NATIONAL SCIENCE EDUCATION STANDARDS

A. Science as Inquiry

Abilities necessary to do scientific inquiry
Understanding about scientifc inquiry

D. Earth and Space Science

K–4

Objects in the sky

- The sun, moon, stars, clouds, birds, and airplanes all have properties, locations, and movements that can be observed and described.
- The sun provides the heat and light necessary to maintain the temperature of the earth.

Changes in earth and sky

- Weather changes from day to day and over the seasons. Weather can be described by measurable quantities, such as temperature, wind direction and speed, and precipitation.
- Objects in the sky have patterns of movement.

5–8

Structure of the earth system

- Water evaporates from the earth's surface, rises and cools as it moves to higher elevations, condenses as rain or snow, and falls to the surface.
- The atmosphere has different properties at different elevations.
- Clouds, formed by the condensation of water vapor, affect weather and climate.
- Global patterns of atmospheric movement influence local weather.

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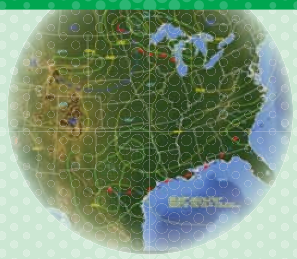

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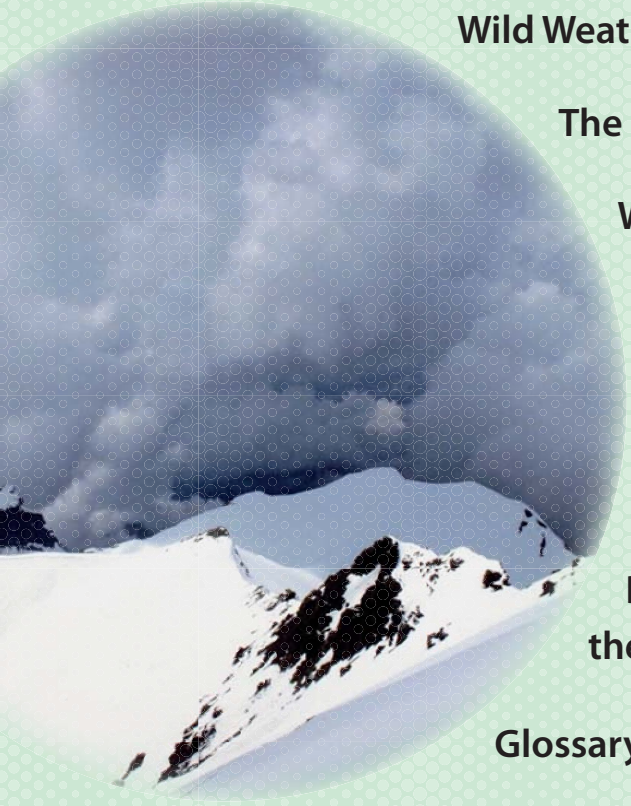
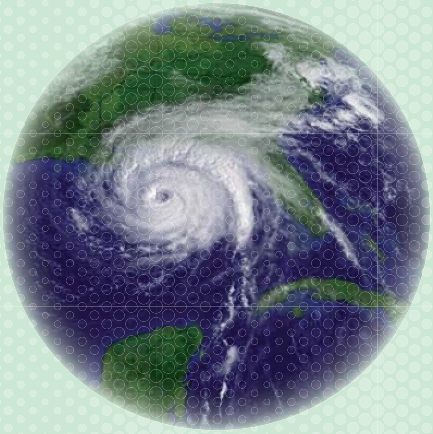




WILD WEATHER

The United States has experienced some of the wildest weather ever recorded. Maybe this is why **predicting** the weather is so fascinating.

What?	How much?	When?	Where?
Most snowfall in a day	76 inches (193 centimeters)	April 14–15, 1921	Silver Lake, Colorado
Largest snowflake	15 inches (38.1 centimeters) wide and 8 inches (20.3 centimeters) thick	January 28, 1887	Fort Keogh, Montana
Strongest wind	165 miles (265.5 kilometers) per hour	October 24–25, 2005 (during Hurricane Wilma)	Florida
Widest tornado	5,250 feet (1,600.2 meters) wide	May 3, 1999	Mulhall, Oklahoma
Most tornadoes in 24 hours	148 tornadoes	April 3–4,1974	Tornado Alley, South and Midwest

Weather **forecasters** predict what the weather will be like. They base their predictions on information they gather. Then they use a mixture of forecasting methods to predict what will happen. You can gather information about the weather and use a mixture of forecasting methods, too.

