.1	2265	558	4.00	492	2375
136	4086	1.322	0.990	34.717	27.819	37.077	45.920	196	146	2.27	31.9	117.0	2268	529	4.00	465	2387

Station 141 Latitude 53-29.6S Longitude 126-00.1W Date 12/17/92 Bottom Depth 3741 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	3	7.302	7.302	34.391	26.897	35.836	44.380	300	-6	1.12	15.7	0.0	2093	297	4.00	342	2281
102	36	7.225	7.222	34.416	26.928	35.870	44.418	296	-2	1.13	15.9	0.0	2096	302	4.00	346	2282
103	66	7.197	7.191	34.416	26.932	35.876	44.425	296	-2	1.14	15.9	0.0	2099	308	4.00	352	2281
104	116	7.169	7.158	34.416	26.937	35.882	44.432	295	-1	1.15	16.0	0.0	2100	306	4.00	350	2283
105	166	7.095	7.079	34.410	26.943	35.892	44.446	293	2	1.18	16.2	0.0	2099	312	4.00	355	2279
106	214	6.744	6.724	34.379	26.967	35.934	44.503	287	10	1.32	17.7	2.6	2112	325	4.00	365	2287
107	265	6.541	6.517	34.359	26.979	35.956	44.535	278	21	1.43	19.6	4.6	2118	345	4.00	384	2282
108	315	6.325	6.297	34.334	26.988	35.976	44.565	275	25	1.48	20.5	5.9	2118	350	4.00	386	2281
109	363	6.188	6.156	34.321	26.996	35.990	44.586	286	15	1.43	19.3	4.1	2115	342	4.00	374	2281
110	412	6.126	6.090	34.315	27.000	35.998	44.596	289	13	1.42	19.2	3.6	2115	335	4.00	366	2285
111	461	5.967	5.927	34.293	27.003	36.009	44.616	289	14	1.45	19.7	4.3	2114	342	4.00	371	2280
112	509	5.920	5.876	34.296	27.012	36.020	44.629	276	28	1.55	21.6	7.1	2124	370	4.00	401	2278
113	557	5.584	5.537	34.255	27.021	36.047	44.672	275	32	1.62	22.6	8.5	2127	375	4.00	400	2279
114	604	5.382	5.331	34.249	27.041	36.077	44.711	259	49	1.72	24.4	11.9	2140	398	4.00	421	2284
115	675	5.177	5.121	34.264	27.078	36.123	44.768	241	68	1.84	26.3	16.0	2151	423	4.00	444	2287
116	722	4.741	4.683	34.222	27.094	36.162	44.828	259	53	1.82	25.7	16.3	2147	416	4.00	428	2285
117	791	4.793	4.729	34.288	27.142	36.206	44.869	225	87	2.03	28.6	23.5	2170	466	4.00	481	2293
118	835	4.634	4.567	34.316	27.182	36.254	44.924	215	98	2.07	29.5	28.2	2175	487	4.00	499	2292
119	878	4.404	4.335	34.312	27.204	36.288	44.969	215	100	2.10	30.0	30.1	2182	496	4.00	503	2297
120	923	3.974	3.904	34.297	27.237	36.344	45.045	216	102	2.16	30.7	33.2	2185	511	4.00	509	2296
121	964	3.857	3.785	34.307	27.257	36.370	45.077	213	106	2.19	31.3	35.5	2191	524	4.00	519	2299
122	1054	3.561	3.484	34.345	27.317	36.445	45.166	202	119	2.27	32.2	44.2	2200	546	4.00	535	2304
123	1238	3.064	2.976	34.409	27.416	36.569	45.315	189	136	2.37	34.1	56.9	2222	585	4.00	560	2318
124	1427	2.735	2.635	34.488	27.509	36.680	45.441	178	150	2.41	34.2	68.7	2240	613	4.00	578	2332
125	1619	2.508	2.395	34.567	27.593	36.775	45.548	172	158	2.41	34.2	77.8	2247	622	4.00	581	2338
126	1822	2.370	2.241	34.627	27.653	36.843	45.623	172	159	2.36	33.6	82.7	2253	618	4.00	574	2345
127	2018	2.254	2.110	34.671	27.699	36.896	45.681	174	157	2.31	32.9	87.3	2252	600	4.00	554	2349
128	2219	2.121	1.961	34.701	27.735	36.939	45.732	178	155	2.28	32.4	91.2	2255	588	4.00	540	2356
129	2421	1.986	1.810	34.717	27.760	36.972	45.772	183	152	2.25	32.0	94.8	2255	578	4.00	527	2358
130	2623	1.864	1.671	34.723	27.775	36.995	45.803	185	151	2.26	32.0	99.8	2259	575	4.00	521	2364
131	2623	1.864	1.671	34.722	27.774	36.994	45.802	185	151	2.26	32.0	99.9	2257	575	4.00	521	2362
132	3029	1.526	1.301	34.719	27.799	37.040	45.867	189	149	2.28	32.3	110.6	2264	567	4.00	506	2371
133	3234	1.405	1.162	34.716	27.806	37.055	45.889	191	149	2.36	32.5	114.8	2266	563	4.00	500	2375
134	3442	1.354	1.091	34.716	27.811	37.064	45.902	192	148	2.29	32.5	117.3	2269	560	4.00	495	2379
135	3636	1.346	1.063	34.717	27.814	37.068	45.907	193	148	2.29	32.5	117.8	2266	560	4.00	495	2376
136	3747	1.346	1.051	34.717	27.815	37.069	45.910	193	148	2.29	32.5	118.1	2269	558	4.00	493	2379

Lamont-Doherty Earth Observatory of Columbia University
WOCE P17E/P19S R/V Knorr WOCE Line P17A

Station 145 Latitude 55-29.9S Longitude 125-59.9W Date 12/18/92 Bottom Depth 3387 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3 -------------umol/kg-------------	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	2	6.467	6.467	34.291	26.932	35.912	44.494	307	-8	1.20	16.4	2.8	2097	298	4.00	330	2286
102	28	6.199	6.197	34.272	26.952	35.945	44.540	310	-8	1.21	16.4	2.3	2095	294	4.00	323	2286
103	58	6.179	6.174	34.274	26.957	35.951	44.547	307	-6	1.24	16.4	2.3	2099	302	4.00	331	2285
104	93	6.196	6.188	34.282	26.961	35.955	44.550	303	-2	1.27	16.7	3.1	2101	306	4.00	336	2284
105	133	6.177	6.165	34.316	26.991	35.985	44.580	292	9	1.43	18.7	6.5	2112	333	4.00	365	2283
106	183	5.771	5.756	34.262	27.000	36.015	44.629	294	11	1.47	19.6	6.4	2115	340	4.00	366	2282
107	233	5.389	5.370	34.225	27.018	36.052	44.685	284	23	1.58	19.8	10.2	2122	360	4.00	382	2279
108	282	5.121	5.099	34.202	27.031	36.079	44.725	281	28	1.65	22.9	11.0	2129	373	4.00	390	2282
109	331	4.604	4.579	34.148	27.047	36.122	44.793	289	25	1.68	23.3	11.0	2127	371	4.00	380	2281
110	380	4.254	4.226	34.110	27.055	36.148	44.837	297	19	1.69	23.5	10.7	2123	370	4.00	374	2276
111	429	4.594	4.561	34.189	27.082	36.156	44.828	261	52	1.82	25.7	15.9	2142	407	4.00	416	2283
112	479	4.829	4.791	34.270	27.120	36.182	44.842	233	78	1.95	27.5	21.6	2159	448	4.00	463	2287
113	527	4.589	4.548	34.268	27.146	36.220	44.891	230	83	2.00	28.3	24.5	2167	463	4.00	474	2291
114	576	4.516	4.472	34.293	27.174	36.252	44.926	222	92	2.06	29.1	27.9	2175	475	4.00	485	2296
115	627	4.115	4.069	34.274	27.202	36.300	44.994	224	93	2.10	29.9	29.9	2177	491	4.00	492	2293
116	676	4.041	3.991	34.305	27.234	36.337	45.034	215	103	2.16	30.5	34.5	2183	510	4.00	510	2294
117	724	3.856	3.803	34.318	27.264	36.376	45.082	210	109	2.20	31.1	37.7	2192	524	4.00	520	2300
118	775	3.725	3.669	34.341	27.296	36.414	45.126	204	116	2.24	31.6	41.7	2198	535	4.00	528	2304
119	824	3.379	3.321	34.337	27.326	36.463	45.192	204	119	2.28	32.2	44.7	2205	553	4.00	537	2306
120	898	3.269	3.206	34.369	27.362	36.505	45.239	197	127	2.31	32.7	49.7	2213	565	4.00	546	2313
121	998	2.940	2.872	34.408	27.424	36.584	45.334	189	137	2.38	33.6	57.1	2223	589	4.00	561	2318
122	1098	2.852	2.777	34.459	27.473	36.637	45.392	181	146	2.39	33.8	64.2	2235	605	4.00	575	2327
123	1246	2.637	2.552	34.516	27.538	36.713	45.479	179	149	2.39	34.1	71.6	2242	619	4.00	582	2332
124	1397	2.487	2.392	34.570	27.595	36.778	45.551	172	158	2.40	34.0	77.7	2250	619	4.00	578	2341
125	1497	2.412	2.310	34.605	27.630	36.817	45.593	171	159	2.39	34.0	81.9	2252	620	4.00	577	2344
126	1597	2.323	2.214	34.629	27.657	36.849	45.630	173	158	2.35	33.3	80.6	2252	616	4.00	571	2345
127	1747	2.244	2.123	34.666	27.694	36.890	45.675	175	156	2.31	32.6	84.6	2254	607	4.00	560	2349
128	1898	2.146	2.014	34.696	27.727	36.928	45.719	180	153	2.27	32.2	86.6	2249	588	4.00	541	2348
129	2097	2.016	1.868	34.719	27.757	36.966	45.763			2.23	31.6	89.2	2250	578	4.00	528	2352
130	2295	1.866	1.703	34.727	27.776	36.994	45.800	187	148	2.21	31.6	94.9	2252	569	4.00	516	2357
131	2494	1.680	1.503	34.730	27.793	37.022	45.839	192	145	2.21	31.5	99.5	2252	562	4.00	506	2359
132	2695	1.521	1.328	34.727	27.803	37.042	45.868	194	145	2.21	31.6	105.2	2255	563	4.00	503	2362
133	2893	1.403	1.194	34.723	27.810	37.056	45.889	194	145	2.25	32.0	110.8	2258	561	4.00	498	2367
134	3093	1.357	1.129	34.722	27.813	37.063	45.900	196	144	2.24	32.0	111.5	2258	561	4.00	497	2367
135	3295	1.284	1.038	34.720	27.818	37.073	45.914	199	142	2.24	31.8	113.6	2256	562	4.00	496	2363
136	3478	1.169	0.907	34.718	27.825	37.088	45.936	201	141	2.24	31.9	116.8	2257	564	4.00	495	2364

Station 147 Latitude 56-29.9S Longitude 125-59.8W Date 12/19/92 Bottom Depth 4248 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3 -------------umol/kg-------------	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	2	4.325	4.325	34.090	27.028	36.117	44.801	326	-11	1.39	20.3	6.3	2106	323	4.00	328	2280
102	56	4.244	4.240	34.109	27.053	36.145	44.833	317	-1	1.46	21.0	7.4	2111	337	4.00	340	2279
103	80	4.291	4.285	34.123	27.059	36.149	44.835	311	4	1.53	21.3	8.0	2116	343	4.00	347	2281
104	106	4.347	4.339	34.131	27.059	36.147	44.830	310	5	1.53	21.2	8.6	2121	347	4.00	352	2285
105	155	4.344	4.333	34.150	27.075	36.162	44.845	304	11	1.60	21.8	10.0	2121	354	4.00	359	2281
106	205	4.455	4.440	34.169	27.079	36.160	44.838	303	12	1.61	21.8	9.9	2123	354	4.00	360	2284
107	255	4.397	4.378	34.165	27.082	36.167	44.848	299	16	1.62	22.3	10.7	2125	364	4.00	370	2281
108	305	3.905	3.884	34.123	27.100	36.211	44.916	290	28	1.73	24.9	13.2	2134	385	4.00	383	2281
109	355	3.692	3.668	34.116	27.116	36.238	44.954	287	34	1.79	25.2	15.1	2141	397	4.00	391	2285
110	404	3.888	3.860	34.175	27.144	36.255	44.961	255	64	1.94	27.6	21.1	2158	442	4.00	439	2287
111	453	3.830	3.798	34.204	27.174	36.287	44.996	244	75	1.99	28.4	24.5	2169	461	4.00	457	2293
112	502	3.774	3.739	34.250	27.216	36.332	45.043	229	91	2.09	29.7	30.2	2181	492	4.00	487	2297
113	564	3.622	3.583	34.279	27.255	36.378	45.096	220	101	2.14	29.9	35.2	2190	516	4.00	507	2300
114	612	3.384	3.342	34.286	27.283	36.420	45.149	217	106	2.18	31.1	38.0	2196	529	4.00	515	2303
115	660	3.250	3.205	34.305	27.311	36.455	45.191	211	113	2.23	31.8	42.1	2203	548	4.00	530	2305
116	742	3.006	2.957	34.334	27.357	36.513	45.261	203	122	2.30	32.6	47.8	2213	567	4.00	543	2312
117	812	2.928	2.874	34.375	27.398	36.557	45.309	195	131	2.31	33.0	53.1	2219	582	4.00	555	2315
118	883	2.772	2.714	34.410	27.440	36.608	45.366	189	138	2.34	33.4	58.2	2228	600	4.00	568	2321
119	959	2.685	2.622	34.451	27.480	36.653	45.416	183	145	2.36	33.6	63.2	2235	612	4.00	577	2326
120	1105	2.495	2.423	34.512	27.546	36.728	45.500	177	153	2.38	33.9	70.3	2243	626	4.00	585	2332
121	1304	2.382	2.295	34.597	27.625	36.812	45.590	172	158	2.35	33.4	77.6	2251	622	4.00	579	2342
122	1503	2.257	2.156	34.652	27.680	36.875	45.658	173	158	2.31	32.7	83.0	2254	609	4.00	563	2348
123	1703	2.144	2.028	34.692	27.723	36.923	45.713	179	154	2.24	31.9	85.0	2259	591	4.00	544	2359
124	1886	2.014	1.884	34.715	27.752	36.961	45.757	183	151	2.22	31.5	89.4	2259	579	4.00	530	2361
125	2082	1.876	1.732	34.726	27.773	36.989	45.794	187	148	2.19	31.2	92.8	2260	571	4.00	519	2365
126	2282	1.643	1.485	34.727	27.792	37.022	45.839	190	147	2.20	31.4	101.1	2266	565	4.00	508	2373
127	2492	1.462	1.289	34.726	27.805	37.047	45.874	194	145	2.20	31.5	105.9	2267	560	4.00	500	2376
128	2694	1.331	1.142	34.724	27.814	37.063	45.899	196	144	2.20	31.5	109.7	2264	561	4.00	497	2373
129	2919	1.251	1.043	34.722	27.819	37.074	45.915	199	142	2.20	31.5	111.7	2260	563	4.00	497	2367
130	3135	1.134	0.908	34.720	27.826	37.089	45.937	201	141	2.21	31.6	115.3	2262	566	4.00	496	2370
131	3338	0.993	0.750	34.715	27.833	37.105	45.961	204	140	2.21	31.8	120.2	2264	565	4.00	493	2372
132	3538	0.897	0.636	34.712	27.837	37.116	45.979	205	140	2.22	31.9	123.1	2264	569	4.00	493	2371
133	3724	0.814	0.536	34.711	27.843	37.127	45.995	206	139	2.23	31.9	125.2	2262	570	4.00	492	2368
134	3940	0.774	0.474	34.709	27.845	37.133	46.004	208	138	2.25	32.0	127.4	2266	571	4.00	492	2373
135	4106	0.776	0.458	34.709	27.846	37.134	46.007	208	138	2.24	32.1	128.2	2268	570	4.00	490	2375
136	4242	0.777	0.444	34.708	27.846	37.135	46.009	208	138	2.23	32.1	128.9	2275	572	4.00	492	2382

Lamont-Doherty Earth Observatory of Columbia University
WOCE P17E/P19S R/V Knorr WOCE Line P17A

Station 151 Latitude 58-29.5S Longitude 126-00.1W Date 12/20/92 Bottom Depth 4168 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	3	3.404	3.404	34.069	27.105	36.241	44.971	320	2	1.60	22.5	8.7	2127	355	4.00	346	2287
102	25	3.390	3.388	34.069	27.106	36.243	44.974	321	2	1.60	22.5	8.6	2125	354	4.00	345	2285
103	55	3.281	3.278	34.068	27.116	36.259	44.995	318	6	1.63	22.7	8.8	2126	358	4.00	347	2285
104	104	3.245	3.238	34.067	27.119	36.264	45.002	315	9	1.64	22.6	9.5	2126	363	4.00	351	2282
105	155	3.244	3.234	34.067	27.119	36.265	45.003	315	9	1.65	22.8	9.7	2128	364	4.00	352	2284
106	209	3.195	3.182	34.062	27.120	36.268	45.009	314	10	1.67	22.9	10.1	2129	364	4.00	352	2285
107	263	2.806	2.790	34.037	27.135	36.305	45.066	310	18	1.77	24.3	13.1	2135	381	4.00	362	2284
108	314	2.793	2.774	34.069	27.162	36.332	45.093	285	43	1.94	27.2	20.2	2154	431	4.00	409	2286
109	364	2.669	2.647	34.106	27.203	36.379	45.146	270	59	2.03	28.8	25.7	2167	459	4.00	433	2292
110	404	2.817	2.792	34.169	27.240	36.408	45.166	251	77	2.09	29.7	30.4	2176	489	4.00	464	2292
111	454	2.899	2.870	34.224	27.277	36.440	45.194	234	93	2.18	31.2	36.6	2190	520	4.00	496	2298
112	503	2.861	2.829	34.273	27.320	36.484	45.239	219	108	2.27	32.3	42.8	2197	548	4.00	521	2299
113	553	2.801	2.766	34.311	27.356	36.523	45.280	209	119	2.31	32.9	47.3	2213	572	4.00	543	2311
114	626	2.702	2.663	34.361	27.405	36.576	45.339	197	131	2.37	33.4	53.7	2222	593	4.00	561	2316
115	700	2.639	2.595	34.414	27.453	36.627	45.392	189	139	2.39	33.7	59.8	2229	608	4.00	573	2320
116	799	2.503	2.453	34.463	27.505	36.686	45.457	183	146	2.40	34.0	65.9	2238	620	4.00	581	2328
117	898	2.442	2.385	34.517	27.553	36.737	45.511	177	153	2.41	34.0	71.3	2245	631	4.00	589	2333
118	996	2.346	2.283	34.563	27.599	36.787	45.566	173	158	2.40	34.0	74.3	2246	637	4.00	593	2333
119	1195	2.246	2.169	34.635	27.666	36.860	45.643	174	158	2.35	33.1	80.1	2251	624	4.00	577	2342
120	1397	2.130	2.039	34.684	27.715	36.916	45.705	178	154	2.28	32.3	84.4	2251	599	4.00	551	2348
121	1595	1.998	1.892	34.714	27.751	36.959	45.755	184	150	2.23	31.6	88.1	2251	583	4.00	533	2352
122	1786	1.869	1.750	34.726	27.772	36.987	45.790	187	148	2.21	31.4	90.8	2247	573	4.00	521	2350
123	1984	1.704	1.571	34.732	27.790	37.015	45.828	191	145	2.21	31.2	95.1	2249	569	4.00	513	2354
124	2187	1.521	1.374	34.732	27.804	37.041	45.864	194	144	2.20	31.2	101.4	2249	565	4.00	505	2355
125	2385	1.358	1.196	34.727	27.813	37.059	45.892	198	141	2.21	31.4	105.3	2254	565	4.00	502	2360
126	2586	1.222	1.045	34.723	27.820	37.075	45.915	199	142	2.21	31.6	112.0	2253	566	4.00	500	2359
127	2790	1.114	0.921	34.720	27.826	37.088	45.935	201	141	2.22	31.6	115.3	2252	565	4.00	496	2359
128	2995	0.997	0.787	34.715	27.830	37.100	45.955	203	140	2.23	31.7	119.1	2255	570	4.00	497	2361
129	3194	0.891	0.664	34.713	27.836	37.113	45.974	205	140	2.24	31.9	122.7	2254	569	4.00	494	2360
130	3393	0.817	0.573	34.711	27.840	37.123	45.989	206	139	2.25	31.9	125.2	2253	572	4.00	495	2359
131	3393	0.817	0.573	34.711	27.840	37.123	45.989	206	139	2.24	31.9	125.5	2254	569	4.00	492	2360
135	3791	0.660	0.379	34.709	27.850	37.144	46.020	208	139	2.26	32.1	127.6	2255	571	4.00	490	2361
132	4046	0.525	0.221	34.708	27.858	37.161	46.047	209	139	2.25	32.1	129.8	2259	569	4.00	485	2366
136	4154	0.499	0.184	34.705	27.858	37.163	46.050	213	136	2.26	32.2	133.6	2258	573	4.00	487	2364

Station 153 Latitude 59-34.8S Longitude 126-06.5W Date 12/22/92 Bottom Depth 4576 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
113	6	3.074	3.074	34.014	27.091	36.246	44.993	321	5	1.60	23.0	8.6	2120	359	4.00	345	2278
114	56	3.060	3.057	34.015	27.094	36.250	44.997	321	5	1.60	23.0	8.2	2125	359	4.00	345	2283
115	115	2.923	2.916	34.006	27.099	36.263	45.018	322	5	1.62	23.2	8.6	2127	362	4.00	346	2284
116	173	2.557	2.547	34.022	27.144	36.327	45.100	305	25	1.80	25.9	16.3	2143	401	4.00	377	2285
117	201	2.572	2.560	34.024	27.144	36.327	45.099	304	26	1.82	25.9	16.7	2144	405	4.00	381	2285
118	251	2.488	2.474	34.083	27.199	36.385	45.161	276	54	2.00	28.7	25.0	2158	454	4.00	426	2283
119	318	2.892	2.872	34.204	27.261	36.424	45.178	239	88	2.12	30.5	34.0	2183	508	4.00	485	2294
120	451	2.807	2.779	34.336	27.375	36.540	45.297	202	125	2.29	32.9	50.6	2215	579	4.00	550	2311
121	600	2.643	2.605	34.463	27.492	36.664	45.428	181	147	2.36	33.6	65.4	2237	612	4.00	577	2328
122	807	2.371	2.321	34.559	27.592	36.779	45.556	173	157	2.38	33.6	74.9	2246	626	4.00	584	2335
123	1013	2.247	2.183	34.637	27.666	36.859	45.641	174	158	2.31	33.3	81.1	2253	609	4.00	564	2347
124	1435	1.974	1.881	34.715	27.753	36.961	45.758	183	150	2.21	31.3	87.7	2249	584	4.00	534	2349
125	1715	1.724	1.612	34.731	27.786	37.009	45.819	191	145	2.17	30.9	94.8	2250	568	4.00	514	2354
126	2006	1.485	1.353	34.732	27.806	37.043	45.867	195	144	2.18	30.9	101.3	2253	565	4.00	505	2360
127	2250	1.287	1.138	34.726	27.816	37.066	45.901	198	142	2.19	31.1	107.6	2255	562	4.00	498	2362
128	2526	1.098	0.929	34.720	27.825	37.087	45.934	201	141	2.21	31.4	114.0	2253	563	4.00	495	2360
129	2838	0.935	0.741	34.713	27.832	37.104	45.961	203	140	2.22	31.5	120.1	2257	567	4.00	494	2363
130	3127	0.798	0.580	34.709	27.838	37.120	45.986	206	139	2.23	31.7	124.7	2254	570	4.00	493	2360
131	3408	0.692	0.449	34.707	27.845	37.134	46.007	208	138	2.25	31.9	127.4	2259	571	4.00	491	2365
132	3743	0.549	0.276	34.704	27.852	37.152	46.034	212	136	2.25	31.9	130.0	2258	573	4.00	490	2363
133	3743	0.549	0.276	34.704	27.852	37.152	46.034	211	137	2.25	31.9	129.6	2260	571	4.00	488	2366
134	4288	0.451	0.123	34.703	27.860	37.168	46.059	213	136	2.26	32.0	131.1	2256	574	4.00	487	2361
135	4288	0.451	0.123	34.703	27.860	37.168	46.059	214	135	2.26	31.9	131.1	2257	571	4.00	484	2364
136	4802	0.444	0.057	34.703	27.863	37.176	46.070	216	134	2.26	32.0	132.6	2256	570	4.00	482	2362

Lamont-Doherty Earth Observatory of Columbia University
WOCE P17E/P19S R/V Knorr WOCE Line P17A
Station 155 Latitude 60-29.6S Longitude 126-00.4W Date 12/22/92 Bottom Depth 4605 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	3	1.077	1.077	33.923	27.174	36.441	45.293	340	3	1.78	25.6	27.2	2144	394	4.00	349	2289
102	26	0.993	0.992	33.921	27.178	36.450	45.306	340	4	1.79	25.5	27.2	2145	394	4.00	347	2290
103	45	0.985	0.983	33.922	27.180	36.452	45.308	340	4	1.79	25.6	27.2	2146	394	4.00	347	2291
104	84	0.979	0.975	33.923	27.181	36.453	45.311	339	5	1.80	25.6	27.2	2146	397	4.00	349	2290
105	135	0.958	0.952	33.924	27.183	36.457	45.315	338	6	1.80	25.7	28.1	2147	399	4.00	351	2291
106	165	0.354	0.348	33.958	27.247	36.555	45.445	330	19	1.98	27.2	38.2	2162	434	4.00	372	2295
107	193	0.465	0.457	34.054	27.318	36.618	45.501	303	45	2.10	29.4	47.1	2179	479	4.00	412	2299
108	224	0.868	0.858	34.151	27.372	36.647	45.507	273	71	2.19	30.8	52.8	2197	520	4.00	455	2307
109	253	1.286	1.274	34.291	27.457	36.706	45.542	234	106	2.33	32.6	61.1	2217	575	4.00	512	2315
110	285	1.507	1.493	34.380	27.513	36.749	45.571	216	122	2.40	33.2	67.8	2231	607	4.00	546	2323
111	313	1.712	1.696	34.459	27.562	36.784	45.595	198	138	2.41	33.8	73.7	2242	625	4.00	567	2330
112	363	1.861	1.841	34.523	27.602	36.816	45.617	187	148	2.40	34.0	77.8	2245	636	4.00	580	2332
113	453	1.997	1.972	34.609	27.661	36.866	45.659	178	155	2.39	33.3	81.8	2253	630	4.00	578	2343
114	552	2.028	1.996	34.657	27.697	36.900	45.692	178	155	2.33	32.6	84.2	2253	620	4.00	570	2345
115	650	2.005	1.967	34.690	27.726	36.930	45.723	180	154	2.29	32.1	86.1	2250	599	4.00	550	2347
116	799	1.899	1.852	34.714	27.754	36.964	45.762	184	150	2.24	31.5	89.0	2251	585	4.00	534	2352
117	946	1.797	1.741	34.727	27.773	36.989	45.793	189	146	2.22	31.1	91.7	2251	572	4.00	520	2355
118	1095	1.669	1.604	34.732	27.787	37.011	45.822	191	145	2.21	31.0	95.4	2249	567	4.00	513	2354
119	1191	1.585	1.514	34.734	27.796	37.024	45.840	193	144				2253	568	4.00	511	
120	1291	1.496	1.419	34.733	27.802	37.036	45.856	194	144	2.21	31.0	100.5	2251	565	4.00	507	2357
121	1391	1.427	1.344	34.731	27.806	37.044	45.868	196	143	2.21	31.0	102.6	2252	564	4.00	504	2358
122	1540	1.317	1.224	34.730	27.813	37.058	45.889	196	143	2.21	31.1	106.1	2253	566	4.00	504	2359
123	1781	1.156	1.047	34.724	27.820	37.075	45.916	201	140	2.21	31.3	111.7	2256	564	4.00	498	2363
124	2028	1.011	0.885	34.720	27.828	37.092	45.941	202	141	2.22	31.5	116.6	2258				
125	2272	0.899	0.755	34.715	27.832	37.104	45.960	204	139	2.24	31.6	120.6	2255				
126	2517	0.776	0.614	34.711	27.838	37.118	45.982	206	139	2.24	31.7	124.8	2259	569	4.00	493	2366
127	2766	0.692	0.510	34.707	27.841	37.127	45.996	208	138	2.24	31.8	126.9	2261	569	4.00	491	2368
128	3010	0.566	0.364	34.705	27.848	37.142	46.020	210	137	2.25	31.9	128.6	2259	572	4.00	491	2365
129	3010	0.566	0.364	34.705	27.848	37.142	46.020	210	137	2.25	31.9	128.7	2261	572	4.00	491	2368
130	3507	0.375	0.131	34.704	27.860	37.168	46.059	212	137	2.25	31.9	129.6	2260	573	4.00	486	2366
131	3756	0.319	0.051	34.704	27.865	37.177	46.072	215	135	2.25	31.9	131.0	2259	572	4.00	484	2365
132	3959	0.299	0.011	34.702	27.865	37.180	46.077	216	134	2.25	32.0	131.7	2259	572	4.00	483	2365
133	4159	0.308	-0.002	34.703	27.867	37.182	46.080	217	133	2.26	32.1	132.7	2260	571	4.00	482	2366
134	4360	0.317	-0.015	34.705	27.869	37.186	46.084	216	134	2.27	32.0	133.0	2259	572	4.00	483	2365
135	4360	0.317	-0.015	34.703	27.867	37.184	46.082	217	134	2.26	32.0	133.4	2259	572	4.00	483	2365
136	4614	0.334	-0.027	34.703	27.868	37.185	46.084	217	134	2.26	31.9	133.9	2258	574	4.00	484	2364

Station 157 Latitude 61-39.9S Longitude 126-00.1W Date 12/23/92 Bottom Depth 4779 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
201	3	1.928	1.928	33.960	27.144	36.362	45.168	336	-1	1.63	24.4	13.1	2129	369	4.00	338	2283
202	26	1.585	1.584	33.959	27.169	36.406	45.230	338	0	1.64	24.4	12.8	2132	368	4.00	332	2287
203	61	1.510	1.507	33.960	27.175	36.417	45.245	334	5	1.67	24.4	13.0	2135	375	4.00	337	2287
204	114	1.503	1.498	33.959	27.175	36.417	45.246	334	5	1.68	24.5	13.6	2134	372	4.00	335	2287
205	145	1.200	1.193	33.965	27.201	36.460	45.305	326	16	1.83	25.6	20.1	2147	398	4.00	353	2291
206	165	0.998	0.991	33.979	27.225	36.496	45.351	320	23	1.95	27.3	29.7	2157	427	4.00	376	2292
207	190	1.512	1.503	34.079	27.271	36.511	45.337	280	58	2.11	30.0	33.9	2175	479	4.00	431	2294
208	214	1.977	1.966	34.160	27.301	36.514	45.315	256	78	2.19	31.2	38.9	2189	512	4.00	470	2300
209	254	2.209	2.195	34.244	27.351	36.549	45.337	232	101	2.26	32.4	45.9	2203	550	4.00	510	2305
210	328	2.371	2.352	34.346	27.419	36.608	45.386	204	127	2.36	33.6	54.8	2223	592	4.00	552	2316
211	401	2.348	2.325	34.424	27.484	36.673	45.451	189	142	2.40	34.2	63.4	2237	621	4.00	579	2326
212	477	2.274	2.246	34.490	27.543	36.735	45.517	182	150	2.40	34.1	69.4	2241	631	4.00	586	2329
213	525	2.275	2.244	34.527	27.573	36.765	45.545	177	154	2.39	34.0	72.5	2247	633	4.00	587	2335
214	650	2.172	2.133	34.586	27.629	36.826	45.612	172	160	2.37	33.6	77.3	2252	631	4.00	583	2340
215	751	2.152	2.107	34.631	27.668	36.865	45.651	176	156	2.33	33.1	79.9	2252	620	4.00	573	2344
216	850	2.071	2.020	34.661	27.699	36.900	45.690	177	156	2.30	32.6	82.2	2251	611	4.00	562	2345
217	950	2.024	1.966	34.688	27.724	36.928	45.721	180	153	2.26	32.2	84.4	2251	601	4.00	551	2347
218	1050	1.963	1.899	34.707	27.745	36.952	45.748	182	151	2.22	31.8	86.9	2253	587	4.00	537	2353
219	1249	1.802	1.725	34.726	27.774	36.990	45.795	188	147	2.19	31.3	91.3	2250	572	4.00	519	2354
220	1450	1.631	1.541	34.732	27.792	37.019	45.833	191	145	2.19	31.2	96.4	2252	566	4.00	510	2358
221	1598	1.521	1.421	34.731	27.800	37.034	45.854	193	145	2.18	31.2	100.0	2252	563	4.00	505	2359
222	1798	1.350	1.237	34.729	27.811	37.056	45.886	196	144	2.20	31.3	105.2	2254	562	4.00	500	2361
223	1998	1.217	1.090	34.725	27.818	37.071	45.909	201	140	2.20	31.6	109.6	2254	564	4.00	498	2361
224	2248	1.074	0.929	34.720	27.825	37.087	45.934	201	141	2.21	31.7	114.4	2257	566	4.00	497	2363
225	2248	1.074	0.929	34.720	27.825	37.087	45.934	203	140	2.21	31.7	114.4	2256	564	4.00	495	2363
226	2747	0.804	0.621	34.710	27.837	37.116	45.980	205	140	2.23	31.9	124.2	2256	566	4.00	491	2363
227	2997	0.704	0.500	34.707	27.841	37.128	45.998	207	139	2.23	32.0	126.9	2256	565	4.00	488	2363
228	3245	0.578	0.354	34.704	27.848	37.143	46.021	210	137	2.24	32.2	128.1	2255	565	4.00	485	2363
229	3495	0.486	0.240	34.704	27.854	37.156	46.040	210	138	2.25	32.1	128.4	2255	568	4.00	484	2362
230	3745	0.385	0.116	34.703	27.860	37.169	46.060	212	137	2.25	32.4	129.9	2255	571	4.00	484	2361
231	3994	0.362	0.068	34.702	27.862	37.174	46.068	216	134	2.25	32.4	132.5	2254	569	4.00	482	2361
232	3994	0.362	0.068	34.705	27.864	37.176	46.070	216	134	2.26	32.4	132.5	2254	570	4.00	482	2361
233	4442	0.323	-0.019	34.702	27.867	37.184	46.082	217	133	2.25	32.4	133.7	2260	569	4.00	480	2367
235	4642	0.335	-0.030	34.703	27.868	37.186	46.085	218	133	2.26	32.3	133.7	2260	569	4.00	480	2368
234	4643	0.335	-0.030	34.703	27.868	37.186	46.085	218	133	2.26	32.3	133.9	2260	570	4.00	481	2367
236	4811	0.344	-0.041	34.703	27.869	37.187	46.087	218	133	2.25	32.3	133.5	2260	571	4.00	481	2367

Station 160 Latitude 63-40.0S Longitude 126-00.0W Date 12/24/92 Bottom Depth 4946 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								umol/kg									
101	4	0.926	0.926	33.915	27.178	36.453	45.313	345	-1	1.60	24.0	18.9	2138	372	4.00	327	2292
102	28	0.788	0.787	33.914	27.186	36.469	45.336	346	-1	1.62	24.1	19.1	2138	371	4.00	324	2292
103	57	0.573	0.571	33.921	27.204	36.500	45.379	345	3	1.65	24.2	19.5	2140	375	4.00	324	2292
104	87	0.591	0.588	33.923	27.205	36.499	45.378	345	2	1.65	24.2	19.5	2141	375	4.00	325	2293
105	107	0.636	0.632	33.933	27.210	36.502	45.378	342	5	1.71	24.4	20.5	2141	381	4.00	331	2291
106	132	0.209	0.204	33.954	27.251	36.568	45.466	334	16	1.93	26.4	30.9	2154	417	4.00	355	2292
107	156	0.234	0.228	33.978	27.269	36.584	45.481	327	23	1.98	27.2	35.2	2162	434	4.00	370	2295
108	181	1.387	1.378	34.146	27.333	36.579	45.411	265	75	2.19	30.9	42.5	2191	509	4.00	456	2303
109	205	1.777	1.766	34.246	27.385	36.608	45.418	230	106	2.35	33.0	51.4	2213	576	4.00	524	2309
110	254	2.226	2.212	34.378	27.456	36.652	45.437	197	134	2.40	34.0	60.2	2234	616	4.00	571	2323
111	327	2.171	2.153	34.460	27.527	36.724	45.511	187	146	2.43	34.2	68.2	2244	636	4.00	588	2331
112	401	2.093	2.070	34.520	27.582	36.783	45.573	183	149	2.41	34.0	73.2	2246	636	4.00	586	2333
113	499	2.142	2.113	34.591	27.635	36.833	45.619	176	156	2.38	33.5	78.0	2249	631	4.00	582	2337
114	596	2.113	2.078	34.633	27.671	36.870	45.658	176	156	2.36	33.0	80.5	2252	624	4.00	575	2343
115	743	2.039	1.995	34.677	27.713	36.916	45.707	179	154	2.31	32.3	83.6	2253	606	4.00	557	2349
116	888	1.945	1.892	34.706	27.745	36.953	45.749	183	151	2.26	31.6	86.4	2250	589	4.00	539	2349
117	1035	1.854	1.792	34.721	27.764	36.978	45.779	186	148	2.22	31.4	89.6	2251	575	4.00	524	2354
118	1182	1.727	1.655	34.729	27.781	37.002	45.810	190	146	2.21	31.1	92.9	2248	562	4.00	509	2355
119	1381	1.568	1.484	34.733	27.797	37.027	45.844	193	144	2.20	31.0	97.8	2250	565	4.00	508	2356
120	1579	1.418	1.321	34.731	27.807	37.046	45.872	195	143	2.21	31.3	102.2	2250	563	4.00	503	2357
121	1778	1.279	1.169	34.727	27.815	37.063	45.896	197	143	2.22	31.4	107.2	2253	565	4.00	501	2360
122	1976	1.168	1.044	34.724	27.821	37.076	45.916	199	142	2.22	31.5	111.1	2255	565	4.00	499	2362
123	2228	1.011	0.869	34.717	27.827	37.092	45.942	202	141	2.24	31.7	116.4	2256	567	4.00	496	2363
124	2478	0.884	0.723	34.713	27.833	37.106	45.964	204	140	2.24	31.8	121.1	2257	566	4.00	493	2365
125	2726	0.789	0.608	34.709	27.837	37.117	45.981	206	139	2.25	32.0	125.0	2257	569	4.00	493	2364
126	2977	0.695	0.493	34.706	27.841	37.128	45.999	208	138	2.26	32.0	127.3	2258	568	4.00	489	2365
127	3225	0.600	0.377	34.704	27.846	37.140	46.017	210	137	2.26	32.1	129.2	2261	569	4.00	488	2368
128	3471	0.506	0.262	34.704	27.853	37.153	46.037	212	136	2.27	32.1	129.8	2262	573	4.00	489	2369
129	3715	0.418	0.151	34.703	27.858	37.165	46.054	214	135	2.27	32.2	131.6	2259	571	4.00	485	2366
130	3715	0.418	0.151	34.703	27.858	37.165	46.054	214	135	2.27	32.2	131.2	2261	572	4.00	486	2367
131	4167	0.339	0.027	34.703	27.865	37.179	46.075	216	135	2.26	32.3	133.5	2258	572	4.00	483	2364
132	4369	0.326	-0.008	34.703	27.867	37.183	46.081	217	134	2.26	32.2	134.0	2259	573	4.00	484	2365
133	4570	0.319	-0.037	34.703	27.868	37.186	46.086	218	133	2.26	32.4	134.9	2258	573	4.00	483	2364
134	4778	0.306	-0.074	34.702	27.870	37.190	46.091	220	131	2.26	32.2	134.4	2259	574	4.00	483	2364
135	4778	0.306	-0.074	34.702	27.870	37.190	46.091	219	132	2.28	32.3	134.3	2258	572	4.00	482	2364
136	4944	0.311	-0.089	34.702	27.870	37.191	46.094	220	132	2.26	32.4	133.4	2258	573	4.00	482	2364

Station 163 Latitude 65-39.5S Longitude 125-59.7W Date 12/25/92 Bottom Depth 4747 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								umol/kg									
101	3	-0.644	-0.644	33.375	26.823	36.200	45.156	359	1	1.54	23.0	25.0	2109	368	4.00	303	2258
102	26	-1.093	-1.094	33.461	26.909	36.312	45.292	359	6	1.65	24.0	28.4	2117	384	4.00	310	2261
103	56	-1.678	-1.679	33.760	27.170	36.604	45.613	358	12	1.80	25.2	31.0	2139	398	4.00	313	2282
104	76	-1.754	-1.755	33.778	27.186	36.625	45.638	355	15	1.83	25.6	32.6	2146	408	4.00	320	2286
105	96	-1.359	-1.361	33.837	27.223	36.636	45.625	351	15	1.85	25.7	33.1	2151	411	4.00	328	2290
106	115	-0.612	-0.615	33.921	27.264	36.630	45.575	343	15	1.89	26.1	34.8	2156	417	4.00	343	2294
107	135	-0.532	-0.536	33.974	27.303	36.663	45.603	337	21	1.93	27.1	39.5	2164	432	4.00	357	2298
108	160	-0.077	-0.083	34.072	27.361	36.693	45.605	305	48	2.07	29.6	47.5	2184	481	4.00	405	2304
109	187	0.805	0.797	34.319	27.511	36.787	45.647	245	100	2.31	32.9	65.7	2222	580	4.00	506	2319
110	225	1.245	1.234	34.431	27.572	36.821	45.657	214	126	2.37	33.7	72.0	2236	618	4.00	550	2326
111	275	1.607	1.593	34.518	27.617	36.844	45.659	193	144	2.39	34.1	76.9	2245	635	4.00	574	2332
112	323	1.749	1.732	34.566	27.645	36.864	45.671	184	151	2.38	34.0	79.6	2251	638	4.00	579	2338
113	381	1.875	1.854	34.618	27.677	36.888	45.688	179	155	2.35	33.5	82.3	2249	631	4.00	576	2338
114	453	1.911	1.886	34.649	27.699	36.909	45.706	180	154	2.32	33.1	84.2	2251	622	4.00	569	2342
115	553	1.904	1.873	34.684	27.729	36.938	45.735	180	154	2.27	32.6	87.8	2252	606	4.00	554	2347
116	651	1.857	1.820	34.704	27.749	36.961	45.761	183	152	2.24	32.3	90.0	2251	596	4.00	544	2348
117	803	1.767	1.721	34.721	27.770	36.987	45.792	186	149	2.20	31.9	91.4	2249	583	4.00	529	2350
118	952	1.663	1.608	34.730	27.786	37.009	45.820	190	146	2.19	31.5	96.8	2250	570	4.00	516	2355
119	1048	1.569	1.508	34.733	27.795	37.024	45.840	191	146	2.18	31.6	100.2	2251	569	4.00	512	2356
120	1152	1.492	1.425	34.733	27.801	37.035	45.855	192	146	2.19	31.5	102.2	2252	567	4.00	509	2358
121	1249	1.420	1.347	34.732	27.806	37.044	45.868	194	144	2.19	31.6	104.6	2251	565	4.00	505	2357
122	1450	1.279	1.193	34.729	27.815	37.061	45.894	195	144	2.20	31.7	108.9	2253	565	4.00	501	2360
123	1702	1.129	1.026	34.724	27.822	37.078	45.919	199	142	2.20	31.9	113.9	2256	565	4.00	498	2363
124	1953	0.998	0.878	34.719	27.828	37.092	45.942	201	142	2.22	32.0	118.7	2256	565	4.00	495	2363
125	2203	0.862	0.724	34.714	27.833	37.107	45.965	203	141	2.23	32.2	123.2	2258	568	4.00	495	2365
126	2450	0.762	0.606	34.709	27.837	37.117	45.981	205	140	2.23	32.2	127.3	2259	567	4.00	491	2366
127	2450	0.762	0.606	34.709	27.837	37.117	45.981	205	140	2.24	32.3	127.1	2257	568	4.00	492	2364
128	2947	0.577	0.381	34.704	27.846	37.140	46.016	209	138	2.25	32.3	129.8	2259	571	4.00	490	2365
129	3201	0.472	0.255	34.704	27.853	37.154	46.038	211	137	2.24	32.4	131.8	2257	573	4.00	489	2363
130	3449	0.398	0.159	34.703	27.858	37.164	46.053	213	136	2.25	32.4	133.4	2259	574	4.00	488	2365
131	3694	0.339	0.077	34.703	27.862	37.174	46.067	213	137	2.25	32.4	134.1	2258	572	4.00	485	2364
132	3945	0.305	0.018	34.703	27.866	37.180	46.077	217	134	2.25	32.4	136.0	2258	572	4.00	483	2364
133	3945	0.305	0.018	34.703	27.866	37.180	46.077	217	134	2.26	32.4	136.1	2258	573	4.00	484	2364
134	4450	0.287	-0.054	34.702	27.869	37.188	46.088	217	134	2.25	32.5	137.2	2261	571	4.00	481	2368
135	4652	0.281	-0.083	34.703	27.871	37.192	46.094	219	132	2.26	32.4	135.7	2259	571	4.00	480	2366
136	4738	0.284	-0.090	34.703	27.871	37.192	46.095	220	131	2.26	32.4	135.3	2261	573	4.00	482	2367

