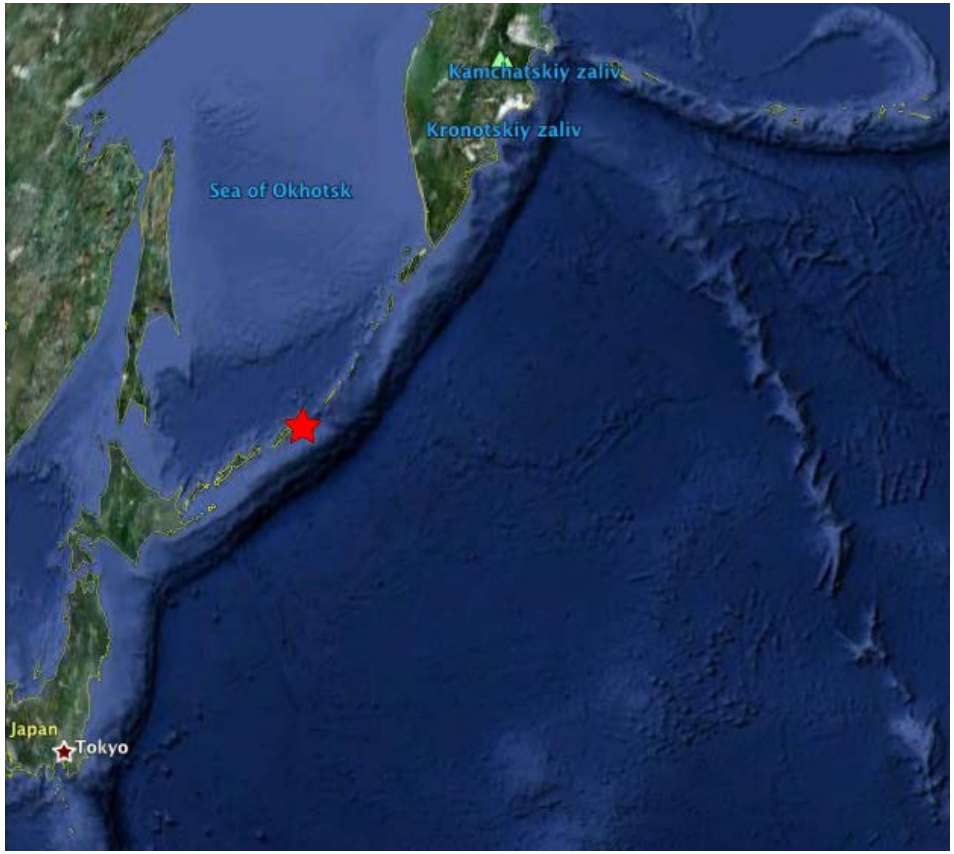
Magnitude 7.2 KURIL ISLANDS

Friday, April 19, 2013 at 03:05:53 UTC

A 7.2 magnitude earthquake has occurred in the Kuril Islands north of Japan. The epicenter was 250 km (155 miles) east-northeast of Kuril'sk, Russia, and 521 km (324 miles) northeast of Nemuro, Japan.

The earthquake was felt 1490 km (926 miles) away in Tokyo, Japan. There have been no reports of damage or injuries. This earthquake was at a depth of 122 km (76 miles), too deep to displace the ocean floor and generate a tsunami.

The nearest land are the volcanic islands of Urup, Iturup and Sumushir.



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The Kuril Islands are a 56 island volcanic archipelago that stretches approximately 1,300 km (810 mi) northeast from Hokkaido, Japan to Kamchatka, Russia separating the Sea of Okhotsk from the North Pacific Ocean.

Japan and Russia both claim some of the sparsely populated islands in this remote region.

