

# Japan Earthquake Accelerated Earth's Rotation, Study Finds

By changing the distribution of mass on the earth, Japan's earthquake sped up the planet's rotation, shortening the day by 1.8 microseconds, a new analysis has found.

Kyodo News/AP

By [SPACE.com Staff](#) / March 14, 2011

<http://www.csmonitor.com/Science/2011/0314/Japan-earthquake-accelerated-Earth-s-rotation-study-finds>

Note from Pastor Kevin Lea follows this article.



A landscape devastated by the earthquake and tsunami three days earlier is seen in Otsuchi, Iwate Prefecture, Monday.

The massive earthquake that struck northeast Japan Friday (March 11) has shortened the length Earth's day by a fraction and shifted how the planet's mass is distributed.

Gallery: [Japan's 9.0 earthquake](#)

A new analysis of the [8.9-magnitude earthquake in Japan](#) has found that the intense temblor has accelerated Earth's spin, shortening the length of the 24-hour day by 1.8 microseconds, according to geophysicist Richard Gross at NASA's Jet Propulsion Laboratory in Pasadena, Calif.

Gross refined his estimates of the Japan quake's impact – which previously suggested a 1.6-microsecond shortening of the day – based on new data on how much the fault that triggered the earthquake slipped to redistribute the planet's mass. A microsecond is a millionth of a second.

[Photos: [Japan Earthquake and Tsunami in Pictures](#)] [IN PICTURES: Japan's 8.9 earthquake](#)

"By changing the distribution of the Earth's mass, the Japanese earthquake should have caused the Earth to rotate a bit faster, shortening the length of the day by about 1.8 microseconds," Gross told SPACE.com in an e-mail. More refinements are possible as new information on the earthquake comes to light, he added.

The scenario is similar to that of a figure skater drawing her arms inward during a spin to turn faster on the ice. The closer the mass shift during an earthquake is to the equator [**this statement is in error, see below**], the more it will speed up the spinning Earth.

One Earth day is about 24 hours, or 86,400 seconds, long. Over the course of a year, its length varies by about one millisecond, or 1,000 microseconds, due to seasonal variations in the planet's mass distribution such as the seasonal shift of the jet stream.

The initial data suggests Friday's [earthquake moved Japan's main island](#) about 8 feet, according to Kenneth Hudnut of the U.S. Geological Survey. The earthquake also shifted Earth's figure axis by about 6 1/2 inches (17 centimeters), Gross added.

The Earth's figure axis is not the same as its north-south axis in space, which it spins around once every day at a speed of about 1,000 mph (1,604 kph). The figure axis is the axis around which the Earth's mass is balanced and the north-south axis by about 33 feet (10 meters).

"This shift in the position of the figure axis will cause the Earth to wobble a bit differently as it rotates, but will not cause a shift of the Earth's axis in space – only external forces like the gravitational attraction of the sun, moon, and planets can do that," Gross said.

This isn't the first time a massive earthquake has changed the length of Earth's day. Major temblors have shortened day length in the past.

The 8.8-magnitude [earthquake in Chile last year](#) also sped up the planet's rotation and shortened the day by 1.26 microseconds. The 9.1 Sumatra earthquake in 2004 shortened the day by 6.8 microseconds.

And the impact from Japan's 8.9-magnitude temblor may not be completely over. The weaker aftershocks may contribute tiny changes to day length as well.

The March 11 quake was the largest ever recorded in Japan and is the world's fifth largest earthquake to strike since 1900, according to the USGS. It struck offshore about 231 miles (373 kilometers) northeast of Tokyo and 80 miles (130 km) east of the city of Sendai, and created a massive tsunami that has devastated Japan's northeastern coastal areas. At least 20 aftershocks registering a 6.0 magnitude or higher have followed the main temblor.

"In theory, anything that redistributes the Earth's mass will change the Earth's rotation," Gross said. "So in principle the smaller aftershocks will also have an effect on the Earth's rotation. But since the aftershocks are smaller their effect will also be smaller."

*Follow SPACE.com for the latest in space science and exploration news on Twitter @Spacedotcom and on Facebook. [IN PICTURES: Japan's 8.9 earthquake](#)*

- [Photos: Japan Earthquake and Tsunami in Pictures](#)
- [FAQ: What's the Science Behind Japan's Quake and Tsunami?](#)
- [NASA Satellite Photos Show Devastation From Japan Quake and Tsunami](#)

**Note from Pastor Kevin Lea:** *There are some things to consider while reading this news item about the disastrous earthquake in Japan:*

*The reason that the earth spins faster (shortens the day) during every earthquake is that the mass of the earth is getting closer to the center of the earth, not closer to the equator as this article says. The ice skater speeds up their twirl by pulling their arms into their body, not by moving them further out, as is the case by moving toward the equator.*

*Secondly, why is the earth getting shorter in its average radius during every earthquake? Since the earth is not losing mass to space, the only answer is that the overall mass of the earth is getting denser. Why? Why are 80% of the earth's earthquakes in the area known as the Pacific Ring of Fire (which Japan abuts)? Why is the Pacific Ocean floor littered with 40,000 volcanoes (orders of magnitude more than other ocean floors)? Why are these volcanoes on the wrong side*

*of the trench (according to what the standard plate tectonic theory teaches)? If the earth has been around for billions of years, why are there any earthquakes at all? Where did the instability in the earth that causes earthquakes come from? The earth would be completely stable if it had been around for billions of years without a major catastrophe which caused the instabilities which are the root cause of earthquakes.*

*Why have GPS measurements shown Japan moving toward the Pacific for years before the quake, and then move 8 feet further toward the Pacific in a sudden lurch during the March 2011 earthquake?*

*The seismologists say this earthquake was caused when the fault let loose where the Pacific and Philippine Sea plates are subducting under the Euro Plate near Japan. They say this faulting occurs after years of building up friction as the Pacific and Philippine plates move West (pushing the Euro plate West also) until the forces break loose and the Euro plate moves to the East again. If this were true, then we would expect to see the GPS sensors in Japan moving West for several years before it breaks loose and then move back East (toward the Pacific), but we do not. The GPS sensors always show Japan moving toward the Pacific – Why? In fact, nearly all GPS sensors show all continental plates moving toward the Pacific – Again, why?*

*Those interested in an alternative explanation for the source of earthquakes and what to expect in the future are encouraged to read Dr. Walt Brown's theory on the origin of Trenches <http://www.creationsscience.com/onlinebook/Trenches.html>. (Dr. Brown graduated from West Point Academy and received a PhD in Mechanical Engineering from MIT. Moving to the Air Force, his career there included a professorship at Air Force Academy. He eventually retired from the Air Force as a full Colonel in order to devote all of his time to researching the global flood – how it occurred, what happened after the flood, and what dynamics are still in play today.)*

*I have also produced a two hour DVD on Earthquakes that can be ordered from our church or downloaded free from our YouTube Channel: <http://www.youtube.com/user/CalvaryChurchPO>. There are six downloads each for Parts 1 and 2 (twelve total), for a total of two hours.*

*Experts have said that the reactor plants in Japan were safe, but they were wrong. Experts say that earthquakes are a result of slowly moving plates that have been doing so for billions of years, they too are wrong. Behind closed doors some have admitted that the evidence does not support their theory. They also say that earthquakes in Japan cannot have an effect on other places in world. This will also be proved untrue when much greater earthquakes trigger global earthquakes in the future, which Dr. Brown's theory predicts.*