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

October 2017

Contacts:

Mark Ivey
(North Slope)
mdivey@sandia.gov
505-284-9092

Daniel A. Lucero
(Barrow)
dalucer@sandia.gov
505-845-3025

Fred Helsel
(AMF3/Oliktok)
fmhelse@sandia.gov
505-284-3620

Dari Dexheimer
(Tethered Balloon Systems)
ddexhei@sandia.gov
505-844-7685

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

FY2017 Financials (as of October 27, 2017)

	October	YTD
Carryover funds	$5,078,053	
Funds Allocated YTD	$1,500,000	
Carryover plus YTD funds	$6,578,053	
Cost, burdened amount	$529,468	
Uncosted Funds	$6,048,584	
Commits, burdened total	$2,270,483	
Current fiscal year uncommitted funds	$3,778,102	
Subsequent fiscal year (SFY)commits	$439,579	
Total uncommitted funds, including SFY commits	$3,338,523	
Fully Burdened Staff Costs	$409,000	
Fully Burdened Contract Costs	$120,000	5
Fully Burdened Total Costs	$529,000	$529,000

3 Safety

AMF3- No incident/Injury

Barrow - No Incident/Injury

4 Instrument Status – Provided by Martin Stuefer

AMF3

INFORMAL AMF3 INSTRUMENT STATUS REPORT FOR October 20 - October 29, 2017
BRIEF STATUS OF INSTRUMENTS and site IN OLIKTOK AS OF 2017/10/29:

Facilities Operational
Data Systems Operational
Vehicles Operational
Desktop Computers Operational
SKYRAD - SKY Radiometer on Stand for downwelling Operational
MFRSR - Multifilter Rotating Shadowband Radiometer Operational
GNDRAD - Ground Radiometer on Stand for Upwelling Operational
MFR3m - Multifilter Radiometer at 3m height Operational
MAWS - Automatic Weather Station Operational
MET - Surface & Tower Meteorological Instruments Operational
CMH - Chilled Mirror Hygrometer Operational
AMC - Soil, up/downwelling radiation measurements Operational
ECOR - Eddy Correlation Flux System Operational
MWR3C - Three Channel Microwave Radiometer Operational
MPL - Micropulse Lidar Operational
DL - Doppler Lidar Operational
CEIL - Vaisala Ceilometer Operational
RWP - Radar Wind Profiler Not Operational
KAZR - Ka ARM Zenith Radar Operational as per warno.arm.gov
KaWSACR - Ka-Band Scanning ARM Cloud Radar Not Operational as per warno.arm.gov
BBSS - Balloon Borne Sounding System Operational
TSI - Total Sky Imager Operational
AOS - Aerosol Observing System Partly Operational
AOSMET - AOS Meteorological Measurements Operational
CO - AOS Carbon Monoxide Analyzer Operational
CPC - Condensation Particle Counter Operational
CAPS - Cavity Attenuated Phase Shift Extinction Monitor Not Operational
ACSM - Aerosol Chemical Speciation Monitor Operational
HTD-MA - Humidified Tandem Differential Mobility Analyzer Not Operational
GHG - PICARRO Operational
NEPH - Nephelometer Partly Operational
PSAP - Particle Soot Absorption Photometer Operational

UHSAS - Ultra-High Sensitivity Aerosol Spectrometer Operational
IMPACTOR - AOS Impactor Operational
OZONE - AOS Ozone Operational
TRACEGAS - AOS CO, N2O, H2O Operational
CCN - Cloud Condensation Nuclei Particle Counter Not Operational
MASC - Multi Angle Snowflake Camera Partly Operational
PIP - Precipitation Imaging Package Operational
LPM - Laser Precipitation Monitor Operational
GEONOR - Geonor Weighing Gauge Operational
SRS - Snow Depth Sensor Operational
AERI - Atmospheric Emitted Radiance Interferometer Operational
CIMEL - Cimel Sunphotometer Not Operational
MET-AIR - DataHawk Unmanned Aerial System Operational
TBS - Tethered Balloon System Operational
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* Oliktok Instruments in Detail: *
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INFRASTRUCTURE --- Facilities --- Operational.
2017/10/23, CM-2017-AMF3-VSN-2168: The alternator on the site's Delta Leasing MMD 100Kw Generator failed around 23:05 UTC on 10/23. Site ops immediately started the back up Delta Leasing Ingersoll Rand 76Kw Generator, let it warm up, and transferred power to it. All instruments were restarted by 23:25 UTC.

INFRASTRUCTURE --- Data Systems --- Operational.
2017/10/28, CM-2017-AMF3-VSN-2173: HDD S/N NA76M78N was replaced with HDD S/N NA7Q2CDN. Site ops will ship HDD S/N NA76M78N via USPS tracking # 9114 9014 9645 0952 9754 02.
2017/10/25, CM-2017-AMF3-VSN-2170: HDD S/N NA76M558 was replaced with HDD S/N NA76M78N.
Site ops will ship HDD S/N NA76M558 via USPS tracking # 9114 9014 9645 0952 9753 96.
2017/10/23, CM-2017-AMF3-VSN-2167: HDD S/N NA7Q2CQ6 was replaced with HDD S/N NA76M558. Site ops will ship HDD S/N NA7Q2CQ6 via USPS tracking # 9114 9014 9645 0952 975396.
2017/10/21, CM-2017-AMF3-VSN-2164: HDD S/N NA76ME2Z was replaced with HDD S/N NA7Q2CQ6. HDD S/N NA76ME2Z will be shipped via USPS tracking # 9114 9014 9645 0952 975389.
INFRASTRUCTURE --- Vehicles --- Operational.
INFRASTRUCTURE --- Desktop Computers --- 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 --- Operational, but a Shading Problem.
2017/10/26, DQPR-6605: There is a shading problem with the MFRSR. The algorithm first picked it up on 10/25, but the exact start is unknown. The most recent DQPR status is "open - requires action."
2017/10/25, CM-2017-AMF3-VSN-2169: During afternoon rounds, site ops found that the MFRSR had stopped doing its scans. Site ops tested the power supply and breaker located within the instrument's housing. Both tested satisfactory. Site ops proceeded to take the heat gun out to warm up the stepper motor attached to the shadowband and this seemed to do the trick. It started to perform its scans again, however, this was short lived. Site ops took the stepper motor off and brought it inside to let it thaw for a few hours. The motor was reinstalled and powered back up. The instrument is now performing its scans as usual.
2017/10/23, CM-2017-AMF3-VSN-2166: Technicians received a report from the mentor of the MFRSR logger not responding around 18 UTC on 10/23. Site ops checked the logger, and upon inspection, found that power flow was stopped at the Altech Corp AC-DC Converter. The green light was not illuminated. Site ops verified power to the

