

Bolides detected by GLM and ground-based meteor networks

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The Geostationary Lightning Mapper (GLM) instrument onboard NOAA satellites GOES-16 and GOES-17 is a near-infrared optical transient detector designed to detect lightning to support weather forecasting and meteorology research over North and South America. It continuously collects high-resolution measurements on transient events at 500 fps and releases real-time data to the public. These transient events serendipitously include bright bolides, as evidenced by recent work comparing United States government satellite detections to GLM data [1], as well as studies examining meteorite falls in Michigan [2] and Cuba [3]. These findings indicate that GLM reliably detects superbolides (and meteorite-producing events). To determine the utility of GLM in detecting fainter bolides that are regularly reported by the public, we undertook a study to correlate GLM detections to bolides observed by the NASA All Sky Fireball Network [4] and the Southern Ontario Meteor Network [5]. This study found over 30 correlations using publically available GLM Level 2 data products, yielding information about how GLM data can be used to identify and characterize bolides. An overview of the GLM data extraction and analysis techniques as well as several case studies will be discussed.

References

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