ICESat-2 PROJECT SCIENCE OFFICE REPORT
Monday, September 23 2019 thru Sunday, September 29, 2019

RGTs spanned: 1328-0046
Cycle 4 into Cycle 5

SUMMARY:
All ATLAS housekeeping data is nominal; laser 2 is firing at energy level 4 and in science mode. SIPS continues the development and delivery of release 002 data products to the SCF and to NSIDC, where data will be live to the public by mid-October. ASAS developers continue to work on the top priority issues as identified by their respective ATBD lead.

NSIDC ICESat-2 Metrics through September 16: 1,607 total users of 10 available data products; 936,840 sciences files downloaded. ATL08 is in the lead with 586 users and 343,770 files downloaded! ATL03 is 2nd with 556 users and 111,019 files downloaded, followed by ATL06 with 453 users and 392,264 files downloaded.

This week's Photon Phriday featured Sequoia National Park, with a bonus figure from ATL08!

ELEMENT DETAILS BELOW

CAMS/POD:
CAMS: Regular CAMS operations: constraint and conjunction monitoring for mission weeks 54 and 55, and mission planning for mission week 56

POD: Regular POD operations continue. Final POD was completed for GPS week 2069. Intermediate POD was completed for GPS week 2071. All results appear nominal.

ISF:
All ATLAS housekeeping data is nominal
Laser 2 is firing at energy level 4 and in science mode
WTEM Peak to Edge Ratio: 1.226
Laser 2 Temperature Error: -0.26C
SADA in Airplane Mode
Spacecraft orientation: + X

Mission Planning:
MW55 ATS is loaded to the spacecraft and currently operating
MW56 is being planned, nominal calibration activities.
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Activities during the past week:
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Real-time activities:
Executed updated sCAR427 to clear file load error flags
Executed sCAR91, sCAR102, sCAR248 to clear routine SDI, SBS and SXP errors
Supported NEN recertification
Continued training new ISF operator - Daniel.

ATS activities:
Routine calibration activities.

Other Activities:
Mini-ATS created to perform LCA17 to mitigate the HIE with 41464 using laser to ARM mode
Updated ANC27 and ANC13 delivered to SIPS

Near-term activities:
Continuing to work on the ISF tech refresh

Notes/Issues:
Continue to have problems receiving tlm from the bMOC

LTO Schedule:
All items remain on schedule

SIPS:

- The SIPS is operating nominally:
  - Ingested and distributed Level 0 data to the ISF.
  - Generated L1A and L1B products and distributed ATL02s to the ISF, POD, and SCF.
  - Distributed selected ATL01s to the ISF and SCF by special request.
  - Generated rapids ATL03 using ANC03/04/05 files from the CAMS.
  - Distributed ATL03 (rapids) to the SCF.
- Upgraded Java to OpenJDK 12.0.2 on all the SIPS baselines
  - Conducted an ORR on Sept. 23 for approval to install on ops
  - No changes to SDMS and ASAS PGEs (job types, control file, etc.). All products are still Release 002.
- Distributed Release 002 ATL03s to NSIDC for DOY 124-177, 2019 and DOY 287-335, 2018.

ASAS:
ASAS developers are working on the top priority issues as identified by their respective ATBD lead.

ASAS has been re-developing the HDF product designer. This is the tool used to create/modify the product templates. The old Web/PHP-based version no longer meets NASA security standards. The new code is being rewritten as a stand-alone Python app.

ASAS is providing support towards the analysis of range bias data and also looking into causes of sub-surface noise.

L2/L3 atmosphere work continues with implementation of CAL method 3 and the comparison of DDA results with science team code.

The atmosphere L3B developer has provided sample smoothing results to the ATBD lead.

The root cause for atmosphere cloud values of 0 in ATL06 has been discovered and a fix is in the works.

The Sea Ice/Freeboard L3B products are in development. The developer is also helping to investigate specular returns.

The Land Ice ATL11 L3B code is being modified to work in a production environment. Developer is writing code to read the ICESat-2 surface mask for use with ATL11.

The ocean developer is tracing the cause of the infinite loop seen in ops.

Inland water work is focused on buffering data when approaching and leaving water bodies.

SCF:
The SCF is operating nominally. Data for releases 002 and R002 are being ingested and distributed. Ingest is complete for the first two batches (May/Jun and Oct/Nov) of final products, but fulfillment of subscriptions for these data is ongoing. Testing for the next release of the Visualizer is underway and on-track for a release of the software by the next Science Team meeting. A file listing the current SCF data holdings is attached.

* Data Management -- Fixes applied last week are behaving as expected: browse jobs no longer fail due to warnings, and transaction trending speed has increased significantly. Recent file hold requests that accidentally included nonexistent files caused an error, revealing the need to improve handling of this situation in the code.

