

GLOBAL T° PATTERNS/DISTRIBUTION

TEMPERATURE (T°): a measure of the average kinetic energy of the atoms and molecules of an objects

** atoms moving faster means greater kinetic energy, which means the substance will have a higher T°

* **T° is NOT heat**

* amount of HEAT is dependent on volume or mass of an object; the T° of an object is not dependent on its volume or mass

EX: an 8 oz glass of water and a filled bath tub can have the same T°, but will not have the same amount of heat because of different volumes

** T° Scales:

	Celsius	Fahrenheit	Kelvin
freezing pt of water	0°	32°	273°
boiling pt of water	100°	212°	373°
range	100°	180°	100°

* 0°K = no molecular motion or absolute zero which = -273°C = -459° F

* $C^{\circ} = (F^{\circ} - 32^{\circ}) \times 5/9$ $F^{\circ} = (C^{\circ} \times 9/5) + 32^{\circ}$

$K = C + 273$ or $C = K - 273$

* isotherm: a line on a map or chart which **connects points of equal temperature**

*** T° Controls

Receipt of Solar Radiation □ determined by latitudinal position primary is the control of temperature at the Earth's

Differential Heating:

*** land cools and warms more quickly than water, and to lower & higher T° because:

- * water is more transparent while land is more opaque
- * specific heat of water is 3X greater than land

s.p. = the heat needed to raise 1 gm of a substance 1° C

SO, it takes more energy (sunlight) to heat up water than it does the same amount of land

- * evaporation from water is greater than land, so energy is used to evaporate the water and not just raise the temperature
- * water turbulence and convection; no 'soil turbulence' or convection occurs

Geographic Setting & Position:

* Proximity to water

* water has a moderating affect on temperature; average monthly temperature will not vary as much between summer to winter

* inland locations show greater temperature variation between winter and summer

This is the idea of **continentality**

- * relationship to wind patterns, windward vs. leeward side of a continent
- * a windward location will vary less than a leeward location
- * barriers to wind or moisture, i.e. mountains

Ocean Currents

- * will influence air temperatures of both the ocean area and adjoining land area where the current is located
 - * warm currents will help keep temperature higher than it would be without the current EX: Gulf Stream and British Isles
 - * cold currents will help keep temperature lower than it would be without the current EX: California Current and US West Coast
- * will also influence precipitation patterns

Elevation

- * as you go higher in elevation/altitude, temperature decreases, but amount of solar radiation actually increases
- * higher elevation often yields greater daily temperature range

Cloud Cover & Albedo

- ** clouds trap-in terrestrial radiation keeping the surface warmer, BUT also reflect solar radiation coming in
 - * a cloudy day is usually cooler than a clear sky
 - * a cloudy night is usually warmer than a clear sky; because it traps the long wave radiation, heat from the sunlight

- * cloudy day vs clear day; cloudy night vs clear night

(Know the differences in temps due to these situations.) They are just opposite

*** Worldwide T° Patterns

- * variations controlled by the above factors
- * one of the key factors is that the proportion of land to water varies over the earth's surface
- ** Southern Hemisphere: 81% water, 19% land
 - * temperature variation and range are smaller
- ** Northern Hemisphere: 61% water, 39% land
 - * greater temperature variation
- * Greater winter time variation with latitude than summer
 - * coldest T°'s: over land at high latitudes in winter
 - EX: Siberia & Antarctica
 - * warmest T°'s: in the tropical deserts in summer
 - EX: Sahara

Know the terms

Wind Chill Index (when the wind blow, your body would need more energy to keep you warm)

Heat Index Temperature humidity, when it's hot, body sweat, but when humidity, it's harder, so it's harder to sweat...