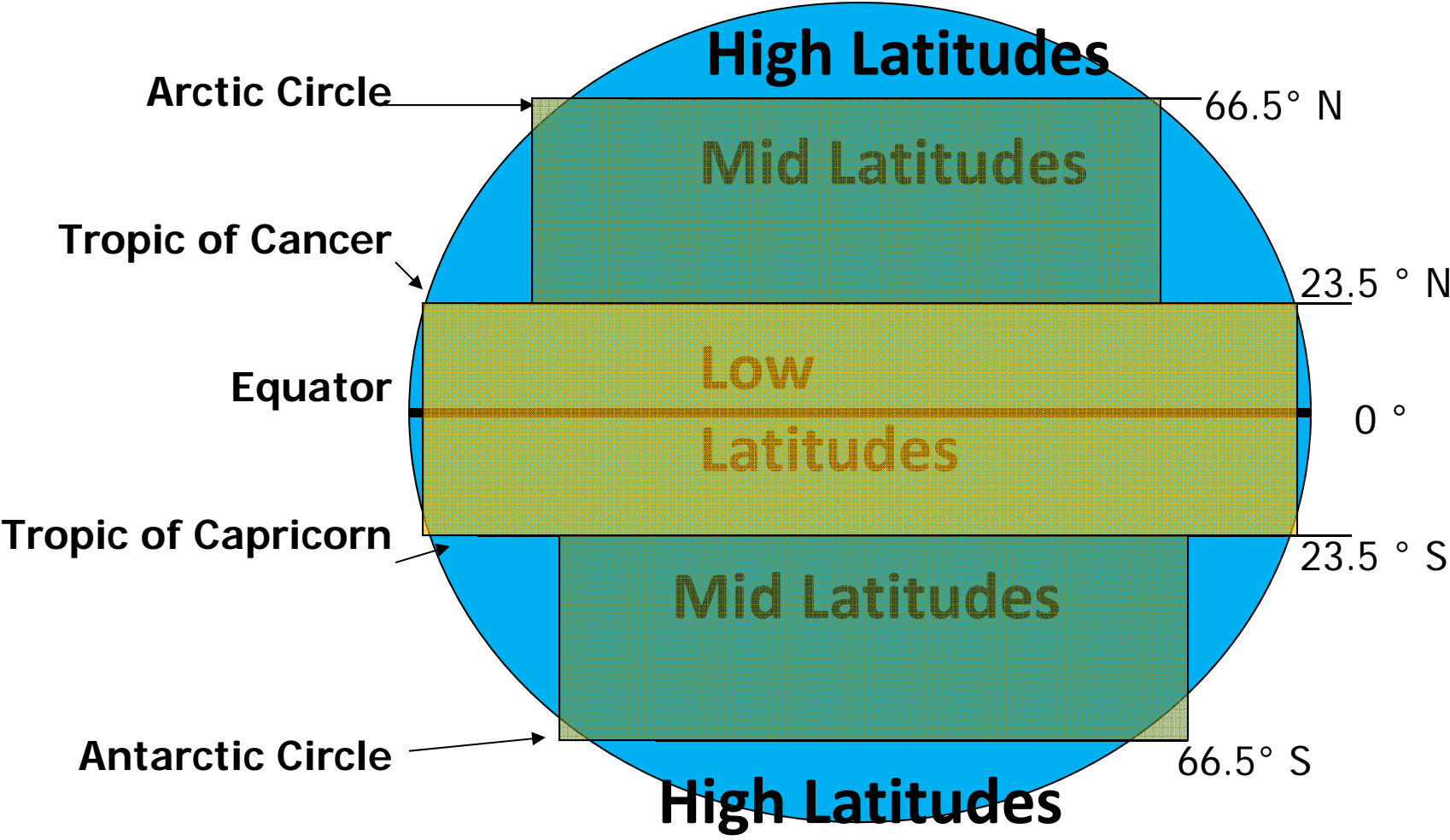


Factors that Affect Climate

LACEMOPS

Important Lines of Latitude



Factors Affecting Climate

Objectives:

- Understand the difference between weather and climate.
- Understand how LACEMOPS affect climate.

What's the difference?

