

ICESat-2 PROJECT SCIENCE OFFICE REPORT

Monday, February 17, 2020 thru Sunday, February 23, 2019

RGTs spanned: 799-905
Cycle 6

Items of Note:

All ATLAS housekeeping data is nominal; laser 2 is firing at energy level 4 and in science mode. The SIPS Build 4.4 TRR was held on Feb. 27 and was approved for Acceptance testing; this included ASAS software build v5.3, SDMS v6.18.0, and ATLAS v1.16.0.

NSIDC ICESat-2 Metrics through March 1: 1,634 total users of 10 available data products; 3,297,108 sciences files downloaded. ATLO3 is in the lead with 671 unique users of 474,614 files downloaded. ATLO8 is in a close second with 661 unique users and 1,235,476 files downloaded, and ATLO6 is in third place with 450 unique users and 1,295,314 files downloaded.

****ELEMENT DETAILS BELOW****

CAMS/POD:

CAMS: Regular CAMS operations: constraint and conjunction monitoring for MW076 and MW077 and mission planning for MW078. CAMS delivered final MW077 SAT with a +5deg slew to mitigate HIE with ISS (25544) on 27-Feb-2020.
Due to a CARA identified red-event, CAMS supported numerous screenings for Mission Planning with and without DMU041 and/or IA005. CARA recommended DMU041 be waived off.

POD: Regular POD operations continue. Intermediate POD was completed for GPS week 2093. Final POD was completed for GPS week 2091.

ISF:

All ATLAS housekeeping data is nominal
Laser 2 is firing at energy level 4 and in science mode
WTEM Peak to Edge Ratio: 1.206
Laser 2 Temperature Error: -0.26C
SADA in SAILBOAT Mode
Spacecraft orientation: + X

Mission Planning:

MW77 ATS is loaded to the spacecraft and currently operating
MW78 has been delivered, nominal calibrations

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Activities during the past week:

Real-time activities:

Executed sCAR91 and sCAR102 to clear routine flags

ATS activities:

Routine Instrument calibrations, Ocean scans and Vegetation Data collection, MW76 included a two orbit TEP stare.

Other Activities:

LCA32 to mitigate HIE with 25544 (ISS), 5 degree roll, 2020/058:05:39:09.

DMU41 scheduled for 02/27/20 was cancelled due to CARA concerns. Inclination Adjust IA005 begins 20-060-14:27:45.000

Near-term activities:

Tech HW refresh plan Phase 1:

Acceptance testing: complete

ORR: Feb 27th

Released into Ops: By end of February

Tech HW refresh plan Phase 2:

Procurement started

Facility:

Red Hat OS License re-order

RSA Token re-order

Notes/Issues:

N/A

LTO Schedule:

All items remain on schedule

**SIPS:**

- The SIPS is operating nominally:
  - o Ingested and distributed Level 0 data to the ISF.
  - o Generated L1A and L1B products and distributed ATL02s to the ISF, POD, and SCF.
  - o Distributed selected ATL01s to the ISF and SCF by special request.
  - o Generated rapids ATL03, ATL04, ATL06, ATL07, ATL08, ATL09, and ATL10 using ANC03/04/05 files from the CAMS.
  - o Distributed the rapid Science Data products to the SCF.
- Continued with installation and patching of the new hardware in the SIPS Ops cluster.
- The SIPS Build 4.4 TRR was held on Feb. 27 and was approved for Acceptance testing.
  - o SIPS has started the Acceptance test process.
  - o As part of the Acceptance testing, SIPS will be sending sample data products to NSIDC to verify that they can be ingested successfully.

### **ASAS:**

ASAS created (effectively) six days of test ATL03s for UTexas from provided ANC05s (ie: 3 days with 2 different ANC05s).

ASAS is working towards changes for ASAS v5.4 (due in mid-summer)

Current L2 Atmosphere work involves invalidating obviously bad profiles (ie: event/bin too high)

Current L3A Atmosphere work involves tracing an QA warning on layer\_conf.

Current L3B Icesheet work revolves around metadata.

Current L3A Land and Inland Water work includes podppd\_flag and DEM filtering.

Current L3B Sea Ice work involves removing bad ATL10 granules from the input stream.

Current L3A Ocean work includes ocean harmonics.

### **SCF:**

The SCF is operating nominally. Data for releases 002 and R002 are being ingested and distributed as they arrive. Test data are being transferred to the atmosphere group and POD/PPD as needed. Work has begun on preparing a second system to run SDMS, which is expected to improve processing, and an updated Visualizer should be ready to distribute to users next week. A file listing the current SCF data holdings is attached.

\* Data Management -- In preparation for using SDMS on a second system, we are revisiting limiting the number of files processed per SDMS job for subscriptions. Code changes for this have been tested in development and worked as expected, but some decisions must be made before they can be set up in operations. While getting test data, we filled up a disk, causing some jobs to fail. More disk space was made available, and the jobs are rerunning successfully. Impact to normal processing was minimal: delayed rSCF PDR creation, which has been resolved.

