

UH research findings promise better earthquake predictions

Two pressure points have been identified as steady swellings

By Marcel Honoré
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New findings from the University of Hawaii about how molten rock pushes against Earth's crust could help better predict earthquakes across the globe and shed new light on the Hawaiian Islands' geological origins, university officials say.

In research published in the June 27 issue of *Nature*, Clinton Conrad, UH associate professor of geophysics, collaborating with a team of scientists at the University of Oslo, Norway, says he's isolated two points on the globe where the earth's subterranean mantle layer has steadily pressed against the surface going back at least 250 million years.

The upward pressure of

molten rock at these two points, Conrad explained Thursday, has pushed away the massive tectonic plates that make up the earth's crust during those millions of years. One of the upwelling points is beneath continental Africa. The other is in the Central Pacific, about 1,500 miles south of Hawaii, Conrad said.

"Those places have been relatively stable on the earth," he said. "People hadn't thought to figure out these points on the earth before."

Conrad's research uncovered two other points where the molten rock has steadily flowed back down toward the planet's core — and where the tectonic plates are converging. Those points, according to the UH findings, are south of Japan, near the Marianas Trench, and in South America off the coast of Brazil.

Together the four points

could help scientists better grasp how the mantle is pressing against the earth — how strong the force of that push is in certain areas and in what directions it's moving, Conrad said.

Those details ultimately could lend seismologists more insight into earthquake patterns, giving those who study temblors more information to work with beyond fault data alone, he added.

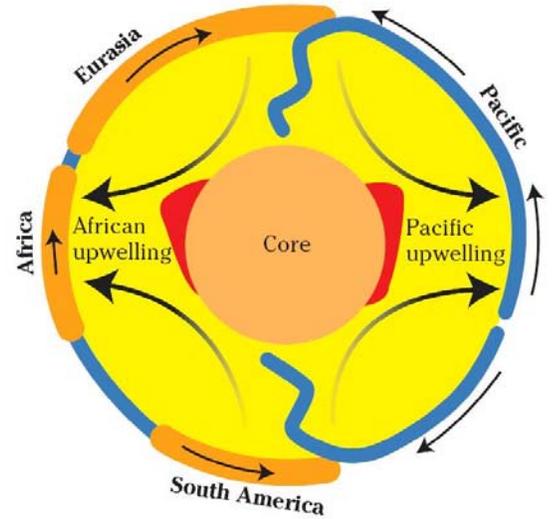
"Earthquakes have to do with fault lines, but also the tectonic forces that are being applied to those faults and where the energy force is coming from," Conrad said.

The information further could help scientists predict where to expect volcanic activity, he said.

Conrad said he believes Hawaii was formed thanks to a similar upwelling of molten rock, and one related to the larger upwelling isolated in his team's research.

EARTH UNDER PRESSURE

University of Hawaii research published last week reveals two large points on the globe, beneath Africa and the Central Pacific, where molten rock has steadily pushed against the earth's crust. These areas have remained mostly the same for millions of years even as tectonic plates have dramatically reshaped the earth's surface during the same time period, the research found.



Source: University of Hawaii

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"We think that Hawaiian volcanism came from an upwelling as well," he said. "We think that they're related."

The Hawaii point could be one of several geological "hot spots" around the

larger upwell, he said.

The team used math and historic tectonic plate movements to pinpoint the key geological regions, which Conrad called "quadrupoles," in the UH research.