ICESat-2 PROJECT SCIENCE OFFICE REPORT
Monday, November 26, 2019 thru Sunday, December 2, 2018

RGTs spanned: 898-1008
Cycle 1

All ATLAS housekeeping data is nominal, Laser 2 is firing at energy level 4 and in science mode. POD completed intermediate processing for GPS week 2028 (DoY 322-328) and delivered associated intermediate ANC products to SIPS that allowed for the production of release 202 ATL03 granules. Finalizing iterated pointing calibration solution from full 10-day calibration period data.   This iterated solution will be used in the production of final ANC products for DOY 287-314. First full set of final ANC products delivered to SIPS on November 30, 2018.

ELEMENT DETAILS BELOW

CAMS/POD/PPD:
CAMS:
CAMS performed Mission Planning for MW012 and continues to monitor MW012 for constraint warnings and laser conjunction events. CAMS has no constraint warnings or detected laser conjunction events for Mission Week 12.

All other daily operations are nominal.

POD:
Completed intermediate POD processing for GPS week 2028 (DoY 322-328) and delivered associated intermediate ANC products to SIPS. Completed final POD processing for GPS week 2026.

Finalizing iterated pointing calibration solution from full 10-day calibration period data.   This iterated solution will be used in the production of final ANC products for DOY 287-314. First full set of final ANC products delivered to SIPS on November 30, 2018.

PPD:
This past week PPD continues to support daily processing.
We also performed analysis of the LRS stellar side to provide an independent assessment of the roll bias orbital variation results from POD calibration efforts.

LRS laser side analysis by Ben Helgeson found some very interesting correlation between some of the atlas housekeeping data and laser spot position. I attached five plots that summarize his finding. In 'Las_spot1HandTemp.png' and 'Las_spot1VandTemp.png', blue dots are laser spot 1 position for one orbital period. Red dots are obtained by combining the following three parameters with some scaling: 'pdu_laser_2_v', 'hkt_lrs_orad2_t', 'hkt_ltr_trans_t'. As you can see, they show pretty good agreement. From the name, 'hkt_ltr_trans_t' is temperature related LTR. The 'hkt_lrs_orad2_t' is another temperature data. The 'pdu_laser_2_v' shows data with volts unit. There is no detailed information about these parameters in the 'ATL02 Product Data Dictionary'. The plots of the temp/volts parameters are attached as well.

ISF:

All ATLAS housekeeping data is nominal
Laser 2 is firing at energy level 4 and in science mode
Laser 2 Temp Err: -0.17
WTEM Peak to Edge Ratio   1.145

