

CLIMATE CONNECTIONS: 6 FACTORS AFFECTING CLIMATE

CGC1D1-MR. A. WITTMANN-UNIT 2: NATURAL SYSTEMS



WEATHER

- **Day to day characteristics of atmospheric conditions**
- **Basically it is climatic events that takes place during a short period of time in a local area.**
- **Atmospheric conditions are...**
 1. Temperature
 2. Precipitation
 3. Humidity
 4. Wind speed & direction
 5. Cloud cover
 6. Air pressure

CLIMATE

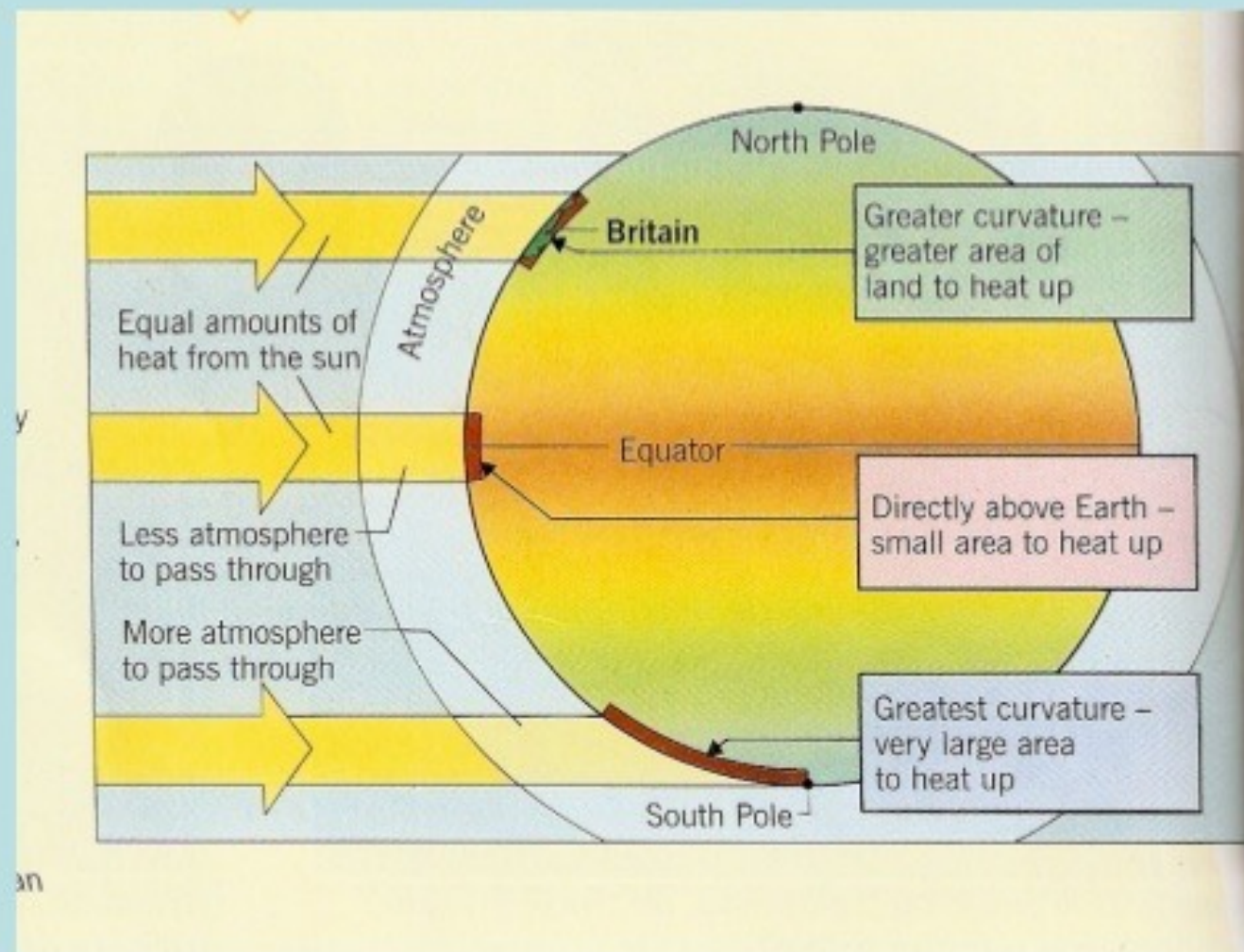
- long term pattern of weather affected by LOWERN...

1. Latitude
2. Ocean Currents
3. Winds, Air Mass, Air Pressure
4. Elevation
5. Relief
6. Nearness To Water

1. LATITUDE

- The further an area is from the equator, the cooler the climate will be.

