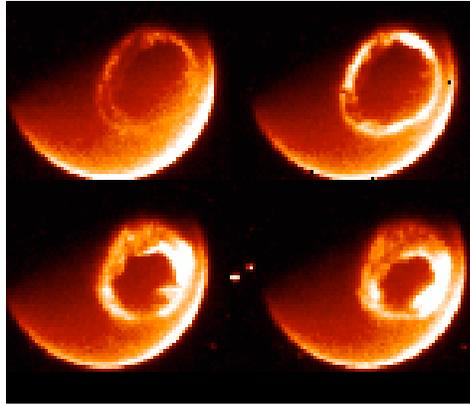


# How big is an aurora?

The IMAGE satellite orbits Earth, and has a camera that can view the Northern and Southern Lights from space. As the solar activity level increases and decreases, the size of the aurora increases and decreases.

This activity will let you use data from this satellite to measure the diameter of the Auroral Oval and its changes during a solar storm event.



The ring of Northern Lights from space.

**Scientists use satellites to study phenomena that are too vast to be studied from the ground.**

➤ Photographs can be used to measure the size of an object.

Now you try!

### Here's how to do it!

1. With a ruler, measure the diameter of the Earth's disk in millimeters in the illustration. (Answer: About 30 mm)
2. The diameter of the Earth in this image is 13,000 kilometers, so the scale of the image is  $(13000 \text{ km}) / (30 \text{ mm}) = 433 \text{ kilometers/mm}$ .
3. The diameter of the Oval is about 15 mm, so using the image scale, the diameter of the Oval is:

$$15 \times 433 = 6,500 \text{ kilometers}$$



This photograph is from the IMAGE 'Far-Ultraviolet Imager' instrument obtained on July 14, 2000. It shows the size of the auroral oval during a severe solar storm.

1) Estimate the inside and outside diameters of the auroral oval.

2) Calculate the oval's area in millions of square kilometers.

Aurora: <http://image.gsfc.nasa.gov/poetry/educator/Qaurora.html>