An assessment of local forecaster's ability to anticipate convective event severity and magnitude using the Hazardous Weather Outlook product at WFO Binghamton, New York

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The Hazardous Weather Outlook (HWO) is an important tool for National Weather Service forecasters to communicate the potential magnitude and severity of upcoming significant weather events. The outlook is issued at least twice per day, and contains information on the potential for hazardous weather during the next seven days. As such, a review of the contents of the product can be used to evaluate forecaster's ability to anticipate hazardous weather. This presentation shows results from a study that examines the HWO issued at the National Weather Service Forecast Office in Binghamton, NY (WFO BGM), and compares the contents of the product to subsequent occurrences of convective severe weather within the first 24 hours of the forecast.

HWO products from WFO BGM were examined from 2012-2014. Contents of the product were compared to the occurrence of severe convective weather in the first 24 hours of the forecast, to evaluate the forecaster's ability to anticipate severe weather. This research is part of a larger project to identify severe convective scenarios with low-predictive skill in the northeast U.S., which is being supported by the Collaborative Science, Technology and Applied Research (CSTAR) program, including the National Weather Service and the State University of New York at Albany.

In order to objectively evaluate the content of the HWO forecasts, an assumption was made that forecasters were communicating a substantial probability for significant severe convection when certain key words and phrases, such as "severe", "large hail" and "damaging winds" were included in the product. A subsequent event was defined as significant any time five or more severe reports occurred in the WFO BGM county warning area in the 24 hours after the HWO was issued. Verification was confined to HWO products issued during the early morning hours. Preliminary results from this study indicate that forecasters at WFO BGM were able to anticipate significant convective events nearly 60 percent of the time at time ranges less than 24 hours. However, the false alarm rate for those events was just over 50 percent. When the threshold for an event was increased to 20 or more reports, the probability of detection increased to around 70 percent. An examination of RAP model proximity soundings associated with the events indicated that the best forecasts were made in environments characterized by large convective available potential energy and large 0-3 km shear. However, when one of those factors was missing, the tendency toward both missed events and false alarms increased substantially. It is believed that the results of this study, along with the larger CSTAR-supported research for the entire northeast U.S., will ultimately be useful for improving forecaster's ability to anticipate the magnitude and severity of imminent convective events.