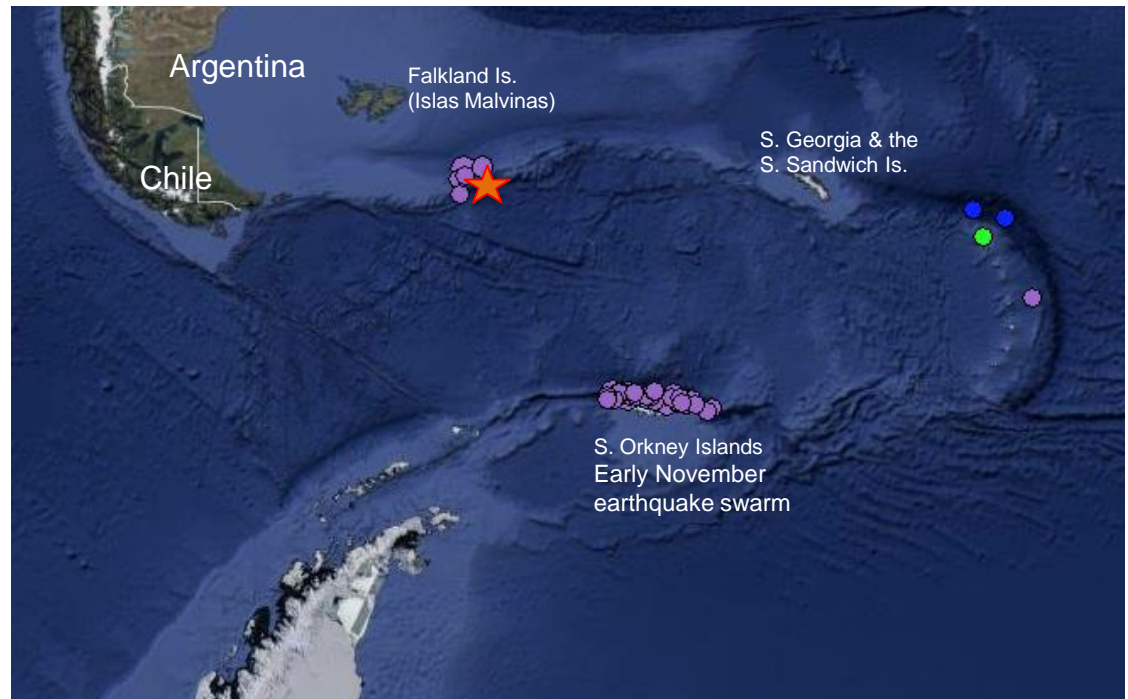


A magnitude 7.0 earthquake occurred 300 km southeast of the Falkland Islands. There was a M 5.6 earthquake 24 seconds prior to this mainshock and was followed by four aftershocks ranging from M 4.6 to M 5.5.