Factors affecting temperatures: latitude



Earth Axis

Arctic Circle

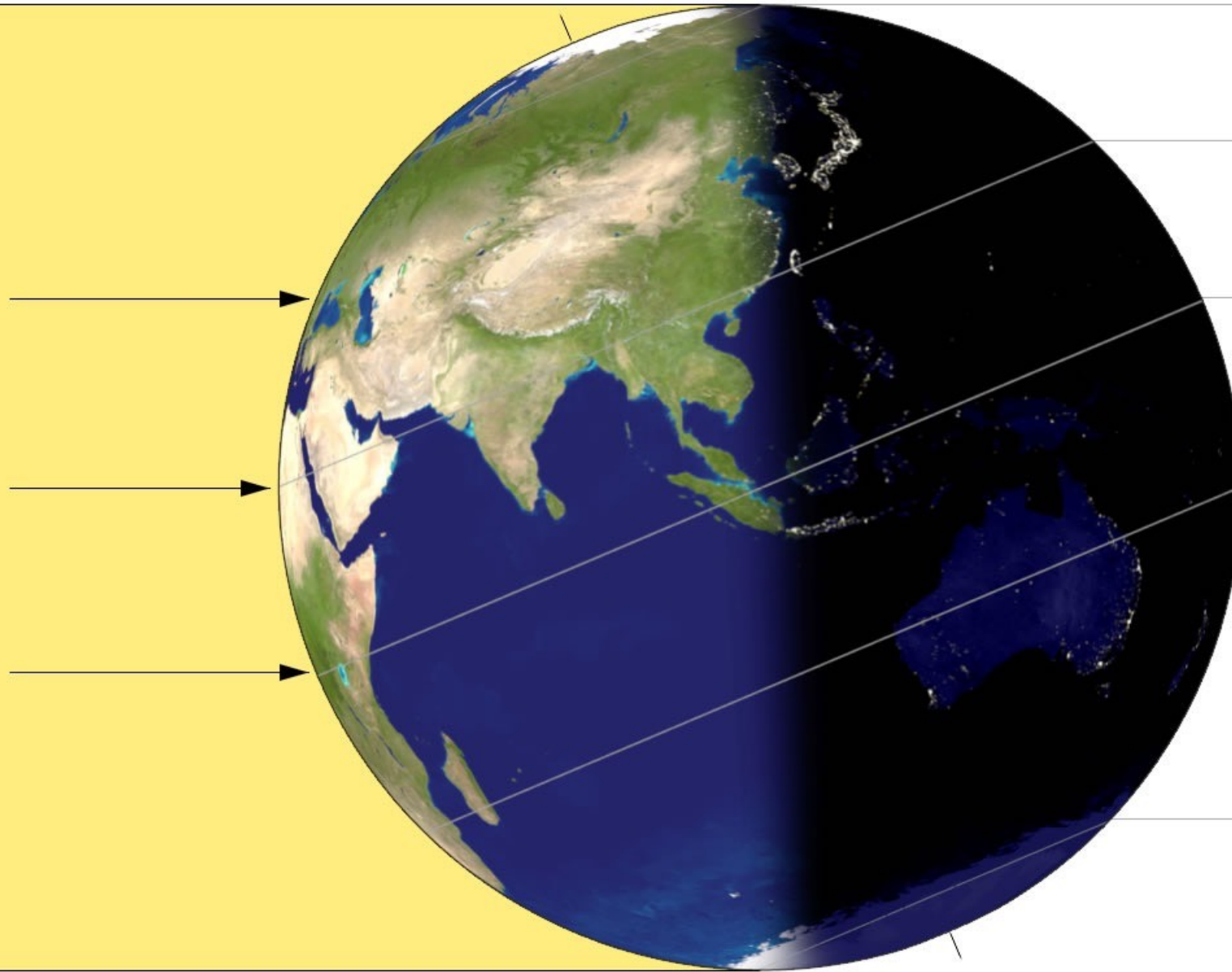
Tropic of Cancer

Equator

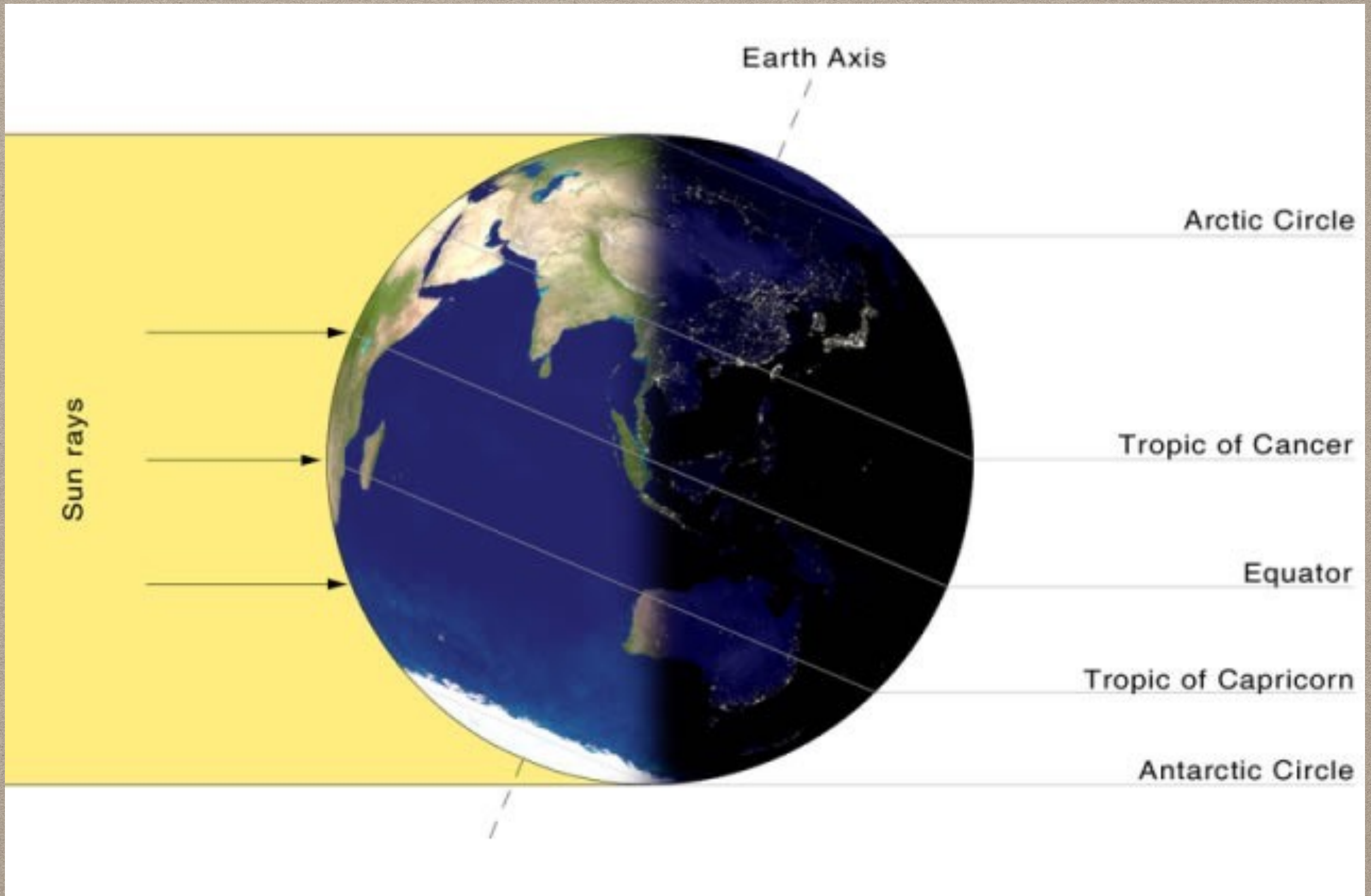
