

Geology of the Tankwa Karoo

Like many places on earth the Tankwa Karoo has seen significant changes throughout various geological settings over billions of years of Earth history. The sediments which formed the rocks comprising the geology of the Tankwa Karoo were laid down in the deep southwestern portion of a large, intra-continental basin (Karoo basin) that stretched from east of present day Johannesburg to the north of where Ceres is now.

All of this happened around 258 million years ago and available evidence indicates that the water depth for the basin in this vicinity was between 500 – 700m. The slow and methodical ‘filling up’ of the Karoo with sediments over time happened before the initiation of the break up of Gondwanaland, which occurred around 18- -200 million years ago.

Subsequent to the deposition of the Tankwa sediments into the basin, which became rocks over time, a further 7 to 8km of younger sediments were deposited on top of them, themselves forming rocks over time. These latter rocks have been eroded over millions of years to reveal the present day landscape as we can observe it.

Evidence suggests that the Tankwa sediments were sourced from the ‘proto’ Andes mountains, located then ca. 700km from the southwestern portion of the Karoo. The Andes mountains are now thousands of km away!

Only fine-grained sedimentary rocks (sandstone and shale rock types) are to be seen in the Tankwa Karoo nowadays. At least five distinct sandstone and shale units have been identified.

Any oil or gas, which was formed as a matter of course, has been lost over time through seepage and degassing as there were no geological mechanisms to trap it and keep it. Oil and gas geologists have come from all over the world to see ‘first hand’ in the Tankwa what is usually only available to them through remote-sensing instruments and borehole data.

The rocks themselves have not been folded (bent/buckled) by earth pressure as in most other places where deep water, sandstone and shale fans are exploited for hydrocarbons, which makes them ideal to study and learn from. The Tankwa Karoo is a treasure trove to earth scientists and an amazing open-air laboratory – and it’s a beautiful place to feel one’s spirit in the open plains.

*A shortened version from the original article by Sven Coles:
<https://www.afrikaburn.com/binnekringblog/tankwa-geology>*