

Chasing the Rain

Mizzou studies stream erosion with a Doppler on Wheels

Written by *Randy Mertens* (<https://cafnr.missouri.edu/?author=10>) · Photography by Randy Mertens unless otherwise noted · September 27, 2012



The Doppler on Wheels (DOW) truck. Courtesy Gulf Coast Exploreum. (http://cafnrnews.com/?attachment_id=12663)

An interdisciplinary team of University of Missouri students is using one of the most advanced mobile radars to better learn how rainfall impacts an ecologically fragile area in middle Missouri.

Students majoring in atmospheric science, geography, biological engineering and forestry are using data from a Doppler on Wheels (DOW), one of three radar trucks maintained by the Center for Severe Weather Research (<http://www.cswr.org/>) (CSWR), Boulder, Colo. The DOW is a tornado-chasing research vehicle

made famous in television documentaries. It was driven to the School of Natural Resources during its off season to give the students an opportunity to conduct hands-on research using the latest in weather technology.



(http://cafnrnews.com/?attachment_id=12681)

Neil Fox, director of undergraduate studies in atmospheric science, and Nicole Hoban, atmospheric ... Expand ▶

In its tornado work, the DOW's radar scans more rapidly and with greater detail than conventional ground-based radar, giving researchers precise data about rainfall amounts, raindrop size and direction, changing wind speeds, storm development and hail formation.

The Mizzou students are using the DOW's abilities to precisely measure the amount and location of rainfall as it falls to earth. As a mobile radar, the DOW can drive close to rain shafts, giving a more unobstructed view than stationary weather radars. The DOW also has advanced features that allow researchers to precisely look vertically into a storm, not just horizontally as conventional radars.

Using Tornado Chasing Technology to Help a Stream

The Mizzou team is studying the impact of rainfall on the Hinkson Creek watershed in central Missouri. Their goal is to precisely measure the amount of rain hitting the creek and its surrounds, and then gauge how much sediment has been dislodged by that rain. The students will use ongoing research data being gathered by Jason Hubbard, assistant professor of Forest Hydrology and Water Quality. Hubbard is work-

ing with a team of MU scientists, along with experts from state and federal government, to develop a comprehensive monitoring project for the entire watershed of the beleaguered urban stream. His goal is to understand the full range of physical processes affecting the health of that stream, and how these impact the extended biological communities those streams support.



(http://cafnrnews.com/?attachment_id=12703)

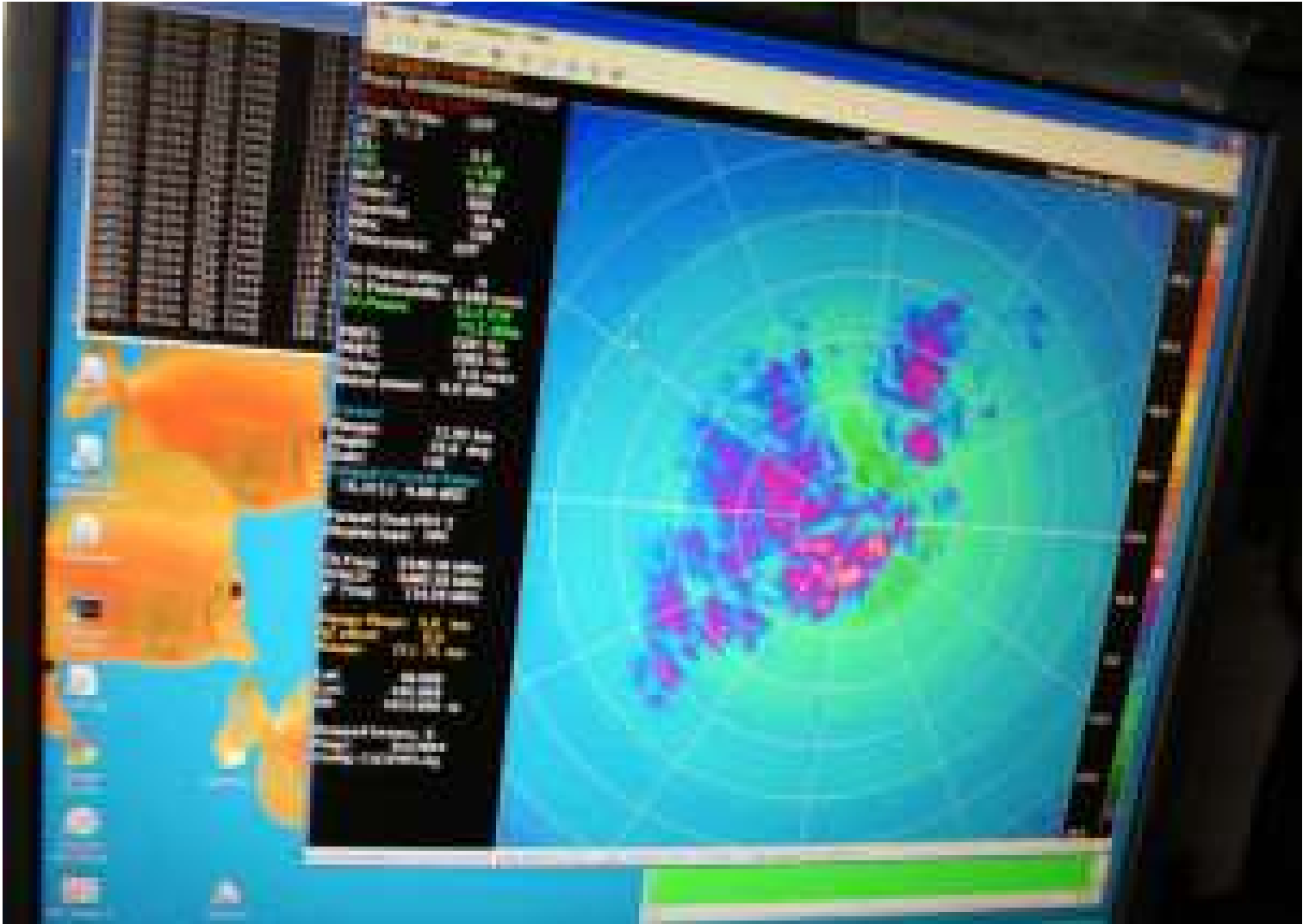
Jason Hubbard and graduate students John Nichols (center) and Keith Brown (right) view a section of ... Expand ►

