ICESat-2 PROJECT SCIENCE OFFICE REPORT
Monday, October 28, 2019 thru Sunday, November 3, 2019

RGTs spanned: 476-581
Cycle 5

SUMMARY:
All ATLAS housekeeping data is nominal; laser 2 is firing at energy level 4 and in science mode. The bi-annual meeting of the ICESat-2 science team was held this week at the University of Washington in Seattle, and was attended/represented by many elements of the PSO. The meeting featured some new and exciting ICESat-2 science results from members of the science team and their collaborators, some of which has already been accepted for publication. "Batch 4" of release 002 data products were generated by SIPS and delivered to the SCF for evaluation this week; this spans the time period 25 July 2019 to 06 September 2019.

NSIDC ICESat-2 Metrics through November 3: 1,992 total users of 10 available data products; 1,504,618 sciences files downloaded. ATL08 is once again in the lead with 737 users and 549,663 files downloaded! ATL03 remains in 2nd place with 696 users of 168,669 files, and ATL06 is in 3rd this week with 543 users and 660,844 files downloaded.

Photon Phriday this week actually occurred on Thursday due to the holiday (Halloween), and as such, was thematically appropriate for the holiday. Check it out here!

ELEMENT DETAILS BELOW

CAMS/POD:
CAMS: Regular CAMS operations: constraint and conjunction monitoring for mission weeks 59 and 60 and mission planning for mission week 61. A laser conjunction was identified with the ISS (25544) for DOY300 (MW59). A laser-arm Mini-ATS was created to mitigate this event.

POD: Regular POD operations continue. Intermediate POD was completed for GPS week 2076. Final POD was completed for GPS week 2074. All results appear nominal. POD also delivered a set of charts for the Science Team meeting which contained an update on the latest POD results, pointing bias calibrations, and pointing control.

ISF:
All ATLAS housekeeping data is nominal
Laser 2 is firing at energy level 4 and in science mode
WTEM Peak to Edge Ratio: 1.204
Laser 2 Temperature Error: -0.28C
SADA in Airplane Mode
Spacecraft orientation: + X

Mission Planning:

MW60 ATS is loaded to the spacecraft and currently operating.
NOTE: Three Vegetation Data collection (VegTk) activities were not completed due to the late load of the MW60 ATS. This is reflected in the PSO activity list. (see note 1)
MW61 is being planned, nominal calibration activities. Activities deconflicted with OIB campaign.
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Activities during the past week:

Real-time activities:

Congratulations to Daniel for completing ISF operator certification!!

ATS activities:

LCA20: 2019/300:18:56:45 (20191027)
DMU30 : 2019/301:11:09:37 (20191028)
IA3 : 2019/304:14:20:31 (20191031)
Routine Instrument calibrations, Ocean scans and Vegetation Data collection; No RTW scans during OIB campaign

Other Activities:

Near-term activities:

Continuing to work on the ISF tech refresh - reviewed plan with ESMO MD; schedule being fleshed out.
Clean up temp files from Rx Alg v9 test
Perform TCS failover contingency operations (i.e., fail over to backup server practice)

Notes/Issues:

1. ATS (file) loads continue to have uplink issues. MW 60 mission ATS was not loaded before MW 59 ended. Uplink and enabling of the MW 60 mission ATS occurred during the WGS contact at 2019/304 01:50.
2. DVESTO A&A Audit: ISF portion completed on October 28 with no issues noted; debrief to be provided.
3. CAMS RAID having issues - failed disk was suspected; RAID SW was updated to latest version and suspect drive replaced; operating normally

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, ATL04, ATL09, ATL using ANC03/04/05 files from the CAMS.
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- Distributed ATL03 (rapids) to the SCF.

· Completed distribution of all Release 002 Science Data products to NSIDC for October 14, 2018 – June 26, 2019.

· Completed processing and distribution of Release 002 L2A and L3A data products for July 26-September 6, 2019 to the SCF and Cooler.

ASAS:

ASAS developers continue to work the top priority issues as identified by their respective ATBD lead.

ASAS is providing support towards the analysis of range bias data.

ASAS is providing support in investigating periods where the number of return events causes data dropouts and/or excessive noise.

ASAS has recommended that the July post-safehold data be released for evaluation. The "final" geolocation products released by POD/PPD significantly improve the ATL03 geolocations. The biggest problem is now that the onboard algorithms do not switch parameter sets between surface types correctly. That cannot be fixed on the ground.

ASAS is managing disk space to enable another execution of the functional tests at the end of this week or the beginning of next week.

ASAS is also managing disk space to enable testing of ATL16 and ATL17 across cycle boundaries.

The L1B code is being updated to address identified issues in the QA parameters.

The L2A atmosphere code is being worked to address the trace of TEP removal and calibration method 3.