unit, but not flowing through. Site ops located a replacement in spares and secured the power supply to the enclosure. They restored power to the enclosure and the green light (DC OK) lit right up, soon followed by the red power light to circuit board for the heater. The mentor confirmed that the problem was resolved.
2017/07/14, DQPR-6185: Adam added that the head_temp2 is still occasionally flagging. The most recent DQPR status is "open - requires action."
TIPTWR --- GNDRAD general --- Operational.
2017/09/28, DQPR-6479: Adam asked Mark what he thinks. There seems to be a larger difference between the ULH and the ULH calculated from the IRT data. The most recent DQPR status is "open - requires action."
2017/09/19, DQPR-6479: After coming back online (since 9/9/2017 at 19:20 UTC), the quality of the data is unknown. Adam These noted that the upwelling longwave data dropped down to negative levels from 9/9-9/10, and there have been some interesting features in the longwave after coming online. The most recent DQPR status is "open - requires action."
TIPTWR --- MFR3m --- Operational.
TIPTWR --- PIRgnd --- Operational.
TIPTWR --- IRTgnd --- Operational.
TIPTWR --- PSPgnd --- Operational.
MAWS --- Automatic Weather Station --- Operational.
MET --- METTOWER general --- Operational.
MET --- CMH --- Operational.
MET --- Barometer --- Operational.
MET --- TEMPERATURE / HUMIDITY --- Operational.
MET --- WIND INSTRUMENTS (SONIC) --- Operational.
MET --- PWD --- Operational.
MET --- AMC --- Operational.
2017/06/19, DQPR-6208: Ken will need to prepare and share data with the developer, and will ascertain the exact time ranges before submitting DQR (D170519.1). The most recent DQPR status is "in progress - assignments."
2017/05/13, DQPR-6208: Data after 20150822 for this site does follow the current DOD. The mentor will submit reformatted raw data for the period of 2014/09/14 to 2015/08/31 for the a1 level and b1 ingest so that the entire data record is based on the same DOD. Ken Reichl has been assigned DQR D170519.1. The most recent DQPR status is "in progress - assignments."
ECOR --- ECOR --- Operational.
ECOR --- SEBS --- Operational.
MW RADIOMETERS --- MWR3C --- Operational.
LIDAR --- MPL --- Operational.
LIDAR --- Doppler LIDAR --- Operational.
LIDAR --- CEIL --- Operational.
RADAR --- RWP --- Not Operational. Instrument Removed and Will Be Sent to SGP.
RADAR --- KAZR --- Operational as per warno.arm.gov .
2017/10/22, CM-2017-AMF3-VSN-2165: There was snow accumulation on the KAZR dome, so site ops brushed off the snow.
RADAR --- KaWSACR --- Not Operational as per warno.arm.gov .
2017/09/27, Warno.arm.gov: The Ka and W SACR has been removed from the site for storage during the winter. It will resume operations summer 2018 at NSA.
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 in the DQPR.
Sonde --- BBSS --- Operational.
2017/10/27, CM-2017-AMF3-VSN-2172: Technicians were unable to launch the 23:30 balloon due to high wind conditions. Winds are >30 mph sustained and gusting >40 mph. Launches will resume when weather conditions permit.

2017/10/27, CM-2017-AMF3-VSN-2171: Technicians were unable to launch the 17:30 balloon due to high wind conditions. Winds are >30 mph sustained and gusting >40 mph. Launches will resume when weather conditions permit.
IMG --- TSI --- Operational.
AOS --- General --- Partly Operational.
2017/10/06, AOS Daily Checklist: The AOS shelter had lower than normal temperatures, so the floor heater was turned on. Site ops will monitor.
2017/07/28, DQPR-5858: Unless there are objections from Cindy or the PRB, Joshua King proposes that we abandon this DQPR. The most recent DQPR status is "in progress - assignments."
2017/06/23, DQPR-5858: Richard Wagener asked if anyone has looked at the VM's clock. Could it be that the time lags behind, and then jumps (resyncs), creating gaps in the time record? Richard suggests adding an assignment to Brent to look into possible system level causes for this behavior. The most recent DQPR status is "in progress - assignments."
AOS --- AOSMET --- Operational.
AOS --- CO - Analyzer --- Operational.
AOS --- CPC --- Operational.
AOS --- CAPS --- Not Operational, Instrument at BNL Due to Incorrect Data.
2017/08/07, DQPR-5816: The red channel should be usable once the mentor can look at the entire OLI dataset. Related to this issue, the mentor has been informed by the manufacturer that a fix to the ongoing problem with the 3W unit regarding the need for a PSL calibration is being finalized. This fix will require swapping out the 3 DAQ cards. New cards are currently being created by a third party for the manufacturer (Aerodyne). Given this, the OLI CAPS will remain at BNL until the three new cards can be installed. The most recent DQPR status is "in progress - assignments."
2017/07/27, DQPR-5816: From the raw data record, it looks like the CAPS was back in service on 2017/06/26. Joshua King asked Ken Burk if the ingests can be turned back on. Arthur Sedlacek has an assignment to write a DQR. The most recent DQPR status is "in progress - assignments."
2017/05/08, DQPR-5816: The OLI CAPS is at BNL, where one of the sample pumps was replaced, the 3- DAQ cards were mounted with screws, and optics were cleaned. The system is currently undergoing a performance test, and as part of this check, some irregularities (signal fluctuations) were observed. The mentor is in contact with the manufacturer. Once the signal fluctuations are resolved, a PSL calibration will be performed prior to shipment back to OLI. This PSL calibration is necessary due to a firmware issue. While Aerodyne is testing a new card that corrects the issue, it is not yet ready for prime time. The most recent DQPR status is "in progress - assignments."
AOS --- ACSM --- Operational.
2017/10/23, DQPR-6123: All available data has been located. An end date is needed for the DQR to close out this DQPR. The most recent DQPR status is "in progress - assignments."
2017/10/19, DQPR-6123: Collections are now working, but raw data are not available before 2017/10/17, which doesn't jibe with the 10/03/2017 date outlined in the DQPR. Joshua King asks that Tom and David Swank look into the actual outage date so that an end date can be put into the open-ended DQR D170428.7, and this DQPR can be closed out.
2017/10/12, DQPR-6123: Per ENG 3500, Tom reports that he calibrated the ToF ACSM on 10/03/2017 and that it is now collecting data. However, it does not look like that raw data are being collected to the DMF systems. Can someone check on collections?
2017/07/28, DQPR-6123: The reinstallation was started, but stopped after the decision was made to close the site, and we examined the need to align, tune, and calibrate the instrument. Right now the instrument is not operating.
AOS --- GHG-Picarro --- Operational.
AOS --- HT-DMA --- Not Operational, In Dryout Procedure for Winter Shutdown.
AOS --- UHSAS --- Operational.
2017/10/06, DQPR-6462: Annette Koontz added that in similar instances to this one, Cindy Salwen was asked to copy the missing raw files to a directory on the development system. Then, they would coordinate with the DMF to get the additional raw files copied onto the DMF and get the data reprocessed. If Cindy can do this, the data could be reprocessed sometime next week. The most recent DQPR status is "open - requires action."

2017/10/05, DQPR-6462: Joshua King checked back on this issue, and noticed that the ingested data record is still incomplete. He asks that DMF staff comment on what needs to be done to ingest the data Janek refers to in this DQPR.
2017/09/08, DQPR-6462: Data is missing from 2-3 UTC on 08/16, returns for an hour or so, and then goes missing again until 10:00 UTC on 08/17. Janek added that data was saved by the instrument, but wasn't copied due to the Unit2 disk being full. Data will be copied over manually for collection.
AOS --- NEPH --- Partly Operational. Wet Neph Down.
2017/10/22, AOS Daily Checklist: The Wet Neph was shutdown at 16:00 UTC due to the bulb burning out. Site ops are awaiting further instruction.
AOS --- IMPACTOR --- Operational.
AOS --- Ozone --- Operational, but Bench Temperature Out of Tolerance.
AOS --- TRACEGAS --- Operational, but Ambient Temperature Value Out of Tolerance.
AOS --- PSAP --- Operational. Pentras was Shut Down for the Winter.
AOS --- IMPACTOR --- Operational.
AOS --- CCN --- Not Operational.
Precip --- MASC --- Party Operational. The 2nd MASC is Installed, and the Original Will be Shipped to Site on Monday, 10/30/2017.
Precip --- PIP --- Operational.
Precip --- LPM --- Operational.
Precip --- GEONOR --- Operational.
Precip --- SRS --- Operational.
Other --- AERI --- Operational.
Other --- CIMEL --- Not Operational.
Other --- DataHawk Unmanned Aerial System --- Operational, not a full time instrument.
Other --- TBS --- Operational. Sensor will not be running full time.

