Chapter 84

Channelized Flood Flow Cuts Water and Wind Gaps

The vast majority of water and wind gaps, especially the deep ones, provide powerful evidence for the Channelized Flow Phase of the Flood. It is not difficult to envision the Genesis Flood rapidly cutting water and wind gaps as the water flowed perpendicular to barriers. The gaps, once started, would rapidly deepen as the runoff changed from sheet to channelized flow. It is possible that processes after the Flood formed a few water and wind gaps, as they did in the Lake Missoula flood (see Chapter 85) as well as by stream piracy through a very low saddle, as in the Atchafalaya River (see in-depth section at the end of the chapter).

Rapid Cutting of Water and Wind Gaps during Flood Runoff

Water gaps probably did not start forming until the very end of the Sheet Flow Phase of the Flood, because the widths of these canyons are much narrower than large-scale sheet flow currents. So, the main cutting had to have taken place when the flow was channelized. At that time, mountains and plateaus gradually became exposed, either through uplift or the water level dropping (see Part II). The Floodwater would then be forced to go around these obstructions.

Sometimes the flowing water would be perpendicular to a ridge or mountain range. Within any ridge, mountain range, or barrier, there are low spots or notches through which the draining floodwater would run. Late in the sheet flow stage, ridge notches would erode and at different rates as a result of varying water velocity.[1] The high velocity areas would erode more causing the low areas or notches to form at the top of the barrier (Figure 84.1a). Alternately, weak zones along the barrier would erode quickly. Epstein[2] and Mills and others[3] believe some Appalachian water gaps started in zones of rock weakness. As the barrier either rose above the water or the water level dropped, the flow would rush through these notches (Figure 84.1b). Like the excavation of submarine canyons, the erosion of the notch would have advanced rapidly, since the water was constricted and therefore accelerating (Figure 84.2). Higher velocity flows carrying abrasive rocks and sediment would have rapidly cut a water gap between the ridges down to the valleys (Figure 84.1c-d). A very simple example of water gap formation would be the breaching of an earth dam by overtopping water. Once the water overtops, it rapidly cuts the breach and the dam empties catastrophically. Most of the remainder of the dam wall would often remain intact.

Wind gaps probably represent notches that formed early, then for various reasons the current's velocity decreased. Erosion proceeded only so far and stopped. The water may have been diverted by upstream or downstream tectonics, or a nearby notch monopolized the water or the water level may have simply dropped (Figure 84.1b and c). These notches would then remain

