Canada's Climate Regions

Yes, we're talking about the weather!

Definitions

- **Air mass** – a volume of air with the same temperature and moisture content
- **Front** – leading edge of an air mass (if the air mass is warm the front is a warm front)
- **Wind** – horizontal movement of air over the Earth's surface
- **Air Pressure** – the weight of air
- **Condensation** – water vapour changing state to liquid water

More Definitions

- **Relief** – the elevation of an area
- **Windward** – side of mountain that faces the prevailing wind
- **Leeward** – side of mountain protected from the prevailing wind (also called Rainshadow)

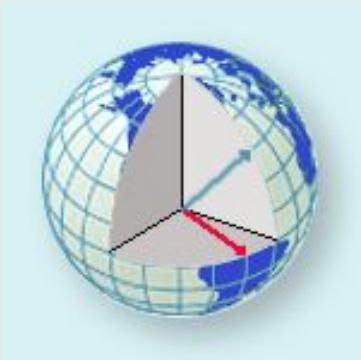
For clarification:

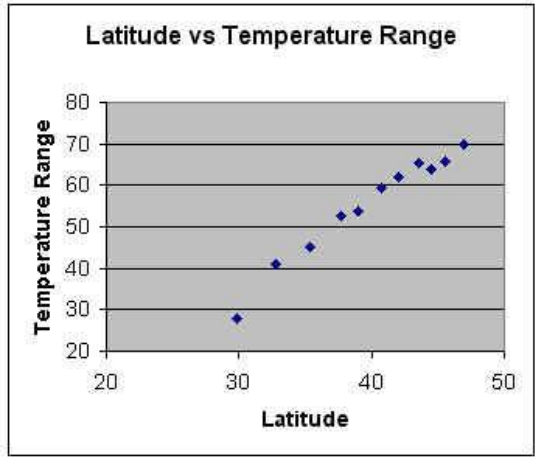
- **Weather** is the day to day observation of atmospheric conditions (temperature, precipitation, cloud cover, and winds)

- **Climate** is weather averaged over a period of time (usually at least 10 years)

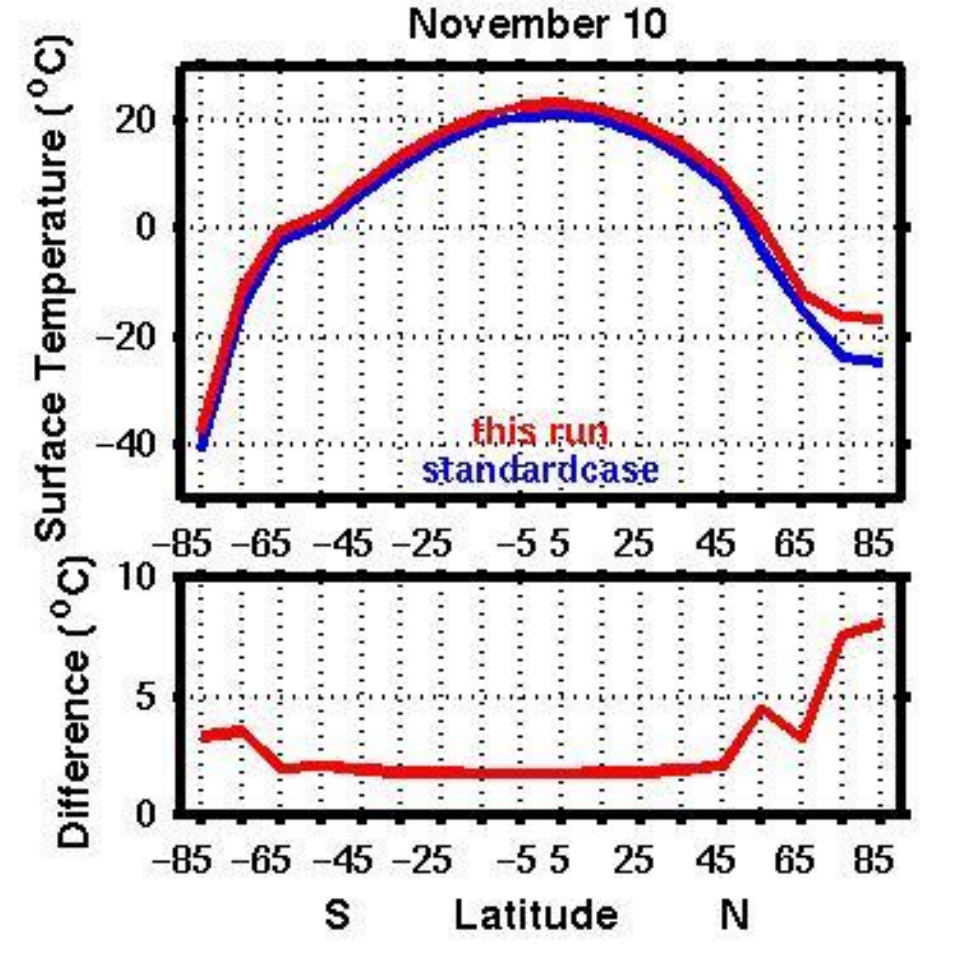
Factors Affecting Climate – [L]