Nicole Hoban, an atmospheric science junior from St. Louis, is one of the students working on the rainfall project. The DOW provides more detail than fixed radar sites in Kansas City and St. Louis, she said. The data is also live, and she can direct the DOW's radar to individual rain shafts that could fall on important areas – something conventional radars can't do. The DOW's radar is unique in that it can scan vertically and detect very small raindrops in the air, allowing the student researchers the ability to gather even more raw data.

Each student is adding something from their respective area. Also involved in the project is Eric Brewster, a Kansas City senior studying atmospheric science, Lee Britt, an Excelsior Springs senior also learning atmospheric science, Kayla Flamm, a Silex, Mo. senior studying environmental geography and Brent Elliot, a Holt's Summit senior studying biological engineering.

As Seen on TV

CSWR's trucks chase super cell thunderstorms in Tornado Alley during the storm season with the intention of getting close and detailed radar data on the formation, life and death of tornadoes. DOWs have observed 141 tornadoes at close range. A DOW scanned the most intense tornadic winds ever recorded in North America at [Bridge Creek](http://en.wikipedia.org/wiki/Bridge_Creek,_Oklahoma) (http://en.wikipedia.org/wiki/Bridge_Creek,_Oklahoma), Okla. on May 3, 1999.



The DOW's radar shows rain shafts falling on Hinkson Creek. (http://cafnrnews.com/?attachment_id=12712)

The DOW has been made famous by the Discovery Channel's reality television series *Storm Chasers* ([http://en.wikipedia.org/wiki/Storm_Chasers_\(TV_series\)](http://en.wikipedia.org/wiki/Storm_Chasers_(TV_series))), National Geographic Channel's television specials *Tornado Intercept* (<http://natgeotv.com/uk/tornado-intercept>) and *The True Face of Hurricanes* (<http://channel.nationalgeographic.com/channel/explorer/episodes/the-true-face-of-hurricanes/>), and PBS's *Nova* episode *The Hunt For the Supertwister* (<http://www.pbs.org/wgbh/nova/earth/hunt-for-the-supertwister.html>), and others.

The mobile DOWs are important in weather research because it is difficult to precisely measure wind movements in violent meteorological phenomena with traditional stationary meteorological radars, said Neil Fox, director of undergraduate studies in MU's Department of Soil, Environmental and Atmospheric Sciences and who is overseeing the Mizzou students' research project.

Fox said the DOW is a great tool for students to implement what they learn in the classroom, and get a real-world look at research in the field. He points out the DOW's advanced features will eventually be incorporated into National Weather Service radars – giving Mizzou students an early and advanced look at the technology and its capabilities.



(http://cafnrnews.com/?attachment_id=12694)

Gathering data from the Doppler on Wheels one day were Kayla Flamm, environmental geology, Eric ... Expand ▶

© 2023 — Curators of the University of Missouri (<https://www.umsystem.edu/>). All rights reserved. DMCA (<http://missouri.edu/dmca/>) and other copyright information (<http://missouri.edu/copyright/>). An equal opportunity/access/affirmative action/pro-disabled and veteran employer (<http://missouri.edu/eo-aa/>). Disability & Accessibility information (<http://ada.missouri.edu/>).

Published by CAFNR Marketing and Communications (<https://cafnr.missouri.edu/about/cafnr-marketing-and-communications/>). Administrative login (<https://cafnr.missouri.edu/wp-admin/>).