Readme File for SUNY Oswego Mobile Surface Snow Data in OWLeS Project

Title: OWLeS Oswego Mobile Surface Snow Observations Data

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1.0 Data Set Overview: SUNY Oswego positioned 1-4 snow teams in most long lake-axis-parallel (LLAP) lake-effect events observed during the Ontario Winter Lake-effect Systems (OWLeS) project in December 2013 and January 2014. Teams were positioned along the most intense axis of the forecasted band position and recorded snow fall depth and liquid water content (LWC) at hourly and 6-hourly periods. They also measured current conditions with a Kestrel mobile weather station and any other notable observations (e.g., hydrometeor type). Please see the OWLeS Field Catalog's Reports section (http://catalog.eol.ucar.edu/owles/37379/files) for more details. Below is a list of events we sampled:

20131207-starting at 17 UTC
20131211-00 UTC
20131212-21 UTC
20131215-21 UTC
20131218-16 UTC
20140107-02 UTC
20140109-05 UTC
20140119-21 UTC
20140120-07 UTC

2.0 Instrument Description: For snowfall and liquid equivalent measurements (hourly and 6-hourly) a standard white-painted piece of plywood and ruler were used via National Weather Service and CoCoRaHS (Community Collaborative Rain, Hail and Snow Network) standards (http://www.cocorahs.org/Content.aspx?page=TrainingVideo). For surface weather observations of state variables students used a Kestrel 4500. The frequency of Kestrel observations varied, but our goal was to measure at least every 10 min during storm conditions. See http://www.nkhome.com/pdfs/Kestrel_specs1.pdf for Kestrel specifications.

3.0 Data Collection and Processing: Ideally snow boards were set up ~2x the height of the nearest obstacle distance from the obstacle. Snowfall was measured to the

nearest tenth of an inch. Liquid water equivalent (LWE) was measured by first coring out snow with the large CoCoRaHS cylinder (on the snow board where the snow was level using a clipboard/spatula underneath the open side of the cylinder). Next, a measured amount of liquid water was added using the small CoCoRaHS cylinder into the large cylinder to help melt the snow while in the vehicle. Using a funnel all the liquid (melted snow + that added to help melt the snow faster) was added into the small cylinder from the large one. LWE was then measured to the nearest hundredth of an inch by subtracting the known amount of liquid water added from the total amount. To obtain snow density, the liquid-to-snow fall ratio was (or can be since some observers did not do this) multiplied by the known density of liquid water (1 g/cm3).

4.0 Data Format: Microsoft Excel spreadsheets. Names of observers and locations are toward the top of the sheet. Locations, along with starting date and time, are given in the file name. Column headings for the snow data are: Time (UTC), 1-hr snowfall (to the nearest 0.1 inch), 1-hr liquid equivalent (to the nearest 0.01 inch), 1-hr snow density (g/cm3), 6-hr snowfall, 6-hr LWE, 6-hr snow density, Hydrometeor type, and Notable Weather conditions. Instructions for how to measure liquid water equivalent and snow density are in tabs at the bottom of the Excel sheet. For the Kestrel measurements (different tab in some files), column headings vary, but the goal was to measure temperature, dew point temperature, wind speed & direction, and station pressure every 10 min during active (i.e., snowy) weather.

5.0 Data Remarks: Please read reports for each surface snow site on this website: http://catalog.eol.ucar.edu/owles/37379/files. Please note it is our belief the Kestrel wind speed measurements are biased too low.