A test version of the L2A_ALT code is being modified to support pre-filtering of signal classification inputs.

The land ice code has been modified to correctly pass ATL09 flags to ATL06, use molecular backscatter in the estimated background calculation and avoid FPU exceptions. The code is in unit/integration testing.

The sea ice/freeboard is working on the L3B products.

The Land Ice ATL11 L3B code is being modified to work in a production environment with an eye towards the ADAPT cluster.

The ocean developer continues the redesign of the ocean manager.

SCF:
The SCF is operating nominally. Data for releases 002, R002, and 001 are being ingested and distributed. Ingest of release 002 batch 4 data (Jul 26 - Sep 6) appears to be complete, but subscriptions are still running on them. Deletion of previous release 002 data is still in progress but expected to finish within a week. A file listing the current SCF data holdings is attached.

* Data Management -- Overall, running smoothly. Some documentation is being updated for consistency with the latest release, and open issues in JIRA are being investigated. The cause of the ATL04 trending issue has been narrowed down, and we hope to have it resolved soon.

* Subsetter -- Working as expected. Open issues in JIRA are being investigated.

* Visualizer -- Version 7 of the software was released last week, and some updates are planned for a point release in the near future. Also, the Visualizer developer represented the SCF at the Science Team meeting this week.

ATL02/Instrument Science:
The status of ATLAS and ATL02 were reported at the ICESat-2 Science Team meeting at the University of Washington.

In addition, work continues on:

- Investigating the mechanism of “jumps” in the TEP TOF
- Further characterization of “afterpulses” and their sources
- Reprocessing I&T data using the latest EMG fit method.
- 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.
- Correcting and optimizing ATL02 QA parameters.

ATL03:
Analysis of the effects of drag makeup maneuvers (DMUs) on absolute heights in ATL03 continues. Team members continue to work with the instrument scientist to delve into why extra pulses occur in ATL03 data (and how to keep the signal finding algorithm from identifying them as high/med/low confidence signal). We are continuing to develop automated QA

procedures for ATL03 granules based on a number of conditions (POD/PPD degrade flags, difference from DEM listed on the product, etc.).

Science Calibration/Validation:
NTR.

ISF ACTIVITIES MISSION WEEK 060:

* Not in science mode
^ Could affect science data quality

* 2019/304:04:44:51.0000 TEP data collection Grid 115 Duration 3 minutes
* 2019/304:06:16:37.0000 AMCS Cal over open ocean Duration 2 minutes
  2019/304:07:48:14.0000 OCEANscan Duration 22 minutes
* 2019/304:09:24:13.0000 AMCS Cal over open ocean Duration 2 minutes
* 2019/304:11:20:09.0000 TEP data collection Grid 393 Duration 3 minutes
* 2019/304:12:28:19.0000 TEP data collection Grid 32 Duration 3 minutes
* 2019/304:14:06:05.0000 TEP data collection Grid 65 Duration 3 minutes
^ 2019/304:14:20:31.0000 Inclination Adjust 3 IA3 Duration 74 minutes
* 2019/304:16:05:39.0000 TEP data collection Grid 422 Duration 3 minutes
  2019/304:16:29:20.0000 TOO TOOid=1190 Duration 3 minutes
* 2019/304:17:16:27.0000 TEP data collection Grid 97 Duration 3 minutes
* 2019/304:18:53:21.0000 TEP data collection Grid 130 Duration 3 minutes
* 2019/304:18:58:34.0000 TEP data collection Grid 202 Duration 3 minutes
* 2019/304:19:11:43.0000 TEP data collection Grid 381 Duration 3 minutes
  2019/304:19:35:19.0000 OCEANscan Duration 22 minutes
* 2019/304:20:27:38.0000 TEP data collection Grid 128 Duration 3 minutes
* 2019/304:20:32:52.0000 TEP data collection Grid 200 Duration 3 minutes
* 2019/304:23:48:09.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/305:01:18:20.0000 TEP data collection Grid 228 Duration 3 minutes
* 2019/305:01:26:09.0000 TEP data collection Grid 336 Duration 3 minutes
* 2019/305:02:36:56.0000 TEP data collection Grid 11 Duration 3 minutes
* 2019/305:03:03:03.0000 TEP data collection Grid 370 Duration 3 minutes
* 2019/305:04:21:42.0000 TEP data collection Grid 152 Duration 3 minutes
* 2019/305:05:50:57.0000 AMCS Cal over open ocean Duration 2 minutes
* 2019/305:06:14:15.0000 TEP data collection Grid 401 Duration 3 minutes
  2019/305:07:22:34.0000 OCEANscan Duration 22 minutes
* 2019/305:08:59:32.0000 AMCS Cal over open ocean Duration 2 minutes
* 2019/305:10:28:23.0000 TEP data collection Grid 35 Duration 3 minutes
  2019/305:11:00:00.0000 Laser window dump Duration 2 minutes
* 2019/305:13:44:49.0000 TEP data collection Grid 138 Duration 3 minutes
* 2019/305:13:52:36.0000 TEP data collection Grid 246 Duration 3 minutes
* 2019/305:15:11:15.0000 TEP data collection Grid 28 Duration 3 minutes