Tropic of Capricorn

Antarctic Circle

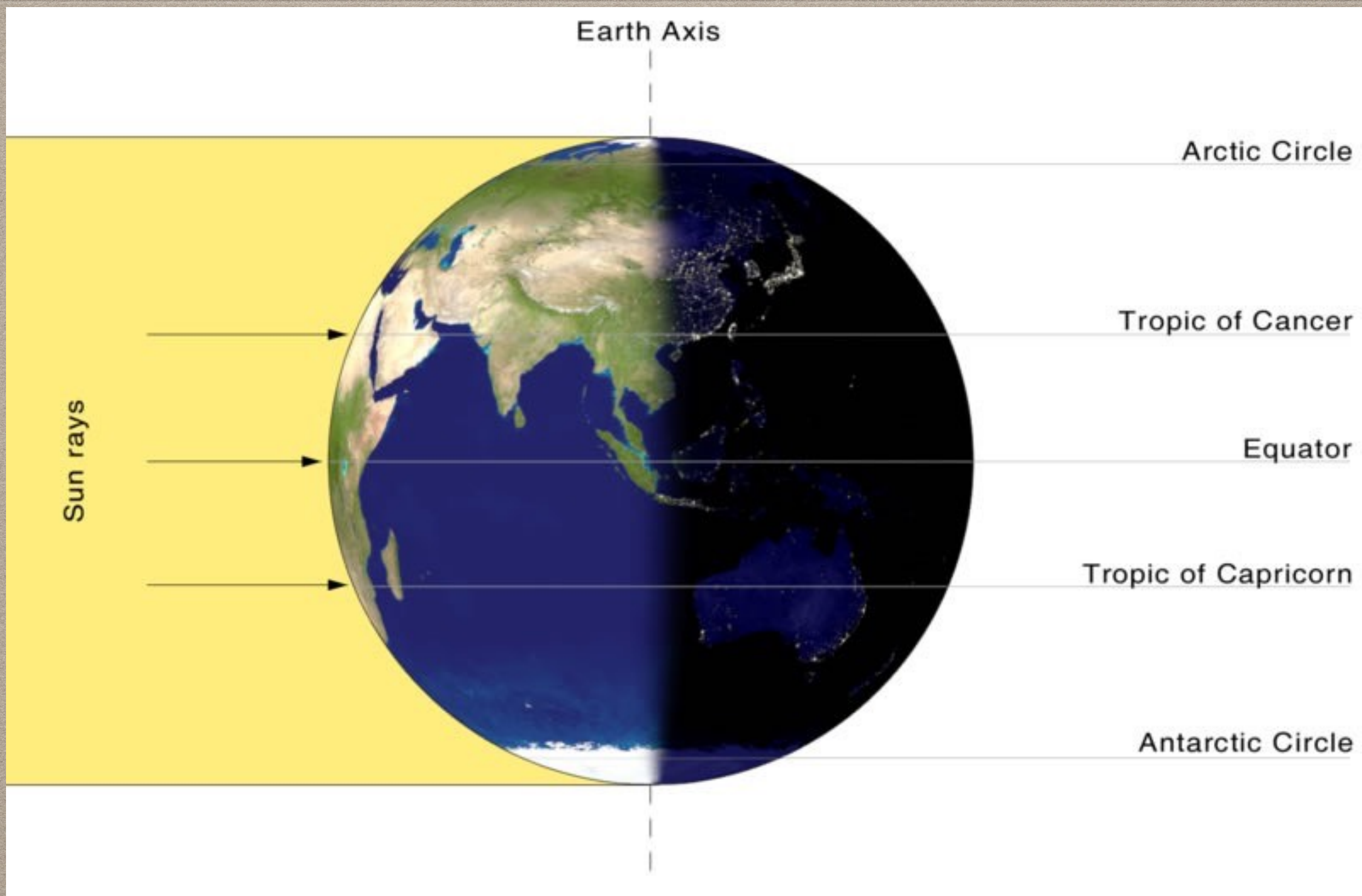
Sun rays



Northern Hemisphere Summer / Southern Hemisphere Winter

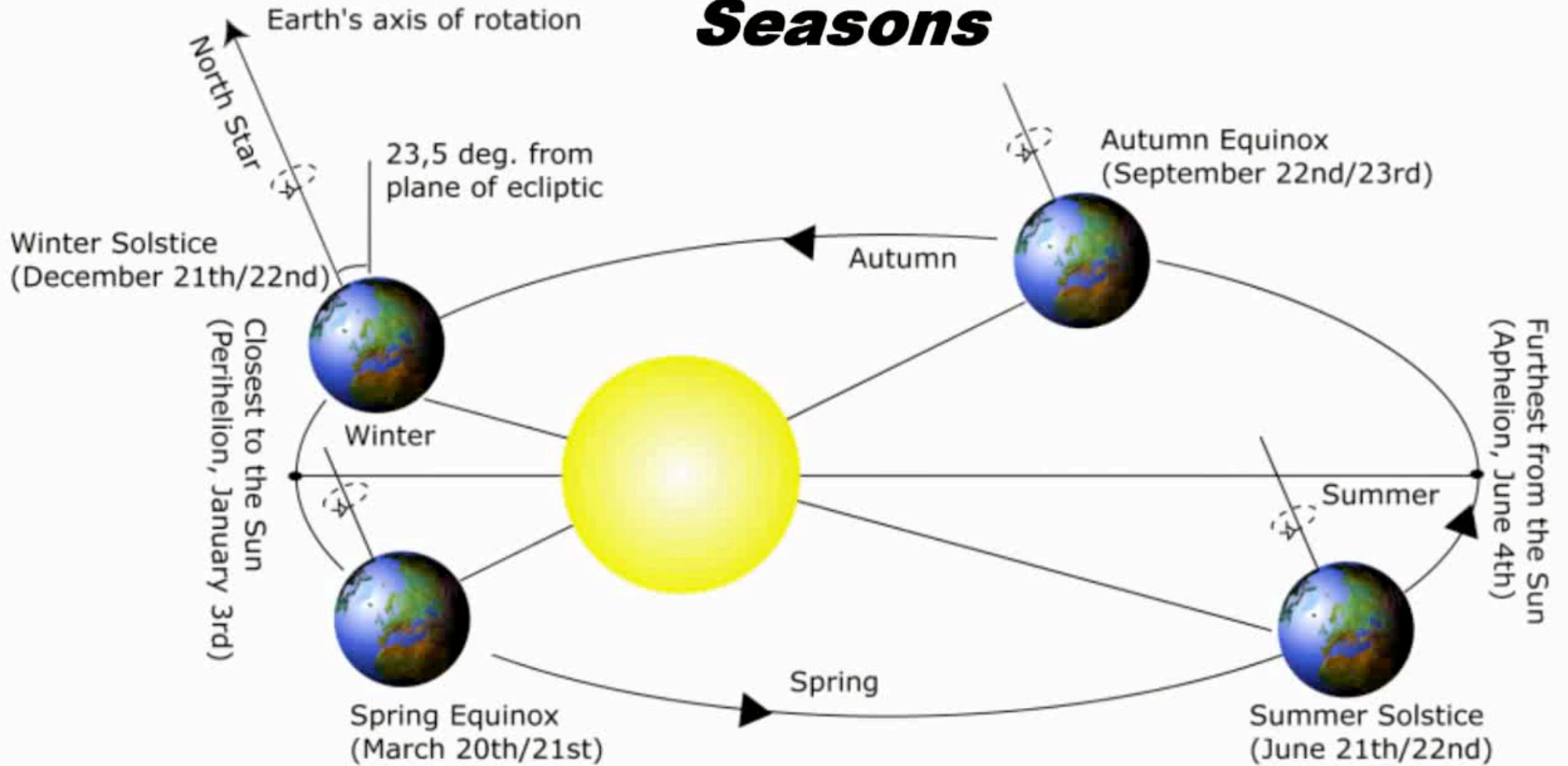


