Chapter 9

Tall Erosional Remnants Demonstrate Catastrophic Erosion

I have established that the continents are greatly eroded. Was this deep erosion slow over millions of years, as would be expected by assuming present processes of erosion and transport? Or was the erosion rapid, as we would expect during Flood runoff? Is there any way to test these two paradigms? Yes, we can test whether erosion was slow or rapid by the characteristics of the erosional remnants.

Erosional Remnants

After the extensive erosion of the continents, numerous erosional remnants were left behind. Erosional remnants come in many shapes and sizes and have been given different names, such as inselbergs (see Chapter 1). An inselberg is, "A prominent, isolated residual knob, hill, or *small mountain* … usually smoothed and rounded, rising abruptly from and surrounded by an extensive lowland erosion surface…[1] Ayers Rock shown in Figure 1.6 is a good example of an inselberg. Tens of thousands of inselbergs are located above planation surfaces across the earth. The subject of inselbergs will be analyzed in more depth in Part XI.

In this chapter, I will examine several erosional remnants to see what message they have for us on the rate of erosion. Tall, narrow remnants are the most significant for estimating the rate of erosion.

Figure 9.1. Devils Tower in northeast Wyoming. Note the vertical fractures, called joints, that should result in rapid erosion from the freeze-thaw mechanism.

Devils Tower

The best example of an erosional remnant that strongly suggests catastrophic erosion is Devils Tower.[2] Devils Tower is located in the northern Powder River Basin of northeast Wyoming in the United States (Figure 9.1). It stands about 1,250 feet (380 m) above the Belle Fouche River Valley to the south and reaches an altitude of 5,115 feet (1,560 m)

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[1] Neuendorf, K.K.E., J.P. Mehl, Jr., and J.A. Jackson, 2005. *Glossary of Geology*, fifth edition, American Geological Institute, Alexandria, VA, p. 328.

[2] Oard, M.J., 2009. Devils Tower can be explained by floodwater runoff. *Journal of Creation* 23(2):124–127.

msl. It is about 900 feet (275 m) above the general altitude of the High Plains of eastern Wyoming. Because of its scenic beauty and scientific interest, President Theodore Roosevelt established Devils Tower and a small area surrounding it as the first national monument in 1906.

The vertical, round tower is 1,000 feet (300 m) in diameter at its base and is composed of a rock called phonolite porphyry, a hard igneous rock similar to basalt. The same rock also intrudes elsewhere through the sedimentary rocks in the region.[3] Just west of Devils Tower are the Missouri Buttes that have same kind of rock.

Figure 9.2. The "feathers" of eastern Washington composed of a single row of large columns from the Columbia River Basalt. The features were exposed by erosion on either side by the Lake Missoula flood. The feathers is a popular rock climbing location.

When the igneous rock of Devils Tower cooled and contracted, vertical columns with regular cracks were formed, just like those in the large basalt flows that cooled in the extensive Columbia River Basalt flows in Washington, northern Oregon, and adjacent Idaho (Figure 9.2).

A Kiowa Native American legend suggests the cracks and vertical columns were caused by a great bear raking the sides in trying to get children trapped at the top of the Tower. The phonolite porphyry is believed to be 33 to 55 million years old, and therefore erupted in the early to middle Cenozoic of the uniformitarian timescale (see Figure 5.3).[4]

The Origin of Devils Tower

The circular shape of the tower has led most geologists to conclude that Devils Tower was the conduit or throat of an ancient volcano.[5,6] If so, it had to *erupt through sedimentary rocks* that once extended to well above the top of the tower. This means that over 1,000 feet (300 m) of sedimentary rocks have been eroded around the tower, and by inference, from this entire region of northeast Wyoming. Further evidence of this much erosion having taken place are the Pumpkin Buttes, a sedimentary erosional remnant about 1,000 feet (300 m) above the surrounding plains, farther southwest in the middle of the Powder River Basin.[7]

However, there are three other hypotheses for the origin of Devils Tower. A second hypothesis is that the tower represents an igneous intrusion, called a stock and that it solidified deep underground. A third hypothesis postulates Devils Tower is an eroded

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3 Robinson, C.S. and R.E. Davis, 1995. *Geology of Devils Tower*, Wyoming, Devils Tower Natural History Association.

4 Robinson and Davis, Ref. 3, p. 1.

5 Blackstone, Jr., D.L., 1988. Traveler's Guide to the Geology of Wyoming, second edition. Geological Survey of Wyoming Bulletin 67, *Geological Survey of Wyoming*, Laramie, WY, p. 42.

6 Lageson, D.R. and D.R. Spearing, 1988. *Roadside Geology of Wyoming*, Mountain Press, Missoula, MT, pp. 98–100.

7 Blackstone, Ref. 5, pp. 94–95.

laccolith, which is a mushroom-shaped, igneous intrusion. A fourth idea, shown on the new road sign (Figure 9.3), states that Devils Tower is a remnant of a sill, which is lava forced to flow between two sheets of sedimentary rock. The lava then solidified and the rock later eroded. Generally, the erosion of a stock or laccolith is unlikely to produce a circular feature like Devils Tower. The suggestion that erosion of a sill would result in such a circular tower stretches credulity. Therefore, the first hypothesis of a volcanic conduit is the most reasonable explanation.

