

Magnitude 7.9 ALEUTIAN ISLANDS, ALASKA

Monday, June 23, 2014 at 20:15:10 UTC



A major magnitude 7.9 earthquake occurred in a remote area of the volcanic Aleutian Islands. The epicenter (★) was located 19 km (11 miles) ESE of Little Sitkin Island, Alaska, while the depth was 108 km below Earth's surface.



View to the east of Kvostof and Davidof Islands (near and mid ground), Little Sitkin on the horizon.

Image courtesy of AVO / U.S. Geological Survey.

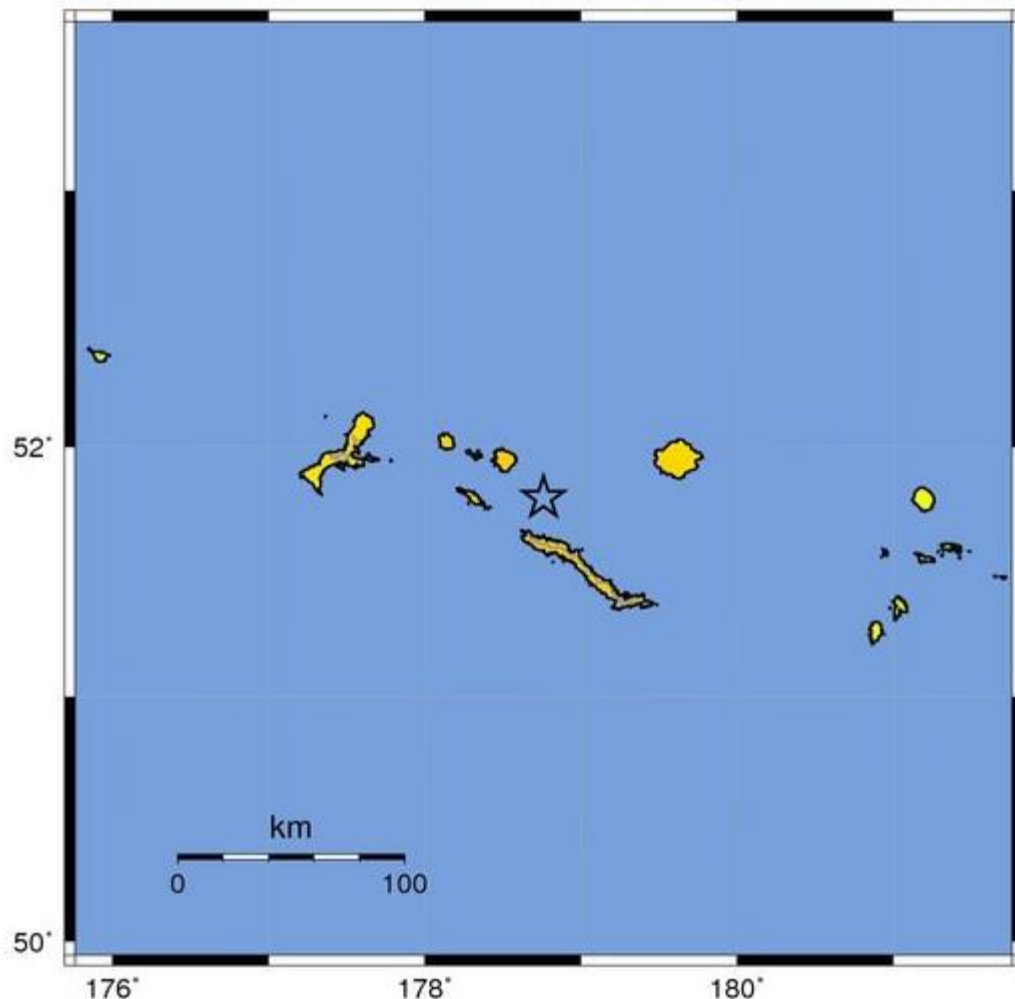
The earthquake was at a depth of 108km, therefore no tsunami was generated.



The Modified-Mercalli Intensity scale is a twelve-stage scale, from I to XII, that indicates the severity of ground shaking.

