Chapter 22

Erosional Escarpments Favor a Late Cenozoic Boundary

It is not only the amount of erosion, but the character of erosion that places the Flood/post-Flood boundary in the late Cenozoic. Some erosional features are difficult, if not impossible, to explain by uniformitarianism or by post-Flood catastrophism.

Coastal Great Escarpments

Coastal Great Escarpments are high cliffs or steep slopes found along what are called Atlantic-type or passive continental margins (see Chapter 11). They are not associated with an offshore trench but possess a continental rise. Coastal Great Escarpments are often over 3,000 feet (1,000 m) high[1] and tend to run parallel to the coast. They are *not* the result of faults but erosion that moved the escarpment 10 miles to over 100 miles (16 to over 160 km) *inland* from the coast. Coastal Great Escarpments separate a high plateau (an erosional or planation surface, planed to low relief with erosional remnants) from a coastal plain of moderate relief. It is not an exaggeration to say coastal Great Escarpments represent some of the largest topographical features on earth.[2]

The best examples of coastal Great Escarpments are found in southern Africa, eastern Australia, eastern Brazil, and the western peninsula of India (Figure 22.1). The coastal Great Escarpment around southern Africa is over 2,200 miles (3,500 km) long (Figure 22.2). The Drakensberg part of this Great Escarpment, which is inland from the southeast African coast, is 10,000 feet (3,000 m) high. This massive erosional feature separates a high planation surface from the more eroded lower country near the coast.[3] The high planation surface is part of the African Surface which covers much of Africa.[4,5] The escarpment lies 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.

Almost the entire length of eastern Australia has an inland Great Escarpment. It extends over 1,500 miles (2,400 km) and varies in height from over 600 to around 3,000 feet (200 to 1,000 m) Figure 22.3 shows part of this continental scale escarpment in the Grose Valley west of Sydney, eastern Australia. There are several gaps in the scarp because it cannot be continuously traced with confidence in these areas. The escarpment separates a high plateau or tableland from a deeply incised coastal area, similar to southeast Africa and Namibia. The plateau is an erosion surface with the sedimentary rocks sometimes at a sharp angle with the erosion surface.

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[1] Ollier, C.D., 1985. Morphotectonics of passive continental margins: Introduction. *Zeitschrift für Geomorphologie N. F.* 54:1–9.
[2] Van der Wateren, F.M. and T.J. Dunai, 2001. Late Neogene passive margin denudation history—cosmogenic isotope measurements from the central Namib Desert. *Global and Planetary Change* 30:271–307.
[3] Ollier, C.D. and M.E. Marker, 1985. The Great Escarpment of Southern Africa. *Zeitschrift für Geomorphologie N. F.* 54:37–56.
[4] 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.
[5] Oard, M.J., 2011. The remarkable African Planation Surface. *Journal of Creation* 25(1):111–122.

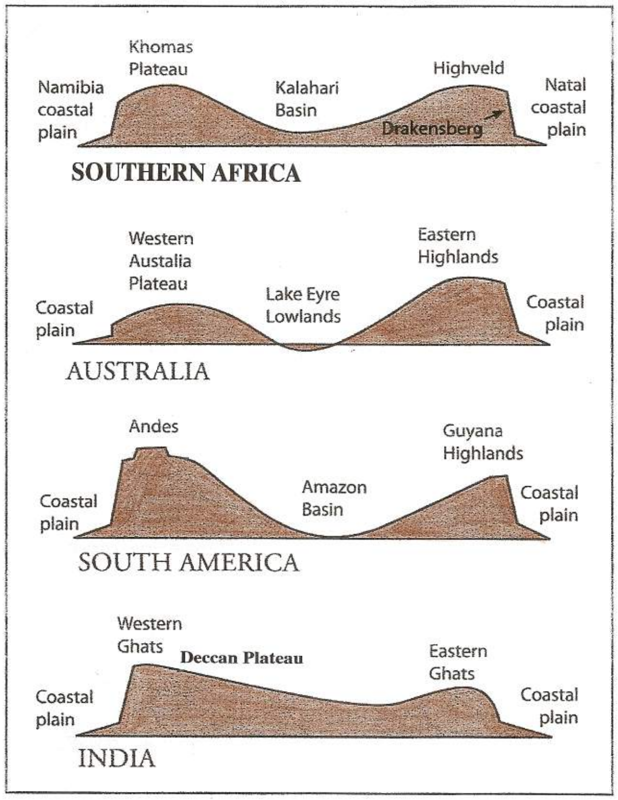

Figure 22.1. Similarities in coastal Great Escarpments from around southern Africa, eastern Australia, eastern Brazil, and the western peninsula of India (modified from Ollier, 1985a, p. 5 by Mrs. Melanie Richard).