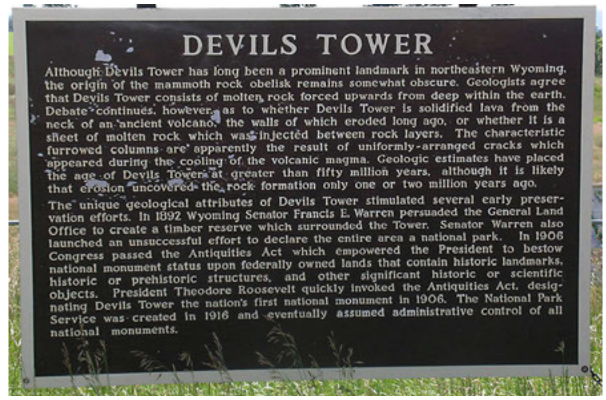

Figure 9.3 A new road sign which states that Devils Tower may be a sill and become exposed in only the last 1 to 2 million years

Plains Erosion Believed Much More than 1,000 Feet

Regardless of which hypothesis is correct, the important point is that Devils Tower was once *completely* covered in sedimentary rocks, and these rocks have been eroded exposing Devils Tower. Since the top of the tower is the minimum depth, how much more sedimentary rocks were above the top of the tower? A sign in the visitor's center states that the sedimentary rock was once 7,870 feet (2.4 km) above the tower and eroded over 50 million years. The sedimentary rock would have been six times the height of Devils Tower. This uniformitarian interpretation could easily be true minus the 50 million years. We learned earlier from Chapter 8 that the continents have been tremendously scoured.

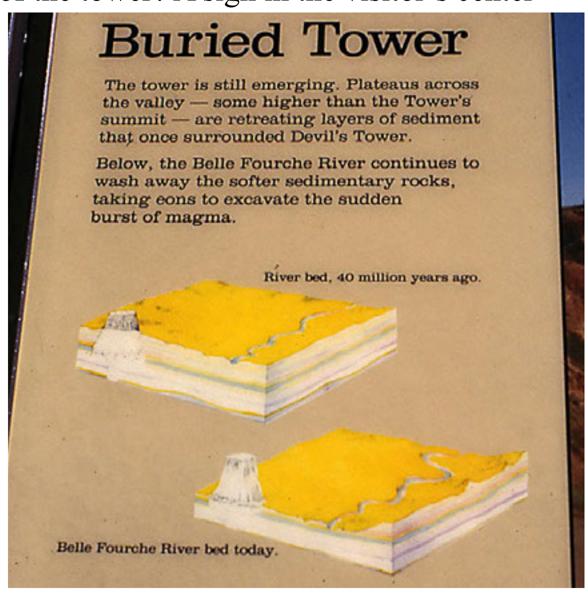

Figure 9.4. A road sign that used to be at Devils Tower National Monument, showing the uniformitarian interpretation of slow erosion over millions of years. According to uniformitarianism, just the top 25 percent of the Tower was exposed 40 million years ago. Erosion since then has lowered the hard sandstone and soft shales of the High Plains about 900 feet (275 m), while the tower remained almost untouched.

The Changing Story of High Plains Erosion

A previous road sign south of Devils Tower National Monument described a previous uniformitarian interpretation and the length of time for the exposure of Devils Tower (Figure 9.4). Geologists believe that the top 25% was exposed by erosion 40 million years ago. So, the remainder of the sedimentary rock was eroded over 40 million years to the present landscape. *But, notice Devils Tower still stands tall with little change in its diameter or height for 40 million years!* How could both hard sandstone and soft shale of the High Plains be eroded and transported away from the entire region without any significant erosion of the tower itself? There is no trace left of the eroded plains sediments. Why aren't the sediments found in a huge floodplain to the east or southeast since it is downslope from the tower. The sediments appear to have been swept off the continent.

This story of slow erosion of the High Plains leaving Devils Tower barely touched for 40 million years must have seemed outrageous even to uniformitarian scientists. In fact, the sign has been replaced with a sign that says it has eroded only in the past 1 to 2 million years (Figure 9.3). This is a 95% reduction in the time for erosion! So, instead of the extremely slow erosion of plains sandstone and shale, more than 900 feet (275 m) of erosion occurred within only one to two million years. This is a radical change in the postulated erosion rate and goes to show that uniformitarian scientists are guessing according to their paradigm of deep time. Whereas the previous estimate was much too slow, compared to today's erosion rate (see below), the new estimate now seems too fast for the uniformitarian principle.

All of North America Can Be Leveled to Sea Level in Less than 50 Million Years

Modern erosion rates that are based on river sediment output into the oceans are so fast that all of North America (and other continents) would have been eroded to sea level in just 10 million years![8] However, the erosion rate neglects to add coastal erosion, which is rapid in some areas such as the Arctic coast. Including coastal erosion would speed up the flattening of the continents to probably around 8 million years.

