

# Chapter 2

Canada's Physical Landscape

# Note:

- Canada is the 2<sup>nd</sup> largest country in the world. It has many types of landforms and climates.
- This unique combination has an effect on Canadian's sense of identity.

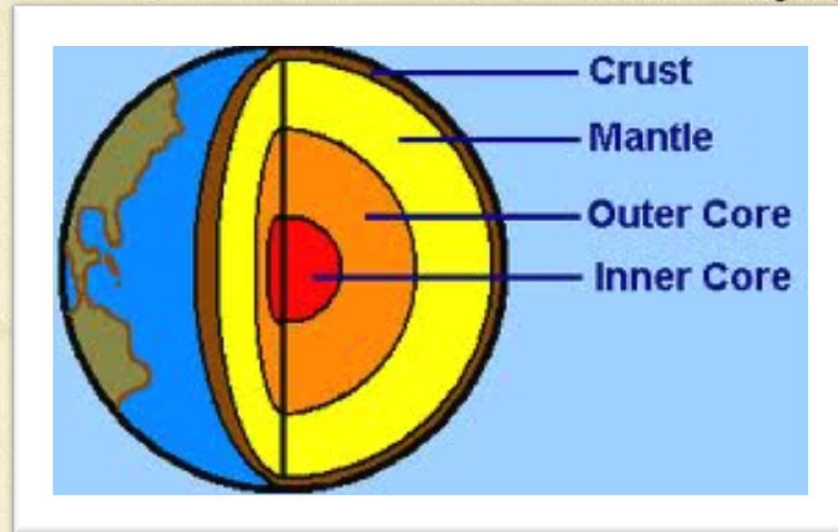




# Earth

The Earth consists of 4 layers surrounded by our atmosphere. The layers are

1. **Inner Core**: Solid and very hot due to the great pressure it is under.
2. **Outer Core**: Made of liquid.
3. **Mantle**: A middle layer consisting of melted rock called **Magma** which is very hot, dense and slow moving. When Magma erupts from the Earth through an opening or crack it is called **Lava**.
4. **Crust**: A solid surface layer that is thick under the continents and thinner under the oceans.





# Movements of the Earth's Crust

Plates: Large sections of the Earth's crust.

Plate Tectonics: The theory that plates move together to cause earthquakes, and form volcanoes and mountains.

Fault: Where 2 plates meet.

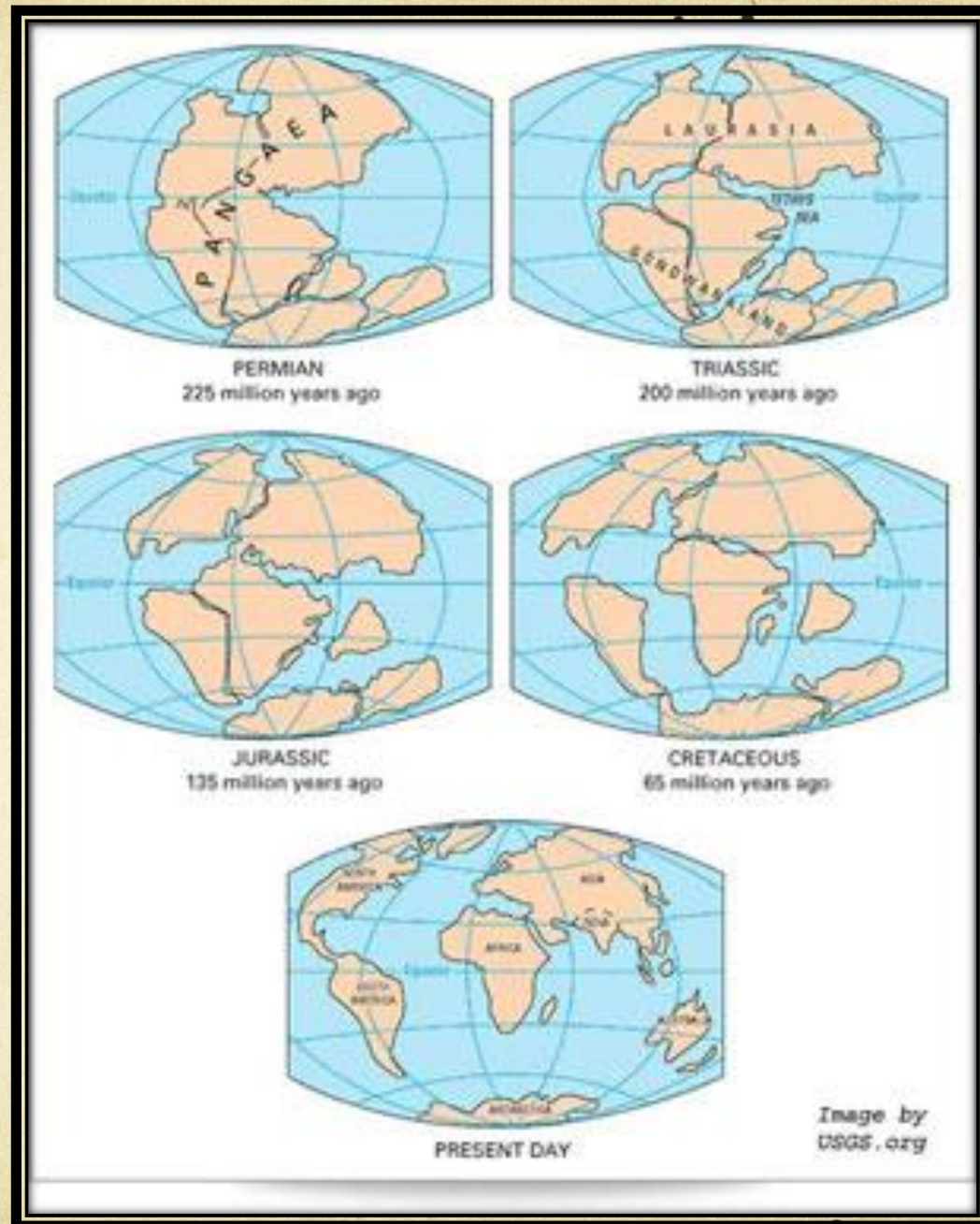
Subduction Zone: when two plates meet and one rises above the other





Pangaea: The name given to the single large supercontinent.

Continental Drift: A theory that the Earth's plates are slowly moving above the mantle.