Lamont-Doherty Earth Observatory of Columbia University
WOCE P17E/P19S R/V Knorr WOCE Line P17E

Station 165 Latitude 52-01.9S Longitude 125-37.8W Date 12/29/92 Bottom Depth 2955 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								umol/kg									
101	5	8.037	8.037	34.424	26.816	35.721	44.233	297	-9	1.03	13.4	1.4	2091	279	4.00	331	2291
102	29	8.042	8.039	34.424	26.816	35.721	44.233	298	-9	1.03	13.3	1.4	2085	278	4.00	329	2285
103	59	8.000	7.994	34.428	26.826	35.732	44.246	296	-8	1.02	13.5	1.4	2088	283	4.00	335	2285
104	104	7.554	7.544	34.426	26.890	35.817	44.351	286	5	1.16	14.7	1.8	2100	302	4.00	350	2287
105	133	7.396	7.383	34.440	26.924	35.859	44.399	280	13	1.25	16.0	5.3	2108	322	4.00	371	2285
106	158	7.365	7.350	34.448	26.935	35.871	44.412	280	13	1.24	16.0	5.5	2108	321	4.00	370	2284
107	209	7.343	7.323	34.440	26.933	35.870	44.412	279	14	1.25	16.4	5.5	2108	322	4.00	370	2284
108	256	7.300	7.275	34.439	26.939	35.878	44.423	277	16	1.27	17.0	5.7	2113	326	4.00	374	2288
109	307	7.239	7.209	34.432	26.942	35.885	44.433	276	18	1.29	17.4	5.9	2112	328	4.00	375	2286
110	358	7.213	7.179	34.430	26.945	35.889	44.438	277	17	1.29	17.4	5.9	2111	329	4.00	376	2283
111	406	7.104	7.065	34.419	26.952	35.902	44.456	274	21	1.32	18.0	6.3	2115	332	4.00	378	2286
112	457	7.002	6.958	34.408	26.958	35.913	44.472	275	20	1.35	18.1	6.9	2112	338	4.00	383	2280
113	530	6.845	6.795	34.392	26.968	35.931	44.497	283	14	1.34	17.8	6.7	2113	330	4.00	372	2285
114	581	6.645	6.591	34.364	26.973	35.946	44.522	266	32	1.48	20.3	8.3	2123	353	4.00	394	2285
115	631	6.463	6.405	34.346	26.984	35.966	44.550	266	33	1.49	20.7	9.2	2121	358	4.00	396	2280
116	680	6.260	6.198	34.327	26.996	35.988	44.582	276	25	1.47	20.5	8.5	2120	351	4.00	385	2283
117	720	6.065	6.000	34.306	27.004	36.006	44.609	263	40	1.58	22.2	10.4	2129	369	4.00	402	2284
118	781	5.665	5.597	34.269	27.025	36.047	44.669	266	40	1.62	22.9	11.4	2131	375	4.00	401	2283
119	829	5.475	5.404	34.262	27.043	36.075	44.706	255	52	1.71	24.3	13.7	2138	393	4.00	417	2283
120	930	4.887	4.810	34.227	27.084	36.146	44.805	254	57	1.80	25.7	16.2	2146	412	4.00	426	2285
121	1027	4.873	4.788	34.313	27.155	36.216	44.875	218	93	1.96	28.6	26.1	2173	469	4.00	485	2295
122	1149	4.187	4.096	34.322	27.237	36.333	45.025	210	106	2.12	30.4	34.4	2187	507	4.00	509	2300
123	1345	3.451	3.350	34.355	27.338	36.472	45.200	200	123	2.26	32.4	46.4	2206	548	4.00	533	2310
124	1545	2.900	2.788	34.419	27.440	36.604	45.359	188	139	2.35	33.7	59.0	2229	595	4.00	565	2323
125	1746	2.453	2.330	34.580	27.608	36.794	45.570	173	157	2.37	33.8	77.7	2249	615	4.00	573	2342
126	1846	2.360	2.229	34.626	27.654	36.844	45.624	172	159	2.34	33.4	82.0	2252	613	4.00	569	2345
127	1947	2.315	2.176	34.649	27.676	36.869	45.652	173	158	2.32	33.1	83.6	2254	607	4.00	562	2349
128	2045	2.273	2.126	34.666	27.694	36.890	45.674	174	158	2.30	32.9	86.1	2253	605	4.00	559	2349
129	2248	2.157	1.994	34.698	27.730	36.933	45.724	178	155	2.26	32.3	89.2	2253	588	4.00	540	2353
130	2448	2.028	1.849	34.716	27.756	36.966	45.765	182	152	2.23	31.9	93.3	2256	577	4.00	527	2359
131	2647	1.828	1.634	34.723	27.778	37.000	45.809	185	151	2.23	31.9	100.1	2256	570	4.00	515	2362
132	2746	1.740	1.538	34.723	27.785	37.012	45.827	186	151	2.24	32.0	103.0	2261	567	4.00	511	2367
133	2845	1.660	1.450	34.722	27.791	37.023	45.842	187	150	2.24	32.0	105.3	2263	564	4.00	507	2370
134	2942	1.607	1.389	34.721	27.794	37.030	45.852	188	150	2.25	32.1	107.1	2263	569	4.00	509	2369
135	3139	1.470	1.236	34.716	27.801	37.045	45.876	188	152	2.28	32.5	113.8	2271	566	4.00	504	2379
136	3249	1.405	1.161	34.714	27.805	37.053	45.888	189	151	2.29	32.6	115.9	2272	564	4.00	500	2381

Station 168 Latitude 51-10.9S Longitude 124-09.3W Date 12/30/92 Bottom Depth 3644 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								umol/kg									
101	1	7.743	7.743	34.399	26.840	35.759	44.284	301	-10	1.06	13.9	1.0	2086	278	4.00	325	2286
102	25	7.707	7.705	34.397	26.844	35.764	44.291	301	-11	1.08	13.9	1.0	2084	277	4.00	324	2284
103	46	7.641	7.637	34.395	26.852	35.776	44.305	301	-10	1.07	14.0	0.9	2085	279	4.00	325	2284
104	76	7.338	7.331	34.398	26.899	35.836	44.379	296	-3	1.16	15.0	1.1	2094	295	4.00	339	2284
105	104	7.243	7.233	34.400	26.914	35.856	44.403	292	2	1.20	15.4	1.8	2099	307	4.00	352	2282
106	134	7.201	7.188	34.403	26.923	35.867	44.415	290	5	1.22	15.5	2.2	2101	309	4.00	354	2283
107	164	7.075	7.060	34.410	26.946	35.896	44.450	279	16	1.31	17.3	6.2	2109	329	4.00	375	2281
108	204	6.942	6.923	34.403	26.959	35.916	44.476	283	13	1.32	17.3	6.4	2112	328	4.00	371	2285
109	252	6.935	6.911	34.404	26.962	35.919	44.480	285	11	1.31	17.1	6.3	2109	327	4.00	370	2282
110	300	6.893	6.865	34.400	26.965	35.924	44.487	283	13	1.31	17.5	6.3	2112	332	4.00	375	2283
111	350	6.866	6.833	34.398	26.968	35.928	44.493	282	15	1.31	17.7	6.5	2112	331	4.00	373	2283
112	400	6.603	6.566	34.366	26.978	35.952	44.529	276	22	1.41	19.5	7.5	2116	341	4.00	380	2283
113	470	6.426	6.383	34.349	26.989	35.972	44.557	279	21	1.41	19.6	7.7	2119	340	4.00	376	2287
114	538	6.137	6.089	34.318	27.003	36.000	44.599	274	28	1.49	20.8	8.8	2123	354	4.00	387	2285
115	603	5.893	5.840	34.293	27.014	36.024	44.635	267	37	1.56	22.2	10.5	2128	366	4.00	396	2284
116	666	5.638	5.581	34.280	27.036	36.059	44.681	252	54	1.70	24.1	13.4	2140	396	4.00	424	2284
117	710	5.445	5.385	34.282	27.061	36.093	44.725	243	64	1.78	25.3	16.0	2147	411	4.00	436	2287
118	757	5.269	5.205	34.289	27.088	36.129	44.769	234	75	1.86	26.5	18.8	2158	432	4.00	455	2291
119	826	4.956	4.888	34.294	27.128	36.185	44.840	225	86	1.95	27.9	23.0	2166	454	4.00	472	2292
120	898	4.586	4.514	34.304	27.178	36.253	44.926	218	96	2.03	29.1	28.0	2178	482	4.00	492	2297
121	992	4.176	4.099	34.331	27.244	36.340	45.032	207	110	2.14	30.7	35.8	2193	512	4.00	514	2304
122	1089	3.712	3.631	34.342	27.300	36.420	45.135	203	117	2.21	31.8	42.2	2201	537	4.00	529	2307
123	1183	3.351	3.265	34.374	27.361	36.500	45.232	196	127	2.27	32.8	50.1	2214	561	4.00	544	2314
124	1322	2.995	2.901	34.424	27.434	36.592	45.341	187	139	2.34	33.6	59.2	2227	590	4.00	564	2322
125	1509	2.688	2.582	34.497	27.521	36.694	45.458	178	150	2.38	34.2	70.0	2241	615	4.00	579	2332
126	1701	2.483	2.363	34.578	27.604	36.788	45.562	172	158	2.36	34.1	79.0	2252	619	4.00	578	2343
127	1889	2.361	2.227	34.632	27.659	36.849	45.629	171	160	2.33	33.5	84.3	2256	611	4.00	566	2351
128	2082	2.243	2.093	34.673	27.702	36.900	45.686	175	157	2.28	32.9	87.7	2254	600	4.00	554	2351
129	2277	2.122	1.957	34.702	27.736	36.941	45.734	179	154	2.24	32.4	90.8	2255	585	4.00	537	2356
130	2476	1.983	1.802	34.717	27.760	36.973	45.774	182	152	2.22	32.1	95.2	2257	578	4.00	527	2360
131	2677	1.818	1.621	34.718	27.775	36.998	45.808	182	154	2.24	32.4	103.5	2263	576	4.00	521	2368
132	2876	1.670	1.457	34.716	27.785	37.017	45.836	184	154	2.26	32.4	109.1	2266	573	4.00	515	2372
133	3081	1.543	1.313	34.716	27.796	37.036	45.862	187	152	2.26	32.5	112.2	2271	569	4.00	508	2378
134	3314	1.409	1.158	34.711	27.802	37.051	45.886	188	152	2.27	32.8	117.4	2275	566	4.00	502	2384
135	3314	1.409	1.158	34.711	27.802	37.051	45.886	189	152	2.27	32.9	117.2	2274	565	4.00	501	2383
136	3677	1.369	1.081	34.712	27.809	37.062	45.900	190	151	2.26	32.8	118.5	2272	558	4.00	493	2383

Lamont-Doherty Earth Observatory of Columbia University
WOCE P17E/P19S R/V Knorr WOCE Line P17E

Station 173 Latitude 51-29.9S Longitude 120-03.4W Date 12/31/92 Bottom Depth 3166 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	4	7.681	7.681	34.325	26.791	35.713	44.242	295	-4	1.13	14.2	2.0	2088	286	4.00	334	2283
102	24	7.679	7.677	34.325	26.792	35.714	44.243	295	-4	1.13	14.1	1.7	2087	286	4.00	334	2281
103	49	7.594	7.589	34.327	26.806	35.732	44.265	296	-4	1.13	14.2	1.7	2090	288	4.00	335	2284
104	79	7.398	7.390	34.343	26.847	35.782	44.323	295	-2	1.16	14.6	1.5	2094	291	4.00	336	2286
105	104	7.135	7.125	34.367	26.903	35.850	44.403	291	4	1.23	15.1	2.1	2105	303	4.00	346	2291
106	134	6.899	6.887	34.357	26.928	35.887	44.450	291	6	1.26	15.9	2.9	2106	310	4.00	350	2289
107	154	6.805	6.791	34.359	26.943	35.906	44.473	287	10	1.32	16.6	3.6	2109	320	4.00	360	2286
108	178	6.654	6.638	34.356	26.961	35.931	44.505	282	16	1.38	18.0	5.2	2114	334	4.00	373	2284
109	203	6.513	6.495	34.348	26.974	35.951	44.531	281	18	1.40	18.8	6.6	2117	338	4.00	376	2286
110	252	6.404	6.381	34.339	26.981	35.964	44.550	281	19	1.42	19.3	7.2	2113	340	4.00	377	2280
111	303	6.323	6.296	34.332	26.987	35.974	44.564	281	19	1.43	19.6	7.2	2115	343	4.00	378	2281
112	351	6.250	6.219	34.326	26.992	35.983	44.576	281	20	1.44	19.8	7.4	2122	348	4.00	382	2286
113	401	6.173	6.137	34.322	27.000	35.995	44.591	281	21	1.46	20.0	7.8	2121	349	4.00	382	2284
114	450	6.030	5.990	34.307	27.006	36.009	44.612	280	23	1.48	20.5	8.2	2120	352	4.00	383	2282
115	499	5.959	5.915	34.301	27.011	36.017	44.624	281	22	1.50	20.6	8.6	2121	350	4.00	380	2284
116	550	5.735	5.688	34.278	27.021	36.039	44.656	273	32	1.57	21.9	9.9	2129	364	4.00	391	2286
117	599	5.448	5.398	34.254	27.037	36.069	44.701	266	41	1.66	23.3	11.7	2137	382	4.00	405	2288
118	650	5.188	5.134	34.238	27.056	36.101	44.745	262	47	1.73	24.4	13.4	2141	394	4.00	413	2287
119	700	4.936	4.879	34.231	27.079	36.138	44.794	252	59	1.82	25.6	16.3	2149	417	4.00	432	2287
120	750	4.951	4.890	34.272	27.111	36.168	44.823	234	77	1.91	27.1	20.4	2162	441	4.00	458	2292
121	799	4.729	4.665	34.277	27.140	36.208	44.874	229	84	1.96	28.0	23.7	2169	457	4.00	471	2295
122	850	4.555	4.488	34.292	27.171	36.248	44.922	222	92	2.03	28.8	27.0	2175	479	4.00	489	2294
123	899	4.340	4.270	34.305	27.205	36.293	44.977	216	100	2.09	29.7	30.3	2182	495	4.00	501	2297
124	998	3.832	3.757	34.322	27.272	36.386	45.094	209	110	2.19	31.0	38.2	2196	525	4.00	519	2304
125	1097	3.366	3.287	34.342	27.333	36.472	45.203	204	119	2.27	32.1	45.2	2208	549	4.00	533	2311
126	1296	2.840	2.750	34.429	27.452	36.617	45.374	187	140	2.36	33.5	60.6	2231	596	4.00	565	2325
127	1296	2.840	2.750	34.428	27.451	36.617	45.373	187	140	2.36	33.6	60.6	2231	595	4.00	564	2325
128	1693	2.402	2.284	34.596	27.625	36.813	45.591	173	158	2.36	33.6	78.9	2253	617	4.00	573	2345
129	1894	2.290	2.156	34.651	27.680	36.874	45.657	175	157	2.32	32.8	83.2	2255	607	4.00	562	2349
130	2095	2.152	2.003	34.692	27.725	36.927	45.717	177	156	2.27	32.3	89.7	2258	589	4.00	542	2358
131	2295	1.974	1.810	34.706	27.751	36.963	45.764	177	158	2.28	32.3	98.5	2265	586	4.00	534	2367
132	2495	1.821	1.641	34.713	27.769	36.991	45.800	180	156	2.27	32.3	103.7	2268	581	4.00	526	2371
133	2696	1.664	1.468	34.711	27.781	37.012	45.830	181	157	2.29	32.6	110.1	2273	578	4.00	519	2379
134	2896	1.521	1.309	34.708	27.790	37.030	45.857	182	157	2.31	32.8	115.6	2277	575	4.00	513	2384
135	3096	1.483	1.253	34.707	27.793	37.036	45.866	183	157	2.32	32.8	117.5	2279	573	4.00	510	2386
136	3225	1.490	1.246	34.707	27.793	37.037	45.867	182	157	2.32	32.9	117.9	2277	573	4.00	510	2384

Station 178 Latitude 51-49.1S Longitude 115-55.8W Date 1/ 1/93 Bottom Depth 3158 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	5	7.899	7.899	34.310	26.747	35.660	44.180	292	-2	1.13	14.0	2.6	2088	282	4.00	332	2285
102	26	7.898	7.895	34.310	26.748	35.661	44.180	291	-2	1.13	14.0	2.1	2089	282	4.00	332	2287
103	55	7.894	7.889	34.310	26.749	35.662	44.182	291	-2	1.13	14.0	2.1	2090	283	4.00	333	2287
104	85	7.242	7.234	34.317	26.848	35.792	44.340	291	3	1.23	15.1	2.9	2096	299	4.00	343	2284
105	120	6.736	6.725	34.327	26.926	35.893	44.463	288	10	1.33	16.4	3.9	2109	317	4.00	356	2288
106	160	6.460	6.446	34.327	26.963	35.944	44.526	280	19	1.43	18.8	6.0	2114	341	4.00	378	2281
107	185	6.394	6.378	34.329	26.974	35.957	44.543	278	22	1.44	19.5	7.4	2117	347	4.00	384	2281
108	235	6.253	6.232	34.315	26.982	35.972	44.565	280	21	1.46	19.8	8.1	2120	346	4.00	380	2284
109	282	6.153	6.128	34.309	26.990	35.986	44.583	278	23	1.47	20.1	8.2	2123	350	4.00	383	2286
110	337	6.035	6.006	34.302	27.001	36.002	44.605	276	26	1.51	20.7	9.1	2124	355	4.00	386	2285
111	393	5.957	5.923	34.303	27.012	36.017	44.624	275	28	1.52	21.0	9.2	2123	359	4.00	390	2281
112	452	5.673	5.635	34.277	27.027	36.047	44.667	261	45	1.66	23.0	11.9	2133	383	4.00	411	2283
113	502	5.418	5.376	34.260	27.045	36.078	44.710	257	51	1.72	24.0	13.8	2140	396	4.00	420	2285
114	547	5.265	5.220	34.253	27.058	36.098	44.738	254	55	1.75	24.6	14.6	2145	403	4.00	424	2287
115	588	5.105	5.057	34.248	27.073	36.122	44.769	250	60	1.80	25.3	16.1	2147	415	4.00	434	2285
116	631	5.022	4.971	34.267	27.098	36.151	44.802	237	73	1.88	26.4	19.4	2157	436	4.00	454	2288
117	681	4.873	4.818	34.284	27.128	36.189	44.847	227	84	1.95	27.6	22.3	2165	454	4.00	470	2291
118	732	4.458	4.401	34.264	27.159	36.240	44.918	230	84	2.01	28.4	24.6	2169	467	4.00	475	2292
119	785	4.368	4.307	34.300	27.197	36.283	44.965	217	98	2.08	29.5	29.8	2184	490	4.00	496	2301
120	840	4.012	3.949	34.295	27.231	36.335	45.035	217	101	2.14	30.3	32.9	2191	503	4.00	502	2305
121	906	3.702	3.636	34.311	27.275	36.395	45.110	210	110	2.19	31.1	38.3	2195	524	4.00	516	2303
122	1010	3.300	3.228	34.344	27.340	36.482	45.216	202	121	2.28	32.2	46.4	2211	552	4.00	534	2314
123	1106	3.053	2.976	34.387	27.398	36.552	45.298	193	132	2.34	33.0	53.5	2220				
124	1296	2.696	2.607	34.479	27.504	36.677	45.440	179	149	2.40	33.9	66.8	2240	612	4.00	577	2332
125	1495	2.470	2.367	34.566	27.594	36.778	45.552	172	158	2.39	33.7	76.4	2251	621	4.00	580	2342
126	1691	2.337	2.220	34.632	27.659	36.850	45.631	168	163	2.37	33.4	86.7	2262	614	4.00	569	2356
127	1695	2.336	2.218	34.633	27.660	36.851	45.632	168	163	2.37	33.4	87.1	2261	612	4.00	568	2356
128	1858	2.233	2.103	34.663	27.693	36.890	45.676	170	162	2.34	32.9	90.4	2263	606	4.00	560	2359
129	1963	2.175	2.037	34.676	27.709	36.910	45.699	171	162	2.33	32.8	93.3	2263	601	4.00	553	2361
130	2050	2.111	1.966	34.686	27.723	36.927	45.720	171	162	2.33	32.8	96.7	2267	602	4.00	552	2365
131	2232	1.978	1.819	34.701	27.746	36.958	45.758	174	160	2.32	32.7	100.9	2268	589	4.00	537	2369
132	2433	1.797	1.623	34.705	27.764	36.987	45.797	175	161	2.32	32.8	108.2	2273	586	4.00	530	2376
133	2635	1.653	1.463	34.708	27.779	37.010	45.829	178	159	2.29	32.7	112.5	2275	582	4.00	523	2379
134	2837	1.594	1.386	34.712	27.787	37.023	45.846	181	157	2.28	32.5	113.5	2273	577	4.00	516	2378
135	3035	1.555	1.329	34.716	27.795	37.034	45.859	185	153	2.27	32.2	113.2	2269	571	4.00	510	2376
136	3131	1.539	1.304	34.717	27.797	37.038	45.865	186	152	2.26	32.2	113.4	2266	573	4.00	512	2372

Lamont-Doherty Earth Observatory of Columbia University
WOCE P17E/P19S R/V Knorr WOCE Line P17E

Station 182 Latitude 52-04.9S Longitude 112-38.9W Date 1/ 2/93 Bottom Depth 3236 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	6	7.919	7.918	34.331	26.761	35.672	44.191	291	-1	1.08	13.7	2.2	2086	288	4.00	340	2279
102	24	7.919	7.917	34.330	26.760	35.672	44.191	291	-2	1.08	13.7	2.0	2087	286	4.00	338	2281
103	54	7.921	7.916	34.330	26.760	35.672	44.191	291	-2	1.08	13.7	2.0	2086	287	4.00	339	2280
104	81	7.902	7.894	34.331	26.764	35.677	44.197	291	-2	1.06	13.8	2.0	2087	286	4.00	338	2281
105	101	7.867	7.857	34.331	26.770	35.684	44.205	291	-2	1.06	13.8	2.0	2087	289	4.00	340	2279
106	120	7.515	7.503	34.332	26.822	35.753	44.289	290	2	1.12	14.5	2.0	2093	296	4.00	343	2281
107	151	7.199	7.185	34.375	26.901	35.846	44.395	278	16	1.25	17.5	6.2	2109	328	4.00	375	2281
108	175	7.149	7.132	34.377	26.910	35.857	44.409	277	18	1.26	17.6	6.4	2109	330	4.00	377	2281
109	227	6.998	6.977	34.371	26.927	35.881	44.440	274	22	1.32	18.5	6.7	2111	337	4.00	382	2279
110	279	6.770	6.744	34.341	26.935	35.900	44.470	281	17	1.30	18.3	6.4	2112	332	4.00	373	2283
111	327	6.769	6.739	34.356	26.947	35.913	44.482	271	26	1.38	19.4	7.6	2118	344	4.00	386	2283
112	374	6.636	6.602	34.344	26.956	35.929	44.504	274	25	1.39	19.6	7.3	2115	345	4.00	385	2280
113	421	6.527	6.489	34.335	26.964	35.942	44.523	271	29	1.44	20.3	8.2	2119	352	4.00	391	2281
114	473	6.395	6.352	34.321	26.971	35.956	44.543	270	30	1.46	20.8	8.4	2122	356	4.00	393	2282
115	521	6.212	6.165	34.307	26.984	35.978	44.574	267	35	1.51	21.5	9.4	2127	362	4.00	396	2285
116	578	5.940	5.889	34.284	27.001	36.008	44.617	270	33	1.53	21.8	9.9	2128	365	4.00	395	2285
117	626	5.726	5.672	34.270	27.017	36.035	44.654	263	42	1.61	23.1	11.7	2134	379	4.00	407	2285
118	679	5.512	5.454	34.267	27.041	36.070	44.699	251	56	1.71	24.6	14.7	2142	401	4.00	426	2285
119	727	5.401	5.339	34.284	27.068	36.103	44.736	237	70	1.80	26.0	17.6	2153	423	4.00	448	2288
120	801	4.995	4.929	34.284	27.116	36.171	44.824	230	80	1.90	27.6	21.4	2162	448	4.00	465	2291
121	871	4.634	4.564	34.293	27.164	36.237	44.907	222	91	1.99	28.8	26.9	2173	473	4.00	485	2294
122	945	4.256	4.182	34.301	27.211	36.304	44.992	216	100	2.07	29.9	31.7	2186	497	4.00	501	2300
123	1047	3.809	3.730	34.326	27.277	36.393	45.102	207	113	2.17	31.3	39.5	2197	526	4.00	520	2305
124	1150	3.236	3.154	34.343	27.347	36.492	45.230	203	121	2.26	32.5	47.0	2209	554	4.00	535	2310
125	1301	2.963	2.871	34.424	27.437	36.596	45.347	186	140	2.34	33.7	59.7	2230	593	4.00	565	2325
127	1506	2.619	2.514	34.505	27.533	36.710	45.478	177	152	2.37	34.2	70.4	2244	617	4.00	580	2335
126	1507	2.621	2.516	34.504	27.532	36.709	45.476	177	152	2.36	34.2	70.9	2245	618	4.00	581	2335
128	1695	2.447	2.328	34.583	27.611	36.797	45.573	171	159	2.36	33.9	79.1	2253	621	4.00	578	2344
129	1899	2.320	2.185	34.639	27.668	36.860	45.643	170	161	2.33	33.4	86.0	2259	611	4.00	566	2354
130	2105	2.206	2.055	34.676	27.708	36.907	45.695	173	159	2.28	32.8	90.0	2259	601	4.00	553	2356
131	2301	2.053	1.887	34.698	27.739	36.947	45.744	174	160	2.27	32.7	96.9	2264	592	4.00	541	2364
132	2503	1.891	1.709	34.708	27.760	36.978	45.784	177	158	2.26	32.7	102.7	2268	581	4.00	527	2371
133	2703	1.740	1.542	34.712	27.776	37.003	45.818	180	156	2.26	32.6	107.9	2268	578	4.00	521	2373
134	2884	1.641	1.428	34.713	27.785	37.019	45.839	183	155	2.26	32.6	110.8	2269	575	4.00	516	2375
135	3099	1.578	1.345	34.716	27.793	37.032	45.856	186	152	2.25	32.4	111.6	2268	571	4.00	511	2374
136	3247	1.569	1.321	34.717	27.796	37.035	45.861	186	153	2.25	32.4	111.8	2266	569	4.00	508	2373

Station 186 Latitude 52-19.9S Longitude 109-22.2W Date 1/ 3/93 Bottom Depth 3903 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	4	7.617	7.617	34.297	26.778	35.704	44.236	291	0	1.16	14.5	2.2	2091	291	4.00	339	2282
102	25	7.619	7.617	34.298	26.779	35.705	44.237	291	0	1.15	14.4	1.9	2092	294	4.00	343	2282
103	54	7.613	7.608	34.298	26.780	35.706	44.239	291	1	1.16	14.5	1.8	2089	291	4.00	339	2281
104	78	7.590	7.582	34.299	26.785	35.712	44.245			1.17	14.5	1.8					
105	103	7.231	7.221	34.308	26.843	35.787	44.336	291	3	1.19	15.1	2.1	2095				
106	124	6.820	6.809	34.307	26.899	35.862	44.429	284	13	1.29	16.8	4.5	2104	321	4.00	362	2279
107	142	6.815	6.802	34.316	26.907	35.871	44.438	284	13	1.31	17.1	4.9	2106	324	4.00	364	2280
108	201	6.738	6.720	34.331	26.930	35.897	44.468	281	17	1.35	18.1	5.6	2112	342	4.00	383	2277
109	251	6.690	6.667	34.331	26.937	35.907	44.480	280	18	1.38	18.5	6.0	2112	342	4.00	383	2277
110	298	6.612	6.585	34.325	26.944	35.917	44.494	281	18	1.39	18.6	6.1	2112	341	4.00	380	2278
111	345	6.537	6.506	34.322	26.952	35.929	44.509	278	21	1.43	19.2	6.5	2114	350	4.00	389	2276
112	419	6.410	6.372	34.313	26.962	35.946	44.532	285	15	1.41	18.9	6.2	2111	344	4.00	381	2276
113	496	6.220	6.176	34.296	26.974	35.968	44.563	283	18	1.45	19.6	6.7	2116	353	4.00	387	2276
114	568	6.047	5.997	34.286	26.989	35.991	44.595	264	38	1.61	22.3	9.8	2130	384	4.00	418	2278
115	643	5.704	5.648	34.266	27.017	36.036	44.656	258	47	1.70	23.7	12.0	2137	398	4.00	427	2280
116	715	5.374	5.314	34.268	27.058	36.094	44.730	248	60	1.81	25.2	14.9	2147	420	4.00	444	2283
117	793	5.024	4.959	34.274	27.105	36.158	44.810	234	76	1.93	27.1	20.0	2160				
118	893	4.458	4.388	34.284	27.176	36.258	44.937	223	92	2.06	29.2	26.9	2175	494	4.00	502	2290
119	995	3.951	3.876	34.300	27.242	36.350	45.053	215	104	2.17	30.7	34.0	2186	519	4.00	516	2295
120	1197	3.212	3.126	34.360	27.363	36.509	45.248	197	127	2.32	32.9	49.0	2212	574	4.00	553	2309
121	1398	2.747	2.649	34.450	27.477	36.648	45.409	183	145	2.40	33.8	63.6	2235	615	4.00	581	2325
122	1598	2.542	2.430	34.538	27.566	36.748	45.519	173	156	2.40	33.8	73.4	2247	631	4.00	590	2335
123	1797	2.387	2.260	34.609	27.637	36.827	45.605	170	160	2.39	33.7	81.6	2255	628	4.00	584	2345
124	1996	2.268	2.126	34.656	27.686	36.882	45.667	171	161	2.35	33.2	87.7	2258	616	4.00	569	2352
125	2192	2.143	1.985	34.686	27.721	36.924	45.716	173	160	2.33	32.9	92.9	2261	610	4.00	561	2357
127	2385	1.984	1.811	34.702	27.748	36.960	45.761	175	160	2.32	32.6	99.5	2269	598	4.00	545	2368
126	2386	1.988	1.815	34.702	27.747	36.960	45.760	175	159	2.32	32.6	99.4	2268	600	4.00	547	2366
128	2585	1.806	1.618	34.707	27.766	36.989	45.800	176	160	2.33	32.8	106.6	2274	598	4.00	541	2374
129	2779	1.694	1.490	34.711	27.779	37.009	45.826	180	157	2.31	32.7	109.6	2273	583	4.00	524	2377
130	2981	1.617	1.395	34.715	27.789	37.024	45.847	183	155	2.30	32.5	110.6	2271	574	4.00	514	2377
131	3184	1.546	1.305	34.718	27.798	37.038	45.865	188	151	2.28	32.4	111.4	2274	577	4.00	515	2379
132	3383	1.444	1.185	34.719	27.807	37.054	45.887	191	149	2.27	32.2	113.3	2267	568	4.00	504	2374
133	3584	1.267	0.992	34.717	27.819	37.077	45.920	195	147	2.28	32.3	118.6	2265	567	4.00	499	2373
134	3584	1.267	0.992	34.717	27.819	37.077	45.920	195	146	2.28	32.4	118.5	2268	564	4.00	497	2376
135	3785	1.011	0.721	34.713	27.833	37.106	45.964	199	144	2.29	32.5	126.8	2269	562	4.00	489	2379
136	3910	0.985	0.683	34.713	27.835	37.111	45.971	200	144	2.28	32.6	127.8	2270	563	4.00	490	2380

Lamont-Doherty Earth Observatory of Columbia University

WOCE P17E/P19S R/V Knorr WOCE Line P17E

Station 189 Latitude 52-32.2S Longitude 106-36.3W Date 1/ 4/93 Bottom Depth 3812 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy (umol/kg)	AOU (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	TCO2 (umol/kg)	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
113	15	7.442	7.441	34.305	26.810	35.744	44.283	292	1	1.14	14.8	2.4	2092	301	4.00	348	2278
114	64	7.385	7.379	34.305	26.819	35.755	44.297	293	0	1.13	14.8	2.1	2091	294	4.00	339	2281
115	115	6.763	6.753	34.297	26.899	35.865	44.435	286	12	1.23	16.9	4.7	2101	329	4.00	370	2271
116	165	6.781	6.766	34.316	26.912	35.877	44.446	285	12	1.23	17.1	5.1	2103	325	4.00	366	2276
117	233	6.634	6.613	34.317	26.933	35.906	44.481	274	24	1.39	19.2	6.3	2114	353	4.00	394	2274
118	305	6.447	6.420	34.310	26.954	35.935	44.519	269	30	1.45	20.5	7.4	2120	365	4.00	404	2276
119	393	6.230	6.195	34.296	26.972	35.964	44.559	268	33	1.50	21.3	8.4	2122	372	4.00	408	2274
120	482	6.048	6.005	34.289	26.990	35.992	44.595	264	38	1.56	22.1	9.6	2125	380	4.00	414	2275
121	593	5.679	5.628	34.275	27.026	36.047	44.667	255	50	1.65	23.9	12.2	2136	392	4.00	420	2282
122	699	5.233	5.175	34.270	27.076	36.119	44.761	242	67	1.78	25.9	16.7	2151	433	4.00	455	2282
123	848	4.562	4.495	34.288	27.167	36.244	44.917	222	92	1.99	28.7	26.3	2173	486	4.00	496	2290
124	1000	3.796	3.721	34.306	27.262	36.379	45.089	211	108	2.14	31.0	36.8	2191	532	4.00	525	2297
125	1197	3.121	3.036	34.376	27.384	36.535	45.278	194	131	2.26	32.9	51.4	2215	583	4.00	560	2311
127	1491	2.644	2.540	34.494	27.522	36.698	45.464	177	152	2.35	34.0	69.3	2244	625	4.00	588	2333
126	1493	2.644	2.540	34.494	27.522	36.698	45.464	177	152	2.34	34.0	68.9	2242	625	4.00	587	2331
128	1831	2.378	2.248	34.616	27.644	36.834	45.613	170	161	2.31	33.6	82.3	2255	624	4.00	579	2345
129	2179	2.149	1.992	34.686	27.721	36.923	45.715	174	159	2.25	32.6	91.8	2259	608	4.00	558	2354
130	2521	1.881	1.698	34.711	27.764	36.982	45.788	177	158	2.24	32.4	101.8	2262	581	4.00	527	2365
131	2872	1.646	1.434	34.712	27.784	37.017	45.837	181	156	2.24	32.5	110.7	2268	582	4.00	522	2372
132	3189	1.529	1.288	34.718	27.799	37.040	45.868	187	152	2.22	32.2	111.7	2266	577	4.00	515	2370
133	3443	1.338	1.076	34.717	27.813	37.066	45.905	193	148	2.21	32.1	116.5	2267	564	4.00	499	2376
134	3444	1.335	1.073	34.717	27.813	37.067	45.906	193	148	2.21	32.1	116.6	2264	575	4.00	508	2369
135	3689	1.020	0.740	34.713	27.832	37.104	45.961	199	145		32.3	125.9	2268	559	4.00	487	
136	3817	0.933	0.642	34.711	27.836	37.114	45.977	201	144	2.23	32.3	128.6	2268	559	4.00	485	2379

Station 194 Latitude 52-58.0S Longitude 101-08.7W Date 1/ 6/93 Bottom Depth 4460 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy (umol/kg)	AOU (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	TCO2 (umol/kg)	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	1	7.665	7.665	34.259	26.741	35.666	44.196	298	-7	1.15	14.6	2.7	2088	297	4.00	346	2275
102	25	7.667	7.665	34.259	26.741	35.666	44.196	299	-8	1.15	14.6	2.5	2087	292	4.00	341	2277
103	64	7.596	7.590	34.270	26.761	35.688	44.222	292	-1	1.16	14.6	2.5	2089	296	4.00	345	2277
104	105	6.695	6.686	34.265	26.883	35.852	44.425	290	8	1.28	16.5	4.6	2100	321	4.00	360	2275
105	129	6.574	6.562	34.288	26.917	35.892	44.471	285	14	1.32	17.6	5.4	2106	332	4.00	370	2275
106	164	6.524	6.509	34.291	26.927	35.904	44.485	286	13	1.32	17.9	5.6	2106	334	4.00	371	2275
107	203	6.502	6.484	34.295	26.933	35.912	44.494	286	13	1.33	18.0	5.7	2106	334	4.00	371	2275
108	253	6.462	6.439	34.297	26.941	35.922	44.505	286	13	1.34	18.1	5.7	2106	336	4.00	372	2274
109	302	6.374	6.347	34.292	26.949	35.934	44.522	283	17	1.37	18.8	6.1	2108	341	4.00	377	2273
110	363	6.247	6.215	34.286	26.961	35.953	44.547	279	22	1.44	19.8	6.9	2116	352	4.00	387	2277
111	422	6.114	6.077	34.278	26.973	35.971	44.571	275	27	1.50	20.8	8.2	2120	361	4.00	394	2277
112	501	5.934	5.890	34.273	26.992	36.000	44.608	272	32	1.56	21.6	9.0	2123	370	4.00	401	2276
113	571	5.707	5.658	34.269	27.018	36.037	44.656	266	40	1.62	22.7	10.7	2130	384	4.00	411	2279
114	638	5.441	5.387	34.260	27.043	36.076	44.708	255	52	1.72	24.4	13.4	2138	405	4.00	429	2279
115	703	5.166	5.108	34.254	27.072	36.118	44.763	250	59	1.80	25.5	15.7	2142	420	4.00	440	2278
116	771	4.895	4.832	34.257	27.105	36.166	44.823	242	69	1.88	26.7	19.0	2155	441	4.00	457	2284
117	864	4.403	4.335	34.264	27.166	36.251	44.932	230	85	2.02	28.5	25.3	2169	478	4.00	485	2287
118	1010	3.731	3.656	34.305	27.268	36.388	45.101	212	108	2.18	31.0	37.1	2194	527	4.00	519	2301
119	1178	3.170	3.086	34.360	27.366	36.515	45.256	198	127	2.30	32.6	49.8	2212	567	4.00	545	2311
120	1372	2.782	2.686	34.452	27.476	36.644	45.404	181	147	2.37	33.8	63.7	2232	613	4.00	580	2322
121	1580	2.543	2.433	34.534	27.563	36.744	45.515	173	157	2.37	33.8	74.3	2247	627	4.00	587	2336
122	1779	2.398	2.272	34.609	27.636	36.825	45.603	170	161	2.35	33.4	82.1	2255	624	4.00	580	2345
123	1978	2.269	2.128	34.655	27.685	36.881	45.666	172	160	2.32	32.8	86.8	2257	613	4.00	566	2351
124	2175	2.144	1.988	34.687	27.722	36.925	45.716	175	158	2.29	32.4	91.5	2258	602	4.00	553	2355
125	2375	1.991	1.819	34.703	27.748	36.960	45.760	176	158	2.28	32.3	98.7	2264	590	4.00	538	2364
126	2569	1.845	1.658	34.713	27.768	36.989	45.797	180	156	2.27	32.1	102.1	2263	584	4.00	529	2365
127	2770	1.702	1.499	34.714	27.781	37.010	45.827	181	156	2.28	32.2	108.1	2270	581	4.00	523	2374
128	2971	1.605	1.384	34.717	27.791	37.027	45.850	185	153	2.26	32.0	110.1	2268	576	4.00	516	2373
129	3167	1.509	1.271	34.719	27.801	37.043	45.872	189	150	2.25	31.8	110.9	2264	577	4.00	514	2369
130	3367	1.376	1.121	34.719	27.811	37.062	45.899	193	147	2.25	31.8	114.2	2264	568	4.00	503	2371
131	3570	1.184	0.912	34.717	27.824	37.086	45.934	197	145	2.25	31.9	119.8	2264	567	4.00	497	2371
132	3769	0.991	0.704	34.713	27.834	37.109	45.968	201	143	2.26	32.1	125.6	2262	566	4.00	492	2370
133	3968	0.823	0.519	34.710	27.843	37.128	45.997	204	142	2.28	32.2	131.5	2266	561	4.00	484	2376
134	4166	0.730	0.407	34.708	27.848	37.140	46.015	206	141	2.28	32.2	135.1	2267	560	4.00	481	2377
135	4341	0.705	0.363	34.708	27.850	37.145	46.022	207	140	2.27	32.2	135.9	2266	559	4.00	479	2377
136	4458	0.707	0.352	34.707	27.850	37.145	46.024	207	140	2.27	32.2	136.6	2267	548	4.00	470	2381

Lamont-Doherty Earth Observatory of Columbia University
WOCE P17E/P19S R/V Knorr WOCE Line P17E

Station 198 Latitude 53-19.0S Longitude 96-46.1W Date 1/ 7/93 Bottom Depth 4438 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	5	7.787	7.787	34.238	26.707	35.626	44.152	291	0	1.14	14.1	2.7	2088	291	4.00	342	2278
102	24	7.754	7.752	34.237	26.711	35.632	44.159	291	0	1.13	14.2	2.5	2086	293	4.00	344	2275
103	54	7.709	7.704	34.237	26.718	35.641	44.170	291	0	1.15	14.2	2.3	2086	290	4.00	340	2277
104	79	7.622	7.614	34.239	26.733	35.660	44.193	290	1	1.16	14.4	2.1	2089	296	4.00	345	2276
105	98	6.296	6.287	34.256	26.928	35.917	44.508	291	10	1.38	17.6	5.8	2110	333	4.00	367	2280
106	118	6.253	6.243	34.271	26.946	35.936	44.529	287	14	1.41	18.2	6.3	2111	344	4.00	378	2276
107	143	6.216	6.204	34.273	26.952	35.945	44.539	288	14	1.40	18.6	6.9	2112	338	4.00	371	2279
108	174	6.170	6.155	34.270	26.956	35.951	44.548	289	12	1.39	18.7	6.5	2110	338	4.00	370	2278
109	202	6.144	6.126	34.270	26.960	35.956	44.554	290	11	1.39	18.7	6.3	2110	340	4.00	372	2276
110	251	6.099	6.077	34.268	26.965	35.963	44.563	290	12	1.40	18.8	6.5	2110	338	4.00	369	2278
111	300	6.033	6.007	34.267	26.973	35.975	44.578	284	19	1.45	19.7	6.9	2113	352	4.00	383	2274
112	371	5.876	5.844	34.258	26.986	35.996	44.607	277	27	1.54	21.1	8.4	2122	362	4.00	392	2279
113	444	5.721	5.683	34.251	27.000	36.018	44.637	269	36	1.62	22.5	10.1	2130	381	4.00	409	2279
114	518	5.470	5.427	34.244	27.026	36.057	44.687	261	46	1.71	24.1	12.2	2134	394	4.00	419	2279
115	592	5.212	5.163	34.243	27.056	36.100	44.743	252	57	1.81	25.6	15.1	2145	415	4.00	436	2282
116	667	4.987	4.933	34.250	27.088	36.144	44.797	243	67	1.88	27.0	18.0	2155	433	4.00	450	2288
117	741	4.715	4.656	34.262	27.129	36.198	44.864	233	79	1.97	28.3	22.0	2162	457	4.00	470	2287
118	817	4.378	4.315	34.273	27.175	36.261	44.943	225	90	2.06	29.9	27.0	2174	488	4.00	495	2290
119	890	4.016	3.949	34.280	27.219	36.324	45.023	221	97	2.13	31.1	31.4	2181	503	4.00	502	2294
120	988	3.638	3.566	34.305	27.277	36.401	45.119	212	109	2.22	32.3	38.5	2195	538	4.00	529	2299
121	1184	3.056	2.973	34.369	27.384	36.539	45.285	199	126	2.34	34.3	51.7	2217	577	4.00	553	2314
122	1407	2.676	2.578	34.460	27.491	36.666	45.431	182	147	2.41	35.3	66.0	2238	619	4.00	583	2328
123	1631	2.476	2.362	34.564	27.593	36.777	45.552										
124	1855	2.335	2.204	34.631	27.660	36.852	45.633	173	158	2.37	34.6	84.7	2256	618	4.00	573	2349
125	2081	2.206	2.057	34.673	27.705	36.904	45.693	173	159	2.33	33.9	89.4	2259	609	4.00	561	2354
126	2301	2.076	1.909	34.699	27.738	36.945	45.740	176	157	2.30	33.4	94.1	2259	594	4.00	544	2358
127	2523	1.908	1.724	34.711	27.762	36.979	45.784	179	156	2.29	33.2	100.1	2263	589	4.00	535	2364
128	2745	1.715	1.514	34.714	27.780	37.008	45.824	182	155	2.30	33.4	107.8	2269	584	4.00	525	2372
129	2961	1.610	1.390	34.716	27.790	37.026	45.848	185	153	2.29	33.2	109.8	2266	581	4.00	520	2370
130	3182	1.486	1.247	34.719	27.803	37.046	45.876	189	150	2.28	33.1	112.0	2266	572	4.00	509	2372
131	3411	1.318	1.059	34.719	27.816	37.070	45.910	194	146	2.28	33.0	115.7	2262				
132	3638	1.102	0.825	34.714	27.827	37.095	45.947	198	145	2.28	33.1	122.1	2264				
133	3869	0.893	0.598	34.711	27.839	37.120	45.984	203	142	2.29	33.2	127.8	2263				
134	4103	0.735	0.419	34.708	27.847	37.138	46.013	206	140	2.30	33.3	132.6	2263	562	4.00	483	2373
135	4331	0.681	0.341	34.708	27.852	37.147	46.026	208	140	2.29	33.3	134.7	2264	560	4.00	480	2374
136	4449	0.680	0.327	34.708	27.852	37.149	46.029			2.29	33.3	135.2	2266	555	4.00	475	2377

