

ICESat-2 PROJECT SCIENCE OFFICE REPORT

Monday, October 21, 2019 thru Sunday, October 27, 2019

RGTs spanned: 369-475

Cycle 5

Items of Note:

All ATLAS housekeeping data is nominal; laser 2 is firing at energy level 4 and in science mode. NSIDC began distributing release 002 data products to the public on October 24th with data spanning 10/14/2018 through 6/26/2019 (batches 1, 2 and 3) for ATL03, ATL06, and ATL07/10, with the remaining data products (ATL04/09, ATL08, ATL12) being released to the public with batches 1 and 2. Batch 3 data for those data products is being released to NSIDC this week.

The ISF and receiver algorithm team supported an onboard software parameter test (v9) from October 24-26 to determine if widening the telemetry band over flat land and over coastal areas would allow for greater observations of bathymetric surfaces. The PCEs were returned to the standard v8 onboard parameters following the test, and analysis by the PSO and science team will dictate whether or not these new v9 parameters will become standard operations.

NSIDC ICESat-2 Metrics through October 27: 1,913 total users of 10 available data products; 1,258,486 sciences files downloaded. ATL08 is once again in the lead with 699 users and 429,466 files downloaded! ATL03 remains in 2nd place with 672 users of 155,821 files, and ATL06 is in 3rd this week with 534 users and 526,846 files downloaded.

Photon Phriday this week featured a series of fjords (phjords? yuk yuk) in southwestern Norway. Check it out [here](#)! Got a cool idea for Photon Phriday? Let Kaitlin know and we'll do our best to make it happen!

****ELEMENT DETAILS BELOW****

CAMS/POD:

CAMS: Regular CAMS operations: constraint and conjunction monitoring for mission weeks 58 and 59, and mission planning for mission week 60.

CAMS is currently planning to schedule TOO 1189 for MW60. A laser conjunction was identified for DOY295(MW58), CAMS recommended a laser arm to the ISF for the HIE event with LEMUR2-Alexander (43559). CAMS is also monitoring a potential HIE with the ISS (25544) for DOY300 (MW59).

POD: Regular POD operations continue. Intermediate POD was completed for GPS week 2075. Final POD was completed for GPS week 2073. 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: 1.202
Laser 2 Temperature Error: -0.28C
SADA in Airplane Mode
Spacecraft orientation: + X

Mission Planning:

MW59 ATS is loaded to the spacecraft and currently operating, it includes the v9 Algorithm parameters test.

MW60 is being planned, nominal calibration activities.

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Activities during the past week:

Real-time activities:

Executed CAR438 step 1 to load receiver algorithm V9 parameters for testing (completed on Tuesday, 2019/10/22, 2019/295)

Executed sCAR91 to clear routine SBS errors

Continued training new ISF operator - Daniel.

ATS activities:

Routine calibration activities, two TOOs.

v9 Algorithm parameters test:

PCEs out of science mode: 2019/297:07:30:34

Test start : 2019/297:07:32:20

Test Complete and PCEs out of science mode: 2019/299:07:30:34

PCEs back in science mode (V8): 2019/299:07:31:38

Other Activities:

Near-term activities:

Prepared mini-ATS with laser to ARM for 10 seconds to mitigate LCA 020 with the ISS  
2019/300 10/27/19

DMU 030 2019/301 10/28/19 ( 60 minutes)

Continuing to work on the ISF tech refresh

Notes/Issues:

ISF had to switch our routine trending and file processing from the primary server, isfop1 to the redundant server, isfop2. All backlog of data (4 days) cleared < 24 hours after failover. No issues seen with isfops2. We have a spare server that can be configured since we are single string. Isfops1 will be checked out more thoroughly after A&A audit

DVESTO A&A Audit prep (audit scheduled for end of October)

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 ANCO3/04/05 files from the CAMS.
  - Distributed ATL03 (rapids) to the SCF.
- Distributed Release 002 ATL06, ATL07, and ATL10 products to NSIDC for December 01, 2018 – May 03, 2019 (Batch #3).
- SIPS will start processing Release 002 L2A and L3A data products for July 26-September 6, 2019 early next week.
  - The data products will be distributed to the SCF and Cooler.