- **Latitude** – the further north or south you go from the equator the cooler it gets. The poles have colder temperatures than equatorial regions because the same amount of energy is spread over a larger area





Latitude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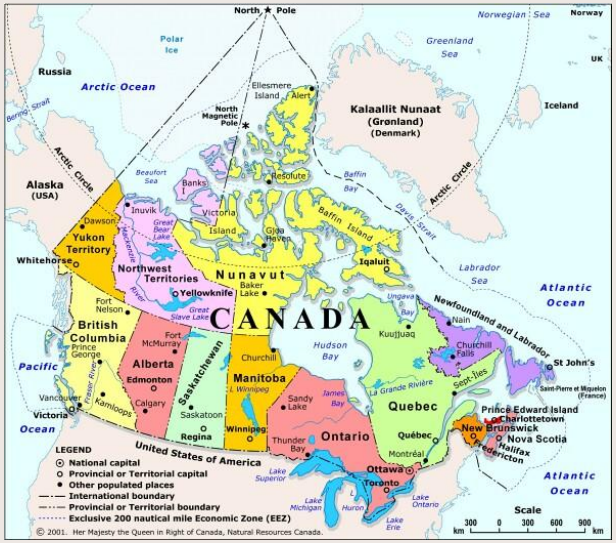
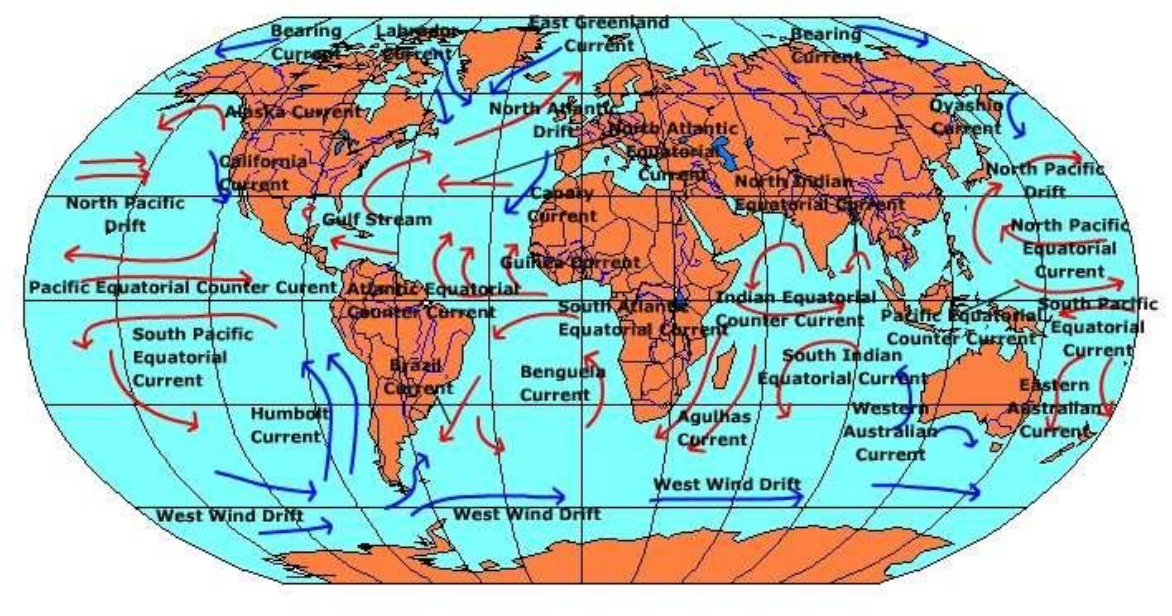
Latitude

- average temperature at Alert (most northerly point in Canada - 83°N) is -18.1°C while Pelee Island (most southerly point in Canada - 41°N) is 9.1°C



Factors Affecting Climate – [O]

- **Ocean Currents** – the temperature of the ocean current affects the temperature of the air mass that passes over it which then affects the temperature of coastal land.



