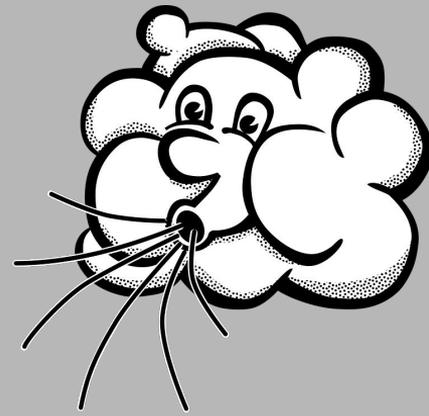


Air Movement



Objectives:

Explain why different latitudes on Earth receive different amounts of solar energy

Describe the Coriolis effect

Explain how land and water surfaces affect the overlying air

I. Forming Wind

Wind

The movement of air from an area of higher pressure to an area of lower pressure



WHAT IS WIND?

Sci Show



A. Heated Air

- Temperature differences on Earth's surface are caused by Earth's tilt and the curved surface.
- Wind is caused by the uneven heating of Earth and its atmosphere.
- Wind is the movement of air from high pressure areas into low pressure areas.

Causing air circulation (wind).



B. The Coriolis Effect

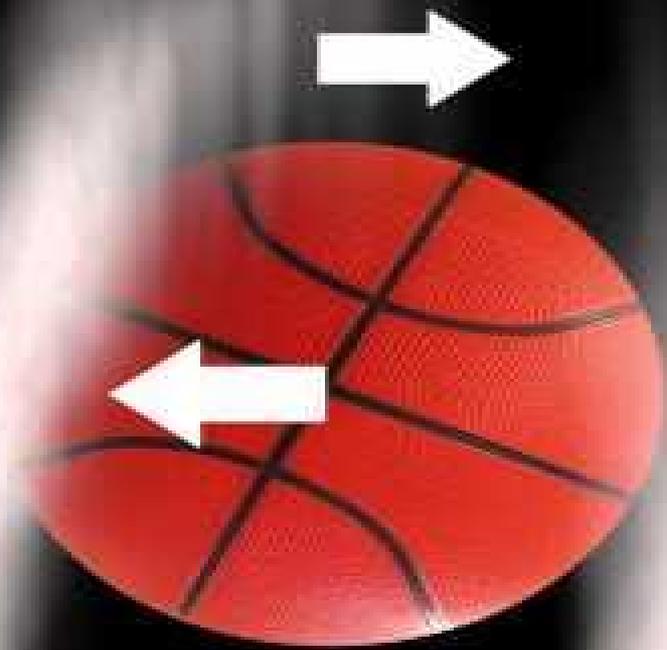
- If the Earth didn't rotate, winds would blow in a straight line from the poles to the equator.
- Because the Earth rotates, wind curves (right in the N.H. & left in the S.H.)
- This curve is called the Coriolis Effect.

CORIOLIS EFFECT



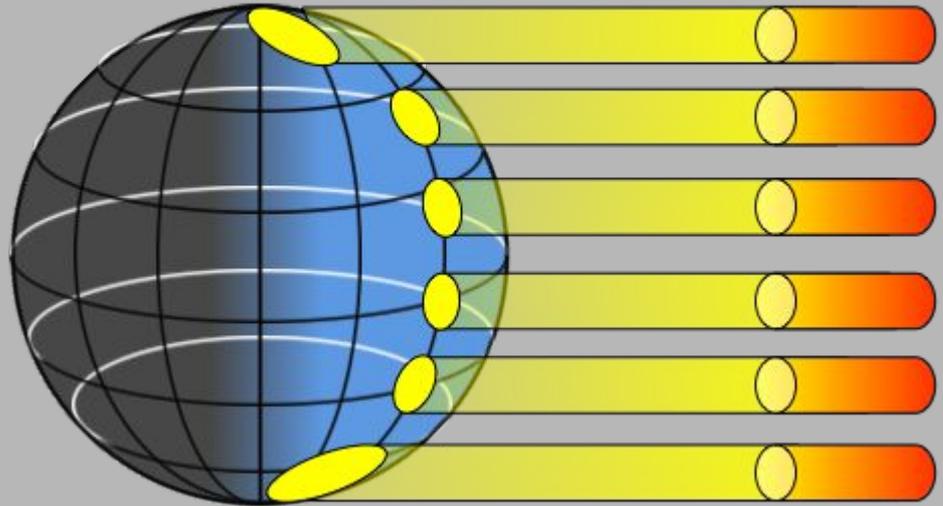
Sci Show





II. Global Winds

The sun's uneven heating of Earth's surface forms cells of moving air.



