



Teacher Guide

Where in the World?

Key idea: Students can determine the location, orientation, and scale of EarthKAM images to help them understand what the images represent.

Time: 50 minutes

Objective

Students use an EarthKAM image to practice interpreting images of Earth from space. They determine the location, orientation, and scale of the image and then suggest areas for further investigation.

Do the activity

Give students the *Where in the World?* Student Handout and have them follow the steps to figure out what the image on page 3 of the handout shows. Make atlases available. You can also allow students to find maps on the Internet.

Answer Key

1. Look at the EarthKAM photo on page 3 of this handout. It was taken during the 2012 Sally Ride EarthKAM mission. Look at the Image Properties information. What are the latitude and longitude of the image? *[The latitude is 41.71°N. The longitude is 71.12°W.]*
2. Use a world atlas to find the location, based on the latitude and longitude coordinates. Where was the image taken? *[The image shows the coast of Massachusetts, including Cape Cod.]*
3. Find a map in the atlas or on the Internet that shows the area of Earth where the image was taken. On the map, north is up and south is down. What about in the EarthKAM image? Turn the image until it is in the same orientation as the map, with north up. Draw a compass rose on the image. *[The image should be turned completely so that Cape Cod faces east.]*
4. Now figure out the scale of the image. Identify two points on the map—the two ends of the hammer-shaped landmass. Use the map scale to determine how far apart the two points are. What is the distance from one side of the landmass to the other? *[The two ends of Cape Cod are about 70 kilometers apart.]*
Now find the same two places on the EarthKAM image. Use a metric ruler to find the distance in centimeters between the two points. *[The two ends of Cape Cod are about 8.5 centimeters apart.]*
What distance on the EarthKAM image corresponds to 1 kilometer on Earth? Show your calculation. *[About 0.12 centimeters on the EarthKAM image equals 1 kilometer on Earth. (10 cm/70 kilometers = 0.12 cm/1 kilometer.)]*
5. Refer to the labels on the map. On the EarthKAM image, label towns, islands, bays, and other features.

STANDARDS ALIGNMENT

Geography

- I.1:** The World in Spatial Terms: How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective.
- I.2:** The World in Spatial Terms: How to use mental maps to organize information about people, places, and environments in a spatial context.
- I.3:** The World in Spatial Terms: How to analyze the spatial organization of people, places, and environments on Earth's surface.
- II.4:** Places and Regions: The physical and human characteristics of places.

CCSS

RTS.6-8.3: Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

MATERIALS

- > *Where in the World?* Student Handout (It includes an EarthKAM image with Image Properties information.)
- > Atlases
- > Metric ruler



Investigate further

Now you know where in the world the EarthKAM image was captured. But that's only the beginning. List three questions you could investigate to learn more about the place pictured and what the EarthKAM image reveals about it. Then research the answers.

Sample questions

- 1. Why is there so much brown stuff in the water around Cape Cod?*
- 2. Is Cape Cod eroding significantly over time?*
- 3. Why are population centers located where they are along the Massachusetts coast?*