Landscapes around Canberra

- a geological excursion for students of all ages

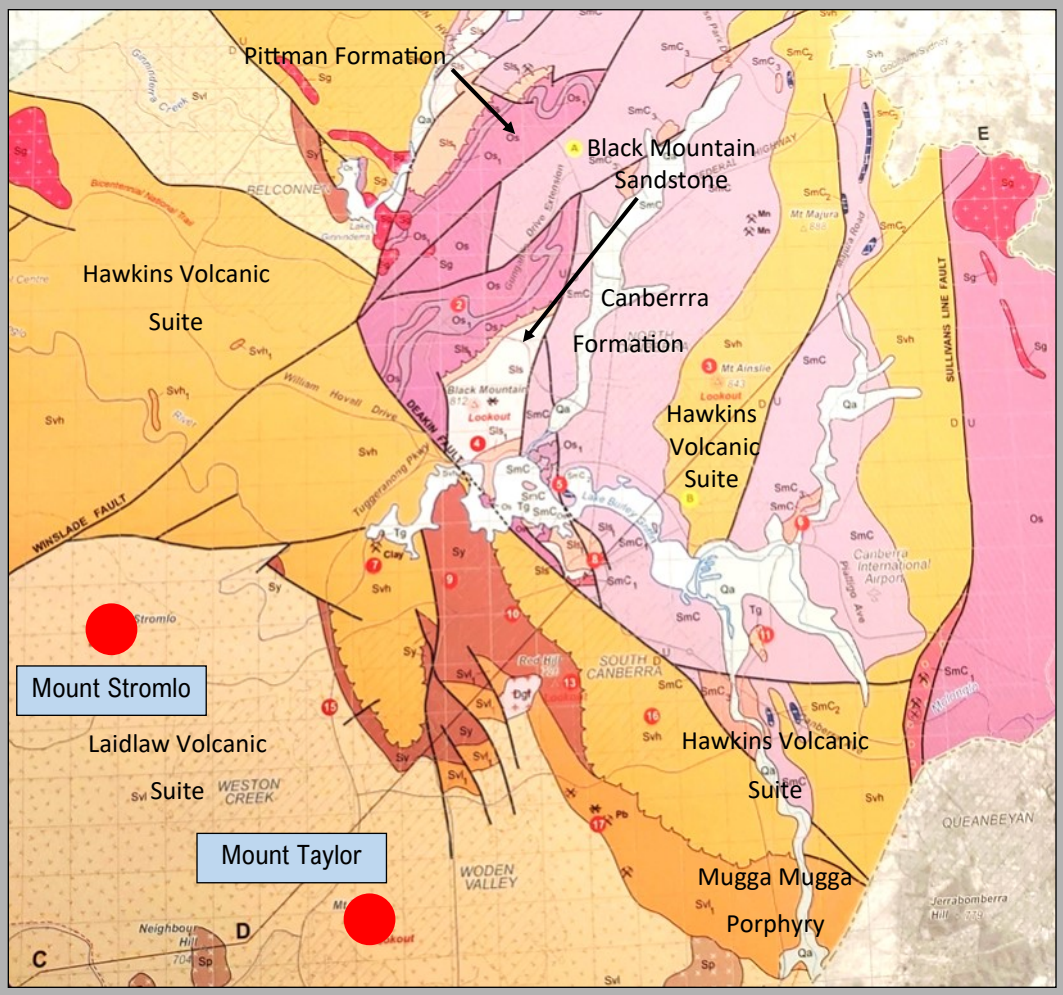
Mount Stromlo

Rock outcrops around Canberra tell us about the early history and evolution of the region's landscapes.

