**Ocean Circulation Notes**

1. Earth’s Oceans = 71% of Earth’s surface
2. What heats all that water? Infrared radiation & the sun
3. Surface Ocean Currents Factors
   1. Tides
   2. Wind
   3. Thermohaline Circulation
4. Tides
   1. The movement of Earth’s surface water
   2. Gravitational forces interacting: Moon, Earth, Sun
   3. Moon has a bigger effect because it is closer
5. Coriolis Effect
6. Global Ocean Currents
   1. Predictable
   2. Based on temperature and salinity
   3. Cold and salty sinks the deepest; warm and less salty is closer to the surface
7. Winds, Waves, & Currents: The stronger the wind and current = the higher the wave
8. Saltwater vs. Freshwater Venn Diagram
9. Distribution of Earth’s Water (97%=ocean; 3%=fresh)
10. Hydrologic Cycle (Water Cycle) & Human Impact
    1. Alter the atmosphere
    2. Dams
    3. Deforestation
    4. River drawdown
    5. Agriculture
    6. Industry
    7. Utilization

Ocean Circulation Reading KEY (35 pts)

1. (**1 pt**) Land heats/cools FASTER than water (water has high heat capacity)
2. (**1 pt**) 71% of Earth’s surface is covered by water
3. (**1 pt**) Blue wavelength is NOT ABSORBED = why water is blue; all wavelengths absorbed at 100m
4. (**1 pt**) Infrared SLOWLY heats water; still water heats faster than moving water
5. (**2 pts**) Solar energy – temperature & density; Wind energy – belts, Coriolis effect, gyres (deflection by continent)
6. (**2 pts**) East coast has warm currents from Caribbean; West coast has cold currents from Alaska
7. (**4 pts**) Warm = lower salinity & molecules spaced further apart = less dense Cold = higher salinity & molecules closer together = more dense
8. (**4 pts**) **Freshwater**: mixture of water with minerals, gases, nutrients; density = 1.0 g/cm3; 0°C = freezes

**Salt water:** mixture of water with salts, gases, nutrients; density =1.03 g/cm3; -20°C = freezes

1. (**2 pts**) High salinity where (1) evaporation is high and (2) freezing takes place because water changes state but salt does not
2. (**1 pt**) Low salinity where fresh water and salt water mix (estuary, delta)
3. (**1 pt**) 3% = freshwater
4. (**6 pts**) Freshwater found in icecaps & glaciers (69%); Goundwater (30%); Surface (1% with 0.3% found in lakes, swamps, rivers)
5. (**9 pts**) The following must be included: Land, Ocean, Cloud, Evaporation, Condensation, Precipitation, Runoff, Freshwater, Salt water