Station 202 Latitude 53-40.0S Longitude 92-22.5W Date 1/ 8/93 Bottom Depth 4911 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	3	7.768	7.768	34.241	26.712	35.632	44.158	290	1	1.15	15.0	2.1	2091	294	4.00	345	2281
102	26	7.706	7.703	34.240	26.721	35.643	44.172	292	-1	1.16	15.0	2.1	2090	291	4.00	340	2281
103	55	7.669	7.664	34.240	26.727	35.651	44.182	291	0	1.15	15.0	1.9	2091	294	4.00	344	2280
104	80	7.309	7.301	34.248	26.785	35.726	44.272	291	3	1.21	15.4	2.8	2096	301	4.00	346	2282
105	106	6.226	6.217	34.255	26.936	35.929	44.523	289	12	1.39	18.2	6.3	2110	338	4.00	372	2277
106	131	6.094	6.083	34.261	26.958	35.957	44.557	290	12	1.40	18.8	6.8	2114	341	4.00	372	2281
107	176	6.002	5.987	34.257	26.967	35.971	44.575	290	13	1.41	19.2	7.0	2114	341	4.00	371	2280
108	205	5.993	5.975	34.262	26.973	35.976	44.581	290	13	1.41	19.4	7.0	2117	343	4.00	373	2283
109	255	5.931	5.909	34.259	26.979	35.986	44.594	287	16	1.43	19.8	7.4	2116	346	4.00	376	2279
110	305	5.832	5.806	34.247	26.982	35.994	44.607	291	14	1.43	19.8	7.0	2112	346	4.00	373	2275
111	380	5.765	5.733	34.247	26.991	36.007	44.623	285	19	1.46	20.3	7.7	2117	350	4.00	376	2279
112	453	5.583	5.545	34.232	27.002	36.027	44.652	284	22	1.51	21.2	8.4	2121	358	4.00	383	2280
113	524	5.427	5.383	34.227	27.018	36.051	44.683	278	29	1.56	22.3	9.7	2124	371	4.00	393	2277
114	593	5.255	5.206	34.232	27.043	36.084	44.725	262	46	1.69	24.2	13.2	2137	399	4.00	420	2280
115	667	5.028	4.974	34.242	27.077	36.131	44.782	247	63	1.82	25.9	16.9	2152	428	4.00	446	2286
116	740	4.714	4.655	34.246	27.116	36.186	44.852	242	70	1.88	27.1	19.4	2156	446	4.00	459	2283
117	814	4.408	4.345	34.257	27.159	36.244	44.925	232	83	1.98	28.4	24.7	2166	470	4.00	477	2287
118	888	4.057	3.990	34.277	27.212	36.315	45.013	221	96	2.07	29.4	30.7	2181	501	4.00	501	2294
119	1036	3.402	3.328	34.303	27.298	36.435	45.165	213	110	2.19	31.5	40.6	2198	538	4.00	523	2303
120	1285	2.826	2.737	34.412	27.439	36.606	45.364	189	138	2.33	33.4	58.5	2224	595	4.00	564	2318
121	1510	2.555	2.450	34.513	27.545	36.725	45.496	176	154	2.36	33.9	71.0	2245	626	4.00	586	2334
122	1734	2.408	2.286	34.598	27.626	36.814	45.592	170	160	2.34	33.5	80.4	2255	624	4.00	581	2345
123	1960	2.262	2.123	34.655	27.685	36.881	45.667	174	158	2.29	32.9	86.4	2259	610	4.00	563	2354
124	2184	2.118	1.961	34.686	27.723	36.928	45.721	173	160	2.27	32.5	93.6	2265	600	4.00	551	2363
125	2410	1.957	1.782	34.701	27.749	36.963	45.765	176	159	2.27	32.4	99.4	2267	592	4.00	539	2368
126	2636	1.819	1.626	34.714	27.771	36.994	45.804	181	155	2.23	32.0	101.5	2266	583	4.00	528	2369
127	2860	1.660	1.449	34.718	27.788	37.020	45.839	183	154	2.25	32.1	107.8	2268	577	4.00	518	2373
128	3085	1.535	1.304	34.719	27.799	37.039	45.866	188	150	2.22	32.0	109.1	2264	570	4.00	508	2370
129	3336	1.363	1.111	34.718	27.811	37.063	45.900	193	147	2.21	31.9	113.5	2260	566	4.00	501	2368
130	3584	1.151	0.879	34.716	27.825	37.090	45.939	198	144	2.21	31.9	118.9	2261	563	4.00	493	2370
131	3832	0.932	0.640	34.712	27.837	37.115	45.978	203	142	2.23	32.0	125.1	2262	564	4.00	489	2370
132	4084	0.747	0.433	34.709	27.847	37.137	46.011	206	140	2.23	32.1	130.4	2263	567	4.00	488	2370
133	4336	0.665	0.325	34.706	27.851	37.148	46.027	209	139	2.24	32.3	133.3	2265	565	4.00	484	2373
134	4585	0.634	0.267	34.706	27.854	37.154	46.037	210	139	2.23	32.3	135.5	2261	563	4.00	481	2370
135	4786	0.636	0.245	34.706	27.856	37.157	46.041	210	138	2.24	32.3	135.7	2263	564	4.00	482	2372
136	4901	0.636	0.231	34.705	27.856	37.158	46.043	210	138	2.24	32.3	136.1	2266	562	4.00	479	2375

Lamont-Doherty Earth Observatory of Columbia University
WOCE P17E/P19S R/V Knorr WOCE Line P19

Station 206 Latitude 54-00.0S Longitude 87-59.0W Date 1/10/93 Bottom Depth 5045 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
201	8	7.904	7.903	34.212	26.670	35.584	44.104	290	0	1.11	15.4	1.7	2086	292	4.00	344	2276
202	26	7.878	7.875	34.212	26.674	35.589	44.111	291	-1	1.12	15.4	1.5	2087	291	4.00	342	2277
203	52	7.791	7.786	34.214	26.688	35.608	44.133	291	-1	1.13	15.4	1.4	2086	287	4.00	337	2279
204	77	7.025	7.018	34.206	26.791	35.746	44.305	291	4	1.17	15.9	2.0	2090	298	4.00	338	2276
205	107	6.027	6.018	34.250	26.958	35.960	44.563	291	11	1.41	19.0	6.6	2111	344	4.00	374	2275
206	143	5.957	5.945	34.250	26.967	35.972	44.579	293	10	1.40	19.4	6.6	2109	341	4.00	370	2274
207	177	5.945	5.930	34.254	26.972	35.978	44.585	291	13	1.38	19.6	6.6	2110	342	4.00	372	2275
208	217	5.697	5.679	34.221	26.977	35.996	44.615	295	10	1.43	19.8	6.7	2109	344	4.00	369	2273
209	266	5.604	5.582	34.217	26.986	36.009	44.633	296	10	1.44	19.9	6.9	2111	343	4.00	367	2275
210	314	5.649	5.623	34.234	26.994	36.016	44.637	287	19	1.50	21.1	8.3	2113	357	4.00	382	2272
211	367	5.577	5.546	34.233	27.003	36.028	44.653	282	24	1.52	21.7	8.8	2120	362	4.00	387	2277
212	426	5.406	5.371	34.227	27.019	36.053	44.686	282	25	1.55	22.3	9.6	2121	369	4.00	391	2275
215	506	5.175	5.134	34.219	27.041	36.086	44.731	270	39	1.66	24.0	12.2	2133	391	4.00	410	2278
216	604	4.946	4.897	34.234	27.080	36.137	44.792	260	51	1.77	25.5	15.5	2141	413	4.00	429	2280
217	701	4.598	4.543	34.232	27.118	36.193	44.865	248	66	1.89	27.2	19.7	2155	441	4.00	451	2284
218	800	4.148	4.087	34.253	27.183	36.281	44.974	232	85	2.02	29.4	27.1	2170	486	4.00	488	2287
219	897	3.788	3.722	34.274	27.237	36.354	45.064	222	98	2.12	30.7	33.4	2184	509	4.00	503	2295
220	1047	3.301	3.226	34.319	27.321	36.463	45.197	208	116	2.24	32.5	44.1	2203	555	4.00	538	2303
221	1197	2.997	2.913	34.392	27.408	36.565	45.314	189	137	2.34	34.0	56.3	2221	594	4.00	567	2315
222	1396	2.711	2.614	34.480	27.504	36.676	45.439	174	154	2.40	34.8	69.4	2239	628	4.00	592	2326
223	1595	2.501	2.390	34.559	27.587	36.770	45.543	169	161	2.39	34.6	79.1	2254	630	4.00	589	2343
224	1791	2.365	2.239	34.618	27.646	36.837	45.616	169	162	2.36	34.1	85.2	2262	624	4.00	579	2353
225	1988	2.245	2.104	34.660	27.691	36.888	45.674	171	161	2.32	33.5	90.2	2258	612	4.00	565	2352
226	2234	2.087	1.926	34.694	27.732	36.939	45.733	175	159	2.29	33.0	95.1	2260	598	4.00	548	2358
227	2483	1.896	1.716	34.705	27.757	36.975	45.781	176	160	2.28	33.0	104.5	2269	590	4.00	536	2371
228	2729	1.735	1.535	34.713	27.777	37.005	45.820	180	157	2.28	32.9	108.5	2269	582	4.00	524	2373
229	2975	1.612	1.390	34.720	27.793	37.029	45.851	186	152	2.25	32.4	109.5	2266	570	4.00	511	2373
230	3221	1.466	1.223	34.723	27.808	37.053	45.884	192	148	2.23	32.1	111.2	2263	569	4.00	506	2369
231	3468	1.271	1.008	34.720	27.820	37.077	45.920	196	145	2.23	32.2	115.8	2262	565	4.00	498	2370
232	3715	1.077	0.793	34.716	27.831	37.100	45.954	201	143	2.23	32.2	121.1	2261	568	4.00	496	2368
233	3959	0.873	0.568	34.712	27.841	37.124	45.990	204	141	2.24	32.4	127.7	2266	564	4.00	488	2375
234	4453	0.651	0.298	34.707	27.853	37.152	46.033	209	139	2.25	32.6	135.5	2264	568	4.00	485	2372
235	4695	0.641	0.260	34.707	27.855	37.156	46.039	210	138	2.26	32.6	136.5	2263	564	4.00	482	2372
236	4893	0.650	0.246	34.707	27.856	37.158	46.042	210	138	2.26	32.6	137.5	2265	564	4.00	481	2375

Station 209 Latitude 55-29.8S Longitude 88-00.2W Date 1/11/93 Bottom Depth 5170 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	4	7.936	7.936	34.195	26.651	35.564	44.084	295	-5	1.06	15.4	1.8	2080	288	4.00	340	2272
102	27	7.588	7.585	34.203	26.709	35.637	44.172	293	-2	1.13	15.5	1.6	2086	292	4.00	340	2276
103	57	7.362	7.357	34.207	26.745	35.684	44.228	292	1	1.16	15.5	1.8	2091	295	4.00	340	2279
104	87	5.637	5.630	34.210	26.975	35.996	44.617	297	9	1.43	18.9	7.4	2109	348	4.00	373	2271
105	126	5.629	5.619	34.224	26.987	36.009	44.630	295	10	1.43	19.4	7.7	2114	346	4.00	370	2277
106	183	5.587	5.572	34.224	26.993	36.017	44.640	295	11	1.43	19.5	7.3	2112	347	4.00	371	2275
107	245	5.552	5.532	34.222	26.996	36.022	44.648	295	11	1.43	19.5	7.5	2112	344	4.00	367	2276
108	298	5.525	5.500	34.225	27.002	36.029	44.657	293	14	1.44	19.9	7.8	2115	353	4.00	377	2275
109	351	5.424	5.395	34.216	27.008	36.040	44.672	291	17	1.47	20.4	8.2	2117	354	4.00	375	2277
110	441	5.276	5.240	34.220	27.029	36.069	44.709	281	27	1.57	21.9	10.4	2127	379	4.00	400	2276
111	508	5.141	5.100	34.220	27.045	36.093	44.739	276	33	1.62	22.7	11.7	2132	379	4.00	397	2282
112	589	4.982	4.935	34.222	27.066	36.122	44.775	274	37	1.67	23.5	13.1	2136	397	4.00	414	2280
113	651	4.808	4.756	34.226	27.089	36.154	44.816	265	47	1.73	24.4	15.0	2142	406	4.00	419	2283
114	711	4.595	4.539	34.228	27.115	36.190	44.862	254	59	1.83	25.8	18.3	2152	428	4.00	438	2286
115	803	4.213	4.152	34.236	27.163	36.258	44.948	243	73	1.93	27.3	23.3	2164	460	4.00	463	2288
116	902	3.832	3.765	34.265	27.225	36.340	45.049	226	94	2.07	29.3	31.4	2185	500	4.00	495	2299
117	1002	3.436	3.364	34.301	27.293	36.428	45.156	214	109	2.18	30.6	39.9	2197	537	4.00	523	2302
118	1102	3.167	3.089	34.341	27.351	36.500	45.241	202	123	2.25	31.5	47.6	2211	565	4.00	543	2311
119	1300	2.814	2.724	34.429	27.454	36.621	45.379	184	144	2.34	32.8	61.0	2235	609	4.00	577	2326
120	1501	2.609	2.504	34.513	27.540	36.718	45.486	171	158	2.37	33.1	72.4	2248	628	4.00	589	2336
121	1700	2.430	2.311	34.583	27.612	36.799	45.576	171	160	2.34	33.0	79.1	2254	633	4.00	589	2343
122	1902	2.301	2.166	34.643	27.672	36.866	45.649	171	161	2.30	32.1	85.2	2259	615	4.00	569	2352
123	2099	2.202	2.051	34.677	27.709	36.908	45.697	173	159	2.26	31.5	88.0	2260	605	4.00	557	2356
124	2346	2.010	1.840	34.705	27.748	36.959	45.758	177	157	2.23	31.1	95.7	2264	590	4.00	539	2364
125	2593	1.839	1.650	34.714	27.770	36.991	45.800	179	157	2.24	30.9	102.0	2266	586	4.00	530	2368
126	2840	1.686	1.476	34.719	27.786	37.017	45.835	184	153	2.21	30.9	105.6	2265	582	4.00	523	2368
127	3080	1.538	1.308	34.721	27.800	37.040	45.867	189	150	2.21	30.8	108.2	2262	569	4.00	508	2368
128	3080	1.538	1.308	34.723	27.802	37.042	45.868	189	150	2.21	30.9	108.7	2262	570	4.00	509	2368
129	3579	1.160	0.888	34.718	27.826	37.090	45.939	199	144	2.21	30.9	117.8	2261	565	4.00	495	2369
130	3827	0.948	0.656	34.713	27.837	37.114	45.976	203	142	2.22	31.1	124.3	2261	564	4.00	489	2369
131	4079	0.783	0.468	34.710	27.846	37.134	46.006	206	140	2.23	31.2	130.0	2264	564	4.00	486	2373
132	4321	0.669	0.331	34.708	27.852	37.149	46.028	208	139	2.24	31.5	133.9	2262	567	4.00	485	2370
133	4564	0.624	0.259	34.706	27.855	37.155	46.039	210	138	2.25	31.6	135.7	2264	569	4.00	485	2372
134	4814	0.611	0.217	34.706	27.857	37.160	46.046	211	138	2.25	31.7	137.6	2261	568	4.00	484	2369
135	4814	0.611	0.217	34.706	27.857	37.160	46.046	211	138	2.25	31.8	137.5	2263	565	4.00	482	2372
136	5160	0.630	0.193	34.705	27.858	37.162	46.049	211	138	2.25	31.8	138.2	2264	564	4.00	480	2373

Lamont-Doherty Earth Observatory of Columbia University
WOCE P17E/P19S R/V Knorr WOCE Line P19

Station 212 Latitude 56-59.8S Longitude 87-59.9W Date 1/11/93 Bottom Depth 5095 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								-------------	-------------	umol/kg	-------------	-------------	-------------				
101	2	8.402	8.402	34.237	26.614	35.505	44.005	291	-4	1.18	14.4	2.1	2090	290	4.00	349	2282
102	25	7.588	7.586	34.241	26.739	35.667	44.201	293	-1	1.18	14.4	2.1	2091	292	4.00	340	2281
103	50	7.437	7.432	34.249	26.767	35.702	44.242	294	-1	1.18	14.5	2.2	2090	294	4.00	340	2279
104	80	7.046	7.039	34.256	26.828	35.781	44.338	292	4	1.28	15.9	3.7	2099	313	4.00	356	2278
105	110	6.236	6.226	34.279	26.954	35.945	44.539	285	16	1.39	18.7	6.6	2113	344	4.00	378	2278
106	140	6.209	6.197	34.282	26.960	35.953	44.548	284	17	1.39	19.0	6.9	2114	344	4.00	377	2279
107	170	6.060	6.045	34.268	26.969	35.969	44.570	286	17	1.41	19.5	7.5	2115	344	4.00	376	2279
108	204	6.021	6.003	34.268	26.974	35.976	44.580	285	18	1.41	19.8	7.7	2119	349	4.00	380	2282
109	254	5.846	5.824	34.250	26.982	35.993	44.605	290	14	1.40	19.7	7.3	2114	345	4.00	373	2278
110	304	5.805	5.779	34.249	26.987	36.000	44.614	287	18	1.44	20.2	7.8	2118	349	4.00	376	2281
111	377	5.639	5.607	34.240	27.001	36.023	44.645	277	28	1.52	21.6	9.4	2123	366	4.00	391	2279
112	452	5.329	5.292	34.217	27.021	36.058	44.695	282	26	1.54	22.1	9.8	2123	368	4.00	388	2278
113	527	5.214	5.171	34.221	27.038	36.082	44.724	267	42	1.67	24.4	12.7	2134	395	4.00	415	2278
114	602	4.953	4.905	34.229	27.075	36.132	44.787	249	62	1.80	26.8	17.1	2151	427	4.00	444	2285
115	702	4.456	4.402	34.237	27.137	36.219	44.898	237	77	1.93	29.1	22.9	2166	461	4.00	469	2289
116	800	4.057	3.997	34.267	27.203	36.306	45.004	223	94	2.07	31.2	30.6	2179	498	4.00	498	2293
117	900	3.611	3.546	34.295	27.271	36.396	45.116	215	107	2.16	32.7	38.2	2193	527	4.00	517	2301
118	1049	3.062	2.989	34.341	27.360	36.514	45.260	203	122	2.27	34.3	49.4	2213	569	4.00	545	2312
119	1199	2.814	2.732	34.418	27.445	36.611	45.369	187	141	2.34	35.4	60.7	2228	602	4.00	570	2320
120	1399	2.563	2.467	34.504	27.536	36.716	45.486	176	153	2.37	35.8	71.4	2243	627	4.00	587	2332
121	1599	2.374	2.264	34.575	27.610	36.799	45.579	173	158	2.34	35.5	78.5	2249	628	4.00	584	2338
122	1798	2.273	2.147	34.638	27.670	36.865	45.649	173	159	2.30	34.6	83.8	2251	615	4.00	568	2343
123	2049	2.137	1.992	34.685	27.720	36.923	45.714	177	156	2.25	33.8	89.2	2259	599	4.00	550	2356
124	2297	2.008	1.843	34.708	27.750	36.961	45.759	181	153	2.21	33.1	92.3	2255	582	4.00	531	2357
125	2546	1.747	1.564	34.721	27.782	37.007	45.821	187	150	2.20	32.8	99.7	2255	572	4.00	516	2360
126	2795	1.578	1.375	34.717	27.792	37.029	45.852	189	149	2.21	33.0	106.2	2262	568	4.00	508	2369
127	3046	1.435	1.210	34.718	27.805	37.050	45.882	193	146	2.20	32.9	108.8	2259	565	4.00	502	2366
128	3295	1.274	1.028	34.715	27.814	37.071	45.912	197	144	2.20	33.0	113.1	2259	563	4.00	497	2367
129	3545	1.088	0.821	34.710	27.824	37.092	45.945	201	142	2.22	33.1	119.8	2258	566	4.00	495	2365
130	3794	0.905	0.617	34.706	27.834	37.113	45.977	204	141	2.24	33.3	124.5	2261	569	4.00	493	2368
131	4043	0.733	0.423	34.704	27.844	37.135	46.009	208	139	2.24	33.5	129.3	2262	570	4.00	490	2369
132	4292	0.617	0.283	34.702	27.850	37.149	46.031	210	138	2.24	33.5	133.5	2261	566	4.00	484	2369
133	4543	0.578	0.217	34.701	27.853	37.156	46.042	211	137	2.25	33.4	135.4	2262	568	4.00	484	2370
134	4792	0.578	0.188	34.700	27.854	37.159	46.046	212	137	2.25	33.4	136.2	2264	572	4.00	487	2370
135	4990	0.581	0.167	34.699	27.854	37.160	46.049	212	137	2.25	33.5	137.3	2263	566	4.00	482	2371
136	5095	0.589	0.162	34.700	27.855	37.162	46.050	212	137	2.25	33.4	137.7	2261	566	4.00	482	2369

Station 217 Latitude 59-30.0S Longitude 87-59.8W Date 1/13/93 Bottom Depth 5011 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								-------------	-------------	umol/kg	-------------	-------------	-------------				
101	4	7.091	7.091	34.160	26.745	35.697	44.254			1.25	17.3	2.2	2092	293	4.00	334	2282
102	28	6.844	6.841	34.162	26.780	35.744	44.312	299	-2	1.27	17.4	2.2	2093	300	4.00	339	2278
103	47	6.487	6.483	34.163	26.829	35.810	44.393	302	-2	1.29	17.6	2.3	2095	302	4.00	336	2280
104	77	5.187	5.181	34.156	26.985	36.030	44.673	300	9	1.54	20.2	7.4	2118	345	4.00	362	2283
105	102	4.987	4.979	34.187	27.033	36.087	44.739	294	17	1.54	21.5	8.7	2121	364	4.00	379	2277
106	151	4.689	4.678	34.159	27.045	36.114	44.781	296	17	1.56	22.4	9.5	2124	362	4.00	372	2280
107	206	4.525	4.510	34.149	27.055	36.134	44.808	292	22	1.60	23.0	10.0	2126	369	4.00	377	2280
108	256	4.204	4.186	34.126	27.072	36.167	44.857	292	25	1.66	23.9	11.1	2131	380	4.00	383	2280
109	305	3.965	3.944	34.134	27.103	36.210	44.913	276	43	1.79	25.9	15.5	2145	411	4.00	410	2284
110	381	4.026	3.999	34.194	27.145	36.249	44.947	249	69	1.94	28.1	22.1	2162	454	4.00	454	2288
111	455	3.770	3.738	34.223	27.195	36.311	45.022	237	83	2.03	29.6	28.0	2176	484	4.00	479	2294
112	528	3.539	3.503	34.250	27.239	36.368	45.090	228	94	2.12	30.7	33.4	2183	507	4.00	497	2295
113	600	3.214	3.174	34.275	27.290	36.436	45.174	221	104	2.18	31.8	39.6	2196	532	4.00	514	2302
114	693	2.925	2.880	34.310	27.345	36.506	45.258	212	114	2.25	32.8	46.5	2208	557	4.00	531	2309
115	782	2.775	2.724	34.362	27.400	36.569	45.328	200	128	2.32	33.6	53.8	2219	586	4.00	555	2314
116	869	2.642	2.586	34.413	27.453	36.628	45.393	190	139	2.33	34.2	60.7	2230	604	4.00	569	2321
117	961	2.485	2.423	34.457	27.502	36.685	45.458	184	146	2.38	34.4	66.6	2239	618	4.00	578	2329
118	1098	2.429	2.357	34.530	27.566	36.751	45.526	176	155	2.38	34.4	73.8	2246	630	4.00	588	2334
119	1185	2.350	2.273	34.565	27.601	36.790	45.569	173	157	2.36	34.2	77.1	2250	630	4.00	586	2338
120	1372	2.244	2.153	34.625	27.659	36.854	45.638	173	158	2.32	33.6	82.0	2253	619	4.00	573	2345
121	1554	2.172	2.068	34.669	27.701	36.900	45.688	174	158	2.27	33.0	86.8	2256	606	4.00	559	2351
122	1765	2.046	1.926	34.700	27.737	36.943	45.738	178	156	2.26	32.5	91.7	2261	589	4.00	540	2361
123	1977	1.871	1.736	34.717	27.766	36.982	45.786	182	153	2.25	32.2	93.5	2262	580	4.00	527	2365
124	2192	1.723	1.572	34.723	27.783	37.008	45.821	186	151	2.21	32.0	101.3	2262	573	4.00	517	2366
125	2402	1.586	1.419	34.722	27.793	37.027	45.848	187	150	2.22	32.1	104.2	2264	570	4.00	511	2371
126	2628	1.465	1.279	34.725	27.805	37.047	45.875	192	147	2.21	31.9	107.9	2264	567	4.00	505	2371
127	2863	1.326	1.121	34.723	27.815	37.065	45.902	195	145	2.21	32.0	111.6	2261	568	4.00	503	2368
128	3094	1.182	0.958	34.720	27.823	37.083	45.928	199	143	2.21	32.1	115.7	2257	563	4.00	495	2364
129	3343	1.028	0.783	34.715	27.830	37.100	45.955	202	142	2.22	32.3	120.9	2261	566	4.00	494	2368
130	3600	0.897	0.630	34.711	27.837	37.116	45.979	204	141	2.24	32.4	125.3	2261	568	4.00	493	2368
131	3853	0.726	0.437	34.707	27.845	37.135	46.009	207	139	2.25	32.5	129.8	2261	571	4.00	491	2368
132	4099	0.613	0.301	34.707	27.853	37.151	46.032	209	138	2.26	32.7	134.0	2263	570	4.00	487	2370
133	4353	0.559	0.220	34.705	27.856	37.159	46.044	211	138	2.26	32.7	136.4	2262	571	4.00	487	2369
134	4685	0.531	0.155	34.705	27.860	37.166	46.055	212	137	2.26	32.8	138.4	2262	569	4.00	484	2369
135	4886	0.532	0.132	34.704	27.860	37.168	46.059	212	137	2.27	32.8	139.3	2260	567	4.00	481	2368
136	5042	0.551	0.131	34.704	27.860	37.168	46.059	212	137	2.27	32.8	139.3	2259	565	4.00	480	2367

Lamont-Doherty Earth Observatory of Columbia University

WOCE P17E/P19S R/V Knorr WOCE Line P19

Station 220 Latitude 61-00.0S Longitude 88-00.0W Date 1/14/93 Bottom Depth 4864 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	4	5.498	5.498	34.059	26.871	35.901	44.531	308	-2	1.39	20.1	1.6	2102	316	4.00	337	2278
102	26	5.457	5.455	34.060	26.877	35.909	44.541	308	-1	1.41	20.1	1.8	2103	324	4.00	344	2276
103	46	5.337	5.333	34.058	26.890	35.928	44.565	309	-1	1.47	20.4	2.2	2106	322	4.00	340	2281
104	76	3.928	3.923	34.081	27.063	36.172	44.876	310	9	1.68	22.8	10.7	2126	367	4.00	366	2281
105	106	3.443	3.436	34.076	27.107	36.242	44.970	302	20	1.73	24.6	12.9	2133	388	4.00	379	2279
106	155	3.171	3.161	34.082	27.138	36.287	45.028	296	29	1.80	25.7	15.3	2140	404	4.00	390	2281
107	206	2.940	2.927	34.088	27.164	36.325	45.078	292	35	1.84	26.6	18.0	2149	420	4.00	402	2285
108	255	2.952	2.936	34.135	27.200	36.361	45.113	270	56	1.95	28.5	24.0	2162	454	4.00	434	2287
109	305	2.677	2.659	34.146	27.234	36.409	45.174	257	62	2.00	29.1	27.4	2170	471	4.00	445	2291
110	355	2.662	2.641	34.176	27.259	36.435	45.201	257	72	2.06	30.2	32.4	2179	489	4.00	462	2295
111	429	2.463	2.438	34.213	27.306	36.492	45.268										
112	503	2.240	2.211	34.238	27.344	36.542	45.330	239	93	2.20	32.3	44.7	2200	541	4.00	501	2305
113	576	2.532	2.497	34.328	27.393	36.574	45.345	210	120	2.27	33.2	52.3	2218	584	4.00	548	2313
114	650	2.447	2.407	34.376	27.439	36.624	45.399	201	129	2.31	33.7	58.4	2225	599	4.00	560	2318
115	723	2.309	2.265	34.414	27.481	36.673	45.455	194	137	2.35	34.2	63.4	2234	619	4.00	575	2323
116	797	2.292	2.243	34.473	27.530	36.722	45.504	183	148	2.36	34.4	69.3	2244	632	4.00	587	2332
117	897	2.288	2.232	34.524	27.572	36.764	45.545	178	153	2.35	34.2	73.5	2248	638	4.00	592	2334
118	1019	2.242	2.178	34.576	27.618	36.812	45.596	175	157	2.34	34.0	77.7	2251	641	4.00	593	2337
119	1167	2.202	2.127	34.639	27.672	36.868	45.653	175	157	2.28	33.2	82.3	2252	618	4.00	571	2344
120	1391	2.098	2.007	34.683	27.717	36.919	45.710	178	155	2.23	32.4	86.0	2253	601	4.00	552	2349
121	1616	1.975	1.868	34.713	27.752	36.961	45.759	182	152	2.19	31.9	89.6	2254	587	4.00	536	2354
122	1842	1.807	1.684	34.728	27.778	36.997	45.804	187	149	2.17	31.4	94.8	2255	573	4.00	520	2359
123	2068	1.626	1.487	34.729	27.794	37.024	45.841	189	148	2.17	31.6	101.0	2258	569	4.00	511	2363
124	2291	1.482	1.326	34.728	27.804	37.043	45.869	193	146	2.18	31.6	105.5	2257	566	4.00	505	2363
125	2514	1.351	1.178	34.727	27.814	37.061	45.895	196	144	2.18	31.6	109.0	2256	566	4.00	502	2363
126	2737	1.220	1.029	34.722	27.820	37.076	45.917	198	143	2.18	31.8	113.3	2258	564	4.00	497	2365
127	2962	1.081	0.872	34.719	27.828	37.093	45.943	201	142	2.19	31.9	117.5	2259	566	4.00	496	2366
128	3187	0.956	0.729	34.714	27.833	37.106	45.964	203	141	2.21	32.0	121.9	2259	569	4.00	496	2365
129	3410	0.871	0.624	34.711	27.837	37.117	45.980	205	140	2.21	32.1	124.9	2260	569	4.00	493	2367
130	3636	0.761	0.493	34.709	27.844	37.130	46.001	207	139	2.22	32.1	127.9	2258	572	4.00	493	2364
131	3862	0.644	0.356	34.707	27.850	37.145	46.023	209	138	2.22	32.4	131.5	2259	570	4.00	489	2366
132	4088	0.562	0.252	34.706	27.855	37.156	46.040	211	137	2.23	32.4	134.5	2259	572	4.00	488	2366
133	4315	0.515	0.182	34.705	27.858	37.163	46.051	212	137	2.24	32.5	136.8	2259	571	4.00	486	2366
134	4540	0.489	0.131	34.704	27.860	37.168	46.059	213	136	2.23	32.4	138.6	2260	576	4.00	489	2365
135	4739	0.476	0.095	34.705	27.863	37.173	46.065	213	136	2.24	32.5	140.5	2262	569	4.00	482	2369
136	4859	0.460	0.066	34.704	27.864	37.176	46.070	214	136	2.24	32.5	141.6	2262	571	4.00	484	2369

Station 223 Latitude 62-59.9S Longitude 88-00.0W Date 1/15/93 Bottom Depth 4798 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	4	4.000	4.000	33.937	26.941	36.048	44.751	321	-3	1.57	23.3	9.4	2123	351	4.00	351	2284
102	28	3.997	3.995	33.937	26.941	36.049	44.752	322	-4	1.57	23.3	9.2	2122	354	4.00	353	2281
103	58	2.689	2.686	33.985	27.103	36.279	45.046	331	-2	1.82	24.5	13.0	2130	374	4.00	354	2281
104	87	2.156	2.151	34.025	27.179	36.383	45.177	320	14	1.85	25.9	19.3	2142	404	4.00	374	2283
105	122	1.746	1.740	34.025	27.210	36.438	45.253	315	21	1.90	26.8	21.9	2144	418	4.00	380	2279
106	167	1.534	1.526	34.034	27.233	36.472	45.298	313	26	1.93	27.6	23.5	2152	430	4.00	387	2284
107	217	1.278	1.268	34.046	27.261	36.514	45.354	305	36	1.99	28.7	27.8	2160	448	4.00	399	2287
108	277	1.371	1.358	34.092	27.291	36.539	45.373	288	52	2.06	29.8	32.9	2172	474	4.00	423	2292
109	332	2.127	2.109	34.213	27.333	36.537	45.329	246	87	2.20	31.9	43.1	2194	531	4.00	490	2300
110	382	2.076	2.055	34.243	27.361	36.567	45.363	237	96	2.24	32.7	47.7		549	4.00	505	
111	456	2.209	2.183	34.323	27.415	36.613	45.400	216	117	2.31	33.6	55.8	2217	584	4.00	541	2312
112	555	2.235	2.202	34.407	27.480	36.676	45.461	196	136	2.37	34.3	64.3	2231	615	4.00	570	2321
113	654	2.258	2.219	34.469	27.529	36.723	45.506	185	147	2.38	34.5	70.3	2240	632	4.00	586	2327
114	753	2.231	2.185	34.525	27.576	36.771	45.555	178	153	2.37	34.5	75.1	2245	641	4.00	593	2331
115	853	2.231	2.179	34.573	27.615	36.810	45.593	175	157	2.36	34.2	78.8	2251	635	4.00	588	2339
116	951	2.198	2.139	34.609	27.647	36.843	45.628	174	158	2.33	33.7	81.3	2252	627	4.00	580	2342
117	1049	2.162	2.096	34.637	27.673	36.871	45.658	175	158	2.31	33.4	83.6	2252	621	4.00	573	2344
118	1149	2.131	2.058	34.660	27.695	36.894	45.683	176	157	2.28	33.0	85.4	2254	616	4.00	567	2347
119	1298	2.061	1.978	34.690	27.725	36.928	45.721	178	155	2.24	32.5	87.4	2254	601	4.00	551	2351
120	1496	1.948	1.851	34.715	27.755	36.965	45.763	182	152	2.21	32.0	90.8	2251	587	4.00	536	2352
121	1693	1.805	1.694	34.727	27.777	36.995	45.801	186	149	2.18	31.6	95.6	2250	576	4.00	523	2352
122	1891	1.642	1.517	34.729	27.791	37.020	45.835	189	148	2.18	31.5	101.0	2252	573	4.00	516	2357
123	2091	1.507	1.368	34.729	27.802	37.039	45.862	192	146	2.19	31.6	104.6	2254	571	4.00	510	2359
124	2282	1.386	1.233	34.728	27.811	37.055	45.886	194	145	2.19	31.7	108.9	2257	568	4.00	505	2364
125	2463	1.283	1.116	34.725	27.817	37.068	45.904	196	144	2.18	31.7	111.7	2258	567	4.00	502	2365
126	2638	1.186	1.005	34.722	27.822	37.079	45.922	198	143	2.19	31.7	114.7	2261	569	4.00	501	2368
127	2850	1.064	0.866	34.718	27.828	37.093	45.943	201	142	2.19	32.0	118.7	2256	567	4.00	497	2362
128	3080	0.943	0.726	34.714	27.833	37.107	45.964	203	141	2.21	32.1	123.3	2258	571	4.00	497	2364
129	3312	0.831	0.594	34.710	27.838	37.119	45.984	205	140	2.22	32.2	126.8	2257	569	4.00	493	2364
130	3542	0.724	0.467	34.708	27.844	37.133	46.005	207	139	2.23	32.2	129.6	2258	573	4.00	493	2364
131	3773	0.622	0.344	34.706	27.850	37.145	46.024	209	138	2.23	32.3	132.3	2254	571	4.00	489	2360
132	4003	0.534	0.234	34.706	27.856	37.158	46.043	211	137	2.24	32.4	135.6	2261	571	4.00	487	2368
133	4232	0.488	0.165	34.705	27.859	37.165	46.054	212	137	2.24	32.5	138.4	2259	571	4.00	485	2366
134	4462	0.466	0.118	34.704	27.861	37.170	46.061	213	137	2.24	32.3	140.3	2260	576	4.00	488	2366
135	4665	0.452	0.081	34.704	27.863	37.174	46.067	214	136	2.24	32.6	141.7	2260	573	4.00	485	2367
136	4793	0.445	0.059	34.704	27.864	37.176	46.071	214	136	2.24	32.6	145.0	2262	575	4.00	487	2368

Lamont-Doherty Earth Observatory of Columbia University
WOCE P17E/P19S R/V Knorr WOCE Line P19

Station 227 Latitude 65-40.1S Longitude 87-59.8W Date 1/16/93 Bottom Depth 4583 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	3	2.417	2.417	33.744	26.932	36.127	44.912	334	-2	1.63	23.9	16.5	2126	376	4.00	351	2275
102	26	2.378	2.377	33.749	26.940	36.137	44.923	334	-2	1.65	24.0	16.6	2127	376	4.00	351	2277
103	51	1.167	1.165	33.798	27.068	36.332	45.181	345	-3	1.78	24.5	18.1	2132	384	4.00	340	2280
104	81	0.202	0.199	33.883	27.194	36.512	45.412	345	6	1.88	25.4	22.9	2142	399	4.00	339	2285
105	131	-0.031	-0.036	33.928	27.243	36.574	45.486	338	15	1.93	26.8	26.5	2147	418	4.00	352	2283
106	181	-0.322	-0.328	33.943	27.269	36.617	45.545	334	22	1.97	27.9	28.1	2155	432	4.00	360	2287
107	230	0.882	0.872	34.088	27.320	36.596	45.456	291	54	2.12	30.4	38.8	2178	489	4.00	428	2295
108	276	1.532	1.518	34.217	27.380	36.617	45.441	250	88	2.25	32.5	49.3	2201	548	4.00	494	2303
109	325	1.806	1.789	34.305	27.431	36.651	45.459	225	111	2.33	33.6	57.4	2217	589	4.00	536	2311
110	399	1.927	1.905	34.388	27.489	36.701	45.502	204	130	2.39	34.3	65.3	2231	620	4.00	567	2320
111	474	2.019	1.992	34.455	27.536	36.742	45.537	191	143	2.40	34.6	70.8	2240	633	4.00	581	2327
112	549	2.076	2.044	34.514	27.579	36.781	45.573	182	151	2.39	34.4	75.0	2248	644	4.00	593	2333
113	623	2.095	2.059	34.554	27.610	36.811	45.601	178	155	2.39	34.3	77.7	2251	641	4.00	590	2338
114	699	2.081	2.040	34.590	27.640	36.842	45.632	177	156	2.37	33.9	80.5	2251	635	4.00	585	2338
115	800	2.075	2.027	34.631	27.674	36.876	45.666	176	157	2.33	33.5	82.9	2254	623	4.00	573	2345
116	900	2.082	2.027	34.662	27.699	36.900	45.690	176	157	2.30	33.0	85.2	2251	616	4.00	566	2344
117	999	2.046	1.985	34.683	27.719	36.922	45.714	178	155	2.26	32.6	87.1	2254	604	4.00	555	2350
118	1143	1.986	1.915	34.705	27.742	36.949	45.744	181	153	2.23	32.2	89.4	2252	595	4.00	545	2350
119	1292	1.894	1.813	34.720	27.762	36.974	45.774	184	151	2.21	31.8	92.3	2252	582	4.00	531	2354
120	1489	1.748	1.654	34.729	27.781	37.002	45.810	187	148	2.20	31.5	96.2	2252	575	4.00	521	2356
121	1687	1.586	1.478	34.731	27.796	37.026	45.844	191	146	2.20	31.6	101.6	2257	566	4.00	509	2363
122	1886	1.435	1.314	34.729	27.806	37.046	45.872	194	145	2.21	31.6	106.2	2253	567	4.00	506	2359
123	2085	1.320	1.184	34.726	27.813	37.060	45.893	195	144	2.20	31.6	109.6	2258	565	4.00	502	2366
124	2282	1.188	1.038	34.723	27.820	37.076	45.917	198	143	2.21	31.7	114.0	2256	564	4.00	497	2364
125	2479	1.085	0.920	34.720	27.826	37.088	45.935	200	142	2.22	31.9	117.4	2257	567	4.00	498	2363
126	2671	0.979	0.799	34.716	27.830	37.099	45.953	202	141	2.22	32.1	120.9	2258	565	4.00	493	2366
127	2859	0.881	0.686	34.712	27.834	37.110	45.970	204	141	2.24	32.2	124.1	2259	569	4.00	495	2366
128	3047	0.788	0.578	34.710	27.839	37.121	45.987	205	140	2.24	32.2	127.3	2260	569	4.00	492	2367
129	3229	0.700	0.474	34.708	27.844	37.132	46.003	207	139	2.25	32.3	129.3	2260	571	4.00	492	2367
130	3418	0.603	0.361	34.706	27.849	37.143	46.021	210	138	2.26	32.4	131.9	2261	572	4.00	491	2367
131	3627	0.524	0.264	34.706	27.854	37.155	46.038	211	137	2.26	32.4	134.7	2261	571	4.00	487	2368
132	3826	0.480	0.200	34.705	27.857	37.161	46.048	212	137	2.26	32.4	136.8	2258	574	4.00	488	2364
133	4023	0.446	0.146	34.704	27.859	37.167	46.056	213	137	2.26	32.6	139.2	2260	571	4.00	485	2366
134	4223	0.424	0.103	34.704	27.862	37.171	46.063	213	136	2.27	32.4	141.1	2260	574	4.00	486	2366
135	4427	0.421	0.078	34.704	27.863	37.174	46.068	214	136	2.27	32.6	142.7	2257	572	4.00	485	2364
136	4575	0.420	0.060	34.704	27.864	37.176	46.071	214	136	2.27	32.6	144.7	2260	572	4.00	485	2366