- Weather: the daily condition of the atmosphere which includes temperature and precipitation. (think: weather or not to wear a coat today).
- Climate: average weather over an extended period of time.
- Precipitation: Moisture that falls from the sky (rain, snow, sleet, hail)



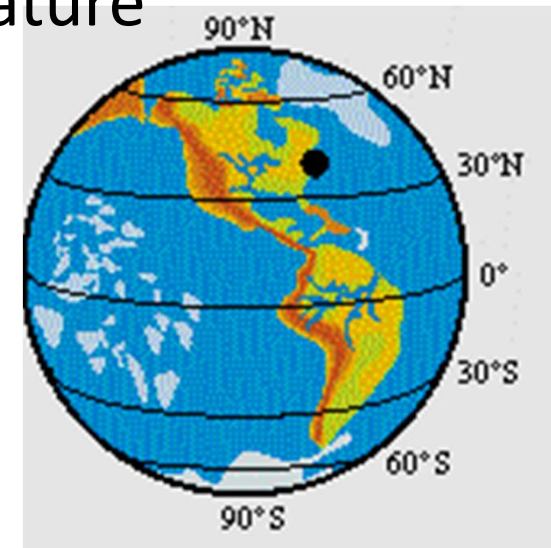
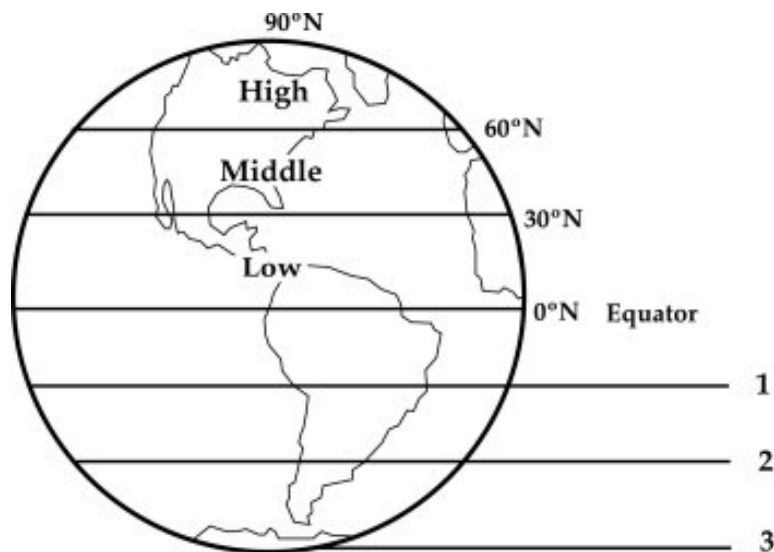
Factors Affecting Climate

- Latitude
- Air Masses
- Continentality
- Elevation
- Mountain Barriers
- Ocean Currents
- Pressure and Prevailing Winds
- Storms



LACEMOPS: Latitude

- The most important factor.
- The farther from the equator- the colder and drier it becomes.
- Low latitude: high temperature.
- Middle latitude: temperate
- High latitude: low temperature



LACEMOPS: Air Masses

- Air masses take on the temperature and moisture characteristics of the surface they pass over.
- Polar regions-
 - Cold air
 - High pressure area
- Tropics-
 - Warm air
 - Low pressure area
- Mountains can act as barriers to air movement.



LACEMOPS: Continentality

- Water moderates climate.

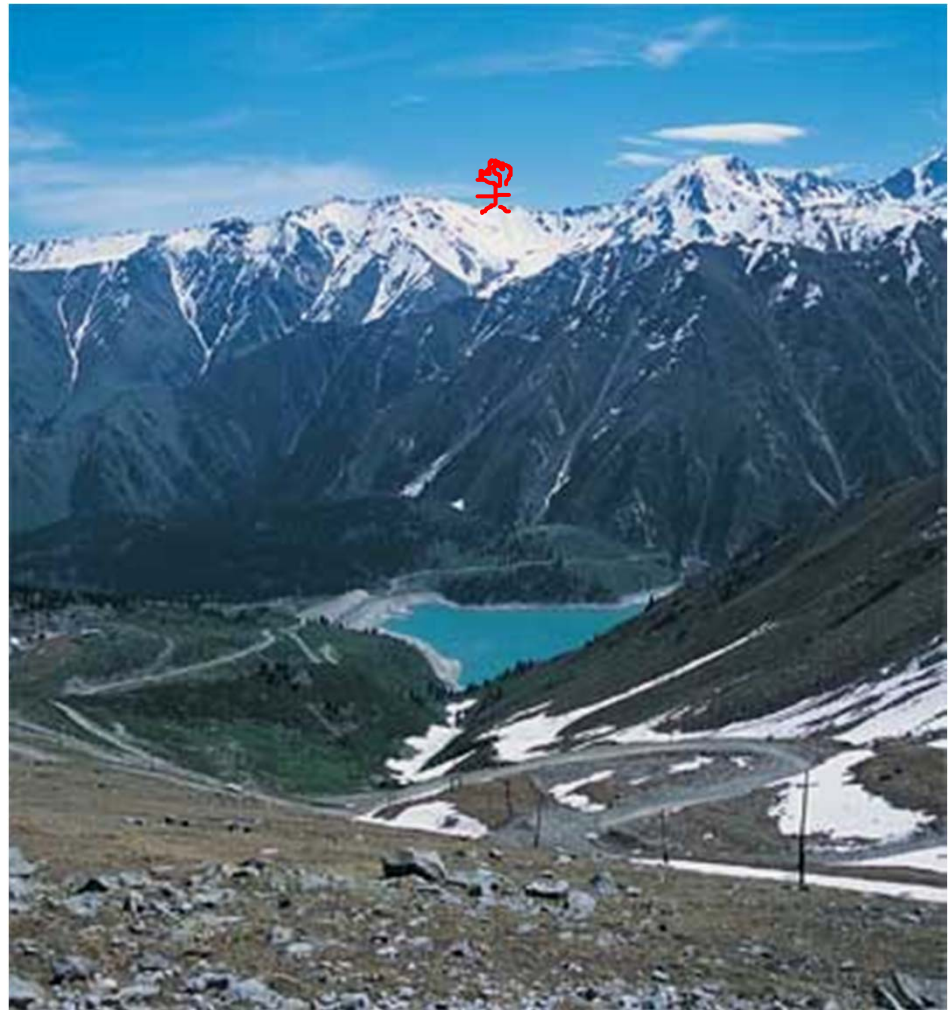
- Water takes longer to cool/heat than land does.

