SAND2017-2354R

North Slope of Alaska ARM Facilities
Monthly Status Update
Sandia National Labs

February 2017

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1 North Slope Facilities Management Executive Summary and Major Issues

This monthly report is intended to communicate the status of North Slope ARM facilities managed by Sandia National Labs.

Operations Team

* Mark Ivey- ARM Alaska Sites Manager (SNL)
* Fred Helsel- AMF3 Site Manager (SNL)
* Dan Lucero- Barrow Site Manager (SNL)
* Darielle Dexheimer- Tethered Balloon Operations (SNL)
* Valerie Sparks- ARM Project Office (SNL)
* Martin Stuefer- Rapid Response Team (UAF)
* Randy Peppler- ARM DQ Office Manager (OU)

2 Budget

FY2016 Financials (as of February 24, 2017)

	November	YTD
Carryover funds	$3,729,525	
Funds Allocated YTD	$4,524,000	
Carryover plus YTD funds	$8,253,525	
Cost, burdened amount	$2,792,823	
Uncosted Funds	$5,460,703	
Commits, burdened total	$3,262,190	
Current fiscal year uncommitted funds	$2,198,512	
Subsequent fiscal year (SFY)commits	$709,502	
Total uncommitted funds, including SFY commits	$2,552,689	
Fully Burdened Staff Costs	$281,000	
Fully Burdened Contract Costs	$286,000	
Fully Burdened Total Costs	$567,000	$2,793,000

3 Safety

AMF3– No Incident/Injury

Barrow - No Incident/Injury

4 Instrument Status – Provided by Martin Stuefer

AMF3

INFORMAL AMF3 INSTRUMENT STATUS REPORT FOR February 17, 2017 - February 24, 2017

BRIEF STATUS OF INSTRUMENTS and site IN OLIKTOK AS OF 2017/02/24:

Facilities Operational
Data Systems Operational
Vehicles Operational
SKYRAD - SKY Radiometer on Stand for downwelling Operational
MFRSR - Multifilter Rotating Shadowband Radiometer Not Operational
GNDRAD - Ground Radiometer on Stand for Upwelling Operational
MFR3m - Multifilter Radiometer at 3m height Not Operational
MET - Meteorological Instruments on Tower Operational
AMC - Soil, up/downwelling radiation measurements Operational
ECOR - Eddy Correlation Flux System Operational
MWR3C - Three Channel Microwave Radiometer Partly Operational
MPL - Micropulse Lidar Operational
DL - Doppler Lidar Operational
RL - Raman Lidar Not Operational
CEIL - Vaisala Ceilometer Operational
RWP - Radar Wind Profiler Operational as per http://radar.arm.gov
KAZR - Ka ARM Zenith Radar Operational as per http://radar.arm.gov
KaSACR - Ka-Band Scanning ARM Cloud Radar Operational
WSACR - W-Band Scanning ARM Cloud Radar Not Operational
TSI - Total Sky Imager Operational
AOS - Aerosol Observing System Partly Operational
AERI - Atmospheric Emitted Radiance Interferometer Operational
CPC - Condensation Particle Counter Operational
ACSM - Aerosol Chemical Speciation Monitor Not Operational
HTDMA - Humidified Tandem Differential Mobility Analyzer Operational
GHG - PICARRO Operational
NEPH - Nephelometer Operational
PSAP - Particle Soot Absorption Photometer Operational
BBSS - Balloon Borne Sounding System Operational
CIMEL - Cimel Sunphotometer Not Operational
MASC - Multi Angle Snowflake Camera Operational
PIP - Precipitation Imaging Package Operational
LPM - Laser Precipitation Monitor Operational
Geonor - Geonor Weighing Gauge Operational
SR50A - Snow Depth Sensor Operational
MET-AIR - DataHawk Unmanned Aerial System Operational
TBS - Tethered Balloon System Operational

CCN - Cloud Condensation Nuclei Particle Counter Not installed at site yet.

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* Oliktok Instruments in Detail: *

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INFRASTRUCTURE --- Facilities --- Operational.

2017/02/21, CM-2017-AMF3-VSN-1865: The North generator supplying power to the site failed multiple times. On 2/19/17 at 03:47, site technicians were notified of the power loss to the site by the auto-dialer. At 04:05, site technicians restored site power. There were no alarms, leaks, or indications of overheating. The North generator came back up without issue, and the South generator is currently operational, but is awaiting a new tensioner arm and belt. Site technicians decided to rely on the North generator. On 2/20/17 at 16:00, site technicians were again notified of power loss to the site by the auto dialer. By 16:10, site technicians restored site power. Again, there were no alarms, leaks, or indications of overheating. Delta was notified of the reoccurring power outages, and a mechanic arrived onsite to troubleshoot. Delta's mechanic could not find any issues with the North generator, so site techs ran up the South generator, and left it on to take on the site's load. At 19:54, site power went down. At 19:56, site technicians switched power to the South generator, which held the load overnight. However, Delta mechanics will be on site to install failing parts of the unit. While they are working on the South generator, we will need to switch to the North generator, and site techs are not confident that this generator will hold the load through the CM period required on the South generator. Site techs are taking precautions in the event that both generators are down at the same time, and have ensured that the AOS backup generator is in Auto mode, the buss breaker is not tripped, and battery voltage is above 12V. We have staged the Magnum 25kw generator at the emergence power breaker (on the back of warm storage one)and have it ready to take the load in the event that both primary generators shut down. The AOS instruments have been left off due to the UPS issue with these systems.

INFRASTRUCTURE --- Data Systems --- Operational.

2017/02/23, CM-2017-AMF3-VSN-1866: HDD SN NA75FD6B was full, so it was replaced with HDD SN NA78Y6WC. Technicians will ship HDD SN NA75FD6B via USPS tracking # 9114 9014 9645 0952 4698 95.

2017/02/21, CM-2017-AMF3-VSN-1864: HDD SN NA7Q2CAK was full, so it was replaced with HDD SN NA75FD6B. Technicians will ship HDD SN NA7Q2CAK via USPS tracking # 9114 9014 9645 0952 4699 01.

2017/02/18, CM-2017-AMF3-VSN-1862: HDD SN NA76MDAK was full, so it was replaced with HDD SN NA7Q2CAK. Technicians will ship HDD SN NA76MDAK via USPS tracking # 9114 9014 9645 0952 4699 18.

INFRASTRUCTURE --- Vehicles --- Operational.

SKYRAD --- SKYRAD general --- Operational.

SKYRAD --- IRT --- Operational.

SKYRAD --- PIR 1 shaded --- Operational.

SKYRAD --- PIR 2 shaded --- Operational.

SKYRAD --- SOLAR Tracker --- Operational.

SKYRAD --- B&W diffuse --- Operational.

SKYRAD --- NIP --- Operational.

SKYRAD --- PSPg --- Operational.

SKYRAD --- MFRSR --- Not Operational, Removed for the Winter.

TIPTWR --- GNDRAD general --- Operational.

TIPTWR --- MFR3m --- Not Operational, Removed for the Winter.

TIPTWR --- PIRgnd --- Operational.

TIPTWR --- IRTgnd --- Operational.

TIPTWR --- PSPgnd --- Operational.

MET --- METTOWER general --- Operational.

MET --- CMH --- Operational, but Some Incorrect Data.

2016/12/09, DQPR-5428: Jenni Kyrouac has submitted an open-ended DQR (D161118.6) documenting this on-going issue, and it has been reviewed and accepted by the PRB. The most recent DQPR status is "in progress-assignments."

2016/11/14, DQPR-5428: Joshua asked Jenni if there has been any update from the manufacturer, and states that CMH behavior has been consistent since late October. Jenni responded that there has been no response from the manufacturer yet, and there are no available spares.

2016/10/21, DQPR-5428: IM Jenni Kyrouac responded that she is awaiting response from the manufacturer regarding the dew point/RH problem. As Josh notes, as of 2016/10/19, the CMH is completely stagnant. Jenni will want to check the error message on Monday, and she suspects a dew point assembly circuitry problem.

