

Module E

Unit 2

Lesson 3

Exploration 3

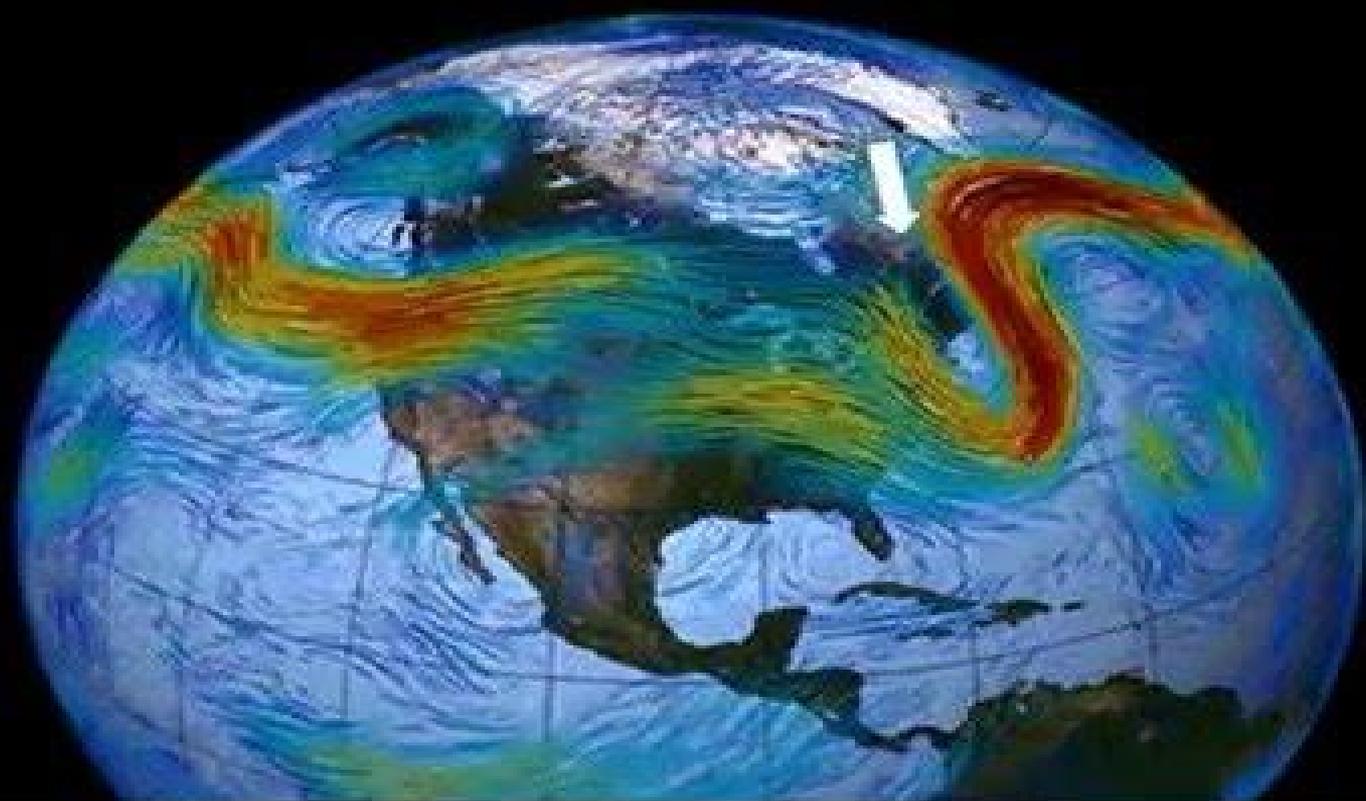
Explaining What
Influences Climate

Objective

- Understand how Climate can be described in a graph
- Interpret climate models

Do Now:

Log onto your student Ebook and complete the Lesson Opener, “Can You Explain It Activity” at the beginning of Lesson 3



