1) What is a tornado?

A tornado is a violent rotating column of air extending from a thunderstorm to the ground. The most violent tornadoes are capable of tremendous destruction with wind speeds of up to 300 mph. They can destroy large buildings, uproot trees and hurl vehicles hundreds of yards. They can also drive straw into trees. Damage paths can be in excess of one mile wide to 50 miles long. In an average year, 1000 tornadoes are reported nationwide.

2)How do tornadoes form?

Most tornadoes form from thunderstorms. You need warm, moist air from the Gulf of Mexico and cool, dry air from Canada. When these two air masses meet, they create instability in the atmosphere. A change in wind direction and an increase in wind speed with increasing height create an invisible, horizontal spinning effect in the lower atmosphere. Rising air within the updraft tilts the rotating air from horizontal to vertical. An area of rotation, 2-6 miles wide, now extends through much of the storm. Most strong and violent tornadoes form within this area of strong rotation.

3) How do tornadoes stop?

It is not fully understood about how exactly tornadoes form, grow and die. Tornado researchers are still trying to solve the tornado puzzle, but for every piece that seems to fit they often uncover new pieces that need to be studied.

4) What is a waterspout?

A waterspout is just a weak tornado that forms over water. They are most common along the Gulf Coast. Waterspouts can sometimes move inland, becoming tornadoes causing damage and injuries.

5) What is hail?

Hail is created when small water droplets are caught in the updraft of a thunderstorm. These water droplets are lifted higher and higher into the sky until they freeze into ice. Once they become heavy, they will start to fall. If the smaller hailstones get caught in the updraft again, they will get more water on them and get lifted higher in the sky and get bigger. Once they get lifted again, they freeze and fall. This happens over and over again until the hailstone is too heavy and then falls to the ground.

6) What is a gustnado?

A gustnado is a short-lived, relatively weak whirlwind that forms along a gust front. A gust front is the surge of very gusty winds at the leading edge of a thunderstorm's outflow of air. Gustnadoes are not tornadoes. They do not connect with any cloud-base rotation. But because gustnadoes often have a spinning dust cloud at ground level, they are sometimes wrongly reported as

tornadoes. Gustnadoes can do minor damage.

7) When are tornadoes most likely to occur?

Tornadoes can happen at any time of the year and at any time of the day. In the southern states, peak tornado season is from March through May. Peak times for tornadoes in the northern states are during the summer. A few southern states have a second peak time for tornado outbreaks in the fall. Tornadoes are most likely to occur between 3 p.m. and 9 p.m.

8) Where are tornadoes most likely to occur?

The geography of the central part of the United States, known as the Great Plains, is suited to bring all of the ingredients together to forms tornadoes. More than 500 tornadoes typically occur in this area every year and are why it is commonly known as "Tornado Alley".

Know the Lingo

10) TORNADO WATCH - Tornadoes are possible in your area. Stay tuned to the radio or television news.

11) TORNADO WARNING - A tornado is either on the ground or has been detected by Doppler radar. Seek shelter immediately!

Click Here to see if there are any active warnings in your area.

Fujita Scale of Tornado Intensity

SCALE	WIND SPEED	POSSIBLE DAMAGE
F0	**40-72 mph**	**Light damage: Branches broken off trees; minor roof damage**
F1	**73-112 mph**	**Moderate damage: Trees snapped; mobile home pushed off foundations; roofs damaged**
F2	**113-157 mph**	**Considerable damage: Mobile homes demolished; trees uprooted; strong built homes unroofed**
F3	**158-206 mph**	**Severe damage: Trains overturned; cars lifted off the ground; strong built homes have outside walls blown away**
F4	**207-260 mph**	**Devastating damage: Houses leveled leaving piles of debris; cars thrown 300 yards or more in the air**
F5	**261-318 mph**	**Incredible damage:** Strongly **built homes completely blown away; automobile-sized missiles generated**

12) Tornado Safety Tips

BEFORE A TORNADO: Have a disaster plan. Make sure everyone knows where to go in case a tornado threatens. Make sure you know which county or parish you live in. Prepare a disaster

supplies kit for your home and car. Include a first aid kit, canned food and a can opener, bottled water, battery-operated radio, flashlight, protective clothing and written instructions on how to turn off electricity, gas, and water.

13) DURING A TORNADO: Go to a basement. If you do not have a basement, go to an interior room without windows on the lowest floor such as a bathroom or closet. If you can, get under a sturdy piece of furniture, like a table. If you live in a mobile home get out. They offer little protection against tornadoes. Get out of automobiles. Do not try to outrun a tornado in your car, leave it immediately. If you're outside, go to a ditch or low lying area and lie flat in it. Stay away from fallen power lines and stay out of damaged areas.

14) AFTER A TORNADO: Stay indoors until it is safe to come out. Check for injured or trapped people, without putting yourself in danger. Watch out for downed power lines. Use a flashlight to inspect your home.

15) Tornado Activities

Lesson Plan: Here is a great lesson plan on learning about tornado safety. In this activity, kids learn how tornadoes form and what they should do in case a tornado threatens their area. Note: This is a PDF file, so you need to have Adobe Acrobat Reader.