2016/10/20, DQPR-5428: Josh Remitz posted about maintenance performed after site technicians noticed CMH temperature readings were over 90c this morning. Site technicians went out to the field and physically inspected the instrument unit, finding nothing out of the ordinary. CMH relative humidity continues to read higher than 100%.

2016/09/15, DQPR-5428: Starting from 2016/07/12 the CMH data (dew point, RH and vapor pressure) dropped to unusually low values. Aspirator and mirror were cleaned and instrument power was cycled but the problem did not resolve. IM Jenni reports that no error messages are reported by the instrument and calibration info looks ok. Data have recovered after the most recent self-check. The manufacturer was contacted for suggestions. Instrument recovered, then dropped out again on 7/24. An RMA was received from the manufacturer to send the instrument for service. Spare CMH from NSA was sent to OLI and the faulty CMH was replaced with the spare from NSA. Power was restored to the replacement instrument on 08/02, 22:45 UTC. Dew point and RH were observed to be off 08/05 and 08/06. Technicians cleaned the instrument's mirror and ran through the calibration process starting on 08/08 at 22:00 UTC. Issue reoccurred on 8/6. Data drop out on 8/9 for a few hours. Problem is ongoing as on 9/1. IM Jenni will contact the manufacturer.

MET --- Barometer --- Operational.

MET --- TEMPERATURE / HUMIDITY Operational.

MET --- WIND INSTRUMENTS (SONIC) --- Operational.

MET --- PWD --- Operational.

MET --- AMC --- Operational.

ECOR --- ECOR --- Operational.

ECOR --- SEBS --- Operational.

MW RADIOMETERS --- MWR3C --- Partly Operational (Waiting on IRT Repair).

2017/02/03, DQPR-4873: Maria sent an email to the vendor today to check on the timeline of return.

2016/10/14, DQPR-4873: The DQO/DQO-SSG/PRB has updated the DQPR status to "waiting- for spares."

2016/10/12, DQPR-4873: IM/VAP Maria Cadeddu responded that the vendor is testing the IRT sensor, but has not yet provided a timeline for return.

LIDAR --- MPL --- Operational.

LIDAR --- Doppler LIDAR --- Operational.

LIDAR --- Raman LIDAR --- Not Operational, Waiting on Contact with Continuum to Proceed.

2017/02/03, DQPR-5906: The heads in the front bench showed possible signs of damage, so they will be sent to Continuum for inspection. Operators were not successful in bringing the system up using the rear bench (with low laser power). The IM and operators will consult Continuum about this difficultly before deciding how to proceed. The most recent DQPR status is "waiting - for spares."

2017/01/20, DQPR-5906: The RL went down due to the power outage on site, and has yet to come back online. This DQPR is just for documenting the longer outage compared to many of the other instruments. IM John Goldsmith added that Todd Houchens will be on site the week of 2017/01/23 to check the laser for damage due to the cooling water freezing. He will work with John to determine if the system can be brought back into service, or if repairs are necessary.

LIDAR --- CEIL --- Operational.

RADAR --- RWP --- Operational as per http://radar.arm.gov/.

RADAR --- KAZR --- Operational as per http://radar.arm.gov/. Ingest up to 2017/02/09.

2017/02/20, CM-2017-AMF3-VSN-1863: Site technicians found that the radiate light was not illuminated during daily rounds. Site technicians logged into the software, and executed the PACSI command file. This made the radiate light reillumninate.

2017/01/09, DQPR-5585: Adam Theisen has listed the latest periods of missing data in a DQR. The most recent status of this DQPR is "waiting - for spares".

RADAR --- KASACR --- Operational. Ingest up to 2017/02/14.

2017/02/24, DQPR-5979: Work has been done with Todd Houchens and on-site techs to get reinforcement for the flexible waveguide installed on 2017/02/16. The effectiveness of this fix is still being evaluated, and the most recent DQPR status is "open - requires action."

2017/02/17, Radar.arm.gov: Calibrated noise sources and refurbished DSAs (digital servo amplifiers) were installed.

2017/02/06, DQPR-5979: The differential phase from the hemispheric RHI scans is consistently higher at negative distance ranges than at positive ranges. This difference appears to be independent of the spatial structure of the reflectivity, differential reflectivity, and correlation coefficient fields. See the attached plot on the DQPR for an example.

2017/01/27, DQPR-5704: An increased noise floor occurred twice on 2017/01/03. Prior to this occurrence, the last events were on 2016/12/29, when there was an increased noise floor three times.

2017/01/23, DQPR-5947: When switching to ppivh mode, one of the boards that controls transmit switching is getting confused, and the mode defaults to single pol mode. The radar is transmitting on H, but not V. This also causes the drop in rhohv, as it's correlating the H return with what is mostly a noise field (plus the cross polar signal). Unfortunately, these files won't be fixable, and so neither should be used. At the very least, their polar metric variables should not be used. This is a sporadic problem, and does appear to be infrequent. These files will need to be DQPR'd.

2017/01/09, DQPR-5848: Just to document, this apparent ingest issue is occurring in the latest data up through 2016/12/22.

2016/12/15, DQPR-5848: Starting on 2016/09/27 at 19:30 UTC, there looks to be an issue with how the ingest is setting the transition flag, and getting the sweeps for the HSRHI data. The number of sweeps in the HSRHI files start to shift between 1-3, when the shifting should not start until 4. Some examples of the azimuth and transition flags are posted below.

2016/10/12, DQPR-5704: The data looks saturated at times. It looks like we are still getting some returns, so it does not seem that the transmitter is going out. This is occurring in both RHI (Range Height Indicator) and PPI (Plan Position Indicator) plots at random times. This was brought up during the data review, but it looks to be an ongoing

problem. See DQPR for attached plots. IM Joseph Hardin replied that this might just be an issue of terminology, but that he does not see any saturation, nor missing data. Adam Theisen posted previous scan plots for reference. He noted that it is probably a terminology issue, but if you look at the previous RHI scan, there is a large difference in the background reflectivity, as well as a jump in the Zdr (differential reflectivity) values. Joseph replied that we tend to refer to these particular plots as having an increased noise floor. There is something more subtle going on here that we are attempting to track down. It does seem to be very infrequent (once a day or less per mode).

RADAR --- WSACR --- Not Operational as per http://radar.arm.gov/. Ingest up to 2017/02/01.

2017/02/17, Radar.arm.gov: Down due to broken waveguide. Spare waveguide is at Sandia, and will be shipped to site. Refurbished DSAs (digital servo amplifiers) were installed.

2017/02/08, DQPR-5979: The issue was tracked down to a piece of waveguide deforming slightly due to gravity as the antenna rotates in elevation. We've communicated a temporary fix to site operations to stabilize the pieces of waveguide, and are looking into more permanent fixes. The most recent DQPR status is "open - requires action".

2017/02/01, DQPR-5971: Horizontal polarization was not being transmitted by the radar. This has been going on for at least 2 weeks, and it is currently being diagnosed. In the meantime, the W-band will be operated only sporadically for troubleshooting, and the KaSACR will be down for extended periods as technicians work to help diagnose the issue. The most recent DQPR status is "open- requires action."

2017/01/11, DQPR-5705: PPI missing data was found on 2016/12/29, and HSRHI missing data was found on 2016/12/11. The most recent DQPR status is "open- requires action."

2016/12/09, DQPR-5705: Adam Theisen added that the latest data from the DMF is from 09/19.

2016/10/12, DQPR-5705: WSACR is sometimes showing some degraded/missing data. In the PPI (Plan Position Indicator) plots, there are missing data between 60-90 degrees. In the RHI (Range Height Indicator) plots, there are missing data throughout the scans. In the RHI, the background Zdr signal drops out, and the values in the echo region are high compared to bracketing scans.

IMG --- TSI --- Operational.

