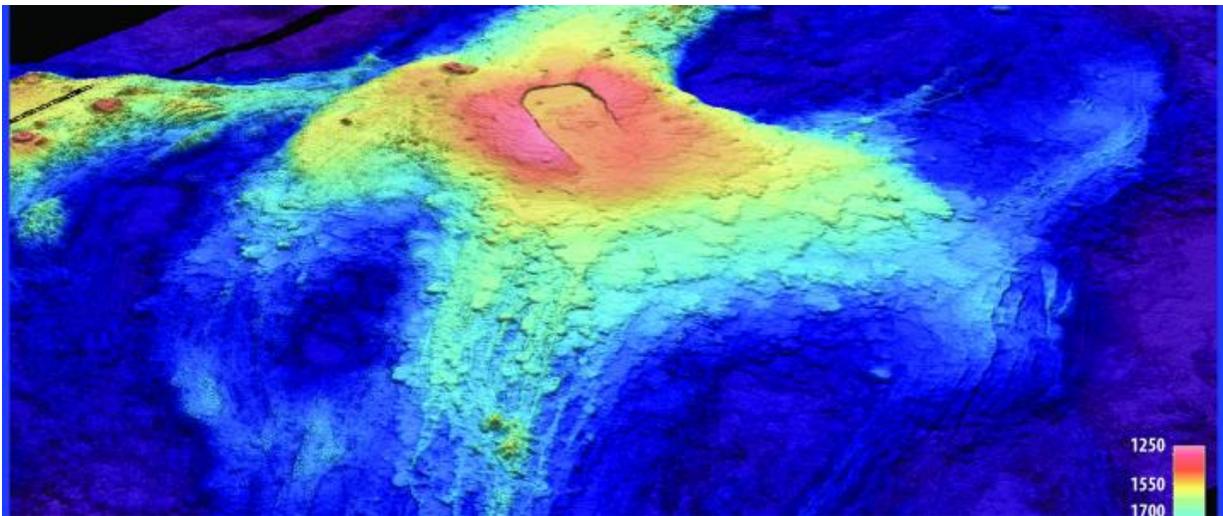


Researchers think Axial Seamount off Northwest coast is erupting – right on schedule

May 1 2015



Axial Seamount, an active underwater volcano located about 300 miles off the coast of Oregon and Washington, appears to be erupting – after two scientists had forecast that such an event would take place there in 2015.

Geologists Bill Chadwick of Oregon State University and Scott Nooner of the University of North Carolina Wilmington made their [forecast](#) last

September during a public lecture and followed it up with [blog posts](#) and a reiteration of their forecast just last week at a scientific workshop.

They based their forecast on some of their previous research – funded by the National Science Foundation (NSF) and the National Oceanic and Atmospheric Administration (NOAA), which showed how the volcano inflates and deflates like a balloon in a repeatable pattern as it responds to [magma](#) being fed into the seamount.

Since last Friday, the region has experienced thousands of tiny earthquakes – a sign that magma is moving toward the surface – and the seafloor dropped by 2.4 meters, or nearly eight feet, also a sign of magma being withdrawn from a reservoir beneath the summit. Instrumentation recording the activity is part of the NSF-funded Ocean Observatories Initiative. William Wilcock of the University of Washington first observed the earthquakes.

"It isn't clear yet whether the earthquakes and deflation at Axial are related to a full-blown eruption, or if it is only a large intrusion of magma that hasn't quite reached the surface," said Chadwick, who works out of OSU's Hatfield Marine Science Center in Newport and also is affiliated with NOAA's Pacific Marine Environmental Laboratory. "There are some hints that lava did erupt, but we may not know for sure until we can get out there with a ship."



