What's New at the Storm Prediction Center

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ABSTRACT

The Storm Prediction Center (SPC) in Norman, OK continues to be at the forefront of emerging hazardous weather forecasting techniques and verification systems that offer unique insights into how researchers and forecasters alike can assess severe storm environments. Large strides have been taken to improve the forecast of severe convective weather by developing and utilizing improved objective analysis of the near-storm environment, short-term and storm-scale ensemble forecasting systems, and a more robust and comprehensive verification system. These, in turn, have allowed operational forecasters to prepare and disseminate modified and highly-effective products to the end-user.

Each year, SPC and the National Severe Storm Laboratory have jointly hosted a Spring Experiment that is a cornerstone of the NOAA Hazardous Weather Testbed located in Norman, OK at the National Weather Center. One of the goals of this experiment has been to investigate the use of convection-allowing model forecasts as guidance for the prediction of severe convective weather. The variety of model output allows forecasters and researchers to explore different types of guidance, including products derived from both short-range and storm-scale ensembles and deterministic forecasts. SPC forecasters have been successfully integrating some of the model guidance into an operational environment.

In addition to new and improved model guidance, SPC has been exploring a valuable and informative verification system that provides more information than a typical verification scheme. In the past, verification systems have simply compared severe weather forecasts to the number and distribution of verifying severe events. But, a more extensive verification system is needed that provides prompt and valuable feedback to forecasters, including links to synoptic/mesoscale patterns and environments that are related to forecast performance. Therefore, improvements can be made through a continuous learning process. A portion of the talk will be dedicated to the new and improved verification database and system that SPC has been developing. This new system is designed to include not only a comprehensive, multi-decade, digital database of severe reports and associated convective watches, but also links verification statistics and the synoptic/mesoscale backgrounds that drive the forecast process.

The opening of this presentation will briefly describe a few of the most memorable meteorological events from 2009 across the United States as seen through a national SPC perspective. Following the review highlights, a discussion involving the development of the short-term and storm-scale ensemble models will be given, including what model guidance has proven useful to the SPC operational environment. Additionally, an in-depth look at the severe weather relational database will be presented and how it is being used to improve convective forecasting and verification systems at SPC. Finally, to end the presentation, a description of a few new technologically advanced SPC products will be given, specifically as they relate to aiding our customers in making weather impact-based decisions.