- Areas far from the influence of any ocean or sea tend to experience temperature extremes.



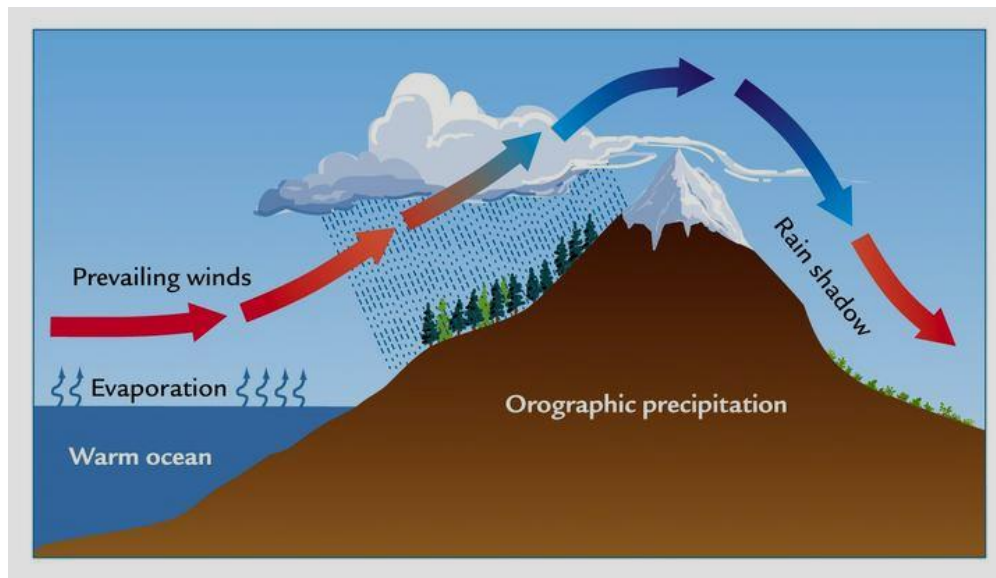
LACEMOPS: Elevation

- The higher the elevation, the colder and drier the air.
 - Thinner air
 - Further away from the earth's heat
- Think: peaks of mountains have snow.



