

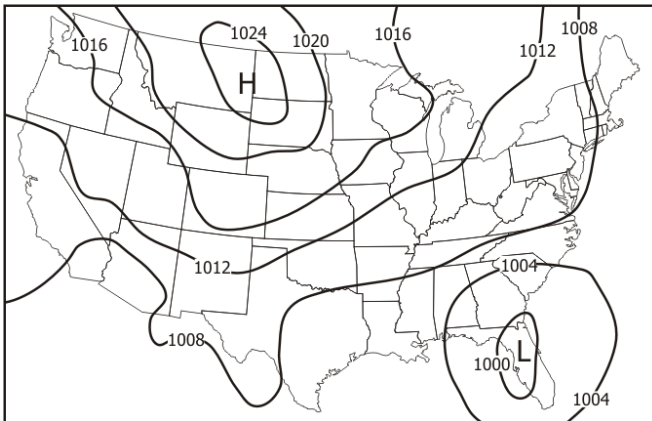
CH 19 NOTES

name _____ hr _____

19.1 UNDERSTANDING AIR PRESSURE

A) **Air pressure** – the pushing of air in all directions, up, down, and sideways

- 1) **Barometer**- tool used to measure air pressure that is pressing downward
- 2) **Millibars**- the unit used to label pressure measurements
- 3) **Isobars**- lines drawn on a weather map that indicate the same pressure



B) **Wind**- air that is moving sideways

- 1) Air flows from high pressure to low pressure
- 2) The unequal heating of Earth's surface creates pressure differences
- 3) Air is always trying to balance out the pressure
- 4) When isobars are close together on a map, wind speed is high

C) **Jetstream**- fast moving river of air at the top of the troposphere

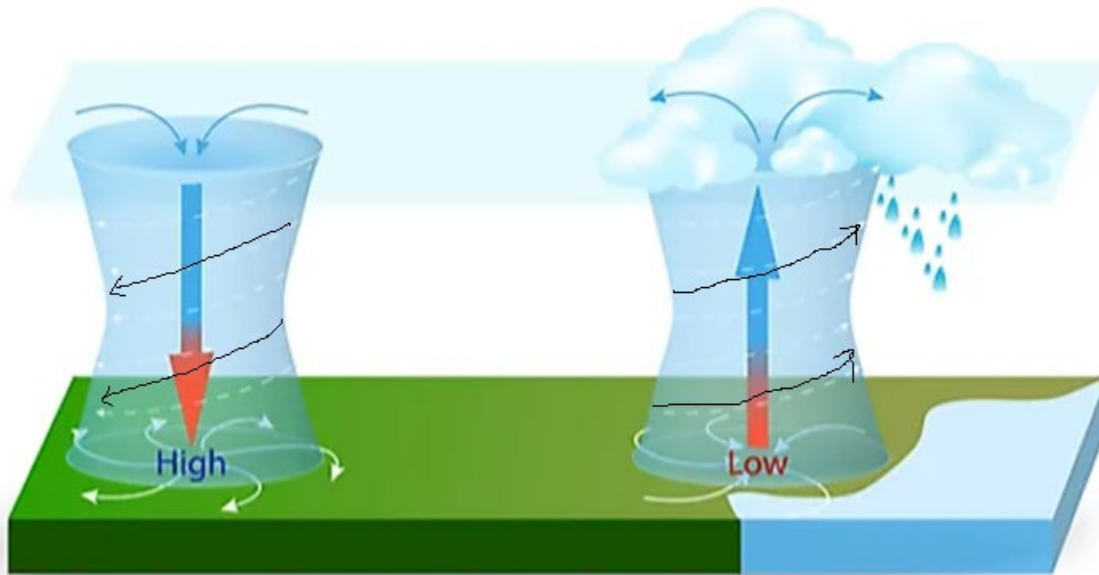
19.2 PRESSURE CENTERS AND WINDS

D) **Cyclone**- counterclockwise spin of air

- 1) low pressure
- 2) air is rising
- 3) causes cooling, thus condensation, thus clouds and precipitation
- 4) air converges at base

E) **Anticyclone**- clockwise spin of air

- 1) high pressure
- 2) air is sinking
- 3) causes heating, thus evaporation, thus the removal of clouds, thus dry weather
- 4) air diverges at base



Anticyclones

Cyclones

F) GLOBAL WINDS

1) Non-rotating model:

a) if the earth didn't spin, cold air from the poles would sink down and move toward the equator, forcing warm equator air to rise. It would then hit the top of the troposphere and start squirting towards the poles.

