

Life Zones in Washington



What is a Life Zone?

- Life zones are areas with similar plant and animal communities

Why is understanding life zones important?

- Each life zone has characteristic species:

Trees

Plants

Animals

Life zones provide a framework for predicting the flora and fauna of a particular ecoregion.

What makes a life zone ?

- Precipitation

- Temperature

- Other Factors

- Elevation, wind, fire, avalanche, flood, clear-cutting, soil type and nutrients, aspect, steepness, intensity of solar radiation (insolation)

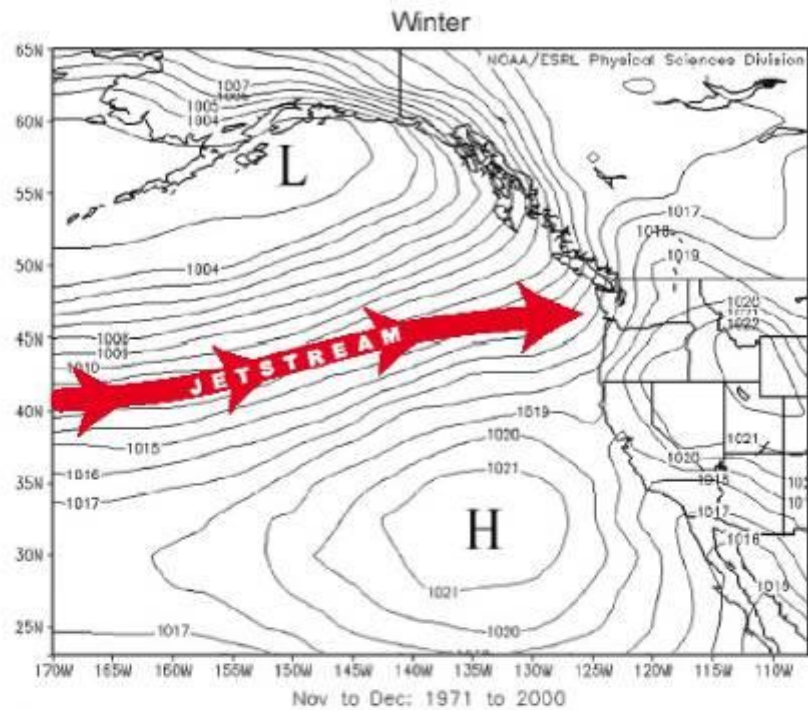
Weather and Precipitation

- **The Pacific Ocean** is the chief determinant of the NW weather pattern.
 - Source of **precipitation** via jet stream
 - Moderates **temperatures** all year round
- **Mountain ranges** are also a major determinant of NW weather. They moderate weather coming in from the ocean and from the interior of the continent