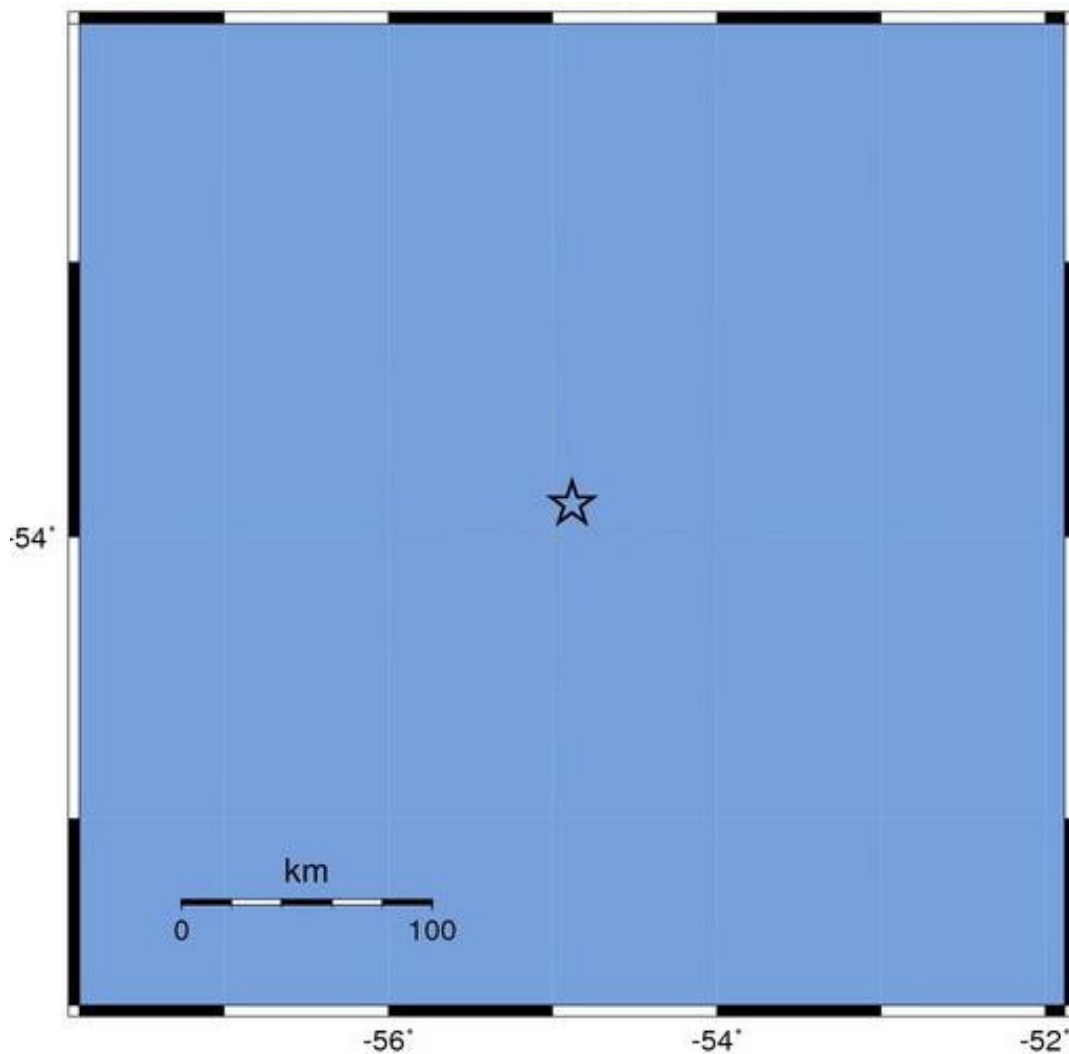
Although this earthquake (red star) occurred on the northern Scotia Plate boundary, it was unrelated to the November 17th magnitude 7.8 earthquake and the subsequent aftershocks that occurred near the South Orkney Islands on the southern margin of that plate.



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

The earthquake occurred 300 km (190 mi) from the nearest island, thus was not felt.

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



The Falkland Islands lie east of Patagonia and are an archipelago on the Patagonian (or Argentine) Shelf, a submarine part of the South American Continent. Patagonia is the picturesque region at the southern terminus of the Andes Mountains that is shared by Chile and Argentina.