* Subsetter -- A bug where empty data files were improperly treated as an unknown data type has been fixed but not in operations. The bug does not affect cases where users should receive data, which are working as expected, so the fix will be brought into operations at a convenient time in the future.

* Visualizer -- Testing of the first Python 3 version of the code is in progress. Bugs are being fixed promptly as they are found, and individual test cases are rerun as needed. We are on schedule to have a release made and available in advance of the next Science Team meeting at the end of October.

ATL02/Instrument Science:

Final Release 002 versions of the ATL02 ATBD and related documents were released.

Investigation of the jumps in TEP TOF has revealed (1) a possible correlation with the skew and lower width parameters derived from the start pulse and (2) unexpected sensitivity of the exponentially-modified Gaussian fit to the initial estimate. Both leads will be pursued.

Analysis of LRS laser-side centroid data from two periods on September 21 and 22 when the AMCS control loop was disabled and the BSM was set to a fixed position gave some insight into the behavior of ATLAS' transmitter/receiver alignment. (1) The relative offset between laser and TAMS centroids varied about 50 microradians peak-to-peak, periodic at the orbital frequency. This variation would result in significant loss of throughput if the AMCS control loop did not correct for it. (2) There is an additional motion, common to the TAMS and laser spots, about 12 microradians peak-to-peak with a period about 200 seconds. This is interpreted as motion of the LRS, probably due to a heater cycling on and off.

In addition, work continues on:

- 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.

- Investigation of apparent change in Spot 3 TEP strength after the late June/early July safehold. Analysis of a thorough VBG sweep on September 22 indicates that there was not a shift in tuning; the current setpoints as indicated by WTEM signals result in maximum TEP strength.

- Development of an algorithm for estimation of OFM transmittance peak shift from 2-step VBG sweep data.

ATL03:
Evaluation of release 002 granules continues, with an enhanced focus on analyzing ATL03 data collected during and just following drag makeup maneuvers (DMUs), as well as the effect/presence of the TEP on the primary signal finding algorithm.

ISF ACTIVITIES MISSION WEEK 055:

* Not in science mode
^ Could affect science data quality

* 2019/269:00:45:57.0000 TEP data collection Grid 52 Duration 3 minutes
* 2019/269:01:01:37.0000 TEP data collection Grid 267 Duration 3 minutes
* 2019/269:02:37:24.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/269:02:47:21.0000 TEP data collection Grid 408 Duration 3 minutes

* 2019/269:03:54:31.0000 TEP data collection Grid 47 Duration 3 minutes
* 2019/269:04:04:59.0000 TEP data collection Grid 191 Duration 3 minutes
* 2019/269:07:06:41.0000 AMCS Cal over open ocean Duration 2 minutes
  2019/269:08:37:32.0000 OCEANscan Duration 22 minutes
* 2019/269:09:03:31.0000 TEP data collection Grid 399 Duration 3 minutes
* 2019/269:10:14:30.0000 AMCS Cal over open ocean Duration 2 minutes
* 2019/269:11:51:13.0000 TEP data collection Grid 143 Duration 3 minutes
* 2019/269:12:01:38.0000 TEP data collection Grid 287 Duration 3 minutes
* 2019/269:13:36:40.0000 TEP data collection Grid 284 Duration 3 minutes
* 2019/269:14:57:10.0000 TEP data collection Grid 103 Duration 3 minutes
* 2019/269:15:02:24.0000 TEP data collection Grid 174 Duration 3 minutes
* 2019/269:18:21:24.0000 TEP data collection Grid 313 Duration 3 minutes
* 2019/269:19:41:37.0000 TEP data collection Grid 132 Duration 3 minutes
  2019/269:20:24:38.0000 OCEANscan Duration 22 minutes
* 2019/269:21:14:20.0000 TEP data collection Grid 93 Duration 3 minutes
* 2019/269:21:33:01.0000 TEP data collection Grid 344 Duration 3 minutes
* 2019/269:22:53:51.0000 TEP data collection Grid 163 Duration 3 minutes
* 2019/269:23:09:30.0000 TEP data collection Grid 378 Duration 3 minutes
  2019/269:23:25:26.0000 RTWscan Duration 90 minutes
* 2019/270:02:11:45.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/270:03:52:22.0000 TEP data collection Grid 371 Duration 3 minutes
  2019/270:04:00:00.0000 Laser window dump Duration 2 minutes
* 2019/270:06:55:17.0000 AMCS Cal over open ocean Duration 2 minutes
* 2019/270:08:14:33.0000 AMCS Cal over open ocean Duration 2 minutes
  2019/270:09:46:10.0000 OCEANscan Duration 22 minutes
* 2019/270:11:30:46.0000 TEP data collection Grid 216 Duration 3 minutes
* 2019/270:12:57:13.0000 TEP data collection Grid 106 Duration 3 minutes
* 2019/270:13:20:40.0000 TEP data collection Grid 429 Duration 3 minutes
* 2019/270:14:36:45.0000 TEP data collection Grid 175 Duration 3 minutes
* 2019/270:16:13:38.0000 TEP data collection Grid 209 Duration 3 minutes
* 2019/270:17:34:51.0000 TEP data collection Grid 27 Duration 3 minutes
* 2019/270:19:27:26.0000 TEP data collection Grid 276 Duration 3 minutes
* 2019/270:20:55:28.0000 TEP data collection Grid 202 Duration 3 minutes
  2019/270:21:33:15.0000 OCEANscan Duration 22 minutes
* 2019/270:22:30:48.0000 TEP data collection Grid 199 Duration 3 minutes
* 2019/270:23:59:52.0000 TEP data collection Grid 125 Duration 3 minutes
* 2019/271:01:31:32.0000 TEP data collection Grid 87 Duration 3 minutes
* 2019/271:01:46:05.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/271:03:18:53.0000 TEP data collection Grid 264 Duration 3 minutes
* 2019/271:04:42:44.0000 TEP data collection Grid 118 Duration 3 minutes
* 2019/271:06:09:10.0000 TEP data collection Grid 8 Duration 3 minutes
* 2019/271:06:14:25.0000 TEP data collection Grid 80 Duration 3 minutes
* 2019/271:06:30:04.0000 TEP data collection Grid 295 Duration 3 minutes
* 2019/271:07:43:03.0000 TEP data collection Grid 6 Duration 3 minutes

