

WHAT'S ON OUR PLATES?

EXPLORE OUR ACTIVE PLATE BOUNDARY

MODULE

3

Unlocking the Hikurangi Subduction Zone

OUR SUBDUCTION ZONE

What is the deepest point of the Hikurangi Trench?

_____ metres

What are maps of the seafloor called?

Where is the Hikurangi subduction zone located?
(circle one)

Out to sea

Underneath our feet

An underwater mountain that rises hundreds or thousands of metres from the sea floor is called

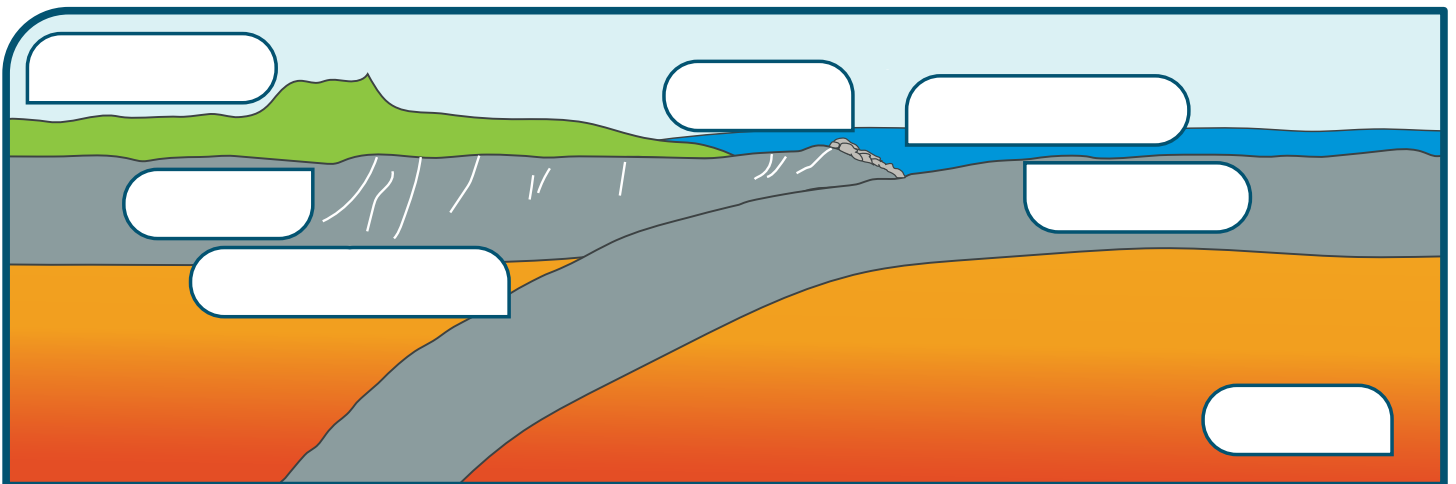
a _____.

One of these can be found off the east coast of

_____.

Place these labels into the correct boxes below:

Mantle, Sediments, Oceanic Crust, Fault Lines, Hikurangi Trench, Continental Crust, Plate Boundary Fault



What are the sediments sitting on top of the oceanic crust made of?

What might happen if a fault ruptures and the ocean floor is displaced?

How deep under our feet is the Pacific Plate in Gisborne, Napier, and Wellington?



DID YOU KNOW?

When the subducted plate dives deep beneath New Zealand it undergoes a process called **Metamorphism**. The rock gets compressed and heated and transforms into a new geologic texture - Magma!

Scientists collect evidence to show when and where earthquakes have occurred. A sample of rock or sediment is called a _____, and layers of sediment are called _____.

PAST MOVEMENT

How many large subduction zone earthquakes have happened on the East Coast over the last 8,000 years? (circle one)

None 10 50 80 100

Te Ika-a-Māui, the North Island's east coast has many sites with stepped terraces (land _____ in earthquakes) and drowned coastal plains (land _____ in earthquakes).

The flat-top hills located along the East Coast are made of uplifted _____.

