

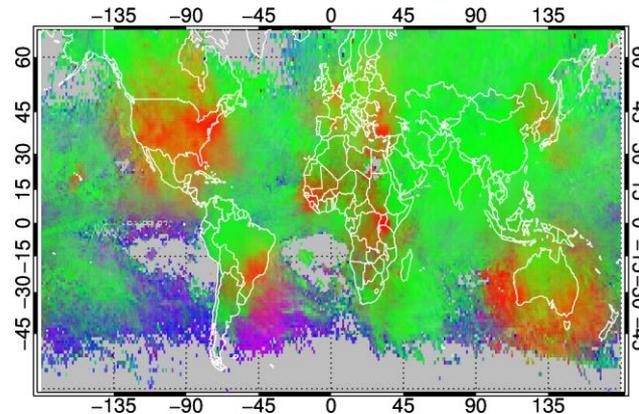
Bayesian Merging of GLM data with Ground-Based Networks

Phillip Bitzer (UAH), Christopher Schultz (NASA), Jeffrey Burchfield (UAH)

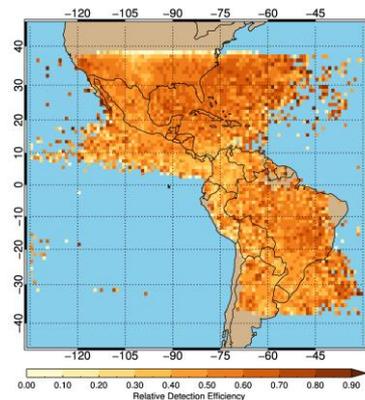
This research helps NOAA meet the Weather-Ready Nation goal by advancing how lightning data is used to reduce loss of life and property from weather events.

Specifically, this research uses the GOES-R GLM, in combination with other data sources, to derive both a more comprehensive view of the lightning that is occurring and a new lightning-based product that can be used in severe weather forecasting and fire weather applications.

- The Geostationary Lightning Mapper (GLM) will detect total lightning (intracloud and cloud to ground) over a hemispheric domain with high detection efficiency (DE) but is generally unable to discriminate between flash type.
- Ground based lightning location systems can provide flash type, but the detection efficiency varies across the domain and by type.
- This project will merge, via Bayesian methods, lightning detected by GLM and ground systems to produce 1) a better estimate of all lightning occurring and 2) provide an estimate of the cloud flash fraction in near-real time.



DE of three ground systems. The color (ENTLN:red, GLD+NLDN:green, WWLLN:blue) is the proportional to the performance of each system.



Relative detection efficiency of the Lightning Imaging Sensor (similar in performance to GLM) to ENTLN. The detection efficiency of ENLTLN to LIS is 14% across this domain.