



Tornadoes

by Rob Arego

HOUGHTON MIFFLIN HARCOURT



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A tornado moves across open country.

Tornado!

Since ancient times, people in some parts of our country spend their days peering nervously at the horizon. They're looking for a dark funnel-shaped cloud rapidly approaching their town. What is it that they dread so much? It's a tornado, one of the most deadly forces on our planet!

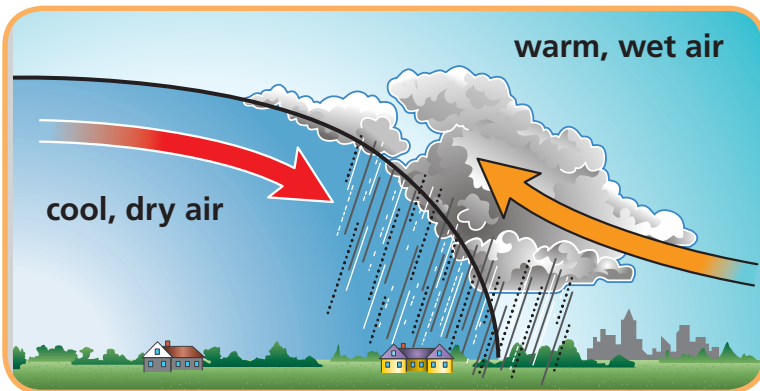


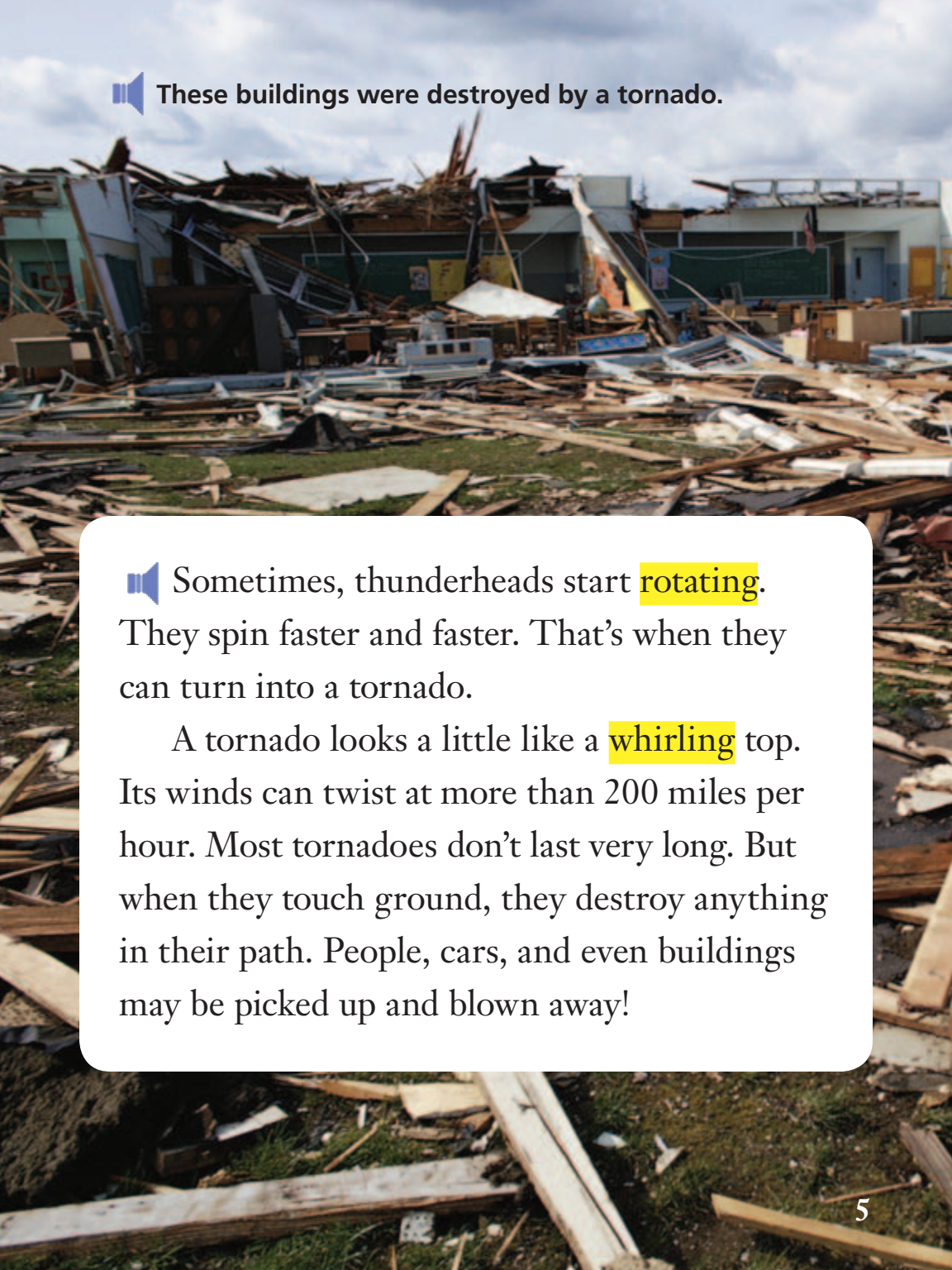


Born in a Storm

Most tornadoes begin as thunderstorms. Thunderstorms form when large streams of cool, dry air hit warm, wet air. The warm air is driven up. As it goes higher, it cools. The moisture in the warm air begins to cool and **condense**, changing into tiny drops of water. These drops form clouds.

If the warm air rises very fast it can form special kinds of clouds called thunderheads. The drops of water in these dark clouds combine into bigger drops. When the drops become large enough, rain begins to fall in a thunderstorm.





