Assimilation of High-Frequency GOES-R Geostationary Lightning Mapper (GLM) Flash Extent Density Data in GSI-Based EnKF and Hybrid for Improving Convective Scale Weather Predictions

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The project would help accelerate the use of GOES-R GLM data in operational models, and thereby help meet the Weather Ready Nation objectives and realize the Warn-on-Forecast goals.

- **The Geostationary Lightning Mapper (GLM) on board of GOES-R provides almost continuous coverage of total lightning data over the CONUS. Lightning flash extent density (FED) data products at up to 8 km pixel resolution and sub-minute time intervals will be available.**
- **This project will implement and test direct assimilation capabilities for GOES-R GLM data within the operational GSI framework, by using advanced ensemble Kalman filter (EnKF) and hybrid ensemble-variational (EnVar) methods.**
- **The data assimilation system will be coupled with advanced multi-moment microphysics schemes to evaluate the impact of microphysics sophistication on the effectiveness of GOES-R GLM data assimilation.**
- **The capabilities developed will be first tested using selected, representative convective cases, then evaluated extensively in realtime during the Hazardous Weather Testbed (HWT) Spring Experiment.**
- **The impacts of assimilating additional GOES-R GLM data with and without operational radar data will be assessed by comparing against parallel data assimilation and forecast members of the Storm-Scale Ensemble Forecasts to be run by CAPS during HWT Spring Experiment.**
- **This is a new project starting in April 2017. Not result to show yet.**