

ICESat-2 PROJECT SCIENCE OFFICE REPORT

Monday, November 18, 2019 thru Sunday, November 24, 2019

RGTs spanned: 796-902

Cycle 5

Items of Note:

All ATLAS housekeeping data is nominal; laser 2 is firing at energy level 4 and in science mode. SIPS distributed the Batch #4 (July 26–Sept 03) Release 002 ATL03, ATL04, ATL06, ATL07, ATL08, ATL09, ATL10, and ATL12 products to NSIDC with the appropriate holds applied. Evaluation of data collected between July 9-26 continues among the science team and PSO to determine the viability of the data affected by the TAI-GPS offset.

Following up on a strange return, an anomaly was found in the Trailing Upper start time reported by ATLAS. The anomaly was cleared November 25 by resetting PCE2. The data affected from November 7 to November 25, have incorrect time-of-flight values in ATL02. The error is correctable, and will be corrected in a future processing of the data.

[Photon Phriday](#) this week featured a neat comparison of ICESat-2 atmospheric data (ATL09) and data collected by the Cloud Physics Lidar onboard the ER-2 aircraft. Both sensors observed the same area of the Pacific Ocean at the same time, and captured smoke from this fall's fires in Sonoma County, CA. Check it out!

Have a wonderful and safe Thanksgiving!!

****ELEMENT DETAILS BELOW****

CAMS/POD:

CAMS: Regular CAMS operations: constraint and conjunction monitoring for MW062 and MW063 and mission planning for MW064.

CAMS recommended Laser ARM for HIE event with 43556 for doy322(MW062) that self-mitigated.

CAMS also recommended a Laser ARM for HIE event with 43723 for doy324(MW62).

CAMS continues to target the moorings at 36.0259 lat, -125.105 lon per the Science Team request.

POD: Regular POD operations continue. Intermediate POD was completed for GPS week 2079. Final POD was completed for GPS week 2077. 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: 1.199

Laser 2 Temperature Error: -0.29C
SADA in SAILBOAT Mode
Spacecraft orientation: + X

Mission Planning:

MW63 ATS is loaded to the spacecraft and currently operating.
MW64 is being planned, nominal calibrations , RTW scans following OIB

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Activities during the past week:

Real-time activities:

sCAR166 to raise the VBG temperature (note 1)  
CAR452 to adjust the SPD threshold crossing voltages (note 2)  
CAR91 and CAR102 to clear routine SBS and SXP errors

ATS activities:

Routine Instrument calibrations, Ocean scans and Vegetation Data collection.  
DMU33 : 2019/325:15:49 (2019/11/21)

Other Activities:

Prepared CAR 454 to reset ATLAS PCE2 to clear an anomalous condition (note 3)  
Prepared a mini ATS to mitigate HIE18 41962 (FLOCK 3P 17)with Laser to ARM mode. The HIE self-mitigated and the mini ATS was not loaded.

Near-term activities:

Continuing to work on the ISF tech refresh - schedule dates for testing to be provided.  
Perform TCS failover contingency operations (i.e., fail over to backup server practice)  
DVESTO A&A Audit Debrief, no ATLAS ISF issues.

Notes/Issues:

1. The VBG temperature setpoint was raised 0.03 deg to bring the WTEM peak to edge ratio back to the desired 1.2.
2. The SPD Upper threshold was raised to 65 millivolts for approximately 3 days (4335 mins), as part of the investigation of ATLAS ARB-001, PCE2 Upper Threshold Crossing Anomaly.
3. CAR454 resets PCE2 to resolve ATLAS ARB-001, PCE2 Upper Threshold Crossing Anomaly. These steps were run successfully Monday 11/25/19, (2019/329) and PCE2 is functioning nominally once more.

