

Regional Landscapes of the United States and Canada North Pacific Coast

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North Pacific Coast

Narrow, isolated coastal area of NW North America extending from northern California to the Alaska Peninsula (between 40°N and 63°N).



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OVERVIEW: Physical

- ✓ "Subtropical-like climate in spite of its latitude.
- ✓ Very irregular coastline.
- ✓ Coast is hemmed in by tall volcanic mountains with evidence of major eruptions.
- ✓ Prone to earthquakes.
- ✓ Landforms were shaped by mountain glaciers that reach the sea: fjord landscape
- ✓ Snowiest area of North America.
- ✓ Heavily forested.

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OVERVIEW: Human

- ✓ Isolated from the rest of Namer by site and situation.
- ✓ Over 100 distinct Native American ethnic groups in small coastal valleys (*isolated from each other*).
- ✓ First settled by Russians (1700s); purchased by the U.S. (1867).
- ✓ Difficult transportation between areas.
- ✓ Low population density with few large cities.
- ✓ British Columbia is Canada's fastest growing area.
- ✓ Diversifying economy still dominated by primary activities.

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Alaska Airlines Route Map

Primary passenger and freight transport for Alaska, a state without roads.

Most areas can be reached only by air and water.

Alaska Airlines, Flying Solo

Taking Off

Alaska Airlines' roots go back to the 1930s, long before Alaska's statehood, and to the day many of its destinations were inaccessible by road. Out over the last 20 years, the airline has expanded into Hawaii, Texas and elsewhere in the United States.

Domestic Performance, 2012

Alaska Airlines 87.3%

US Airways 85.0%

Delta Air Lines 84.0%

JetBlue Airways 79.4%

Southeast Airlines 77.0%

United Airlines 76.9%

American Airlines 76.0%

Alaska Airlines 76.0%

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Physiography

Coast Ranges:

N. Calif., Oregon, Washington

- 4,000+ ft high; intercept Pacific moisture
- Responsible for the inland rain shadow

Coast Mountains:

British Columbia and SE Alaska

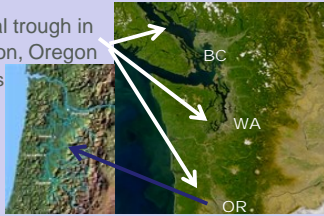
- Impede coastal and overland travel.
- Creates Alaska's **Inside Passage**.
- **Mt. McKinley** (20,300 ft high in the **Alaska Range**) is the **highest point in N. Amer.**
- **St. Elias Mts.** (Alaska-Yukon-British Columbia border): are **world's tallest coastal mountains** and site of **Mt. Logan** (19,700 feet), **highest point in Canada**.



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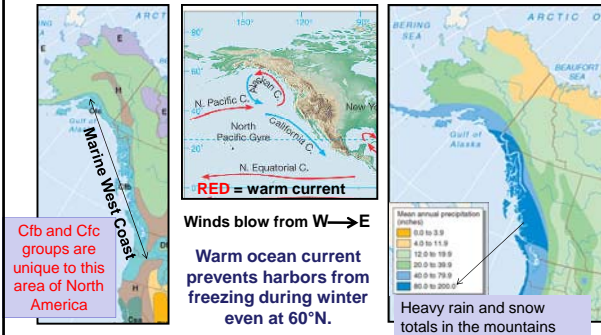
Physiography (cont'd)

- **Klamath Mountains** (N. California, S. Oregon): rugged, empty area 4,000+ ft high
- **Cascades:** Inland mountain range topped with volcanic peaks created by the subduction of the Juan de Fuca Plate
- **Lowlands:** A structural trough in Br. Columbia, Washington, Oregon
 - created along fault lines
 - deepened by glaciers
 - warmer, drier than the highlands



Climate Controls: Marine West Coast (Cf)

- Westerly winds
- Warm ocean current
- Tall north-south mountains



Temperatures

- ❖ **Mild winters and cool summers.**
- ❖ **Warm offshore ocean current with onshore winds** moderate upper middle latitude temperatures.
- ❖ **Temperatures decrease with elevation.**
- ❖ **Snow:**
 - Not common in the coastal areas south of Vancouver, BC
 - BUT 100-400 inches in the mountains.**
 - (Some mountain roads are open only from mid-June to mid-September.)*

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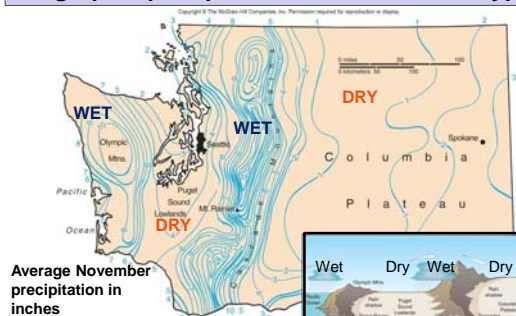
Precipitation Patterns

