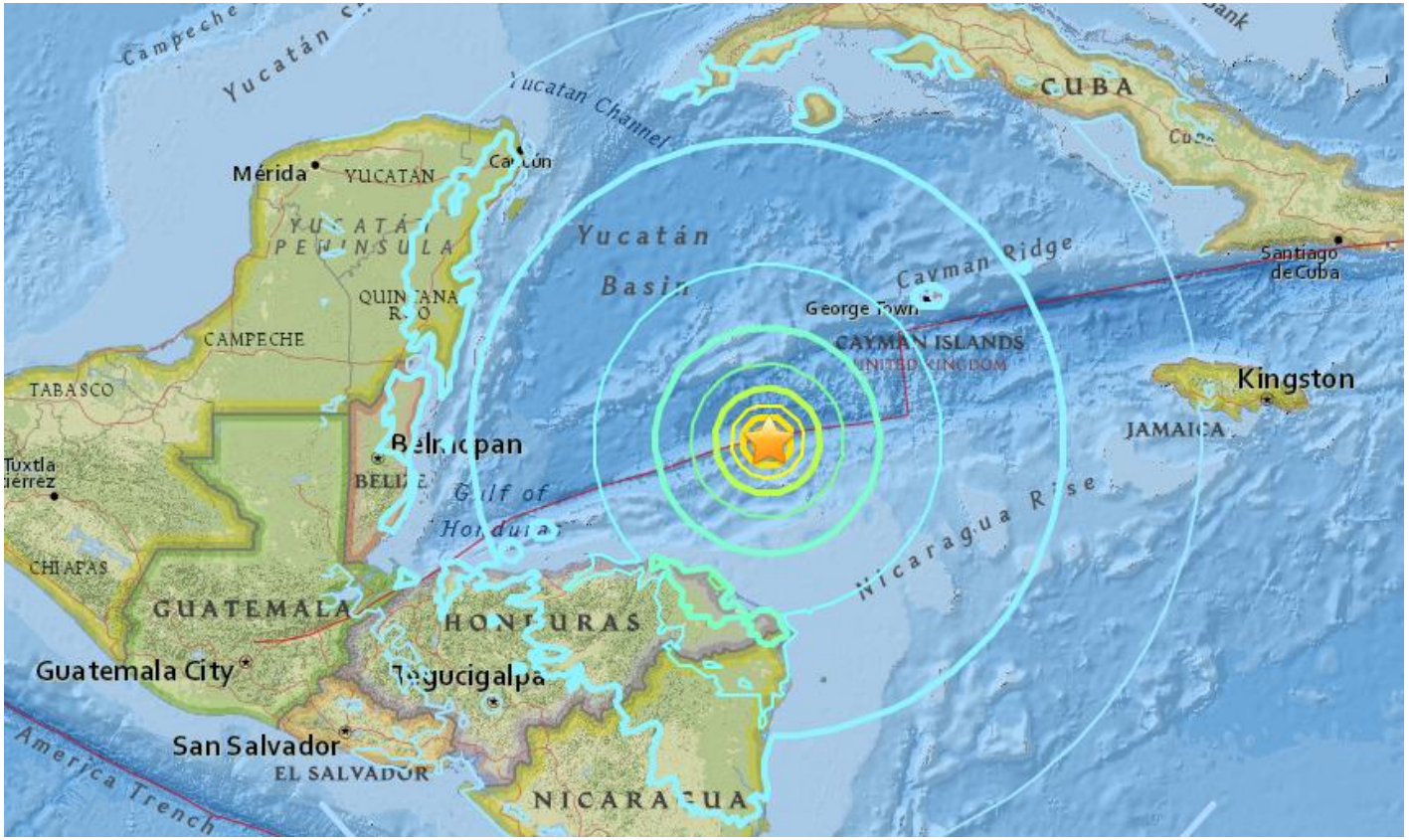
Magnitude 7.6 HONDURAS

Wednesday, January 10, 2018 at 02:51:31 UTC

A magnitude 7.6 earthquake has occurred in the Caribbean between Honduras and the Cayman Islands approximately 125 miles (202 km) north-northeast of Barra Patuca, Honduras, and 188 miles (303 km) southwest of George Town, Cayman Islands at a depth of 6 miles (10 km). There have been no reports of damage.