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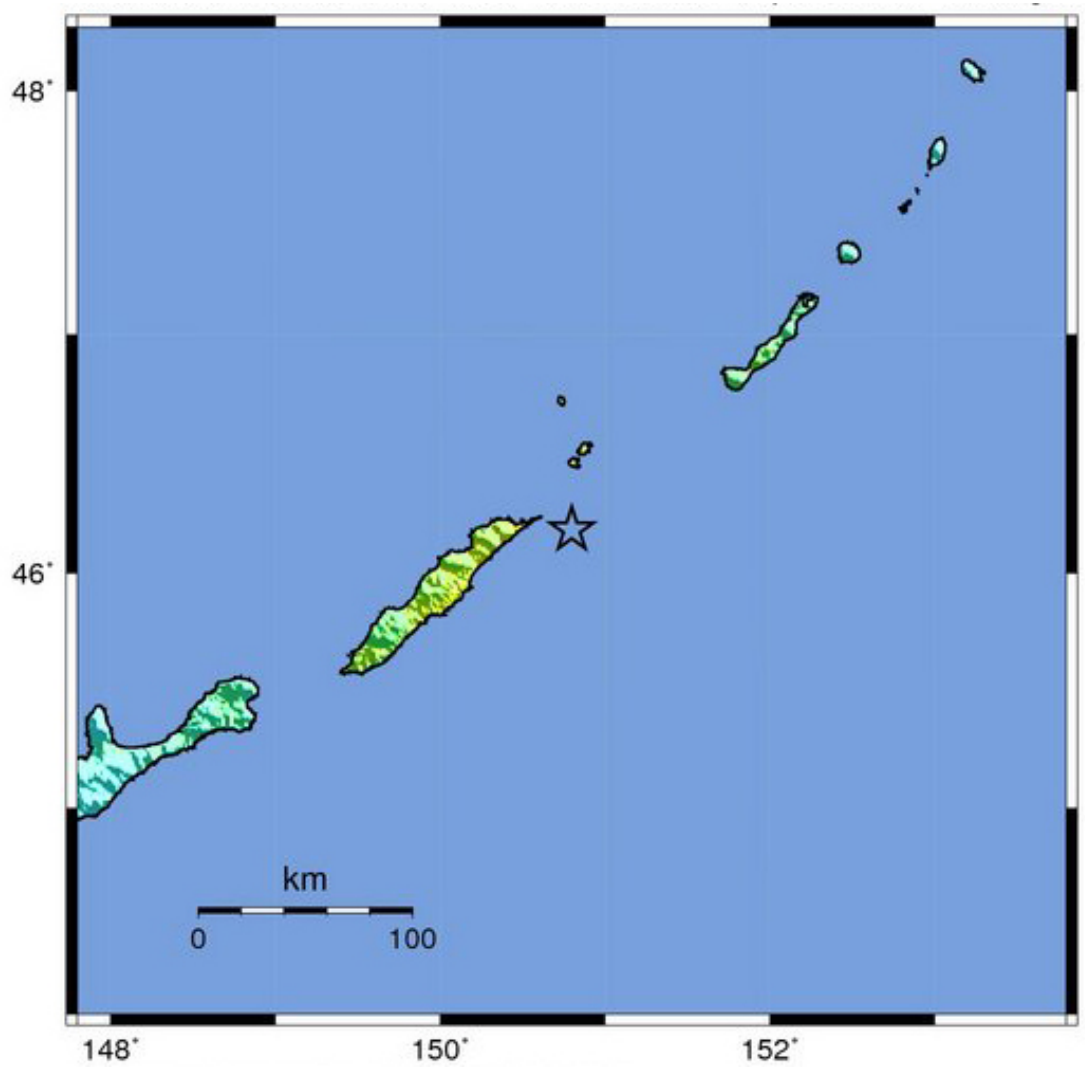
Shaking Intensity

The Modified Mercalli Intensity (MMI) scale depicts shaking severity. The islands nearest the earthquake, while sparsely populated, experienced strong shaking.

Modified Mercalli Intensity	Perceived Shaking
X	Extreme
IX	Violent
VIII	Severe
VII	Very Strong
VI	Strong
V	Moderate
IV	Light
II-III	Weak
I	Not Felt