Barrow

INFORMAL NSA INSTRUMENT STATUS REPORT FOR October 20 - October 29, 2017
BRIEF STATUS OF INSTRUMENTS IN BARROW (C1) AS OF 2017/10/29:

Facilities Operational
Data Systems Operational
Vehicles Operational
Desktop Computers Operational
SKYRAD - SKY Radiometer on Stand for Downwelling Operational
MFRSR - Multifilter Rotating Shadowband Radiometer Operational
NIMFR - Normal Incidence Multifilter Radiometer Operational
GNDRAD - Ground Radiometer on Stand for Upwelling Operational
MFR10m - Multifilter Radiometer at 10m height Operational
MET - Surface & Tower Meteorological Instruments Operational
AMC - Soil, up/downwelling radiation measurements Operational
ECOR-twr - Eddy Correlation Flux System Operational
MWR - Microwave Radiometer Operational
MWRP - Microwave Radiometer Profiler Operational
MWRHF - Microwave Radiometer High Frequency Operational
GVR - G-band Vapor Radiometer Not Operational
GVRP - G-band Vapor Radiometer Profiler Operational
HSRL - High Spectral Resolution Lidar Operational
MPL - Micropulse Lidar Operational
CEIL - Vaisala Ceilometer Not Operational
DL - Doppler LIDAR Operational
RWP - Radar Wind Profiler Not Operational
KAZR - Ka ARM Zenith Radar Operational as per warno.arm.gov
KaWSACR - Ka-Band Scanning ARM Cloud Radar Not Operational as per warno.arm.gov
XSAPR - X-Band Scanning ARM Precipitation Radar Not Operational as per warno.arm.gov

BBSS (Autosonde) - Balloon Borne Sounding System Operational
AOS - Aerosol Observing System Operational
CLAP - Continuous Light Absorption Photometer Operational
CPC - Condensation Particle Counter Operational
NEPH - Nephelometer Operational
IMPACTOR - AOS Impactor Operational
TOWERCAM - 40m tower camera Operational
Great White Camera Operational
TSI - Total Sky Imager Operational
AERI - Atmospheric Emitted Radiance Interferometer Operational
CIMEL - Cimel Sunphotometer Not Operational
LPM - Laser Precipitation Monitor Operational
SR50A - Snow Depth Sensor Operational
IOP - CAM Operational

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* Barrow Instruments in Detail: *
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INFRASTRUCTURE --- Facilities --- Operational.
2017/10/25, CM-2017-NSA-VSN-4452: The duplex needed an exterior light bulb replaced, so Walter removed and replaced the entrance ballast and bulbs.
INFRASTRUCTURE --- Data Systems --- Operational.
INFRASTRUCTURE --- Vehicles --- Operational.
INFRASTRUCTURE --- Desktop Computers --- 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 --- Operational, but Shading Problems.
2017/09/28, DQPR-6297: After Adam found shading in data between 22:00 - 24:00 UTC, Christian Herrera suggests that site ops check the shading again. The most recent DQPR status is "open - requires action."
2017/09/20, DQPR-6297: Adam added that it looks like the MFRSR dropped out on 2017/09/20 from 16:40 - 17:15 UTC. The most recent DQPR status is "in progress - assignments."
2017/08/28, DQPR-6297: Christian Herrera is wondering if there has been a clear day yet for setting banding. Walter responded that it has been overcast for some time, with marginal to no sunlight. Currently it is raining and snowing in Barrow.
2017/07/28, DQPR-6354: Adam Theisen posted a plot showing the shading from 2017/07/27. The most recent DQPR status is "open - requires action."
2017/07/21, DQPR-6297/6354: Christian Herrera asked to check the shading band position. Walter is awaiting a sunny day to perform the check.
2017/07/07, DQPR-6297: Christian Herrera has an assignment to write DQR D170707.3. Christian thinks that he narrowed the start date to 3/18 when the MFRSR first started showing a definite signal in the FFT. It increased in intensity over time, but became more intense on 5/28. The most recent DQPR status is "in progress - assignments."
SKYRAD --- NIMFR --- Operational.
TIPTWR --- GNDRAD general --- Operational.
TIPTWR --- MFR10m --- Operational.
TIPTWR --- PIRgnd --- Operational.
TIPTWR --- IRTgnd --- Operational.
TIPTWR --- PSPgnd --- Operational.
MET --- METTOWER general --- Operational.
MET --- CMH --- Operational.
MET --- Barometer --- Operational.
2017/10/25, DQPR-6601: The barometer was upgraded, so during the period of 2017/10/24 at 22:40 UTC to 2017/10/25 at 19:42 UTC, the data are incorrect. The instrument settings were reconfigured at 19:50 UTC on 2017/10/25. Jenni submitted DQR D171026.1. The most recent DQPR status is "in progress - assignments."

