

Part XVI

The Conundrum of Water and Wind Gaps

We now move onto the last major topic in geomorphology that can easily be explained during the Retreating Stage of the Flood. This topic is the origin of water and wind gaps, common all across the earth. Water and wind gaps are typical features formed during channelized flow perpendicular to ridges, mountains, and plateaus during the Channelized Flow Phase of the Flood. Their origin is very difficult, if not impossible, for uniformitarian geomorphologists to explain.

Chapter 75

The Mystery of Water and Wind Gaps

There are many mysteries within the study of geomorphology that the uniformitarian geologist is unable to account for within their paradigm. The last mystery we will examine is the existence of water and wind gaps.

The Erroneous Definition of a Water Gap

A water gap is: “A deep pass in a mountain ridge, through which a stream flows; esp. a narrow gorge or ravine cut through resistant rocks by an antecedent or superposed stream.”¹ In other words, a water gap is a perpendicular cut through a mountain range, ridge, or other rock barrier. It is a gorge that a river or stream runs through.

Figure 75.1 shows the 350-foot (110 m) deep, narrow gorge of the Sweetwater River in central Wyoming. This gap cuts through a granite ridge.



Figure 75.1. Devils Gate, a 330-foot (100 m) gap through a plunging granite ridge. The Sweetwater River, central Wyoming flows west through the notch. When the sediments in the area were higher the river could have easily flowed around the barrier about one-half mile (1 km) to the east.

The Problem of a Hypothesis Being Part of a Descriptive Definition

The definition of a water gap unfortunately includes two supposed mechanisms for its formation. One of these is an “antecedent stream,” which is, “A stream that was established

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. 715.

before local uplift or diastrophic movement was developed across it and that maintained its original course after and in spite of the deformation by incising its channel at approximately the same rate as the land was rising; a stream that existed prior to the present topography”² A superposed or superimposed stream is, “A stream that was established on a new surface and that maintained its course despite different lithologies and structures encountered as it eroded downward into the underlying rocks.”³

These two mechanisms are two of five possible hypotheses for the origin of water gaps (see Part XVII). Ironically the two mechanisms in the definition, in the past thought to be the mechanisms, have since been mostly ruled out for most water gaps.

An assumed origin should never be part of the definition of an observed landform; it should be purely descriptive. This is a case of a hypothesis intruding upon observations.

The Definition Is Too Narrow

Another problem with the definition of water gaps is its application is too narrow. It states the gorge cuts through a “mountain ridge.” But there are gorges that go through mountain ranges and gorges that go through plateaus or a series of plateaus. These too should be considered water gaps. To simplify the discussion, I will define a water gap as a gorge that cuts through any barrier of rock and has a stream or river flowing through it.

The most impressive water gaps are where the gorge transverses the barrier, the top of which is at a higher level than a nearby low area that would have allowed the river to go around the barrier (Figure 75.2). Twidale and Campbell note there is often an easier route around a barrier:

Yet in many areas we find that the major streams flow across mountain ranges and upland ridges when only a short distance away there is an easier route available.⁴

Instead of going around the barrier at the lower altitude, for some reason the river “choose” to cut through a higher level, assuming that the river really had something to do with cutting the gorge. This is the major challenge to explaining the origin of water gaps.

In the case of a plateau or a series of plateaus, the gorge may be longer than those through a mountain or ridge because the distance across a large plateau is usually longer. A gorge that cuts through a plateau or series of plateaus is even more difficult for the uniformitarian geologist to explain than a water gap that cuts through a mountain ridge.

What Is a Wind Gap?

A wind gap is: “A shallow notch in the crest or the upper part of a mountain ridge. Usually, it is at a higher level than a water gap.”⁵ To qualify as a wind gap, the notch has to be an *erosional* notch and not caused by faulting or some other mechanism. In other words, the entire ridge was at one time near the same altitude, until the notch was eroded perpendicular to its top. Figure 75.3 shows the famous Cumberland wind gap between Virginia and Kentucky. (The pioneers frequently used this gap as they traveled west through the Appalachian Mountains.) A wind gap is considered an ancient or incipient water gap, thought to have formed either when the sediments were thicker in the valleys or before the ridge uplifted assuming the ridge is a fault block.