However, other processes would slow down the erosion rate. Two of these are man's influence on the current erosion rate and the decreased erosion rate as the relief (see Figure 2.5) decreases. It is estimated that man is causing about twice the natural erosion, so without man in the mix, the erosion rate would be around 16 million years, if uniformitarianism were true for millions of years. Another variable that must be considered is that as the mountains are worn down, the rate of erosion decreases. Based on all variables, except coastal erosion, Stanley Schumm estimated that the United States would be flattened in 33 million years in a warm, humid climate.[9] Erosion can still be significant in a drier climate because of rapid erosion caused by flash floods and heavy rain storms in the spring and summer, while in a warm, humid climate vegetation would retard erosion. So, a changing climate would not change the estimate of 33 million years much, as stated by Summerfield:

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[8] Roth, A.A., 1998. *Origins—Linking Science and Scripture*, Review and Herald Publishing, Hagerstown, MD, pp. 263–266.

[9] Schumm, S., 1963. Disparity between present rates of denudation and orogeny. *U. S. Geological Professional Paper* 454, Washington, D.C.

> Climate has been widely held to have a predominant influence on rates of denudation, although in the light of more recent data it is doubtful whether this view can now be sustained.[10]

Such rapid continental erosion has been accepted by uniformitarian geologists. Young believes the continents can be leveled in 10 to 25 million years.[11] Other geomorphologists have accepted Schumm's estimate[12,13] Twidale and Campbell conclude:

> However, in all cases, assuming no further major uplift or lowering of sea-level, it has been estimated that a small area like New Zealand, although mountainous, would be base-leveled [reduced to sea level] in about 11 million years. Larger land areas, like the continental United States, sub-Saharan Africa, peninsular India or Australia, would be reduced to base-level in 33 million years or so. [14]

Although estimates vary from 10 to 33 million years, to be on the conservative side, I will estimate that it would take a maximum of 50 million years to level the continents.

Why Should Devils Tower Remain Standing for Millions of Years?

In view of such rapid continental erosion on a timescale of millions of years, why is Devils Tower still standing? The survival of Devils Tower is especially puzzling because vertical rock faces are more easily eroded than horizontal surfaces since cliffs and steep slopes are strongly affected by gravity, causing rock slides and falls.[15,16] Furthermore, the extensive vertical cracks of the tower would be prone to destruction by freeze-thaw weathering. Cracks fill with water during storms, and as the water freezes during cold periods, the cracks enlarge. One would expect blocks of rock to frequently break free and fall to the base of the tower each winter. And indeed that is what is observed:

> While living near the base of the Tower in November 1954, during periods of frost action at night one could hear blocks crash onto the talus. This would happen typically after a snowfall … On a warm sunny day the snow would melt and the moisture would enter the joints [vertical cracks] in the Tower. After dark, the water would freeze and expand, which over time continues to force blocks from the Tower and build more talus.[17]

Devils Tower should have been destroyed quickly in a timeframe of thousands or tens of thousands of years, certainly in less than 100,000 years.

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[10] Summerfield, M.A., 1991. *Global Geomorphology*. Longman Scientific & Technical, New York, NY, p. 392.

[11] Young, R.W., 1983. The tempo of geomorphological change: evidence from southeastern Australia. *The Journal of Geology* 91:221–230.

[12] Nott, J., 1995. The antiquity of landscapes on the North Australian Craton and the implications for theories of long-term landscape evolution. *The Journal of Geology* 103:19–32.

[13] Twidale, C.R. and E.M. Campbell, 1993. Remnants of Gondwana in the Australian landscape. In, Findlay, R.H., R. Unrug, M.R. Banks, and J.J. Veevers (editors), *Gopndwana Eight – Assembly, Evolution and Dispersal*, A.A. Balkema, Rotterdam, Holland, p. 579.

[14] Twidale, C.R. and E.M. Campbell, 2005. *Australian Landforms: Understanding a Low, Flat, Arid and Old Landscape*, Rosenberg Publishing PTY Ltd, Dural Delivery Centre, New South Wales, p. 188.

[15] Twidale, C.R., 1968. *Geomorphology*, Thomas Nelson, Melbourne, Australia, pp. 164–165.

[16] Pazzaglia, F.J., 2004. Landscape evolution models. In, Gillespie, A. R., S. C. Porter, and B. F. Atwater (editors), *The Quaternary Period in the United States*, Elsevier, New York, NY, p. 249.

[17] Robinson and Davis, Ref. 3, p. 36.