Hurricane Wilma

Make an Anemometer

To measure the wind's speed you'll need an anemometer.

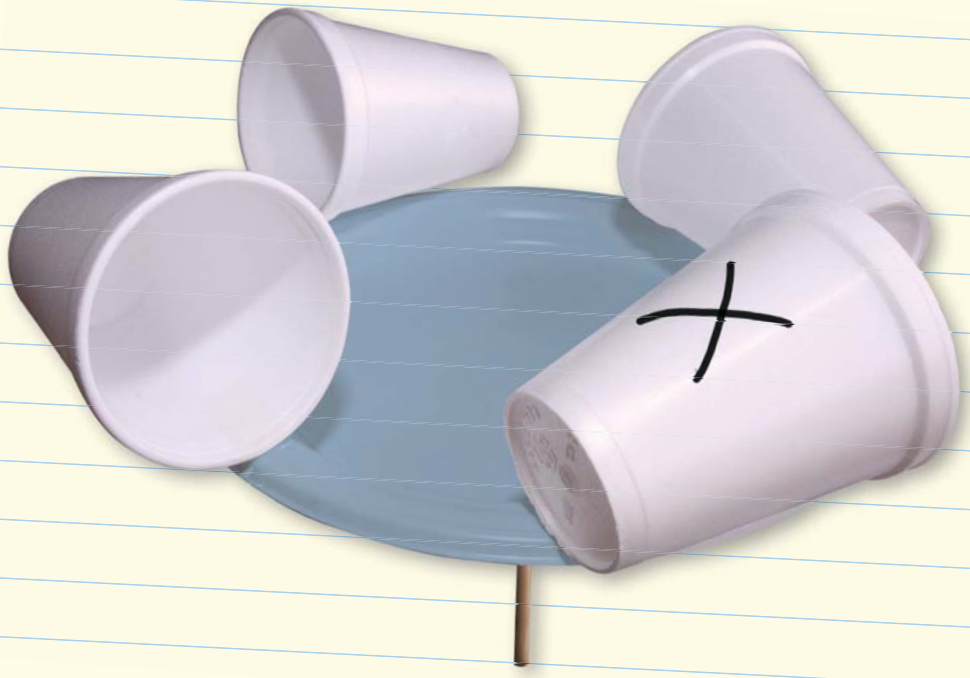
You will need:

- tape • 4 Styrofoam or paper cups • a paper plate • a marker
- a spool of thread • a knitting needle (or chopstick)
- a digital watch (or a watch with a second hand)

What to do:

1. Tape the cups on their sides to the edge of the plate, making sure that they all face the same way, as shown on page 9.
2. Mark a large X on one of the cups.
3. Turn the plate over and tape the spool to the center of the plate.

4. Push the pointed end of the knitting needle into the ground and slide the knitting needle into the spool.
5. Count how many times the marked cup goes around in 1 minute. This measures the wind's speed in **revolutions** per minute.



Tell a friend:

Using your wind vane and anemometer, you can now tell a friend the wind's direction and speed.

Rain, Hail, or Snow?

Clouds tell us about the weather that's coming, but clouds themselves don't always mean rain. It's the color of the clouds that tells us what kind of **precipitation** will fall.

So what's going to come out of that dark cloud that may be above you right now—rain, hail, or snow? That pretty much depends on the temperature. Rain is the most likely result, but if the raindrops get lifted high enough up into the troposphere, they'll turn into ice. Ice crystals form when a cloud's temperature falls below freezing. These crystals fall as snow or hail.

White clouds = nice weather.

Gray clouds or gray patches in white clouds = it might rain, hail, or snow.

Dark gray or black clouds = rain, hail, or snow is not far away!

Hailstones go for a roller-coaster ride around the inside of a cloud. Each time they're carried up, they get a fresh coat of ice—until at last they're too heavy for the air to hold them up any longer. Then they fall.