² Neuendorf *et al.*, Ref. 1, p. 27.

³ Neuendorf *et al.*, Ref. 1, p. 645.

⁴ Twidale, C.R. and E.M. Campbell, 2005. *Australian Landforms: Understanding a Low, Flat, Arid and Old Landscape*. Rosenberg Publishing Pty Ltd, New South Wales, Australia, p. 192.

⁵ Neuendorf *et al.*, Ref. 1, p. 723.

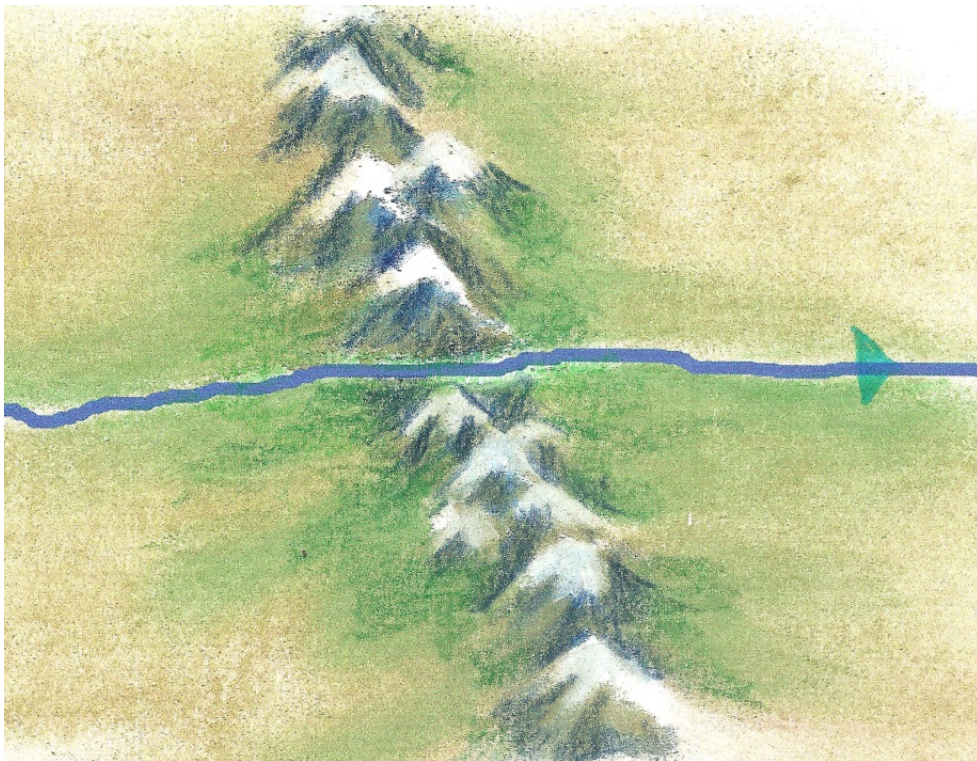
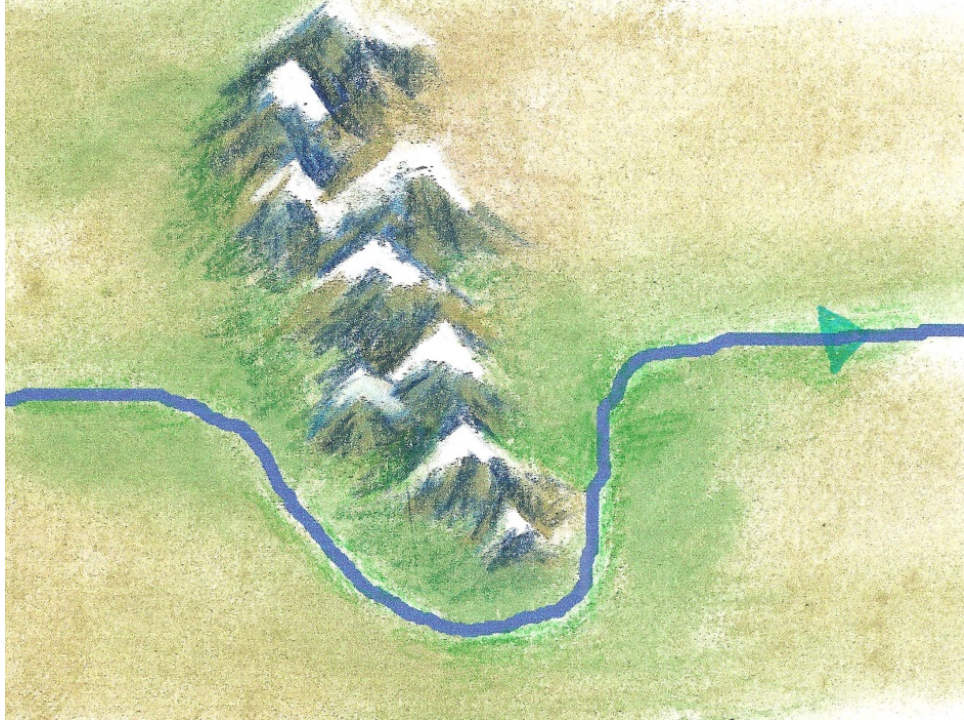


