

Lesson 21

TECHNICAL TEXT



GENRE

Technical texts explain a process, procedure, or job in detail.

TEXT FOCUS

Characteristics of Technical Text A technical text includes facts and domain-specific words and phrases that provide readers with a deeper understanding of the topic. A technical text might also include detailed diagrams that illustrate important concepts.

Wild Weather

by Laura Townsend

What's the weather like where you are? Sunny and warm? Snowy and cold? Is a storm predicted? Have you thought about the weather at all today?

Meteorologists, or scientists who study weather, always think about the weather. They also observe, measure, and record its changing patterns. Their goal is to better predict what the weather will be, especially when storms are about to strike.

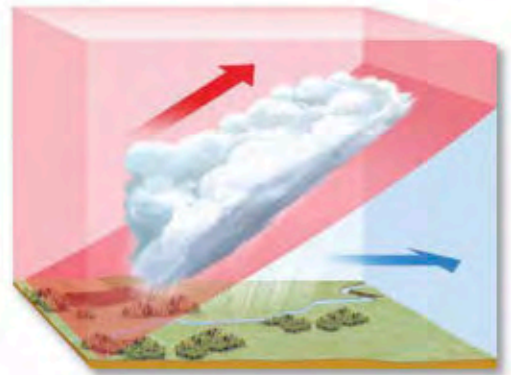
What Causes Weather?

When predicting weather, scientists study air masses. An air mass is a large body of air with the same properties, such as temperature, air pressure, and water vapor.

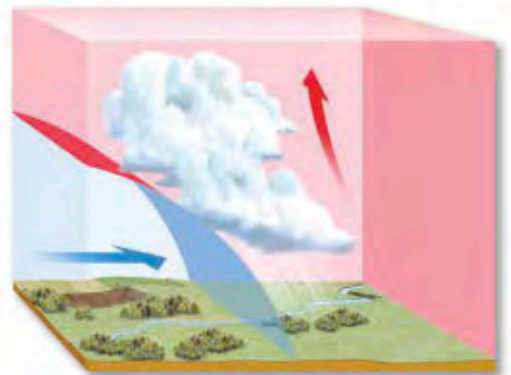
A colder air mass doesn't mix well with a warmer air mass, and that can cause stormy weather! Cold air is heavier than warm air, so it pushes underneath a warm air mass. When warm air moves into a cold air mass, however, the opposite action occurs. Warm air is lighter, so it rises above the cold air.

Changes in the weather occur because air masses are always on the move. The area where two air masses meet is known as a *front*. When a warm air mass is moving into an area, it's called a warm front. When a cold air mass moves in, that area is called a cold front.

Scientists also study air pressure to predict the weather. Air pressure is the weight of air pressing down on you. High air pressure causes the weather to stay calm, but if air pressure begins to drop, watch out—this can lead to really wild weather!



Warm Front: Warm air is lighter, so it lifts above a cold air mass.



Cold Front: Because cold air is heavier, a cold front pushes a warm air mass upward.

KEY



warm air



cold air

What Causes Hurricanes?

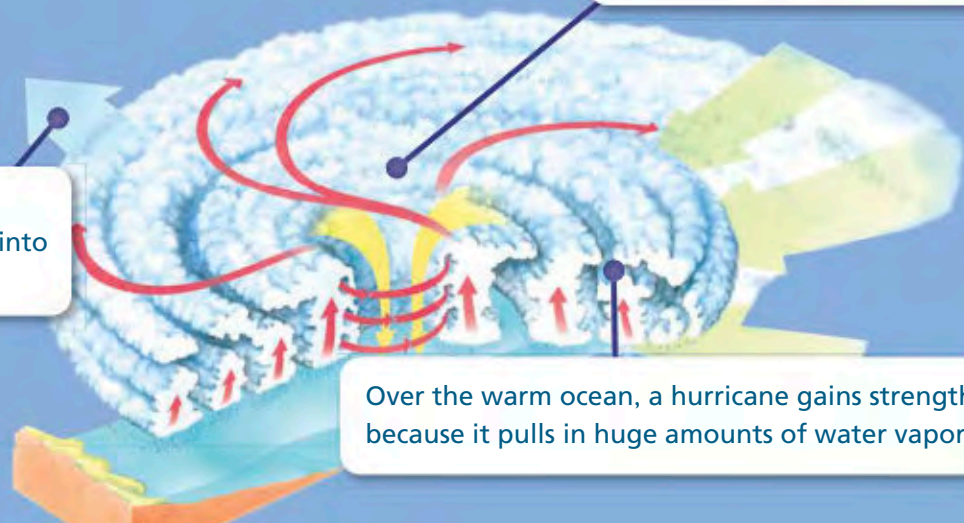
Hurricanes affect the weather in the United States each year. Beginning as tropical disturbances, some storms continue to gain force and size. Once their wind speeds reach 74 miles per hour, the huge, rotating storms are officially labeled hurricanes.

