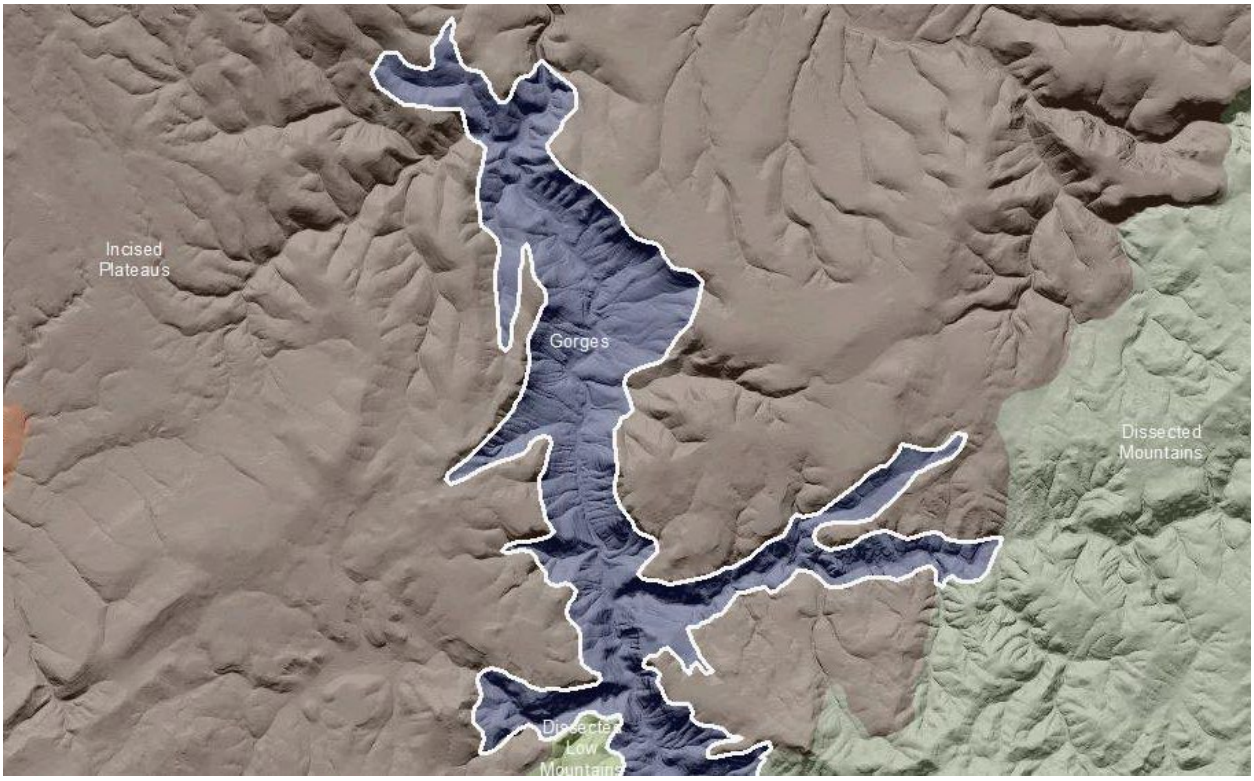
Eastern Cascades Gorges

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:
Gorges



Gorges are deep, box-shaped valleys typically created by higher than normal discharges. These gorge-forming discharges are the result of a restriction or stoppage of normal flows upstream of this landform that upon release create a catastrophic flood. The gorge-forming flows have originated from a landslide formed lake, which was catastrophically breached, or a glacier-dammed lake breaching the restricting ice, as in the Missoula Floods. A gorge is identified by its vertical or overhanging walls, narrow slotted shape and higher relief slopes than the canyon or valley adjoining or bounding it. Gorges are spatially shorter along a channel reach than a canyon or valley. Soils are thin to not present on the scoured bedrock slopes. Local accumulations of colluvium and rock fall have immature soils.

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°)**
Gorges	**0.7%**	**37**	**786**	**1145**	**948**	**70%**	**30%**
Gorges, Douglas-Fir	40.7%	46	359	879	606	64%	36%
Gorges, Douglas-Fir - Grand Fir-White Fir	2.9%	33	836	1066	943	64%	36%
Gorges, Douglas-Fir - Ponderosa Pine	5.9%	41	413	790	586	74%	26%
Gorges, Grand Fir - Douglas-Fir	3.7%	46	313	820	530	86%	14%
Gorges, Grand Fir-White Fir	23.6%	30	1291	1687	1475	73%	27%
Gorges, Grand Fir-White Fir - Douglas-Fir	2.7%	59	581	1032	753	55%	45%
Gorges, Grand Fir-White Fir - Parkland	2.0%	38	1728	2209	1987	81%	19%
Gorges, Grand Fir-White Fir - Ponderosa Pine	3.9%	30	1371	1564	1470	82%	18%
Gorges, Grasslands / Meadows	0.8%	39	1752	2179	1971	33%	67%
Gorges, Mountain Hemlock	1.6%	36	1817	2126	2001	82%	18%
Gorges, Pacific Silver Fir - Western Hemlock	0.3%	54	740	946	806	77%	23%
Gorges, Ponderosa Pine	3.3%	31	413	692	523	78%	22%
Gorges, Ponderosa Pine - Shrub-Steppe	3.0%	45	24	362	145	69%	31%
Gorges, Ponderosa Pine - Western Juniper	3.3%	34	594	873	694	63%	37%
Gorges, Water	0.7%	3	594	609	594	92%	8%
Gorges, Western Hemlock - Grand Fir	1.1%	29	676	975	795	71%	29%
Gorges, Western Juniper - Shrub-Steppe	0.4%	24	736	876	792	41%	59%

Climate:

Landform Association/Landtype Association	**Mean Annual Temperature °C**	**AET/PET Ratio July, Aug, Sept**
Gorges	**8**	**0.26**
Gorges, Douglas-Fir	9	0.33
Gorges, Douglas-Fir - Grand Fir-White Fir	8	0.26
Gorges, Douglas-Fir - Ponderosa Pine	10	0.20
Gorges, Grand Fir - Douglas-Fir	9	0.28
Gorges, Grand Fir-White Fir	7	0.28
Gorges, Grand Fir-White Fir - Douglas-Fir	8	0.47
Gorges, Grand Fir-White Fir - Parkland	5	0.16
Gorges, Grand Fir-White Fir - Ponderosa Pine	7	0.18
Gorges, Grasslands / Meadows	5	0.16
Gorges, Mountain Hemlock	5	0.20
Gorges, Pacific Silver Fir - Western Hemlock	7	0.57
Gorges, Ponderosa Pine	10	0.18
Gorges, Ponderosa Pine - Shrub-Steppe	11	0.32
Gorges, Ponderosa Pine - Western Juniper	10	0.09
Gorges, Water	10	0.08
Gorges, Western Hemlock - Grand Fir	7	0.53
Gorges, Western Juniper - Shrub-Steppe	9	0.09

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).