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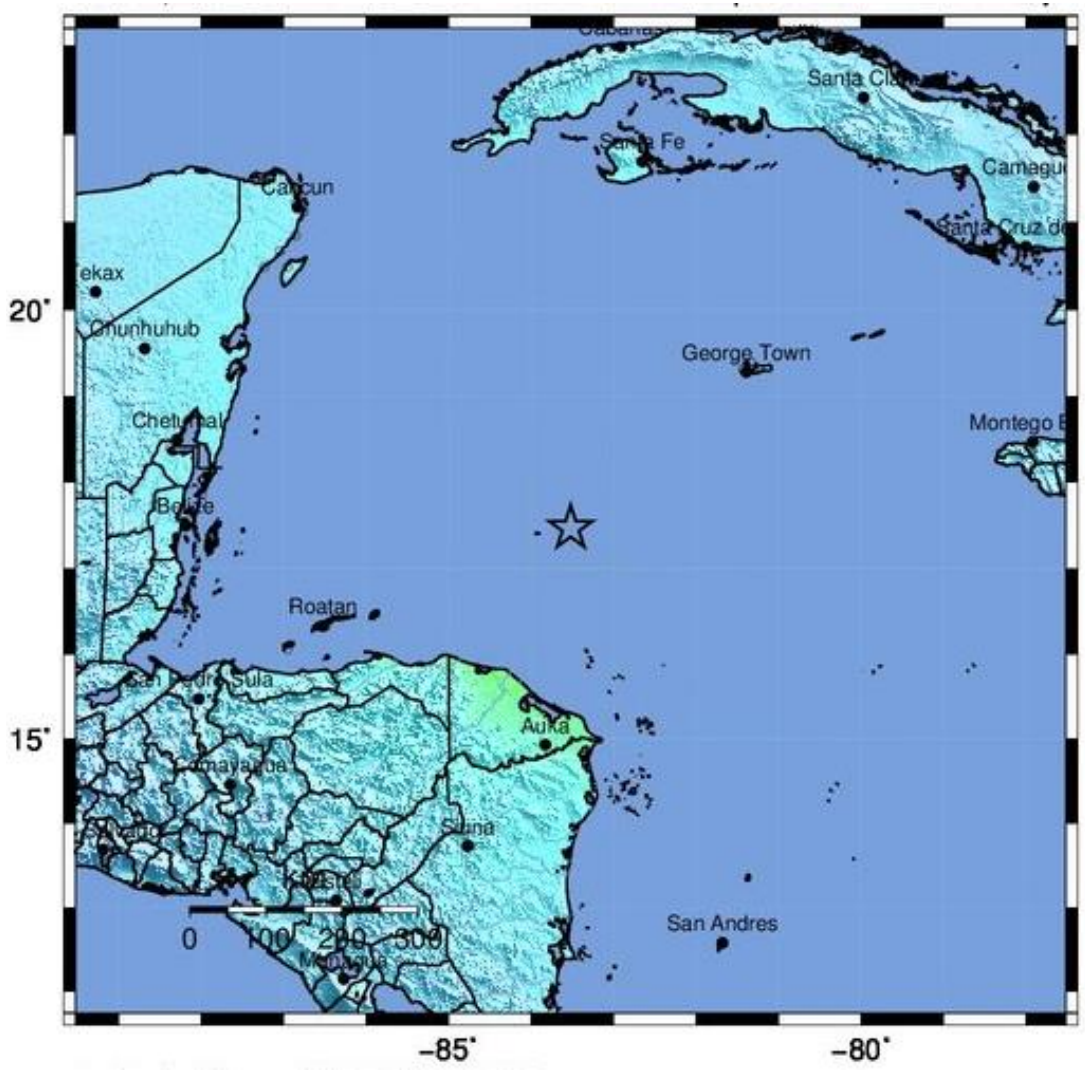
The Modified-Mercalli Intensity scale is a twelve-stage scale, from I to XII, that indicates the severity of ground shaking.

