

## **Nonlinear Post-processing of Model Output: Ceiling and Visibility (NPMO)**

**PROGRAM/PROJECT:** Center for Analysis and Prediction of Storms (CAPS)

**LEAD AGENCY/COLLABORATING AGENCIES:** University of Oklahoma (OU) Center for Analysis and Prediction of Storms (CAPS) / National Weather Service - Seattle

**PROGRAM POINT OF CONTACT:** Caren Marzban, Center for Analysis and Prediction of Storms, 206-282-9791, marzban@caps.ou.edu

### **SERVICE AREA(S)/INITIATIVE(S)**

- *National Aviation Weather Initiatives:*  
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### **FUNDING**

- *Programmed/Planned (\$'s/FY):* Funded in FY03 & FY04 via a COMET grant.

### **TYPE OF PROGRAM/APPLICATION**

Product Development

### **SCOPE OF PROGRAM/PROJECT**

- *What's being developed, procured, etc:* The goal of the project is to develop a statistical post-processor for the 5<sup>th</sup> Generation PSU-NCAR Mesoscale Model (MM5). The postprocessor will first combine the MM5 as well as hourly surface observations and then utilize this combined data as inputs (i.e., predictors) into a nonlinear statistical model. Both nonlinear regression and neural networks will be considered as statistical techniques. The primary objective is to derive more accurate forecasts of ceiling and visibility.
- *How operations will be changed/improved:* The statistical system developed will improve short-term forecasts of ceiling and visibility at 28 stations in the northwestern United States, as desired by the National Weather Service.

### **PROGRAM/PROJECT MANAGEMENT**

- *Basic guidance document for this program:* Leyton, S. M. and J. M. Fritsch, 2003: Short-term probabilistic forecasts of ceiling and visibility utilizing high density surface weather observations. *Wea. Forecasting*, **18**, 891-902. Marzban, C., 2003: A neural network for post-processing model output: ARPS. *Mon. Wea. Rev.*, in press.
- *Program/Project verification process:* N/A
- *Method used for product validation:* N/A
- *Operational training for the user:* No training will be required on the part of the prospective users. The forecaster will simply be presented a series of numbers, with each number representing the probability of a given ceiling or visibility threshold being exceeded.

### **SCHEDULE/IMPLEMENTATION**

- *Next major program milestone:* Organization and preprocessing of model and observational data; Statistical forecast equation development.
- *Program becomes operational:* TBD
- *Plans for further improvements:* Apply technique to other NWS stations as well as other NWP models.