**ASAS:**

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

ASAS evaluating the first post-release 2.0 functional testing data. ASAS has created test products for the following time periods:

[Cycle 01, RGTs 0225-0240](#): 2018-10-14t00:03:47 thru 2018-10-14t09:29:31  
[Cycle 01, RGTs 0241-0256](#): 2018-10-14t09:29:31 thru 2018-10-15t10:38:10  
[Cycle 01, RGTs 0257-0272](#): 2018-10-15t10:38:10 thru 2018-10-16t11:46:48  
[Cycle 01, RGTs 0273-0288](#): 2018-10-16t11:46:48 thru 2018-10-17t12:55:26  
[Cycle 01, RGTs 0289-0304](#): 2018-10-17t12:55:26 thru 2018-10-18t13:57:00  
[Cycle 01, RGTs 0305-0320](#): 2018-10-18t14:04:03 thru 2018-10-19t15:12:41  
[Cycle 01, RGTs 0321-0336](#): 2018-10-19t15:12:41 thru 2018-10-19t23:51:12  
[Cycle 01, RGTs 0561-0576](#): 2018-11-05T00:00:00 thru 2018-11-05T09:31:01  
[Cycle 01, RGTs 0577-0592](#): 2018-11-05T09:31:02 thru 2018-11-06T00:00:39  
[Cycle 01, RGTs 0769-0784](#): 2018-11-18T23:56:45 thru 2018-11-19T00:23:16  
[Cycle 01, RGTs 0785-0800](#): 2018-11-19T00:23:16 thru 2018-11-20T00:04:38  
[Cycle 01, RGTs 1137-1152](#): 2018-12-12T01:33:05 thru 2018-12-13T00:04:39  
[Cycle 01, RGTs 1377-1387](#): 2018-12-28T00:00:00 thru 2018-12-28T11:59:50  
[Cycle 02, RGTs 0001-0016](#): 2018-12-28T11:59:51 thru 2018-12-29T00:00:01  
[Cycle 02, RGTs 0513-0528](#): 2019-01-31T00:36:21 thru 2019-02-01T01:45:00  
[Cycle 02, RGTs 0529-0544](#): 2019-02-01T01:45:00 thru 2019-02-02T02:53:38  
[Cycle 02, RGTs 0545-0560](#): 2019-02-02T02:53:38 thru 2019-02-03T04:02:16  
[Cycle 02, RGTs 0561-0576](#): 2019-02-03T04:02:16 thru 2019-02-04T05:10:55  
[Cycle 02, RGTs 0577-0592](#): 2019-02-04T05:10:55 thru 2019-02-05T06:19:33  
[Cycle 02, RGTs 0593-0608](#): 2019-02-05T06:19:33 thru 2019-02-06T07:28:11

[Cycle 02, RGTs 0609-0624](#) : 2019-02-06T07:28:11 thru 2019-02-07T08:36:48  
[Cycle 02, RGTs 0625-0640](#) : 2019-02-07T08:36:48 thru 2019-02-08T00:06:37

The re-worked HDF5 product designer is being used by the ASAS team to perform product modifications.

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. Current thinking is that ASAS cannot fix this alone, but must fix the time issue in conjunction with POD/PPD.

ATL16/17s that cross cycle boundaries breaks an ASAS assumption that products would not cross cycle boundaries. Code is being revised to handle this case. A month of ATL09s have been retrieved from SIPS in order to test the code fix.

L2/L3 atmosphere work continues with the testing of CAL method 3. The developer reports that improved DDA results compare well with results from science team code .

The Atmosphere L3B developer is adding code to compute the number of observed points.

The Land Ice code is being modified to correctly pass atmosphere flags from ATL09 to ATL06. Other minor issues in the code are being investigated.

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. The developer is currently implementing coordinate projection conversions for the ICESat-2 surface type mask.

The inland water developer is testing the code that modifies the shape buffer as a function of body/type size.

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, and preparations are being made to hold the next large batch of data. Version 7.0 of the Visualizer software was released and is now available for download from the SCF web site. A file listing the current SCF data holdings is attached.

\* Data Management -- ATL16 and ATL17 were not showing up in certain reports due to an oversight in the initial setup at the SCF for these products. This was corrected by entering the

necessary information into the database. The issue with ATL04 trending is still under investigation. The general cause is known, but how best to address it needs to be determined.

\* Subsetter -- Some ATL06 files with no data caused certain subsetting jobs to fail in SDMS. This issue was fixed after it first appeared, but the fix was not placed into operations at the time. The operational code has been updated now, and the files with issues we rerun successfully.

\* Visualizer -- Testing of the stand-alone apps was completed, and the apps were finalized for release. The apps for OS X, Linux, and Windows, with updated documentation and supporting files, were uploaded to the SCF web site for distribution to users.

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

NTR.

### **ATL03:**

Regular analysis of radiometry/signal strength through mid-October appears nominal. 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:**

GRL paper was accepted for publication (Brunt, KM, Neumann, TA, & Smith, BE (accepted) Assessment of ICESat-2 ice-sheet surface heights, based on comparisons over the interior of the Antarctic ice sheet, Geophysical Research Letters).

