GOES-R AWG GLM Val Tool Development

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We are developing tools needed to enable the validation of the Geostationary Lightning Mapper (GLM). In order to develop and test these tools, we have need of a robust, high-fidelity set of GLM proxy data. Many steps have been taken to ensure that the proxy data are high quality. LIS is the closest analog that exists for GLM, so it has been used extensively in developing the GLM proxy. We have verified the proxy data both statistically and algorithmically. The proxy data are pixel (event) data, called Level 1B. These data were then clustered into flashes by the Lightning Cluster-Filter Algorithm (LCFA), generating proxy Level 2 data. These were then compared with the data used to generate the proxy, and both the proxy data and the LCFA were validated.

We have developed tools to allow us to visualize and compare the GLM proxy data with several other sources of lightning and other meteorological data (the so-called shallow-dive tool). The shallow-dive tool shows storm-level data and can ingest many different ground-based lightning detection networks, including: NLDN, LMA, WWLLN, and ENTLN. These are presented in a way such that it can be seen if the GLM is properly detecting the lightning in location and time comparable to the ground-based networks.

Currently in development is the deep-dive tool, which will allow us to dive into the GLM data, down to flash, group and event level. This will allow us to assess performance in comparison with other data sources, and tell us if there are detection, timing, or geolocation problems. These tools will be compatible with the GLM Level-2 data format, so they can be used beginning on Day 0.