



News

Chilean Quake May Have Shortened Earth Days

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The Feb. 27 magnitude 8.8 earthquake in Chile may have shortened the length of each Earth day.

JPL research scientist Richard Gross computed how Earth's rotation should have changed as a result of the Feb. 27 quake. Using a complex model, he and fellow scientists came up with a preliminary calculation that the quake should have shortened the length of an Earth day by about 1.26 microseconds (a microsecond is one millionth of a second).

Perhaps more impressive is how much the quake shifted Earth's axis. Gross calculates the quake should have moved Earth's figure axis (the axis about which Earth's mass is balanced) by 2.7 milliarcseconds (about 8 centimeters, or 3 inches). Earth's figure axis is not the same as its north-south axis; they are offset by about 10 meters (about 33 feet).

By comparison, Gross said the same model estimated the 2004 magnitude 9.1 Sumatran earthquake should have shortened the length of day by 6.8 microseconds and shifted Earth's axis by 2.32 milliarcseconds (about 7 centimeters, or 2.76 inches).

Gross said that even though the Chilean earthquake is much smaller than the Sumatran quake, it is predicted to have changed the position of the figure axis by a bit more for two reasons. First, unlike the 2004 Sumatran earthquake, which was located near the equator, the 2010 Chilean earthquake was located in Earth's mid-latitudes, which makes it more effective in shifting Earth's figure axis. Second, the fault responsible for the 2010 Chilean earthquake dips into Earth at a slightly steeper angle than does the fault responsible for the 2004 Sumatran earthquake. This makes the Chile fault more effective in moving Earth's mass vertically and hence more effective in shifting Earth's figure axis.

Gross said the Chile predictions will likely change as data on the quake are further refined.

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Find this article at:

<http://www.nasa.gov/topics/earth/features/earth-20100301.html>



This view of Earth comes from NASA's Moderate Resolution Imaging Spectroradiometer aboard the Terra satellite.

[Full resolution jpeg \(180 Kb\)](#)