

Study tracks relationship between storms, cities

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(Phys.org)—On the Great Plains, storm clouds are visible from quite a distance. And, sometimes, those storms seem to veer off course for no apparent reason. A group of scientists is studying weather patterns to determine if city size or shape has any influence on a storm's track.

"We're trying to quantify something that has had anecdotal evidence through the years but has not been approached in a systematic way," said Geoff Henebry, a professor and senior scientist at the Geographic Information Science Center of Excellence at South Dakota State University.

Henebry is the principal investigator for the project that has earned a three-year, \$1.58 million grant from NASA. Researchers will concentrate on studying storm patterns around urbanized areas in the Great Plains.

According to Henebry, the Great Plains is a good place for the study because of its frequent severe weather, relatively level terrain and isolated urban areas surrounded by [croplands](#) and pastures.

The research will use both NASA's space-borne sensors and the network of weather radar stations to map storm tracks and weather radar archives to study past storm events.

"Our research will explore how city size and shape—both horizontal and vertical—can influence storm track, direction and intensity," Henebry

said.

To find the answer, researchers in fields as diverse as weather forecasting and modeling, radar meteorology, urban remote sensing, [landscape architecture](#), [atmospheric chemistry](#), statistical analysis and computer modeling will take part in the study.

Henebry will lead an interdisciplinary team that includes researchers from the University of Oklahoma, the University of Michigan, Columbia University, the University of Minnesota and the National Severe Storms Laboratory in Norman, Okla.

The implications for the work are wide-ranging. If the size or shape of urban areas does influence weather patterns in predictable ways, this information may have ramifications not only for the city and regional planning but also for the agricultural producers whose land surrounds the cities.

City planning typically looks at terrain with regard to the best places for sewer lines and pump stations and with an eye toward areas that could sustain future growth.

If the NASA-funded research draws a link between [weather patterns](#) and city size or shape, it could determine the size of tornadoes likely to strike a city, the frequency of downpours or the likelihood of hail.

"Are certain-sized storms impacted by city size?" Henebry asks. "If they are, that would be good information for city planning."

Provided by South Dakota State University

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