Chapter 12

The 10,000-Foot High Great Escarpment Southeast Africa

In this chapter, I will describe one of the many coastal Great Escarpments so the reader can appreciate how truly enormous these features are. I will also repeat some of the arguments presented in Chapter 11 to demonstrate the near impossibility of uniformitarianism to explain them, while they seem like a straightforward erosional feature left over from catastrophic Flood runoff.

The Coastal Great Escarpment of Southern Africa

The most impressive coastal Great Escarpment in the world is the mostly continuous one that runs parallel to the southwestern African coast from Namibia around the southern tip of Africa and northeast to the Limpopo River (Figure 12.1). The escarpment has some major gaps in it. We will take a closer look at this escarpment, mainly the part that lies in southeast South Africa. For a brief summary of the other coastal Great Escarpments see Appendix 5.

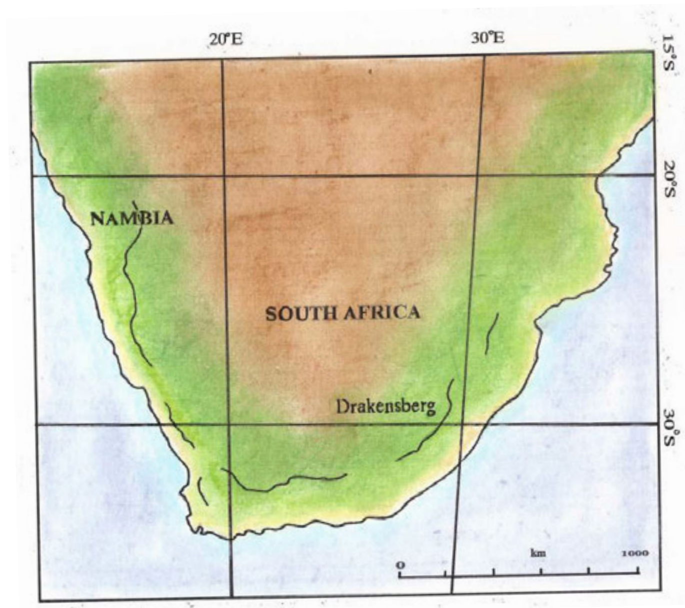


Figure 12.1. Great Escarpment that parallels most of the coast of Southern Africa (drawn by Mrs. Melanie Richard).

This coastal Great Escarpment is over 2,200 miles (3,500 km) long. It is a major erosional feature that separates a high planation surface from a more eroded coastal plain.[1] The high planation surface is part of the African Surface that covers much of Africa (see Chapter 42).[2,3] The escarpment is more than 60 miles (100 km) inland from the coast in Namibia and 60 to over 120 miles (100 to over 200 km) inland from the coast in southeast Africa. Except in Namibia, the scarp is formed on generally horizontal rock units.[4] The coastal plain of the Namib

[1] Ollier, C.D. and M.E. Marker, 1985. The Great Escarpment of Southern Africa. *Zeitschrift für Geomorphologie* N. F. 54:37–56.

[2] Burke, K. and Y. Gunnell, 2008. The African Erosion Surface: *A Continental-Scale Synthesis of Geomorphology, Tectonics, and Environmental Change over the Past 180 Million Years*, Geological Society of America Memoir 201, Boulder, CO.

[3] Oard, M.J., 2011. The remarkable African Planation Surface. *Journal of Creation* 25(1):111–122.

[4] Moon, B.P. and M.J. Selby, 1983. Rock mass strength and scarp forms in southern Africa. *Geografiska Annaler* 65A:135–145.

Desert is considered an erosion surface with several impressive inselbergs.[5] (See Volume II of this book on the subject of erosion/planation surfaces and inselbergs.)

Geologists and geomorphologists would like to correlate the erosion of the southern African escarpment with the geological structure or rock type. Softer rocks eroded faster than harder rocks—this is what is expected by uniformitarianism and this is what we observe today. However, the escarpment was formed on variable types of rocks with only local modification due to different rock types.[1,4,6] The erosion seems to have paid little attention to the hardness of the rocks, which is contrary to what would be expected by the uniformitarian paradigm. Ollier and Marker state: “The geological relationships thus show that the Great Escarpment is essentially erosional in origin while structure is of secondary importance.”[7]

The escarpment also crosses areas with a great variety of climates, ranging from warm humid to arid.[8] But yet it remains similar regardless of the climate; the climate seems to have had no impact on the origin and erosion of the escarpment. This is another anomalous feature for the uniformitarian principle. Remember that practically all geology is built upon this principle, despite the recent belief in a few, widely spaced catastrophes as discussed in Chapter 1.