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, ATL06, ATL07, ATL08, ATL09, and ATL10 using ANC03/04/05 files from the CAMS.
  - Distributed the rapid Science Data products to the SCF.
- Successfully ingested L0 data from the newly transitioned EDOS C8.1 system.
- Generated rapid ATL01 and ATL02 products for 2019/326 12:00:00-14:00:00 to help evaluate the results for the updated SPD upper threshold event. The data was distributed to the ISF and SCF.
- Completed processing and distribution of Release 002 L2A and L3A data products from July 9-25 to the SCF and Cooler.
- Distributed the Batch #4 (July 26–Sept 03) Release 002 ATL03, ATL04, ATL06, ATL07, ATL08, ATL09, ATL10 and ATL12 products to NSIDC with the appropriate holds applied.

### **ASAS:**

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

ASAS provided support in investigating and resolving the PCE2 anomaly and is providing support towards the analysis of range bias data.

L1B work involves improving the reported QA and testing the modified receiver sensitivity equation.

L2/L3 atmosphere work continues with the interpolation of CAL method 3 and DDA ground detection.

ATL03 work is focused on verifying the POD/PPD degrade flags and (in the background) improved signal classification.

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

The Land Ice code is being tested to verify the atmosphere flags read from ATL09.

The Land/Veg developer is adding flags to identify data availability issues regarding terrain/canopy.

The sea ice/freeboard is working on TEP removal, fixing NaNs in ATL10 and the L3B products.

The Land Ice ATL11 L3B code is being modified to work in a production environment. The developer has submitted changes to the ATL11 repository.

The inland water developer is working on EM Bias updates.

The ocean developer continues the redesign of the ocean manager.

### **SCF:**

The SCF is operating nominally. Data for releases 002 and R002 are being ingested and distributed. All subscriptions have caught up and are current. The next batch of data from SIPS is expected to arrive at the SCF in early December. A file listing the current SCF data holdings is attached.

\* Data Management -- Two recent hold/publish requests failed because "filename=" lines omitted the file name. The issue was resolved by removing these lines from the requests and rerunning them. Further edits to the code were made in the testing environment to handle this case and appear to be working as expected, but additional tests may be needed before the code is ready for operations. The design document is being reviewed and updated as needed.

\* Subsetter -- The issue reported last week, of jobs failing likely due to simultaneous access of the input file, was resolved by rerunning the failed jobs. Such failures have not reoccurred and appear to be rare, so we are monitoring the situation.

\* Visualizer -- Updates for v7.0 of the testing document have been completed. Work continues on updating the design document for v7.0 of the software.

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

Investigating the frequency and circumstances of "Did not finish" events, in which the data from a 200-shot major frame is truncated due to a data "traffic jam" within ATLAS, Katie Gosmeyer has found that high rates of DNF events occur mostly in areas with high relief: the Himalayas, the Andes, and the Antarctic Peninsula. Apparently it is a matter of total number rather than density.

Following up on a strange return, an anomaly was found in the Trailing Upper start time reported by ATLAS. The anomaly was cleared November 25 by resetting PCE2. The data affected from November 7 to November 25, have incorrect time-of-flight values in ATL02. The error is correctable, and will be corrected in a future processing of the data.

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:**

New parameters planned for rel003 include a QA parameter indicating the percent of granule geolocation segments with the absolute difference between reference photon height and DEM height exceeding a threshold and a flag on the actual product indicating whether or not photons resulting from saturation are likely present in a particular granule or geolocation segment. Analyses continue of comparing across-track error computed by Northrup Grumman and observed biases in ATL03 data compared to the geoid at GPS data collected at 88S.

