

# UConn

## UNIVERSITY OF CONNECTICUT

**Department of Marine Sciences  
Presents a Seminar By**

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UConn Civil and Environmental Engineering**

### **Atmospheric composition and dynamics: aerosol influence on cloud/precipitation formation and prediction of extreme weather events**

Extreme weather events associated with high wind speed and precipitation (rain, snow, ice) have severe impacts in human lives and the environment and have become more frequent in the Northeastern part of United States. The storm type, strength and duration dictates the severity of the consequences to infrastructure and every-day life as well as human life itself. The linkages between weather prediction, weather impacts and resiliency have become a major target for legislators and scientists in the recent years. In this work, we present the framework under which we use numerical weather prediction models in-house to produce real-time operational forecasts during extreme weather events for NE U.S. and further analyze past storm cases that affected the region. Approximately 100 storms have been analyzed so far covering the period from 2001 to 2014 ranging from thunderstorms, snow/ice storms to typical winter storms and hurricanes. The numerical weather prediction models used are WRF and RAMS/ICLAMS in the view of assessing the uncertainty of atmospheric variables by implementing two different and, at the same time, similarly configured modeling systems. To accomplish that, we use the two models to create an ensemble that informs other research activities related to infrastructure resiliency and adaptation. Going one step forward, we assess the effects of natural aerosols (sea salt, desert dust) in atmospheric dynamics by including the radiative feedback and the explicit treatment of cloud condensation nuclei in the atmospheric simulations. The consistent coupling between atmospheric physical and chemical processes allows the investigation of aerosol effects on meteorological conditions and vice versa in an interactive way. The seminar will be dedicated in explaining the background knowledge on how these interactions materialize and how we use state-of-the-science numerical models to assess their effects and further improve the predictions.

**Host:** Penny Vlahos

**Time & Date:** 11:00 am, Friday, March 20, 2015

**Place:** Marine Sciences Building, Seminar Room 103

Please see this [page](#) for cancelations and additional seminar information, email [marinesciences@uconn.edu](mailto:marinesciences@uconn.edu), or call 860-405-9152 or 860-405-9151