Doldrums

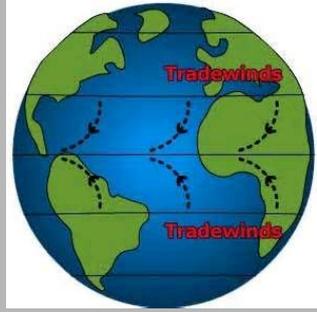
Air currents also leave an area of Earth unaffected by wind. This area is called the doldrums.





A. Surface Winds

Trades Winds

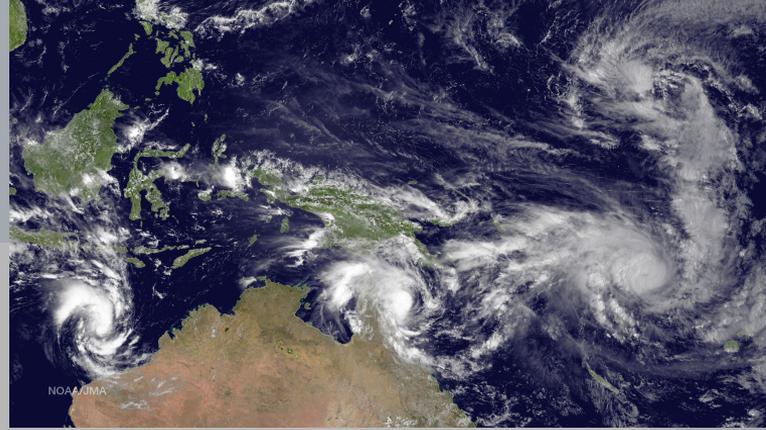


- Warm (less dense) air rises away from the poles
- A constant convection current is located between the equator and 30 degrees latitude north and south of the equator.
- Fun Fact
 - For hundreds of years Traders depended on the winds to move their ships to different points on the globe, this is how the Trade Winds got their name.

A. Surface Winds

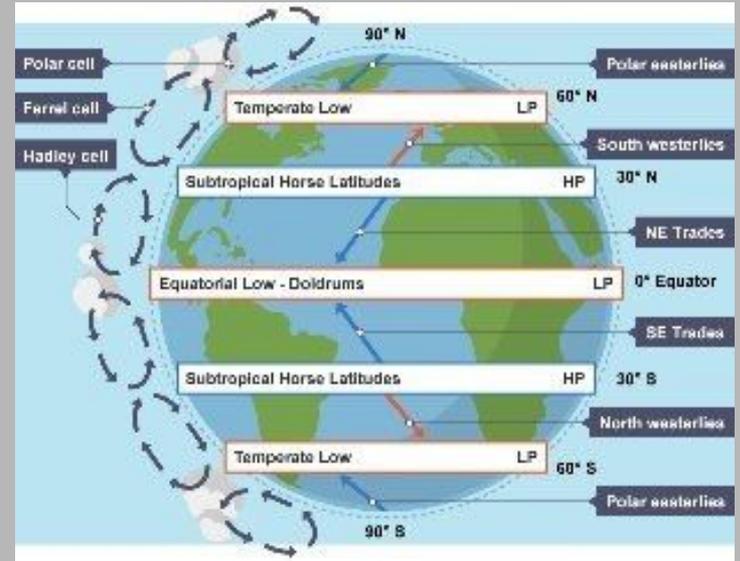
Westerlies

- Are located near 30 degrees N and S of the equator,
- Flow west to east moving toward poles,
- They are reason for the movement of many weather systems in USA