Just as perplexing (to uniformitarian geologists) is that Devils Tower appears to be close to the *same* size today as when it was first exposed:

> There is no evidence to support the idea that these masses of igneous rock were appreciably larger than they are at present, or at least larger than the present area covered by their talus aprons.[18]

Furthermore, the amount of talus around Devils Tower is modest,[19] reinforcing the deduction that erosion was both *fast and recent*, otherwise there should be a huge amount of talus at its base if the Devils Tower were even 10,000 years old

The Flood Explanation

It seems that the only way to explain Devils Tower is catastrophic erosion of the High Plains sedimentary rocks by fast-moving water, leaving behind an erosional remnant of the lava conduit. This is consistent with rapid sheet flow erosion of the High Plains as the Floodwater drained off the continent.[20,21] The tower was left behind because the rock probably was more resistant and/or the current speeds were reduced in the area close to the tower.

Figure 9.5. Erosion of a field during a flood in South Africa (photo courtesy of Dr. Walter Veith).

Floods typically leave behind erosional remnants. There are many examples. A flood in a field in South Africa left behind a number of erosional remnants (Figure 9.5). The Lake Missoula flood in the upper Grand Coulee that eroded through 900 feet (275 m) of basalt lava in a matter of days left behind Steamboat Rock in the middle of the Upper Grand Coulee (Figure 9.6).[22]

Figure 9.6. Steamboat Rock, a 900-foot (275 m) high erosional remnant of basalt lava in the Upper Grand Coulee, Washington. The lava around Steamboat Rock was eroded in a few days by the Lake Missoula flood.

Figure 9.7 is a schematic of what should happen to Devils Tower if the High Plains erosion occurred over millions of years in the uniformitarian paradigm, based on what we know of present erosion rates. In contrast, Figure 9.8 is a schematic of erosion expected during Flood runoff,

[18] Robinson and Davis, Ref. 3, p. 58.

[19] Robinson and Davis, Ref. 3, pp. 57–58.

[20] Walker, T., 1994. A Biblical geological model. In, Walsh, R. E. (editor), *Proceedings of the Third International Conference on Creationism*, technical symposium sessions, Creation Science Fellowship, Pittsburgh, PA, pp. 581–592.

[21] Oard, M.J., 2008. *Flood by Design: Receding Water Shapes the Earth's Surface*, Master Books, Green Forest, AR.

[22] Oard, M. J., 2004. *The Missoula Flood Controversy and the Genesis Flood*, Creation Research Society Monograph No. 13, Chino Valley, AZ, p. 109.

leaving behind a tall, little eroded, vertical tower that has not decreased in size much since it was exposed only 4,500 years ago. Clearly, the Flood paradigm better fits the evidence.

Figure 9.7. Schematic of Devils Tower with realistic erosion rates over millions of years.

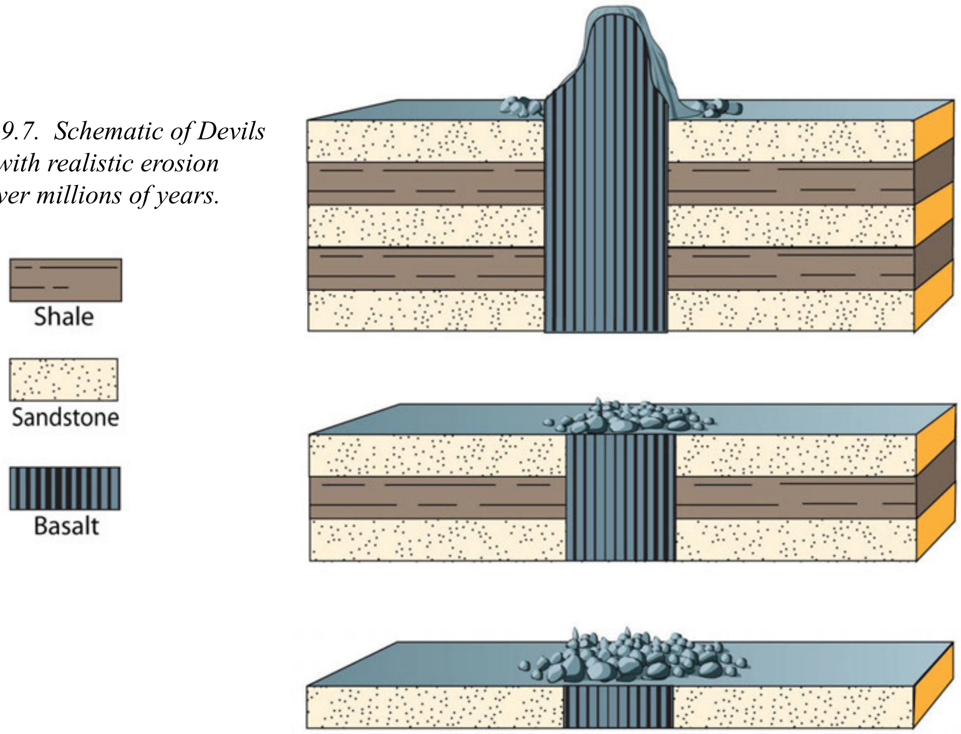
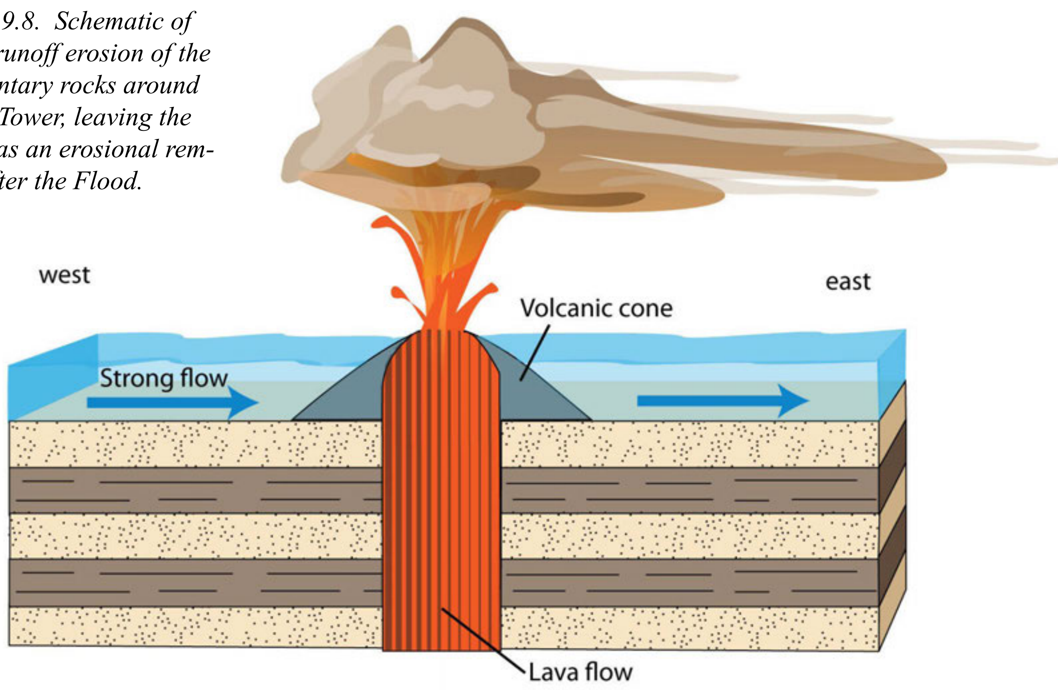