\* Subsetter -- Working as expected. One job failed recently due to a dimension scale mismatch on two 2D datasets in a rel953 ATL08 product. This is a known issue with the data that was reported the first time it was encountered.

\* Visualizer -- ASAS v5.3 product dataframes have been finalized, and the code has been updated to v7.9. Apps are being made and tested, and bugs discovered during this process are being resolved. We expect to have this update ready for release early next week.

### **ATL02/Instrument Science:**

Data from the pre-launch Zero-Range Test and the last ATLAS thermal-vacuum test have been processed with the updated time-of-flight extraction algorithm. The resulting data will be used

to provide a data set for a new version of CAL 08. The updated algorithm will also be transferred to the ISF for ongoing processing of on-orbit TEP data.

A revised model of ATLAS dead-time behavior, which uses an exponentially-modified Gaussian as the base pulse shape, shows some features similar to those seen in quasi-specular returns. The effort will continue, with the goal of explaining all the features seen in these returns.

In addition, work continues on:

- Extending the QA screening process beyond ATL01 and ATL02.
- Characterizing ATLAS' radiometric sensitivity.
- Preparing documents for Release 003.
- Investigating the mechanism of "jumps" in the TEP TOF.
- A new method for analyzing the results of on-orbit AMCS calibrations. The current method does not separate return from background, and is usable only for AMCS calibrations done over the night side of the earth. The new method will allow AMCS calibrations to be done usefully over the day side as well.
- Development of an algorithm for estimation of OFM transmittance peak shift from 2-step VBG sweep data.

### **ATL03:**

Work continues on development future improvements to the ATL03 data product. One of the ongoing ideas is the inclusion of a binary "good/no good" flag for photon data in ATL03, to be used as a first pass filter by upper-level products to dictate whether or not they'd be generated.

### **ISF ACTIVITIES MISSION WEEK 076:**

\* Not in science mode

^ Could affect science data quality

2020/051:02:20:40.0000 OCEANscan Duration 22 minutes

\* 2020/051:04:39:17.0000 TEP data collection Grid 414 Duration 3 minutes

\* 2020/051:06:20:18.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes

\* 2020/051:07:54:36.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes

2020/051:09:59:47.0000 TOO TOOid 1340 RGT 850 offpoint 0.04deg Duration 2 minutes

\* 2020/051:12:36:10.0000 AMCS Cal over open ocean Duration 2 minutes

2020/051:14:07:45.0000 OCEANscan Duration 22 minutes

\* 2020/051:15:44:44.0000 AMCS Cal over open ocean Duration 2 minutes  
\* 2020/051:17:34:28.0000 TEP data collection Grid 142 Duration 3 minutes  
\* 2020/051:19:14:00.0000 TEP data collection Grid 67 Duration 3 minutes  
\* 2020/051:20:22:10.0000 TEP data collection Grid 426 Duration 3 minutes  
\* 2020/051:22:17:20.0000 TEP data collection Grid 135 Duration 3 minutes  
2020/052:01:55:01.0000 OCEANscan Duration 22 minutes  
\* 2020/052:02:39:20.0000 TEP data collection Grid 417 Duration 3 minutes  
\* 2020/052:04:31:39.0000 TEP data collection Grid 162 Duration 3 minutes  
\* 2020/052:05:58:07.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
\* 2020/052:07:28:56.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
\* 2020/052:07:43:04.0000 TEP data collection Grid 121 Duration 3 minutes  
\* 2020/052:08:59:06.0000 TEP data collection Grid 371 Duration 3 minutes  
\* 2020/052:09:06:57.0000 TEP data collection Grid 263 Duration 3 minutes  
\* 2020/052:12:10:30.0000 AMCS Cal over open ocean Duration 2 minutes  
2020/052:13:42:06.0000 OCEANscan Duration 22 minutes  
\* 2020/052:15:19:05.0000 AMCS Cal over open ocean Duration 2 minutes  
\* 2020/052:17:08:33.0000 TEP data collection Grid 143 Duration 3 minutes  
\* 2020/052:21:49:04.0000 TEP data collection Grid 172 Duration 3 minutes  
\* 2020/052:21:54:18.0000 TEP data collection Grid 99 Duration 3 minutes  
\* 2020/053:01:06:01.0000 TEP data collection Grid 58 Duration 3 minutes  
2020/053:01:29:21.0000 OCEANscan Duration 22 minutes  
\* 2020/053:05:35:19.0000 TEP data collection Grid 232 Duration 3 minutes  
\* 2020/053:07:03:17.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
\* 2020/053:08:35:50.0000 TEP data collection Grid 336 Duration 3 minutes  
2020/053:10:05:00.0000 Stellar window dump Duration 90 minutes  
2020/053:11:42:05.0000 TOO TOOid 1327 RGT 882 offpoint 0.84deg Duration 2 minutes  
\* 2020/053:11:47:16.0000 TEP data collection Grid 295 Duration 3 minutes  
\* 2020/053:11:53:51.0000 AMCS Cal over open ocean Duration 2 minutes  
2020/053:13:16:26.0000 OCEANscan Duration 22 minutes  
\* 2020/053:14:53:26.0000 AMCS Cal over open ocean Duration 2 minutes  
2020/053:16:17:15.0000 RTWscan Duration 90 minutes  
\* 2020/054:02:03:41.0000 TEP data collection Grid 201 Duration 3 minutes  
\* 2020/054:02:08:54.0000 TEP data collection Grid 129 Duration 3 minutes  
2020/054:02:37:59.0000 OCEANscan Duration 22 minutes  
\* 2020/054:03:40:34.0000 TEP data collection Grid 163 Duration 3 minutes  
\* 2020/054:06:30:53.0000 TEP data collection Grid 411 Duration 3 minutes  
\* 2020/054:06:37:38.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
\* 2020/054:06:51:46.0000 TEP data collection Grid 122 Duration 3 minutes  
\* 2020/054:06:57:00.0000 TEP data collection Grid 50 Duration 3 minutes  
\* 2020/054:08:18:14.0000 TEP data collection Grid 228 Duration 3 minutes  
\* 2020/054:09:39:28.0000 TEP data collection Grid 406 Duration 3 minutes  
\* 2020/054:11:17:08.0000 TEP data collection Grid 367 Duration 3 minutes  
\* 2020/054:12:53:29.0000 AMCS Cal over open ocean Duration 2 minutes  
2020/054:14:25:04.0000 OCEANscan Duration 22 minutes

