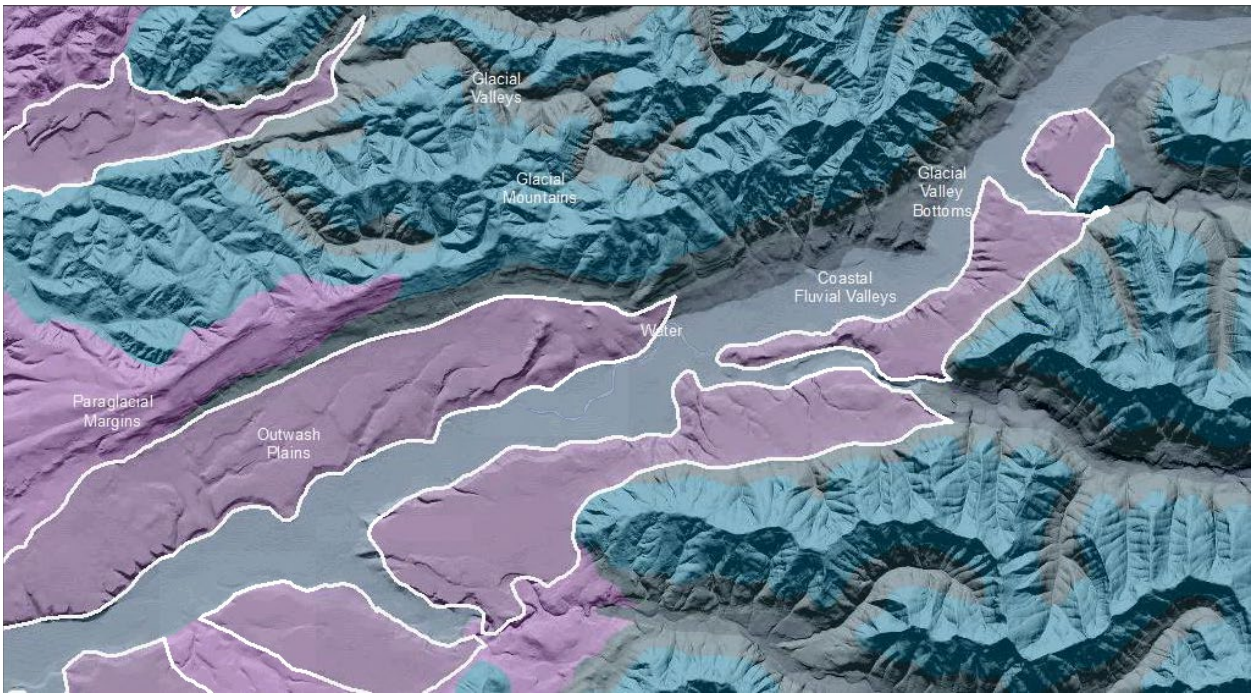
Eastern Cascades Outwash Plains

Overall Terrain:

Plains [Landscape Term] A general term referring to an extensive, lowland area that ranges from level to gently sloping or undulating. A plain has few or no prominent hills or valleys, and usually occurs at low elevation relative to surrounding areas. (Bates and Jackson, 1980)

Landform Association:

Outwash Plains:



Outwash Plains are broad flats lying downstream of and connected to glacial valleys and moraines by their parent streams which conveyed meltwater and entrained glacial sediments. Upstream glacial action past or present continues to influence processes in this map unit. Outwash Plains were formed by braided water courses distributing sediments in fan-shaped depositions where unconfined by mountains, and in long terraces where confined to valleys. Deposits tend to be sandy to cobbly gravels which are well sorted. These deposits are typically many meters thick and yield deep, productive soils. These deposits produce significant shallow aquifers.

This Landform Association is rare 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°)
Outwash Plains	**0.3%**	**2**	**1366**	**1402**	**1376**	**76%**	**24%**
Outwash Plains, Grand Fir-White Fir	32.8%	2	1348	1406	1368	56%	44%
Outwash Plains, Grand Fir-White Fir - Developed	2.3%	3	1440	1472	1456	92%	8%
Outwash Plains, Grand Fir-White Fir - Grasslands / Meadows	1.7%	1	1356	1373	1360	51%	49%
Outwash Plains, Grand Fir-White Fir - Grasslands / Meadows - mix	2.5%	1	1339	1359	1344	91%	9%
Outwash Plains, Grand Fir-White Fir - Ponderosa Pine	26.0%	1	1370	1410	1380	89%	11%
Outwash Plains, Grasslands / Meadows	1.4%	1	1338	1343	1340	91%	9%
Outwash Plains, Grasslands / Meadows - Grand Fir-White Fir	1.3%	2	1338	1350	1342	47%	53%
Outwash Plains, Grasslands / Meadows - Ponderosa Pine	2.1%	1	1357	1367	1361	47%	53%
Outwash Plains, Mountain Hemlock - Ponderosa Pine	1.2%	2	1462	1487	1467	71%	29%
Outwash Plains, Ponderosa Pine	10.7%	2	1367	1393	1377	88%	12%
Outwash Plains, Ponderosa Pine - Grand Fir-White Fir	6.5%	5	1386	1441	1397	74%	26%
Outwash Plains, Ponderosa Pine - Grasslands / Meadows	3.2%	2	1354	1394	1362	64%	36%
Outwash Plains, Subalpine Fir	4.8%	3	1356	1435	1376	53%	47%
Outwash Plains, Subalpine Fir - Grand Fir-White Fir	2.2%	3	1359	1424	1376	94%	6%
Outwash Plains, Water - Grasslands / Meadows	1.5%	1	1323	1332	1324	90%	10%

Climate:

Landform Association/Landtype Association	Mean Annual Precipitation (mm)	Mean Annual Temperature °C	AET/PET Ratio July, Aug, Sept
Outwash Plains	**786**	**6**	**0.24**
Outwash Plains, Grand Fir-White Fir	797	6	0.27
Outwash Plains, Grand Fir-White Fir - Developed	898	6	0.21
Outwash Plains, Grand Fir-White Fir - Grasslands / Meadows	739	6	0.15
Outwash Plains, Grand Fir-White Fir - Grasslands / Meadows - mix	762	6	0.20
Outwash Plains, Grand Fir-White Fir - Ponderosa Pine	788	6	0.25
Outwash Plains, Grasslands / Meadows	772	6	0.24
Outwash Plains, Grasslands / Meadows - Grand Fir-White Fir	728	6	0.15
Outwash Plains, Grasslands / Meadows - Ponderosa Pine	749	6	0.21
Outwash Plains, Mountain Hemlock - Ponderosa Pine	1010	6	0.25
Outwash Plains, Ponderosa Pine	758	6	0.23
Outwash Plains, Ponderosa Pine - Grand Fir-White Fir	807	6	0.25
Outwash Plains, Ponderosa Pine - Grasslands / Meadows	772	6	0.24
Outwash Plains, Subalpine Fir	797	6	0.26
Outwash Plains, Subalpine Fir - Grand Fir-White Fir	826	6	0.39
Outwash Plains, Water - Grasslands / Meadows	616	7	0.24

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).