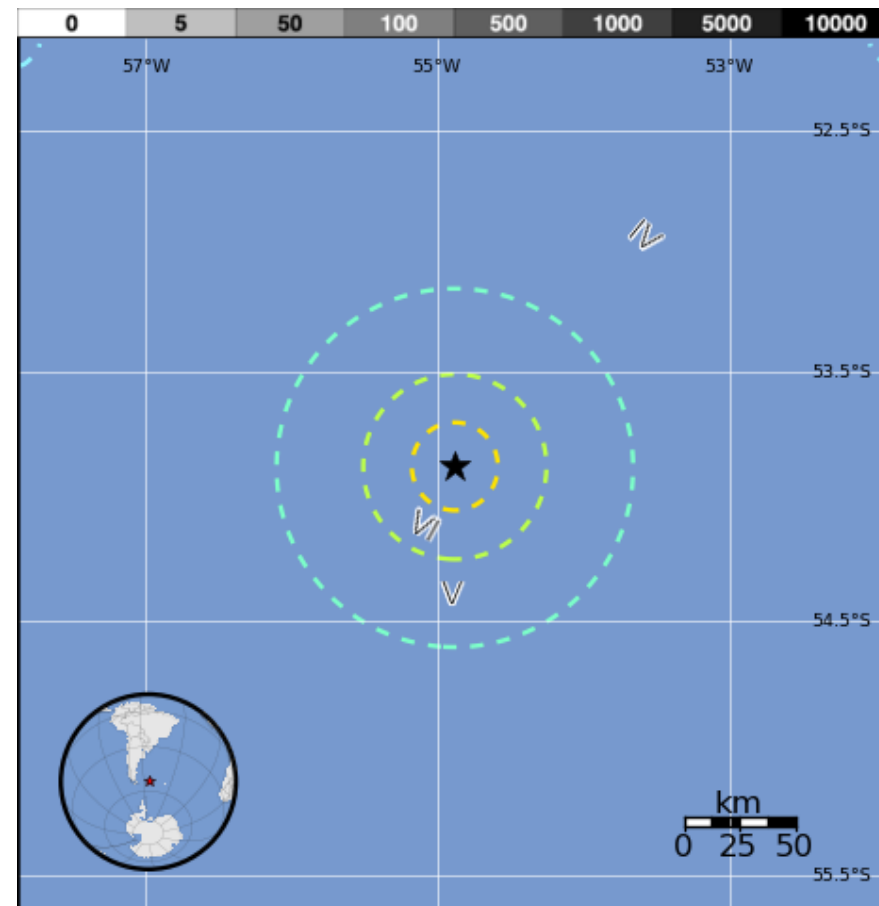
Southern Rockhopper Penguins of the Falkland Islands maintain a wary watch

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

Due to absence of nearby islands, the USGS estimates that no one felt shaking from this earthquake.