Northern Hemisphere Winter / Southern Hemisphere Summer



Autumnal (Fall) Equinox / Vernal (Spring) Equinox

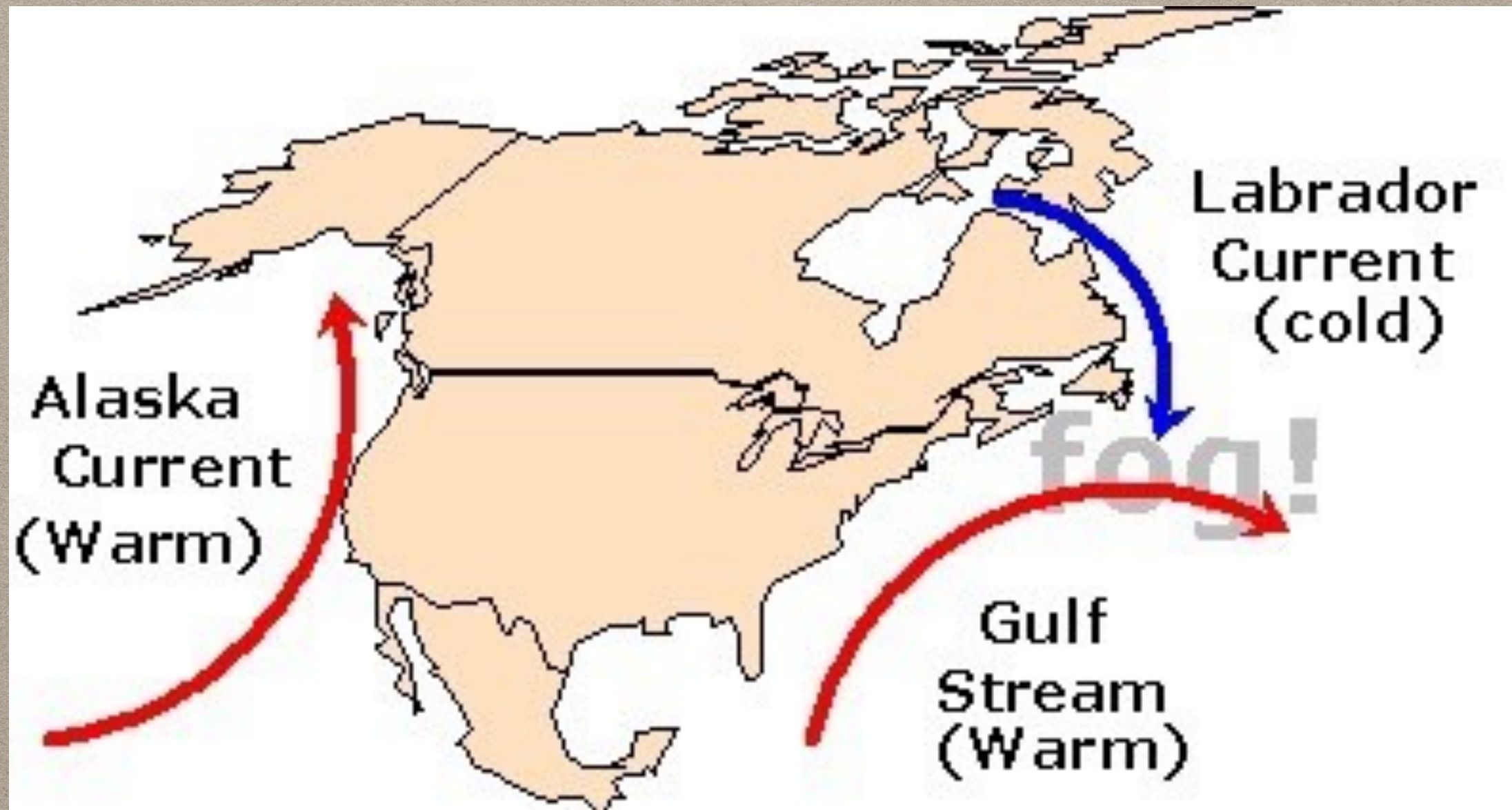
Seasons

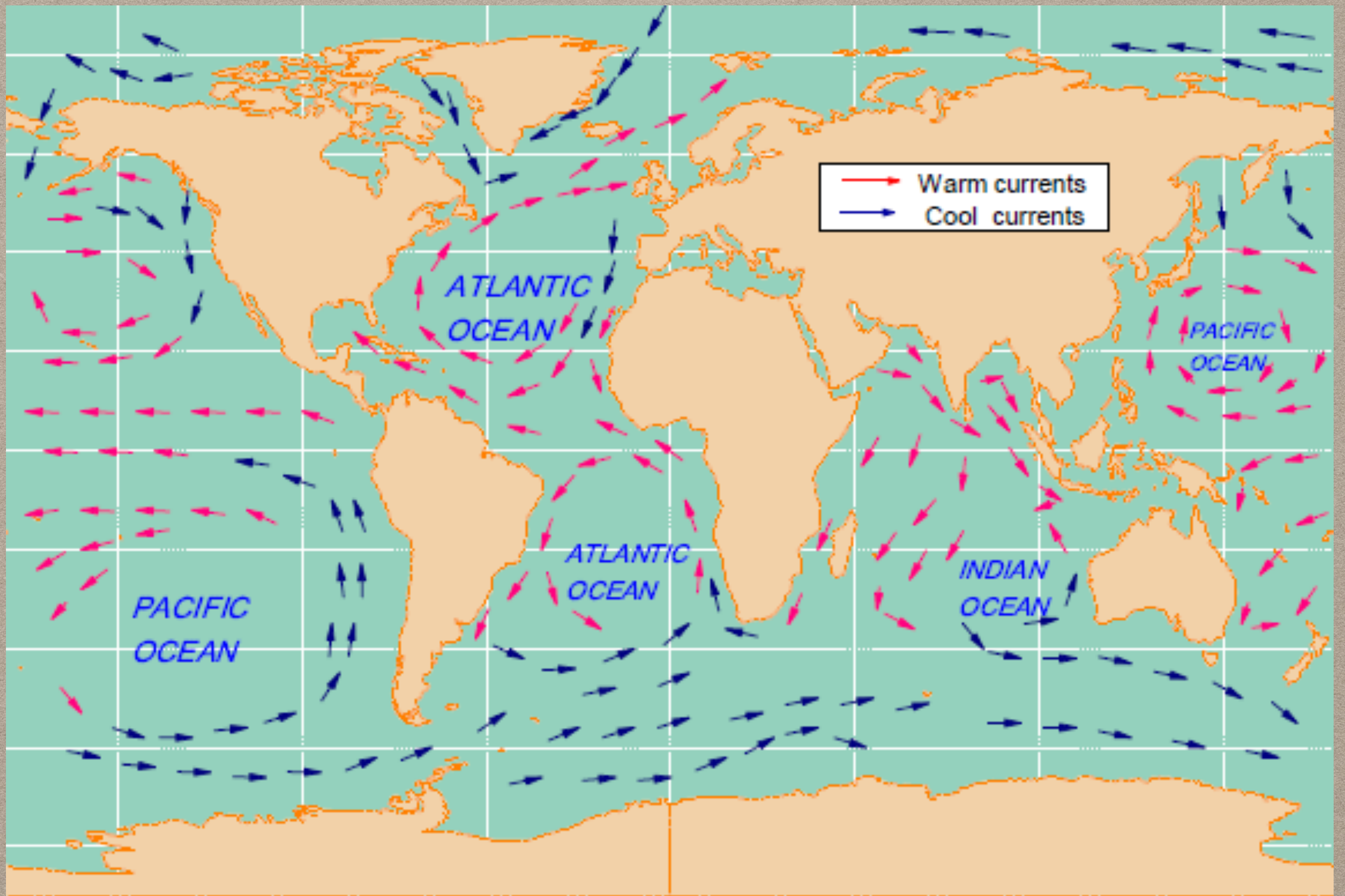


