

ICESat-2 PROJECT SCIENCE OFFICE REPORT
Monday, August 10, 2020 thru Sunday, August 16, 2020

RGTs spanned: 698 - 804
Cycle 8

SUMMARY:

All ATLAS housekeeping data is nominal; laser 2 is firing at energy level 4 and in science mode. SIPS distributed the final release 003 data from July 9-26, 2019 for ATL03, ATL04, ATL06, ATL08, ATL07, ATL10, ATL12 and ATL13 to NSIDC, and all of that data is currently available for public use/download. In preparation for testing the improved range bias and geolocation, ASAS has generated 3 weeks of reference products using the ASAS 954a3 code, with a couple of exceptions (see full ASAS report below for more details).

****ELEMENT DETAILS BELOW****

CAMS/POD:

CAMS: Regular CAMS operations: constraint and conjunction monitoring for MW100 and MW101 and mission planning for MW102.

CAMS continued working with the project on ARB09 and has delivered supporting documents.

CAMS supported the ESMO red event 87732 (UNKNOWN) 15 Aug 2020 screening/possible RMM planning(MW101). Event self mitigated.

POD: Regular POD operations continue. Intermediate POD was completed for GPS week 2117. Final POD was completed for GPS week 2115.

ISF:

All ATLAS housekeeping data is nominal
Laser 2 is firing at energy level 4 and in science mode
WTEM Peak to Edge Ratio: 1.178
Laser 2 Temperature Error: -0.26C
SADA in SAILBOAT Mode
Spacecraft orientation: - X

Mission Planning:

MW101 ATS is loaded to the spacecraft and currently operating (PSO Activity List is attached)

MW102 AIP has been delivered, nominal calibrations; CAMS/ISF planning complete and SAT submitted to MOC

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**Activities during the past week:**

Real-time activities: monitoring via telework

ATS activities:

MW\_101 (currently loaded and executing):

Routine Instrument calibrations, TOOs, Ocean scans and Vegetation Data collection, modified RTW

**VBG Temperature update to 62.93C to optimize laser wavelength: 2020/226 12:00 UTC / 08/13/2020 08:00 EDT**

**Mini-ATS for additional VBG Temperature update to 62.96C to optimize laser wavelength 2020/230 18:15 UTC / 08/17/2020 14:15 EDT**

Other Activities:

Team started RMM planning but the CARA HIE self-mitigated

Near-term upcoming activities:

DMU057a 2020/233 (20 Aug 2020)

Tech HW refresh:

Procurement in progress for ISF Tech Refresh Phase 2 to complete during FY20

Facility:

No updates

Notes/Issues:

1. ARB09: RMM02 Anomaly - the team continues to analyze events and determine process (automated and manual) updates to mitigate the chance of a recurrence. The team has implemented changes to the manual processes for verification of planning products. The team is providing inputs for root cause analysis and corrective action.

LTO Schedule:

Updates to Schedule in progress

**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 ATL01 and ATL02 Data products to NSIDC.
  - Distributed the rapid Science Data products to the SCF.
- Completed testing of the SDMS V7.0.0/ATLAS V2.0.0 software on the Integration Test System. Conducted the TRR for SIPS Build 5.0 consisting of this SDMS update. There are no changes to the ASAS PGEs.
- Distributed the final release 003 data from July 9-26, 2019 for ATL03, ATL04, ATL06, ATL08, ATL07, ATL10, ATL12 and ATL13 to NSIDC.

**ASAS:**

In preparation for testing the improved range bias and geolocation, ASAS has generated 3 weeks of reference products using the ASAS 954a3 code, with the following exceptions:

- (1) reclassification of saturated photons on ATL03 is DISABLED.
- (2) the Land Ice code was updated slightly to fix bugs discovered in 954a3 functional testing. These bugs include bad interpolations for az/el parameters and over-zealous invalidation of parameters when the ATL06\_quality\_flag was non-zero.

ATL03, ATL04, ATL09 , ATL06 and ATL07 products were created for the following mission weeks:

Mission Week 029 = 2019-03-28 00:00:00 to 2019-04-04 00:00:00

Mission Week 052 = 2019-09-05 00:00:00 to 2019-09-12 00:00:00

Mission Week 074 = 2020-02-06 00:00:00 to 2020-02-13 00:00:00

The primary purpose of these products is to serve as a baseline for testing improved geolocation. However, these products are currently available on SCF in /asas/release\_pod0 and can also be evaluated as additional test cases for ASAS v954a3.

L1B: Work is underway on the addition of several new parameters to ATL02. These additional parameters, requested by the flight software algorithm team, are extracted from the algorithm science and sxp\_ssr APIDs.

