

Eastern Cascades Low 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: Low Mountains



Low Mountains are mountains with a low relief class where specific geomorphic development processes are not apparent. These are the “catch-all” landscapes that do not fit into another category. Ridge systems are broad, slope gradients are moderate and slope lengths are short in this landscape. Broad valleys may be present. Residual soils store moisture on the low slope angles and weather to deep and moderately deep 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° -	% Southerly Aspect (135° -
Low Mountains	0.5%	16	1137	1422	1262	67%	33%
Low Mountains, Douglas-Fir	10.7%	11	997	1175	1079	61%	39%
Low Mountains, Douglas-Fir - Grand Fir-White Fir	4.6%	17	878	1167	1045	91%	9%
Low Mountains, Douglas-Fir - Ponderosa Pine	1.1%	25	972	1126	1054	57%	43%
Low Mountains, Grand Fir-White Fir	37.2%	12	995	1341	1215	89%	11%
Low Mountains, Grand Fir-White Fir - Douglas-Fir	7.6%	17	818	1103	951	92%	8%
Low Mountains, Grasslands / Meadows - Shrub-Steppe	1.6%	32	1498	1937	1730	23%	77%
Low Mountains, Ponderosa Pine	26.6%	14	1239	1534	1352	76%	24%
Low Mountains, Ponderosa Pine - Grand Fir-White Fir	3.1%	6	878	1003	929	93%	7%
Low Mountains, Shrub-Steppe	4.8%	21	1466	1846	1549	42%	58%
Low Mountains, Shrub-Steppe - Grasslands / Meadows	2.6%	27	1506	1948	1649	38%	62%

Climate:

Landform Association/Landtype Association	Mean Annual Precipitation (mm)	Mean Annual Temperature °C	AET/PET Ratio July, Aug, Sept
Low Mountains	437	7	0.21
Low Mountains, Douglas-Fir	501	8	0.24
Low Mountains, Douglas-Fir - Grand Fir-White Fir	496	8	0.32
Low Mountains, Douglas-Fir - Ponderosa Pine	483	8	0.20
Low Mountains, Grand Fir-White Fir	614	7	0.36
Low Mountains, Grand Fir-White Fir - Douglas-Fir	518	8	0.34
Low Mountains, Grasslands / Meadows - Shrub-Steppe	292	6	0.08
Low Mountains, Ponderosa Pine	380	7	0.14
Low Mountains, Ponderosa Pine - Grand Fir-White Fir	476	8	0.30
Low Mountains, Shrub-Steppe	269	6	0.06
Low Mountains, Shrub-Steppe - Grasslands / Meadows	291	6	0.08

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 1 means that the Actual Evapotranspiration is below potential based on this climatic zone (Ringo, et. al. 2016 in draft).