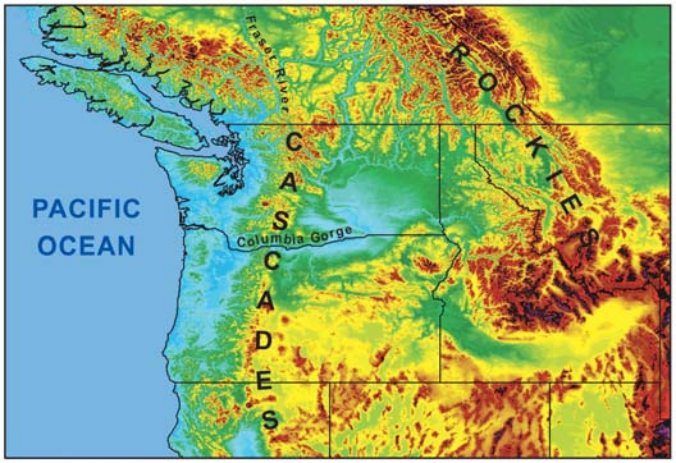
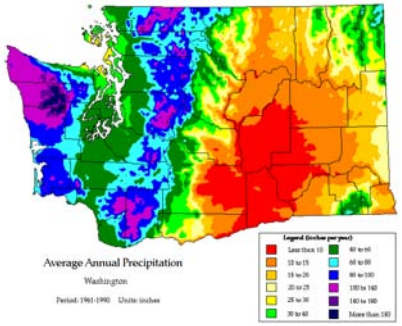
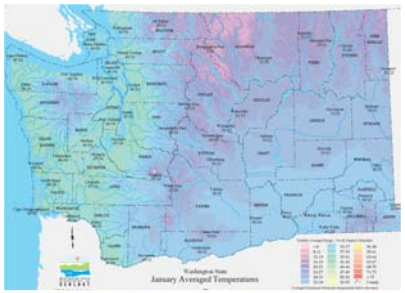
Weather and Climate of the Pacific Northwest

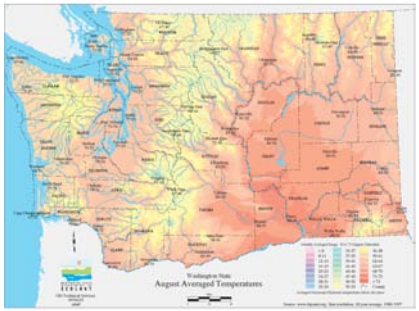
The weather and climate of the Pacific Northwest and southern B.C. is dominated by terrain and the presence of the Pacific Ocean