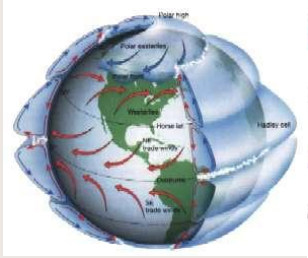
Ocean Currents

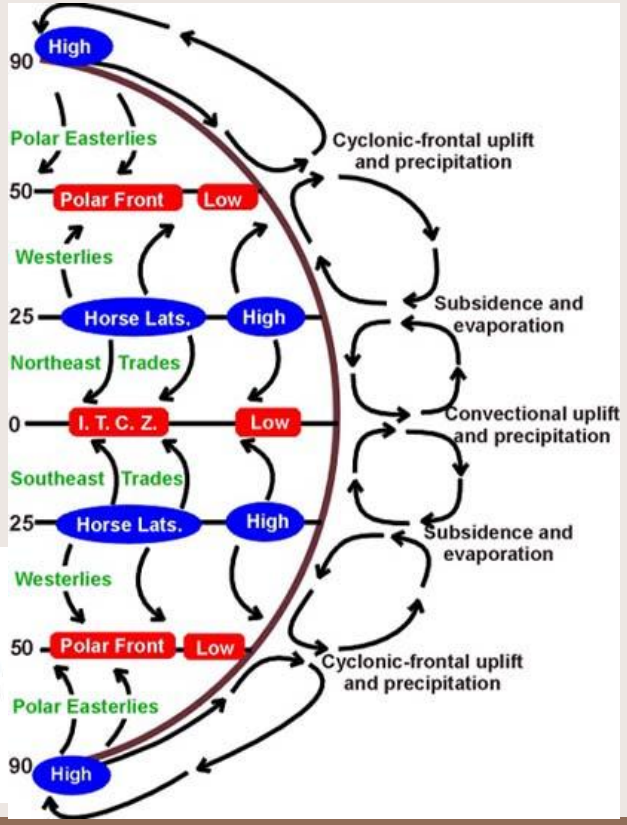
- warm current on west coast (West Pacific Drift) heats the cool, moist air moving over it moderating coastal B.C.'s climate (average annual temp 9oC)
- cold current on east coast (Labrador Current) cools the air of coastal locations
- Labrador Current meets warm Gulf Stream which causes the damp and foggy weather characteristic of SE Newfoundland

Factors Affecting Climate – [W]

- **Winds and Air Masses** – winds are the vehicles by which air masses move

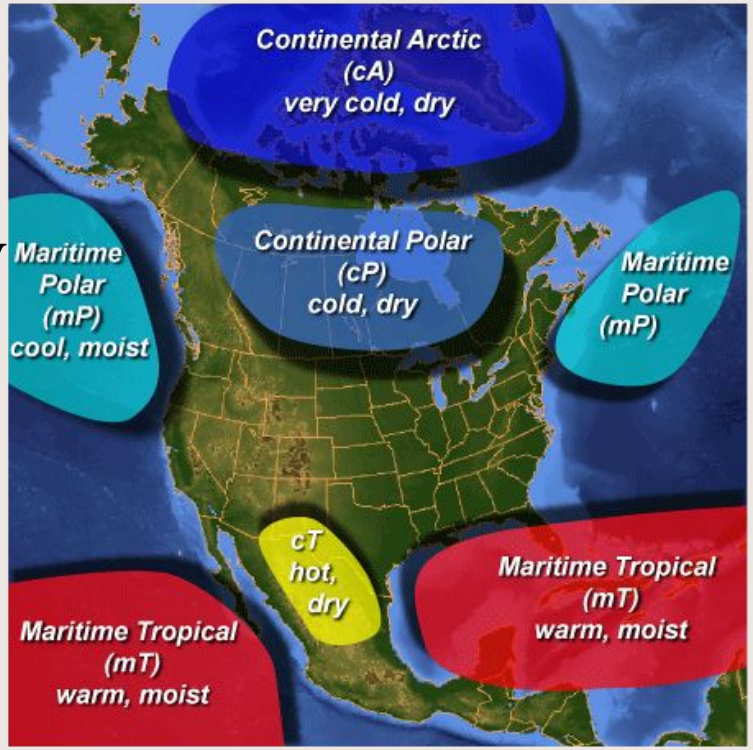
Prevailing winds – predictable wind patterns (in Canada, we're affected by the *Westerlies* which blows from West to East)