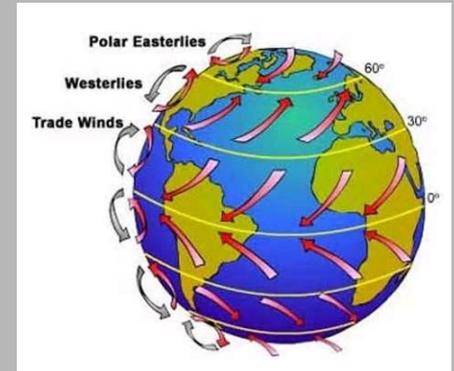
Horse Latitudes

- **Latitudes** between 30 and 38 degrees both north and south
- Earth's atmosphere is dominated by the subtropical high, an area of high pressure, which suppresses precipitation and cloud formation, and has variable winds mixed with calm winds.



Polar Easterlies

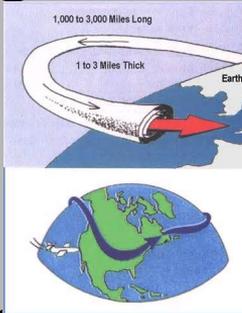
- Cold (dense) air near the poles sink and flow back toward the lower latitudes.
- This occurs between 60 degrees and 90 degrees latitude.
- They flow from east to west.