Mission Planning:
MW12 ATS is loaded to the spacecraft and currently operating.
MW13/MW14 AIPs delivered to CAMS

~~~~~~
Activities during the past week:
ATS activities:
All ATLAS and pointing activities were routine and completed as planned
DMU3 executed successfully on Sunday 11/25 (2018/329:14:31:12 to 2018/329:15:33:17)
DMU4 executed successfully on Thursday, 11/29 (2018/333:02:35:40 to   2018/333:03:37:45)
Real-time activities
Nov 26: Executed CAR329 step 1 to load the files for Rx Alg Test 5 (TBpad) - this is to re-run the test that failed.
Nov 27: Executed CAR329 steps 2 and 3 to setup for the test and to reset when the test was completed. The Rx Alg Test 5 executed from : 2018/331/19:03:50 to 2018/331/22:19:15. The test could have impacted the science data quality during this period.
Nov 28: Executed CAR329 step 4 to remove the files for Rx Alg Test 5 (TBpad)
Executed standing CAR91 to clear SBS errors and CAR102 to clear PCE errors.
~~~~~~
Upcoming activities:
MW12 scheduled activities in the ATS: Attached
Other Near-term activities:
ISF server patching - Dec 3 -7
ISF Quarterly Scan - Dec 10
Update Stellar Background Image for warm pixels (schedule TBD) - FLATLAS Testing next week

~~~~~~
Issues:
1. ISF is not receiving automated Integrated Contact Schedule (ICS) file deliveries, we are working with the MOC to resolve and have contacted GCC to asist. Meanwhile the MOC is able to manually deliver the ICS files.
2. The MOC has resolved the RTAMAC issue, IOT reenabled the "no data at AOS" alerting. There have been no issues receiving the MOC connections at AOS since DOY 325 except for the AS3 contact yesterday morning which was a station issue.
3. ILRS file transfers were not being completed in a timely manner due to heavy traffic on the website. The ILRS transfers were moved to first in the queu and that seems to have solved theissue; we are continuing to monitor.

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 ATL01s via special request to the SCF.

· Generated ATL03/04/09 products using the intermediate and final ANC03/04/05 files from the POD for the following dates:
  ▪ DOY 322-328: Received intermediate ANC03/04/05 files on Nov.28. Produced and distributed the Release 201 ATL03, ATL04, and ATL09 files to the SCF and NSIDC.
  ▪ DOY 287-314: Received final ANC03/04/05 files on Nov. 30. Currently producing Release 202 ATL03, ATL04, and ATL09 files which are being distributed to the SCF.

ASAS:
Investigating and tracking issues identified by SIPS operations and science team; prime issues being addressed by developers.
L1A –ATL01
The S/C star tracker VC5 packet additions have been decommutated. Remaining work is to verify the decommutation and merge the VC5 data with the VC4 data.
L1B- ATL02
Updated CAL54 is in testing/verification. Updated CAL47 is in work by the CAL team.
Updated LRS housekeeping thermistors to scale to degrees. Testing in progress.
Additional issues fixed based on a review of calibrations and ancillary data.
L2A-ALT ATL03
Investigating flag for TEP signal classification filtering.
Continue investigations of SIPS processing issues report non-ASAS issues communicated to SIPS lead and enter ASAS bug issues as needed. ASAS fixes ongoing.
Fixing issues related to missing data, where photons are present, but the quantity is insufficient for processing.
Delivered ATL03/ATL09 Python image code to SCF for distribution to the ST.
L2A – ATM ATL04
Adding information to items ready for CCB to approval.
L3A-ATM ATL09
QA additions to ATL09 product ready for CCB review
Working removal of the ground surface from being identified as the lowest cloud.
L3B –ATM ATL16/17
Continue developing unit test for L3B PGE.
L3A- land ice ATL06
Preparing fixes for errors in segment time of day, residual histogram jumps related to ocean tide and the computation of residual histogram background per .
L3A Sea Ice ATL07/10
Fixed issues with adjustable histogram binsize
Adjusting surface classification to properly use solar elevation