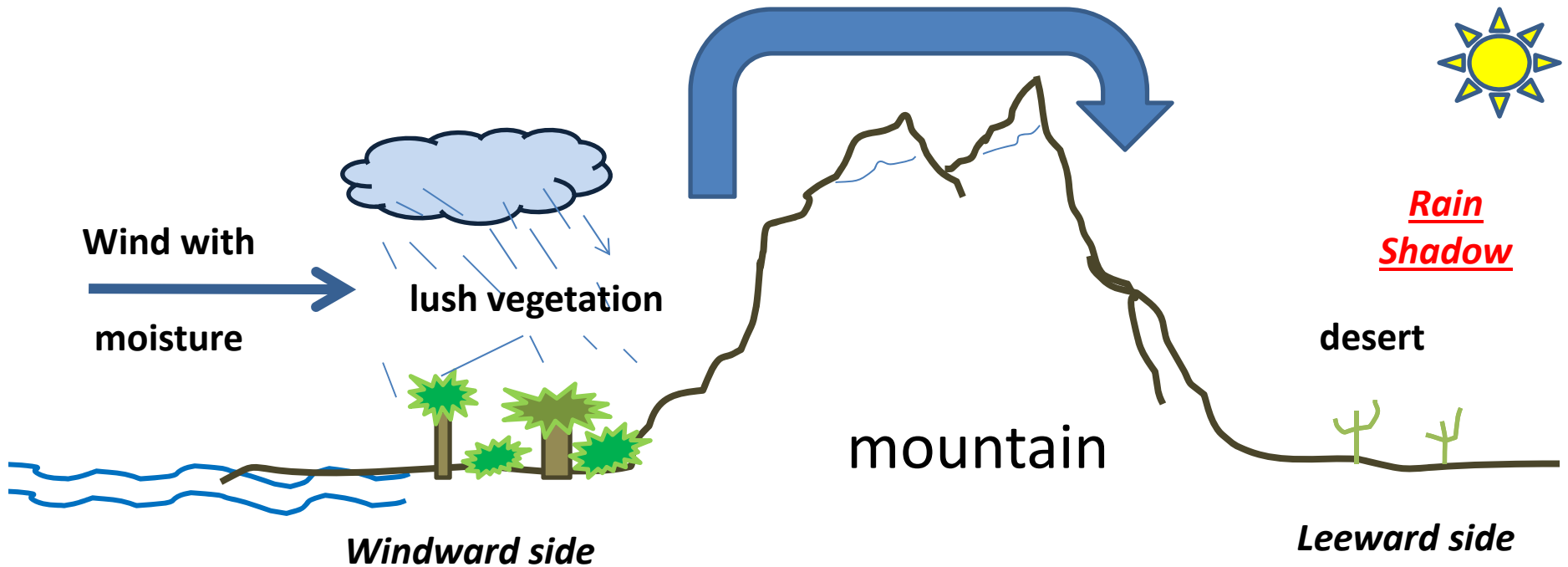
LACEMOPS: Mountain Barriers

- Mountains can act as barriers to air masses moving.



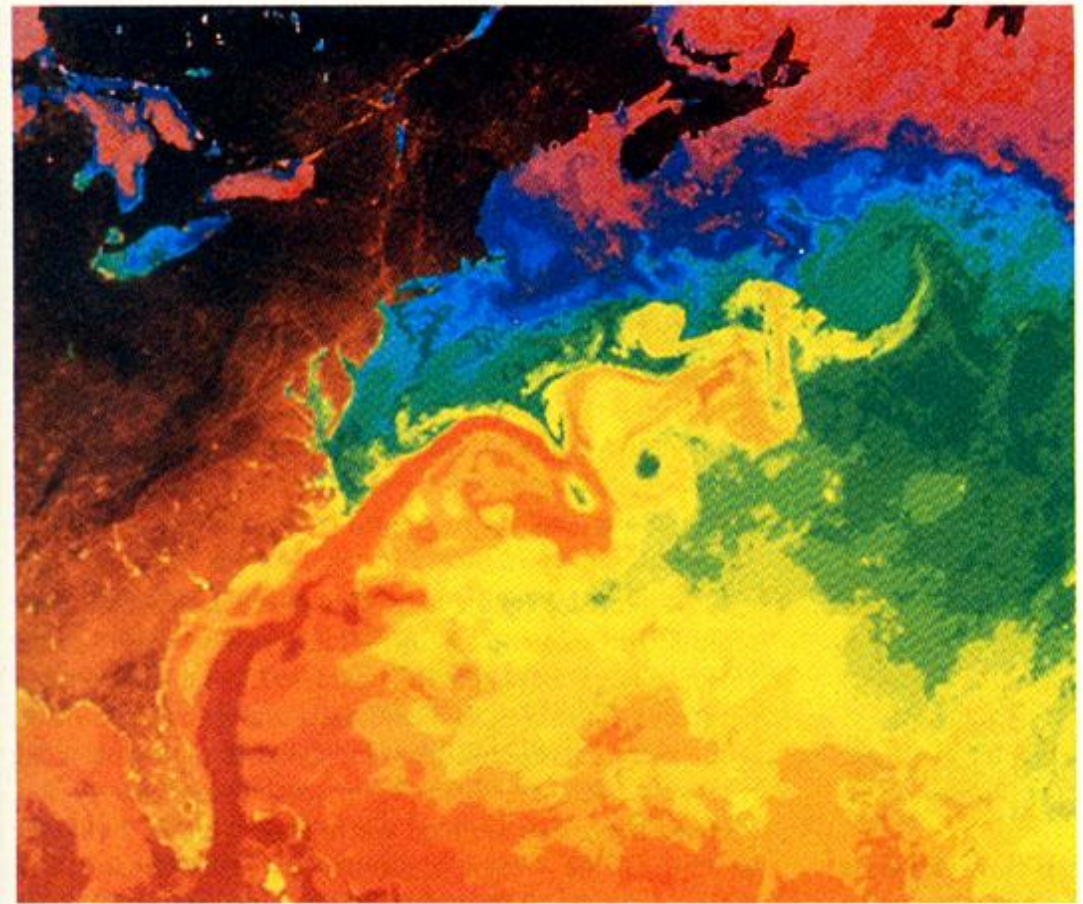
- Orographic effect:
 - The windward side of a mountain gets precipitation & has lush vegetation.
 - The leeward side (facing away from the wind) is dry.
 - Dry side is called a “rain shadow.”
 - Usually a desert