Southeast Africa Bowed Upward

The escarpment is especially high along the southeast coast of South Africa where it is called the Natal Drakensberg or Drakensberg Escarpment. It separates Lesotho with altitudes exceeding 10,000 feet (3,050 m) msl from a deeply incised coastal plain. The

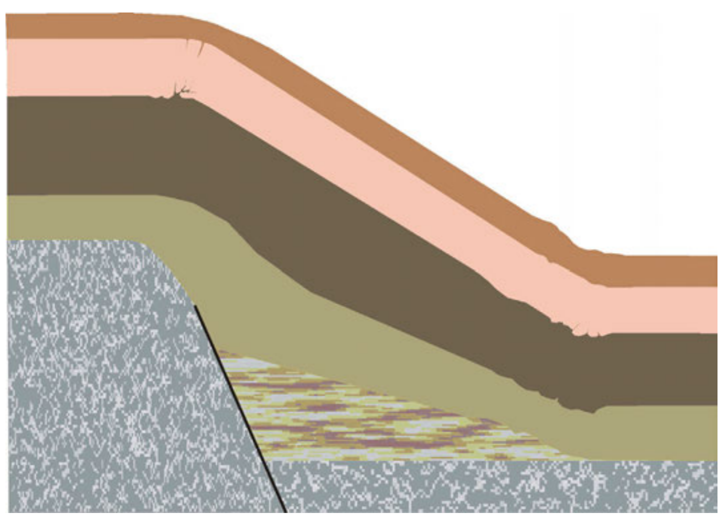


Figure 12.2. Diagram of a monocline (drawn by Peter Klevberg)

[5] Selby, M.J., 1982. Form and origin of some bornhardts of the Namib Desert. *Zeitschrift für Geomorphologie* N. F. 26:1–15.

[6] King, L.C., 1982. *The Natal Monocline*, second revised edition. University of Natal Press, Pietermaritzburg, South Africa.

[7] Ollier and Marker, Ref. 1, p. 43.

[8] Moon and Selby, Ref. 4, p. 135.

escarpment was eroded along a broad uplift with the axis generally near the escarpment and the greatest erosion along the eastern, coastal edge.[6,9] It was a monoclinal uplift. A monocline is a local or regional steepening or change in the dip of sedimentary beds [10] (Figure 12.2). The monocline forms one limb of an anticline or large fold in the strata. The western part of the fold would be west of the Great Escarpment.

While southern Africa was rising, the adjacent offshore areas were sinking and collecting the sediments eroded off the continent. South African geomorphologist, Lester King, commented on the dip of the seismically imaged sediments eroded from the continent to the offshore margin, indicating uplift during sedimentation:

We note that all the formations drilled dip offshore. The oldest and deepest formations dip at several degrees, the youngest and uppermost dip at less than one degree ... As the monoclinal tilting is always seaward, the land always moves up, *the ocean floor always goes down* (emphasis mine).[11]

The latter statement is a clear statement of Psalm 104:8 by a uniformitarian geomorphologist! It confirms that the continents rose at the same time the ocean basins sank (see Part II). The hinge line, which divides the rising land to the west from the subsiding crust to the east, is close to the coast. So, there is no disagreement between Flood geologists and uniformitarians over the broad structural pattern and the vertical tectonics that caused this coastal Great Escarpment. The major difference is over the timing and the mechanism.

Too Much Erosion for the Uniformitarian Timescale

There is, however, a major problem for uniformitarian scientists to account for so much erosion so fast. If the Great Escarpment started at the coast, which is widely believed, it would have to move about 100 miles (160 km) inland in only about 30 million years,2 which is extremely rapid within their timescale. This short amount of time is challenged by some scientists, since many believe it would take much longer than 30 million years to erode the escarpments. So they believe the escarpment to be much older.[12]

For southern Africa, King (1982) proposed the gradual retreat of the escarpment from near the coast to about 100 miles (160 km) inland, as I described in the in-depth section of Chapter 11.[1,6,13] Many at first accepted King's explanation,[14] although Moon and Selby[4] believed rock strength was another variable determining the escarpment slope.[15] Lately, geomorphologists appear to be stymied in trying to explain the tremendous horizontal erosion needed to form the escarpment where observed, so they advanced a model based more on downward erosion of the coastal strip with an essentially stationary escarpment (see Figure 11.4). This second hypothesis is unlikely, and what was considered the conventional wisdom as far as the gradual retreat of the escarpment is supported (see Chapter 11).

---

[9] Ollier and Marker, Ref. 1, pp. 49–50.

[10] Neuendorf, K.K.E., J.P. Mehl, Jr., and J.A. Jackson, 2005. *Glossary of Geology*, fifth edition, American Geological Institute, Alexandria, VA, p. 421.

[11] King, Ref. 6, p. 45.

[12] Moore, A.E., 1999. A reappraisal of epeirogenic flexure axes in southern Africa. *South African Journal of Geology* 102(4):363–376.