- **Source area:** North Pacific with its warm waters
- **Seasonal Pattern:**
 - **Winter precipitation** because of the high pressure cell moves south off the coast of Mexico. Ocean moisture moves **clockwise** around the high pressure cell and into the Pacific Northwest region.
 - **Summer dry:** the cell moves north, **blocks the moisture** from reaching the southern portion of the region.
- **Variation due to latitude:** Alaska's south coast gets **less rain and snow** because weather systems do not reach that far north.

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Topography and Precipitation

Orographic precipitation is the dominant type.



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Precipitation Totals

Regional Average is 75+ inches of precipitation per year.

- Baranof Is. (Alaska Panhandle) averages 237"/yr of precipitation on 233 days.
- W Washington and NW Oregon get over 130"/yr of rain, with the wettest areas getting over 200"/yr of precipitation.
- The Cascades are the snowiest mountains of North America.
- Mt. Baker and Mt. Rainier get over 600"/yr of snow; Crater Lake NP gets over 500"/yr of snow.
- W British Columbia is the rainiest and snowiest area of Canada with areas averaging 150" of rain and 580" of snow/yr.
- Northern Vancouver Island gets 230"/yr of precipitation mainly as rain.

LOWLAND TOTALS by City
 Vancouver 45 in. rain/19 in. snow. Seattle 38 in. rain/5 in. snow.
 Portland 43 in. rain/3 in. snow.

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Temperate Rain Forest

❖ **Olympic Peninsula** of Washington has a temperate rain forest biome: warm and humid.

- **Dense forest**: western hemlock, red cedar, Sitka spruce, and Douglas fir (to 200 feet tall).
- **Lush greenery**: mosses, ferns.



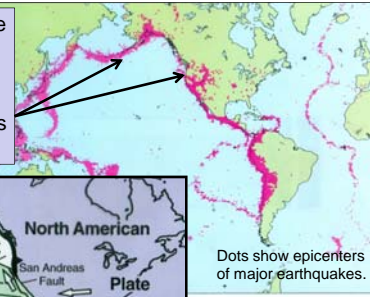
Douglas fir lumber yard
Oregon



Hoh Rain Forest
Olympic National Park, WA

Earthquakes and Volcanoes

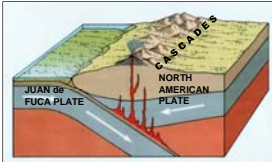
Region exists on the NE margin of the Pacific **"Ring of Fire"** - a geologic zone of earthquakes and volcanism.



Dots show epicenters of major earthquakes.

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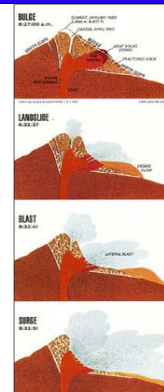
Volcanism caused by Subduction



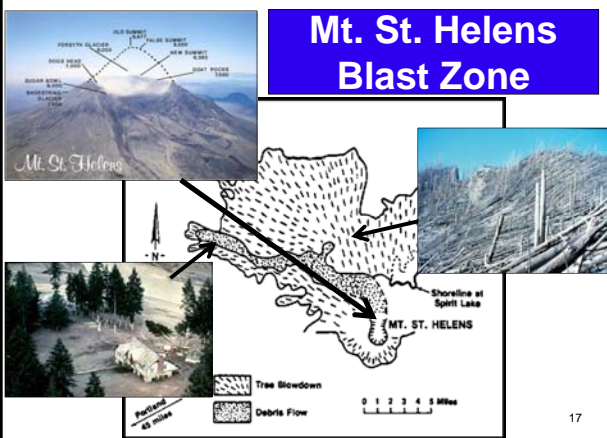
The Juan de Fuca Plate is being overridden by the North American Plate. As it melts, molten rock moves to the surface through fracture zones in the crumpled North American Plate.



Eruption of Mt. St. Helens (1980)

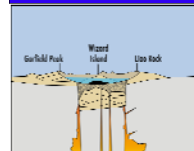


Mt. St. Helens Blast Zone



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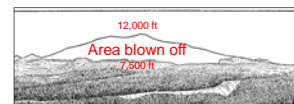
Crater Lake



FORMATION OF CRATER LAKE
About 7500 years ago, **Mt. Mazama** erupted with such force that its top was blown off, creating a caldera that has since filled with water.



