

The You Yangs

The You Yangs are a series of low granite ridges rising up to 300 m (at Flinders Peak) above the Werribee Plains, about 50 km WSW of Melbourne. The main ridge runs roughly N-S for about 9 km, with a lower extension running for about 15 km to the west.



Granite outcrops on the eastern face of the You Yangs
Photographer: Bill Birch. Source: Museum Victoria

Contrary to popular belief, the You Yangs are not the remains of a volcano. The granite that forms them was originally a mass of magma that had worked its way up into the surrounding sedimentary rocks during a period of geological time known as the Devonian, when the land surface in Victoria was several kilometres higher than today. The magma crystallised before it reached the surface, so it did not produce any volcanic activity. Instead, a very slow cooling rate allowed many large white crystals of feldspar to form. These can be seen in many of the granite outcrops throughout the ranges. In places the crystals appear to be lined up, probably because the sticky magma was still moving around when they were growing. The rock enclosing the big feldspar crystals mainly contains crystals of greyish quartz and two black minerals (hornblende and a variety of mica known as biotite).

There are also some tiny crystals of two minerals, allanite and titanite, that contain radioactive elements such as uranium and thorium. Titanite crystals have been used to calculate that the You Yangs granite solidified 365 million years ago. In many places in the granite there are dark grey clots and lumps. These are called 'xenoliths' and are pieces of sedimentary rock that have been caught up and baked by the magma.

The land surface has been lowered by erosion over the millions of years since the granite solidified, so it is now exposed. Because it is a hard rock, it has resisted erosion better than the rocks that surrounded it. The size and

shape of the rounded tors are controlled by fractures in the granite that resulted from slight shrinkage during cooling. Weathering and erosion of the granite has formed a blanket of sandy soil that covers any contacts with surrounding rocks.



View north from Flinders Peak
Photographer: Bill Birch. Source: Museum Victoria

The young volcanoes

The countryside surrounding the granite ridges is a lava plain. Known as the Werribee Plain, it forms part of the vast Western District Volcanic Plains that extend from Melbourne to the South Australian border. Volcanoes began erupting lava flows about 4.5 million years ago, and the youngest eruptions are only about 10 000 years old. There are over 400 mapped craters and vents on the plains. While all these individual volcanoes are extinct, the volcanic field itself is only dormant, so that a new eruption is possible at any time.

The nearest volcanoes are the Anakies, the three low hills on the western horizon. These all have summit craters and provided lava flows for the plains south of the You Yangs. There were also flows from the low volcanoes of Bald Hill and Spring Hill to the north. When these volcanoes were active, probably between 2 and 3 million years ago, the You Yangs would have been granite islands in a sea of lava.

Other geological features

The low wooded scarp along the western skyline is the Rowsley Fault, which has been active intermittently for millions of years. This fault is the western edge of a geological structure known as the Port Phillip Basin. Over

millions of years, this basin has experienced periodic flooding by the sea, which is now represented by Port Phillip Bay. At a time of high sea level, perhaps a million years or so prior to the volcanic eruptions, the You Yangs would have been granite islands in a sparkling sea. Sands and gravels containing marine fossils occur along the southern edge of the granite ridges and mark the beaches and shorelines that formed at that time.

