

## **Utilizing Sub-Flash Properties of GLM to Monitor Convective Intensity with Probabilistic Guidance**

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### Abstract

Rapid increases in total lightning (lightning jumps) are the result of increases in mixed-phase updraft speed and size. Recent work has developed a lightning jump algorithm to objectively identify when a storm has produced a lightning jump using lightning flash data. With the successful launch into orbit of GOES-16, the Geostationary Lightning Mapper brings a long awaited opportunity to measure lightning from space. The GLM instrument will provide sub-flash properties of lightning that directly relate to physical processes within the lightning channel and thunderstorm. Therefore, the goal of this proposal is to understand the impact of and integrate the sub-flash components from the GLM into the operational lightning jump algorithm to improve assessment of thunderstorm strength. This work has the potential take the use of lightning data for hazardous weather monitoring beyond the instrument dependent term “flash” and directly relate to basic physical quantities like radiance, energy, and size. The end result will be a GLM based lightning jump algorithm that can be utilized within the entire field of view of GOES-16 or the future GOES-S, T, and U missions.