* 2019/271:07:48:54.0000 AMCS Cal over open ocean Duration 2 minutes
2019/271:09:20:30.0000 OCEANscan Duration 22 minutes
* 2019/271:10:52:02.0000 TEP data collection Grid 1 Duration 3 minutes
* 2019/271:10:57:04.0000 AMCS Cal over open ocean Duration 2 minutes
2019/271:12:02:00.0000 Stellar window dump Duration 90 minutes
* 2019/271:14:05:51.0000 TEP data collection Grid 104 Duration 3 minutes
2019/271:18:01:40.0000 TOO (TOOid=1160) Duration 2.5 minutes
* 2019/271:19:06:59.0000 TEP data collection Grid 348 Duration 3 minutes
* 2019/271:20:19:36.0000 TEP data collection Grid 59 Duration 3 minutes
2019/271:21:07:36.0000 OCEANscan Duration 22 minutes
* 2019/271:21:59:55.0000 TEP data collection Grid 128 Duration 3 minutes
* 2019/271:22:09:25.0000 TEP data collection Grid 272 Duration 3 minutes
* 2019/271:23:28:58.0000 TEP data collection Grid 54 Duration 3 minutes
* 2019/272:01:20:26.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/272:02:40:10.0000 TEP data collection Grid 85 Duration 3 minutes
* 2019/272:07:23:14.0000 AMCS Cal over open ocean Duration 2 minutes
2019/272:08:54:51.0000 OCEANscan Duration 22 minutes
* 2019/272:10:31:49.0000 AMCS Cal over open ocean Duration 2 minutes
* 2019/272:12:12:05.0000 TEP data collection Grid 178 Duration 3 minutes
* 2019/272:18:43:56.0000 TEP data collection Grid 384 Duration 3 minutes
2019/272:20:41:56.0000 OCEANscan Duration 22 minutes
* 2019/273:00:54:46.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/273:02:29:03.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/273:06:57:34.0000 AMCS Cal over open ocean Duration 2 minutes
2019/273:08:29:11.0000 OCEANscan Duration 22 minutes
* 2019/273:10:06:09.0000 AMCS Cal over open ocean Duration 2 minutes
* 2019/273:12:48:17.0000 Put laser in ARM mode for LCA17 41464 (MSL 300) 30-Sep-2019 12:48:32 Duration 1 minute
2019/273:12:55:07.0000 DMU27 Duration 60 minutes
2019/273:20:16:16.0000 OCEANscan Duration 22 minutes
2019/273:23:17:05.0000 RTWscan Duration 90 minutes
* 2019/274:02:03:24.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/274:06:44:58.0000 AMCS Cal over open ocean Duration 2 minutes
* 2019/274:08:06:13.0000 AMCS Cal over open ocean Duration 2 minutes
2019/274:09:37:49.0000 OCEANscan Duration 22 minutes
2019/274:21:24:55.0000 OCEANscan Duration 22 minutes
* 2019/275:01:37:45.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/275:07:40:34.0000 AMCS Cal over open ocean Duration 2 minutes
2019/275:09:12:10.0000 OCEANscan Duration 22 minutes
* 2019/275:10:47:53.0000 AMCS Cal over open ocean Duration 2 minutes
* 2019/275:12:31:04.0000 TEP data collection Grid 214 Duration 3 minutes
2019/275:20:59:16.0000 OCEANscan Duration 22 minutes