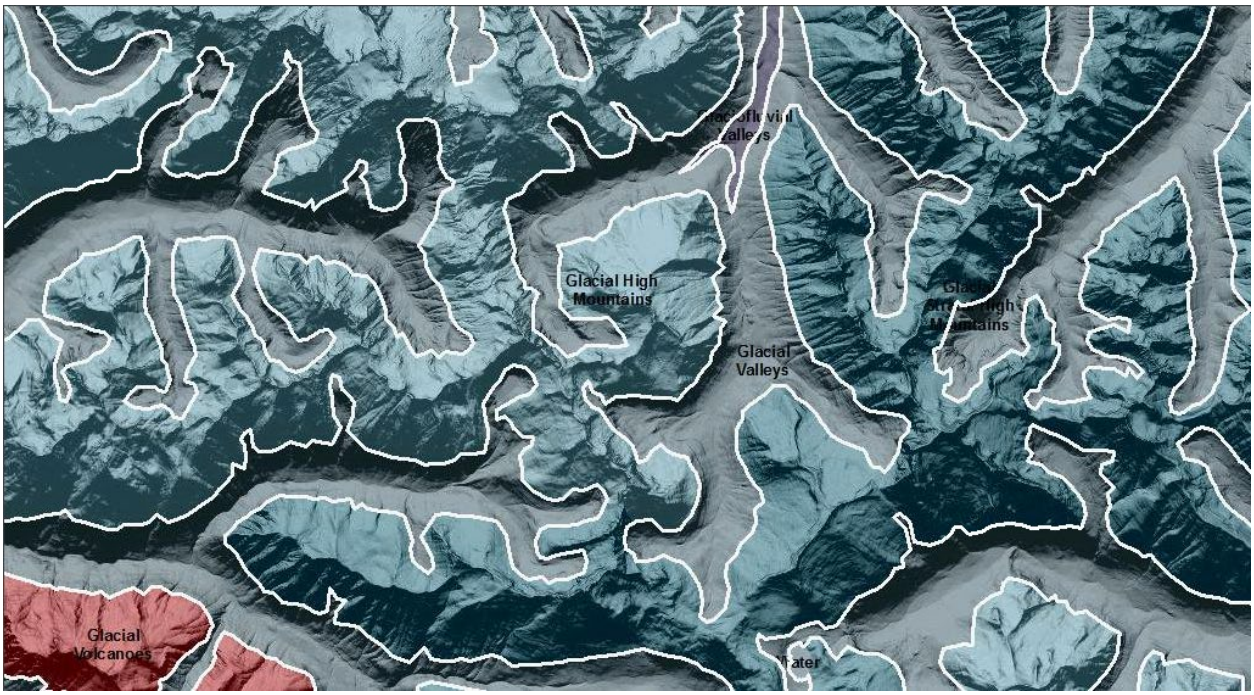
Eastern Cascades Glacial Valleys

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:
Glacial Valleys



Glacial Valleys are the U-shaped, ice-covered valley segments in glacial and glaciated areas. They include both the glacial valley bottom and sideslopes of the glacial valley wall. Often the landform is too narrow at this scale of mapping to differentiate the bottom as in Glacial Valley Bottoms from the wall sections themselves. The sideslopes accumulate the basal and lateral till of the valley glacier. The area experienced immediate post glacial redistribution of valley side till through colluvial deposition, debris flows, and sheet flow with deposition onto the valley floor. Many areas of the valley walls are exposed to bedrock as a result. There are pockets of lateral moraines with fluvial deposits between them. Seeps and springs emerge in the colluvial material and associated with till deposits.

