Chapter 23

Planation Surfaces: The Boundary Is in the Late Cenozoic

Many of the earth's surface features provide strong evidence for the Flood/post-Flood boundary being in the late Cenozoic. Probably the most definitive evidence from geomorphology is planation surfaces.[1,2] An erosion surface is: "A land surface shaped and subdued by the action of erosion, esp. by running water. The term is generally applied to a level or nearly level surface"[3] An erosion surface is often synonymous with a planation surface, but it is usually regarded as a rolling surface with low relief. Planation and erosion surfaces can be seen in many areas of the world.[4] Today, comparatively small planation surfaces are formed when a river floods, overflows its banks, and planes bedrock to a horizontal or near horizontal surface.[5] These are on a very small scale. Present processes do not form planation surfaces of any *significant size.* The large-scale planation surfaces that are commonly found on the Earth's surface are contrary to the principle of uniformitarianism. A planation surface found on Africa is on a continental scale. If we use small planation surfaces, as those sometimes seen along the edge of a river, as an example, we can extrapolate the current size of many planation surfaces to deduce there were once enormous flows of water planing the surface—very much larger than anything we have ever observed in the present day.

Some planation surfaces have actually been exhumed, in other words, they formed early in the Flood, were covered by sediments, and then re-eroded, exposing the original surface. We must be careful not to confuse exhumed planation with those formed during surface erosion.

Planation Surfaces Occur in Different Topographic Contexts

Planation surfaces are found in many topographic circumstances: 1) valley bottoms, 2) hill slopes, 3) pediments, 4) mountaintops, and 5) plains or plateaus. The last three are readily noticed, but the first two are somewhat difficult to discern. A pediment is: "A broad sloping rock-floored erosion surface or plain of low relief, typically developed by subaerial agents (including running water), in an arid or semiarid region at the base of an abrupt and receding mountain front or plateau escarpment…"[6] In other words, a pediment is a planation surface at the base of a mountain, mountain range, hill, or ridge. Pediments are common worldwide and will be discussed in Chapter 26.

Planation Surfaces Not Forming Today and Have Been Reduced in Size

Planation surfaces are not forming today but are being destroyed or reduced in size by

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[1] Oard, M.J., 2014. *Earth's Surface Shaped by Genesis Flood Runoff.* http://michael.oards.net/GenesisFloodRunoff.htm.
[2] Oard, M.J., 2008. *Flood by Design: Receding Water Shapes the Earth's Surface*. Master Books, Green Forest, AR.
[3] Neuendorf, K.K.E., J.P. Mehl, Jr., and J.A. Jackson, 2005. *Glossary of Geology*, Fifth Edition. American Geological Institute, Alexandria, VA, p. 217.
[4] Oard, M.J., 2006. It's plain to see: flat land surfaces are strong evidence for the Genesis Flood. *Creation Ex Nihilo* 28(2):34–37.
[5] Crickmay, C.H., 1974. *The Work of the River: A Critical Study of the Central Aspects of Geomorphology*, American Elsevier Publishing Co., New York, NY, pp. 205, 214.
[6] Neuendorf, K.K.E., J.P. Mehl, Jr., and J.A. Jackson, 2005. *Glossary of Geology*, Fifth Edition. American Geological Institute, Alexandria, VA, p. 477.

weathering and erosion. They were formed in the past by some large watery event.

Once formed, a planation surface was subsequently modified. Many times the edges are eroded. Other times, canyons or valleys were carved through the planation surface, dissecting the surface into erosional remnants. Sometimes a planation surface is faulted, breaking it up into surfaces at different elevaions. Rarely, volcanic debris covers one and disguises it.

Figure 23.1. Picture of top of the tableland of eastern Australia, an erosion surface with erosional remnants left behind called either inselbergs or monadnocks.

Planation Surfaces Worldwide

Planation surfaces are a vast and common feature found around the world. Most of Africa is a planation surface that has been warped and faulted to different levels.[7,8] The Tibetan Plateau is another huge planation surface, which covers an area of about 273,000 mi^2 (700,000 km^2). It was later heavily dissected by erosion.[9] One Chinese scientist described it as a "…vast planation surface."[10] Dewey and others called it, "…a remarkably level plateau…"[11] The large-scale

[7] Oard, M.J., 2011. The remarkable African planation surface. *Journal of Creation* 25(1):111–122.
[8] Burke, K. and Y. Gunnell, Y., 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.
[9] Fielding, E.J., 2000. Morphotectonic evolution of the Himalayas and Tibetan Plateau. In, Summerfield, M.A. (editor), *Geomorphology and Global Tectonics*, John Wiley & Sons, New York, NY, pp. 201–222.
[10] Wright, J.S., 2001. "Desert" loess versus "glacial" loess: quartz silt formation, source areas and sediment pathways in the formation of loess deposits. *Geomorphology* 36:240.