Factors that influence Climate

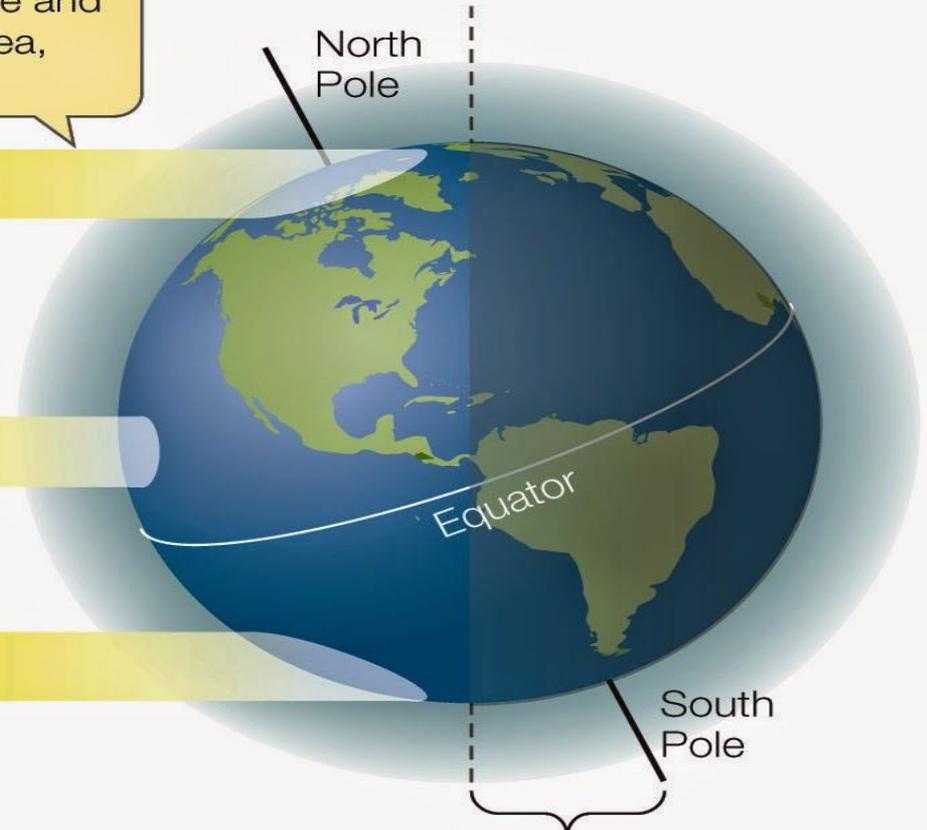
- Factors in the Earth system that influence climate include
 - Latitude
 - Prevailing winds
 - Ocean currents
 - Elevation
 - Large bodies of water
 - Landforms



Latitude

- The intensity of the sunlight is greater at the equator
- Temperature differences cause air pressure differences
- Along with Earth's rotation, these pressure differences result in global wind patterns
- Near the equator, warm, moist air rises and cools, and water vapor condenses to form clouds and rain.
 - Therefore, rainy climates commonly exist near the equator.
 - A similar process occurs near 60°N and 60°S
- In contrast, cool, dry air sinks along high-pressure belts near 30°N and 30°S and at the poles.
 - These areas commonly have dry climates.

Toward the poles, the sun's rays hit Earth at an oblique angle and are spread over a larger area, diffusing their energy.

