Proximity Alerts Based on Total Lightning

Intended for the Meteorological Applications of Lightning Data Session Topic

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Outdoor activities, from golfing to construction of nuclear power plants, are vulnerable to lightning strikes. Those responsible for safety of personnel and security of assets need the best possible information on which to base lightning hazard-warning decisions. Several past studies have suggested that in-cloud (IC) lightning often (but not always) precedes the first cloud-to-ground (CG) lightning flash in an area of concern (AoC) by several minutes. This suggests that use of total lightning for lightning hazard-warning decision support should often afford decision makers an opportunity to warn personnel earlier than if the data were limited to CG flashes only. This paper compares lead times before the first (CG) lightning flash in an AoC and alert duration using total lightning with the lead times and durations based on CG lightning only and provides an estimate of the percentage of first flashes in a storm that are IC and CG.