CONTINENTAL MARGINS
- Origin of continental shelves
- Contrasting types of continental margins
- Submarine canyons on continental margins
- Continents vs. Ocean Basins

Typical profile: Shelf, Shelf break, Slope, Rise

Continental shelf
- Flooded continent and coastal plain
- Exposed during ice ages (lower sea level)
- 5-500 km wide; up to 200 m deep

Shelf break
- Edge of shelf
- Abrupt change in slope - Why?

Continental slope
- Continent/ocean boundaries
- 10-100 km wide
- Depth to base of slope varies
  - roughly 3,000 m in Atlantic
  - roughly 8,000 m in Pacific (marginal trenches)
- What forms them?
  - In passive (no subduction) margins: Edges of Initial rift that formed the ocean
  - Subduction zones: crunched-up material at edge of shelf

Continental rise
- Slope/ocean basin transition, gently sloping
- Well developed in Atlantic; uncommon in Pacific
- 100-1,000 km wide
- Origin: thick accumulation of sediment from land

TYPES OF MARGINS
1) "Passive" margins
   - Typical of Atlantic -- well-developed shelf, slope, rise
   - Origin (plate tectonics):
     - Rifting of continent to form new ocean
     - Margin is "trailing edge" of a continent-ocean plate
     - "Constructive" margin -- built seaward by sediment deposition
2) "Active" margins
   - Typical of Pacific -- narrow shelf, narrow & deep slope, rise uncommon
   - Origin (plate tectonics)
     - Convergent or transform boundary
     - Margin is "leading edge" of plate
SUBMARINE CANYONS
Steep-sided, V-shaped valleys on shelf and slope
Origin -- erosion by turbidity currents (sediment slurrys)
  Initiated by earthquake or other "event"
  Sediments break loose- “avalanche”
Currents erode canyons as they flow downslope
Deposition of sediments on rise

Continents vs. Ocean Basins
Why does the earth have continents and oceans, instead of just a smooth solid surface
with a thin (~3000 m) layer of water everywhere?
(Class discussion)