Station 229 Latitude 67-00.3S Longitude 87-59.8W Date 1/16/93 Bottom Depth 4385 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
201	1	1.930	1.930	33.716	26.948	36.170	44.980	345	-9	1.56	23.4	14.8	2124	375	4.00	343	2274
202	29	1.930	1.929	33.716	26.948	36.171	44.981	337	-1	1.56	23.3	14.6	2124	371	4.00	340	2275
203	59	-0.273	-0.275	33.772	27.128	36.476	45.404	352	3	1.75	24.6	18.1	2128	384	4.00	321	2275
204	79	-0.539	-0.541	33.831	27.188	36.551	45.493	346	12	1.89	25.6	23.8	2141	404	4.00	333	2282
205	107	-0.255	-0.259	33.930	27.255	36.599	45.524	333	22	1.95	27.6	26.7	2150	425	4.00	355	2283
206	137	-0.263	-0.268	33.946	27.268	36.613	45.538	331	24	1.96	28.0	27.3	2153	426	4.00	355	2287
207	167	0.364	0.358	34.018	27.294	36.601	45.490	311	38	2.03	29.2	33.3	2165	458	4.00	392	2290
208	216	1.409	1.398	34.207	27.381	36.625	45.455	254	85	2.23	32.4	49.0	2198	539	4.00	483	2303
209	264	1.681	1.667	34.295	27.432	36.659	45.474	228	109	2.31	33.6	56.7	2215	580	4.00	525	2311
210	341	1.903	1.885	34.393	27.494	36.708	45.509	204	131	2.37	34.4	65.5	2231	627	4.00	573	2318
211	419	2.031	2.007	34.469	27.546	36.751	45.545	188	146	2.39	34.6	71.2	2242	631	4.00	580	2330
212	495	2.085	2.057	34.529	27.590	36.792	45.582	180	153	2.38	34.5	75.6	2248	644	4.00	594	2333
213	548	2.093	2.061	34.560	27.614	36.815	45.605	177	156	2.36	34.2	77.8	2250	629	4.00	580	2339
214	604	2.088	2.053	34.589	27.638	36.839	45.629	176	157	2.35	34.0	79.7	2251	635	4.00	585	2339
215	695	2.077	2.036	34.621	27.665	36.867	45.657	175	157	2.32	33.5	81.9	2252	628	4.00	578	2342
216	795	2.053	2.005	34.656	27.696	36.898	45.689	176	157	2.29	33.1	84.1	2255	615	4.00	566	2348
217	911	2.029	1.974	34.688	27.724	36.927	45.720	178	155	2.25	32.3	86.3	2256				
218	1045	1.956	1.892	34.708	27.746	36.954	45.750	181	153	2.22	31.9	88.9	2254	588	4.00	538	2353
219	1181	1.862	1.789	34.721	27.765	36.978	45.779	184	151	2.20	31.6	91.5	2254	587	4.00	535	2354
220	1181	1.862	1.789	34.721	27.765	36.978	45.779	184	151	2.19	31.8	91.5	2254				
221	1518	1.593	1.498	34.733	27.796	37.025	45.842	191	146	2.17	31.5	99.7	2256	572	4.00	515	2360
222	1716	1.442	1.334	34.731	27.806	37.045	45.870	193	145	2.17	31.6	104.6	2257				
223	1916	1.312	1.190	34.727	27.813	37.060	45.893	195	145	2.19	31.7	108.6	2258	569	4.00	506	2364
224	2113	1.195	1.059	34.725	27.820	37.075	45.914	197	144	2.19	31.8	112.3	2259	568	4.00	502	2365
225	2310	1.071	0.921	34.720	27.826	37.088	45.935	199	143	2.20	31.9	116.3	2259	571	4.00	501	2365
226	2510	0.963	0.798	34.716	27.830	37.100	45.953	202	142	2.21	32.0	119.7	2260	568	4.00	496	2367
227	2707	0.873	0.692	34.712	27.834	37.109	45.969	203	141	2.21	32.1	123.0	2259	569	4.00	495	2365
228	2908	0.783	0.586	34.710	27.839	37.120	45.986	205	140	2.22	32.2	126.1	2257	572	4.00	495	2363
229	3152	0.669	0.452	34.708	27.845	37.134	46.007	207	139	2.22	32.4	129.3	2262	573	4.00	493	2368
230	3402	0.555	0.316	34.706	27.851	37.149	46.029	209	138	2.24	32.5	132.8	2262	571	4.00	488	2369
231	3653	0.477	0.215	34.706	27.857	37.160	46.046	211	138	2.24	32.6	135.8	2264	574	4.00	489	2370
232	3906	0.438	0.151	34.705	27.860	37.167	46.056	212	137	2.25	32.6	138.7	2263	575	4.00	488	2370
233	4160	0.412	0.099	34.704	27.862	37.172	46.064	213	137	2.25	32.6	141.1	2264	576	4.00	489	2370
234	4345	0.397	0.064	34.704	27.864	37.176	46.070	213	137	2.25	32.7	145.4	2264	583	4.00	493	2368
235	4345	0.397	0.064	34.705	27.865	37.177	46.071	213	137	2.26	32.8	145.4	2262	577	4.00	488	2368
236	4379	0.388	0.051	34.705	27.865	37.178	46.073	213	138	2.25	32.7	145.4	2262	576	4.00	488	2367

Lamont-Doherty Earth Observatory of Columbia University
WOCE P17E/P19S R/V Knorr WOCE Line P19

Station 232 Latitude 68-52.0S Longitude 88-01.8W Date 1/17/93 Bottom Depth 3482 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
101	1	1.033	1.033	33.734	27.025	36.298	45.155	351	-7	1.57	23.0	40.0	2127	362	4.00	320	2284
102	26	0.886	0.885	33.745	27.044	36.324	45.189	352	-7	1.59	22.9	40.1	2128	357	4.00	313	2288
103	45	-1.132	-1.133	33.869	27.241	36.640	45.615	341	23	1.99	27.6	52.0	2163	446	4.00	359	2292
104	75	-1.397	-1.399	33.955	27.320	36.733	45.723	310	56	2.09	29.1	64.8	2184	497	4.00	395	2299
105	101	-1.077	-1.080	34.111	27.436	36.827	45.795	290	73	2.16	30.8	62.7	2198	529	4.00	427	2306
106	126	-0.529	-0.533	34.217	27.500	36.855	45.791	264	93	2.20	31.7	68.6	2212	556	4.00	459	2314
107	175	0.509	0.502	34.391	27.587	36.878	45.754	225	122	2.29	33.1	74.7	2234	608	4.00	524	2326
108	224	1.461	1.450	34.562	27.662	36.897	45.719	189	149	2.32	33.7	82.2	2248	631	4.00	566	2337
109	274	1.665	1.651	34.617	27.692	36.914	45.725	182	154	2.31	33.5	85.7	2256	642	4.00	581	2343
110	333	1.828	1.810	34.669	27.721	36.934	45.735	177	157	2.28	33.2	88.1	2258	630	4.00	574	2348
111	393	1.845	1.823	34.690	27.737	36.949	45.749	177	157	2.27	32.8	89.8	2256	623	4.00	569	2348
112	452	1.813	1.788	34.703	27.750	36.964	45.766	179	156	2.24	32.6	91.6	2256	614	4.00	559	2350
113	511	1.787	1.759	34.712	27.760	36.975	45.778	180	155	2.23	32.4	93.3	2256	604	4.00	549	2352
114	569	1.752	1.720	34.719	27.768	36.985	45.790	182	153	2.22	32.3	94.2	2253	605	4.00	549	2348
115	628	1.704	1.669	34.724	27.776	36.996	45.804	184	152	2.21	32.1	96.2	2253	590	4.00	535	2353
116	697	1.647	1.608	34.727	27.783	37.006	45.817	185	151	2.21	31.8	97.5	2254	591	4.00	534	2354
117	764	1.595	1.552	34.729	27.789	37.015	45.829	187	150	2.20	32.0	99.2	2253	587	4.00	530	2354
118	820	1.560	1.514	34.731	27.793	37.022	45.837	188	149	2.18	31.8	100.1	2254	578	4.00	520	2357
119	887	1.487	1.437	34.730	27.798	37.031	45.851	189	148	2.19	31.8	102.6	2256	584	4.00	524	2357
120	955	1.438	1.384	34.730	27.802	37.038	45.860	191	147	2.19	31.8	103.7	2256	578	4.00	518	2359
121	1072	1.341	1.280	34.729	27.808	37.050	45.878	192	147	2.20	31.9	106.7	2256	574	4.00	512	2361
122	1250	1.213	1.142	34.726	27.816	37.065	45.900	196	144	2.20	31.9	110.5	2256	572	4.00	506	2361
123	1417	1.109	1.027	34.723	27.821	37.077	45.918	197	144	2.21	32.0	114.1	2258	571	4.00	504	2363
124	1583	1.021	0.928	34.720	27.825	37.087	45.934	199	143	2.21	32.0	116.7	2258	573	4.00	503	2364
125	1749	0.922	0.819	34.717	27.830	37.098	45.951	201	142	2.21	32.1	120.4	2259	573	4.00	501	2364
126	1904	0.841	0.727	34.714	27.833	37.106	45.964	203	141	2.22	32.2	122.9	2259	576	4.00	502	2363
127	2067	0.768	0.643	34.711	27.836	37.114	45.977	204	140	2.23	32.2	125.3	2260	575	4.00	499	2365
128	2257	0.676	0.537	34.708	27.840	37.124	45.993	206	139	2.23	32.4	127.9	2262	572	4.00	494	2368
129	2424	0.602	0.451	34.708	27.845	37.135	46.007	208	139	2.23	32.5	129.8	2260	572	4.00	492	2366
130	2588	0.537	0.373	34.707	27.849	37.143	46.020	209	138	2.24	32.6	131.9	2260	573	4.00	491	2367
131	2771	0.478	0.300	34.705	27.852	37.150	46.031	210	138	2.24	32.6	134.6	2261	572	4.00	489	2368
132	2972	0.428	0.233	34.705	27.855	37.157	46.042	211	138	2.24	32.7	137.2	2261	571	4.00	487	2368
133	3182	0.408	0.194	34.704	27.857	37.161	46.048	211	137	2.25	32.6	138.7	2261	572	4.00	487	2368
134	3290	0.392	0.168	34.705	27.859	37.165	46.053	212	137	2.25	32.8	139.7	2262	572	4.00	487	2368
135	3372	0.383	0.151	34.704	27.859	37.166	46.055	212	137	2.25	32.7	140.9	2263				
136	3482	0.369	0.127	34.704	27.860	37.169	46.059	211	138	2.26	32.8	143.2	2263				

Station 234 Latitude 53-01.8S Longitude 74-55.0W Date 2/23/93 Bottom Depth 126 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
176	2	11.416	11.416	31.250	23.784	32.589	41.008	289	-15	0.61	2.7	1.3	1887	209	4.00	286	2092
175	27	10.398	10.395	33.605	25.796	34.610	43.037	272	3	0.93	9.6	1.9					
170	43	10.006	10.001	33.698	25.936	34.765	43.206	271	6	0.99	11.1	1.9	2050	266	4.00	343	2250
171	44	10.006	10.001	33.699	25.936	34.766	43.207	271	6								
172	45	9.996	9.991	33.701	25.940	34.769	43.211	271	6								
173	45	9.996	9.991	33.700	25.939	34.768	43.210	271	6								
174	47	9.927	9.922	33.718	25.965	34.797	43.241	271	7								
152	53	9.798	9.792	33.744	26.006	34.844	43.293										
153	53	9.798	9.792	33.744	26.006	34.844	43.293	273	5								
154	54	9.788	9.782	33.745	26.009	34.847	43.296	274	5								
155	55	9.751	9.745	33.753	26.021	34.861	43.312										
156	57	9.752	9.746	33.753	26.021	34.861	43.312	273	6								
157	59	9.753	9.746	33.756	26.023	34.863	43.314	273	6								
151	61	9.753	9.746	33.755	26.023	34.862	43.313	273	6	1.03	11.9	2.5	2056	270	4.00	344	2254
158	61	9.754	9.747	33.758	26.025	34.864	43.315	273	6								
159	62	9.751	9.744	33.759	26.026	34.865	43.316	273	6								
160	64	9.742	9.735	33.762	26.030	34.870	43.321	273	6								
161	66	9.716	9.709	33.766	26.037	34.878	43.331	273	6								
162	66	9.698	9.691	33.769	26.043	34.884	43.337	273	7								
163	67	9.695	9.688	33.767	26.042	34.883	43.337	273	7								
164	68	9.681	9.673	33.769	26.046	34.888	43.342	272	7								
165	69	9.680	9.672	33.769	26.046	34.888	43.342	272	7								
132	70	9.667	9.659	33.771	26.050	34.892	43.347	272	7								
166	70	9.654	9.646	33.772	26.053	34.896	43.351										
133	71	9.665	9.657	33.770	26.049	34.892	43.346	272	8								
135	71	9.645	9.637	33.774	26.056	34.899	43.354	271	9								
136	71	9.659	9.651	33.772	26.052	34.895	43.349	272	8								
167	71	9.654	9.646	33.771	26.052	34.895	43.350										
134	72	9.644	9.636	33.773	26.055	34.899	43.354	271	8								
168	72	9.636	9.628	33.774	26.057	34.901	43.357	272	8								
169	72	9.642	9.634	33.775	26.057	34.901	43.356	271	9								
131	100	8.958	8.947	33.859	26.233	35.106	43.588	256	28	1.24	15.4	3.2	2082	313	4.00	386	2257
102	123	7.784	7.772	33.944	26.478	35.402	43.932	240	51	1.45	18.9	4.7	2111	370	4.00	434	2261

Lamont-Doherty Earth Observatory of Columbia University

WOCE P19C R/V Knorr WOCE Line P17E

Station 236 Latitude 53-06.6S Longitude 75-01.4W Date 2/23/93 Bottom Depth 1273 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
151	2	9.917	9.917	33.745	25.986	34.819	43.263	280	-2	0.99	11.5	2.3	2049	267	4.00	343	2248
152	2	9.915	9.915	33.745	25.987	34.819	43.263										
131	28	9.454	9.451	33.863	26.156	35.006	43.468	281	-1	1.06	13.0	2.3	2061	277	4.00	349	2255
102	53	9.300	9.294	33.878	26.193	35.050	43.517	277	5	1.10	13.6	2.3	2064	279	4.00	349	2257
176	78	9.047	9.039	33.896	26.248	35.116	43.594	267	16	1.19	14.8	2.8	2074	302	4.00	374	2255
130	103	8.455	8.444	33.948	26.381	35.275	43.776	249	38	1.35	17.4	3.9	2094	342	4.00	413	2255
174	127	7.574	7.562	34.088	26.622	35.553	44.090	241	52	1.64	22.4	8.5	2134	422	4.00	491	2266
173	154	7.108	7.094	34.066	26.670	35.624	44.182	233	63	1.64	22.0	6.8	2129	415	4.00	473	2264
172	179	6.615	6.599	34.084	26.752	35.728	44.307	244	55	1.66	22.4	7.2	2131	408	4.00	456	2269
171	203	6.531	6.513	34.118	26.790	35.770	44.353	236	64	1.69	23.4	7.9	2137	428	4.00	475	2268
170	251	6.015	5.993	34.138	26.873	35.877	44.483			1.64	22.8	7.7					
136	303	5.736	5.711	34.188	26.947	35.965	44.583	255	50	1.67	23.7	9.0	2135	405	4.00	435	2275
128	352	5.356	5.327	34.192	26.997	36.033	44.669	276	31	1.61	22.7	8.8	2127	376	4.00	398	2278
168	402	5.216	5.183	34.199	27.019	36.063	44.705			1.58	22.4	9.1					
135	403	5.214	5.181	34.198	27.019	36.062	44.704	283	26	1.59	22.4	9.1	2127	369	4.00	388	2281
134	451	5.165	5.128	34.209	27.033	36.079	44.724			1.62	23.0	10.2					
167	452	5.161	5.124	34.211	27.035	36.082	44.726	279	30	1.62	23.1	10.2	2130	374	4.00	392	2283
133	502	5.118	5.077	34.222	27.050	36.098	44.745	274	35	1.66	23.8	10.9	2133	383	4.00	401	2283
166	502	5.118	5.077	34.222	27.050	36.098	44.745			1.65	23.8	10.7					
165	551	5.008	4.964	34.225	27.065	36.119	44.771	272	39	1.69	24.3	12.0	2134	389	4.00	405	2281
132	552	5.007	4.963	34.224	27.064	36.119	44.771			1.69	24.3	12.0					
163	600	4.897	4.849	34.221	27.075	36.135	44.792	271	40	1.70	24.6	12.5	2139	393	4.00	408	2284
164	601	4.897	4.849	34.221	27.075	36.135	44.792			1.72	24.5	12.7					
161	650	4.751	4.700	34.223	27.093	36.161	44.825	266	46	1.78	25.3	14.5	2144	406	4.00	418	2286
162	650	4.750	4.699	34.222	27.093	36.160	44.825			1.77	25.4	14.5					
160	699	4.559	4.504	34.223	27.115	36.192	44.866										
159	700	4.557	4.502	34.223	27.115	36.192	44.866	259	55	1.84	26.4	16.9	2152	422	4.00	431	2287
158	799	4.218	4.157	34.239	27.165	36.259	44.949	240	76	2.00	28.5	23.4	2168	462	4.00	465	2292
157	898	3.689	3.624	34.263	27.238	36.360	45.076	228	92	2.13	30.5	32.7	2185	506	4.00	498	2297
155	996	3.383	3.312	34.323	27.316	36.453	45.183	202	121	2.26	32.4	43.5	2208	558	4.00	542	2309
156	996	3.382	3.311	34.316	27.310	36.448	45.178										
129	1193	2.916	2.833	34.430	27.445	36.606	45.359	176	150	2.40	34.5	62.3	2240	627	4.00	596	2328
153	1428	2.676	2.576	34.519	27.539	36.712	45.476	158	170	2.49	35.4	78.1	2262	652	4.00	614	2347

Station 238 Latitude 53-11.9S Longitude 75-29.6W Date 2/24/93 Bottom Depth 1986 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
152	3	10.584	10.584	33.588	25.750	34.556	42.976	282	-7	0.85	8.5	1.8	2027	241	4.00	318	2240
151	12	10.471	10.470	33.599	25.778	34.589	43.013	281	-6	0.85	8.7	1.8	2029	245	4.00	322	2240
102	38	9.480	9.476	33.792	26.096	34.946	43.408	274	6	1.05	12.4	2.1					
131	38	9.541	9.537	33.795	26.088	34.936	43.395	274	6	1.05	12.4	2.1	2054	274	4.00	346	2249
176	62	8.835	8.828	33.916	26.297	35.174	43.660	264	21	1.23	15.6	2.5	2078	308	4.00	377	2256
130	87	8.073	8.064	33.962	26.449	35.360	43.877	246	43	1.41	18.2	4.1	2103	353	4.00	419	2261
174	110	7.622	7.611	34.028	26.567	35.498	44.033	235	57	1.54	20.4	5.4	2118	392	4.00	457	2260
173	133	7.212	7.199	34.058	26.649	35.598	44.151	229	66	1.63	21.9	6.5	2128	415	4.00	475	2263
172	159	6.888	6.873	34.085	26.715	35.679	44.246	230	67	1.68	22.8	7.4	2133	431	4.00	486	2262
170	178	7.104	7.087	34.149	26.737	35.689	44.246	202	93	1.82	24.8	8.8					
171	178	7.060	7.043	34.153	26.746	35.700	44.259	201	95	1.83	24.9	8.8	2153	482	4.00	548	2268
136	228	6.232	6.212	34.147	26.852	35.846	44.442	238	63	1.70	23.8	8.1	2139	428	4.00	470	2270
128	277	5.740	5.717	34.172	26.934	35.951	44.569	256	49	1.67	23.6	8.3	2133	404	4.00	434	2273
135	328	5.437	5.410	34.195	26.989	36.021	44.653	268	39	1.64	23.3	8.8	2131	387	4.00	411	2277
134	377	5.389	5.358	34.212	27.009	36.043	44.677	268	39	1.64	23.4	9.5					
168	378	5.389	5.358	34.212	27.009	36.043	44.677	269	39	1.65	23.5	9.5	2133	390	4.00	413	2279
167	476	5.205	5.166	34.225	27.042	36.086	44.728	271	38	1.66	23.8	10.8	2133	387	4.00	407	2280
133	574	5.043	4.997	34.224	27.061	36.113	44.763	272	38	1.68	24.2	11.5	2134	391	4.00	407	2280
166	673	4.815	4.761	34.222	27.086	36.150	44.811	269	43	1.74	25.0	13.5	2142	402	4.00	415	2284
132	772	4.437	4.377	34.224	27.129	36.213	44.893	254	60	1.88	27.0	18.6	2154	437	4.00	444	2284
165	871	4.087	4.021	34.248	27.186	36.287	44.984	234	83	2.04	29.2	26.0	2173	476	4.00	476	2293
164	969	3.690	3.619	34.281	27.253	36.375	45.090	217	104	2.17	31.1	35.1	2189	524	4.00	516	2297
162	1165	3.116	3.034	34.387	27.393	36.544	45.287	184	141	2.36	34.0	55.3					
163	1165	3.116	3.034	34.387	27.393	36.544	45.287	184	141	2.36	33.9	55.1	2225	612	4.00	587	2315
161	1362	2.852	2.756	34.486	27.497	36.661	45.417	157	170	2.50	35.6	73.3	2258	663	4.00	629	2340
158	1561	2.608	2.498	34.553	27.573	36.750	45.517	150	179	2.51	35.8	85.4					
159	1561	2.608	2.498	34.553	27.573	36.750	45.517	150	179	2.51	35.7	85.4	2270	677	4.00	635	2351
160	1561	2.609	2.499	34.552	27.572	36.749	45.516	150	179	2.51	35.7	85.2					
155	1761	2.404	2.280	34.602	27.630	36.818	45.596	148	183	2.52	35.6	96.5	2283	672	4.00	625	2366
156	1761	2.404	2.280	34.601	27.629	36.818	45.596	148	183	2.51	35.7	96.5					
157	1761	2.404	2.280	34.601	27.629	36.818	45.596	148	183	2.51	35.7	96.5	2285	674	4.00	627	2368
129	1880	2.249	2.117	34.629	27.665	36.862	45.648	149	183	2.49	35.4	103.0	2289	668	4.00	617	2374
153	1989	2.111	1.972	34.649	27.693	36.897	45.690	149	184	2.49	35.3	109.5	2295	655	4.00	601	2384

Lamont-Doherty Earth Observatory of Columbia University
WOCE P19C R/V Knorr WOCE Line P17E
Station 241 Latitude 53-20.1S Longitude 76-35.1W Date 2/25/93 Bottom Depth 4097 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								------------	------	umol/kg	------	------------					
252	1	9.667	9.667	33.951	26.189	35.029	43.480	283	-4	1.10	14.6	1.4	2068	272	4.00	346	2267
452	3	9.287	9.287	34.001	26.290	35.146	43.612	284	-3	1.14	15.1	1.7	2071	278	4.00	348	2267
251	29	8.835	8.832	33.950	26.323	35.199	43.685	283	1	1.12	14.5	1.4	2068	273	4.00	335	2266
231	54	8.786	8.780	34.040	26.401	35.279	43.765	284	0	1.15	15.2	1.4	2077	276	4.00	338	2274
232	79	6.858	6.851	34.027	26.673	35.638	44.207	270	27	1.46	19.7	4.4	2108	355	4.00	400	2265
230	104	6.253	6.244	34.087	26.800	35.794	44.389	260	42	1.59	22.1	6.2	2122	388	4.00	426	2267
226	129	5.903	5.892	34.115	26.867	35.877	44.488	272	32	1.58	21.8	6.7	2120	378	4.00	409	2268
274	154	5.744	5.731	34.147	26.912	35.930	44.547	278	27	1.58	21.5	6.5	2122	367	4.00	395	2276
273	179	5.561	5.546	34.175	26.957	35.983	44.609	269	37	1.62	22.9	7.9	2128	380	4.00	406	2277
451	202	5.498	5.482	34.172	26.962	35.992	44.620	277	29	1.56	22.3	8.3					
272	203	5.484	5.467	34.188	26.977	36.006	44.636	271	36	1.61	23.0	8.2	2131	383	4.00	408	2279
271	253	5.369	5.349	34.199	27.000	36.035	44.669	277	31	1.58	22.7	8.6	2126	372	4.00	394	2279
270	302	5.344	5.320	34.209	27.011	36.048	44.683	278	30	1.58	22.7	8.9	2125	371	4.00	393	2278
236	350	5.263	5.235	34.217	27.027	36.068	44.708	277	32	1.62	23.3	9.4	2128	375	4.00	395	2280
228	399	5.144	5.112	34.220	27.044	36.091	44.736	274	35	1.65	23.7	10.5	2131	382	4.00	400	2280
431	402	5.090	5.058	34.221	27.051	36.100	44.748	275	35	1.66	23.8	10.8					
235	498	4.977	4.937	34.221	27.065	36.120	44.774	273	38	1.68	24.3	11.2	2132	388	4.00	404	2279
268	596	4.757	4.710	34.223	27.092	36.159	44.823	265	47	1.76	25.6	14.2	2143	407	4.00	420	2283
432	601	4.666	4.619	34.220	27.100	36.171	44.840	264	49	1.79	25.7	15.5					
234	695	4.382	4.329	34.222	27.133	36.219	44.901	254	61	1.89	27.2	18.5	2160	431	4.00	437	2293
267	793	4.043	3.984	34.245	27.187	36.291	44.989	235	83	2.03	29.4	25.6	2171	474	4.00	474	2291
430	801	3.936	3.877	34.256	27.207	36.316	45.019	231	88	2.08	29.9	28.3					
233	893	3.574	3.510	34.286	27.267	36.395	45.116	215	107	2.19	31.4	36.2	2194	525	4.00	515	2301
215	992	3.301	3.231	34.339	27.336	36.478	45.212										
426	999	3.267	3.197	34.345	27.344	36.487	45.223	195	129	2.31	33.2	48.0					
214	1191	2.920	2.837	34.454	27.464	36.625	45.376	164	162	2.47	35.3	66.6					
474	1196	2.928	2.845	34.445	27.456	36.616	45.368	169	158	2.44	35.0	65.1	2243	641	4.00	611	2328
213	1391	2.675	2.578	34.535	27.551	36.725	45.488										
473	1395	2.726	2.629	34.522	27.537	36.707	45.469	152	176	2.52	35.7	79.2	2266	672	4.00	634	2347
212	1590	2.513	2.402	34.582	27.604	36.786	45.558	143	187	2.55	36.2	93.2					
472	1596	2.503	2.392	34.582	27.605	36.787	45.560	147	183	2.53	35.7	91.6	2278	685	4.00	640	2358
211	1789	2.338	2.212	34.617	27.648	36.839	45.621										
471	1795	2.328	2.202	34.617	27.649	36.841	45.623	147	184	2.51	35.7	100.4	2286	675	4.00	626	2369
470	1994	2.145	2.005	34.645	27.687	36.890	45.681	150	183	2.49	35.2	107.8	2292	663	4.00	610	2378
210	2039	2.143	1.999	34.647	27.689	36.892	45.684	152	181	2.47	35.2	106.6					
436	2194	2.033	1.877	34.662	27.711	36.920	45.718	153	180	2.46	35.1	111.3	2292	646	4.00	590	2382
209	2290	1.965	1.801	34.668	27.721	36.935	45.736										
428	2393	1.940	1.767	34.670	27.725	36.941	45.744	154	181	2.45	34.8	115.7	2298	641	4.00	583	2390
208	2540	1.890	1.705	34.676	27.735	36.954	45.760	156	180	2.44	34.9	117.3					
435	2591	1.879	1.689	34.677	27.737	36.957	45.764	156	179	2.44	34.7	117.6	2297	632	4.00	573	2391
468	2788	1.835	1.627	34.683	27.746	36.969	45.780	160	176	2.43	34.6	118.3	2294	621	4.00	562	2391
207	2790	1.845	1.637	34.684	27.747	36.969	45.779										
434	2985	1.796	1.570	34.692	27.758	36.984	45.797	166	171	2.39	33.9	116.5	2292	611	4.00	551	2390
206	3039	1.767	1.536	34.691	27.760	36.987	45.803										
467	3184	1.735	1.490	34.700	27.770	37.000	45.818	172	166	2.35	33.5	115.5	2285	603	4.00	542	2385
205	3289	1.696	1.441	34.712	27.783	37.016	45.836										
433	3385	1.593	1.330	34.709	27.789	37.028	45.854	180	158	2.30	32.9	115.1		592	4.00	529	
204	3487	1.523	1.251	34.718	27.802	37.045	45.875	188	151	2.25	32.3	111.9					
413	3584	1.383	1.105	34.719	27.813	37.064	45.902										
414	3584	1.384	1.106	34.719	27.812	37.064	45.901	193	148	2.24	32.2	114.4	2268	574	4.00	508	2374
415	3584	1.384	1.106	34.718	27.812	37.063	45.901	193	148	2.24	32.2	114.4					
203	3734	1.203	0.914	34.718	27.824	37.087	45.935										
409	3781	1.139	0.846	34.716	27.827	37.094	45.945	197	145	2.25	32.2	121.1	2269	572	4.00	501	2376
410	3781	1.140	0.847	34.715	27.826	37.093	45.944	197	145	2.25	32.2	121.1					
411	3781	1.140	0.847	34.716	27.827	37.094	45.945										
412	3782	1.139	0.846	34.715	27.826	37.093	45.944	197	145	2.25	32.2	121.3					
404	3978	0.969	0.660	34.714	27.837	37.115	45.976	202	143	2.25	32.3	126.3	2267	570	4.00	495	2374
405	3978	0.969	0.660	34.713	27.837	37.114	45.975	202	142	2.25	32.3	126.1					
406	3978	0.969	0.660	34.713	27.837	37.114	45.975	202	143	2.25	32.3	126.1					
407	3978	0.969	0.660	34.712	27.836	37.113	45.974										
408	3979	0.969	0.660	34.713	27.837	37.114	45.975	202	143	2.25	32.2	126.0					
202	3982	0.981	0.671	34.713	27.836	37.112	45.973	201	143	2.24	32.2	125.4					
402	4091	0.902	0.582	34.712	27.841	37.122	45.988	203	143	2.25	32.3	129.1					
403	4091	0.902	0.582	34.712	27.841	37.122	45.988										
476	4091	0.902	0.582	34.711	27.840	37.121	45.987	202	143	2.25	32.3	128.6	2268	569	4.00	492	2375
276	4093	0.905	0.585	34.713	27.841	37.123	45.988										

Station 245 Latitude 53-51.1S Longitude 79-15.0W Date 2/26/93 Bottom Depth 4197 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
136	2	9.080	9.080	33.987	26.313	35.177	43.652						2104	333	4.00	412	
135	29	8.768	8.765	34.040	26.404	35.282	43.769	285	0	1.13	15.2	1.3					
134	55	8.692	8.686	34.045	26.420	35.301	43.792	285	0	1.14	15.1	1.1					
133	80	5.941	5.934	34.129	26.873	35.881	44.489	287	16	1.50	20.0	4.5					
132	104	5.583	5.575	34.163	26.944	35.969	44.593	272	34	1.59	22.5	7.8					
131	129	5.453	5.443	34.171	26.966	35.997	44.628	279	28	1.56	22.1	7.8					
130	154	5.522	5.510	34.205	26.985	36.012	44.639	292	15	1.48	20.7	7.6					
129	178	5.541	5.526	34.217	26.993	36.019	44.645	292	14	1.45	20.6	7.6					
174	203	5.537	5.520	34.220	26.996	36.022	44.648	293	13	1.45	20.5	7.4					
127	252	5.477	5.456	34.218	27.002	36.032	44.661	293	14	1.46	20.7	7.5					
126	301	5.379	5.354	34.213	27.010	36.045	44.679	290	17	1.49	21.2	7.7					
172	352	5.302	5.273	34.213	27.020	36.058	44.696	286	22	1.53	21.8	8.4					
124	401	5.196	5.164	34.216	27.035	36.079	44.722	279	30	1.62	23.1	9.8					
170	501	5.013	4.973	34.217	27.058	36.111	44.763	275	35	1.66	24.0	11.4					
122	599	4.777	4.730	34.218	27.086	36.152	44.815	266	46	1.75	25.2	14.5					
128	698	4.415	4.361	34.226	27.133	36.217	44.898	250	65	1.89	27.4	19.8					
120	797	4.025	3.965	34.236	27.182	36.287	44.986	240	78	2.01	29.0	25.4					
168	896	3.680	3.615	34.264	27.240	36.362	45.078	224	96	2.13	30.7	32.6					
118	995	3.329	3.258	34.309	27.310	36.450	45.183	208	115	2.23	32.2	41.9					
117	1194	2.954	2.871	34.404	27.421	36.581	45.332	183	144	2.37	34.1	58.2					
116	1392	2.684	2.587	34.497	27.520	36.694	45.457	166	162	2.43	34.9	72.4					
115	1491	2.642	2.538	34.542	27.561	36.736	45.501	152	177	2.50	35.7	82.3					
114	1590	2.545	2.434	34.572	27.593	36.774	45.544	149	180	2.50	35.7	88.3					
113	1789	2.353	2.227	34.615	27.645	36.836	45.616	152	179	2.46	35.2	95.7					
112	1988	2.216	2.075	34.640	27.677	36.876	45.664	153	179	2.45	35.0	102.3					
111	2187	2.045	1.889	34.657	27.706	36.914	45.712	151	183	2.47	35.2	112.0					
110	2387	1.955	1.783	34.670	27.724	36.939	45.741	155	180	2.45	34.8	114.0					
109	2586	1.869	1.680	34.678	27.738	36.959	45.766	157	178	2.43	34.7	117.6					
108	2785	1.804	1.597	34.686	27.751	36.976	45.788	161	175	2.41	34.5	118.1					
107	2985	1.748	1.523	34.699	27.767	36.995	45.811	172	165	2.34	33.6	114.0					
106	3185	1.648	1.405	34.712	27.786	37.021	45.843	181	157	2.28	32.7	111.4					
105	3384	1.492	1.232	34.718	27.803	37.047	45.878	188	151	2.24	32.3	112.3					
104	3584	1.250	0.975	34.717	27.820	37.079	45.923	195	146	2.23	32.2	117.7					
103	3783	1.035	0.745	34.714	27.832	37.104	45.961	200	144	2.24	32.3	123.6					
102	3983	0.893	0.585	34.711	27.840	37.121	45.987	202	143	2.25	32.5	128.9					
101	4196	0.771	0.443	34.708	27.846	37.135	46.009	205	141	2.25	32.7	132.4	2267				

Station 246 Latitude 54-00.6S Longitude 79-59.6W Date 2/26/93 Bottom Depth 4202 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
136	2	9.423	9.423	33.981	26.253	35.103	43.563	282	-1	1.14	14.6	1.3	2070	273	4.00	343	2269
135	31	8.785	8.782	34.016	26.382	35.260	43.747	284	1	1.19	15.3	1.3	2078	281	4.00	344	2273
168	56	8.248	8.242	34.084	26.518	35.419	43.927	284	4	1.25	16.3	2.0	2087	295	4.00	354	2274
133	81	5.871	5.864	34.126	26.879	35.890	44.502	282	22	1.55	20.6	6.3	2121	361	4.00	390	2278
132	106	5.535	5.526	34.150	26.940	35.967	44.594	282	24	1.56	21.4	7.7	2120	362	4.00	386	2276
131	131	5.449	5.438	34.171	26.967	35.998	44.629	283	24	1.55	21.5	8.0	2122	364	4.00	387	2278
130	156	5.434	5.421	34.181	26.977	36.009	44.640	284	23	1.53	21.5	8.0	2123	361	4.00	383	2280
129	181	5.410	5.395	34.194	26.990	36.023	44.656	285	23	1.53	21.5	8.0	2122	361	4.00	383	2280
174	205	5.404	5.387	34.198	26.994	36.028	44.660	285	22	1.53	21.5	8.2	2121	358	4.00	379	2280
127	252	5.329	5.309	34.202	27.007	36.044	44.680	284	23	1.54	21.8	8.2	2124	362	4.00	383	2281
126	298	5.281	5.257	34.208	27.018	36.057	44.696	283	25	1.57	22.1	8.9	2124	363	4.00	383	2281
172	345	5.244	5.216	34.213	27.026	36.068	44.708	279	30	1.61	22.8	9.9	2131	373	4.00	393	2284
124	395	5.150	5.118	34.215	27.039	36.086	44.731	277	33	1.63	23.3	10.4	2133	375	4.00	393	2285
170	497	4.949	4.909	34.216	27.064	36.121	44.776	274	37	1.69	23.9	11.9	2135	386	4.00	402	2283
122	601	4.680	4.633	34.218	27.097	36.167	44.835	264	49	1.78	25.6	15.3	2146	407	4.00	418	2287
128	702	4.368	4.314	34.224	27.136	36.223	44.906	250	66	1.91	27.3	20.4	2161	439	4.00	444	2292
120	800	4.050	3.990	34.252	27.192	36.295	44.993	232	86	2.05	29.3	27.6	2176	485	4.00	484	2294
119	899	3.622	3.557	34.280	27.258	36.383	45.102	218	103	2.16	31.0	35.4	2194	519	4.00	509	2303
118	998	3.301	3.230	34.320	27.321	36.463	45.197	206	117	2.25	32.1	43.8	2207	553	4.00	535	2309
117	1097	3.051	2.975	34.367	27.382	36.537	45.283	194	131	2.32	33.2	52.3	2222	582	4.00	557	2318
116	1192	2.941	2.858	34.427	27.441	36.600	45.352	175	151	2.41	34.4	61.9	2237	624	4.00	595	2325
115	1391	2.717	2.620	34.516	27.533	36.704	45.466	156	172	2.49	35.4	77.7	2263	672	4.00	634	2343
114	1587	2.531	2.420	34.574	27.596	36.777	45.548	153	176	2.48	35.2	86.9	2272	660	4.00	617	2356
113	1781	2.362	2.237	34.614	27.643	36.834	45.614	154	177	2.45	34.9	94.6	2282	651	4.00	604	2369
112	1973	2.214	2.074	34.644	27.681	36.879	45.667	157	175	2.42	34.5	99.6	2279	635	4.00	585	2370
111	2164	2.080	1.926	34.665	27.709	36.916	45.711	159	174	2.41	34.3	105.3	2285	624	4.00	572	2380
110	2358	1.971	1.801	34.680	27.731	36.944	45.746	162	173	2.40	34.0	109.0	2287	618	4.00	563	2383
109	2550	1.893	1.707	34.687	27.744	36.962	45.768	163	172	2.38	33.9	112.3	2292	613	4.00	557	2390
108	2745	1.833	1.629	34.694	27.755	36.978	45.788	168	168	2.36	33.7	112.5	2288	601	4.00	543	2389
107	2940	1.760	1.539	34.707	27.772	37.000	45.814	176	161	2.30	32.9	110.1	2275	587	4.00	529	2377
106	3135	1.633	1.395	34.715	27.789	37.024	45.847	183	155	2.27	32.4	110.4	2271	576	4.00	516	2377
105	3333	1.510	1.255	34.720	27.803	37.046	45.876	189	150	2.24	32.0	110.8	2268	568	4.00	505	2375
104	3532	1.369	1.097	34.720	27.814	37.066	45.904	193	147	2.24	32.0	114.3	2267	564	4.00	499	2375
103	3731	1.184	0.895	34.717	27.825	37.088	45.937	198	145	2.24	32.0	118.7	2266	566	4.00	496	2374
102	3929	1.026	0.720	34.714	27.834	37.107	45.965	201	143	2.26	32.2	124.1	2267	562	4.00	489	2376
101	4185	0.776	0.450	34.709	27.846	37.135	46.008	206	141	2.26	32.4	132.0	2268	561	4.00	483	2379

Lamont-Doherty Earth Observatory of Columbia University
WOCE P19C R/V Knorr WOCE Line P17E

Station 251 Latitude 53-59.9S Longitude 83-58.8W Date 2/27/93 Bottom Depth 5027 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy (umol/kg)	AOU (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	TCO2 (umol/kg)	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
136	1	9.123	9.123	34.046	26.352	35.214	43.686	284	-2	1.22	16.2	1.8	2080	282	4.00	350	2275
135	42	8.667	8.663	34.057	26.433	35.315	43.806	285	0	1.22	16.3	1.8	2080	284	4.00	346	2273
168	67	6.853	6.847	34.131	26.755	35.719	44.287	296	1	1.40	18.5	4.5	2101	316	4.00	357	2278
133	87	5.645	5.638	34.160	26.934	35.956	44.577	301	5	1.44	19.3	6.1	2110	329	4.00	352	2281
132	107	5.562	5.553	34.165	26.948	35.974	44.599	299	7	1.45	19.4	6.4	2110	333	4.00	356	2279
131	156	5.489	5.476	34.176	26.966	35.996	44.624	296	11	1.46	20.2	6.9	2115	339	4.00	361	2281
130	207	5.502	5.485	34.201	26.985	36.013	44.642	294	12	1.46	20.5	7.1	2115	341	4.00	363	2280
129	256	5.515	5.494	34.219	26.998	36.026	44.653	292	14	1.46	20.5	7.4	2116	342	4.00	364	2282
128	306	5.377	5.352	34.214	27.011	36.046	44.680	287	20	1.53	21.7	8.5	2123	355	4.00	376	2283
127	406	5.197	5.164	34.219	27.037	36.081	44.724	282	27	1.62	22.8	10.3	2127	367	4.00	386	2282
126	505	5.053	5.012	34.219	27.055	36.106	44.756	278	32	1.65	23.6	11.1	2135	375	4.00	391	2288
125	604	4.858	4.810	34.219	27.078	36.140	44.799	272	39	1.72	24.6	13.3	2140	391	4.00	404	2286
124	704	4.492	4.437	34.205	27.108	36.189	44.866	269	46	1.80	25.8	15.9	2146	406	4.00	414	2287
123	804	4.222	4.161	34.224	27.152	36.247	44.937	249	67	1.95	27.9	21.9	2166	446	4.00	449	2295
122	902	3.884	3.817	34.259	27.215	36.327	45.034	228	91	2.10	30.0	29.9	2182	489	4.00	486	2299
121	1002	3.571	3.498	34.290	27.272	36.400	45.121	215	107	2.19	31.6	37.4	2198	527	4.00	516	2306
120	1211	3.060	2.974	34.389	27.400	36.554	45.300	187	138	2.36	33.8	55.2	2223	595	4.00	569	2317
119	1431	2.739	2.639	34.491	27.511	36.682	45.443	166	162	2.45	35.1	72.0	2253	645	4.00	609	2338
118	1651	2.548	2.431	34.567	27.590	36.770	45.541	155	175	2.48	35.4	85.4	2271	658	4.00	616	2356
117	1800	2.400	2.273	34.606	27.634	36.823	45.601	157	174	2.45	35.0	91.3	2271	651	4.00	605	2358
116	2000	2.239	2.097	34.644	27.679	36.876	45.663										
115	2199	2.134	1.976	34.669	27.708	36.912	45.705	165	168	2.37	33.8	99.0	2276	618	4.00	568	2371
114	2399	2.005	1.831	34.685	27.733	36.944	45.744	167	168	2.36	33.7	104.4	2276	612	4.00	558	2372
113	2598	1.878	1.687	34.693	27.750	36.969	45.776	168	167	2.36	33.6	109.5	2281	607	4.00	550	2379
112	2798	1.817	1.608	34.707	27.767	36.991	45.802	176	160	2.29	32.8	106.6	2270	595	4.00	538	2371
111	2998	1.702	1.476	34.713	27.782	37.012	45.830	181	156	2.28	32.6	108.6	2271	579	4.00	521	2375
110	3198	1.585	1.342	34.719	27.796	37.034	45.859	187	151	2.25	32.2	109.6	2266	573	4.00	512	2372
109	3398	1.433	1.173	34.719	27.808	37.056	45.889	192	148	2.23	32.1	112.0	2262	567	4.00	503	2369
108	3598	1.287	1.010	34.719	27.819	37.076	45.918	197	145	2.23	32.1	115.4	2265	566	4.00	499	2372
107	3796	1.120	0.826	34.715	27.828	37.095	45.948	200	143	2.23	32.1	120.4	2264	566	4.00	494	2372
106	3996	0.967	0.656	34.712	27.836	37.113	45.975	203	142	2.24	32.3	125.2	2268	567	4.00	492	2376
105	4195	0.824	0.495	34.709	27.843	37.130	46.001	205	141	2.25	32.5	130.2	2267	560	4.00	483	2377
104	4392	0.711	0.363	34.707	27.850	37.144	46.022	208	139	2.26	32.6	134.1	2266	563	4.00	482	2375
103	4589	0.664	0.295	34.706	27.853	37.151	46.032	209	139	2.26	32.5	135.8	2265	559	4.00	478	2375
102	4788	0.656	0.264	34.706	27.854	37.155	46.038	210	138	2.26	32.5	136.5	2267	561	4.00	479	2377
172	5031	0.666	0.244	34.706	27.856	37.157	46.041	210	138	2.26	32.6	137.1	2265	556	4.00	474	2376

Station 256 Latitude 53-59.9S Longitude 88-00.4W Date 3/ 1/93 Bottom Depth 5049 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy (umol/kg)	AOU (umol/kg)	PO4 (umol/kg)	NO3 (umol/kg)	SiO3 (umol/kg)	TCO2 (umol/kg)	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
136	3	8.548	8.548	34.165	26.535	35.421	43.916	287	-1	1.13	14.9	2.5	2084	289	4.00	350	2275
135	37	8.543	8.539	34.167	26.538	35.424	43.919	287	-2	1.13	14.8	2.5	2084	301	4.00	364	2267
168	54	8.344	8.338	34.183	26.582	35.476	43.979	287	0	1.15	14.9	2.5	2085	299	4.00	359	2270
133	83	6.146	6.139	34.246	26.939	35.935	44.533	292	10	1.38	18.4	6.2	2113	340	4.00	373	2279
132	116	6.161	6.151	34.270	26.957	35.952	44.549	286	15	1.38	19.3	7.1	2114	346	4.00	379	2278
131	155	6.045	6.032	34.262	26.966	35.967	44.569	287	15	1.40	19.7	7.1	2116	350	4.00	381	2278
130	199	6.021	6.004	34.269	26.975	35.977	44.580	284	19	1.43	20.2	7.5	2120	355	4.00	386	2280
129	255	5.829	5.807	34.248	26.983	35.995	44.607	289	15	1.42	20.1	7.3	2117	352	4.00	380	2278
128	305	5.658	5.633	34.228	26.988	36.009	44.630	291	14	1.44	20.5	7.5	2116	350	4.00	375	2277
127	404	5.544	5.510	34.237	27.010	36.037	44.664	277	29	1.56	22.5	9.6	2127	374	4.00	399	2279
126	501	5.278	5.237	34.230	27.037	36.078	44.717	268	40	1.68	24.2	12.5	2138	400	4.00	421	2280
125	596	5.005	4.957	34.233	27.072	36.126	44.779	260	50	1.76	25.7	14.8	2145	416	4.00	433	2282
124	693	4.643	4.588	34.243	27.121	36.194	44.864	244	69	1.91	27.8	20.2	2163	448	4.00	460	2291
123	793	4.184	4.124	34.261	27.186	36.282	44.973	228	88	2.05	30.0	27.6	2180	489	4.00	492	2296
122	892	3.800	3.734	34.282	27.242	36.358	45.068										
121	990	3.420	3.349	34.313	27.304	36.440	45.168	210	113	2.22	32.6	41.9	2205	550	4.00	535	2307
120	1189	2.940	2.857	34.391	27.412	36.572	45.324	192	134	2.34	34.2	56.1	2227	593	4.00	565	2321
119	1388	2.671	2.575	34.482	27.509	36.684	45.448	177	151	2.39	35.1	68.6	2245	630	4.00	593	2333
118	1589	2.469	2.359	34.558	27.588	36.773	45.548	172	158	2.38	34.9	77.3	2252	633	4.00	591	2341
117	1739	2.380	2.258	34.606	27.635	36.825	45.604	171	160	2.35	34.5	82.0	2259	632	4.00	587	2348
116	1890	2.284	2.150	34.645	27.675	36.870	45.654	172	160	2.32	33.9	86.1	2260	621	4.00	574	2353
115	2091	2.159	2.010	34.677	27.712	36.914	45.705	171	162	2.31	33.7	93.6	2266	618	4.00	568	2359
114	2293	2.015	1.850	34.692	27.737	36.947	45.746	172	162	2.31	33.7	101.1	2274	606	4.00	553	2371
113	2492	1.908	1.727	34.706	27.757	36.974	45.779	176	159	2.28	33.3	103.1	2271	603	4.00	548	2369
112	2642	1.804	1.611	34.712	27.771	36.994	45.805	179	157	2.26	33.1	105.2	2270	587	4.00	531	2372
111	2791	1.702	1.496	34.714	27.781	37.011	45.827	181	156	2.26	33.0	108.2	2272	591	4.00	532	2374
110	2992	1.608	1.385	34.719	27.793	37.029	45.851	187	151	2.25	32.7	108.5	2266	583	4.00	522	2369
109	3190	1.480	1.240	34.720	27.804	37.048	45.878	191	148	2.22	32.4	110.5	2265	574	4.00	511	2370
108	3390	1.335	1.078	34.720	27.815	37.068	45.907	195	146	2.22	32.4	113.8	2265	577	4.00	510	2369
107	3589	1.178	0.905	34.717	27.824	37.087	45.936	199	144	2.22	32.5	117.7	2262	574	4.00	504	2368
106	3789	1.014	0.724	34.713	27.833	37.106	45.964	202	142	2.24	32.6	123.1	2264	566	4.00	493	2372
105	4035	0.824	0.513	34.710	27.843	37.129	45.998	205	141	2.25	32.6	129.3	2269	565	4.00	488	2378
104	4286	0.692	0.357	34.707	27.850	37.145	46.023	208	139	2.26	32.9	134.0	2266	571	4.00	489	2373
103	4535	0.646	0.284	34.706	27.853	37.152	46.034										
102	4784	0.646	0.255	34.706	27.855	37.156	46.039	210	138	2.26	32.9	136.6	2267	569	4.00	485	2375
101	5042	0.663	0.240	34.706	27.856	37.157	46.042	210	138	2.26	32.9	137.3	2268	571	4.00	487	2375

