FORECAST CHECKLISTS AND DECISION TREES

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The following decision tree is only the first step in the prediction of snowband location, duration and orientation. It does not forecast snowfall amounts, but rather alerts the forecaster to the potential for the mesoscale event. As with many decision trees of this type, we find it most helpful to the novice forecaster who may not have a lot of experience with Lake Effect Snow forecasting.

LAKE EFFECT SNOW FORECASTS

Decision Tree 3W
NWSFO, Buffalo, NY

1) Will the temperature difference between the Lake and the 850mb level exceed 12 degrees C during forecast period?
   YES \rightarrow lake effect not likely
   NO \rightarrow

2) Is the wind direction in the boundary layer and at 850mb between?
   a) LAKE ERIE 230 and 340 degrees?
   b) LAKE ONTARIO 230 and 080 degrees?
   YES \rightarrow Trajectory not favorable for western/central New York
   NO \rightarrow

3) Is there less than a 30 degree directional wind shear between the boundary level and 700mb?
   NO \rightarrow Is shear between 30 & 60 degrees?
   YES \rightarrow Although instability exists, wind shear is detrimental to formation. Bands spread out, are less intense or activity is suppressed.
   NO \rightarrow

4) Lake effect snow is likely!
   - Long over water trajectories and large air-lake differences will contribute to snowfall rates in excess of one inch an hour.
   - PVA or positive 700mb vertical motion can greatly enhance snowfall rates.
   - Anticyclonic curvature or negative 700mb vertical motion suppresses them.
   - Inversion height and strength will limit cloud depth and snowfall rate.
   - Locator charts can be used to pinpoint location.

5) Lake effect snow possible
   - Directional wind shear makes location difficult to pinpoint and limits intensity of snowfall.
   - PVA or positive 700mb vertical motion will enhance snowfall rate.
   - Anticyclonic curvature or negative 700mb vertical motion further reduces snowfall.
   - Inversion height and strength will limit cloud depth and snowfall rate.
   - Use locator charts with caution, only to get ballpark estimate of location.

SUMMARY: Total snowfall is a combination of snowfall rate, the total time that a snowband remains over an area, and orographic effects. Be aware of wind shifts at the surface and aloft.