

The 12-13 October Buffalo Snowstorm: The Day the Trees Wept

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ABSTRACT

Lake-effect snow is prevalent around the Great Lakes each winter season where areas east of Lake Ontario and Lake Erie receive as much as eight meters during the season. Generally, the lake-effect snow season extends from late November through early March. However, an unprecedented early season lake-effect snowstorm affected the Buffalo metropolitan area in early October of the past year. This event devastated the region due to loss of life, enormous tree damage, and economic loss of at least 100 million dollars.

The Cooperative Program for Operation Meteorology, Education and Training [COMET] and the National Weather Service Forecast Office in Buffalo, NY, collaborated with SUNY College at Oswego to study the lake-effect storms on Lakes Erie and Ontario. This study entailed looking at the sensitivity of model runs to horizontal, vertical resolution and domain size. In addition, the research evaluated possible controls on inland extent, diurnal effects, and orographic influences.

We considered Lake-Effect Storm "Aphid" the benchmark case for this study. Many forecasters originally thought the precipitation would fall in the form of rain; therefore, specific to this event is not only the prediction of band location, but also the critical forecast of rain versus snow. In order to improve the precipitation type forecast, we analyzed processes that affect the elevation of the melting level. These processes included melting from falling precipitation, magnitude of the modification of the lower boundary layer by Lake Erie, and convective downdrafts in the lake-effect snow band.