Figure 9.8. Schematic of Flood runoff erosion of the sedimentary rocks around Devils Tower, leaving the Tower as an erosional remnant after the Flood.



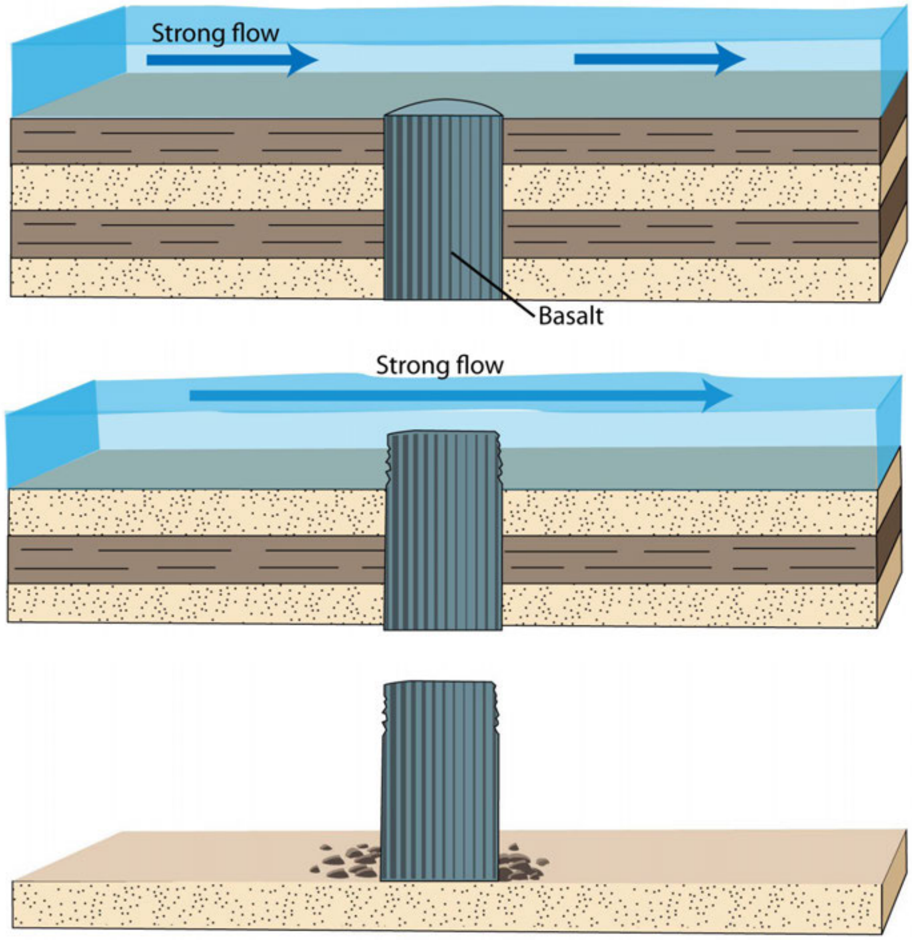


Figure 9.8 As the strong f ow of water wears through the layers of sandstone and shale the top of the basalt is worn off and then the surrounding, softer sediments are removed.

