

The RAL Seminar Series



NCAR

Estimating Continuous-coverage Instantaneous Precipitation Rates Using Remotely-sensed and Ground-based Measurements

by

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**Wednesday, June 1, 2011
Foothills Lab Building 2,
Room 1001, 2:00 p.m.**

This study demonstrates a method of temporally and spatially scaling precipitation rates at low probability of precipitation rate exceedance levels (e.g., 0.1%) from coarser resolution global data sets to near-instantaneous localized rain gauge precipitation rates. In particular, the 8 km, 1-hr resolution Climate Prediction Center Morphing (CMORPH) data set was scaled to one-minute localized rates using the Automated Surface Observing Station (ASOS) rain gauge data. Maps of these scaled precipitation rates show nearly identical overall patterns and magnitudes to the lower spatial resolution rain gauge maps, yet retain the much higher resolution of the original remotely-sensed global data set, which is particularly important over regions of complex geography and sparse surface observing stations. In order to scale the CMORPH data, temporal and spatial conversion factor arrays were calculated by comparing precipitation rates at different temporal (ASOS one-minute and one-hour) and spatial (ASOS one-hour and CMORPH one-hour) resolutions. These temporal and spatial conversion factors were found to vary by probability level, season, and climatological region. Meteorological implications of these variations are discussed.