Image courtesy of the US Geological Survey



USGS Estimated shaking Intensity from M 7.2 Earthquake

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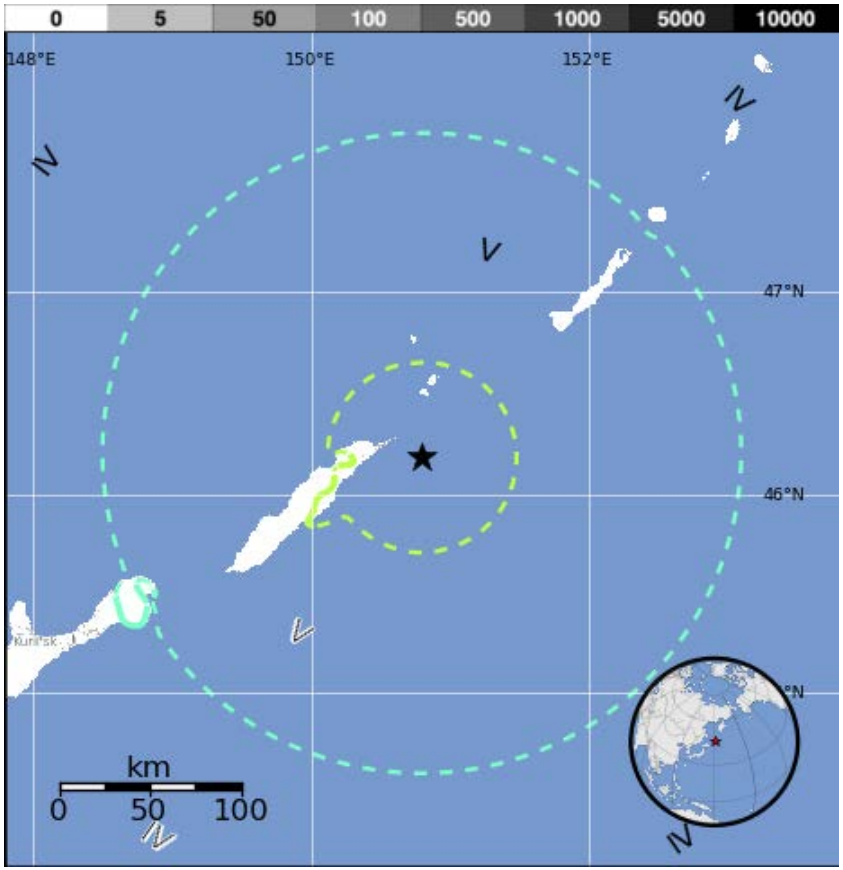
USGS PAGER
Population Exposed to Earthquake Shaking

The USGS PAGER map shows the population exposed to different Modified Mercalli Intensity (MMI) levels.

The USGS is estimating that 2000 people live within the region that experienced moderate shaking, and an additional 2000 people experienced light shaking.



The color coded contour lines outline regions of MMI intensity. The total population exposure to a given MMI value is obtained by summing the population between the contour lines. The estimated population exposure to each MMI Intensity is shown in the table below.

Image courtesy of the US Geological Survey

Estimated Modified Mercalli Intensity	I	II-III	IV	V	VI	VII	VIII	IX	X
Est. Population Exposure	--*	--*	2k*	2k	0k	0k	0k	0k	0k
Perceived Shaking	Not Felt	Weak	Light	Moderate	Strong	Very Strong	Severe	Violent	Extreme

