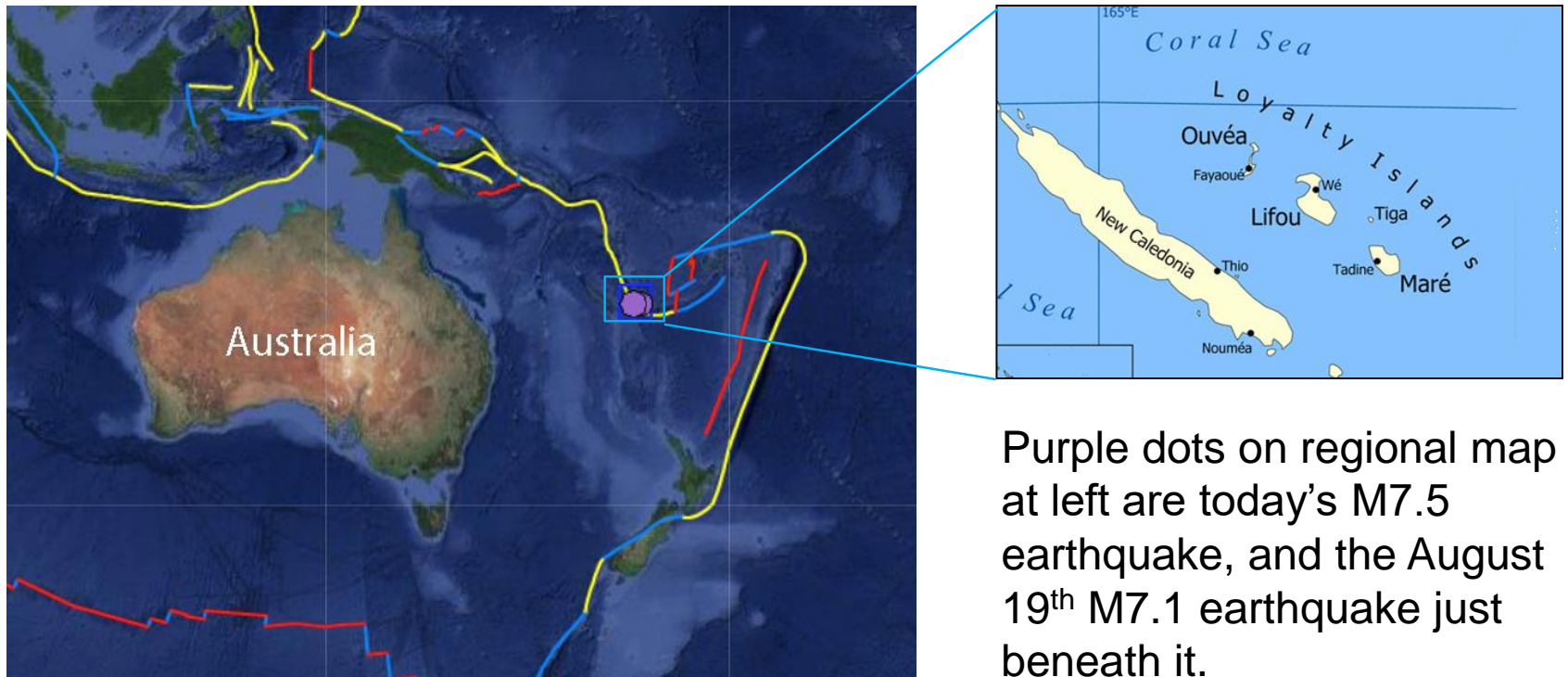


# Magnitude 7.5, ESE of TADINE, NEW CALEDONIA

Wednesday, December 5, 2018, 04:18:08 UTC

A magnitude 7.5 earthquake has occurred 168 km (104 mi) ESE of Tadine, New Caledonia at a depth of 10 km (6.2 miles). The earthquake triggered a tsunami alert and emergency evacuations across the region, but there were no reports of serious damage or injuries



Purple dots on regional map at left are today's M7.5 earthquake, and the August 19<sup>th</sup> M7.1 earthquake just beneath it.

