

ICESat-2 PROJECT SCIENCE OFFICE REPORT
Monday, July 22, 2019 thru Sunday, July 28, 2019

RGTs spanned: 366-472
Cycle 4

Items of Note:

All ATLAS housekeeping data is nominal; laser 2 is firing at energy level 4 and in science mode. POD processed data from the post safe-hold round-the-world scan maneuvers (DoY 193, 195, 196). These gave poor results, as there was little photon data collected during the scan maneuvers. Multiple elements from the PSO investigated the cause of these problems, which ended up being the TAI-UTC time offset error on-board the spacecraft.

NSIDC has been busy serving ICESat-2 data to the general public: to date, there have been 921 users of 10 available data products. More than 539,000 science files have been downloaded by users from 51 different countries. ATLO8 continues to be the winner with 346 users and more than 260,000 files downloaded, followed by ATLO6 with 294 users and 174,000 files downloaded and ATLO3 with 260 users and 68,400 files downloaded.

****ELEMENT DETAILS BELOW****

CAMS/POD/PPD:

CAMS: Regular CAMS operations continue with constraint and conjunction monitoring for Mission Weeks 45 and 46, and mission planning for Mission Week 47.

CAMS performed extensive analysis to determine the probable cause of an onboard error post safe-hold. Impact of the on-board EOP error:

- 1). ATLAS not tracking the RGT.
- 2). Surface returns not being received from the altimeter.
- 3). CAMS unable to model the true pointing/attitude.

Due to the above impact, CAMS removed all VegTracks from the SAT and scheduled all calibration scans to be 1 deg instead of 5 degs for MW046. After the MOC EOP error was fixed on July 25, 2019, CAMS starting preparing a SAT for a MW046 split load ATS. CAMS added additional RTWS in order to have scans Monday – Wednesday (July 29-31) and put all calibration scans back to 5 degs.

CAMS installed the new STK machine this week. CAMS hardware configuration is back to normal OPS.

POD: Regular POD operations continue. Intermediate POD was performed for GPS week 2062. All results appear nominal.

POD processed data from the post safe-hold round-the-world scan maneuvers (DoY 193, 195, 196). These gave poor results, as there was little photon data collected during the scan maneuvers. POD then assisted with the investigation into the cause of these problems, which ended up being the TAI-UTC time offset error on-board the spacecraft.

PPD: PPD is functioning nominally and has delivered ANC05 data through DOY 196. Analysis of the attitude solutions from the star trackers were compared to an attitude solution using LRS data (eclipse) before and after safe hold to help with the investigation into the pointing control anomalies. Those comparisons for DOY 193 showed no significant differences to those prior to safe hold to help confirm that the issue was confined to the rapid ANC05 used by the ACS. The analysis also indicated that the pointing determination remains solid for the airplane solar panel configuration and the outlook looks good for the final ANC05 product input to ATL03.

ISF:

All ATLAS housekeeping data is nominal

Laser 2 is firing at energy level 4 and in science mode

WTEM Peak to Edge Ratio: 1.260

Laser 2 Temperature Error: -0.31C

SADA in Airplane Mode

Spacecraft orientation: - X

Mission Planning:

MW46 ATS is loaded to the spacecraft and currently operating

MW47 is being planned

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**Activities during the past week:**

Real-time activities:

Executed standing CAR405 on contacts 2019/203/15:25, 2019/203/18:46 and 2019/203/20:15 (note 1)

Executed standing CAR407 2019/206/14:08 (note 2)

Executed standing CAR91 2019/206/14:08 to clear routine SBC errors

Supported AS3 recertification tests with the MOC and AS3, 2019/206/13:00 and 207/21:30

ILRS flag set to NOGO during DMU20

**ATS activities:**

DMU20 - 2019/206:15:25:51 (60 minutes)

Routine calibration activities

All activities were nominal with the exception of changing to 1 deg RTW scans 2019/206-208 at the request of CAMS/POD.

Other Activities:

Created a split ATS to add two additional 5 deg RTW scans on 2019/211 and 2019/212 to confirm pointing is now within specifications

Near-term activities:

Monitor results of instrument calibrations and re-calibrate as needed.

The Rx Algorithm V8 parameters load testing will take place at FLATLAS next week.

Reviewing frequency and location of instrument calibrations for impact to atmospheric data collection

Coordinating with PSO to schedule 100 minutes of TEP collection in MW048

Veg tracks to be included in MW048

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Notes/Issues:

1. sCAR405 Investigates and clears ATLAS PCE computer logging errors.
2. sCAR407 Clears the PCE# FM command error counter
3. Continuing Hardware refresh planning - testbed servers are being ordered.

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LTO Schedule:

All items remain on schedule

Third quarter scanning planned for 3rd week in August; RSA maintenance agreements are being renewed

**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 using ANC03/04/05 files from the CAMS.
  - o Distributed ATL03 (rapids) to the SCF.
- All the Release 001 ATL03s for DOY 055-122 are now at the NSIDC.
- SIPS will start staging the PSO approved upper-level products (ATL04, 06, 07, 08, 09, 10, 12, 13) for DOY 055-122 to NSIDC on July 29, 2019.
- ASAS 5.2 has been delivered to the SIPS and is currently undergoing SIPS Integration testing with SDMS V6.16.0.