Lesson Plan: Here is a great lesson plan on learning about tornado safety. In this activity, kids learn about severe weather, including hail and tornadoes. Note: This is a PDF file, so you need to have Adobe **17)** Acrobat Reader.

Lesson Plan: Here is a great lesson plan on learning about tornado safety. In this activity, kids learn what they should do and where to go in case a tornado threatens their area. Note: This is a PDF file, so you need to have Adobe Acrobat Reader.

Tornado Experiment: Here is a great experiment that allows the kids to make a tornado in a bottle.

Tornado Experiment: Here is a great experiment that allows the kids to make a tornado in a jar.

An illustration of generation of infrasound in tornadoes by the Earth System Research Laboratory's Infrasound Program.

Tornadoes also produce identifiable inaudible infrasonic signatures.[35] Unlike audible signatures, tornadic signatures have been isolated; due to the long distance propagation of low-frequency sound, efforts are ongoing to develop tornado prediction and detection devices with additional value in understanding tornado morphology, dynamics, and creation.[36] Tornadoes also produce a detectable seismic signature, and research continues on isolating it and understanding the process.[37]

18) Electromagnetic, lightning, and other effects

Tornadoes emit on the electromagnetic spectrum, for example, with sferics and E-field effects detected.[36][38] The effects vary, mostly with little observed consistency.

Correlations with patterns of lightning activity have also been observed, but little in way of consistent correlations have been advanced. Tornadic storms do not contain more lightning than other storms, and some tornadic cells never contain lightning. More often that not, overall cloud-to-ground (CG) lightning activity decreases as a tornado reaches the surface and returns to the baseline level when the tornado lifts. In many cases, very intense tornadoes and thunderstorms exhibit an increased and anomalous dominance in positive polarity CG discharges.[39] Electromagnetics and lightning have little to nothing to do directly with what drives tornadoes (tornadoes are basically a thermodynamic phenomenon), though there are likely connections with the storm and environment affecting both phenomena.

19) Luminosity has been reported in the past, and is probably due to misidentification of external light sources such as lightning, city lights, and power flashes from broken lines, as internal sources are now uncommonly reported and are not known to ever been recorded.

In addition to winds, tornadoes also exhibit changes in atmospheric variables such as temperature, moisture, and pressure. For example, on June 24, 2003 near Manchester, South Dakota, a probe measured a 100 mbar (hPa) (2.95 inHg) pressure deficit. The pressure dropped gradually as the vortex approached then dropped extremely rapidly to 850 mbar (hPa) (25.10 inHg) in the core of the violent tornado before rising rapidly as the vortex moved away, resulting in a V-shape pressure trace. Temperature tends to decrease and moisture content to increase in the immediate vicinity of a tornado.[40]

20) Probabilistic maps issued by the Storm Prediction Center during the heart of the April 6-8, 2006 Tornado Outbreak. The top map indicates the risk of general severe weather (including large hail, damaging winds, and tornadoes), while the bottom map specifically shows the percent risk of a tornado forming within 25 miles (40 km) of any point within the enclosed area. The hashed area on the bottom map indicates a 10% or greater risk of an F2 or stronger tornado forming within 25 miles (40 km) of a point.

Weather forecasting is handled regionally by many national and international agencies. For the most part, they are also in charge of the prediction of conditions conducive to tornado development.

21) Australia

Severe thunderstorm warnings are provided to Australia by the Bureau of Meteorology. The country is in the middle of an upgrade to Doppler radar systems, with their first benchmark of installing six new radars reached in July 2006.[53]

22) Europe

The European Union founded a project in 2002 called the European Severe Storms virtual Laboratory, or ESSL, which is meant to fully document tornado occurrence across the continent. The ESTOFEX (European Storm Forecast Experiment) arm of the project also issues one day forecasts for severe weather likelihood.[54] In Germany, Austria, and Switzerland, an organization known as TorDACH collects information regarding tornadoes, waterspouts, and downbursts from Germany, Austria, and Switzerland. A secondary goal is collect all severe weather information. This project is meant to fully document severe weather activity in these three countries.[55]

23)United Kingdom

In the United Kingdom, the Tornado and Storm Research Organisation (TORRO) makes experimental predictions. The Met Office provides official forecasts for the UK.

24) United States

In the United States, generalized severe weather predictions are issued by the Storm Prediction Center, based in Norman, Oklahoma. For the next one, two and three days, respectively, they will issue categorical and probabilistic forecasts of severe weather, including tornadoes. There is also a more general forecast issued for the four to eight day period. Just prior to the expected onset of an organized severe weather threat, SPC issues severe thunderstorm and tornado watches, in collaboration with local National Weather Service offices. Warnings are issued by local National Weather Service offices when a severe thunderstorm or tornado is occurring or imminent.

25) Other areas

In Japan, predictions and study of tornadoes in Japan are handled by the Japan Meteorological Agency. In Canada, weather forecasts and warnings, including tornadoes, are produced by the Meteorological Service of Canada, a division of Environment Canada.