

# WHAT'S ON OUR PLATES?

EXPLORE OUR ACTIVE PLATE BOUNDARY

MODULE

2

Exploring Our Plate Boundary

## EARTH'S STRUCTURE

Which two elements are thought to make up the earth's core?

\_\_\_\_\_ and \_\_\_\_\_

Which of these is the correct name for the currents which move the earth's crust? (circle one)

Geothermal

Convection

Conduction

Name 5 of the earth's major tectonic plates:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Match the term to the correct plate movement:

Convergent

The plates move apart from each other

Transform

The plates collide or buckle together

Divergent

The plates move sideways

Label the parts of the earth's structure:



DID YOU KNOW?

The earth's crust is also called the **lithosphere**, and tectonic plates are sometimes called **lithospheric plates**.

Where two plates meet each other, stress builds up overtime. This stress is eventually released in the form of an **earthquake**.

## CONTINENTS ARE DIFFERENT FROM PLATES!

**Tectonic plates** form the earth's crust; there are over 80 major, minor, and micro plates worldwide, the smallest being only 100km<sup>2</sup>.

**Continents** are large continuous landmasses, or islands which have been grouped together as a region.

**Subcontinents** occur when parts of the landmass sit on a different tectonic plate (for example Central America).

**Submerged continents** are areas of continental crust which are largely covered by sea (for example Zealandia). The Māori name for Zealandia is Te Riu-a-Māui, meaning 'the hills, valleys, and plains of Māui'.

What percentage of the submerged continent of Zealandia is underwater? (circle one)

75%

85%

95%

BONUS FACT

Scientists estimate that tectonic plates were moving around on Earth between 3.3 and 3.5 billion years ago!

## WHERE THEY MEET

Which of these plates is subducting near the **East Coast** of the North Island? (circle one)

**Australian Plate**      **Pacific Plate**

Which of these plates is subducting near the **Southwest Coast** of the South Island? (circle one)

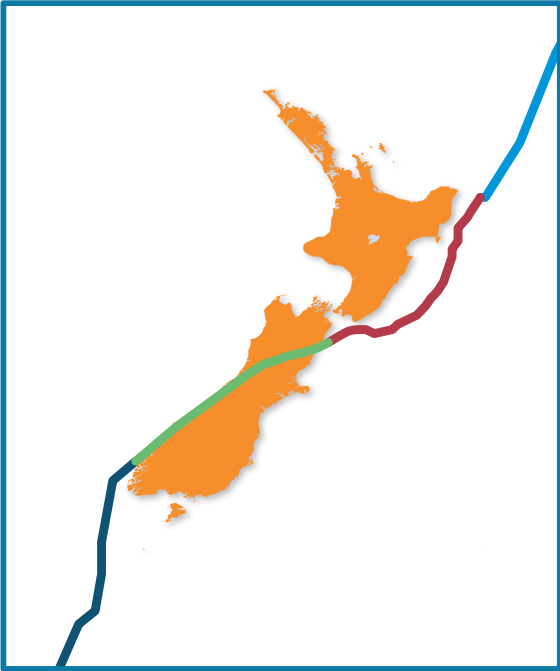
**Australian Plate**      **Pacific Plate**

Where in New Zealand can you put your finger on the plate boundary?

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Where the two plates **converge** along the Alpine Fault they **transform** sideways at an average distance of \_\_\_\_\_ per year.

What are the common names for these sections of the plate boundary?



## PRETTY PETROLOGY

Petrology is the study of rocks. In the video, Julian described two rocks featured in the make-up of tectonic plates.

Match these rocks to their name and properties:



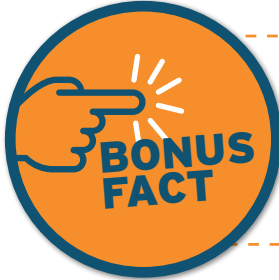
**Granite**

Dark coloured (igneous) rock containing iron, found in **oceanic** plates



**Basalt**

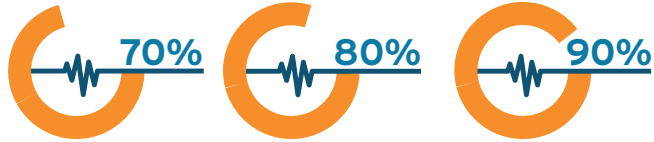
Course-grained (igneous) rock containing quartz, found in **continental** plates



Igneous rock can also be formed by **solidification** beneath the earth's surface which is called 'plutonic rock' relating to the Roman god of the underworld, **Pluto**.

## PACIFIC RING OF FIRE

What percentage of the world's earthquakes happen in the Pacific Ring of Fire? (circle one)



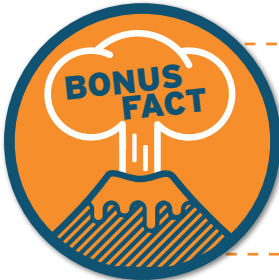
On average, how many earthquakes are recorded in Aotearoa New Zealand each year?

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On average, how deep are the areas of Deep Ocean surrounding New Zealand?

\_\_\_\_\_ km



The Ring of Fire contains approximately 850-1,000 volcanoes that have been active during the last 11,700 years (about two-thirds of the world's total).

MODULE  
**2**

## Exploring Our Plate Boundary

# EXTENSION CHALLENGES FOR EXPERTS

### PLATE TECTONICS

What category of tectonic plates does Aotearoa New Zealand sit on the boundary of? (circle one)

- Major (Primary)      Minor (Secondary)  
Micro (Tertiary)

At 103,300,000 square kilometres, which major tectonic plate is the largest?

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 **Google Search challenge:**  
Name the worlds smallest known micro-plate?

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*(Hint: it sits between the minor North and South Bismark plates)*

### FAULT LINES

What is the name for the complex of faults which ruptured during the Kaikōura earthquake in 2016?

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Why is there no subduction zone along the Alpine Fault?

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### PETROLOGY

Both of the rocks Julian talked about are 'igneous' rocks - formed by solidified lava or magma. Find the names of two other types of rock.

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### SEDIMENTATION

Scientists sampled **sediment** from the bottom of the Kermadec Trench at a depth of 9,994m; this will give them information about plate movement and earthquakes. But how did the sediment get there?

Sediment is moved by natural processes over many, many years; three processes are listed below.

In your own words, summarise how each works.

**Fluvial:**

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**Aeolian:**

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**Glacial:**

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