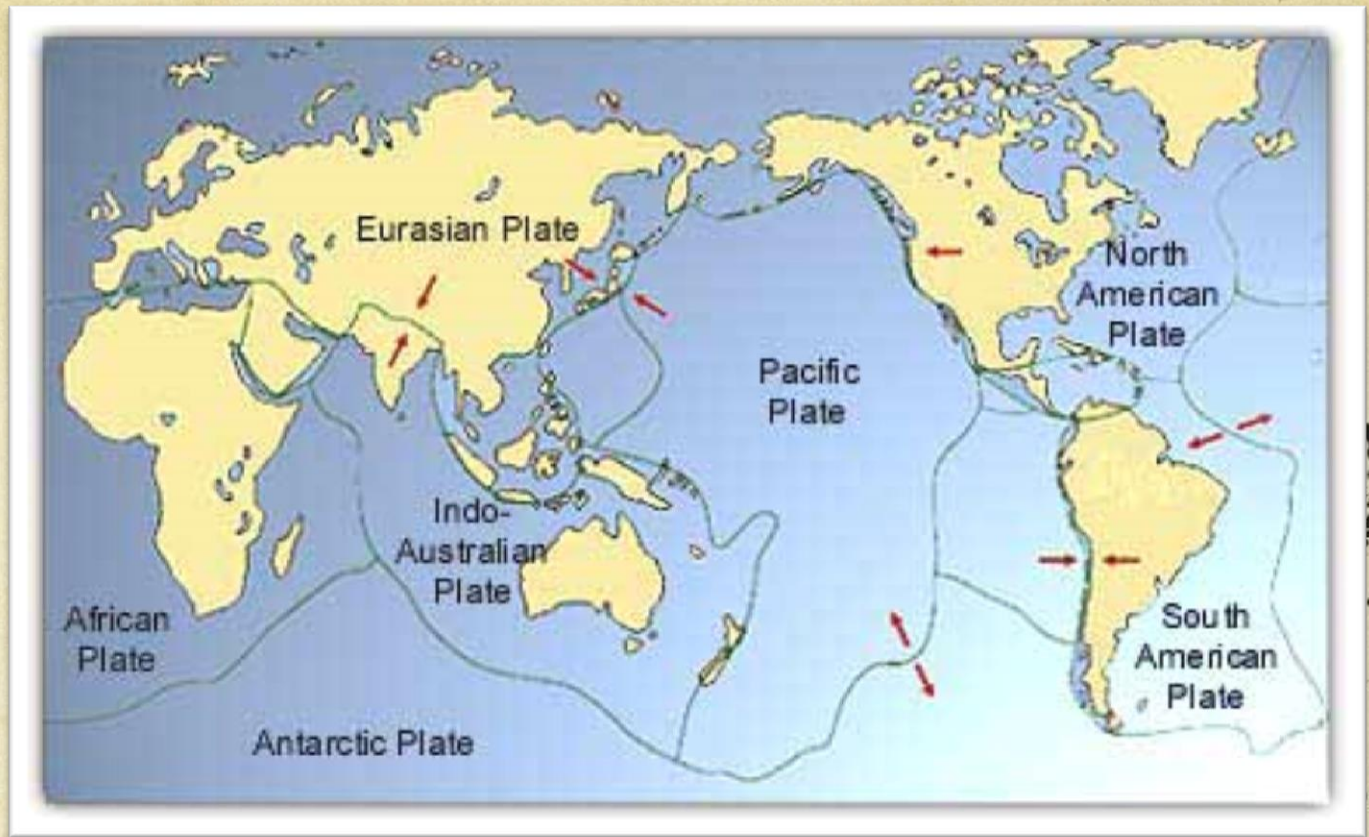
A German named Alfred Wegener suggested the theory of continental drift. He claims the Earth was once one large land mass (Pangaea) surrounded by water. He says this land split and began to slowly move apart (continental drift).

Evidence to support this theory include:

1. The continents actually look like they could fit together.
2. There are similar fossils found in rocks on different continents.
3. There are matching magnetic bands found on different continents.
4. Fossils of sea animals have been found high up in the Himalayas.







## Note:

- Canada is found on the northern part of the North American Plate. It is moving west (away from Europe) at a rate of 2 cm per year.
- The west coast has the Pacific Plate which moves in a NE direction.
- These two plates often rub together causing earthquakes. Many small earthquakes occur in BC each year (over 200).





# Landforms

Topography (landforms): the natural features on the Earth's surface.





There are several terms that help describe the topography of an area. They include:

1. Landscape: a combination of an area's topography, vegetation, water, ice, and rock type.
2. Elevation: the height of land above sea level.
3. Relief: the height between the top and bottom of a hill or mountain.





4. **Gradient**: the steepness of the slope of land.
5. **Geology**: the type and history of rocks found in an area.
6. **General Appearance**: the description of landforms (ex. young mountains)



# Terms to Know

## Convection Currents:

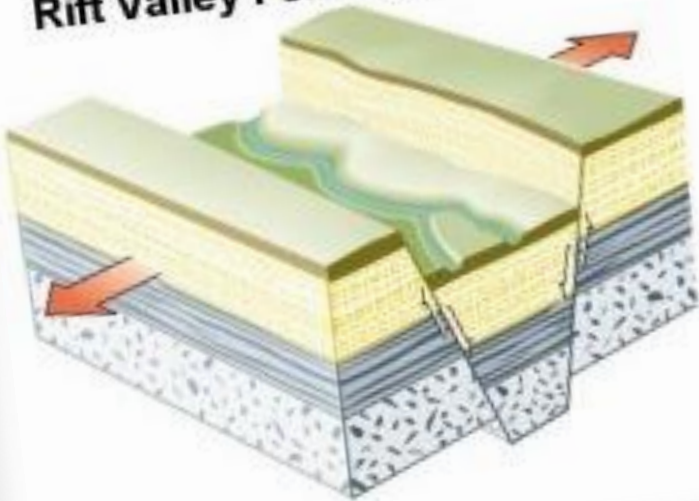
Movement of liquid caused by heat (ex. water bubbling as it boils)



Rift Valleys: formed when two plates pull apart and a valley is formed.

Mountains: formed when two plates collide and one moves upward.

## Rift Valley Formed by Extension







### Volcanic Mountains:

Formed when magma moves towards the surface. It pushes up the crust but then cools and hardens as it nears the surface.



Plateau: a flat area between mountains.

