A local verification study of convection allowing model performance during convective events in eastern New York and western New England

Part I: Initial findings

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Convection Allowing Models (CAMs) have become an increasingly utilized tool for forecasters to anticipate the development and evolution of convective weather during the past several years. Formal and informal evaluations of CAMs during convective weather events have been performed over the past several years at testbeds, universities, modeling centers and forecast offices. This presentation describes a study recently completed at the National Weather Service Forecast Office in Albany NY (NWS ALY) on the performance of the 3-km NAM nest and HRRR models during convective events that occurred in eastern New York and western New England during 2021. The study utilized subjective evaluations from forecasters with a wide range of experience levels, using a methodology similar to evaluations done at NOAA’s Hazardous Weather Testbed. Participating forecaster’s experience level in this project ranged from undergraduate students, to National Weather Service forecasters with over 20 years of experience.

The study evaluated CAM forecasts from 32 events that included at least one report of severe weather and / or one report of flash flooding in the NWS ALY county warning area (CWA) during the 2021 warm season (severe cases). In addition, 16 cases were evaluated when NOAA’s Storm Prediction Center forecast at least a marginal potential for severe storms in the NWS Albany CWA, but no reports of severe weather occurred (null cases). For each case, forecasters evaluated CAM-forecasts of the magnitude of coverage of convection across the study area, timing of convection, and forecasts of convective mode (ie. linear vs. discrete). Results from the study indicated that CAM-forecast coverage tended to be slightly underdone for severe cases, but substantially overdone for null cases. The 00 UTC HRRR model was most overdone with coverage during null events. Both the NAM nest and HRRR tended to be too slow with timing of convection during severe cases, and no timing bias was evident for null cases. Finally, the NAM nest and HRRR model forecasts appeared to be of similar quality regarding storm evolution during severe cases. There did appear to be a tendency for the HRRR model’s forecasts of convective evolution to improve from the 00 UTC to the 12 UTC run times, while no such improvement was noted with the NAM nest.