2017/10/24, CM-2017-NSA-VSN-4450/1: It was time to upgrade the barometer. Walter removed PTB201A, SN# S2540001, and transferred the power and data cable to PTB330 SN# N2040520. He worked with the tower mentor remotely to configure the new barometer.
MET --- TEMPERATURE / HUMIDITY --- Operational.
MET --- WIND INSTRUMENTS (SONIC) --- Operational.
MET --- PWD --- Operational.
MET --- AMC --- Operational.
2017/10/20, DQPR-6589: A lack of sufficient factory calibrations is causing missing and flatlined values in the volumetric water content fields since 2017/06/18. An example plot is posted on the DQPR. The most recent DQPR status is "open - requires action."
2017/10/12, DQPR-6207: Andrew Moyes can now transfer all raw data files for the entire record to the following directory for reprocessing: /data/home/moyes/NSA_AMC_C1. The most recent DQPR status is "in progress - assignments."
2017/09/29, DQPR-6207: Ken Reichl formatted data to unify the entire record with the same raw data format. All data for the entire record (multiple raw and b1 data) will be copied to a DMF research system computer, but he is awaiting to gain access to build a directory to put raw data in. A BCR will be submitted to create a new DOD version in order to change all temperature valid_min from -10 degC to -40 degC. Once that has been released to production, the reprocessing should be done via the attached DQR. Andrew Moyes will be taking over this process as the mentor, as Ken will be leaving LBNL and ARM as of 9/29/2017. The most recent DQPR status is "in progress - assignments."
2017/06/19, DQPR-6207: Raw data needs to be prepared and shared with the developer. Over the years, some sensor cables have been switched around with inputs to the logger. The most recent DQPR status 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?
ECOR --- ECOR-twr --- Operational.
ECOR --- ECOR-Pt. Barrow --- Not Operational, End of Season.
MW RADIOMETERS --- MWR --- Operational.
MW RADIOMETERS --- MWRP --- Operational.
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 --- Not Operational. Instrument Being Shipped Back to Site.
2017/10/06, DQPR-6274: Maria Cadeddu updated that the GVR should be sent back next week. The most recent DQPR status is "waiting - for spares."
2017/07/07, DQPR-6274: The contract with Prosensing has been approved, so the mentor requests that the GVR be packed and shipped there.
MW RADIOMETERS --- GVRP --- Operational.
LIDAR --- HSRL --- Operational.
LIDAR --- MPL --- Operational.
2017/10/22, DQPR-6590: Data was not available from 15:43 UTC on 10/18 through 18:52 UTC on 10/19. The most recent DQPR status is "open - requires action."
2017/10/13, DQPR-6550: Data was not available beginning at 17:00 UTC on 10/04. DS View indicated an ingest issue. Adam Theisen added that we are waiting on configuration files for this. The most recent DQPR status is "open - requires action."
2017/10/03, DQPR-6328: Donna Flynn posted some responses to Rich's analysis of data quality. Adam posted a figure of the Afterpulse Comparison Polarization failing/working for ENA MPL.
2017/09/29, DQPR-6328: Donna Flynn submitted a summary of her findings of the MPL system at NSA. Richard Coulter added that afterwards that it is not likely that applying the after pulse correction created negative backscatter, but it is more likely the background value that is causing any negative values. The SNR is a highly variable variable, affected by multiple elements, and is and not likely to be useful for system evaluation. The afterpulse measurement process is well established and works well when done properly. More discussion is needed, and the details can be found on the DQPR page. The most recent DQPR status is "waiting - for spares."
2017/09/13, DQPR-6328: There are no spare MPLs right now. We are planning on sending the NSA MPL for repairs once we have a replacement (probably next month). So Paytsar's suggestion at this point is to wait until the replacement gets to NSA, then we will be able to properly identify the affected periods. The most recent DQPR status is "waiting - for spares."

2017/08/02, DQPR-6328: DQR D170802.9 has been submitted for AWR.M1. When start and end dates for NSA.C1 problems are identified, this DQR can be used as a template. The most recent DQPR status is "open - requires action."
2017/07/07, DQPR-6328: During the investigation into the MPLCMASK problem, it was determined that there are potential problems with the NSA C1 and AWR M1 polarizations. From Donna Flynn: The AWR.M1 instrument polarization is off. The values for the linear depolarization ratio are too high. If you compare the water clouds at both AWR.S1 (reasonable values) and AWR.M1(high) on 20151210, this is evident. Additionally, the NSA.C1 data looks suspicious. I have only looked at a few days, but I have found poor agreement with HSRL and clear sky profiles when compared to Rayleigh, which suggests either an overly strong afterpulse or a collimation problem. The most recent DQPR status is "open - requires action."
LIDAR --- CEIL --- Not Operational (Blower Failure). Will Be Sent to Vendor for Repair.
2017/08/11, DQPR-6153: The blower failure warning returned on 2017/08/11 at 03:00. Victor will get an RMA for the return of the ceilometer for repair. The most recent DQPR status is "waiting - for spares."
2017/08/09, DQPR-6153: Vaisala recommends first ruling out a contaminated and/or scratched window, so IM Victor Morris asks that site ops please thoroughly clean the optics window and examine for scratches that may appear like spider webs under the surface. Site ops should contact Victor when finished, and he will remotely perform a window calibration, or follow the procedure in the Vaisala CL31 User's Guide, Chapter 6, under "Periodic maintenance / Window Cleaning / Calibration." The most recent DQPR status is "waiting - for spares."
2017/07/13, DQPR-6153: The blower (SN K0810010) that apparently failed on 3/19 was tested at SGP with the following findings: Craig tested the blowers (SNs K0810010 and F0910001 [from AWR/M1]), and both of them seem to be working. The fans definitely work and they are also putting out heat; however, it's not much. According to the manual, they are only 175W heaters. The current draw was 1.6A. Victor Morris supplied this information on the open Vaisala spport ticket, and they recommend returning the CL31 for repair. The most recent DQPR status is "waiting - for spares."
LIDAR --- Doppler LIDAR --- Operational. Blower Failure on 2017/09/20.
RADAR --- RWP --- Not Operational, Unit Decommissioned.
2017/10/24, CM-2017-NSA-VSN-4449: James Ivanoff shut down the RWP computer and the associated components for the decommission of the unit. Cables were disconnected from the unit outside except for 2 that would not come loose. He also started to disconnect the small tubes off the amplifier.
RADAR --- KAZR --- Operational as per warno.arm.gov.
2017/06/12, warno.arm.gov: The RDS1 power supply was replaced and the signal processor is operational. The system will be taken out for maintenance for a short time to replace a fan.
RADAR --- KaWSACR --- Not Operational as per warno.arm.gov.
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 warno.arm.gov .
2016/08/04, DQPR-4841: The elevation servo amplifier failed, the radar can not scan in elevation. The radar will be upgraded sometime, 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.
Sonde --- BBSS (Autosonde) --- Operational, New Computer Installed and Annual Maintenance Performed.
2017/10/23, DQPR-6469: The Autosonde is in use again, collections are ongoing, and ingest may resume. This DQPR can be closed. The most recent DQPR status is "open - requires action."
2017/10/17, DQPR-6470: The computer was received at Barrow today (10/17/2017). Vaisala field service technician Brian Phillips is onsite to do annual maintenance on the Autosonde. Brian will install the computer, test all systems (both mechanical and electronic), and put the system back into service by 10/18/2017. The most recent DQPR status is "waiting - for spares."
AOS --- General --- Operational.
2017/08/22, DQPR-6425: The NSA AOS system will be serviced from the period of 2017/08/22 at 00:00 UTC to 2017/08/26 at 00:00 UTC. The most recent DQPR status is "open - requires action."
AOS --- AETH --- Operational.
AOS --- CLAP --- Operational.
2017/07/06, DQPR-6251: Per comments in connected DQPR 6252, offline discussion is ongoing with Annette and Anne offline on how best to proceed.
2017/05/31, DQPR-6251: This DQPR is being submitted as a placeholder for 2 periods of missing data identified through data review EWO 21024: 1. DQR D160927.8 covers a CLAP power supply failure from 08/25 - 09/19/2016, but we don't have ingested data again until 05:00 UTC 10/24/2016. We need another DQR for the 09/19 - 10/24/2016 time period. 2. Another missing data gap from 00:00 UTC 12/01 - 18:00 UTC 12/06/2016. Joshua King omitted start/end dates from DQPR so that DQRs can easily be assigned/filled out for these periods. The most recent DQPR status is "in progress - assignments."
AOS --- CPC --- Operational.
2017/06/30, DQPR-6252: Joshua King has reviewed the reprocessed data from Annette and Anne, and he is coordinating with them offline to determine a path forward. The most recent DQPR status is "in progress - assignments."