CANBERRA

Canberra region landscapes

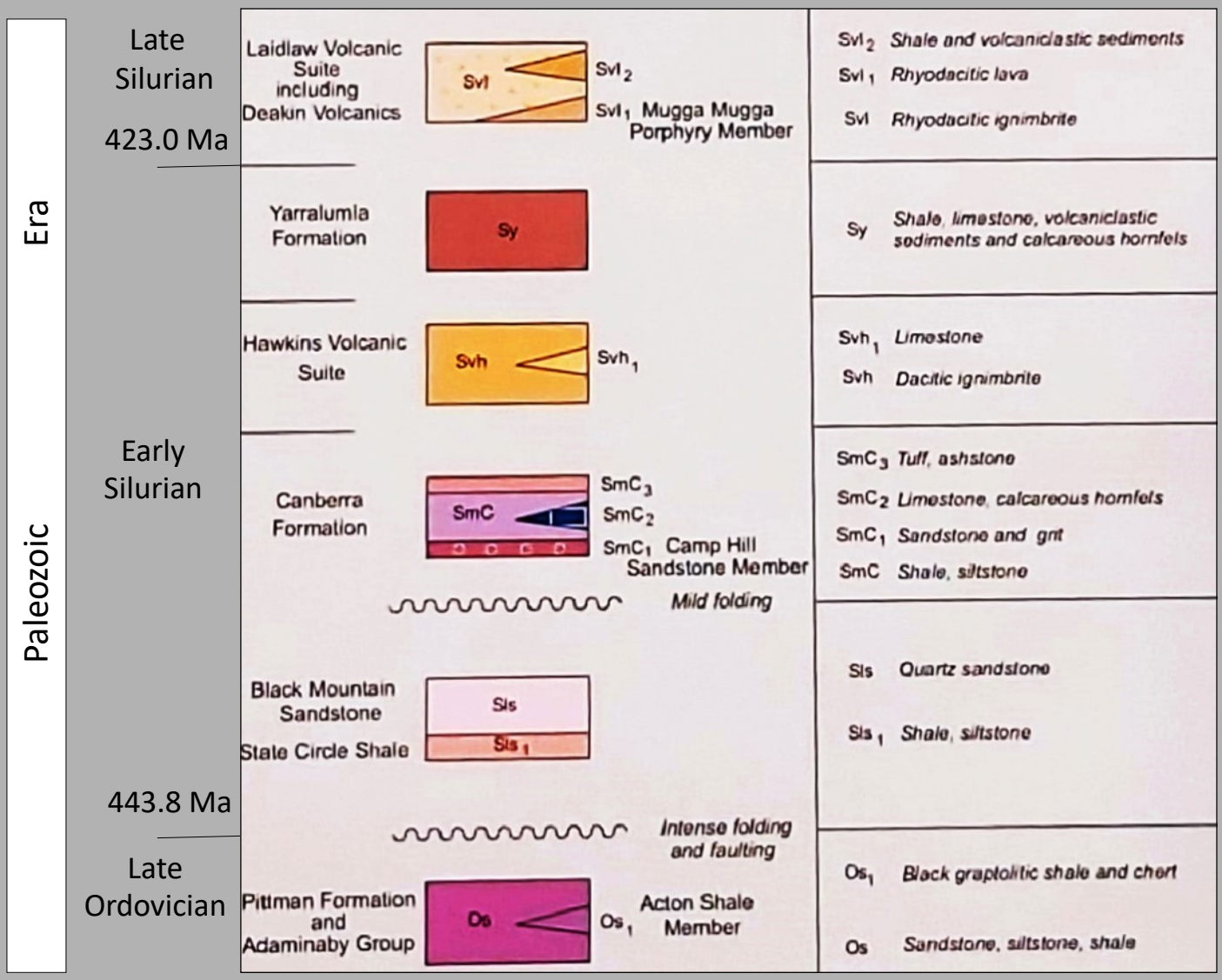
The landscapes around Canberra had their origins over 400 million years ago during the Paleozoic geological era on the margins of the Gondwana supercontinent. Since those formative years the landscapes have been shaped and deeply eroded to reveal the rocks we now see at outcrops around Canberra.



