

An Enhanced Lake-Effect Snow Nowcasting Tool Using Synergistic GOES-R, NEXRAD, and Ground-Based Snowfall Microphysics Observations

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This project leverages coincident GOES-R, NEXRAD, and in situ snow microphysics observations to create a GOES-R lake-effect snow QPE nowcasting tool for Great Lakes NWS offices. The project aligns with two NOAA GOES-R3 goals: (1) to improve operational environmental prediction by exploiting both GOES-R high temporal resolution and GLM capabilities and (2) NWS situational awareness monitoring applications in AWIPS-2 for winter storm monitoring.

- Development of a satellite-based lake-effect snow QPE product to leverage improved GOES-R sampling and mitigate NEXRAD observational deficiencies associated with lake-effect snow.
- NEXRAD lake-effect snow QPE will be improved using ground-based in situ snow microphysics measurements at the Marquette, MI NWS.
- GOES-R cloud property/GLM products will be matched with improved NEXRAD QPE products near select Great Lakes radar sites to create an empirical GOES-R snowfall rate product.
- Product development and testing will utilize Great Lakes NWS offices. This project leverages an existing working relationship between CIMSS and the Marquette, MI NWS.
- Transition to AWIPS-2 after testing phase.

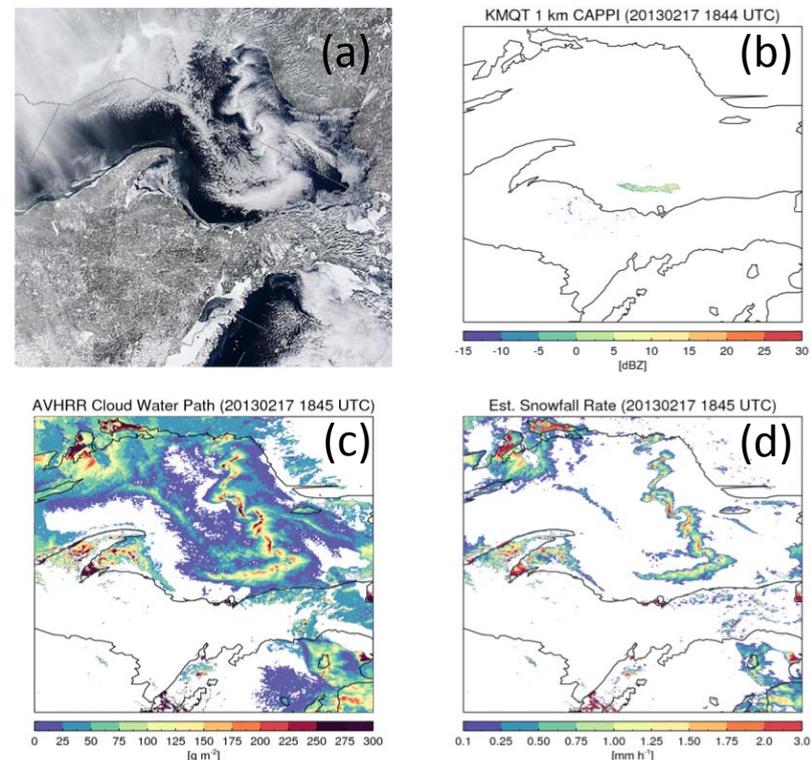


Figure 1: Proof-of-concept lake-effect snow product using AVHRR data for a mesoscale vortex snowfall case on 17 Feb 2013. (a) MODIS visible, (b) KMQT radar reflectivity (note limited radar information), (c) AVHRR cloud water path, and (d) AVHRR snowfall rate product. Empirical AVHRR-NEXRAD matching performed in a prior step (not shown).