

Spinning Thunderstorms

This StepRead is based on an article provided by the American Museum of Natural History.

One night in 2007 disaster struck a small town in Kansas called Greensburg. A little before 10 p.m., a siren went off. The siren warned people that a tornado was moving toward the town. And it wasn't just any tornado. It was the most powerful kind of tornado there is.

The tornado was a mile wide. Its winds were moving faster than 200 miles an hour. In less than ten minutes, it destroyed the town. Ten people died.

When the fury had passed, people came out of their basements. They climbed through the ruins of their town. Cars and trucks had been thrown around. Some homes were crushed. Others had been pulled out of the ground. "There's really nothing left," said a person in downtown Greensburg.



Credit: FEMA Photo by Michael Raphael

The tornado destroyed much of Greensburg. Many people in the town needed new homes.

How do tornadoes form?

A tornado is a spinning column of wind that forms during a thunderstorm. Thunderstorms happen when warm, wet air mixes with cool, dry air. Next, the air moves in circles to form a wide tube of spinning air. That tube stretches down from the sky to the ground. Once it touches the ground, it becomes a tornado.



CREDIT: NOAA

A tornado is a spinning tube of wind. It forms during a thunderstorm.



Credit: The Field Museum

The winds of a tornado can bend a stop sign.

Kansans are used to tornadoes. The people of Greensburg live in “Tornado Alley.” That is an area in the middle of the United States where a lot of tornadoes happen. It has the right kind of weather for thunderstorms and tornadoes to form. It has warm, wet air from the Gulf of Mexico. It also has cool, dry air from the Arctic. And it has lots of wide, open space where the cool air can mix with the warm air and form thunderstorms. These conditions result in a lot of tornadoes. There are over 600 tornadoes in “Tornado Alley” every year.



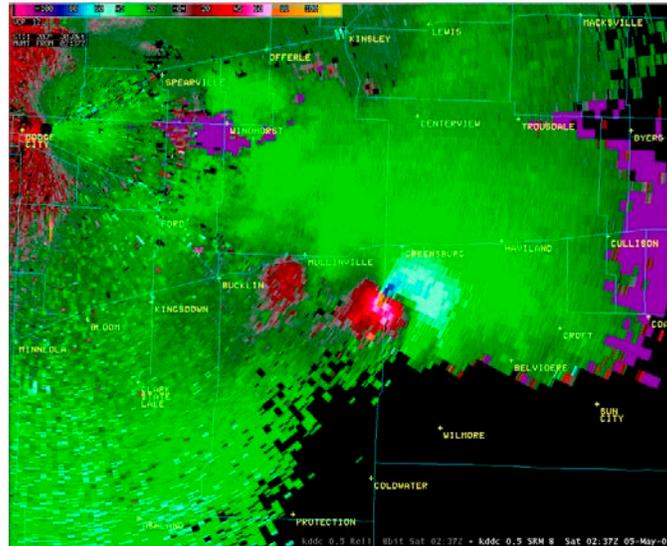
CREDIT: Either from the Field Museum or create our own

Three out of every four tornadoes in the world take place in “Tornado Alley.”

How do scientists predict storms?

Some scientists study and predict weather. They use radar to help them. Radar is a technology that can track storms. Here is how weather radar works. First, the radar sends a radio wave toward the storm. The radio wave bounces off the raindrops, hail, or snow that is in the storm. The wave then returns to the radar. The amount of time it takes for the wave to return tells scientists how far away the storm is. Most radars send out about 1,000 radio waves each second. Sending out this many radio waves is helpful to scientists. It gives them detailed, up-to-date information about the storm they are tracking.

Scientists can use radar to track powerful storms like tornadoes. They track both the formation and path of a tornado. When a tornado takes shape, its winds blow raindrops in circles. When scientists see those circles on a radar screen, they know that a tornado is forming. Although the winds in a tornado spin fast, tornadoes move across the ground slowly. (Tornadoes travel 18 to 30 miles an hour.) The movement of tornadoes is slow enough that scientists can make reasonable forecasts about where the tornado will go.



CREDIT: NOAA

A radar map shows the tornado on its way to Greensburg.

Information that scientists gather about tornadoes by radar is shared with the public. The public gets this information through a system of tornado watches and warnings. A tornado “watch” means there are thunderstorm conditions that could result in a tornado. A “warning” means a tornado has touched down and been seen.

This system saved many lives in Greensburg. Tornado sirens warned people that a tornado was on the way. They gave people time to go somewhere safe. Many people went into a basement or storm shelter. Twenty minutes after the sirens went off, the tornado came through and destroyed the town.