BUBBLE & FIZZ

WEEK 6: TORNADOES

EVER WONDER . . . WHAT CAUSES TORNADOES?

What we learned this week:

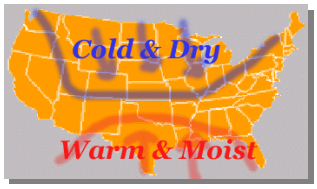
- A tornado is a spinning column of air that stretches from the sky to the ground.
- Tornadoes happen when there is a "battle" between warm air and cold air.
- The U.S. has about 800 tornados per year – most of them in "Tornado Alley".

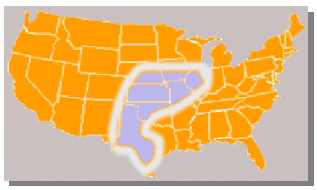
Today's Experiments

1. Model warm and cold air fronts.
2. Create a vortex in a bottle.
3. Experiment with wind speed.
4. Experiment with a tornado tube.
5. Create a tornado weather map.

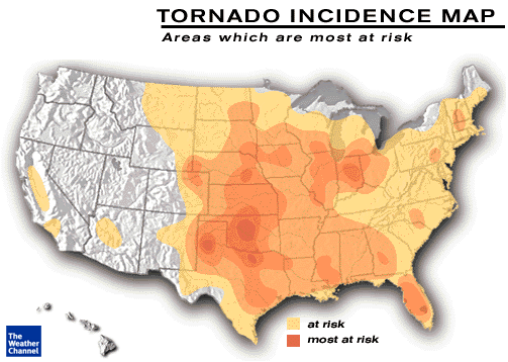
Did you know?

- A tornado is column of destructive, spinning air that stretches from the sky (usually from a cumulonimbus cloud) all the way to the ground. It can be just a few yards wide or more than a mile wide, and swirl as fast as 300 mph! Swirling air is only called a tornado if it touches the ground -- otherwise it is called a funnel cloud. Most tornadoes in the Northern Hemisphere rotate counter-clockwise, while in the Southern Hemisphere they spin clockwise. A waterspout is a tornado over water. Even though they are called funnel "clouds" in the sky, tornados are not clouds at all – just spinning air. The only reason you can see them is because of the dirt and debris they suck in – much like a vacuum cleaner. Some tornados are powerful enough to suck in cars – even entire houses!





- Tornados begin where there is a battle between cold air and warm air, which do not mix. The boundary between the warm and cold air is called a front. For example, let's say Virginia was experiencing a warm front. We might first have gentle rains, or feel warm, humid air. Then, when the cold front moved in, the weather would start to change. As the cooler air pushed in, the warm, moister air would rise and cool down. This collision of air would make the weather very unstable, resulting in heavy rain, high winds, a thunderstorm – maybe even a tornado. But a tornado can form only under very specific circumstances. First, the energy of a very strong thunderstorm (called a "supercell") must be present. (A supercell can contain 20-100 times the energy of a nuclear warhead!) This energy must then cause a very strong updraft to form. Then, there must be a change in wind direction that causes the whole air column to start spinning. If all of that happens – voila, a tornado!



- The U.S. has the most tornadoes in the world – about 800 every year. They may occur in all 50 states but are most likely to happen in the area called Tornado Alley, which runs from Texas to North Dakota. This is where the warm, moist air from the Gulf of Mexico often collides with the cooler air from the north, especially during the spring and fall months.
- Tornados are dangerous to people because they can form so quickly, making it difficult to give people enough warning to seek shelter. Many cities and towns in Tornado Alley have loud, blaring sirens that go off, day or night, to warn people that a tornado is coming. Scientists still have much to learn about exactly how and when a tornado will form.

Amazing Scientists

Storm Chasers. Storm chasers are very brave people with a love of nature and science who go out and study dangerous storms. When they hear that there might be a tornado, they go out looking for it instead of seeking shelter! While this is an extremely dangerous thing to do, as tornados are very upredictable storms, their work helps to keep the rest of us safe by helping us understand how these powerful storms form and change.

Curiosity @ Home

This week at home, see how many experiments you can come up with using your tornado tube. What happens when you use less water? More water? Bigger containers? Smaller containers? Thicker liquids (like milk)? What happens when you shake it? When you poke holes in the sides of the bottles? Can you get your tornado to spin clockwise?

Word Search

Find the following words from class today

(look up, down, backwards, forwards & diagonally):

Tornado

Spinning

Supercell

Tornado Alley

Waterspout

Samaras

Funnel

Storm Chaser

Vortex

A	S	B	F	A	A	B	M	K	S	E	R	U	P	T	Y	X	W
C	U	O	Q	G	A	M	E	O	M	P	T	T	A	O	P	S	H
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