Intercomparison between PBL schemes in WRF model:
Application to GMAST

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Abstract

There are serious deficiencies with all boundary layer parameterizations and land surface schemes in atmospheric mesoscale numerical models. The main problems are: (i) poor characterization of boundary layer heights, (ii) an inability to represent stable boundary layers, and (iii) uncertainty in calculation of fluxes at the sea surface under high winds. Significant biases were also noted for the surface and 2-mag temperatures.

In this presentation, we identify the limitations of current version of the state-of-the-science WRF mesoscale model used in MATERHORN project for mountain-terrain weather prediction. Intercomparison between different PBL schemes showed that modifications of existing parameterizations or development and implementation of new parameterizations is needed to improve WRF predictability. Modeling results in application to complex terrain region (Dugway, Utah) are discussed. This research is funded by the US Office of Naval Research, Award # N00014-11-1-0709, Mountain Terrain Atmospheric Modeling and Observations (MATERHORN) Program.