ICESat-2 PROJECT SCIENCE OFFICE REPORT
Monday, September 30 2019 thru Sunday, October 6, 2019

RGTs spanned: 48-154
Cycle 5

Items of Note:
All ATLAS housekeeping data is nominal; laser 2 is firing at energy level 4 and in science mode. SIPS continued processing Batch 3 (Dec. 01, 2018 – May 03, 2019) Release 002 products, and delivered products to SCF and NSIDC based on direction from the PSO and from the science team.

Photon Phriday this week featured changing water levels in Lake Mead – the first depiction (at least with our Photon Phriday series) of ICESat-2 showing its capabilities for repeat monitoring of dynamic Earth surfaces!

NSIDC ICESat-2 Metrics through October 6: the big news – we hit 1 million downloads!!! 1,666 total users of 10 available data products; 1,022,067 sciences files downloaded. ATL08 is in the lead with 607 users and 364,157 files downloaded! ATL03 is 2nd with 581 users and 114,103 files downloaded, followed by ATL06 with 463 users and an astounding 453,114 files downloaded.

ELEMENT DETAILS BELOW

CAMS/POD:
CAMS: Regular CAMS operations: constraint and conjunction monitoring for mission weeks 55 and 56, and mission planning for mission week 57.
CAMS supported mini-ATS for MW055
  • Mitigation of MVL300 (41464) HIE (0.631 Pl, laser miss < 0.39 km) with laser to arm
CAMS supported mini-ATS for MW056
  • Mitigation of ISS (25544) HIE (6.603 Pl, laser miss < 3.77 km) with laser to arm

POD: Regular POD operations continue. Intermediate POD was completed for GPS week 2072. Final POD was completed for GPS week 2070. All results appear nominal.

A series of calibration solutions spanning DoY 208-250 were performed using final ANC05 products. This includes calibration solutions using ocean scan data only from DoY 233-250 where no round-the-world scans were performed due to OIB. Once validated, these results will be used to generate final calibrated ANC products from DoY 206-250 (spacecraft GPS-TAI offset fix through yaw-flip).

A series of calibration solutions spanning DoY 208-232 were performed using rapid ANC05 products. Analysis of these results will be used to tune the on-board beam unit vectors being used, if required.

ISF:
All ATLAS housekeeping data is nominal
Laser 2 is firing at energy level 4 and in science mode
WTEM Peak to Edge Ratio: 1.221
Laser 2 Temperature Error: -0.27C
SADA in Airplane Mode
Spacecraft orientation: + X

Mission Planning:
MW56 ATS is loaded to the spacecraft and currently operating
MW57 is being planned, nominal calibration activities.
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Activities during the past week:

Real-time activities:
  Executed CAR432 to commit V8 to EEPROM; files were committed and the temporary files removed on 2019/277 (10/4/19)
     First attempt comitted files to wrong location in EEPROM due to operator error
  Executed updated sCAR427 to clear file load error flags
  Executed sCAR91, sCAR102, sCAR248, sCAR380 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 started for HIE15 but conjunction self-mitigated
  Mini-ATS created to perform LCA18 to mitigate the HIE with ISS using laser to ARM mode
  Ops server was unresponsive - rebooted and recovered stopped processes

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

Notes/Issues:

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.
- Started producing Rapid R002 ATL06 products for the Science Team for the current time period. These are only being distributed to the SCF.
- Continued processing Batch 3 (Dec. 01, 2018 – May 03, 2019) Release 002 products
- Distributed Release 002 ATL03s to NSIDC for DOY 124-177, 2019 and DOY 287-335, 2018.

ASAS:

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

The re-worked HDF5 product designer has entered the testing stage.

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

ASAS is providing support in regards to 'fixing' the July data where incorrect leap seconds were uploaded to the SC after the safehold.

The ATL03 developer has fixed an issue with reading the POD Flag from ANC04 that is causing processing failures in SIPS. This update will likely be delivered to Ops as a hot-fix.

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

The atmosphere L3B developer has prototyped/demonstrated the image smoothing algorithm and is adding code to compute the number of observed points.

The sea ice/freeboard developer has implemented a fix for specular returns and is working on the L3B products.

The Land Ice ATL11 L3B code is being modified to work in a production environment. The developer is currently coding a Python interface to the ICESat-2 surface type mask.

The inland water developer is adding control overrides for body edge handline.

The ocean developer has made several improvements st the ocean code. These improvements are going to be locked down in anticipation of a re-design of the manager that will improve handling of missing data/equator crossings.

SCF:

The SCF is operating nominally. Data for releases 002 and R002 are being ingested and distributed as they arrive; all previously queued jobs have been completed. Recent work has focused on testing the Python 3 version of the Visualizer, finding and fixing bugs, in preparation for a software release before the next Science Team meeting at the end of October. A file listing the current SCF data holdings is attached.

