

# **DOW Radar Observations of Lake-Effects**

*Final Report to the Earth Observing Laboratory  
National Center for Atmospheric Research*

Submitted by

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2 July 2012

## **1. Introduction**

SUNY Oswego had possession of the Doppler on Wheels 6 (DOW 6) from 20 March through 5 April 2012. The goals were to expose students in the Meteorology 416 course (Remote Sensing and Mesoscale Meteorology Laboratory) to the state-of-the-art facility, to train them on how to operate the DOW, and to design and follow through carrying out experiments with the radar. The class of 24 students were placed into four teams based on the types of weather phenomena that can typically be observed in this part of the country in early spring (Table 1): lake breeze, interior snowstorm, lake-crossing convection (showers/thunderstorms over nearby Lake Ontario; since this did not occur this group focused on a thunderstorm event they sampled over Missouri), and wind farm (there are two major farms near Oswego) groups.

## **2. Methods**

The four teams began developing a plan for how they were to carry out their experiments from late January until mid-March 2012. They were given time during the lab meeting each week to work as groups on writing operations plans and then they presented these plans to the class two weeks prior to the DOW's arrival. These plans included the use of other equipment SUNY Oswego owns, such as the rawinsonde system. The students used Google Earth in siting locations for the DOW to get at least 90° sector scans at at least 1.0° elevation scans. Some students also drove personal vehicles to these sites (up to a couple of hours away) to take pictures and get comments from the class. They then created mission plans (e.g., when forecasters would make a decision on a go/no go decision) based

on the day who in the research group would be available to participate in operations (the scheduling was a challenge as classes were ongoing). The students also had to predetermine scan strategies for their sites (e.g., PRF, elevation angles). The teams used literature reviews to aid in their planning (e.g., the wind farm group used some of the findings from Toth et al. 2011).

### **3. Results and Discussion**

Each group had success at deploying the DOW. Part of their work was then to present what they had learned at the Great Lakes Atmospheric Science Symposium (GLASS; [http://www.oswego.edu/news\\_weather/weather/GLASS/home.php](http://www.oswego.edu/news_weather/weather/GLASS/home.php)), held each year in late April on the SUNY Oswego campus. They did excellent work and their presentations are included with this report. The reader is asked to view these presentations to learn about their key findings:

Cavlin, P. and M. Murphy, 2012: Preliminary case study of the 4 April 2012 thunderstorm complex over the Midwest using the Doppler on Wheels. *Proceedings, 3<sup>rd</sup> Annual Great Lakes Atmospheric Science Symposium*, Oswego, NY, Oswego State Student Chapter of the American Meteorological Society and National Weather Association.

Kassmann, K. and S. Travis, 2012: A preliminary analysis of a lake breeze over eastern Lake Ontario in March with a DOW. *Proceedings, 3<sup>rd</sup> Annual Great Lakes Atmospheric Science Symposium*, Oswego, NY, Oswego State Student Chapter of the American Meteorological Society and National Weather Association.

Speck, P., and R. Schrom, 2012: Wyoming County wind farm observations with the Doppler on Wheels. *Proceedings, 3<sup>rd</sup> Annual Great Lakes Atmospheric Science Symposium*, Oswego, NY, Oswego State Student Chapter of the American Meteorological Society and National Weather Association.

Wodzicki, K. and K. Barber, 2012: Preliminary case study of the 30 March 2012 interior snowstorm using the Doppler on Wheels. *Proceedings, 3<sup>rd</sup> Annual Great Lakes Atmospheric Science Symposium*, Oswego, NY, Oswego State Student Chapter of the American Meteorological Society and National Weather Association.

#### **4. Conclusions and lessons learned**

The goals of this program were reached in that the 24 students in the Meteorology 416 course were trained and operated the DOW. They also successfully planned and carried out an experiment. The students and professor had difficulty with working around class, work, and personal time schedules, and sometimes team members from another group had to assist each other. The lesson learnt is to have better planning of peoples' schedules and to post this on a classroom wall so to know who is available when. Several Oswego meteorology students and professors outside this lab were also exposed to the DOW and were trained when the DOW was not working an experiment.

Two outreach activities occurred: the DOW was shown to an introductory meteorology course (~50 students) taught at SUNY-ESF (Environmental Science and Forestry) in Syracuse, NY on 27 March 2012 (see Fig. 1). A Syracuse TV station, Your News Now (YNN), did a story on this event. Another "media day" occurred on the Oswego campus 30 March 2012. Several non-meteorology majors, along with college administrators and local high school teachers visited the DOW on this day.

Overall having the DOW at SUNY Oswego was a large success as students had much excitement in using a state-of-the-art facility and will analyze the data for years to come.

#### **Reference**

Toth, M., E. Jones, D. Pittman, D. Solomon, 2011: DOW Radar Observations of Wind Farms. *Bull. Amer. Meteor. Soc.*, **92**, 987–995.

Table 1. List of projects for DOW Lake-effects 2012 program with associated SUNY Oswego students in Meteorology 416 (Meso./Remote sensing lab).

Lake breeze	Kyle Kassman, Steve Travis, Brendan Hammer, James Falkowski, Michael Murphy, Brittany Gibbons
Interior snowstorm	Michael Stahlman, Ryan Farrell, Tara Hecke, James Gilbert, Robert Lehmann, Kyle Wodzicki
Convection	Ashley Poreda, Mary Butwin, Samantha Wessing, Julie Budd, Katelyn Barber (Patrick Cavlin*, Ryan Farrell, Brendan Hammer, Ashley Poreda, Michael Stahlman, Laurel Zimmer*, Kyle Kassman, Julie Budd, and Michael Murphy collected data in Missouri)
Wind farm	Madison VanKuren, Robert Schrom, Courtney Zupo, Sam Hewitt, Brian Donegan, Peter Speck

\* Meteorology majors not part of Meteorology 416



Figure 1. SUNY-ESF introductory meteorology students visit the DOW on 27 March 2012.