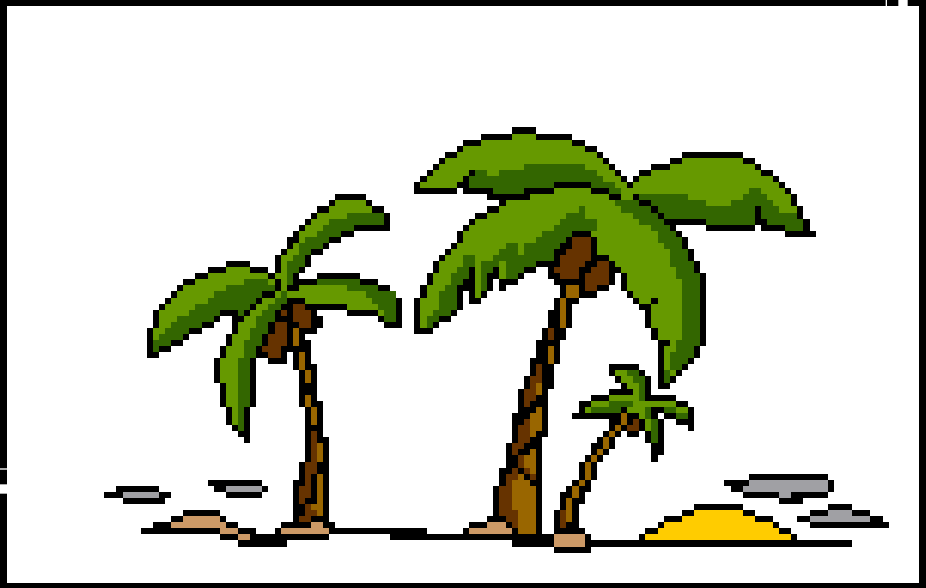
What is wind?

- The Sun heats the Earth unevenly, so there are many areas of high pressure and low pressure.
- Air moves from high pressure to low pressure forming winds.
- The greater the difference between the high and low pressure areas, the higher the wind speed is.



Wind is MOVING AIR!

Why does air move??

Wind moves because of differences in air pressure. The greater the pressure difference, the faster the wind moves.

Why does the air pressure change?

- Because of the unequal heating of the Earth. The air at the equator is warmer, and less dense so…it rises! This creates an area of low pressure.

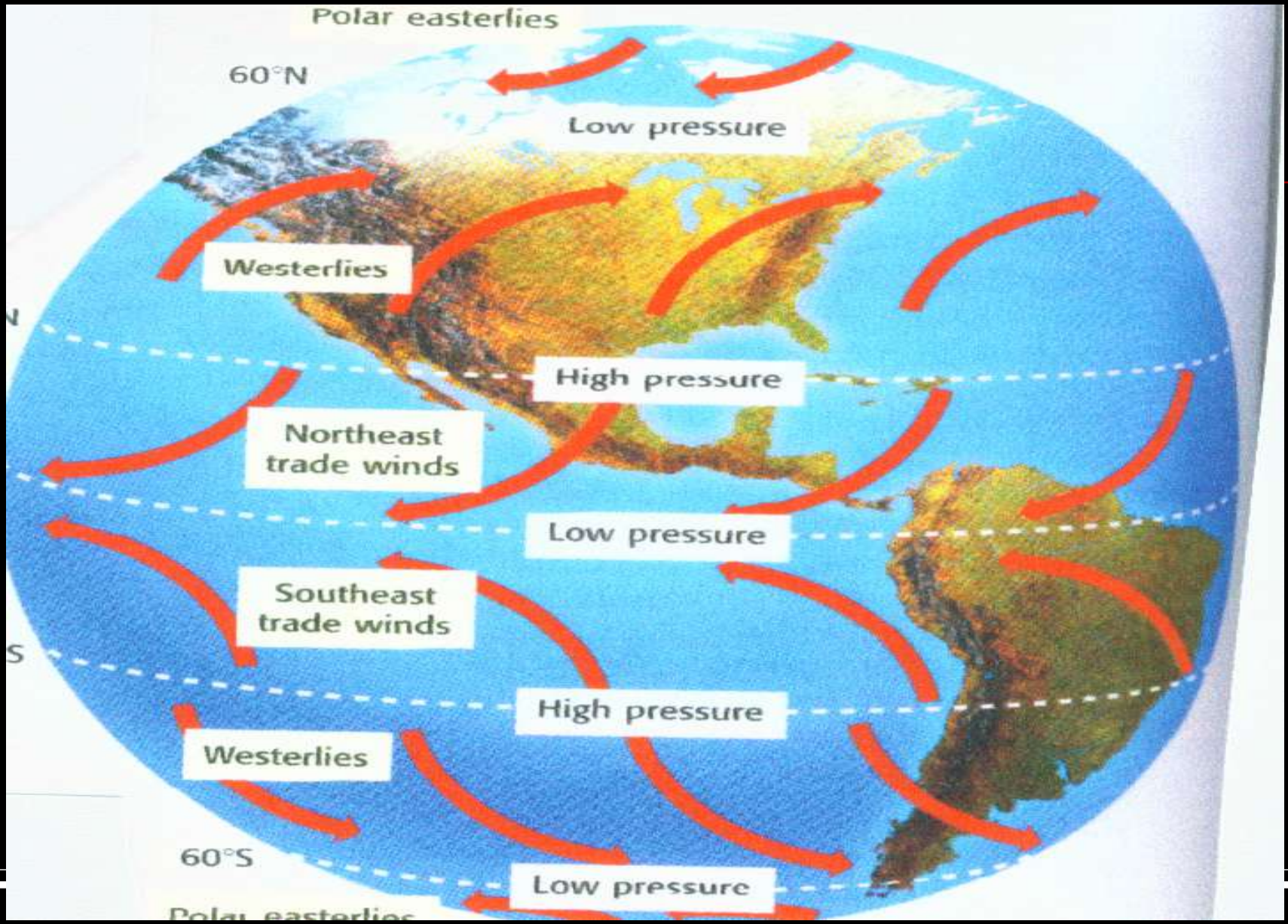
- Remember Convection!!

