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Towards a Summary Documentation of the AMIP Models for the World-Wide Web

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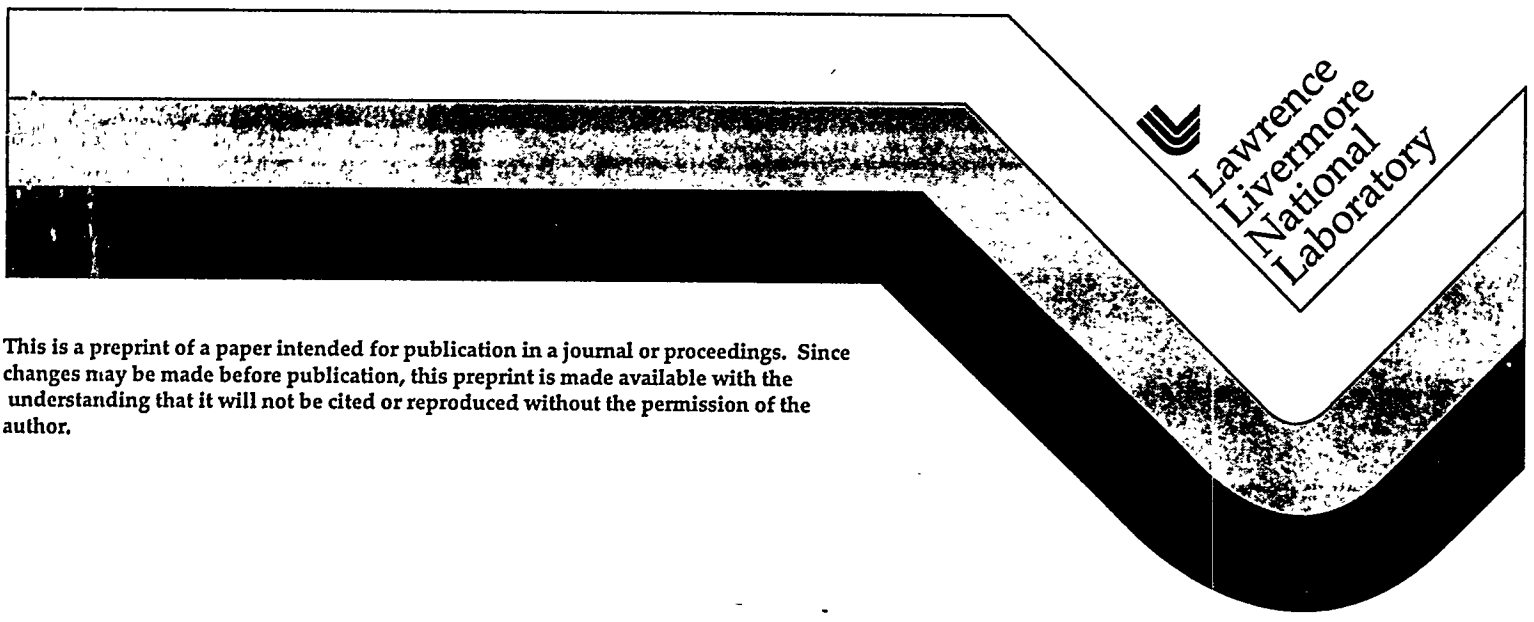

Towards a Summary Documentation of the AMIP Models for the World-Wide Web

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1. AMIP Model Documentation

The Atmospheric Model Intercomparison Project (AMIP) is an international effort to simulate the global climate of the period 1979-1988 by specifying certain common boundary conditions and radiative forcings (Gates 1992). The Program for Climate Model Diagnosis and Intercomparison (PCMDI), which is funded by the U.S. Department of Energy (DOE), coordinates the AMIP on behalf of the Working Group on Numerical Experimentation (WGNE) of the World Climate Research Programme (WCRP). To date, some 30 international modeling centers are participating in the AMIP (Table 1), and some 25 additional diagnostic subprojects are analyzing particular processes or regional climatic features in these simulations.

A common goal of the diagnostic subprojects is to assess the impacts of using the diverse numerical algorithms, dynamical schemes, and physical parameterizations that are represented in the collection of AMIP models. To further this goal, a summary documentation of the AMIP models was written (Phillips 1994) to describe the main features of the AMIP models in a common framework (Table 2). This information is conveyed by means of summary reports and tables, along with an extensive bibliography of references that may be consulted for further details on the properties of the AMIP models.

2. Towards Electronic Model Documentation

Work is in progress to translate the AMIP summary documentation into Hypertext Markup Language (HTML) for use with the public-domain Mosaic software developed by the National Center for Supercomputing Applications (NCSA). We are exploiting the hypertext attributes of this software (Shneiderman and Kearsley 1989) to permit rapid access to those facets of the AMIP documentation that are of most interest to the individual scientist. This Mosaic AMIP documentation will be accessible by the very wide number of Internet users of the World-Wide Web (WWW) of hypermedia resources.

