

## **New York State Finger Lakes Winter Lake-Effect Events: Event Characteristics**

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Much of the current knowledge regarding lake-effect snow storms is associated with large water bodies, such as the Great Lakes and the Great Salt Lake. Snowfall events attributed to small lakes (fetch < 100km) have received less attention, although significant snowfall totals have been documented with these systems. This study uses data from the eleven winters (October – March) of 1995 through 2005 to examine lake-effect systems in the Finger Lake region of New York State (NYS) and the atmospheric environments favorable for their development. WSR-88D radar data from Binghamton, NY was used to identify 108 lake-effect events which contained quasi-stationary precipitation bands aligned with a major-axis of one or more of the Finger Lakes. The lake-effect events were classified into three main categories: Finger Lakes (36), Lake Ontario-enhanced (57), and synoptic-enhanced (15). In addition, 17 cases occurred which transitioned from one main category to another during the lake-effect systems evolution.

The frequency, duration, timing, and environmental conditions during the 125 events were examined. Lake-effect events were found to (a) have an average duration of 9.4 hours, with 75% of events lasting less than 14 hours, and (b) occur throughout the 6-month period. The largest frequency of events typically occurred in December, with an average of 3 events per year. October was shown to be the least active month averaging 1 event per year, with several of the identified events developing as lake-effect rain systems. Cayuga Lake, the second largest of the Finger Lakes, has the largest frequency of events during the winter. Analyses of lake-effect event onset and dissipation showed events predominantly began between 00 - 12 UTC in association with a trough or frontal passage and dissipated in the early evening as the linear precipitation bands transitioned into a field of widespread cellular convection. A comparison of NYS Finger Lakes events with the characteristics (e.g., timing and frequency) of Great Lakes lake-effect events will be presented.