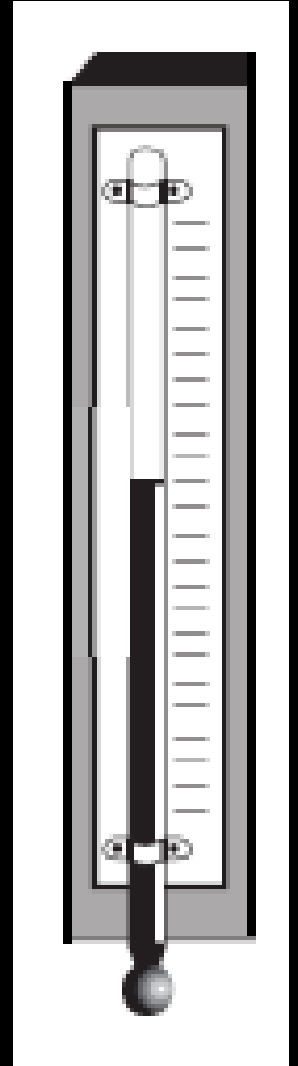


Weather Part 2

A. Temperature:

1. The measure of the average kinetic energy.
2. How fast the molecules move. (vibrate)
3. Instrument used to measure thermometer.



4. Measured in

- ° F Fahrenheit
- ° C Celsius
- ° K Kelvin

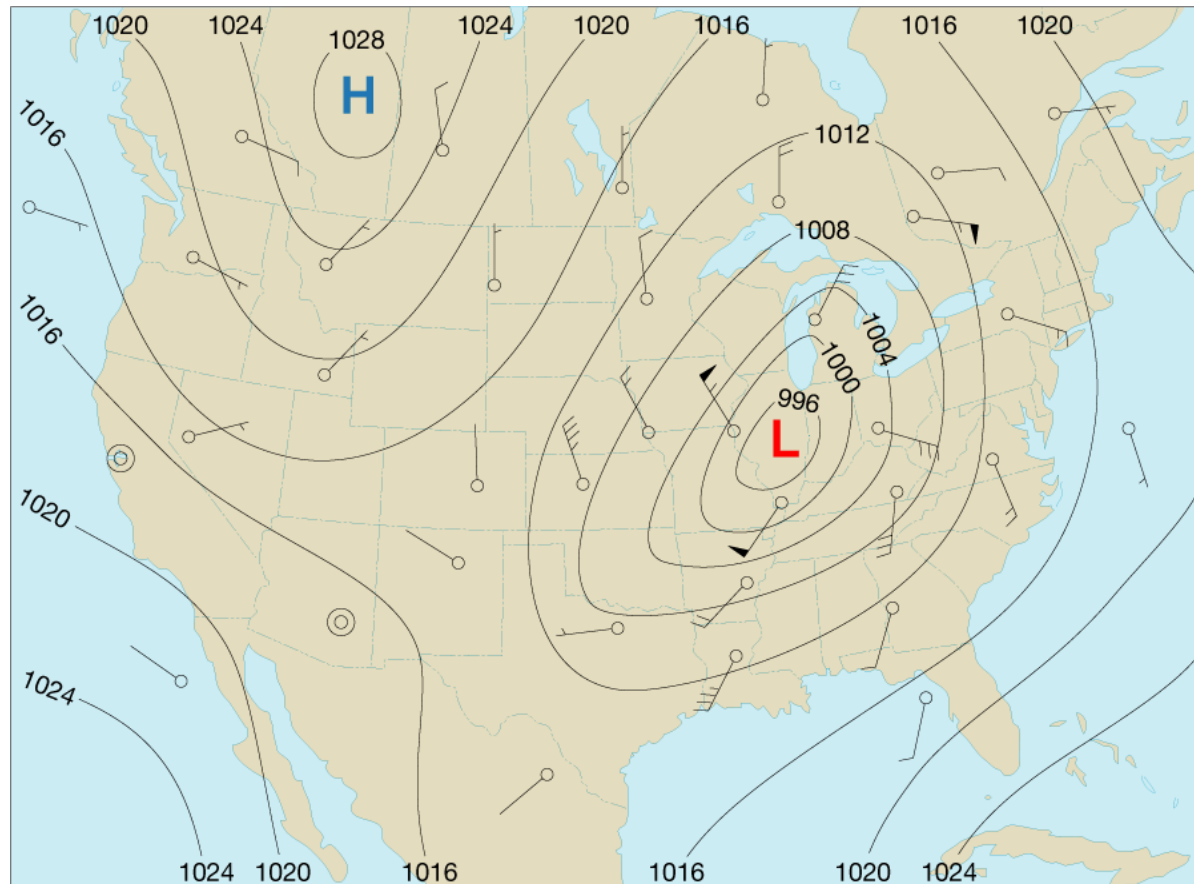
5. Shown on a weather map with Isotherms - Lines that connect points (places) of equal temperature.

