ATS/CIRA Colloquium

Kelly Lombardo

Visiting ATS from the University of Connecticut

The Behavior of Coastal Squall Lines

Hosted by Michael Bell

Friday, April 27, 2018

ATS room 101
Discussion will begin at 11:15 a.m.
Refreshments will be served at 10:45 a.m. in the weather lab

Organized mesoscale convective systems, specifically quasi-linear convective systems (QLCS) or squall lines, respond to surface heterogeneities within coastal regions resulting from the presence of the marine atmospheric boundary layer (MABL) and complex elevated terrain. As organized storms move over and interact with these features, storm evolution, lifetime, mode, and severity are impacted. The response of QLCSs to the stable atmospheric marine layer is dependent on the depth and buoyancy of the stable layer, characteristics of the storm's cold pool, and the time of collision between the MABL and the cold pool in a storm's lifecycle. Furthermore, the presence of a stable boundary layer is not always a detriment to storm survival, and at times can contribute to enhanced storm intensity. As storms move over coastal land surfaces with varying topographic relief, they respond to resultant changes in ambient instability and vertical wind shear. Additionally, characteristics of storm cold pools vary as they ascend and descend the sloping surfaces, impacting storm-scale physical processes and storm characteristics. In this presentation, I will discuss recent research results from idealized numerical sensitivity experiments quantifying the impact of the MABL, terrain, and the combined impact of both on QLCSs.

Link to colloquia page: https://www.atmos.colostate.edu/colloquia/