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

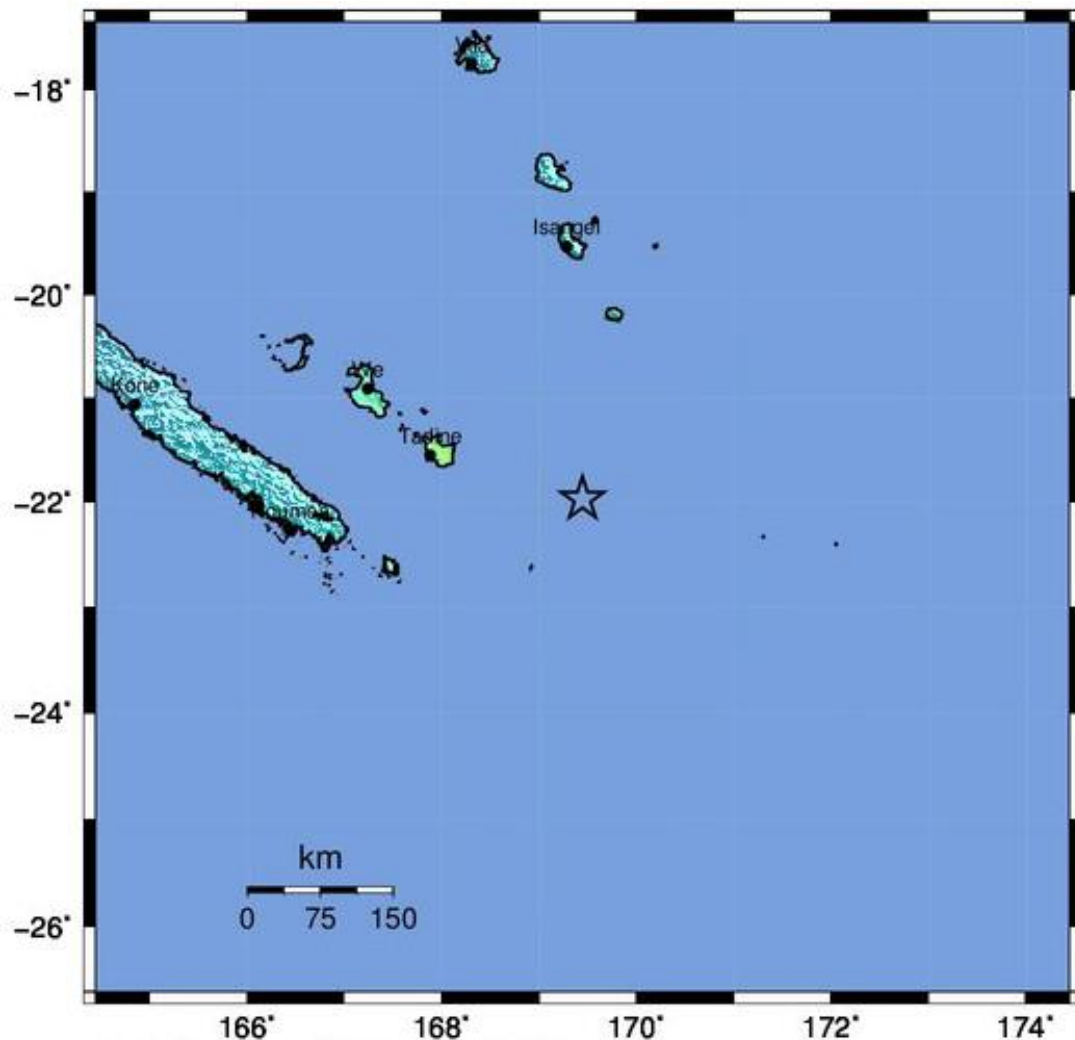
Maré Island, with a population nearing 6,000 experienced light to moderate shaking during the earthquake.