Simplified geology extract from — Geological Map of the ACT, 2008.

This publication was compiled for the ACT Division, Geological Society of Australia, by Douglas Finlayson.

Geology Map Legend



The Canberra region is in the southeastern part of the Lachlan Orogen (or Lachlan Fold Belt), a geological province that stretches from near South Australia to the Australian southeast Tasman Sea coast.

During the Paleozoic era this province was subjected to major orogenic (mountain building) events, the Benambran Orogeny Phase 1 (444-440 Ma) and Phase 2 (431-428 Ma) and the Tabberabberan Orogeny (about 400—370 Ma).

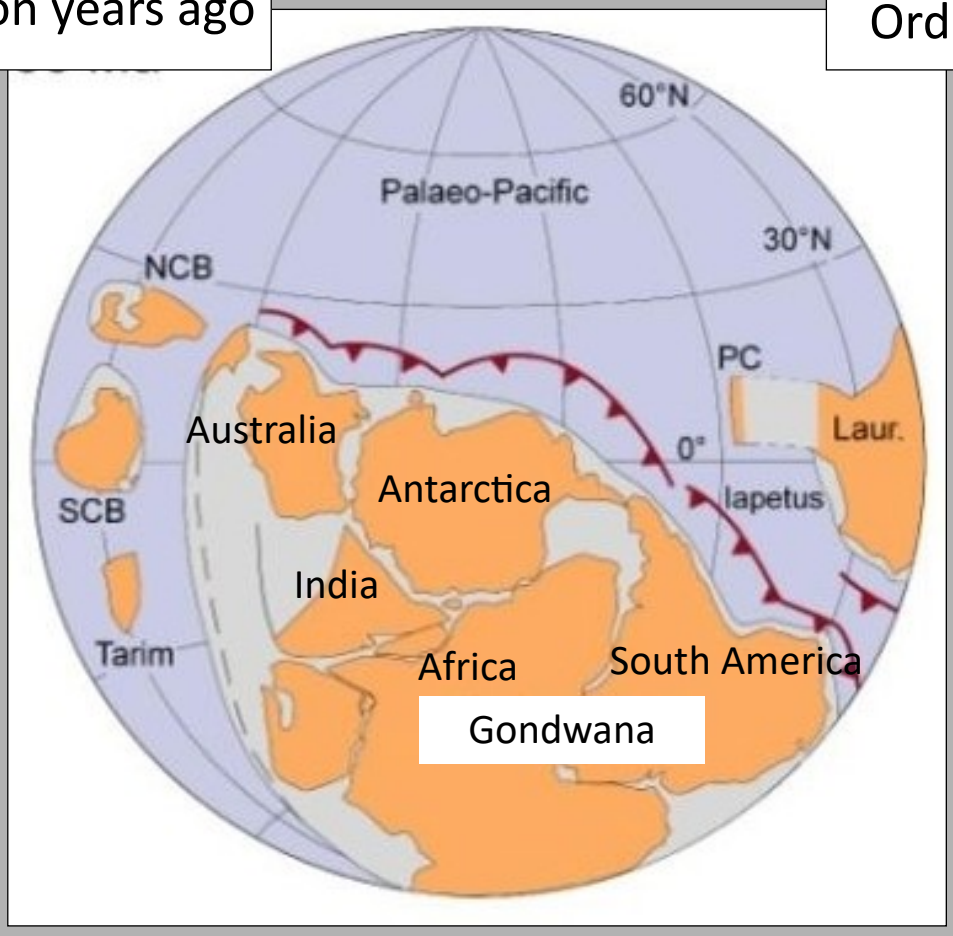
Ma = million years ago

Where has Australia been in the past?

Paleogeography

480 million years ago

Ordovician



From — Li and Powell, 2001.