Pacific jet stream

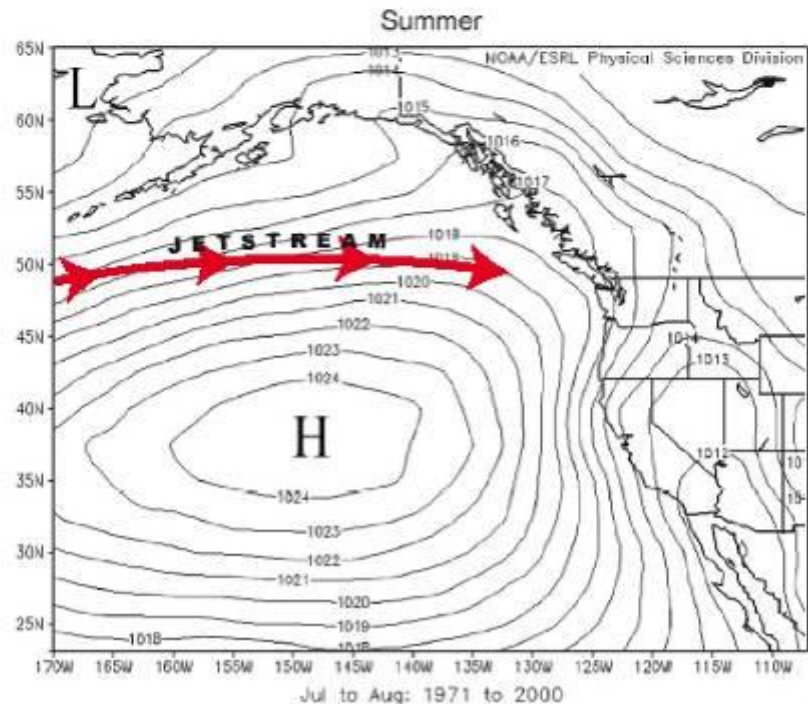
WINTER

Strong, aimed toward Wa coast

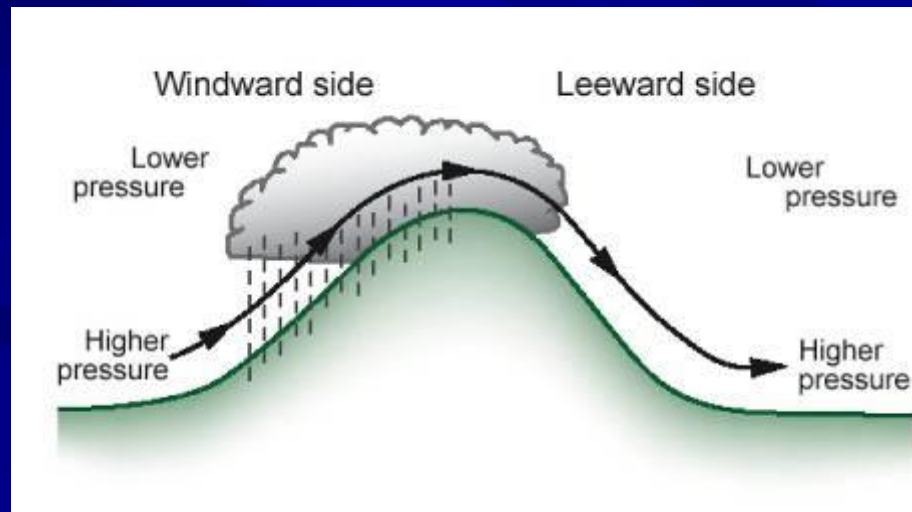


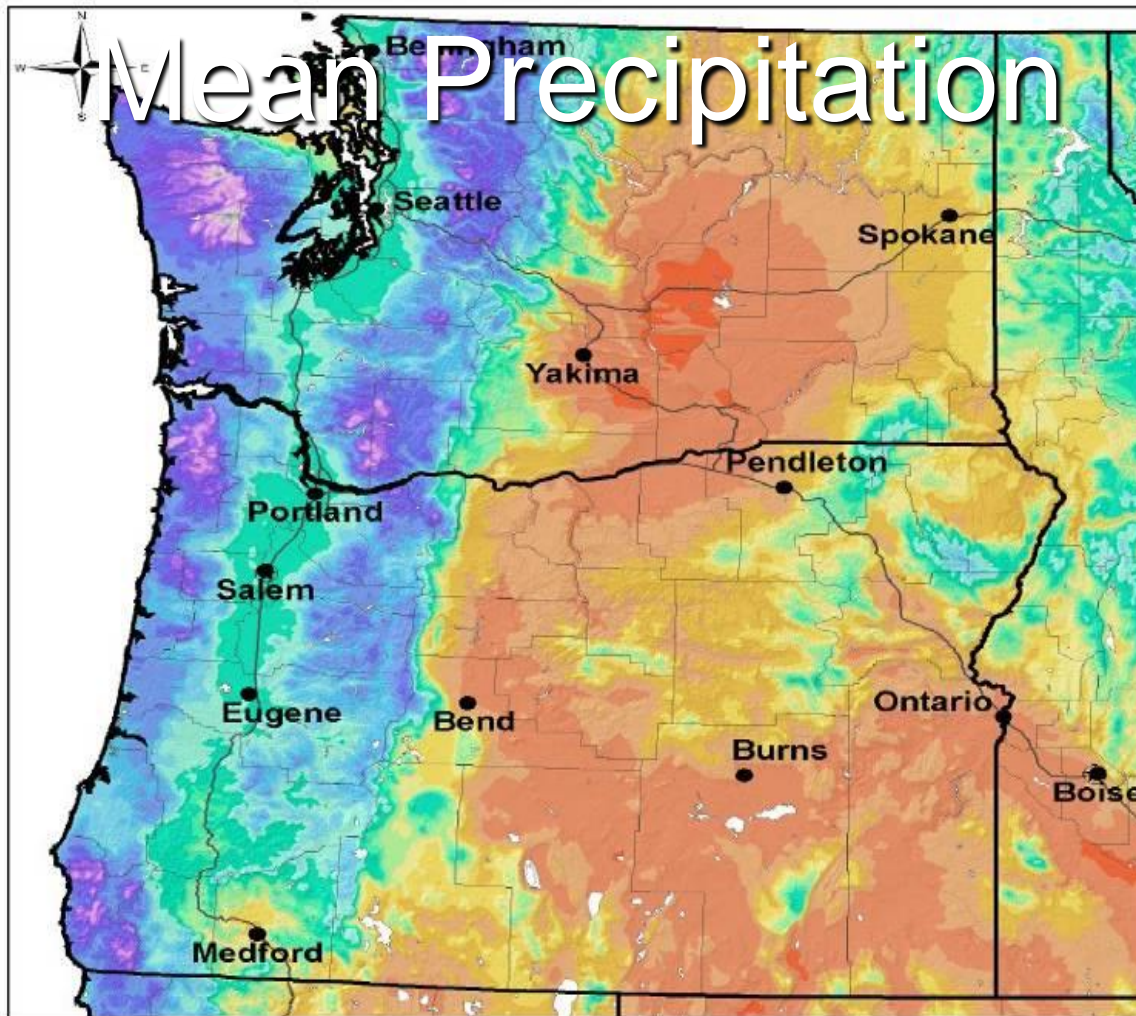
SUMMER

Weaker, aimed north of Wa

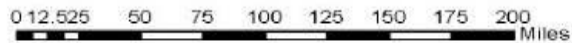
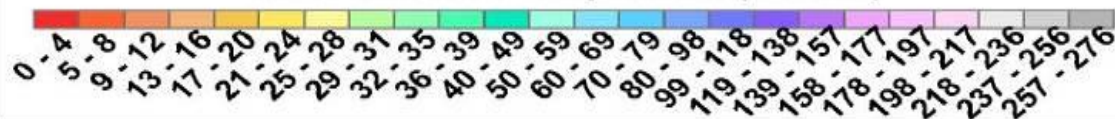


Moist Pacific air hits the west side of NW mountain ranges, rises, cools as it expands at lower pressure, and drops its moisture. The drier air then sinks and warms producing **rain shadowing** on the east side of both the Olympics and Cascades





Mean Annual Precipitation (Inches)