Kurdistan Planetarium

2. OCEAN CURRENTS

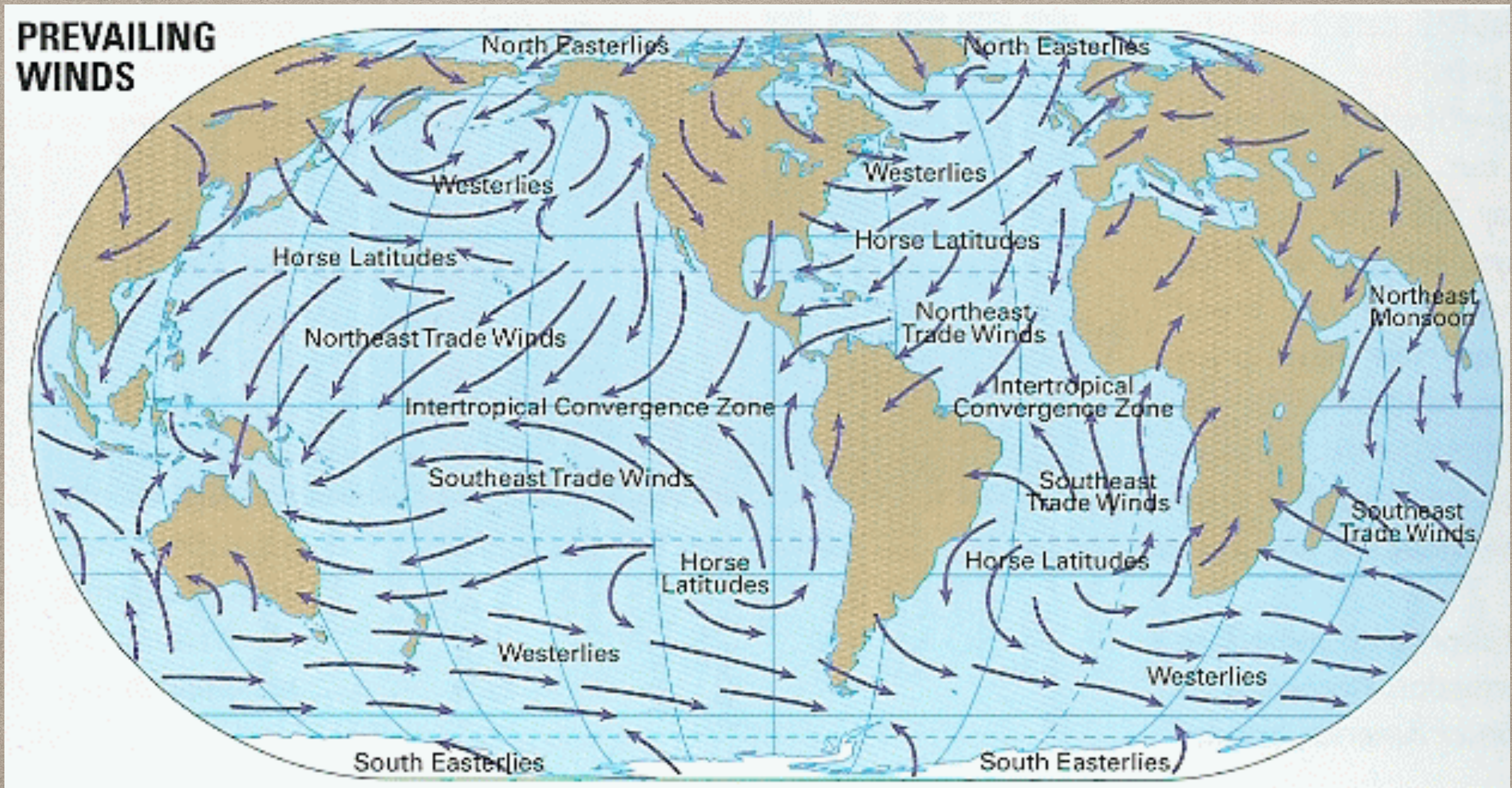
- Temperature of ocean currents affects the temperature of the air that passes over it.





