



Overview of GHRC Lightning Activities

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Web Page Updates



- **GLM Portal remains supported**
 - <https://goes-r.nsstc.nasa.gov/home/>
 - Built for GOES-R Post Launch Test (PLT) field campaign
- **Contains lightning data cleared for use by the MSFC lightning science team**
 - National Lightning Detection Network
 - Earth Networks Total Lightning Network
- **GLM Science meeting presentations**
- **North Alabama Lightning Mapping Array (NALMA) page has been updated to coincide with new publications**
 - https://ghrc.nsstc.nasa.gov/lightning/data/data_nalma.html

- **5 years on orbit – extending long-term TRMM LIS climatology**
 - Middle and higher latitudes of special interest
 - Have not sampled outside of GLM since the Optical Transient Detector (OTD) from 1995-2000
- **ISS LIS being incorporated into the 20+ year combined TRMM LIS/OTD climatology**
- **Relocated on ISS over the summer**
- **Continued operations through at least late 2023**
 - Experienced multiple outages in September and October due to power outages
 - Alert users about outages/instrument back online
 - Address POCC activities

- **ISS LIS code for Version 2.1 is operational**
 - Have Quality Controlled data available
- **V2.2 ISS LIS is almost operational**
- **You can find data at:**
 - <https://search.earthdata.nasa.gov/portal/ghrc/search?q=isslis>
 - https://ghrc.nsstc.nasa.gov/lightning/data/data_lis_iss.html



North Alabama Lightning Mapping Array (NALMA)



- **Operations have resumed, including earlier data**
 - Start date: December 17, 2018
 - Number of stations: 12
- **Processing transitioned to Huntsville**
 - Local processing is a collaboration between GHRC and the MSFC Lightning Team
- **GHRC hosts full-rate NALMA data**
 - Full rate: <http://dx.doi.org/10.5067/NALMA/DATA101>
- **Future plans include publishing the entire period of record back to 2002**

Mid-Atlantic Lightning Mapping Array (MALMA)



- **Combination of two different networks**
 - DCLMA and WILMA
- **Science team currently testing data**
- **Will initially archive the NRT data, then will backfill historical data**
- **Serves as the test for working with other NASA LMAs**
 - KSC and others

Geostationary Lightning Mapper



- **Two GLM products in preparation for publication in FY23**
 - Full disk, gridded GLM products
 - <http://dx.doi.org/10.5067/GLM/GOES/DATA101>
 - GLM CIERRA – cluster integrity
 - <http://dx.doi.org/10.5067/GLM/CIERRA/DATA101>
 - GHRC is working with the PIs to publish
 - Potential high level-of-interest with these data products
 - Can look at these datasets to determine how to support users as we want to be a lightning science enabling center

Looking Ahead for FY2023



- **Complete GLM and MALMA publications**
- **Expand Field Campaign Explorer tie-ins**
 - Gridded LMA and gridded GLM products
- **Continue work on Lightning Dashboard**
 - Gridded LMA and gridded GLM products
 - Address feedback received
- **Incorporate other LMA networks**
- **WMO global datasets**
 - Global gridded lightning product
 - Will incorporate majority of public, private, and international sensors
- **Lightning Above the Troposphere Workshop**
 - May 2022
 - Potential source for new lightning datasets for GHRC

Airborne Lightning Observatory for FEGS and TGFs (ALOFT)



- **ALOFT is joint venture between University of Bergen (Norway) and NASA**
- **4-week, 50-hour ER-2 campaign scheduled for July 2023 out of Key West, FL (or comparable FL airbase)**
- **Science focus is Terrestrial Gamma-ray Flashes (TGFs) produced by thunderstorms.**
- **Main payload**
 - FEGS
 - LIP
 - two gamma-ray detectors
- **Science goals:**
 - Observe TGFs in one of the most TGF-intensive regions on the planet.
 - Observe gamma-ray glows in thunderstorms and their relation to TGFs.
 - Perform GLM and ISS LIS validation using improved suborbital instrumentation.
 - Evaluate new design concepts for next-generation spaceborne lightning mappers.
 - If relevant instrumentation is available, make measurements useful to advance convection science from a suborbital platform.



THANK YOU!

QUESTIONS?

