

## Image 1: Earth from space

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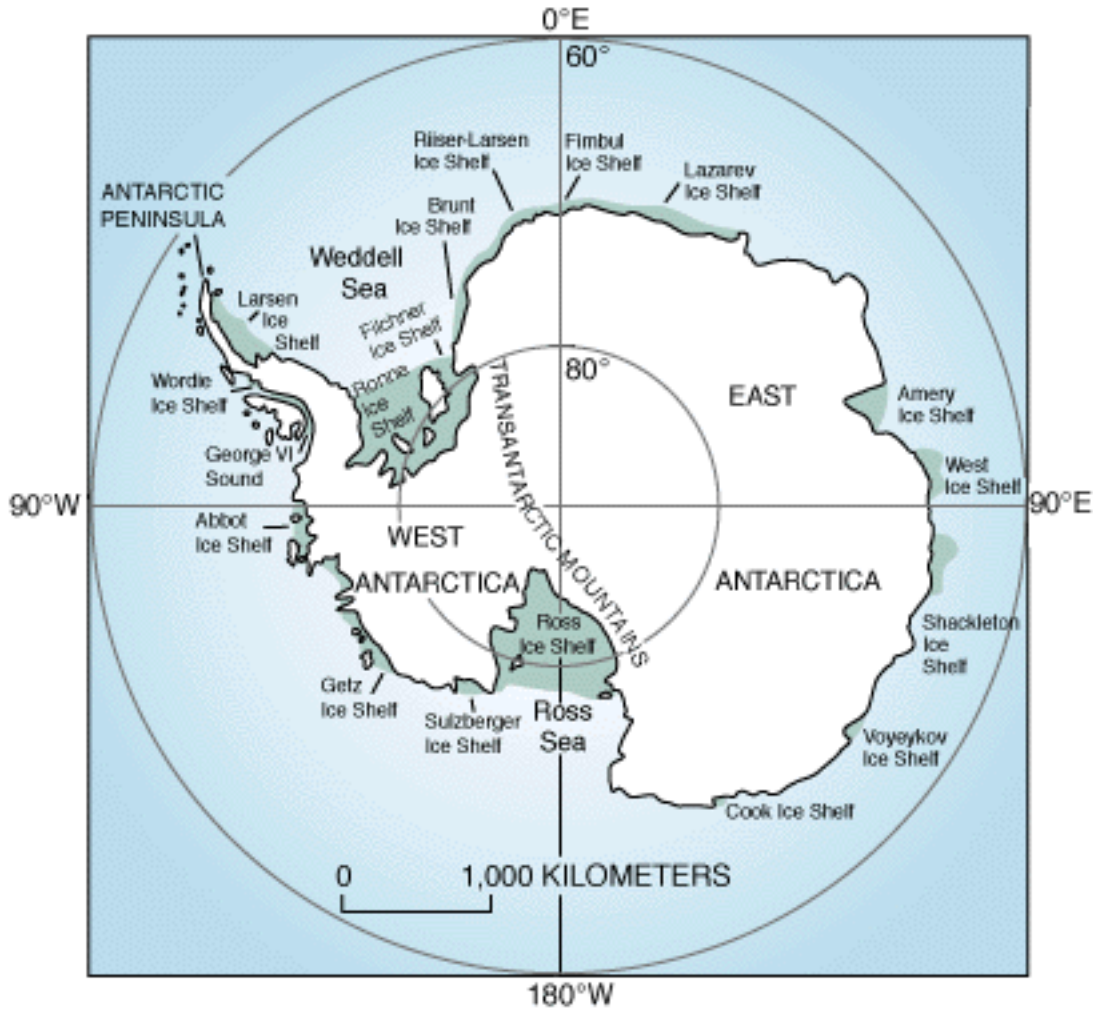
Credit: NASA  
Spacecraft: Apollo 17  
Sensor: camera using visible light  
Image date: December 7, 1972

This image is a photograph of Earth taken by Harrison "Jack" Schmitt, an astronaut aboard Apollo 17, which was headed to the moon. Schmitt used an ordinary camera, the kind a professional photographer would use on Earth. When this picture was taken, the spacecraft was 25,000 miles above Earth, so Schmitt was able to capture an image of the entire planet in one frame. Cameras capture visible light from the Sun as it is reflected off materials and objects in its path. Snow, ice, and clouds all reflect a lot of light, so they appear white in the photograph. When this picture was taken, Antarctica was relatively free of cloud cover. You can see it at the bottom of the picture. This picture, which is very famous, is often called "The Blue Marble."

**Think about It**

Why is it remarkable that this image of the entire Earth was captured in a single frame? Passenger planes fly about 6.5 miles above Earth when they reach cruising altitude. If you photographed Earth from a plane at this altitude, would you capture more or less of Earth in a single frame? Where was the Sun when this photograph was taken—behind Earth, behind Apollo 17, or between Earth and Apollo 17? How do you know?

## Image 2: Outline Map of Antarctica



Credit: USGS  
 Satellite: none  
 Sensor: none  
 Image date: 1998

You may have seen this kind of map before. It shows the shape of the continent and the names and locations of geographical features such as ice shelves and the South Pole. To help describe the exact location of these features, the mapmaker has drawn lines of longitude and latitude on the map. These lines can be used to give every point on the map a numerical value that locates it precisely on Earth's surface. Early maps of Antarctica were sometimes inaccurate and incomplete. Satellite technology and modern mapmaking techniques make recent maps much more reliable. Of course, there is always some distortion when a curved surface like Earth is drawn on a flat piece of paper. This is especially true when the map covers a large area like Antarctica.

Think about It

Before the development of satellite technology, how was information gathered to make maps such as this one? Is the shape of Antarctica in this image the same as the shape in the other images? What is your explanation for any differences?