AOS --- General --- Partly Operational (Data Dropouts).

2017/02/22, DQPR-5858: Cynthia is still trying to troubleshoot the data dropout problem. Her next step is to set up a virtual machine server as a test platform at BNL. There have been delays in getting the ANL-BNL network link back up, and this step is necessary before setting up the VM server. Rob Denney has been working with BNL ITD to get this working again, but so far, neither side has found the solution.

2017/02/21, DQPR-6027: An unlabeled waste stream of liquid water contained in an empty butanol glass flask was used to fill the butanol bottle on the CPCs. This caused water to enter the butanol reservoir, which affected the ability of the instrument to register accurate concentrations of atmospheric aerosol. Joshua King connected this DQPR to DQPR 5996, which was opened to describe this behavior. That DQPR will be collapsed down to focus resolution efforts here. Joshua asked if this was the cause for the noise in many of the concentration measurements at OLI beginning at around 18:00 UTC on 2017/02/18. That behavior was short-lived before subsequent data dropouts. Robert Bullard responded that this particular problem would not have affected other instruments, and there were some power issues during this period also. Robert submitted DQR D170221.6, which is pending PRB review. The most recent DQPR status is "in progress - assignments."

2017/01/06, DQPR-5858: IM Cynthia Salwen has added the following: Brent has not found anything in the logs yet. He spoke with an instrument mentor who developed serial software; this mentor said that moving to a VM caused problems with the serial, and consequently, the mentor had to use a different serial library. Since the software is developed with LabVIEW, the options are different. Cynthia will try other tests, and Brent will talk to his team about this. The most recent DQPR status is "open - requires action".

2016/12/20, DQPR-5858: OLI and SGP both have virtual machines for the AOS computers, and both are showing data dropouts on multiple instruments at the same time. These dropouts can be as short as a couple of seconds, or up to 30 seconds or more. In OLI there are missing data lines at the same time in the files for the WXT520, which is on Unit 1, and the CPC3772, CPC3776, and Dryneph, which are on Unit 2. There are no dropouts on the Wet Neph.

SGP shows dropouts in the data files of the WXT520, which is on Unit 1 and the TAP, CPC3772, and the Dry Neph at the same time. At both sites, the dropouts seems to have started at the beginning of the deployments. There are no other error indications that the data is not being received from the instruments. Brent Kolasinski is looking into the VMWare logs and expects to consult with VMware support.

AOS --- aosmet --- Operational.

AOS --- CPC --- Operational.

AOS --- CAPS-PMEX --- Not Operational. Pulled and sent for Repair (BNL).

2017/01/20, DQPR-5816: This instrument continues to have problems. As a result, IM Arthur is asking that the OLI-CAPS be sent to BNL for servicing, as the problem cannot be diagnosed remotely. Scott Smith will send the shipping container for the instrument to OLI. Joshua King suggested that this DQPR be escalated to PRB attention, given the ongoing issues. Arthur Sedlacek has started the logistics of sending the unit to BNL. The most recent DQPR status is "in progress - assignments."

2017/01/04, DQPR-5816: This DQPR has been linked to DQPR 5895. Joshua King added that he opened 5895 to separately resolve the raw data/collection/ingest issues described for the CAPS and CO beginning 2016/12/28. This DQPR can continue to serve as a resolution point for the potential NO2 contamination issues affecting the CAPS.

2016/12/15, DQPR-5816: Joshua asked Art what kind of timeline he needs for further investigation. Art responded that we are currently collecting data on particle-free ambient air via a HEPA filter. We are doing so to confirm that the molecular interference is coming from NO2, to identify the wind directions which bring in the NO2, and to collect enough data in the current configuration to figure out if one channel could serve as the molecular interference monitoring channel. This monitoring channel is likely to be the blue channel, which will allow us to correct the green channel. Upon ArtÕs return to BNL next week, he will look at the data to see if the statistics will allow for this. 2016/12/02, DQPR-5816: Arthur added that only the red channel will be free of NO2 signal contamination. Therefore, the red channel data are fine.

2016/12/01, DQPR-5816: Since the CAPS takes a measurement of the molecular extinction every 20 minutes, and subtracts this quantity from the total extinction measured during normal operation, the only way to consistently generate a negative extinction is to have a baseline (acquired on particle-free air) that is larger than the total extinction. The only way this could happen is if a time-varying molecular species is present. Further investigation has suggested that locally sourced anthropogenic emissions of NO2 is the likely origin of these episodic periods. There are 3 pieces of evidence that NO2 is the culprit: firstly, optical extinction under particle free conditions (which are achieved with a HEPA filter) reveals that these episodes characterized by negative extinction also exhibit a wavelength dependence in light absorption that parallels the known absorption spectrum of NO2 (see 2nd attached file on DQPR page); secondly, negative signals are tightly correlated with CO, a known tracer from combustion activities; lastly, the local prevailing wind direction is from the north, where there are sources of diesel emissions. Taken together, this is strong evidence for the presence of NO2 emissions impacting the OLI AOS. Using a calibration for the green, it is estimated that the NO2 loading is over 1.2 ppb. The CAPS simply measures optical extinction, irrespective of whether the extinction is molecular or particulate in origin. The CAPS takes a particle-free background reading every 20 minutes in an effort to account for variations in molecular extinction caused by changes in the molecular composition of air masses. However, the large absorption cross-section of the NO2, and shifts in particle loadings thwart the background correction scheme employed by the CAPS instrument. Since we donÕt have a NO2 measurement at the OLI site to determine NO2 to be the culprit, IM Arthur Sedlacek has asked the AOS technicians to install a HEPA filter in the CAPS sampling line to confirm that the behavior described above is due to molecular species, and not particles. Arthur will also contact the manufacturer about the idea of converting the blue channel to a particle-free green channel. In this way, we will have a constant measure of NO2, thereby enabling the green aerosol channel to be corrected for these episodes. In the long term, we may want to terminate aerosol extinction measurements via the CAPS at Oliktok, or, live with the issue, and simply flag data as bad (unusable) when the wind direction is from the north, where the desalination plant is located. Other long-term options include adding a fourth channel to the CAPS that measures NO2 full-time, using an NO2 scrubber on the front end of the CAPS (this is a consumable, and particle loss issues would have to be determined), or procuring a separate way of locally measuring NO2. This observation does raise the question as to what is precisely present in

these plumes. It is possible that other molecular species (e.g., hydrocarbons) could be present locally, and have the potential of impacting other instruments. Several informative graphs have been posted to the DQPR.

AOS --- ACSM-- Not Operational.

AOS --- GHG-Picarro --- Operational.

2017/02/16, DQPR-5908: DQR D170217.1 has been submitted to cover the period of data loss and subsequent mentor testing. With regard to ingest, ENG 3362 is open, and conversation is ongoing. DQR D170217.1 is pending PRB review, and the most recent DQPR status is "waiting - for spares"

2017/02/01, DQPR-5908: Mentors are on site, and have determined the cause of the problem to be the Picarro analyzer malfunctioning. A replacement analyzer has been installed. Testing will proceed until 02/04. Since the new Picarro is a different computer, data transfer will need to be re-established, and the OSS will be updated to reflect the installation of the analyzer. The end date to this DQPR will be updated after mentors have verified that the system is functioning normally (after 02/04). A DQR will follow.

2017/01/20, DQPR-5908: Ken shipped replacement parts that arrive on site from 2017/02/01 - 2017/02/04. The system is not collecting data due to the analyzer and/or pump issue. The exact source of the problems are currently being worked out, and he will provide an update as things go on.

