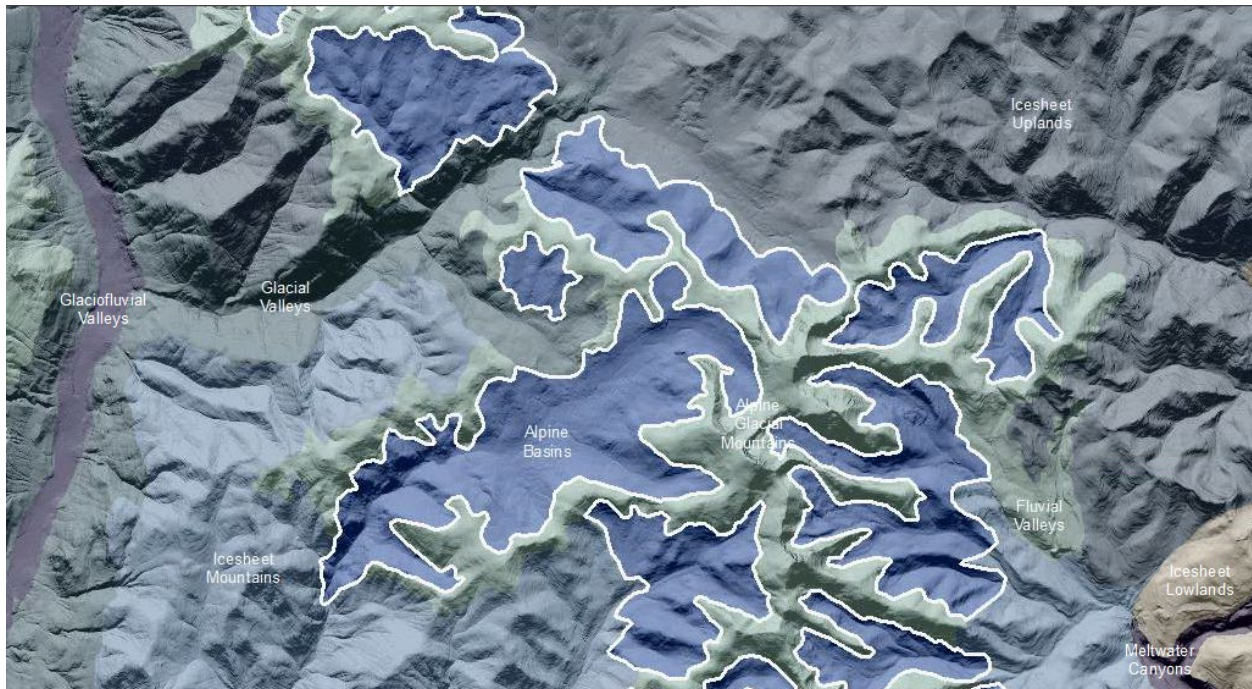


## Northern Rockies Alpine Basins

**Terrain Class: Valley** (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: Alpine Basins



**Alpine Basins** are cirque basins and glacial valleys emanating from the Alpine Glacial Mountains of the eastern North Cascade Range and the Columbia Mountains of the Northern Rocky Mountain Ecoregion (Kettle River Range and Selkirk Mountains) that stood above the maximal extent of the Cordilleran Icesheet. These basins formed as a result of alpine glaciers on the high mountain slopes above the level of continental glaciation. The Alpine Basins are cirque features and include semi-circular bowl-like excavation in hanging valleys or at the head of a valley. An aerial view of a cirque or alpine basin shows a horseshoe like shape with the open end of the shoe pointing away from the steep headwall and surrounding side slopes. This open end of the shoe is a raised threshold often supplemented by a recessional moraine. The closed depression of the cirque frequently hosts a meadow, lake or tarn. These features often have recessional moraines damming their basins. Since these are high elevation and northern latitudes cirques, the aspect can be to any point of the compass. These basins host relic boreal plant species. In addition to Sposols and Andisols, there is a potential for Gelisol soil taxa to be found here.

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>Alpine Basins</b>	<b>6.5%</b>	<b>31</b>	<b>1065</b>	<b>1588</b>	<b>1320</b>	<b>76%</b>	<b>24%</b>
Alpine Basins, Douglas-Fir	24.9%	27	1017	1487	1236	54%	46%
Alpine Basins, Douglas-Fir - Subalpine Fir	0.2%	34	1109	1478	1257	84%	16%
Alpine Basins, Douglas-Fir - Western Hemlock	0.7%	29	949	1336	1126	67%	33%
Alpine Basins, Subalpine Fir	35.4%	33	1163	1714	1440	85%	15%
Alpine Basins, Subalpine Fir - Douglas-Fir	1.6%	30	1104	1545	1327	60%	40%
Alpine Basins, Subalpine Fir - Western Hemlock	1.3%	24	1227	1591	1432	73%	27%
Alpine Basins, Western Hemlock	33.4%	33	1010	1623	1306	85%	15%
Alpine Basins, Western Hemlock - Douglas-Fir	0.3%	26	960	1202	1079	99%	1%
Alpine Basins, Western Hemlock - Parkland	0.2%	32	1659	2027	1879	95%	5%
Alpine Basins, Western Hemlock - Subalpine Fir	2.1%	33	1116	1575	1361	86%	14%

**Climate:**

Landtype Association	Mean Annual Precipitation (mm)	Mean Annual Temperature °C	AET/PET Ratio July, Aug, Sept
<b>Alpine Basins</b>	<b>880</b>	<b>5</b>	<b>0.39</b>
Alpine Basins, Douglas-Fir	664	6	0.38
Alpine Basins, Douglas-Fir - Subalpine Fir	708	5	0.30
Alpine Basins, Douglas-Fir - Western Hemlock	644	6	0.40
Alpine Basins, Subalpine Fir	937	4	0.39
Alpine Basins, Subalpine Fir - Douglas-Fir	687	5	0.35
Alpine Basins, Subalpine Fir - Western Hemlock	1008	4	0.42
Alpine Basins, Western Hemlock	1032	5	0.42
Alpine Basins, Western Hemlock - Douglas-Fir	691	6	0.38
Alpine Basins, Western Hemlock - Parkland	1645	2	0.41
Alpine Basins, Western Hemlock - Subalpine Fir	929	5	0.39

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).