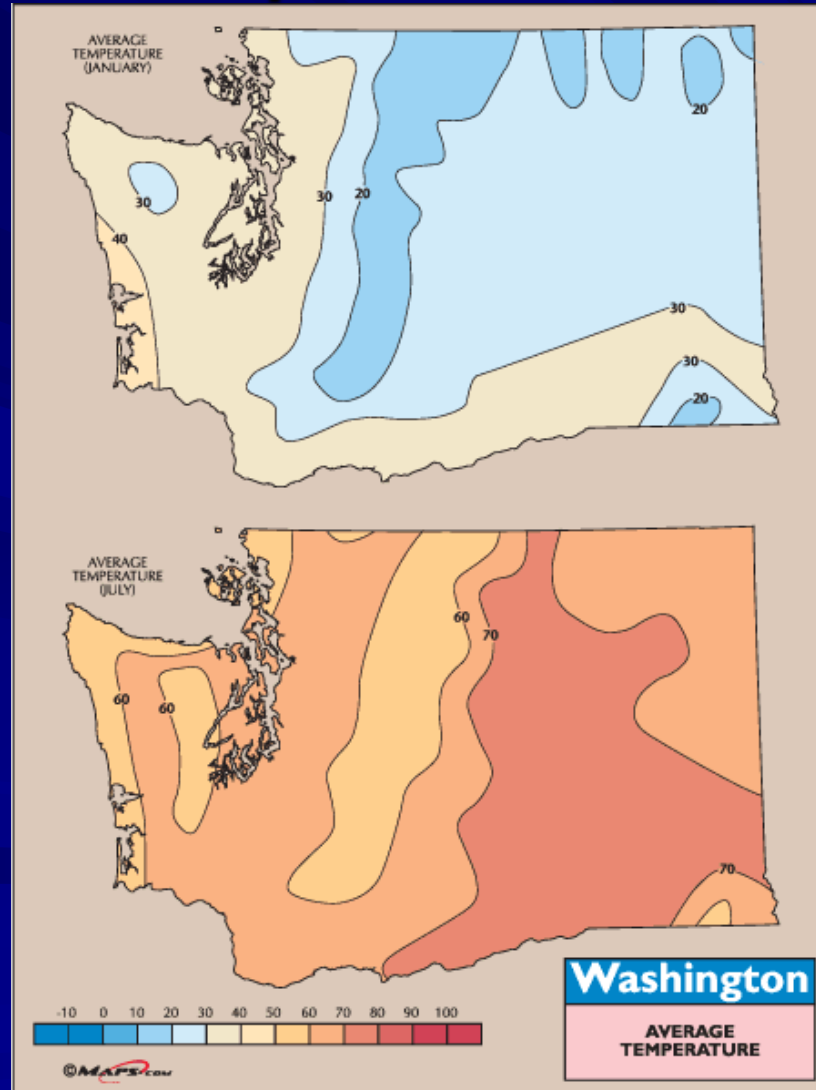


Temperature

- Temperature decreases approximately 3 degrees for each 1000 feet of elevation gain.
- Temperature in the Cascades decreases as you go from south to north.

