Ocean Basins

- Shows distribution of surface relative to sea level
  - ~67% below sea level
  - Mean ocean depth ~3.8 km (well below sea level)
  - Mean land elevation ~840m (~at sea level)
- Is this significant?

Hypsometric Curve

- What is the elevation of Champaign?

- Shows distribution of surface relative to sea level
  - ~67% below sea level
  - Mean ocean depth ~3.8 km (well below sea level)
  - Mean land elevation ~840m (~at sea level)
- Is this significant?
Consider Ocean Basins:

Do you have a feel for the shape and bathymetry of the oceans?

Ocean Basins:

- Shape of Ocean Basins
  - Irregular?
  - Distribution?
  - Depth?

This implies the process that forms oceans is complex.
Ocean Basins:

- Are they isolated/restricted
  - Where do they connect?

Ocean basins: Connected?

- Look at the shallow shelf (<130 m in light blue)
- So, how well do oceans communicate?
Bathymetry: What do you Expect?

• Where are the oceans deepest?
  – In the center of the basins?
  – At the margins of the basins?

• What sort of seafloor topography do you expect?
  – Smooth?
  – Symmetrical?
  – Textured?

So, are the processes that form the seafloor complex and worth studying?
If you could walk along the seafloor, what would the topography be like?

- We will learn the details later in class
- For now, see the 4 main geographic features: Passive margin, abyssal plain, mid-ocean ridge, active margin/trench
Passive Margin = trailing edge of continent

Abyssal Plain

Flat - VERY FLAT <1°
Deep: 4000 - 6000 mbsl
Covered in sediment
Mid-Ocean Ridge
- Volcanic Mountain chain
- Average 2500 mbsl

Active margin/trench = leading edge of continent
Preview of Ocean Sediment:

What do you find on a beach?
What about on the Gulf of Mexico?

What is Fundamentally different about these three coastlines?

TECTONIC SETTING

N. Pacific Coast?
Sediment Here?

Very fine sediment: mud

- How does it get there?
Pelagic “Rain”!

- That’s how!

Avalanche too! (‘Tubidite’)

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Monterey Canyon

What does all the sediment rest on?