A hurricane forms over warm ocean waters. Its winds begin to circle around an area of low air pressure, creating clouds and thunderstorms. More warm, wet air gets pulled upward, causing the storm to become larger and stronger. Wind speeds build, air pressure drops, and the storm keeps strengthening because of the warm, wet air feeding it. Eventually, a dangerous hurricane is born.

Pushed ahead of a hurricane, the ocean's surface may rise up to 33 feet higher. These *storm surges* can be as wide as 100 miles and can smash into shorelines like bulldozers. If a hurricane comes ashore, it brings heavy rain, flooding, and powerful winds, causing damage to property and harm to people and animals.

A hurricane may be as wide as 300 miles. It can travel thousands of miles and last for more than a week. Once it reaches cooler seas or moves across land, however, the hurricane loses its energy source. As a result, it begins to weaken.

A Look at a Hurricane



Storm clouds can reach eight miles into the atmosphere.

The hurricane's fastest winds spiral around the eye wall. The air inside the eye is calm.

Over the warm ocean, a hurricane gains strength because it pulls in huge amounts of water vapor.

What Causes Thunderstorms?

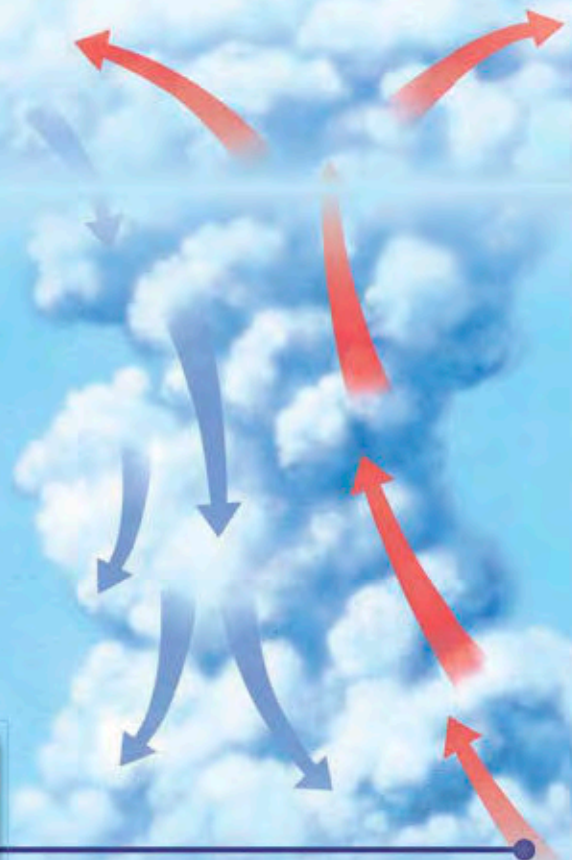
About 45,000 thunderstorms occur around the world every day, bringing rain, wind, lightning, thunder, and sometimes hail. These powerful storms develop when air masses of different temperatures come together.

Thunderstorms begin to form as warm, humid air rises rapidly. Then a cold front or strong winds push under the warmer air mass. As the rising air begins to cool, clouds take shape, heavy with water droplets and even ice crystals. Strong winds blow both upward and downward within the cloud. Finally, rain begins to fall, pulling cool air down with it. Strong electric charges build up at the bottom of the cloud, causing lightning and thunder.

While violent, these powerful storms are usually over within about an hour. Because the rain and cooler air prevent warm air from continuing to rise into the clouds, most thunderstorms will move away quickly.

When extremely strong thunderstorms occur, meteorologists become concerned about the possibility of another severe weather event—a tornado. Tornadoes form in less than one percent of all thunderstorms, but when they hit, they can destroy everything in their path.

Large amounts of warm air are pushed upward, forming a thundercloud. These upward movements of air, called updrafts, can reach speeds of 62 miles per hour.



