

Module E

Unit 2

Lesson 1

Exploration 4

Relating Earth

System Interactions

to Weather

# Weather and the Earth Systems

- The Earth system is made up of subsystems that work together:
  - The *geosphere* is the mostly solid, rocky part of Earth.
  - The *hydrosphere* is all of Earth's water.
  - The *biosphere* is all living things on Earth.
  - The *atmosphere* is the layer of air surrounding Earth.

# Effect of The Sun

- Energy from the sun drives interactions, that affect weather patterns.
- Rocks, vegetation, and water on Earth's surface all absorb energy from the sun.
- For example, oceans absorb energy from the sun
  - the energy is exchanged with the atmosphere. causes coastal temperatures to vary less throughout the year than the temperatures of inland areas at the same latitude.

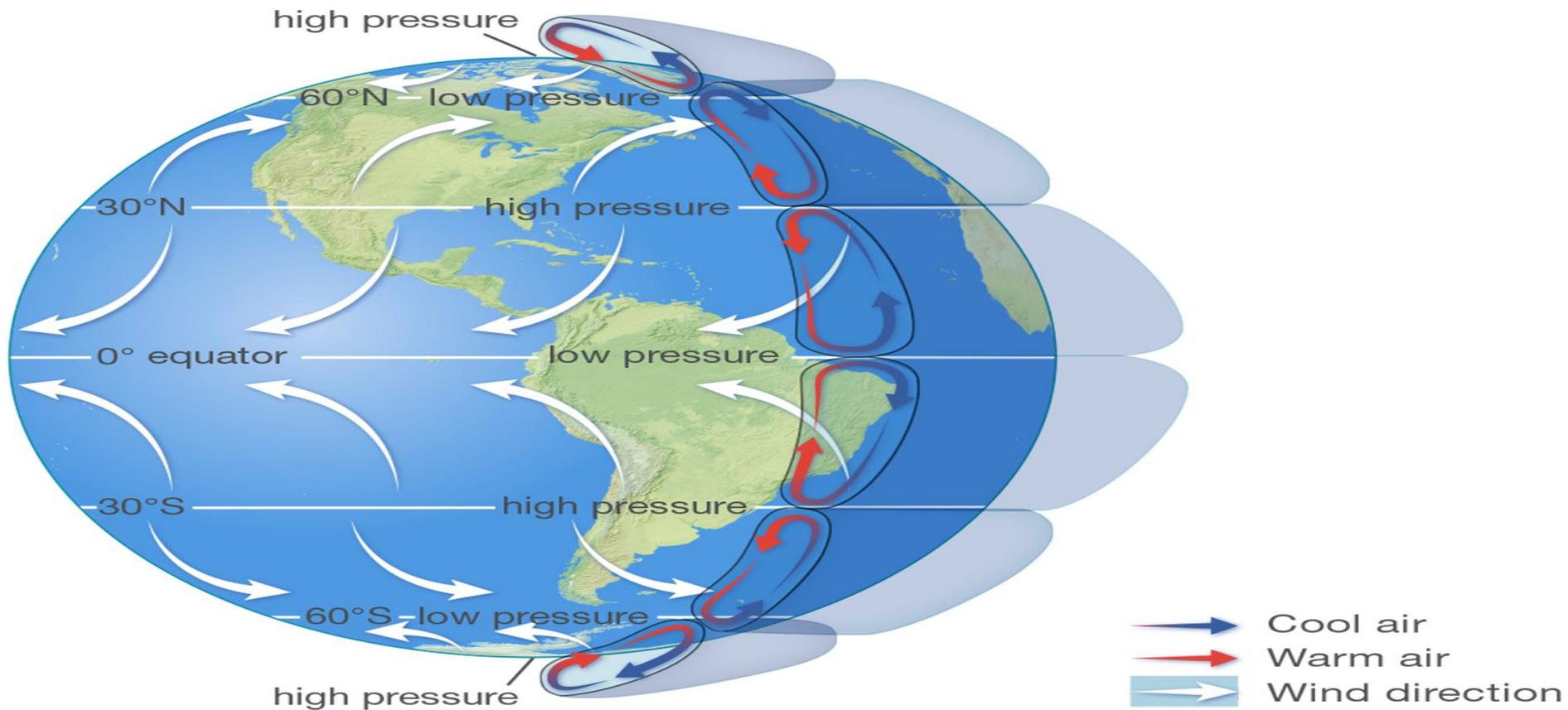
# Blue textbook pg 91 #20

Why do you think Gateway, Oregon, has very little rain throughout the year, whereas Detroit, Oregon, receives a lot of rain?