Lake is 2,000 ft deep
Ave elevation of rim is 7500 ft



Seattle/Portland/Bellingham



Mt. Rainier and Seattle, WA

Urban areas, on the coastal lowlands, have grown in the shadow of the Cascades and **can be affected by an eruption**



Mt. Baker and Bellingham, WA



Mt. Hood and Portland, OR

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Lahar Flow

❖ **LAHAR** is a term describing massive fast-moving mudflows (ash, debris and water from melted snow) that may occur after the eruption of a volcano.



USGS

Mt. St. Helens (1982 eruption)

The greatest worry about any volcanic eruption in the Cascades is the creation of lahars.

Evidence of historic lahars are found throughout the region including the suburbs of Seattle.

Lahar evacuation route maps are posted around the area.

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Alaska Panhandle

The **Alaska Panhandle** is the southernmost area of Alaska.

Inside Passage is a maze of deep and scenic navigable waterways between the islands.

The islands are the tops of mountains after the area was flooded by the sea.

Topography limits interaction with the mainland. Transportation is by boat, ferry and small airplane.

Overland travel along the length of the coast difficult or impossible.



Juneau, Alaska

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Fjored Coastline

❖ **FJORD** - a narrow, steep sloped inlet created by the widening and deepening of a valley by glaciers and the subsequent flooding of the valley by the ocean.

Fjords are found along the coast of

- **Southern Alaska** including the Alaskan Panhandle, Alaska Peninsula and Kodiak Island.
- **British Columbia** mainland.
- **Western side of Vancouver Island.**

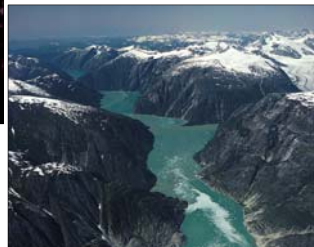
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Glacier-carved Landscape

Glacier-carved U-shaped valley.



When the U-shaped valley is flooded by the sea, a **fjord** is created.



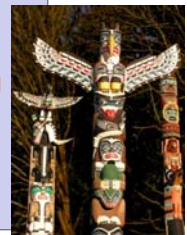
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Native American Settlement

- **Native American population** was relatively large because of the **moderate climate** and abundant **year-round food supply**.

• Culture

- **100+ distinct ethnic groups** each located in a small coastal valley.
- **Sustained by hunting, fishing and gathering.**
- **Large, impressive houses and dugout canoes.**
- **Totem Poles:** carved record of person's life on a log.



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European Arrival

- **Last area of North America to be explored by Europeans** (because of the distance from Europe)
 - **Juan de Fuca** (1592) for Spain
 - **Vitus Bering** (1740) for Russia
 - **James Cook** (1778) for Britain
- **Russian Settlement**
 - First settlements late 1700s.
 - Fur-trading posts from SE Alaska to N California.
 - Never self-sufficient in food; expensive to maintain.
 - Conflict with the British and Americans over Oregon.
 - Russia sold Alaska to the U.S. in 1867.

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British Settlement

- **Hudson's Bay Company**
 - Fur-trading operation in Columbia R Basin (early 1800s)
 - Was the dominant force from N Oregon to British Columbia until 1830s.
- **Victoria** (1843) at southern tip of **Vancouver Island**; **strategic overlook** on the **Strait of Juan de Fuca**.
- **City of Vancouver**
 - Established as a sawmill in 1867.
 - Protected harbor made it a seaport.
 - Terminus of Canadian transcontinental railroad (1886).

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American Expansion

See maps in Historical Atlas pp. 23, 32, 33, 34, 36, 42, 46, 47

- **Boundary disputes with British and Russians.**
- Explored by **Lewis and Clarke** in 1804-07.
- **John Jacob Astor** established fur trade (1810)
- **Treaty of 1818** extended the US-Canada border along 49°N latitude to the Rocky Mts.
- US and Great Britain jointly administer **Oregon Country** (Rockies to Pacific) from 1818-46.
- **American settlers arrive** via the **Oregon Trail** to Oregon's Willamette Valley (1840s).
- By late 1840s **Oregon Territory** was pushing for statehood.

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Oregon Country

Oregon Country was disputed by the United States and Great Britain.

The **Oregon Treaty of 1846** set the boundary at 49°N latitude with the exception of Vancouver Is.

While politically acceptable, it disrupted N-S movement in Puget Sound and on the Columbia River.

Became Oregon Territory in 1848; a state in 1859.