L2A\_ALT: PSO and ASAS are re-evaluating the saturation reclassification based on negative comments received during the last SDT telecon.

L2/L3 Atmosphere: L2A work is underway on calibration method 3 adjustments for the South Atlantic Anomaly. For L3A, checkout of the total column optical depth has been completed and blowing snow refinement work continues.

L3A Ice Sheet: Addressed issues involving invalid values within ref\_azimuth and ref\_coelev. Added checks for the presence of valid data before processing ATL09 information and residual histograms. Removed over-zealous invalidation of parameters when atl06\_quality\_flag was non-zero.

L3A Sea Ice/Freeboard: Several clean-up items are under review. Work continues on along-track slope.

L3A Land/Veg: Evaluation of the changes in the 954a3 ATL08s is underway. Positive effects of the ATL03 saturation re-classifications were noted. New work awaits ATBD updates.

L3A Inland Water: Analysis/adjustments based on missing groundtracks is underway as well as work on the addition of anomalous short-segment information to the ATL13 data product.

L3A Ocean: Outstanding L3A ocean work has been approved by the ASAS CCB.

L3B Land Ice: The team addressed an issue that prevented NSDIC from extracting the default browse images. Improvement were made to orbit\_info data. A new sample ATL11 has been provided to NSIDC for evaluation of browse and metadata.

L3B Atmosphere: A initial test product, including new parameters and updated grid sizes has been delivered to the ATBD lead.

L3B Freeboard: Addressed an issue in grid assignment. Awaiting approval for release.

L3B Ocean: Work continues on L3B Ocean.

**SCF:**

The SCF is operating nominally. Data for releases 003 and R003 are being ingested and distributed. We expect the next batch of 003 data from SIPS, covering mid-May to mid-July, within the next week. ASAS release 954a3 test data have been transferred to the SCF. A file listing the current SCF data holdings is attached.

+ Data Management -- The data management pipeline is operating nominally.

+ Subsetter -- Operations continue normally with no failed jobs. A user found that the Subsetter crashes when subsetting ATL12 files obtained from EarthData Search. This crash happens when copying data from an ATL12 file into a new HDF5 file, and can be reproduced outside the Subsetter. We are preparing to report this to EarthData.

+ Visualizer -- Updated the Visualizer design document for version 8.0.

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

The revised version of CAL 08, Range Bias, has only a small effect on the comparison between elevations computed with the current CAL 08, the 2017 version of CAL 08, and field measurements. An updated, detailed description of the process by which CAL 08 is produced and used is also being reviewed.

In addition, work continues on:

- Examination of data from the July 8-16 anomaly period.
- Quantifying the expected annual number of back reflections from solar arrays on other spacecraft (e.g. Starlink)
- Investigating and modeling the properties of saturated returns.
- Writing up the results of the study of variation of range bias on orbital and seasonal time scales.
- Re-examining the temperature dependence of the ATLAS transmitted beam divergence.
- Investigating and explaining “interesting” behavior revealed by the expanded ATLAS QA screening process.
- Improving the process for calibrating transmitter-receiver alignment.

### **ATL03:**

Work continues on improvements to the proposed -3 and -4 saturation reclassification for the signal\_conf\_ph parameter. Additionally, the group verified that the new MERIT DEM for land surface types is working as expected on the rel954a3 data set.