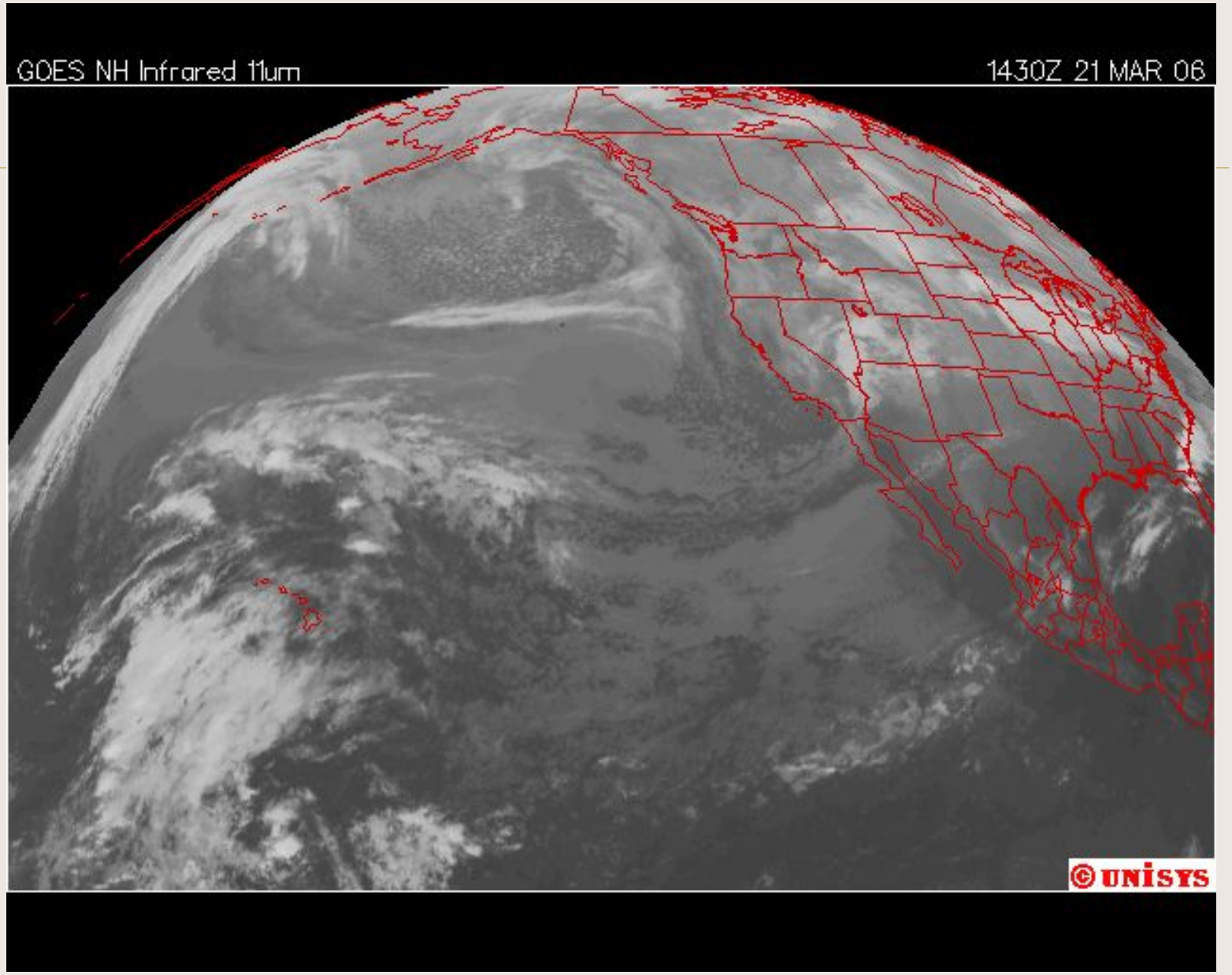




Winds and Air Masses

- The characteristics of an air mass will impact the weather in an area.
- If a cold/dry air mass moves into an area, the weather will be cold/dry
- If a warm/moist air mass moves into an air, the weather will be warm and rainy.

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Factors Affecting Climate – [E]

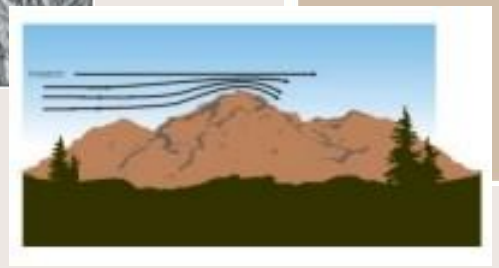
- **Elevation** – the higher you go, the cooler it gets because the temperature of an air mass drops as elevation increases.

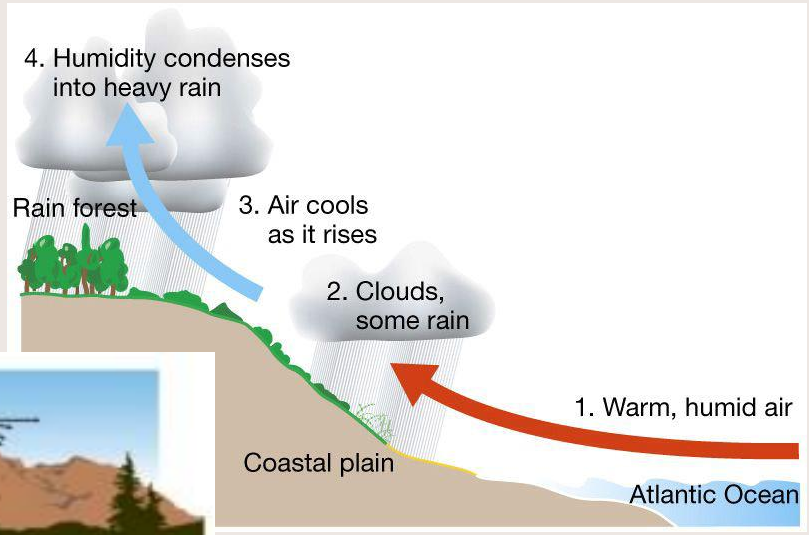
Elevation

- rising air cools at a rate of 1ºC per 100m (or 0.6ºC per 100m for saturated air)