### Modified Mercalli Intensity



### Perceived Shaking

**Extreme**  
**Violent**  
**Severe**  
**Very Strong**  
**Strong**  
 Moderate  
 Light  
 Weak  
 Not Felt

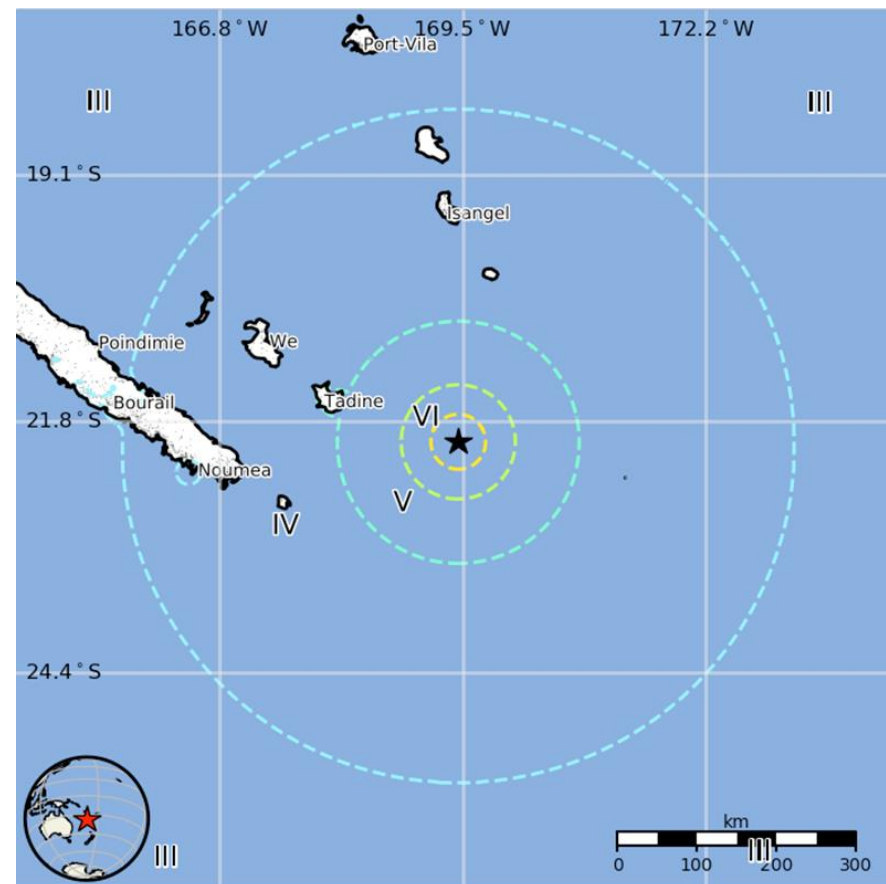


USGS Estimated shaking Intensity from M 7.5 Earthquake

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

The USGS estimates approximately 350,000 people felt weak to light shaking from this earthquake.

I	Not Felt	0 k*
II-III	Weak	206 k*
IV	Light	154 k
V	Moderate	3 k
VI	Strong	0 k
VII	Very Strong	0 k
VIII	Severe	0 k
IX	Violent	0 k
X	Extreme	0 k



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.

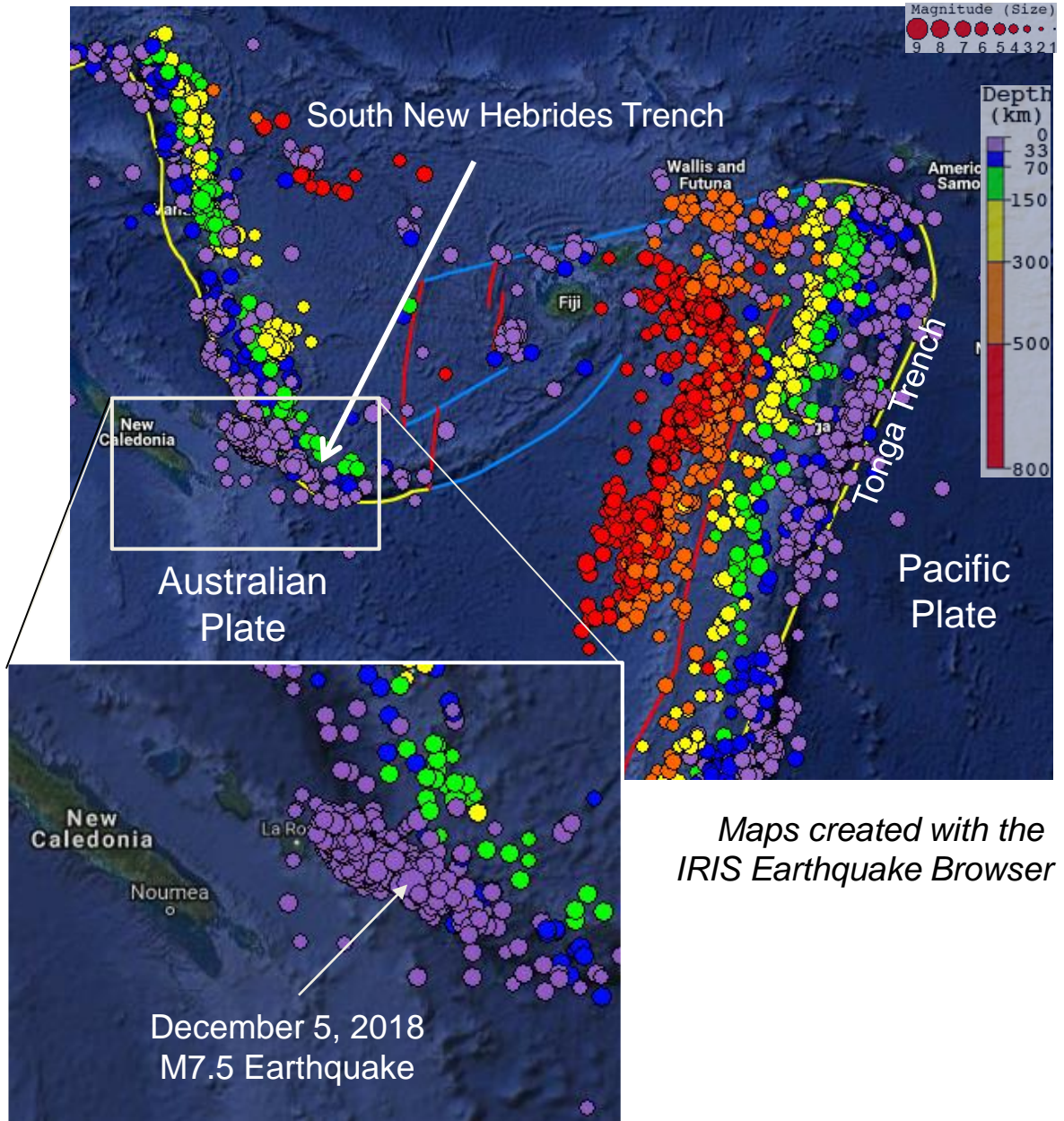
# Magnitude 7.5, ESE of TADINE, NEW CALEDONIA