Tall Erosional Remnants Abound in the United States

Devils Tower is not the only erosional remnant in the western United States that indicates rapid erosion of surrounding sedimentary rocks. There are plenty more. I will point out more tall erosional remnants in the United States, where I am most familiar.

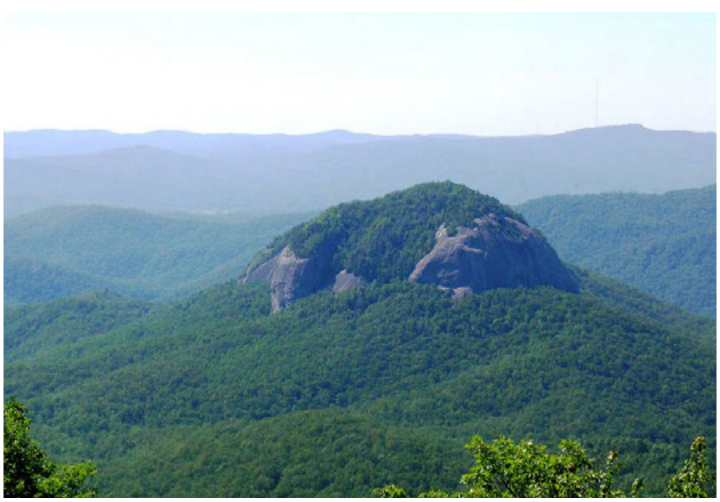


Figure 9.9. A granite massive as seen from Log Hallow Overlook on the Blue Ridge Parkway. Since granite has to be underground and likely did not fault up, the granite massive indicates the surrounding rock has been eroded.

Square Butte in central Montana, just northeast of the Highwood Mountains, is another igneous erosional remnant. It is about 2,000 feet (600 m) higher than the surrounding plains and indicates that at least this amount of erosion of sedimentary rocks occurred in this region.

Some plutonic rock masses in the Appalachians (Figure 9.9) indicate a few thousand feet of

Figure 9.10. Erosional remnants at Monument Valley along the border of southeast Utah and northeast Arizona.

Figure 9.11. Agathla Peak, near Kayenta in northeast Arizona, rises 1,225 feet (375 m) above the surrounding land.

erosion as a minimum. Plutonic rocks are igneous rocks that were once under the ground and have been exposed by erosion. But, there was much more erosion than a few thousand feet (see Appendix 4).

Monument Valley and Vicinity

Most people have seen Monument Valley along the Arizona-Utah border (Figure 9.10), if not personally at least in old cowboy movies. These tall buttes and pinnacles are composed of soft shale capped by harder sandstone. Since they are composed of the same rock as seen on the sides of the valley, they can be considered inselbergs (see Part XI). These sedimentary erosional remnants stand about 1,000 feet (300 m) above the wide valley.

The Navajo Buttes, igneous volcanic towers, are similar to Devils Tower. They also rise up to 1,230 feet (375 m) above the countryside just south of Monument Valley. Agathla Peak, a volcanic conduit near Kayenta, northeast Arizona, 1,225 feet (375 m) above the surrounding countryside (Figure 9.11), is one of the volcanic throats of the Navajo Buttes.

Figure 9.12. Ship Rock, northwest New Mexico, stands 1,700 feet (520 m) above a wide valley. It also is an igneous erosional remnant that was the conduit of a volcano, like Devils Tower.

Ship Rock is another volcanic throat that sticks up out of a wide, flat-bottom valley in northwest New Mexico (Figure 9.12), close to Monument Valley. Ship Rock is about 1,700 feet (520 m) high. Plummer and McGeary believe that the land surface was probably around 3,000 feet (900 m) higher than the bottom of the valley prior to erosion.[23]

Slow erosion over millions of years is not an adequate explanation for the tall formations that dot Monument valley and its vicinity. How could all these monuments remain vertical while all the surrounding sedimentary rocks slowly wasted away over millions of years? The capping sandstone of the monuments in Monument Valley is poorly lithified and crumbles easily (personal observation). It appears that a recent flood of huge extent must have eroded the wide valleys in the region and left behind the erosional remnants, similar to those formed in Grand Coulee during the Lake Missoula flood,[24] such as Steamboat Rock (Figure 9.6). The similarity of vertical, tall erosional remnants is striking.

Another important feature of these erosional remnants is that the debris eroded from their surroundings has been transported out of the area; it cannot be located. Slow erosion over millions of years should have left behind enormous debris in floodplains toward lower elevations. The area is semi-arid today, with no major streams or rivers. So, one viable mechanism within the uniformitarian paradigm seems to be erosion by flash floods, which are prevalent during the summer. But, even with flash floods we should find giant floodplains somewhere. Rapid erosion from a global Flood would leave behind erosional

Figure 9.13. The erosional remnant of Red Butte on the south rim of the Grand Canyon. The butte is 1,000 feet (300 m) above the planation surface at the top of the Grand Canyon.

