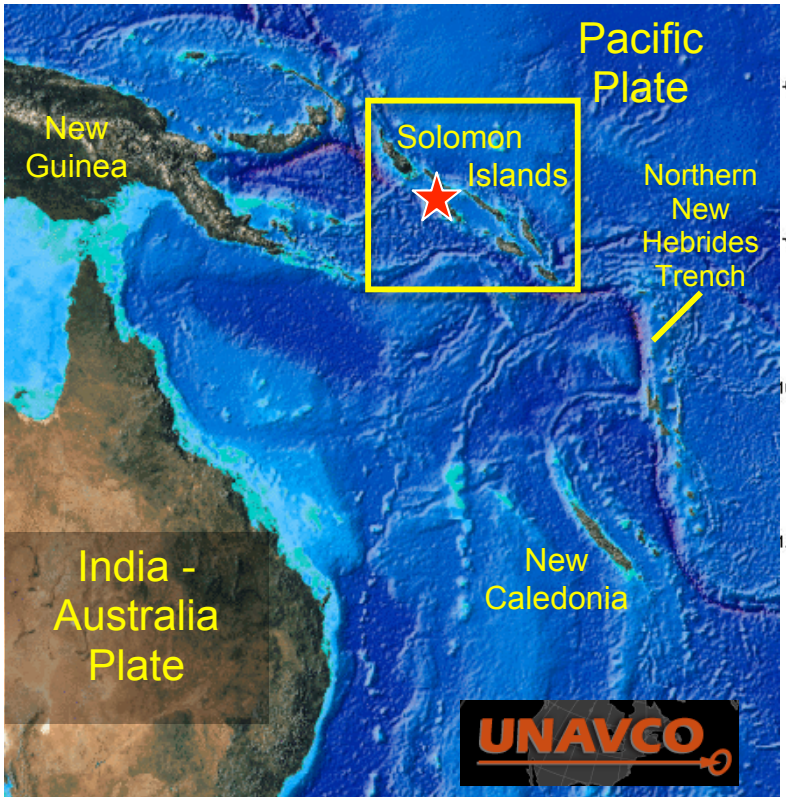
Magnitude 7.2 Solomon Islands Earthquake
Sunday, January 3, 2010 at 22:36:30 UTC
2:36:30 PM Pacific Standard Time

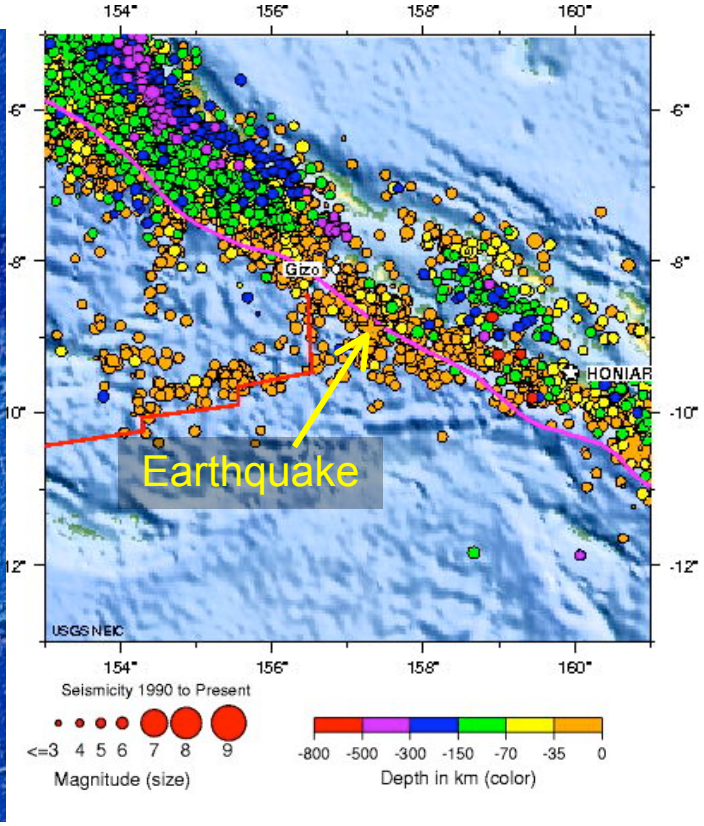
Epicenter: Latitude 8.912°S, Longitude 157.307°E (indicated by stars on maps below).
Depth: 30.5 kilometers.

As determined by the US Geological Survey National Earthquake Information Center (NEIC), a magnitude 7.2 earthquake occurred Sunday afternoon Portland time in the Solomon Islands region of the southwestern Pacific Ocean. In this region, the northeastern corner of the India-Australia Plate subducts beneath the Pacific Plate (Map A on left). The 1990-to-present earthquake history within the yellow square of Map A is shown on Map B where the yellow star indicates the location of the M7.2 January 3 earthquake. This earthquake occurred about 105 km (65 miles) south-southeast of Gizo, New Georgia Islands, Solomon Islands (Map B). The NEIC tectonic summary states: “The Solomon Islands earthquake of January 3, 2010, likely occurred at the boundary between the Pacific and Australian plates, where the Australian plate subducts beneath the Pacific towards the northeast at a rate of approximately 95 mm/yr. The mechanism of the January 3rd earthquake is consistent with its occurrence in relation to underthrusting of the Australia plate beneath the Pacific plate, as part of this subduction process.” Major earthquakes that occur at shallow depths below the seafloor are candidates for producing tsunamis. The Pacific Tsunami Warning Center reported that a tsunami was generated but the wave amplitude was only 0.2 feet at Honiaria, Guadalcanal, Solomon Islands about 295 km (185 miles) from the epicenter.

Map A



Map B



The record of the M7.2 Solomon Islands earthquake on the University of Portland seismometer (UPOR) is illustrated below. Portland is about 9919 km (6163 miles, 89.4°) from the location of this earthquake. Following the earthquake, it took 12 minutes and 53 seconds (773 seconds) for the compressional P waves to travel a curved path through the mantle from the Solomon Islands to Portland. PP waves are compressional waves that bounced off the Earth's surface halfway between the earthquake and the station. PP energy arrived 16 minutes and 24 seconds (984 seconds) after the earthquake. S and SS are shear waves that follow the same paths through the mantle as P and PP waves, respectively. The S waves arrived 23 minutes and 41 seconds (1421 seconds) after the earthquake while SS waves took 29 minutes and 38 seconds (1778 seconds) to travel from the earthquake to Portland. Surface wave energy required approximately 37 minutes and 48 seconds (2268 seconds) to travel the 9919 km (6163 miles) from the Solomon Islands to Portland, Oregon. There is a bit of overprinting in the arrivals for this earthquake from a magnitude 6.5 foreshock in the Solomon Islands that occurred nearly an hour before the M7.2 earthquake. When the first P-wave arrivals are seen on the Portland recording from the magnitude 7.2 earthquake, the station was still recording surface waves from the earlier magnitude 6.5 earthquake.