

Uluru and Kata Tjuta – Teacher Notes

Uluru

The Central Australian Outback is famous for its red desert and for a large, enchanting monolith named Uluru. This rock is striking for the way it unexpectedly rises out of the surrounding, very flat, land; it towers 348 meters above the plain. Uluru is sacred to the local Yankunytjatjara and Pitjantjatjara people, and they ask that people do not climb it. Every year, about 250,000 people from around the world visit Uluru and it is a major icon of Australia.



Uluru is entirely made from a rock called arkose. Arkose is a coarse-grained sandstone that also contains lots of feldspar (25% or more). The landscape surrounding Uluru is currently mostly alluvial sediments (loose bits of rock moved there by erosion) which used to be mostly sedimentary rocks. Why might Uluru rise above the surrounding landscape?

Quartz and feldspar are very durable and resistant to weathering, so they have withstood weathering better than the weaker sedimentary rocks around them.

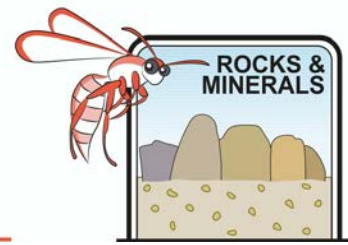
The arkose of Uluru also contains plenty of iron. What does the iron content have to do with the colour of the rock?

Iron oxidises in the air to form rust, which is red, which is the distinctive colour of Uluru.

Uluru has distinctive grooves down the sides of the rock. **What might have created these grooves?**

Weathering. As rainwater flows off the top of the rock, it collected in places to wear away pathways in the rock.





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Kata Tjuta

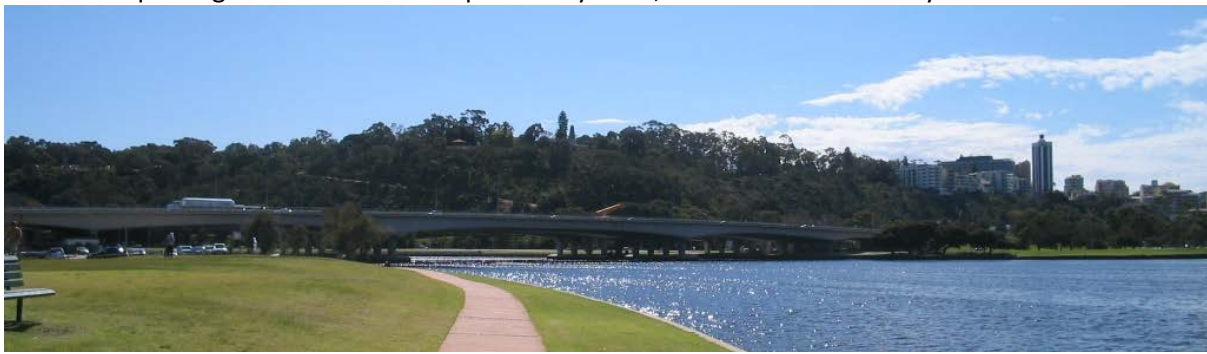
Only 25 km from Uluru stands another impressive rock outcrop called Kata Tjuta. In the local Pitjantjatjara language, Kata Tjuta translates to 'many heads', an appropriate name, considering Kata Tjuta is actually a series of 36 rock outcrops. Despite its proximity to Uluru, Kata Tjuta is made from an entirely different sort of sedimentary rock: conglomerate, with a variety of clast sizes ranging from boulders to pebbles cemented by quartz and feldspar. The clasts

are made of many different kinds of rock, including granite, basalt, gneiss, and volcanic rock. Both Kata Tjuta and Uluru were formed around the same time 600 million years ago.

What does the size of the clasts in Kata Tjuta suggest about the original depositional environment?
A variety of clast sizes suggests the deposit was very close to the source. Kata Tjuta was the river/ocean bed close to a mountain which has been completely eroded away.

What does the composition of the clasts in Kata Tjuta suggest about the original source rocks?
The variety of intrusive igneous rocks, metamorphic rocks, and extrusive igneous rocks suggests that the source was a volcanic mountain

Kings Park in Perth is another example of a hill rising out of its surrounding landscape, although it is only about 62 meters high. Kings Park is made of a limestone called Tamala Limestone, which you can see in the cliffs along Mounts Bay Road. This limestone is made of tiny fragments of marine shells and quartz grains which were deposited by wind, and then cemented by calcium carbonate.



For more information, visit:

- Uluru-Kata Tjuta National Park Geology. Australian Government Department of the Environment and Energy. <https://www.environment.gov.au/topics/national-parks/uluru-kata-tjuta-national-park/natural-environment/geology>
- How did Uluru Form? Ask an Expert. ABC Science. <http://www.abc.net.au/science/articles/2013/11/19/3872350.htm>