The GLM/Radar fused tracking algorithm used to assign characteristics to storms (the VILFRD Method; Schultz et al. 2016).

The current challenge is transitioning the lightning jump algorithm from its LMA-based roots to GLM. The LMA and GLM measure different properties of lightning (electrical breakdown vs optical energy), and thus the LMA-based algorithm will need to be adjusted to the GLM data. Furthermore, it is known that the term “flash” is defined by the instrument making the measurement, therefore, simply adjusting the algorithm to the GLM flash rate will not produce similar results. Previous works that took the LMA-based jump algorithm and placed NLDN and Earth Networks data into the algorithm. Often sub-severe storms were identified as severe by the algorithm, leading to high false alarm rates (Chronis et al. 2014, Eck et al. 2017). Therefore, the goal of the present work is to understand how the GLM, LMA, and ground based networks like the NLDN observe lightning. Additionally, GLM provides new measurements of flash size and flash radiance that are more physically connected to the kinematics and microphysics of the parent storm. Therefore, the authors are working to characterize how the trend in these measurements align temporally with the LMA-based lightning jump algorithm.

Early Observations

1) At times, inverse trends in flash rate are observed between the LMA flash rate and the GLM flash rate. This is likely due to GLM’s lightning cluster filter algorithm merging smaller flashes that occur in the same GLM pixel or splitting very large flashes.

2) Monitoring GLM group/event rates should be the more intuitive way to monitor lightning from thunderstorms for severe weather potential versus GLM flash rate.

3) Multiple NLDN flashes continue to be associated with single LMA or GLM flashes. This is due to the lack of areal information from these types of networks to combine multiple detections that are part of the same lightning event.

4) GLM flash areas and radiance values are still to be explored. This will occur after the release of level 2 GLM data in January 2018.

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