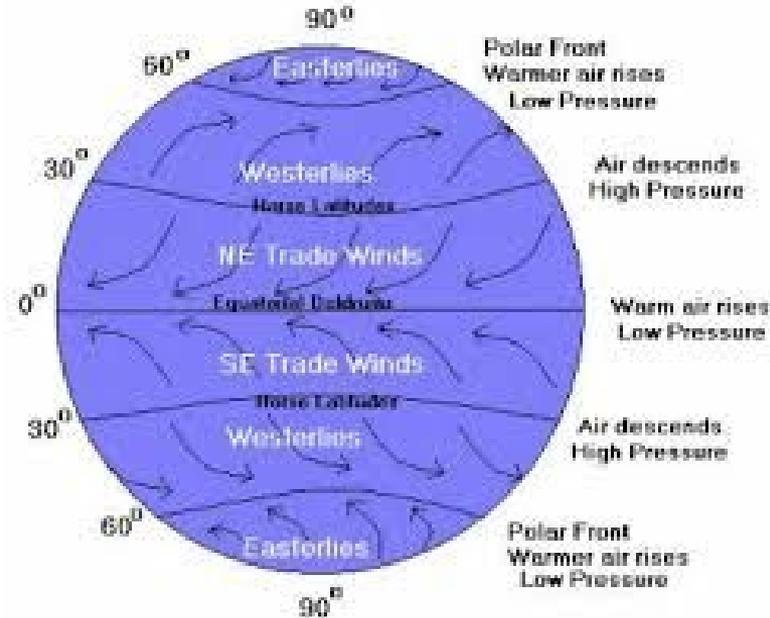


At and near the Equator, sunlight hits Earth directly, delivering more heat and light at any given spot.

Constant tilt of 23.5°

Prevailing Winds

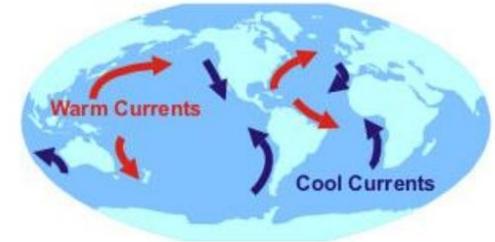
- Global patterns of wind that generally move in a certain direction.
- Prevailing winds affect climate because they move air masses from one place to another.
 - For example, cool, moist air masses that form over the Pacific Ocean are carried to the northwest coast of the United States by prevailing winds.
- Prevailing winds also drive ocean surface currents that travel the globe and constantly move both warm and cool ocean water.



Ocean Currents

- Move water and distribute energy and nutrients around the globe.
- *Surface currents* are driven by prevailing winds. They carry warm water away from the equator and cool water away from the poles.
- Currents moderate coastal cities' temperatures as cold currents cool warmer air and warm currents warm cooler air.
 - For example, the waters of the Gulf Stream move warm water from the Gulf of Mexico northeastward toward Great Britain. The British climate is mild, in part because of the warm Gulf Stream and the North Atlantic Drift.

Predictable Patterns
How do these currents affect the climate of the coastline?



Elevation

- A place's distance above sea level.
- As elevation increases, air temperature decreases.
- Cities at the same latitude and far from a large body of water, can have very different climates if they are at different elevations.

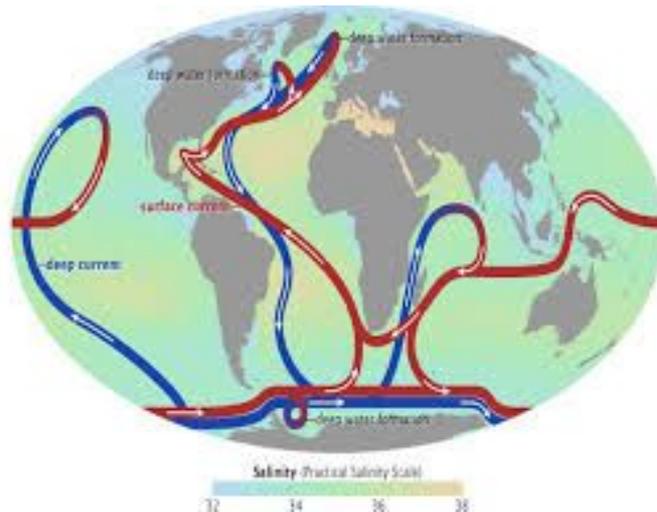


Do Now:

Log onto your student Ebook and complete the Lesson Activities for Latitude, Prevailing wind, Ocean Currents and Elevation

Large Bodies of Water

- Water absorbs and releases energy more slowly than land does
- Therefore, the temperatures of coastal areas tend not to vary as greatly when compared to areas inland along similar latitudes.
- Nearby bodies of water increase the amount of water in the air.
- places near large bodies of water often receive more precipitation



Landforms- Rain Shadow Effect

- Prevailing winds move moist air toward mountains, the moist air rises to pass over the mountain, it cools and condenses into clouds and precipitation.
- Rain or snow falls on the side of the mountain where the prevailing winds are coming from.
- The air that reaches the other side of the mountain is drier, so very little precipitation occurs.