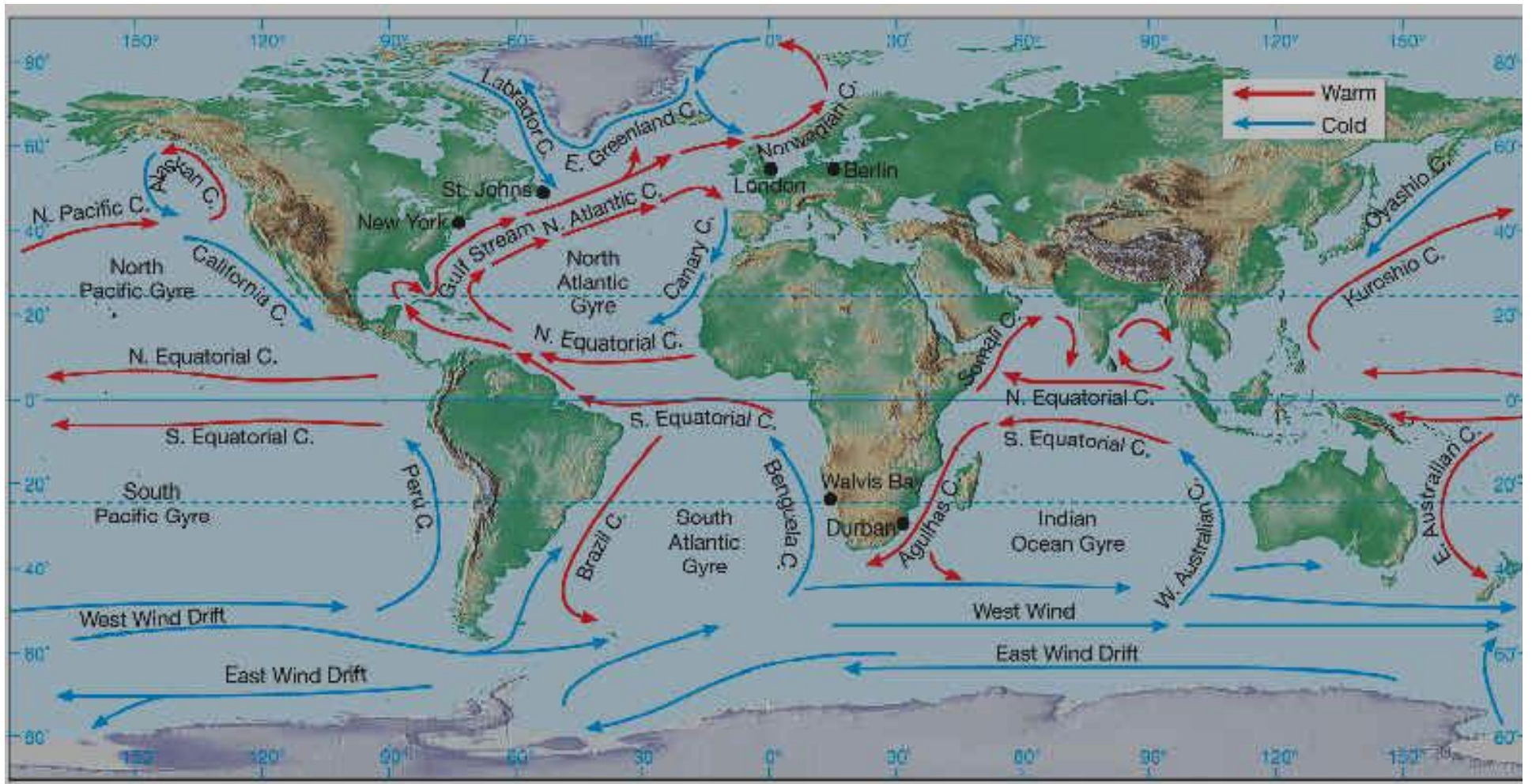
Orographic Effect



LACEMOPS: Ocean Currents

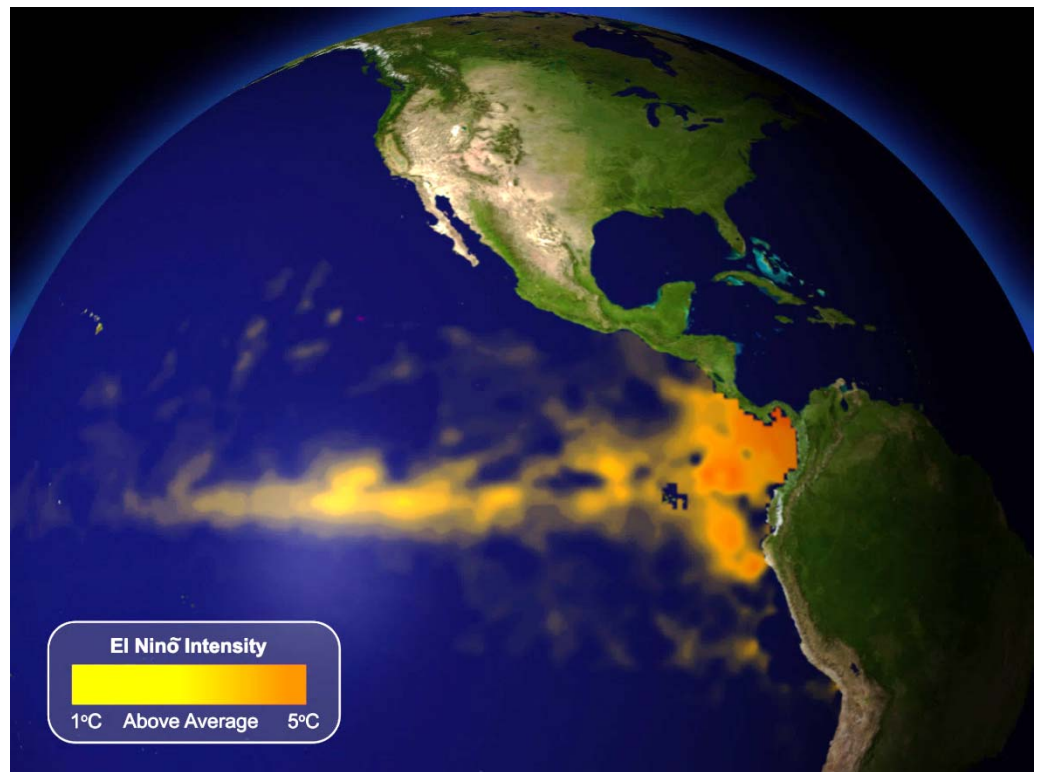
- Move heat back and forth between the tropics and the polar regions.
- Cold air currents are dry.
- Warm air currents are wet.