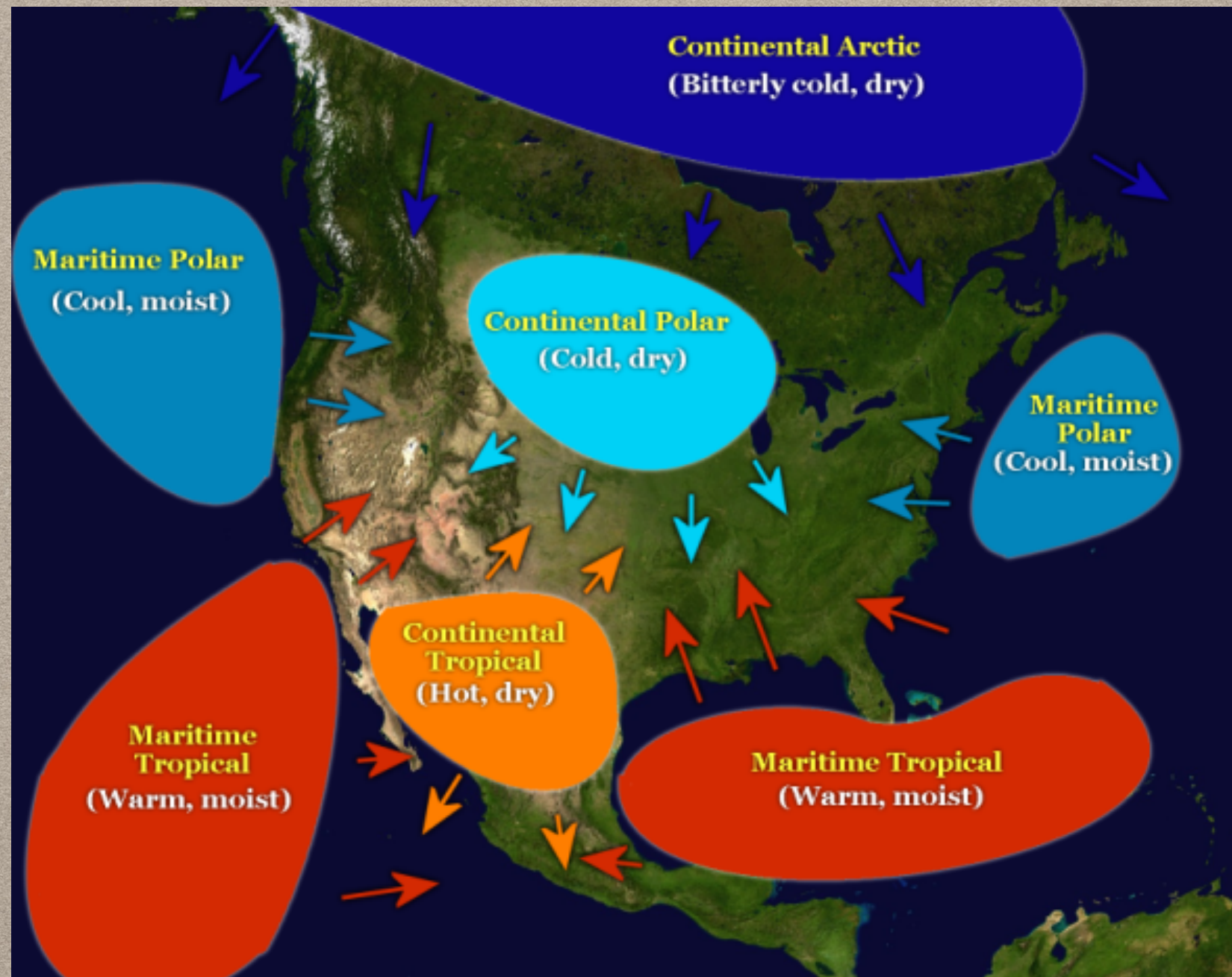
World Ocean Currents

3. WINDS, AIR MASSES, AIR PRESSURE



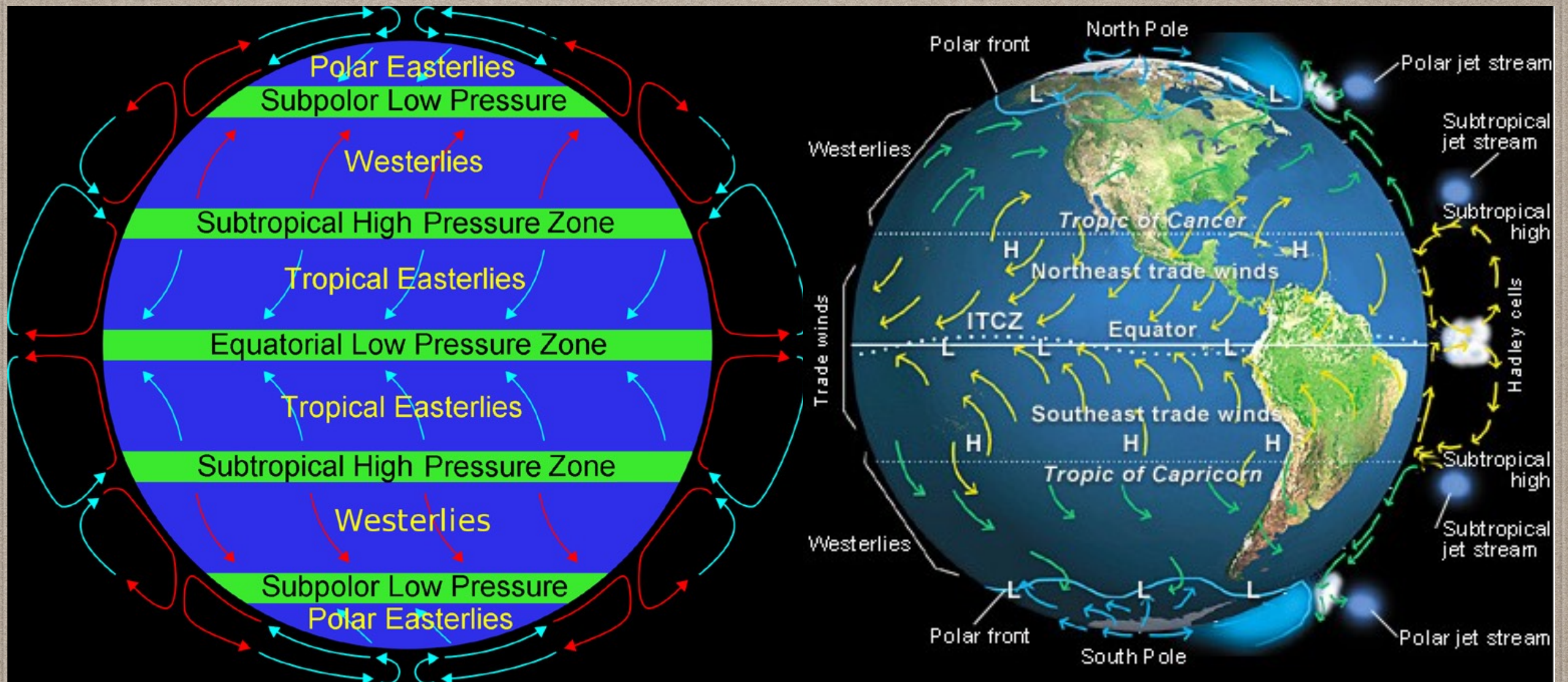
Prevailing Winds: Est. patterns of winds caused by systems of high & low pressure belts (Canada=westerly)

3. WINDS, AIR MASSES, PRESSURE



AIR MASSES: large volumes of air carry the temperature & moisture from where they formed

