Wenatchee Valley Erratics
Wenatchee, Washington

The Wenatchee Valley Erratics Chapter is named after the prominent, postglacial white-colored rocks that were carried to the Wenatchee Valley embedded within icebergs floating in the ice-age floodwaters. After the floodwaters receded and the icebergs melted, these ice-rafted erratics (foreign rocks) were left high on the hilltops and remain today as testaments to the cataclysmic Ice Age Floods in Wenatchee Valley.

In the fall of 2000 the Ice Age Floods Institute Board decided to support local chapters, so local geologist, prominent Charlie Mason seized the opportunity. Over 30 people attended the first meeting where Charlie was elected president, Kim Lacy Vice-President, Susan Lacy Secretary/Treasurer, and Wilf Woods, local newspaper publisher, took the PR position. The name Erratics was enthusiastically approved and the chapter was born, running the first [IAF chapter in the spring of 2000]. For many years, the Erratics were the largest IAF chapter, with over 125 members, including some from outside Washington State.

The Wenatchee Valley Erratics Chapter, working cooperatively with the Wenatchee Valley Museum and Cultural Center, has met four times a year (bi-monthly) at the museum, with speakers highlighting the Ice Age Floods story or other related topics. The Erratics and museum also host several field trips exploring the Ice Age Floods and geology of north-central Washington.

The Ice Age Floods Institute is dedicated to educating the public about the astounding Ice Age Floods story and the fascinating geology associated with the floods within the north-central Washington area.

Ice Age Floods National Geologic Trail

Since the 1980s the Ice Age Floods Institute (IAF) has worked to create and build support for the Ice Age Floods National Geologic Trail. The Ice Age Floods National Geologic Trail is essentially a network of marked touring routes extending across parts of Montana, Idaho, Washington, and Oregon, with several special interpretive centers located across the region. Many interested parties are being brought together in a collaborative and effective interpretive program at a remarkably low cost, despite the extraordinary size of the region.

The Trail is being developed under the National Park Service on existing public lands, with no changes in jurisdiction and no threats to private property rights. The role of the National Park Service is to coordinate and manage the planning of the project and the timing of the story, without taking custodianship of public and private lands.

Interesting Flood Facts!

Moses Coulee - Devil’s Cataract

During the largest Ice Age Floods, water levels in the Wenatchee Valley was almost one thousand feet deep. Some boulders as large as a small house (40’ diameter) were carried as bedload by floodwaters and deposited in East Wenatchee. A good location to see them is along the Apple Capital Loop Trail.

At least five large floods poured through Moses Coulee during the most recent Ice Age. Enormous amounts of gravel and rock debris flooded out the mouth of Moses Coulee south of Rock Island, Washington, and blocked the flow of the Columbia River valley for years at a time, forming large temporary lakes where Wenatchee sits today.

Gigantic, well-defined current ripples (ripple marks) occur at Brandy Canyon, north of Omak, Pangborn Bar in Cashmere, and in the Yakima Valley, and on West Bar across from Trinidad. Some of the current ripples are twenty feet high and as much as 300 feet apart.

Large white, granitic erratic boulders that were carried in on icebergs from distant locations during the floods dot the hilltops within the Wenatchee valley. The rocks represent the “high water” marks of the cataclysmic Ice Age floods that filled the valley.

A GUIDE TO THE INCREDIBLE ICE AGE FLOODS IN THE WENATCHEE VALLEY AREA

Our Cataclysmic Floodscape

During the last glacial cycle of the ice-ages some 80,000 to 14,000 years ago, continental glaciers and repeated massive floods carved many of the distinguishing features of the interior Northwest’s unique landscape.

This is your local guide to dramatic evidence of those cataclysmic forces, from spectacular canyons and cliffs to waterfalls and vast, flood-eroded scalblands, that can be witnessed with a short road trip.

It is our hope that you will use this guide to explore these fascinating geological features in our region and will want to learn more about the dramatic ice-age story of glaciers and floods.

Cordilleran Continental Glacier

The Story of the Great Ice Age Floods

During the peak of the last Ice Age, a vast Cordilleran continental ice sheet covered southwestern Canada and the northern parts of Washington, Idaho and Montana. An eastern Purcell lobe of the ice sheet descended into the Idaho purcell, blocking the Clark Fork River with an ice dam thousands of feet thick.