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

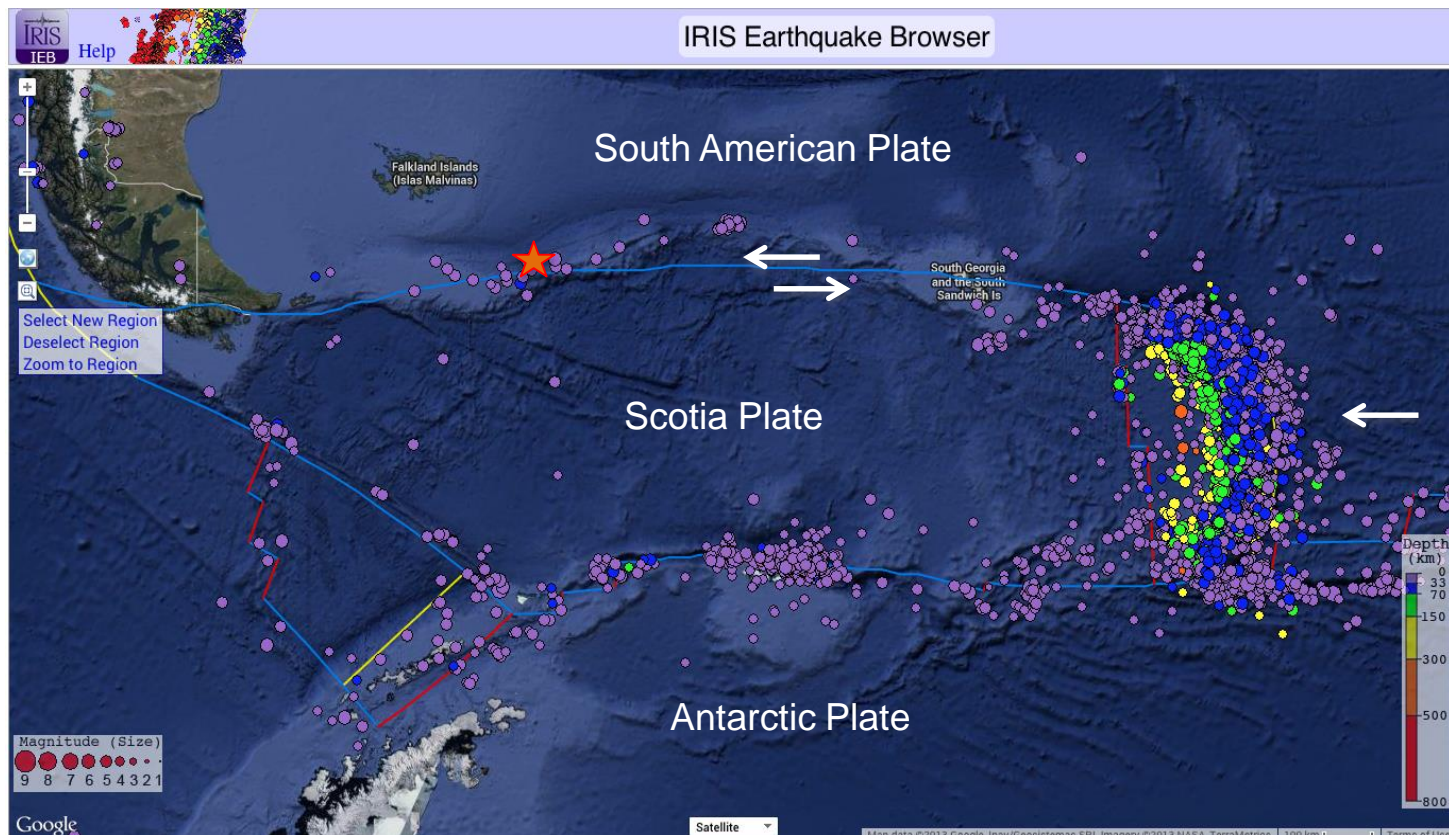


Estimated Modified Mercalli Intensity	I	II-III	IV	V	VI	VII	VIII	IX	X
Est. Population Exposure	--*	--*	--*	0k	0k	0k	0k	0k	0k
Perceived Shaking	Not Felt	Weak	Light	Moderate	Strong	Very Strong	Severe	Violent	Extreme

This earthquake epicenter (red star) is plotted on the map with regional earthquakes M 5 – 8 since 1973.