Plain: flat land under a lake or sea that is exposed when the water recedes



# Canada's landscape is the result of 4 forces.

They include:

1. **Mountain Building** (building up force)
2. **Weathering** – the breakdown of rock (wearing down force)
3. **Erosion** – wearing down due to running water, wind, waves and glaciers (wearing down force)
4. **Deposition** – depositing of eroded rock to make new landforms



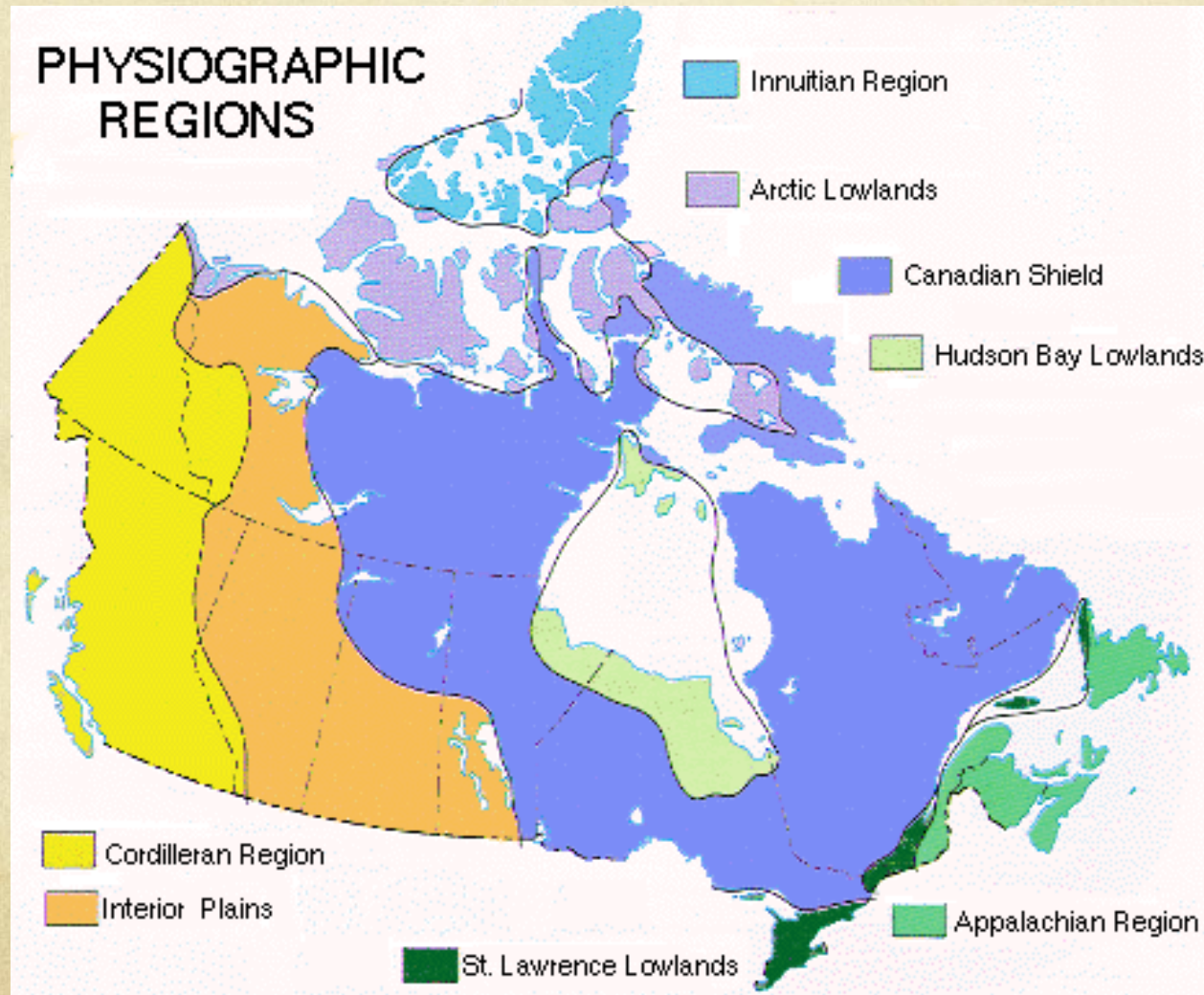


Canada's landform regions are classified using the following criteria:

