

NOAA 98-006

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## **SUBMARINE-TRACKING NETWORK DETECTS DEEP- SEA EARTHQUAKES OFF OREGON COAST**

Using a military system designed to track submarines, National Oceanic and Atmospheric Administration scientists have detected and are monitoring intense earthquake activity on the sea floor about 300 miles off the northern Oregon coast, indicating an ongoing seafloor volcanic eruption, the Commerce Department agency announced today.

Scientists with NOAA's Vents Program in Newport, Oreg., listening through the U.S. Navy's Sound Surveillance System, have detected more than 6,000 small earthquakes since seismic activity began at 4 a.m. Pacific Standard Time Jan. 25 on the summit and southern flank of the Axial Seamount on the Juan de Fuca Ridge. The ridge is an underwater mountain range off the U.S. Pacific northwest coast.

"This is the most intense seafloor seismic event we have detected since we began monitoring in 1991," said Chris Fox, who leads the NOAA team monitoring the eruption. "Intense seismic activity is continuing on the south flank of the Axial Seamount. The character of the seismicity is very similar to what we observed during similar volcanic events in 1993 and 1996 at other northeast Pacific sites, which were both later confirmed to be volcanic eruptions. So far, all the Navy SOSUS hydrophones and the NOAA recording systems are operational, and we are getting excellent data showing the beginnings of the eruption and its migration southward along the ridge," Fox said.

Scientists with the NOAA Vents Program and the National Science Foundation's Ridge Program will continue to monitor the ongoing eruption and are considering dispatching the research vessel *Wecoma* to the site in early February to study the eruption a close distance.

The Axial Seamount is a seafloor volcano that lies at the intersection of the Juan de Fuca Ridge and the Cobb Seamount chain at 46°N, 130°W. The seamount rises 1,100 meters above the surrounding ocean floor to a depth of approximately 1,400 meters below sea level.

Although deep sea volcanic eruptions account for more than 80 percent of the Earth's volcanic activity, there was no way to detect these eruptions until NOAA adapted the Navy SOSUS system in the early 1990s. NOAA Vents scientists using SOSUS were the first to successfully detect, locate and monitor a seafloor eruption in June 1993.

Similar to volcanoes on land, seafloor volcanoes erupt episodically, and their effects on the ocean environment are most profound during the early stages of eruption. This makes it critical to detect them early so that their effects can be scientifically observed. Although hot mineral springs, called hydrothermal vents, are relatively common along this submarine mountain chain, they were not discovered until the early 1980s.

In the early 1990s, NOAA scientists and engineers, in cooperating with the Navy, began receiving data in real time from the Navy SOSUS system used to listen for submarines. By filtering the signal from these seafloor hydrophones, NOAA scientists were able to hear the distinct sounds produced by seafloor earthquakes, pinpoint their location, and measure their intensity.

As scientists have learned more about these hydrothermal vents, they now believe these eruptions of super heated water and dissolved minerals have a significant impact on the chemistry and heat distribution of the oceans, with possibly profound effects on everything from sea life to climate.

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**Note to broadcasters:** Call 301-881-0270 for video footage of the Juan de Fuca Ridge; ask for "Hydrothermal Vents Research Video Highlights." For more information about the current eruption, visit the following Internet site: <http://newport.pmel.noaa.gov/axial98.html>