[13] Tucker, G.E. and R.L. Slingerland, 1994. Erosional dynamics, flexural isostasy, and long-lived escarpments: a numerical modeling study. *Journal of Geophysical Research* 99 (B6):12,229–12,243.

[14] Ollier, C., 1991. *Ancient Landforms*, Belhaven Press, New York, NY, pp. 122–123.

[15] Ollier and Marker, Ref. 1, p. 51.

Another aspect to be considered in the origin of the Southeastern Africa escarpment is the uplift of the area was fairly recent within the uniformitarian timescale, as indicated by the geomorphology of the coastal plain with steep perpendicular valley sides and steep river profiles showing that the rivers are not in equilibrium.[16] These are young rivers according to the uniformitarian paradigm. King remarked on the significance of such steep rivers: “So recent have the latest upheavals been that the rivers are still cutting down their rocky beds to compensate for the uplift...”[17] How can so much erosion have occurred so recently, given only present-day processes?

The Coastal Great Escarpment Formed by Flood Runoff

As already introduced at the end of Chapter 11, the Great Escarpment in Southeast Africa demonstrates all the earmarks of rapid Flood erosion.[18] As southern Africa uplifted out of the Floodwater, an elongated dome formed near the east coast (see Figure 11.1). The flow off domes would be like a retreating waterfall hundreds of miles long. Such Flood erosion would have no relationship to the present climate and little correlation to the hardness or softness of the rocks, as observed.

Figure 12.3 presents a schematic of what would be expected during the Flood formation of the African Surface (see Chapter 42), the main planation surface covering much of Africa, and the Great Escarpment of Southeast Africa as the African continent uplifted and the ocean basins sank.3 Flood erosion at the beginning of the Retreating Stage likely planed much of Africa down to a flat or nearly flat surface (Figures 12.3a and b), forming the African Surface.2 Later uplift and regional doming resulted in erosion of the African Surface into remnants of various sizes (Figure 12.3c). The coastal Great Escarpment of Southeast Africa likely was rapidly eroded from near the coast toward the interior, as the Floodwater was running more perpendicular off the uplifting large dome and towards the oceans (Figure 12.3d). Erosion did not form a second escarpment west of the rising dome likely because of the slower water movement caused by much less differential vertical motion in the interior of southern Africa. It was mainly near the coast with the uplifting dome and the downfaulting continental margin (differential vertical tectonics of tens of thousands of feet in a short time) that would cause rapid, very erosive Flood currents. Such sheet currents flowing off the continents would form Great Escarpments rapidly. The erosion of the Great Escarpment caused the erosion of the African Surface from near the coast to its present location and formed a coastal plain (Figure 12.3e).

---

16 King, Ref. 6, p. 27.

17 King, Ref. 6, p. 49.

18 Oard, M.J., 2008. Flood by Design: *Retreating Water Shapes the Earth’s Surface*, Master Books, Green Forest, AR, pp. 53–54.1

