The Effectiveness of Using Total Lightning Data for Severe Storm Prediction

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Studies have confirmed that Intracloud (IC) lightning can provide better indicators of storm severity than cloud-to-ground (CG) lightning only. The detection of total lightning data, especially the IC lightning, enables improvements in the lead time of severe weather prediction and alerting. Earth Networks Total Lightning Network[TM] (ENTLN) provides the capability of detecting total lightning data efficiently on a continental scale. Using the total lightning data from ENTLN, a real-time lightning cell tracking program has been developed to identify and track the properties of storm cells, such as the lightning flash rate, moving direction and speed of the lightning cells. The Earth Networks Dangerous Thunderstorm Alert (DTA) based on the real-time cell tracker has been successfully used in the Earth Networks nowcast system for several years. In this presentation, the methodologies employed in creating the dangerous thunderstorm alerts and the statistical analysis on the performance of the DTAs will be discussed. The objective study on the effectiveness of DTA, by comparing with U.S. National Weather Service (NWS) severe storm warnings and storm reports in CONUS for the entire year of 2011, will be presented.