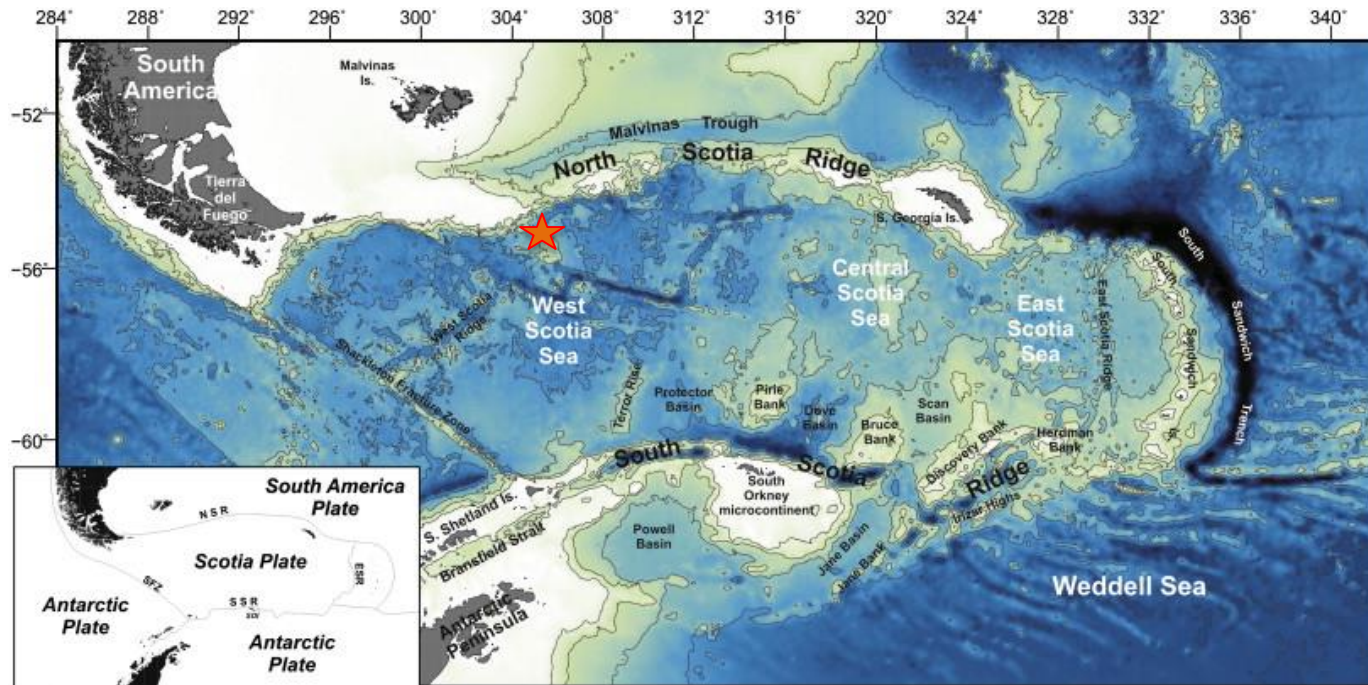
The Scotia Plate is caught between the Antarctic and South America Plates and is bounded on it's north and south sides by plate boundaries that are dominantly transform (strike-slip) boundaries. (Only the major plates are labeled)

At the location of this earthquake, the Scotia plate moves ENE with respect to South America at a rate of approximately 9.5 mm/yr.



The recent earthquakes occurred on or near the North Scotia Ridge, the east-west trending rise along the left-lateral transform boundary that separates the Scotia and South American Plates.

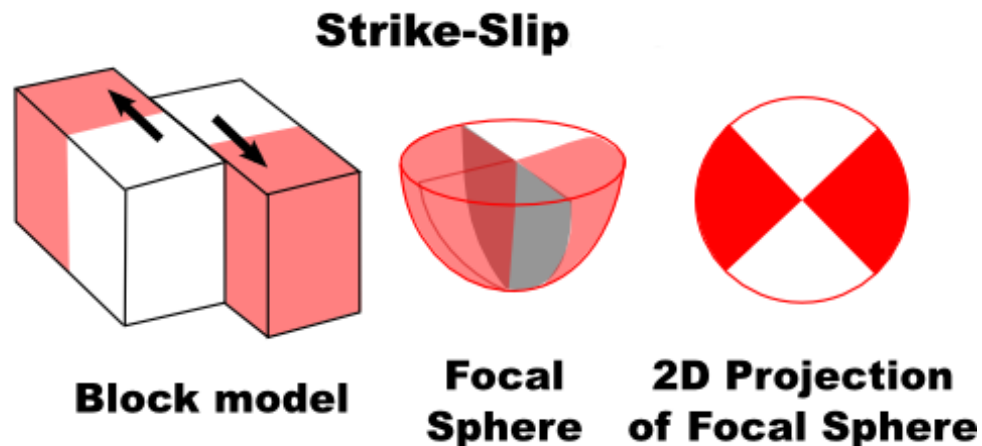
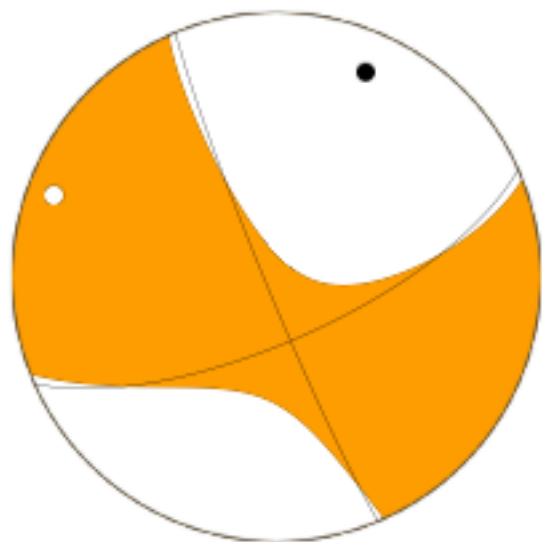
According to the USGS, there are no land-based observations within the Scotia Plate to measure plate motion; all reported plate motions are derived from remote earthquake recordings.



