



Effects of Soil Moisture Variations on Summertime Convective Activity over the Floridian Peninsula

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The Model

An idealized WRF-ARW 2d sea-breeze model is used to simulate the Floridian peninsula. A warm central land mass initiated onshore flow over a period of 20 hours.

Model Domain:

- 6km x 664km domain with 35 linearly spaced vertical levels
- 2km grid resolution
- Land mass at the center of the domain spans 110 grid points
- Time domain: June 1st 2012 0000-2000 local time

Model Specifications:

- No convective parameterization scheme is used
- Unified Noah Land Surface model is used
- Soil moisture varies uniformly across the four soil layers

Objectives:

- Determine the effect of soil moisture on atmospheric moisture over 1 day
- Analyze sea-breeze structure and strength with various soil moisture conditions
- Investigate soil moisture effects on daytime heating

0-2m Soil Moisture Cases

Drought: 0.02 m³/m³

Dry: 0.075 m³/m³

50% Saturation: 0.1875 m³/m³

Wet: 0.3 m³/m³

Super Saturation: 0.6 m³/m³

References:

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