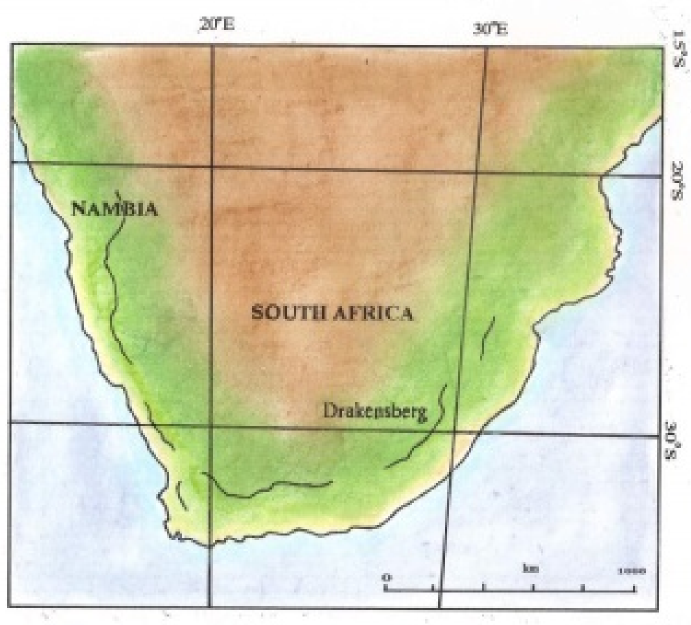

Figure 22.2. The Great Escarpment that parallels most of the coast of Southern Africa (drawn by Mrs. Melanie Richard).

Most of Peninsular India is ringed with an escarpment, similar to southern Africa. It is the best developed in the Western and Eastern Ghats. The word "ghat" simply means an ascent and can refer to a hill or an escarpment. The Western Ghats in particular are the most impressive with a total length of over 940 miles (1,500 km). The height of the escarpment varies, but its highest point is in the southern region and is at about 7,200 feet (2,200 m) above msl.[6] Although its distance from the coast varies from 20 to 60 miles (30 to 100 km), it is seldom more than 40 miles (60 km) inland. The escarpment is most distinct in the north where the western edge of the huge Deccan lava province helps preserve the steep cliffs.

In eastern Brazil there is a very well defined escarpment that separates a high area in eastern Brazil, called the Brazilian Plateau, from a coastal plain,[7] similar to other coastal Great Escarpments. It has been given various local names. The largest section is called the Serra do Mar and extends 500 miles (800km) parallel to the coast with a maximum height of 7,300 feet (2,245 m).[8] It resembles the Western Ghats in India.