Bathymetric contour map of the Scotia Sea (see notes for reference & description)

The focal mechanism illustrated below indicates that the earthquake resulted from either left-lateral strike-slip motion on an east-west oriented fault plane or right-lateral strike-slip motion on a north-south oriented fault plane.

Given the east-west alignment of the Scotia–South America Plate boundary, it is likely that this earthquake was produced by left-lateral strike-slip motion on this transform boundary.

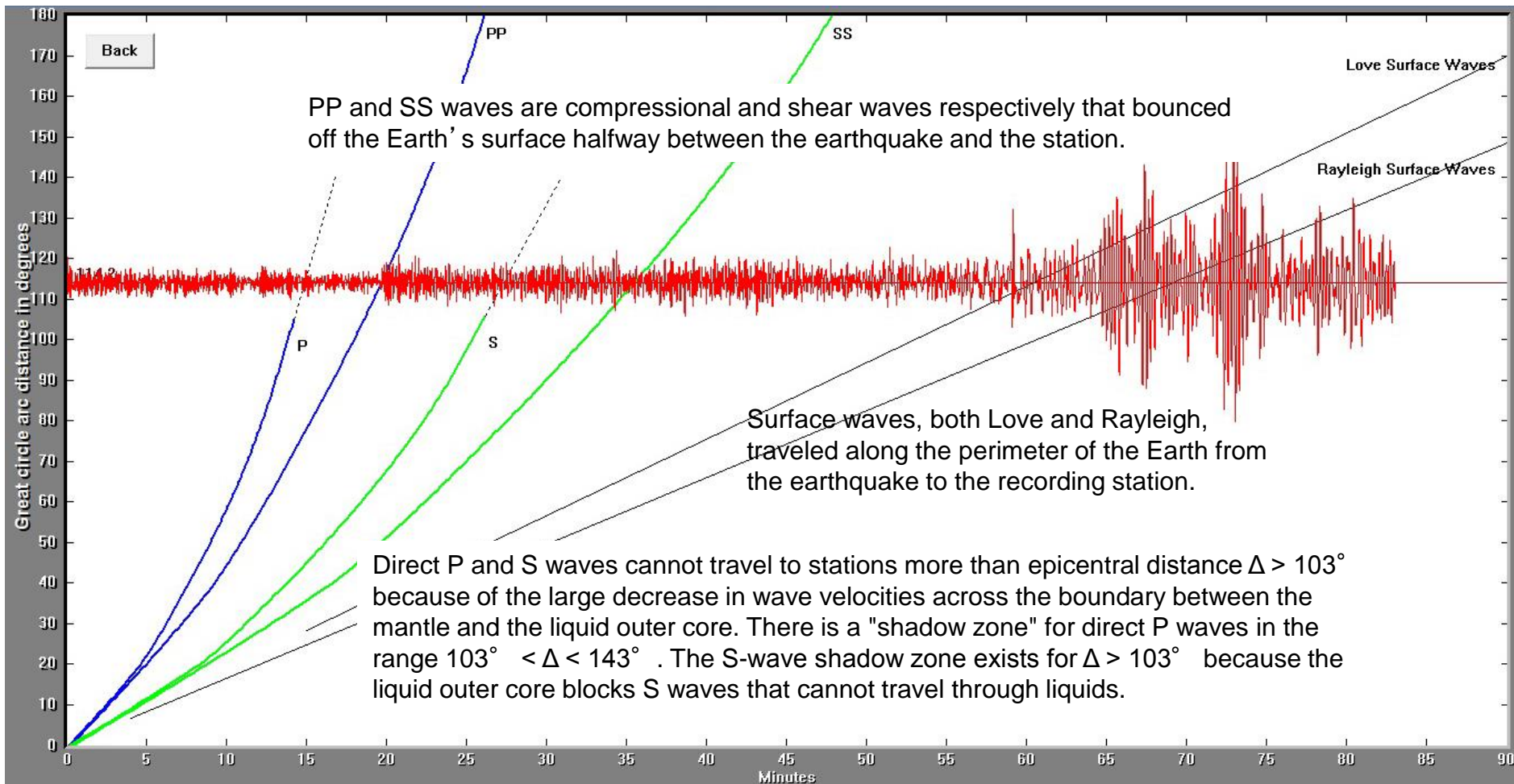


The tension axis (T) reflects the minimum compressive stress direction. The pressure axis (P) reflects the maximum compressive stress direction.

Magnitude 7.0 SOUTH ATLANTIC OCEAN

Monday, November 25, 2013 at 06:27:33 UTC

The record of the earthquake on the University of Portland seismometer (UPOR) is illustrated below. Portland is 12,670 km (8,874 miles, 114.2°) from the location of this earthquake.