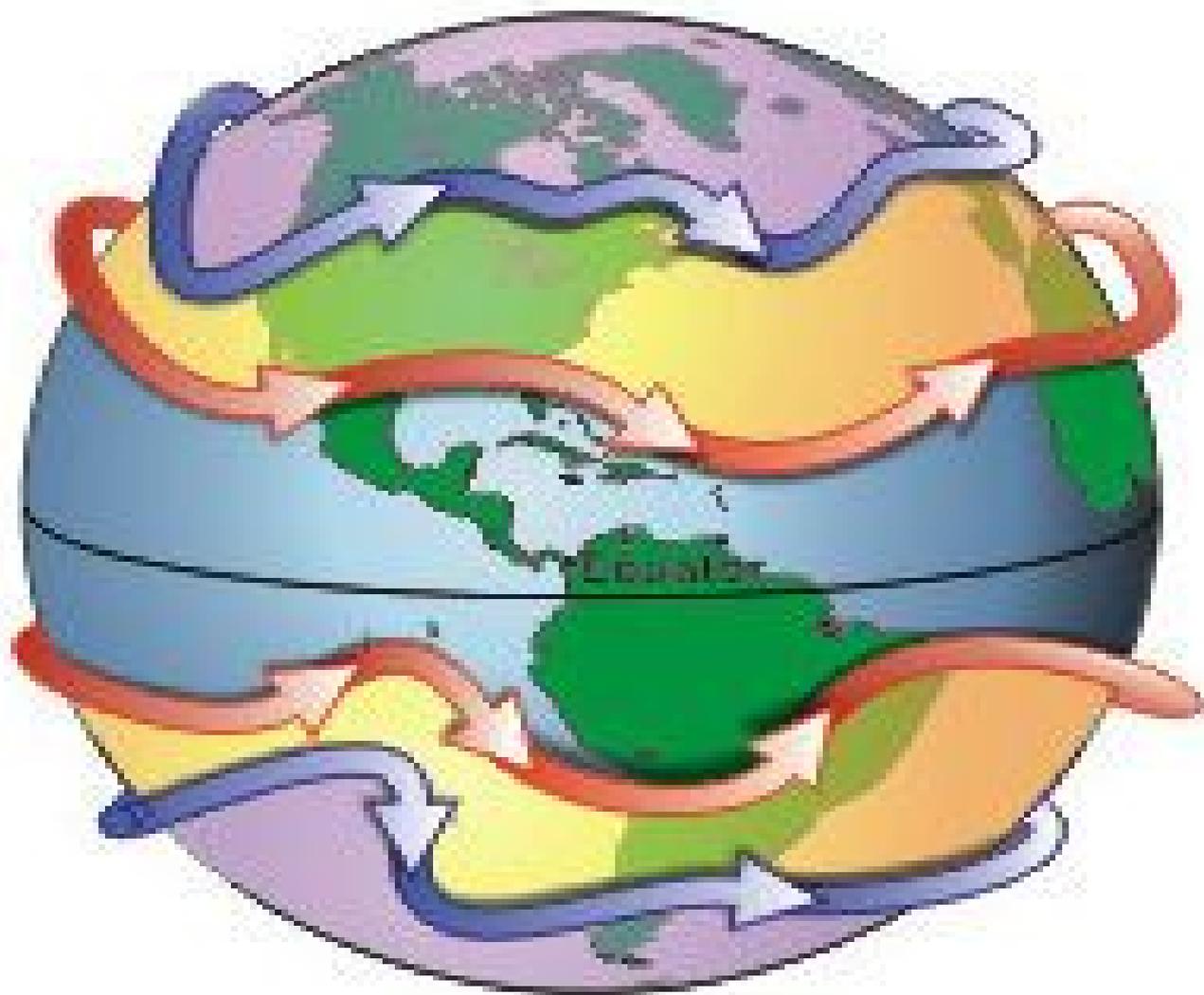


B. Winds in the Upper Troposphere

Jet Stream

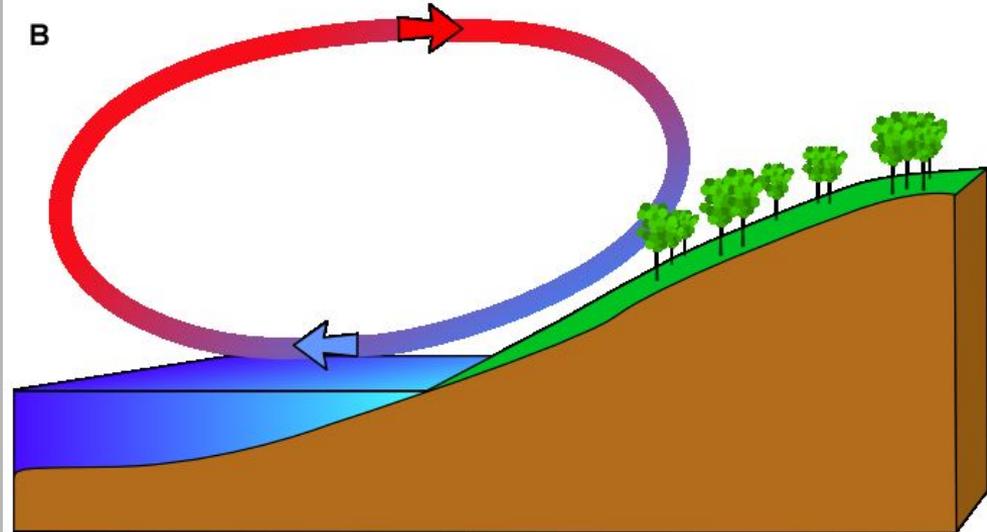
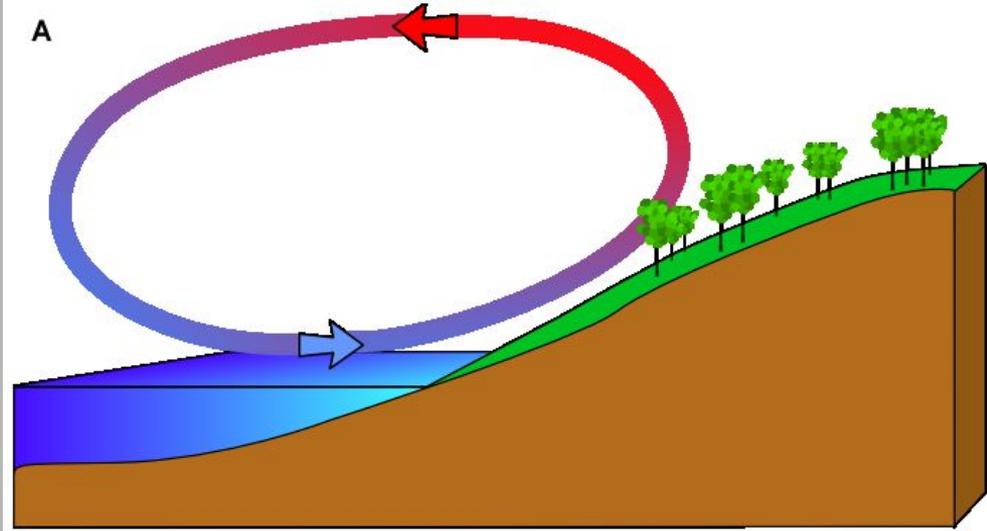
- Narrow belts of strong winds called jet streams blow at speeds of 200-400 mph at higher altitudes
- Just as the sailors used the trade winds to push them along, pilots use jet streams to save fuel and time.





