

Marine Provinces (Ch. 3)

- Active vs. passive margin-type ocean
- Continental margin of a passive margin
 - Cont. shelf, cont. slope, cont. rise
 - Submarine canyons, Turbidity currents, turbidies (Bouma's sequence) submarine fans, mud waves
- Abyssal Plains
 - Seamounts, seaknolls, gyouts, atolls, escarpments, fractures
 - CCD, red clay, Fe-Mn nodules
- Mid Oceanic Ridges/Rises (MOR)
 - Rift valley, transform faults, black and white smokers, vent glow, chemosynthetic ecosystem
- Oceanic trenches & Volcanic arcs along active margin-type ocean

Marine Sediments

- Lithogenous
 - Gravel, sand, silt, clay
- Hydrogenous
 - Limestone, chert, salt, gypsum, Fe-Mn nodules
- Biogenous
 - Diatoms, radiolarians, foraminifera, corals, ooze (organic mud), chalk, limestone (above CCD)
- Cosmogenous
 - Meteorites, microtektites
- Controlling Factors: delivery, dilution, destruction

What to know for the lab?

- Magnetic field intensity = dipolar field + remanent magnetism of ocean floor
- Mirror image of magnetic anomaly patterns with respect to M.O.R and ages
 - Sea floor spreading rates = distance from M.O.R/age of ocean floor at that distance)
 - Hot Spots and movement of volcanic islands over hot spots (their relations to directions and rates of plate movement)

What to know for the lab (Ex. 5)?

- Passive Continental Margin features
- Features associated with plate boundaries
 - Know the names of various features found in convergent and divergent boundaries (Figures in lab)
- Nature of M.O.R and East Pacific Rise
- Ocean Sediments (i.e. loose and soft materials)
 - Relationship between abyssal plain & sediments
 - What type of sediment will you find in various physiographic zones?

Physical Oceanography

- What is Physical Oceanography?
- Forces and factors in air-sea interaction
 - Exogenous vs. endogenous force
 - Interconnectedness of forces
- What will we study in physical oceanography?
 - Global wind circulation
 - Surface ocean currents
 - Deep ocean currents
 - Upwelling/downwelling
 - El Nino
 - Waves
 - Tides

Global Wind Circulation

- Driving Forces
 - Pressure gradient
 - Coriolis effect (**Lab exercise 9**)
 - Friction
- Global wind circulation patterns
 - Know the main latitudes and main low and high pressures zones
 - Westerlies, easterlies, trade winds, etc.
- Surface ocean currents
 - Subtropical gyres
 - Upwelling-downwelling (coastal and equatorial)
 - Ekman spiral or transport