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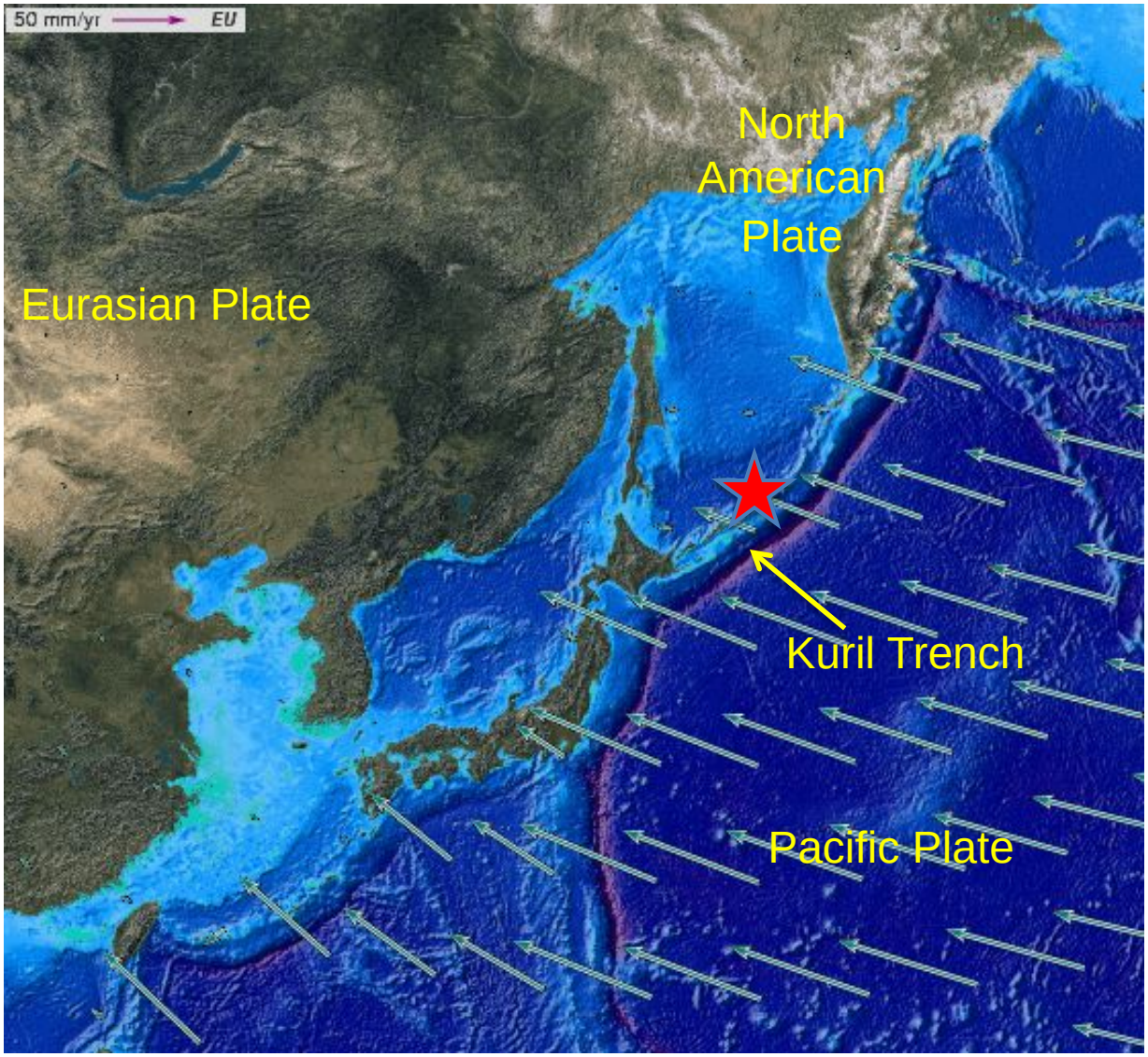
The blue arrows show the motion of the Pacific Plate with respect to the North American Plate. The epicenter of this earthquake is shown by the red star.

At the Kuril Trench, the Pacific Plate subducts beneath the North American Plate at a rate of 80 mm/yr (8 cm/yr).



