

Tornado Season Returns



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Several tornadoes hit the Dallas-Fort Worth area of Texas last week, causing heavy damage but no deaths

BARBARA KLEIN: This is SCIENCE IN THE NEWS in VOA Special English. I'm Barbara Klein.

BOB DOUGHTY: And I'm Bob Doughty. This week, we explore the science of tornadoes. These violent storms strike in many parts of the world but happen most commonly in the United States.

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BARBARA KLEIN: Tornado season has begun in the United States.

Last Tuesday a series of storms tore across the Dallas-Fort Worth area in Texas. The tornadoes damaged or destroyed hundreds of homes. Yet no deaths were reported.

On March second, more than forty tornadoes moved through the Ohio and Tennessee Valleys, and the South. Reports say the storms killed at least thirty-nine people in five states.

A tornado is a violently turning tube of air suspended from a thick cloud. It extends from a thunderstorm in the sky down to the ground. The shape is like a funnel: wide at the top, narrower at the bottom.



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A funnel cloud touches down in Orchard, Iowa, on June 10, 2008

Tornadoes form when winds blowing in different directions meet in the clouds and begin to turn in circles. Warm air rising from below causes the wind tube to reach toward the ground. Because of their circular movement, these windstorms are also known as twisters.

The most severe tornadoes can reach wind speeds of three hundred twenty kilometers an hour or more. In some cases, the resulting paths of damage can stretch more than a kilometer wide and eighty kilometers long.

BOB DOUGHTY: With a tornado, bigger does not necessarily mean stronger. Large tornadoes can be weak. And some of the smallest tornadoes can be the most damaging. But no matter what the size, tornado winds are the strongest on Earth. Tornadoes have been known to carry trees, cars or homes from one place to another. They can also destroy anything in their path.

Tornadoes have been observed on every continent except Antarctica. But experts say they are most commonly seen in the United States. On average, more than one thousand are reported nationwide each year.

The National Oceanic and Atmospheric Administration keeps records of tornado sightings. It says tornadoes kill seventy people and injure one thousand five hundred others nationwide in an average year.

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BARBARA KLEIN: Tornadoes are observed most often in the middle of the United States, where the land is mostly flat. The area where the most violent tornadoes usually happen is known as "Tornado Alley." This area is considered to extend from north central Texas to North Dakota.

Tornadoes can happen any time of the year. But most happen from late winter to the middle of summer. In some areas, there is a second high season in autumn.

BOB DOUGHTY: Tornado seasons are the result of wind and weather patterns. During spring, warm air moves north and mixes with cold air remaining from winter. In autumn, the opposite happens. Cold weather moves south and combines with the last of the warm air from summer.



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A series of tornadoes over two days in March killed 40 people in Kentucky, Alabama, Indiana and Ohio

Tornadoes can strike with little or no warning. Most injuries happen when flying objects hit people. Experts say the best place to be is in an underground shelter, or a small, windowless room in the lowest part of a building.

People driving during a tornado are told to find low ground and lay flat, facedown, with their hands covering their head. People in the path of a tornado often just have minutes to make life-or-death decisions.

BARBARA KLEIN: The deadliest American tornado on record was the Tri-State Tornado of March eighteenth, nineteen twenty-five. It tore across Missouri, Illinois and Indiana. About seven hundred people were killed.

Between March and May of last year, there were one thousand one hundred fifty-nine confirmed tornadoes across the United States. Scientists say that is the most on record for any three-month period. The most active month was last April, when seven hundred fifty-eight tornadoes were confirmed. That is the most ever for any month.

Last April, the country also broke a thirty-seven year old record for the largest tornado outbreak. A "tornado outbreak" is often defined as six or more tornadoes produced by the same weather system within a day.

Scientists say the one hundred ninety-nine tornadoes on April twenty-seventh were the most for any single day. They say the storms killed three hundred sixteen people – the most ever in modern records for a twenty-four hour period.

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BOB DOUGHTY: No two tornadoes look exactly the same. And no two tornadoes act the same way.

Even a weak tornado requires the right combination of wind, temperature, pressure and humidity. Weather experts can identify these conditions. And, when

they observe them, they can advise people that tornadoes might develop. But they are not able to tell exactly where or when a tornado will hit. Tornado warnings still depend in large part on human observations.

Usually a community will receive a warning at least a few minutes before a tornado strikes. But each year there are some surprises where tornadoes develop when they are least expected.

BARBARA KLEIN: The tornado reporting system involves watches and warnings. A tornado watch means tornadoes are possible in the area. A tornado warning means that a tornado has been seen. People are told to take shelter immediately.

Yet tornadoes can be difficult to see. Sometimes only the objects they are carrying through the air can be seen. Some night-time tornadoes have been observed because of lightning strikes nearby. But tornadoes at night are usually impossible to see.

Tornadoes that form over water are called waterspouts. But tornadoes cover a much smaller area than hurricanes, which form over oceans.

Tornadoes can be measured using wind speed information from Doppler radar systems. Tornadoes usually travel in a northeasterly direction with a speed of thirty-two to sixty-four kilometers an hour. But they have been reported to move in other directions and as fast as one hundred seventeen kilometers an hour.

BOB DOUGHTY: In the United States, the force of a tornado is judged by the damage to structures. Scientists inspect the damage before they estimate the severity of a tornado. They measure tornadoes on the Enhanced Fujita scale or the EF scale.

Ted Fujita was a weather expert who developed a system to rate tornados in the nineteen seventies. The EF scale is a set, or collection, of wind estimates. They are based on levels of damage to twenty-eight different kinds of structures and other objects. Tornadoes that cause only light damage are called an EF-zero. Those with the highest winds that destroy well-built homes and throw vehicles great distances are called an EF-five.

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BARBARA KLEIN: Some people make a sport out of watching and following tornadoes. They are called tornado chasers or storm chasers. Their work can be seen in the extreme weather videos that are increasingly popular on television and on the Internet.

Some chasers do it just because it is their idea of fun. Others do it to help document storms and warn the public. Still others are part of weather research teams.

Two years ago, an international team of scientists completed a tornado research project called VORTEX2. More than one hundred researchers traveled throughout America's Great Plains in two thousand nine and two thousand ten. They used weather measurement instruments to collect scientific information about the life of a tornado. The goal of the project was to examine in detail how tornadoes are formed and the kinds of damage they cause.

Last year, a film about the VORTEX2 project was released. The film includes never before seen images of tornadoes. To safely capture up-close film footage of tornadoes, some project participants traveled in a seven-ton, armored tornado intercept vehicle directly into tornadoes as they formed.

BOB DOUGHTY: The National Weather Service says the United States gets more severe weather than any other country. For one thing, it is also bigger than most other countries. And it has many different conditions that create many different kinds of weather.

There are seacoasts and deserts, flatlands and mountains. The West Coast is along the Pacific Ocean, which is relatively calm. The East Coast is along the Atlantic Ocean, which is known for its hurricanes. These strike mainly the southeastern states.

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BARBARA KLEIN: This SCIENCE IN THE NEWS was written by Brianna Blake and George Grow. June Simms was our producer. I'm Barbara Klein.

BOB DOUGHTY: And I'm Bob Doughty. Read and listen to our programs at voaspecialenglish.com. Join us again next week for more news about science, in Special English, on the Voice of America.