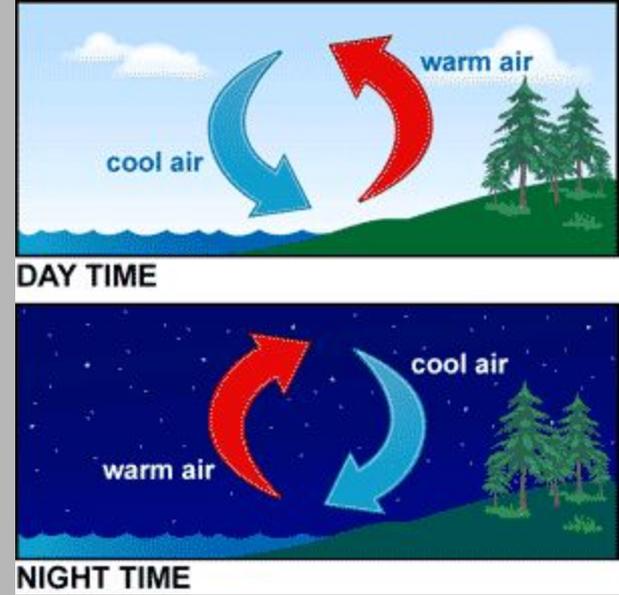
III. Local Wind Systems

Locations near water are affected by Land and Sea Breezes.



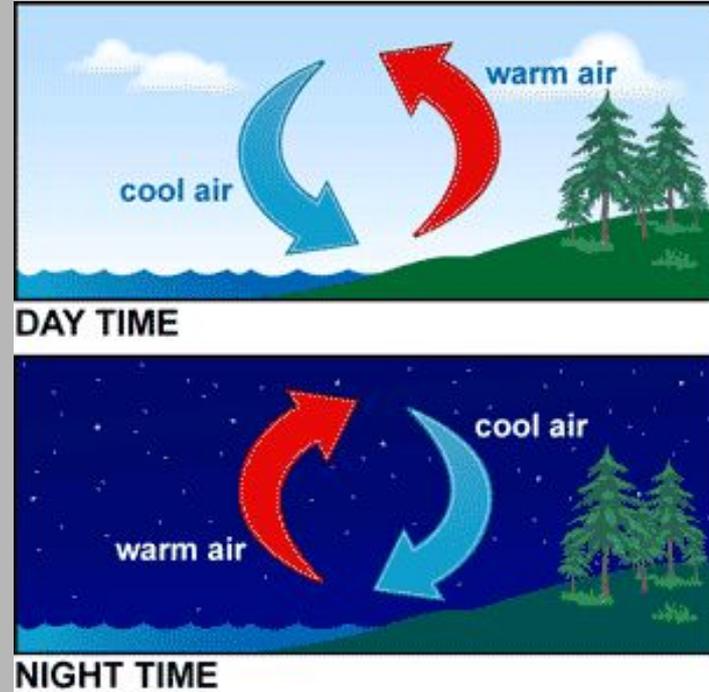
Sea Breezes

- During the day, both the land and water absorb radiation from the sun.
- The land warms up faster than the water,
- The warm air over the land rises and the cool air from the water moves in causing a sea breeze.



Land Breeze

- At night the land cools faster than the water.
- The air over the water rises, and the cool air from the land blows over the water causing a land breeze.





Breeze link



This winds about to blow, blow
This winds about to blow, blow