1. Age of rock
2. Type of rock
3. Relief
4. Gradient
5. Process that has shaped the area

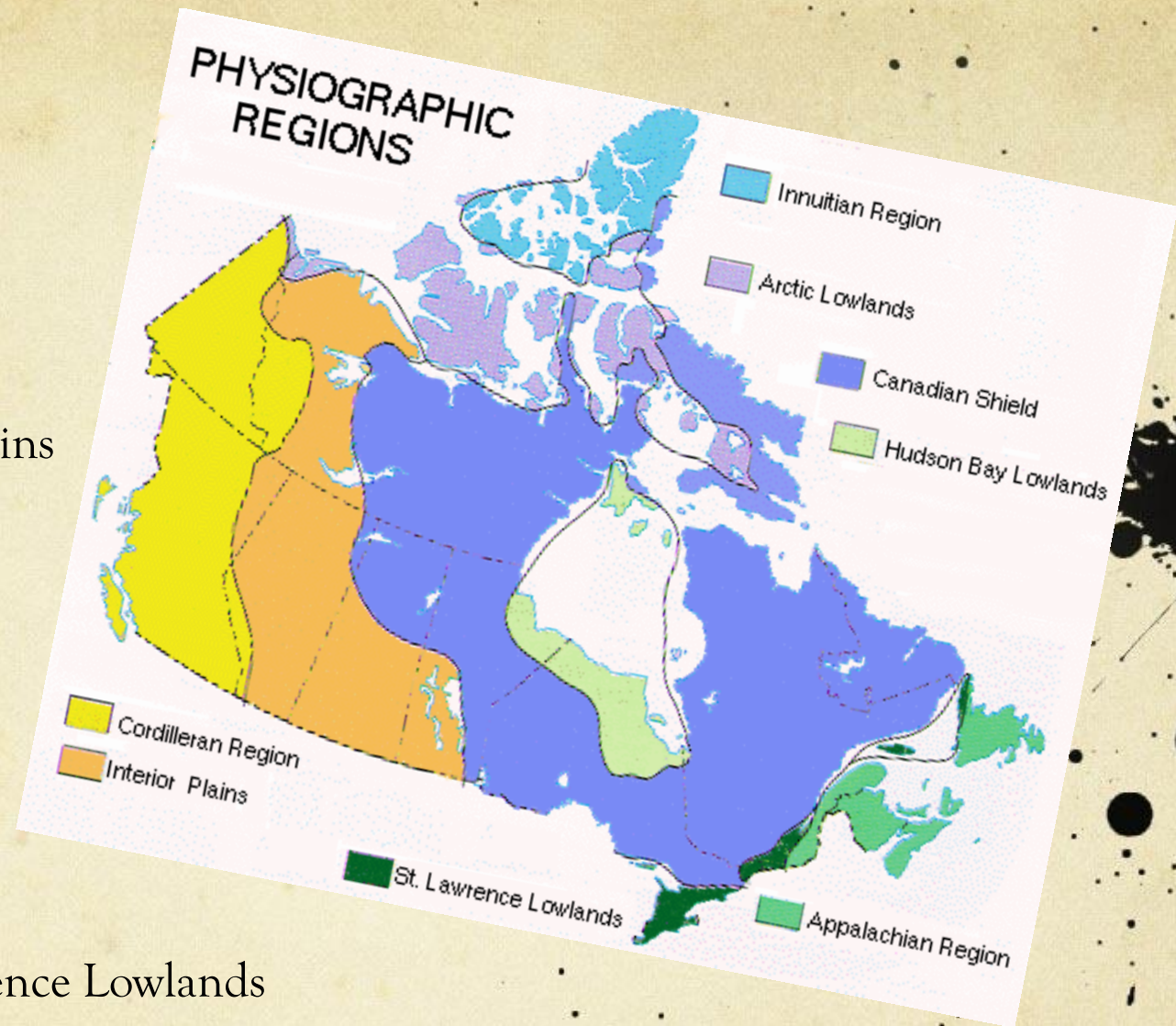


# Canada has 8 landform regions!





1. Canadian Shield
2. Appalachian Mountains
3. Western Cordillera
4. Innuitian Mountains
5. Arctic Lowlands
6. Interior Plains
7. Great Lakes-St. Lawrence Lowlands
8. Hudson Bay Lowlands





# Climate and Weather

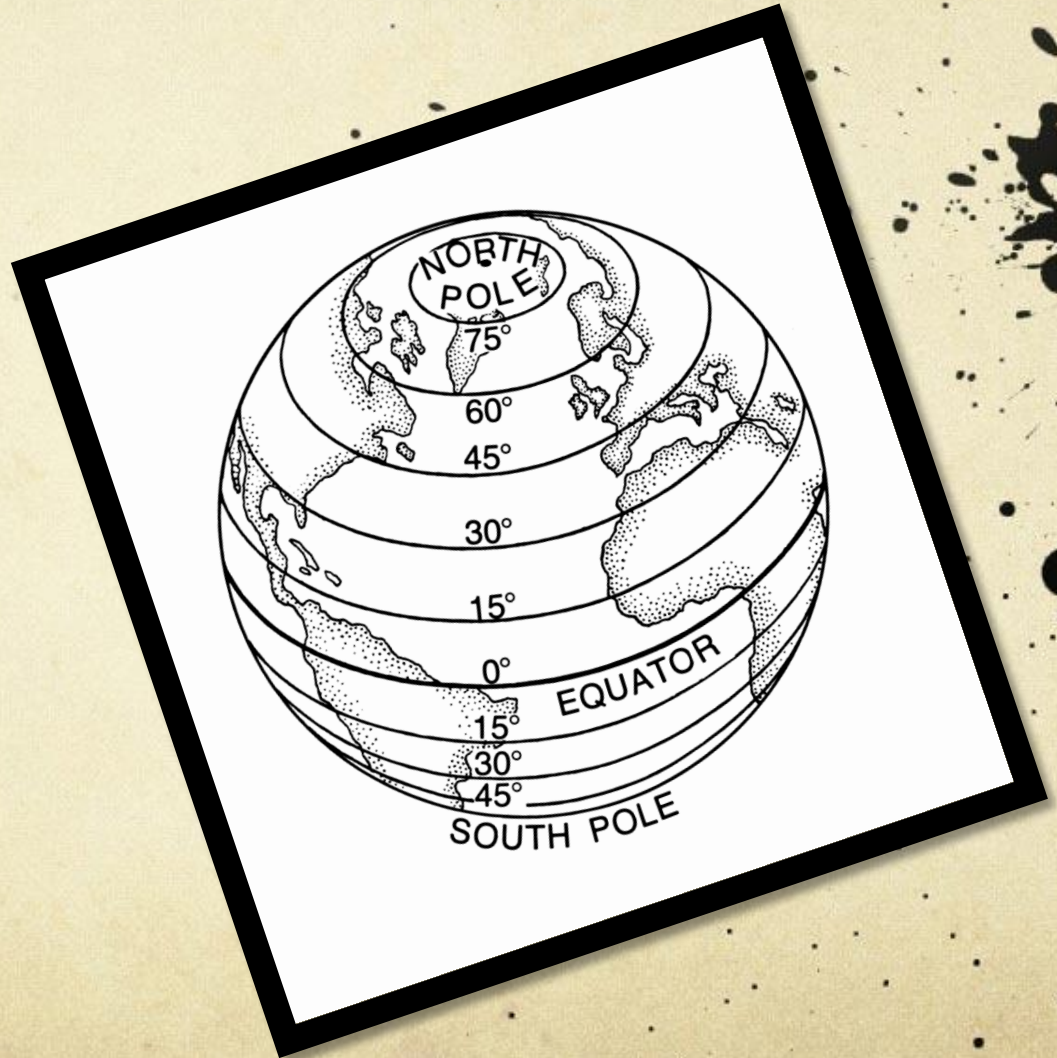
- **Weather**: atmospheric conditions on any given day
- **Climate**: weather patterns over a long period
- **Meteorology**: the science of studying weather





