The Ellensburg Chapter is based in Ellensburg, Washington. Ellensburg lies in a unique geologic, climatic, and topographic setting. It is situated near the western edge of the Columbia River Basalt Province, where geology, climate, and topography combine to create a unique setting that is conducive to great field trips! Within a one-hour drive, one can see all of the major rock types, exposed to eroding and changing by wind, rain, and other natural processes. Chapter activities include field trips and speaker series. We offer four or five field trips per year, typically in September, November, April, and June, to sites within and outside the floods-impacted area. We host five or six speaker presentations each year, typically in October, December, February, April, and June, focused on a variety of geology and physical geography topics. Field trips and presentations are free of charge and open to all.

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 Kalasin panhandle, 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 roamed across the landscape at up to 650 mph.

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

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 telling of the story, without taking custodianship of public and private lands.

The Cordilleran Continental Glacier

The Cordilleran Continental Glacier is the result of the Great Ice Age floods from Missoula, Montana, extending across some of the most remote and scenic areas of the Northwest. The glacier covered most of the Pacific Northwest from southern Alaska to northern California, and from the Canadian border to the Mexican border.

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.

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**Mt. Stuart**

"Greatest exposed granite mass in the U.S."

**Yakima River Glacial Moraines & Terraces**

Several times in the recent geologic past, alpine glaciers formed at high elevations in the Upper Yakima River Basin. Persistent cold and snowy climates caused these glaciers to flow far downvalley. The largest of these glaciers terminated, and deposited large piles of debris (i.e., moraine), at Thorp Prairie (also known as Elk Heights and crossed by I-90) and Skwok Prairie (crossed by WA 970) more than 500,000 years ago. This glacier was more than 40 miles long!

Glacial meltwater left thick deposits of gravel and sand that was later partially eroded by the Yakima River. This partial erosion left relatively flat terraces downstream nearly to Ellensburg.

Subsequent glacial advances deposited moraines further upvalley and terraces nested below the prominent ancient ones. The most prominent of these moraines are those that impound lakes Cle Elum, Kachess, and Keechelus.

**Yakima River Canyon**

The Yakima River Canyon is one of Central Washington's last enclaves of "gems" and is located just south of Ellensburg and the Kittitas Basin. The spectacular canyon formed from the incision of the Yakima River through resistant Columbia River Basalts.

Because the river flows perpendicularly to the prominent folds of the Yakima Fold and Thrust Belt, it is thought to be antecedent—i.e., the river eroded downward as the folded ridges rose. And it continues to do so! The sinuous path of the river through the hard rocks forms "entrenched meanders."

The steep walls of these meanders show evidence of prehistoric to recent rockfall, landsliding, and debris flows. Over the past 25 years, WA 821 has been closed several times for extended periods by debris flow events driven by thunderstorms. The most recent debris flow-related closure occurred in August 2019.

**Ginkgo Petrified Forest**

Ginkgo State Park is home to the Ginkgo Petrified Forest. The park stretches from Vantage on the Columbia River several miles west into lower Schnepfey Coulee where it is bisected by the old Vantage Highway. Approximately 16 million years ago, when the Pacific Northwest was under a warmer, wetter climate, Cascade Range forests included more diverse species than today. Volcanic debris flows from the Cascades uprooted and transported many of these trees to the Vantage area where they were deposited. They were then buried by the Ginkgo lava flow, an ~15.5 million year old member of the Wanapum Basalts. With burial, cellulose of the wood was replaced with silica thereby petrifying the logs.

More than 35 different trees have been found here including pine, fir, spruce, and sequoia that are present today in western coniferous forests. More intriguing are the other species—oak, maple, elm, cypress, beech, and ginkgo representative of southeastern US or southeastern Asia native forests. Subsequent Ice Age floods through the area exposed some of the logs so we can see them today.

**Frenchman Coulee**

Frenchman Coulee is an erosional feature left behind by the great Ice Age Floods, a spectacular dual coulee and recessional-cataract complex in the western Quincy Basin.

In the Pacific Northwest, "coulee" refers to steep-sided, flat-bottomed, straight channels eroded in basalt bedrock by Ice Age floods. Frenchman Coulee is actually two parallel coulees—old US 10 follows the northern coulee while roadless "Echo Basin" is the southern branch.

Frenchman Coulee formed when Ice Age floodwaters flowed down the Grand Coulee and across the Quincy Basin. It is one of four main outlets for floodwaters in the Quincy Basin—Crater Coulee and Potholes Coulee lie to the north while the Drumheller Channels lie to the southeast.

**Additional details on these features and associated road tours and trails are online at** [https://iafi.org/](https://iafi.org/)