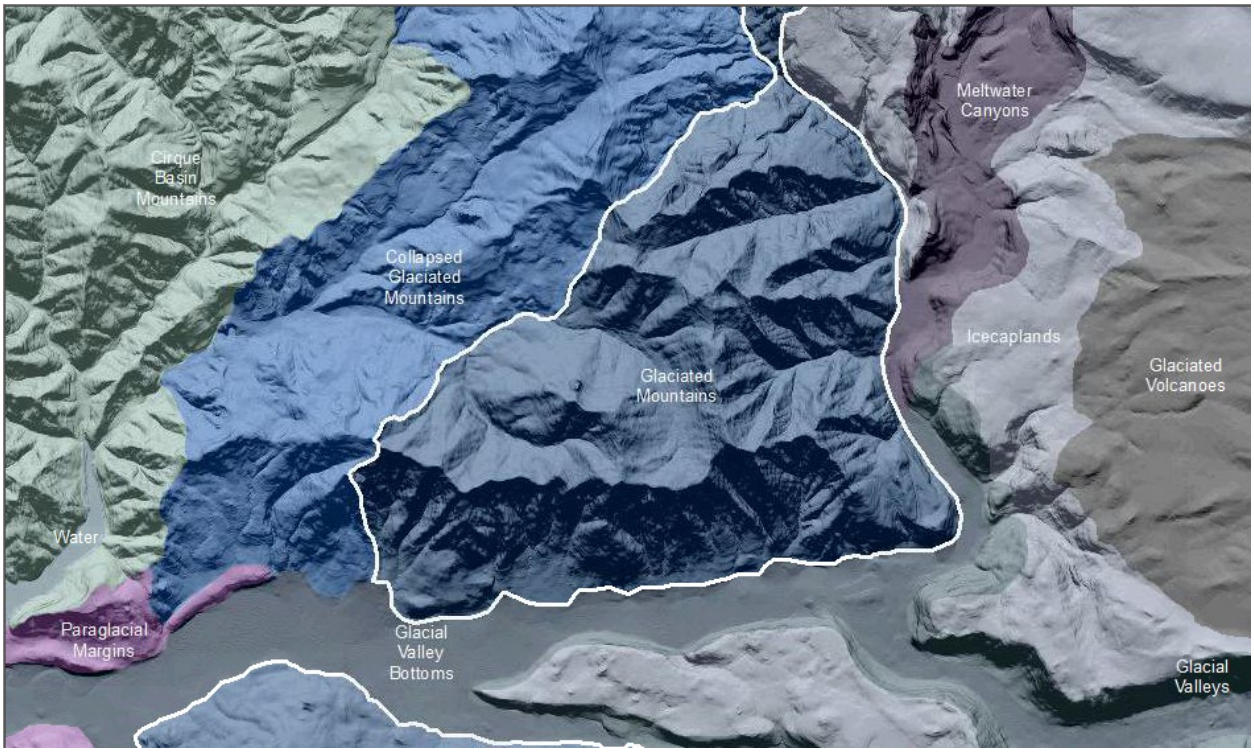
Eastern Cascades Glaciated Mountains

Terrain Class: Mountains - No one process responsible for construction of mountains. They can be uplifted, tectonic, subduction of plates, folding, uplift, up and down warping of the mantle, inflation of molten lower crustal (batholiths), etc. Erosion of mountain systems occurs over time. The rate of erosion is dependent on the geomorphic process, the underlying rock structure, and the climate, including both freeze thaw and the amount and intensity of precipitation and runoff. Mountains are further defined and distinguished based on morphology, including the pattern and density of drainages, depth of drainages, overall morphology of the area between the drainages, evidence of a strong imprint of a surficial process such as glaciation, and presence of visible underlying rock structure.

Mountains have simple to very complex forms that have arisen due to inherited rock structure, rock history, and are the net result of local to regional spatial scales of competing rates of upbuilding/uplift and downgrading/erosion. Mountains will have an inherited history from weathering and degradation of the underlying stack of earth materials that forms them. Vegetation, habitat, water interception, collection and transport will share a similar history in the same type of uplift and rock.

Landform Association: Glaciated Mountains



Glaciated Mountains are areas shaped by past glaciers and are somewhat masked more recent geomorphic processes. The terrain is glacially scoured, with hanging valleys, cirque basins, icefields, and large U-shaped valleys, with vertical to near-vertical slopes in bedrock common throughout.. Since the cessation of glaciation in these areas, however, surface, mass wasting (shallow rapid or deepseated

earthflow, rockfall, etc.) or fluvial erosion processes have dominated and masked much of the glacial signature of the mid to lower slopes.

Soils in Glaciated Mountains are highly variable depending on the scour and deposition and subsequent fluvial and mass wasting erosion.

This Landform Association has a common 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°)**
Glaciated Mountains	**0.6%**	**42**	**1005**	**1488**	**1235**	**76%**	**24%**
Glaciated Mountains, Douglas-Fir	19.4%	32	785	1214	987	53%	47%
Glaciated Mountains, Grand Fir	47.6%	44	1027	1564	1293	71%	29%
Glaciated Mountains, Pacific Silver Fir - Grand Fir	1.7%	36	1059	1438	1193	82%	18%
Glaciated Mountains, Pacific Silver Fir - Western Hemlock	0.5%	43	989	1287	1140	94%	6%
Glaciated Mountains, Ponderosa Pine	3.3%	36	599	1013	792	23%	77%
Glaciated Mountains, Subalpine Fir	25.0%	43	1226	1871	1539	87%	13%
Glaciated Mountains, Subalpine Fir - Grand Fir	0.5%	56	987	1542	1280	99%	1%
Glaciated Mountains, Western Hemlock	2.0%	47	1094	1478	1258	97%	3%

Climate:

Landtype Assocation	Mean Annual Precipitation (mm)	Mean Annual Temperature °C	AET/PET Ratio July, Aug, Sept
Glaciated Mountains	**1495**	**5**	**0.36**
Glaciated Mountains, Douglas-Fir	1221	6	0.42
Glaciated Mountains, Grand Fir	1171	5	0.34
Glaciated Mountains, Pacific Silver Fir - Grand Fir	2000	5	0.36
Glaciated Mountains, Pacific Silver Fir - Western Hemlock	2155	5	0.42
Glaciated Mountains, Ponderosa Pine	802	7	0.29
Glaciated Mountains, Subalpine Fir	1611	4	0.32
Glaciated Mountains, Subalpine Fir - Grand Fir	1890	5	0.38
Glaciated Mountains, Western Hemlock	1904	5	0.36

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).