ICESat-2 PROJECT SCIENCE OFFICE REPORT
Monday, January 6, 2020 thru Sunday, January 12, 2019

RGTs spanned: 158-264
Cycle 6

Items of Note:
All ATLAS housekeeping data is nominal; laser 2 is firing at energy level 4 and in science mode.

Erroneous shapes were reported in the TEP histogram data starting 26 December. Analysis determined the cause to be a repetition of the PCE2 start timing error that also occurred on 7 November, in which the Leading Lower and Trailing Upper start times were swapped. Tolerance values for start timing parameters in the routine screening process of the ATL02 QA parameters have been adjusted to trigger on the erroneous values and not trigger on correct values. Modifications to the ATL02 code to detect and correct this swap have been tested, and the decision has been made to put in as a fix to Release 002, rather than waiting for Release 003. SIPS started preparations for the Atlas_L1B hotfix to handle this error.

NSIDC ICESat-2 Metrics through January 12: 1,444* total users of 10 available data products; 2,745,865 sciences files downloaded. ATL03 is in the lead with 593 unique users of 428,986 files downloaded. ATL08 is in a close second with 570 unique users and 956,397 files downloaded, and ATL06 is in third place with 410 unique users and 1,140,476 files downloaded.

* The NSIDC data support folks are now reporting the number of NASA Earthdata users downloading ICESat-2 data, instead of unique web hosts (hence the seemingly lower number of data users).

ELEMENT DETAILS BELOW

CAMS/POD:
CAMS: Regular CAMS operations: constraint and conjunction monitoring for MW069 and MW070 and mission planning for MW071.
CAMS continues to target mooring at 36.0259 lat, -125.105 lon per the science team request.
CAMS is currently monitoring HIE event with ISS (25544) for DoY011 (MW070).

POD: Regular POD operations continue. Intermediate POD was completed for GPS week 2086. Final POD was completed for GPS week 2084. 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: 1.209
Laser 2 Temperature Error: -0.20C
SADA in SAILBOAT Mode

Spacecraft orientation: + X

Mission Planning:
MW70 ATS is loaded to the spacecraft and currently operating
MW71 is being planned, nominal calibrations
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Activities during the past week:

Real-time activities:

Executed sCAR323 2020/009 to raise the telescope primary and secondary temperature setpoints. (note 1)
Ran sCAR91 and sCAR102 to clear routine SBS, SXP errors

ATS activities:

Routine Instrument calibrations, Ocean scans and Vegetation Data collection.

Other Activities:

Prepared CAR 477 to reset ATLAS PCE2 to clear an anomalous condition (note 1)

ISF discussed the results of the December ATLAS science activities with the PSO and ASET 2020/009, including a shift in the observed AMCS bias that corresponds to a general warming of ATLAS in the weeks before and after the new year.

ESMO Monthly

Near-term activities:
Continuing to work on the ISF tech refresh
Perform TCS failover contingency operations (i.e., fail over to backup server practice)

Notes/Issues:

1) CAR477 resets PCE2 to resolve a recurrence of the ATLAS ARB-001, PCE2 Upper Threshold Crossing Anomaly. CAR477 will be executed 1/15/2020.

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.
- · SIPS started preparations for the Atlas_L1B hotfix to handle the PCE2 anomalous Tx fine counts bytes out-of-order.
  - o The SIPS TRR has been scheduled for Monday, January 13. The plan is to have it in Ops by the end of next week.

ASAS:

ASAS developers are wrapping up top priority issues as identified by their respective ATBD lead for the January 15 code freeze.

The code that fixes PCE2 anomalous Tx fine counts was extracted from the ASAS v5.3 code and inserted into a hotfix (v5.2.1) release of atlas_l1b. This hotfix has been approved by the ASAS CCB for testing and eventual installation into Ops.

A new series of functional test data (ASAS v5.3a3) is being generated over the weekend.

Several L1B fixes were verified and only a small number of issues remain outstanding.

A significant amount of work has gone into verifying the ATL03 podppd_flag (derived from ANC04/05 degrade periods.) Final wrapup on this work will be checking the results of the ongoing functional test. Results from the saturation fraction algorithm will be also verified with the functional test data.

