

What to Know for the Lab?

- Latitude vs. longitude (why in angle?)
- Great circles vs. small circles
- Map projection
 - Transformation from 3-D globe to 2D map
 - Distortion associated with projection
- Antipodal point
- Hypsographic curve
- Histogram or bar graph

Plate Tectonics

- What is continental drift?
- What evidence did A. Wegener use to pursue the concept of continental drift?
- Why the idea of continental drift didn't fly?
- What is plate tectonics? How many plates are there?
- Who discovered the sea-floor spreading and the convection currents in the mantle?
- How do these concepts relate to plate tectonics?
- Know the major features associated with three different types of plate?

What to Know for the Lab?

- Marine charts (Topo maps of oceans)
 - Sounding to determine water depths
 - Bathymetry vs. hydrography
- Bathymetric contours from soundings
 - Rules about contours
 - Drawing cross section along a line
- Magnetic declination
- Compass Rose on marine charts
- Parallel Rulers
 - Charting navigational directions

Plate Tectonics (Cont'd)

- Know major characteristics (e.g. occurrence of volcanoes, earthquakes, trenches, mountain ranges, submarine volcanic ridges, black smokers, etc.) associated with three types of plate boundaries (convergent, divergent, transform) and geographic locations where you are likely to find such boundaries.
- What is a rift valley? Along what plate boundaries are you likely to find a rift valley (e.g. East African Rift Valley, which is also called the Red Sea)?

Plate Tectonics (Cont'd)

- Where (i.e. along what type of plate boundaries) do the new ocean floors form and where do the old ocean floors destroyed?
- What is the Ring of Fire? Why it this important for us to know (i.e. what happens there)?
- Why do ocean floors get younger and deeper away from mid-ocean ridges?
- Know that the Earth itself is about 4.6 billion years old. Why isn't there any ocean floor older than 200 million years old?

Magnetism & the Plate Tectonics

- What are the components of magnetic field?
 - Dipolar magnetic field, remanent magnetism
 - Magnetic declination vs. inclination
- What is magnetic (+ and -) anomaly? Who first demonstrated the magnetic anomaly patterns of ocean floors? How do the magnetic anomaly patterns of ocean floors support the idea of plate tectonics?
- What is polar wander curve? How do polar wander curves support the idea of plate tectonics?

Plate Tectonics & the Wilson Cycle

- What evidence did the ODP collect that support the concept of plate tectonics?
- How do the presence of hot spots verify the plate movement and their rates?
- What is the Wilson Cycle?
- Know examples of each of the stages or components of this cycle as they relate to evolution of oceans.