2017/01/10, DQPR-5908: The GHG went down during the site-wide power outage at 14:00 UTC on 2017/01/05. Unlike other instrument systems, the system has not been brought back online as of today. IM Ken Reichl added that the Picarro pump has not been powered on as of 19:38 GMT on 2017/01/10. Ken Burk from the DMF responded that the data seems to be flowing now. One exception is that for the last 3 days the file 'CFADS2364_NA_NA_DataLog_User.dat' has made it's way to the DMF @ approximately 12:15. The ingest does not seem to like that file, so IM Ken authorized turning off the collection of files with NA_NA within the file name. He also disabled the creation of these files. The reason these files are being created is due to the Picarro pump not functioning, and therefore, the analyzer is not producing data. As long as the Picarro is not functioning, oliaosghgM1 raw data is not being produced. IM Ken is looking into a solution, such as perhaps sending a replacement pump box for the GHG.

AOS --- HTDMA --- Operational.

2017/02/16, DQPR-5805: HT-DMA is back up and running, with perfect flows. However, the MCPC is still showing no counts. It appears that the MCPC was damaged by the previous power loss, so the MCPC was shut down and sent in for repairs. A spare MCPC should be available soon, and the most recent DQPR status is "waiting - for spares."

2017/02/14, DQPR-5805: The Pentras is overheating after the latest power loss. The HT-DMA was shut down to protect it. The Pentras is working, but has large temperature spikes. Janek is troubleshooting. The most recent DQPR status is "in progress - assignments."

2017/02/08, DQPR-5805: MCPC is not showing any counts after AMF3 experienced a loss of power. Janek will keep this DQPR open as the instrument was still under observation when this happened.

2017/02/03, DQPR-5805: The instrument is working well. This DQPR should be closed, as data has been processed, and ingest enabled.

2017/01/12, DQPR-5805: Janek said that restarting the HTDMA went fine, and overall, the instrument is ok. However, the MCPC condenser cooler is not working. Tests show no voltage on the cooler pins. The manufacturer has been contacted, and Janek has a spare MCPC at hand that may be sent to the site if needed. Janek submitted DQR D161208.2, which was reviewed and accepted by the PRB.

2017/01/06, DQPR-5805: Ingests are still off. After several power outages at AMF3, the instrument is currently offline. As of the last check on 2016/12/22, the HTDMA was producing good quality data with some minor flow issues. These will be checked on once the power is restored. AMF3 is currently experiencing Phase 3 blizzard conditions, and the emergency heating system reportedly kicked in. Operators will have to check the system to see if there is any freezing damage.

2016/12/16, DQPR-5805: Janek replied to Joshua's request for turning on ingest/collection, asking for DMF to wait until the valve is fixed. Operators discovered something with the valve that could be the cause for the flows we are seeing, and it will be tested today.

2016/12/15, DQPR-5805: Joshua King asked the DMF team if collection/ingests could be turned back on given Janek's comments from yesterday.

2016/12/14, DQPR-5805: The MCPC was successfully installed, and is showing counts. The scanning works nicely, but the humidifier sheath RH is low. This is probably due to a stuck internal valve, which we will test.

2016/12/06, DQPR-5805: After numerous tests on the MCPC have failed to pinpoint the cause for zero counts, a spare MCPC is being shipped in, and the old one returned for maintenance. Janek Uin has an assignment to write an open-ended DQR D161208.2.

2016/11/29, DQPR-5805: Beginning at around 20:00 UTC on 2016/11/21, HTDMA size distributions and aerosol concentrations have flatlined at 0/cm^3 (see attached graph). IM Janek Uin responded that the MCPC was flooded, and the temperature in the AOS dropped to the levels where the HTDMA RH is too low. The MCPC was drained, and we are waiting to see if that worked. We are looking into insulating the HTDMA, and raising the AOS temperature.

AOS --- UHSAS --- Operational

AOS --- NEPH --- Operational.

AOS --- IMPACTOR --- Operational.

AOS --- OZONE --- Operational.

AOS --- TRACEGAS --- Operational.

2017/02/21, DQPR-6028: The AOS CO DataStream, starting at 20170221_145746, are all NaNs. Joshua King thinks this issue might be related to the ongoing AMF3 power issues. The most recent DQPR status is "open- requires action."

AOS --- PSAP --- Operational.

2017/02/16, DQPR-5937: Joshua King posted a reminder for Stephen to submit DQR D170127.7. The most recent DQPR status is "in progress - assignments."

2017/02/03, DQPR-5937: Data has been processed, and ingest enabled. This DQPR can be closed.

2017/01/27, DQPR-5937: Technicians replaced the failed pump, and restarted the PSAP at 18:55 UTC. Steven Springston has an assignment to write DQR D170127.7 about the outage period. There will not be an official end date before ingests are operational once again, but it looks like raw data returned on 2017/01/25.

2017/01/18, DQPR-5937: Technicians have shut down the PSAP due to a possible failure to the pump feeding the instrument. Operators are waiting on the replacement pump.

Other --- AERI --- Operational.

Other --- BBSS --- Operational.

Other --- CIMEL --- Not Operational.

Precip --- MASC --- Operational, Data Ingest Up to 2017/02/11.

2017/02/17, DQPR-5954: Data have come through, and it looks like this will just be a missing DQR on the a1 level images. The b1 level data look ok. The most recent DQPR status is "in progress - assignments," pending submission of DQR D170217.2.

2017/02/03, DQPR-5954: Once the latest data come through, the DQO will verify the times, and assign a DQR. The most recent DQPR status is "open - requires action."

2017/01/24, DQPR-5954: The MASC image collection within the MASC Mac mini computer failed from 2017/01/11 at 22:37 UTC to 2017/01/24 at 22:00 UTC. A camera freeze-up was expected, and site ops checked the MASC and its

IR sensors. The trigger function tested ok, so the MASC software was restarted, and the manual trigger function executed. Collection was resumed.

Precip --- PIP --- Operational, Working on Beginning Data Ingest to DMF Archives.

Precip --- LPM --- Operational, Working on Beginning Data Ingest to DMF Archives.

2017/02/25, CM-2017-AMF3-VSN-1867: Lily Cohen wanted to store more outputs from the instrument, so she updated the logger program to store more outputs from sensors.

Precip --- Geonor --- Operational, Working on Beginning Data Ingest to DMF Archives.

2017/02/14, CM-2017-AMF3-VSN-1869: There was snow built up on the snow fence on February 14th, so it was cleaned by site ops.

2017/02/25, CM-2017-AMF3-VSN-1868: The antifreeze in the GEONOR was not working, so the bucket was thawed and operators replaced the old antifreeze with a more appropriate solution at the end of January.

Other --- SR50A --- Operational.

Other --- DataHawk Unmanned Aerial System --- Operational, not a full time instrument.

Other --- TBS --- Operational. Sensor will not be running full time.

Other --- CCN --- Not at the Site Yet, Calibrated.

2017/02/16, DQPR-5447: The CCN was calibrated, and Janek is running it to verify proper operation. The most recent DQPR status is "waiting for spares."

2017/01/31, DQPR-5447: The instrument sent back to the vendor was actually the CCN for SGP. The CCN covered in this DQPR is waiting for calibration. Janek just got new power supplies from DMT, and will proceed ASAP.

2017/01/27, DQPR-5447: Stephen noted on this week's DQPR coordination call that the instrument was being sent back to the vendor for additional troubleshooting.

2017/01/06, DQPR-5447: The instrument started showing that wide distribution again. The OPC was switched out, and the distribution looks normal again. Concentrations between the column are currently different at the same supersaturation. Most likely, the calibration changed with the OPC switch. The instrument will be re-calibrated as soon as possible.

2016/12/20, DQPR-5447: Janek received the power supply, and he is letting the instrument run to confirm the previous issue. He is currently not seeing the wide size distribution at high supersaturation, and has a spare OPC at hand to install if needed.

2016/12/06, DQPR-5447: Janek added that we are awaiting a spare CCN power supply to turn the instrument on as to provide data to DMT.

2016/11/17, DQPR-5447: Nothing has changed, and Janek is discussing with others on how to approach DMT.

2016/10/24, DQPR-5447: Email distribution flag changed - distribution will exclude site operations. Janek received no reply from DMT, but will try again. The most recent DQPR status is "waiting- for spares." The DQPR requires an end date to close it.