picture shows it to be extremely flat as described by Fielding and colleagues: “Concerning the first factor, at moderate to long wavelengths from tens to hundreds of kilometres, central Tibet is extremely flat…”[12] Why Tibet is so flat over much of its area is a mystery since it is within a plate tectonic collision zone: “How can central Tibet have low relief in spite of its location in the middle of an active continental collision zone?”[12]

Planation surfaces are found on other continents as well. Much of Australia is planed into either a planation surface or an erosion surface, as those found on the Tableland, the high area of eastern Australia (Figure 23.1). The Piedmont east of the Blue Ridge Mountains (Figure 23.2) and the Appalachian Plateau, west of the Blue Ridge Mountains (Figure 23.3) are planation surfaces, the latter being deeply eroded and dissected. There are four levels of planation surfaces on the High Plains of Montana and adjacent Canada, the highest being the Cypress Hills (Figure 23.4), about 2,500 feet (760 m) above the adjacent rivers. Europe and even Antarctica have planation surfaces, represented by flat topped mountains that rise above the ice sheet.

Figure 23.2. A lake on the Piedmont near Parkersville, showing the general flatness of the erosion surface east of the Blue Ridge Mountains, eastern United States.

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[11] Dewey, J.F., R.M. Shackleton, C. Chengfa, and S. Yiyin, 1988. The tectonic evolution of the Tibetan Plateau. *Philosophical Transactions of the Royal Society, London* A327:379–413.

[12] Fielding, E., B. Isacks, M. Barazangi, and C. Duncan, 1994. How flat is Tibet? *Geology* 22:166.

Figure 23.3. Planation surface of the Cumberland Plateau of the southern Appalachian Plateau, west of the Blue Ridge Mountains, eastern United States.

Planation Surfaces Eroded by Water in the Cenozoic

It is important to note a planation surface is *eroded into hard rock* or sometimes into unconsolidated sediment by an *erosive watery mechanism*. It is not a surface of deposition, as are river terraces, river bars, flood plains, or alluvial fans.

The vast majority of the Earth's planation surfaces were eroded by water *in the Cenozoic*. In Cliff Ollier and Colin Pain's book, *The Origin of Mountains*, they state planation surfaces were actually formed in the late Cenozoic (the Pliocene and Miocene):

> There is nothing special about the climate in the late Miocene-Early Pliocene period [late Cenozoic] when there often occurred planation that suggests an increased erosion rate, and in any case the mountains discussed are in a wide range of latitudinal and climatic situations. At present, the cause of the observed high rate of planation remains a mystery.[13]

Ollier and Pain attempt to attribute planation surfaces to climate change, but no one knows how a wetter climate would plane the land. In fact, it is well known that water erosion does just the opposite; it dissects the land. Lester King also accepts the late Cenozoic formation of worldwide

[13] Ollier, C. and C. Pain, 2000. *The Origin of Mountains*, Routledge, London, U.K., p. 302.

planation surfaces.[14]

Figure 23.4. The flat surface of the Cypress Hills at Upper Battle Creek. The surface has been partially dissected, likely from glacial meltwater rivers, since large crystalline boulders from the Ice Age were found within the valley.

The existence of planation surfaces shows the bankruptcy of uniformitarianism and even the vague concept of actualism, in which the features were formed in the past by some "natural process" that is not observed today. But what uniformitarians find so perplexing is easily explained within the Retreating Stage of the Flood, mainly during the Sheet Flow Phase in which wide, fast moving currents planed the land down to a flat surface.[1]

How Can Planation Surfaces Form after the Flood?

It is very significant that planation surfaces are not forming today and are instead being destroyed. Scientists agree they were originally formed by water. The best explanation for a worldwide, water formed feature that includes the tops of mountains and plateaus is a global Flood and not a series of local floods or catastrophes. The most likely time for their formation is the late Cenozoic, if we assume the geological column as a reliable measure.

It is highly unlikely planation surfaces formed after the Flood. Local flood water had to cover the flat-topped mountains and high plateaus. Local or regional floods are incapable of planing at this height, unless there were no mountains and plateaus early in the Flood, which presents other problems. According to the K/T Boundary Model, as well as within the late Paleozoic and Precambrian Boundary Models (see Chapters 40 and 41), the local or regional flooding occurred

[14] King, L.C., 1983. *Wandering Continents and Spreading Sea Floors on an Expanding Earth*, John Wiley and Sons, New York, NY, pp. 19, 86.

a few hundred years after the Flood. If this were true where is the eroded debris? It is not nearby but on the continental shelf, slope, and rise, once again pointing to much more than a local or regional event. Planation surfaces are a predicted Retreating Flood feature, not a post-Flood feature. In conclusion, planation surfaces represent a clear testimony that the Flood/post-Flood boundary is in the late Cenozoic, often in the very late Cenozoic.