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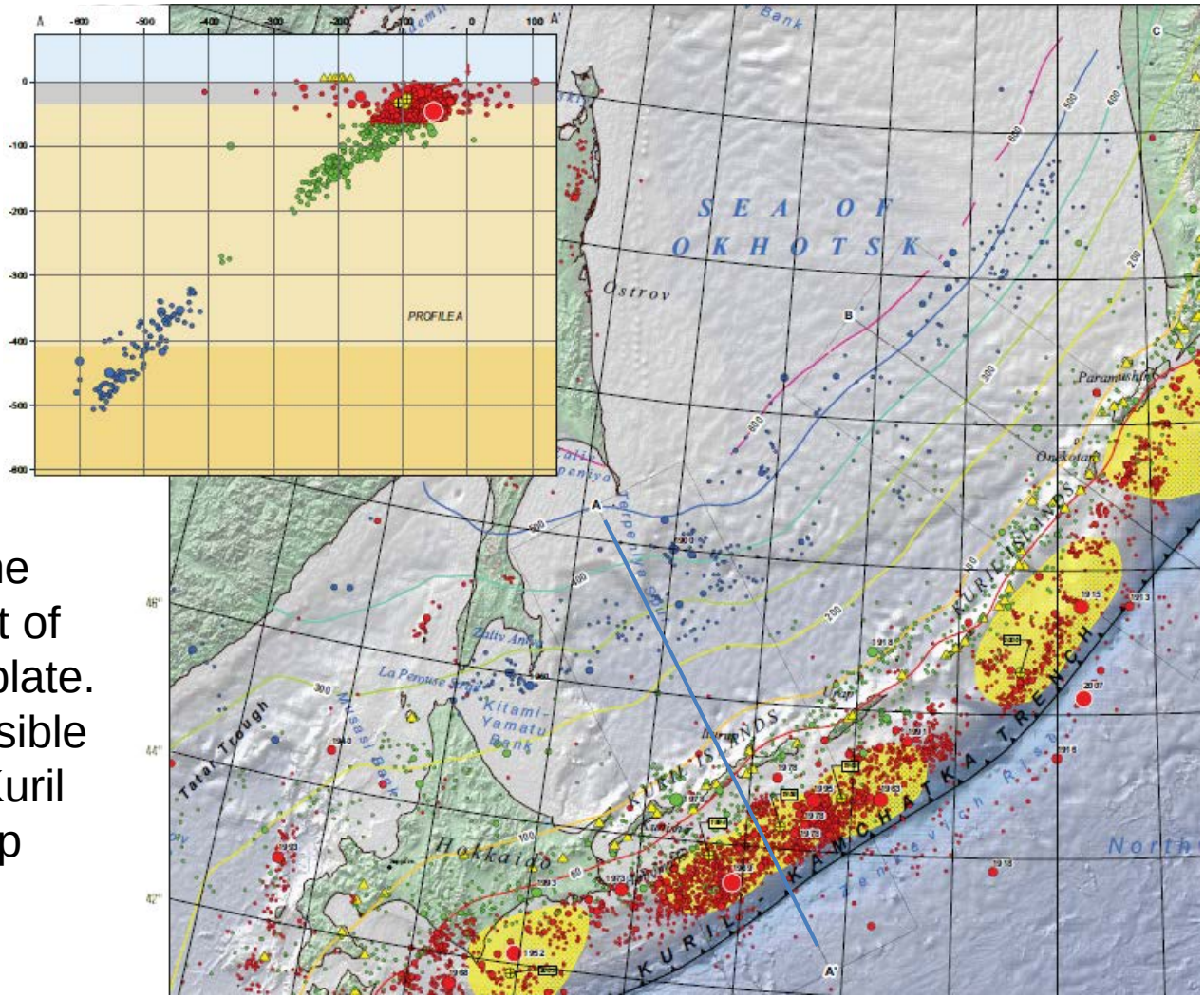
The Kuril-Kamchatka arc extends about 2,100 km from Hokkaido, Japan, along the Kuril Islands and the pacific coast of the Kamchatka, Russia, peninsula to its intersection with the Aleutian arc. It marks the region where the Pacific plate subducts into the mantle beneath the Okhotsk microplate, a part of the larger North America plate. This subduction is responsible for the generation of the Kuril Islands chain and the deep offshore Kuril-Kamchatka trench.