Washington Average Temperatures

January

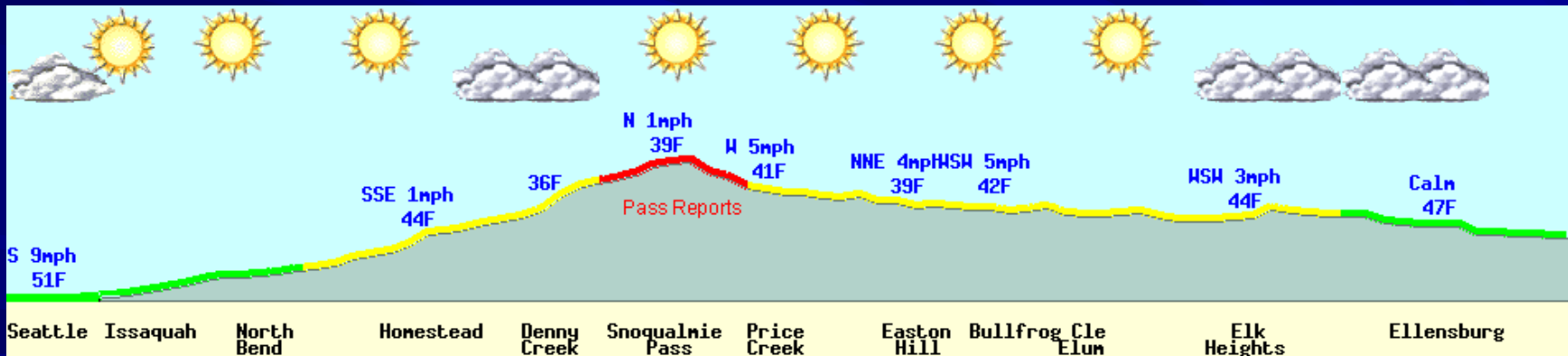


July

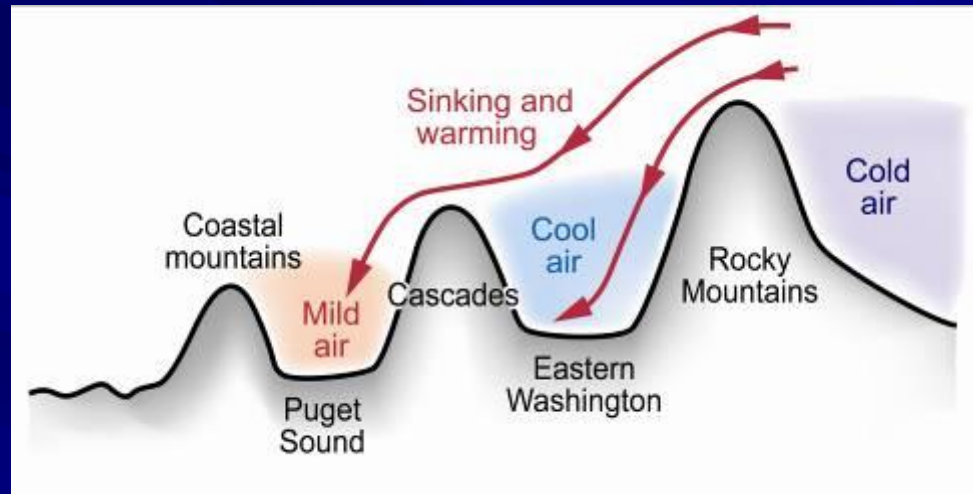
I-90 Cross State Travel WSDOT

Approximate Elevation:

Seattle	sea level	Logged coastal forest
Denny Creek	2700 ft	Coastal-Silver fir
Snoqualmie Pass	3000 ft	Silver fir
Cle Elum	1900 ft	Ponderosa
East of Ellensburg	1500 ft	Shrub-Steppe