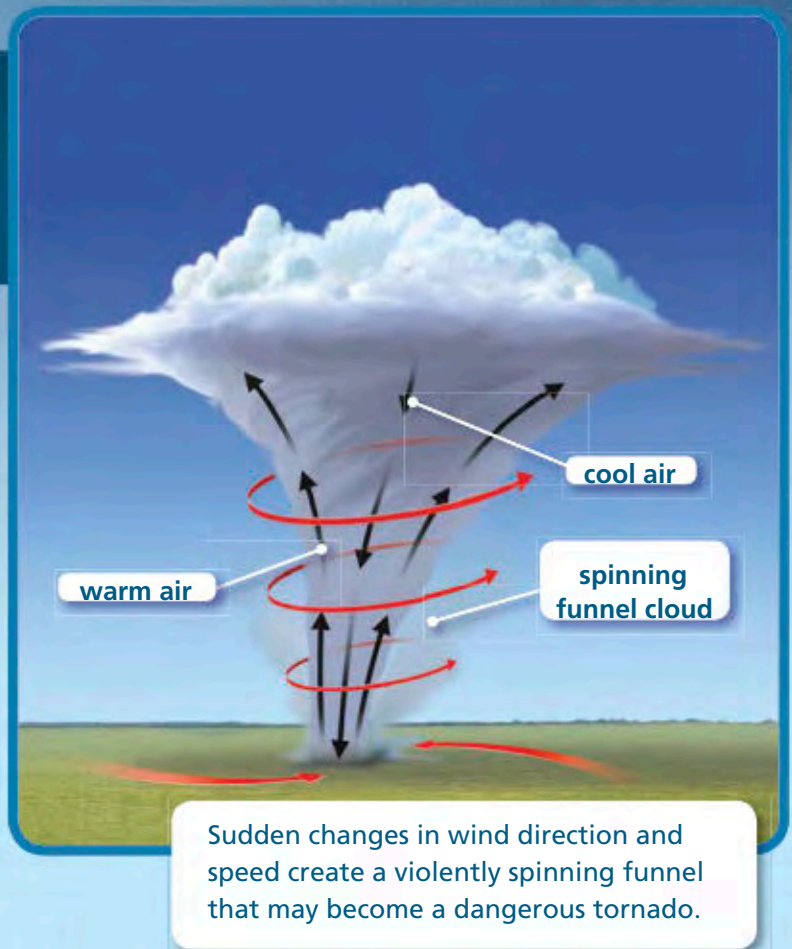
What Causes Tornadoes?

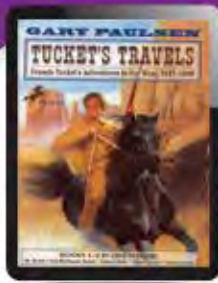
A violent, twisting column of air racing across the plains may be exciting to see in a movie, but few people want to see one in real life. Some tornadoes generate the fastest winds on Earth. Their wind speeds may reach over 300 miles per hour.

Tornadoes form when winds spin a funnel, or column of air, at the base of a storm cloud. Rapidly rising air in the funnel pulls warm, humid air into it. The fast-spinning air creates an area of low air pressure in the funnel's center. Due to the low pressure, air on the ground continues to rush into the funnel and to join the cloud above. The swirling funnel begins to lengthen. If conditions are right, the funnel touches down, and the tornado begins to move along the ground.

These violent storms typically have narrow paths of destruction; nevertheless, their routes may cover many miles. Tornadoes are more difficult to predict than other storms. However, with advanced weather tracking, meteorologists are now better able to warn people and give them time to take cover.

As meteorologists continue to learn about weather patterns, they will be able to more accurately predict the paths that storms may take. This means less chance of loss of life and property. With better forecasting, people have more time to prepare, so wild weather doesn't have to be so scary!





Compare Texts

TEXT TO TEXT

Compare Protective Instincts Think about Francis in “Tucket's Travels” and Travis in “Old Yeller” (Lesson 7). In what similar ways do the two characters confront challenges and help the children for whom they feel responsible? With a partner, review both selections and compare and contrast the characters. Use the characters’ actions to draw inferences about protecting children in dangerous situations. Be sure to support your ideas with quotations and text evidence.



TEXT TO SELF

Write About Weather The selections in this lesson describe extreme weather conditions. Think of a time when you experienced extreme weather, such as a storm or a heat wave. Describe in a few paragraphs how it affected you or others around you. Explain what you or others did to adapt to the conditions.



TEXT TO WORLD

Present Information With a partner, use a combination of resources to research how to survive extreme weather events such as hurricanes or tornados. From your research, create a safety brochure with information, supply lists, and helpful illustrations. Then present your brochure to a group.