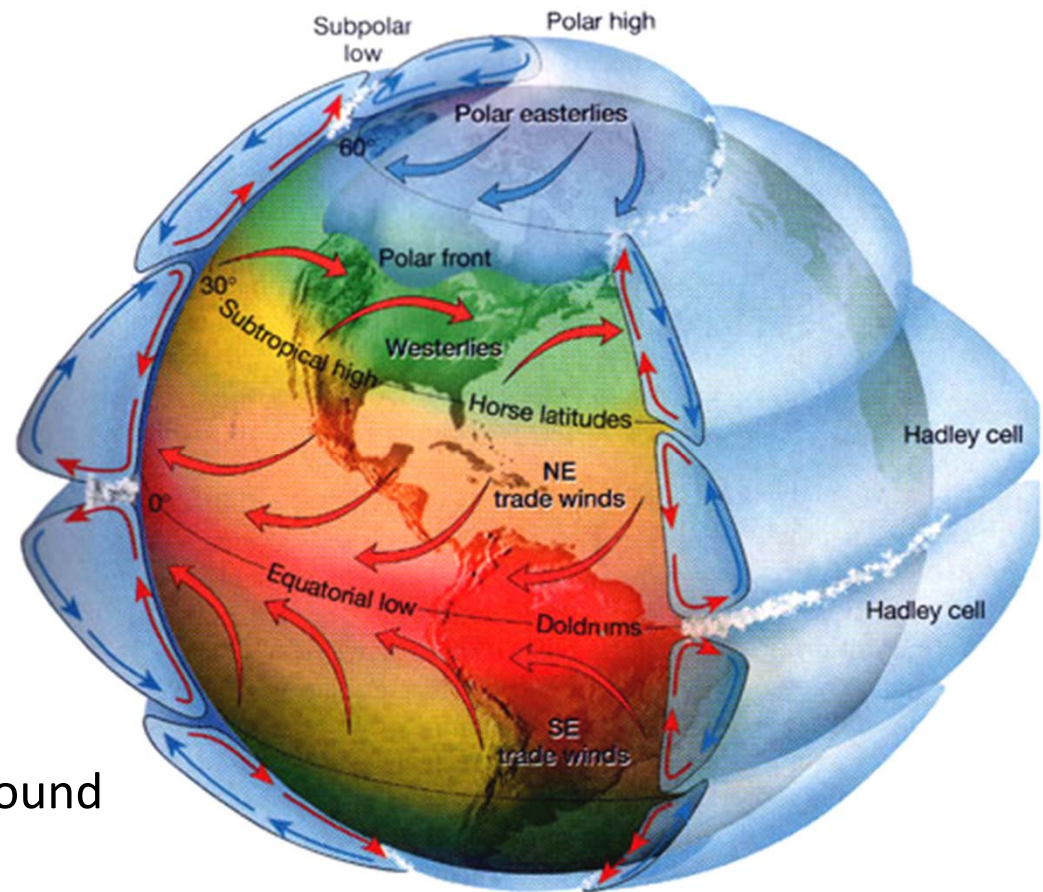
El Niño

- El Niño is a weather pattern created by the warming of the waters off the west coast of South America.
 - Pushes heavy rains to the southwestern U.S.
 - Produces drought conditions in Asia and Australia.

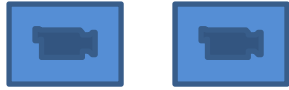


LACEMO^Ps: Pressure & Prevailing Winds