Axial Seamount vent taken in 2011

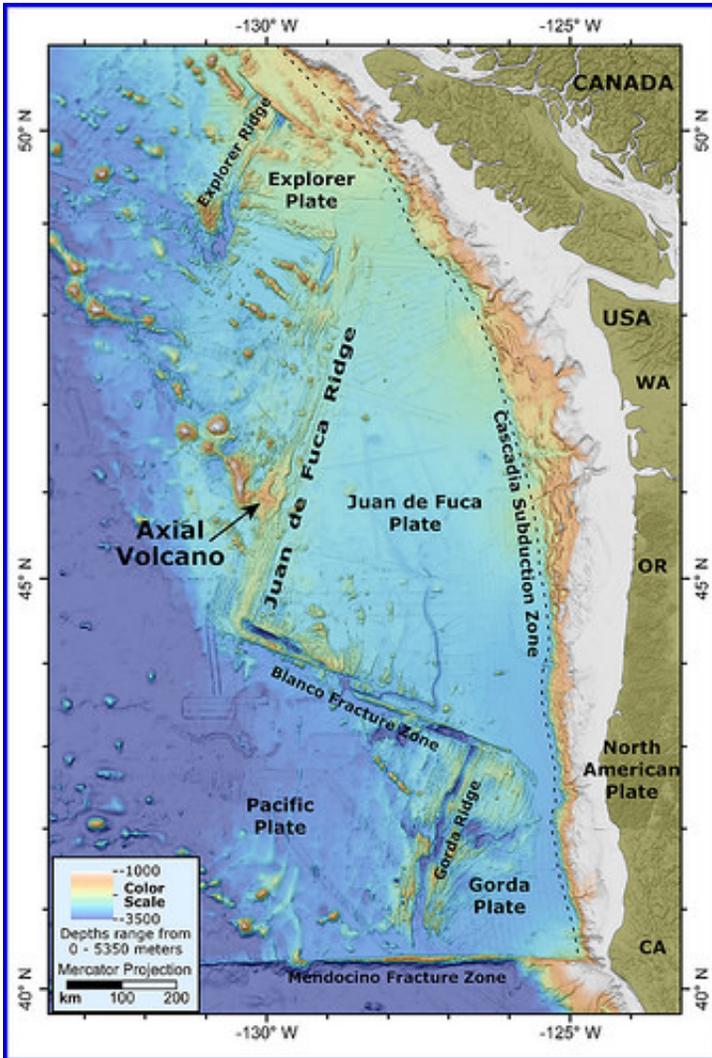
In any case, the researchers say, such an eruption is not a threat to coastal residents. The earthquakes at Axial Seamount are small and the seafloor movements gradual and thus cannot cause a tsunami.

"I have to say, I was having doubts about the forecast even the night before the activity started," Chadwick admitted. "We didn't have any real certainty that it would take place – it was more of a way to test our hypothesis that the pattern we have seen was repeatable and predictable."

Axial Seamount provides scientists with an ideal laboratory, not only because of its close proximity to the Northwest coast, but for its unique structure.

"Because Axial is on very thin ocean crust, its 'plumbing system' is

simpler than at most volcanoes on land that are often complicated by other factors related to having a thicker crust," said Chadwick, who is an adjunct professor in OSU's College of Earth, Ocean, and Atmospheric Sciences. "Thus Axial can give us insights into how volcano magma systems work – and how eruptions might be predicted."



[Axial Seamount last erupted in 2011](#) and that event was loosely forecast

by Chadwick and Nooner, who had said in 2006 that the volcano would erupt before 2014. Since the 2011 eruption, additional research led to a refined forecast that the next eruption would be in 2015 based on the fact that the rate of inflation had increased by about 400 percent since the last eruption.

"We've learned that the supply rate of magma has a big influence on the time between eruptions," Nooner said. "When the magma rate was lower, it took 13 years between eruptions. But now when the magma rate is high, it took only four years."

Chadwick and Nooner are scheduled to go back to Axial in August to gather more data, but it may be possible for other researchers to visit the seamount on an expedition as early as May. They hope to confirm the eruption and, if so, measure the volume of lava involved.

Evidence that was key to the successful forecast came in the summer of 2014 via measurements taken by colleagues Dave Caress and Dave Clague of Monterey Bay Aquarium Research Institute and Mark Zumberge and Glenn Sasagawa of Scripps Oceanographic Institution. Those measurements showed the high rate of magma inflation was continuing.

Provided by Oregon State University

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