Fine-scale X-Band Mobile Radar Observations of Small-scale Circulations in Intense Lake-effect Snow Bands

Karen Kosiba
Center for Severe Weather Research, USA
Wurman, Joshua (Center for Severe Weather Research, Boulder, U.S.A)

E-mail: kakosiba@cswr.org

The OWLeS (Ontario Winter Lake-effect Systems) field project was conducted December 2013 and January 2014 in the United States and Canada along the shores of Lake Ontario to better understand the underlying kinematic, thermodynamic and microphysical processes of lake-effect snow bands. OWLeS utilized 3 mobile X-Band radar systems (CSWR Doppler on Wheels; DOWs), instrumented aircraft (University of Wyoming King Air), balloon-borne soundings, and array of surface observations such as the CSWR Pods and Mobile Mesonets to document the structure and evolution of approximately 24 lake-effect systems.

This study focuses on the intense convective bands that form parallel to the long-axis of the lake, which often contain small-scale rotations (~100s meters in diameter) that are associated with increased surface winds and may impact hydrometeor transport within these bands. Preliminary dual-Doppler radar analyses and evolution of the dual-polarization signatures characteristic of these intense snow bands will be presented. In particular, the evolution of the fields before, during and after the development of small-scale vortices and their effects on the band structure will be discussed.