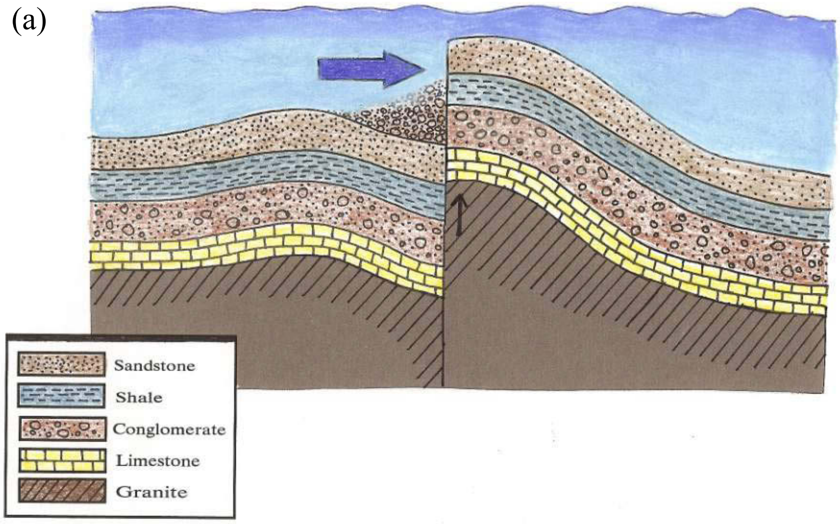
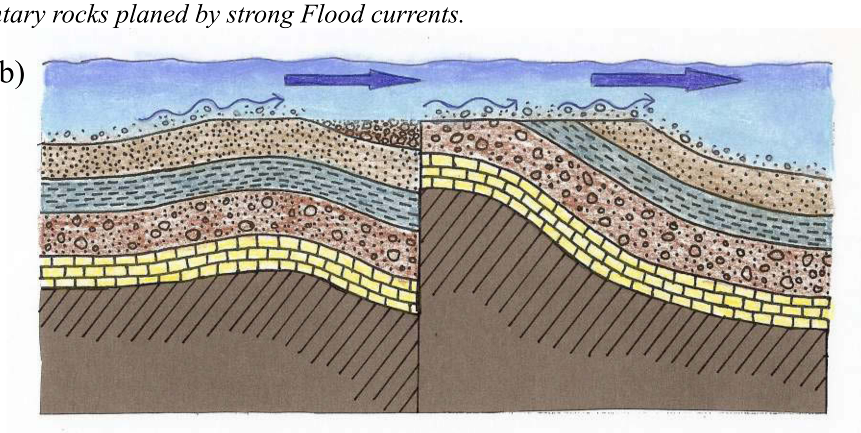
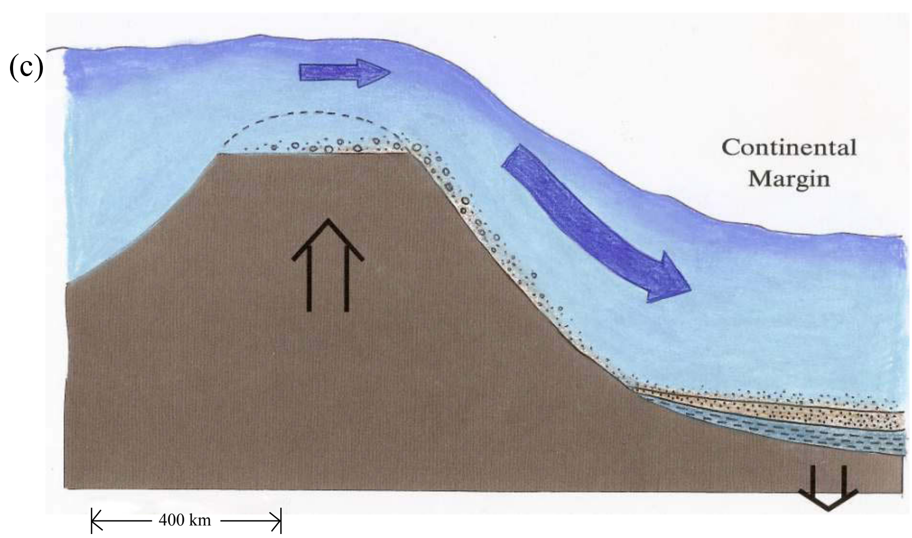


Figure 12.3. Series of schematics showing erosion and doming of southeast Africa as it uplifted out of the Floodwater while the ocean basins sank (great vertical exaggeration, drawn by Mrs. Melanie Richard).
a) After sedimentation of the African continent, the continent uplifts, faults, and sedimentary rocks tilt.
b) Sedimentary rocks planed by strong Flood currents.

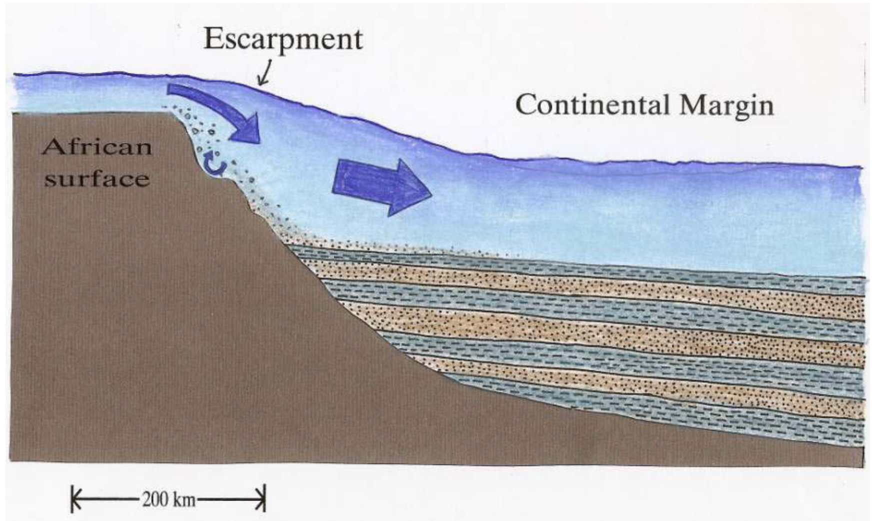


c) Focus shifted to the rise of south-east Africa with the uplift and erosion of a dome and the development of the continental margin. Sedimentary layers taken out.



d) Focus shifted to the erosion of the Great Escarpment in Southeast Africa. The escarpment erodes to the left as sediments continue to pile up on the continental margin.

(d)



e) The Great Escarpment now separates the high African Surface from a coastal plain. Eroded sediments formed the continental margin sedimentary rocks.

(e)