2) Rotating model:

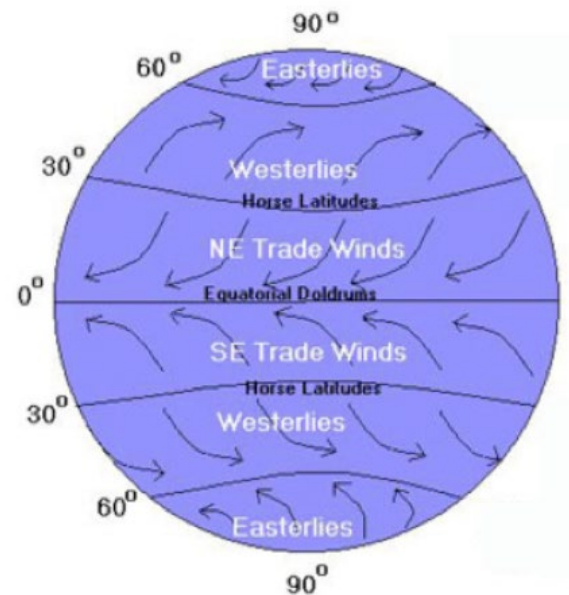
a) But, we do spin, so those currents of air get twisted to the west and east in predictable patterns

(1) **Tradewinds**- come from the east and blow toward the west--Located between 0 and 30 degrees

(2) **Prevailing westerlies**- come from the west and blow toward the east--Located between 30 and 60 degrees

(3) **Polar easterlies**- come from the east--Located between 60 and 90 (the poles)

3) **Coriolis effect**- the Earth's spin bends and twists air movements that would normally just go north and south



G) Convection cells

1) **Hadley cell**

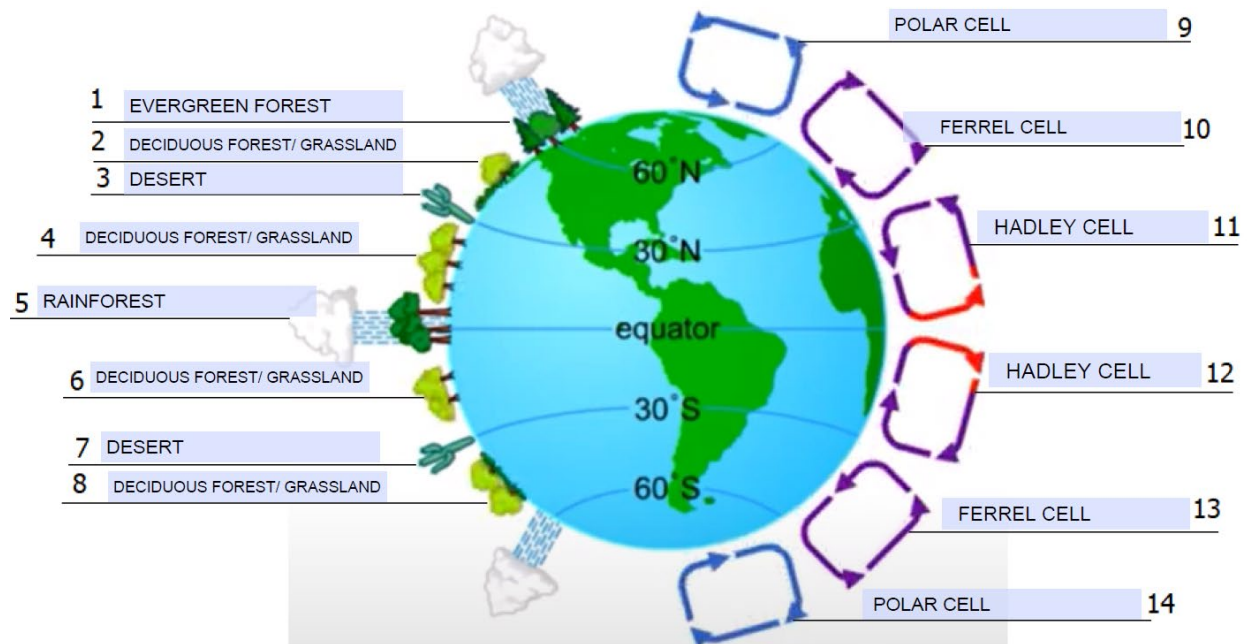
- a) Hot air rises at equator then
- b) Cools and sinks at 30
- c) Moves sideways at the surface of Earth (wind)
- d) Some goes north and
- e) Some hits the equator (and heats up again)

2) Ferrel cell

- The air squirting north from the Hadley cell collides with
- Air squirting south from the polar cell
- They hit and then squirt upwards (convergence)
- Once aloft the air diverges, some headed back to the poles and some going back to the start of the Ferrel cell

3) Polar cell

- Air is cold, sinking and headed toward the equator
- Collides with Ferrel cell air and
- Squirts upward eventually
- Returning to the pole to get chilled again



H) BIOMES

- Latitudes with rising air bring a lot of precipitation
- Latitudes with sinking air bring no precipitation
- Rising air at 0 degrees – lots of rain, thus rainforests
- Rising air at 60 degrees – lots of rain, thus coniferous / evergreen forests
- Sinking at 30 degrees – no rain, thus deserts
- All areas in between these latitudes= deciduous forests or grasslands