# Atmosphere and Weather

- The intensity of sunlight is greater at the equator than at the poles. This results in temperature and air pressure differences across Earth.
- Earth's rotation, air pressure differences result in global wind patterns and alternating belts of high and low air pressure at different latitudes.
- These global wind patterns are sometimes called *prevailing winds*.
- Prevailing winds tend to move west to east over the United States and Canada.
- Prevailing winds influence weather because they affect the directions of moving air masses and fronts.
- They also drive ocean surface currents.

Using the Handout provided recreate this in your Evidence ISN



*Polar Easterlies*

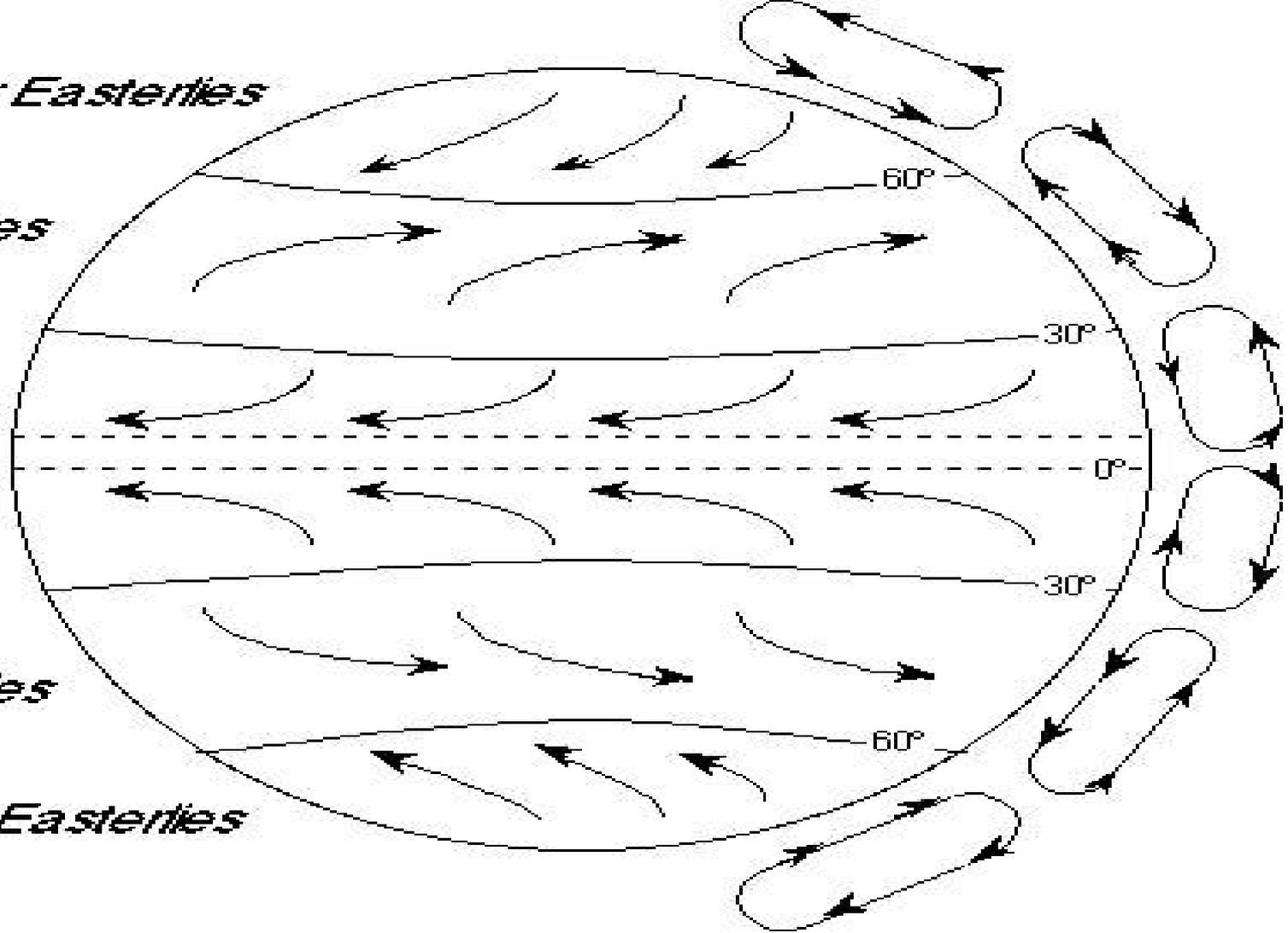
*Westerlies*

*Tradewinds*

*Tradewinds*

*Westerlies*

*Polar Easterlies*



# Blue textbook pg 92 #21

Select all statements that are true about pressure systems and prevailing winds.

# Ocean and Weather

- Prevailing winds move ocean water, forming surface currents.
- Surface currents occur at, or near, the ocean surface and flow around the globe redistributing the energy oceans absorb from the sun.
- Surface currents affect weather in coastal cities.
- Oceans also affect weather because humid air masses form over them and can bring rain to nearby areas.



EPISODE 34.1

# CURRENT EVENTS



Oh, I just wanna tell you all about the ocean's might  
Deep currents moving every day and every night  
Cycling to take it there, take it there  
Water moving cycling, yeah

Oh ,this water is moving from the heart to the poles  
Hot is moving up and cold moving down  