Weak shaking from this earthquake was felt over a large area.

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 7.6 Earthquake

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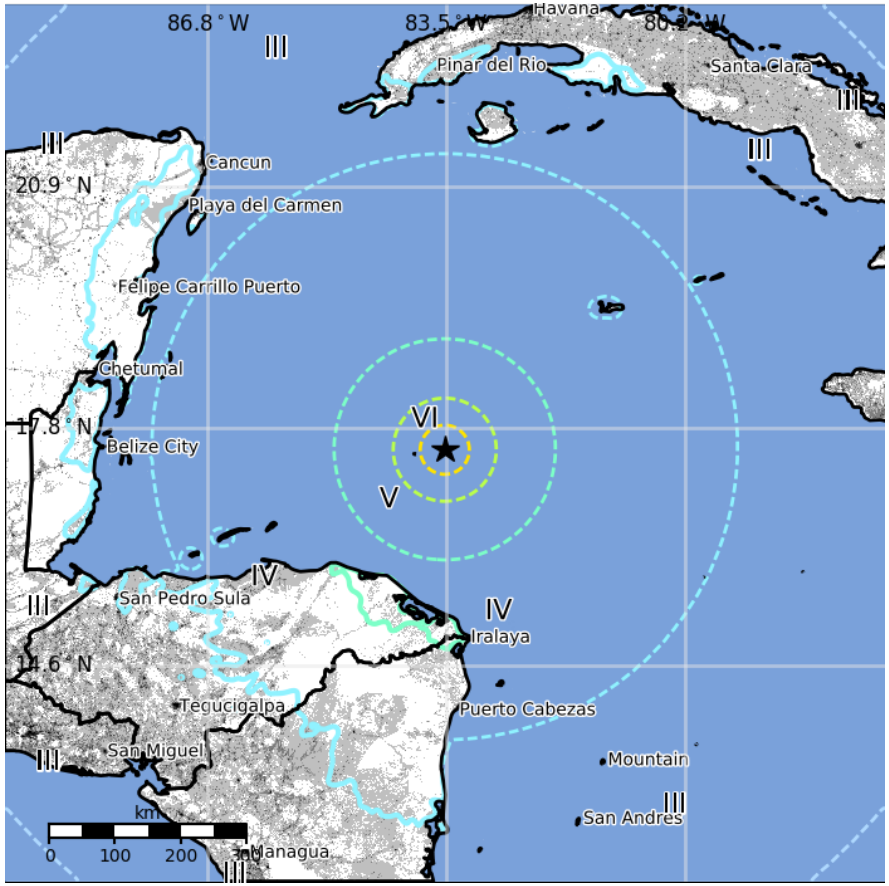
USGS PAGER
Population Exposed to Earthquake Shaking

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

The USGS estimates that over three million people felt light shaking from this earthquake.

MMI	Shaking	Pop.
I	Not Felt	--*
II-III	Weak	27,958 k*
IV	Light	3,359 k
V	Moderate	58 k
VI	Strong	0 k
VII	Very Strong	0 k
VIII	Severe	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.

