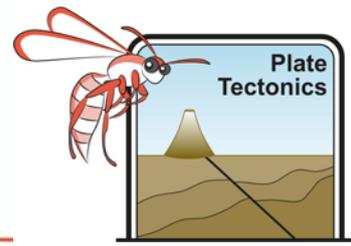


## Supercontinents – Teacher Notes



Use a range of resources to answer the following questions.

What is a supercontinent? It is a large landmass made of many major tectonic plates that have welded together to form a single very large continent. A single cycle of amalgamation, stabilisation and breakup takes about 300 to 500 million years



An example of a past supercontinent would be? Gondwana (Gondwanaland), Laurasia, Pangea, Pannotia, Rodinia, Nuna. In Australia, we have evidence of Nuna (alternatively known as Columbia) as Earth's first true supercontinent.

To which supercontinent did Australia most recently belong?  
Gondwana or Gondwanaland

Which other continents formed this supercontinent?  
South America, Africa, Arabia, Madagascar, India and Antarctica.

Why does the formation of supercontinents often coincide with the formation of desert sandstones? Supercontinents are so large that rain-bearing clouds will have dropped their water long before they make it to the centre of the huge continent. The centre of many large landmasses is desert, producing red, cross-bedded sandstones.

From the time when Australia was still part of Gondwana there is evidence of glaciation in a band of features such as U-shaped valleys, glacial drop stones, and moraines that runs through South America, Central Africa, North India and South Australia. None of these countries are currently near the South Pole. Explain why this is so. At that time all these places were close together over the South Pole. They have since moved apart, in different directions.

Glaciers move downhill away from the Poles. Stones held in the ice at the base and sides of the glaciers scrape deep scratches into the underlying rock. The scratches are aligned with glacier movement. These are known as glacial striations.

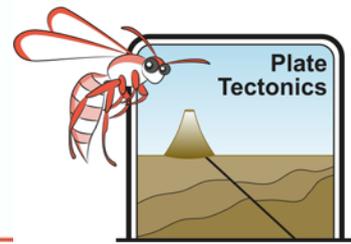
How can we use these striations to find where the South Pole was located in Gondwana? Since glaciers radiated downhill from the Poles, you can plot the orientation of striations on a map and where they converge is the position of the Pole.



Visit Geoscience Australia's site at [www.ga.gov.au/earthquakes/initRecentQuakes.do](http://www.ga.gov.au/earthquakes/initRecentQuakes.do) and use the real time data to learn about recent earthquakes in this part of the world.

Most earthquakes occur at plate margins. Australia lies in the middle of a tectonic plate. How do we get frequent earthquakes here in Western Australia? The Australian plate is moving northwards at about 3cm per 100 years. The eastern side is moving slightly faster than the west. This causes intra-plate stress, which is relieved by earthquakes and faulting.

# Supercontinents – Teacher Notes



## Cratons

What is a craton?

A craton is a thick part of the Earth's Continental Crust that has been stable over long periods of geological time.

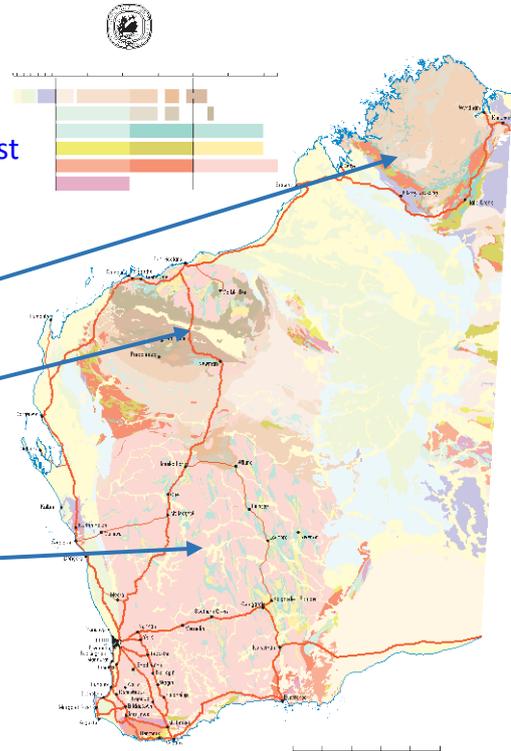
Where would you find cratons in WA?

Please locate them on the map.

Kimberley Craton

Pilbara Craton

Yilgarn Craton



The Yilgarn Craton is the largest remnant of Archean crust in Australia. It appears to have assembled between 3.2 and 2.8 billion years ago.

Cratons are interesting because they provide geological information from very early Earth, when tectonic processes may have been different. Heat remaining from the formation of the planet may have made convection currents within the Earth more fluid. This could explain how large deposits of very dense materials such as gold and nickel come to be found at the surface in rock of this age, but not in younger ones.

Cratons form the "anchors" round which tectonics plates accrete (stick onto).