Adjustment made to sea ice fine tracking
Implementing control to disable the computation of multi-beam freeboard parameters
Fixing identified bugs that cause crash with odd data.
L3A- Land ATL08
Ongoing comparisons between ST and ASAS of alternative DRAGANN results led to improved selection of noise peak filtering.
L3A Ocean ATL12
No work. Developer working Land Ice
Issues with ASAS sea state bias computation are next implementations.
L3A Inland Water ATL13
Switching to inflight data for all testing.

Implementing background removal from long segment histogram

SCF:
The SCF is ingested and distributed rel 201 through doy 321 for products ATL02, ATL03, ATL04 and ATL09. All of rel 201 is on the cooler except for the ATL02 files after 11/28. We are currently ingesting and distributing rel 202 of ATL02, ATL03, ATL04, and ATL09 for doys 287-314. Files are not being distributed to cooler because we ran out of space. We are working on obtaining more space and will restart the cooler distribution as soon as possible. A new release of the SCF software has been created and is under testing. The release will fix issues that caused jobs to be marked as failing when functionally they worked, reducing the time required to monitor the SCF.

ATL02:
Work continued on CAL 47 and CAL 49. Clean images of the back-illuminated receiver field of view, taken using the large collimator in the SCA, were discovered after a long time of believing they did not exist.

Examination of ATL02 during ground-based laser ranging to ICESat-2 with an elevation limit of 50 degrees revealed no evidence of interference in the ATLAS receiver. An increase in the elevation limit to 65 degrees was recommended.

Investigation continues on:
- Possible afterpulsing evident under very strong return conditions
- Power drop in Flight 1 laser (in laboratory life test

ATL03:
The ATL03 group continued analysis for the r201 data products. To date, the verification analysis has turned up no major issues. ATL03 processing and distribution for r202 data products began at the end of the week and granules began appearing in end users' outboxes on the SCF and in the cooler on Friday afternoon. The group has been supporting the geolocation/spacecraft attitude control analysis efforts to update the spacecraft pointing. The group approved a red-lined version of the ATBD that incorporates a number of corrections, and after changes are accepted by ASAS, a number of these updates will go into the next software release.

Post-Launch Validation:
-The crossover code is working with QA being performed on results; most crossovers are now being found.

-The bias code is working well. Analysis of version 202 data has just begun (within the past hour) Analysis of ASAS 4.4 data shows about ~50 cm bias along 88S, for the 10/14 to 10/27 data available at the SCF.

-A preliminary version of code to identify corner cube retroreflector data is working with minor tweaks still being made. This has been passed to Lori Magruder.

-88S: Field team departs Tuesday

-Summit: NTR

ISF ACTIVITIES MISSION WEEK 012

** may impact science data quality
**2018/333:00:12:37.0000 TEP data collection for 3 minutes
**2018/333:01:46:55.0000 TEP data collection for 3 minutes
**2018/333:02:35:40 // Maneuver Timeline Activity Scheduled, DMU
**2018/333:03:37:45 // Maneuver Timeline Activity Scheduled (finish)
2018/333:10:49:05.0000 OCEANscan (22 minutes)
**2018/333:12:26:04.0000 AMCS Cal for 2 minutes
**2018/333:12:44:40.0000 AMCS Cal for 2 minutes
**2018/333:17:29:49.0000 TEP data collection for 3 minutes
**2018/333:19:04:06.0000 TEP data collection for 3 minutes
**2018/333:20:38:24.0000 TEP data collection for 3 minutes
**2018/333:22:12:41.0000 TEP data collection for 3 minutes
2018/333:22:36:20.0000 OCEANscan (22 minutes)