What are convection cells?

- The circular patterns caused by the rising and sinking of cold air.
- Surface winds blow from polar high pressure areas to equatorial low pressure areas.

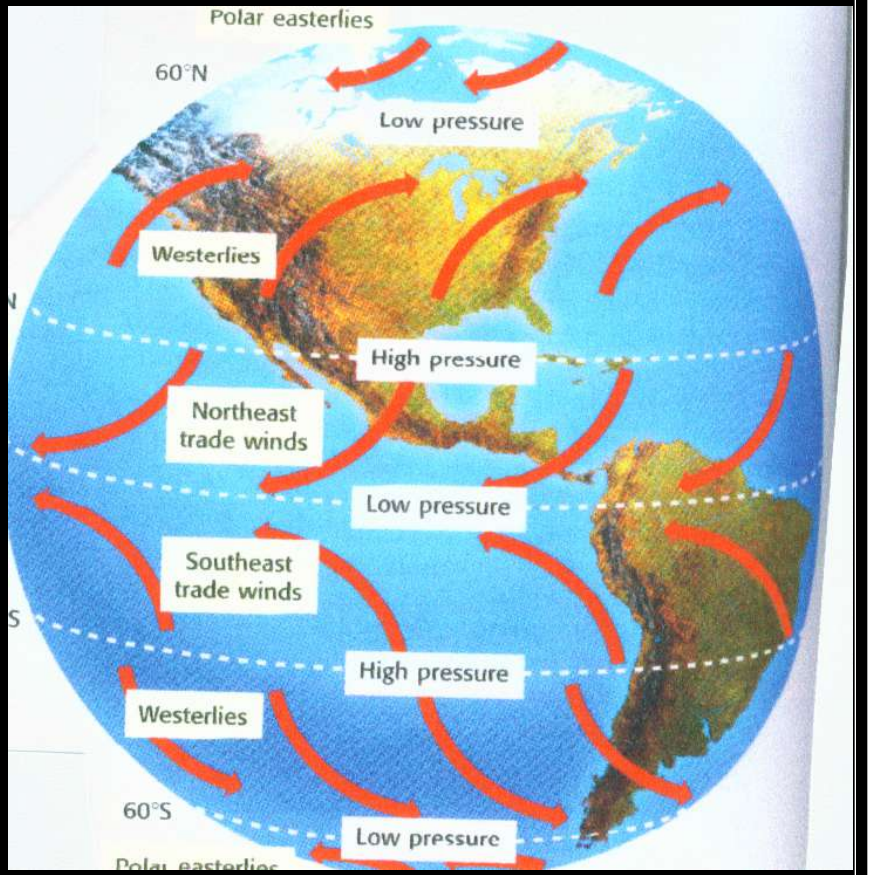
What is the Coriolis Effect?