2016/10/13, DQPR-5447: An issue with one of the OPCs (Optical Particle Counter) was discovered. The OPC's particle size distribution is very wide, and does not match the other OPC under the same conditions. Contacting DMT.

2016/09/12, DQPR-5447: Janek Uin reports that the CCN was calibrated and proper operation verified before shipping the instrument to the OLI site (Linked DQPR-5290). A difference in concentrations between the columns at 1% supersaturation was discovered after calibration.

Barrow

INFORMAL NSA INSTRUMENT STATUS REPORT FOR February 17, 2017 - February 24, 2017
BRIEF STATUS OF INSTRUMENTS IN BARROW (C1) AS OF 2017/02/24:
Facilities Operational
Data Systems Operational
Vehicles Partly Operational
SKYRAD - SKY Radiometer on Stand for Downwelling Operational
MFRSR - Multifilter Rotating Shadowband Radiometer Not Operational
NIMFR - Normal Incidence Multifilter Radiometer Not Operational
GNDRAD - Ground Radiometer on Stand for Upwelling Partly Operational
MFR10m - Multifilter Radiometer at 10m height Not Operational
METTOWER - Surface Meteorological Instrument on tower Partly Operational
AMC - Soil, up/downwelling radiation measurements Operational
ECOR-twr - Eddy Correlation Flux System Operational
ECOR-PtBRW - Eddy Correlation Flux System Not Operational
MWR - Microwave Radiometer Operational
MWRP - Microwave Radiometer Profiler Operational
MWRHF - Microwave Radiometer High Frequency Operational
GVR - G-band Vapor Radiometer Operational
HSRL - High Spectral Resolution Lidar Operational
MPL - Micropulse Lidar Operational
CEIL - Vaisala Ceilometer Operational
DL - Doppler LIDAR Operational
RWP - Radar Wind Profiler Operational as per http://radar.arm.gov
KAZR - Ka ARM Zenith Radar Operational
KaWSACR - Ka-Band Scanning ARM Cloud Radar Not Operational, undergoing testing as per http://radar.arm.gov
XSAPR - X-Band Scanning ARM Precipitation Radar Not Operational as per http://radar.arm.gov
AOS - Aerosol Observing System Operational
CLAP - Continuous Light Absorption Photometer Operational
CPC - Condensation Particle Counter Operational
NEPH - Nephelometer Operational
TOWERCAM - 40m tower camera Operational
TSI - Total Sky Imager Operational
LPM - Laser Precipitation Monitor Operational
SR50A - Snow Depth Sensor Operational
AERI - Atmospheric Emitted Radiance Interferometer Operational
BBSS (Autosonde) - Balloon Borne Sounding System Not Operational
CIMEL - Cimel Sunphotometer Not Operational
IOP - CAM Operational

****
* Barrow Instruments in Detail: *
****

INFRASTRUCTURE --- Facilities --- Operational.

INFRASTRUCTURE --- Data Systems --- Operational.
2017/02/23, CM-2017-NSA-VSN-4242: IT asked operators to reboot the residential computers, Walter's, and James' computer.
2017/02/20, CM-2017-NSA-VSN-4235: A site data disk was changed out.
2017/02/17, CM-2017-NSA-VSN-4234: The Barrow daily rounds database (Filemaker file) needed to be updated for the operators. The Barrow Filemaker database was copied over to Telayna' s desktop at UAF, and was improved

using that template. A new color scheme was developed, new instruments were added (the whole AOS suite, the HSRL, GVR, MWHRF, DL, SACR), old instruments were deleted or improved (AERI), variables were corrected, and graphics changed. The database was improved with input from instrument mentors. After making the improvements, all the test records were deleted and the file was made blank for operators to begin using on the morning of 02/17/17. The new file (with the same name as the old, Brw daily rounds) was transferred to both the Operator's desktop and laptop, and the old file was deleted after being copied over to my desktop and Agvik's desktop.

INFRASTRUCTURE --- Vehicles --- Partly Operational--Waiting on Telehandler Repair.
SKYRAD --- SKYRAD General --- Operational.
SKYRAD --- IRT --- Operational.
SKYRAD --- PIR 1 Shaded --- Operational.
SKYRAD --- PIR 2 Shaded --- Operational.
SKYRAD --- SOLAR Tracker --- Operational.
SKYRAD --- B&W diffuse --- Operational.
SKYRAD --- NIP --- Operational.
SKYRAD --- PSPg --- Operational.
SKYRAD --- MFRSR --- Not Operational, Removed for the Winter.
SKYRAD --- NIMFR --- Not Operational, Removed for the Winter.
TIPTWR --- GNDRAD general --- Partly Operational (missing and incorrect data).
2017/02/24, DQPR-5860: On 2017/02/13, Walter checked all wires connected to the SKYRAD and GNDRAD loggers from the instruments. All appeared connected and fine. The most recent DQPR status is "open - requires action."
2017/02/17, DQPR-5860: There was a short period from 02/13 at 22:56 to 02/15 at 16:53 when the data comes back, but data is currently missing again.
2017/02/07, DQPR-5860: Intermittent periods of missing upwelling longwave data have occurred, most recently since 02/02/17. IM Mark Kutchenreiter asked site ops to check GNDRAD PIR connections to troubleshoot and correct possible causes of missing data.
2017/01/25, DQPR-5860: Up long hemispheric has gone missing again as of approximately 20:00 UTC on 2017/01/22, and has not yet come back.
2017/01/20, DQPR-5860: Data comes back on 2017/01/20 at 08:09 UTC.
2017/01/09, DQPR-5860: Data looks to come back on 2016/12/30 at 23:26, and then goes missing again through the current date. The ranges of missing data so far include: 2016/11/10 @ 14:00 to 2016/12/30 @ 23:26, 2017/01/04 @ 02:57 to 2017/01/05 @ 17:49, 2017/01/06 @ 11:19 to the present.
2016/12/21, DQPR-5860: There has been some missing data since 14:00 UTC on 2016/11/10: up long hemispheric, up long hemispheric max, and min. Missing data was proceeded by incorrect data that exceeded their max limits.
TIPTWR --- MFR10m --- Not Operational, Removed for the Winter.
TIPTWR --- PIRgnd --- Operational.
TIPTWR --- IRTgnd --- Operational.
TIPTWR --- PSPgnd --- Operational.
MET --- METTOWER general --- Operational.
MET --- CMH --- Operational.
MET --- Barometer --- Operational.
MET --- TEMPERATURE / HUMIDITY --- Operational.
MET --- WIND INSTRUMENTS (SONIC) --- Operational.
MET --- PWD --- Partly Operational.
2017/02/23, DQPR-6040: The PWD is consistently reporting missing data due to a hardware warning. Jenni connected remotely to pull diagnostics that showed an error with the raincap sensor. She will contact the manufacturer about options for repair. The most recent DQPR status is "open - requires action."
MET --- AMC --- Operational.
2017/01/27, DQPR-5835: Data is getting to the DMF now—-it has been processed, and the ingest is enabled. Ken Reichl has been assigned DQR D170127.9, and the most recent DQPR status is “in progress - assignments.”
2017/01/13, DQPR-5835: If weather permits, operators will connect other sensors. The most recent DQPR status is “open — requires action.”

