

## **Integration of the Geostationary Lightning Mapper with ground-based lightning detection systems for National Weather Service Operations**

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### Abstract

With the continued increase of data, forecasters under the time constraints of warning decisions and decision-support services (DSS) can greatly benefit from the availability of single lightning product or bundle within operations. Since the methodology for the detection of lightning from each network is different (i.e., high frequency radiation, low frequency radiation, or optical detection), different segments of lightning flashes will be detected by each system. A combined detection algorithm may be able to better contribute to the overall understanding storm development and lightning safety. This project utilizes the operational multi-radar/multi-sensor (MRMS) system and capabilities to blend the satellite-based lightning detection data from the new GOES satellites with that from ground-based systems (e.g., Vaisala National Lightning Detection Network or Earth Networks Total Lightning Data). The primary goal is to create a blended product for forecasters every 2 min with little-to-no delay into operations. We will test different aspects of lightning detection from the systems against severe storm and hazardous weather properties and reports such as the hail, straight-line wind and tornadoes to determine the optimal lightning properties (e.g., flashes, groups, events) and resolution within NWS operations. These gridded products will be developed with current forecaster sequencing and data interrogation methods in mind such that forecasters can easily move through the products in time and space similar to other radar products currently commonly used in operations.