We anticipate the public release of this electronic AMIP documentation early in 1995. At that time, inquiries on how to access it may be directed to the author via Internet address *phillips@tworks.llnl.gov* .

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References

Gates, W.L., 1992: AMIP: The Atmospheric Model Intercomparison Project. *Bull. Amer. Meteor. Soc.*, **73**, 1962-1970.

Phillips, T.J., 1994: A summary documentation of the AMIP models. PCMDI Report No. 18, UCRL-ID-116384, Program for Climate Model Diagnosis and Intercomparison, Lawrence Livermore National Laboratory, Livermore, CA, 343 pp.

Shneiderman, B., and G. Kearsley, 1989: Hypertext Hands On! An Introduction to a New Way of Organizing and Accessing Information, Addison-Wesley, Reading, MA.

Table 1: AMIP modeling groups and their locations.

Acronym	AMIP Group	Location
BMRC	Bureau of Meteorology Research Centre	Melbourne, Australia
CCC	Canadian Centre for Climate Research	Victoria, Canada
CNRM	Centre National de Recherches Météorologiques	Toulouse, France
COLA	Center for Ocean-Land-Atmosphere Studies	Calverton, Maryland
CSIRO	Commonwealth Scientific & Industrial Research Organization	Mordialloc, Australia
CSU	Colorado State University	Fort Collins, Colorado
DERF	Dynamical Extended Range Forecasting (at GFDL)	Princeton, New Jersey
DNM	Department of Numerical Mathematics	Moscow, Russia
ECMWF	European Centre for Medium-Range Weather Forecasts	Reading, England
GFDL	Geophysical Fluid Dynamics Laboratory	Princeton, New Jersey
GISS	Goddard Institute for Space Studies	New York, New York
GLA	Goddard Laboratory for Atmospheres	Greenbelt, Maryland
GSFC	Goddard Space Flight Center	Greenbelt, Maryland
IAP	Institute of Atmospheric Physics	Beijing, China
JMA	Japan Meteorological Agency	Tokyo, Japan
LMD	Laboratoire de Météorologie Dynamique	Paris, France
MGO	Main Geophysical Observatory	St. Petersburg, Russia
MPI	Max Planck Institut fuer Meteorologie	Hamburg, Germany
MRI	Meteorological Research Institute	Ibaraki-ken, Japan
NCAR	National Center for Atmospheric Research	Boulder, Colorado
NMC	National Meteorological Center	Suitland, Maryland
NRL	Naval Research Laboratory	Monterey, California
RPN	Recherche en Prévision Numérique	Dorval, Canada
SUNYA	State University of New York at Albany	Albany, New York
SUNYA/ NCAR	State University of New York at Albany/ National Center for Atmospheric Research	Albany, New York/ Boulder, Colorado
UCLA	University of California at Los Angeles	Los Angeles, California
UGAMP	The UK Universities' Global Atmospheric Modelling Programme	Reading, England
UIUC	University of Illinois at Urbana-Champaign	Urbana, Illinois
UKMO	United Kingdom Meteorological Office	Bracknell, U.K.
YONU	Yonsei University	Seoul, Korea

Table 2: AMIP model features described by the Phillips (1994) summary documentation.

- AMIP representative(s)
- Model designation (following a WGNE-recommended format)
- Model lineage (predecessor and related models)
- Model documentation (key references)
- Horizontal representation (spectral or finite differences)
- Horizontal resolution
- Vertical domain (lowest/highest atmospheric levels)
- Vertical representation (coordinates and differencing schemes)
- Vertical resolution
- Computer/operating system (for the AMIP simulation)
- Computational performance (minutes per simulated day)
- Initialization (of atmospheric state, snow cover/depth, and soil moisture)
- Time integration scheme(s)
- Smoothing/filling (types of algorithms used)
- Sampling frequency (AMIP history storage interval)
- Atmospheric dynamics (state variables)
- Diffusion (horizontal and vertical)
- Gravity-wave drag
- Solar constant/cycles (AMIP solar constant, inclusion of diurnal cycle)
- Chemistry (radiatively active gases and aerosols)
- Radiation (shortwave/longwave schemes, cloud-radiative interactions)
- Convection (deep and shallow)
- Cloud formation (prognostic or diagnostic schemes)
- Precipitation (formation and subsequent evaporation)
- Planetary boundary layer (representation and depth)
- Orography (datasets, smoothing procedures)
- Ocean (detailed treatment for AMIP simulation)
- Sea ice (detailed treatment for AMIP simulation)
- Snow cover (formation/melting, effects on surface characteristics)
- Surface characteristics (surface types, roughness, albedo, emissivity)
- Surface fluxes (momentum, heat, and moisture)
- Land surface processes (vegetation and soil thermodynamics/hydrology)