AOS --- NEPH --- Operational, but Some Missing Data.
2017/10/05, DQPR-6504: Joshua King attached a screenshot of this aforementioned QC behavior. The start of this behavior coincides with a 2017/07/24 reprocessing date that Ken Burk documented in data review EWO 21024. He asks that Anne, Annette, and/or Ken Burk comment on this behavior. It is likely something related to Impactor switches. He asks if anything changed with the ingests in the latest release. The most recent DQPR status is "open - requires action."
2017/09/22, DQPR-6504: Data is missing on the 30th minute of the hour 1-3 times a day for most days starting on 7/24. This problem appears similar to earlier issues with NSA AOS instruments. See DQR D170818.2.
AOS --- IMPACTOR --- Operational.
IMG --- TOWERCAM --- Operational.
IMG --- Great White Camera --- Operational.
2017/10/26, CM-2017-NSA-VSN-4453: The Great White camera needed to be relocated from the railing of the deck to the Skyrad stand. It was raised as high as possible for the DE-ICE IOP.
IMG --- TSI --- Operational.
Other --- AERI --- Operational.
Other --- CIMEL --- Not Operational.
Other --- LPM --- Operational.
Other --- SR50A --- Operational.
IOP --- CAM --- Operational.

5 North Slope Facilities

AMF3

Current and Upcoming Site Visits

Fred Helsel, Bruce Edwardson-SNL	11/03-14	Power upgrades/installs
Mark Ivey – SNL	11/06-07	Site inspection before winter

Current and Upcoming IOPs

De-Icing Comparison Experiment (DICE)
AXIS camera was relocated for Chuck Longs De-Icing Comparison Experiment (DICE).
This will enable Chuck to observe the AMF3 radiometers. Martin Stuefer setup a script to take a photo every 10 minutes they can be viewed at: http://nanuna.gi.alaska.edu/media/cam/oli_psp/
http://nanuna.gi.alaska.edu/media/cam/oli_skyrad/

Snowflake Settling Speed Experiment: MASC (upcoming)
Dr Timothy Garrett- University of Utah

Site Safety

None

Unmet Needs

We are running on leased diesel generators while other options are explored.

Site News

AMF3 SACRII pedestal was removed and will be stored in Deadhorse for the winter.

SACRII Shelter with PDU and racks removed, main panel rewired.

Three of the four Capstone micro-turbines were repaired and arrived at AMF3 on 10/26/2017. The micro-turbines are currently stored in the Sprung Structure pending install in power shelters.

Power shelter upgrade

While on site, Thomas Watson and Robert Bullard from BNL calibrated the Tof-ACSM, removed the PO-210 sources, and readied the HTDMA for shipment. The HTDMA will be packed and shipped back to BNL as soon as it clears a radiological survey.

Replacement 25,000 gallon diesel fuel tank arrived at AMF3.

Site Staffing Issues

We welcome two new Fairweather techs- Michael Crume and Justin LaPierre.

Tethered Balloon Operations

Ten hours of TBS flights were conducted at Oliktok Point from 10/13/17 – 10/22/17. The TBS operated at Oliktok Point during the previous two Octobers and in general this October was much colder and windier with higher cloud bases than the previous two Octobers, resulting in challenging conditions for flights. Summary reports of each flight are included below. Analysis of TBS-produced data is ongoing.

Date: 10/13/17

Platform: TBS: helikite and aerostat winch

Instruments flown on aerostat:
V8 tethersonde and SLWC
0.5m 405 MHz SLWC
80m to 402 & 404 MHz SLWC

Flight pattern followed:

Flight 1: 22:15 – 24:36

Ascended to 650m at 22:55, began descent at 00:00. Balloon sometimes increased to 700m altitude. Descent started quickly after balloon lost 150m of altitude in 1 minute after onset of heavy snowflake precipitation.

General Conditions: Cloud base deviating from 350m to 800m. Occasionally two and three cloud layers detected by ceilometer between those altitudes, although typically cloud base was around 650m with cloud top around 850m. Precip at 23:11, precip at 23:24 - 23:34 – columnar ice particles. Balloon definitely out of cloud base at 23:40 visually, correlated with stop in decrease of SLWC frequency. Columnar precip at 23:48, flakes at 23:55. Surface winds and winds aloft 7 – 9.5 m/s from east to southeast with time. Temperature initially -5.5 °C increasing to -4 °C with time.

Notable events: The last section of the helikite spar separated from the rest of the spar and was dangling below the balloon, which likely limited the altitude capability.

This helikite had several holes along the main seam upon inflation and was patched. After flight it had lost at least one bottle of helium, and will need to be inflated with air and patched more thoroughly before being used again.

The helikite and tether shifted significantly from being parallel with the winch when snowflakes moved in and the winds shifted to the southeast. The tether jumped off the edge of the winch fairlead rollers and was frayed by abrading against the edge of rollers. The tether was going to be replaced at the end of this campaign anyway, so we will replace it before flying again and returned for repair.

Helikite and sky conditions at 23:06

Date: 10/15/17

Platform: TBS: aerostat and aerostat winch

Instruments flown on aerostat:
Silixa DTS, FORJ in Ch1 and Static in Ch2, 1 minute samples at .5 cm
.5m iMet & SLWC2
.5m UK Reading cloud charge particle & optical cloud sensor
70m iMet & SLWC1
.5m V8 tethersonde & SLWC, SLWC did not report
65m to iMet & SLWC1

.2m to POPS SN18
.2m to POPS SN14
.5m to CPC

Flight pattern followed:

Flight 1: 22:35 – 01:45

Ascended to 1.44 km at 22:55, began descent at 00:16. Static DTS Ch2 plugged in 00:20 – 00:35. Started descent 00:42, visually balloon observed out of cloud base at 01:08. Icing observed on tether starting at 560m on descent. Icing intensified significantly at 500m.

General Conditions: Cloud base around 860m with cloud top around 1.25 – 1.4 km. Intermittent snow flake precip throughout flight. Surface winds and winds aloft < 3.5 m/s from southwest. Surface temperature -4 °C to -11 °C aloft. Significant SLW observed in real-time from sensors and in amount of icing on tether and sensors upon descent.

Notable events: This was the first use of our new 7,000' tether and we deployed to a new altitude record of 1.44 km.

This was the first use of the Silixa DTS (improved submeter spatial resolution) on the TBS. After using heat to identify the surface during JUBA, we found it skewed the measurement to be too warm. We tried using a glycol bath today which seemed to function well for data analysis purposes but was messy. We may attempt other methods of identifying the surface.

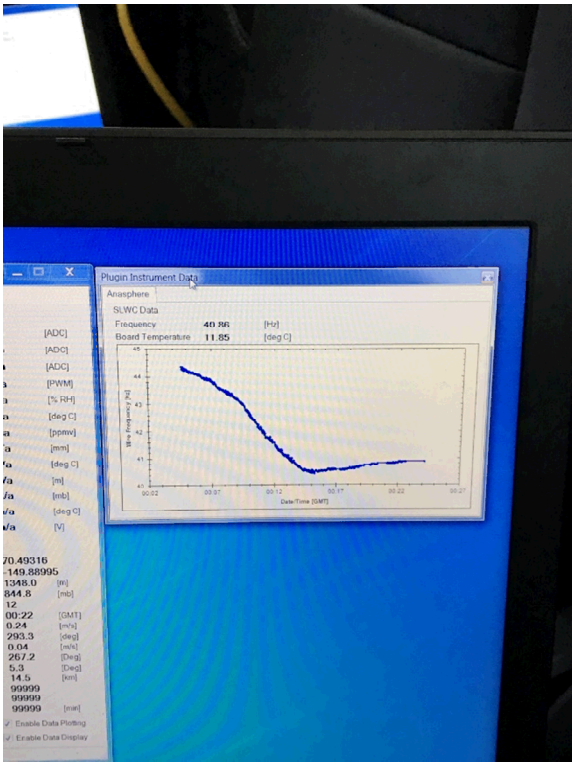
Both POPS were run as close together as possible without handwarmers. They did run into the cloud but did not appear to have blocked inlets based on the real-time iMet data.

