Experimental gridded warning guidance for severe convective weather threats
(request poster presentation)

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Abstract

The National Weather Service (NWS) is presently transitioning to "storm-based" warnings (formerly known as "polygon" warnings) from "county" warnings to better serve the public by providing more specific information about hazardous weather threats. These storm-based warnings have the same general structure as county warnings, except that the threat area is assigned by a polygon that, in theory, is not restricted by county boundaries and should highlight a smaller area. However, the science and verification methods to support new warning practices are not fully developed, and it is imperative that applied researchers, alongside expert forecasters, take a leading role in the development of warning decision-making tools and techniques based on sound science, as well as enhanced severe storm verification methods, that support improvements to NWS Tornado and Severe Thunderstorm warnings.

The National Severe Storms Laboratory has a long history of collaboration with local NWS forecast offices (NWSFOs) across the United States and has conducted proof-of-concept tests for new warning decision-making tools [such as the Warning Decision Support System (WDSS) and WDSSII] at over 20 offices since the mid-1990s. The 2007 Hazardous Weather Testbed Experimental Warning Program (HWT/EWP) spring experiment kicked off a new era of collaboration between NSSL and local NWSFOs as we work on warning-scale (0-2 hour) nowcasting challenges for convective weather hazards. The goal of the first year of the project was to define new warning techniques that build upon "storm-based" warnings. These warnings have the following characteristics:

- More specific in time (when will the storm affect a location and when will it end?);
- More specific in space (covering less area; threat area advects with storm);
- More specific intensity estimates;
- Defines the types and intensity of threats (wind, tornado, hail, lightning);
- Defines the temporal, spatial, and intensity uncertainties of the threats through the use of probabilities that may be communicated to advance users.

Visiting forecasters used WDSSII applications and display tools to identify threat areas for each convective hazard type in real-time for events across the conterminous United States. These continuously updating threat areas will be compared to storm-based and county-based warnings to evaluate lead time at different points, area-under-warning and time-under-warning, and correct warnings and non-warnings on a high-resolution (~ 1 km^2) grid.