MAKE A TORNADO

AT A GLANCE

GRADE LEVEL

- Grade K-2, 3-5, 6-8

TIME REQUIRED

- 5-10 minutes prep time
- 15-25 minutes classtime

FORMAT

- Small group exploration
- Large group demonstration

MATERIALS

- 2 1-liter bottles
- 750 mL water
- Duct tape or bottle connector EXAMPLE
- Paper towels
- Pencils and science journal (or related materials to record observations)

THE SCIENCE EXPLAINED

Tornadoes are huge and powerful forces of nature that can happen anywhere around the world. They occur inside a thunderstorm cloud when warm and humid air is rising while cool air is falling. These conditions can result in rolling, spinning air currents inside the cloud. When this spinning column of air goes vertical, it can drop from the cloud and form a funnel cloud. Once the funnel cloud touches the ground, it is a tornado.

LESSON SUMMARY

Explore how tornadoes form in this hands-on activity that demonstrates the shape of a funnel cloud.

OBJECTIVES

The learner will:
- Demonstrate how rotational motion can create a vortex, simulating the funnel shape of a tornado.
- Make connections between the model and real-world weather systems, identifying both similarities and limitations of the simulation.

PROCEDURE

Activity Prep
Create your "tornado in a bottle" by filling one bottle with 750 ml of water. Connect the two bottles with either duct tape or connector.

Step One
Hold the connected water bottles by the duct tape or central connector.

Step Two
Flip the bottle end over end in one movement; the water should be in the top bottle.

Step Three
Quickly move the bottles in a circular motion to swirl the water.

Step Four
When a funnel begins to form, stop the motion and set the bottle down on a flat surface.

Step Five
Have students observe what happens, and record observations in their science journals

MAKE A TORNADO AND NOAA GEOSTATIONARY SATELLITES

CONNECTIONS

Severe weather is one of the weather phenomena that the GOES-R Series studies from space!

The Advanced Baseline Imager (ABI) is the primary instrument on the GOES-R Series for imaging Earth's weather, oceans and environment.

ABI provides data for accurate severe weather forecasting and detection. It tracks and monitors cloud formation, atmospheric motion, and convection, among other data points. ABI's data enables meteorologists to pinpoint and track developing storms that spawn tornadoes in near real-time.

Did you know …

In April 2011, GOES-13 served as GOES East and provided critical observations of a super outbreak of tornadoes across the United States. Over the course of four days more that 360 tornadoes touched down from Texas to New York, marking one of the largest tornado outbreaks in United States history.

KEY RESOURCES

Learn more about tornadoes with SciJinks!

Select the link or scan the QR code to visit the page:

SciJinks - What Causes Tornadoes?
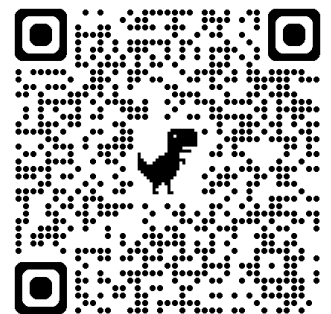
THINKING OUTSIDE THE BOX

Discussion Prompts and Extension Activities

DISCUSSION AND JOURNAL PROMPTS

- Draw a stormy scene and include a thunderstorm cloud and a tornado.
- In 2-3 paragraphs, describe the shape of a tornado and how it forms in a thunderstorm cloud.
- How do GOES satellites assist in the forecasting of severe weather and tornadic activity? Explain how the satellites inform forecasting of severe weather.

SUGGESTED EXTENSION ACTIVITIES

- Become a weather forecaster! Using weather data over the course of 1 to 10 years, track the frequency of tornadoes to identify any patterns or increase and decrease of tornadic weather in your local area.