

AP Environmental Science Things to Memorize

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1 Notes

This document is not comprehensive. There are many items that were omitted/included based on my understanding of certain concepts before taking the class.

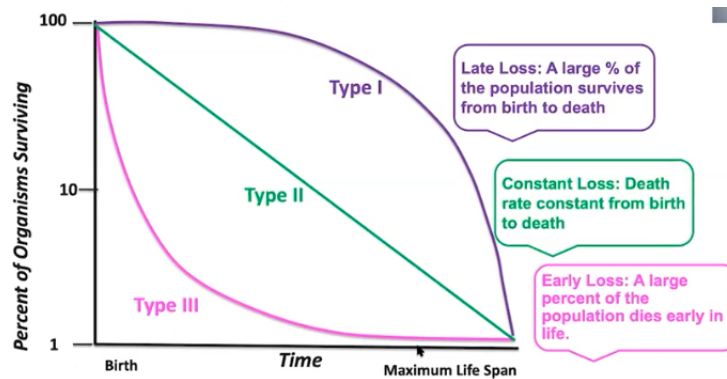
Please contact me at michel.liao@systemgreen.org if you have any questions or notice any typos.

2 Things to Memorize

- Types and biomes and their characteristics
- Primary productivity – rate at which sunlight is converted into organic compounds via photosynthesis
- GPP – total rate of photosynthesis in a given area
- NPP – rate of energy storage after subtracting energy used in respiration
- Carbon, Nitrogen, Phosphorous, Hydrologic Cycle
 - Nitrogen Cycle: N_2 in the atmosphere goes through **nitrogen fixation**, turning it into ammonia (NH_3); **ammonification** converting NH_3 into NH_4^+ by soil bacteria; **nitrification** NH_4^+ converted into NO_2^- then NO_3^- ; **assimilation** NO_3^- is taken by plants through roots; **denitrification** NO_3^- converted back into N_2 by soil bacteria.
- **Species diversity** is the number of species and abundance of each species in a certain location. **Species richness** is the number of species that live in a certain location.
- Ecosystem Services
 - **Supporting** - services necessary for the production of other ecosystem services; e.g. photosynthesis, nutrient cycling, creation of soils

- **Cultural** - non-material benefits obtained from an ecosystem; e.g. recreation, education, aesthetics
- **Regulating** - benefits obtained from regulation of ecosystem processes; e.g. pollination, decomposition, water purification
- **Provisioning** - products obtaining from ecosystems; e.g. wood fuel, medicine, potable water

- **r-strategists** have high reproductive rates. **K-strategists** have lower productive rates and fewer offspring.



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- Demographic transition model, characteristics of each stage
- Soil Layers
- El Nino, La Nina
 - Occurs every 3-7 years
 - Normal Conditions
 - * Warm surface currents run toward Australia
 - * Hits Australia and are shunted downwards, become cooler in the ocean floor (scrapes a bunch of nutrients with it)
 - * Flows toward South America and an upwelling happens
 - * Lots of fish in coast of South America
 - El Nino
 - * Normal wind patterns blow from South America to Australia (east to west, easterlies)
 - * Winds stall or reverse direction
 - * Warm surface waters go toward South America, suppressing upwelling (fish aren't supported by nutrient-rich upwelling)

- La Nina
 - * Same as normal, but stronger
 - * Warm current closer to Australia
 - * Enhanced upwelling
- Effects of El Nino and La Nina:
 - * El Nino
 - Normal conditions, wet in Australia, dry in South America
 - El Nino, dry in Australia and wet in South America
 - Jet stream in North America goes west to east
 - Warmer winters in Canada, wetter and colder in southern states, drier in northeast
 - * La Nina
 - Increased storm potential and ocean evaporation in Australia, increased upwelling in South America
 - Cooler and drier in South America
 - Warmer and rainier in Australia
 - Colder winters in Canada, dry patch in south of America, wet in northwest America
- Types of mining
- Types of agriculture
- Natural gas has fewer impurities than coal and oil, so it emits very little sulfur dioxide or particulates and much less carbon dioxide
- All sources for oil and gas are sedimentary
- Ethanol produces lower carbon dioxide emissions and lower levels of hydrocarbons and nitrogen oxides than gasoline because it is oxygenated
- Hydrogen fuel cells take the chemical energy in molecules of hydrogen and oxygen gas to generate electricity, producing H_2O and heat.
- **Low-pressure** systems suck air up, spin counter-clockwise. **High-pressure** systems push air down and are associated with blue skies.