ATL03 currently accurate to <5 cm; <13 cm surface-measurement precision;

ATL06 currently accurate to <3 cm; <9 cm surface-measurement precision;

ICESat-2 data comparable to results from ICESat mission.

### **ISF ACTIVITIES MISSION WEEK 059:**

\* Not in science mode

^ Could affect science data quality

\* 2019/297:02:56:15.0000 TEP data collection Grid 47 Duration 3 minutes

\* 2019/297:04:29:07.0000 TEP data collection Grid 8 Duration 3 minutes

\* 2019/297:04:52:41.0000 TEP data collection Grid 331 Duration 3 minutes

\* 2019/297:06:07:39.0000 AMCS Cal over open ocean Duration 2 minutes

- \* 2019/297:07:30:34.0000 Setting up for Rx Alg Test of V9 parameters Duration 2 minutes
- 2019/297:07:32:26.0000 ATLAS Receiver Algorithm V9 test Duration 2880 minutes
- \* 2019/297:07:41:56.0000 AMCS Cal over open ocean Duration 2 minutes
- \* 2019/297:08:04:59.0000 TEP data collection Grid 399 Duration 3 minutes
- 2019/297:09:13:33.0000 OCEANscan Duration 22 minutes
- \* 2019/297:10:55:33.0000 TEP data collection Grid 179 Duration 3 minutes
- \* 2019/297:11:13:49.0000 TEP data collection Grid 430 Duration 3 minutes
- \* 2019/297:12:32:27.0000 TEP data collection Grid 212 Duration 3 minutes
- \* 2019/297:12:37:39.0000 TEP data collection Grid 284 Duration 3 minutes
- \* 2019/297:14:01:31.0000 TEP data collection Grid 138 Duration 3 minutes
- \* 2019/297:14:11:57.0000 TEP data collection Grid 282 Duration 3 minutes
- \* 2019/297:14:15:08.0000 TEP data collection Grid 317 Duration 3 minutes
- \* 2019/297:15:48:50.0000 TEP data collection Grid 315 Duration 3 minutes
- \* 2019/297:17:05:43.0000 TEP data collection Grid 61 Duration 3 minutes
- \* 2019/297:17:17:55.0000 TEP data collection Grid 241 Duration 3 minutes
- \* 2019/297:18:44:23.0000 TEP data collection Grid 131 Duration 3 minutes
- 2019/297:19:26:21.0000 OCEANscan Duration 22 minutes
- \* 2019/297:20:10:48.0000 TEP data collection Grid 21 Duration 3 minutes
- \* 2019/297:20:34:19.0000 TEP data collection Grid 344 Duration 3 minutes
- \* 2019/297:22:10:03.0000 TEP data collection Grid 378 Duration 3 minutes
- \* 2019/297:23:27:15.0000 TEP data collection Grid 124 Duration 3 minutes
- \* 2019/297:23:32:28.0000 TEP data collection Grid 196 Duration 3 minutes
- \* 2019/297:23:39:11.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
- \* 2019/298:01:13:28.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
- \* 2019/298:02:41:03.0000 TEP data collection Grid 191 Duration 3 minutes
- \* 2019/298:02:50:41.0000 TEP data collection Grid 335 Duration 3 minutes
- \* 2019/298:04:28:23.0000 TEP data collection Grid 368 Duration 3 minutes
- \* 2019/298:05:43:19.0000 AMCS Cal over open ocean Duration 2 minutes
- 2019/298:07:13:36.0000 OCEANscan Duration 22 minutes
- \* 2019/298:08:50:34.0000 AMCS Cal over open ocean Duration 2 minutes
- \* 2019/298:13:27:59.0000 TEP data collection Grid 31 Duration 3 minutes
- \* 2019/298:15:20:35.0000 TEP data collection Grid 280 Duration 3 minutes
- \* 2019/298:16:54:52.0000 TEP data collection Grid 277 Duration 3 minutes
- 2019/298:19:00:41.0000 OCEANscan Duration 22 minutes
- \* 2019/298:20:03:27.0000 TEP data collection Grid 273 Duration 3 minutes
- \* 2019/298:20:08:05.0000 TEP data collection Grid 345 Duration 3 minutes
- \* 2019/298:21:27:18.0000 TEP data collection Grid 127 Duration 3 minutes
- \* 2019/299:00:47:49.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
- \* 2019/299:02:12:47.0000 TEP data collection Grid 156 Duration 3 minutes
- \* 2019/299:03:39:10.0000 TEP data collection Grid 46 Duration 3 minutes
- \* 2019/299:03:57:30.0000 TEP data collection Grid 297 Duration 3 minutes
- \* 2019/299:05:32:00.0000 AMCS Cal over open ocean Duration 2 minutes
- \* 2019/299:06:50:37.0000 AMCS Cal over open ocean Duration 2 minutes
- \* 2019/299:07:30:34.0000 Cleaning up after Rx Alg Test of V9 parameters Duration 2 minutes