POPSs and iMet configuration

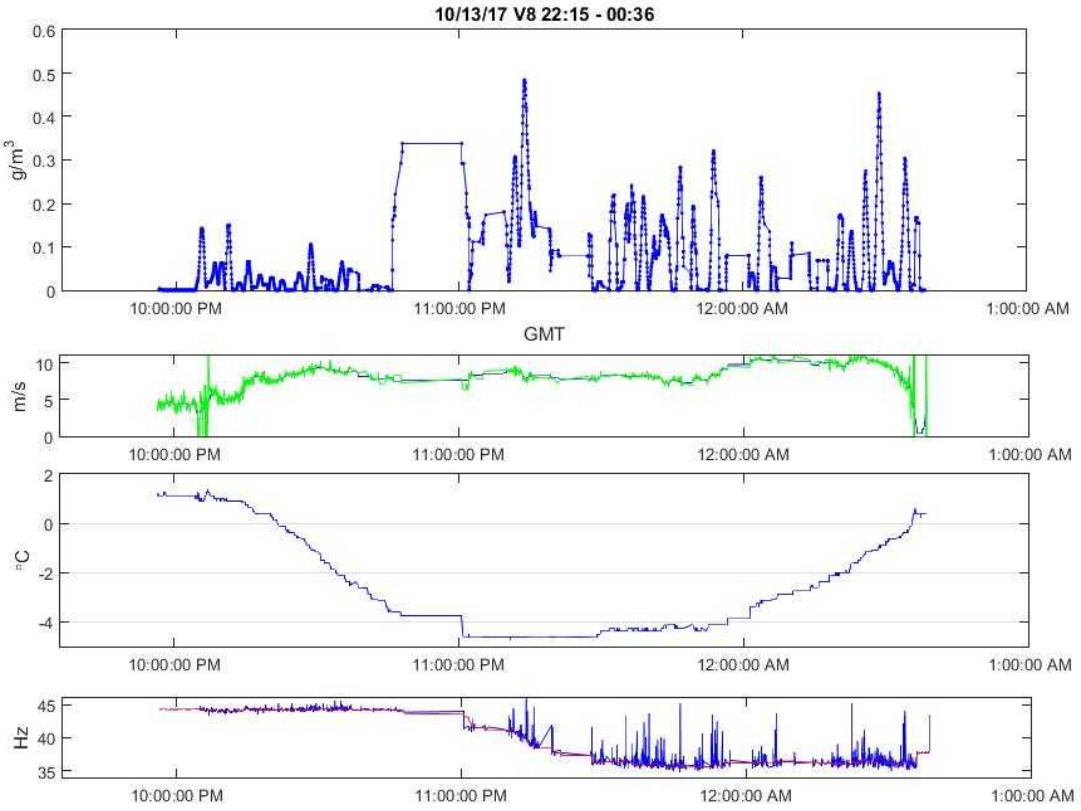
Sky conditions at 1:14

Icing on tether, iMet, and SLWC boxes; tether is neon green

Ice on vibrating wire of SLWC

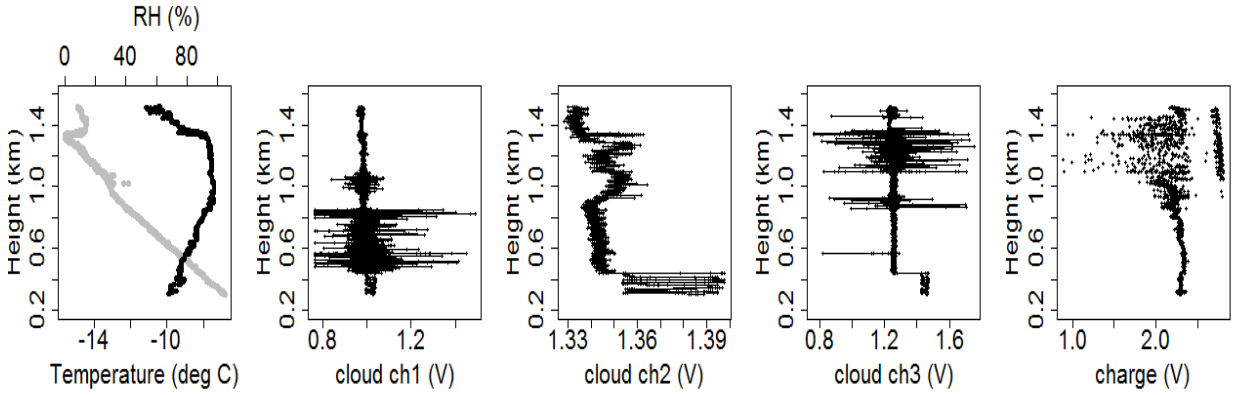


Depression of SLWC wire frequency upon entry into cloud, then increase upon sensor exiting cloud top

