

Herrig helps study effect of wind on Missouri River sandbars

Spotlight On

UNIVERSITY OF
SOUTH DAKOTA

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Aeolian processes – the ability of the wind to change the surface of the earth – have a potentially large effect on the formation of and changes to sandbars.

This is why USD undergrad Karen Herrig and Dr. Mark Sweeney, associate professor of earth sciences, are studying the effects of the wind on sandbars located in three nearby locations, including Elk Point and Ponca, NE.

Herrig said that when the study is complete, they hope to know how much dust is emitted from the sandbars, how it impacts the air quality on windy

days and to determine if there is a potential hazard to wildlife.

“We haven’t gotten that far in the study,” Herrig said. “I don’t know if there’s a link at all yet, but eventually we will get there.”

Herrig made a presentation on the study during the annual Missouri River Institute Research Symposium, which took place at USD on April 4.

“Rivers are common source of dust, especially on glacial landscapes,” Herrig said. “(Transporting the dust) is such an easy thing for the wind to do, and that can change the landscape of the sandbars. We would like to know how much dust is getting emitted off of the

sandbars.” To find out, Herrig and Sweeney used a Portable in-Situ Wind Erosion Lab (PI-SWIRL), which measures the amount of dust emitted from a surface when a known amount of wind shear is applied.

A flat blade inside the machine rotates at various levels to simulate specific rates of wind, which allows the dust to be measured.

“We went to about four to six different sites on each sandbar, and at each one of those sites we did four tests using the PI-SWIRL as a means to judge the emissions potential of the dust on those sandbars,” Herrig said.

They also measured on different surface types of each sandbar, including dune, interdune and wind ripple.

Dune is lighter in color and consists mostly of sand, which interdune is darker and made of other materials like gravel, Herrig said.

Aeolian processes are very important to the process of sandbar modification, she said.

“(The wind) can blow off sand on the bar, reducing the height of the bar over time,” she said.



USD undergrad Karen Herrig uses a PI-SWIRL to measure the amount of dust being emitted from an area sandbar. (Courtesy photo)

“(It can also) pick up the sediments and suspend them in the air ... and leave the coarser material like gravel behind. So then it makes just a layer over the sediment and reduces how much dust can be emitted because it takes a higher velocity to pick up the gravel.”

Debris on the sandbars also play an important role.

“It can affect sediment

transport, because the debris slows down the wind velocity, and when the velocity slows down it no longer keeps the sediment in suspension,” Herrig said. “Then it just drops out and forms a deposit. So, debris like logs can definitely change the landscape and change how sediment can be transported.”

Herrig and Sweeney already have performed a

particle size analysis of some of their samples at the University of Nebraska-Lincoln, and used X-ray diffraction to determine the composition of some surface samples.

However, she said it will take time for the overall project to be completed.

“This study is a work in progress. It’s in the beginning stages,” she said. “We’ll be doing more this summer.”

Notice Annual Tour of Roads

The Clay County Commissioners will be making their annual inspection of county roads, bridges, and drainage systems

Thursday May 9, 2013
8:30 a.m. to 12:00 p.m.

County Highway Superintendent Rod Polley will accompany the commissioners.

County residents with concerns should call the Highway Office at 677-7149 or the Auditor's office at 677-7120 and the Commissioners will include the site on their tour.

Ruth A. Bremer
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Artwork featured has been donated by many community artists & is diverse in media & subject matter. All proceeds from the auction will be donated to the Madison Wallace Fund.

When: April 20, 2013
5-8pm

Where: Washington
Street Arts
Center 202
Washington St.

Bidding & Refreshments
5-7:30pm Winner
pick-up 8pm

