

Calculating the Movement of Australia

YEAR 9
EARTH AND SPACE SCIENCES



QGC

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Future Makers

Future Makers is an innovative partnership between Queensland Museum Network and Shell's QGC business aiming to increase awareness and understanding of the value of science, technology, engineering and maths (STEM) education and skills in Queensland.

This partnership aims to engage and inspire people with the wonder of science, and increase the participation and performance of students in STEM-related subjects and careers — creating a highly capable workforce for the future.

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ELABORATE

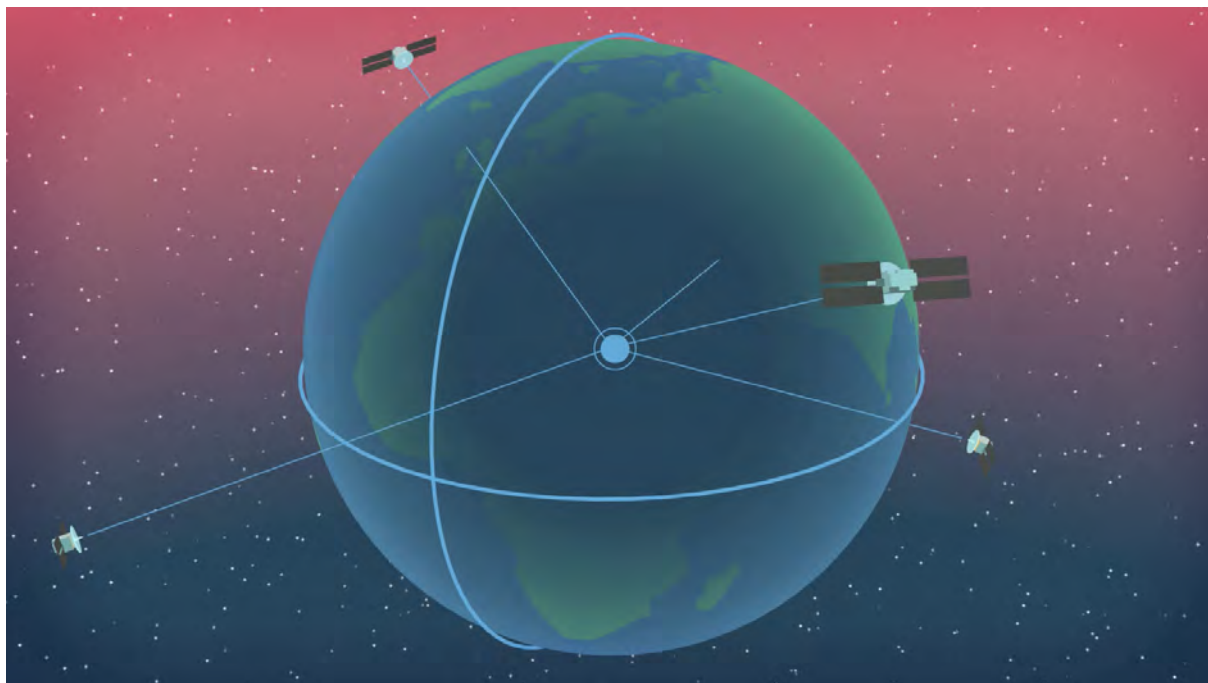
Calculating the Movement of Australia

Teacher Resource

It is important to note that the tectonic plates are in a continuous state of movement, and this movement, resulting from the flow of convection currents, impacts the surface of the Earth. This movement also impacts how we engage with the world around us using technologies.

For example, the Indo-Australian plate moves north at about seven centimetres per year. In 2016, Australia's position had to be reviewed and recalibrated as the country had moved 1.5 metres away from our GPS location on maps due to continental drift. This accuracy is not so much of a problem when using Google Maps on your phone; however, it can cause huge problems for technology that requires positional accuracy to function properly, such as self-driving cars. 1.5 metres could be the difference between being on the road and crashing into a tree!