The L2A/B Atmosphere developer is working on the layer confidence flag and cal method 3. New ATL04s/ATL09s (without the in-work changes) are being generated during functional testing.

The Atmosphere L3B developer is generating ATL16s and ATL17s to test newly coded parameters.

The Land Ice code is being modified to account for better understanding of the residual histogram surface_window_flag. Once this coding is complete, the generation of sample ALT06s will begin as part of functional testing.

The Land/Veg developer had delivered improvements to the ground-finding algorithm and test ATL08s are being generated in functional testing.

The sea ice/freeboard has delivered improvements to the ATL10 product and is working on the L3B sea ice products. New ATL07s and ATL10s are being generated during functional testing.

The Land Ice ATL11 L3B code is being modified to work in a production environment. The developer is working on getting the correct Python environment set up on the Adapt cluster.

The inland water developer is working on first photon bias. Improved inland water masks and shapefiles are being used to generate new ATL13s during functional testing.

The ocean developer is working on removing the effects of sub-wavecrest returns. New ATL12s (without the in-work changes) are being generated during functional testing.

ASAS plans to deliver the post-freeze v953 test data to SCF by the end of January.

SCF:
The SCF is operating nominally. Data for releases 002 and R002 are being ingested and distributed. The next batch of data (about Sep. 5 to Nov. 7) is expected to arrive in the next few weeks. A bug fix for the Subsetter has been put into operations, and the Visualizer code has been updated internally to version 7.3. A file listing the current SCF data holdings is attached.

* Data Management -- Subscriptions are current, and disk space has been freed up for the next batch of data, which required deleting some rapid data products. While we await the finals to replace them, there will be a gap of ~2 months in the SCF's holdings. A second server on which SDMS can be run is expected to become available in about a month, after SIPS transitions to their new hardware.

* Subsetter -- A fix for the ATL08 subsetting subscription failures from a few weeks ago has been developed, tested, and placed into operations. The affected files were then rerun successfully. A user notified us of receiving more files than expected for an ATL09 subsetting subscription. The cause has been identified, and a fix to prevent delivery of effectively empty files is being developed. We hope to have an update ready for operations next week.

* Visualizer -- Internally, the visualizer was updated to v7.2 and then v7.3. The v7.2 update improved notifications related to reading setup files, and v7.3 fixes some bugs with the simultaneous paging feature added in v7.1. Work continues on high priority issues.

ATL02/Instrument Science:
A ray tracing analysis by Luis Ramos-Izquierdo (at the request of Christopher Field) has identified the source of the prominent "afterpulses" that appear with very long integration times, or very strong returns. These pulses come from stay reflections in the ATLAS receiver, between various anti-reflection coated surfaces and the the detector surface. The ray trace shows extra pulses in the same locations, with the same relative magnitude, as are observed in the I&T data and on-orbit data. The intensity threshold for continuing to trace a ray had to be lowered by orders of magnitude from its usual value to reveal these extra pulses.

Erroneous shapes were reported in the TEP histogram data starting 26 December. Analysis determined the cause to be a repetition of the PCE2 start timing error that also occurred on 7 November, in which the Leading Lower and Trailing Upper start times were swapped. Tolerance values for start timing parameters in the routine screening process of the ATL02 QA parameters have been adjusted to trigger on the erroneous values and not trigger on correct values. Modifications to the ATL02 code to detect and correct this swap have been tested, and the decision has been made to put the in as a fix to Release 002, rather than waiting for Release 003. Once the modification is in place, QA screening will detect a flag that will be set when the ATL02 software detects and corrects the error, as the start timing parameters will no longer be erroneous.

In addition, work continues on:

- Simulating the effect of "slips" and "swaps" in the timing data

- Investigating the mechanism of "jumps" in the TEP TOF

- 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.

ATL03:
Work continues on verifying parameters for rel003, specifically the percent of granule geolocation segments with the absolute difference between reference photon height and DEM height exceeding a threshold being reported as a QA metric to quickly assess ATL03 granule quality.

