ICECAPS Weekly Report

June 22 – 28, 2015
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Sam Dorsi and Mike O'Neill working on the meteorology suite on the TAWO tower. --CVH

General:
- 6/24: MSF drifting surveyed with HEO Boyd for future drift mitigation.

Significant Weather Observations:
- 6/22: scattered cirrus, 9kts, -8.5C
- 6/23: scattered cirrostratus, 7kts, -11.0C
- 6/24: scattered cirrostratus, 10kts, -11.5C
- 6/25: broken altostratus, 10kts, -6.6C
- 6/26: scattered cirrus, 7kts, -11.4C
- 6/27: few cirrostratus, 7kts, -13.7C
- 6/28: scattered cirrus, 3kts, -10.6C

Dataman Account:
- 6/23: At 1235z, during daily checks on Dataman, at the df –h prompt, this line appeared at the top: */dev/mapper/VolGroup00-LogVol00   49G (size) 46G (Used) 0 (Avail) 100% (Used %)*. At the spot_check_archive.sh script, "No space left on device" was reported for the MMCR, MPL, Ceilometer, IceCam, Capabl, Radiosonde, and Sodar. For TSI and MASC, it reported that it "cannot create directory" and "no space left on device." This problem was reported to Matt Shupe.
- 6/24: At 12:35z, during daily checks on Dataman, the number of files in the ToBoulder folder

continues to grow. No new ICECAPS queuing log files have been created since June 22. The ArchiveBoulder log reports "no such file or directory" errors for all instruments. The Dataman trash was emptied at 15:45z.

- 6:25: At 11:05z, the ToBoulder folder did not transfer. At the df – prompt, compared to 6/23 when dev/mapper/VolGroup00-LogVol00 (mounted at '/') was at 100% capacity, it now reads at 78%.   The ArchiveBoulder log reports "no such file or directory" errors for all instruments.
- 6/27: Per Matt Shupe's instructions, at 11:25z the Linux system was rebooted to clear out several processes that were not properly stopped.
- 6/28: At the end of this week, there is currently a data backlog in the ToBoulder folder. This has been slowly improving since 6/27.

MWR:
- HATPRO: operating normally.
- 150-90: operating normally.
- 6/24: MWR software rebooted for turnover training at 16:28z. Radiometers were left powered on during this training.

SODAR:
- Operating normally.

POSS:
- Operating normally.
- 6/22: POSS files are empty, possibly due to full drive.
- 6/23: At 13:05z, during daily checks on POSS, the MESPOS, MAINPOS, and POS20150623.txt files were empty. This is assumed to be because of the full disk noted above.
- 6/24: POSS is once again saving data.
- 6/24: POSS rebooted for turnover training at 16:16z.

MMCR:
- Operating normally.
- 6/22: Opened gray sensor case on underside of MMCR, and confirmed that wires are intact and well-seated. Unplugged cable MPP8 to disconnect pitch, roll and external temperature sensors, and assessed for change in +5 v bus reported voltage. Measured voltages at 7 test points on back of Radian Interface box, and compared to LabView-reported values.
- 6/23: Again measured voltages at Radian Interface box test points (17:48z). Shortly thereafter, 5 v line was restored to nominal voltage. Duane logged in and restarted LabView program. Re-measured voltages at 18:21z and confirmed that radar returns corresponded to local conditions.
- 6/24: At daily checks at 1310z, pulse controller errors were present, due to calibration issues. The LabView 5v #2 bus is reading 3.6 v this morning. This was confirmed on the Radian Interface back panel test point with a multimeter. Duane has requested that the power supply be replaced—this request had been previously put on hold.
- 6/25: During daily checks at 11:39z, the TWTA "Fault" light was on, then "Standby" would light up, then "Operate", and this sequence continued to repeat. Helix Current was at 0.00mA. Transmitted Power was at 5W, when the standard is ~180W. In the "Health" file, the TransmittedPower, TWTA Collector Voltage, TWTA Cathode Voltage and TWTA Helix Current showed 3600 out-of-tolerance instances. This was reported to Duane Hazen.
- 6/25: MMCR mount was down and an attempt to remount at 11:13z failed. MMCR Ethernet cable was moved from Port 20 on the Network Switch to Port 18 in an attempt to reestablish the

network connection. When this was successful the MMCR was switched back to Port 20, and the network connection came back up on that port. After this test, the MMCR was moved for normal operations to Port 18, which we hope will be a more stable long-term configuration.