Lamont-Doherty Earth Observatory of Columbia University
WOCE P19C R/V Knorr WOCE Line P19

Station 260 Latitude 52-00.3S Longitude 88-01.8W Date 3/ 2/93 Bottom Depth 4819 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3 -------------umol/kg-------------	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
136	4	8.648	8.648	34.191	26.540	35.421	43.911	287	-2	1.13	15.2	2.8	2086	288	4.00	351	2278
135	51	8.651	8.646	34.190	26.540	35.421	43.911	287	-2	1.13	15.2	2.7	2085	300	4.00	365	2270
168	82	7.591	7.583	34.215	26.719	35.647	44.182	289	3	1.20	16.0	3.3	2096	302	4.00	351	2281
133	95	5.951	5.943	34.220	26.944	35.950	44.556	296	7	1.38	18.7	6.7	2112	343	4.00	373	2276
132	101	5.960	5.951	34.229	26.950	35.955	44.561	294	9	1.39	18.8	6.8	2110	347	4.00	377	2272
131	144	5.939	5.927	34.244	26.965	35.971	44.578	290	13	1.39	19.7	7.0	2115	344	4.00	373	2280
130	182	5.899	5.884	34.248	26.973	35.982	44.591	289	14	1.40	19.8	7.4	2118	351	4.00	380	2279
129	229	5.765	5.746	34.236	26.981	35.996	44.612	291	13	1.40	19.8	7.3	2114	346	4.00	372	2278
128	299	5.678	5.653	34.233	26.990	36.010	44.630	291	15	1.43	20.2	7.7	2119	348	4.00	373	2282
127	393	5.518	5.485	34.232	27.009	36.037	44.665	281	25	1.53	21.8	9.5	2126	375	4.00	399	2277
126	489	5.333	5.293	34.234	27.034	36.072	44.708	270	38	1.62	23.4	12.0	2135	389	4.00	411	2282
125	582	5.044	4.997	34.237	27.071	36.123	44.773	258	52	1.75	25.1	15.4	2146	419	4.00	437	2282
124	674	4.712	4.659	34.239	27.111	36.180	44.846	248	64	1.85	26.5	19.1	2156	437	4.00	449	2287
123	765	4.318	4.259	34.235	27.151	36.240	44.925	244	72	1.93	27.9	22.0	2164	466	4.00	471	2286
122	857	4.013	3.949	34.263	27.205	36.310	45.010	227	91	2.06	29.6	29.7	2182	496	4.00	495	2297
121	947	3.729	3.659	34.293	27.258	36.378	45.091	216	104	2.15	30.9	36.0	2193	530	4.00	522	2299
120	1135	3.150	3.070	34.365	27.372	36.521	45.263	195	130	2.31	33.0	50.6	2220	582	4.00	560	2315
119	1327	2.771	2.679	34.444	27.470	36.639	45.399	183	145	2.37	33.9	63.0	2238	620	4.00	586	2327
118	1527	2.564	2.458	34.529	27.557	36.737	45.507	172	158	2.39	34.2	73.8	2251	638	4.00	597	2338
117	1715	2.440	2.319	34.590	27.617	36.804	45.580	167	164	2.37	34.1	82.1	2263	640	4.00	596	2350
116	1849	2.347	2.216	34.625	27.654	36.845	45.626										
115	1986	2.256	2.115	34.649	27.681	36.878	45.664	166	166	2.35	33.5	91.2	2270	629	4.00	581	2362
114	2171	2.135	1.979	34.674	27.712	36.916	45.708	168	165	2.32	33.2	95.5	2271	618	4.00	567	2366
113	2315	2.038	1.871	34.689	27.733	36.942	45.740	170	164	2.31	32.9	98.8	2273	611	4.00	558	2369
112	2549	1.920	1.733	34.707	27.758	36.974	45.779	177	159	2.27	32.4	100.3	2267	594	4.00	540	2367
111	2732	1.795	1.593	34.710	27.771	36.995	45.807	178	158	2.27	32.4	104.8	2273	592	4.00	535	2374
110	2902	1.680	1.464	34.712	27.782	37.013	45.832	181	156	2.27	32.3	108.1	2272	578	4.00	520	2377
109	3105	1.574	1.340	34.720	27.797	37.035	45.860	188	150	2.23	31.9	107.7	2266				
108	3202	1.506	1.264	34.720	27.802	37.045	45.874	189	150	2.23	31.9	109.4	2268	573	4.00	510	2374
107	3449	1.317	1.055	34.720	27.817	37.071	45.911	195	146	2.23	31.9	113.4	2264	573	4.00	506	2369
106	3702	1.085	0.802	34.715	27.829	37.098	45.952	199	144	2.23	32.0	120.8	2268	568	4.00	496	2376
105	3949	0.864	0.561	34.711	27.841	37.124	45.991	204	141	2.24	32.3	128.3	2270	573	4.00	495	2377
104	4200	0.728	0.401	34.708	27.848	37.140	46.016	207	139	2.25	32.4	132.1	2268	565	4.00	485	2378
103	4400	0.671	0.324	34.707	27.852	37.149	46.028	209	139	2.26	32.4	135.5	2267	570	4.00	488	2374
102	4602	0.645	0.275	34.707	27.855	37.154	46.037	210	138	2.25	32.4	135.7	2265	565	4.00	482	2374
101	4810	0.638	0.244	34.706	27.856	37.157	46.041	210	138	2.26	32.5	137.4	2269	568	4.00	485	2378

Station 264 Latitude 50-00.3S Longitude 88-00.3W Date 3/ 3/93 Bottom Depth 4620 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3 -------------umol/kg-------------	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
236	2	9.671	9.671	34.084	26.292	35.130	43.580	282	-3	1.18	15.8	2.3	2077	285	4.00	362	2270
235	30	9.645	9.642	34.083	26.296	35.135	43.586	282	-3	1.18	15.8	2.1	2079	288	4.00	366	2270
268	46	9.602	9.597	34.082	26.303	35.144	43.596	282	-3	1.18	15.8	2.1	2080	283	4.00	359	2274
233	66	8.499	8.492	34.123	26.511	35.400	43.897	290	-4	1.25	16.6	2.8	2088	299	4.00	361	2274
232	80	6.769	6.762	34.112	26.752	35.720	44.292	299	-2	1.31	17.6	4.0	2094	313	4.00	352	2272
231	128	6.223	6.212	34.162	26.864	35.857	44.453	296	6	1.36	18.2	5.1	2102	323	4.00	355	2275
230	179	5.927	5.912	34.187	26.921	35.929	44.538	294	9	1.40	18.9	5.8	2107	337	4.00	366	2274
229	228	5.856	5.837	34.236	26.970	35.980	44.592	283	21	1.48	21.0	7.6	2120	351	4.00	380	2282
228	303	5.708	5.683	34.252	27.001	36.019	44.638	280	25	1.53	21.7	8.7	2118	362	4.00	389	2275
227	401	5.514	5.481	34.249	27.023	36.051	44.679	278	28	1.57	22.3	9.9	2126	369	4.00	393	2280
226	494	5.304	5.263	34.244	27.045	36.084	44.722	273	35	1.63	23.1	11.4	2132	376	4.00	397	2283
225	588	5.083	5.035	34.240	27.069	36.119	44.768	267	43	1.69	24.4	13.2	2138	396	4.00	413	2282
224	689	4.725	4.670	34.235	27.106	36.175	44.840	256	56	1.81	26.1	17.1	2151	418	4.00	430	2288
223	794	4.323	4.262	34.250	27.162	36.251	44.936	236	80	1.98	28.5	24.3	2167	467	4.00	472	2289
222	892	3.917	3.850	34.279	27.228	36.338	45.042	219	100	2.12	30.5	32.6	2185	508	4.00	505	2297
221	989	3.630	3.558	34.311	27.283	36.407	45.126	206	115	2.21	31.8	39.8	2199	542	4.00	532	2303
220	1136	3.202	3.121	34.375	27.375	36.522	45.261	189	136	2.32	33.7	52.4	2220	589	4.00	568	2314
219	1282	2.954	2.864	34.445	27.454	36.614	45.364	169	157	2.42	34.9	65.0	2242	636	4.00	606	2328
218	1429	2.778	2.677	34.505	27.519	36.687	45.446	156	171	2.48	35.6	76.0	2259	664	4.00	628	2341
217	1577	2.600	2.489	34.559	27.578	36.756	45.524	152	177	2.48	35.5	85.6	2273	667	4.00	626	2356
216	1727	2.462	2.340	34.594	27.619	36.804	45.579	150	180	2.48	35.5	93.1	2279	668	4.00	623	2363
215	1875	2.329	2.196	34.620	27.651	36.844	45.626	152	180	2.46	35.0	98.6	2284	651	4.00	603	2372
214	2071	2.191	2.043	34.649	27.687	36.887	45.677	158	175	2.41	34.4	101.5	2282				
213	2269	2.066	1.902	34.675	27.719	36.927	45.723	164	169	2.36	33.8	103.0	2282	615	4.00	562	2378
212	2467	1.947	1.767	34.687	27.739	36.954	45.757	166	169	2.35	33.6	107.6	2281	607	4.00	552	2379
211	2667	1.831	1.635	34.691	27.752	36.975	45.785	166	170	2.37	33.8	113.4	2285	606	4.00	549	2385
210	2866	1.737	1.524	34.697	27.765	36.994	45.809	170	167	2.35	33.6	115.2	2284	598	4.00	538	2385
209	3064	1.650	1.419	34.707	27.781	37.015	45.836	177	160	2.30	33.1	114.1	2281	588	4.00	527	2384
208	3262	1.533	1.285	34.714	27.796	37.038	45.866	185	154	2.27	32.6	113.7	2273	579	4.00	516	2378
207	3462	1.356	1.091	34.716	27.811	37.063	45.902	191	149	2.25	32.3	116.9	2269	574	4.00	507	2375
206	3662	1.118	0.839	34.715	27.827	37.094	45.946	197	146	2.25	32.4	122.3	2268	569	4.00	498	2376
205	3862	0.930	0.634	34.712	27.837	37.116	45.979	201	144	2.25	32.6	128.0	2268	565	4.00	490	2377
204	4063	0.813	0.499	34.711	27.845	37.131	46.001	204	142	2.25	32.6	132.0	2269	562	4.00	485	2378
203	4260	0.760	0.426	34.709	27.848	37.138	46.012	205	141	2.26	32.6	134.1	2270	562	4.00	483	2380
202	4461	0.737	0.381	34.708	27.849	37.143	46.019	206	141	2.26	32.6	135.4	2269	559	4.00	480	2380
201	4626	0.741	0.365	34.708	27.850	37.145	46.022	207	140	2.26	32.7	135.6	2269	559	4.00	479	2380

Lamont-Doherty Earth Observatory of Columbia University
WOCE P19C R/V Knorr WOCE Line P19

Station 268 Latitude 48-00.0S Longitude 87-59.2W Date 3/ 4/93 Bottom Depth 4283 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
136	3	10.973	10.973	34.047	26.039	34.822	43.221	275	-4	1.21	16.3	2.9	2072	286	4.00	384	2263
135	35	10.878	10.874	34.047	26.056	34.844	43.247										
168	59	10.766	10.759	34.046	26.076	34.868	43.276	275	-3	1.22	16.3	2.9	2073	286	4.00	380	2265
133	103	6.802	6.793	34.141	26.771	35.737	44.307	299	-1	1.29	17.7	4.1	2094	309	4.00	348	2275
132	154	6.244	6.231	34.180	26.875	35.868	44.463	288	14	1.40	19.3	5.5	2104	338	4.00	371	2270
131	203	6.037	6.020	34.246	26.955	35.956	44.559	275	28	1.50	21.3	7.2	2121	357	4.00	389	2280
130	252	5.940	5.918	34.262	26.980	35.986	44.594	275	28	1.51	21.4	8.3	2122	363	4.00	394	2279
129	301	5.801	5.775	34.262	26.998	36.011	44.625	276	28	1.53	21.8	8.8	2123	361	4.00	389	2281
128	402	5.598	5.564	34.258	27.020	36.044	44.668	275	30	1.57	22.3	9.6	2127	369	4.00	394	2282
127	504	5.384	5.342	34.254	27.044	36.079	44.713	269	38	1.64	23.6	11.6	2133	380	4.00	403	2284
126	601	5.112	5.063	34.249	27.073	36.121	44.768			1.74	25.0	14.2	2142	405	4.00	424	2283
125	698	4.746	4.691	34.246	27.113	36.180	44.845	248	65	1.86	26.8	18.5	2153	434	4.00	447	2284
124	789	4.379	4.318	34.254	27.159	36.246	44.928	234	82	1.99	28.6	24.1	2164	464	4.00	471	2287
123	884	4.048	3.981	34.287	27.221	36.324	45.022	213	104	2.13	30.7	32.2	2186	513	4.00	513	2297
122	981	3.722	3.650	34.322	27.282	36.402	45.116	200	120	2.23	32.1	40.0	2202	547	4.00	539	2304
121	1127	3.292	3.211	34.387	27.376	36.518	45.252	179	145	2.38	34.1	53.9	2229	602	4.00	582	2321
120	1275	3.034	2.943	34.461	27.460	36.615	45.361	157	168	2.50	35.7	68.4	2252	658	4.00	630	2334
119	1373	2.924	2.826	34.499	27.501	36.661	45.413	148	178	2.54	36.2	76.5	2265	681	4.00	648	2344
118	1469	2.783	2.679	34.535	27.543	36.710	45.469	143	184	2.56	36.4	84.1	2276	694	4.00	656	2354
117	1569	2.666	2.555	34.561	27.574	36.748	45.513	140	188	2.57	36.4	90.4	2282	700	4.00	658	2359
116	1720	2.505	2.383	34.589	27.611	36.794	45.567	143	187	2.53	36.0	95.8	2287	691	4.00	645	2367
115	1872	2.350	2.217	34.615	27.646	36.837	45.618	148	183	2.50	35.5	100.4	2287	674	4.00	625	2370
114	2025	2.229	2.085	34.634	27.672	36.870	45.658	150	182	2.48	35.3	105.2	2289	659	4.00	608	2375
113	2179	2.108	1.952	34.652	27.697	36.902	45.696	152	181	2.46	35.0	109.1	2290	650	4.00	596	2379
112	2329	2.011	1.843	34.662	27.713	36.924	45.724	153	181	2.46	35.0	114.0	2294	643	4.00	587	2385
111	2476	1.935	1.755	34.669	27.726	36.942	45.746	156	179	2.43	34.8	116.0	2296	628	4.00	571	2391
110	2622	1.877	1.684	34.678	27.738	36.958	45.765	159	176	2.41	34.5	117.0	2295	619	4.00	561	2392
109	2770	1.823	1.617	34.684	27.748	36.971	45.782	161	175	2.40	34.4	118.5	2296	614	4.00	555	2395
108	2917	1.772	1.553	34.688	27.756	36.983	45.797	164	173	2.39	34.2	119.2	2295	615	4.00	555	2393
107	3065	1.716	1.484	34.694	27.766	36.997	45.814	169	168	2.36	33.9	118.4	2292	604	4.00	543	2392
106	3264	1.565	1.316	34.702	27.784	37.024	45.851	177	162	2.33	33.4	118.9	2285	593	4.00	530	2388
105	3463	1.360	1.095	34.710	27.806	37.058	45.896	187	153	2.28	32.8	119.6	2277	578	4.00	511	2383
104	3660	1.141	0.861	34.713	27.824	37.089	45.940	196	147	2.24	32.4	122.7	2269	569	4.00	498	2377
103	3859	0.939	0.644	34.710	27.835	37.113	45.976	201	144	2.26	32.5	128.2	2268	564	4.00	489	2377
102	4058	0.821	0.508	34.709	27.843	37.129	45.998	204	142	2.26	32.5	132.3	2269	559	4.00	482	2380
101	4291	0.778	0.440	34.709	27.847	37.137	46.010	205	141	2.25	32.5	134.3	2269	556	4.00	478	2381

Station 273 Latitude 45-30.2S Longitude 87-59.4W Date 3/ 6/93 Bottom Depth 3005 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
168	2	12.125	12.125	33.997	25.787	34.525	42.881										
136	7	12.126	12.125	33.995	25.785	34.523	42.879	269	-5	1.13	14.9	2.6	2062	526	20.00	377	2265
135	54	11.081	11.074	34.017	25.997	34.777	43.172	276	-6	1.13	14.9	2.5	2063	528	20.00	362	2265
133	79	8.760	8.752	34.050	26.414	35.292	43.779	288	-3	1.19	15.5	3.1	2074	563	20.00	350	2266
132	104	7.449	7.439	34.096	26.646	35.583	44.125	288	5	1.28	17.1	3.6	2093	609	20.00	358	2272
131	129	6.960	6.948	34.137	26.746	35.706	44.269	277	19	1.37	18.7	4.3	2105	654	20.00	376	2273
130	153	6.594	6.580	34.182	26.831	35.807	44.386	267	31	1.46	20.6	5.5	2115	698	20.00	396	2273
129	179	6.292	6.276	34.225	26.905	35.895	44.487	265	35	1.51	21.3	6.8	2124	717	20.00	401	2279
128	204	6.185	6.167	34.241	26.932	35.927	44.523	266	36	1.53	21.6	7.3	2126	726	20.00	404	2279
127	253	6.086	6.064	34.272	26.969	35.969	44.569	265	38	1.54	21.8	8.0	2127	727	20.00	403	2279
126	304	5.962	5.936	34.278	26.990	35.996	44.602	266	37	1.55	22.0	8.7	2128	726	20.00	401	2282
125	354	5.856	5.826	34.280	27.006	36.016	44.628	268	36	1.56	22.2	9.2	2127	726	20.00	399	2281
124	402	5.756	5.722	34.277	27.016	36.032	44.648	268	37	1.58	22.5	9.5	2128	732	20.00	400	2280
123	503	5.506	5.464	34.266	27.039	36.068	44.696	264	43	1.64	23.6	11.0	2138	754	20.00	408	2286
122	602	5.184	5.134	34.256	27.070	36.115	44.759	255	54	1.74	25.0	13.6	2143	791	20.00	422	2284
121	699	4.827	4.771	34.254	27.110	36.173	44.834	240	71	1.89	27.0	18.1	2156	847	20.00	445	2287
120	800	4.432	4.370	34.270	27.167	36.250	44.930	221	93	2.03	29.2	25.2	2172	938	20.00	484	2288
119	900	4.044	3.976	34.298	27.230	36.333	45.031	206	111	2.16	30.9	33.4	2191	1007	20.00	511	2298
118	1000	3.687	3.613	34.334	27.295	36.417	45.132	193	128	2.27	32.7	42.0	2207	1090	20.00	545	2304
117	1099	3.382	3.303	34.377	27.360	36.497	45.227	180	143	2.37	34.0	51.7	2221	1163	20.00	574	2310
116	1198	3.162	3.076	34.429	27.422	36.570	45.311	163	162	2.46	35.4	62.6	2245	1238	20.00	605	2327
115	1297	3.051	2.958	34.470	27.466	36.620	45.365	150	176	2.53	36.3	71.2	2258	1305	20.00	634	2334
114	1397	2.915	2.815	34.515	27.515	36.675	45.427	139	187	2.59	36.9	81.4	2274	1339	20.00	647	2348
113	1497	2.802	2.695	34.546	27.550	36.717	45.474	134	193	2.61	37.1	89.2	2282	1368	20.00	658	2354
112	1596	2.680	2.567	34.566	27.577	36.750	45.514	135	194	2.60	36.9	93.5	2288	1348	20.00	645	2362
111	1694	2.559	2.439	34.585	27.603	36.783	45.553	138	192	2.58	36.5	97.7	2295	1339	20.00	637	2371
110	1796	2.450	2.322	34.601	27.626	36.812	45.588	141	189	2.55	36.2	100.8	2292	1305	20.00	618	2372
109	1895	2.361	2.226	34.614	27.644	36.835	45.616	145	187	2.52	35.9	102.9		1298	20.00	612	
108	1995	2.278	2.136	34.626	27.661	36.857	45.642	148	184	2.50	35.6	105.7	2292	1266	20.00	595	2377
107	2143	2.174	2.020	34.642	27.683	36.885	45.676	153	180	2.45	35.1	106.9	2290	1250	20.00	584	2377
106	2291	2.056	1.891	34.660	27.708	36.917	45.714	157	177	2.44	34.7	110.0	2290	1213	20.00	564	2382
105	2442	1.957	1.780	34.675	27.728	36.943	45.746	159	176	2.41	34.5	113.3	2291	1213	20.00	561	2383
104	2592	1.890	1.700	34.679	27.738	36.957	45.763	160	175	2.41	34.5	116.5	2296	1189	20.00	548	2391
103	2793	1.827	1.619	34.686	27.749	36.973	45.784	163	173	2.39	34.3	117.4	2293	1193	20.00	548	2388
102	2991	1.756	1.530	34.694	27.762	36.991	45.806	167	170	2.37	34.0	118.5	2292	1163	20.00	532	2390
101	3204	1.642	1.397	34.698	27.775	37.011	45.833	173	165	2.34	33.7	119.2	2286	1157	20.00	527	2385

Lamont-Doherty Earth Observatory of Columbia University
WOCE P19C R/V Knorr WOCE Line P19

Station 275 Latitude 44-30.4S Longitude 87-59.7W Date 3/ 6/93 Bottom Depth 4047 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3 -----------umol/kg-----------	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
136	1	12.590	12.590	33.987	25.690	34.409	42.748	266	-4	1.12	14.6	2.5	2058	515	20.00	376	2264
135	29	12.575	12.571	33.988	25.694	34.414	42.754	267	-5	1.11	14.6	2.5	2059	512	20.00	374	2267
168	54	12.429	12.422	33.991	25.725	34.451	42.796	268	-5	1.13	14.7	2.4	2064	518	20.00	376	2269
133	79	10.611	10.602	34.021	26.084	34.884	43.297	280	-7	1.14	14.8	2.6	2069	533	20.00	358	2270
132	103	8.435	8.424	34.052	26.466	35.359	43.860	289	-2	1.22	15.9	2.8	2080	571	20.00	350	2269
131	129	7.518	7.506	34.096	26.636	35.570	44.110	284	9	1.30	17.4	3.4	2094	609	20.00	359	2273
130	154	6.855	6.841	34.144	26.766	35.731	44.298	276	21	1.40	19.2	4.5	2106	659	20.00	378	2273
129	178	6.616	6.600	34.194	26.838	35.813	44.391	266	32	1.48	20.8	5.7	2120	700	20.00	397	2278
128	203	6.383	6.365	34.226	26.894	35.880	44.468	265	35	1.51	21.3	6.2	2123	714	20.00	401	2278
127	254	6.172	6.150	34.265	26.953	35.948	44.545	260	42	1.56	22.2	7.8	2131	737	20.00	410	2282
126	302	6.014	5.988	34.274	26.981	35.984	44.588	263	40	1.57	22.4	8.3	2131	726	20.00	401	2285
125	401	5.741	5.707	34.271	27.013	36.030	44.647	265	40	1.61	23.0	9.7	2133	734	20.00	401	2285
124	502	5.495	5.453	34.264	27.039	36.068	44.697	262	44	1.66	23.9	10.8	2134	751	20.00	406	2283
123	600	5.233	5.183	34.255	27.063	36.106	44.747	257	52	1.74	25.0	12.7	2143	779	20.00	416	2287
122	701	4.905	4.848	34.252	27.100	36.159	44.816	243	68	1.87	26.8	16.8	2154	825	20.00	435	2290
121	800	4.470	4.407	34.264	27.158	36.239	44.917	223	91	2.04	29.4	23.9	2172	916	20.00	473	2292
120	900	4.086	4.018	34.290	27.220	36.321	45.017	208	109	2.16	31.0	31.9	2189	1000	20.00	509	2298
119	1050	3.553	3.476	34.347	27.319	36.448	45.169	188	134	2.33	33.4	45.4	2214	1123	20.00	558	2308
118	1198	3.184	3.098	34.422	27.415	36.562	45.301	164	161	2.47	35.4	61.1	2242	1237	20.00	605	2324
117	1347	2.966	2.870	34.492	27.491	36.650	45.399	144	182	2.58	36.7	75.9	2266	1324	20.00	641	2340
116	1497	2.793	2.686	34.544	27.549	36.716	45.475	134	193	2.62	37.3	88.1	2279	1359	20.00	653	2351
115	1598	2.682	2.568	34.568	27.579	36.752	45.516	133	195	2.62	37.2	94.4	2288	1355	20.00	648	2361
114	1746	2.497	2.373	34.595	27.617	36.800	45.573	136	194	2.60	36.8	100.5	2292	1333	20.00	633	2368
113	1896	2.344	2.209	34.615	27.646	36.838	45.620	143	189	2.54	36.1	103.9	2293	1281	20.00	604	2376
112	2047	2.207	2.061	34.633	27.673	36.873	45.661	145	188	2.53	35.9	109.2	2295	1269	20.00	594	2380
111	2195	2.099	1.942	34.647	27.693	36.900	45.694	149	184	2.51	35.6	111.6	2295	1241	20.00	578	2383
110	2345	1.994	1.825	34.661	27.714	36.926	45.727	153	181	2.48	35.2	114.3	2295	1229	20.00	570	2385
109	2496	1.934	1.752	34.671	27.727	36.944	45.748	157	178	2.45	34.8	115.0	2294				
108	2695	1.857	1.658	34.681	27.743	36.964	45.773	161	175	2.43	34.5	116.4	2292	1191	20.00	548	2386
107	2894	1.782	1.565	34.687	27.754	36.981	45.794	164	173	2.40	34.3	118.4	2292	1169	20.00	536	2389
106	3093	1.696	1.461	34.694	27.767	36.999	45.818	169	169	2.39	34.0	118.9	2291	1164	20.00	531	2389
105	3293	1.553	1.301	34.701	27.785	37.025	45.853	177	162	2.35	33.6	119.5	2282	1127	20.00	511	2384
104	3492	1.263	0.998	34.708	27.811	37.069	45.912	188	153	2.31	33.1	122.8	2274	1107	20.00	496	2378
103	3694	1.043	0.763	34.710	27.828	37.099	45.955	196	147	2.28	32.9	127.0	2271	1083	20.00	480	2379
102	3892	0.994	0.694	34.711	27.833	37.108	45.968	198	146	2.27	32.8	128.3	2274	1074	20.00	475	2384
101	4045	0.997	0.680	34.711	27.834	37.110	45.970	199	145	2.27	32.8	129.2	2274	1062	20.00	469	2385

Station 278 Latitude 43-00.4S Longitude 88-00.3W Date 3/ 7/93 Bottom Depth 3667 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3 -----------umol/kg-----------	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
136	0	13.375	13.375	33.954	25.508	34.198	42.509	262	-4	1.05	13.4	2.4	2050	498	20.00	376	2262
135	27	13.343	13.339	33.954	25.515	34.206	42.518	262	-4	1.05	13.6	2.4	2051	496	20.00	374	2263
168	52	12.716	12.709	33.967	25.651	34.366	42.701	266	-5	1.08	13.9	2.3	2055	510	20.00	374	2263
133	77	10.650	10.641	33.993	26.056	34.854	43.266	279	-6	1.05	13.4	2.3	2060	520	20.00	350	2264
132	102	8.772	8.761	34.033	26.399	35.277	43.764	279	6	1.18	15.4	2.9	2076	577	20.00	359	2262
131	126	7.875	7.863	34.030	26.533	35.451	43.976	282	9	1.27	16.9	3.2	2085	605	20.00	362	2264
130	152	7.453	7.438	34.068	26.624	35.561	44.104	271	22	1.36	18.8	3.9	2099	645	20.00	379	2269
129	172	7.119	7.103	34.123	26.714	35.666	44.223	261	34	1.46	20.3	4.8	2114	694	20.00	402	2273
128	196	6.810	6.792	34.171	26.794	35.760	44.330	256	41	1.51	21.2	5.7	2120	725	20.00	415	2272
127	243	6.372	6.350	34.226	26.896	35.882	44.471	255	45	1.56	22.1	6.9	2129	747	20.00	420	2277
126	289	6.115	6.090	34.247	26.946	35.945	44.545	259	43	1.57	22.5	7.9	2130	737	20.00	409	2281
125	338	5.932	5.903	34.268	26.987	35.994	44.602	265	39	1.57	22.5	8.5	2131	733	20.00	404	2283
124	385	5.787	5.754	34.269	27.006	36.020	44.635	267	38	1.59	22.7	9.3	2132	736	20.00	403	2284
123	477	5.569	5.529	34.265	27.030	36.056	44.681	264	42	1.63	23.5	10.4	2134	756	20.00	410	2281
122	570	5.297	5.250	34.254	27.055	36.094	44.733	260	48	1.70	24.6	12.0	2142	770	20.00	413	2287
121	663	5.000	4.946	34.248	27.085	36.140	44.792	251	59	1.80	26.2	15.0	2150	808	20.00	427	2288
120	755	4.630	4.570	34.249	27.128	36.202	44.872	236	77	1.95	28.2	20.3	2163	877	20.00	457	2289
119	846	4.306	4.241	34.274	27.184	36.273	44.959	216	100	2.09	30.3	27.4	2179	962	20.00	494	2293
118	940	3.905	3.835	34.307	27.252	36.362	45.067	201	118	2.22	32.1	36.3	2196	1041	20.00	525	2299
117	1084	3.462	3.383	34.367	27.344	36.477	45.203	178	144	2.38	34.2	49.9	2225	1166	20.00	577	2315
116	1232	3.179	3.091	34.442	27.431	36.579	45.318	153	171	2.52	36.2	65.4	2253	1297	20.00	634	2330
115	1376	2.976	2.878	34.505	27.501	36.659	45.408	137	189	2.60	37.2	79.5	2277	1359	20.00	659	2348
114	1524	2.788	2.679	34.551	27.555	36.723	45.481	131	196	2.64	37.4	90.4	2288	1375	20.00	661	2359
113	1676	2.599	2.480	34.583	27.598	36.776	45.544	132	197	2.62	37.3	98.9	2294	1358	20.00	647	2368
112	1829	2.428	2.298	34.605	27.631	36.818	45.595	140	191	2.56	36.6	102.3	2293	1301	20.00	615	2373
111	1981	2.277	2.136	34.624	27.660	36.855	45.640	147	185	2.51	35.9	105.0	2293	1281	20.00	602	2376
110	2129	2.159	2.007	34.642	27.684	36.887	45.678	152	181	2.47	35.5	107.8	2289	1242	20.00	580	2377
109	2283	2.050	1.886	34.658	27.707	36.916	45.713	156	178	2.44	35.1	110.2	2291	1235	20.00	574	2379
108	2432	1.973	1.796	34.670	27.723	36.937	45.739	159	175	2.42	34.7	112.0	2292	1220	20.00	565	2382
107	2587	1.894	1.704	34.680	27.738	36.957	45.763	162	173	2.40	34.5	113.9	2288	1190	20.00	549	2382
106	2741	1.841	1.638	34.689	27.750	36.973	45.782	166	170	2.38	34.1	113.9	2287	1183	20.00	544	2382
105	2947	1.767	1.545	34.695	27.762	36.989	45.804	170	166	2.35	33.8	115.0	2285	1153	20.00	528	2383
104	3146	1.672	1.432	34.700	27.774	37.008	45.828	175	163	2.34	33.7	116.4	2284	1145	20.00	522	2383
103	3347	1.494	1.238	34.706	27.793	37.037	45.868	182	158	2.30	33.3	118.5	2284	1119	20.00	506	2388
102	3551	1.203	0.933	34.707	27.814	37.076	45.923	191	151	2.30	33.2	124.6	2277	1087	20.00	485	2385
101	3711	1.091	0.807	34.708	27.823	37.092	45.946	195	149	2.29	33.1	127.0	2277	1095	20.00	486	2383

Lamont-Doherty Earth Observatory of Columbia University
WOCE P19C R/V Knorr WOCE Line P19

Station 282 Latitude 41-00.3S Longitude 88-00.0W Date 3/ 8/93 Bottom Depth 3082 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
136	4	15.265	15.264	33.932	25.091	33.712	41.958	252	-3	0.92	11.2	1.9	2035	465	20.00	380	2258
135	29	15.202	15.198	33.932	25.106	33.729	41.977	252	-3	0.93	11.3	1.9	2036	466	20.00	380	2258
168	55	13.034	13.027	33.954	25.578	34.281	42.604	271	-12	0.88	10.5	1.9	2039	475	20.00	353	2258
133	80	10.869	10.859	34.011	26.031	34.820	43.223	273	-2	0.94	11.3	1.8	2052	510	20.00	346	2259
132	105	9.862	9.850	34.038	26.226	35.057	43.500	271	7	1.07	13.4	1.9	2068	547	20.00	356	2263
131	129	9.450	9.436	34.090	26.336	35.184	43.642	258	23	1.18	15.0	2.1	2083	593	20.00	379	2266
130	154	8.459	8.443	34.082	26.486	35.378	43.878	263	23	1.28	17.0	3.0	2090	621	20.00	381	2266
129	180	7.929	7.911	34.127	26.602	35.517	44.038	257	33	1.39	19.0	3.7	2103	668	20.00	401	2267
128	203	7.492	7.472	34.168	26.697	35.632	44.172	251	42	1.46	20.3	4.6	2113	706	20.00	416	2269
127	251	6.549	6.526	34.218	26.867	35.845	44.425	256	43	1.54	21.7	6.3	2124	732	20.00	414	2275
126	299	6.214	6.188	34.253	26.939	35.932	44.528	258	43	1.57	22.3	7.2	2130	742	20.00	414	2280
125	398	5.884	5.850	34.275	26.999	36.008	44.619	262	42	1.60	22.8	8.9	2131	738	20.00	405	2282
124	494	5.600	5.558	34.266	27.028	36.051	44.675	264	42	1.64	23.4	10.3	2133	754	20.00	409	2280
123	592	5.314	5.265	34.255	27.054	36.092	44.730	259	49	1.71	24.6	11.9	2143	774	20.00	415	2287
122	695	4.941	4.885	34.249	27.093	36.151	44.806	247	64	1.84	26.6	15.7	2150	826	20.00	436	2284
121	799	4.559	4.496	34.258	27.143	36.221	44.894	227	87	2.01	28.9	22.2	2168	913	20.00	474	2288
120	899	4.109	4.041	34.290	27.217	36.317	45.012	206	111	2.17	31.3	31.6	2192	1016	20.00	517	2298
119	1002	3.694	3.620	34.337	27.297	36.418	45.133	186	134	2.32	33.3	43.2	2210	1120	20.00	560	2304
118	1102	3.398	3.318	34.386	27.365	36.501	45.230	170	152	2.43	34.9	53.8	2233	1192	20.00	589	2319
116	1201	3.188	3.102	34.439	27.428	36.575	45.313	153	171	2.53	36.2	65.0	2248	1292	20.00	632	2325
117	1201	3.191	3.105	34.439	27.428	36.574	45.313	153	171	2.53	36.2	65.0	2253	1286	20.00	629	2331
115	1300	3.021	2.928	34.495	27.489	36.643	45.390	136	190	2.63	37.3	78.0	2272	1350	20.00	656	2344
114	1399	2.892	2.793	34.529	27.528	36.690	45.443	129	197	2.67	37.7	85.9	2288	1401	20.00	677	2356
113	1497	2.755	2.649	34.562	27.567	36.736	45.496	126	202	2.68	37.7	94.8	2293	1379	20.00	662	2365
112	1596	2.645	2.532	34.580	27.591	36.766	45.532	127	202	2.67	37.6	99.9	2297	1394	20.00	666	2367
111	1695	2.528	2.408	34.595	27.614	36.795	45.567	129	201	2.65	37.4	103.6	2301	1362	20.00	647	2375
110	1795	2.426	2.299	34.607	27.633	36.820	45.597	132	199	2.62	37.0	107.0	2303	1350	20.00	638	2379
109	1895	2.317	2.183	34.619	27.652	36.845	45.628	136	196	2.59	36.7	110.2	2301	1314	20.00	618	2381
108	2044	2.148	2.003	34.638	27.681	36.884	45.676	142	191	2.55	36.2	114.5	2303	1290	20.00	603	2386
107	2192	2.049	1.893	34.649	27.699	36.908	45.705	146	188	2.52	35.9	117.4	2306	1262	20.00	587	2392
106	2339	1.966	1.798	34.659	27.714	36.928	45.730	149	186	2.50	35.7	119.6	2303	1246	20.00	577	2391
105	2488	1.894	1.714	34.667	27.727	36.945	45.752	151	184	2.49	35.4	121.7	2304	1224	20.00	565	2396
104	2636	1.846	1.653	34.673	27.736	36.958	45.767	152	183	2.49	35.3	123.3	2307	1228	20.00	565	2398
103	2835	1.792	1.581	34.679	27.747	36.972	45.785	155	182	2.47	35.2	125.0	2305	1211	20.00	556	2399
102	2983	1.741	1.516	34.684	27.755	36.984	45.801	158	179	2.45	35.0	125.1	2302	1180	20.00	540	2399
101	3139	1.717	1.477	34.685	27.759	36.990	45.809	160	177	2.43	34.8	125.1	2303	1182	20.00	540	2399

Station 286 Latitude 38-59.6S Longitude 87-59.6W Date 3/10/93 Bottom Depth 3337 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
136	2	17.321	17.321	33.953	24.636	33.184	41.363	242	-4	0.59	6.1	1.6	2008	411	20.00	367	2253
135	30	17.300	17.295	33.953	24.642	33.191	41.371	243	-4	0.59	6.1	1.4	2012	411	20.00	367	2257
168	56	15.128	15.120	33.951	25.138	33.763	42.014	264	-15	0.67	7.3	1.4	2021	437	20.00	355	2255
133	80	12.700	12.689	34.006	25.685	34.400	42.735	269	-7	0.71	7.6	1.4	2033	457	20.00	336	2259
132	105	11.468	11.455	34.042	25.947	34.711	43.092	261	7	0.81	8.9	1.3	2049	501	20.00	349	2258
131	130	10.596	10.580	34.067	26.124	34.923	43.337	258	16	0.96	11.3	1.7	2063	538	20.00	361	2261
130	155	9.987	9.969	34.142	26.288	35.112	43.549	248	29	1.06	13.6	2.0	2080	577	20.00	378	2268
129	180	9.416	9.396	34.201	26.429	35.277	43.736	239	41	1.20	16.1	2.2	2094	631	20.00	403	2267
128	206	8.800	8.778	34.198	26.525	35.401	43.885	239	45	1.29	17.6	3.0	2103	658	20.00	409	2270
127	256	7.700	7.675	34.232	26.719	35.643	44.173	235	56	1.49	20.7	4.9	2122	736	20.00	437	2271
126	306	6.926	6.897	34.263	26.852	35.812	44.376	237	60	1.58	22.3	6.6	2131	772	20.00	444	2274
125	356	6.380	6.348	34.280	26.939	35.925	44.512	247	54	1.60	22.8	8.0	2133	771	20.00	433	2277
124	405	6.186	6.150	34.297	26.978	35.973	44.569	251	51	1.60	23.0	8.7	2132	758	20.00	422	2278
123	504	5.825	5.781	34.281	27.012	36.025	44.638	258	46	1.62	23.2	9.5	2132	753	20.00	413	2280
122	602	5.478	5.427	34.266	27.043	36.074	44.704	254	52	1.69	24.6	10.9	2136	773	20.00	417	2280
121	703	5.114	5.056	34.252	27.076	36.125	44.772	248	62	1.80	26.1	14.0	2145	811	20.00	431	2282
120	801	4.708	4.644	34.256	27.126	36.195	44.862	230	83	1.96	28.4	20.3	2163	890	20.00	465	2286
119	901	4.210	4.141	34.285	27.203	36.298	44.988	209	107	2.13	30.9	29.8	2183	985	20.00	504	2293
118	1000	3.794	3.719	34.327	27.279	36.395	45.105	186	133	2.31	33.2	41.0	2204	1106	20.00	555	2299
117	1099	3.485	3.405	34.386	27.357	36.489	45.213	163	159	2.46	35.3	54.0	2236	1227	20.00	608	2319
116	1198	3.248	3.162	34.443	27.426	36.569	45.305	146	178	2.57	36.8	66.2	2257	1308	20.00	642	2333
115	1298	3.099	3.006	34.496	27.482	36.633	45.376	129	196	2.66	37.8	78.8	2278	1411	20.00	688	2344
114	1448	2.904	2.800	34.545	27.540	36.701	45.453	122	205	2.70	38.2	90.9	2294	1440	20.00	696	2359
113	1599	2.704	2.590	34.577	27.584	36.756	45.518	123	205	2.67	37.9	99.8	2304	1423	20.00	681	2372
112	1748	2.507	2.383	34.600	27.620	36.803	45.575	129	201	2.63	37.4	105.5	2302	1353	20.00	642	2377
111	1898	2.358	2.223	34.615	27.645	36.836	45.617	134	197	2.60	36.8	109.4	2305	1331	20.00	627	2383
110	2049	2.205	2.059	34.631	27.671	36.871	45.660	141	191	2.56	36.2	112.4	2304	1283	20.00	601	2388
109	2199	2.086	1.929	34.645	27.693	36.900	45.695	145	188	2.53	36.0	115.8	2303	1273	20.00	593	2387
108	2350	1.986	1.817	34.656	27.710	36.923	45.724	149	186	2.50	35.7	118.2	2300	1266	20.00	587	2386
107	2499	1.909	1.728	34.665	27.724	36.942	45.748	151	184	2.49	35.5	120.9	2301	1239	20.00	572	2390
106	2648	1.866	1.671	34.672	27.734	36.955	45.763	153	182	2.47	35.3	121.6	2302	1219	20.00	562	2393
105	2798	1.829	1.621	34.675	27.740	36.964	45.775	155	181	2.46	35.2	122.8	2301	1218	20.00	560	2393
104	2947	1.766	1.544	34.683	27.753	36.980	45.795	160	177	2.43	34.8	122.8	2299	1178	20.00	540	2395
103	3098	1.693	1.458	34.687	27.762	36.994	45.814	165	173	2.41	34.4	122.6	2295	1168	20.00	533	2393
102	3247	1.602	1.354	34.694	27.775	37.013	45.838	171	167	2.37	34.1	122.4	2290	1126	20.00	512	2393
101	3394	1.553	1.291	34.696	27.781	37.023	45.851	174	165	2.37	33.8	122.7	2288	1132	20.00	513	2391

Lamont-Doherty Earth Observatory of Columbia University
WOCE P19C R/V Knorr WOCE Line P19

