The Major Lake-Enhanced Central New York Snowstorm of November 20-21, 2016

Part 1: Overview, Forecast Tools and Verification

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A very unusual lake-enhanced snow event occurred across central New York and extreme northern Pennsylvania on November 20-21, 2016. This presentation gives an overview of the event and illustrates the output from some tools available to forecasters to forecast the event. Verification of National Weather Service snowfall forecasts is shown using a new tool developed at the National Weather Service forecast office in Albany.

This event was unusual primarily due to the very large snowfall amounts observed across a widespread area of central New York. For example, snow amounts in the Syracuse area were as much as 90 cm (36 in) over 36 hours. Heavy snow also extended well south of the traditional lake effect snow belts near Lake Ontario, with as much as 70 cm (27 in) of snow reported as far south as Binghamton, New York just north of the New York / Pennsylvania border.

The storm was associated with a very slow-moving closed-contoured mid-tropospheric cyclone over northern New England and the Canadian Maritimes. Satellite imagery indicated a mid-level moist plume from the central Atlantic curving northwestward around the northern and western flank of the mid-tropospheric cyclone across New York. A trajectory analysis showed a persistent flow from Georgian Bay southeastward across western Lake Ontario and the twin tiers of northern Pennsylvania and southern New York, and operational model forecast soundings for central New York indicated a deep, moist lower-tropospheric flow from approximately 310 degrees. Forecaster experience and historical analogs indicate that this pattern has historically been associated with significant lake-effect snow across central New York. High resolution

models also provided some signals for the potential of significant lake effect snow across central New York including the southern tier.

Output from a gridded snowfall forecast verification program developed at the National Weather Service at Albany is shown for the case. It is shown that snowfall amounts for the storm were significantly under-forecast, however forecasts improved as the event drew near.