GLM Ground System Status **1 December 2017**

Update: The updates to DO 06.00.00 and DO 06.02.00 produced marked improvement in the GLM data. No GLM data will be available from 30 November 1430 UTC to 14 December 2017 (during drift east).

This document lists all known GLM-related changes to the Ground System (GS) software since initial deployment. The GS makes fixes through series of ADRs and WRs. Some fixes are minor while others take longer to diagnose and remedy. The WRs are implemented in new versions of the GS software that are first deployed in the Development Environment (DE) then the Operational Environment (OE). New versions are indicated by three sets of integers (e.g., DO 04.04.02). The first is the GS software version, the second indicates software patches, and the third signifies emergency patches. The Product Readiness and Operations (PRO) team developed a system to integrate less complicated fixes into the GS outside of the more rigorous GS process. The PRO team makes changes to the GS software and releases (PR) patches that follow the same numbering system. Most updates to the lookup tables (e.g., Rev G LUTs) follow the PR path. In terms of priority, every indication has been that the GLM falls low on the list (ABIs little brother), which often results in schedule slips for the GLM-specific WRs. The following list is complete as of the date referenced above, and this document will be periodically updated and uploaded to the Cal/Val portal.

Ground System Update Schedule:
DO 04.02.00 – 1/13/17 – 1500UTC
DO 04.03.00 – 2/17/17 – 2153UTC
DO 04.04.00 – 4/24/17 – 1952UTC
DO 04.04.01 – 4/24/17 – 1952UTC
DO 05.00.00 – 7/24/17 – 1700UTC
DO 06.00.00 – 10/31/17 – 1722 UTC
DO 06.01.00 – No GLM updates
DO 06.02.00 – 11/28/17 – 1646 UTC
DO 07.00.00 – June 2018

WRs Resolved in DO.04.02

- WR 1948: GLM Group Energy Values are all set to the minimum value
- WR 1950, 1948, 2284: GLM energy discrepancies
- WR 2232: Write GLM L1b Intermediate Product to the 2 day store
- WR 2267: Improve GLM LCFA algorithm error-handling
- WR 2284: Different units between GLM L1b and GLM L2 - ADR 91
- WR 2643: GLM L0 Processing receiving out of order packets
- WR 2834/2728: GSIT3-2 : GRB Incr. Turn-on Requires Update to GRB Assembly Start Scripts
- WR 1935: GLM Eastern RTEP mapping appears incorrect
- WR 1937: GLM L2+ product metadata errors
- WR 2376: Apparently spurious error logged from GLM L0 services
- WR 2411: Intermittent "bad_alloc" errors in GLM L1 Geolocate

- WR 3498: GLM RPY measurement instrument activities in the PM DB are not associated with the GLM Background Image.
- WR 3502: GLM background image navigation grids are incorrect
- WR 3556: Update GLM Navigation Parameters
- WR 3557: Update GLM RTEP Map

WRs Resolved in DO.04.03

- WR 3315: Zero Pixels at RTEP corners in GLM Background Image
- WR 3702: GLM not producing background images

WRs Resolved in DO.04.04.00/01

- WR 1949: GLM appears to have Timing Artifacts
- External WR 2061: GLM OP - Change Event Filter Order to match GLM CDRL-80 Rev F
- External WR 2063: GLM OP - Implement Overshoot Filter
- External WR 2064: GLM OP - Implement Solar Glint Filter
- External WR 2065: GLM OP - Implement Crosstalk Filter
- External WR 2066: GLM OP - Update event energy computation
- External WR 2067: GLM OP - Update Block-Level Metadata
- External WR 2068: GLM OP - Update INR Implementation to GLM CDRL-46 Rev H
- WR 2234 ADR118: Event and group count variables differ from theevents, group data arrays
- WR 3033 ADR 150: GLM L2+ start/end times incorrect, ETE4b using MVTDS-Synthetic data
- WR 3339: GLM INR Prototype water mask differs from independent matlab implementation
- WR 3749, 4140: GLM L0 Event Processing Errors when handling maximum event rates
- WR 4255: SOZ DE DO.04.04.00 GLM LCFA file names have invalid start/end date times and don't meet latency requirements