2017/01/09, DQPR-5835: Walter has not yet had a chance to spend time connecting soil sensors (to see which one causes the logger to drop power) due to weather conditions and other instrument issues.
2016/12/15, DQPR-5835: Foxes have again eaten the set of sensor wires that were repaired in early November. Walter asked if the mentor can identify the set of wires to disconnect from the logger to prevent shorting and to collect from other sensors.
2016/12/14, DQPR-5835: On 2016/11/14, old data from Aug-Oct were re-sent. That data has been cleaned up, and bundled back on.
2016/12/09, DQPR-5835: All data is missing since 2016/11/22 at 18:00 UTC. DSView shows that no data has been collected from the instrument since this day, and the bundle is flagged as “getting old data.” The most recent status of this DQPR is “open - requires action.”
2016/11/03, DQPR-5694: This DQPR has been linked to DQPR 5756, and DQR D161011.3 has been submitted and reviewed by PRB. The most recent status of this DQPR is “in progress - assignments.”
2016/10/11, DQPR-5694: Joshua responds to IM Ken Reichl that after conferring with others at the Data Quality Office, the best action is to create another DQR about this behavior, like the one that exists for OLI. Joshua has assigned an open-ended, "transparent" DQR to Ken. He then asks what the relevant time period was for this issue within the NSA C1 AMC data record. The status of this DQPR is "in progress-assignments."
2016/10/10, DQPR-5694: Joshua King adds that vmc from sensor 4 was missing from 14:30 UTC 2016/07/12- 15:30 UTC 2016/09/25. Since returning 2016/09/25, vmc has been decreasing to below 0.3. He is asking mentors if they have thoughts on what is causing this behavior. An attached image can be found on the DQPR page. IM Ken Reichl responds that this is an issue outlined in DQPR-4793 for the analogous site, OLI. The instrument reports soil data as 9999999, or a non-numerical character (for data SGP) for soil systems. The AMC systems may report missing data during warm seasons for instruments that are not sufficiently calibrated. The OLI DataStream has an open-ended DQR D151023.3. Ken asks if he should make one for the NSA data as well, and is the DQR system the best way to characterize this issue?
2016/10/09, DQPR-5694: Vwc (volumetric water content) 4 is missing for the entire period starting 16/07/12 to 16/09/25.
ECOR --- ECOR-twr --- Operational.
ECOR --- ECOR-Pt. Barrow --- Not Operational, End of Season.
2016/12/12, DQPR-4322: Power supply problems prevented us from collecting any data this past autumn, and the ECOR/SEBS system was removed for winter on Dec 7th to prevent further bear damage. The most recent status of this DQPR is “in progress - assignments.”
2016/12/09, DQPR-4322: Adam Theisen added that the ingest appears to still be off.
2016/11/21, DQPR-4322: Despite being able to communicate with the Point sometimes, no data shows up in the Archive. David will ask if the ingest is running.
2016/10/07, DQPR-4322: IM David Cook says that the ECOR/SEBS system was reinstalled and running at approximately 2400 CST on 9/28/2016. However, reliable radio communication has not been established with the instrument system, and manual data collection may be needed as the radio communication problem is actively being investigated.
2016/09/23, DQPR-4322: The SEBS re-installation is scheduled for September 26-30, 2016.
MW RADIOMETERS --- MWR --- Operational.
2017/02/22, CM-2017-NSA-VSN-4238: Walter received the loaner instrument from SGP (S/N #38, property number WD30750), and installed and powered it up. The data cable was connected, and the mentor was informed.
2017/02/03, DQPR-5946: Adam put this DQPR back into a “waiting - for spares” state until the MWR is swapped out.
2017/01/25, DQPR-5946: Walter checked the storage for a spare, and found nothing. After checking his emails, he realized the spare was shipped to PNNL. There is no spare at NSA. Maria Cadeddu has submitted DQR D170127.1, and it is pending PRB review. the most recent DQPR status is “in progress - assignments.”
2017/01/22, DQPR-5946: There is a large spike in the data from 2017/01/05 at 16:00 UTC to 2017/01/11 at 21:00 UTC. Then, the PWV data seems unreliable during the period of 2017/01/05 to 2017/01/11. The radiometer set temperature suddenly dropped from 306 K to 280 K around 2017/01/05. This caused a lot of instability in the radiometer. The data should be listed as red in the DQR, and the radiometer should probably be removed and sent to Radiometrics. Maria Cadeddu will check with SGP for a spare and request an RMA from Radiometrics. Walter will check for a spare MWR in Long Term Storage.

MW RADIOMETERS --- MWRP --- Operational (Data Spikes, Missing Data).
2017/02/17, DQPR-5297: We are waiting on calibration. Maria Cadeddu suggested that we close this DQR, and open a new one if there are more issues post-calibration. The most recent DQPR status is "in progress - assignments."
2017/01/25, DQPR-5297: The instrument was reinstalled on 2017/01/11. The data has been processed, and the ingest enabled. There is a fair amount of missing data (-9999) showing up along with intermittent spikes in many variables, including the brightness temps. IRT data are flatlined around 220k. Some of this may be normal, as it has been a while since Adam has looked at these data. Walter added that it is currently -33F on the ground, so surely the sky temperatures are much colder. Maria has updated the mp.cfg file on 2017/01/21, and proposes that we plan a LN2 calibration. The most recent DQPR status is "waiting - for spares."
MW RADIOMETERS --- MWRHF --- Operational (External Noise Interference).
2016/09/30, DQPR-4165: The 150 GHz channel was showing high noise levels probably because of an external source of interference. Adam inquires if there is a path forward to solve the interference issues? The current DQPR status is "in progress- assignments", and it is open-ended. DQRs D140610.1 and D160426.3 have been reviewed and accepted by the PRB.
MW RADIOMETERS --- GVR --- Operational.
2017/02/24, DQPR-6013: Maria Cadeddu submitted DQR D170224.3, and it is pending PRB review. The most recent DQPR status is "open - requires action."
2017/02/17, DQPR-6013: Data was not available from 2017/02/02 at 12:56 UTC to 2017/02/06 at 14:35 UTC.
LIDAR --- HSRL --- Operational.
2017/02/24, DQPR-6014: The problem was related to a firmware update of the seed laser controller intended to re-center the target lock point near 0 V. It had been drifting over the course of a few years, and was approaching the edge of the usable range. After the firmware update, the target lock point is near 0. However, the computer wasn't properly locking, but a parameter adjustment has now allowed the lock to be properly maintained. The most recent DQPR status is "open - requires action."
2017/02/17, DQPR-6014: The HSRL lost the lock point from 02/10 at 01:11 UTC to 15:34 UTC.
LIDAR --- MPL --- Operational.
LIDAR --- CEIL --- Operational.
LIDAR --- Doppler LIDAR --- Operational.
2017/02/23, CM-2017-NSA-VSN-4244: The DL computer required a reboot to install software patches, so the program was terminated, and the instrument was power cycled. Walter waited a bit to see that the program restarted and was running.
2017/02/22, CM-2017-NSA-VSN-4236: The Doppler Lidar's optics' blower failed, and there was snow accumulation on it. There are no spare parts, and the mentor was notified.
RADAR --- RWP --- Operational.
RADAR --- KAZR --- Operational.
RADAR --- KaWSACR --- Not Operational, undergoing testing per http://radar.arm.gov. Chiller sent to RMA.
2017/02/23, CM-2017-NSA-VSN-4241: There was a high wind warning. Operators rotated and pinned the radar to prevent any movement.
2017/02/17, Radar.arm.gov: Refurbished DSAs were installed, the azimuth axis is still not functional, and the chiller is not functional.
2016/10/23, CM-2016-NSA-VSN-4158: The Ka Band chiller overflowed, and we suspect it is because of a faulty pump. The unit was shipped to SGP until repair paperwork can be generated. The chiller (S/N 10080330) was removed and drained, and we are awaiting a spare, or for this unit to be rebuilt.
2016/03/12, DQPR-4041: After much coordination with the pedestal manufacturer and while working with the instrument mentors, the azimuth DSA was re-programmed. Once a reprogrammed Azimuth DSA was installed and verified the Elevation DSA was also found to be faulty. It was replaced with another unit and the system now accepts azimuth and elevation commands. The most recent DQPR status is "waiting- for spares."
RADAR --- XSAPR --- Not Operational as per http://radar.arm.gov. Dehydrator and RCP Shipped Out to PNNL for Repair.
2017/02/16, Biweekly Telecon: Andrei is looking at parts replacement/repairs/upgrade for June.
2016/08/04, DQPR-4841: The elevation servo amplifier failed, the radar can not scan in elevation. The radar will be upgraded by the end of this year, and will be turned off until then. A DQR was submitted and reviewed by PRB. The DQPR status is "in progress" due to it being open-ended. Adam Theisen's DQR D160719.1 has been reviewed and