B. Air Pressure:

1. The weight of Earth's atmosphere.
2. Air pressure decreases as elevation increases.
3. A barometer measures air pressure in either
 - a. inches of mercury or
 - b. millibars

4. Cold air is relatively heavy; therefore pushes more on the Earth -> HIGH
5. Warm air is relatively light; therefore pushes less on the Earth -> LOW
6. Instrument used to measure pressure: BAROMETER.
7. Shown on a weather map with -
Lines that connect points (places) of equal barometric .
8. Normal pressure at sea level is 1 atmosphere and is equal to:
 - a. 1013 millibars
 - b. 29.92 inches

Isobars



ff	Miles per hour
☉	Calm
—	1–2
—	3–8
—	9–14
—	15–20
—	21–25
—	26–31
—	32–37
—	38–43
—	44–49
—	50–54
▲—	55–60
▲—	61–66
▲—	67–71
▲—	72–77
▲—	78–83
▲—	84–89
▲—	119–123

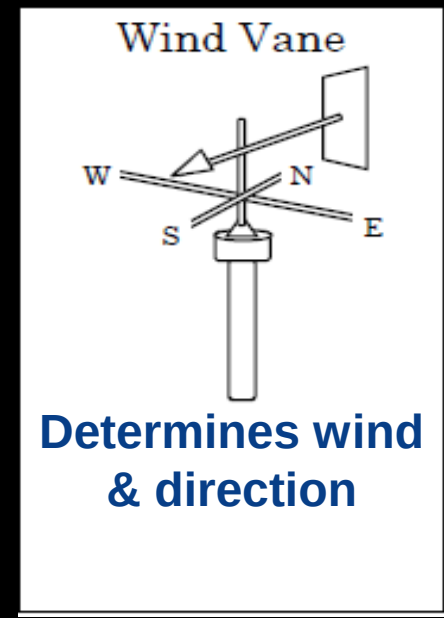
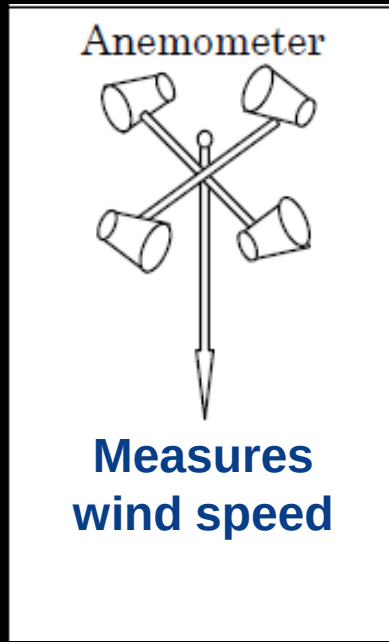
Inches	Millibars
29.06	984.1
29.94	1014.0
30.50	1033.0
29.44	997.0

Millibars	Inches
1011.0	29.85
1021.0	30.15
1035.0	30.56
991.0	29.26

C. Wind - The horizontal movement of air, caused by unequal heating of the Earth's surface.



1. Differences in air temperature cause differences in air pressure.
2. Named by the direction in which they come FROM.
3. Isobars - connect places of equal barometric pressure on a weather map.
4. Wind blows from HIGH pressure to LOW pressure.

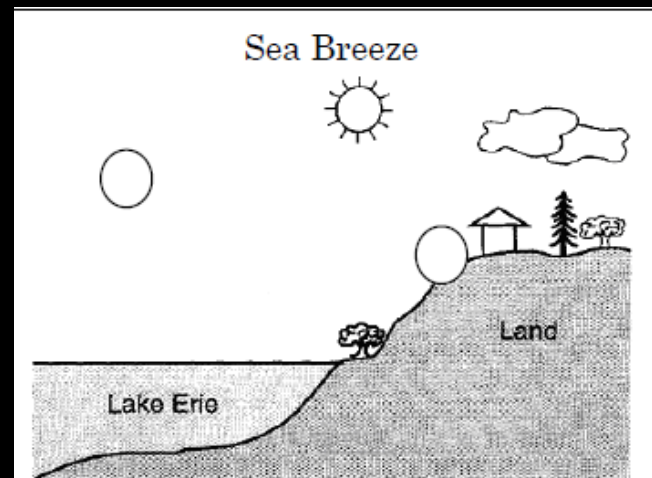


5. Sea Breeze

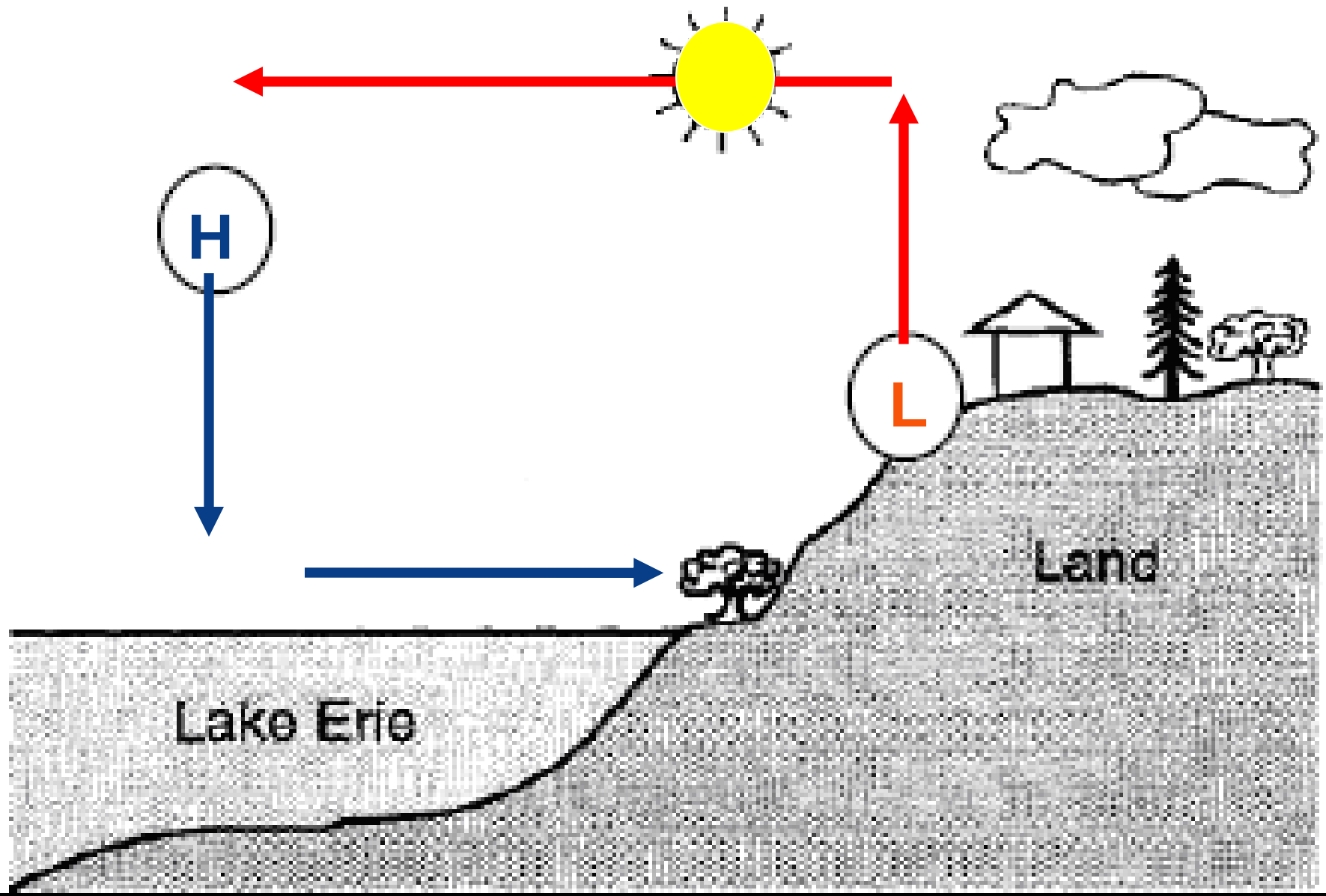
- a. When wind blows from the water to the land.
- b. During the daytime.
- c. Why?

