

# Russian Far East holds seismic hazards that could threaten Pacific Basin

December 3 2012, by Vince Stricherz

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The 2009 eruption of Sarychev Peak volcano in the Kuril Islands was captured in this photograph from the International Space Station. Credit: NASA

(Phys.org)—For decades, a source of powerful earthquakes and volcanic activity on the Pacific Rim was shrouded in secrecy, as the Soviet government kept outsiders away from what is now referred to as the Russian Far East.

But research in the last 20 years has shown that the [Kamchatka Peninsula](#) and [Kuril Islands](#) are a seismic and volcanic hotbed, with a potential to trigger tsunamis that pose a risk to the rest of the Pacific Basin.

A magnitude 9 earthquake in that region in 1952 caused significant damage elsewhere on the Pacific Rim, and even less-powerful quakes have had effects throughout the Pacific Basin.

"There's not a large population in the Russian Far East, but it's obviously important to the people who live there. Thousands of people were killed in tsunamis because of the earthquake in 1952. And tsunamis don't stay home," said Jody Bourgeois, a University of Washington professor of Earth and space sciences.

Bourgeois will discuss the seismic and volcanic threats in the Kamchatka-Kurils region Monday (Dec. 3) during the fall meeting of the [American Geophysical Union](#) in San Francisco.

Earthquakes greater than magnitude 8 struck the central Kurils in 2006 and 2007, and both produced large local tsunamis, up to about 50 feet. Though the tsunamis that crossed the Pacific were much smaller, the one from the 2006 quake did more than \$10 million in damage at Crescent City, Calif.

In 2009, Sarychev Peak in the Kurils erupted spectacularly, disrupting air traffic over the North Pacific.

Clearly, determining the frequency of such events is important to many people over a broad area, Bourgeois said.

"Let's say you decide to build a nuclear power plant in Crescent City. You have to consider local events, but you also have to consider non-local events, worst-case scenarios, which includes tsunamis coming across the Pacific," she said.

But that is only possible by understanding the nature of the hazards, and the historic record for earthquakes, tsunamis and volcanic eruptions in Kamchatka and the Kurils is relatively short. In addition, because the region was closed off from much of the world for decades, much of the information has started becoming available only recently.

Much has been learned in the last 10 years in the examination of tsunami deposits and other evidence of prehistoric events, Bourgeois said, but more field work in the Kamchatka-Kurils subduction zone is required to get a clearer picture.

"For hazard analysis, you should just assume that a subduction zone can produce a magnitude 9 earthquake," she said. So it is important to "pay attention to the prehistoric record" to know where, and how often, such major events occur.

Bourgeois noted that in the last 25 years research in the Cascadia [subduction zone](#) off the coast of Washington, Oregon, northern California and British Columbia has demonstrated that the historic record does not provide a good characterization of the hazard. It was once assumed the risks in the Northwest were small, but the research has shown that, before there were any written records, Cascadia produced at least one magnitude 9 earthquake and a tsunami that struck Japan.

Alaska's Aleutian Islands and the Komandorsky Islands, an extension of

the Aleutians controlled by Russia, are another source of seismic and [volcanic activity](#) that need to be evaluated for their potential risk beyond what is known from the historical record.

"The Aleutians are under-studied," Bourgeois said. "The work in the [Russian Far East](#) is kind of a template for the Aleutians."

Ideally, a dedicated boat could ferry researchers to a number of islands in the Aleutian chain, similar to how Bourgeois and other scientists from the United States, Japan and Russia have carried out a detailed research project in the Kuril Islands in the last decade.

"The problem is that during the (research) field season, boats are commonly in demand for fishing," she said.

Provided by University of Washington

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