Source: USGS Open-File Report 2010-1083-C

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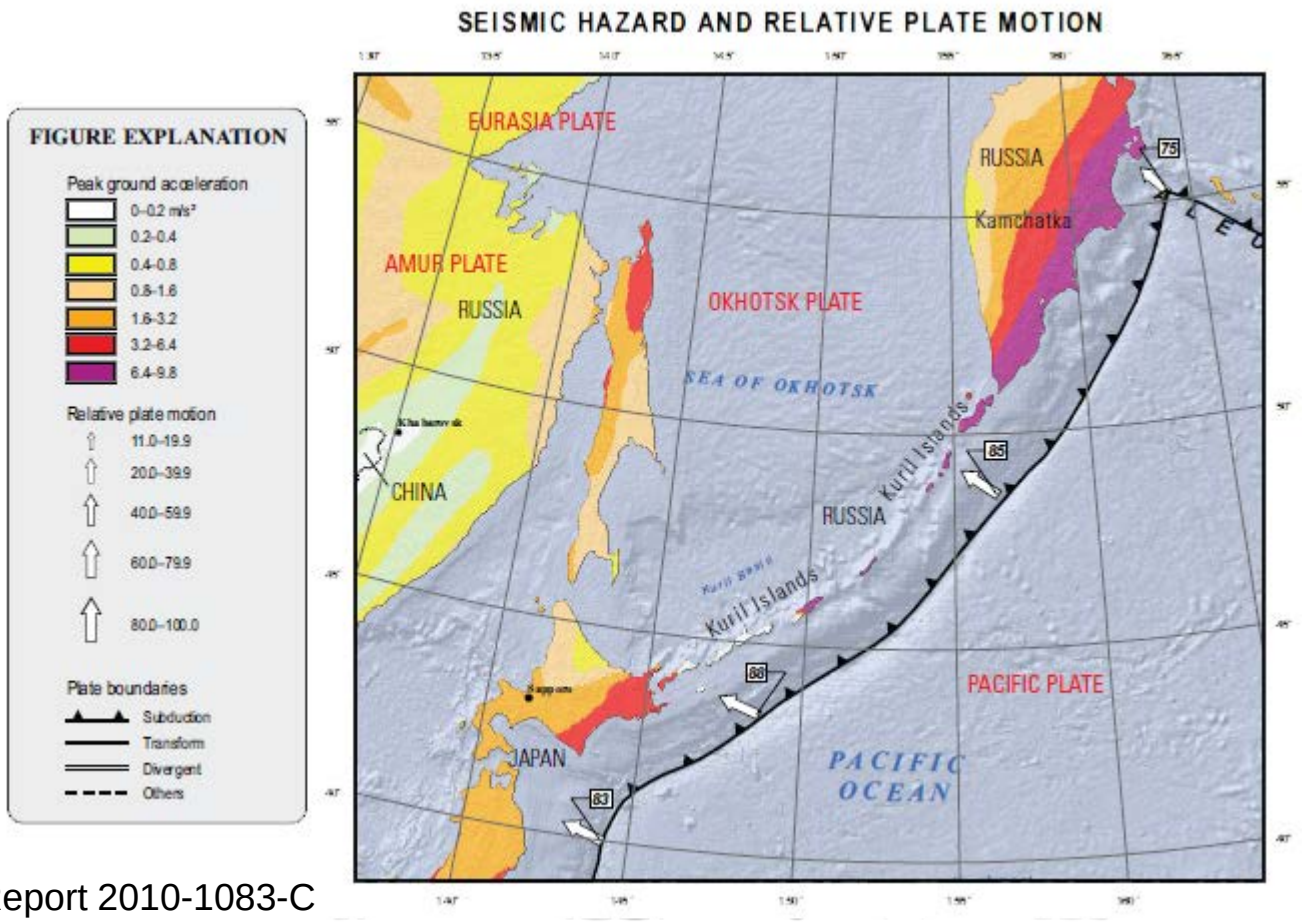
The Kuril-Kamchatka arc is considered one of the most seismically active regions in the world. Deformation of the overriding North America Plate generates shallow crustal earthquakes, whereas slip at the subduction zone interface between the Pacific and North America plates generates interplate earthquakes that extend from near the base of the trench to depths of 40 to 60 km. At greater depths, Kuril-Kamchatka subduction zone earthquakes occur within the subducting Pacific Plate and can reach depths of approximately 650 km.



Source: USGS Open-File Report 2010-1083-C

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Earthquake and Historic Seismicity

This earthquake epicenter (green star), is plotted on the map with regional seismicity since 1990.

This earthquake fits within the general pattern of shallow earthquake depth near the Kuril Trench with increasing depth toward the northwest. Earthquakes shallower than 150 km are within the Pacific Plate or on the interface between the Pacific and North American plates. Events deeper than 150 km are within the subducting lithosphere of the Pacific Plate.