### **ISF ACTIVITIES MISSION WEEK 063:**

\* Not in science mode

^ Could affect science data quality

\* 2019/325:00:36:42.0000 TEP data collection Grid 228 Duration 3 minutes

\* 2019/325:00:47:08.0000 TEP data collection Grid 372 Duration 3 minutes

\* 2019/325:02:18:49.0000 TEP data collection Grid 333 Duration 3 minutes

\* 2019/325:02:24:03.0000 TEP data collection Grid 405 Duration 3 minutes

\* 2019/325:05:09:20.0000 AMCS Cal over open ocean Duration 2 minutes

\* 2019/325:05:30:53.0000 TEP data collection Grid 364 Duration 3 minutes

2019/325:06:40:56.0000 OCEANscan Duration 22 minutes

2019/325:08:10:00.0000 Stellar window dump Duration 90 minutes

\* 2019/325:09:46:43.0000 TEP data collection Grid 35 Duration 3 minutes

\* 2019/325:09:54:37.0000 TEP data collection Grid 142 Duration 3 minutes

\* 2019/325:10:11:35.0000 TEP data collection Grid 394 Duration 3 minutes

\* 2019/325:11:34:07.0000 TEP data collection Grid 212 Duration 3 minutes

\* 2019/325:12:55:20.0000 TEP data collection Grid 30 Duration 3 minutes

\* 2019/325:13:25:11.0000 TEP data collection Grid 424 Duration 3 minutes

\* 2019/325:14:32:15.0000 TEP data collection Grid 63 Duration 3 minutes

\* 2019/325:14:52:13.0000 TEP data collection Grid 351 Duration 3 minutes

\* 2019/325:14:58:22.0000 TEP data collection Grid 422 Duration 3 minutes

^ 2019/325:15:49:44.0000 DMU33 Duration 55 minutes  
\* 2019/325:17:48:41.0000 TEP data collection Grid 166 Duration 3 minutes  
\* 2019/325:18:06:06.0000 TEP data collection Grid 418 Duration 3 minutes  
2019/325:18:28:02.0000 OCEANscan Duration 22 minutes  
\* 2019/325:19:17:44.0000 TEP data collection Grid 92 Duration 3 minutes  
\* 2019/325:19:28:11.0000 TEP data collection Grid 236 Duration 3 minutes  
\* 2019/325:19:32:46.0000 TEP data collection Grid 308 Duration 3 minutes  
\* 2019/325:21:07:41.0000 TEP data collection Grid 305 Duration 3 minutes  
\* 2019/325:22:40:52.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
\* 2019/326:00:03:13.0000 TEP data collection Grid 121 Duration 3 minutes  
\* 2019/326:00:14:01.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
\* 2019/326:01:39:00.0000 TEP data collection Grid 155 Duration 3 minutes  
\* 2019/326:01:58:23.0000 TEP data collection Grid 406 Duration 3 minutes  
\* 2019/326:04:43:40.0000 AMCS Cal over open ocean Duration 2 minutes  
2019/326:06:15:17.0000 OCEANscan Duration 22 minutes  
\* 2019/326:07:52:15.0000 AMCS Cal over open ocean Duration 2 minutes  
\* 2019/326:09:26:21.0000 TEP data collection Grid 107 Duration 3 minutes  
\* 2019/326:09:49:50.0000 TEP data collection Grid 430 Duration 3 minutes  
\* 2019/326:11:21:30.0000 TEP data collection Grid 392 Duration 3 minutes  
\* 2019/326:12:28:27.0000 TEP data collection Grid 31 Duration 3 minutes  
\* 2019/326:12:42:46.0000 TEP data collection Grid 210 Duration 3 minutes  
^ 2019/326:13:20:46.0000 Set SPD Upper threshold to 65 millivolts Duration 4335 minutes  
\* 2019/326:14:11:50.0000 TEP data collection Grid 136 Duration 3 minutes  
\* 2019/326:16:01:46.0000 TEP data collection Grid 349 Duration 3 minutes  
\* 2019/326:16:05:35.0000 TEP data collection Grid 384 Duration 3 minutes  
2019/326:17:02:50.0000 TOO TOOid=1223 Duration 3 minutes  
2019/326:18:02:22.0000 OCEANscan Duration 22 minutes  
\* 2019/326:18:49:28.0000 TEP data collection Grid 57 Duration 3 minutes  
\* 2019/326:19:12:57.0000 TEP data collection Grid 380 Duration 3 minutes  
\* 2019/326:22:15:13.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
\* 2019/326:22:24:09.0000 TEP data collection Grid 411 Duration 3 minutes  
\* 2019/326:23:49:30.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
\* 2019/326:23:58:27.0000 TEP data collection Grid 409 Duration 3 minutes  
\* 2019/327:01:22:17.0000 TEP data collection Grid 263 Duration 3 minutes  
\* 2019/327:02:52:56.0000 TEP data collection Grid 225 Duration 3 minutes  
\* 2019/327:04:19:56.0000 AMCS Cal over open ocean Duration 2 minutes  
2019/327:05:49:38.0000 OCEANscan Duration 22 minutes  
\* 2019/327:07:26:36.0000 AMCS Cal over open ocean Duration 2 minutes  
\* 2019/327:07:49:54.0000 TEP data collection Grid 397 Duration 3 minutes  
\* 2019/327:12:27:31.0000 TEP data collection Grid 354 Duration 3 minutes  
2019/327:13:28:40.0000 TOO TOOid=1224 Duration 3 minutes  
\* 2019/327:14:03:43.0000 TEP data collection Grid 388 Duration 3 minutes  
\* 2019/327:16:52:08.0000 TEP data collection Grid 96 Duration 3 minutes  
2019/327:17:36:43.0000 OCEANscan Duration 22 minutes