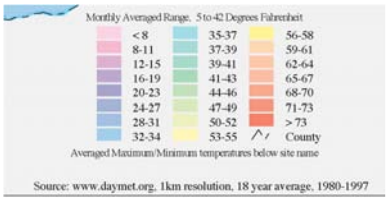


Part 1: Climate

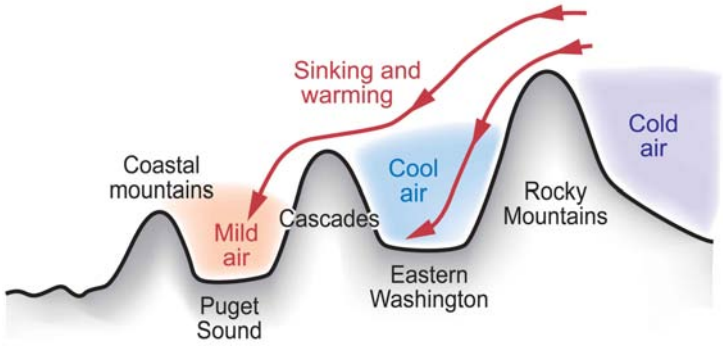






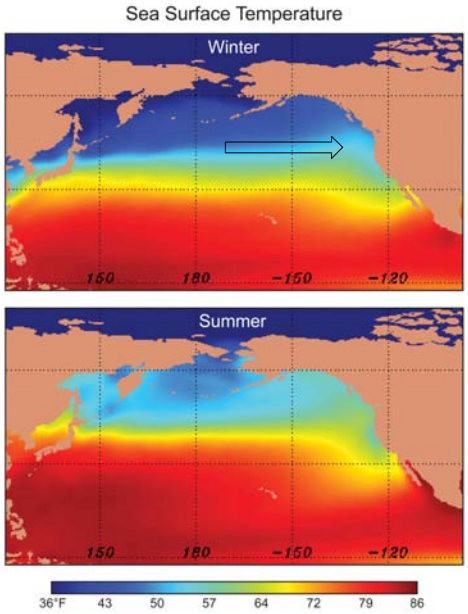


Cold Air from the Continental Interior Has a Hard Time Reaching Western Washington, Oregon, and B.C.

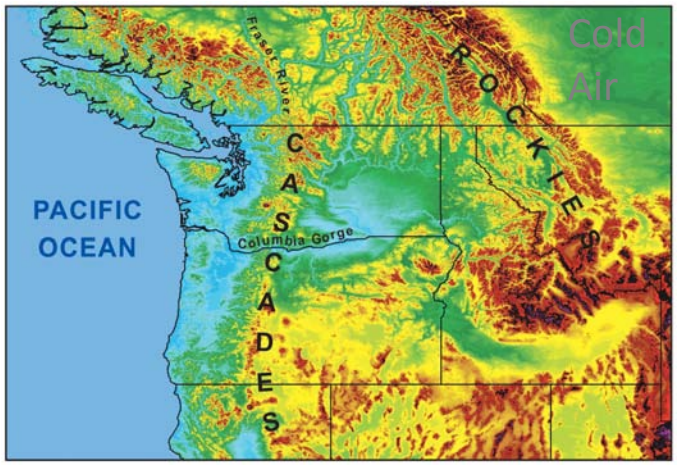


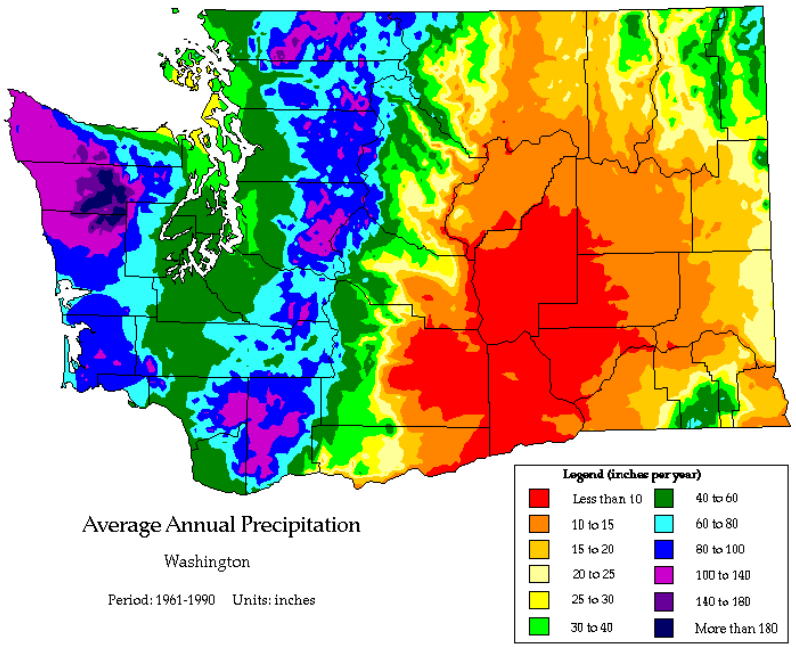
Our air and weather systems generally move west to east