1. Water has a high specific heat.
2. Heats up slower than land.
3. Cooler temperatures during the day.
4. Air sinks over the water (more dense).
5. HIGH pressure over water.

1. Land has a low specific heat.
2. Heats up Faster than the water.
3. Warmer temperatures during the day.
4. Air rises over the land (less dense).
5. LOW pressure over land.



Sea Breeze



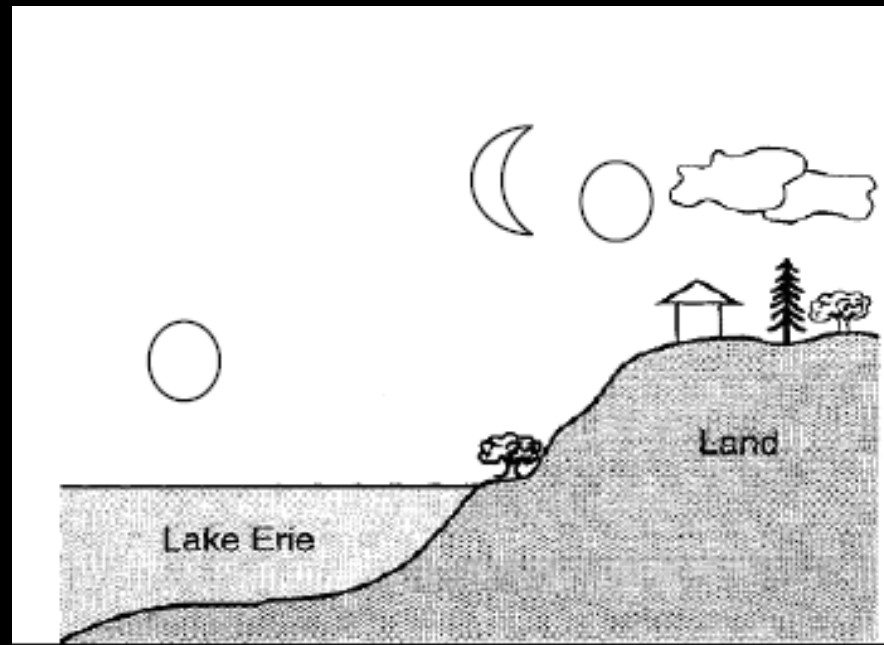
a. When wind blows from the land to the water.