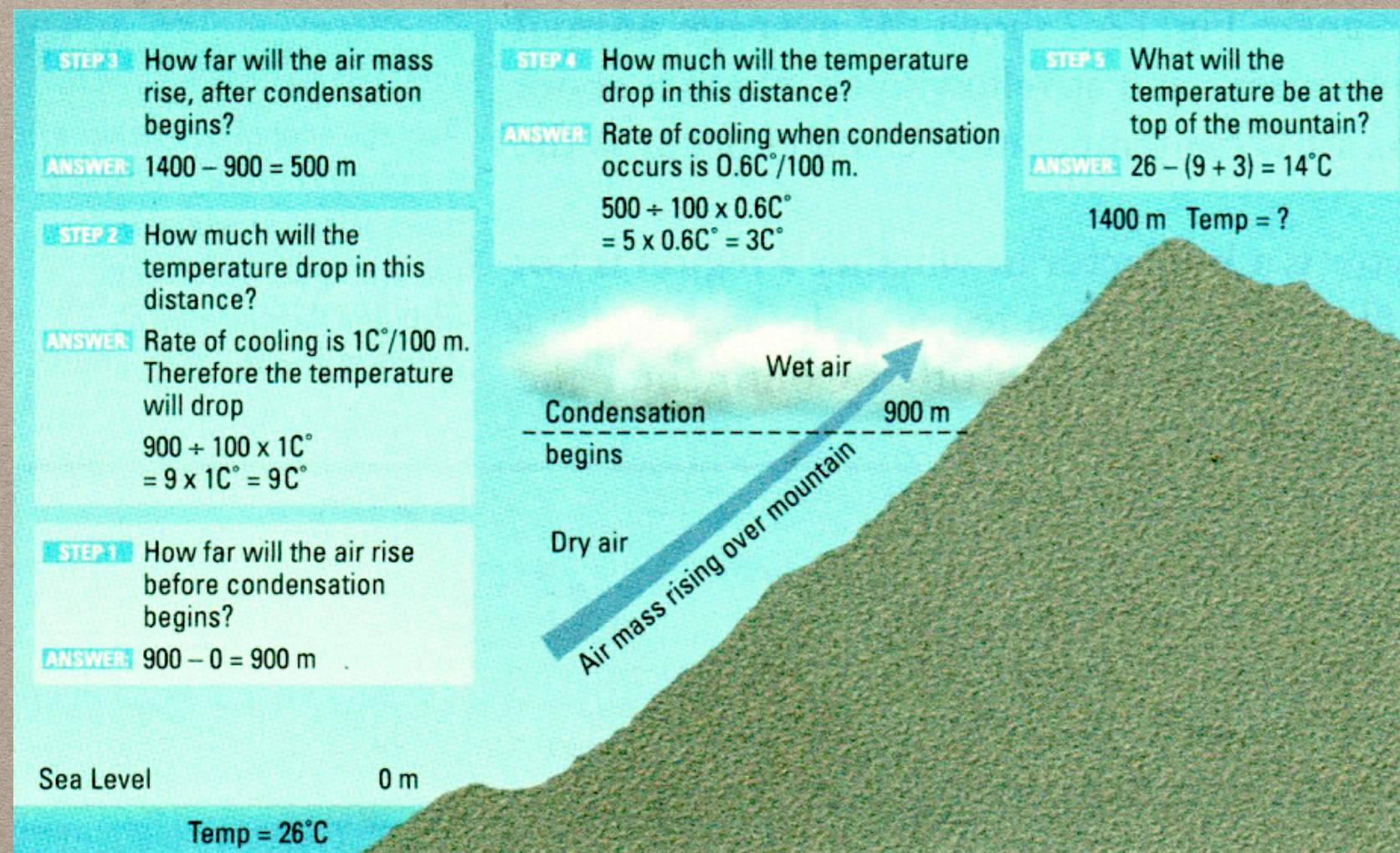
3. WINDS, AIR MASSES, PRESSURE



AIR Pressure: Colder air is heavier than warm air & pushes warm air up

4. ELEVATION

- Temperature decrease steadily as altitude increases
- As air rises, it expands, because the drop in atmospheric pressure & losses heat
- Lapse rate = rate air cools (with condensation = $.6\text{ C} / 100\text{m}$, no condensation = $1\text{ C} / 100\text{m}$)
- When water vapour condenses into liquid, heat is released



5. RELIEF

- Differences in elevation of the Earth's surface.
- Mountains act as barriers to air masses.
- For example, the Western Cordillera blocks warm, moist air from reaching the Prairies, keeping precipitation over Vancouver.



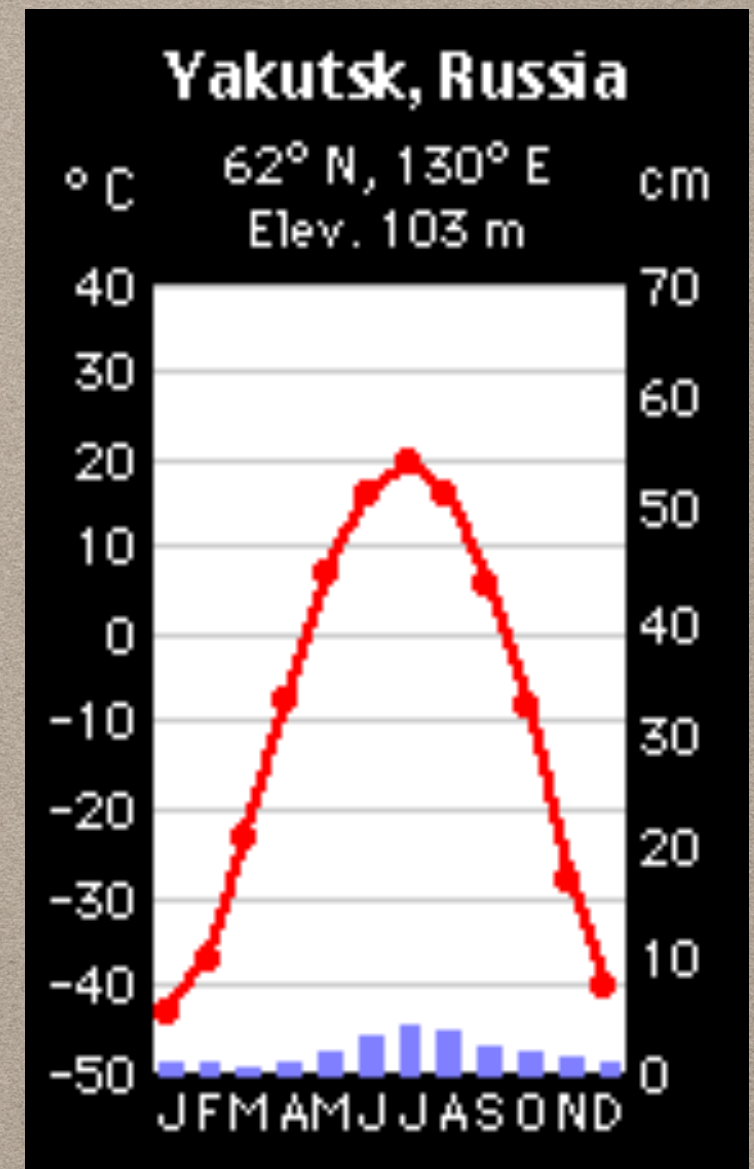
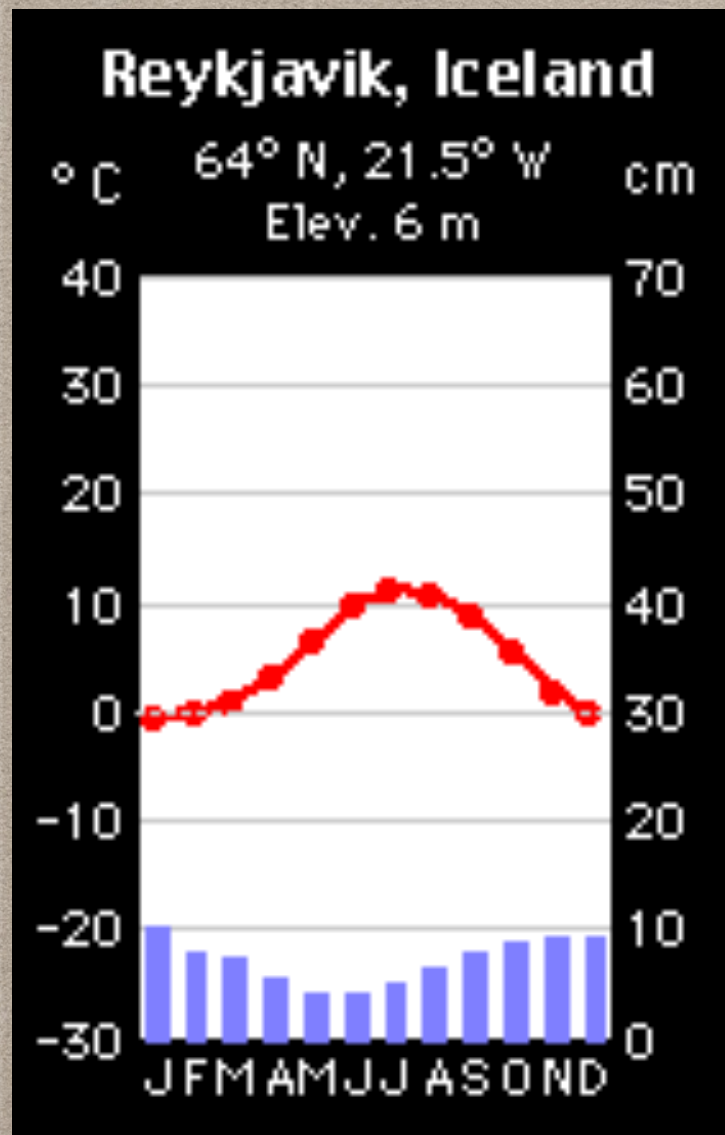
6. NEARNESS TO BODIES OF WATER

