UNIVERSITÉ TOULOUSE Jean Jaurès

European Master's in Translation

cetim
Centre de Traduction, Interprétation et Médiation Linguistique

Université de Toulouse Jean Jaurès
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CETIM : Centre de Traduction, Interprétation et Médiation Linguistique

Sujet d'Anglais

MASTER 2

Documents et dictionnaires non autorisés – Téléphones portables interdits

Consignes :

1) Traduisez en français le texte ci-dessous (620 mots)

2) Commentez **une** difficulté de traduction que vous avez repérée et expliquez comment vous l'avez résolue.

3) Listez précisément les différentes ressources que vous avez consultées.

Two huge magma chambers spied beneath Yellowstone National Park

By Eric Hand
23 April 2015 2:00 pm

http://news.sciencemag.org/earth/2015/04/two-huge-magma-chambers-spied-beneath-yellowstone-national-park

Underneath the bubbling geysers and hot springs of Yellowstone National Park in Wyoming sits a volcanic hot spot that has driven some of the largest eruptions on Earth. Geoscientists have now completely imaged the subterranean plumbing system and have found not just one, but two magma chambers underneath the giant volcano.

"The main new thing is we unveil a deeper and bigger magma reservoir in the lower crust," says study author Hsin-Hua Huang, a seismologist at the University of Utah in Salt Lake City.

Scientists had already known about a plume, which brings molten rock up from deep in the mantle to a region about 60 kilometers below the surface. And they had also imaged a shallow magma chamber about 10 kilometers below the surface, containing about 10,000 cubic kilometers of molten material. But now they have found a deeper one, 4.5 times larger, that sits between 20 and 50 kilometers below the surface. "They found the missing link between the mantle plume and the shallow magma chamber," says Peter Cervelli, a geophysicist in Anchorage, Alaska, who works at the U.S. Geological Survey's Yellowstone Volcano Observatory.

The discovery does not, on its own, increase the chance of an eruption, which is driven by an emptying of the shallow chamber. The last major eruption was 640,000 years ago, and today the threat of earthquakes is far more likely. But the deeper chamber does mean that the shallow chamber can be replenished again and again. "Knowing that you have this additional reservoir tells you you could have a much bigger volume erupt over a relatively short time scale," says co-author Victor Tsai, a geophysicist at the California Institute of Technology in Pasadena. The discovery, reported online today in *Science*, also confirms a long-suspected model for some volcanoes, in which a deep chamber of melted basalt, a dense iron- and magnesium-rich rock, feeds a shallower chamber containing a melted, lighter silicon-rich rock called a rhyolite.

The researchers used seismometers to measure the noise of earthquakes in order to take a sort of sonogram of Earth's crust. When earthquakes pass through liquid material, seismic waves slow down. The team interprets these low-velocity regions as magma chambers (although these chambers are still mostly solid rock and contain only a small fraction of liquid melt). Distant earthquakes are useful for imaging deep structures, like the mantle plume, and local earthquakes can help to see the shallow chamber. Huang says his study is the first time that both types of data were combined so that the middle depths, and the deeper chamber, could be seen. His team used 11 seismometers from the EarthScope USArray to listen for the deep earthquakes and 69 seismometers from several local seismic networks to gather data from shallower earthquakes.

The study is “a comprehensive view of the magma system from the top of the plume into the crust,” says Alan Levander, a geophysicist at Rice University in Houston, Texas. But he says the work raises one interesting new question that could provide fodder for future studies. With the North American tectonic plate riding westward a few centimeters a year over top of the fixed mantle plume, he would have expected to see the two chambers, which sit within the plate, to be offset to the west of the plume. Instead, they are offset to the east of the plume. “This doesn’t exactly match up with our expectations,” he says.

But Huang says that with rough dimensions now in hand for all the major magma bodies, modelers can try to understand how magma moved around in past eruptions—and why the chambers sit where they are. “After this study, they can have better numbers for this sort of modeling.”

(620 mots)