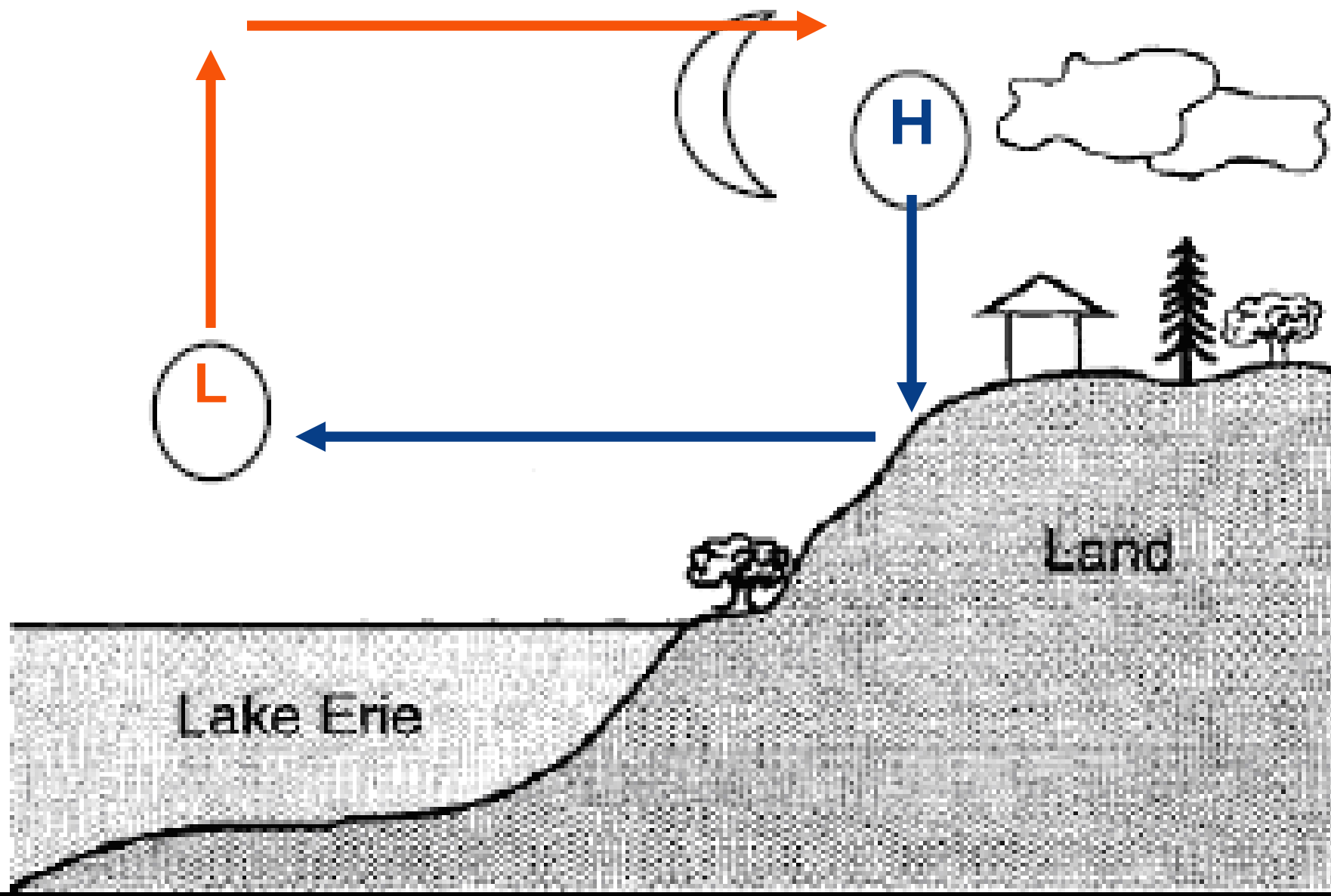
b. During the night time.