These buildings were destroyed by a tornado.

Sometimes, thunderheads start **rotating**. They spin faster and faster. That's when they can turn into a tornado.

A tornado looks a little like a **whirling** top. Its winds can twist at more than 200 miles per hour. Most tornadoes don't last very long. But when they touch ground, they destroy anything in their path. People, cars, and even buildings may be picked up and blown away!



Fujita Tornado Scale

Scale	Wind Speed
EF0	60-85 miles per hour
EF1	86-110 miles per hour
EF2	111-135 miles per hour
EF3	136-165 miles per hour
EF4	166-200 miles per hour
EF5	over 200 miles per hour



Weather scientists use this scale to grade tornadoes.



Weather scientists rank tornadoes by their strength—weak, strong, and violent. They developed a scale to tell how strong a tornado is.

Most tornadoes fall in the EF0 or EF1 category of the scale. These are considered weak tornadoes. They don't cause much damage.

Only a few tornadoes are **registered** as violent tornadoes in the EF4 or EF5 category.



Where Do Tornadoes Occur?

Most tornadoes occur in the central United States. This area is made up of flat grasslands.

One region of our country has so many tornadoes that it is called Tornado Alley. Tornado Alley stretches from Texas in the south to North Dakota in the north. The Gulf States also have a lot of tornadoes.

Tornado Alley has more tornadoes than any other part of the United States.





Most tornadoes strike in the spring and summer. During these seasons, warm air streams move north from their **source** in the Gulf of Mexico and smash into cold air streams from further north. Thunderstorms develop as a result. Some of them turn into tornadoes.

Although tornadoes can occur at any time of day, they are most common in the late afternoons. That's the time when heat from the sun-baked earth begins to rise. When this warm air meets cooling air above, severe thunderstorms can form. These can grow into tornadoes.





Super Tornado Facts


Date: April 3-4

Deaths: more than 300

Injuries: more than 5,000



Super Tornado Outbreak of 1974


 When a tornado hits a city or town, it can cause a lot of damage. Now imagine what would happen if more than 100 tornadoes unleashed their **rage** on one region in one day.

That's what actually happened in 1974 during the Super Tornado Outbreak. During that outbreak, nearly 150 tornadoes struck 13 states in less than 24 hours. It was the worst tornado outbreak in the history of our country.







 This house was destroyed by a tornado.

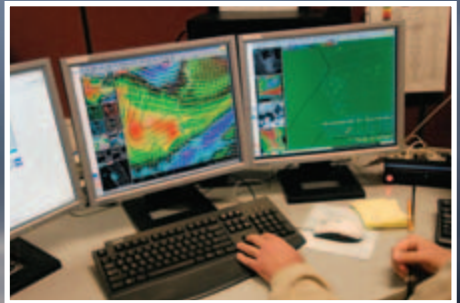
 The most deadly tornado struck the town of Xenia, Ohio. The town **experienced** a tornado with winds that were higher than 260 miles per hour. Schools, churches, and more than 1,200 homes and businesses were destroyed. Many of the people who lived there were left homeless.

Predicting Tornadoes

 At the time of the Super Tornado Outbreak, people had little warning that tornadoes were on the way. Weather forecasters did not have good tools to **predict** tornadoes.

Now the National Weather Service uses radar and other scientific tools to help them. Radar can detect when thunderstorms are forming. That can help forecasters to tell if these thunderstorms might develop into tornadoes.

 Radar can help forecasters predict tornadoes.



Even with new technology, it is hard to tell when and where a tornado will hit. Sometimes, forecasters think a tornado might strike, and then it doesn't. Sometimes, a tornado develops suddenly and catches forecasters by surprise.

When weather forecasters discover the signs of a tornado, they let people know. They have a system of letting people know that a tornado might be coming. A **tornado watch** tells people that the present weather conditions could cause a tornado. A **tornado warning** means that a tornado is actually occurring.




Weather forecasters warn people that a tornado may be coming.



 This storm shelter can protect people from a tornado.

Staying Safe in a Tornado

 If you are in a place where tornadoes are common, it is important to learn about how to stay safe. Being prepared is the best way to protect yourself during a tornado.


During a severe thunderstorm, listen to the local news to see if any tornado watches and warnings have been announced. If a tornado watch is announced, do the following:


- Keep alert and watch for changing weather conditions.
- Listen to local weather updates.
- Be ready to seek shelter at a moment's notice.






 **An oncoming tornado**

 If a tornado warning is issued, you need to seek shelter immediately. If you are home, move to a place in your house that is safe. This should be in a basement, storm cellar, or a room away from windows.

 If you are outside, try to get to a shelter. If there's no time, lie down in a ditch or a low area. This will help protect you from dangerous flying objects.

The chances of finding yourself in the path of a tornado are really very small. But if you are unlucky enough to be there, knowing what to do can be the difference in keeping you safe.

 **A tornado siren warns people that a tornado is coming.**



Responding



TARGET VOCABULARY **Word Builder** Words

such as **rapidly** end with the suffix *-ly*. The suffix *-ly* means “in a certain way.” What other describing words end with *-ly*? Add more words to the chart below.

Words with <i>-ly</i>	Meaning
rapidly	in a rapid way
?	?
?	?





Write About It

Text to Self What other kinds of storms do you know about? Write a paragraph describing a storm you have seen. Use one word from the Word Builder in your writing.

**TARGET VOCABULARY**

ancient
condense
experience
predict
rage

rapidly
registered
rotating
source
whirling

**TARGET STRATEGY Infer/Predict** Use text clues to figure out what isn't directly stated by the author.

Which vocabulary word sounds like something that is doing that action?

Level: Q

DRA: 40

Science

Strategy:
Infer/Predict

Word Count: 872

4.3.11 Build Vocabulary

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