Wednesday, December 5, 2018, 04:18:08 UTC

This seismicity map shows the most recent 3000 earthquakes in the region of the South New Hebrides and Tonga trenches. Earthquake depths increase from west to east across the South New Hebrides Trench, where the Australian Plate subducts beneath the Pacific Plate.

Across the Tonga Trench, earthquake depths increase from east to west where the Pacific Plate subducts beneath the Australian Plate.

The epicenter of this M7.5 earthquake is labeled on the inset map at right.

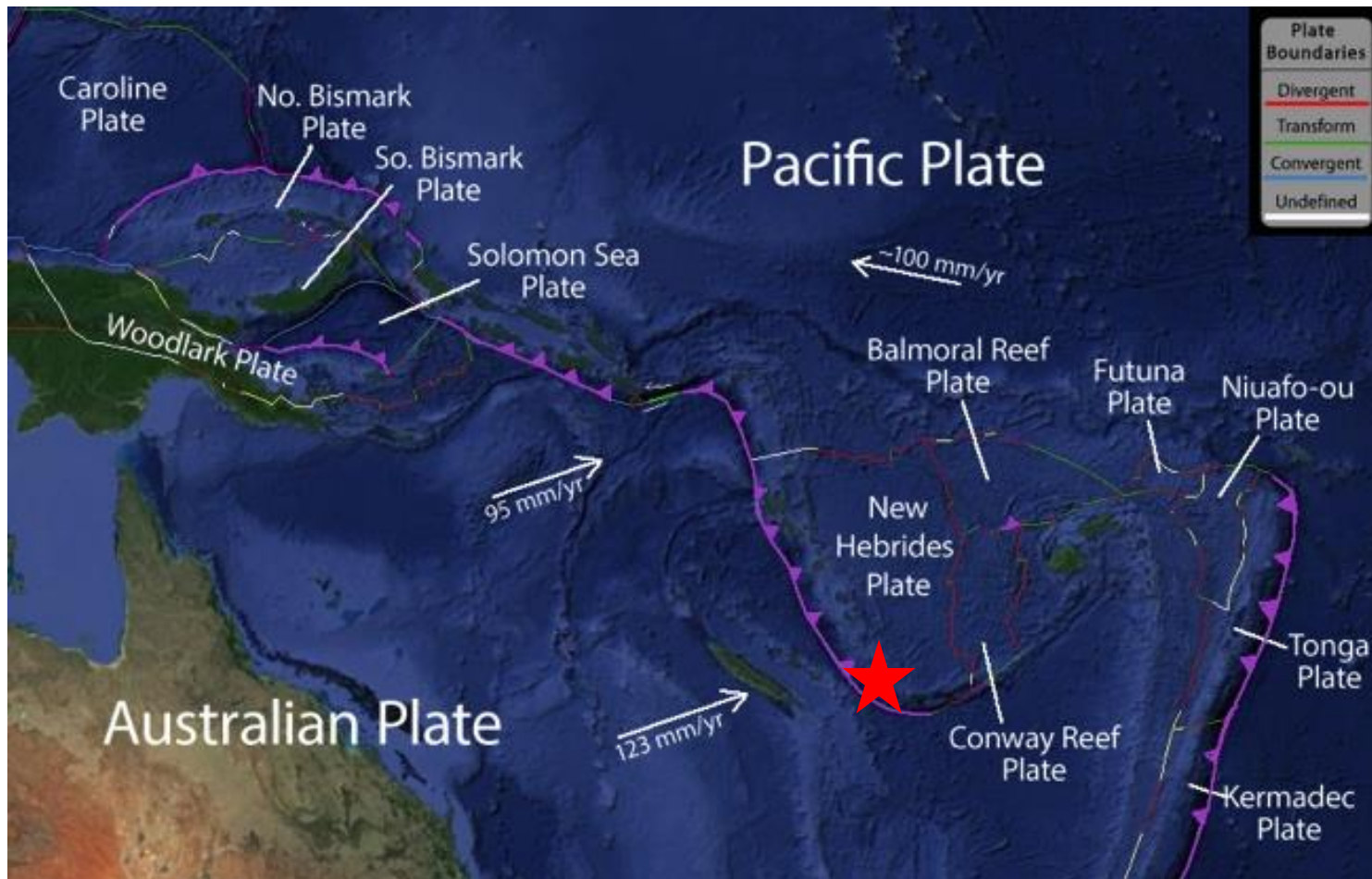


