

## Eastern Cascades Faulted Incised Plateaus

**Plateaus** in the Pacific Northwest are predominantly underlain by stacked flows of the Columbia River Basalts and form extensive elevated plains bounded on one or more sides by steep slopes hundreds of feet above adjoining areas. Plateaus are differentiated from each other by the most-evident surficial processes of alteration.

### Landform Association:

#### Faulted Incised Plateaus:



**Faulted Incised Plateaus** are narrow elongate upland plains cut by parallel and sub-parallel faults. Typically these are normal faults with much more vertical than lateral displacement. The faulting has created positive (uplands) and negative (drainages) patterns with repeating topographic elements. These plateaus are characterized by numerous faults over a broad area up to several kilometers in extent. Many of these faults show evidence of movement during the recent geologic past.

The drainages in the Faulted Incised Plateaus are captured and redirected by displacement of the fault blocks. The rearrangement and redirection of precipitation runoff by the fault blocks gives a zig-zag appearance to catchment channels. The faults are zones of weakness and set up water flows along these zones. Sediment is impounded by fault scarps, in closed depressions, and at locations with lower slope angle. In these pockets of sediment accumulation there is increased soil development.

The slopes in this landform are a mix of steep (tectonic) and not so steep (erosion processes) slope. Bedrock slopes within this map unit occur more as a result of tectonic activity than erosion. The tectonic created slopes are steeper than the angle of repose of slopes created by erosion. These slopes have

developed little if any soil mantle. There are valleys with flows that have been diverted or captured flow by other drainages. These captured or diverted drainages are essentially “hanging valleys.” These hanging valleys are dominated by sheet flow at a reduced rate and sediment transport is reduced.

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°)
<b>Faulted Incised Plateaus</b>	<b>3.9%</b>	<b>10</b>	<b>1618</b>	<b>1777</b>	<b>1702</b>	<b>73%</b>	<b>27%</b>
Faulted Incised Plateaus, Grand Fir-White Fir	33.4%	14	1659	1974	1828	76%	24%
Faulted Incised Plateaus, Grand Fir-White Fir - Ponderosa Pine	9.0%	14	1554	1755	1651	79%	21%
Faulted Incised Plateaus, Grand Fir-White Fir - Riparian Shrub / Hardwood Forest	0.1%	10	1601	1657	1626	75%	25%
Faulted Incised Plateaus, Grand Fir-White Fir - Western Juniper	0.1%	3	1609	1632	1622	69%	31%
Faulted Incised Plateaus, Grasslands / Meadows	0.6%	10	1622	1753	1690	70%	30%
Faulted Incised Plateaus, Grasslands / Meadows - Grand Fir-White Fir	0.2%	11	1409	1534	1490	69%	31%
Faulted Incised Plateaus, Grasslands / Meadows - Western Juniper	0.2%	1	1612	1623	1614	83%	17%
Faulted Incised Plateaus, Parkland	1.0%	11	2136	2319	2246	59%	41%
Faulted Incised Plateaus, Parkland - Ponderosa Pine	0.1%	11	1879	2082	1970	97%	3%
Faulted Incised Plateaus, Ponderosa Pine	28.3%	13	1548	1764	1662	72%	28%
Faulted Incised Plateaus, Ponderosa Pine - Grand Fir-White Fir	12.9%	11	1583	1779	1691	61%	39%
Faulted Incised Plateaus, Ponderosa Pine - Grand Fir-White Fir - mix	0.2%	4	1885	1937	1914	99%	1%
Faulted Incised Plateaus, Ponderosa Pine - Grasslands / Meadows	0.2%	21	1410	1569	1467	89%	11%
Faulted Incised Plateaus, Ponderosa Pine - Riparian Shrub / Hardwood Forest	0.3%	10	1774	1880	1801	70%	30%
Faulted Incised Plateaus, Ponderosa Pine - Shrub-Steppe	2.4%	7	1631	1735	1684	73%	27%
Faulted Incised Plateaus, Ponderosa Pine - Western Juniper	1.0%	11	1639	1799	1720	63%	37%
Faulted Incised Plateaus, Shrub-Steppe	2.8%	4	1554	1614	1591	78%	22%
Faulted Incised Plateaus, Shrub-Steppe - Grand Fir-White Fir	0.2%	3	1643	1715	1698	91%	9%
Faulted Incised Plateaus, Shrub-Steppe - Grasslands / Meadows	0.2%	11	1447	1631	1524	65%	35%
Faulted Incised Plateaus, Shrub-Steppe - Ponderosa Pine	1.0%	7	1623	1712	1665	78%	22%
Faulted Incised Plateaus, Shrub-Steppe - Western Juniper	0.9%	5	1607	1658	1631	73%	27%
Faulted Incised Plateaus, Western Juniper	2.7%	5	1671	1746	1710	70%	30%
Faulted Incised Plateaus, Western Juniper - Grand Fir-White Fir	0.2%	5	1576	1654	1639	89%	11%
Faulted Incised Plateaus, Western Juniper - Ponderosa Pine	0.8%	7	1712	1814	1765	54%	46%
Faulted Incised Plateaus, Western Juniper - Ponderosa Pine - mix	0.3%	2	1649	1685	1660	83%	17%
Faulted Incised Plateaus, Western Juniper - Shrub-Steppe	0.7%	3	1618	1684	1670	64%	36%