Image courtesy of the US Geological Survey

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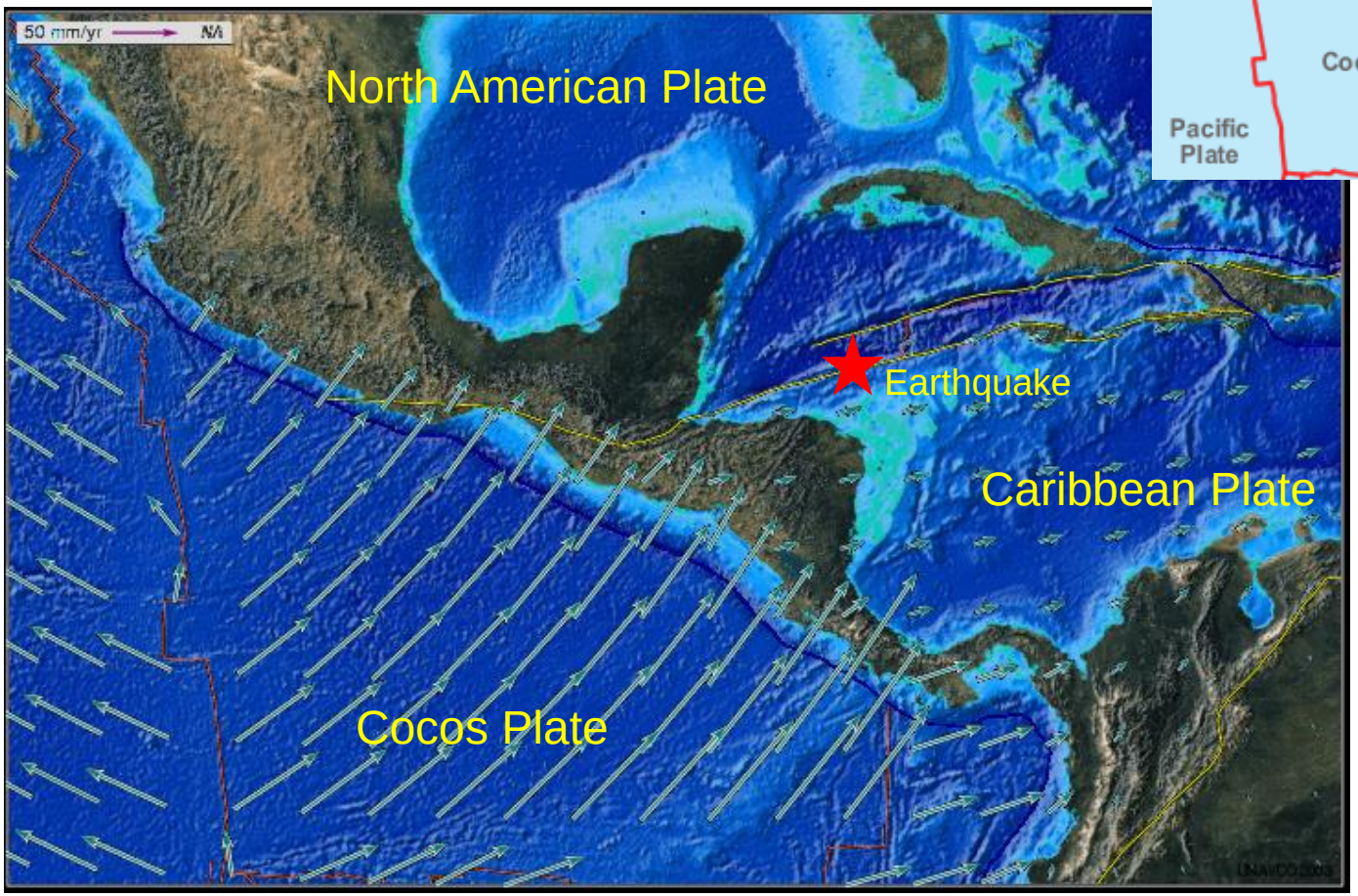
At the location of this earthquake, the Caribbean Plate moves ENE with respect to the North American Plate.



Arrows show plate motion relative to the North American Plate.

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This map shows plate boundaries between the North American, Caribbean, Cocos, Nazca, and South American Plates. The location of this magnitude 7.6 earthquake is shown by the red star.