* Data Management -- Overall, things are running smoothly, but a possible bug in creating trending plots for ATL04 has turned up, and it is preventing new plots from being generated. This has been recorded and will be investigated but completing the Visualizer release has a higher priority right now.

* Subsetter -- Also running smoothly overall. One file failed on one subscription this week, but the failure could not be reproduced manually. We suspect that multiple jobs accessing the file simultaneously caused the issue, because when the job was rerun, it was successful.

* Visualizer -- Testing of the Python 3 code continues. Bugs are being reported as they are found and promptly fixed. Documentation is being updated and test cases added as needed. We are still on track to make a release of the software before the next Science Team meeting at the end of October.

ATL02/Instrument Science:
Revisions of the ATL02 ATBD have begun to reflect planned changes for Release 003.

Sensitivity to the initial estimate of the maximum-likelihood fit to an Exponentially-Modified Gaussian function, which is used to determine the position of at Transmitter Echo or return pulse, has been eliminated by preceding it with a fit to the same function of a histogram of the data; the result of the histogram fit is used as the initial estimate in the more precise maximum-likelihood fit. This addresses one possible cause of unexplained jumps in the calculated position of the Transmitter Echo pulse.

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.

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

- Correcting and optimizing ATL02 QA parameters.

ATL03:
Evaluation of release 002 granules continues, with an enhanced focus on analyzing ATL03 data collected during and just following drag makeup maneuvers (DMUs) and evaluating data collected between 9 July and 25 July to resolve the TAI-GPS timing offset.

ISF ACTIVITIES MISSION WEEK 056:

* Not in science mode
^ Could affect science data quality

* 2019/276:02:26:36.0000 TEP data collection Grid 13 Duration 3 minutes
* 2019/276:04:03:31.0000 TEP data collection Grid 47 Duration 3 minutes
* 2019/276:04:29:58.0000 TEP data collection Grid 405 Duration 3 minutes
* 2019/276:05:43:03.0000 TEP data collection Grid 116 Duration 3 minutes
* 2019/276:05:48:17.0000 TEP data collection Grid 188 Duration 3 minutes
* 2019/276:06:03:56.0000 TEP data collection Grid 403 Duration 3 minutes
* 2019/276:07:14:56.0000 AMCS Cal over open ocean Duration 2 minutes
  2019/276:08:46:32.0000 OCEANscan Duration 22 minutes
* 2019/276:10:18:03.0000 TEP data collection Grid 1 Duration 3 minutes
* 2019/276:10:23:30.0000 AMCS Cal over open ocean Duration 2 minutes
* 2019/276:10:41:34.0000 TEP data collection Grid 360 Duration 3 minutes
* 2019/276:12:01:29.0000 TEP data collection Grid 142 Duration 3 minutes
* 2019/276:12:13:15.0000 TEP data collection Grid 322 Duration 3 minutes
* 2019/276:15:00:55.0000 TEP data collection Grid 30 Duration 3 minutes
* 2019/276:15:06:10.0000 TEP data collection Grid 102 Duration 3 minutes
* 2019/276:15:27:03.0000 TEP data collection Grid 389 Duration 3 minutes
* 2019/276:16:42:00.0000 TEP data collection Grid 136 Duration 3 minutes
* 2019/276:17:05:05.0000 TEP data collection Grid 422 Duration 3 minutes
* 2019/276:18:27:48.0000 TEP data collection Grid 277 Duration 3 minutes
* 2019/276:20:02:06.0000 TEP data collection Grid 274 Duration 3 minutes
  2019/276:20:33:38.0000 OCEANscan Duration 22 minutes
* 2019/276:21:18:05.0000 TEP data collection Grid 21 Duration 3 minutes
* 2019/276:21:25:57.0000 TEP data collection Grid 128 Duration 3 minutes
* 2019/276:21:33:47.0000 TEP data collection Grid 236 Duration 3 minutes
* 2019/276:21:47:19.0000 TEP data collection Grid 415 Duration 3 minutes
* 2019/276:22:55:00.0000 TEP data collection Grid 54 Duration 3 minutes
* 2019/277:00:46:28.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/277:02:20:45.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/277:03:53:11.0000 TEP data collection Grid 263 Duration 3 minutes
* 2019/277:04:04:00.0000 TEP data collection Grid 406 Duration 3 minutes
* 2019/277:05:18:55.0000 TEP data collection Grid 153 Duration 3 minutes
* 2019/277:05:38:17.0000 TEP data collection Grid 404 Duration 3 minutes
* 2019/277:06:43:50.0000 TEP data collection Grid 7 Duration 3 minutes
* 2019/277:06:49:17.0000 AMCS Cal over open ocean Duration 2 minutes