# There are 6 Global Factors that influence climate

1. Latitude - As distance from the Equator increases, it gets colder due to less direct sunlight.



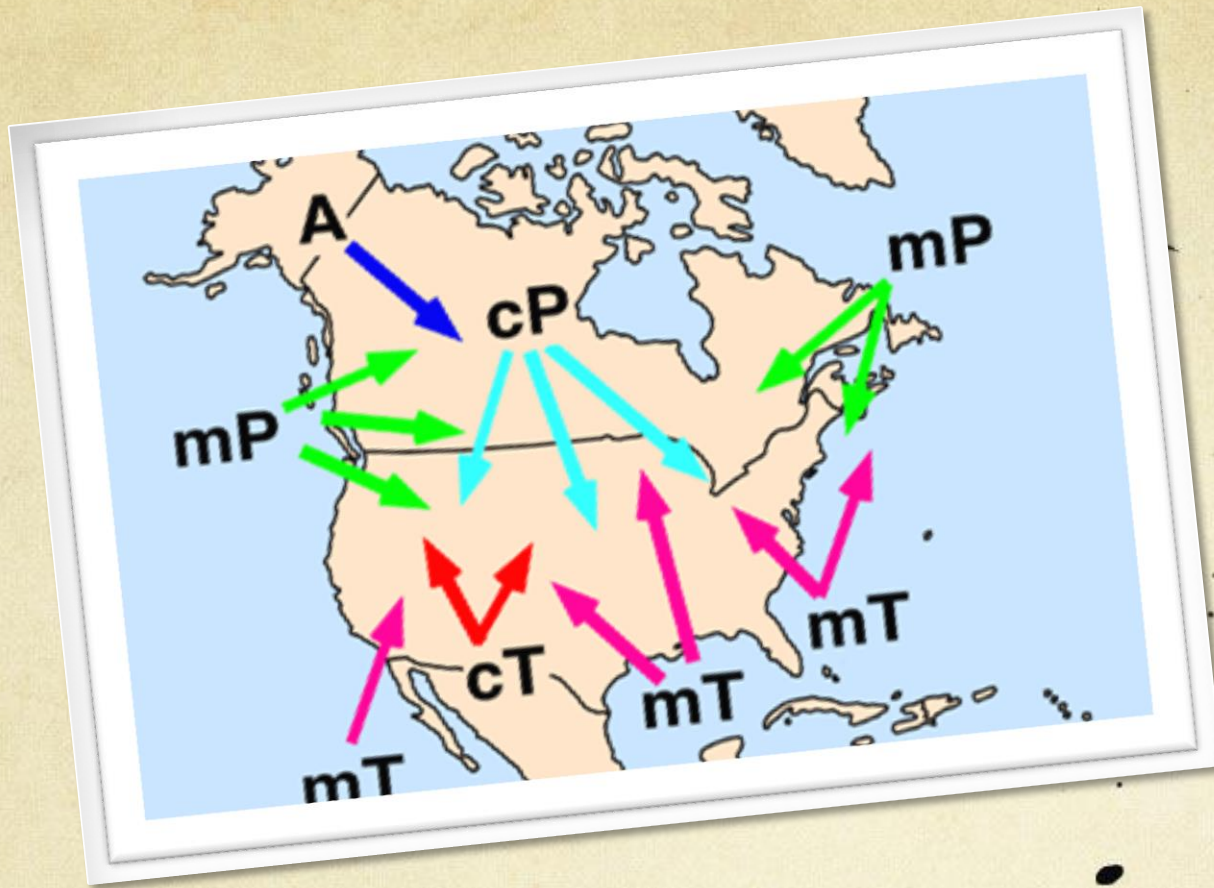


## ○ 2. Air Masses and Winds - Wind can be warm, cold, dry, or wet.

- Maritime Air – forms over water and is moist
- Continental Air – forms over land and is dry
- Tropical Air – warm
- Polar Air – cool
- Arctic Air – cold

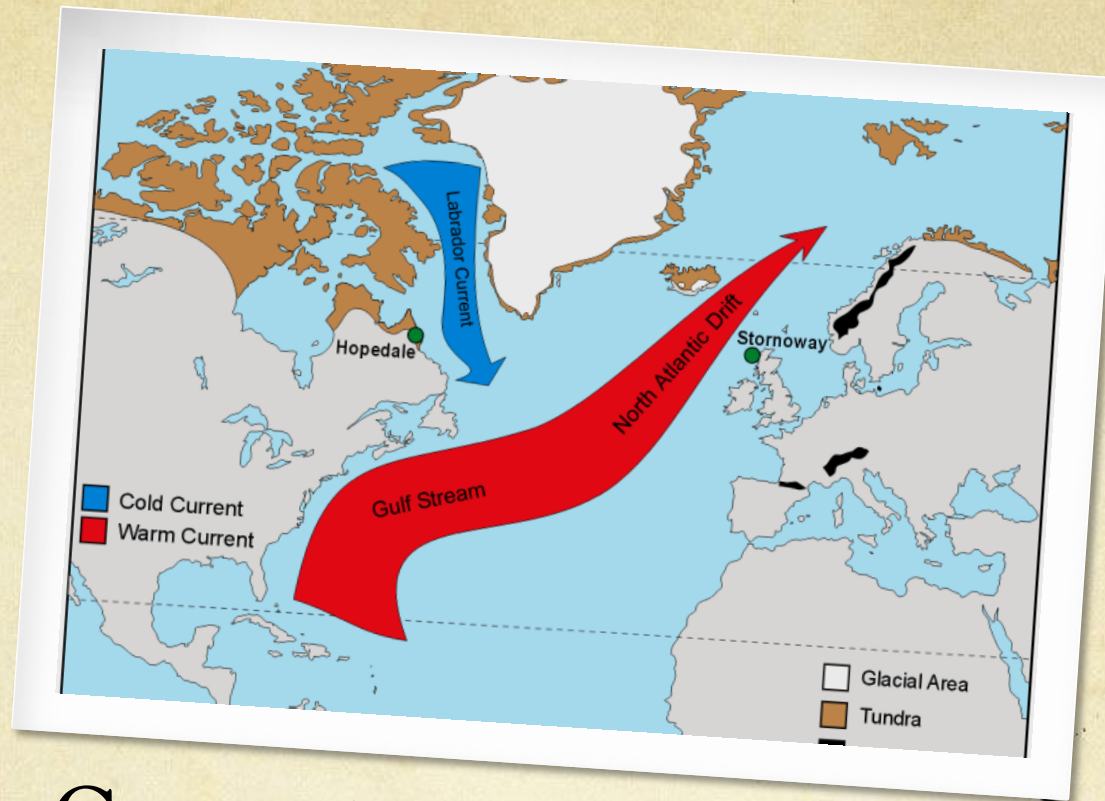






- The former can create different types of air masses. For example. Maritime Tropical (mT) air is warm and moist.





### 3. Ocean Currents

- Ocean currents can be warm or cold, making the surrounding area the same. Two currents that affect NL are:

- a. Labrador Current – cold current from the north
- b. Gulf Stream – Warm current from the Gulf of Mexico.