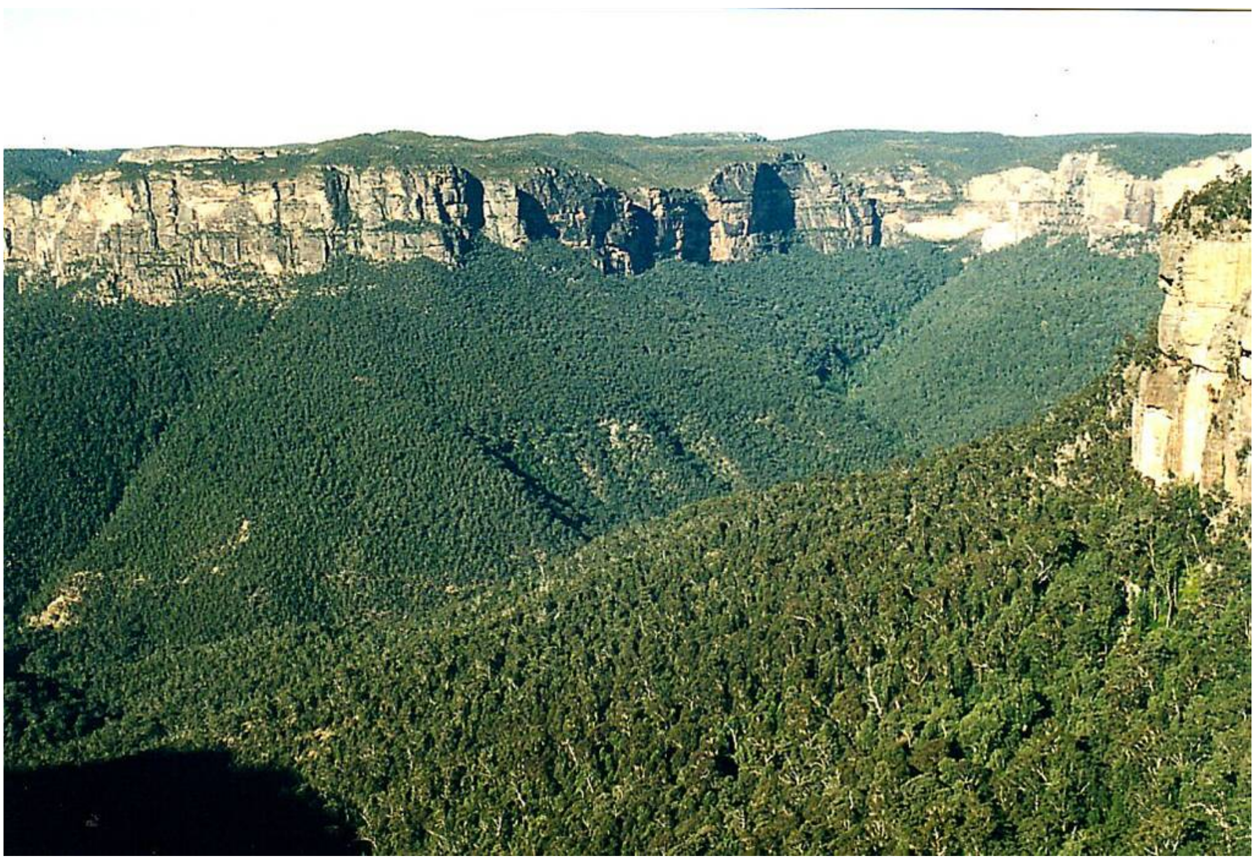

Figure 22.3. Australian Great Escarpment in the Grose Valley west of Sydney, Australia, from Govett's Leap (courtesy of Tas Walker).

[6] Ollier, C.D. and K.P. Powar, 1985. The Western Ghats and the morphotectonics of Peninsular India. *Zeitschrift für Geomorphologie N. F.* 54:57–69.
[7] Ollier, Ref. **Error! Bookmark not defined.**, p. 11.
[8] Ollier C. and C. Pain, 2000. *The Origin of Mountains,* Routledge, London, U.K., pp. 210–211.

The Blue Ridge Escarpment in the eastern United States is a smaller version of a coastal Great Escarpment. The Blue Ridge Escarpment of the southern Appalachian Mountains is about 310 miles (500 km) long and averages 1,000 to 1,640 feet (300 to 500 m) high.[9,10] It is the most abrupt in western North Carolina, where it rises vertically about 2,000 feet (600 m).

How Can Great Escarpments Be Explained by Post-Flood Catastrophism?

Providing an explanation for the origin of coastal Great Escarpments is difficult for uniformitarianism.[11] It is also difficult for post-Flood catastrophism. Coastal Great Escarpments are erosional escarpments; they eroded from near the coast tens of miles away to where they are now. What kind of post Flood catastrophe can explain this extensive retreat of a cliff, and from water erosion flowing over the top? There is no evidence for huge landslide deposits offshore, if the erosion was by mass wasting as advocated by Whitmore.[12] There doesn't seem to be any viable post-Flood mechanism or even suggestion to explain coastal Great Escarpments.

Great Escarpments Explained by Flood Runoff

Field evidence suggests to uniformitarian geologists that escarpment erosion was very rapid within their timescale. It is thought that some escarpments eroded horizontally inland from the coast up to 100 miles (160 km) in a few tens of millions of years. It is admitted by those who have studied coastal Great Escarpments of passive margins that the escarpment was formed by continental uplift while the ocean basins sank.

Therefore, coastal Great Escarpments can be placed in the Sheet Flow Phase of the Retreating Stage of the Flood (see Figure 4.3), when the mountains rose and the valleys sank. Runoff perpendicular to the coast, like a gigantic waterfall hundreds of miles long, can readily explain the erosion that formed the coastal Great Escarpments. The pattern fits well with the enormous continental erosion that took place during the Retreating Stage of the Flood. Figure 11.7 in Chapter 11 not only shows the origin of the continental margin, but also the formation of coastal Great Escarpments during Flood runoff.

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[9] Oard, M.J., 2011. Origin of Appalachian geomorphology Part I: erosion by retreating Floodwaterand the formation of the continental margin. *Creation Research Society Quarterly* 48(1):33–48.

[10] Spotila, J.A., G.C. Bank, R.W. Reiners, C.W. Naeser, N.D. Naeser, and B.S. Henika. 2004. Origin of the Blue Ridge escarpment along the passive margin of Eastern North America. *Basin Research* 16:41–63.

[11] Oard, M.J., 2013 (ebook). *Earth's Surface Shaped by Genesis Flood Runoff*. http://Michael.oards.net?GenesisFloodRunoff.htm.

[12] Whitmore, J., 2013. The potential for and implications of widespread post-Flood erosion and mass wasting processes; in: Horstemeyer, M. (editor), *Proceedings of the Seventh International Conference on Creationism*, Creation Science Fellowship, Pittsburgh, PA.