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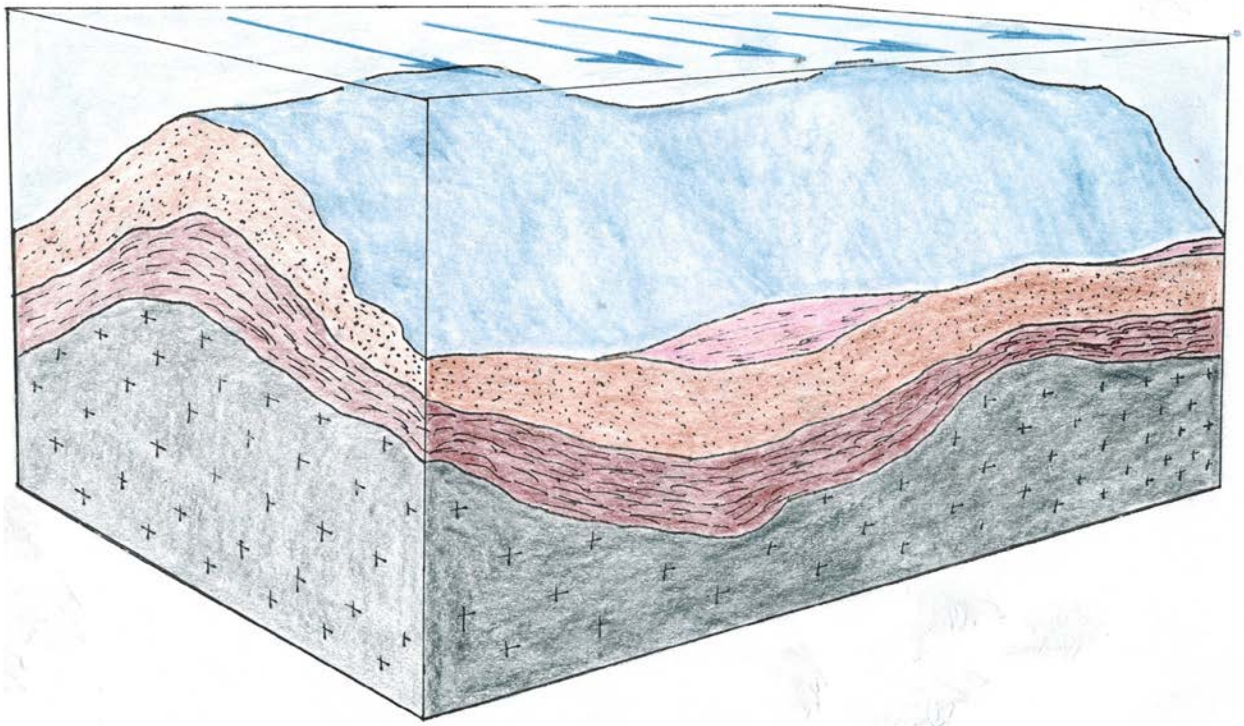
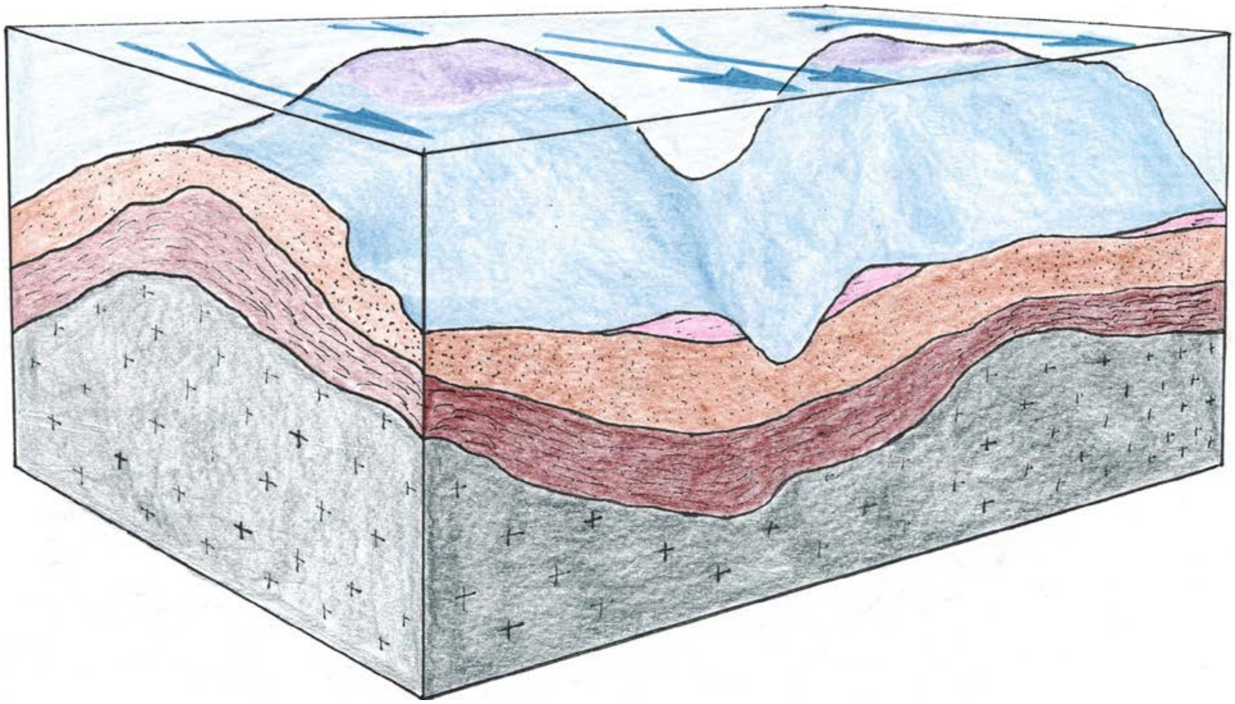
[1] Schumm, S. and F.G. Ethridge, 1994. Origin, evolution and morphology of fluvial valleys. In, Dalrymple, R.W., R. Boyd, and B.A. Zaitlin (editors), *Incised-Valley Systems: Origins and Sedimentary Sequences*, SEPM Special Publication No. 51, Tulsa, OK, p. 11.