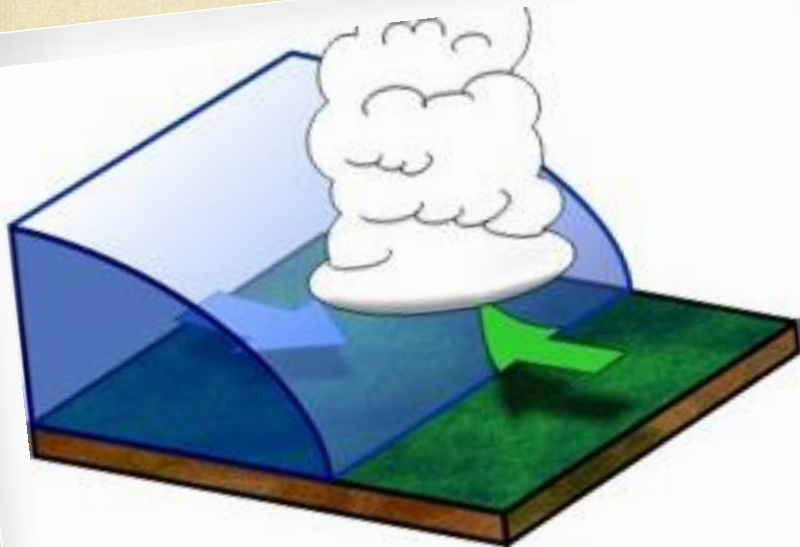




## 4. Precipitation

Dew Point: the temperature where condensation occurs

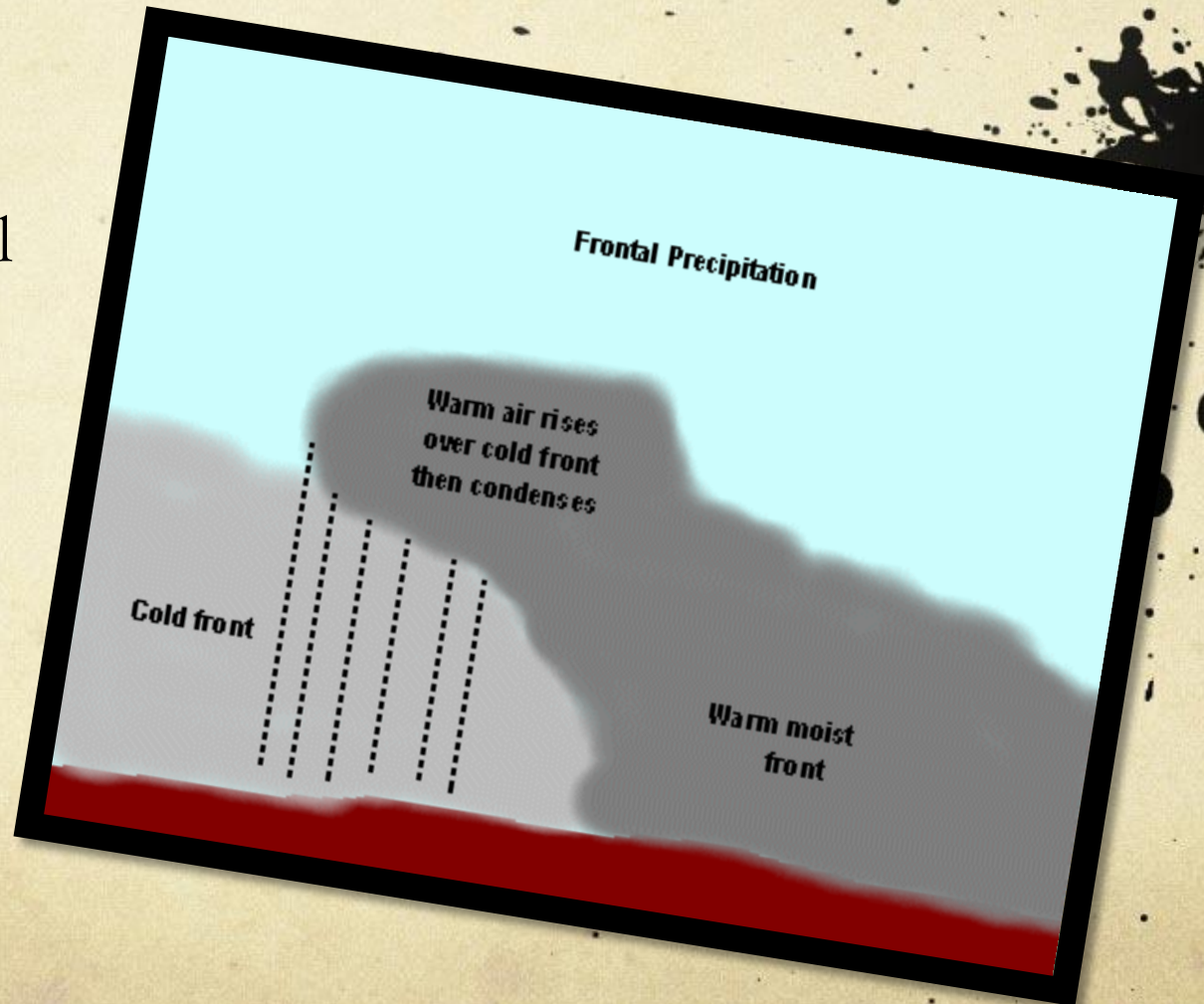
Front: The leading edge of an air mass



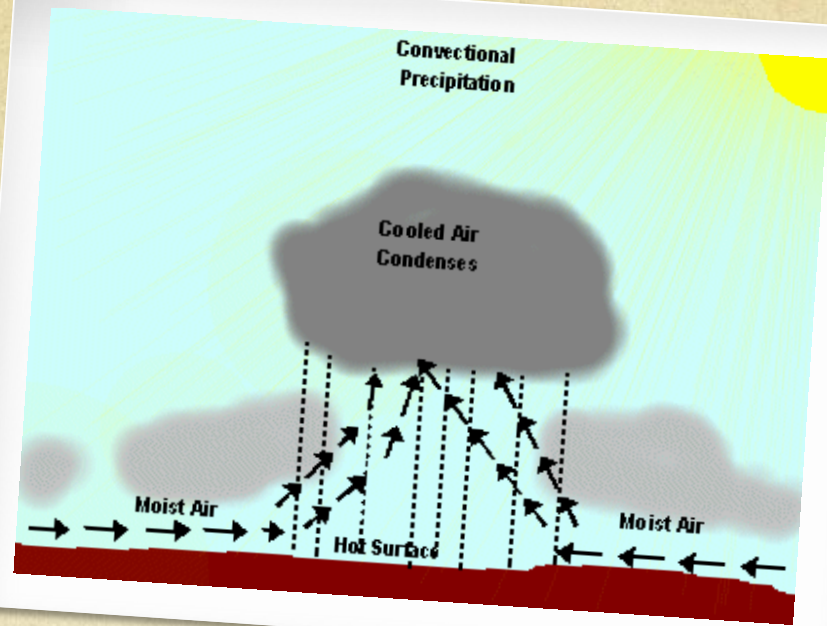


## There are 3 types of Precipitation:

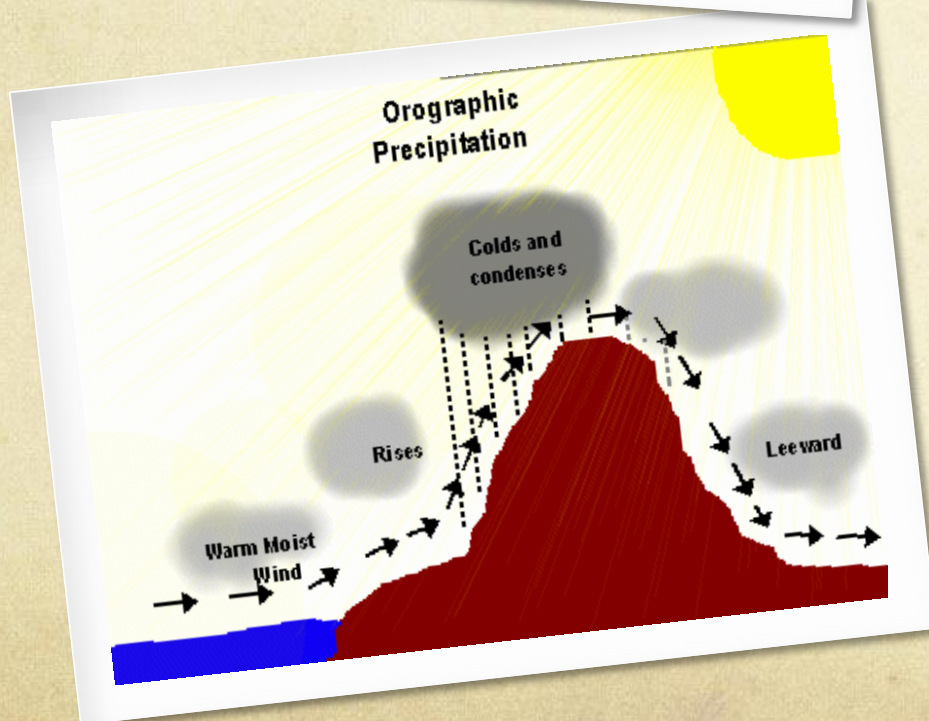