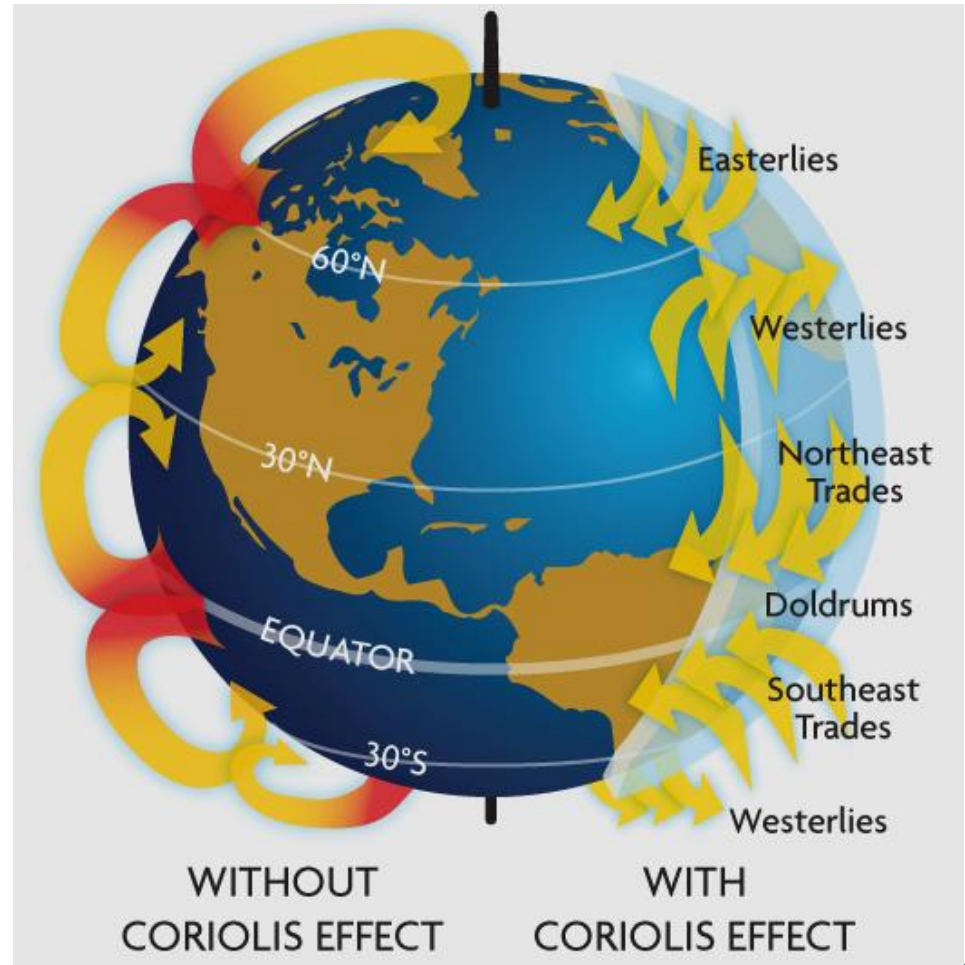
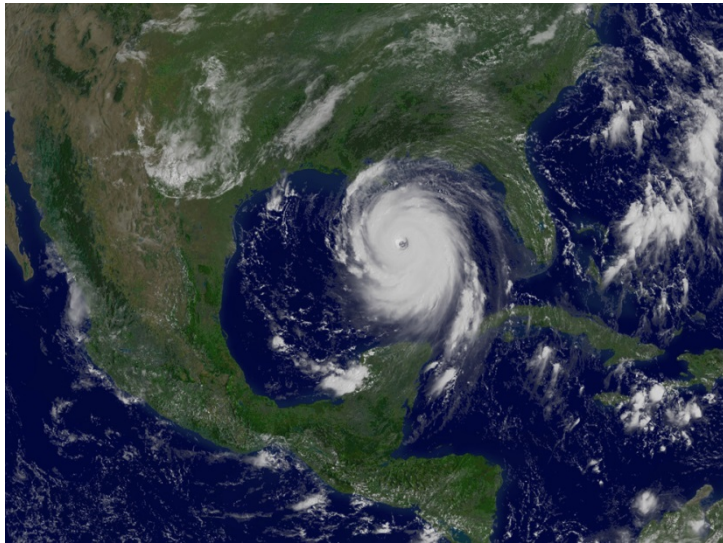
- High pressure-
 - clear skies and no rain
 - from the Poles
- Low pressure –
 - brings precipitation
 - from the equator
- Prevailing winds:
 - Trade winds (E→W)
 - Westerlies (W→E)
 - Doldrums (calm areas around equator)



