

Forecaster Decision-Making with Automated Probabilistic Guidance in the 2015 Hazardous Weather Testbed Probabilistic Hazard Information Experiment

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This presentation summarizes findings from the 2015 Hazardous Weather Testbed (HWT) Probabilistic Hazard Information (PHI) experiment with National Weather Service (NWS) forecasters, an effort that is part of Forecasting a Continuum of Environmental Threats (FACETs). The primary objective of this experiment focused on the generation of probabilistic forecasts for severe convective weather (any severe and tornadoes) by giving forecasters the ability to evaluate, accept, allow, deny, or partially override first-guess, automated probabilistic guidance, in addition to the option for manual probabilistic forecast generation (evaluated in 2014). Forecasters worked in both real time and on two displaced real time events. Automated guidance made available to the forecasters included NOAA/CIMSS ProbSevere objects, a real-time statistical model for calculating the probability of a storm producing severe weather in the next 60 minutes, and an early implementation of radar-derived azimuthal shear objects for probabilistically denoting the forecast occurrence of tornadoes.

The tools that were developed for and used by the forecasters to interact with the automated guidance are also described. These tools were developed in a prototype web-application, and included a two-pronged slider to set thresholds for quickly masking none, part (low and/or high values), or all of the probabilistic guidance. Additionally, forecasters could select individual automated objects to allow or deny, or override a portion of the object attributes, including the duration, discussion, object position/shape, as well as forecast trends of probability, speed, and direction. In addition to the prototype web application, forecasters used AWIPS 2 to interrogate storms and view the rapidly-updating probabilistic forecasts they generated. Forecasters were observed as they were working with PHI, and completed usability and situation awareness surveys and the NASA Task Load Index after each case or event. Research data will be combined with feedback from forecasters and emergency managers to improve algorithm performance and improve the prototype tool functionality. These results will inform future development and HWT experiments.