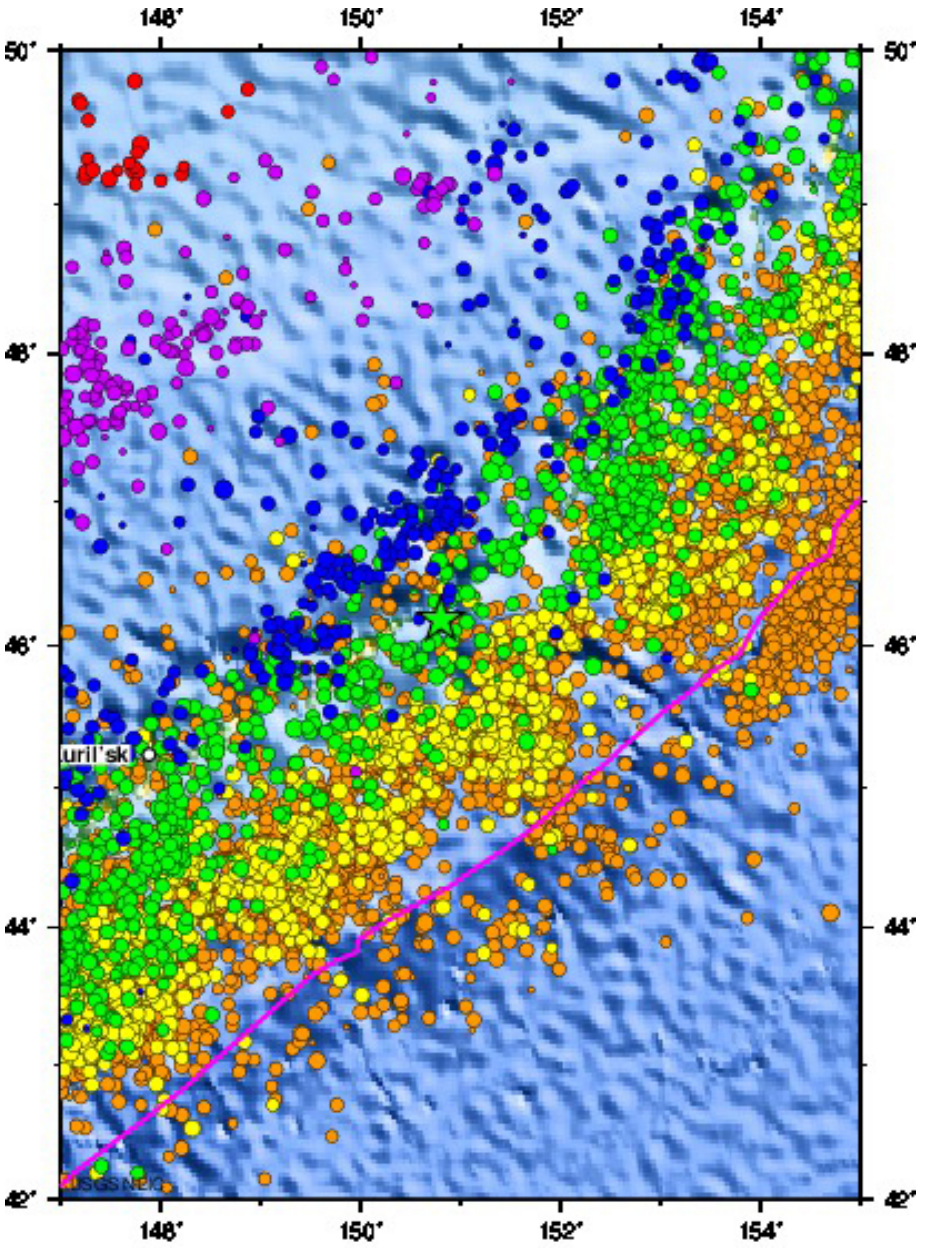

Image courtesy of the US Geological Survey

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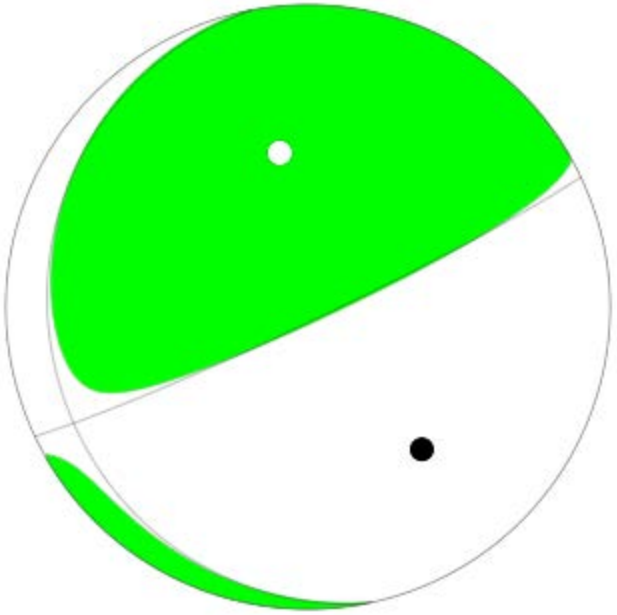
This earthquake occurred as a result of oblique normal faulting at intermediate depths within the subducting lithosphere of the Pacific plate.

The depth of this earthquake, and its oblique-faulting mechanism, indicate that it involved intraplate faulting within the subducting slab, rather than being an interplate thrust event on the shallower seismogenic zone between the two tectonic plates.



