Chapter 1 – Section 3 LECTURE and TEAM Notes

Global Winds and Local Winds

- You can create a wind by letting air out of a bicycle tube because the air pressure INSIDE the tube is greater than the air pressure OUTSIDE of it.

Why Air Moves

- Difference in air pressure = wind (the greater the difference = faster wind)
    - Hurricane Andrew (1992) … 264 km/h winds

Air Rises at the Equator and Sinks at the Poles

- Unequal heating of Earth = differences in air pressure
- LOW pressure = equator where air is warmer and less dense due to direct solar energy
- Warm equatorial air rises and flows toward the poles
- Polar air is colder and denser = sinks creating HIGH pressure = flows toward the equator

Pressure Belts Are Found Every 30^o

- Air travels in MANY large, circular patterns = *convection cells*
    - (It does **NOT** move in ONE big circle from the poles to the equator.)
- Convection cells separated by high and low pressure areas = *pressure belts*
    - pressure belts = *(~ every 30^o latitude)*

The Coriolis Effect

- Earth spins (rotates) … winds (& ocean currents) curve
    - Northern Hemisphere = winds traveling north = curve east
      = winds traveling south = curve west

Global Winds

- Coriolis Effect and convection cells together produce air circulation patterns called *GLOBAL WINDS*

Polar Easterlies

- Wind belts from poles to 60^{o} N or S = *"polar easterlies"*
    - Northern hemisphere polar easterlies cause snow / freezing weather to U.S.

Westerlies

- Wind belts from 30^{o} to 60^{o} (both hemispheres) = *"westerlies"*
    - Blow FROM west to east and carry moist air causing rain / snow in U.S.

Trade Winds

- Wind belts from 30^{o} to ALMOST the equator = *"trade winds"*
    - Northern hemisphere - trade winds blow FROM east to west
    - Southern hemisphere – trade winds blow FROM west to east
- Got the name *"trade winds"* because traders used the dependable winds to transport their goods between Europe and the Americas.

The Doldrums

- Area around the equator where trade winds meet = little wind (LOW pressure)

Horse Latitudes

- Area near 30^{o} N and 30^{o} S = weak winds (HIGH pressure)

- Got the name "horse latitudes" because horses were thrown overboard to save drinking water when ships got stuck in windless areas

- Most deserts in the world are in the horse latitudes because sinking air is VERY dry.

(ADD A BULLETED SUMMARY LIST OF INFORMATION FOR THE LAST FEW SUB-SECTIONS)

Jet Streams: Atmospheric Conveyor Belts

Local Winds

Mountain Breezes and Valley Breezes