Factors Affecting Climate – [R]

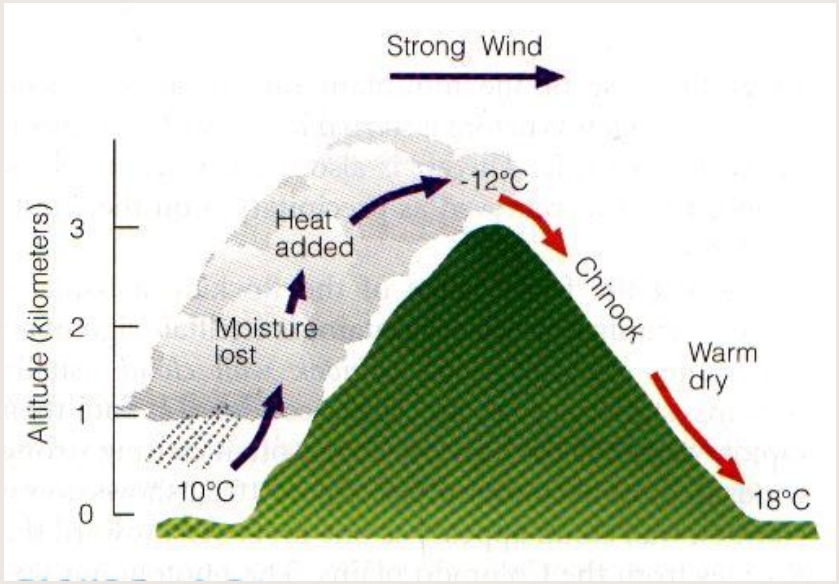
- **Relief** – mountains act as a BARRIER to the movement of air masses. Climate changes depending on which side of the barrier you are on.





Relief

- Vancouver is warm and moist while Calgary is cold and dry



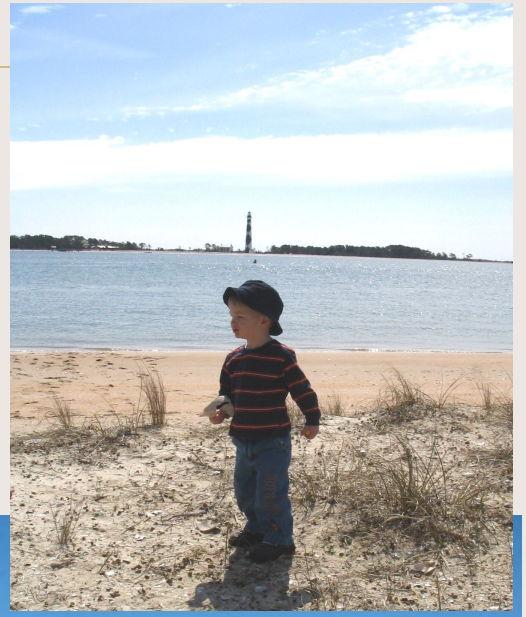
Chinook – a dry, warm wind that comes off the Rocky Mtns. quickly melting the snow in early spring. The air warms as it descends down the slope. Best observed in valleys.

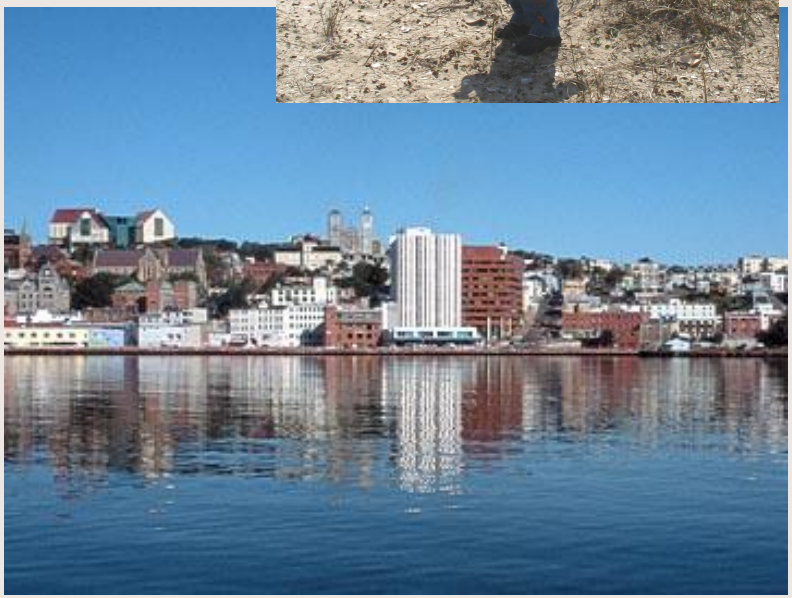
Factors Affecting Climate – [N]

