High Impact Weather Forecasts and Warnings with the GOES-RGeostationary Lightning Mapper (GLM)

Presenting_Author: Steven Goodman,
NOAA/NESDIS, GOES-R Program Office
320 Sparkman Dr
Huntsville, AL   35805,
USA

Second_Author: Richard Blakeslee
NASA/MSFC, Huntsville, AL

Third_Author: William Koshak
NASA/MSFC, Huntsville, AL

Fourth_Author: Douglas Mach
UAHuntsville, Huntsville, AL

Abstract: The Geostationary Operational Environmental Satellite (GOES-R) is the next series to follow the existing GOES system currently operating over the Western Hemisphere. A major advancement over the current GOES include a new capability for total lightning detection (cloud and cloud-to-ground flashes) from the Geostationary Lightning Mapper (GLM). The GLM will operate continuously day and night with near-uniform spatial resolution of 8 km with a product refresh rate of less than 20 sec over the Americas and adjacent oceanic regions. This will aid in forecasting severe storms and tornado activity, and convective weather impacts on aviation safety and efficiency. In parallel with the instrument development, a GOES-R Risk Reduction Science Team and Algorithm Working Group Lightning Applications Team have begun to develop cal/val performance monitoring tools and new applications using the GLM alone, in conjunction with other instruments, and merged or blended integrated observing system products combining satellite, radar, in-situ and numerical models. Proxy total lightning data from the NASA Lightning Imaging Sensor (LIS) on the Tropical Rainfall Measuring Mission (TRMM) satellite and regional ground-based lightning networks are being used to develop the pre-launch algorithms, test data sets, and applications, as well as improve our knowledge of thunderstorm initiation and evolution. In this presentation we review the planned implementation of the instrument and suite of operational algorithms.