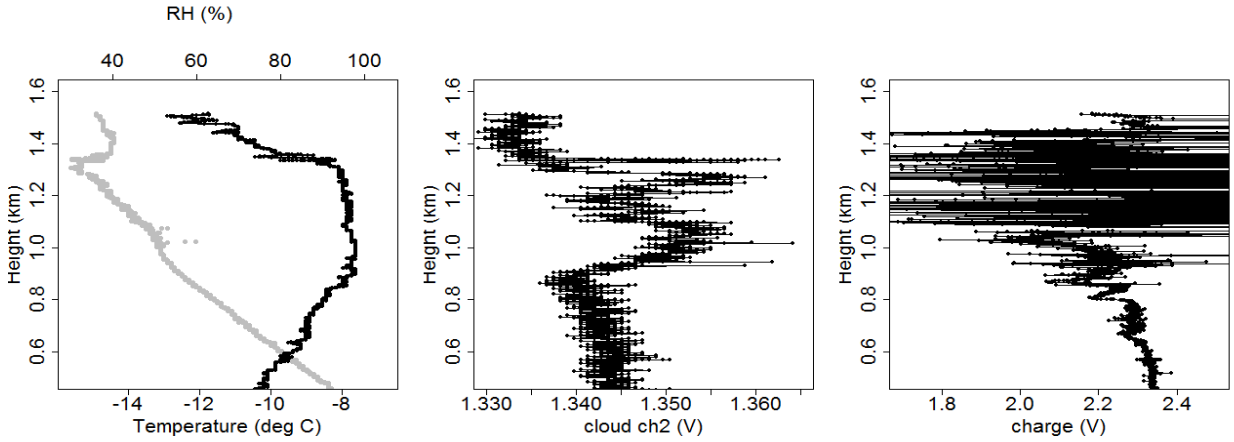


Initial SLWC data from tethersonde SLWC from 10/13/17

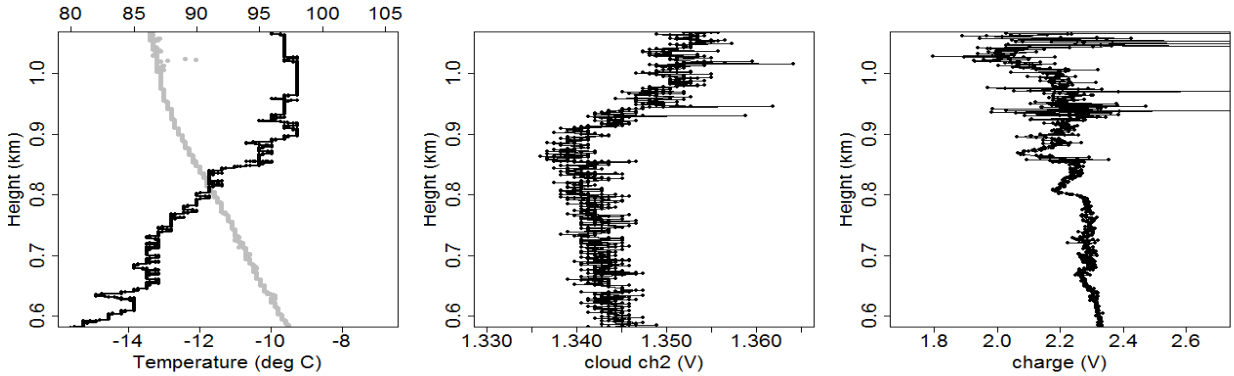
Results from University of Reading cloud and charge particle sensor on ascent through cloud layer – 1701 15th Oct 2017



Close up of cloud layer

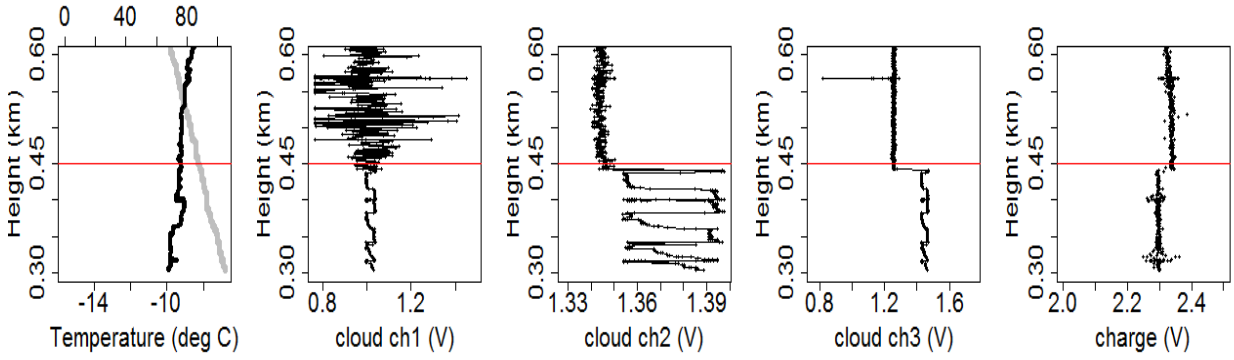


Close up of cloud base region



Radiosonde interference issues:

- High power mode suspected at 1007-50 mbar = 957 mbar = 450m
- Oscillations in cloud sensor below this height (in all channels). High power seems to sort out ch2, but knocks out ch1 and 3 (3 becomes unresponsive but 1 is just noisy).



Date: 10/17/17

Platform: TBS: aerostat and aerostat winch

Instruments flown on aerostat:
Silixa DTS, FORJ in Ch1, 1 minute samples at .5 cm
15" to iMet1
29" from iMet base to SN18 inlet
21" from SN18 inlet to SN14 inlet
12" from SN14 inlet to CPC inlet
100m to V8 tethersonde & SLWC

Flight pattern followed:
Flight 1: 19:48 – 20:24
Lost iMet1 signal almost immediately upon ascent. Added a second iMet (iMet2) at approximately 200m at 20:09 to see if the issue was EMI-related or specific to iMet1. Ascended iMet2 to 80m with no comm drops. Descended to surface and replaced iMet1 with iMet2 at 20:24.

Flight 2: 20:27 – 21:40
POPS iMet (iMet2) radiosonde altitude not usable due to ascent/descent – must use GPS altitude. Ascended to 600m and while adding SLWC and iMet to tether the tether was observed to be shifting directions significantly and getting very close to the edges of the winch rollers, where the old tether was nicked during the helikite flight on 10/13. Wind direction was expected to shift throughout the day, and wind speed increased from 4-5 to 7-8 m/s while discussing the issue. We decided to abort the flight in order to permanently resolve the rough roller edge issue and not risk damaging the tether which would preclude further flights. Surfaced at 21:40.

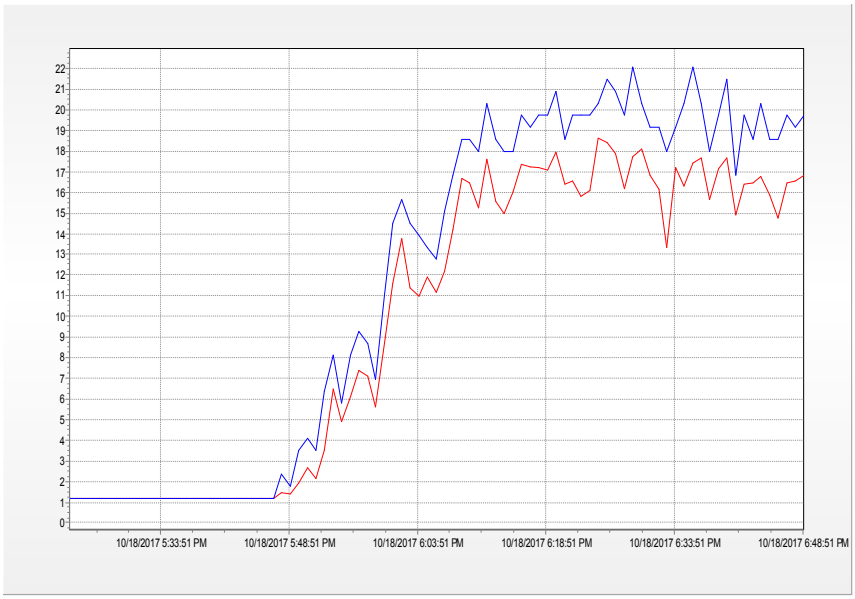
General Conditions: Cloud base generally above 1.5 km, sometimes above 2 km. Sporadic clouds intermittently between 500 – 800m with intermittent precipitation. South winds shifting to westerly. Wind speed initially 3-4 m/s increasing to 7-8 m/s at end of flight.

Notable events: Flight occurred at far south end of runway, which was previously thought to be the best spot for EMI, but frequent comm drops occurred.

From top to bottom DTS fiber ends, iMet, POPS SN18, POPS SN14, CPC

Date: 10/18/17

The wind forecast was for almost calm winds, increasing to ~8-9 m/s after 2 pm – well within the helikite's capabilities. We prepared the helikite for flight (rather than the aerostat), just in case wind speeds increased earlier or more strongly than was forecasted, and intended to do a morning flight. At 10 am we were on the runway preparing to launch the balloon when the wind speed significantly increased. The tbs shelter reported wind speeds went from 0 – 22 m/s in < 15 minutes, and on the attached maws plot below they spiked over 18 m/s. The balloon trailer was moved back to the hangar and no flights were conducted this day.