2019/299:08:22:14.0000 OCEANscan Duration 22 minutes  
\* 2019/299:10:09:27.0000 TEP data collection Grid 252 Duration 3 minutes  
\* 2019/299:11:30:40.0000 TEP data collection Grid 70 Duration 3 minutes  
\* 2019/299:11:51:33.0000 TEP data collection Grid 357 Duration 3 minutes  
\* 2019/299:14:44:29.0000 TEP data collection Grid 137 Duration 3 minutes  
\* 2019/299:16:13:32.0000 TEP data collection Grid 63 Duration 3 minutes  
\* 2019/299:16:39:11.0000 TEP data collection Grid 422 Duration 3 minutes  
\* 2019/299:17:58:17.0000 TEP data collection Grid 204 Duration 3 minutes  
\* 2019/299:18:03:30.0000 TEP data collection Grid 276 Duration 3 minutes  
2019/299:20:09:19.0000 OCEANscan Duration 22 minutes  
\* 2019/299:20:56:24.0000 TEP data collection Grid 56 Duration 3 minutes  
\* 2019/299:21:21:23.0000 TEP data collection Grid 415 Duration 3 minutes  
\* 2019/299:22:41:09.0000 TEP data collection Grid 197 Duration 3 minutes  
\* 2019/300:00:10:13.0000 TEP data collection Grid 123 Duration 3 minutes  
\* 2019/300:00:22:09.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
2019/300:06:22:17.0000 OCEANscan Duration 22 minutes  
2019/300:08:00:00.0000 Laser window dump Duration 2 minutes  
\* 2019/300:08:10:01.0000 AMCS Cal over open ocean Duration 2 minutes  
\* 2019/300:09:33:26.0000 AMCS Cal over open ocean Duration 2 minutes  
\* 2019/300:09:51:36.0000 TEP data collection Grid 360 Duration 3 minutes  
\* 2019/300:14:21:26.0000 TEP data collection Grid 173 Duration 3 minutes  
\* 2019/300:14:34:28.0000 TEP data collection Grid 353 Duration 3 minutes  
\* 2019/300:17:43:03.0000 TEP data collection Grid 348 Duration 3 minutes  
\* 2019/300:18:56:45.0000 Put laser in ARM mode for LCA20 25544 (ISS) 27-Oct-2019 18:57:00  
Duration 1 minute  
2019/300:19:43:39.0000 OCEANscan Duration 22 minutes  
\* 2019/300:23:56:29.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
\* 2019/301:05:59:18.0000 AMCS Cal over open ocean Duration 2 minutes  
2019/301:07:30:54.0000 OCEANscan Duration 22 minutes  
\* 2019/301:09:07:52.0000 AMCS Cal over open ocean Duration 2 minutes  
2019/301:09:11:13.0000 TOO TOOid=1180 Duration 2 minutes  
\* 2019/301:09:14:33.0000 AMCS Cal over open ocean Duration 2 minutes  
^ 2019/301:11:09:37.0000 DMU030 Duration 60 minutes  
2019/301:19:18:00.0000 OCEANscan Duration 22 minutes  
\* 2019/301:23:30:50.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
\* 2019/302:01:05:07.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
\* 2019/302:02:30:06.0000 TEP data collection Grid 155 Duration 3 minutes  
\* 2019/302:05:33:39.0000 AMCS Cal over open ocean Duration 2 minutes  
2019/302:07:05:15.0000 OCEANscan Duration 22 minutes  
\* 2019/302:08:42:13.0000 AMCS Cal over open ocean Duration 2 minutes  
2019/302:18:52:21.0000 OCEANscan Duration 22 minutes  
2019/302:23:09:37.0000 TOO TOOid=1179 Duration 2 minutes  
\* 2019/303:00:39:28.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
\* 2019/303:05:21:42.0000 AMCS Cal over open ocean Duration 2 minutes

\* 2019/303:06:42:17.0000 AMCS Cal over open ocean Duration 2 minutes  
2019/303:08:13:54.0000 OCEANscan Duration 22 minutes  
2019/303:20:00:59.0000 OCEANscan Duration 22 minutes