

**SSEC/CIMSS
Seminar**

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**Development and Application of a
Satellite-based Convective Cloud
Object-Tracking**

Convective clouds develop on the order of minutes to hours. To capture the developmental portion (infancy to maturity) of a convective cloud lifecycle, it is necessary to monitor these types of clouds at a high temporal resolution. Geostationary imagers offer expansive spatial coverage (ranging from CONUS to full disk) at high temporal resolution (5-15 minutes). Often, satellite data is processed and used on the pixel level; in this work satellite pixels are grouped together to create cloud objects. These cloud objects can be tracked across space and time in an automated manner, in a way very similar to how a human interprets satellite data.

The focus of this presentation is to, in detail, demonstrate the methodology developed at UW/CIMSS to track convective clouds as objects through space and time using the Warning Decision Support System – Integrated Information (WDSS-II). WDSS-II cloud object output and a UW/CIMSS post-processing methodology together allow cloud objects to maintain unique, consistent object ID numbers through space and time. Once cloud objects are generated, statistics (both spatial and temporal) from any number of fields, from any variety of inputs (satellite, radar, lightning, NWP, etc.) can be tracked for each cloud object. Two NOAA/CIMSS projects are utilizing this cloud tracking methodology: The validation of UWCI/CTC cloud-top cooling rate vs. various NEXRAD fields, and the development of a naïve Bayesian Probabilistic Severe Thunderstorm Nowcasting algorithm. These two projects and their unique implementation of the convective cloud object tracking capability will be briefly presented.

**Thursday, 18 August 2011
2:00 p.m.
Room AOSS 351**