Water rising behind the dam flooded the valleys of Montana creating Glacial Lake Missoula – a great inland lake stretching over 200 miles to the east with a volume of water greater than Lake Erie and Lake Ontario combined.

The rising lake waters periodically caused the ice dam to fail, resulting in sudden, cataclysmic floods that rushed across northern Idaho and the Channeled Scablands of eastern and central Washington, through the Columbia River Gorge, and into Oregon’s Willamette Valley, before emptying into the Pacific Ocean at the ancient mouth of the Columbia River. Glacial Lake Missoula would have drained in just a few days as a volume of floodwaters greater than all the rivers of the world combined roared across the landscape at up to 600 mph.

Now imagine this happening not once but dozens, perhaps even hundreds of times as the advancing continental glacier built a new ice dam.

DETAILED MAP INSIDE

Highlighting Key Sites to prominent Ice-age flood features in the Wenatchee Valley Area:

- A regional geologic framework of the GREAT ICE FLOODS that sculpted the Wenatchee area landscape.
Explore Ice Age Floods Features in the Wenatchee Valley

Discover why our region is like nowhere else. Jump into the Ice Age Floods story with a DRIVE/HIKE/LEARN day tour.

1. Watertown Plateau

The advancing Okanogan Lobe of the Cordilleran Ice Sheet flowed south from the Okanogan region, filled the Columbia River Valley and radiated across the northern Watertown Plateau, leaving behind facinating glacial landforms. Near the mouth of the Okanogan Valley the ice sheet was over 2,000 feet thick. The ice dammed the Columbia River, creating Glacial Lake Columbia and forcing the giant floods from Glacial Lake Missoula to erode Grand Coulee. Moving ice molded bedrock and sediment into elongated, streamlined ridges called drumlins. The Okanogan Lobe also left accumlated debris as a terminal moraine known as the Watertown Moraine, north of the town of Watertown. Erratic boulders, including exceptionally large ones called ‘haystack rocks,’ mark the Watertown Moraine.

Although some smaller erratics were derived from bedrock in the mountains to the north, the huge haystack rocks are entirely Columbia River basalt, plucked out of the local bedrock and repositioned by the moving ice. Hundreds of haystack rocks are clustered at Boulder Park.

As the Okanogan Lobe became stagnant and melted in place towards the end of the last ice age, it left behind its entrained debris as rolling topography. Sediment-covered ice blocks melted to produce closed depressions (kettles) on the Plateau, some containing shallow lakes and ponds.

Streams deposited layers of sand, gravel, and silt next to the melting ice, forming isolated hills and mounds of stratified sediment called kames. Subglacial streams flowing in tunnels beneath the disintegrating glacier produced streamlined depots which become serpentines ridges known as eskers. Excellent examples of these features occur in the Sims Corridor area.

2. Early Man – Clovis Points

East Wenatchee

Did early man experience the catastrophic Pleistocene Ice-Age flooding? During the installation of an irrigation system in East Wenatchee on May 27, 1987, orchard workers uncovered a cache of enormous spear points and knives subsequently identified as Clovis points, named after the first fluted projectile point site, discovered near Clovis, New Mexico. To date, the East Wenatchee Rockey Clovis Cache has yielded one of the largest fluted stone tools ever found (9.25 inches, compared to earlier discoveries measuring 6 inches). The East Wenatchee site also contains more artifacts in situ (undisturbed and in place) within a contained area than any site previously discovered. Sixty-nine stone and bone artifacts were recovered.

An ash layer was documented just below one of the large fluted stone tools. The ash layer was likely from an eruption of Glacier Peak, a composite volcano located in the Cascade Range about 60 miles northwest of the site. The Glacier Peak ash is dated at 11,250 years before present. This suggests the Clovis people occupied the area shortly after the ash fall. No one knows why the Clovis people didn’t return to their cache of tools. Perhaps they were caught by one of those Columbia River drainage Ice-Age floods that came after the ash fall? They were back-first and covered with a concrete slab after the evacuation, and the site returned to orchard. This exciting discovery is highlighted in an exhibit at Wenatchee Valley Museum and Cultural Center, one of the participants in the excavation. Interpreting the geological and archaeological discoveries of the region, and displaying materials from the site in East Wenatchee, Washington.

Find an interactive map and additional details online about these and other Ice Age features in the area, at https://iaf.org

3. Wenatchee Floods

Pangborn Bar and Erratics

Ice-age flood deposits at Wenatchee/East Wenatchee reached almost 1,000 feet above the modern Columbia River. Pangborn Bar formed as floodwaters rounded the river bend, creating a depositional bar that extended along the opposite bank. Maya floodwaters were also called “glacial current ripples,” with crests ranging from two feet tall and spaced 300 feet apart, mark the surface of the bar. 2nd and 4th Streets in East Wenatchee go up and over the flood deposits.

Erratics, rocks foreign to the area, were deposited in two places. As floodwaters left the restricted confines of the Columbia Valley and entered the Wenatchee, erratic boulders from the floor of Glacial Lake Missoula that bounced along as bedload settled out on the local bedrock. A good place to see these large boulders (some 40 feet in diameter) is along the Apalachee Trail Loop 9 in East Wenatchee.

Numerous cavings carrying erossed details, some as far as away as Canada and NW Montana, are also found on the floodwaters. As the floodwaters retreated the lowlands were left high on the hilltops, then melted, leaving the erratics to record the temporary water level.

Moses Coulee

Moses Coulee, second only in grandeur to Grand Coulee, was excavated by the Ice Age Floods. After the Okanogan Lobe blocked the Columbia River at Bremerton, before it reached Bridgeport, floodwaters flowed down Moses Coulee. Later, as the ice advanced further south, it covered the northern end of Moses Coulee and forced the floodwaters to flow into Grand Coulee, carving it into a more efficient outlet. Glacial sediments deposited by the Okanogan Lobe are preserved in upper Moses Coulee, north of Highway 2.

Moses Coulee is carved from a thick sequence of basalt flows of the Columbia River Basalt Group that are Mesozoic in age (15-16 million years old). The “spongy” layers of the bedrock consist of columns of basalt that were easily broken out and removed by the turbulent Ice Age floods. Moving horizontally, the high, vertical walls of the coulee at Near Pahatsad, the cliffs that form the walls of the coulee reach 800 feet high.

Ice-age floods carried large volumes of eroded rock down the coulee and deposited it in a huge gravel bar running out from the mouth of the river. The bar expanded across the Columbia River valley, damming it from Rock Island nearly ten miles downstream to Trikell, and backing up a temporary Lake in the Wenatchee area. The impounded lake waters eventually eroded down through the fan deposits, leaving the lake and leaving behind layers of silty lake deposits and stranded debris that had formed where side streams deposited their sediment load into the lake. These deposits can still be seen today near Wenatchee.

4. Moses Coulee

Babboc Bench/West Bar

Babboc Bench is a 20-mile long, relatively flat floodplain feature along the east side of the Columbia River from Trikell, WA to I-90 that is bisected by Moses and Frenchman Coulees. Babboc Bench has excellent examples of “basin and bench” geography (a large highland surrounded by smaller eroded depressions) and left isolated basalt butts on a flood-resistant layer of Columbia River Basalt.

West Bar: a large crescent-shaped ‘point’ bar with well-preserved symmetrical current dunes or rippled, represents one of the most dramatic flood features found in the Ice Age Floods. Much of the sediment in West Bar was derived by back-flowing from early Glacial Lake Missoula floods that left the Quincy Basin and Potholes Coulee to the south. Late Ice Age floodwaters continued to move and erode fossils from the retreat of the Pleistocene continental ice sheet and transported much of the surface of West Bar into its present form.

5. Potholes Coulee

Consists of two elongate alcoves separated by a relatively thin “rock blade,” similar to Dry Falls in Grand Coulee. It even more dramatic in the area above.

Spotting it on a new topographic map in the early 1900s, Potholes Coulee was the first feature that H. L. Brem totalized and mapped. His work and dedicated research, despite criticism by the geological community and the geologic “uniformitarians” dogma of the day, eventually led to the incredible Ice Age Floods “catastrophic” story we recognize today.

6. Baboc Bench

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