accepted by the PRB.
AOS --- General --- Operational.
AOS --- AETH --- Operational.
AOS --- CLAP --- Operational.
AOS --- CPC --- Operational.
AOS --- NEPH --- Operational.
IMG --- TOWERCAM --- Operational.
IMG --- TSI --- Operational.
Precip --- LPM --- Operational, Logger Program Being Worked On.
2017/02/25, CM-2017-NSA-VSN-4245/4246: The logger program needed to be uploaded to allow the instrument data from the LPM and SR50a sensors to be properly stored. Walter uploaded the new program to the logger, which resolved the issue with the SR50a sensors, but not the issues with the LPM. In addition, the LPM logger program was updated.
2017/02/23, CM-2017-NSA-VSN-4239: Walter received and installed the new wireless communication in E5 and the TPS location. A connection was made, and there are 4 communication lights showing.
2017/02/22, CM-2017-NSA-VSN-4237: Walter loaded the new LPM logger program onto the logger. After pushing the new program, he selected 'collect now.' He also grabbed some data that was acquired from last week.
2017/02/17, CM-2017-NSA-VSN-4233: Data collection failed on an earlier attempt, so Walter again connected to the logger and collected all the data, which was saved to the laptop. The laptop was connected back in the Great White.
Other --- SR50A --- Operational.
2017/02/25, CM-2017-NSA-VSN-4245: The logger program needed to be uploaded to allow the instrument data from the LPM and SR50a sensors to be properly stored. Walter uploaded the new program to the logger, which resolved the issue with the SR50a sensors, but not the issues with the LPM.
Other --- AERI --- Operational.
Other --- BBSS --- Not Operational (Autolauncher), Will Be Repaired. As of 2017/01/24, Launches Will Be Manual!
2017/02/23, CM-2017-NSA-VSN-4243: IT scheduled some software patches for the instrument, and operators were requested to power cycle the BBSS (94.20) computer.
2017/02/03, DQPR-5953: Adam These updated the DQPR status to “waiting - for spares.”
2017/01/24, DQPR-5953: The Autosonde pneumatic system failures have caused missing launches from 2017/01/15 to 2017/01/17, on 2017/01/19, and will cause missing data from 2017/01/23 until the instrument is repaired. Beginning on 2017/01/15, the pneumatic cylinder(s) on the cover lid failed, and inflated balloons were not able to be launched. On 2017/01/21, the main air compressor failed. The system ran on the backup compressor, but the pneumatic ram(s) began failing again—it was not possible to close them without force. The vendor has been slow to respond to requests for replacement part quotes. On 2017/01/24, Site ops shut down the Autosonde at C1, and will be doing manual launches from the backup system (S01). A Vaisala Autosonde technician is helping site ops and IM Donna Holdridge find a path forward for repair. They are currently awaiting a quote before ordering repair parts. The most recent DQPR status is “open - requires action.”
Other --- CIMEL --- Not Operational, Removed for the Winter.
IOP --- CAM --- Operational.

5 North Slope Facilities

AMF3

Current and Upcoming Site Visits

Fred Helsel, Bruce Edwardson/SNL	02/28- 03/08/2017	Ice Nucleating Particle Sources IOP
Jessie Creamean/CIRES	02/28- 03/13/2017	Ice Nucleating Particle Sources IOP

Current and Upcoming IOPs

Black Carbon on the North Slope (Baylor)
Ice Nucleating Particle Sources (Jessie Creamean on-site) KERRI PRATT, RACHEL KIRPES, NICHOLAS SPADA and GOURIHAR KULKARNI IOP starting 2/28/2017

Site News/Issues

The AOS/UPS battery pack failed leaving the AOS without a UPS. It was still under warranty and the manufacturer has shipped a new battery pack.

In December 2016, Delta Leasing, who assumed the Sandia lease, purchased MagTec, who supplied us with our power generators. Some of the mechanic skill set was lost in the purchase. The generators are becoming less reliable as they age and accumulate operational hours. Further, the kW capacity of the present-leased generators has been reached due to the addition of the Arctic Shelters and extra instruments.

Prime power generators

Unmet Needs

AMF3 still lacks a permanent source of power.