[2] Epstein, J.B., 1966. Structural control of wind gaps and water gaps and of stream capture in the Stroudsburg area, Pennsylvania and New Jersey. *U. S. Geological Survey Professional Paper 550-B*, Washington, D.C.

[3] Mills, H.H., G.R. Brakenridge, R.B. Jacobson, W.L. Newell, M.J. Pavich, and J.S. Pomeroy, 1987. Appalachian mountains and plateaus, In, Graf, W.L. (editor), *Geomorphic Systems of North America*, Geological Society of America Centennial Special Volume 2, Boulder, CO, p. 8.

at elevations too high for a stream or river to flow through, therefore creating a wind gap (Figure 84.1d).





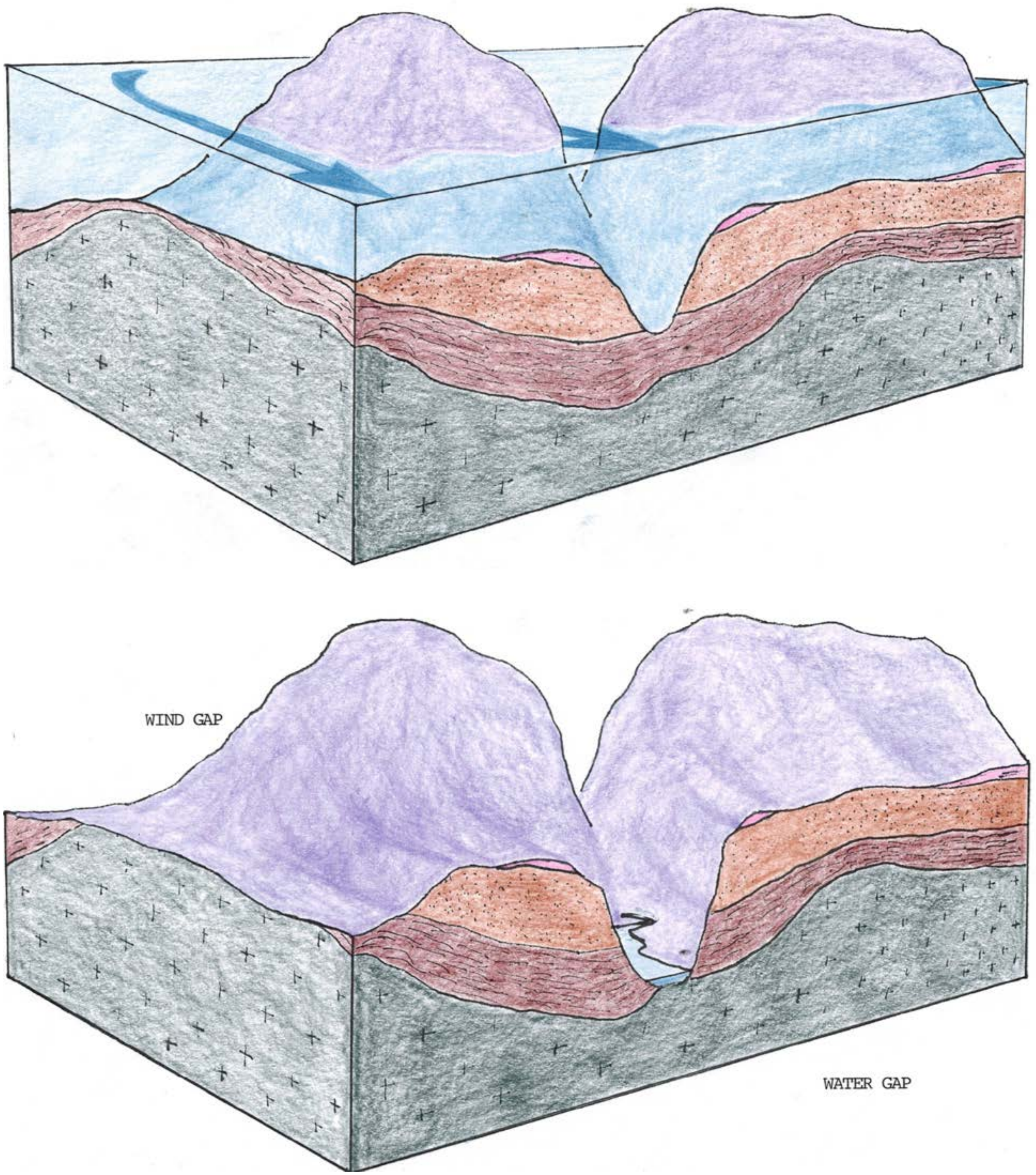


Figure 84.1a-d. Schematic showing the formation of water and wind gaps (drawn by Peter Klevberg).
a) Water flowing perpendicular to a transverse ridge forms shallow notches on the ridge.
b) Notches erode deeper as the water level drops below the top of the ridge.
c) Floodwater continues to drain as notches deepen.
d) Floodwaters are completely drained with a river running through the lowest notch, the water gap. Erosion ceased too early through the other notch, leaving a wind gap.

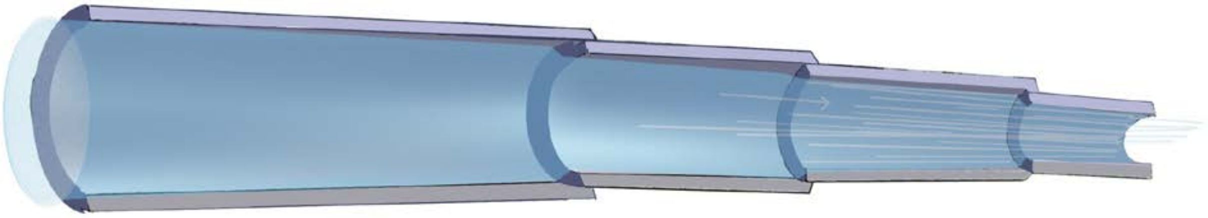


Figure 84.2. The same volume of water moving through a wide pipe has to accelerate as the pipe narrows.

Dynamic Flood processes could also account for some of the evidence attributed to stream capture, such as the elbow of capture; rounded, exotic gravels in wind gaps; and underfit streams. An elbow of capture might have formed by large current directional shifts of the channelized flow near mountain uplifts. These changes in Floodwater flow are demonstrated in the western United States where the early "continental divide" started in western Idaho and advanced to western Montana by the end of the Flood (see Chapter 23). So in Idaho, channelized currents at first flowed toward the east. After the modern continental divide was established in western Montana, the flow shifted toward the west. As a result, some rivers initially flowed toward the east or northeast and then turned around and flowed toward the west.[4]