Station 290 Latitude 37-00.8S Longitude 88-00.1W Date 3/10/93 Bottom Depth 4219 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
136	0	19.194	19.194	34.090	24.278	32.764	40.884	236	-6	0.49	4.3	1.1	2009	397	20.00	384	2262
135	29	18.747	18.742	34.076	24.381	32.882	41.016	239	-7	0.50	4.3	1.0	2009	395	20.00	374	2263
168	54	15.301	15.293	34.037	25.166	33.784	42.028	264	-16	0.59	5.6	1.0	2019	423	20.00	347	2260
133	78	12.599	12.589	34.035	25.727	34.446	42.784	273	-11	0.67	6.9	1.0	2031	456	20.00	333	2258
132	108	12.274	12.260	34.111	25.850	34.580	42.930	250	14	0.76	7.7	1.0	2047	499	20.00	360	2257
131	154	10.579	10.561	34.034	26.102	34.902	43.317	257	17	1.01	12.3	1.7	2063	553	20.00	371	2255
130	204	9.362	9.339	34.135	26.387	35.238	43.700	239	42	1.27	17.0	2.5	2094	658	20.00	419	2259
129	255	8.053	8.027	34.217	26.655	35.563	44.079	215	74	1.61	21.8	6.2	2131	811	20.00	488	2266
128	304	7.196	7.167	34.263	26.815	35.762	44.314	208	87	1.75	24.2	8.6	2149	885	20.00	514	2271
127	355	6.684	6.651	34.295	26.911	35.882	44.456	202	96	1.86	26.2	10.7	2159	940	20.00	534	2273
126	404	6.191	6.155	34.292	26.974	35.968	44.564	233	69	1.74	24.7	10.0	2145	838	20.00	467	2276
125	503	5.722	5.679	34.277	27.022	36.039	44.658	249	56	1.70	24.5	10.5	2140	801	20.00	437	2278
124	603	5.317	5.267	34.259	27.057	36.095	44.733	247	61	1.79	25.6	12.4	2145	823	20.00	441	2279
123	703	4.919	4.862	34.251	27.097	36.156	44.812	236	75	1.91	27.5	16.7	2154	880	20.00	464	2278
122	803	4.463	4.400	34.259	27.155	36.237	44.915	222	92	2.05	29.5	23.9	2172	945	20.00	489	2287
121	902	4.039	3.971	34.299	27.232	36.335	45.033	197	121	2.25	32.2	34.8	2197	1070	20.00	543	2296
120	1001	3.665	3.591	34.351	27.311	36.433	45.149	175	146	2.40	34.3	47.0	2223	1165	20.00	582	2312
119	1149	3.308	3.225	34.437	27.415	36.555	45.288	144	179	2.59	36.8	65.7	2257	1343	20.00	661	2328
118	1297	3.078	2.985	34.508	27.494	36.645	45.389	125	200	2.69	38.1	82.2	2284	1436	20.00	699	2348
117	1446	2.858	2.755	34.554	27.551	36.714	45.469	121	205	2.72	38.2	94.3	2295	1444	20.00	696	2360
116	1594	2.659	2.546	34.581	27.591	36.765	45.530	126	202	2.68	37.7	101.4	2301	1389	20.00	664	2372
115	1793	2.405	2.278	34.607	27.634	36.823	45.600	134	196	2.62	36.9	108.0	2301	1338	20.00	632	2378
114	1991	2.191	2.050	34.628	27.670	36.870	45.659	144	189	2.55	36.0	112.1	2300	1274	20.00	596	2385
113	2190	2.009	1.854	34.651	27.704	36.914	45.714	149	185	2.51	35.6	116.6	2302	1252	20.00	581	2390
112	2388	1.902	1.731	34.664	27.723	36.941	45.746	152	183	2.50	35.2	119.7	2302	1221	20.00	564	2394
111	2586	1.837	1.649	34.672	27.736	36.958	45.767	155	181	2.47	35.2	122.0	2304	1215	20.00	559	2397
110	2785	1.758	1.552	34.679	27.749	36.976	45.790	158	179	2.46	35.1	123.8	2304	1200	20.00	550	2399
109	2984	1.678	1.455	34.686	27.762	36.994	45.813	164	173	2.43	34.6	123.1	2298	1181	20.00	539	2394
108	3135	1.605	1.368	34.692	27.773	37.010	45.834	170	168	2.39	34.2	122.7	2292	1156	20.00	526	2392
107	3283	1.584	1.333	34.695	27.777	37.017	45.842	171	168	2.38	34.1	122.6	2288	1159	20.00	526	2386
106	3432	1.574	1.308	34.696	27.780	37.021	45.848	172	167	2.38	34.0	123.0	2293	1149	20.00	521	2394
105	3579	1.569	1.287	34.696	27.781	37.023	45.851	172	167	2.38	33.9	123.1	2293	1152	20.00	522	2392
104	3728	1.561	1.263	34.696	27.783	37.026	45.856	173	166	2.38	33.9	123.4	2291	1137	20.00	515	2393
103	3878	1.558	1.244	34.696	27.784	37.029	45.859	174	166	2.38	33.9	123.9	2291	1143	20.00	517	2392
102	4026	1.557	1.226	34.697	27.787	37.032	45.863	174	165	2.38	34.0	124.3	2290	1140	20.00	515	2391
101	4216	1.567	1.214	34.698	27.788	37.034	45.866	175	165	2.37	34.0	124.4	2291	1138	20.00	514	2392

Station 295 Latitude 34-29.9S Longitude 87-59.7W Date 3/12/93 Bottom Depth 3922 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
136	0	20.509	20.509	34.180	24.003	32.448	40.529	230	-6	0.32	1.7	1.6	1999	365	20.00	373	2270
135	29	19.848	19.843	34.191	24.187	32.652	40.752	234	-7	0.31	1.7	1.4	2000	375	20.00	373	2264
168	55	16.695	16.686	34.226	24.995	33.562	41.757	254	-13	0.32	1.5	1.4	2006	382	20.00	332	2268
132	80	14.874	14.862	34.264	25.435	34.066	42.321	261	-12	0.36	2.1	1.3	2016	399	20.00	321	2270
130	104	13.859	13.844	34.229	25.624	34.293	42.584	253	2	0.50	3.8	1.3	2029	434	20.00	334	2267
128	134	12.881	12.863	34.168	25.776	34.483	42.809	248	12	0.65	6.1	1.3	2042	470	20.00	348	2264
127	164	12.192	12.171	34.198	25.934	34.667	43.019	235	29	0.80	9.6	1.5	2060	519	20.00	373	2265
126	205	11.099	11.074	34.217	26.153	34.930	43.323	229	41	1.00	12.6	1.6	2079	577	20.00	396	2266
125	265	9.073	9.044	34.234	26.512	35.374	43.847	205	78	1.48	19.7	5.1	2125	753	20.00	474	2271
124	335	7.335	7.303	34.280	26.810	35.750	44.296	201	92	1.74	24.3	8.5	2151	873	20.00	510	2276
123	404	6.447	6.410	34.292	26.941	35.923	44.508	228	72	1.69	24.3	9.0	2144	817	20.00	460	2279
122	503	5.890	5.846	34.287	27.009	36.018	44.629	246	58	1.68	24.2	10.0	2137	778	20.00	427	2280
121	603	5.455	5.404	34.265	27.045	36.077	44.708	247	60	1.73	25.4	11.7	2143	797	20.00	430	2282
120	703	5.002	4.945	34.252	27.089	36.143	44.796	238	73	1.86	27.1	15.5	2152	852	20.00	451	2282
119	803	4.614	4.550	34.261	27.140	36.214	44.885	219	94	2.02	29.4	22.3	2172	933	20.00	485	2289
118	903	4.103	4.034	34.299	27.225	36.325	45.020	195	122	2.22	32.1	33.8	2198	1039	20.00	529	2302
117	1002	3.747	3.673	34.344	27.298	36.416	45.128	176	144	2.36	34.0	44.7	2216	1150	20.00	576	2306
116	1152	3.402	3.318	34.437	27.406	36.541	45.269	139	183	2.58	37.2	65.3	2258	1333	20.00	658	2330
115	1302	3.177	3.083	34.521	27.495	36.641	45.380	118	207	2.71	38.6	85.7	2288	1431	20.00	700	2353
114	1452	2.939	2.835	34.559	27.548	36.707	45.457	121	205	2.68	38.1	95.1	2294	1389	20.00	672	2364
113	1601	2.706	2.592	34.580	27.586	36.758	45.520	131	198	2.62	37.2	100.2	2296	1328	20.00	636	2374
112	1801	2.422	2.295	34.604	27.631	36.818	45.595	143	188	2.53	36.1	104.3	2294	1257	20.00	594	2380
111	2000	2.179	2.038	34.629	27.671	36.873	45.662	151	182	2.48	35.5	109.2	2294	1210	20.00	566	2386
110	2201	2.006	1.850	34.651	27.704	36.915	45.714	155	179	2.44	35.1	114.2	2293	1196	20.00	555	2386
109	2400	1.890	1.718	34.667	27.727	36.945	45.751	157	178	2.42	34.8	117.1	2293	1175	20.00	542	2390
108	2597	1.811	1.622	34.677	27.742	36.965	45.776	161	175	2.40	34.5	118.5	2296	1168	20.00	537	2393
107	2797	1.761	1.554	34.684	27.753	36.980	45.794	164	173	2.38	34.4	119.5	2292	1151	20.00	527	2392
106	2997	1.725	1.500	34.689	27.761	36.991	45.808	165	172	2.38	34.3	120.0	2294	1157	20.00	529	2393
105	3196	1.698	1.453	34.690	27.765	36.997	45.817	166	171	2.37	34.3	121.4	2296	1162	20.00	530	2395
104	3394	1.673	1.408	34.693	27.770	37.005	45.827	167	171	2.36	34.3	121.6	2294	1154	20.00	526	2393
103	3595	1.653	1.367	34.694	27.774	37.011	45.835	168	171	2.36	34.3	122.6	2295	1150	20.00	523	2396
172	3794	1.646	1.339	34.695	27.777	37.016	45.841	168	171	2.36	34.3	123.1	2299	1147	20.00	521	2400
171	3942	1.654	1.330	34.696	27.778	37.018	45.844	167	171	2.36	34.3	123.3	2300	1132	20.00	514	2403

Lamont-Doherty Earth Observatory of Columbia University
WOCE P19C R/V Knorr WOCE Line P19

Station 299 Latitude 32-30.1S Longitude 87-59.6W Date 3/13/93 Bottom Depth 3723 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
236	0	22.643	22.643	34.788	23.877	32.252	40.268	220	-5	0.22	0.1	0.9	2021	362	20.00	404	2302
235	6	22.501	22.500	34.777	23.909	32.288	40.308	221	-5	0.22	0.1	0.9	2018	361	20.00	402	2299
295	29	22.342	22.336	34.768	23.949	32.333	40.357										
268	54	17.493	17.484	34.481	25.001	33.538	41.705	268	-32	0.22	0.1	0.9	2008	368	20.00	331	2281
232	79	15.748	15.736	34.456	25.390	33.987	42.210	267	-22	0.24	0.1	0.9	2013	377	20.00	315	2280
230	104	15.093	15.077	34.455	25.536	34.156	42.401	250	-2	0.33	1.2	0.9	2025	406	20.00	330	2278
228	134	14.185	14.166	34.341	25.644	34.299	42.577	240	13	0.49	3.2	0.9	2038	444	20.00	347	2272
227	173	13.008	12.984	34.197	25.775	34.476	42.798	237	23	0.68	7.4	0.9	2049	489	20.00	363	2265
226	213	11.977	11.949	34.161	25.948	34.690	43.050	227	38	0.92	11.5	1.2	2069	552	20.00	392	2263
225	254	10.795	10.764	34.231	26.219	35.009	43.413	217	55	1.12	14.6	2.4	2092	634	20.00	429	2264
224	303	9.460	9.426	34.306	26.506	35.351	43.808	156	124	1.80	22.5	9.3	2161	957	20.00	612	2272
223	354	8.417	8.380	34.368	26.720	35.611	44.109	124	163	2.14	27.7	14.3	2195	1196	20.00	732	2276
222	404	7.544	7.504	34.371	26.853	35.782	44.318	124	169	2.24	30.8	16.2	2203	1273	20.00	750	2276
221	503	6.142	6.097	34.303	26.990	35.987	44.586	214	88	1.84	26.7	11.4	2157	892	20.00	495	2280
220	602	5.558	5.507	34.276	27.042	36.068	44.694	232	74	1.82	26.5	12.6	2151	849	20.00	460	2281
219	703	5.157	5.099	34.262	27.079	36.126	44.771	229	81	1.92	27.6	15.2	2157	867	20.00	462	2284
218	803	4.697	4.633	34.271	27.139	36.209	44.876	209	104	2.09	30.2	22.9	2176	965	20.00	504	2289
217	903	4.215	4.146	34.315	27.226	36.320	45.010	180	136	2.32	33.4	35.5	2207	1113	20.00	569	2300
216	1002	3.812	3.737	34.380	27.320	36.434	45.142	150	169	2.53	36.2	51.2	2237	1279	20.00	643	2314
215	1151	3.470	3.386	34.472	27.428	36.559	45.283	122	200	2.71	38.6	73.2	2275	1418	20.00	702	2340
214	1301	3.228	3.133	34.528	27.496	36.640	45.376	114	210	2.75	39.0	87.3	2293	1446	20.00	709	2358
213	1452	2.971	2.866	34.560	27.546	36.703	45.452	118	208	2.72	38.5	95.7	2299	1406	20.00	681	2368
212	1601	2.718	2.604	34.585	27.589	36.760	45.522	124	204	2.68	38.0	103.1	2303	1370	20.00	656	2377
211	1801	2.456	2.328	34.605	27.629	36.814	45.590	137	194	2.59	36.9	106.6	2300	1292	20.00	612	2382
210	2001	2.205	2.063	34.627	27.668	36.868	45.656	149	183	2.50	35.7	109.6	2296	1232	20.00	577	2385
209	2200	2.019	1.863	34.649	27.701	36.912	45.710	155	179	2.46	35.3	113.7	2293	1199	20.00	557	2386
208	2400	1.889	1.717	34.666	27.726	36.944	45.750	159	176	2.43	35.0	117.1	2295	1181	20.00	545	2391
207	2600	1.821	1.632	34.676	27.740	36.963	45.774	152	174	2.42	34.7	118.4	2295	1174	20.00	540	2392
206	2800	1.767	1.560	34.683	27.751	36.978	45.792	154	173	2.41	34.7	119.3	2295	1151	20.00	528	2395
205	3000	1.737	1.511	34.687	27.758	36.988	45.804	155	172	2.41	34.6	120.4	2294	1151	20.00	526	2394
204	3200	1.709	1.464	34.690	27.764	36.996	45.815	156	172	2.40	34.6	120.9	2297	1146	20.00	523	2398
203	3400	1.680	1.415	34.692	27.769	37.004	45.825	156	172	2.40	34.6	122.0	2297	1147	20.00	523	2398
272	3600	1.679	1.392	34.693	27.772	37.007	45.830	156	172	2.40	34.6	122.5	2297	1133	20.00	516	2400
271	3720	1.680	1.380	34.694	27.773	37.010	45.833	156	172	2.41	34.7	122.7	2299	1139	20.00	518	2402

Station 303 Latitude 30-29.9S Longitude 87-59.5W Date 3/14/93 Bottom Depth 3635 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
136	0	23.441	23.441	35.093	23.878	32.227	40.220	216	-4	0.22	0.2	1.8	2030	357	20.00	412	2319
135	27	22.955	22.949	35.071	24.004	32.367	40.372	220	-6	0.22	0.2	1.8	2031	359	20.00	407	2318
168	54	18.782	18.773	34.824	24.946	33.436	41.560	250	-19	0.20	0.2	1.5	2018	367	20.00	348	2295
132	78	17.413	17.400	34.781	25.252	33.787	41.954	254	-17	0.20	0.2	1.5	2018	368	20.00	329	2295
130	102	16.798	16.781	34.820	25.429	33.985	42.170	247	-8	0.22	0.2	1.5	2024	375	20.00	327	2298
128	133	16.003	15.982	34.700	25.522	34.107	42.319	239	5	0.32	0.6	1.4	2036	404	20.00	341	2294
127	173	14.682	14.656	34.497	25.660	34.294	42.554	231	20	0.48	3.8	1.4	2042	439	20.00	350	2281
126	213	13.389	13.359	34.358	25.824	34.509	42.815	216	41	0.76	8.5	1.5	2063	515	20.00	389	2272
125	253	11.382	11.350	34.237	26.118	34.884	43.266	200	69	1.21	15.1	3.3	2099	659	20.00	457	2264
124	302	10.066	10.031	34.333	26.426	35.245	43.677	151	125	1.76	21.4	8.9	2157	922	20.00	605	2274
123	353	9.006	8.967	34.425	26.673	35.537	44.010	94	189	2.29	28.4	16.7	2213	1348	20.00	845	2279
122	403	8.104	8.063	34.416	26.806	35.710	44.221	96	193	2.38	31.3	18.3	2219	1398	20.00	844	2280
121	503	6.522	6.476	34.342	26.971	35.950	44.531	164	135	2.14	30.4	16.3	2190	1095	20.00	618	2284
120	602	5.626	5.575	34.290	27.045	36.067	44.690	215	90	1.94	27.8	14.6	2161	899	20.00	489	2283
119	702	4.986	4.929	34.270	27.105	36.160	44.813	216	95	2.03	29.1	19.2	2169	928	20.00	491	2287
118	801	4.487	4.424	34.290	27.177	36.257	44.934	195	119	2.21	31.8	29.0	2190	1031	20.00	534	2294
117	901	4.063	3.995	34.365	27.282	36.383	45.079	154	164	2.50	35.8	46.2	2229	1245	20.00	633	2309
116	1000	3.690	3.616	34.432	27.373	36.493	45.206	127	193	2.69	38.2	63.7	2264	1399	20.00	700	2330
115	1149	3.446	3.362	34.477	27.434	36.566	45.291	117	205	2.77	38.9	75.2	2283	1463	20.00	724	2344
114	1297	3.216	3.122	34.509	27.482	36.626	45.363	115	209	2.77	39.0	83.4	2289	1458	20.00	714	2352
113	1447	3.033	2.928	34.554	27.536	36.690	45.436	117	209	2.73	38.6	94.0	2300	1420	20.00	689	2367
112	1596	2.749	2.635	34.584	27.586	36.755	45.515	123	205	2.69	38.0	102.7	2301	1372	20.00	658	2375
111	1796	2.424	2.297	34.610	27.635	36.822	45.599	134	196	2.61	37.1	109.0	2301	1314	20.00	621	2381
110	1995	2.201	2.060	34.630	27.671	36.870	45.659	147	186	2.53	36.1	111.8	2299	1236	20.00	579	2388
109	2194	2.016	1.860	34.647	27.700	36.910	45.709	154	180	2.47	35.5	114.7	2298	1209	20.00	561	2391
108	2393	1.916	1.744	34.662	27.721	36.937	45.742	158	177	2.44	35.2	117.1	2295	1184	20.00	547	2391
107	2593	1.837	1.648	34.673	27.737	36.959	45.768	160	176	2.43	35.0	118.7	2298	1177	20.00	542	2394
106	2792	1.779	1.573	34.681	27.749	36.975	45.788	162	174	2.42	34.7	119.9	2297	1152	20.00	528	2397
105	2991	1.740	1.515	34.686	27.757	36.986	45.803	164	173	2.41	34.7	120.5	2298	1155	20.00	528	2398
104	3188	1.701	1.457	34.689	27.764	36.996	45.815	165	173	2.40	34.7	121.9	2298	1154	20.00	527	2398
103	3387	1.681	1.417	34.691	27.768	37.003	45.824	165	173	2.40	34.6	122.5	2299	1151	20.00	524	2400
172	3586	1.683	1.398	34.692	27.770	37.006	45.828	165	173	2.40	34.6	123.0	2298	1147	20.00	522	2399
101	3699	1.691	1.393	34.693	27.772	37.007	45.830	165	173	2.40	34.6	123.2	2301	1149	20.00	523	2402

Lamont-Doherty Earth Observatory of Columbia University
WOCE P19C R/V Knorr WOCE Line P19

Station 307 Latitude 28-29.9S Longitude 88-00.0W Date 3/14/93 Bottom Depth 2904 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	---------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3 ------------umol/kg------------	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
136	1	23.709	23.709	35.445	24.066	32.404	40.386	213	-3	0.28	0.1	1.7	2049	356	20.00	416	2345
135	28	23.134	23.128	35.451	24.240	32.594	40.591	218	-5	0.28	0.1	1.5	2050	356	20.00	406	2347
168	53	19.701	19.691	35.118	24.934	33.392	41.486	241	-15	0.25	0.1	1.5	2037	363	20.00	358	2323
132	78	18.086	18.072	34.994	25.251	33.761	41.905	250	-16	0.24	0.1	1.3	2030	366	20.00	337	2311
130	103	17.637	17.619	34.999	25.366	33.891	42.048	246	-10	0.24	0.1	1.2	2035	372	20.00	336	2314
128	128	17.042	17.021	34.949	25.471	34.017	42.194	238	0	0.28	0.1	1.2	2040	388	20.00	342	2310
127	153	16.063	16.039	34.738	25.538	34.121	42.331	237	6	0.32	0.5	1.2	2038	407	20.00	344	2295
126	178	15.588	15.560	34.629	25.563	34.163	42.390	236	10	0.37	1.4	1.2	2040	419	20.00	347	2290
125	203	14.496	14.466	34.509	25.710	34.351	42.617	219	32	0.62	6.0	1.2	2058	476	20.00	377	2282
124	233	12.701	12.669	34.308	25.923	34.635	42.967	215	46	0.87	10.3	1.8	2070	545	20.00	400	2268
123	264	11.704	11.670	34.349	26.146	34.897	43.265	199	67	1.09	13.2	2.9	2095	623	20.00	438	2272
122	303	10.382	10.346	34.331	26.371	35.176	43.596	168	107	1.58	19.2	7.0	2137	827	20.00	550	2269
121	354	9.015	8.976	34.416	26.665	35.528	44.001	101	182	2.25	27.8	16.1	2206	1293	20.00	811	2277
120	404	8.026	7.985	34.405	26.809	35.717	44.231	104	185	2.34	30.7	17.3	2214	1335	20.00	803	2282
119	504	6.570	6.524	34.343	26.966	35.942	44.521	167	131	2.11	29.9	15.6	2183	1073	20.00	607	2280
118	603	5.741	5.689	34.298	27.037	36.054	44.671	208	97	1.97	28.2	15.1	2163	924	20.00	505	2281
117	702	5.215	5.157	34.286	27.091	36.135	44.777	205	104	2.07	29.5	19.4	2173	960	20.00	512	2285
116	802	4.668	4.604	34.310	27.173	36.244	44.911	179	134	2.31	32.9	30.4	2199	1098	20.00	572	2294
115	903	4.209	4.140	34.373	27.273	36.366	45.055	144	172	2.56	36.5	47.5	2233	1299	20.00	664	2307
114	1002	3.885	3.810	34.435	27.356	36.466	45.170	122	197	2.72	38.4	62.6	2264	1424	20.00	718	2327
113	1151	3.516	3.431	34.506	27.450	36.578	45.300	108	214	2.81	39.4	80.8	2287	1484	20.00	736	2347
112	1301	3.249	3.154	34.543	27.506	36.648	45.383	113	211	2.77	38.9	91.0	2291	1431	20.00	702	2357
111	1451	2.924	2.820	34.571	27.559	36.719	45.470	120	207	2.72	38.3	99.2	2298	1395	20.00	675	2368
110	1601	2.663	2.549	34.593	27.600	36.774	45.538	128	201	2.67	37.5	105.1	2297	1346	20.00	643	2373
109	1751	2.402	2.279	34.608	27.635	36.823	45.601	144	187	2.56	36.4	106.6	2294	1249	20.00	590	2381
108	1901	2.232	2.099	34.623	27.662	36.860	45.647	150	182	2.52	35.9	109.8	2293	1225	20.00	574	2383
107	2049	2.060	1.917	34.641	27.691	36.898	45.694	155	179	2.48	35.4	113.5	2294	1192	20.00	555	2388
106	2200	1.972	1.817	34.652	27.707	36.920	45.721	157	177	2.46	35.1	115.9	2295	1180	20.00	547	2391
105	2350	1.900	1.733	34.661	27.721	36.938	45.744	159	176	2.45	35.0	118.0	2295	1168	20.00	539	2393
104	2500	1.860	1.680	34.668	27.730	36.951	45.759	160	175	2.44	35.0	119.4	2300	1166	20.00	537	2398
103	2650	1.832	1.638	34.673	27.738	36.960	45.770	161	175	2.43	34.9	120.2	2297	1156	20.00	532	2397
172	2800	1.807	1.599	34.678	27.744	36.969	45.781	162	174	2.42	34.8	120.6	2292	1149	20.00	528	2392
101	2921	1.796	1.577	34.682	27.749	36.975	45.788	163	174	2.42	34.8	120.9	2298	1142	20.00	524	2400

Station 311 Latitude 26-30.2S Longitude 87-59.9W Date 3/15/93 Bottom Depth 3356 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	---------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3 ------------umol/kg------------	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
136	2	23.298	23.298	35.421	24.168	32.518	40.510	215	-3	0.29	0.0	1.9	2050	357	20.00	411	2345
135	28	22.969	22.963	35.456	24.292	32.650	40.651	217	-4	0.29	0.0	1.6	2054	353	20.00	401	2353
168	54	19.239	19.229	35.035	24.990	33.464	41.572	246	-17	0.23	0.0	1.6	2032	366	20.00	354	2315
132	79	18.590	18.576	35.128	25.228	33.720	41.847	244	-13	0.22	0.0	1.4	2036	364	20.00	342	2321
130	103	17.735	17.717	35.045	25.377	33.899	42.052	242	-7	0.23	0.0	1.2	2034	371	20.00	337	2313
128	128	17.167	17.146	34.984	25.468	34.010	42.182	236	2	0.27	0.1	1.2	2042	387	20.00	343	2313
127	153	16.757	16.732	34.906	25.506	34.063	42.249	232	8	0.32	0.4	1.2	2044	397	20.00	345	2309
126	178	16.180	16.152	34.792	25.554	34.132	42.338	231	12	0.37	1.0	1.2	2046	409	20.00	348	2303
125	203	15.203	15.172	34.648	25.664	34.278	42.518	221	27	0.51	4.1	1.2	2054	448	20.00	365	2292
124	253	12.557	12.523	34.336	25.973	34.691	43.027	206	56	0.93	10.9	2.1	2081	574	20.00	418	2271
123	303	10.644	10.607	34.339	26.331	35.126	43.535	155	117	1.64	19.6	7.6	2147	857	20.00	576	2274
122	353	9.541	9.501	34.472	26.624	35.463	43.914	77	202	2.34	28.0	18.3	2221	1384	20.00	888	2283
121	402	8.322	8.280	34.453	26.802	35.696	44.197	81	206	2.47	32.1	20.6	2232	1478	20.00	900	2286
120	501	6.803	6.756	34.390	26.972	35.936	44.504	126	171	2.35	32.9	20.6	2214	1269	20.00	725	2288
119	600	5.909	5.856	34.351	27.058	36.066	44.675	156	147	2.30	32.4	22.6	2202	1148	20.00	631	2291
118	698	5.357	5.298	34.362	27.135	36.170	44.804	141	166	2.47	35.1	31.7	2217	1238	20.00	665	2296
117	797	4.965	4.900	34.403	27.214	36.268	44.920	115	196	2.69	38.1	44.7	2247	1408	20.00	743	2311
116	896	4.524	4.453	34.444	27.296	36.372	45.045	101	213	2.83	39.8	58.5	2266	1509	20.00	782	2321
115	994	4.145	4.068	34.476	27.362	36.458	45.149	99	217	2.85	40.1	69.2	2282	1509	20.00	769	2339
114	1143	3.721	3.635	34.511	27.434	36.552	45.263	105	215	2.81	39.7	80.3	2285	1473	20.00	737	2346
113	1291	3.352	3.257	34.536	27.491	36.628	45.357	115	208	2.75	38.7	88.1	2290	1384	20.00	681	2360
112	1490	2.902	2.795	34.568	27.559	36.720	45.472	128	198	2.67	37.7	96.8	2291	1323	20.00	639	2368
111	1688	2.522	2.403	34.597	27.616	36.798	45.569	139	190	2.60	36.6	104.5	2294	1268	20.00	602	2378
110	1887	2.244	2.112	34.621	27.659	36.856	45.643	149	183	2.53	35.9	109.3	2293	1215	20.00	570	2384
109	2087	2.021	1.875	34.645	27.697	36.907	45.705	155	179	2.49	35.5	114.9	2291	1191	20.00	553	2385
108	2237	1.923	1.765	34.657	27.715	36.931	45.734	157	178	2.48	35.3	117.4	2297	1174	20.00	543	2394
107	2387	1.866	1.696	34.665	27.727	36.946	45.753	159	177	2.46	35.1	119.5	2296	1170	20.00	539	2393
106	2537	1.830	1.647	34.672	27.736	36.958	45.768	160	176	2.45	35.1	120.5	2297	1159	20.00	533	2396
105	2687	1.814	1.617	34.674	27.740	36.964	45.775	160	176	2.45	35.0	121.1	2295	1156	20.00	531	2394
104	2836	1.806	1.595	34.678	27.745	36.970	45.782	161	175	2.44	34.9	121.5	2298	1152	20.00	529	2398
103	2985	1.805	1.579	34.680	27.748	36.973	45.786	161	176	2.44	34.8	121.7	2300	1148	20.00	527	2401
172	3183	1.805	1.559	34.683	27.751	36.978	45.792	161	175	2.43	34.8	121.9	2300	1132	20.00	519	2403
171	3344	1.817	1.554	34.683	27.752	36.979	45.793	162	175	2.43	34.8	121.9	2299	1147	20.00	526	2401

Station 314 Latitude 25-14.7S Longitude 88-00.0W Date 3/16/93 Bottom Depth 1461 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
126	1	23.612	23.612	35.566	24.186	32.526	40.509	216	-5	0.33	0.1	1.8	2056	357	20.00	415	2353
125	27	23.097	23.091	35.550	24.326	32.680	40.676	217	-5	0.33	0.1	1.7	2056	355	20.00	405	2354
124	53	19.926	19.916	35.124	24.880	33.331	41.418	243	-17	0.29	0.1	1.5	2038	368	20.00	367	2320
123	77	18.440	18.426	35.095	25.240	33.738	41.869	248	-16	0.26	0.1	1.5	2036	364	20.00	340	2321
122	103	18.040	18.022	35.123	25.362	33.873	42.016	242	-9	0.29	0.1	1.4	2042	376	20.00	346	2321
121	127	17.594	17.572	35.080	25.439	33.965	42.123	238	-2	0.33	0.1	1.4	2046	383	20.00	346	2321
120	151	17.282	17.257	35.048	25.491	34.028	42.195	230	7	0.39	0.5	1.4	2054	404	20.00	360	2317
119	175	16.503	16.475	34.908	25.568	34.133	42.328	223	18	0.50	2.6	1.4	2057	431	20.00	372	2305
118	201	15.280	15.249	34.709	25.693	34.304	42.541	216	31	0.63	5.2	1.5	2062	463	20.00	378	2294
117	250	12.269	12.236	34.383	26.065	34.793	43.140	185	78	1.17	13.3	4.2	2102	647	20.00	466	2272
116	299	10.760	10.723	34.434	26.385	35.173	43.576	120	152	1.88	21.4	12.1	2172	1011	20.00	683	2276
115	349	9.433	9.394	34.480	26.648	35.492	43.947	74	206	2.39	28.8	19.3	2222	1434	20.00	916	2280
114	399	8.223	8.182	34.459	26.822	35.720	44.225	80	207	2.48	32.6	21.7	2230	1477	20.00	896	2284
113	448	7.442	7.398	34.424	26.909	35.843	44.383	103	190	2.44	33.0	21.5	2223	1390	20.00	815	2285
112	547	6.252	6.203	34.371	27.030	36.021	44.614	143	158	2.34	32.9	22.7	2205	1202	20.00	670	2287
111	645	5.593	5.538	34.358	27.103	36.126	44.750	148	158	2.39	33.9	28.0	2210	1196	20.00	649	2293
110	745	5.044	4.983	34.387	27.191	36.242	44.891	128	182	2.59	36.7	40.3	2234	1336	20.00	708	2303
109	843	4.581	4.514	34.426	27.275	36.348	45.019	112	202	2.74	38.7	53.6	2256	1418	20.00	736	2319
108	943	4.218	4.145	34.462	27.343	36.435	45.122	107	209	2.79	39.3	64.6	2271	1463	20.00	748	2331
107	1042	3.890	3.811	34.499	27.407	36.516	45.219	104	214	2.81	39.6	75.7	2282	1469	20.00	741	2343
106	1141	3.607	3.522	34.521	27.453	36.577	45.293	110	211	2.77	39.0	82.5	2288	1427	20.00	711	2354
105	1240	3.458	3.366	34.532	27.477	36.608	45.333	114	208	2.75	38.7	85.9	2288	1419	20.00	702	2355
104	1338	3.290	3.192	34.544	27.503	36.644	45.376	117	206	2.73	38.4	90.0	2290	1380	20.00	678	2362
103	1438	3.067	2.963	34.558	27.536	36.688	45.432	125	200	2.68	37.8	93.5	2291	1343	20.00	653	2367
172	1536	2.778	2.669	34.579	27.579	36.746	45.505	133	195	2.63	37.2	99.3	2294	1279	20.00	615	2377
101	1648	2.464	2.349	34.604	27.626	36.811	45.585	141	189	2.57	36.5	105.7	2296	1253	20.00	594	2382

Station 317 Latitude 24-19.8S Longitude 88-00.2W Date 3/17/93 Bottom Depth 4133 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
236	0	23.648	23.648	35.699	24.276	32.613	40.594	217	-6	0.31	0.1	1.7	2058	356	20.00	416	2357
235	34	23.149	23.142	35.675	24.406	32.757	40.751	217	-4	0.31	0.1	1.7	2056	365	20.00	417	2349
268	64	19.317	19.305	35.170	25.074	33.543	41.648	246	-18	0.29	0.1	1.4	2042	365	20.00	354	2328
232	104	18.399	18.381	35.190	25.324	33.822	41.954	242	-10	0.29	0.1	1.4	2046	387	20.00	361	2319
230	144	17.258	17.234	35.042	25.492	34.029	42.198	231	6	0.38	0.4	1.4	2055	398	20.00	354	2322
228	194	14.877	14.848	34.641	25.729	34.355	42.606	213	36	0.66	6.1	1.6	2073	477	20.00	383	2301
227	254	11.946	11.913	34.395	26.136	34.877	43.235	180	85	1.22	14.3	5.1	2110	681	20.00	484	2272
226	303	10.055	10.020	34.458	26.526	35.343	43.774	99	177	2.12	24.8	15.5	2197	1191	20.00	781	2279
225	404	7.983	7.942	34.438	26.841	35.750	44.266	94	195	2.41	32.0	20.4	2227	1416	20.00	850	2287
224	503	6.574	6.528	34.380	26.994	35.970	44.548	136	163	2.31	32.7	21.4	2211	1236	20.00	699	2290
223	603	5.706	5.654	34.350	27.082	36.100	44.718	154	151	2.33	33.3	25.5	2204	1179	20.00	643	2289
222	702	5.227	5.169	34.371	27.157	36.199	44.839	135	174	2.52	35.9	35.3	2225	1282	20.00	685	2300
221	802	4.787	4.722	34.410	27.239	36.302	44.963	115	197	2.70	38.4	48.1	2249	1415	20.00	741	2312
220	901	4.372	4.301	34.449	27.316	36.400	45.080	106	209	2.77	39.4	60.6	2266	1479	20.00	762	2324
219	1001	4.023	3.946	34.490	27.386	36.488	45.184	105	212	2.79	39.4	72.5	2277	1466	20.00	743	2338
218	1200	3.527	3.438	34.531	27.470	36.597	45.318	110	212	2.78	39.2	85.8	2290	1451	20.00	720	2354
217	1400	3.049	2.948	34.565	27.543	36.695	45.440	118	207	2.74	38.5	97.8	2298	1382	20.00	672	2370
216	1600	2.718	2.604	34.588	27.592	36.762	45.524	128	200	2.66	37.7	103.8	2301	1339	20.00	642	2378
214	1749	2.476	2.352	34.606	27.627	36.812	45.586	137	193	2.61	36.9	108.1	2299	1288	20.00	611	2381
215	1750	2.476	2.352	34.605	27.627	36.811	45.585	137	193	2.61	37.0	107.9	2300	1289	20.00	611	2382
213	1900	2.286	2.152	34.624	27.658	36.853	45.637	142	189	2.57	36.4	112.0	2300	1271	20.00	597	2384
212	2049	2.148	2.003	34.637	27.681	36.883	45.675	148	185	2.53	36.0	114.5	2301	1220	20.00	570	2392
211	2200	2.041	1.885	34.647	27.698	36.907	45.705	151	182	2.50	35.8	116.8	2300	1217	20.00	566	2392
210	2350	1.941	1.773	34.658	27.715	36.931	45.734	155	180	2.48	35.4	118.9	2301	1178	20.00	545	2398
209	2499	1.892	1.711	34.663	27.724	36.943	45.749	157	179	2.47	35.3	120.1	2300	1181	20.00	545	2397
208	2649	1.855	1.661	34.669	27.733	36.954	45.763	158	178	2.46	35.2	121.5	2302	1166	20.00	537	2401
207	2799	1.826	1.618	34.674	27.740	36.963	45.775	158	178	2.46	35.1	122.6	2304	1165	20.00	535	2403
206	2999	1.800	1.573	34.681	27.749	36.975	45.788	157	179	2.47	35.3	124.9	2311	1165	20.00	534	2411
205	3197	1.791	1.544	34.681	27.751	36.979	45.793	156	181	2.48	35.3	126.3	2310	1172	20.00	537	2409
204	3397	1.784	1.517	34.684	27.755	36.984	45.801	155	182	2.48	35.4	128.4	2313	1165	20.00	533	2413
203	3646	1.787	1.493	34.687	27.760	36.990	45.807	153	184	2.49	35.4	130.3	2316	1175	20.00	537	2415
272	3896	1.806	1.484	34.688	27.761	36.992	45.810	153	184	2.51	35.6	130.7	2319	1157	20.00	529	2421
201	4128	1.830	1.480	34.688	27.761	36.992	45.810	153	185	2.49	35.6	130.7	2319	1167	20.00	533	2419

Lamont-Doherty Earth Observatory of Columbia University

WOCE P19C R/V Knorr WOCE Line P19

Station 322 Latitude 21-59.4S Longitude 88-00.2W Date 3/18/93 Bottom Depth 4032 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								-------------umol/kg					--------------				
136	0	23.143	23.143	35.648	24.385	32.737	40.730	217	-5	0.33	0.1	1.7	2059	351	20.00	401	2362
135	31	23.134	23.128	35.644	24.387	32.739	40.733	218	-5	0.33	0.1	1.7	2058	350	20.00	399	2362
168	56	20.328	20.317	35.329	24.930	33.366	41.440	246	-22	0.30	0.1	1.7	2047	356	20.00	361	2341
133	80	19.153	19.139	35.341	25.248	33.720	41.827	244	-16	0.29	0.1	1.6	2048	366	20.00	353	2336
132	105	18.465	18.447	35.281	25.377	33.872	42.001	240	-8	0.32	0.1	1.6	2047	371	20.00	347	2330
131	155	17.869	17.842	35.238	25.494	34.009	42.157	225	9	0.43	0.6	1.6	2065	408	20.00	373	2330
130	180	16.850	16.820	35.067	25.609	34.161	42.342	214	25	0.59	3.4	1.8	2073	442	20.00	386	2320
129	207	13.607	13.578	34.570	25.943	34.617	42.913	183	72	1.03	10.5	3.8	2098	598	20.00	455	2284
128	245	11.851	11.819	34.488	26.226	34.969	43.330	111	154	1.85	18.8	12.0	2178	994	20.00	703	2286
127	285	10.958	10.923	34.585	26.467	35.245	43.638	49	221	2.42	24.6	20.9	2232	1461	20.00	995	2288
126	355	9.469	9.429	34.569	26.711	35.553	44.005	35	244	2.65	31.8	25.4	2256	1723	20.00	1102	2291
125	404	8.242	8.200	34.512	26.861	35.757	44.261	52	236	2.67	35.4	26.4	2254	1684	20.00	1022	2293
124	503	6.817	6.770	34.436	27.006	35.969	44.536	96	201	2.56	36.0	27.2	2233	1459	20.00	834	2290
123	600	6.008	5.955	34.425	27.104	36.106	44.710	100	202	2.64	37.7	33.9	2239	1462	20.00	807	2296
122	699	5.484	5.424	34.443	27.184	36.212	44.839	83	224	2.83	40.4	45.1	2261	1603	20.00	865	2307
121	798	5.020	4.954	34.456	27.249	36.300	44.949	82	228	2.90	41.2	54.2	2271	1625	20.00	860	2316
120	899	4.633	4.561	34.486	27.317	36.388	45.055	75	238	2.97	42.2	66.0	2288	1641	20.00	854	2333
119	996	4.266	4.188	34.504	27.372	36.461	45.146	82	233	2.95	41.6	74.0	2294	1629	20.00	835	2341
118	1143	3.738	3.652	34.527	27.445	36.562	45.272	98	222	2.85	40.2	84.4	2295	1490	20.00	746	2355
117	1292	3.359	3.264	34.553	27.504	36.640	45.369	108	215	2.80	39.5	92.9	2298	1439	20.00	709	2364
116	1439	3.007	2.903	34.574	27.554	36.709	45.456	116	210	2.75	38.8	100.9	2303	1402	20.00	680	2374
115	1583	2.746	2.633	34.592	27.592	36.762	45.522	120	208	2.72	38.5	107.3	2307	1379	20.00	662	2379
114	1729	2.509	2.387	34.611	27.629	36.811	45.583	128	202	2.67	37.8	111.4	2307	1349	20.00	641	2383
113	1875	2.321	2.189	34.624	27.655	36.848	45.630	135	196	2.62	37.2	115.1	2308	1299	20.00	611	2390
112	2024	2.172	2.029	34.638	27.679	36.881	45.671	142	191	2.57	36.6	117.5	2305	1262	20.00	590	2392
111	2174	2.046	1.892	34.650	27.700	36.909	45.706	147	187	2.54	36.3	119.8	2305	1229	20.00	572	2396
110	2325	1.956	1.790	34.659	27.715	36.929	45.731	151	183	2.51	35.8	120.8	2307	1203	20.00	557	2401
109	2475	1.886	1.707	34.667	27.728	36.946	45.753	155	180	2.48	35.6	121.8	2305	1180	20.00	544	2402
108	2674	1.825	1.629	34.674	27.739	36.962	45.772	157	179	2.47	35.3	123.2	2305	1178	20.00	542	2403
107	2874	1.793	1.578	34.679	27.747	36.973	45.786	158	179	2.47	35.5	125.0	2307	1170	20.00	537	2406
106	3071	1.777	1.543	34.682	27.752	36.979	45.794	157	180	2.48	35.6	126.9	2311	1168	20.00	535	2411
105	3267	1.767	1.514	34.684	27.756	36.985	45.801	155	182	2.49	35.8	128.9	2317	1173	20.00	537	2416
104	3468	1.764	1.490	34.687	27.760	36.990	45.808	154	183	2.50	35.8	130.3	2318	1171	20.00	535	2418
103	3667	1.769	1.473	34.688	27.762	36.993	45.812	154	184	2.50	35.9	131.3	2320	1181	20.00	539	2418
172	3868	1.783	1.464	34.689	27.763	36.995	45.814	154	184	2.51	35.9	131.5	2321	1164	20.00	531	2422
171	4100	1.804	1.458	34.688	27.763	36.995	45.814	154	184	2.51	35.9	131.9	2319	1160	20.00	529	2420