This earthquake occurred on the transform plate boundary between the Caribbean Plate and the North American Plate where the relative motion velocity is 2.0 cm/yr (20 mm/yr). The Caribbean Plate moves ENE with respect to the North American Plate along this transform boundary. The location of the Caribbean - North American Plate boundary follows the Cayman Trench and the smaller Swan Trough along which this earthquake occurred.

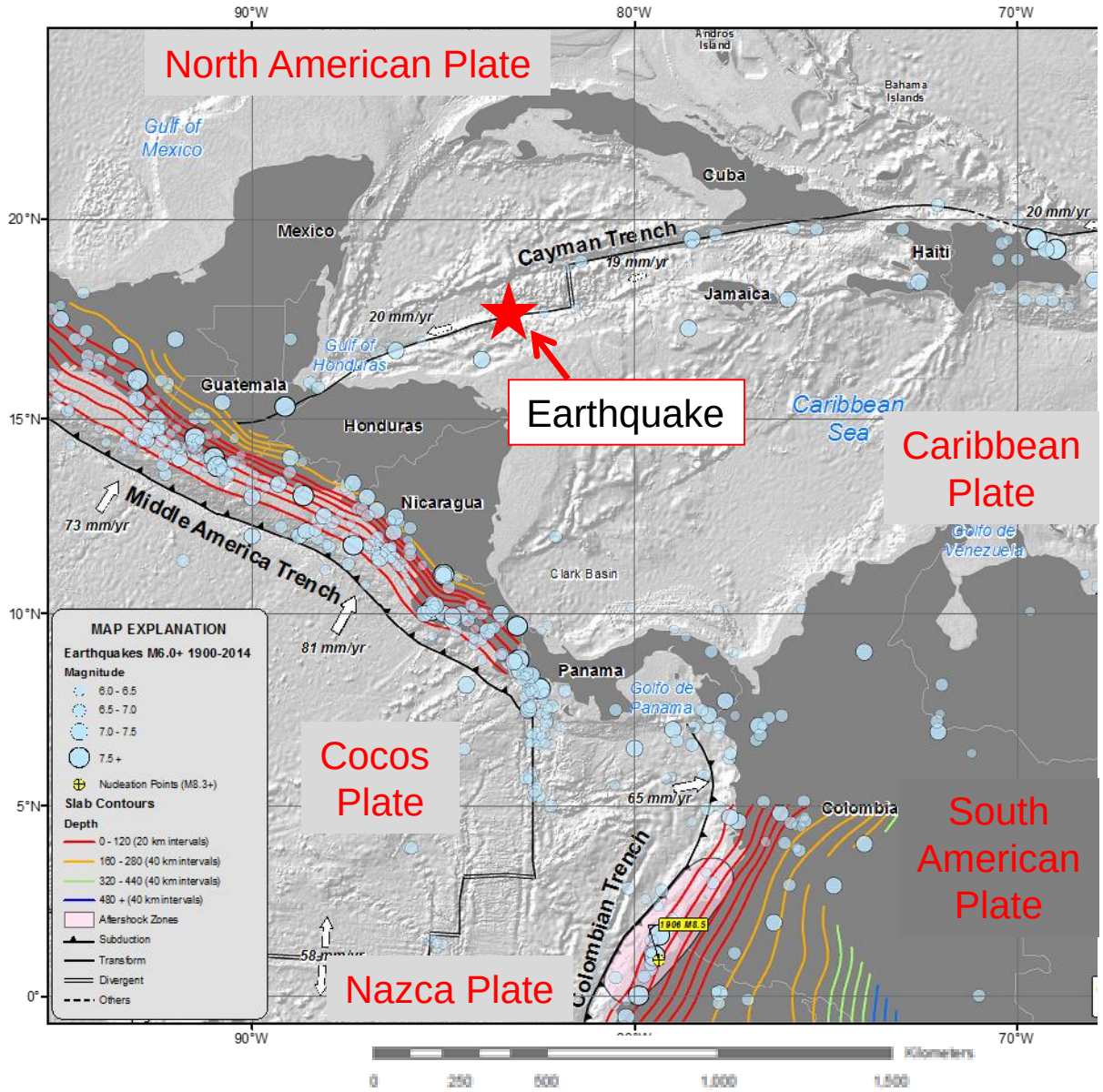

Image courtesy of the US Geological Survey

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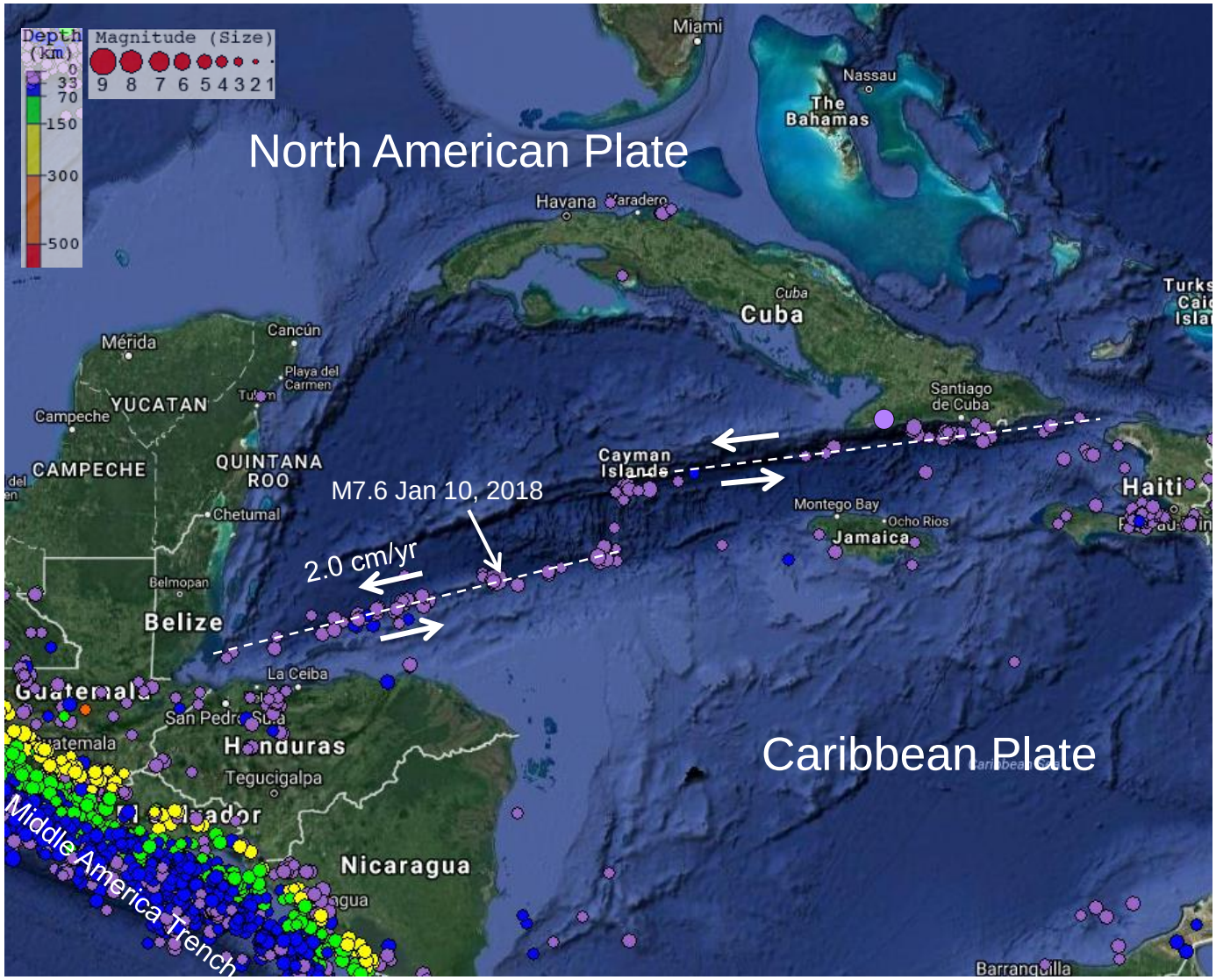
IRIS Teachable Moments

This regional map shows epicenters of the 2000 most recent M ≥ 4.0 earthquakes in the region of this M7.6 earthquake.