## **ISF ACTIVITIES MISSION WEEK 101**

\* 2020/226:02:18:41.0000 TEP data collection Grid 260 Duration 3 minutes

\* 2020/226:02:25:17.0000 TEP data collection Grid 152 Duration 3 minutes

\* 2020/226:03:41:19.0000 TEP data collection Grid 403 Duration 3 minutes

2020/226:03:45:09.0000 TOO TOOid 1652 RGT 745 offpoint 2.43deg Duration 2 minutes  
\* 2020/226:03:48:29.0000 AMCS Cal over open ocean Duration 2 minutes  
2020/226:05:18:20.0000 OCEANscan Duration 22 minutes  
\* 2020/226:06:55:19.0000 AMCS Cal over open ocean Duration 2 minutes  
2020/226:08:19:09.0000 Segmented RTWscan Part 1 Duration 37 minutes  
2020/226:09:08:17.0000 Segmented RTWscan Part 2 Duration 35 minutes  
2020/226:09:48:48.0000 Segmented RTWscan Part 3 Duration 14 minutes  
\* 2020/226:10:08:55.0000 TEP data collection Grid 285 Duration 3 minutes  
\* 2020/226:10:15:12.0000 TEP data collection Grid 212 Duration 3 minutes  
\* 2020/226:10:19:20.0000 TEP data collection Grid 140 Duration 3 minutes  
^ 2020/226:12:00:00.0000 Adjust the VBG Setpoint to 62.93 to optimize the laser  
wavelength Duration 1 minute  
\* 2020/226:13:09:40.0000 TEP data collection Grid 388 Duration 3 minutes  
\* 2020/226:13:25:19.0000 TEP data collection Grid 172 Duration 3 minutes  
\* 2020/226:15:02:13.0000 TEP data collection Grid 133 Duration 3 minutes  
2020/226:15:19:04.0000 TOO TOOid 1654 RGT 752 offpoint 4.53deg Duration 2 minutes  
\* 2020/226:16:18:15.0000 TEP data collection Grid 384 Duration 3 minutes  
\* 2020/226:16:43:39.0000 TEP data collection Grid 23 Duration 3 minutes  
2020/226:17:05:36.0000 OCEANscan Duration 22 minutes  
2020/226:17:40:30.0000 TOO TOOid 1661 RGT 754 offpoint 4.71deg Duration 2 minutes  
\* 2020/226:18:00:22.0000 TEP data collection Grid 273 Duration 3 minutes  
\* 2020/226:18:08:11.0000 TEP data collection Grid 165 Duration 3 minutes  
\* 2020/226:18:18:40.0000 TEP data collection Grid 20 Duration 3 minutes  
\* 2020/226:22:39:31.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
\* 2020/226:22:56:16.0000 TEP data collection Grid 85 Duration 3 minutes  
\* 2020/227:00:16:35.0000 TEP data collection Grid 264 Duration 3 minutes  
\* 2020/227:01:51:49.0000 TEP data collection Grid 261 Duration 3 minutes  
\* 2020/227:03:20:53.0000 TEP data collection Grid 331 Duration 3 minutes  
\* 2020/227:03:26:06.0000 TEP data collection Grid 259 Duration 3 minutes  
\* 2020/227:03:34:10.0000 AMCS Cal over open ocean Duration 2 minutes  
\* 2020/227:04:55:23.0000 AMCS Cal over open ocean Duration 2 minutes  
2020/227:06:26:58.0000 OCEANscan Duration 22 minutes  
2020/227:07:01:57.0000 TOO TOOid 1655 RGT 762 offpoint 4.58deg Duration 2 minutes  
2020/227:07:49:07.0000 TOO TOOid 1662 RGT 763 offpoint 4.73deg Duration 2 minutes  
\* 2020/227:08:01:08.0000 TEP data collection Grid 396 Duration 3 minutes  
\* 2020/227:08:14:23.0000 TEP data collection Grid 215 Duration 3 minutes  
\* 2020/227:08:27:16.0000 TEP data collection Grid 35 Duration 3 minutes  
\* 2020/227:09:35:26.0000 TEP data collection Grid 394 Duration 3 minutes  
\* 2020/227:11:25:22.0000 TEP data collection Grid 175 Duration 3 minutes  
\* 2020/227:12:49:14.0000 TEP data collection Grid 317 Duration 3 minutes  
2020/227:13:45:00.0000 Stellar window dump Duration 90 minutes  
2020/227:15:27:18.0000 TOO TOOid 1653 RGT 768 offpoint 1.19deg Duration 2 minutes  
\* 2020/227:16:16:05.0000 TEP data collection Grid 59 Duration 3 minutes  
2020/227:18:14:14.0000 OCEANscan Duration 22 minutes  
\* 2020/227:19:00:17.0000 TEP data collection Grid 380 Duration 3 minutes  
\* 2020/227:20:48:30.0000 TEP data collection Grid 197 Duration 3 minutes

