

Regional

Hildebrandt teaches lessons about tornadoes

Tornadoes are a sad reality. Every year hundreds of people die – and billions of dollars in damage result. Yet, it seems that there is little we can do to prevent their effects. Someone who studies them and who teaches about these and other meteorological catastrophes is Mark Hildebrandt, an associate professor in the department of geography at Southern Illinois University Edwardsville.

Hildebrandt was born in Ravenna, Ohio. He obtained his bachelor's and master's degree from Kent State University and his doctorate in geography from Arizona State University. Hildebrandt became interested in tornadoes and other meteorological phenomena when he was a kid.

"I heard about a tornado that took place in 1974 that destroyed a town called Xenia in Ohio," Hildebrandt said. "A book was found in my grandfather's farm about 150 miles away and he knew where it came from because it had the seals of a school library from that town. Since then I have been fascinated about these phenomena."

Many Internet videos and television programs deal with storm chasing, but the chasers are sometimes depicted as more adventurers than scientists. According to Hildebrandt, science is always at the forefront in the minds of real storm chasers.

"It is more scientific than anything else," he said. "What they do is to collect data in understanding what causes tornadoes, severe weather and the like."

Storm chasers also do assessment about the damage these phenomena inflict and try to educate people about what to do when these natural occurrences strike.

During the interview for this article we were walking through one of the most devastated areas of Joplin, Mo., which was struck on May 22, 2011 by one of the most violent tornadoes in United States history. The sheer power of the winds created by tornadoes make them, according to Hildebrandt, one of the Earth's most violent weather events.

"The intensity of the winds can exceed 200 miles per hour in a very defined area," he explained. "Typically hurricanes do not even approach that," he said, pointing to the



Photo by Daniel Martinez

Dr. Mark Hildebrandt, at right, being interviewed for this article in Joplin, Mo., on the eve of the first anniversary of the 2011 tornado that struck that city.

foundations of homes where neighborhoods used to be.

Meteorologists like Hildebrandt use a scale to measure tornadoes called the Enhanced Fujita (EF) that combines information about wind speed and damage. In the case of Joplin, the storm reached EF5 – the strongest intensity measurable. In such winds, most man-made structures have little chance of surviving.

"Mobile homes can be easily destroyed by winds of up to 60 miles per hour," Hildebrandt said. "Imagine 200 miles per hour." And when it comes to what people should do to protect themselves, he has one major suggestion: Do not attempt to ride out the storm in a car. "Don't even try it," he said. "It will not give you any protection. People should get into a secure shelter."

Tornadoes, contrary to the common

notion that they always hit flat land, can actually occur in any landscape, including mountains and even on the water. People should never consider themselves safe just because of where they live, Hildebrandt said, adding, "If you don't have a basement, build a storm cellar."

In the last few years, early warning systems have improved, which is why more people are surviving the storms. "Unfortunately

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still some people do not take the sirens of the warning system seriously," said Hildebrandt. "Most of the responsibility falls upon them." Many deaths could be prevented if people paid more attention and took better preparedness measures. While sirens did sound in Joplin, another complication made it even more deadly: The tornado had more than one vortex, meaning that several spots were being hit at the same time.

Tornadoes are produced by a complex set of conditions – air temperature, moisture, winds – that when all come together under certain circumstances create "the perfect storm," especially during spring. As gyrating air masses form below the cloud base, they begin to take in cool, moist air from the lower region of the storm. This convergence of warm air from the updraft and this cool air causes a rotating wall cloud to form. And there is nothing we can do to stop them.

Just be prepared, said Hildebrandt, who explained that the Saint Louis area is very prone to this phenomenon and has witnessed some of the worst tornadoes in history.

The United States has a "Tornado Alley" (roughly between the Rockies and the Appalachian Mountains) where a lot of the conditions that come into play in the formation of tornadoes occur more frequently. The increased number and violence of tornadoes that we see today in this area is being linked by some scientists to climate change.

"We don't understand everything about tornadoes," said Hildebrandt. "There is much to be learned. Maybe in the future we will be able to alert people about a tornado with as much as a 20-minute warning."

Aldemaro Romero is the Dean of the College of Arts and Sciences at Southern Illinois University Edwardsville. His show, "Segue," can be heard every Sunday morning at 9 a.m. on WSIE, 88.7 FM. He can be reached at College_Arts_Sciences@siue.edu.