- As an air mass passes over water, it absorbs moisture.
- As it passes over land , it releases moisture by way of precipitation.
- An area closer to a large body of water receives more precipitation.
- Because water gains & loses heat slower than land. land temp. modified.

Continental climate: warm-hot summers, cold winters, -25 to 45 degrees C, 200-1000mm precipitation

Maritime climate: cool-warm summers, cool winters, -10 to 30 degrees C, 1000-2500mm precipitation

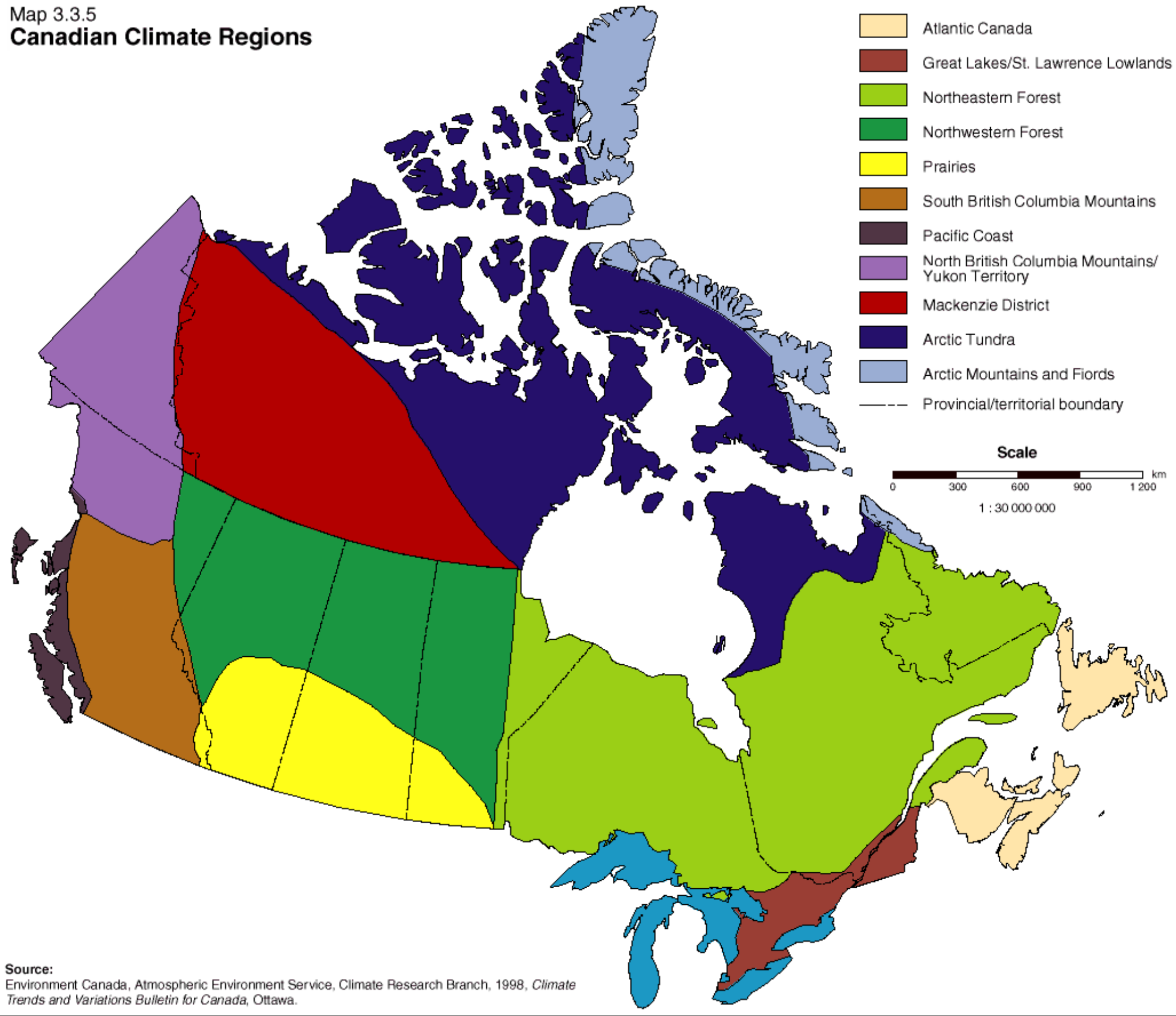
6. NEARNESS TO BODIES OF WATER



6. NEARNESS TO BODIES OF WATER



Map 3.3.5
Canadian Climate Regions



Source:
Environment Canada, Atmospheric Environment Service, Climate Research Branch, 1998, *Climate Trends and Variations Bulletin for Canada*, Ottawa.

THE END