Site Upgrades

NA

Site Safety

NA

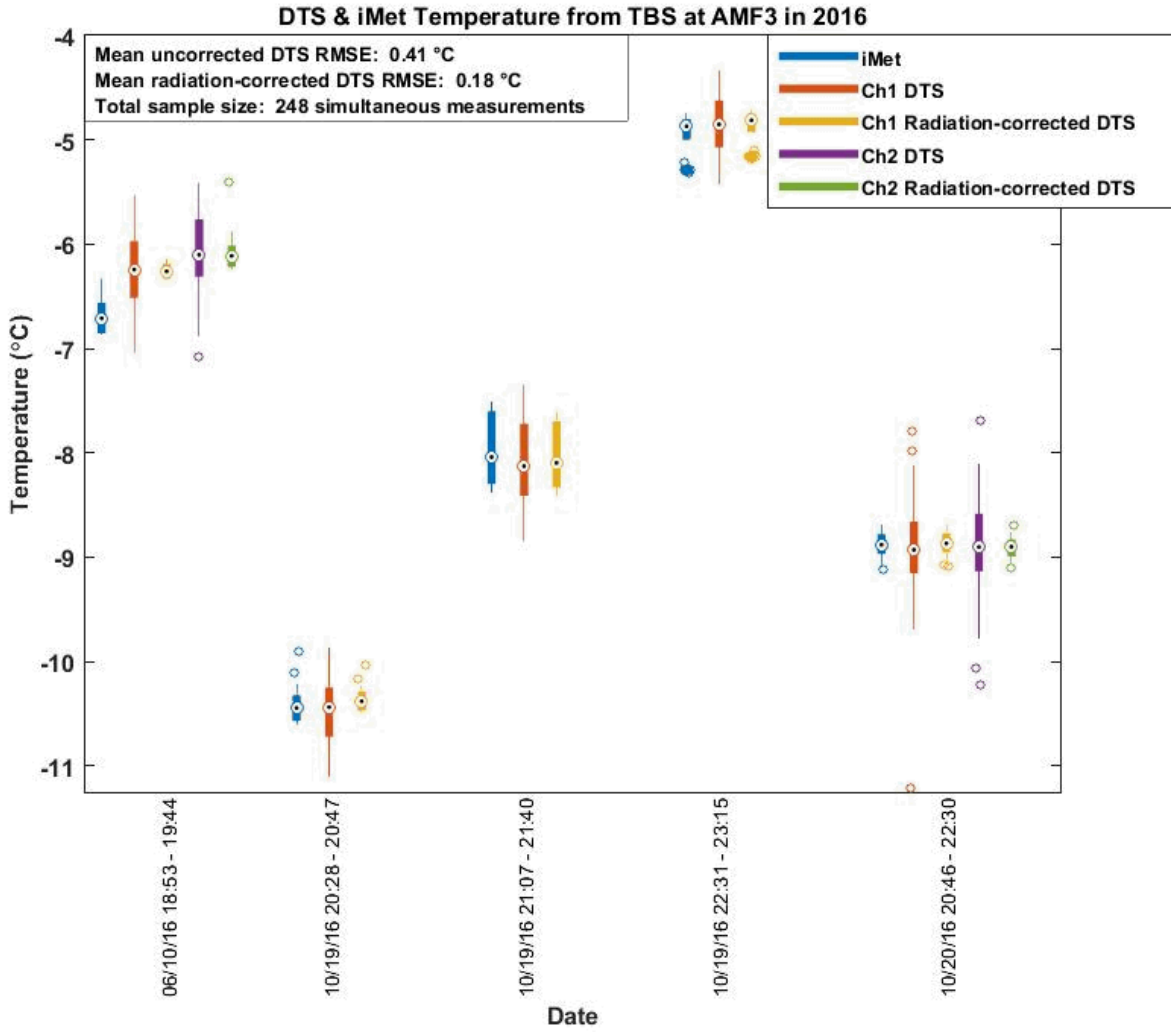
Site Staffing Issues

NA

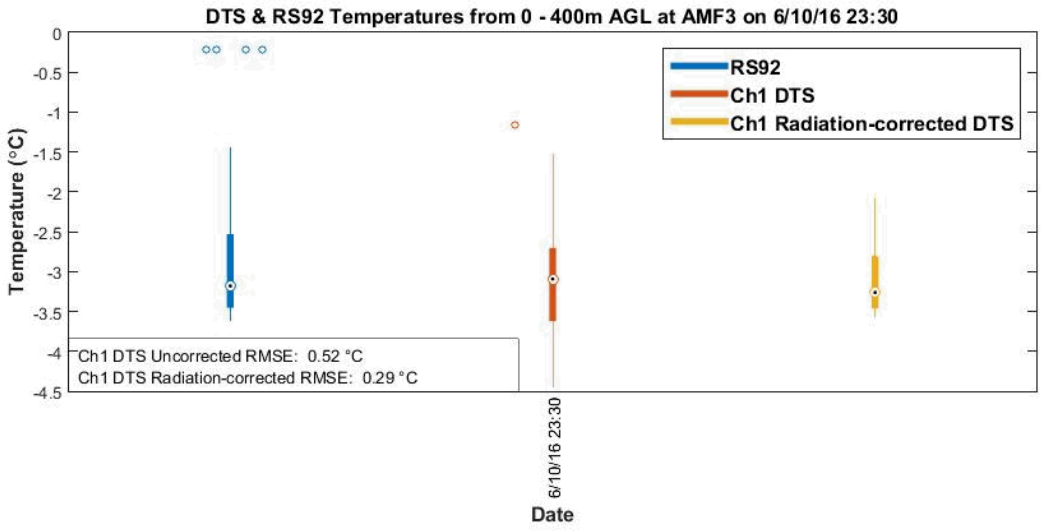
Tethered Balloon Operations

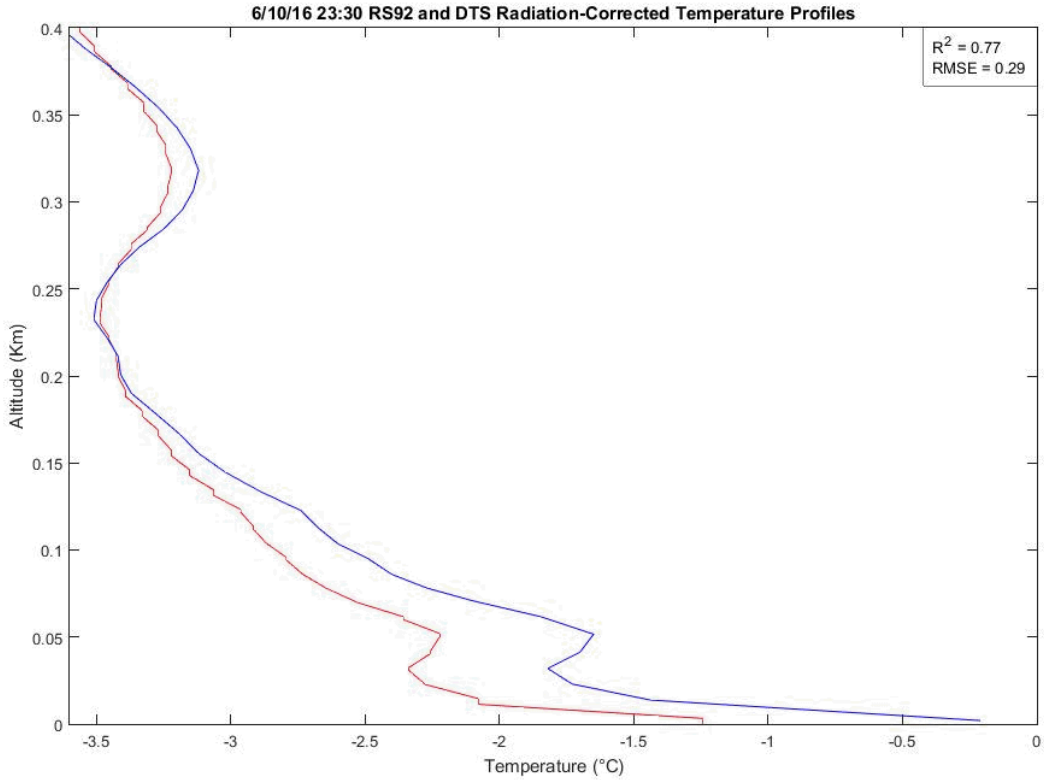
1. TBS testing flights were conducted in Albuquerque, NM, on 2/16/17. The tether burn wire device was installed on a 4' length of tether dangling beside the main helikite tether. The parachute was also installed on the 4' length.
   The helikite was raised to approximately 200' AGL and then tether burn was initiated from the ground. The tether successfully separated and the parachute deployed. Improvements to the burn-wire, parachute system are being implemented and the system is planned to be implemented during TBS flights at the AMF3 in 2017.
   Flights are planned for the week of 2/27/16 to test how the installation of secondary tethers (dangling free from the main tether) affects the performance of the balloon system.

2. Concurrent and co-located iMet radiosonde temperature data and DTS temperature data from the AMF3 in 2016 were compared. The DTS data was corrected for solar radiation based on comparison with the radiation-corrected iMet radiosonde data. The uncorrected and corrected RMSEs between the DTS and iMet temperatures were 0.41 °C, 0.18 °C respectively.



3. A concurrent afternoon Vaisala RS92 sonde launch was also compared with the DTS, and used to correct the DTS data for solar radiation. The RMSE between the corrected DTS and RS92 temperatures up to the balloon height was 0.29 °C. The correlation between the two was 0.77.


DTS & RS92 Temperatures from 0 - 400m AGL at AMF3 on 6/10/16 23:30
RS92
Ch1 DTS
Ch1 Radiation-corrected DTS
Temperature (°C)
Ch1 DTS Uncorrected RMSE: 0.52 °C
Ch1 DTS Radiation-corrected RMSE: 0.29 °C
6/10/16 23:30
Date


6/10/16 23:30 RS92 and DTS Radiation-Corrected Temperature Profiles
R2 = 0.77
RMSE = 0.29
Altitude (Km)
Temperature (°C)

Barrow

Current and Upcoming Site Visits

Dan Lucero/SNL	02/13-17/2017	Autolauncher support

Current and Upcoming IOPs

SNPP/NPOESS Ground Truth Sonde Launch, Phase 5 – Started Oct 1, 2016
Sea Ice Effects on Arctic Climate, Rain sample collection - Dartmouth University – POP Ends Dec 2016
Seismic Probes for NSF– POP Ends, Oct 31, 2018
Carbon Aerosol/Methane Gas, - Task order under CPA 1260749 for labor – POP Ends – 2018
Multi-faceted Approach to Characterizing Potential Radiative Forcing on the NSA using Two Coastal Sites, Baylor – June 2016 – Sept 2017.

Site Issues

Update on Auto Balloon Launcher- compressor installed the week of the 23rd; on-line diagnostics to be completed to determine other issues with programmable controllers.

Telehandler is still in the shop waiting for repair. Replacement hydraulic hoses ordered, we are hoping it will be back in operation by the end of February.

Unmet Needs

Auto Launcher deck installation scheduled April 18.

Site Upgrades

NA

Site Safety

NA

Site Staffing Issues

NA

Distribution

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