*Maps created with the IRIS Earthquake Browser*

# Magnitude 7.5, ESE of TADINE, NEW CALEDONIA

Wednesday, December 5, 2018, 04:18:08 UTC

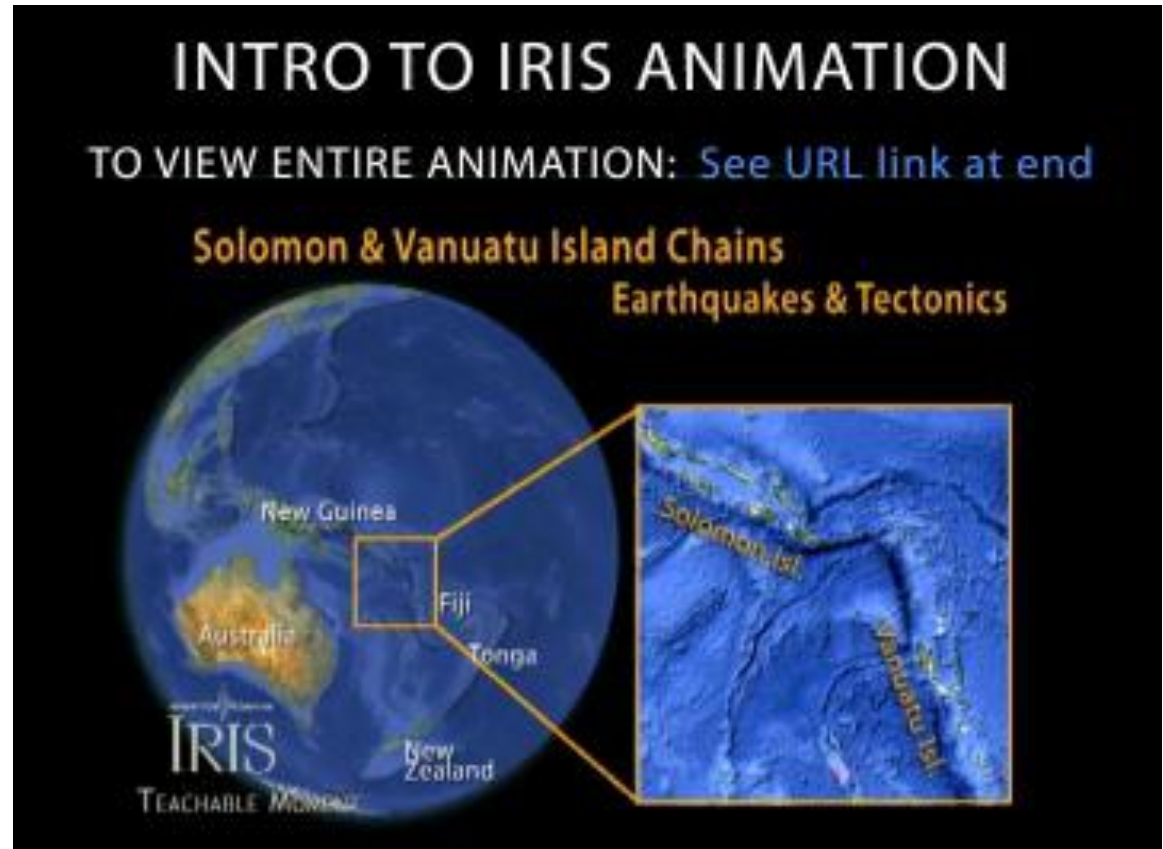
This regional map shows the complexity of major tectonic plates and microplates resulting from the convergence between the Australian and Pacific Plates. The red star indicates the epicenter of this earthquake. The location and focal mechanism indicate that this earthquake resulted from extensional forces in top of the Australian Plate as it bends to enter the South New Hebrides Trench.



