

Book Review

50 MUST-SEE GEOLOGICAL SITES IN SOUTH AFRICA

Gavin Whitfield

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South Africa has one of the oldest and most complex geologies on earth, with fine examples of classic geological topographies, many unique minerals and of course, significant riches in the form of exploitable industrial and precious minerals. The motivation for *50 Must-see geological sites in South Africa* can be found in the preface: “I have tried to provide information on a large selection of South Africa’s best known geological sites and landscapes, placed in their regional geological context, and to give the observer a good idea of what they are seeing.”¹

The book presents 50 of the most recognisable, accessible and geologically interesting sites around South Africa, including some of the historically (paleontological) renowned areas and some related to mining interests. Although the book has been compiled to cater for the interests of the lay person and visitor, geological jargon has been kept to a minimum and basic concepts explained in detail, practitioners in geography and geology would also find it an informative work.

This work is very well illustrated with a large number of photos, maps, satellite images and diagrams. It further includes an excellent glossary of technical terms and a guide for further reading. In the table of contents, chapters are divided according to South African provinces, with some neighbouring provinces sharing a chapter, making it easy to keep track of where these geological features can be found.

In the introduction, Whitfield defines the science of geology widely as the study of the origin and nature of the earth. Even though this is a very simplistic definition, he does not neglect the complex nature of the discipline and its subdivisions. These include the structure and development of the earth’s crust, the composition of its interior, individual rock types, geographical information systems, remote sensing,

environmental and mining geology, as well as forms of life found as fossils. This became clear as he later discusses South Africa's vast span of geological time, alluding to unique geological records from nearly 3,6 million years ago to date, thus providing insight into how the earth and its infinite variety of time forms evolved through geological time. Discussed here are southern Africa's large-scale geoheritage attractions from the oldest (Barberton Mountain Lands, ~3,4 million years) to the youngest (human evolution, 3 million years ago).

The diverse selection dealt with in the book includes sites such as the Stadsaal Caves, Howick Falls, Walter Sisulu National Botanical Gardens, Valley of Desolation, Tswaing Meteorite Crater and the Fraserburg Fossil Surface. Each site is discussed to reveal its key features, geological heritage, landscape and rock formations, topics of local or historical interest and things to see and do at the site and in the surrounding area. Some sites and terraces are perhaps less familiar than others, for example Paarl Rock, the Eye of Kuruman (in the Kudumane district adjacent to the Northern Cape) and Pilanesberg Complex.

For those readers wondering what or where these are, Paarl Rock is a set of three landmark rock domes, declared a provincial heritage site, 2 km from the town of Paarl, 60 km east–northeast of Cape Town. The author refers to them as a classic example of eroded granite. They are some of the largest domes in the country. An image of the three dome-shaped rocks appears in the book and shows clearly how they are distributed over the area. Also included in the book is an east–west geological cross-section of Paarl Mountain, showing major rock formations and landmarks.

The Eye of Kuruman is a provincial heritage site located in Kuruman, in North-West. It is the largest natural fountain in the Southern Hemisphere, delivering an astounding 20+ million litres of fresh water every day. The regional geology of the Eye is very interesting, as the Eye is found in the upper Campbell Rand Subgroup of the Griqualand West Basin, the western basin of the Transvaal Supergroup. Geological dates for these rocks indicate that they were formed 2,5 million years ago as chemical sediments deposited in warm, shallow marine conditions, making them one of the oldest dolomite formations known. They formed with the intimate assistance of algal life forms and were part of the early Earth's great oxygen generator through the process of photosynthesis.

The Pilanesberg Complex is located 40 km north of Rustenburg, in North-West. It is one of the largest volcanic complexes of its type in the world, and the rare rock types and formations make it a unique geological feature. It is geographically located within the Witwatersrand range comprising a vast circular crater of a very ancient extinct volcano that last erupted some 1,2 million years ago. Whitfield's work provides a simplified geological map of the Pilanesberg Complex, showing the roads and location of 15 demarcated geological sites that can be visited as well as the rough ring-like arrangement of steeply dipping geological formations.

50 Must-see geological sites in South Africa is a compelling book relevant in the fields of tourism, geography, history and geology. The GPS coordinates provided for each site makes it easy for one to navigate an unfamiliar area to reach the sites listed in the book. There are few if any better books currently available to help one grasp the complexities of South African geology, which contributed in shaping the topography of the country as we know it today. The work is factual, crisply and clearly written in an accessible style and makes for excellent reading. Gavin Whitfield's book is one of a kind for South African geology and will be well received in the fields of geography and military geography. People interested in studies of sustainable ecology and those inclined to a multi-interdisciplinary nexus, such as (social) history, the human–nature interface, history and anthropology may well find it useful.

Endnotes

¹ G Whitfield. *50 must-see geological sites in South Africa*. Johannesburg: Penguin Random House, 2015.