\* 2020/054:15:59:14.0000 TEP data collection Grid 396 Duration 3 minutes  
\* 2020/054:17:36:09.0000 TEP data collection Grid 358 Duration 3 minutes  
\* 2020/054:17:41:22.0000 TEP data collection Grid 286 Duration 3 minutes  
\* 2020/054:17:57:02.0000 TEP data collection Grid 69 Duration 3 minutes  
\* 2020/054:19:26:04.0000 TEP data collection Grid 139 Duration 3 minutes  
2020/054:23:26:22.0000 TOO TOOid 1328 RGT 905 offpoint 0.84deg Duration 2 minutes  
\* 2020/054:23:52:32.0000 TEP data collection Grid 349 Duration 3 minutes  
2020/055:00:38:02.0000 OCEANscan Duration 22 minutes  
\* 2020/055:01:40:38.0000 TEP data collection Grid 166 Duration 3 minutes  
\* 2020/055:02:14:00.0000 TEP Stare Duration 195 minutes  
\* 2020/055:06:11:58.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
\* 2020/055:07:46:15.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
\* 2020/055:09:26:52.0000 TEP data collection Grid 226 Duration 3 minutes  
\* 2020/055:12:27:49.0000 AMCS Cal over open ocean Duration 2 minutes  
2020/055:13:00:03.0000 TOO TOOid 1341 RGT 913 offpoint 0.04deg Duration 2 minutes  
\* 2020/055:13:56:05.0000 TEP data collection Grid 400 Duration 3 minutes  
2020/055:13:59:25.0000 OCEANscan Duration 22 minutes  
\* 2020/055:15:36:24.0000 AMCS Cal over open ocean Duration 2 minutes  
2020/056:01:46:40.0000 OCEANscan Duration 22 minutes  
\* 2020/056:02:46:39.0000 TEP data collection Grid 200 Duration 3 minutes  
\* 2020/056:02:57:31.0000 TEP data collection Grid 55 Duration 3 minutes  
\* 2020/056:04:13:08.0000 TEP data collection Grid 306 Duration 3 minutes  
\* 2020/056:05:48:50.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
\* 2020/056:07:20:36.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
\* 2020/056:09:01:12.0000 TEP data collection Grid 227 Duration 3 minutes  
\* 2020/056:10:45:56.0000 TEP data collection Grid 80 Duration 3 minutes  
\* 2020/056:12:02:10.0000 AMCS Cal over open ocean Duration 2 minutes  
2020/056:13:33:45.0000 OCEANscan Duration 22 minutes  
\* 2020/056:15:10:45.0000 AMCS Cal over open ocean Duration 2 minutes  
2020/056:16:34:34.0000 RTWscan Duration 90 minutes  
\* 2020/057:00:44:06.0000 TEP data collection Grid 239 Duration 3 minutes  
2020/057:01:21:01.0000 OCEANscan Duration 22 minutes  
\* 2020/057:02:23:36.0000 TEP data collection Grid 164 Duration 3 minutes  
\* 2020/057:06:54:56.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
2020/057:11:33:58.0000 TOO TOOid 1329 RGT 943 offpoint 1.12deg Duration 2 minutes  
\* 2020/057:11:43:31.0000 AMCS Cal over open ocean Duration 2 minutes  
2020/057:13:08:06.0000 OCEANscan Duration 22 minutes  
\* 2020/057:14:45:05.0000 AMCS Cal over open ocean Duration 2 minutes  
2020/057:16:05:00.0000 Laser window dump Duration 2 minutes