- \* 2019/327:18:45:42.0000 TEP data collection Grid 344 Duration 3 minutes
- \* 2019/327:20:00:43.0000 TEP data collection Grid 91 Duration 3 minutes
- \* 2019/327:21:34:52.0000 TEP data collection Grid 89 Duration 3 minutes
- \* 2019/327:23:17:08.0000 TEP data collection Grid 194 Duration 3 minutes
- \* 2019/327:23:23:51.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
- \* 2019/328:04:08:41.0000 AMCS Cal over open ocean Duration 2 minutes
- \* 2019/328:05:26:39.0000 AMCS Cal over open ocean Duration 2 minutes
- 2019/328:06:58:16.0000 OCEANscan Duration 22 minutes
- \* 2019/328:08:42:52.0000 TEP data collection Grid 216 Duration 3 minutes
- \* 2019/328:15:13:04.0000 TEP data collection Grid 386 Duration 3 minutes
- \* 2019/328:16:23:52.0000 TEP data collection Grid 60 Duration 3 minutes
- \* 2019/328:16:39:32.0000 TEP data collection Grid 276 Duration 3 minutes
- \* 2019/328:16:43:42.0000 TEP data collection Grid 348 Duration 3 minutes
- 2019/328:18:45:21.0000 OCEANscan Duration 22 minutes
- \* 2019/328:19:32:26.0000 TEP data collection Grid 56 Duration 3 minutes
- \* 2019/328:22:50:00.0000 TEP data collection Grid 158 Duration 3 minutes
- \* 2019/328:22:58:11.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
- \* 2019/329:05:01:00.0000 AMCS Cal over open ocean Duration 2 minutes
- 2019/329:06:32:36.0000 OCEANscan Duration 22 minutes
- \* 2019/329:08:09:34.0000 AMCS Cal over open ocean Duration 2 minutes
- \* 2019/329:13:36:00.0000 Reboot PCE2 CAR 454 Duration 270 minutes
- \* 2019/329:16:16:29.0000 TEP data collection Grid 312 Duration 3 minutes
- 2019/329:18:19:42.0000 OCEANscan Duration 22 minutes
- 2019/329:19:46:13.0000 RTWscan Duration 90 minutes
- \* 2019/329:22:32:32.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
- \* 2019/330:04:35:20.0000 AMCS Cal over open ocean Duration 2 minutes
- 2019/330:06:06:57.0000 OCEANscan Duration 22 minutes
- \* 2019/330:07:43:55.0000 AMCS Cal over open ocean Duration 2 minutes
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- \* 2019/330:23:41:10.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
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- 2019/331:05:41:18.0000 OCEANscan Duration 22 minutes
- \* 2019/331:07:18:16.0000 AMCS Cal over open ocean Duration 2 minutes
- 2019/331:17:28:23.0000 OCEANscan Duration 22 minutes
- 2019/331:19:00:00.0000 Laser window dump Duration 2 minutes
- 2019/331:20:29:11.0000 RTWscan Duration 90 minutes
- \* 2019/331:23:15:30.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes