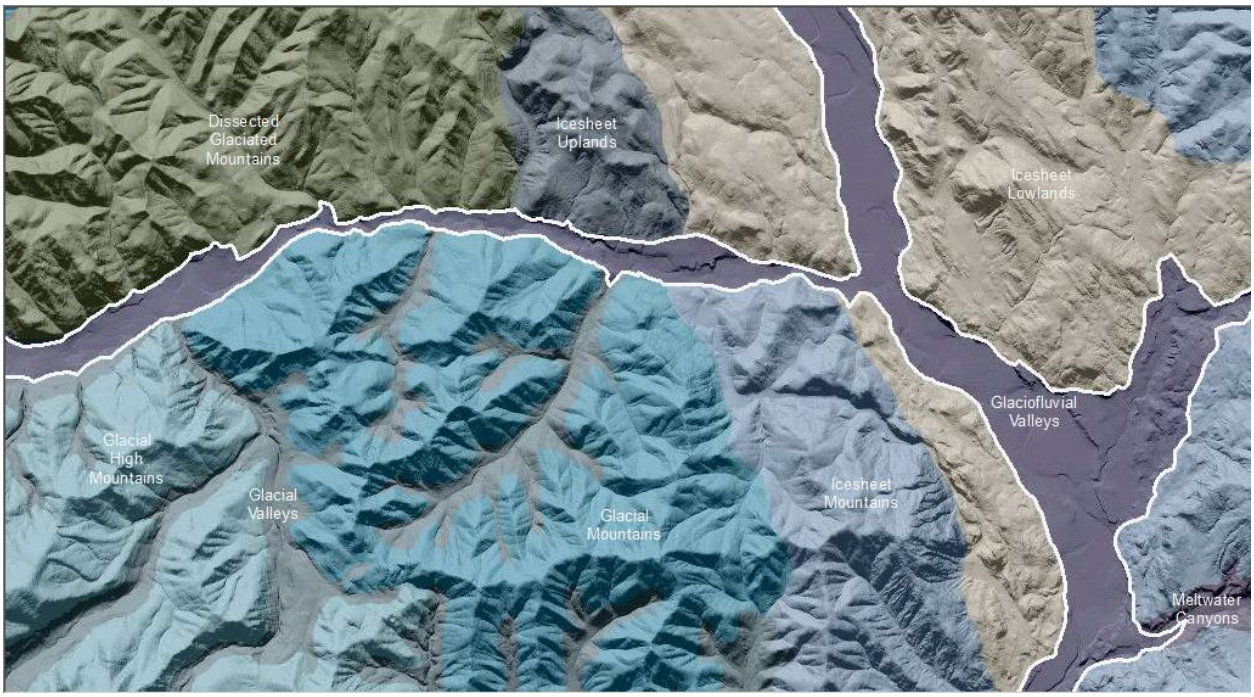
East Cascades Glaciofluvial Valleys

Terrain Class: Valley [Landscape Term] (a) Any low-lying land bordered by higher ground; esp. an elongate, relatively large, gently sloping depression of the Earth's surface, commonly situated between two mountains or between ranges of hills or mountains, and often containing a stream with an outlet. It is usually developed by stream erosion, but may be formed by faulting. (b) A broad area of generally flat land extending inland for a considerable distance, drained or watered by a large river and its tributaries; a river basin. (Bates and Jackson, 1995)

Landform Association: Glaciofluvial Valleys



Glaciofluvial Valleys contain the full extent of glacial valley bottoms principally formed by meltwaters of Pleistocene glaciers. They resulted from both continental and alpine glaciation. Areas of glacially deposited sediments and scours mixed in with fluvial aggradation and erosion. Glaciofluvial valleys experienced channelized flows that often deeply incised into the valley bottom. Parent streams carried heavy sediment loads. As a consequence, thick, sandy to gravelly deposits are the norm. It may be difficult to distinguish the two origins but fluvial processes are commonly more recent and overly or are inset to glacially derived sediments in the plain. Some deposits formed in a flow direction counter to modern day drainages. As a result, sediment particle size classes are the reverse of expected. Coarse rounded cobbly and bouldery deposits are found. As a general rule, the modern hydrologic and sediment regime supports a meandering stream course.

This Landform Association has a limited spatial extent on National Forest System Lands.

Landtype Associations: Landtype Associations are formed by intersecting vegetation series or groups of vegetation series with Landform Associations.

Topography:
The following tables represent the average conditions for the Landform Association. Only lands within and adjacent to National Forest System Lands were mapped by this project. The entire EPA Level III Ecoregion is not covered by this mapping.

The percent of Landform Association (% of LfA) in bold in the table below refers to the percent of the Ecoregion represented by that Landform Association. The (% of LfA) numbers not in bold in the table below refer to the percent of each Landtype Association within the Landform Association.

Landform Association/Landtype Association	% of LfA	Mean % Slope	Minimum Elevation (m)	Maximum Elevation (m)	Mean Elevation (m)	% Northerly Aspect (226° - 134°)	% Southerly Aspect (135° - 225°)
Glaciofluvial Valleys	**0.1%**	**11**	**757**	**908**	**817**	**64%**	**36%**
Glaciofluvial Valleys, Douglas-Fir	18.9%	14	639	802	703	49%	51%
Glaciofluvial Valleys, Douglas-Fir - Ponderosa Pine	3.5%	17	524	830	680	47%	53%
Glaciofluvial Valleys, Grand Fir	3.8%	12	759	879	804	66%	34%
Glaciofluvial Valleys, Grand Fir - Douglas-Fir	8.6%	11	721	880	779	70%	30%
Glaciofluvial Valleys, Grand Fir - Western Hemlock	8.2%	9	809	926	867	70%	30%
Glaciofluvial Valleys, Pacific Silver Fir	1.3%	4	950	982	960	70%	30%
Glaciofluvial Valleys, Ponderosa Pine - Douglas-Fir	3.6%	20	575	705	612	67%	33%
Glaciofluvial Valleys, Western Hemlock	52.3%	7	941	1096	997	75%	25%

Climate:

Landform Association/Landtype Association	Mean Annual Precipitation (mm)	Mean Annual Temperature °C	AET/PET Ratio July, Aug, Sept
Glaciofluvial Valleys	**840**	**6**	**0.35**
Glaciofluvial Valleys, Douglas-Fir	608	7	0.33
Glaciofluvial Valleys, Douglas-Fir - Ponderosa Pine	454	8	0.10
Glaciofluvial Valleys, Grand Fir	596	7	0.34
Glaciofluvial Valleys, Grand Fir - Douglas-Fir	905	7	0.42
Glaciofluvial Valleys, Grand Fir - Western Hemlock	997	6	0.42
Glaciofluvial Valleys, Pacific Silver Fir	1131	5	0.49
Glaciofluvial Valleys, Ponderosa Pine - Douglas-Fir	441	8	0.17
Glaciofluvial Valleys, Western Hemlock	1245	5	0.43

The ratio of Actual Evapotranspiration to Potential Evapotranspiration (AET/PET) is used as a broad-scale indicator of potential drought stress. We obtained modeled actual and potential evapotranspiration datasets from the Numerical Terradynamic Simulation Group at the University of Montana (http://www.ntsg.umt.edu/project/mod16) for a 30 year climate average. AET/PET ratio in the table above is based on a scale of zero to one. A value closer to 1 means the vegetation is transpiring close to its potential. A value farther from 1means that the Actual Evapotranspiration is below potential based on this climatic zone (Ringo, et. al. 2016 in draft).