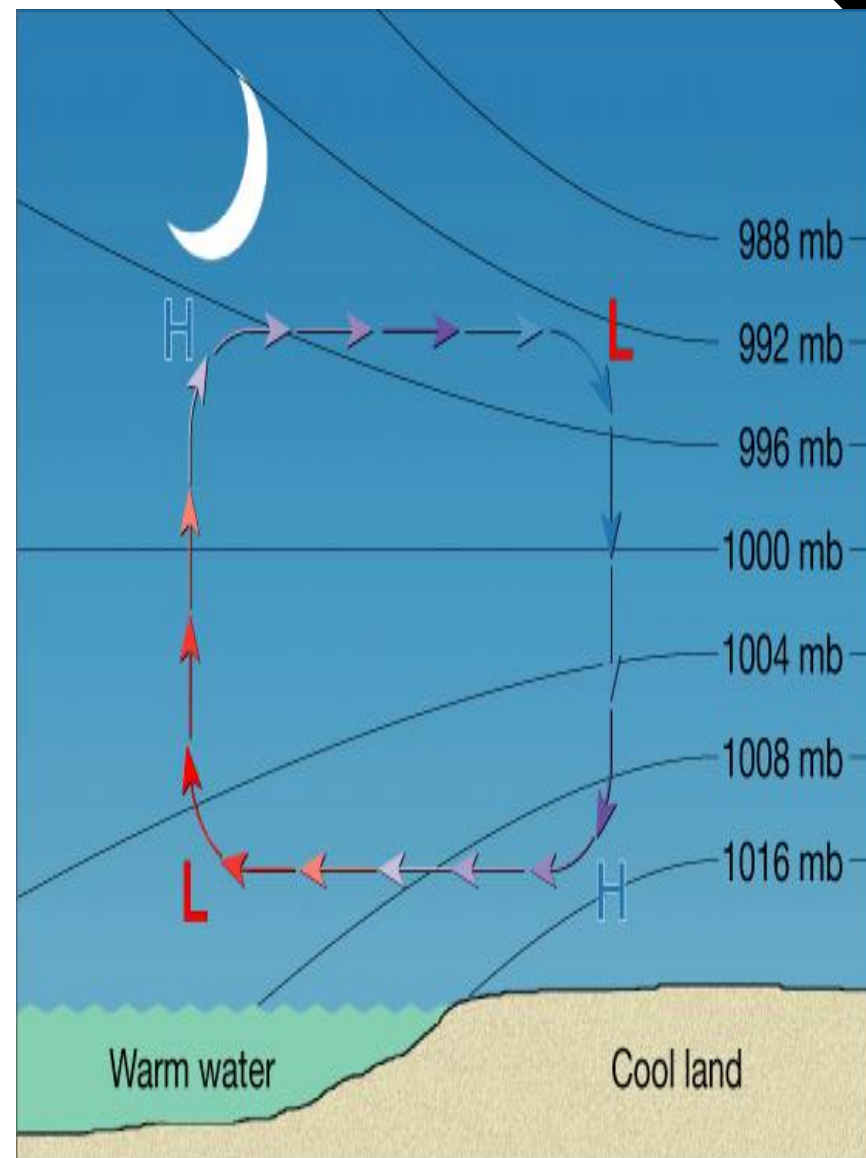
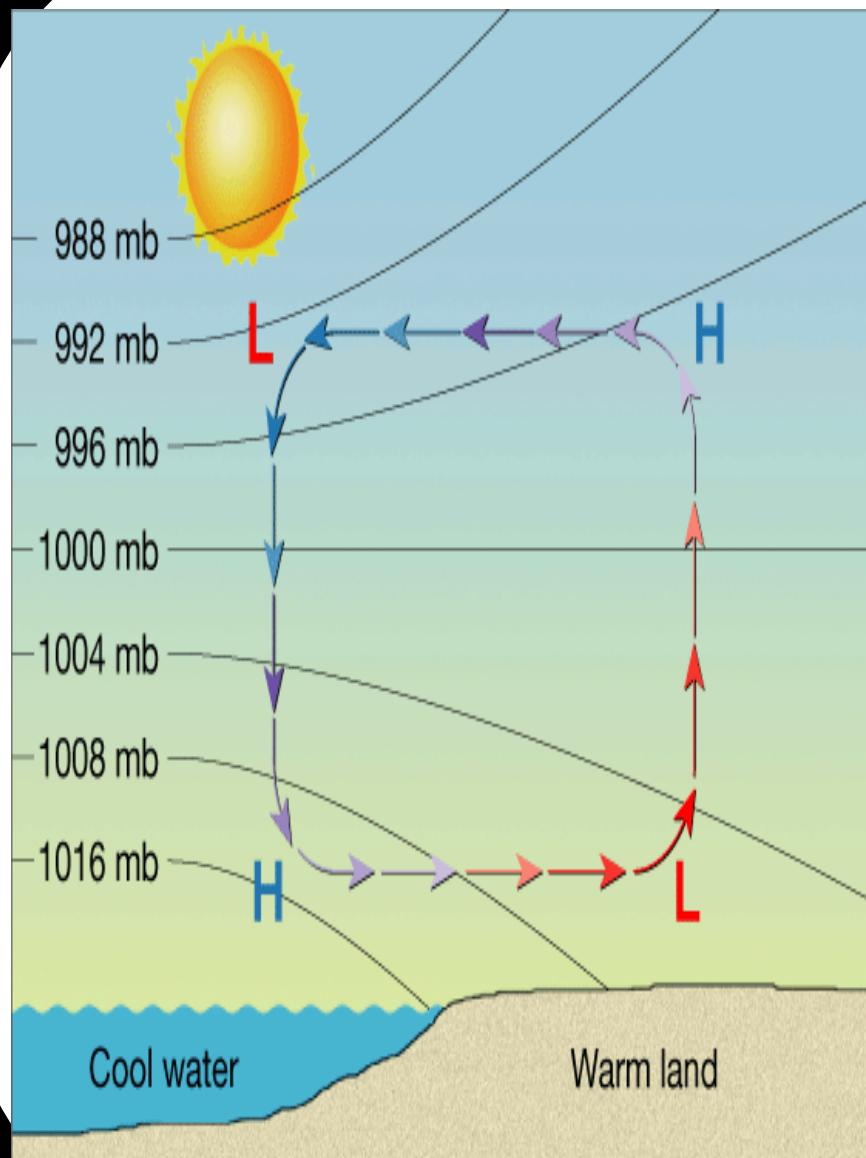
c. Why?

1. Water cools down slower than land (stays warmer).
2. Warmer temperatures at night.
3. Air rises.
4. LOW pressure over water.

1. Land cools down faster than the water.
2. Cooler temperatures at night.
3. Air sinks over the land (more dense).
4. HIGH pressure over land.