**ASAS:**

ASAS v5.2 was delivered to SIPS CM for acceptance testing. The v952 test products were delivered to SCF.

A processing error in playground led to ATL07/10s being created with an earlier intermediate version of the software. Reprocessing for ATL07/ATL10 is underway in playground and the updated ATL07/10s will be delivered to SCF, replacing the current v952 ATL07/10s. This error is not present in the ASAS delivery to SIPS and will not affect SIPS testing.

### **SCF:**

The SCF is operating nominally. Data for releases 001 and R001 are being ingested and distributed. Data for the ASAS release 952 has also been ingested and distributed. A change in the ATL08 products for release 952 caused a problem with trending, but a fix is being developed. Integration testing of the Python 3 version of the data management scripts and the Subsetter is underway. A file listing the current SCF data holdings is attached.

\* Data Management -- December 2018 data were deleted to conserve disk space; they are available at NSIDC. Ingest and distribution of ASAS release 952 data went smoothly, but the removal of a dataset in ATL08 caused trending to fail. A fix that uses a different but very similar dataset in its place shows promising results in initial tests. Testing of the Python 3 code has begun, and bugs are being fixed as needed.

\* Subsetter -- Testing of the Python 3 code has begun. Due to changes in the products since the last time such testing was performed, some test cases are being updated and the testing document revised accordingly.

\* Visualizer -- Updating the code to Python 3 continues. Recent efforts focused on getting the granule location map and background images to work correctly when using the Cartopy package.

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

Work has begun on some new efforts:

- Re-analysis of TEP and MA/AT return times of flight during instrument thermal/vacuum testing, using the latest TOF computation methods
- 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.
- Analysis of the time variations of the TEP time of flight, particularly on the orbital time scale.

### **ATL03:**

Evaluation of rapid data products continue following TAI-GPS offset fix and RTW scans.

### **ISF ACTIVITIES MISSION WEEK 046:**

\* Not in science mode

^ Could affect science data quality

2019/206:00:12:00.0000 OCEANscan (22 minutes)

\* 2019/206:02:30:56.0000 TEP data collection for 3 minutes

\* 2019/206:04:05:13.0000 TEP data collection for 3 minutes

^ 2019/206:04:24:50.0000 AMCS Cal for 2 minutes over open ocean

^ 2019/206:10:27:39.0000 AMCS Cal for 2 minutes over open ocean

2019/206:11:59:16.0000 OCEANscan (22 minutes)

^ 2019/206:13:36:14.0000 AMCS Cal for 2 minutes over open ocean

2019/206:15:25:51.0000 DMU20 for 60 minutes

\* 2019/206:18:13:50.0000 TEP data collection for 3 minutes

\* 2019/206:19:48:07.0000 TEP data collection for 3 minutes

\* 2019/206:21:22:25.0000 TEP data collection for 3 minutes

\* 2019/206:22:56:42.0000 TEP data collection for 3 minutes

\* 2019/207:00:31:00.0000 TEP data collection for 3 minutes

\* 2019/207:02:05:17.0000 TEP data collection for 3 minutes

\* 2019/207:03:39:34.0000 TEP data collection for 3 minutes

^ 2019/207:03:59:12.0000 AMCS Cal for 2 minutes over open ocean

\* 2019/207:05:13:52.0000 TEP data collection for 3 minutes

^ 2019/207:05:33:29.0000 AMCS Cal for 2 minutes over open ocean

^ 2019/207:10:03:22.0000 AMCS Cal for 2 minutes over open ocean

2019/207:11:33:37.0000 OCEANscan (22 minutes)

^ 2019/207:13:10:35.0000 AMCS Cal for 2 minutes over open ocean

\* 2019/207:17:48:11.0000 TEP data collection for 3 minutes

\* 2019/207:19:22:29.0000 TEP data collection for 3 minutes

\* 2019/207:20:56:46.0000 TEP data collection for 3 minutes

\* 2019/207:22:31:04.0000 TEP data collection for 3 minutes

2019/207:23:20:43.0000 OCEANscan (22 minutes)

\* 2019/208:00:05:21.0000 TEP data collection for 3 minutes

2019/208:00:55:00.0000 OCEANscan (22 minutes)

\* 2019/208:01:39:38.0000 TEP data collection for 3 minutes

2019/208:02:21:31.0000 RTWscan (90 minutes)

\* 2019/208:04:48:13.0000 TEP data collection for 3 minutes

^ 2019/208:05:07:50.0000 AMCS Cal for 2 minutes over open ocean

^ 2019/208:09:52:03.0000 AMCS Cal for 2 minutes over open ocean

^ 2019/208:11:10:39.0000 AMCS Cal for 2 minutes over open ocean

2019/208:12:42:16.0000 OCEANscan (22 minutes)