A) Frontal – when 2 air masses meet the warmer one will rise over the colder one. As it rises the air will cool and condense causing it to rain.





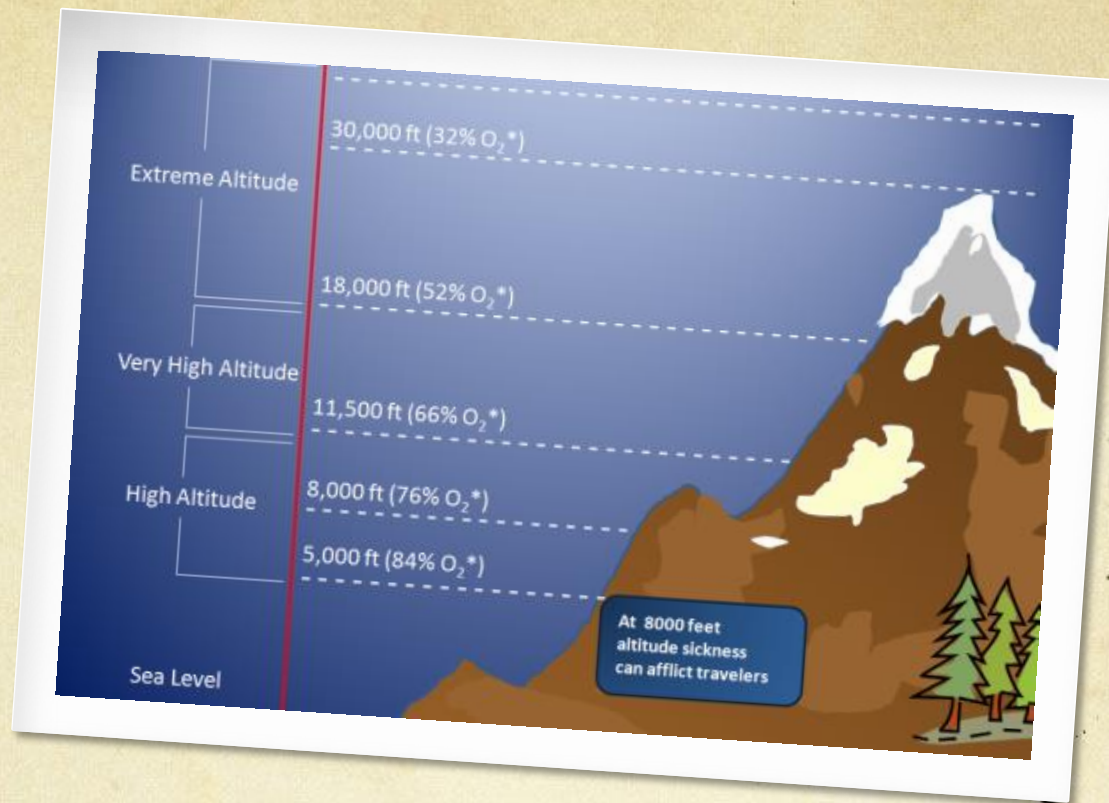


B) Convective – occurs over flat land on a hot summer day. The land will heat up quickly, rise and cool, and we get thunder showers.