What is the Coriolis effect?



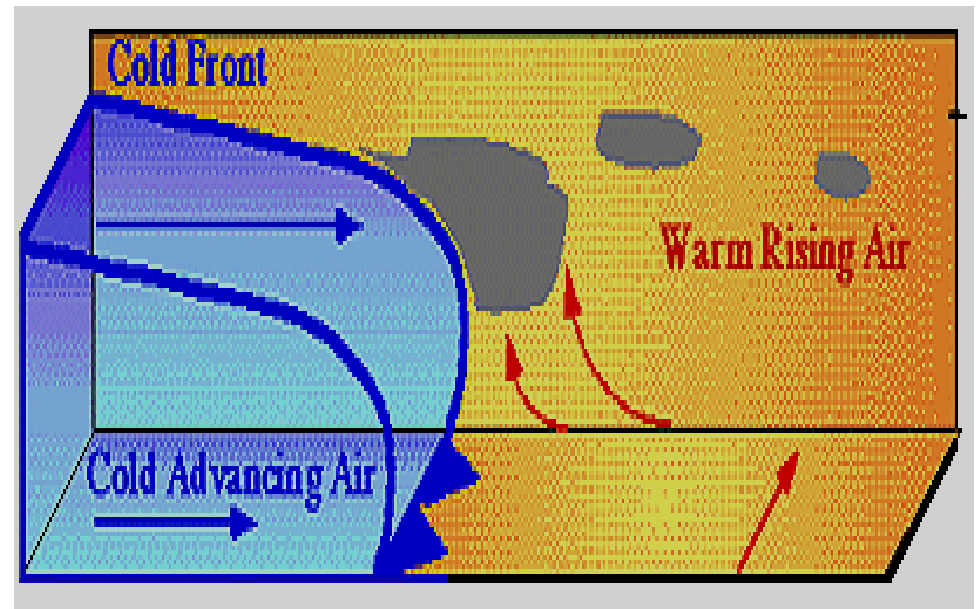
- The Coriolis effect is the apparent curvature of global winds, ocean currents, and everything else that moves freely across the Earth's surface.
- The curvature is due to the rotation of the Earth on its axis.



The Coriolis effect is responsible for the rotation pattern of hurricanes and typhoons.

LACEMOPS: Storm Tracks

- Storms occur where cold & hot air masses collide.
 - Ex. when Westerlies meet polar winds, there are storms.
- N. Hemi: counter-clockwise
- S. Hemi: clockwise



LACEMOPS: Storms

- Types of storms:
 - Tornadoes: form quickly; relatively small diameter; usually in middle latitudes
 - Hurricanes: ocean storms that cover large areas and take days to form
 - Typhoon: hurricanes in the western Pacific Ocean

Summary

- On the end of your paper:
 - Write a summary that's exactly 20 words in length (no more, no less)
 - Must include the term *climate*
 - Must include two terms from *LACEMOPS*