Shallow earthquakes occur along the transform plate boundary between the North American and Caribbean Plates shown by the dashed lines.

Earthquakes to 300 km depth occur in the subduction zone where the Cocos Plate dives beneath the Caribbean Plate at the Middle America Trench.

Earthquake and Historical Seismicity



Map created with the IRIS Earthquake Browser

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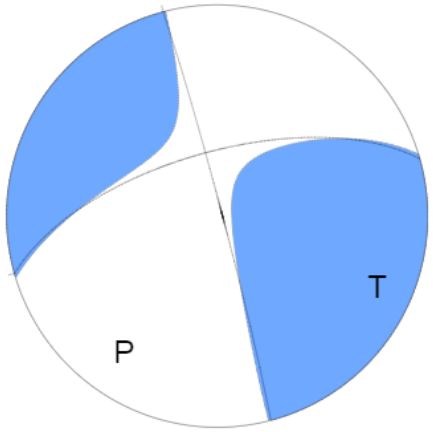
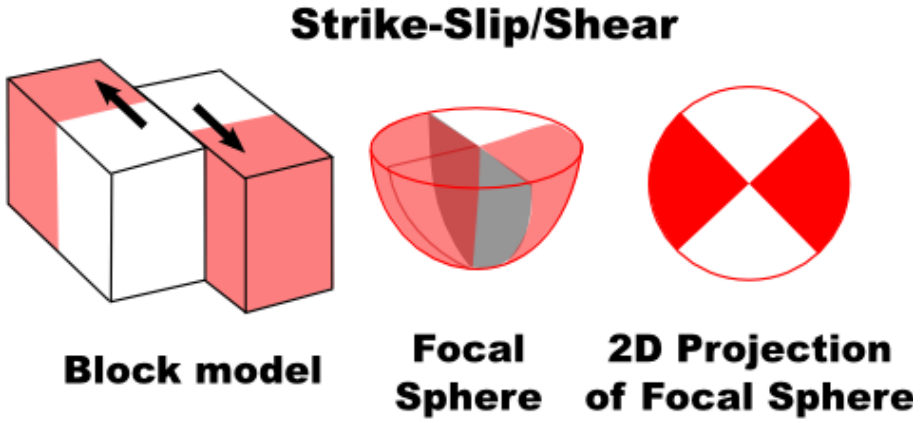
The focal mechanism is how seismologists plot the 3-D stress orientations of an earthquake. Because an earthquake occurs as slip on a fault, it generates primary (P) waves in quadrants where the first pulse is compressional (shaded) and quadrants where the first pulse is extensional (white). The orientation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



USGS W-phase Moment Tensor Solution

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



In this case, the focal mechanism indicates this earthquake occurred as the result of strike slip faulting.