WRs Resolved in DO.05.00

- WR 1935: GLM Eastern RTEP mapping appears incorrect
- WR 1937: GLM L2+ product metadata errors
- WR 2376: Apparently spurious error logged from GLM L0 services
- WR 2411: Intermittent "bad_alloc" errors in GLM L1 Geolocate
- WR 3498: GLM RPY measurement instrument activities in the PM DB are not associated with the GLM Background Image
- WR 3502: GLM background image navigation grids are incorrect
- WR 3556: Update GLM Navigation Parameters
- WR 3557: Update GLM RTEP Map

WRs Resolved in DO.06.00

- ADR 385, WR 5140: Banded Structure in Group Geolocation GLM L2 – Fixed “Charlie Brown” stripes in L2 groups – also should greatly reduce the splitting of individual GLM flashes
- WR 2062: GLM OP - Implement data formatter burst filter
- WR 2691: Abnormally large group areas in the L2+ products

- WR 3669: GLM downsampled background (DBG) image does not contain radiance fill values
- WR 4017: GLM INR update to CDRL 46 Rev K (ADR 227)
- WR 4330: Empty Objects GLM L0 Service produces empty objects after a data gap
- WR 4589: Time offset of events, groups and flashes, GLM L2+ (only corrected in L1b)
- WR 4709: GLM CALINR update to CDRL 79 Rev H

WRs Resolved in DO.06.01

- No GLM WRs

WRs Resolved in DO.06.02

- WR4762: Radiation 'dots', removing single-group flashes
- WR4780: Duplicate events - Duplication dots are no longer present
- WR 5284: Interim solution - GLM Event Geolocation Does Not Match Vendor Results

WR Resolutions scheduled for DO.07.00

- WR2129: GLM Longitude Offsets
- WR3407: GLM Background Image Metadata Doesn't Match PUG
- WR4477: GLM L2 LCFA product has 'n/a' for production_data_source

WR Resolution Status – Implementation Schedule TBD (list not complete)

- WR 4758/5016: Position errors, Properly account for RPY in the INR calculations
- WR4697: Update Blooming Filter, GLM L2
- WRyyyy: Implementation of APID255 for GLM GPA
- WRzzzz: GLM INR update to CDRL 46 Rev L
- WR4696:
- WR4507:

Path to "full validation" June 2018 (Draft):

Image Navigation and Registration (INR):

- Complete ongoing coastline id validation WR4758
- Correct time of origination
- time-of-flight (units) WR4589?
- event times vs frame times WR4507
- Group area WR 4696. Discrepancy between GS and LM values (~20%)
- Reduced PIT vector database WR5016
- Solar glint box. Need new WR.

Parameter updates. CDRL079. No WR or code change needed:

- Improved cloud height ellipsoid values (pole and equator parameters)
- Updated non-nominal distortion and other parameters based on Carr GLM/ABI analysis

False events:

- Blooming Filter
- Updated CCD Frame Transfer Filter
- Updated Data Formatter Burst Filter
- Updated Glint Filter
- Updated Second-level Threshold Filter
- Updated Coherency Filter
- Implementation of Filters in L2+ Code (LCFA)
- Data Quality Product

Select Pro-Release Patches (Not complete)

PR 04.04.07 – 6/28/17 – 2000UTC GLM Rev G LUTs

PR 05.00.01 – 9/07/17 – 1841 UTC GLM Rev H LUTs

Changes in Rev H compared to Rev G

- Set second level threshold to min threshold for each RTEP
- Implemented Overshoot Filter LUT
- Adjusted Glint Filter parameters
- Adjusted Contrast Leakage parameters
- Adjusted Coherency Filter parameters: probability table based on on-orbit thresholds and higher amplitudes remaining after the second level threshold removes low amplitude events
- Adjusted Frame Transfer parameters
- Incorporated scaling changes into temperature conversion coefficients to mitigate focal length calculation errors that were causing nav issues (significant change)

PR 06.00.02 – 11/21/17 –

- L2 event time now has changed scale factor to 1 millisecond

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