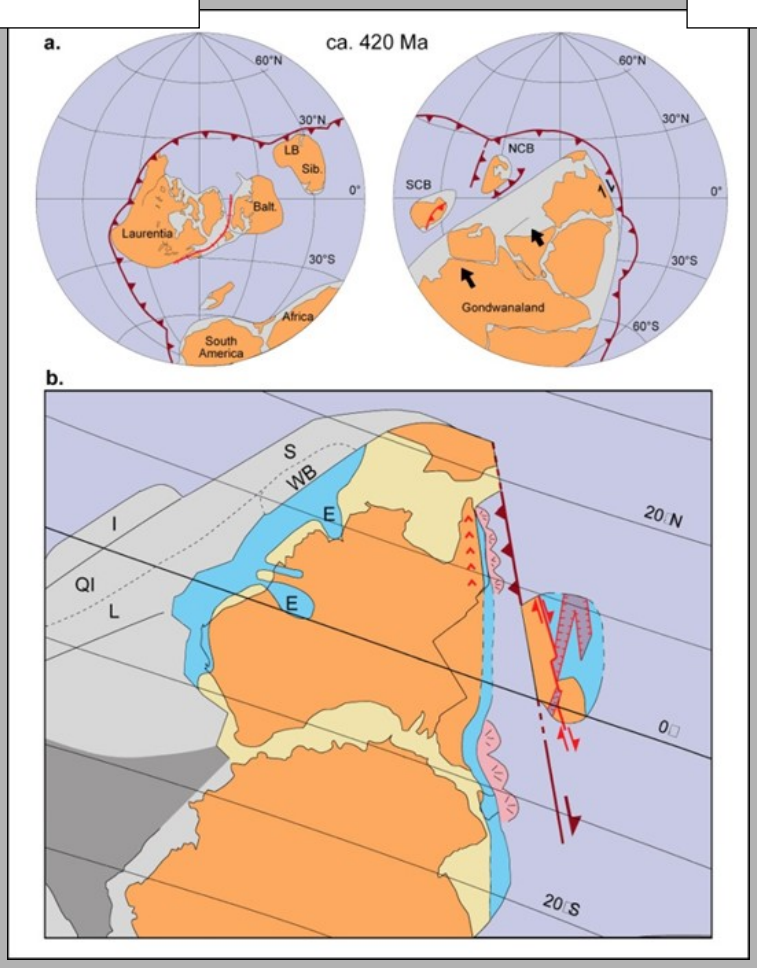
During the early part of the Paleozoic era Australia was part of the Gondwana supercontinent that also included India, Antarctica, Africa, and South America.

Australia was surrounded by warm waters north of the Equator. The Paleo-Pacific Ocean lithospheric plate was colliding with Gondwana and there were subduction zones, with associated volcanoes and earthquakes, dipping under the Australia-Antarctica-South America margins, much like the tectonic processes happening today under Japan and Indonesia.

Paleogeography

420 million years ago

Silurian



From — Li and Powell, 2001.

During the later part of the Paleozoic era, during the Silurian geological period, Australia was still part of the Gondwana supercontinent and still at tropical latitudes with the Paleo-Pacific Ocean lithospheric plate colliding with Gondwana with consequent subduction zones, volcanoes and earthquakes.

Mount Stromlo

The astronomical telescopes and other instruments at the ANU Mount Stromlo Observatory are firmly anchored to rocks of the Laidlaw Volcanic Suite.

The rocks are 427.70±0.12 million years old. They are rhyodacitic ignimbrites erupted from island arc volcanoes during the middle to late Silurian geological period, the same as those found at the summit of Mount Taylor far-there south in the Australian Capital Territory. The exact location of the regional centres of eruption are unknown.

Laidlaw Volcanics

Access

Access to the Mount Stromlo Observatory area is from the Cotter Road heading west from the Molonglo Town Centre area.

Mount Stromlo is also the site of a Satellite Laser Ranging Station managed by Geoscience Australia and currently operated by Electro Optic Systems (EOS). It is one of 42 stations throughout the world.