\* 2020/227:22:13:52.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
\* 2020/228:01:20:57.0000 TEP data collection Grid 334 Duration 3 minutes  
2020/228:03:27:42.0000 TOO TOOid 1656 RGT 775 offpoint 4.57deg Duration 2 minutes  
2020/228:04:14:52.0000 TOO TOOid 1663 RGT 776 offpoint 4.69deg Duration 2 minutes  
\* 2020/228:04:29:43.0000 AMCS Cal over open ocean Duration 2 minutes  
2020/228:06:01:19.0000 OCEANscan Duration 22 minutes  
\* 2020/228:07:32:52.0000 TEP data collection Grid 397 Duration 3 minutes  
\* 2020/228:07:37:03.0000 AMCS Cal over open ocean Duration 2 minutes  
\* 2020/228:10:49:17.0000 TEP data collection Grid 320 Duration 3 minutes  
\* 2020/228:12:17:39.0000 TEP data collection Grid 390 Duration 3 minutes  
\* 2020/228:12:20:58.0000 TEP data collection Grid 353 Duration 3 minutes  
\* 2020/228:12:31:24.0000 TEP data collection Grid 209 Duration 3 minutes  
\* 2020/228:12:39:14.0000 TEP data collection Grid 101 Duration 3 minutes  
\* 2020/228:14:03:05.0000 TEP data collection Grid 243 Duration 3 minutes  
\* 2020/228:14:07:29.0000 TEP data collection Grid 171 Duration 3 minutes  
\* 2020/228:15:29:33.0000 TEP data collection Grid 349 Duration 3 minutes  
2020/228:17:48:34.0000 OCEANscan Duration 22 minutes  
\* 2020/228:21:48:13.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
2020/228:23:06:21.0000 TOO TOOid 1664 RGT 788 offpoint 4.69deg Duration 2 minutes  
\* 2020/228:23:22:30.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
\* 2020/229:00:50:03.0000 TEP data collection Grid 407 Duration 3 minutes  
\* 2020/229:01:13:33.0000 TEP data collection Grid 82 Duration 3 minutes  
\* 2020/229:04:04:04.0000 AMCS Cal over open ocean Duration 2 minutes  
2020/229:05:35:40.0000 OCEANscan Duration 22 minutes  
\* 2020/229:07:12:39.0000 AMCS Cal over open ocean Duration 2 minutes  
\* 2020/229:08:44:07.0000 TEP data collection Grid 395 Duration 3 minutes  
2020/229:14:02:07.0000 TOO TOOid 1657 RGT 797 offpoint 4.51deg Duration 2 minutes  
2020/229:17:22:55.0000 OCEANscan Duration 22 minutes  
\* 2020/229:22:56:51.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
\* 2020/230:00:27:01.0000 TEP data collection Grid 371 Duration 3 minutes  
\* 2020/230:03:38:25.0000 AMCS Cal over open ocean Duration 2 minutes  
2020/230:05:10:00.0000 OCEANscan Duration 22 minutes  
2020/230:05:45:00.0000 TOO TOOid 1658 RGT 807 offpoint 4.54deg Duration 2 minutes  
\* 2020/230:06:47:00.0000 AMCS Cal over open ocean Duration 2 minutes  
\* 2020/230:08:16:36.0000 TEP data collection Grid 431 Duration 3 minutes  
2020/230:09:40:44.0000 TOO TOOid 1665 RGT 810 offpoint 4.70deg Duration 2 minutes  
2020/230:16:57:16.0000 OCEANscan Duration 22 minutes  
\* 2020/230:22:31:12.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes  
\* 2020/231:03:23:49.0000 AMCS Cal over open ocean Duration 2 minutes  
2020/231:04:44:21.0000 OCEANscan Duration 22 minutes  
\* 2020/231:06:21:20.0000 AMCS Cal over open ocean Duration 2 minutes  
2020/231:08:27:57.0000 TOO TOOid 1659 RGT 824 offpoint 4.59deg Duration 2 minutes  
2020/231:17:06:31.0000 TOO TOOid 1666 RGT 830 offpoint 4.68deg Duration 2 minutes  
2020/231:18:05:54.0000 OCEANscan Duration 22 minutes  
^ 2020/230:18:15:00.0000 Adjust the VBG Setpoint to 62.96 to optimize the laser  
wavelength Duration 1 minute

- \* 2020/231:22:05:32.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
- \* 2020/232:04:21:24.0000 AMCS Cal over open ocean Duration 2 minutes
- 2020/232:05:52:59.0000 OCEANscan Duration 22 minutes
- 2020/232:07:15:08.0000 TOO TOOid 1667 RGT 839 offpoint 4.70deg Duration 2 minutes
- 2020/232:07:19:30.0000 Segmented RTWscan Part 1 Duration 38 minutes
- 2020/232:08:09:10.0000 Segmented RTWscan Part 2 Duration 35 minutes
- 2020/232:08:49:31.0000 Segmented RTWscan Part 3 Duration 13 minutes
- 2020/232:15:53:44.0000 TOO TOOid 1660 RGT 844 offpoint 4.51deg Duration 2 minutes
- 2020/232:17:40:15.0000 OCEANscan Duration 22 minutes
- 2020/232:21:05:00.0000 Laser window dump Duration 2 minutes
- \* 2020/232:21:39:53.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes
- \* 2020/232:23:14:10.0000 AMCS Cal over open Atlantic ocean Duration 2 minutes