Cold intercontinental air is warmed as it passes over the mountain ranges

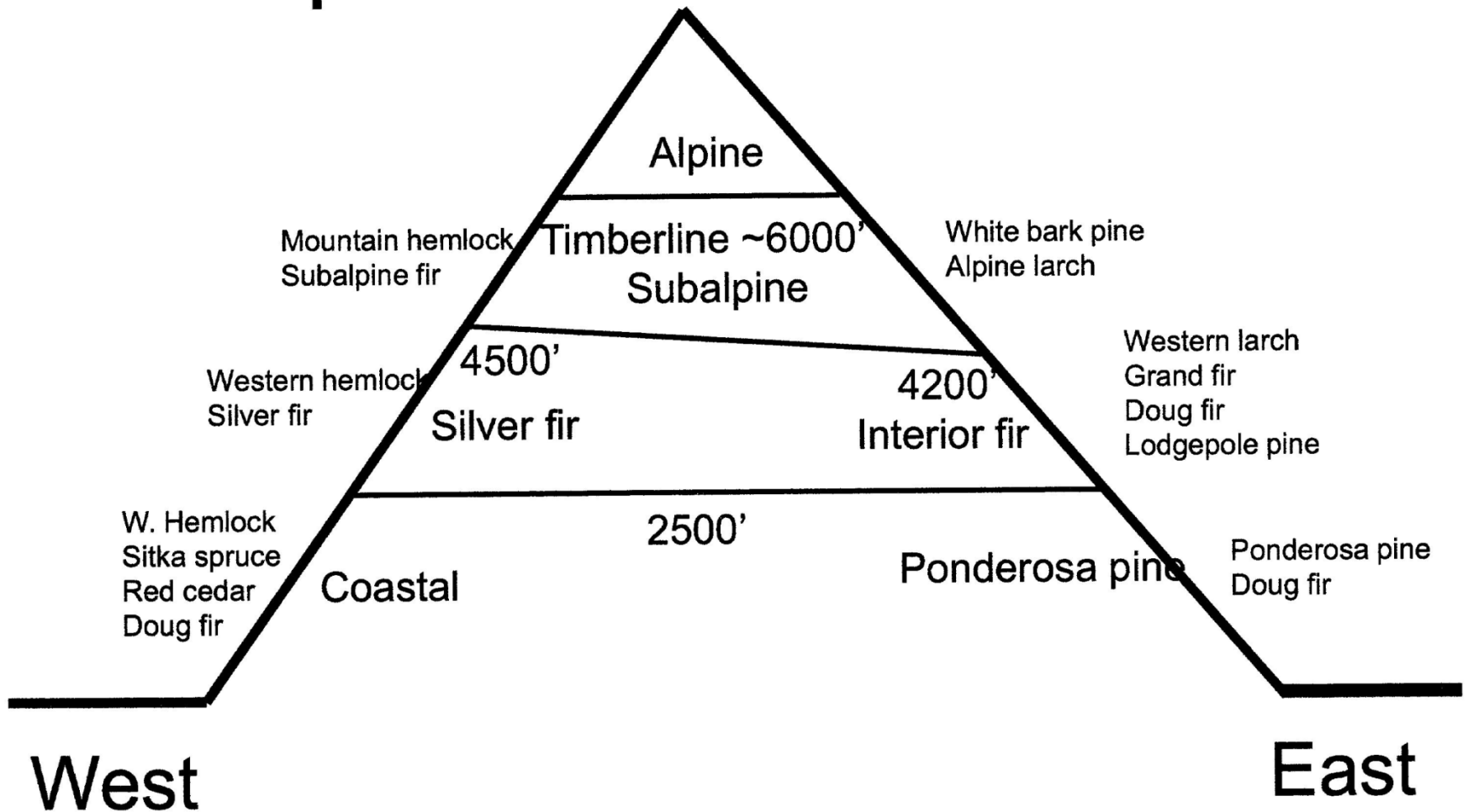


PNW Life Zones

W to E

- Intertidal
- Coastal Forest - Olympic
- Coastal Forest - Cascade
- Silver Fir
- Subalpine - west
- Alpine
- Subalpine - east
- Interior Fir
- Ponderosa Pine
- Shrub - Steppe

Location: zones and predominant trees



Coastal Forest Life Zone



Elevation: 0 – 2000 ft.

Dominant Conifers

- Western Hemlock
- Douglas Fir
- Western Red Cedar

Olympic Coast – Sitka
spruce

Western Hemlock



Douglas Fir



Western Red Cedar



Sitka Spruce-Olympics



Coastal Forest

- River valleys: Ohanapecosh, Hoh River
- Copious rainfall
- Trees: immense, huge biomass. rainforest
- Dense canopy shades understory, except at edges
- Plants: salmonberry, salal, devil's club, moss, fern, lichens.



(W) Silver Fir Life Zone

Elevation: 2500-4500 ft.



Dominant Trees

- Pacific Silver Fir
- Western Hemlock

Silver Fir



Silver Fir

- Mt. Rainier Paradise Road
- Cold, heavy snow, soil poor & acidic
- Plants: heath, huckleberry, vanilla leaf

(W & E) Subalpine Life Zone

Elevation: 4000-7000 ft
(Up to treeline)



Dominant trees

- (W) Subalpine Fir, Mountain Hemlock
- (E) Whitebark Pine, Alpine Larch

Subalpine Fir - spires



Mountain Hemlock





Whitebark Pine



Alpine Larch

(W & E) Subalpine

- Paradise, Heather Meadows, Hurricane Ridge
- Cold, snow lingers late, growing season 8-10 weeks
- West: lots of precipitation, mostly as snow
- East: drier
- Parklands: meadows with clustered subalpine fir
- Plants: huckleberry, heather, bistort, valerian, glacier lilies, lupine, paintbrush. sedges

Grand Park - MRNP





Naches Peak



Alpine Life Zone

Elevation: treeline to
7500 ft



Dominant Trees:

- No trees or stunted (krummholz) trees near timberline

Alpine

- Krummholz (crooked wood) : stunted and misshapen trees covered in winter by snow, hug the ground, flag appearance
- Thin, rocky soil along crest
- Snow lingers later, short growing season of 60 days or less. Continuous wind.
- Plants are small, take cushion form for protection from elements
- Moss campion, sedums, heather, pussy toes, spreading phlox