This short animation is part of a longer IRIS animation that looks at seismicity and tectonics of this region.

The full animation looks at three areas in cross section to reveal a change from:

- 1) Steeply dipping subduction along the New Hebrides trench
- 2) Strike slip motion along the Solomon Islands
- 3) Shallow subduction zone to the west.

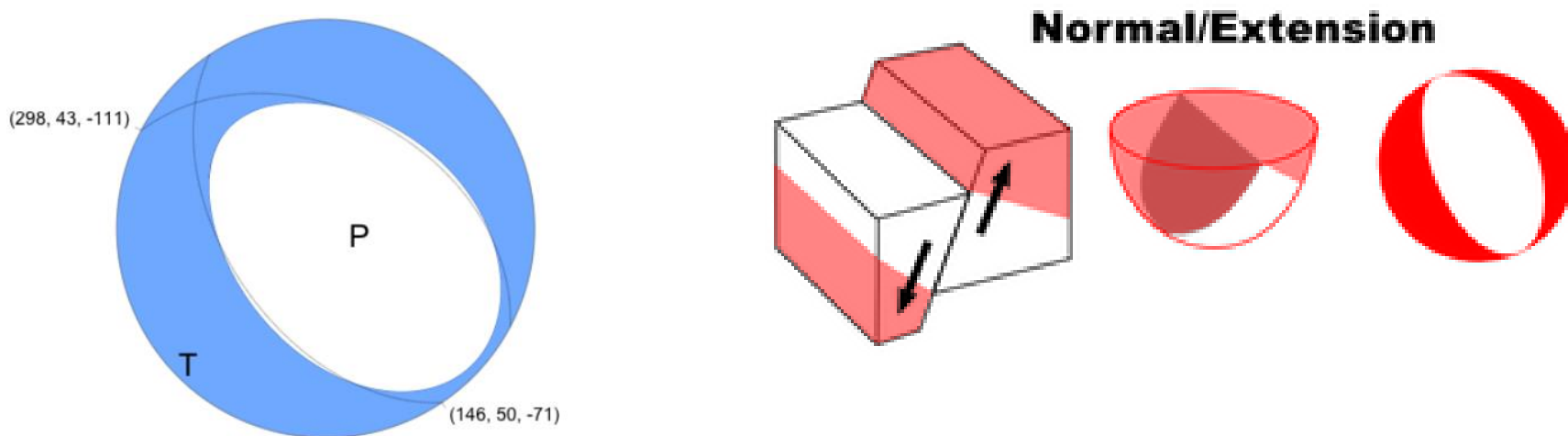


Full animation: <https://youtu.be/GUIPv1vUvlc>

Or download: <https://www.iris.edu/hq/inclass/animation/237>

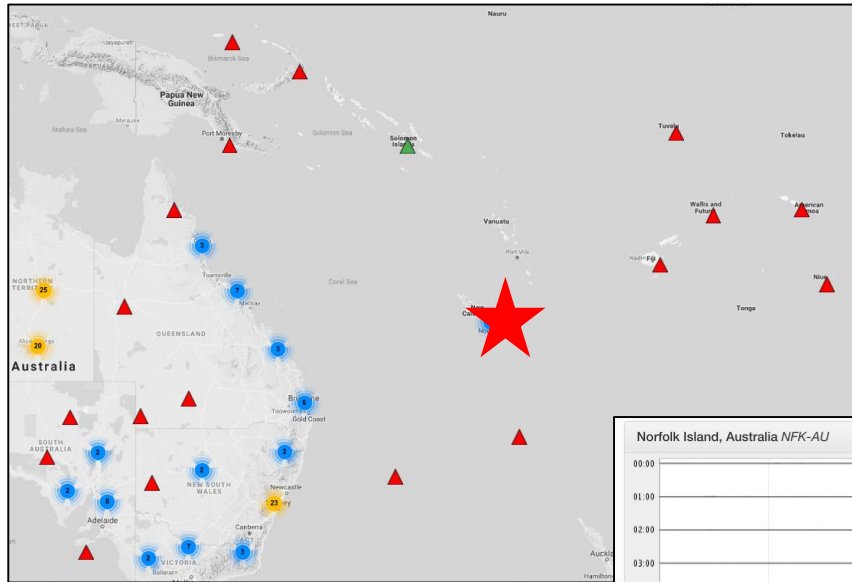
The focal mechanism is how seismologists plot the 3-D stress orientations of an earthquake. Because an earthquake occurs as slip on a fault, it generates primary (P) waves in quadrants where the first pulse is compressional (shaded) and quadrants where the first pulse is extensional (white). The orientation of these quadrants determined from recorded seismic waves identifies the type of fault that produced the earthquake.

The earthquake occurred as the result of normal faulting on or near the plate boundary interface between the Australian and Pacific Plates.

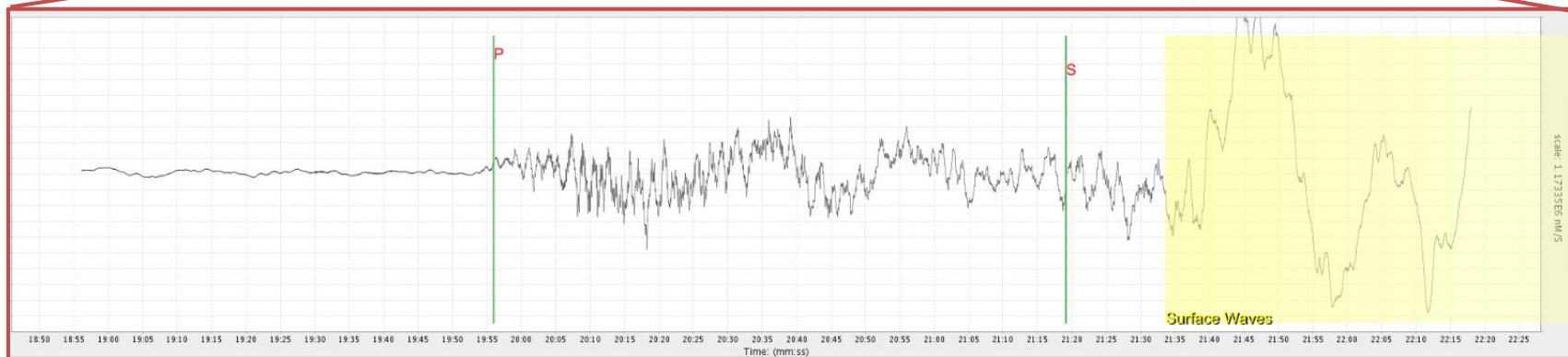
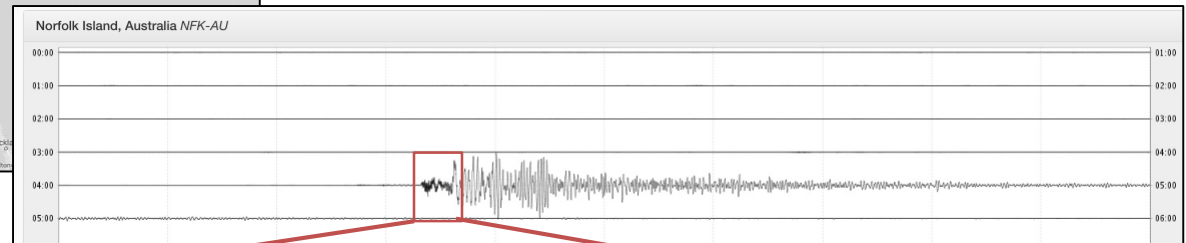


# Magnitude 7.5, ESE of TADINE, NEW CALEDONIA

Wednesday, December 5, 2018, 04:18:08 UTC



Seismogram from IRIS's *Station Monitor*\* app shows the arrival of the P wave to Norfolk Island (blue arrow, 800 km SSE of epicenter) at 04:19:55 UTC, about 47 seconds after the earthquake. The S wave arrived about 1 min 25 sec later.