2019/277:08:20:53.0000 OCEANscan Duration 22 minutes
* 2019/277:09:52:25.0000 TEP data collection Grid 2 Duration 3 minutes
* 2019/277:09:57:51.0000 AMCS Cal over open ocean Duration 2 minutes
* 2019/277:13:06:14.0000 TEP data collection Grid 105 Duration 3 minutes
* 2019/277:15:03:20.0000 TEP data collection Grid 426 Duration 3 minutes
* 2019/277:16:27:52.0000 TEP data collection Grid 280 Duration 3 minutes
* 2019/277:17:55:52.0000 TEP data collection Grid 206 Duration 3 minutes
* 2019/277:18:04:46.0000 TEP data collection Grid 313 Duration 3 minutes
  2019/277:20:00:00.0000 Laser window dump Duration 2 minutes
  2019/277:21:42:16.0000 OCEANscan Duration 22 minutes
* 2019/277:22:29:21.0000 TEP data collection Grid 55 Duration 3 minutes
* 2019/277:22:55:28.0000 TEP data collection Grid 414 Duration 3 minutes
  2019/277:23:08:47.0000 RTWscan Duration 90 minutes
* 2019/278:00:18:08.0000 Put laser in ARM mode for LCA18 25544 (ISS) 05-Oct-2019 00:18:23 Duration 1 minute
* 2019/278:01:45:47.0000 TEP data collection Grid 158 Duration 3 minutes
* 2019/278:01:55:06.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
  2019/278:02:02:00.0000 Stellar window dump Duration 90 minutes
* 2019/278:03:38:20.0000 TEP data collection Grid 407 Duration 3 minutes
* 2019/278:04:59:35.0000 TEP data collection Grid 225 Duration 3 minutes
* 2019/278:06:34:38.0000 AMCS Cal over open ocean Duration 2 minutes
  2019/278:07:55:14.0000 OCEANscan Duration 22 minutes
* 2019/278:09:32:12.0000 AMCS Cal over open ocean Duration 2 minutes
* 2019/278:17:20:00.0000 TEP data collection Grid 63 Duration 3 minutes
* 2019/278:20:29:25.0000 TEP data collection Grid 58 Duration 3 minutes
* 2019/278:20:50:18.0000 TEP data collection Grid 345 Duration 3 minutes
  2019/278:21:16:37.0000 OCEANscan Duration 22 minutes
* 2019/278:22:14:10.0000 TEP data collection Grid 199 Duration 3 minutes
* 2019/278:22:24:18.0000 TEP data collection Grid 343 Duration 3 minutes
* 2019/278:23:50:16.0000 TEP data collection Grid 233 Duration 3 minutes
* 2019/279:01:29:27.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/279:01:39:18.0000 TEP data collection Grid 409 Duration 3 minutes
* 2019/279:04:23:29.0000 TEP data collection Grid 82 Duration 3 minutes
* 2019/279:07:32:16.0000 AMCS Cal over open ocean Duration 2 minutes
  2019/279:09:03:52.0000 OCEANscan Duration 22 minutes
* 2019/279:16:57:48.0000 TEP data collection Grid 99 Duration 3 minutes
  2019/279:20:50:58.0000 OCEANscan Duration 22 minutes
* 2019/280:01:03:48.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/280:07:06:36.0000 AMCS Cal over open ocean Duration 2 minutes
  2019/280:08:38:13.0000 OCEANscan Duration 22 minutes
* 2019/280:10:15:11.0000 AMCS Cal over open ocean Duration 2 minutes
  2019/280:20:25:18.0000 OCEANscan Duration 22 minutes
* 2019/281:00:38:08.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/281:02:12:26.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes

2019/281:05:23:50.0000 TOO (TOOid=1164) Duration 3 minutes
* 2019/281:06:40:57.0000 AMCS Cal over open ocean Duration 2 minutes
  2019/281:08:12:34.0000 OCEANscan Duration 22 minutes
* 2019/281:09:49:32.0000 AMCS Cal over open ocean Duration 2 minutes
  2019/281:19:59:39.0000 OCEANscan Duration 22 minutes
  2019/281:23:00:27.0000 RTWscan Duration 90 minutes
* 2019/282:01:46:46.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2019/282:06:24:17.0000 AMCS Cal over open ocean Duration 2 minutes
  2019/282:07:46:54.0000 OCEANscan Duration 22 minutes
* 2019/282:09:23:52.0000 AMCS Cal over open ocean Duration 2 minutes
  2019/282:21:08:17.0000 OCEANscan Duration 22 minutes
* 2019/282:23:40:56.0000 TEP data collection Grid 196 Duration 3 minutes