

- I. Tides
 - A. Daily changes in sea level caused by gravity of Moon and Sun
 - 1. Water and Earth are pulled toward Moon and Sun
 - 2. high tide comes in as 'flood tide'
 - 3. low tide recedes as 'ebb tide'
 - 4. Unequal tides created by location of bulge with respect to latitude
 - B. Monthly cycle
 - 1. 29 ½ day Lunar orbit around Earth
 - 2. spring tides are not in spring—when Moon and Sun bulges amplify
 - 3. neap tides are of less pronounced
 - C. patterns
 - 1. diurnal—daily alternation
 - 2. semidiurnal—twice daily alternation
 - 3. mixed—two unequal highs and two unequal lows
 - D. tidal current
 - 1. through inlet in barrier island
 - 2. deposits material in lagoon and on seaward side
- II. Axial Tilt and Orbit around Sun—
 - A. Earth tilts 23.5° to orbit around Sun
 - B. Latitudes of Sun incidence
 - 1. polar circles—Arctic, Antarctic
 - 2. tropical circles—Cancer, Capricorn
 - 3. equator
 - C. Days corresponding to Sun incidence
 - 1. solstice—overhead Sun at tropical circle—June 22, December 22
 - 2. equinox—overhead Sun at equator—March 22, September 22
 - D. Day length varies with latitude and season, due to circle of illumination
 - 1. longest/shortest at solstice, at high latitudes
 - 2. equinox—equal day and night all over the world
- III. Heating
 - A. Greater heating capability with higher Sun angle
 - 1. latitude controls on Sun energy
 - 2. seasonal controls on Sun energy
 - B. Low latitudes have high Sun angle year round
- IV. Incoming Solar Radiation
 - A. Temperature Variation greater in areas closer to poles
 - B. Temperature Distribution—affected by land-water relation as well as latitude