



Tornadoes

Stemology for Kids



Outside Applications

- Can anyone describe what a tornado is?
- Where else have you seen tornados from? Movies? Books? TV Shows?
- What do you know about tornados already?





What is a Tornado?

- A violently rotating column of air extending from a thunderstorm to the ground
- Can destroy large buildings, uproot trees, and hurl vehicles hundreds of yards.
- Damaged paths can be anywhere from one mile wide to 50 miles long.
 - In an average year, 1000 tornadoes are reported nationwide.

What Forms a Tornado?

- Most tornadoes form from thunderstorms.
- When warm, moist air and cold, dry air meet, they create instability in the atmosphere.
- Change in wind direction + increase in wind speed + increasing height creates the spinning effect you see in a tornado

Why do Tornadoes form?

- Abundant low-level moisture + a "trigger" (ex: a cold front or low-level zone of converging winds) is needed to lift the moist air
- Once the air begins to rise and becomes saturated, it will continue rising to produce a thunderstorm cloud if the atmosphere is unstable.
 - Unstable atmosphere: where the temperature decreases rapidly with height or when dry air encounters moist air near the earth's surface
- Tornadoes usually form in areas where winds at all levels of the atmosphere are strong and turn with height in a clockwise or veering direction.

Facts

- Tornadoes can occur at any time of the year
- No terrain is safe from tornadoes
 - Do not open windows during tornadoes. It allows wind and debris to enter the structure.
- 69% of all tornadoes are labeled “weak tornadoes”; they last for 1-10 minutes and have winds less than 110 mph
- 29% of all tornadoes are labeled “strong tornadoes”; they last 20 minutes or longer & have winds that reach 110-205 mph

Fujita Scale of Tornado Intensity

Wind Speed	EF Scale	Typical Damage
65-85 mph	0	Peels surface off some roofs, some damage to gutters or siding
86-110 mph	1	Roof severely stripped, mobile homes overturned or badly damaged, loss of exterior doors, windows and other glass broken
111-135 mph	2	Roofs torn off well-constructed homes; foundations of frame homes shifted; mobile homes completely destroyed
136-165 mph	3	Entire stories of well-constructed homes destroyed; severe damage to large buildings such as shopping malls
166-200 mph	4	Well-constructed houses and whole-frame homes completely leveled
200+ mph	5	Strong frame houses leveled off foundations and swept away; high-rise buildings have significant structural deformation

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 kit with emergency food for your home. Have enough food and water for at least 3 days.

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. 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.

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.

HOW DO TORNADOES FORM?

TEDEd

LORIE

How to make a Tornado in a Bottle!

You will need:

- Water
- Dish soap
- Tall narrow plastic water bottle





Instructions

Step 1:

- Fill your bottle $\frac{3}{4}$ of the way with water and add a drop of dish soap

Step 2:

- Cover tightly

Step 3:

- Swirl the bottle to create your own mini tornado!

Discussion Questions

- What should you do during a tornado?
- Do you think climate change is making tornadoes more frequent and severe?
- What is the Fujita Scale used to measure?



The background is a solid light blue color. There are several stylized white clouds scattered across the page. The clouds are simple, rounded shapes with a few lobes, resembling soft, fluffy clouds. One cloud is at the top center, another is at the top left, one is at the top right, one is at the bottom left, and one is at the bottom center.

Tornado Simulation!

<https://scijinks.gov/tornado-simulation/>





credits

<https://www.weatherwizkids.com/weather-tornado.htm>

<https://littlebinsforlittlehands.com/tornado-bottle-weather-science-activity-books/>

<https://www.iccsafe.org/building-safety-journal/bsj-dives/how-damage-determines-a-tornados-rating-from-fujita-to-enhanced-fujita/>