- The curving of moving objects, such as wind, by the Earth's rotation is called the Coriolis Effect.
- Winds in the Northern hemisphere curve to the right.
- Winds in the Southern Hemisphere curve to the left.


Polar easterlies
60°N
Low pressure
Westerlies
High pressure
Northeast trade winds
Low pressure
Southeast trade winds
High pressure
Westerlies
60°S
Low pressure

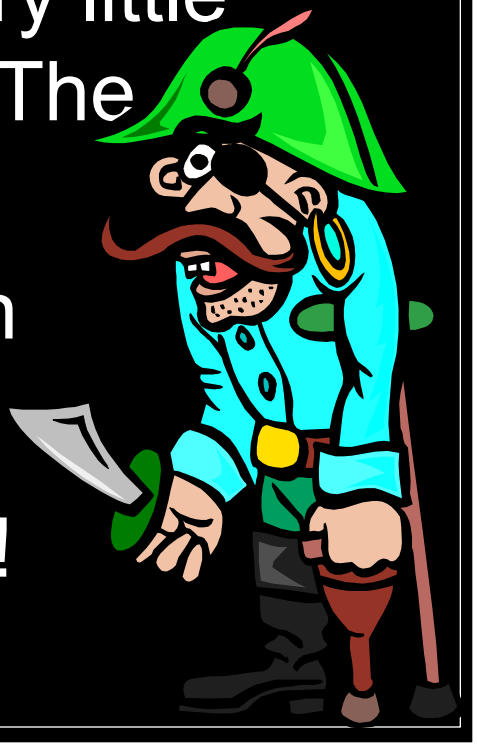
Global Wind Systems…

- Global Winds are part of a pattern of air circulation that moves across the Earth. They travel long distances and in a specific direction.



Doldrums

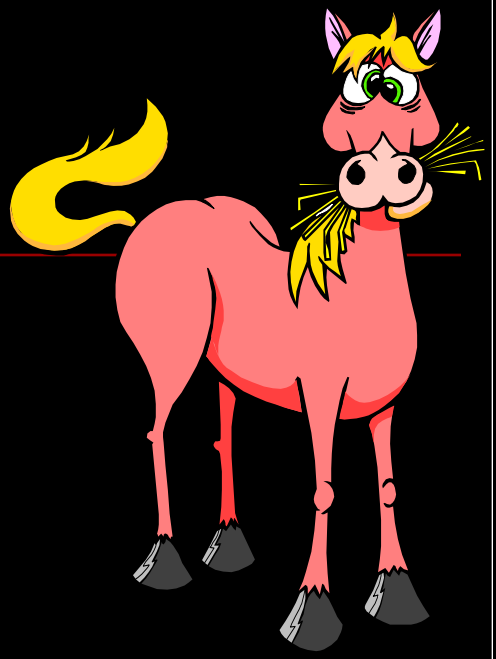
- The Doldrums is the area of low pressure around the Equator. There is very little wind due to the rising warm air. The English word “Doldrum” means foolish! The sailors who sailed in this area, with little or no wind were foolish!



Trade Winds

- In both hemispheres, the winds that blow from 30° latitude to the equator is called the trade winds. These winds curve due to the Coriolis Effect. Traders used these winds to travel from Europe to the Americas.

Horse Latitudes…



- At about 30 North and 30 South of the Equator, sinking air creates an area of high pressure.
- Here, the winds are weak.
- Horses, aboard boats traveling from Europe to America were sometimes thrown overboard if ships were stuck in this area. It reduced the weight of the ship and saved precious drinking water.

Prevailing Westerlies

- The Westerlies are wind belts found in both the Northern and Southern Hemispheres between 30 and 60 latitude.
- They flow toward the poles in opposite directions than the Trade Winds.
- Helped early traders return to Europe.

Polar Easterlies

- Wind belts that extend from the poles to 60 latitude in both hemispheres.
- They are formed from cold, sinking air moving from the poles toward 60 North and 60 South latitude.