Station 326 Latitude 19-59.7S Longitude 88-00.0W Date 3/19/93 Bottom Depth 4311 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								-------------umol/kg					--------------				
236	0	23.034	23.034	35.587	24.371	32.726	40.723	216	-3	0.35	0.1	1.9	2056				
235	29	22.998	22.992	35.582	24.379	32.735	40.734	216	-3	0.35	0.1	1.9	2058	369	20.00	419	2347
268	49	19.930	19.921	35.229	24.959	33.408	41.494	245	-20	0.29	0.1	1.6	2043	377	20.00	375	2322
233	80	18.918	18.904	35.332	25.301	33.781	41.895	240	-11	0.31	0.1	1.6	2049	367	20.00	350	2336
232	104	18.149	18.131	35.238	25.423	33.929	42.067	236	-3	0.31	0.1	1.4	2053	378	20.00	349	2334
231	144	17.887	17.862	35.254	25.502	34.016	42.163	221	13	0.51	1.2	1.4	2070	425	20.00	388	2327
230	179	15.726	15.698	34.853	25.704	34.297	42.517	206	39	0.70	5.4	2.0	2076	480	20.00	400	2305
229	204	13.579	13.550	34.543	25.928	34.603	42.900	180	76	1.09	10.9	4.0	2101	613	20.00	467	2282
228	254	11.080	11.049	34.519	26.393	35.167	43.556	78	192	2.20	22.9	16.4	2206	1254	20.00	859	2282
227	328	9.619	9.582	34.549	26.671	35.505	43.952	43	235	2.59	30.5	23.2	2247	1621	20.00	1044	2290
226	429	7.560	7.517	34.459	26.920	35.848	44.382	82	210	2.54	35.2	24.3	2233	1513	20.00	892	2285
225	529	6.450	6.402	34.435	27.055	36.035	44.618	95	205	2.61	37.2	30.2	2237	1447	20.00	814	2296
224	628	5.877	5.822	34.452	27.142	36.150	44.759	79	225	2.81	40.2	40.1	2258	1578	20.00	866	2306
223	728	5.325	5.264	34.479	27.232	36.267	44.901	58	250	3.05	43.2	55.3	2284	1810	20.00	970	2315
222	828	4.874	4.806	34.490	27.293	36.351	45.006	62	249	3.07	43.4	64.1	2292	1774	20.00	933	2327
221	928	4.434	4.361	34.502	27.352	36.432	45.109	71	243	3.03	42.7	72.5	2296	1705	20.00	880	2337
220	1026	4.085	4.006	34.517	27.401	36.500	45.193	79	238	3.00	42.2	80.3	2300	1630	20.00	829	2348
219	1150	3.666	3.580	34.538	27.461	36.581	45.295	92	228	2.91	41.0	88.5	2303	1557	20.00	778	2358
218	1300	3.258	3.163	34.562	27.520	36.662	45.396	99	224	2.87	40.4	98.3	2309	1517	20.00	744	2368
251	1449	2.904	2.800	34.585	27.572	36.732	45.484	109	218	2.81	39.6	106.2	2311	1459	20.00	705	2376
216	1595	2.636	2.523	34.604	27.611	36.786	45.552										
215	1742	2.445	2.322	34.619	27.640	36.826	45.601	122	209	2.71	38.5	117.4	2314	1371	20.00	649	2389
214	1892	2.268	2.135	34.631	27.665	36.861	45.646	131	201	2.64	37.8	119.2	2315	1341	20.00	630	2393
213	2043	2.111	1.967	34.644	27.689	36.894	45.687	139	194	2.58	37.0	120.7	2311	1271	20.00	593	2397
212	2192	1.994	1.839	34.654	27.707	36.919	45.719	146	188	2.53	36.4	121.3	2305	1228	20.00	570	2396
211	2392	1.895	1.724	34.664	27.724	36.942	45.747	151	184	2.50	36.0	122.7	2307	1213	20.00	560	2400
210	2592	1.830	1.642	34.672	27.737	36.959	45.769	154	182	2.48	35.8	124.1	2307	1188	20.00	547	2404
209	2793	1.787	1.580	34.677	27.745	36.971	45.784	153	183	2.49	35.8	126.9	2313	1184	20.00	543	2410
208	2994	1.764	1.538	34.682	27.752	36.980	45.795	152	185	2.49	35.9	129.1	2316	1186	20.00	543	2413
207	3193	1.752	1.506	34.684	27.756	36.986	45.803	152	185	2.49	35.9	130.6	2318	1183	20.00	541	2416
206	3395	1.747	1.481	34.687	27.760	36.991	45.809	152	185	2.49	35.8	131.0	2318	1189	20.00	543	2415
205	3595	1.754	1.466	34.688	27.762	36.994	45.813	152	185	2.49	35.8	131.0	2319	1170	20.00	534	2419
204	3794	1.766	1.456	34.689	27.764	36.996	45.815	153	185	2.49	35.8	130.9	2318	1177	20.00	537	2417
203	3993	1.778	1.445	34.689	27.765	36.998	45.817	153	185	2.49	35.8	131.1	2318	1179	20.00	538	2417
272	4194	1.790	1.434	34.688	27.765	36.998	45.819	153	184	2.49	35.8	130.9	2313	1172	20.00	534	2412
271	4302	1.802	1.433	34.691	27.767	37.001	45.821	153	185	2.49	35.8	131.1	2318	1171	20.00	534	2418

Station 329 Latitude 18-38.4S Longitude 87-18.4W Date 3/20/93 Bottom Depth 4214 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
136	0	24.238	24.238	35.942	24.285	32.604	40.567	213	-5	0.37	0.4	2.1	2049	337	20.00	403	2363
135	29	24.240	24.234	35.942	24.287	32.605	40.568	213	-5	0.37	0.4	1.9	2053	320	20.00	383	2381
168	54	20.003	19.993	35.292	24.988	33.434	41.517	248	-23	0.32	0.1	1.4	2047	358	20.00	358	2340
133	80	19.035	19.021	35.438	25.352	33.827	41.936	237	-8	0.39	0.2	1.4	2063	388	20.00	373	2340
132	104	18.150	18.132	35.280	25.455	33.960	42.098	230	3	0.39	0.3	1.4	2062	390	20.00	361	2336
131	154	17.502	17.476	35.179	25.538	34.066	42.226	214	21	0.61	3.3	1.6	2079	448	20.00	403	2325
130	178	14.841	14.814	34.733	25.807	34.433	42.684	197	52	0.84	7.4	2.4	2090	519	20.00	417	2303
129	204	12.859	12.831	34.496	26.037	34.740	43.063	158	102	1.34	13.8	5.8	2128	705	20.00	521	2287
128	253	11.311	11.279	34.562	26.384	35.148	43.528	68	200	2.24	22.2	17.5	2216	1281	20.00	886	2290
127	328	9.124	9.088	34.522	26.730	35.587	44.054	54	227	2.54	31.9	22.9	2246	1531	20.00	965	2297
126	451	7.389	7.345	34.501	26.978	35.913	44.454	57	236	2.72	38.4	30.6	2257	1681	20.00	984	2296
125	547	6.514	6.464	34.474	27.077	36.054	44.634	67	232	2.78	39.9	36.0	2258	1654	20.00	933	2299
124	646	5.811	5.754	34.479	27.172	36.183	44.795	56	248	2.97	42.7	47.5	2281	1740	20.00	952	2317
123	745	5.265	5.202	34.495	27.251	36.289	44.926	49	259	3.10	44.5	59.6	2296	1882	20.00	1007	2323
122	843	4.703	4.635	34.497	27.318	36.384	45.048	64	248	3.04	43.5	67.9	2297	1713	20.00	894	2338
121	942	4.223	4.150	34.509	27.380	36.471	45.157	82	233	2.94	41.9	75.7	2297	1625	20.00	831	2344
120	1039	3.883	3.804	34.526	27.429	36.538	45.241	92	227	2.90	41.4	83.0	2298	1561	20.00	787	2352
119	1135	3.613	3.529	34.542	27.469	36.592	45.308	93	227	2.89	41.3	90.1	2305	1517	20.00	756	2363
118	1231	3.357	3.267	34.557	27.507	36.643	45.372	97	226	2.87	40.9	96.8	2309	1541	20.00	759	2366
117	1326	3.154	3.058	34.570	27.537	36.683	45.423	99	225	2.87	40.6	102.1	2316	1521	20.00	743	2375
116	1467	2.887	2.782	34.596	27.582	36.744	45.496	99	228	2.87	40.7	112.4	2322	1479	20.00	714	2386
115	1609	2.641	2.527	34.609	27.615	36.790	45.555	107	222	2.81	39.9	117.7	2324	1466	20.00	700	2389
114	1753	2.419	2.296	34.623	27.646	36.833	45.610	115	215	2.74	39.2	122.2	2330	1399	20.00	662	2403
113	1945	2.196	2.060	34.640	27.679	36.878	45.667	125	207	2.67	38.4	126.2	2326	1349	20.00	632	2405
112	2142	2.027	1.876	34.654	27.704	36.914	45.712	133	201	2.62	37.8	129.3	2323	1301	20.00	604	2407
111	2339	1.911	1.744	34.663	27.722	36.938	45.743	141	194	2.57	37.1	129.9	2319	1266	20.00	585	2407
110	2533	1.844	1.661	34.670	27.733	36.955	45.764	142	194	2.56	36.8	133.0					
109	2727	1.812	1.611	34.674	27.740	36.964	45.776	143	193	2.56	37.0	135.1					
108	2923	1.791	1.572	34.678	27.747	36.973	45.786	145	192	2.53	36.8	135.3					
107	3120	1.777	1.538	34.681	27.751	36.979	45.794	145	192	2.53	36.7	136.1					
106	3318	1.771	1.512	34.683	27.755	36.984	45.801	147	190	2.52	36.6	135.9					
105	3511	1.761	1.482	34.686	27.760	36.990	45.808	150	187	2.51	36.3	133.5					
104	3700	1.759	1.460	34.687	27.762	36.994	45.813	152	185	2.49	36.2	133.1					
103	3892	1.763	1.442	34.688	27.764	36.997	45.817	154	184	2.48	36.0	132.2					
170	4143	1.779	1.429	34.689	27.766	37.000	45.820	154	184	2.48	36.0	131.8					
171	4420	1.810	1.426	34.690	27.767	37.001	45.822	154	184	2.48	36.0	131.4					

Station 333 Latitude 16-50.6S Longitude 86-23.4W Date 3/21/93 Bottom Depth 4496 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
136	0	24.397	24.397	35.910	24.214	32.528	40.488	214	-7	0.42	0.6	2.1	2043	317	20.00	382	2372
135	34	24.400	24.393	35.911	24.216	32.530	40.490	215	-8	0.42	0.6	2.1	2042	321	20.00	387	2366
168	53	20.406	20.396	35.570	25.093	33.524	41.592	242	-19	0.51	1.3	2.5	2062	377	20.00	383	2348
133	78	18.871	18.857	35.477	25.423	33.903	42.017	220	10	0.69	2.7	3.0	2084	423	20.00	403	2346
132	104	18.583	18.565	35.479	25.499	33.988	42.111	212	18	0.69	2.5	2.6	2087	432	20.00	407	2344
131	132	18.084	18.061	35.390	25.557	34.063	42.202	201	32	0.89	7.1	3.2	2103	485	20.00	446	2337
130	171	15.022	14.996	34.954	25.938	34.555	42.797	102	146	1.67	17.1	8.5	2171	842	20.00	681	2307
129	201	13.274	13.246	34.771	26.167	34.850	43.155	45	212	2.23	20.1	15.7	2218	1243	20.00	934	2297
128	274	11.876	11.840	34.796	26.462	35.200	43.556	1	264	2.73	22.6	28.4	2269	1744	20.00	1235	2304
127	349	10.291	10.249	34.706	26.680	35.484	43.902	2	272	2.78	32.2	30.5	2277	1863	20.00	1233	2303
126	449	8.772	8.723	34.627	26.870	35.741	44.222	9	275	2.88	38.7	34.3	2279	1936	20.00	1201	2300
125	548	7.303	7.249	34.552	27.031	35.970	44.514	24	270	2.99	42.2	40.5	2281	1909	20.00	1113	2305
124	648	6.509	6.449	34.521	27.116	36.093	44.673	33	266	3.04	43.3	45.7	2287	1890	20.00	1065	2312
123	745	5.683	5.618	34.490	27.198	36.215	44.833	48	257	3.05	43.7	51.9	2287	1857	20.00	1011	2315
122	841	5.178	5.107	34.510	27.274	36.317	44.958	41	267	3.17	45.0	65.1	2302	1905	20.00	1015	2327
121	941	4.668	4.592	34.520	27.341	36.409	45.074	50	262	3.16	44.5	75.1	2309	1869	20.00	974	2338
120	1040	4.236	4.154	34.533	27.399	36.489	45.175	61	254	3.10	43.7	84.0	2316	1760	20.00	900	2354
119	1191	3.672	3.582	34.554	27.474	36.593	45.307	76	244	3.03	42.5	95.9	2321	1683	20.00	840	2365
118	1341	3.274	3.176	34.576	27.530	36.671	45.404	83	241	2.99	41.8	106.4	2329	1619	20.00	794	2380
117	1491	2.983	2.875	34.596	27.574	36.730	45.478	87	239	2.95	41.4	115.6	2334	1604	20.00	777	2387
116	1640	2.732	2.614	34.609	27.607	36.777	45.538	94	234	2.90	40.7	121.3	2336	1531	20.00	734	2397
115	1790	2.519	2.391	34.624	27.639	36.820	45.592	102	228	2.85	40.2	127.1	2336	1493	20.00	709	2400
114	1942	2.310	2.172	34.635	27.665	36.859	45.642	115	217	2.75	39.1	127.6	2332	1387	20.00	652	2407
113	2090	2.156	2.008	34.646	27.688	36.890	45.681	125	207	2.68	38.2	127.8	2327	1338	20.00	625	2407
112	2287	1.983	1.820	34.659	27.713	36.925	45.726	137	197	2.59	37.1	127.8	2318	1268	20.00	588	2405
111	2485	1.890	1.711	34.667	27.727	36.946	45.752	143	193	2.56	36.7	129.0	2319	1239	20.00	572	2409
110	2681	1.834	1.637	34.675	27.739	36.962	45.772	144	192	2.55	36.6	131.8	2322	1221	20.00	561	2415
109	2878	1.801	1.586	34.678	27.745	36.971	45.783	144	192	2.55	36.7	134.3	2325	1215	20.00	558	2420
108	3074	1.786	1.552	34.682	27.751	36.978	45.793	143	193	2.55	36.7	136.5	2323	1225	20.00	561	2417
107	3271	1.779	1.525	34.684	27.755	36.983	45.799	144	193	2.55	36.7	136.7	2324	1210	20.00	554	2419
106	3464	1.767	1.493	34.687	27.760	36.990	45.807	148	189	2.52	36.3	134.6	2323	1206	20.00	551	2419
105	3658	1.754	1.459	34.688	27.763	36.995	45.814	151	186	2.51	36.1	133.1	2319	1187	20.00	542	2417
104	3853	1.754	1.438	34.690	27.766	36.999	45.820	153	184	2.48	35.9	131.6	2314	1187	20.00	541	2411
103	4051	1.768	1.429	34.691	27.767	37.001	45.822	154	184	2.48	35.8	131.3	2315	1162	20.00	530	2416
170	4246	1.783	1.421	34.692	27.769	37.003	45.824	154	184	2.48	35.7	131.1	2316	1183	20.00	539	2415
171	4497	1.808	1.415	34.691	27.768	37.003	45.824	154	184	2.48	35.7	131.3	2316	1177	20.00	536	2415

Lamont-Doherty Earth Observatory of Columbia University
WOCE P19C R/V Knorr WOCE Line P19

Station 338 Latitude 14-33.1S Longitude 85-49.5W Date 3/22/93 Bottom Depth 4532 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
236	0	25.348	25.348	35.841	23.872	32.163	40.100	209	-5	0.41	0.1	2.2	2037	303	20.00	380	2375
235	30	25.286	25.279	35.837	23.890	32.183	40.122	209	-5	0.41	0.1	2.2	2036	310	20.00	388	2368
268	54	19.627	19.617	35.520	25.260	33.716	41.807	229	-3	0.79	5.2	3.4	2065	417	20.00	410	2327
233	75	18.620	18.607	35.457	25.472	33.959	42.081	207	24	0.96	6.7	4.0	2101	479	20.00	451	2339
232	98	17.545	17.528	35.286	25.608	34.133	42.289	176	59	1.23	12.3	5.2	2128	576	20.00	519	2329
231	124	14.652	14.634	34.906	25.980	34.610	42.865	100	150	1.76	18.0	9.7	2175	878	20.00	700	2304
230	151	13.586	13.565	34.920	26.217	34.886	43.178	1	254	2.56	21.3	23.1	2250	1511	20.00	1151	2305
229	185	12.920	12.895	34.909	26.344	35.039	43.355	1	257	2.56	23.7	26.4	2252	1548	20.00	1146	2302
228	237	12.185	12.154	34.863	26.454	35.178	43.522	1	262	2.61	26.5	28.0	2260	1609	20.00	1155	2306
227	285	11.429	11.393	34.813	26.559	35.314	43.687	3	264	2.61	31.0	28.8	2260	1680	20.00	1168	2300
226	335	10.608	10.567	34.766	26.671	35.461	43.866	6	266	2.65	33.8	31.0	2266	1703	20.00	1143	2304
225	392	9.941	9.895	34.718	26.750	35.569	44.001	2	274	2.81	35.1	34.1	2279	1869	20.00	1219	2305
224	447	8.998	8.949	34.661	26.861	35.722	44.193	3	279	2.94	38.7	37.1	2283	1935	20.00	1212	2305
223	529	7.955	7.900	34.610	26.983	35.891	44.406	15	274	2.95	41.4	41.0	2282	1908	20.00	1144	2306
222	613	6.986	6.927	34.556	27.079	36.033	44.591	22	273	3.04	43.4	45.4	2289	1923	20.00	1106	2312
221	698	6.226	6.162	34.529	27.160	36.150	44.743	27	274	3.13	45.0	51.9	2292	1967	20.00	1096	2313
220	783	5.605	5.537	34.522	27.233	36.254	44.875	31	274	3.18	45.8	61.3	2303	1964	20.00	1065	2324
219	867	5.161	5.088	34.521	27.285	36.329	44.970	37	271	3.20	45.8	68.5	2306	1954	20.00	1040	2328
218	1020	4.495	4.413	34.535	27.373	36.449	45.123	51	262	3.16	44.7	82.2	2315	1832	20.00	948	2347
217	1194	3.826	3.735	34.551	27.456	36.568	45.274	69	250	3.08	43.2	94.9	2321	1730	20.00	869	2362
216	1374	3.269	3.168	34.577	27.532	36.673	45.406	80	243	3.01	42.2	108.5	2328	1636	20.00	802	2378
215	1558	2.890	2.777	34.602	27.588	36.749	45.502	88	238	2.95	41.6	120.4	2339	1595	20.00	770	2393
214	1746	2.548	2.424	34.621	27.633	36.814	45.584	100	229	2.87	40.4	127.3	2339	1488	20.00	707	2403
213	1938	2.303	2.166	34.638	27.668	36.862	45.646	109	222	2.79	39.8	134.0	2336	1432	20.00	673	2407
212	2131	2.126	1.974	34.651	27.694	36.898	45.691	117	216	2.74	39.2	137.2	2340	1368	20.00	638	2418
211	2330	1.975	1.808	34.662	27.716	36.929	45.730	125	210	2.68	38.4	138.8	2337	1327	20.00	615	2419
210	2532	1.883	1.699	34.670	27.731	36.950	45.757	129	206	2.65	38.2	141.1	2337	1293	20.00	596	2423
209	2733	1.832	1.630	34.674	27.739	36.962	45.772	131	205	2.64	38.1	144.1	2339	1282	20.00	589	2427
208	2988	1.805	1.579	34.678	27.746	36.972	45.785	133	203	2.62	37.8	145.8	2341	1254	20.00	575	2432
207	3249	1.802	1.550	34.680	27.750	36.977	45.792	138	198	2.59	37.6	143.2	2335	1233	20.00	565	2428
206	3509	1.794	1.515	34.684	27.756	36.985	45.801	144	193	2.56	37.0	138.2	2329	1195	20.00	547	2427
205	3774	1.783	1.475	34.686	27.760	36.991	45.810	148	190	2.53	36.7	136.3	2326	1199	20.00	548	2424
204	4039	1.774	1.436	34.689	27.765	36.999	45.819	153	185	2.50	36.2	133.7	2322	1180	20.00	538	2421
203	4306	1.788	1.419	34.690	27.767	37.002	45.823	153	184	2.50	36.1	133.0	2319	1184	20.00	540	2417
270	4517	1.810	1.415	34.690	27.768	37.002	45.824	153	184	2.48	36.1	132.8	2319	1177	20.00	536	2418
271	4702	1.833	1.414	34.690	27.768	37.002	45.824	153	184	2.48	36.1	132.8	2319	1169	20.00	532	2419

Station 342 Latitude 12-29.3S Longitude 85-50.1W Date 3/23/93 Bottom Depth 4332 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
236	0	26.200	26.200	35.845	23.610	31.880	39.797	204	-3	0.43	0.6	2.4	2032	303	20.00	394	2369
235	28	25.949	25.943	35.804	23.660	31.936	39.860	211	-9	0.48	1.2	2.4	2038	314	20.00	403	2367
268	53	19.546	19.536	35.477	25.249	33.707	41.801	190	36	1.12	9.5	4.9	2112	513	20.00	503	2336
233	77	18.464	18.450	35.401	25.468	33.962	42.089	197	34	1.22	10.8	4.8	2128	548	20.00	513	2341
232	104	16.626	16.609	35.180	25.746	34.303	42.489	110	130	1.76	20.1	8.9	2174	819	20.00	710	2315
231	130	14.212	14.193	34.940	26.101	34.747	43.016	1	251	2.51	23.8	19.5	2249	1481	20.00	1158	2306
230	154	13.355	13.333	34.927	26.269	34.948	43.248	1	255	2.57	18.0	26.7	2255	1520	20.00	1147	2309
229	183	12.842	12.817	34.904	26.356	35.054	43.373	1	258	2.54	25.2	26.7	2255	1549	20.00	1143	2306
228	223	12.000	11.971	34.855	26.483	35.215	43.565	2	262	2.57	28.6	27.7	2260	1606	20.00	1143	2306
227	263	11.421	11.388	34.823	26.567	35.323	43.696	4	263	2.57	31.5	28.9	2260	1655	20.00	1150	2301
226	303	10.942	10.904	34.796	26.634	35.410	43.802	12	258	2.53	33.3	29.1	2257	1580	20.00	1075	2305
225	353	10.252	10.210	34.748	26.720	35.525	43.944	10	264	2.62	35.0	31.5	2268	1703	20.00	1125	2306
224	402	9.573	9.527	34.709	26.805	35.640	44.086	10	268	2.73	36.7	34.5	2270	1756	20.00	1128	2305
223	502	8.380	8.327	34.637	26.940	35.828	44.325	11	275	2.90	39.9	39.4	2281	1908	20.00	1164	2305
222	602	7.034	6.976	34.566	27.080	36.032	44.588	14	281	3.09	43.4	47.6	2293	2003	20.00	1155	2311
221	700	6.185	6.121	34.537	27.171	36.164	44.758	24	278	3.15	44.8	54.8	2299	2009	20.00	1117	2316
220	799	5.512	5.443	34.526	27.247	36.273	44.898	31	275	3.18	45.2	63.6	2307	1972	20.00	1065	2327
219	899	4.926	4.852	34.526	27.317	36.372	45.024	44	267	3.15	44.8	72.4	2312	1908	20.00	1005	2337
218	1000	4.515	4.435	34.534	27.369	36.445	45.118	55	259	3.11	43.8	80.2	2313	1799	20.00	931	2347
217	1199	3.728	3.637	34.561	27.474	36.590	45.301	70	249	3.04	42.4	98.6	2323	1715	20.00	859	2366
216	1398	3.189	3.087	34.586	27.547	36.692	45.429	80	244	3.00	41.7	112.5	2332	1633	20.00	799	2382
215	1599	2.753	2.639	34.612	27.608	36.776	45.536	90	238	2.92	40.8	124.4	2342	1563	20.00	750	2399
214	1799	2,481	2.353	34.628	27.645	36.829	45.603	98	232	2.86	40.0	132.4	2347	1502	20.00	712	2411
213	1999	2.248	2.106	34.643	27.677	36.874	45.660	107	225	2.78	39.3	137.7	2346	1428	20.00	670	2417
212	2199	2.073	1.916	34.655	27.702	36.909	45.705	116	217	2.72	38.5	139.2	2344	1391	20.00	647	2420
211	2400	1.935	1.763	34.664	27.721	36.937	45.740	124	211	2.67	37.9	140.7	2342	1329	20.00	614	2424
210	2599	1.844	1.655	34.673	27.736	36.958	45.767	131	205	2.63	37.6	142.4	2340	1290	20.00	594	2427
209	2800	1.812	1.604	34.674	27.741	36.965	45.777	132	204	2.61	37.2	144.5	2344	1272	20.00	584	2433
208	2999	1.793	1.566	34.679	27.748	36.974	45.788	139	198	2.57	36.9	140.6	2336	1226	20.00	562	2431
207	3199	1.783	1.536	34.681	27.752	36.980	45.795	143	194	2.55	36.6	138.9	2335	1219	20.00	558	2430
206	3399	1.770	1.503	34.686	27.758	36.988	45.805	145	192	2.54	36.4	137.8	2332	1206	20.00	551	2429
205	3597	1.766	1.478	34.687	27.761	36.992	45.810	148	189	2.51	36.1	134.8	2326	1193	20.00	545	2424
204	3796	1.770	1.460	34.688	27.763	36.995	45.814	149	188	2.51	36.1	134.5	2328	1187	20.00	542	2427
203	3991	1.785	1.453	34.688	27.763	36.996	45.815	150	188	2.50	36.0	134.5	2328	1194	20.00	545	2426
270	4189	1.805	1.449	34.688	27.764	36.996	45.816	150	188	2.49	36.0	134.5	2327	1184	20.00	540	2426
271	4340	1.822	1.448	34.689	27.764	36.997	45.817	150	188	2.49	36.0	134.4	2327	1173	20.00	535	2427

Lamont-Doherty Earth Observatory of Columbia University
WOCE P19C R/V Knorr WOCE Line P19

Station 346 Latitude 10-29.5S Longitude 85-50.0W Date 3/24/93 Bottom Depth 4283 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								umol/kg									
136	0	27.391	27.391	35.623	23.064	31.306	39.199	208	-11	0.27	0.1	2.7	1962	245	20.00	335	2339
135	29	25.383	25.377	35.633	23.706	31.999	39.937	194	11	0.44	2.0	2.6	2022	323	20.00	406	2338
168	54	20.206	20.196	35.463	25.064	33.503	41.578	163	61	1.12	9.7	4.9	2145	598	20.00	602	2342
133	80	18.427	18.413	35.345	25.435	33.930	42.059	126	105	1.45	16.6	5.9	2159	685	20.00	641	2331
132	105	15.927	15.910	35.082	25.832	34.414	42.625	65	179	1.89	21.9	10.0	2194	960	20.00	808	2311
131	135	13.827	13.808	34.919	26.165	34.826	43.109	5	249	2.47	24.5	19.7	2244	1453	20.00	1118	2304
130	163	12.686	12.664	34.897	26.381	35.085	43.409	1	259	2.55	26.4	25.6	2253	1550	20.00	1136	2303
129	193	12.273	12.247	34.880	26.449	35.170	43.509	4	258	2.51	29.4	26.0	2251	1541	20.00	1110	2302
128	222	11.808	11.779	34.855	26.519	35.259	43.616	5	260	2.52	31.0	27.9	2256	1583	20.00	1118	2303
127	251	11.407	11.375	34.833	26.577	35.334	43.706	11	256	2.48	32.5	28.1	2253	1543	20.00	1071	2304
126	279	11.056	11.021	34.808	26.623	35.394	43.780	4	266	2.60	32.4	30.5	2264	1681	20.00	1150	2304
125	327	10.493	10.454	34.772	26.696	35.491	43.900	4	268	2.67	34.0	32.5	2270	1730	20.00	1155	2306
124	397	9.588	9.543	34.716	26.808	35.642	44.088	7	272	2.77	36.4	35.8	2276	1809	20.00	1162	2306
123	495	8.297	8.245	34.638	26.953	35.845	44.346	10	277	2.92	40.0	40.1	2284	1901	20.00	1156	2308
122	591	7.066	7.009	34.577	27.085	36.034	44.589	10	285	3.14	43.4	49.0	2300	2027	20.00	1170	2316
121	686	6.393	6.330	34.559	27.162	36.144	44.729	9	290	3.25	45.1	57.7	2308	2202	20.00	1235	2314
120	786	5.619	5.551	34.543	27.248	36.268	44.888	23	283	3.26	45.5	65.9	2312	2040	20.00	1107	2329
119	884	5.013	4.939	34.541	27.318	36.369	45.017	39	270	3.21	44.2	75.4	2315	1901	20.00	1005	2342
118	983	4.603	4.524	34.547	27.370	36.441	45.109	50	263	3.16	43.5	83.3	2316	1839	20.00	956	2348
117	1182	3.839	3.749	34.566	27.467	36.577	45.282	68	251	3.08	42.2	98.7	2325	1699	20.00	854	2369
116	1383	3.291	3.189	34.586	27.537	36.677	45.409	81	243	2.99	41.3	111.2	2332	1627	20.00	799	2383
115	1586	2.875	2.760	34.608	27.594	36.756	45.509	90	237	2.93	40.4	122.6	2339	1549	20.00	747	2397
114	1786	2.579	2.451	34.625	27.634	36.813	45.582	96	233	2.87	40.1	130.4	2343	1511	20.00	719	2406
113	1987	2.331	2.189	34.642	27.670	36.862	45.644	102	229	2.82	39.5	138.7	2350	1453	20.00	684	2420
112	2187	2.145	1.988	34.653	27.695	36.898	45.690	110	223	2.77	39.0	141.5	2346	1410	20.00	658	2419
111	2387	1.983	1.811	34.663	27.716	36.930	45.731	118	216	2.71	38.3	143.4	2349	1349	20.00	625	2429
110	2588	1.875	1.686	34.671	27.732	36.952	45.760	124	212	2.67	37.9	145.8	2344	1303	20.00	601	2430
109	2788	1.826	1.619	34.675	27.741	36.964	45.775	130	206	2.64	37.5	145.1	2343	1284	20.00	590	2431
108	2986	1.802	1.576	34.678	27.746	36.972	45.785	134	202	2.60	37.2	144.2	2342	1238	20.00	568	2436
107	3187	1.793	1.547	34.681	27.751	36.978	45.793	139	198	2.58	36.8	141.6	2338	1230	20.00	564	2432
106	3386	1.783	1.517	34.684	27.755	36.984	45.801	143	194	2.55	36.4	138.5	2333	1201	20.00	550	2430
105	3586	1.778	1.491	34.685	27.758	36.989	45.806	146	191	2.54	36.2	136.4	2325	1205	20.00	551	2421
104	3786	1.770	1.461	34.688	27.763	36.995	45.814	148	189	2.52	36.0	134.8	2328	1185	20.00	541	2427
103	3935	1.777	1.451	34.689	27.764	36.997	45.816	148	189	2.52	35.9	135.4	2327	1199	20.00	547	2424
170	4084	1.791	1.448	34.689	27.764	36.997	45.817	149	189	2.51	36.0	134.6	2324	1179	20.00	538	2423
171	4310	1.814	1.444	34.690	27.766	36.999	45.819	149	189	2.51	35.9	134.8	2326	1193	20.00	544	2423

Station 351 Latitude 8-00.5S Longitude 85-50.1W Date 3/26/93 Bottom Depth 4187 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								umol/kg									
136	0	27.522	27.522	34.833	22.427	30.675	38.572	213	-15	0.43	1.5	2.0	1974	287	20.00	394	2305
135	33	17.969	17.963	35.173	25.415	33.927	42.071	13	221	2.14	23.9	10.2	2254	1309	20.00	1201	2329
168	55	15.579	15.570	35.064	25.895	34.490	42.711	3	242	2.25	30.1	18.1	2232	1307	20.00	1083	2306
133	80	14.570	14.558	35.018	26.083	34.714	42.970	8	242	2.20	30.1	20.7	2224	1278	20.00	1015	2300
132	105	14.144	14.129	34.992	26.154	34.802	43.073	6	246	2.26	30.6	22.2	2225	1306	20.00	1019	2298
131	135	13.827	13.808	34.973	26.207	34.867	43.150	13	241	2.22	30.2	22.4	2226	1285	20.00	989	2301
130	164	13.565	13.542	34.960	26.252	34.922	43.214	14	242	2.25	30.4	22.6	2228	1289	20.00	981	2304
129	194	13.306	13.279	34.945	26.295	34.975	43.276	7	250	2.34	30.7	23.6	2241	1392	20.00	1048	2306
128	224	12.980	12.949	34.925	26.346	35.039	43.352	1	257	2.47	27.5	26.7	2249	1478	20.00	1097	2306
127	264	12.556	12.520	34.900	26.411	35.121	43.451	1	259	2.49	29.2	27.5	2255	1551	20.00	1130	2305
126	304	11.981	11.941	34.867	26.498	35.231	43.582	1	263	2.54	30.4	28.4	2263	1604	20.00	1141	2310
125	354	11.120	11.076	34.812	26.616	35.385	43.769	1	268	2.64	31.3	31.8	2271	1725	20.00	1183	2307
124	404	10.165	10.117	34.750	26.737	35.546	43.969	2	273	2.77	33.2	35.5	2275	1816	20.00	1196	2305
123	504	8.233	8.180	34.645	26.968	35.863	44.366	2	285	3.04	40.1	46.4	2292	2042	20.00	1239	2306
122	604	7.277	7.218	34.599	27.073	36.012	44.557	3	290	3.16	43.4	51.3	2300	2059	20.00	1199	2314
121	703	6.297	6.233	34.560	27.175	36.162	44.751	11	289	3.23	45.1	58.7	2308	2112	20.00	1180	2319
120	802	5.505	5.436	34.548	27.266	36.291	44.917	31	275	3.20	44.5	69.1	2308	1935	20.00	1045	2331
119	903	4.939	4.864	34.550	27.334	36.388	45.040	43	268	3.20	43.7	78.9	2315	1894	20.00	999	2342
118	1003	4.499	4.419	34.555	27.388	36.464	45.137	52	262	3.15	43.1	87.6	2321	1782	20.00	922	2357
117	1102	4.068	3.982	34.563	27.440	36.539	45.233			3.07	42.2	95.9	2320	1712	20.00	869	2363
116	1201	3.725	3.634	34.573	27.484	36.600	45.311	73	247	3.02	41.5	102.7	2326	1642	20.00	822	2374
115	1401	3.111	3.009	34.600	27.565	36.714	45.455	82	243	2.97	40.8	119.3	2337	1590	20.00	775	2392
114	1600	2.774	2.659	34.619	27.612	36.779	45.537	88	240	2.91	40.2	130.3	2345	1565	20.00	752	2403
113	1799	2.503	2.375	34.635	27.649	36.831	45.604	93	236	2.86	39.7	137.9	2351	1499	20.00	711	2416
112	1997	2.289	2.147	34.648	27.678	36.873	45.657	100	231	2.82	39.1	144.2	2355	1436	20.00	675	2427
111	2195	2.095	1.938	34.658	27.703	36.909	45.703	108	226	2.77	38.6	147.4	2355	1406	20.00	655	2430
110	2393	1.936	1.764	34.667	27.723	36.939	45.742	118	217	2.71	37.9	147.5	2349	1333	20.00	617	2431
109	2590	1.853	1.665	34.672	27.735	36.956	45.764	123	213	2.67	37.5	148.4	2349	1314	20.00	605	2434
108	2788	1.804	1.598	34.676	27.743	36.968	45.780	127	209	2.64	37.2	149.0	2347	1266	20.00	581	2437
107	2985	1.784	1.559	34.679	27.748	36.975	45.789	131	205	2.61	37.0	147.9	2344	1259	20.00	577	2435
106	3183	1.785	1.540	34.681	27.751	36.979	45.794	133	204	2.59	36.9	147.1	2344	1234	20.00	565	2439
105	3382	1.789	1.523	34.682	27.753	36.982	45.798	135	202	2.58	36.7	145.8	2343	1236	20.00	566	2437
104	3579	1.795	1.508	34.684	27.756	36.986	45.802	136	201	2.57	36.6	144.7	2340	1215	20.00	556	2436
103	3776	1.800	1.491	34.686	27.759	36.989	45.807	138	199	2.56	36.3	144.2	2339	1229	20.00	562	2433
170	3973	1.804	1.473	34.687	27.761	36.992	45.811	140	197	2.55	36.1	142.0	2338	1204	20.00	550	2435
171	4191	1.807	1.451	34.689	27.764	36.997	45.816	144	194	2.52	36.0	138.5	2330	1203	20.00	549	2427

Lamont-Doherty Earth Observatory of Columbia University
WOCE P19C R/V Knorr WOCE Line P19

Station 355 Latitude 6-00.4S Longitude 85-49.8W Date 3/27/93 Bottom Depth 4098 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
136	0	28.497	28.497	33.730	21.280	29.517	37.404	203	-6	0.22	0.2	2.3	1908	281	20.00	403	2220
135	19	24.132	24.128	35.439	23.937	32.265	40.236	219	-10	0.79	7.3	3.7	2053	388	20.00	462	2330
168	40	19.459	19.452	35.357	25.179	33.641	41.739	133	94	1.41	14.1	6.2	2134	614	20.00	600	2325
132	61	15.417	15.408	35.060	25.929	34.529	42.756	26	219	2.04	27.3	16.4	2205	1136	20.00	936	2297
130	95	14.129	14.115	35.001	26.164	34.812	43.084	29	223	2.08	28.8	19.7	2211	1151	20.00	897	2302
128	135	13.648	13.629	34.963	26.237	34.903	43.192	23	232	2.15	29.7	21.8	2219	1234	20.00	943	2300
127	195	13.036	13.009	34.927	26.335	35.026	43.337	4	254	2.36	31.1	25.5	2242	1435	20.00	1068	2303
126	255	12.377	12.343	34.887	26.436	35.153	43.489	4	258	2.44	31.4	28.0	2250	1539	20.00	1113	2302
125	315	11.465	11.425	34.831	26.567	35.321	43.692	4	263	2.55	32.8	32.2	2261	1654	20.00	1151	2303
124	403	9.789	9.742	34.732	26.787	35.612	44.050	1	276	2.84	32.4	39.9	2284	1850	20.00	1199	2312
123	501	7.993	7.941	34.638	26.999	35.905	44.418	4	285	3.04	41.2	49.7	2295	1997	20.00	1199	2313
122	598	6.926	6.869	34.591	27.115	36.071	44.631	5	291	3.18	44.1	57.2	2304	2070	20.00	1188	2318
121	695	6.098	6.035	34.565	27.205	36.201	44.798	22	280	3.16	44.4	63.9	2310	1978	20.00	1096	2330
120	793	5.454	5.386	34.562	27.283	36.311	44.938	37	269	3.13	43.2	74.8	2308	1880	20.00	1013	2336
119	889	4.942	4.868	34.558	27.340	36.394	45.045	48	262	3.10	42.8	82.5	2314	1805	20.00	951	2348
118	986	4.531	4.452	34.560	27.388	36.463	45.134	56	257	3.09	42.3	88.4	2315	1767	20.00	915	2352
117	1083	4.131	4.047	34.566	27.436	36.531	45.222	64	252	3.06	41.9	96.8	2322	1693	20.00	862	2366
116	1181	3.861	3.770	34.578	27.474	36.583	45.287	68	251	3.03	41.5	104.6	2328	1708	20.00	859	2371
115	1327	3.352	3.254	34.594	27.537	36.673	45.402	77	246	2.99	41.1	116.3	2338	1638	20.00	806	2388
114	1474	3.001	2.894	34.607	27.581	36.736	45.483	85	241	2.93	40.5	123.5	2339	1577	20.00	765	2395
113	1668	2.702	2.582	34.627	27.625	36.796	45.558	88	240	2.90	40.1	135.2	2345	1515	20.00	725	2408
112	1862	2.372	2.240	34.643	27.666	36.856	45.635	98	233	2.82	39.3	142.8	2351	1467	20.00	692	2419
111	2056	2.179	2.033	34.654	27.692	36.893	45.683	104	228	2.78	38.8	147.1	2355	1411	20.00	660	2429
110	2246	2.019	1.859	34.665	27.714	36.925	45.723	111	223	2.74	38.3	150.4	2354	1379	20.00	640	2432
109	2441	1.923	1.747	34.668	27.725	36.942	45.746	117	218	2.70	37.9	150.4	2353	1329	20.00	614	2436
108	2636	1.849	1.656	34.673	27.736	36.958	45.767	123	213	2.66	37.5	150.7	2349	1312	20.00	604	2435
107	2834	1.803	1.592	34.679	27.746	36.971	45.783	128	209	2.63	37.2	149.6	2347	1277	20.00	586	2436
106	3031	1.775	1.546	34.681	27.751	36.978	45.793	133	204	2.61	36.8	147.6	2345	1236	20.00	566	2440
105	3230	1.775	1.525	34.685	27.756	36.984	45.800	134	203	2.59	36.7	147.4	2345	1235	20.00	565	2440
104	3430	1.790	1.519	34.684	27.755	36.984	45.800	133	204	2.59	36.7	148.0	2345	1213	20.00	555	2442
103	3633	1.808	1.515	34.683	27.755	36.984	45.800	134	203	2.59	36.7	147.2	2347	1237	20.00	566	2441
170	3864	1.821	1.502	34.685	27.757	36.987	45.804	134	203	2.59	36.5	147.2	2345	1233	20.00	564	2439
171	4096	1.844	1.498	34.686	27.758	36.988	45.806	134	203	2.59	36.4	147.2	2342	1238	20.00	566	2435

Station 359 Latitude 4-00.1S Longitude 85-50.2W Date 3/28/93 Bottom Depth 3440 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
136	0	28.804	28.804	33.909	21.313	29.541	37.420	203	-8	0.20	0.0	2.5	1915	280	20.00	406	2230
135	25	26.410	26.404	34.560	22.577	30.856	38.781	241	-39	0.26	0.0	3.1	1973	306	20.00	402	2283
168	36	21.788	21.781	34.795	24.125	32.524	40.563	185	34	0.78	6.7	6.0	2053	446	20.00	481	2293
132	51	19.726	19.717	35.035	24.864	33.322	41.416	138	89	1.27	13.6	8.5	2111	588	20.00	581	2305
130	87	15.543	15.530	35.073	25.911	34.507	42.730	57	188	1.80	24.7	15.6	2183	916	20.00	758	2307
128	106	14.979	14.963	35.045	26.016	34.632	42.874	60	188	1.81	24.7	16.8	2182	916	20.00	740	2306
127	137	14.138	14.118	34.998	26.161	34.809	43.081	62	190	1.84	25.2	18.4	2191	950	20.00	741	2309
126	167	13.646	13.622	34.959	26.235	34.902	43.191	72	183	1.82	24.8	19.6	2181	927	20.00	708	2302
125	206	13.463	13.434	34.946	26.264	34.938	43.234	66	190	1.88	25.6	20.4	2190	974	20.00	738	2305
124	256	12.768	12.733	34.910	26.377	35.078	43.400	6	254	2.41	31.3	25.8	2239	1455	20.00	1070	2298
123	307	11.524	11.485	34.833	26.557	35.309	43.678	2	265	2.61	31.9	32.1	2262	1656	20.00	1155	2304
122	357	10.294	10.251	34.761	26.722	35.526	43.943	2	272	2.75	34.6	38.5	2275	1773	20.00	1174	2309
121	405	9.186	9.141	34.698	26.859	35.711	44.174	3	278	2.88	37.3	43.8	2285	1889	20.00	1194	2310
120	505	7.786	7.735	34.632	27.024	35.940	44.462	6	284	3.06	41.6	51.6	2296	1969	20.00	1172	2316
119	604	6.751	6.694	34.589	27.137	36.101	44.669	10	287	3.17	43.9	59.3	2306	2047	20.00	1166	2322
118	704	5.720	5.659	34.567	27.253	36.268	44.883	38	267	3.09	42.8	71.3	2306	1816	20.00	990	2338
117	804	5.249	5.181	34.559	27.305	36.343	44.980	48	260	3.07	42.3	76.9	2307	1801	20.00	962	2341
116	903	4.695	4.622	34.561	27.370	36.436	45.099										
115	1002	4.317	4.238	34.567	27.417	36.502	45.184	67	249	3.02	41.3	93.5	2317	1676	20.00	861	2362
114	1152	3.877	3.789	34.581	27.475	36.583	45.286	71	247	3.00	40.9	105.6	2328	1627	20.00	819	2378
113	1301	3.498	3.401	34.599	27.527	36.656	45.377	75	246	2.96	40.7	116.9	2338	1618	20.00	802	2390
112	1451	3.183	3.076	34.608	27.565	36.711	45.448	81	243	2.94	40.4	123.5	2342	1587	20.00	776	2397
111	1601	2.932	2.815	34.622	27.600	36.759	45.510	84	242	2.91	40.1	131.6	2350	1537	20.00	743	2411
110	1801	2.597	2.467	34.632	27.638	36.816	45.584			2.87	39.7	137.4	2351	1510	20.00	719	2414
109	2001	2.276	2.134	34.650	27.681	36.876	45.661	101	230	2.82	39.1	144.7	2354	1444	20.00	678	2425
108	2202	2.106	1.949	34.660	27.703	36.909	45.703	107	226	2.78	38.6	148.9	2354	1385	20.00	645	2432
107	2402	1.947	1.774	34.668	27.723	36.938	45.741	116	219	2.72	38.0	149.9	2354	1342	20.00	621	2436
106	2601	1.844	1.655	34.674	27.737	36.959	45.768	123	212	2.67	37.5	150.1	2352	1288	20.00	593	2440
105	2799	1.787	1.580	34.677	27.745	36.971	45.784	129	208	2.64	37.2	149.8	2349	1269	20.00	582	2439
104	2949	1.773	1.552	34.679	27.749	36.976	45.790	131	205	2.62	37.0	148.6	2346	1234	20.00	565	2441
103	3098	1.769	1.533	34.680	27.751	36.979	45.795	133	204	2.60	36.9	147.9	2352	1241	20.00	568	2446
170	3296	1.788	1.531	34.681	27.752	36.980	45.796	133	204	2.60	36.9	148.1	2346	1209	20.00	554	2444
171	3434	1.803	1.531	34.681	27.752	36.980	45.796	133	204	2.60	36.8	148.1	2347	1227	20.00	562	2443

