

## REMINDERS

❖ Two required essays are due by March 27, 2018. (A third may be used for extra credit in place of a "Think Geographically" essay.)

ESSAY TOPICS (choose any two):

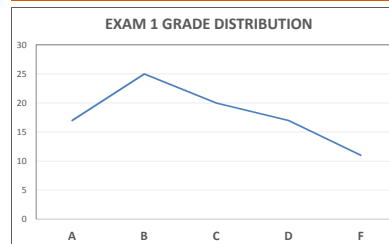
- Contributions of a noted geographer, earth scientist or explorer (chapter 1)
- Relationship of climate change to a listed current event topic (ch. 2)
- Discuss a natural process that is deemed a natural hazard (ch. 3)

❖ Extra Credit: "Think Geographically" Essays from any five of the textbook's 12 chapters.

- Last day to submit is May 15 but it is best to do them as you finish reading a chapter.

- Any essay may be submitted before the deadline.
- Don't wait for the night before to write them!!

## Revised Exam 1 grade distribution with additional extra credit points (as per syllabus)



Maximum Score = 109  
Highest score = 104  
8 people = 95+  
REVISED DISTRIBUTION

17 - A  
25 - B  
20 - C  
17 - D  
11 - F  
4 - absent

Original Grade Distribution  
Maximum score = 105  
Highest score = 102  
4 people = 95+  
13 - A 18 - D  
25 - B 12 - F  
21 - C 4 - absent

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## GEOG 101 Part II People and their Physical Environment

### 11: The Hydrosphere

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Hunter College Geography

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## PART II: People and their Physical Environment

- ✓ I. Introduction to the Physical Environment
- ✓ II. Earth-Sun Relationship
- III. Earth Systems
  - A. The Hydrosphere: Oceans
  - B. The Atmosphere: Weather and Climate
  - C. The Lithosphere: Geologic Influences
- IV. Earth Habitat
  - A. Biosphere
  - B. Natural Controls and Cycles
  - C. Human Impact
  - D. Natural Hazards

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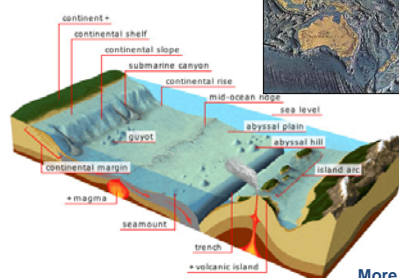
## HYDROSPHERE: Overview

- Earth is the Water Planet:** 71% of surface is water and 97% of all water is in the oceans.
- Ocean Movements:** The oceans are a dynamic system with much activity and interactions.
- Oceans and People:** Ocean play an important role in earth environment, influencing many things people do.

<https://www.youtube.com/watch?v=vP4QTYVQTUo> 2 min oceans video

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## OCEAN BASIN TOPOGRAPHY



The ocean floor is not flat!

More on it when we do the geology section.

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## MOVEMENTS in the OCEAN

❖ **Ocean current:** a ribbon of moving water with unique characteristics generated by earth's **rotation** and by **differences in water salinity and water temperature**.

- Movements are both horizontal (surface) and vertical (deep sea).
- **Gyres** are giant circulation systems.

[https://www.youtube.com/watch?v=5xQP\\_B18vMw](https://www.youtube.com/watch?v=5xQP_B18vMw)  
3 min video on salinity

❖ **Waves are generated by mainly by wind.** Waves alter the coastline through erosion and deposition.

❖ **Tsunamis are seismic sea waves** (falsely called tidal waves) generated by earthquakes and underwater landslides.

❖ **Tides** (moving water bulges) are caused by earth's rotation and the gravitational pull of the moon.

- **Tidal bore** (a true tidal wave) is the leading edge of the incoming tide.
- **Tidal range** is the difference between high and low tide.

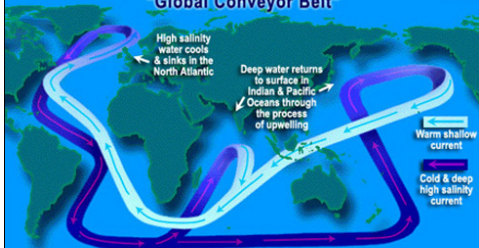
## SURFACE OCEAN CIRCULATION



Currents are designated **warm** and **cold** by their source region, not their temperature. **Surface currents influence climate on land.**

## DEEP-SEA OCEAN CURRENTS

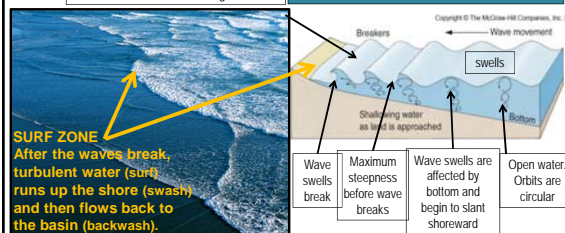
Generalized model of thermohaline circulation: "Global Conveyor Belt"



Thermohaline circulation <https://www.youtube.com/watch?v=QVvXDIOkBY> 3 min no sound

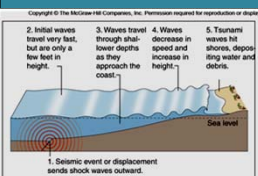
## WAVE FORMATION

The "wave swells" grow in height until they reach a point beyond which they cannot support themselves and "break" forming breakers.



**Most waves are wind generated.** Friction from the bottom of an air mass moving against the top of the water causes the water to move in orbits and pile on top of itself creating **swells**. Breaking waves in the surf zone shape the shoreline.

## TSUNAMI: A shock generated wave



**CAUSES:**

- Earthquake
- Landslide
- Meteor strike

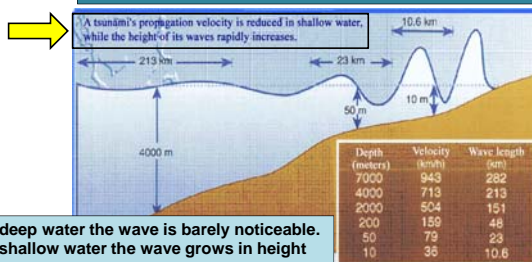
Sendai, Japan (2011) before and after being hit by the tsunami.



<https://www.youtube.com/watch?v=StwZbGh7Cw>  
earthquake tsunami 3D demo 1 min

<https://www.youtube.com/watch?v=Ks1QogN8DUU> NOAA landslide tsunami animation 2 min

## Tsunamis and the Ocean Floor



**In deep water the wave is barely noticeable. In shallow water the wave grows in height proportional to its length,** similar to a flat piece of paper being pressed against a hard object.

## OCEANS and PEOPLE

- ✓ Oceans help to **equalize the Earth's temperature.**
  - ✓ They are the **chief source of atmospheric moisture.**
  - ✓ They are an important **link in the carbon/oxygen cycle.**
  - ✓ They are a **source of food.**
  - ✓ They are a **source of minerals.**
  - ✓ Their rise and fall effects **coastline habitation.**
- ✓ They are used for:
    - **transportation**
    - **drinking water** through desalinization process
    - **waste disposal**
    - **recreation.**
  - ✓ They are a major **barrier to interaction.**
  - ✓ Historically ocean coasts have been the **gateway to cultural interaction.**

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## NEXT

### THE ATMOSPHERE:

### Weather and Climate

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