- **Near Water** – temperature of the water affects the temperature of the air masses that pass over it.
- areas close to water have more precipitation
- maritime regions have a cooler summer and a milder winter than continental regions

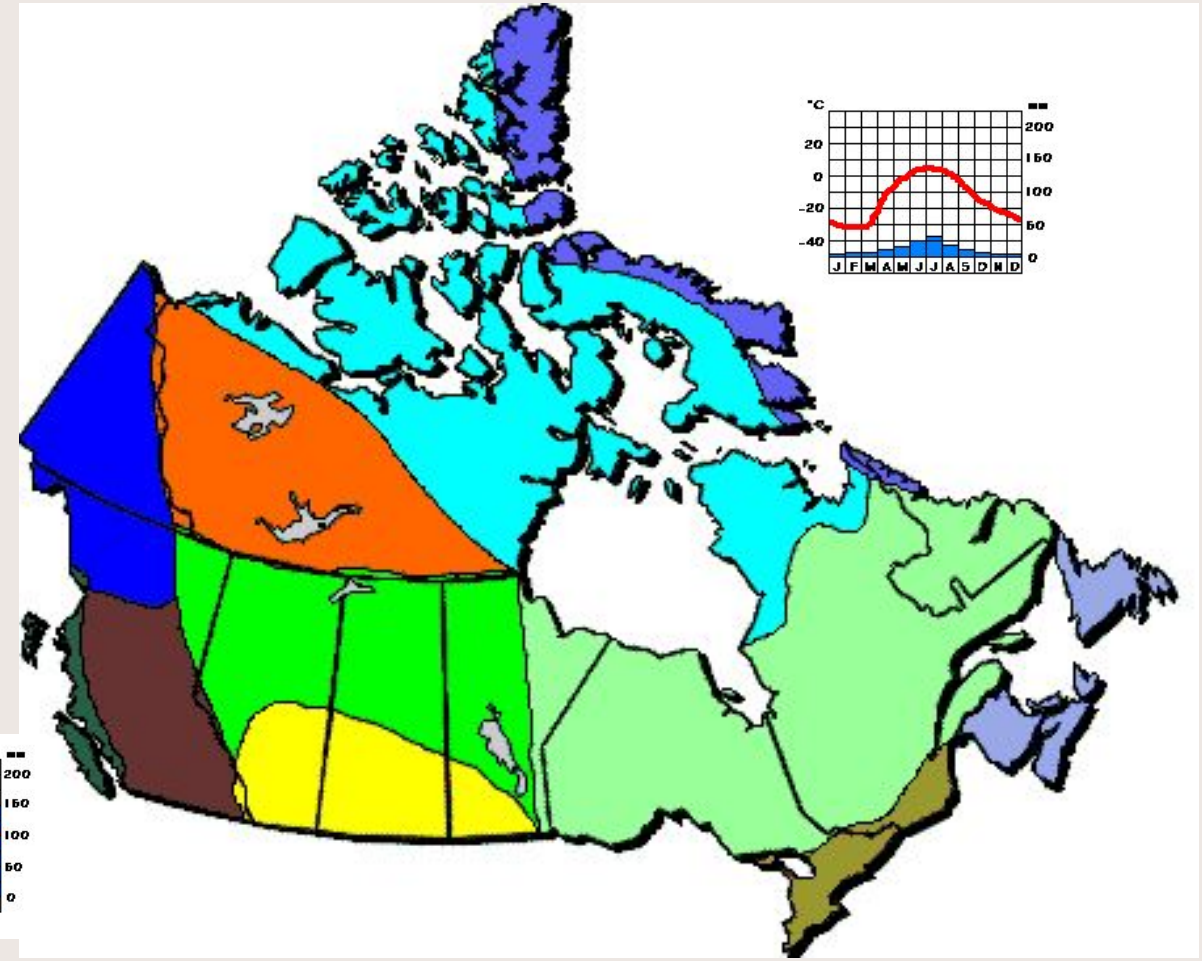
Near Water

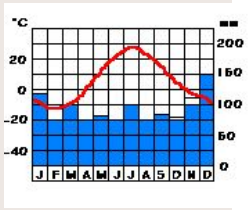
- water gains and loses heat slower than land, this moderates the temperature of coastal areas (in the summer this cools the land, in the winter this warms the land)





