East Cascades Glaciofluvial Fans

Terrain Class: 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: Glaciofluvial Fans

Glaciofluvial Fans are fan deposits onto a plain or into a lake bed. The deposits spread out during the depositional period and created a convex land surface with multiple flow paths. Glaciofulvial Fans are produced by deposition of sediments from glacial outwash or glacial meltwater streams. Parent streams were typically multi-threaded and carried heavy sediment loads. As a consequence, thick, sandy to gravelly deposits are the norm. It may be difficult to distinguish the two origins but fluvial processes are commonly more recent and overly or are inset to glacially derived sediments in the fan.

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°)**
Glaciofluvial Fans	**0.6%**	**3**	**1079**	**1128**	**1095**	**84%**	**16%**
Glaciofluvial Fans, Developed	5.0%	1	1082	1100	1087	88%	12%
Glaciofluvial Fans, Developed - Grand Fir-White Fir	4.8%	2	1262	1290	1269	79%	21%
Glaciofluvial Fans, Developed - Grasslands / Meadows	1.3%	1	1264	1281	1269	94%	6%
Glaciofluvial Fans, Douglas-Fir - Ponderosa Pine	2.0%	6	877	916	892	72%	28%
Glaciofluvial Fans, Grand Fir-White Fir	47.9%	3	1102	1212	1131	89%	11%
Glaciofluvial Fans, Grand Fir-White Fir - Douglas-Fir	0.7%	5	818	902	861	91%	9%
Glaciofluvial Fans, Grand Fir-White Fir - Ponderosa Pine	1.1%	2	991	1033	1011	72%	28%
Glaciofluvial Fans, Grand Fir-White Fir - Riparian Shrub / Hardwood Forest	1.8%	2	957	988	973	64%	36%
Glaciofluvial Fans, Grasslands / Meadows	0.8%	1	1263	1275	1268	77%	23%
Glaciofluvial Fans, Grasslands / Meadows - Developed	1.4%	0	1264	1269	1265	84%	16%
Glaciofluvial Fans, Ponderosa Pine	31.2%	6	1021	1071	1038	85%	15%
Glaciofluvial Fans, Ponderosa Pine - Douglas-Fir	2.0%	6	887	958	916	94%	6%

Climate:

Landform Association/Landtype Association	**Mean Annual Precipitation (mm)**	**Mean Annual Temperature °C**	**AET/PET Ratio July, Aug, Sept**
Glaciofluvial Fans	**605**	**8**	**0.27**
Glaciofluvial Fans, Developed	561	8	0.32
Glaciofluvial Fans, Developed - Grand Fir-White Fir	731	7	0.28
Glaciofluvial Fans, Developed - Grasslands / Meadows	852	7	0.33
Glaciofluvial Fans, Douglas-Fir - Ponderosa Pine	472	8	0.29
Glaciofluvial Fans, Grand Fir-White Fir	738	7	0.30
Glaciofluvial Fans, Grand Fir-White Fir - Douglas-Fir	501	8	0.31
Glaciofluvial Fans, Grand Fir-White Fir - Ponderosa Pine	542	8	0.26
Glaciofluvial Fans, Grand Fir-White Fir - Riparian Shrub / Hardwood Forest	418	8	0.17
Glaciofluvial Fans, Grasslands / Meadows	752	7	0.31
Glaciofluvial Fans, Grasslands / Meadows - Developed	751	7	0.31
Glaciofluvial Fans, Ponderosa Pine	488	8	0.19
Glaciofluvial Fans, Ponderosa Pine - Douglas-Fir	469	8	0.31

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).