## Climate:

Landform Association/Landtype Association	Mean Annual Temperature °C	AET/PET Ratio July, Aug, Sept
<b>Faulted Incised Plateaus</b>	<b>7</b>	<b>0.11</b>
Faulted Incised Plateaus, Grand Fir-White Fir	6	0.13
Faulted Incised Plateaus, Grand Fir-White Fir - Ponderosa Pine	7	0.12
Faulted Incised Plateaus, Grand Fir-White Fir - Riparian Shrub / Hardwood	7	0.10
Faulted Incised Plateaus, Grand Fir-White Fir - Western Juniper	7	0.13
Faulted Incised Plateaus, Grasslands / Meadows	7	0.10
Faulted Incised Plateaus, Grasslands / Meadows - Grand Fir-White Fir	7	0.11
Faulted Incised Plateaus, Grasslands / Meadows - Western Juniper	7	0.12
Faulted Incised Plateaus, Parkland	4	0.12
Faulted Incised Plateaus, Parkland - Ponderosa Pine	6	0.17
Faulted Incised Plateaus, Ponderosa Pine	7	0.12
Faulted Incised Plateaus, Ponderosa Pine - Grand Fir-White Fir	7	0.10
Faulted Incised Plateaus, Ponderosa Pine - Grand Fir-White Fir - mix	7	0.06
Faulted Incised Plateaus, Ponderosa Pine - Grasslands / Meadows	8	0.15
Faulted Incised Plateaus, Ponderosa Pine - Riparian Shrub / Hardwood	7	0.10
Faulted Incised Plateaus, Ponderosa Pine - Shrub-Steppe	7	0.11
Faulted Incised Plateaus, Ponderosa Pine - Western Juniper	7	0.09
Faulted Incised Plateaus, Shrub-Steppe	7	0.10
Faulted Incised Plateaus, Shrub-Steppe - Grand Fir-White Fir	7	0.12
Faulted Incised Plateaus, Shrub-Steppe - Grasslands / Meadows	7	0.13
Faulted Incised Plateaus, Shrub-Steppe - Ponderosa Pine	7	0.10
Faulted Incised Plateaus, Shrub-Steppe - Western Juniper	7	0.09
Faulted Incised Plateaus, Western Juniper	7	0.08
Faulted Incised Plateaus, Western Juniper - Grand Fir-White Fir	7	0.07
Faulted Incised Plateaus, Western Juniper - Ponderosa Pine	7	0.11
Faulted Incised Plateaus, Western Juniper - Ponderosa Pine - mix	7	0.07
Faulted Incised Plateaus, Western Juniper - Shrub-Steppe	7	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.ntsug.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).