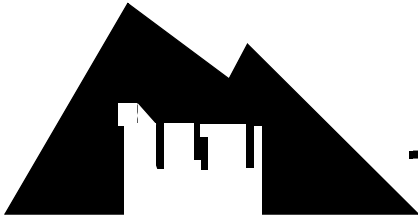


# *The RAL Seminar Series*

**NCAR**

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## **Investigating the "Time of Wind Return" Associated with Transient Convection at Airport Terminals**

by

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***Tuesday, February 14, 2012, 3:00 p.m.  
Foothills Lab Building 2, Room 1001***

Air traffic operations are significantly impacted when convective weather impacts an airport terminal. In addition to the immediate safety threats associated with thunderstorms, convectively-induced outflow winds (typically referred to as "gust fronts") often result in drastic changes in wind speed and direction at the airport that require runway reconfigurations. Over the years, much research and development has been devoted to identifying and predicting gust front passage through airport terminal airspace, resulting in advanced capabilities and decision support utilized by traffic managers to increase airport capacity, enhance operational efficiency, and reduce delay.

Significant challenges remain however in managing terminal airspace and airport surface operations when thunderstorms force winds to shift significantly from the pre-impact "synoptic" wind direction. One of the most vexing challenges for traffic managers and tower controllers is trying to determine when the off-nominal wind conditions - and resultant changes and impacts to the air traffic operation - associated with transient convection will cease and the pre-impact wind regime will become re-established. One of the most common questions posed by traffic managers at New York airport towers related to weather impact management in recent years has been "When will my winds return?" - In reference to the uncertainty as to when storm-induced wind shift conditions will cease and the wind conditions prior to the storm impact in the terminal will resume. Without "Time of Wind Return" (TOWR) information, airport operations are plagued by reactive runway reconfigurations, inefficient runway and taxi queue management, and increased workload as decision-makers try to anticipate wind shifts back to pre-storm conditions.

Funded by the FAA, AvMet has developed preliminary criteria defining terminal convective events possessing a Post-Occurrence Wind Return (POWR) and a corresponding TOWR. Focusing first on five target airports, this seminar will highlight the frequency and characteristics of terminal convection, storm-induced wind shifts, and POWR events - all in the context of active runway usage. Per airport and per runway distributions of TOWR, and ongoing refinements to TOWR results, will be presented. Ongoing work to assess capabilities to anticipate POWR events and to provide a TOWR prediction, as well as to investigate the potential operational benefits of a TOWR forecast, will be discussed.