Animation explaining the seismic shadow zone.


Epicentral distance is the angle formed by the intersection of the line from the earthquake to Earth's center with the line from the observing point to the Earth's center.

S waves are seen up to a distance of 104° from an earthquake, but direct S waves are not recorded after this distance.


P waves also have a shadow zone between 104° and 140°

1.ShadowZones_640_med

File Edit View Window Help



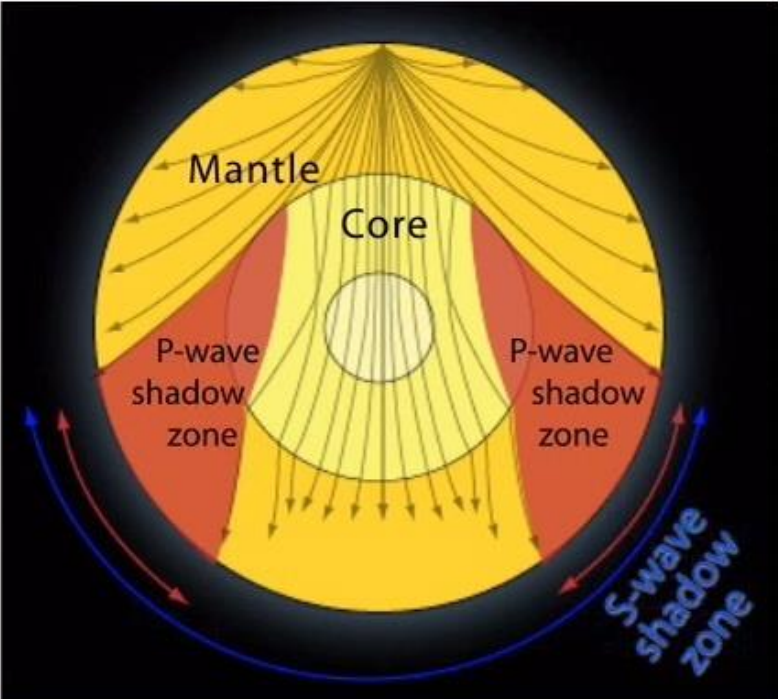
Seismic Shadow Zones









How the mantle and core were determined using the arrival times of direct P and S body waves

P waves (primary) are compressive waves that travel through solids & liquids.

S waves (secondary) are shear waves that travel through solids only.



00:00:00

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