Climate Regions of Canada

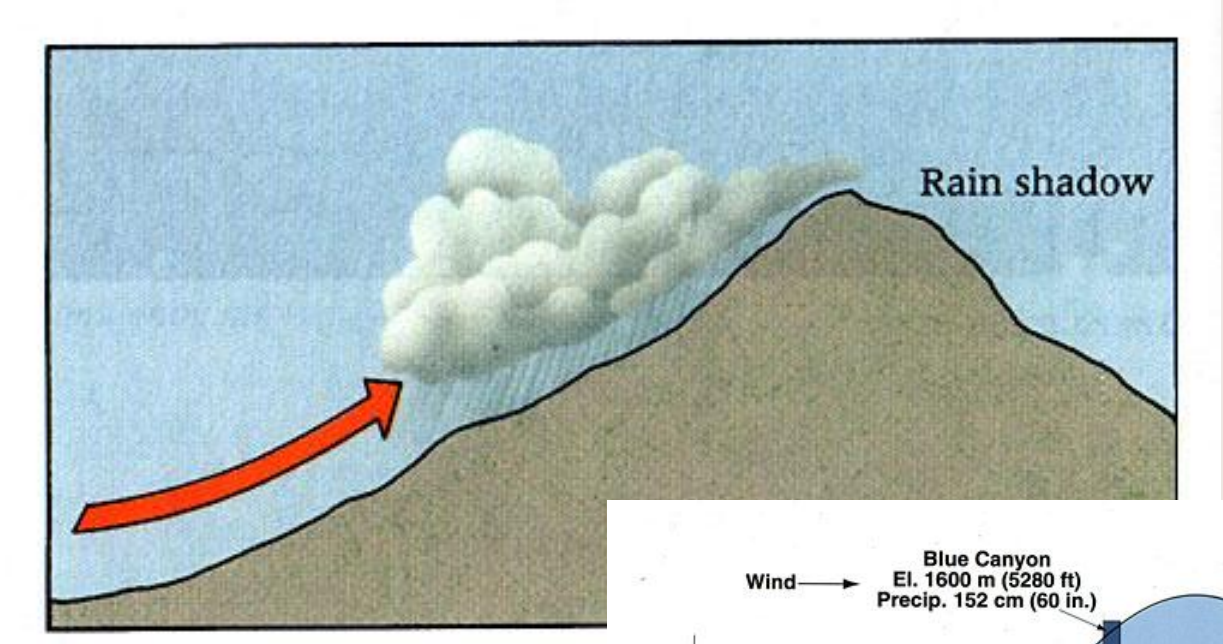


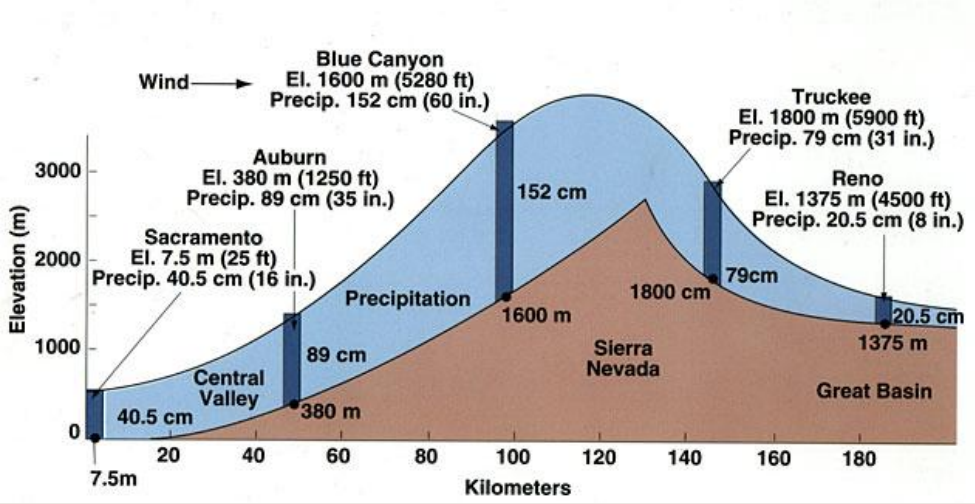


Why does Canada have such a diverse climate?