In this activity, students will watch the video *Modernising Australia's Datum* to explain why the position of Australia was recalibrated in 2016. They will then calculate how far Australia will move between now and 2085. You could extend learning by asking students to calculate how long it will take for Australia to move certain distances.



Modernising Australia's Datum, ICSM ANZLIC Committee on Surveying and Mapping, Small Island Studios.

Curriculum Links

Science

YEAR 9

Science Understanding

The theory of plate tectonics explains global patterns of geological activity and continental movement (ACSSU180)

Humanities and Social Sciences

YEAR 6

Geography: Knowledge and Understanding

The geographical diversity of the Asia region and the location of its major countries in relation to Australia (describing the location of places in countries of the Asia region in absolute terms using latitude and longitude) (ACHASSK138)

General Capabilities

Numeracy

Estimating and calculating with whole numbers

Using measurement

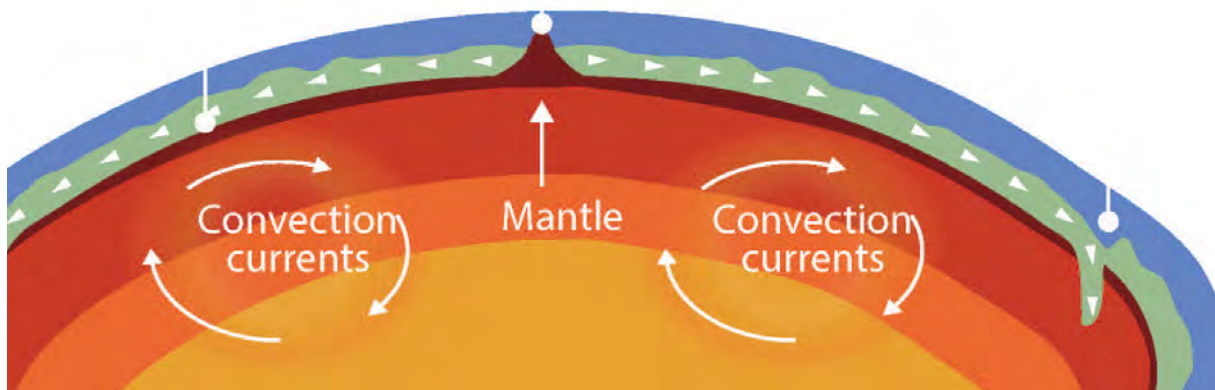
Using spatial reasoning

Calculating the Movement of Australia

Student Activity

From the highest mountain to the deepest trench, the theory of plate tectonics explains the features of the Earth, along with much of the geological activity we experience such as earthquakes and volcanoes.

The Earth's crust is divided into many plates that move around on top of the mantle. Convection currents caused by heat contained within the Earth drive the movement of these plates.



Slow moving convection currents within the mantle contribute to tectonic activity. Image: QM, Angelina Martinez

The tectonic plates are in a continuous state of movement, and this movement, resulting from the flow of convection currents, impacts the surface of the Earth.

For example, the Indo-Australian plate, one of the fastest moving plates, moves north at about seven centimetres per year. Due to this movement, scientists believe that in 200,000 years we could have another supercontinent as the Indo-Australian plate crashes into the Eurasian Plate. Austraeurasia anyone?

This movement also impacts how we engage with the world around us. Watch [Modernising Australia's Datum](#) to investigate how people are using technologies to address the effects of continental drift.

Questions

1. In 2016 Australia's position had to be recalibrated. Watch [Modernising Australia's Datum](#) then explain why recalibration was required.

2. Is there anything that puzzles you after watching the video, or is there anything else you would like to know about modernising Australia's datum?

3. How will you find the answers to your questions?

4. Australia moves north at about 7 centimetres per year. Use the information to calculate how far Australia will move between now and 2085.

5. If Australia continues to move the same speed and distance, how far will Australia have moved in 10 000 years? Draw this on a map.