USGS Centroid Moment Tensor Solution

Shaded areas show quadrants of the focal sphere in which the P-wave first-motions are away from the source, and unshaded areas show quadrants in which the P-wave first-motions are toward the source. The dots represent the axis of maximum compressional strain (in black, called the "P-axis") and the axis of maximum extensional strain (in white, called the "T-axis") resulting from the earthquake.

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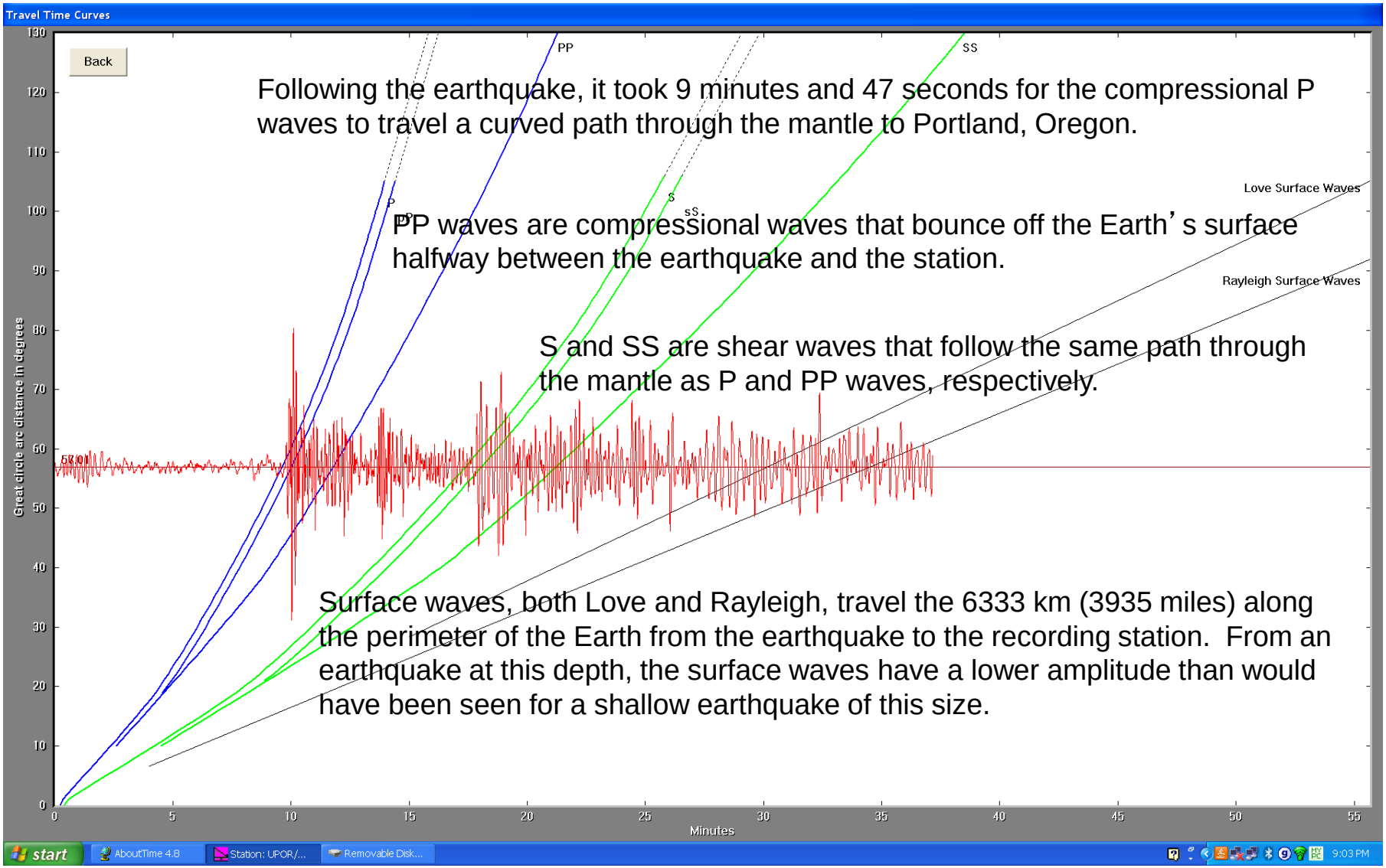
The record of the earthquake on the University of Portland seismometer (UPOR) is illustrated below. Portland is 6333 km (3935 miles, 57.05˚) from the location of this earthquake.



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