Strong shaking would have been felt throughout the Rat Islands.

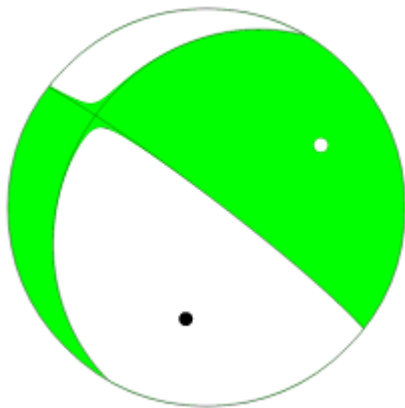
Modified Mercalli Intensity	Perceived Shaking
X	Extreme
IX	Violent
VIII	Severe
VII	Very Strong
VI	Strong
V	Moderate
IV	Light
II-III	Weak
I	Not Felt



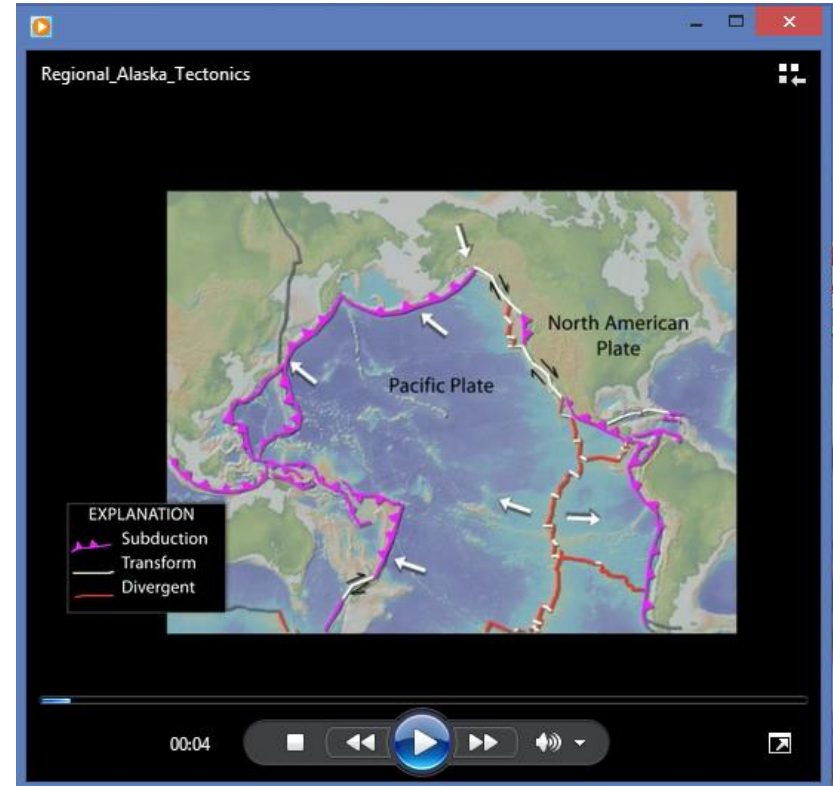
USGS Estimated shaking Intensity from M 7.9 Earthquake

The June 23 earthquake resulted from oblique normal faulting at a depth of approximately 108 km. This is likely within the subducting Pacific Plate.

At the location of this earthquake, the Pacific Plate subducts obliquely towards the northwest beneath the North American Plate at the rate of about 75 mm/yr.