Figure 75.2. Schematic showing that a river should do around a barrier, such as a mountain range (a), but many rivers often go through the range (b) (drawn by Mrs. Melanie Richard).



Figure 75.3. The Cumberland wind gap in the Appalachian Mountains along the Virginia/Kentucky border near Middlesboro, Kentucky (view northwest from highway 58). This notch has been eroded down near 1,000 feet (300 m), as measured on the northeast side.

In other words, the wind gap started off as a low water gap, but because of changing circumstances, a river or stream stopped flowing through it and erosion ceased. As erosion continued in the surrounding valleys or the ridge uplifted, the old water gap was left high and dry as a notch or pass. The flow of water that first cut the water gap could have been diverted, or maybe mountain uplift blocked the flow of water. This would leave the wind gap at a higher altitude than the adjacent valley. Only wind passes through the gap now, which is why it is called a *wind gap*.

A Major Mystery

Crickmay, a uniformitarian geomorphologist colorfully describes the frequent troubles he has with water and wind gaps:

Admittedly a fascinating picture, a river runs over low, open plains directly towards seemingly impassable mountains but, undiverted by their presence, passes through them by way of a narrow defile, or water gap, to a lower region beyond.⁶

Summerfield reiterates:

One of the most perplexing problems of drainage development to unravel is that provided by **transverse drainage**. Such a drainage pattern, which is also known as **discordant drainage**, occurs when river channels cut across geological structures ...

⁶ 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, p. 154.

Such drainage, which is common in fold mountain belts, is often regarded as anomalous, although this is not really an appropriate description (emphasis his).⁷

Why should a river or stream flow through a barrier and not around it? Like canyons and valleys (see Chapter 59), uniformitarian scientists assume the river eroded the gorge simply because a river is *presently* flowing through the gap. They ignore the possibility that some other mechanism originally cut the gap and the river simply followed the easiest route. Their reasoning is fogged by their commitment to uniformitarianism, and their ideas, though plentiful, are poorly supported by observation, as will be shown in Part XVII. A Flood mechanism is much more reasonable, especially in the light the water and wind gap that formed during the gigantic Lake Missoula flood (discussed in Chapter 85).



Figure 75.4. The Columbia River flowing westward through the Columbia River Gorge between Washington and Oregon.

Water gaps are only a puzzle when the river or stream could have more easily flowed around the ridge, mountain, mountain range, or plateau instead of cutting through the barrier. An example of a water gap that is not a mystery for uniformitarian theory is the Columbia River Gorge that lies between Oregon and Washington (Figure 75.4). It is a large water gap that runs through the Cascade Mountains. It is *not* mysterious since most likely the river is flowing along

⁷ Summerfield, M.A. 1991. *Global Geomorphology*, Longman Scientific & Technical, New York, NY, p. 411.

the lowest path through the Cascade Mountains. Presumably the terrain was once higher in eastern Washington and Oregon, or the mountains lower, so the “ancient river” would have followed its present course through a low area of the Cascade Mountains.