ISF ACTIVITIES MISSION WEEK 070:

* Not in science mode
^ Could affect science data quality

* 2020/009:02:11:31.0000 TEP data collection Grid 420 Duration 3 minutes
* 2020/009:03:15:02.0000 AMCS Cal over open ocean Duration 2 minutes
* 2020/009:03:26:57.0000 TEP data collection Grid 400 Duration 3 minutes
  2020/009:04:35:16.0000 OCEANscan Duration 22 minutes

* 2020/009:05:19:36.0000 TEP data collection Grid 416 Duration 3 minutes
* 2020/009:05:34:39.0000 TEP data collection Grid 199 Duration 3 minutes
* 2020/009:06:59:07.0000 TEP data collection Grid 341 Duration 3 minutes
* 2020/009:08:01:58.0000 TEP data collection Grid 321 Duration 3 minutes
* 2020/009:08:37:17.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2020/009:08:41:14.0000 TEP data collection Grid 230 Duration 3 minutes
  2020/009:09:06:12.0000 TOO PID ISF11 TOOid 1276 RGT 208 offpoint 3.95deg Duration 2 minutes
* 2020/009:09:31:35.0000 TEP data collection Grid 247 Duration 3 minutes
* 2020/009:10:05:56.0000 TEP data collection Grid 372 Duration 3 minutes
  2020/009:10:40:17.0000 TOO PID ISF14 TOOid 1276 RGT 209 offpoint 0.01deg Duration 2 minutes
* 2020/009:11:05:54.0000 TEP data collection Grid 245 Duration 3 minutes
  2020/009:12:14:21.0000 TOO PID ISF16 TOOid 1276 RGT 210 offpoint 0.23deg Duration 2 minutes
* 2020/009:12:42:14.0000 TEP data collection Grid 278 Duration 3 minutes
* 2020/009:13:13:39.0000 TEP data collection Grid 368 Duration 3 minutes
* 2020/009:13:18:53.0000 TEP data collection Grid 296 Duration 3 minutes
  2020/009:13:48:53.0000 TOO PID ISF17 TOOid 1277 RGT 211 offpoint 0.11deg Duration 2 minutes
* 2020/009:14:50:46.0000 AMCS Cal over open ocean Duration 2 minutes
  2020/009:15:22:57.0000 TOO PID ISF21 TOOid 1277 RGT 212 offpoint 0.13deg Duration 2 minutes
  2020/009:16:22:21.0000 OCEANscan Duration 22 minutes
  2020/009:16:57:02.0000 TOO PID ISF24 TOOid 1277 RGT 213 offpoint 4.29deg Duration 2 minutes
* 2020/009:17:23:08.0000 TEP data collection Grid 235 Duration 3 minutes
* 2020/009:17:59:20.0000 AMCS Cal over open ocean Duration 2 minutes
^ 2020/009:18:26:55.0000 DMU37 Duration 55 minutes
* 2020/009:19:43:25.0000 TEP data collection Grid 214 Duration 3 minutes
* 2020/009:20:37:34.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2020/009:20:44:08.0000 TEP data collection Grid 410 Duration 3 minutes
* 2020/009:21:07:43.0000 TEP data collection Grid 356 Duration 3 minutes
  2020/010:02:05:00.0000 Stellar window dump Duration 90 minutes
  2020/010:04:09:36.0000 OCEANscan Duration 22 minutes
* 2020/010:05:09:17.0000 TEP data collection Grid 200 Duration 3 minutes
* 2020/010:09:43:33.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
* 2020/010:09:47:15.0000 TEP data collection Grid 265 Duration 3 minutes
  2020/010:10:14:41.0000 TOO PID ISF44 TOOid 1276 RGT 224 offpoint 0.60deg Duration 2 minutes
* 2020/010:11:16:20.0000 TEP data collection Grid 335 Duration 3 minutes
  2020/010:11:48:45.0000 TOO PID ISF46 TOOid 1276 RGT 225 offpoint 0.22deg Duration 2 minutes
* 2020/010:12:46:10.0000 TEP data collection Grid 404 Duration 3 minutes

* 2020/010:12:50:37.0000 TEP data collection Grid 332 Duration 3 minutes

2020/010:13:22:50.0000 TOO PID ISF48 TOOid 1276 RGT 226 offpoint 3.19deg Duration 2 minutes

* 2020/010:14:25:07.0000 AMCS Cal over open ocean Duration 2 minutes

2020/010:14:57:21.0000 TOO PID ISF51 TOOid 1277 RGT 227 offpoint 0.27deg Duration 2 minutes