USGS Centroid Moment Tensor Solution



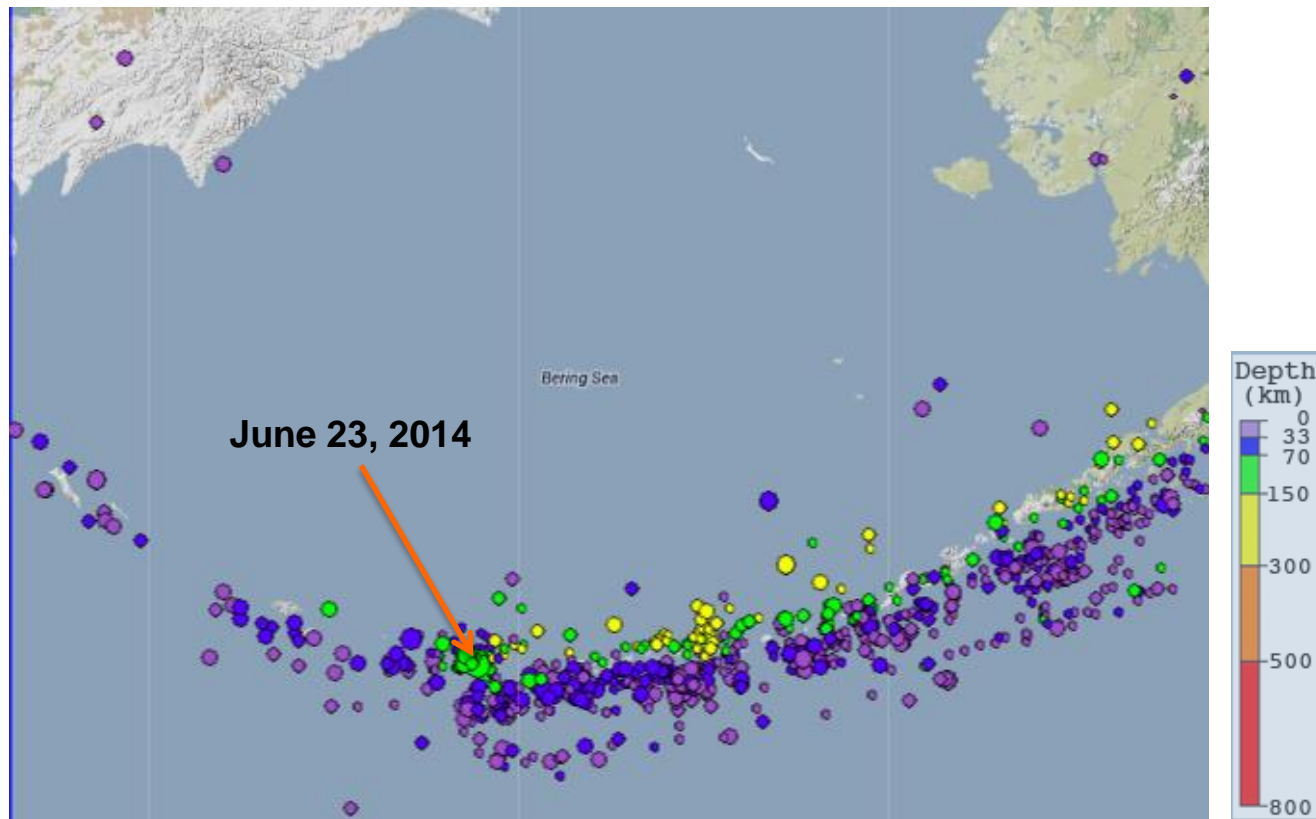
Regional Alaska tectonics

The tension axis (white dot) reflects the minimum compressive stress direction. The pressure axis (black dot) reflects the maximum compressive stress direction.

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According to the USGS, 26 events of M 7 or greater have occurred within 250 km since 1900. Notable events include an M 8.4 in 1906, M 8.7 in 1965, and an M 7.9 in 1996. Unlike the June 23 earthquake, many of these large events occurred at shallower depths along interface between the Pacific and North American plates. The 1965 M 8.7 event generated a damaging tsunami that was observed throughout the Pacific Basin.