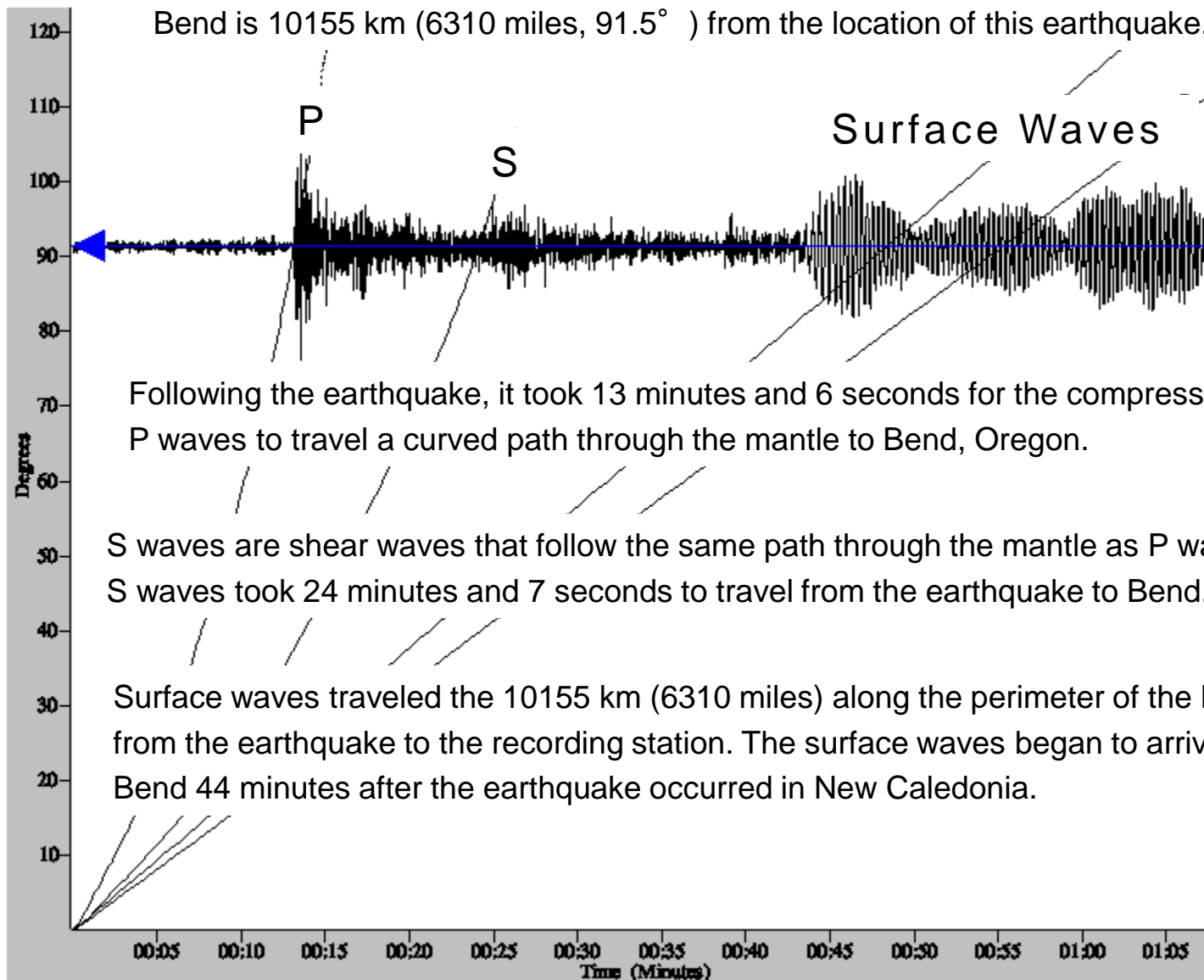
\*iris.edu/app/station\_monitor (use App to find a seismometer near you)



# Magnitude 7.5, ESE of TADINE, NEW CALEDONIA

Wednesday, December 5, 2018, 04:18:08 UTC

The record of the earthquake in Bend, Oregon (BNOR) is illustrated below. Bend is 10155 km (6310 miles,  $91.5^\circ$ ) from the location of this earthquake.



Following the earthquake, it took 13 minutes and 6 seconds for the compressional P waves to travel a curved path through the mantle to Bend, Oregon.

S waves are shear waves that follow the same path through the mantle as P waves. S waves took 24 minutes and 7 seconds to travel from the earthquake to Bend.

Surface waves traveled the 10155 km (6310 miles) along the perimeter of the Earth from the earthquake to the recording station. The surface waves began to arrive in Bend 44 minutes after the earthquake occurred in New Caledonia.

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