\* 2019/208:17:22:32.0000 TEP data collection for 3 minutes

\* 2019/208:18:56:50.0000 TEP data collection for 3 minutes  
\* 2019/208:20:31:07.0000 TEP data collection for 3 minutes  
\* 2019/208:22:05:25.0000 TEP data collection for 3 minutes  
\* 2019/208:23:39:42.0000 TEP data collection for 3 minutes  
^ 2019/209:00:02:00.0000 Stellar centroid window dump for 90 minutes (no stellar centroids)  
\* 2019/209:02:48:17.0000 TEP data collection for 3 minutes  
\* 2019/209:04:22:34.0000 TEP data collection for 3 minutes  
^ 2019/209:04:42:12.0000 AMCS Cal for 2 minutes over open ocean  
^ 2019/209:10:45:00.0000 AMCS Cal for 2 minutes over open ocean  
2019/209:12:16:37.0000 OCEANscan (22 minutes)  
^ 2019/209:13:53:35.0000 AMCS Cal for 2 minutes over open ocean  
\* 2019/209:16:59:43.0000 TEP data collection for 3 minutes  
\* 2019/209:18:31:11.0000 TEP data collection for 3 minutes  
\* 2019/209:20:05:29.0000 TEP data collection for 3 minutes  
\* 2019/209:21:39:46.0000 TEP data collection for 3 minutes  
2019/209:22:29:25.0000 OCEANscan (22 minutes)  
\* 2019/209:23:14:04.0000 TEP data collection for 3 minutes  
2019/210:00:03:42.0000 OCEANscan (22 minutes)  
\* 2019/210:00:48:21.0000 TEP data collection for 3 minutes  
\* 2019/210:02:22:38.0000 TEP data collection for 3 minutes  
\* 2019/210:03:56:56.0000 TEP data collection for 3 minutes  
^ 2019/210:04:16:33.0000 AMCS Cal for 2 minutes over open ocean  
^ 2019/210:10:19:21.0000 AMCS Cal for 2 minutes over open ocean  
2019/210:11:50:58.0000 OCEANscan (22 minutes)  
^ 2019/210:13:27:56.0000 AMCS Cal for 2 minutes over open ocean  
2019/210:13:31:17.0000 TOO (TOOid=1100)for 3 minutes  
^ 2019/210:13:34:37.0000 AMCS Cal for 2 minutes over open ocean  
\* 2019/210:18:05:32.0000 TEP data collection for 3 minutes  
\* 2019/210:19:39:50.0000 TEP data collection for 3 minutes  
^ 2019/210:21:00:00.0000 ACT atlasLRSWinDump; // Laser Window dump for 5 minutes  
\* 2019/210:21:14:07.0000 TEP data collection for 3 minutes  
\* 2019/210:22:48:25.0000 TEP data collection for 3 minutes  
\* 2019/211:00:22:42.0000 TEP data collection for 3 minutes  
\* 2019/211:01:57:00.0000 TEP data collection for 3 minutes  
2019/211:02:38:52.0000 RTWscan (90 minutes)  
\* 2019/211:03:31:17.0000 TEP data collection for 3 minutes  
^ 2019/211:03:50:54.0000 AMCS Cal for 2 minutes over open ocean  
\* 2019/211:05:05:34.0000 TEP data collection for 3 minutes  
^ 2019/211:05:25:11.0000 AMCS Cal for 2 minutes over open ocean  
^ 2019/211:09:53:43.0000 AMCS Cal for 2 minutes over open ocean  
2019/211:11:25:19.0000 OCEANscan (22 minutes)  
^ 2019/211:13:02:17.0000 AMCS Cal for 2 minutes over open ocean  
\* 2019/211:17:39:54.0000 TEP data collection for 3 minutes  
\* 2019/211:19:14:11.0000 TEP data collection for 3 minutes

- \* 2019/211:20:48:28.0000 TEP data collection for 3 minutes
- \* 2019/211:22:22:46.0000 TEP data collection for 3 minutes
- 2019/211:23:12:25.0000 OCEANscan (22 minutes)
- \* 2019/211:23:57:03.0000 TEP data collection for 3 minutes
- 2019/212:00:46:42.0000 OCEANscan (22 minutes)
- \* 2019/212:01:31:21.0000 TEP data collection for 3 minutes
- 2019/212:02:13:13.0000 RTWscan (90 minutes)
- \* 2019/212:04:39:55.0000 TEP data collection for 3 minutes
- ^ 2019/212:04:59:32.0000 AMCS Cal for 2 minutes over open ocean
- ^ 2019/212:09:41:46.0000 AMCS Cal for 2 minutes over open ocean
- ^ 2019/212:11:02:21.0000 AMCS Cal for 2 minutes over open ocean
- 2019/212:12:33:58.0000 OCEANscan (22 minutes)
- \* 2019/212:17:24:57.0000 LCA12 with 25544 (ISS) on 31-Jul-2019 17:25:12 with laser in ARM mode for one minute
- \* 2019/212:18:48:32.0000 TEP data collection for 3 minutes
- \* 2019/212:20:22:49.0000 TEP data collection for 3 minutes
- \* 2019/212:21:57:07.0000 TEP data collection for 3 minutes
- \* 2019/212:23:31:24.0000 TEP data collection for 3 minutes