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[23] Plummer, C. C. and D. McGeary, 1996. *Physical geology*, seventh edition, Wm. C. Brown Publishers, Dubuque, IA, pp. 77–78.

[24] Oard, M.J., 2004. *The Missoula Flood Controversy and the Genesis Flood*, Creation Research Society Books, Chino Valley, AZ.

remnants and the sediments would be transported clean off the continents. The Flood paradigm fits our observations much better than its uniformitarian opposite.

The Grand Canyon Area

Red Butte is one of three erosional remnants lying on the planation surface through which Grand Canyon is cut (see Figure 32.8). It rises 1,000 feet (300 m) above the surrounding plain (Figure 9.13). Red Butte is composed of formations similar to those much farther north in the Grand Staircase of southern Utah. The butte is capped by basalt. Since basalt flows like water, both the basalt cap and the sedimentary rocks below were once much more extensive. Calculations based on this remnant show the entire area above the Grand Canyon was once covered by at least 1,000 feet (300 m) of sedimentary and extrusive igneous rocks, most of which were eroded away.[25] The Grand Staircase to the north and a projection of this strata south over the Grand Canyon, show erosion of northern Arizona was at least 6,000 to 10,000 feet (1,830 to 3,000 m), as described in Chapter 8. Red Butte is one small indication erosion over the Grand Canyon area was rapid (see the in-depth section below).

Rapid Erosion over the Grand Canyon Area (in-depth section)

The Colorado Plateau has been eroded an average of 8,000 to 16,000 feet (2,500 to 5,000 m) over the *entire* Colorado Plateau![26] In the area of the Grand Staircase and the Grand Canyon area (see Figure 8.3), this erosion is called the Great Denudation by uniformitarian geologists.[27,28] The Grand Staircase represents a sedimentary erosional remnant 10,000 feet thick.

Uniformitarian geologists, of course, believe the Great Denudation and the formation of the Grand Staircase was done by water erosion over many millions of years. However, there are subtle but powerful, indications that the Great Denudation was not slow but very rapid, as we would expect in the runoff of the Genesis Flood. This evidence is found largely in the type of rock that eroded from

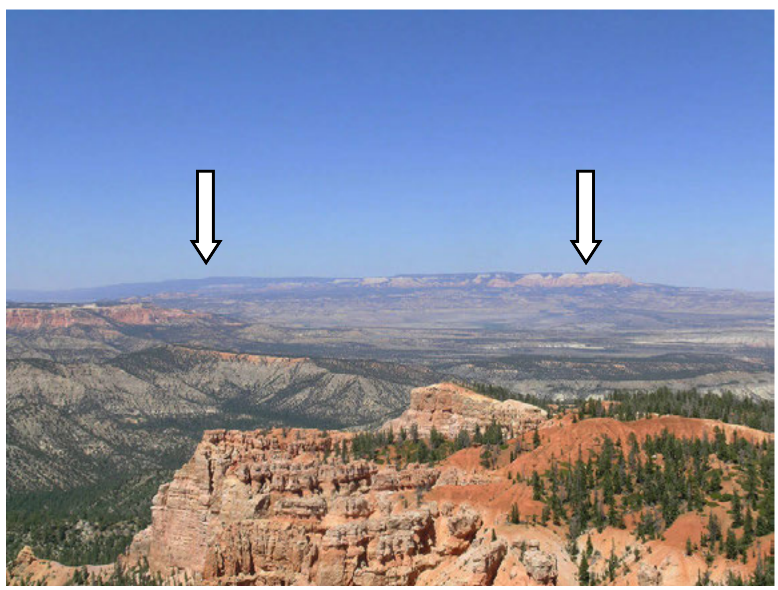

Figure 9.14. Aquarius and Table Cliffs Plateaus. The Aquarius Plateau is to the left on top of the dark colored volcanic rocks (left arrow). The Table Cliffs Plateau is to the right and is on top of the white colored band above the pink band (right arrow).

[25] Austin, S.A., 1994. How was Grand Canyon eroded? In: Austin, S.A. (editor), *Grand Canyon: Monument to Catastrophe*, Institute for Creation Research, Santee, CA, pp. 83–84.

[26] Schmidt, K.-H., 1989. The significance of scarp retreat for Cenozoic landform evolution on the Colorado Plateau, U.S.A. *Earth Surface Processes and Landforms* 14:93–105.

[27] Ranney, W., 2005. *Carving Grand Canyon: Evidence, Theories, and Mystery*. Grand Canyon Association, Grand Canyon, AZ.