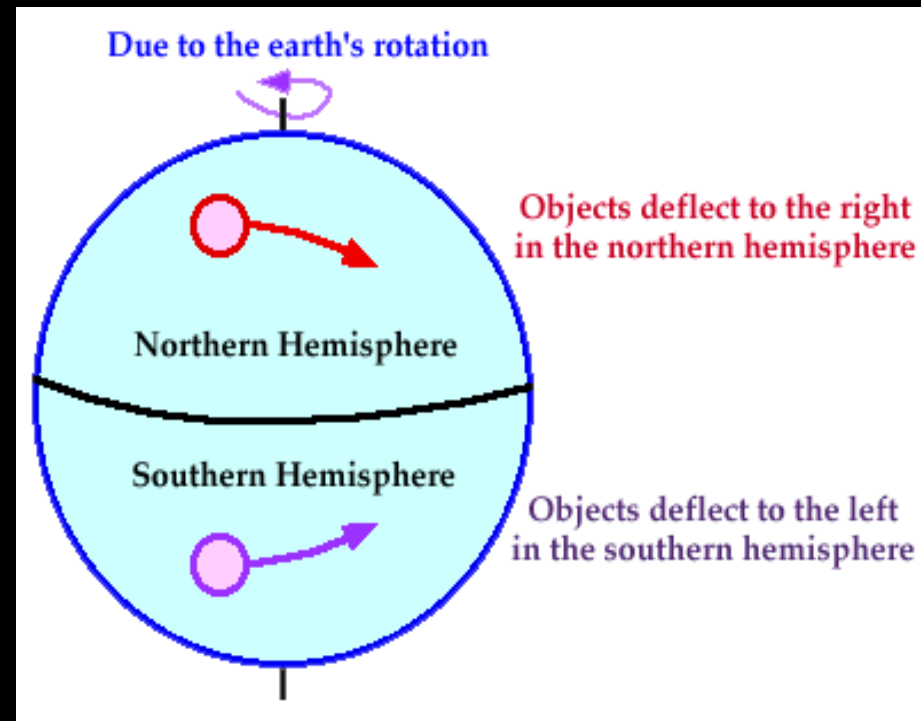


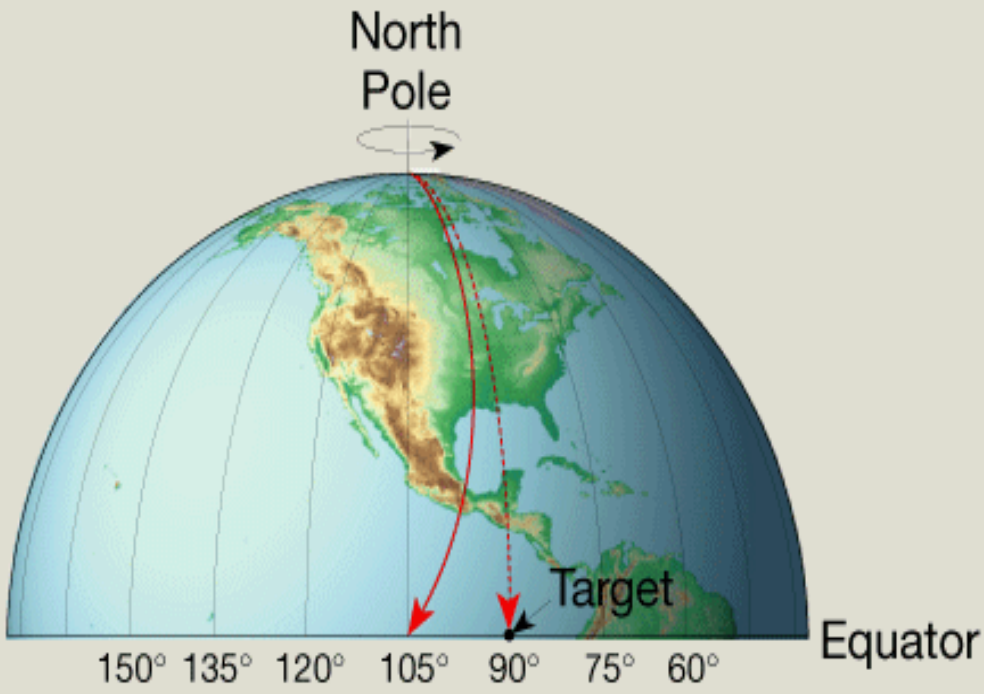
6. Coriolis Effect: Winds (all free-moving objects) are deflected from their path of motion.

a. To the RIGHT in the Northern Hemisphere.

b. To the LEFT in the Southern Hemisphere.

c. Due to earth's rotation.





Rotating Earth



D. Moisture (Humidity)

1. Water vapor is the gaseous form of water and consists of extremely tiny droplets.
2. Humidity is the measure of the total amount of water vapor in the air.
3. Warm air has a greater capacity for water vapor than cold air.
4. When the air is holding as much water vapor as it can, the air is saturated.
5. When the air is saturated, the relative humidity is 100 %.

6. Absolute Humidity

- a. Exact amount of water vapor in the air.
- b. Also considered as the mass of the water vapor.
- c. It is usually expressed in grams per cubic meter.

7. Relative Humidity-

- a. The ratio between the amount of moisture is in the atmosphere and how much moisture the atmosphere can hold AT A GIVEN TEMPERATURE.
- b. Measured in %.
- c. As temperature increases, relative humidity decreases
- d. As temperature decreases, relative humidity increases.

8. Dew Point Temperature:

- a. The temperature in which the air must cool to become saturated
- a. 100% Relative Humidity.