Conceivably, a channelized Flood current would have sufficient *momentum* to keep it moving in a straight or gently curving course. These currents would have the power to erode multiple *aligned* water gaps through a series of perpendicular ridges, as those seen in the Appalachian Mountains of the eastern United States and the Macdonnell Ranges in central Australia.

Water and Wind Gaps are Young Landforms

Since water and wind gaps have modified very little since they were formed, they must be quite young. In the Flood model, they are among the last erosional landforms, shaped late in the Retreating Stage of the Flood.

Uniformitarian scientists mention water gaps as young and attribute their formation late in the Cenozoic (around 1 to 15 million years ago), very recent in their timescale. For instance, the 300 major water gaps in the Zagros Mountains are considered to have been carved in the late Cenozoic.[5]

C.H. Crickmay also noted wind gaps have been modified very little by weathering since they first formed.[6] This is entirely consistent with the Flood explanation—the Channelized Flow Phase was the last event of the Flood and there has not been much erosion since the Flood. This "youthfulness" is an argument against the uniformitarian model since they would have to accept water and wind gaps have remained untouched by erosion for millions of years—an unlikely deduction.

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[4] Oard, M.J., J. Hergenrather, and P. Klevberg, 2006. Flood transported quartzites: part 3—failure of uniformitarian interpretations. *Journal of Creation* 20(3):78-86.

[5] Oberlander, T., 1965. *The Zagros Streams: A New Interpretation of Transverse Drainage in an Orogenic Zone*, Syracuse Geographical Series No. 1, Syracuse, NY.