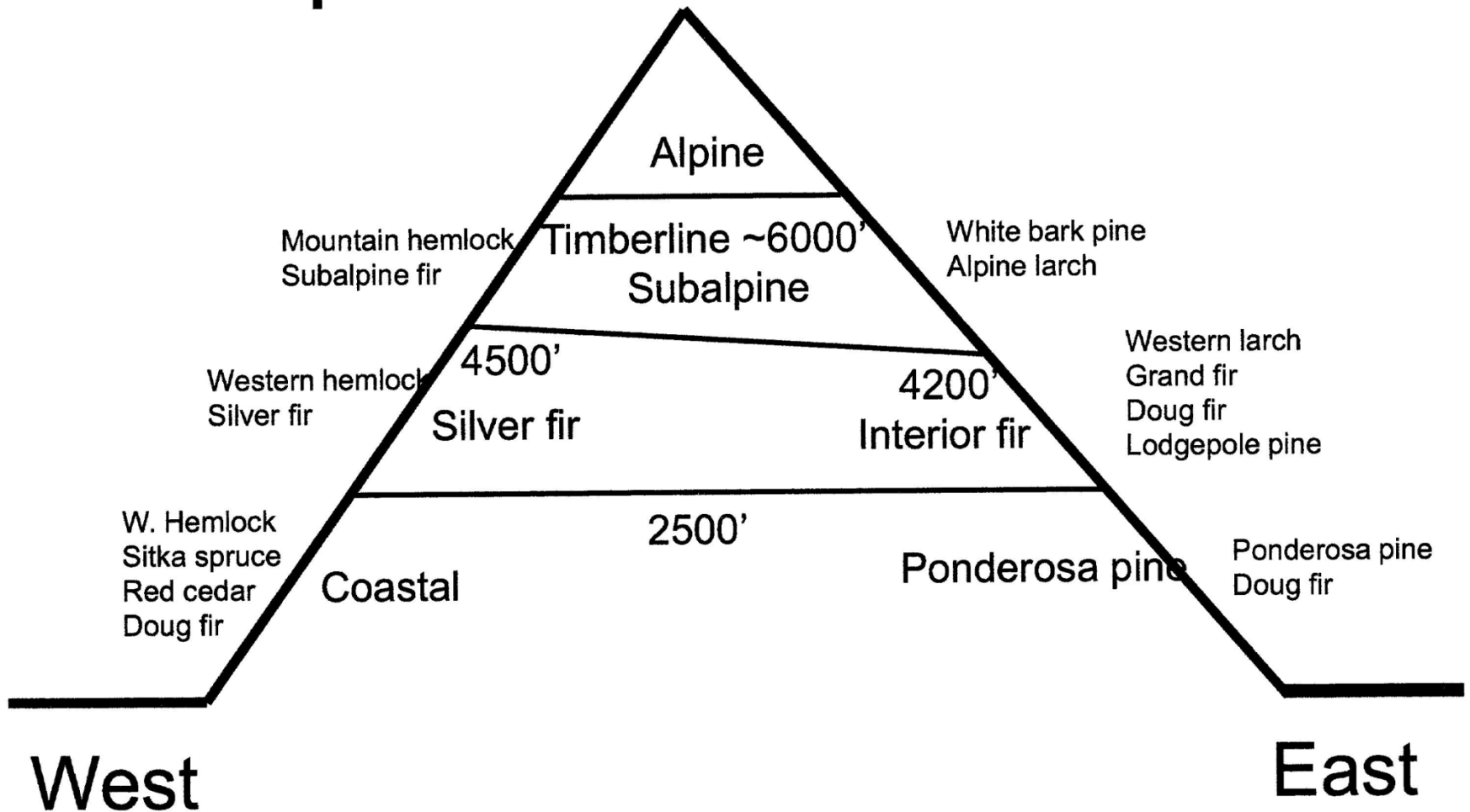
Krummholtz







Location: zones and predominant trees



(E) Interior Fir Life Zone



Elevation: 2500-4200 ft

Dominant Trees

- Grand Fir
- Douglas Fir
- Lodgepole Pine
- Western Larch



(E) Lodgepole Pine



(E) Western Larch



(E) Grand Fir

(E) Interior Fir

- 5-10 miles E of the crest on I-90
- Douglas Fir and true firs, Lodgepole Pine
- Plants: serviceberry, blueberries

(E) Ponderosa Pine Life Zone



Elevation: 2000-4000 ft

Dominant Trees

- Ponderosa Pine
- Douglas Fir

(E) Ponderosa Pine



(E) Ponderosa Pine

- I-90 20 miles E of Cascade Crest
- Cle Elum, Teanaway
- Long, hot, dry summers
- Highly susceptible to fire
- Balsamroot, asters, daisy, serviceberry, silvercrown luina