CURRENT MOVEMENT

Scientists use _____ sites to track the movement of tectonic plates over time.

The movement can be tracked to an accuracy of a few _____ per year!

Ocean bottom seafloor pressure sensors track the _____ and _____ movement of the seafloor.



When was the first slow slip earthquake recorded in Aotearoa New Zealand?

How long do the slow slip events which happen offshore from Gisborne and Hawke's Bay every two years, last?

DID YOU KNOW?

Slow slip earthquakes occur in the Manawatū-Whangnui and Wellington area at around 30-40km deep, every 5 years. Each slip event can last 1-2 years!

Match the earthquake type to its characteristics:

Normal earthquakes

- Are not felt
- Only occur at subduction zones

Both

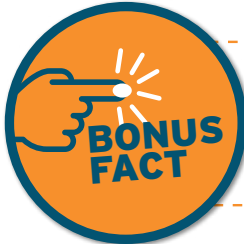
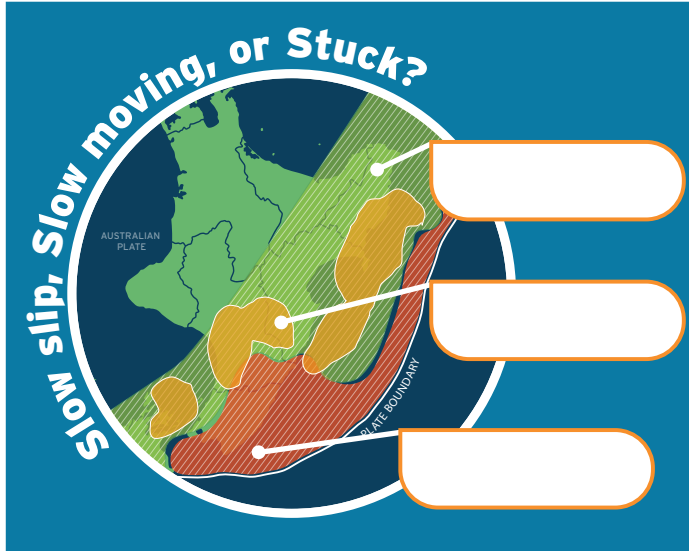
- Release energy quickly and suddenly
- Occur all around the world

Slow slip earthquakes

- Occur beneath the surface of the earth
- Are monitored by instruments

There are three monitored slow slip earthquake locations in New Zealand, where are these? (Hint: see image below)

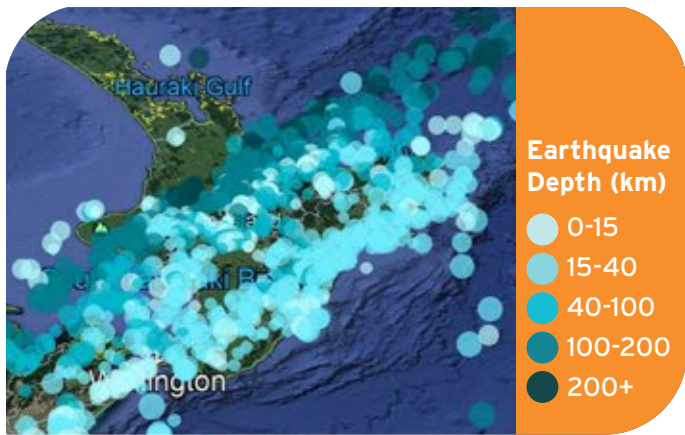
- 1 _____
- 2 _____
- 3 _____



The Hikurangi subduction zone moves at about the same rate your fingernails grow!

What is an 'Accretionary Wedge'?

What does the below image tell us about the location and depth of the subduction zone?



In your own words, describe how a seismometer works

If multiple layers of sediment or rock are called **Strata**, what is one single layer of sediment or rock called?

In your own words, describe how scientists collect a core sample:



Google Search challenge:

Seismic observatories usually have instruments measuring three axes:

_____ (y-axis),
 _____ (x-axis), and _____ (z-axis).



Source: LEARNS