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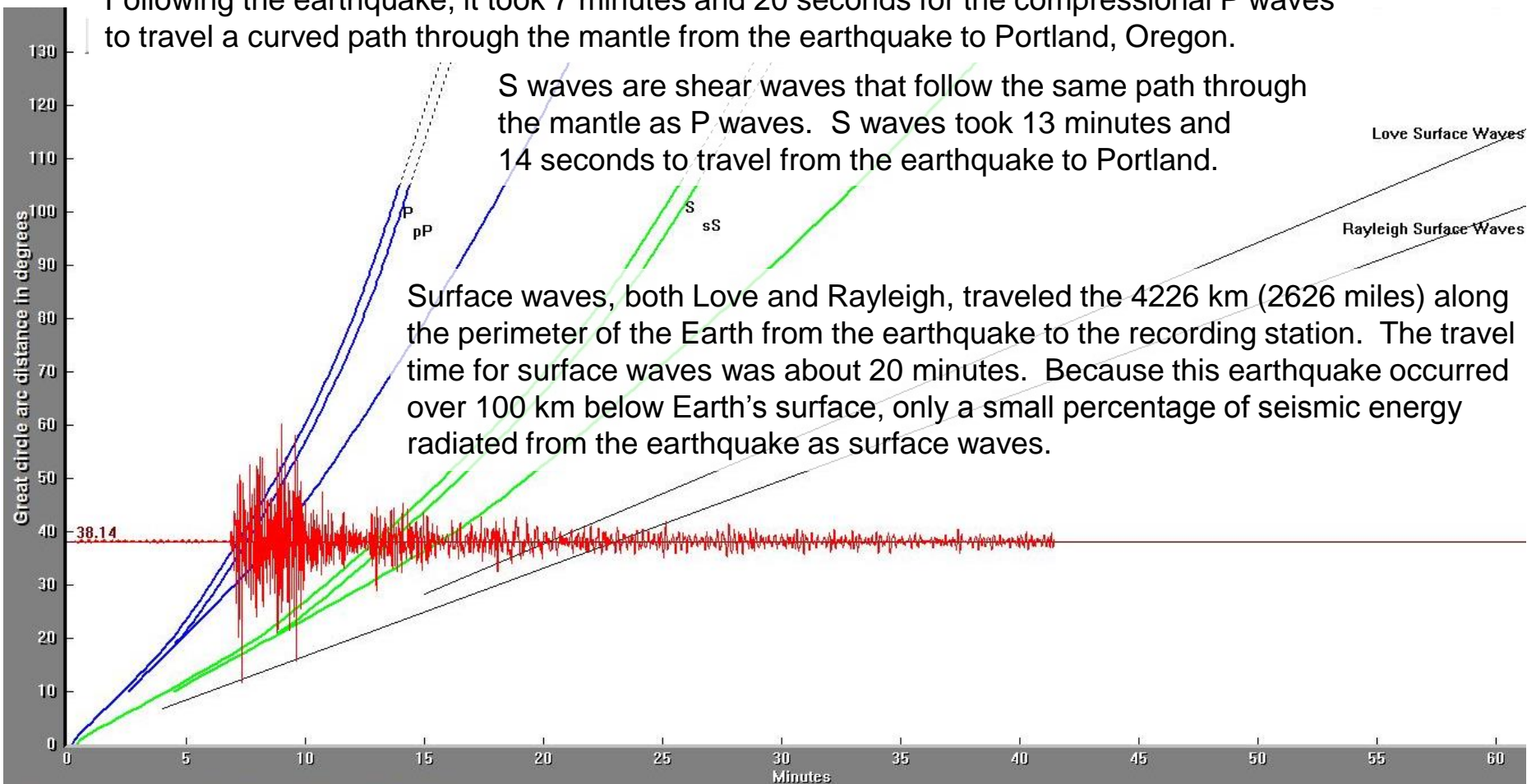
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The record of the earthquake on the University of Portland seismometer (UPOR) is illustrated below. Portland is 4226 km (2626 miles, 38.07°) from the earthquake.

Following the earthquake, it took 7 minutes and 20 seconds for the compressional P waves to travel a curved path through the mantle from the earthquake to Portland, Oregon.

S waves are shear waves that follow the same path through the mantle as P waves. S waves took 13 minutes and 14 seconds to travel from the earthquake to Portland.

Surface waves, both Love and Rayleigh, traveled the 4226 km (2626 miles) along the perimeter of the Earth from the earthquake to the recording station. The travel time for surface waves was about 20 minutes. Because this earthquake occurred over 100 km below Earth's surface, only a small percentage of seismic energy radiated from the earthquake as surface waves.



Teachable Moments are a service of

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