(E) Shrub-Steppe Life Zone

Elevation: 1000-2000 ft



- Dominant trees: none
- Shrubs: big sagebrush, rabbitbrush
- Grasses



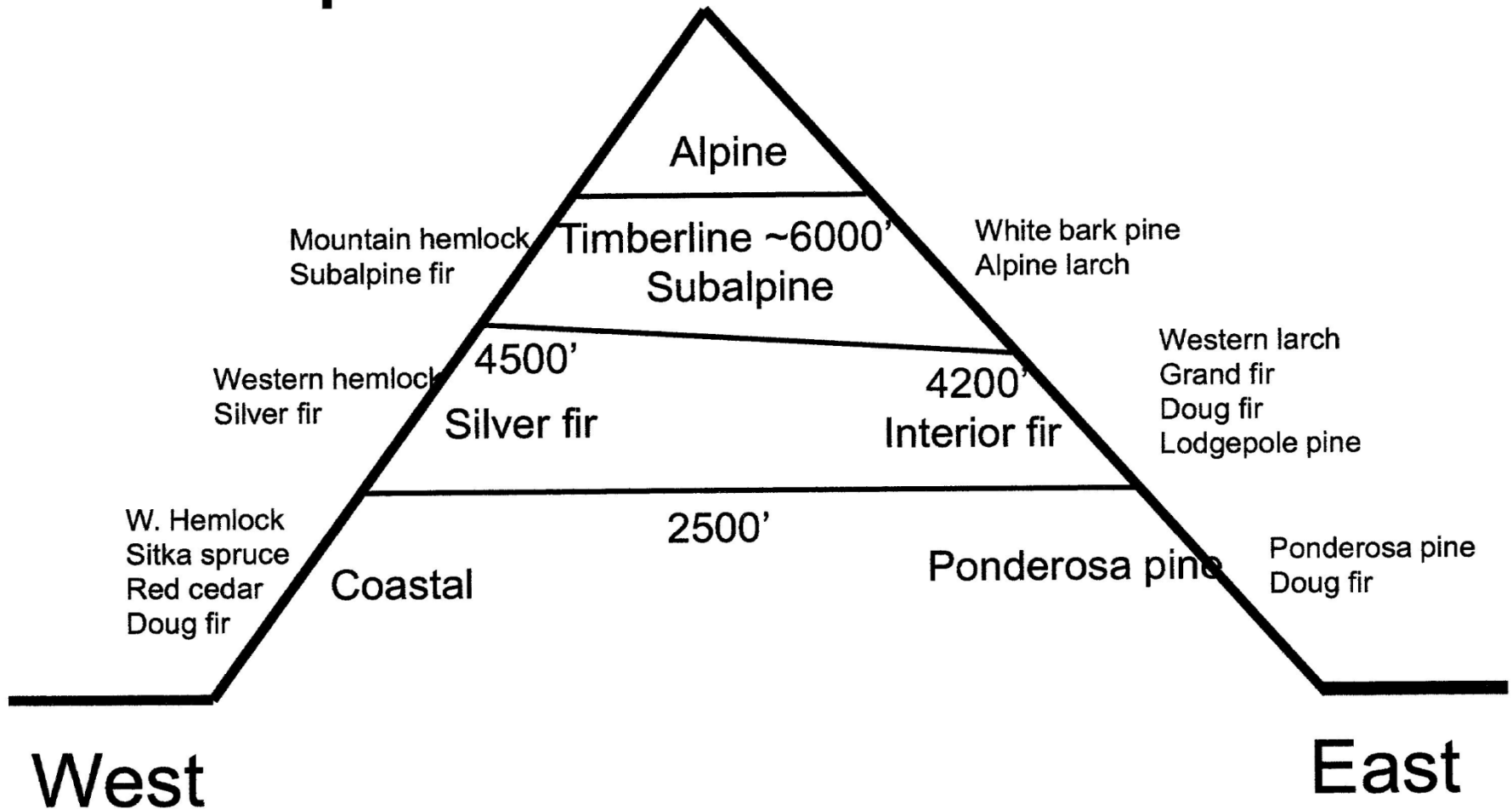




Shrub-Steppe

- Columbia Basin, high plains of central and SE Oregon, ridges (Umtanum, Manastash) between Ellensburg and Yakima
- Plants: big sagebrush, rabbitbrush, bunchgrasses, lomatiums, buckwheat, mosses, lichen, balsamroots and lupines, cheat grass (invasive)

Location: zones and predominant trees



In every walk with nature one receives far more than he
seeks.
John Muir