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Present Population Distribution

- **Faster growth than national averages** in both the U.S. and Canada.
- **British Columbia** is the fastest growing area.
- Home to **3% of U.S. population** and **10% of Canada's population**.
- Most people live within the **interior lowlands** from the Fraser River to Willamette Valley.
- **Few large cities:**
 - Vancouver and Victoria, BC
 - Seattle, WA
 - Portland, OR
 - Anchorage, AK

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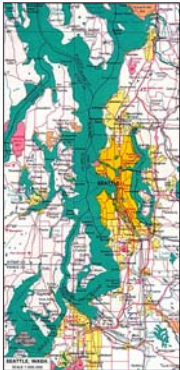
Vancouver



- Canada's **3rd largest** (605,000 people) and **fastest growing city**.
- Metro area of more than 2.3 million people.
- **Western HQ for Canadian businesses.**
- Gateway to the Canadian Rockies (hosted the 2010 Winter Olympics) and interior Canada.
- **Tourist hub** for the Inside Passage.
- **Canada's busiest seaport:** Wood products; wheat.

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Seattle



- ❖ **Largest U.S. city of the Pacific Northwest** since late 1800s; has over 600,000 in city/3.5 mil metro area
- **Founded as a logging center**, became dominant with coming of RRs (1883) and as an **outfitting point to Alaska**, esp. after gold was discovered (1890s) in the Klondike;
- **Second largest container port in U.S.**
- Since WWI, the **home of Boeing Aircraft**.
- **Diversification**: Computer technology (Microsoft); research & development, medical biotechnology, forest products, banking and finance.



Portland

- Has a pop. of over 500,000 people with a metro area of over 1 million.
- Ranks high among livable cities
- More diversified economy than Seattle's with better access to interior via Columbia River.
 - Shipment of grain from eastern Washington.
 - Large, deep port with easy access to the Pacific.
 - Iron and steel, clothing, food processing, computer technology



Anchorage

- **Alaska's largest city** with about 300,000 people and 40% of its population.
- Established (1914) as a port for the construction of the Alaska Railroad.
- Grew as a transportation hub and military base because of its harbor and connections to the interior.
- Today is a shipping center.



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Regional Economy

Characteristics:

- Production of **staple products**: wood, fish, agriculture (primary sector).
- **Distance from major markets** of U.S. and Canada increases costs.
- **Cheap electricity is a asset.**
- **Tourist industry is growing.**

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Agricultural Areas

Major areas include:

Willamette Valley (OR)

Puget Sound Lowland (WA)

Fraser River Delta (BC)

Columbia Plateau (WA)
(east of Cascades; arid)

Areas not requiring irrigation produce:

- Forage crops
- Dairy products
- Strawberries
- Hops
- Cherries
- Spearmint
- Wine grapes
- Grass for turf seed
- Horticultural products
- Vegetables

Semi-arid areas needing irrigation produce:

- Wheat
- Apples
- Sugar beets
- Potatoes
- Alfalfa
- Beans

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Forestry

❖ Major economic activity of the region

- ✓ British Columbia: 54% of Canada's timber.
- ✓ Washington, Oregon, California: c.50% of U.S. total

○ Large-scale logging activity

- ✓ Trees are large; produce much square footage
- ✓ Clear-cut harvesting method

○ Tree species vary with region

- ✓ **Douglas fir** major lumber tree (houses, plywood)

○ Markets

- ✓ Forest products are shipped great distances
- ✓ All parts of US&C; Asian countries, esp. Japan

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Cutting and Milling



❖ Clear Cutting:

A harvesting method where entire areas of forest are cut down without regard to size and species of tree.

Logging Methodology:

Trees are sorted, trimmed of branches and the logs are cut to transportable length on site for truck transport to the mill.

The area will be **replanted** with hybrid seedlings of one specie.

← Lumber mills are located within the forest.

At the mill the logs are cut into usable lengths for easier transport

Forestry Industry

WASHINGTON



OREGON



BRITISH COLUMBIA



BRITISH COLUMBIA



Fishing

- **Once the lifeline of the region especially that of Native American.**
- **Area of cold water species.**
 - Whale and salmon populations have been greatly reduced by overfishing and human interference.
 - Dams on the rivers of the Pacific NW have interfered with salmon migration to upstream spawning areas.

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Fish Ladders



Fish ladders have been built around dams to aid salmon moving up stream.



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Hydroelectric Power and Dams

❖ Region's hydroelectric potential unmatched in North America

- Rugged topography and deep canyons.
(40% of U.S. potential in Oregon and Washington)
- Abundant precipitation with no dry season.
- **Dams on the Columbia River regulate water flow** (flood control and navigation), **impound water** for irrigation and **produce electricity** cheaply.

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