2020/010:15:56:42.0000 OCEANscan Duration 22 minutes

2020/010:16:31:26.0000 TOO PID ISF55 TOOid 1277 RGT 228 offpoint 2.93deg Duration 2 minutes

* 2020/010:17:33:41.0000 AMCS Cal over open ocean Duration 2 minutes

* 2020/010:18:32:05.0000 TEP data collection Grid 234 Duration 3 minutes

* 2020/010:20:11:55.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes

2020/011:00:55:21.0000 TOO PID ISF68 TOOid 1273 RGT 234 offpoint 4.97deg Duration 2 minutes

* 2020/011:02:24:52.0000 AMCS Cal over open ocean Duration 2 minutes

2020/011:03:43:57.0000 OCEANscan Duration 22 minutes

* 2020/011:05:33:31.0000 AMCS Cal over open ocean Duration 2 minutes

* 2020/011:09:17:53.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes

2020/011:09:49:05.0000 TOO PID ISF82 TOOid 1276 RGT 239 offpoint 1.43deg Duration 2 minutes

2020/011:11:23:09.0000 TOO PID ISF86 TOOid 1276 RGT 240 offpoint 0.41deg Duration 2 minutes

* 2020/011:12:24:58.0000 TEP data collection Grid 333 Duration 3 minutes

2020/011:12:57:40.0000 TOO PID ISF88 TOOid 1277 RGT 241 offpoint 1.62deg Duration 2 minutes

2020/011:13:59:06.0000 LCA27 negative 5 degree slew to mitigate 25544 (ISS) 11-Jan-2020 14:01:47 Duration 3 minutes

2020/011:14:31:45.0000 TOO PID ISF91 TOOid 1277 RGT 242 offpoint 0.42deg Duration 2 minutes

2020/011:15:31:03.0000 OCEANscan Duration 22 minutes

2020/011:16:05:50.0000 TOO PID ISF95 TOOid 1277 RGT 243 offpoint 1.79deg Duration 2 minutes

* 2020/011:17:08:02.0000 AMCS Cal over open ocean Duration 2 minutes

2020/011:18:31:51.0000 RTWscan Duration 90 minutes

* 2020/011:21:18:10.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes

* 2020/011:23:36:55.0000 TEP data collection Grid 172 Duration 3 minutes

* 2020/012:01:59:47.0000 AMCS Cal over open ocean Duration 2 minutes

2020/012:02:04:47.0000 TOO PID ISF107 TOOid 1189 RGT 250 offpoint 0.33deg Duration 2 minutes

2020/012:03:18:18.0000 OCEANscan Duration 22 minutes

* 2020/012:05:08:26.0000 AMCS Cal over open ocean Duration 2 minutes

* 2020/012:07:28:28.0000 TEP data collection Grid 160 Duration 3 minutes

* 2020/012:08:52:14.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes

* 2020/012:09:01:09.0000 TEP data collection Grid 194 Duration 3 minutes

2020/012:09:23:28.0000 TOO PID ISF118 TOOid 1276 RGT 254 offpoint 2.49deg Duration 2 minutes

2020/012:10:57:33.0000 TOO PID ISF122 TOOid 1276 RGT 255 offpoint 0.36deg Duration 2 minutes

* 2020/012:12:09:44.0000 TEP data collection Grid 189 Duration 3 minutes

2020/012:12:31:38.0000 TOO PID ISF125 TOOid 1276 RGT 256 offpoint 1.04deg Duration 2 minutes

2020/012:14:06:09.0000 TOO PID ISF128 TOOid 1277 RGT 257 offpoint 0.31deg Duration 2 minutes

* 2020/012:15:08:06.0000 AMCS Cal over open ocean Duration 2 minutes

2020/012:15:40:13.0000 TOO PID ISF132 TOOid 1277 RGT 258 offpoint 0.89deg Duration 2 minutes