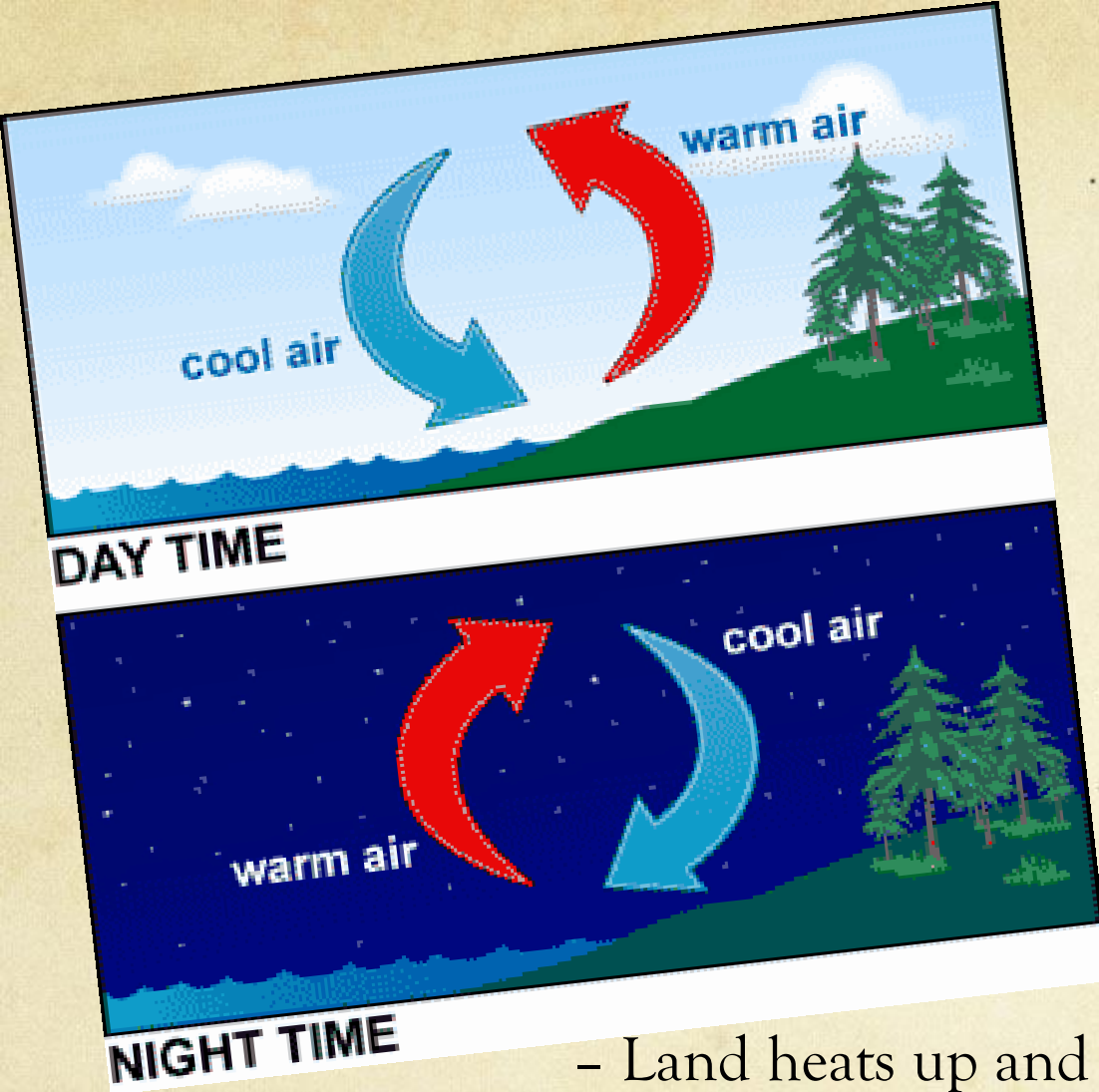
C) Orographic – when moist air comes in off the ocean and has to rise over a mountain it will cool, condense and rain occurs. The opposite (leeward) side of the mountain is very dry and this effect is called rain shadow.





**5. Altitude** – as you go higher above sea level the temperature decreases due to the thinning of the air.

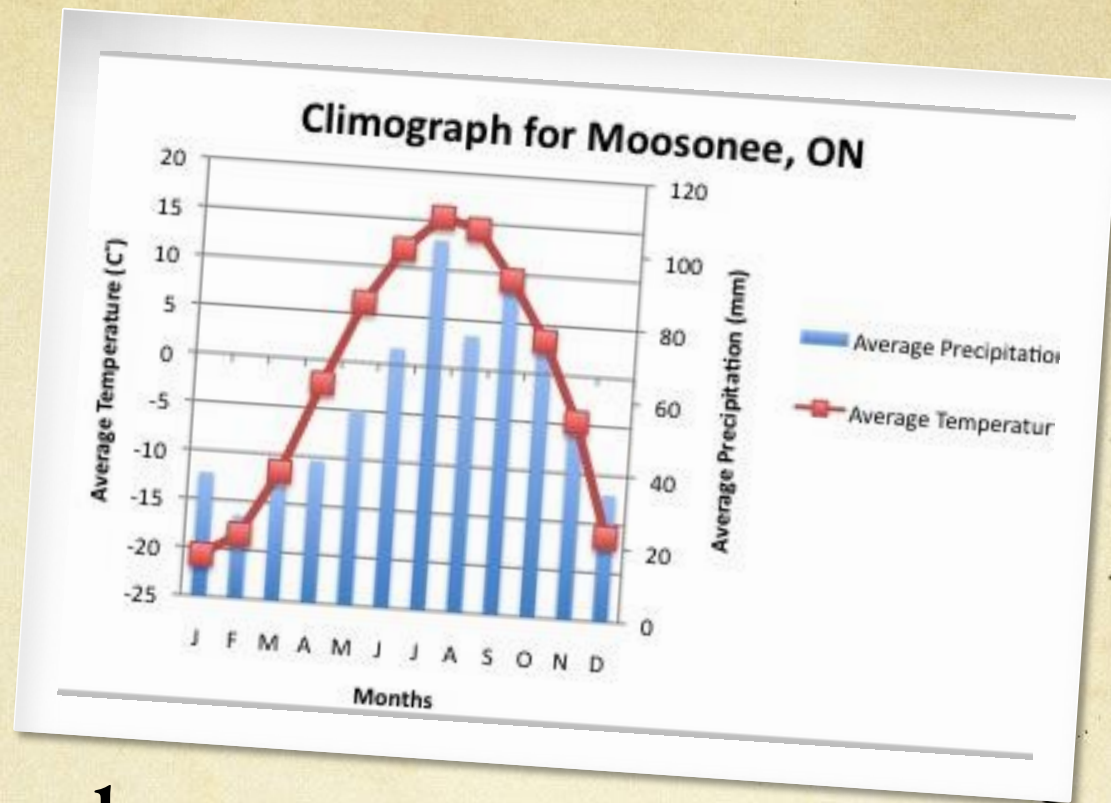




## 6. Closeness to Water

- Land heats up and cools off much faster than water. This will result in land near the ocean, like Botwood, to be cooler in summer and milder in winter. Areas far inland like Calgary will have cold winters and hot summers.





# Climographs

Students Must be able to complete a climograph. The monthly temperature is indicated by a dot in the middle of each month. The dots are then connected. Scale for the temperature is given on the left hand side in Celsius. The precipitation is given as a bar graph with the precipitation scale given on the right hand side in mm..