**2018/333:23:46:58.0000 TEP data collection for 3 minutes
**2018/334:01:21:16.0000 TEP data collection for 3 minutes
**2018/334:03:00:00.0000 Stellar centroid image dump for 90 minutes
**2018/334:10:26:08.0000 AMCS Cal for 2 minutes
**2018/334:10:44:43.0000 AMCS Cal for 2 minutes
2018/334:11:57:44.0000 OCEANscan (22 minutes)
**2018/334:17:04:10.0000 TEP data collection for 3 minutes
**2018/334:18:38:27.0000 TEP data collection for 3 minutes
**2018/334:20:12:45.0000 TEP data collection for 3 minutes
**2018/334:21:47:02.0000 TEP data collection for 3 minutes
**2018/334:23:21:20.0000 TEP data collection for 3 minutes
2018/334:23:44:59.0000 OCEANscan (22 minutes)
**2018/335:00:55:37.0000 TEP data collection for 3 minutes
**2018/335:02:29:55.0000 TEP data collection for 3 minutes
**2018/335:04:04:12.0000 TEP data collection for 3 minutes
2018/335:08:26:17.0000 TOO for 2 minutes
**2018/335:10:00:29.0000 AMCS Cal for 2 minutes
2018/335:11:32:05.0000 OCEANscan (22 minutes)
**2018/335:13:15:16.0000 AMCS Cal for 2 minutes
**2018/335:16:38:31.0000 TEP data collection for 3 minutes
**2018/335:18:12:49.0000 TEP data collection for 3 minutes
**2018/335:19:47:06.0000 TEP data collection for 3 minutes
**2018/335:21:21:24.0000 TEP data collection for 3 minutes
**2018/335:22:55:41.0000 TEP data collection for 3 minutes
2018/335:23:19:20.0000 OCEANscan (22 minutes)
**2018/336:00:29:58.0000 TEP data collection for 3 minutes
**2018/336:02:04:16.0000 TEP data collection for 3 minutes
**2018/336:03:38:33.0000 TEP data collection for 3 minutes
**2018/336:09:34:51.0000 AMCS Cal for 2 minutes
2018/336:11:06:26.0000 OCEANscan (22 minutes)
**2018/336:13:02:01.0000 AMCS Cal for 2 minutes

**2018/336:16:12:52.0000 TEP data collection for 3 minutes
**2018/336:17:47:10.0000 TEP data collection for 3 minutes
**2018/336:19:21:27.0000 TEP data collection for 3 minutes
**2018/336:20:55:45.0000 TEP data collection for 3 minutes
**2018/336:22:30:02.0000 TEP data collection for 3 minutes
2018/336:22:53:42.0000 OCEANscan (22 minutes)
**2018/337:00:04:20.0000 TEP data collection for 3 minutes
**2018/337:01:38:37.0000 TEP data collection for 3 minutes
**2018/337:03:12:54.0000 TEP data collection for 3 minutes
**2018/337:09:14:15.0000 AMCS Cal for 2 minutes
2018/337:10:40:47.0000 OCEANscan (22 minutes)
**2018/337:12:36:22.0000 AMCS Cal for 2 minutes
2018/337:13:41:35.0000 RTWscan (90 minutes)
**2018/337:17:21:31.0000 TEP data collection for 3 minutes
**2018/337:18:55:48.0000 TEP data collection for 3 minutes
**2018/337:20:30:06.0000 TEP data collection for 3 minutes
**2018/337:22:04:23.0000 TEP data collection for 3 minutes
2018/337:22:28:02.0000 OCEANscan (22 minutes)
**2018/337:23:38:41.0000 TEP data collection for 3 minutes
**2018/338:01:12:58.0000 TEP data collection for 3 minutes
**2018/338:02:47:15.0000 TEP data collection for 3 minutes
**2018/338:04:20:44.0000 TEP data collection for 3 minutes
**2018/338:09:02:33.0000 AMCS Cal for 2 minutes
2018/338:10:15:08.0000 OCEANscan (22 minutes)
**2018/338:12:10:43.0000 AMCS Cal for 2 minutes
**2018/338:12:20:00.0000 Stellar centroid window dump for 90 minutes
**2018/338:16:55:52.0000 TEP data collection for 3 minutes
**2018/338:18:30:09.0000 TEP data collection for 3 minutes
**2018/338:20:04:27.0000 TEP data collection for 3 minutes
**2018/338:21:38:44.0000 TEP data collection for 3 minutes
**2018/338:23:13:01.0000 TEP data collection for 3 minutes
2018/338:23:36:41.0000 OCEANscan (22 minutes)
**2018/339:00:47:19.0000 TEP data collection for 3 minutes
**2018/339:02:21:36.0000 TEP data collection for 3 minutes
**2018/339:03:55:53.0000 TEP data collection for 3 minutes
**2018/339:09:52:11.0000 AMCS Cal for 2 minutes
2018/339:11:23:46.0000 OCEANscan (22 minutes)
**2018/339:13:00:45.0000 AMCS Cal for 2 minutes
**2018/339:16:30:12.0000 TEP data collection for 3 minutes
**2018/339:18:04:30.0000 TEP data collection for 3 minutes
**2018/339:19:38:47.0000 TEP data collection for 3 minutes
**2018/339:21:13:05.0000 TEP data collection for 3 minutes
**2018/339:22:47:22.0000 TEP data collection for 3 minutes
2018/339:23:11:02.0000 OCEANscan (22 minutes)