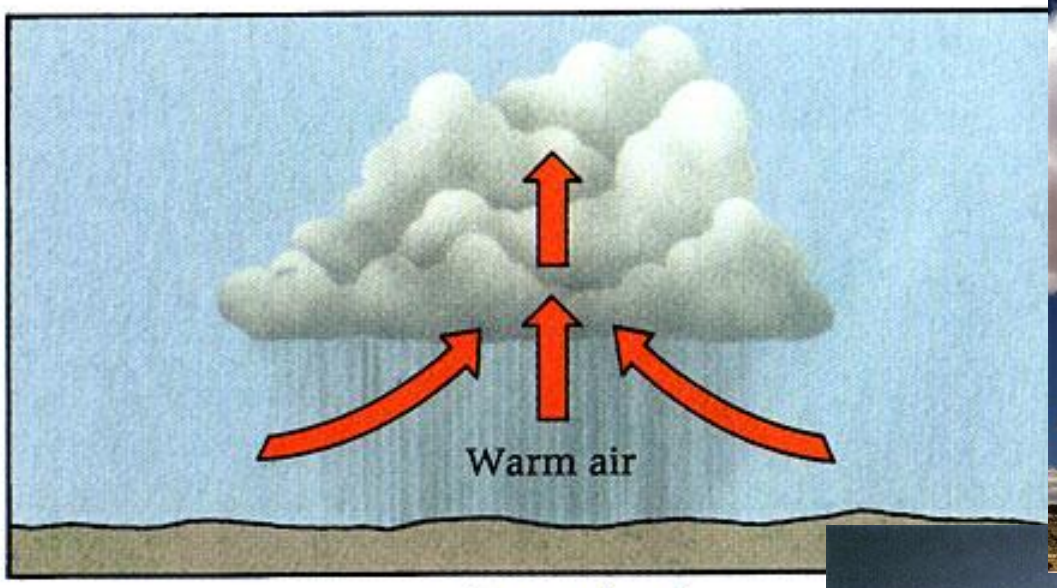
- Canada extends for a great distance from north to south
- different elevations produce different climate conditions
- coastal regions have different climates from inland regions
- wind and pressure systems move weather conditions from one part of the country to another

Relief Precipitation

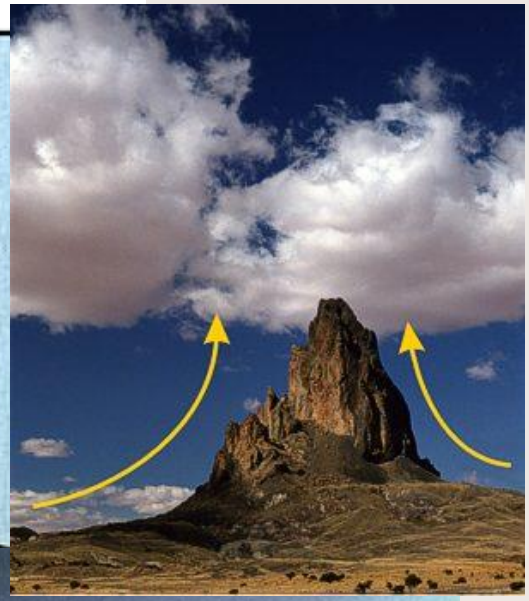




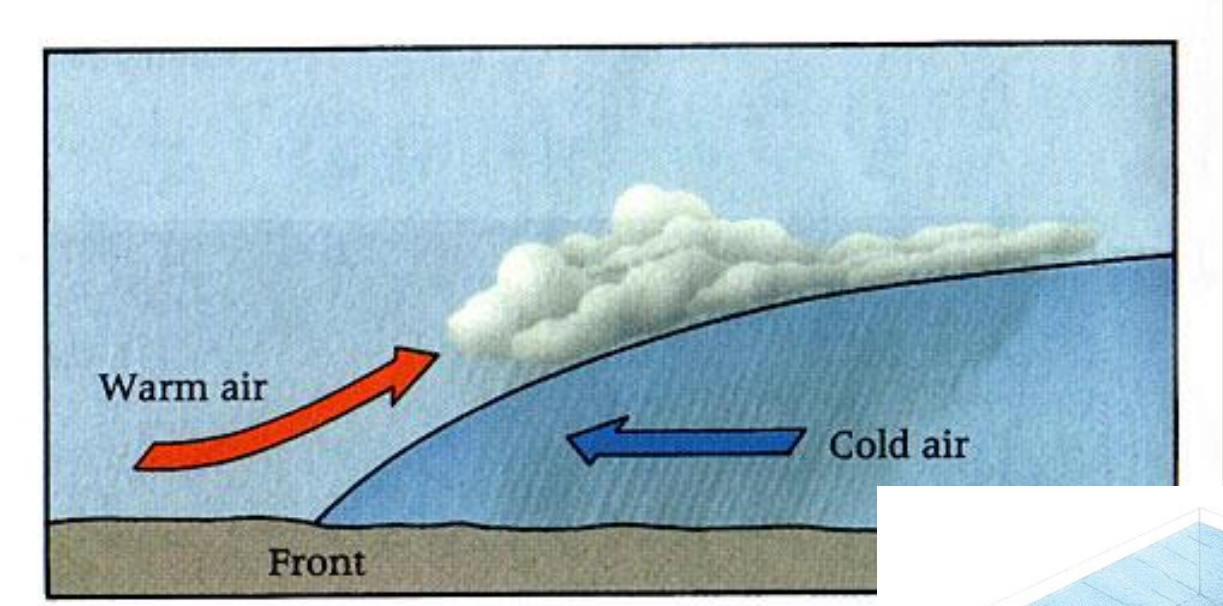
Convectional Precipitation



Convectional



Cyclonic Precipitation



Cyclonic (frontal)