This Landform Association has an abundant 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°)**
Glacial Valleys	**0.8%**	**30**	**1140**	**1451**	**1254**	**72%**	**28%**
Glacial Valleys, Douglas-Fir	0.5%	51	892	1185	980	18%	82%
Glacial Valleys, Douglas-Fir - Subalpine Fir	1.0%	5	815	904	856	62%	38%
Glacial Valleys, Grand Fir	23.7%	33	1077	1447	1208	66%	34%
Glacial Valleys, Grand Fir - Douglas-Fir	2.9%	22	781	1027	892	82%	18%
Glacial Valleys, Grand Fir - Mountain Hemlock	1.5%	41	1179	1591	1382	80%	20%
Glacial Valleys, Grand Fir - Western Hemlock	1.8%	41	989	1357	1103	42%	58%
Glacial Valleys, Grand Fir-White Fir	5.9%	21	1334	1623	1430	52%	48%
Glacial Valleys, Grand Fir-White Fir - Douglas-Fir	1.0%	5	840	980	892	79%	21%
Glacial Valleys, Grand Fir-White Fir - Mountain Hemlock	2.4%	10	1443	1525	1461	85%	15%
Glacial Valleys, Grand Fir-White Fir - Mountain Hemlock - mix	1.4%	14	1444	1639	1537	92%	8%
Glacial Valleys, Grand Fir-White Fir - Ponderosa Pine	0.7%	12	1529	1643	1578	63%	37%
Glacial Valleys, Grand Fir-White Fir - Rock	0.1%	9	966	1034	987	99%	1%
Glacial Valleys, Grand Fir-White Fir - Shasta Red Fir	0.3%	8	1556	1600	1576	48%	52%
Glacial Valleys, Grand Fir-White Fir - Subalpine Fir - mix	2.1%	8	1444	1574	1466	83%	17%
Glacial Valleys, Grasslands / Meadows	2.2%	0	1443	1451	1444	96%	4%
Glacial Valleys, Mountain Hemlock	20.4%	37	1304	1726	1470	73%	27%
Glacial Valleys, Mountain Hemlock - Parkland	0.7%	43	1232	1841	1520	56%	44%
Glacial Valleys, Mountain Hemlock - Western Hemlock	2.6%	49	1033	1411	1174	71%	29%
Glacial Valleys, Pacific Silver Fir	2.1%	42	1062	1321	1163	78%	22%
Glacial Valleys, Pacific Silver Fir - Grand Fir	0.3%	43	1077	1337	1199	85%	15%
Glacial Valleys, Pacific Silver Fir - Grand Fir-White Fir	1.4%	9	1081	1312	1184	83%	17%
Glacial Valleys, Pacific Silver Fir - Western Hemlock	0.1%	24	976	1123	1007	95%	5%
Glacial Valleys, Ponderosa Pine - Grand Fir-White Fir	3.1%	6	1473	1564	1492	83%	17%
Glacial Valleys, Rock	1.8%	7	925	1174	1025	58%	42%
Glacial Valleys, Western Hemlock	12.9%	32	899	1238	999	79%	21%
Glacial Valleys, Western Hemlock - Grand Fir	3.2%	36	972	1289	1092	76%	24%
Glacial Valleys, Western Hemlock - Pacific Silver Fir	3.8%	35	1037	1421	1170	73%	27%

Climate:

Glacial Valleys, Mountain Hemlock	5	0.32
Glacial Valleys, Mountain Hemlock - Parkland	4	0.34
Glacial Valleys, Mountain Hemlock - Western Hemlock	5	0.38
Glacial Valleys, Pacific Silver Fir	5	0.35
Glacial Valleys, Pacific Silver Fir - Grand Fir	5	0.34
Glacial Valleys, Pacific Silver Fir - Grand Fir-White Fir	7	0.25
Glacial Valleys, Pacific Silver Fir - Western Hemlock	5	0.36
Glacial Valleys, Ponderosa Pine - Grand Fir-White Fir	6	0.27
Glacial Valleys, Rock	8	0.30
Glacial Valleys, Western Hemlock	6	0.42
Glacial Valleys, Western Hemlock - Grand Fir	5	0.40
Glacial Valleys, Western Hemlock - Pacific Silver Fir	5	0.37

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).