[28] Oard, M.J., 2010. The origin of Grand Canyon Part IV: The Great Denudation. *Creation Research Society Quarterly* 47(2):146–157.

the top of the fifth "stair" of the Grand Staircase. The soft Claron Formation (the Pink Cliffs) makes up the top or the fifth stair, but volcanic rock once capped it. Remnants of this volcanic rock crop out on the northern portion of the fifth stair, and can be considered a sixth stair. These volcanic rocks probably extended far to the south at one time before erosion. The dark volcanic rocks on top of the Claron Formation can be observed from Bryce Canyon National Park looking northeast toward the Table Cliffs Plateau, the top of the Claron Formation, and the volcanic Aquarius Plateau to the north (Figure 9.14).

C.H. Crickmay noted the perplexing erosional relationships between the 2,000 feet (600 m) of hard volcanic rock eroded north from the top of the northern Table Cliffs Plateau and the erodible and soft Claron Formation, which he calls the Wasatch Formation, that forms the top of the plateau:

> For example, nothing strikes a visitor more than the preservation of upland surfaces in the High Plateau country of Utah; particularly, the vertical succession of survivals. One of the highest is the Aquarius Plateau, formed on top of about 600 m [1,965 feet] of resistant lavas. But, protruding from below these volcanics, stands the Table Cliffs Plateau composed of the erodible [sic] Wasatch formation, from which the resistant capping of volcanics has been stripped; nevertheless the unresistant formation has maintained a plateau form while the surround country, over vast areas, has been lowered another 1200 m [3,930 feet] or more.[29]

If we closely follow what Crickmay is saying, we see that the hard volcanic rock of the Aquarius Plateau eroded first, exposing the soft strata of the Wasatch Formation (now the Claron Formation). Then about 4,000 ft (1.21 km) of strata below and south of the Claron Formation of the Table Cliffs Plateau was eroded forming the other stairs of the Grand Staircase. During all this time, the *soft* Claron Formation capping the Table Cliffs Plateau was hardly touched!

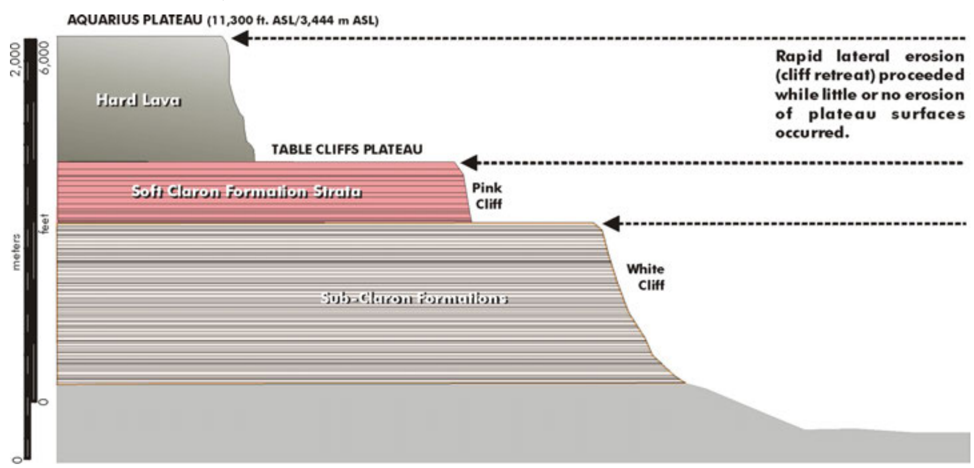

Figure 9.15. Diagram showing the erosion of the Grand Staircase, south-central Utah. The 2,000 feet (600 m) of volcanic rock on top of the Table Cliffs Plateau eroded northward, while the soft Claron Formation underneath hardly eroded downward. The only way this can happen is if the erosion of the volcanic rocks was rapid, implying that the Grand Staircase was eroded rapidly (drawn by Peter Klevberg).

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[29] Crickmay, C.H., *The Work of the River: A Critical Study of the Central Aspects of Geomorphology*, American Elsevier Publishing Co., New York, NY, 1974, p. 238.

If the erosion took millions of years, the soft Claron Formation would have easily eroded after the lava cap was removed. In addition, erosion at the higher elevations of the Table Cliffs Plateau would be more rapid, since higher elevations receive more precipitation and runoff, proportional to erosion. Figure 9.15 shows the huge contrast in erosion as seen by Crickmay.

The only way the top of Claron Formation can remain uneroded after the volcanic rock is eroded is if the erosion of the lava happened *rapidly* and not over many tens of millions of years, as envisioned by uniformitarian geologists. This implies that the entire Grand Staircase was eroded rapidly, consistent with the Retreating Stage of the Flood.

Another indication of rapid erosion is found in the Grand Canyon area. Navajo Mountain near the Utah/Arizona border is about 82 miles (131 km) northeast of Grand Canyon. It stands 10,388 feet (3,166 m) above sea level. It is a volcanic mass that formed *within* sedimentary rocks. Now it stands about 6,000 feet (1,829 m) above the surrounding sedimentary rocks. Therefore, 6,000 feet of sedimentary rock must have eroded quickly over the whole region, similar to Devils Tower, or Navajo Mountain would not exist, since mountains erode much faster than a generally horizontal surface.