Thus, our weather comes from off the mild Pacific

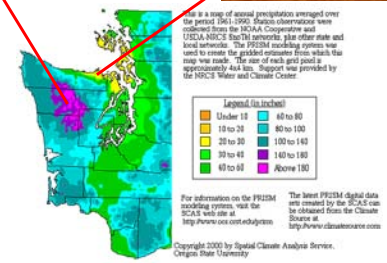


Mountains greatly affect the distribution of precipitation





Washington has the sharpest weather contrasts in the US, with rainforests and deserts in close proximity



Interesting Local Weather

- Wind Storms:
  - Flows along gaps in mountains
  - Flows in Puget Sound
- Puget Sound Convergence Zone
- Pineapple Express
- Marine Push
- Puget Sound Diurnal Sea Breeze

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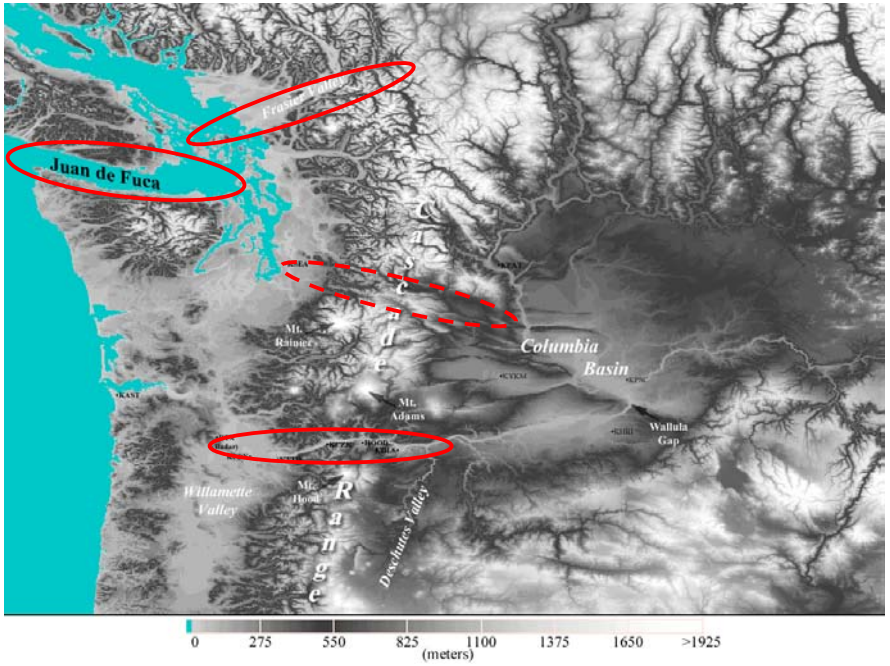
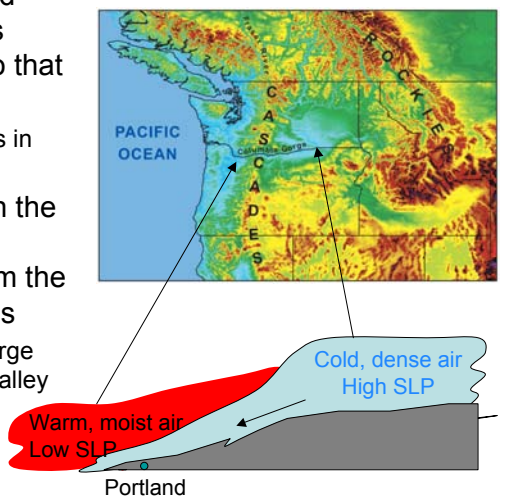


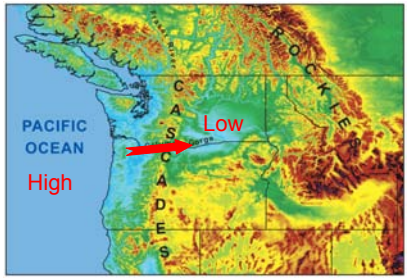
Columbia Gorge

- *In winter,* the air in eastern Washington is very cold (dense) and the SLP is often high compared to that offshore
  - Result: strong easterlies in gorge
- Cold air drainage down the gorge undercuts warm moist air coming in from the west. Result: ice storms
  - Result: ice storms in gorge and upper Willamette Valley