TBS shelter anemometer 1s wind speeds in m/s

Date: 10/19/17

Platform: TBS: aerostat and aerostat winch

Instruments flown on aerostat:
Silixa DTS, FORJ in Ch1, Static in Ch2, 1 minute samples at .5 cm
4" to iMet5
14" to sn18
28' to cpc
75' to tethersondes & slwc

Flight pattern followed:
Flight 1: 23:40 – 00:50
Ascended to 560m at 00:18. Ch2 DTS in 00:20 - 00:26. Started descent 00:30 due to increasing winds aloft, went from calm to 6.5 m/s, and needed to retrieve before operators left for the day. Surfaced 00:50.

General Conditions: Cloud base generally above 1.5 km at start of flight, cloud dissipated in flight. Southeast winds shifting to northeast with altitude. Wind speed < 3 m/s at surface, 6-7 m/s aloft. Temperature -12 °C at surface, -9 °C aloft.

Notable events/failures: SN18 was having intermittent issues where it was not connecting to a network. SN14 was worked on for a few hours. It would report a non-zero particle count briefly, but would not sustain, and thus it was not sent up on the balloon.

DTS, iMet, SN18 POPS, CPC from top to bottom

Conditions at time of flight

Date: 10/22/17

Platform: TBS: aerostat and aerostat winch

Instruments flown on aerostat:
405 MHz iMet
4” to POPS SN18
1" to POPS SN14
17" CPC
1m to tethersonde & SLWC
100m to 404 MHz iMet & SLWC

Flight pattern followed:
Flight 1: 19:00 – 19:50
Ascended to 260m at 00:18. Held at 260m to shift winch trailer into wind. Observed unusually high angle on the tether (45 degrees) and tethersonde wind speeds of 8 m/s. Began to descend due to sharp tether angle combined with high directional and speed shear.

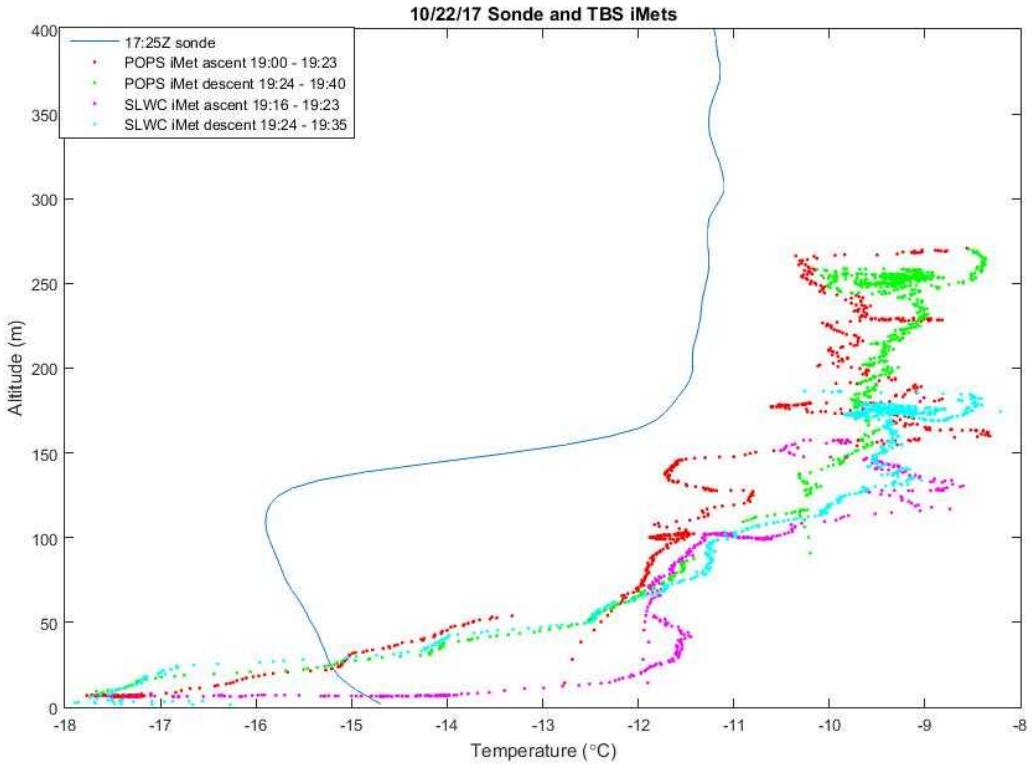
General Conditions: Morning cloud base of 100m, tops at 200m, dissipated before launch. Strong decrease in surface temperature while preparing to launch, from -13 to -18 °C in ~ 30 minutes. Winds < 3 m/s from southwest and surface shifting to ~8 m/s at 250m from the east. After the flight a rapid increase in surface temperature began, going from -18 to -11 °C in the next hour. A cloud layer with bases around 700m developed as the flight ended at 19:45. A secondary cloud layer with bases around 90m developed around 20:37. A sharp-edged low cloud bank rapidly developed offshore after the flight. POPS counts from 20-30 were observed around 260m.

Notable events/failures:

POPS and CPC were in the generator plume until 19:13.

These were the coldest surface temperatures the full-size TBS has operated in. The FORJ fiber snapped and we could not completely close the POPS tether clamps. The POPS were secured to the tether by the clip mechanism on top, but we could not get the clamps tight enough to secure all three points to the tether. Upon retrieval SN18 had slipped down to hang directly above the clamp for SN14.

In general the aerostat has not performed as it has on past campaigns. It seems to have lost its elasticity, which makes it difficult to judge how fully it is inflated. This is likely causing the reduced lift and higher tether angles than previous campaigns. We did not have enough helium onsite to fill the other aerostat.



Morning sonde and subsequent TBS iMet temperatures

POPS and CPC in generator plume on ascent

Offshore clouds which developed immediately after flight ended

Barrow

Current and Upcoming Site Visits

Dan Lucero-SNL	10/23-29	Site support
Todd Houchens-SNL	10/29-30	Radar support
Dan Lucero, Fred Helsel, Bruce Edwardson- SNL	11/14-17	Site turnover/walk down

Current and Upcoming IOPs

SNPP/NPOESS Ground Truth Sonde Launch, Phase 5 – Started Oct 1, 2016

Seismic Probes for NSF– POP Ends, Oct 31, 2018

Multi-faceted Approach to Characterizing Potential Radiative Forcing on the NSA using Two Coastal Sites, Baylor – June 2016 – Sept 2017.

OYES-Electric Field Study, Texas A&M, Started June 2017

Global Navagation Satelite System (GNSS) – Started July 2017

NSA Precipitation Instrumentation – Moved to tower location August 2017
Global Navigation Satellite System (GNSS) – started July 2017

Site Safety

ES&H safety – Contractor Site Safety Plan is in the process of being updated to include confined space training, which was identified in the last safety inspection completed in August.

Unmet Needs

None

Site News

None

Site Staffing Issues

None

Distribution

ARM	
Sally McFarlane ARM Climate Research Facility Program Manager Climate and Environmental Sciences Division Office of Biological and Environmental Research Sally.McFarlane@science.doe.gov	Jim Mather ARM Technical Director Pacific Northwest National Laboratory P.O. Box 999, MS K9-38 Richland, WA 99352 jim.mather@pnnl.gov
Nicki Hickmon ARM Associate Director of Operations Argonne National Laboratory 9700 S Cass Ave 240-5132 Lemont, IL 60439 nhickmon@anl.gov	

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