[6] Crickmay, C.H., 1933. The later stages of the cycle of erosion: some weaknesses in the theory of the cycle of erosion. *Geological Magazine* 70:343.

Did Water Gaps Form after the Flood? (in-depth section)

The vast majority of water and wind gaps formed in the Flood but not all. It is well known that erosion from a catastrophic dam breach can create water and wind gaps. This was suggested as the origin of anomalous drainage on the Zambezi River,[7] and is a reasonable hypothesis. I will give a few more examples.

The Bonneville Flood

During the Ice Age, many lakes existed in southwestern United States, Lake Bonneville was among them. Lake Bonneville filled the Great Salt Lake basin in Utah. It was 800 feet (245 m) deep and about eight times the size of present day Salt Lake, which is only about 12 feet (3.5 m) deep. Lake Bonneville continued to rise during the Ice Age and then overtopped a low barrier in extreme southeast Idaho at Red Rock Pass (Figure 84.3) and catastrophically flooded down the Snake River of southern Idaho,[8] forming local Channeled Scabland features, such as large gravel bars, similar to those seen in eastern Washington (Figure 84.4). The Bonneville flood is believed to have discharged 1,150 mi^3 (4,750 km^3) of water in eight weeks, dropping the Lake 354 feet (108 m).[9] Red Rock pass can be considered a wind gap in a loose sense.

Figure 84 .3. Red Rock Pass in extreme southeast Idaho (view north) in which pluvial Lake Bonneville overflowed to cause the Bonneville flood down the Snake River valley.

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[7] Thomas, D.S.G. and P.A. Shaw, 1992. The Zambezi River: tectonics, climatic change and drainage evolution—is there really evidence for a catastrophic flood? a discussion. *Palaeogeography, Palaeoclimatology, Palaeoecology* 91:175-178.

[8] Oard, M.J., 2004. *The Missoula Flood Controversy and the Genesis Flood*, Creation Research Society Monograph No. 13, Chino Valley, AZ, pp. 60-61.

[9] O'Connor, J.E., 1993. *Hydrology, Hydraulics, and Geomorphology of the Bonneville Flood*. Geological Society of America Special Paper 274, Geological Society of America, Boulder, CO.

Figure 84.4. Large gravel bar on the Snake River caused by the Lake Bonneville flood.

Ice Age Lakes Can Overtop Ridges

The lakes that ponded against the post-Flood ice sheets in North America, Europe, and Asia could have filled with melting ice and then overtopped a bounding ridge, cutting a canyon and reversing the drainage of a river. Glacial Lake Agassiz in south-central Canada spilled over ridges at a number of locations forming water or wind gaps.[10]

Glacial Lake Wisconsin abutted the west side of the Green Bay lobe of the ice sheet around the Great Lakes. It formed when ice backed up the south-flowing Wisconsin River and was estimated to hold a volume of 21 mi^3 (87 km^3) of meltwater.[11] The ice dam failed catastrophically, with high water crossing former drainage divides cutting water gaps.

Possible Stream Capture by the Atchafalaya River

Stream capture is also feasible after the Flood, especially in areas where a low ridge separates water courses. The Atchafalaya River in Mississippi flows generally parallel to the Mississippi River for 170 miles (270 km) on the Mississippi River delta before entering the Gulf of Mexico. It has served periodically as the main channel of the Mississippi River. Sedimentation over many years changes the flow of the water courses on the delta. A natural rise now separated the head of

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[10] Oard, Ref. 8, pp. 61-63.

[11] Clayton, J.A. and J.C. Knox, 2008. Catastrophic flooding from Glacial Lake Wisconsin. *Geomorphology* 93:384-397.

Atchafalaya River from the Mississippi River. Since the early 20th century, man has altered the river channels, and if left to themselves the Atchafalaya River would have captured the Mississippi River! To avoid this situation, the U.S. Corp of Engineers diverted 30% of the water in the Mississippi River down the Atchafalaya River and can divert more during extreme floods, so as to avoid a catastrophic flood. But, this example is simply the switching of the main channel in a huge river delta. It does not compare to the power uniformitarians give to stream capture in order to account for many of the deep water gaps on the earth.