These are many miles down, miles down  
Many years to come around, yeah



Deep currents will move

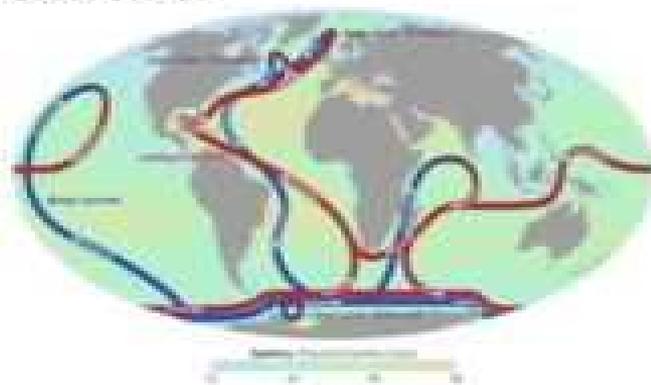
The frozen from the North and South Pole too

Ice cold water sinks through the warmer water switching

Maybe toward equator who knew?

Would be warming, rising here to become surface current

Drifting back to poles starts a new



# Blue textbook pg 93 #22

Select all statements that are true about pressure systems and prevailing winds.

# Landforms and Weather-

- Prevailing winds and ocean surface currents are redirected as they run into land.



# Landforms and Weather- Rain Shadow effect

- On land, there is a phenomenon known as the *rain shadow effect*.
- It occurs where prevailing winds bring humid air over mountains.
- Humid air is forced to rise over the mountains, it cools and condenses into clouds and causes precipitation.
- Once the air reaches the other side of the mountain, it is drier.
- Therefore, one side of the mountain is cloudy and has more precipitation.
- On the other side, it is dry and the skies are often sunny.

A man with glasses, wearing a blue patterned short-sleeved shirt, a red bow tie, and a backpack, is crouching in a lush green area with large monstera leaves. In the background, a coastal landscape with a sandy beach, dark volcanic rock formations, and the ocean is visible under a blue sky.

# Rain Shadow Effect

**2 Minute Geology**

Rain Shadow Effect- recreate this in your evidence ISN with the provided worksheet





# Student ebook- Last two activities of Exp. 4

Oregon Satilite activity  
And  
Realate Global precipitation to Global Winds