2020/012:16:39:41.0000 OCEANscan Duration 22 minutes

* 2020/012:20:52:31.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes

* 2020/013:02:20:10.0000 TEP data collection Grid 168 Duration 3 minutes

* 2020/013:03:09:02.0000 AMCS Cal over open ocean Duration 2 minutes

2020/013:04:26:56.0000 OCEANscan Duration 22 minutes

* 2020/013:08:26:35.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes

2020/013:08:57:52.0000 TOO PID ISF159 TOOid 1276 RGT 269 offpoint 3.77deg Duration 2 minutes

2020/013:10:31:57.0000 TOO PID ISF163 TOOid 1276 RGT 270 offpoint 0.04deg Duration 2 minutes

2020/013:12:06:27.0000 TOO PID ISF166 TOOid 1277 RGT 271 offpoint 4.06deg Duration 2 minutes

2020/013:13:40:07.0000 TOO PID ISF169 TOOid 1276 RGT 272 offpoint 4.82deg Duration 2 minutes

* 2020/013:14:42:26.0000 AMCS Cal over open ocean Duration 2 minutes

2020/013:15:14:37.0000 TOO PID ISF173 TOOid 1277 RGT 273 offpoint 0.21deg Duration 2 minutes

2020/013:16:14:02.0000 OCEANscan Duration 22 minutes

2020/013:16:48:43.0000 TOO PID ISF176 TOOid 1277 RGT 274 offpoint 4.50deg Duration 2 minutes

* 2020/013:17:50:20.0000 AMCS Cal over open ocean Duration 2 minutes

* 2020/013:20:26:52.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes

* 2020/014:02:43:57.0000 AMCS Cal over open ocean Duration 2 minutes

2020/014:04:01:17.0000 OCEANscan Duration 22 minutes

* 2020/014:05:02:38.0000 TEP data collection Grid 164 Duration 3 minutes

* 2020/014:08:00:56.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes

* 2020/014:09:37:36.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes

2020/014:10:06:21.0000 TOO PID ISF204 TOOid 1276 RGT 285 offpoint 0.52deg Duration 2 minutes

2020/014:11:40:25.0000 TOO PID ISF207 TOOid 1276 RGT 286 offpoint 0.16deg Duration 2 minutes

2020/014:13:14:57.0000 TOO PID ISF210 TOOid 1277 RGT 287 offpoint 0.65deg Duration 2 minutes

* 2020/014:14:16:47.0000 AMCS Cal over open ocean Duration 2 minutes

2020/014:14:49:01.0000 TOO PID ISF214 TOOid 1277 RGT 288 offpoint 0.22deg Duration 2 minutes

2020/014:15:48:23.0000 OCEANscan Duration 22 minutes

2020/014:16:23:06.0000 TOO PID ISF218 TOOid 1277 RGT 289 offpoint 3.12deg Duration 2 minutes

* 2020/014:17:25:22.0000 AMCS Cal over open ocean Duration 2 minutes

* 2020/014:21:36:23.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes

* 2020/015:02:18:52.0000 AMCS Cal over open ocean Duration 2 minutes

2020/015:03:35:38.0000 OCEANscan Duration 22 minutes

* 2020/015:05:27:31.0000 AMCS Cal over open ocean Duration 2 minutes

* 2020/015:09:11:57.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes

2020/015:09:40:45.0000 TOO PID ISF246 TOOid 1276 RGT 300 offpoint 1.32deg Duration 2 minutes

2020/015:11:14:49.0000 TOO PID ISF250 TOOid 1276 RGT 301 offpoint 0.39deg Duration 2 minutes

2020/015:11:40:00.0000 Laser window dump Duration 2 minutes

2020/015:12:48:54.0000 TOO PID ISF252 TOOid 1276 RGT 302 offpoint 2.17deg Duration 2 minutes

* 2020/015:13:51:08.0000 AMCS Cal over open ocean Duration 2 minutes

2020/015:14:23:25.0000 TOO PID ISF255 TOOid 1277 RGT 303 offpoint 0.39deg Duration 2 minutes

2020/015:15:22:43.0000 OCEANscan Duration 22 minutes

2020/015:15:57:30.0000 TOO PID ISF259 TOOid 1277 RGT 304 offpoint 1.95deg Duration 2 minutes

* 2020/015:16:59:42.0000 AMCS Cal over open ocean Duration 2 minutes

2020/015:18:23:31.0000 RTWscan Duration 90 minutes