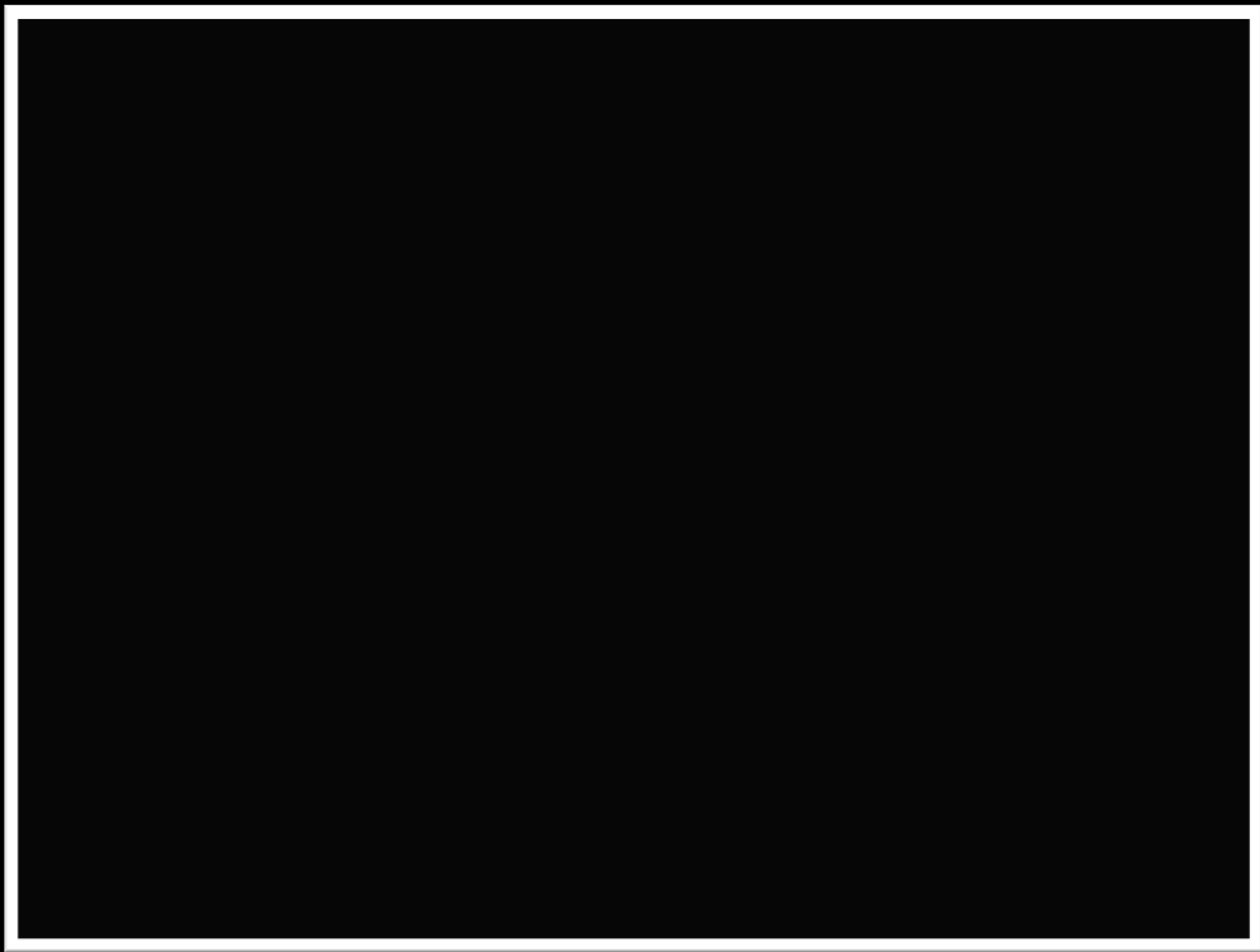
9. Condensation & Cloud Formation

a. When air temperature (cools) = dew point temperature condensation occurs.

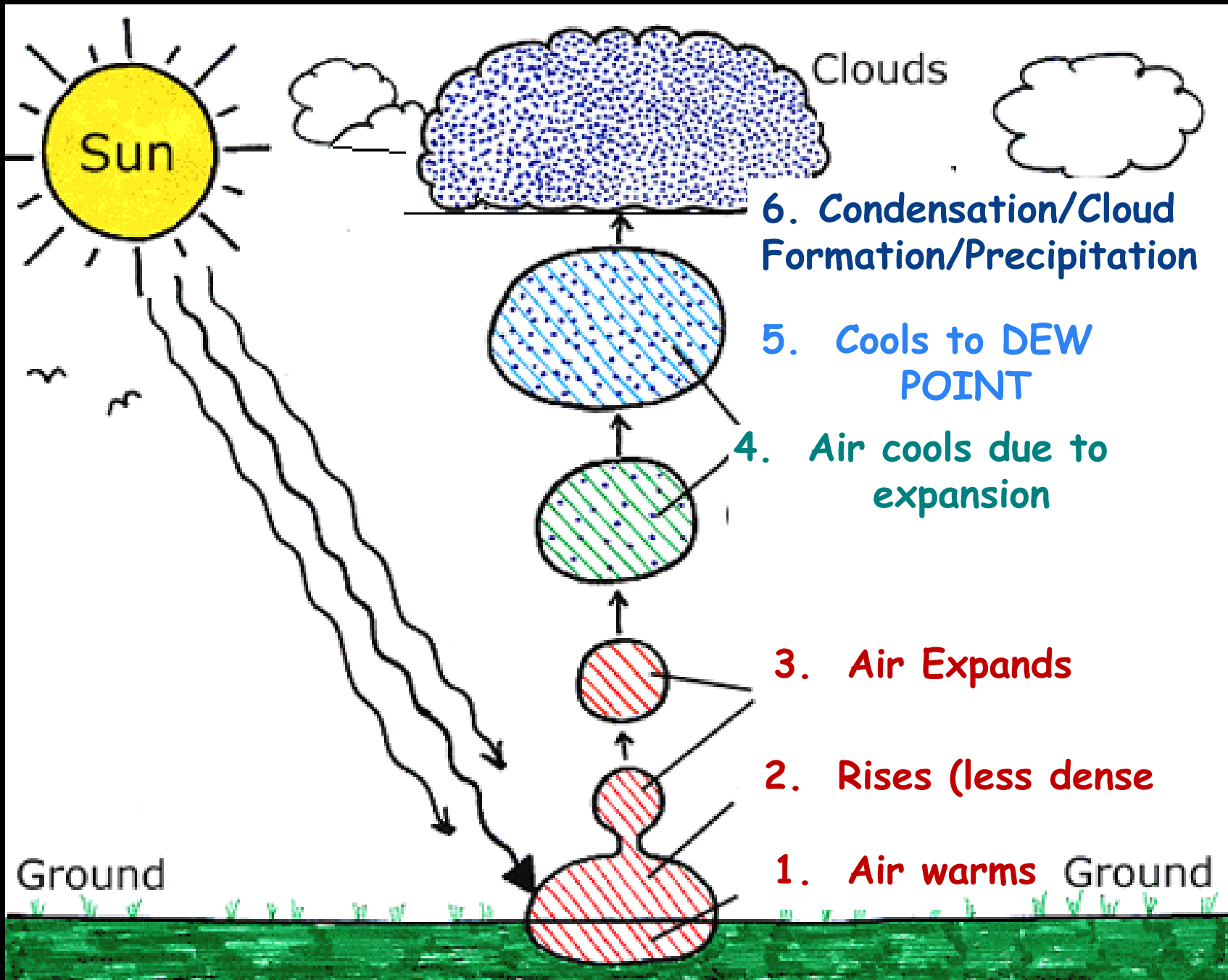
b. Examples of Condensation:

- Water on cold glass of water
- Dew on the grass
- Water on a mirror after a shower
- Fog, Clouds

- c. Condensation nuclei (dust) provide a solid surface for condensation to occur.
- d. Condensed water vapor forms clouds.
- e. When clouds get “too heavy”, it precipitates.
- f. Forms precipitation (rain, snow, sleet, etc..)







