

Title: Gridded MOS

Background information:

The Interactive Forecast Preparation System (IFPS) is now operational at all NWS forecast offices located within the conterminous United States (CONUS). Implementation at forecast offices in the Alaska and Pacific Regions is scheduled for 2004. The IFPS is designed to provide official NWS forecasts on a high-resolution grid covering the county warning area of each WFO. Individual WFO grids are subsequently combined into a high-resolution mosaic covering the CONUS and available through the National Digital Forecast Database (NDFD). For NWS forecasters to produce accurate forecasts on a high-resolution grid in an optimal manner, guidance must be available on a grid at a resolution comparable to that used in the WFO forecast process. MDL is currently developing a prototype system for the western United States in which the MOS guidance is produced on a high-resolution grid. For purposes of this discussion, we refer to this grid as one having 5-km resolution. However, nothing in MDL's approach depends upon that particular resolution. The prototype system is designed to produce MOS guidance for maximum and minimum temperature, 2-m (shelter) temperature and dew point, 10-m wind speed and direction, probability of precipitation, probability of thunderstorms, and snowfall amount.

The benefit of the MOS approach is its ability to reduce the bias and quantify the uncertainty of the numerical prediction model as well as to calibrate actual station observations to the numerical model output. MOS provides guidance at points located between the model grid points. An established verification record documents that the MOS guidance adds value to the raw output from the numerical model and is often comparable in skill to the forecasts produced by the human forecaster. In adapting the MOS approach to provide gridded guidance, MDL is using high-resolution geophysical datasets, as well as available mesonet observational data. MDL's objective in doing this work is to generate gridded guidance with accuracy comparable to that of the station-oriented guidance. Dissemination of these grids to the NWS forecaster would enhance the quality of the final forecasts produced for the NDFD and transmitted to NWS customers and partners.