Rain Patterns are affected by Mountain Ranges



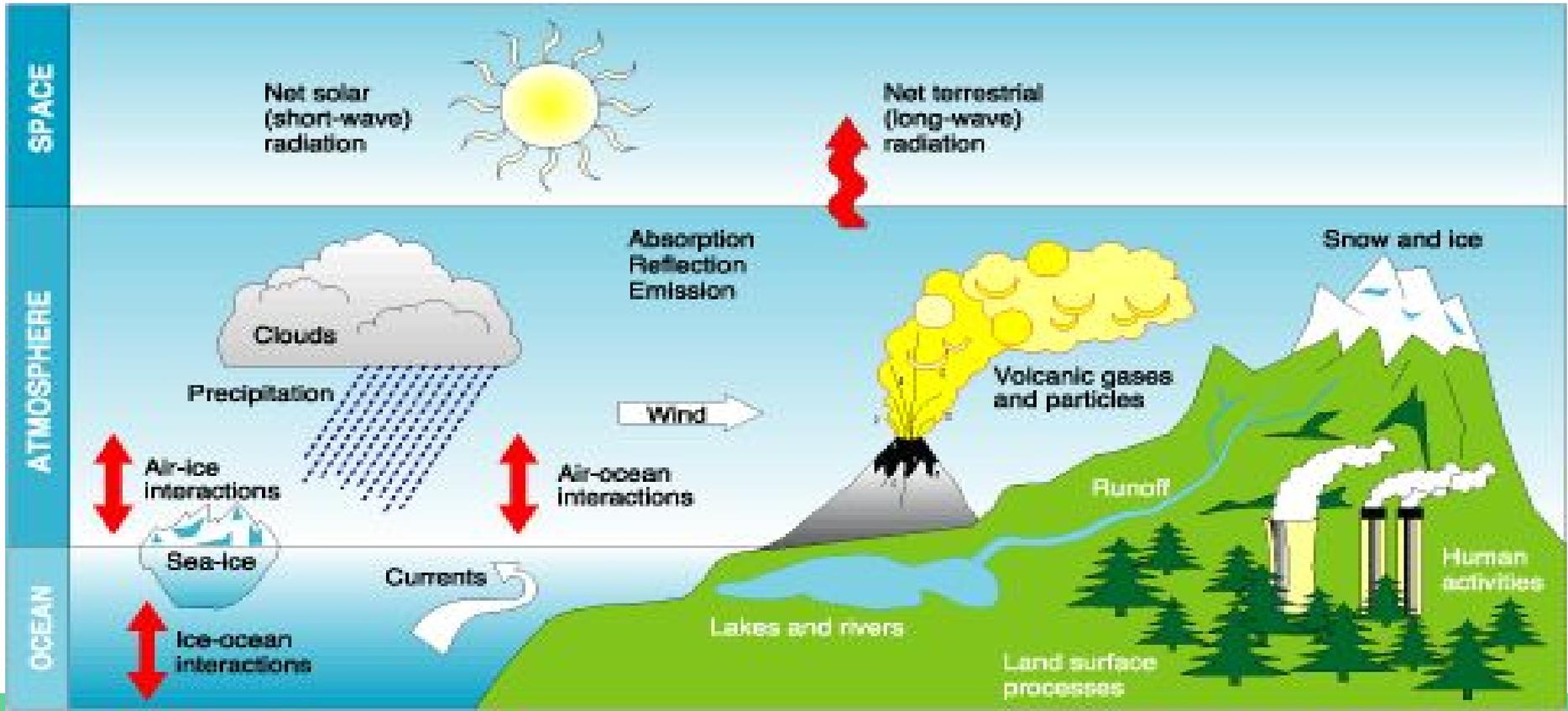
Create your own version of the Rain Shadow Effect as a left side page



Twig



Create a Left side page to help you remember the 6 things that influence Climate





Why
care?

101

CLIMATE CHANGE

Do Now

Complete the Ebook activities for Large bodies of water, Landforms, and compare Climates