Columbia Gorge

- *In summer,* the air in eastern Washington is very hot (light) and the SLP is often low compared to that offshore
  - Result: strong westerlies in gorge (sort of a large scale sea breeze)
  - Wind is against the river current (special for windsurfer)

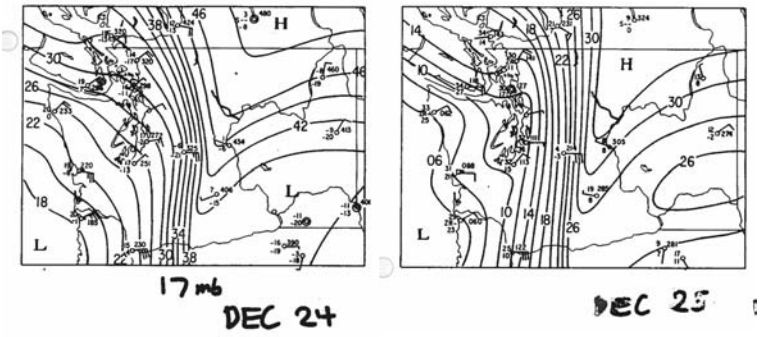


Enumclaw, Washington

"Place of evil spirits"

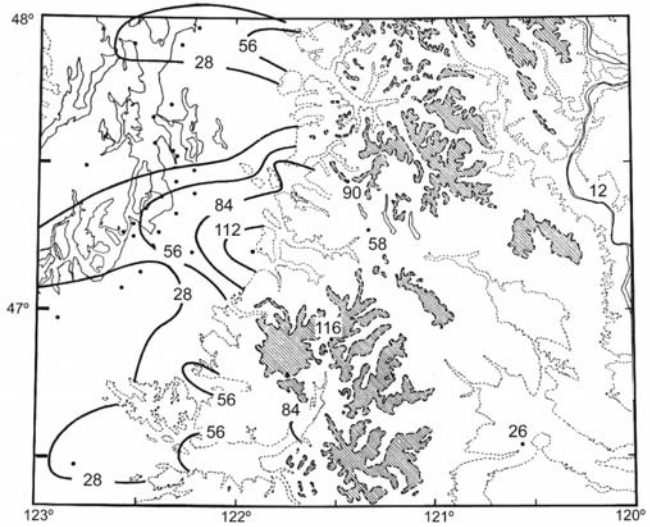
Large Pressure Gradients along the gaps in the Cascades amplify mountain waves and cause strong flow down the gaps

Enumclaw, Washington



A Huge Pressure Gradient developed across the Cascades (17mb SLP drop), which caused the air to accelerate through gaps in the Cascades into the Puget Sound Lowlands

December 24, 1983



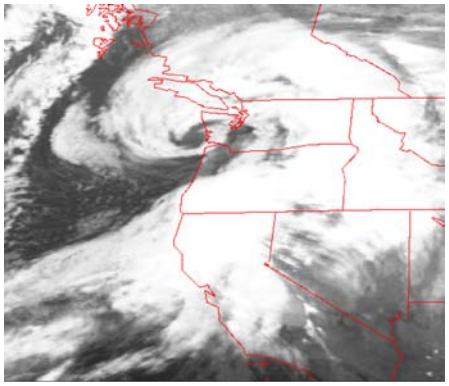
Winds (in mph)

Enumclaw and nearby foothills locations can experience severe windstorms…while calm winds occur a dozen miles away

Winds over 118 mph

December 24, 1983

Our strong windstorms are generally associated with strong low pressure systems, called midlatitude cyclones