* 2019/305:15:37:22.0000 TEP data collection Grid 387 Duration 3 minutes
  2019/305:19:09:39.0000 OCEANscan Duration 22 minutes
* 2019/305:19:54:07.0000 TEP data collection Grid 21 Duration 3 minutes
* 2019/305:20:04:36.0000 TEP data collection Grid 164 Duration 3 minutes
* 2019/305:23:22:29.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/305:23:28:49.0000 TEP data collection Grid 375 Duration 3 minutes
* 2019/306:00:56:47.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/306:02:21:45.0000 TEP data collection Grid 155 Duration 3 minutes
* 2019/306:02:26:58.0000 TEP data collection Grid 227 Duration 3 minutes
* 2019/306:05:25:18.0000 AMCS Cal over open ocean Duration 2 minutes
  2019/306:06:56:54.0000 OCEANscan Duration 22 minutes
* 2019/306:08:33:52.0000 AMCS Cal over open ocean Duration 2 minutes
* 2019/306:10:31:28.0000 TEP data collection Grid 430 Duration 3 minutes
* 2019/306:11:51:47.0000 TEP data collection Grid 249 Duration 3 minutes
^ 2019/306:12:57:07.0000 DMU31 Duration 54 minutes
* 2019/306:15:03:53.0000 TEP data collection Grid 280 Duration 3 minutes
* 2019/306:16:25:07.0000 TEP data collection Grid 98 Duration 3 minutes
* 2019/306:18:15:04.0000 TEP data collection Grid 311 Duration 3 minutes
* 2019/306:18:20:17.0000 TEP data collection Grid 383 Duration 3 minutes
  2019/306:18:44:00.0000 OCEANscan Duration 22 minutes
* 2019/306:19:41:33.0000 TEP data collection Grid 201 Duration 3 minutes
* 2019/306:21:10:37.0000 TEP data collection Grid 127 Duration 3 minutes
* 2019/306:22:38:55.0000 TEP data collection Grid 53 Duration 3 minutes
* 2019/307:00:24:25.0000 TEP data collection Grid 194 Duration 3 minutes
* 2019/307:00:31:07.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/307:01:53:11.0000 TEP data collection Grid 120 Duration 3 minutes
* 2019/307:01:58:42.0000 TEP data collection Grid 191 Duration 3 minutes
* 2019/307:05:11:21.0000 AMCS Cal over open ocean Duration 2 minutes
* 2019/307:06:33:56.0000 AMCS Cal over open ocean Duration 2 minutes
  2019/307:08:05:33.0000 OCEANscan Duration 22 minutes
* 2019/307:09:39:42.0000 TEP data collection Grid 72 Duration 3 minutes
* 2019/307:19:02:49.0000 TEP data collection Grid 22 Duration 3 minutes
* 2019/307:19:31:33.0000 TEP data collection Grid 417 Duration 3 minutes
  2019/307:19:52:38.0000 OCEANscan Duration 22 minutes
* 2019/307:22:16:38.0000 TEP data collection Grid 89 Duration 3 minutes
* 2019/308:00:05:29.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/308:01:33:03.0000 TEP data collection Grid 192 Duration 3 minutes
* 2019/308:06:08:17.0000 AMCS Cal over open ocean Duration 2 minutes
  2019/308:07:39:54.0000 OCEANscan Duration 22 minutes
* 2019/308:18:47:39.0000 TEP data collection Grid 166 Duration 3 minutes
  2019/308:19:27:00.0000 OCEANscan Duration 22 minutes
* 2019/308:23:39:50.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/309:05:42:39.0000 AMCS Cal over open ocean Duration 2 minutes
  2019/309:07:14:15.0000 OCEANscan Duration 22 minutes

* 2019/309:08:51:13.0000 AMCS Cal over open ocean Duration 2 minutes
  2019/309:17:28:50.0000 TOO TOOid=1189 Duration 3 minutes
  2019/309:19:01:21.0000 OCEANscan Duration 22 minutes
* 2019/309:23:14:11.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/310:00:48:28.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/310:05:17:00.0000 AMCS Cal over open ocean Duration 2 minutes
  2019/310:06:48:36.0000 OCEANscan Duration 22 minutes
  2019/310:08:02:00.0000 Stellar window dump Duration 90 minutes
  2019/310:18:35:42.0000 OCEANscan Duration 22 minutes