- 6/25: The MMCR +5v and +/-12v combined power supply was replaced. The MMCR was powered down at 12:42z and the Radian Interface box was removed. The power supply was replaced and new solder connections were made to the replacement supply. However, when powered up, the Interface test points showed only +/- 12 v on the +/- 15 volt lines. The voltage trim potentiometers were adjusted to yield +15 and -15 volts, and the Interface box was given a final test and reinstalled in the MMCR. The MMCR was rebooted at 16:02z, and resumed normal operations.
- 6/26-28: During daily checks, the +5V #2 red alarm light was on, reading between +4.53 and 4.73V. This was reported to Duane Hazen and Matt Shupe.

CAPABL:
- Operating normally.

MPL:
- Operating normally.
- 6/27: Data collection had stopped at 15:33z for an unknown reason. When discovered at 16:10z, the SimgaMPL program was turned off/on and data collection recommenced.

VCEIL:
- Operating normally.

Hotplate:
- Operating normally.

IceCAM:
- Operating normally.

PAERI:
- 6/22: Confirmed appropriate BIOS settings. Checked COM1 port in Window Diagnostics, found 'present and working properly.'
- 6/23: On PAERI CPU, created Hyperterminal serial connection to Mirror Controller (MC), and cycled power on the MC. According to the MC documentation, this should result in a '* READY' string being exported over the serial connection, however, so such string was received in Hyperterminal. This confirms that a fundamental communications error is occurring (not a PAERI software issue, or a problem with the mirror motor itself).

  The same test (CPU to MC communication) was performed using a separate laptop connected to the MC; this test also failed. This suggests that the issue may not be the computer COM port.

  To confirm this, a new female-to-female serial cable was built, and a Zeno data acquisition system was used as a test piece. The serial connection to the Zeno was first tested on an external laptop. When this proved successful, the same test was performed on the PAERI CPU. This test was successful, indicating that the CPU COM port is functional. This implicates the other elements of the communication system.

Mike O'Neill checked the pinout of the handmade serial cable that is attached to the MC via screw terminals. This showed the communications pins to be electrically connected to the cable ground braid. As this could prevent serial communication, cut apart a new serial cable and attached it to the PAERI CPU COM port and the MC. This initially failed to produce the expected diagnostic message in Hyperterminal. We reversed the position of the TX/RX pins on the MC, which is important to note for future repairs, and this time were successful in establishing communications between the PAERI CPU and the MC. We then rebooted the PAERI CPU, allowed Ingest to boot up, and observed good spectra to be produced. A success.

ASIA-A:
- Offsite for repair since 4/30.

TSI:
- Operating normally.
- 6/24: The system clock on the TSI laptop was 3 minutes slow. It was corrected at 13:26z.

IcePIC:
- No photos taken

Radiosonde:
- Twice daily sondes.
- 6/22: Launched additional radiosonde, carrying U Reading ionization sensor, at 16:45z to coincide with atmospheric activity from coronal mass ejection event.
- 6/25: Sounding at 12z was closed out late, due to distraction with other MSF duties (SWD).
- 6/27: Desiccant changed.

Doppler Wind Lidar:
- Operating normally.
- 6/27: The Dopper Wind Lidar was disassembled and removed from the roof of the MSF. It is leaving Summit Station on 6/29.

MASC:
- Operating normally.
- 6/22: The MASC refocusing project was repeated, with the goal of improving on the results of the previous effort. An enclosure was constructed and sealed against light, as the MASC required near-total darkness for proper camera exposure during testing. A second focusing tool was also constructed, which allowed a target to be held motionless at within 1/16-inch of the center of the sample volume. The refocusing was performed, and the PIs appeared satisfied with the new results.
- 6/28: At 10:57z, during daily checks, the MASC host was unresponsive. The network port had been moved when the Wind Lidar was being disassembled, and had been plugged back into a faulty port. It is now plugged into Port 10 and collecting data.