

## AVN-Based MOS Precipitation Type Forecasts

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One important aspect of forecasting a precipitation event is being able to predict in what form the precipitation will fall. Rain storms can cause massive flooding, while heavy snow disrupts schools, transportation, and communication. Ice storms are a major concern to utility companies and the aviation industry. The knowledge of what type of precipitation will fall is vital to those who must plan how to handle an upcoming storm and issue warnings to the public. Probability of precipitation type (PoPT) forecasts have been produced by the Techniques Development Laboratory (TDL) of the National Weather Service for over 20 years. These forecasts have been produced by applying the Model Output Statistics (MOS) technique to output from the numerical weather prediction models run at the National Centers for Environmental Prediction (NCEP). The current PoPT system is based on the Nested Grid Model (NGM). Forecasts are valid every 3 hours from 6 to 36 hours and every 6 hours from 42 to 60 hours after both 0000 and 1200 UTC. Guidance for the conditional probabilities of freezing, frozen, and liquid precipitation and a "best category" forecast of the precipitation type are available for each forecast projection. The NGM-based MOS guidance is available in alphanumeric form for over 600 stations in the contiguous U.S. and Alaska.

Work is currently underway to develop a new MOS PoPT guidance system based on output from the Aviation run (AVN) of NCEP's Global Spectral Model. Equations are being developed to produce the conditional probabilities of freezing, frozen, and liquid precipitation; in turn, these probabilities will be used to determine a categorical forecast of precipitation type. The AVN-based PoPT guidance will be analogous to the current operational NGM product, but the new system will produce forecasts valid every 3 hours from 6 to 72 hours after the 0000 and 1200 UTC AVN model runs, and PoPT guidance will be disseminated for approximately 1000 stations throughout the United States. TDL plans to implement this guidance in late 1999. In this talk, we focus on the development of the PoPT forecast system, including a discussion of the developmental sample, the definition of the predictands, the method of equation development, and the selection of predictors. An explanation of how these conditional probabilities are used to determine the categorical forecasts is also presented. Comparisons between the operational NGM MOS PoPT guidance and AVN-based guidance produced by test equations are shown. Finally, we discuss future work in the area of precipitation type forecasting.