ABSTRACT

Precipitation observations from the February 2000 Intermountain Precipitation Experiment (IPEX) are collected, quality controlled, and used to create a data set of 6- and 24-h precipitation totals. These totals are combined with reflectivity from the KMTX Weather Surveillance Radar-1988 Doppler (WSR-88D) to document the spatial structure and temporal evolution of precipitation during six IPEX intensive observation periods (IOPs). The precipitation data are also used to validate quantitative precipitation forecasts (QPF) of three models: the operational Aviation (AVN) and Eta models available from the National Centers for Environmental Prediction and the Fifth-Generation Pennsylvania State University/National Center for Atmospheric Research Mesoscale Model (MM5) run in real time at the University of Utah.

Each of the storms during the IPEX IOPs had significantly different characteristics, which resulted in complex spatial distributions of precipitation. The resolutions of the models are too coarse to accurately predict the fine scale of the precipitation structures, but forecasts from the higher-resolution MM5 show improvement over the forecasts of the coarser-resolution AVN and Eta models.

A simple objective technique is used to quantify model QPF skill for the MM5 as a function of climatological zones. The mean precipitation at MM5 grid points within each zone is compared to the mean observed precipitation at gauges. The degree to which the mean error is significant is assessed as a function of the predicted and observed variability

of precipitation within the zone. The MM5 tends to overforecast precipitation in the Wasatch Mountains while it exhibits no clear trend for over- or underforecasting along the Wasatch Front.