

**SSEC/CIMSS  
Seminar**

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**An objective radar-derived hail climatology for the  
Contiguous United States**

The threat of damaging hail from severe thunderstorms affects many communities and industries on a yearly basis, as evidenced by annual economic losses in excess of 1 billion US dollars. Past hail climatologies typically rely on the National Climatic Data Center's Storm Data, which has numerous reporting biases and non-meteorological artifacts. This research seeks to quantify the spatial and temporal characteristics of contiguous U.S. (CONUS) hail fall, derived from multi-radar multi-sensor (MRMS) algorithms for several years during the Next-Generation Radar (NEXRAD) era.

The primary MRMS product used in this study is the maximum expected size of hail (MESH). The preliminary climatology includes 40 months of quality-controlled and re-processed MESH grids, which spans over the warm seasons for 4 years (2007-2010), covering 96.4% of all hail reports during that time. The dataset has  $0.01^\circ \times 0.01^\circ \times 31$  vertical levels spatial resolution, and 5-minute temporal resolution. The radar-derived and reports-based methods of hail climatology are compared. It is argued that MRMS MESH has superior coverage and resolution over Storm Data hail reports, and is largely unbiased. Results of this research include confidence intervals of objective probabilities of hail size for given environments and storm modes, using a storm-typing decision tree algorithm, as well as the spatial and temporal character of those environments over the CONUS.

**Friday, 5 August 2011  
10:00 a.m.  
Room AOSS 351**