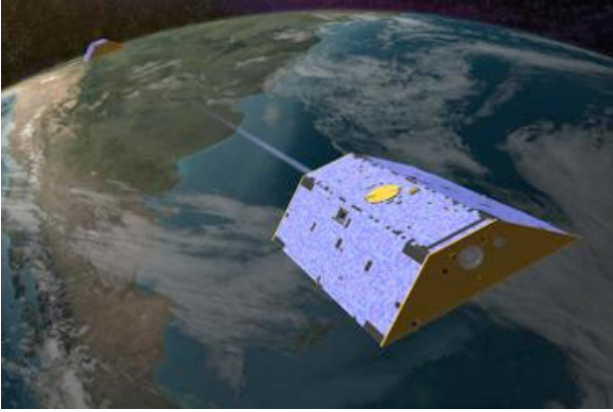


[Earth & Sky](#)

A Clear Voice for Science

Twin GRACE satellites monitor changes in gravity

Program #5168 of the Earth & Sky Radio Series
with hosts [Deborah Byrd](#) and [Joel Block](#)



Artist's concept of one of the Gravity Recovery and Climate Experiment ([GRACE](#)) satellites. ([NASA-JPL](#))

Today ... seeking and finding variations in Earth's gravity by a pair of orbiting satellites.

These twin satellites are part of a mission named [GRACE](#). They orbit Earth once every 94 minutes and cover all of Earth's surface in about a month. The job of these two satellites is to sense variations in local gravity.

In other words, Earth's gravity isn't uniform. Rocks, for example, are denser than water so a mountainous region has different local gravity than an ocean. By sensing changes in local gravity over time, GRACE has made some spectacular measurements, most often related to the movement of water around the globe.

The mission has measured ice melt at the poles, water storage in the Amazon and other river basins, and might have revealed a huge crater under the ice in Antarctica, possibly from the asteroid impact that caused mass extinctions 250 million years ago.

One unanticipated result from the twin GRACE satellites came after the earthquake that caused a deadly tsunami in the Indian Ocean in 2004. The earthquake was so large that it affected local gravity by raising thousands of kilometers of the ocean floor and reducing the density of rocks in this region.

Reduced density means a reduced gravitational pull, which GRACE was able to measure in a unique way. Our thanks today to [NASA](#): explore, discover, understand. We're Block and Byrd for Earth & Sky.

GRACE stands for Gravity Recovery and Climate Experiment. The mission was launched in March of 2002. The GRACE mission has two identical spacecrafts flying about 220 kilometers apart in a polar orbit 500 kilometers above the Earth.

Originally, the mission was planned to last 5 years. But GRACE scientists proposed 2 years ago to extend the mission in order to continue to observe long-term trends in climate change and ocean circulation. According to Mike Watkins, GRACE project scientist, the biggest achievement of this mission so far has been taking direct measurements of polar ice changes in Greenland and Antarctica, and water storage in major river basins and aquifers around the world.

[GRACE in Space](#) from [discovermagazine.com](#)

[Satellite Data Reveals Gravity Change from Sumatran Earthquake](#)

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