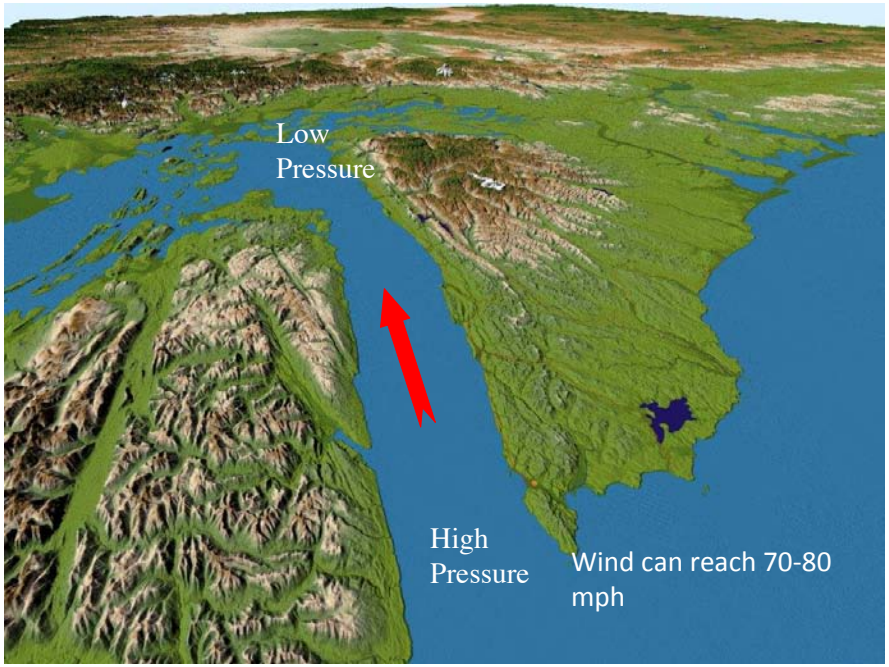


Inauguration Day Storm January 20, 1993

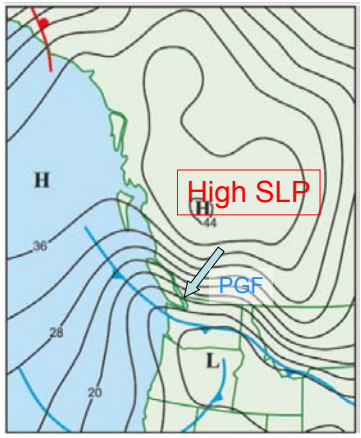
Whether and where a wind storm happens depends on the strength and critically on the nuances of the track of the midlatitude cyclone

Easterly (or Westerly) Wind Surges in the Strait of Juan de Fuca

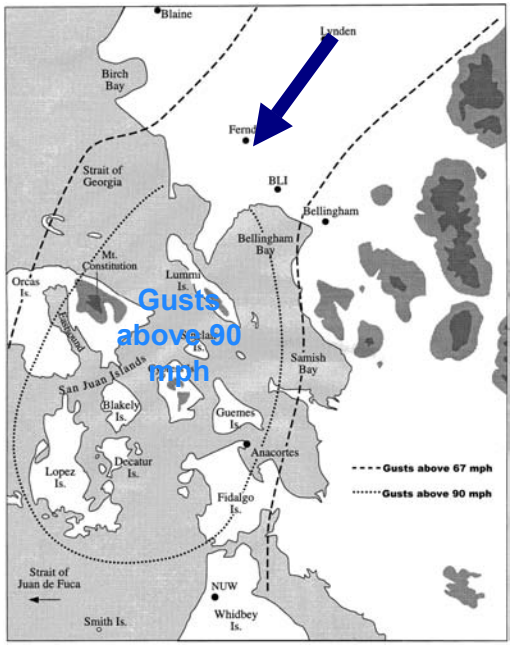
Large Pressure Gradients along the gaps in the Mountains cause strong flows down the gaps



Fraser River Gap Windstorms



Cold air in interior BC is pushed through the Fraser River gap by the strong PGF along the gap axis



Fraser River Gap Winds

December 28, 1990

Picture courtesy of Skagit Valley News

The Squamish Wind: can reach 70-100 mph