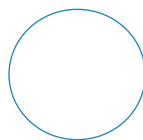
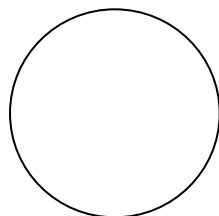
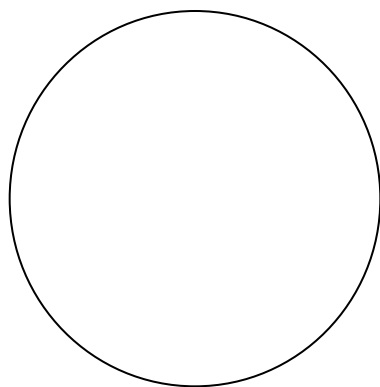
10. Steps For Cloud Formation:

YOU MUST KNOW THESE

1. Warm moist air rises. (less dense)
2. Expands as it rises.
3. Cools due to expansion.
4. Reaches dew point temperature ($AT = DPT$).
5. Condensation occurs. (on condensation nuclei / dust particles).
6. Cloud Formation
7. Precipitation

11. Air rises because of:

- a. • Differences in density (convection)
- b. • Mountains (orographic lifting)
- c. • Fronts

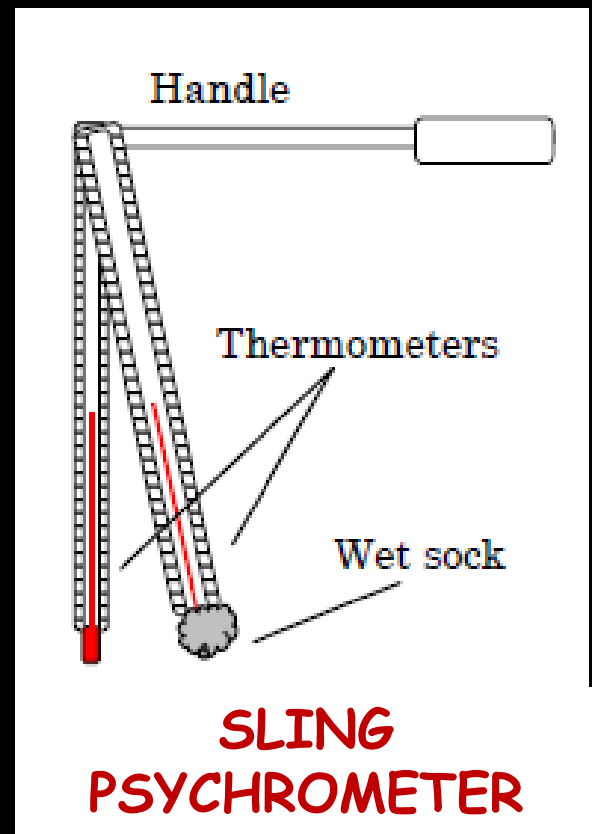
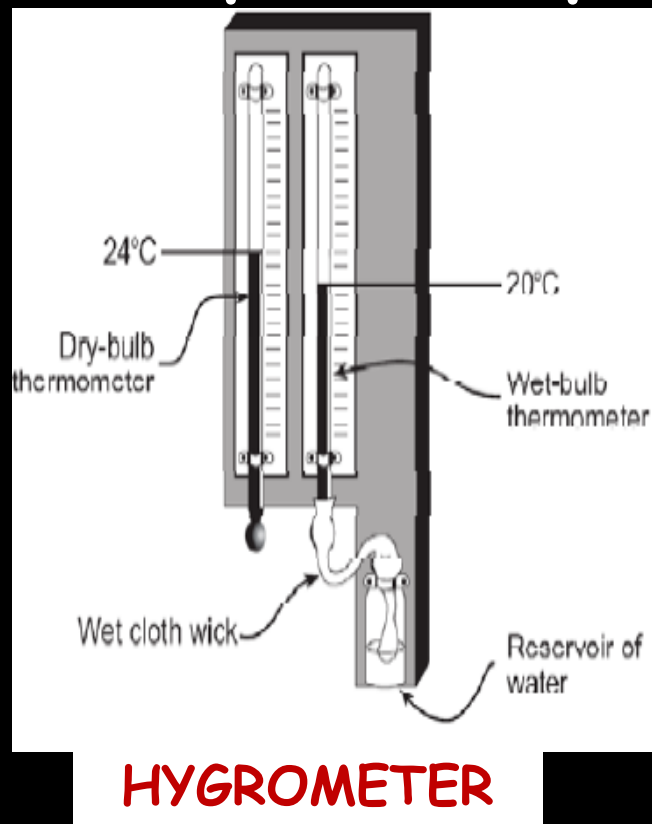


12. Three things needed for condensation to occur:

1. Water vapor must be present.
2. Air must be saturated (relative humidity 100%)
3. Condensation nuclei - ex dust particles

13. Determining Relative Humidity and Dew Point Temperatures

- a. A sling psychrometer or hygrometer uses two thermometers to measure relative humidity and dew point temperature.



- b. Contains a "dry bulb" thermometer and a "wet bulb thermometer" .
- c. Dry bulb temperature = Air temperature.
- d. Wet bulb temperature is cooled due to the cooling effect of evaporation.
- e. Wet bulb depression = difference between dry and wet bulb temps.