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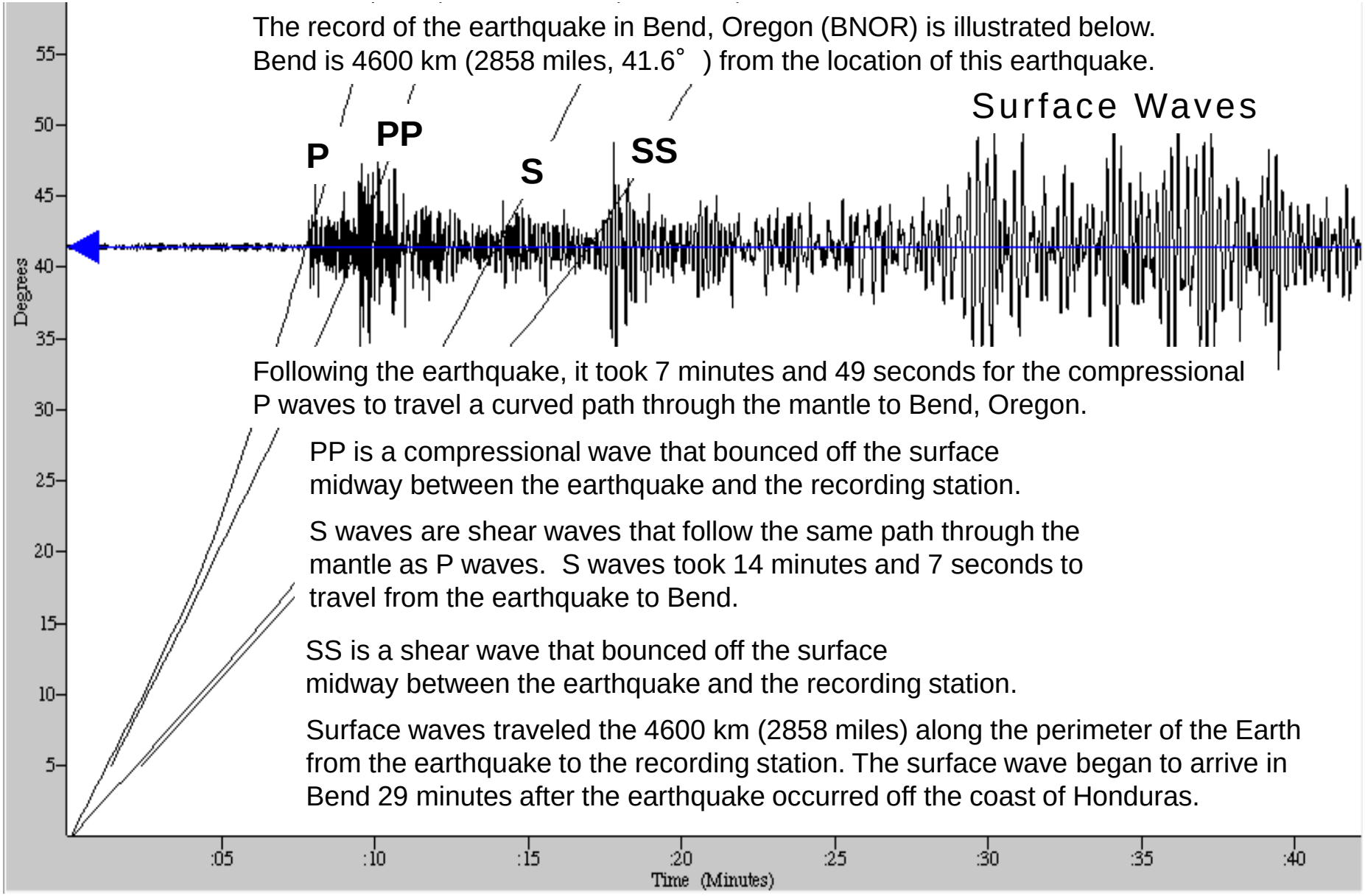
The record of the earthquake in Bend, Oregon (BNOR) is illustrated below. Bend is 4600 km (2858 miles, 41.6˚) from the location of this earthquake.



Following the earthquake, it took 7 minutes and 49 seconds for the compressional P waves to travel a curved path through the mantle to Bend, Oregon.

PP is a compressional wave that bounced off the surface midway between the earthquake and the recording station.

S waves are shear waves that follow the same path through the mantle as P waves. S waves took 14 minutes and 7 seconds to travel from the earthquake to Bend.

SS is a shear wave that bounced off the surface midway between the earthquake and the recording station.

Surface waves traveled the 4600 km (2858 miles) along the perimeter of the Earth from the earthquake to the recording station. The surface wave began to arrive in Bend 29 minutes after the earthquake occurred off the coast of Honduras.

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