The station also monitors space debris resulting from satellite launching and breakup.

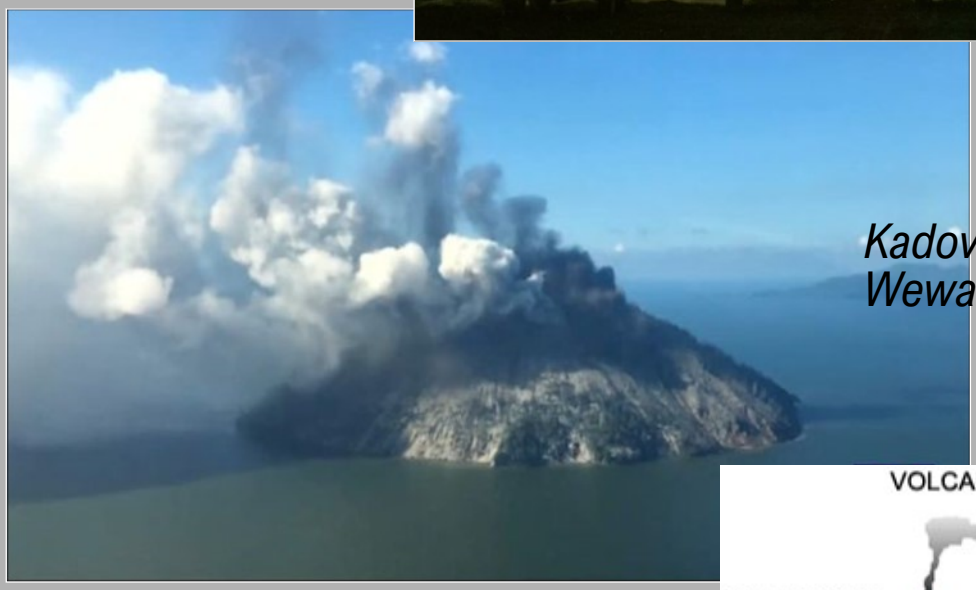
Mount Taylor

The rocks at the summit of Mount Taylor are also Laidlaw Volcanics. They are 427.70±0.12 million years old, the younger of two volcanic suites that were erupted in the Canberra region during the middle to Late Silurian geological period when the region was part of volcanic island chains on the margins of the Gondwana supercontinent. Outcrops are quite extensive in southern ACT.

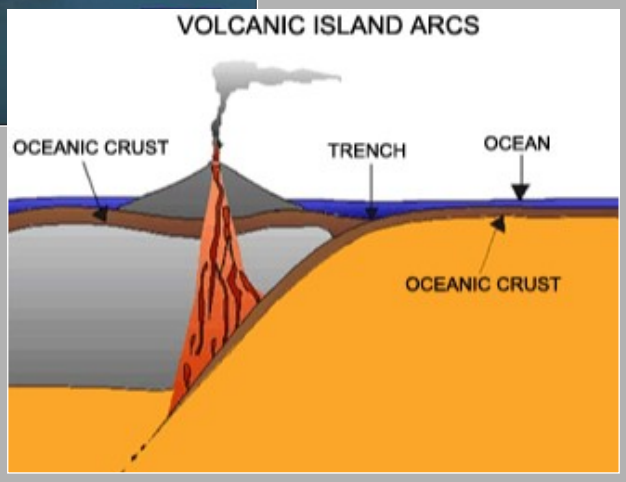
Island Arc Volcanoes

Examples of island arc volcanic eruptions from Papua New Guinea.

Rabaul, New Britain,1997



Kadovar Island near Wewak, 2018



Enjoy your excursion around Canberra

Further information on all geoheritage sites around Canberra can be downloaded from the Geological Society of Australia web site—

https://www.gsa.org.au/Public/Geoheritage/

and look for ACT Sites and Maps on the pulldown menu.