Lamont-Doherty Earth Observatory of Columbia University
WOCE P19C R/V Knorr WOCE Line P19

Station 361 Latitude 2-59.7S Longitude 85-49.7W Date 3/29/93 Bottom Depth 3215 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3 -------------umol/kg-------------	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
236	0	29.149	29.149	34.141	21.372	29.590	37.459	207	-13	0.19	0.0	2.5	1933	287	20.00	422	2249
235	10	28.472	28.470	34.140	21.596	29.830	37.714	217	-21	0.20	0.0	2.5	1937	289	20.00	413	2252
268	23	28.068	28.063	34.493	21.995	30.235	38.124	219	-22	0.22	0.0	2.9	1956	295	20.00	415	2272
232	39	21.388	21.380	34.990	24.384	32.793	40.840	154	66	1.03	11.1	6.9	2088	517	20.00	548	2304
230	59	17.655	17.645	35.099	25.436	33.959	42.114	104	132	1.42	18.1	11.7	2142	683	20.00	618	2312
228	85	16.214	16.200	35.065	25.752	34.325	42.526	92	150	1.51	20.3	13.8	2154	752	20.00	640	2308
227	125	14.802	14.783	35.023	26.038	34.661	42.910	85	164	1.62	22.2	16.0	2169	815	20.00	654	2311
226	170	14.159	14.134	34.997	26.157	34.804	43.075	68	184	1.79	24.7	18.2	2185	920	20.00	718	2309
225	199	13.781	13.752	34.965	26.213	34.874	43.159	68	187	1.82	25.1	19.4	2187	953	20.00	732	2305
224	254	13.365	13.329	34.940	26.280	34.959	43.259	43	213	2.03	28.1	21.8	2211	1129	20.00	852	2304
223	300	12.456	12.416	34.880	26.416	35.130	43.464	5	256	2.45	31.8	28.9	2249	1506	20.00	1093	2303
222	329	10.737	10.697	34.786	26.664	35.448	43.848	2	269	2.69	33.0	36.4	2273	1724	20.00	1163	2310
221	379	9.610	9.567	34.722	26.808	35.641	44.086	2	276	2.83	36.1	41.8	2284	1869	20.00	1202	2310
220	454	8.430	8.382	34.659	26.948	35.834	44.329	10	276	2.90	39.8	47.3	2286	1892	20.00	1157	2311
219	553	7.326	7.272	34.612	27.075	36.012	44.555	23	270	2.95	41.2	54.8	2290	1813	20.00	1058	2321
218	652	6.590	6.529	34.589	27.159	36.131	44.707	27	271	3.03	42.3	61.9	2300	1897	20.00	1073	2325
217	751	5.697	5.631	34.569	27.258	36.274	44.890	45	260	3.02	41.8	72.8	2301	1761	20.00	959	2337
216	852	4.931	4.861	34.567	27.348	36.402	45.054	57	253	3.00	41.3	85.2	2310	1712	20.00	903	2351
215	951	4.601	4.524	34.570	27.388	36.459	45.127	65	248	2.98	41.0	91.3	2318	1647	20.00	856	2365
214	1051	4.265	4.182	34.576	27.430	36.518	45.202	67	248	2.98	40.8	98.2	2324	1647	20.00	843	2372
213	1151	4.007	3.918	34.583	27.463	36.565	45.261	68	249	2.98	40.9	105.0	2327	1656	20.00	839	2375
212	1300	3.555	3.457	34.595	27.519	36.644	45.363	76	245	2.95	40.6	114.8	2334	1594	20.00	792	2388
211	1451	3.234	3.127	34.610	27.562	36.705	45.440	79	245	2.93	40.3	124.8	2342	1574	20.00	771	2398
210	1601	2.951	2.834	34.620	27.597	36.755	45.504	84	242	2.90	40.0	131.4	2345	1558	20.00	754	2403
209	1750	2.767	2.639	34.628	27.620	36.789	45.548	88	239	2.87	39.7	136.4	2350	1511	20.00	725	2413
208	1901	2.508	2.371	34.641	27.654	36.836	45.609	94	236	2.85	39.3	143.2	2357	1486	20.00	705	2424
207	2100	2.271	2.120	34.653	27.684	36.880	45.666	100	232	2.80	38.8	148.9	2358	1421	20.00	667	2431
206	2300	2.111	1.945	34.661	27.704	36.910	45.704	107	226	2.76	38.4	151.0	2357	1393	20.00	649	2434
205	2499	1.921	1.740	34.669	27.727	36.944	45.748	118	217	2.69	37.8	150.7	2353	1322	20.00	611	2437
204	2699	1.810	1.612	34.676	27.742	36.966	45.777	126	210	2.64	37.4	150.3	2349	1286	20.00	591	2437
203	2898	1.776	1.560	34.678	27.747	36.974	45.788	130	207	2.62	37.2	150.2	2348	1247	20.00	572	2441
270	3097	1.779	1.543	34.680	27.750	36.978	45.793	131	206	2.61	37.1	150.9	2350	1242	20.00	569	2444
271	3213	1.791	1.543	34.681	27.751	36.979	45.794	131	206	2.60	37.1	150.8	2349	1227	20.00	562	2444

Station 367 Latitude 1-00.1S Longitude 85-49.9W Date 3/30/93 Bottom Depth 2235 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3 -------------umol/kg-------------	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
136	0	27.837	27.837	34.666	22.199	30.442	38.334	211	-14	0.39	2.0	3.1	1983	320	20.00	446	2286
135	11	26.008	26.006	34.469	22.633	30.923	38.859	220	-17	0.40	2.3	3.3	1977	327	20.00	422	2272
168	30	22.821	22.815	34.806	23.841	32.211	40.223	184	31	0.71	7.1	5.3	2033	402	20.00	453	2293
132	64	17.605	17.594	35.165	25.499	34.023	42.179	109	127	1.32	17.0	11.2	2134	633	20.00	571	2317
130	95	15.887	15.872	35.056	25.821	34.405	42.617	99	145	1.48	19.5	14.5	2148	717	20.00	602	2309
128	124	14.920	14.901	34.997	25.992	34.611	42.856	92	156	1.58	21.4	16.3	2159	776	20.00	625	2308
127	164	14.016	13.992	34.979	26.173	34.826	43.102	66	187	1.82	24.9	19.3	2185	928	20.00	720	2307
126	194	13.492	13.465	34.945	26.257	34.930	43.225	37	219	2.07	28.5	22.3	2210	1133	20.00	859	2303
125	234	12.487	12.455	34.888	26.415	35.127	43.459	13	249	2.34	31.6	27.2	2239	1397	20.00	1015	2303
124	273	11.942	11.906	34.852	26.493	35.227	43.580	13	251	2.39	32.5	29.4	2244	1461	20.00	1038	2302
123	312	10.587	10.549	34.775	26.681	35.472	43.878	7	265	2.60	35.1	35.5	2265	1653	20.00	1108	2307
122	355	9.840	9.799	34.731	26.776	35.599	44.035	13	263	2.65	36.2	37.5	2269	1700	20.00	1104	2308
121	404	9.176	9.131	34.693	26.857	35.709	44.172	15	266	2.72	37.7	41.6	2274	1707	20.00	1078	2313
120	454	8.988	8.938	34.686	26.883	35.743	44.214	10	272	2.81	38.4	43.8	2280	1789	20.00	1120	2312
119	505	8.137	8.084	34.646	26.983	35.883	44.390	16	271	2.89	39.8	49.1	2284	1821	20.00	1100	2314
118	554	7.897	7.840	34.636	27.012	35.923	44.440	18	271	2.90	40.3	50.1	2285	1804	20.00	1078	2317
117	603	7.136	7.077	34.605	27.097	36.043	44.594	28	266	2.94	40.9	56.4	2291	1811	20.00	1049	2323
116	654	6.854	6.791	34.598	27.131	36.091	44.654	33	263	2.94	40.9	59.6	2289	1790	20.00	1024	2322
115	703	6.190	6.126	34.582	27.206	36.198	44.791	41	260	2.98	41.4	66.1	2296	1756	20.00	977	2332
114	804	5.691	5.620	34.573	27.263	36.279	44.896	47	257	2.99	41.4	74.3	2303	1753	20.00	954	2340
113	903	4.969	4.894	34.569	27.346	36.398	45.048	61	249	2.97	40.9	84.5	2305	1657	20.00	875	2351
112	1002	4.604	4.523	34.572	27.390	36.461	45.128	64	249	2.98	41.1	91.0	2315	1684	20.00	875	2359
111	1103	4.047	3.961	34.583	27.459	36.558	45.252	69	248	2.98	41.0	103.9	2324	1674	20.00	849	2370
110	1202	3.672	3.581	34.595	27.507	36.625	45.338	73	247	2.97	40.8	113.2	2332				
109	1301	3.464	3.367	34.601	27.532	36.662	45.385	75	247	2.97	40.7	118.6	2339				
108	1400	3.261	3.158	34.608	27.558	36.699	45.432	79	244	2.95	40.4	123.5	2340				
107	1500	3.082	2.972	34.615	27.580	36.731	45.474	83	242	2.92	40.2	127.3	2344				
106	1601	2.792	2.677	34.628	27.617	36.783	45.541	88	239	2.89	39.8	134.8	2348				
105	1700	2.637	2.515	34.635	27.637	36.812	45.577	90	238	2.88	39.6	139.2	2354				
104	1800	2.508	2.380	34.641	27.653	36.835	45.608	94	236	2.85	39.4	142.6	2356				
103	1950	2.282	2.144	34.653	27.682	36.877	45.661	98	233	2.82	39.0	148.7	2360				
170	2099	2.137	1.988	34.660	27.700	36.904	45.696	104	229	2.78	38.5	151.3	2358				
171	2232	2.025	1.866	34.666	27.715	36.925	45.723	111	223	2.75	38.2	151.7	2356				

Station 373 Latitude 0-00.2N Longitude 85-50.0W Date 3/30/93 Bottom Depth 2875 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								------------		------------umol/kg	--------------						
136	1	26.832	26.832	34.430	22.344	30.614	38.531	215	-14	0.38	2.3	3.3	1974	326	20.00	436	2269
135	28	23.318	23.312	34.834	23.719	32.075	40.073	191	22	0.70	7.4	5.3	2033	403	20.00	463	2293
168	44	21.597	21.588	34.949	24.295	32.698	40.741	161	59	0.88	9.9	6.7	2065	461	20.00	493	2301
132	64	17.766	17.755	35.089	25.401	33.921	42.073	111	124	1.29	16.9	11.1	2126	627	20.00	570	2310
130	84	16.465	16.451	35.007	25.650	34.214	42.408	105	136	1.37	18.4	13.9	2138	672	20.00	578	2310
128	114	15.347	15.329	35.012	25.909	34.513	42.743	96	150	1.51	20.4	15.3	2153	750	20.00	615	2307
127	144	14.889	14.867	34.991	25.995	34.615	42.862	93	155	1.56	21.1	16.3	2161	767	20.00	617	2312
126	174	14.261	14.235	34.973	26.117	34.761	43.029	50	202	1.93	26.6	20.2	2198	1008	20.00	790	2308
125	205	13.656	13.627	34.950	26.227	34.894	43.183	67	188	1.85	25.4	20.3	2191	948	20.00	724	2310
124	244	12.774	12.741	34.895	26.364	35.065	43.387	19	240	2.28	31.1	26.2	2236	1338	20.00	984	2306
123	284	12.381	12.343	34.863	26.417	35.134	43.471	15	246	2.35	32.1	28.2	2239	1397	20.00	1010	2303
122	335	10.724	10.683	34.777	26.659	35.444	43.845	18	253	2.49	34.2	34.1	2254	1561	20.00	1053	2304
121	385	9.757	9.713	34.722	26.784	35.611	44.050	12	266	2.70	36.9	40.4	2271	1717	20.00	1111	2309
120	434	9.048	9.000	34.686	26.873	35.731	44.199	14	268	2.76	38.2	43.4	2277	1723	20.00	1082	2314
119	484	8.657	8.605	34.667	26.920	35.796	44.281	13	272	2.84	39.2	46.2	2281	1820	20.00	1124	2311
118	543	7.582	7.527	34.621	27.046	35.971	44.502	21	271	2.93	40.8	53.5	2286	1829	20.00	1079	2316
117	603	6.938	6.880	34.598	27.119	36.074	44.634	33	263	2.95	40.9	58.7	2290	1790	20.00	1028	2323
116	703	6.400	6.335	34.584	27.181	36.162	44.746	38	262	2.97	41.3	64.2	2292				
115	804	5.601	5.531	34.571	27.272	36.293	44.913	50	255	2.99	41.4	75.4	2301	1721	20.00	933	2341
114	903	5.167	5.091	34.568	27.322	36.365	45.006	59	249	2.97	41.0	81.1	2303	1679	20.00	893	2346
113	1002	4.728	4.646	34.573	27.377	36.442	45.103	61	251	3.00	41.3	89.6	2311	1672	20.00	873	2356
112	1101	4.251	4.164	34.578	27.433	36.522	45.207	66	249	2.99	41.1	99.6	2322	1666	20.00	853	2368
111	1202	3.819	3.727	34.588	27.486	36.598	45.304	72	247	2.97	40.9	109.7	2331	1625	20.00	816	2381
110	1302	3.522	3.424	34.602	27.527	36.654	45.375	74	247	2.97	40.7	118.1	2338	1599	20.00	793	2392
109	1403	3.318	3.214	34.606	27.551	36.689	45.420	78	245	2.97	40.5	122.3	2340	1591	20.00	782	2395
108	1502	3.138	3.027	34.612	27.573	36.721	45.461	82	243	2.94	40.4	126.6	2343	1560	20.00	761	2401
107	1703	2.662	2.540	34.635	27.635	36.808	45.572	89	239	2.89	39.8	139.4	2355	1517	20.00	725	2418
106	1902	2.378	2.243	34.649	27.671	36.860	45.640	95	236	2.85	39.2	147.7	2360	1453	20.00	685	2430
105	2104	2.148	1.999	34.660	27.699	36.902	45.694	101	232	2.81	38.8	154.1	2362	1428	20.00	667	2435
104	2303	2.084	1.918	34.664	27.709	36.916	45.712	106	228	2.78	38.4	154.1	2362	1381	20.00	643	2441
103	2503	2.030	1.846	34.666	27.716	36.927	45.726	109	225	2.76	38.2	155.1	2362	1378	20.00	639	2441
170	2703	2.031	1.828	34.668	27.719	36.931	45.731	109	225	2.75	38.2	156.0	2361	1375	20.00	637	2440
171	2891	2.039	1.818	34.669	27.721	36.933	45.734	109	225	2.75	38.2	156.1	2362	1361	20.00	631	2443

Station 379 Latitude 1-00.2N Longitude 85-50.1W Date 3/31/93 Bottom Depth 2779 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	--------Sigma------ Theta	2000	4000	Oxy	AOU	PO4	NO3	SiO3	TCO2	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
								------------		------------umol/kg	--------------						
336	0	27.255	27.255	34.189	22.028	30.290	38.200	220	-21	0.31	0.9	2.0	1959	320	20.00	436	2253
335	33	21.150	21.144	34.870	24.357	32.774	40.830	157	64	0.94	10.5	7.3	2088	491	20.00	515	2314
368	53	18.662	18.653	34.910	25.042	33.535	41.661	120	111	1.24	15.3	11.1	2119	609	20.00	575	2307
332	79	16.076	16.063	34.967	25.709	34.287	42.494	78	165	1.63	22.0	14.7	2169	810	20.00	686	2311
330	105	15.023	15.007	34.988	25.962	34.578	42.819	96	152	1.53	20.5	15.7	2156	755	20.00	611	2309
328	129	14.892	14.873	34.992	25.995	34.615	42.861	92	156	1.56	21.2	15.9	2165	780	20.00	628	2314
327	154	14.849	14.826	34.993	26.005	34.628	42.875	91	158	1.58	21.5	16.1	2162	790	20.00	634	2308
326	179	14.569	14.542	34.992	26.066	34.699	42.956	59	191	1.84	25.4	18.2	2188	954	20.00	757	2305
325	204	14.177	14.147	34.974	26.137	34.784	43.055	68	185	1.80	24.7	18.8	2187	926	20.00	723	2309
324	254	12.733	12.698	34.878	26.359	35.062	43.386	32	228	2.16	30.0	24.2	2223	1233	20.00	905	2304
323	304	10.876	10.839	34.785	26.638	35.416	43.811	6	265	2.56	34.4	34.5	2268	1621	20.00	1100	2313
322	354	9.873	9.832	34.725	26.766	35.588	44.022	7	270	2.69	36.5	40.0	2280	1744	20.00	1134	2315
321	404	9.127	9.082	34.688	26.861	35.716	44.181	10	272	2.75	38.0	42.8	2289	1773	20.00	1117	2323
320	453	8.805	8.756	34.673	26.901	35.770	44.249	13	271	2.80	38.6	44.6	2288	1792	20.00	1114	2321
319	503	8.461	8.407	34.657	26.943	35.828	44.321	14	272	2.85	39.2	46.8	2294	1808	20.00	1107	2326
318	553	7.846	7.789	34.630	27.015	35.928	44.448	20	270	2.90	40.1	51.1	2294	1811	20.00	1080	2325
317	603	7.135	7.076	34.603	27.096	36.042	44.593	30	265	2.92	40.7	56.5	2293	1790	20.00	1036	2327
316	703	6.621	6.555	34.589	27.156	36.127	44.701	36	262	2.96	41.2	62.4	2291	1769	20.00	1002	2326
315	803	5.795	5.724	34.572	27.249	36.260	44.872	47	257	2.97	41.4	72.5	2301	1728	20.00	945	2340
314	903	4.947	4.872	34.568	27.348	36.401	45.052	60	251	2.96	41.2	85.3	2307	1688	20.00	890	2350
313	1003	4.451	4.371	34.574	27.408	36.487	45.161	66	248	2.96	41.1	95.3	2319	1639	20.00	846	2367
312	1102	4.128	4.042	34.584	27.451	36.546	45.237	66	250	2.98	41.2	103.4	2327	1648	20.00	839	2376
311	1202	3.793	3.701	34.590	27.491	36.603	45.310	72	247	2.97	40.8	111.0	2332	1631	20.00	819	2382
310	1302	3.504	3.406	34.599	27.527	36.655	45.376	75	247	2.96	40.7	117.6	2338	1586	20.00	786	2393
309	1402	3.375	3.270	34.605	27.545	36.680	45.408	76	247	2.96	40.6	121.5	2341	1605	20.00	791	2394
308	1502	3.058	2.948	34.616	27.583	36.735	45.479	80	245	2.93	40.5	129.0	2347	1561	20.00	759	2405
307	1652	2.771	2.652	34.629	27.620	36.788	45.546	86	241	2.90	40.0	136.9	2353	1529	20.00	734	2415
306	1802	2.544	2.415	34.640	27.649	36.830	45.600	90	239	2.87	39.7	143.2	2358	1490	20.00	708	2424
305	2001	2.242	2.100	34.655	27.687	36.885	45.671	98	234	2.82	39.0	151.1	2362	1446	20.00	678	2433
304	2200	2.119	1.961	34.662	27.704	36.909	45.702	101	232	2.78	38.7	155.4	2367	1395	20.00	651	2445
303	2400	2.067	1.892	34.665	27.712	36.920	45.717	104	230	2.77	38.5	156.7	2366	1398	20.00	650	2443
370	2600	2.069	1.875	34.666	27.714	36.923	45.721	104	230	2.77	38.4	157.5	2366	1378	20.00	640	2445
371	2780	2.060	1.849	34.667	27.717	36.928	45.727	105	229	2.75	38.3	157.5	2366	1361	20.00	631	2447

Lamont-Doherty Earth Observatory of Columbia University
WOCE P19C R/V Knorr WOCE Line P19

Station 385 Latitude 3-00.4N Longitude 85-50.2W Date 4/ 1/93 Bottom Depth 3010 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
136	0	30.143	30.143	32.328	19.678	27.894	35.760	199	-5	0.12	0.4	2.0	1816	255	20.00	391	2119
135	33	23.827	23.820	34.100	23.015	31.366	39.359	198	14	0.55	3.4	2.4	1987	383	20.00	450	2243
168	63	16.733	16.723	34.924	25.522	34.079	42.265	67	173	1.69	23.1	14.3	2164	856	20.00	745	2297
132	93	15.362	15.348	34.999	25.895	34.498	42.728	76	170	1.66	23.0	16.1	2166	832	20.00	684	2304
130	122	15.018	14.999	34.991	25.966	34.582	42.823	58	190	1.81	25.2	17.4	2183	935	20.00	756	2303
128	163	14.300	14.276	34.954	26.094	34.736	43.003	53	198	1.89	26.5	19.2	2193	993	20.00	780	2304
127	213	13.481	13.451	34.915	26.236	34.910	43.206	32	224	2.10	29.4	22.2	2221	1180	20.00	895	2308
126	263	12.027	11.992	34.827	26.457	35.188	43.538	23	241	2.27	32.0	27.5	2235	1363	20.00	971	2302
125	314	11.303	11.263	34.797	26.570	35.331	43.709	6	262	2.52	34.1	33.3	2262	1599	20.00	1105	2308
124	363	10.240	10.197	34.744	26.719	35.525	43.944	5	269	2.68	35.9	38.6	2278	1750	20.00	1156	2313
123	462	8.754	8.704	34.667	26.905	35.776	44.257	5	279	2.88	38.2	47.5	2293	1893	20.00	1174	2318
122	562	7.893	7.835	34.632	27.010	35.920	44.438	7	282	3.00	40.2	53.6	2300	1970	20.00	1177	2320
121	662	6.791	6.728	34.599	27.140	36.103	44.669	16	281	3.07	42.0	63.8	2307	1936	20.00	1104	2331
120	762	5.934	5.866	34.580	27.238	36.242	44.847	28	275	3.09	42.6	73.7	2314	1881	20.00	1034	2342
119	862	5.246	5.173	34.573	27.317	36.355	44.992	42	266	3.07	42.3	83.4	2317	1823	20.00	974	2350
118	960	4.737	4.659	34.577	27.379	36.443	45.104	48	264	3.07	42.3	92.6	2325	1788	20.00	935	2361
117	1059	4.303	4.219	34.577	27.427	36.513	45.195	57	258	3.04	41.8	100.8	2327	1724	20.00	884	2368
116	1158	3.936	3.847	34.592	27.477	36.583	45.282	58	260	3.05	42.0	110.5	2338	1748	20.00	883	2379
115	1258	3.655	3.560	34.597	27.510	36.630	45.344	68	252	3.00	41.4	115.5	2336	1645	20.00	821	2386
114	1359	3.360	3.259	34.607	27.547	36.683	45.411	70	252	2.99	41.2	122.8	2352	1665	20.00	820	2401
113	1460	3.142	3.035	34.616	27.575	36.723	45.462	74	251	2.97	40.9	128.1	2363	1671	20.00	815	2413
112	1559	2.960	2.847	34.623	27.598	36.755	45.504	79	247	2.94	40.6	132.2	2355	1600	20.00	775	2410
111	1658	2.774	2.654	34.622	27.614	36.782	45.541	85	243	2.89	40.1	136.1	2349	1557	20.00	748	2407
110	1758	2.648	2.521	34.630	27.632	36.807	45.572	88	241	2.87	39.9	139.6	2350	1551	20.00	741	2410
109	1859	2.509	2.376	34.646	27.657	36.840	45.612	88	242	2.87	39.8	144.0	2361	1507	20.00	715	2426
108	1957	2.380	2.240	34.649	27.671	36.861	45.640	92	239	2.85	39.5	147.7	2360	1513	20.00	714	2424
107	2058	2.253	2.106	34.654	27.686	36.883	45.669	96	236	2.83	39.1	150.9	2361	1454	20.00	682	2431
106	2158	2.189	2.034	34.658	27.695	36.896	45.685	97	235	2.82	38.9	152.8	2366	1461	20.00	683	2436
105	2257	2.128	1.965	34.662	27.704	36.908	45.701	100	234	2.79	38.7	154.6	2361	1418	20.00	661	2435
104	2397	2.070	1.895	34.665	27.712	36.920	45.717	101	233	2.79	38.6	156.3	2368	1412	20.00	657	2443
103	2595	2.041	1.848	34.667	27.717	36.928	45.727	104	231	2.78	38.5	156.9	2371	1369	20.00	635	2452
170	2796	2.052	1.840	34.667	27.717	36.929	45.728	104	230	2.77	38.4	156.9	2371	1382	20.00	641	2450
171	3016	2.072	1.838	34.668	27.718	36.930	45.730	104	230	2.78	38.5	156.9	2371	1355	20.00	628	2454

Station 390 Latitude 5-00.9N Longitude 86-56.0W Date 4/ 3/93 Bottom Depth 1624 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
126	0	29.557	29.557	31.602	19.332	27.569	35.454	201	-5	0.09	0.2	1.6	1785	257	20.00	385	2074
125	25	27.697	27.691	33.129	21.090	29.354	37.265	214	-14	0.18	0.2	1.4	1878	289	20.00	400	2171
124	51	23.336	23.326	34.105	23.163	31.527	39.533	162	51	0.72	6.1	4.2	2010	424	20.00	488	2248
123	77	16.632	16.620	34.879	25.512	34.073	42.263	57	184	1.79	24.7	15.4	2177	907	20.00	786	2301
122	102	15.362	15.346	34.943	25.852	34.456	42.687	52	195	1.87	26.1	17.4	2189	954	20.00	784	2306
121	127	14.691	14.672	34.924	25.986	34.614	42.868	43	207	1.97	27.6	19.4	2202	1053	20.00	840	2306
120	152	14.100	14.078	34.930	26.117	34.768	43.041	33	219	2.07	29.0	20.8	2212	1118	20.00	870	2307
119	187	13.473	13.447	34.903	26.228	34.902	43.198	19	237	2.20	30.9	23.6	2230	1260	20.00	955	2309
118	211	13.113	13.084	34.882	26.285	34.974	43.283	18	240	2.24	31.4	24.6	2231	1295	20.00	967	2306
151	262	12.376	12.341	34.834	26.395	35.113	43.450	13	249	2.34	32.6	27.6	2239	1422	20.00	1028	2300
116	312	11.253	11.214	34.774	26.561	35.325	43.705	6	262	2.52	33.7	33.0	2260	1578	20.00	1088	2308
115	363	10.160	10.117	34.710	26.706	35.516	43.939	4	270	2.73	33.6	40.7	2281	1772	20.00	1167	2315
114	413	9.249	9.203	34.678	26.834	35.683	44.143	2	278	2.87	35.2	46.8	2294	1828	20.00	1158	2324
113	462	8.550	8.501	34.651	26.924	35.805	44.294	3	282	2.96	36.9	51.2	2297	1929	20.00	1186	2320
112	502	8.042	7.990	34.633	26.987	35.891	44.402	5	283	3.00	39.3	53.7	2301	1894	20.00	1139	2327
111	602	7.229	7.170	34.594	27.075	36.018	44.565	24	270	2.98	40.9	55.5	2295	1812	20.00	1053	2327
110	701	6.253	6.189	34.576	27.194	36.182	44.773	21	279	3.10	42.8	67.4	2312	1922	20.00	1072	2337
109	802	5.417	5.348	34.567	27.291	36.321	44.950	35	271	3.11	43.1	79.8	2319	1866	20.00	1004	2348
108	902	4.998	4.923	34.573	27.346	36.396	45.045	42	268	3.10	42.9	88.2	2324	1823	20.00	963	2357
107	1002	4.612	4.531	34.580	27.395	36.466	45.133	47	265	3.10	42.7	97.3	2334	1800	20.00	935	2370
106	1101	4.211	4.124	34.588	27.446	36.536	45.223	54	262	3.07	42.4	104.5	2339	1758	20.00	898	2379
105	1201	3.859	3.767	34.596	27.489	36.598	45.302	58	261	3.06	42.3	112.5	2349	1739	20.00	875	2392
104	1301	3.473	3.376	34.607	27.536	36.666	45.388	66	256	3.01	41.7	121.8	2354	1603	20.00	794	2409
103	1402	3.243	3.140	34.613	27.563	36.705	45.439	71	253	2.98	41.4	126.3	2358	1629	20.00	799	2411
170	1551	2.925	2.813	34.623	27.601	36.760	45.511	79	247	2.94	40.9	133.4	2355	1595	20.00	771	2410
171	1678	2.667	2.547	34.634	27.633	36.807	45.570	85	243	2.89	40.5	139.3	2357	1506	20.00	720	2422

Lamont-Doherty Earth Observatory of Columbia University
WOCE P19C R/V Knorr WOCE Line P19

Station 395 Latitude 6-42.9N Longitude 88-46.7W Date 4/ 4/93 Bottom Depth 3440 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
236	0	29.333	29.333	32.904	20.383	28.610	36.488	200	-5	0.14	0.2	1.0	1853	267	20.00	396	2158
235	20	28.637	28.632	33.531	21.086	29.322	37.208	209	-13	0.15	0.2	1.0	1896	294	20.00	423	2192
268	31	21.301	21.295	34.612	24.120	32.535	40.590	143	78	1.01	11.6	6.1	2064	511	20.00	540	2276
232	46	18.801	18.793	34.872	24.977	33.466	41.589	72	159	1.61	21.0	11.2	2146	783	20.00	744	2290
230	61	17.991	17.981	34.899	25.201	33.715	41.863	59	175	1.72	23.8	12.8	2160	860	20.00	789	2291
228	92	15.784	15.770	34.928	25.746	34.335	42.552	54	190	1.84	25.9	16.0	2180	942	20.00	787	2298
227	127	14.421	14.402	34.928	26.047	34.685	42.948	39	212	2.00	28.4	19.1	2198	1078	20.00	850	2297
226	152	14.089	14.067	34.927	26.117	34.768	43.042	37	216	2.04	28.9	19.9	2203	1101	20.00	857	2299
225	177	13.583	13.558	34.903	26.205	34.875	43.167	33	222	2.10	29.7	21.7	2209	1156	20.00	880	2299
224	201	13.054	13.026	34.877	26.293	34.984	43.295	27	231	2.17	30.9	23.7	2220	1239	20.00	923	2300
223	251	12.160	12.127	34.821	26.426	35.153	43.498	24	240	2.28	32.1	26.8	2231	1346	20.00	965	2300
222	301	11.492	11.454	34.788	26.528	35.281	43.652	6	261	2.48	33.8	31.7	2253	1552	20.00	1081	2303
221	376	10.215	10.170	34.725	26.708	35.516	43.937	3	272	2.69	34.3	39.2	2274	1753	20.00	1156	2309
220	452	8.763	8.714	34.657	26.895	35.766	44.247	2	281	2.93	35.8	49.2	2293	1888	20.00	1172	2319
219	526	7.815	7.761	34.624	27.014	35.929	44.450	7	283	3.02	39.5	54.7	2299	1953	20.00	1164	2321
218	627	6.965	6.905	34.597	27.115	36.069	44.628	10	286	3.11	42.2	62.4	2309	1954	20.00	1123	2331
251	726	6.201	6.135	34.581	27.205	36.196	44.789	17	285	3.15	43.6	70.8	2310	1996	20.00	1110	2329
216	826	5.584	5.512	34.577	27.279	36.301	44.922	27	278	3.15	43.7	79.9	2321	1909	20.00	1034	2348
215	926	4.951	4.874	34.571	27.350	36.403	45.054	34	276	3.18	44.2	90.2	2329	1916	20.00	1011	2356
214	1026	4.556	4.473	34.576	27.399	36.472	45.142	44	269	3.13	43.6	97.4	2334	1837	20.00	952	2367
213	1150	4.132	4.042	34.588	27.454	36.549	45.240	44	272	3.15	43.6	107.7	2344	1824	20.00	929	2379
212	1300	3.650	3.551	34.598	27.512	36.632	45.347	52	268	3.11	43.3	118.3	2352	1803	20.00	899	2389
211	1450	3.194	3.087	34.608	27.564	36.709	45.446	55	269	3.11	43.3	129.5	2363	1811	20.00	885	2401
210	1649	2.760	2.641	34.622	27.616	36.784	45.543	79	248	2.96	41.5	136.9	2355	1580	20.00	758	2412
209	1850	2.439	2.307	34.638	27.657	36.843	45.619	92	239	2.88	40.6	143.3	2357	1535	20.00	726	2419
208	2050	2.185	2.040	34.652	27.690	36.890	45.680	102	231	2.80	39.9	149.3	2359	1435	20.00	671	2431
207	2249	1.970	1.811	34.662	27.716	36.929	45.730	107	227	2.76	39.4	154.5	2363	1426	20.00	661	2436
206	2448	1.864	1.688	34.668	27.730	36.950	45.757	110	225	2.74	39.1	157.8	2363	1367	20.00	630	2444
205	2649	1.819	1.626	34.670	27.736	36.959	45.770	112	224	2.71	38.8	158.9	2364	1387	20.00	638	2442
204	2850	1.820	1.607	34.672	27.739	36.963	45.775	113	223	2.71	38.8	159.4	2363	1354	20.00	622	2444
203	3049	1.834	1.601	34.672	27.740	36.964	45.776	114	222	2.70	38.7	159.0	2363	1345	20.00	618	2446
270	3248	1.844	1.591	34.672	27.740	36.965	45.778	117	219	2.68	38.7	157.7	2360	1328	20.00	609	2444
271	3435	1.858	1.585	34.674	27.742	36.968	45.781	119	217	2.67	38.6	156.6	2359	1299	20.00	596	2447

Station 413 Latitude 13-01.7N Longitude 91-45.6W Date 4/ 9/93 Bottom Depth 6111 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
236	0	29.735	29.735	33.670	20.822	29.032	36.893	201	-8	0.17	0.2	2.0	1895	262	20.00	395	2221
235	35	23.822	23.815	34.330	23.190	31.539	39.530	144	68	0.98	9.5	5.9	2042	475	20.00	558	2264
268	72	16.070	16.059	34.790	25.574	34.155	42.364	20	223	2.13	28.0	19.6	2202	1166	20.00	987	2289
233	107	13.895	13.880	34.830	26.082	34.741	43.023	16	238	2.26	30.3	23.6	2220	1275	20.00	984	2296
232	166	12.959	12.936	34.836	26.279	34.974	43.289	10	248	2.33	32.0	26.1	2233	1383	20.00	1026	2298
231	225	12.391	12.361	34.812	26.374	35.091	43.428	6	256	2.41	32.7	28.2	2243	1510	20.00	1093	2296
230	306	11.401	11.362	34.760	26.523	35.281	43.655	4	264	2.52	31.7	32.4	2260	1634	20.00	1134	2304
229	406	9.814	9.767	34.679	26.741	35.566	44.004	1	276	2.83	26.6	44.2	2288	1856	20.00	1204	2316
228	506	8.144	8.091	34.616	26.959	35.858	44.366										
227	605	7.212	7.153	34.585	27.071	36.014	44.562	1	293	3.19	35.9	67.1	2321	2073	20.00	1204	2336
226	705	6.035	5.972	34.562	27.210	36.210	44.810	2	301	3.30	42.2	80.3	2336	2166	20.00	1196	2346
225	805	5.516	5.446	34.558	27.272	36.297	44.922	3	303	3.35	44.4	87.1	2344	2202	20.00	1190	2352
224	904	5.025	4.949	34.564	27.336	36.385	45.033	9	301	3.37	45.7	94.9	2351	2177	20.00	1152	2361
223	1104	4.238	4.151	34.572	27.430	36.520	45.205	17	299	3.37	45.8	109.8	2361	2127	20.00	1088	2375
222	1303	3.545	3.447	34.592	27.517	36.643	45.363	34	288	3.26	45.0	124.3	2368	1972	20.00	979	2394
221	1503	3.045	2.935	34.610	27.580	36.732	45.477	51	274	3.15	43.6	134.8	2369	1834	20.00	891	2405
220	1703	2.692	2.569	34.625	27.624	36.796	45.559	66	262	3.03	42.3	142.3	2369	1704	20.00	815	2416
219	1903	2.361	2.226	34.639	27.664	36.855	45.635	80	252	2.94	41.3	149.5	2368	1608	20.00	758	2423
218	2103	2.110	1.961	34.652	27.696	36.901	45.694	91	242	2.85	40.4	155.0	2367	1518	20.00	708	2431
251	2303	1.951	1.787	34.660	27.716	36.930	45.733	100	235	2.79	39.7	158.0	2364	1457	20.00	674	2435
216	2503	1.855	1.675	34.668	27.731	36.951	45.760	105	230	2.75	39.1	160.1	2363	1411	20.00	650	2439
215	2703	1.827	1.628	34.670	27.736	36.959	45.770	109	227	2.73	38.8	160.1	2361	1385	20.00	637	2439
214	2903	1.835	1.617	34.673	27.739	36.963	45.774	110	226	2.72	38.7	160.0	2360	1373	20.00	631	2440
213	3102	1.846	1.608	34.672	27.739	36.963	45.775	111	225	2.72	38.7	160.2	2360	1370	20.00	629	2440
212	3303	1.863	1.604	34.672	27.739	36.964	45.776	111	225	2.72	38.5	160.2		1364	20.00	626	
211	3503	1.881	1.600	34.671	27.739	36.963	45.775	112	224	2.72	38.5	160.0	2360	1365	20.00	627	2441
210	3752	1.906	1.597	34.671	27.739	36.964	45.776	113	224	2.71	38.3	158.9		1367	20.00	628	
209	4002	1.933	1.595	34.672	27.740	36.965	45.777	113	223	2.72	38.5	159.9	2360	1352	20.00	621	2441
208	4252	1.962	1.594	34.673	27.741	36.966	45.778	113	223	2.72	38.5	159.7	2360	1352	20.00	621	2441
207	4502	1.992	1.593	34.671	27.739	36.964	45.777	113	223	2.71	38.5	159.5	2359	1350	20.00	620	2441
206	4752	2.023	1.592	34.672	27.740	36.965	45.778	113	223	2.72	38.5	159.3	2363	1354	20.00	622	2444
205	5001	2.055	1.591	34.672	27.740	36.965	45.778	114	222	2.72	38.5	159.4	2358	1343	20.00	616	2440
204	5300	2.095	1.591	34.671	27.740	36.965	45.777	114	222	2.71	38.5	159.4	2360	1356	20.00	623	2441
203	5601	2.137	1.591	34.671	27.740	36.965	45.777	115	222	2.70	38.4	158.9	2361	1346	20.00	618	2443
270	5900	2.180	1.590	34.671	27.740	36.965	45.777	114	222	2.71	38.5	159.1	2361	1329	20.00	610	2445
271	6219	2.228	1.590	34.672	27.740	36.965	45.778	113	223	2.71	38.5	159.1	2360	1341	20.00	615	2443

Station 417 Latitude 13-19.2N Longitude 91-40.0W Date 4/ 9/93 Bottom Depth 2618 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
131	0	29.189	29.189	34.023	21.270	29.489	37.358	212	-18	0.16	0.2	0.7	1913	267	20.00	394	2241
130	28	23.562	23.556	34.318	23.257	31.613	39.610	154	59	0.89	6.9	3.4	2037	458	20.00	532	2266
129	54	17.013	17.004	34.778	25.344	33.893	42.072	18	221	2.11	28.0	17.2	2200	1154	20.00	1017	2289
128	79	15.003	14.991	34.835	25.847	34.466	42.709	19	229	2.19	28.7	21.8	2212	1209	20.00	978	2295
127	104	14.163	14.148	34.820	26.018	34.667	42.939	21	232	2.18	30.1	22.2	2217	1249	20.00	975	2296
126	143	13.504	13.484	34.831	26.164	34.838	43.134	17	239	2.24	31.3	23.7	2225	1319	20.00	1001	2296
125	193	12.990	12.963	34.834	26.272	34.966	43.280	13	246	2.31	31.9	25.5	2232	1369	20.00	1016	2298
124	243	12.362	12.330	34.816	26.383	35.102	43.439	9	253	2.37	32.7	27.7	2243	1475	20.00	1066	2300
123	293	11.748	11.710	34.780	26.474	35.217	43.578	3	262	2.48	32.8	30.0	2253	1587	20.00	1118	2300
122	353	11.116	11.072	34.747	26.566	35.336	43.721	1	268	2.60	29.9	34.2	2266	1712	20.00	1173	2303
121	412	10.011	9.963	34.692	26.718	35.535	43.964	1	275	2.80	27.2	42.4	2286	1851	20.00	1211	2314
120	473	8.405	8.355	34.623	26.924	35.812	44.308	1	285	3.04	29.9	55.9	2308	1986	20.00	1214	2328
119	543	7.445	7.391	34.592	27.043	35.974	44.512	1	291	3.17	34.6	64.0	2317	2079	20.00	1220	2331
118	613	6.865	6.807	34.580	27.115	36.074	44.637	1	295	3.23	38.5	69.6	2325	2109	20.00	1207	2337
151	684	6.255	6.193	34.569	27.188	36.176	44.767	2	299	3.28	41.8	76.2	2331	2138	20.00	1192	2342
116	753	5.961	5.894	34.566	27.223	36.226	44.830	2	301	3.30	42.9	80.8	2337	2189	20.00	1205	2345
115	824	5.513	5.442	34.562	27.276	36.301	44.926	3	303	3.35	44.8	87.6	2345	2215	20.00	1197	2352
114	903	5.160	5.084	34.562	27.318	36.361	45.003	4	305	3.37	45.5	92.0	2348	2247	20.00	1196	2353
113	1003	4.712	4.630	34.566	27.373	36.439	45.101	9	303	3.39	46.2	99.8	2354	2210	20.00	1153	2362
112	1103	4.265	4.178	34.573	27.428	36.516	45.201	17	299	3.38	45.9	108.3	2358	2159	20.00	1105	2370
111	1202	3.867	3.775	34.583	27.478	36.587	45.290	26	293	3.32	45.6	116.1	2365	2069	20.00	1042	2384
110	1301	3.498	3.401	34.593	27.523	36.651	45.373	34	287	3.26	45.1	124.1	2365	1988	20.00	985	2389
109	1401	3.287	3.183	34.602	27.550	36.690	45.422	43	281	3.22	44.5	129.0	2368	1914	20.00	940	2398
108	1502	3.081	2.971	34.610	27.576	36.727	45.470	50	275	3.15	43.8	133.5	2367	1847	20.00	899	2402
107	*1601*	*2.907*	*2.790*	*34.618*	27.599	*36.760*	45.511	58	*268*	*3.09*	*43.0*	*137.0*	2367	1778	*20.00*	859	*2407*
106	1700	2.694	2.572	34.627	27.626	36.798	45.560	67	262	3.03	42.4	141.3	2367	1701	20.00	814	2414
105	1900	2.322	2.188	34.643	27.671	36.863	45.645	82	250	2.91	41.2	149.0	2368	1591	20.00	749	2426
104	2098	2.090	1.942	34.654	27.699	36.905	45.700	92	241	2.85	40.3	154.6	2368	1510	20.00	703	2433
103	2296	1.908	1.745	34.663	27.721	36.938	45.743	101	234	2.78	39.4	157.4	2368	1444	20.00	667	2440
170	2494	1.832	1.653	34.669	27.733	36.955	45.764	107	229	2.75	39.0	159.5	2368	1389	20.00	639	2446
171	2667	1.818	1.623	34.672	27.738	36.961	45.772	109	227	2.73	38.9	159.7	2377	1370	20.00	630	2458

Station 422 Latitude 13-32.1N Longitude 91-34.5W Date 4/10/93 Bottom Depth 202 m

Bot No.	Depth m	Temp deg C	Pot Temp deg C	Salinity o/oo	Sigma Theta	Sigma 2000	Sigma 4000	Oxy umol/kg	AOU umol/kg	PO4 umol/kg	NO3 umol/kg	SiO3 umol/kg	TCO2 umol/kg	pCO2 @Teq uatm	Teq Deg C	pCO2 @Theta uatm	Calc TALK ueq/kg
110	0	29.230	29.230	34.123	21.331	29.548	37.415	209	-15	0.16	0.2	0.3	1920	271	20.00	401	2246
109	21	26.714	26.709	34.167	22.185	30.460	38.383	225	-23	0.23	0.2	1.5	1940	301	20.00	399	2245
108	43	19.036	19.028	34.702	24.787	33.271	41.389	101	129	1.65	19.6	14.5	2148	769	20.00	738	2296
107	63	16.581	16.571	34.781	25.448	34.012	42.204	31	210	2.07	25.7	19.4	2197	1106	20.00	957	2292
106	84	14.974	14.961	34.822	25.844	34.463	42.708	16	232	2.26	28.2	23.3	2216	1243	20.00	1005	2295
105	104	14.564	14.549	34.829	25.939	34.573	42.832	17	233	2.26	28.9	23.3	2221	1256	20.00	997	2299
104	129	14.275	14.256	34.833	26.005	34.650	42.918	17	234	2.27	29.3	23.5	2225	1276	20.00	1001	2301
103	153	13.848	13.826	34.832	26.094	34.755	43.039	14	240	2.33	30.1	24.5	2228	1313	20.00	1011	2300
170	179	13.667	13.642	34.834	26.134	34.802	43.092	15	240	2.29	30.0	25.3	2230	1295	20.00	990	2304
171	194	13.620	13.592	34.837	26.147	34.816	43.108	15	240	2.31	30.0	25.3	2232	1278	20.00	974	2308

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