Geog 3A: Ocean and Atmosphere

Lab 5: Tsunamis

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Outline

• Background knowledge on Tsunami (Section I Conceptual Framework)

• Experiments (Section II Google Earth)
Background on Tsunami
(Section I Conceptual Framework)

What is Tsunami?
A tsunami is a special ocean surface wave caused by a **sudden large-scale disturbance** resulting in the **vertical displacement**.

Background on Tsunami
(Section I Conceptual Framework)

The characteristics of Tsunami:
• Solitary wave: travels with little loss of energy
• Long wavelength (225 mi)
• Short period (0.5 hours)
• Therefore, fast speed in the open ocean (450 mph)
Background on Tsunami

(Section I Conceptual Framework)

How does the tsunami generate?

Sudden disturbance +
Vertical displacement

• Earthquake
• Landslides
• Volcanoes
Background on Tsunami (Section I Conceptual Framework)
What is plate tectonic?

The lithosphere, which is the rigid outermost shell of a planet, is broken up into tectonic plates.

http://en.wikipedia.org/wiki/Plate_tectonics
Background on Tsunami
(Section I Conceptual Framework)

How does it applied in the generation of Tsunami?
Earthquakes, volcanic activity, mountain-building, and oceanic trench formation occur along these plate boundaries, because of the relative strong motion.

http://en.wikipedia.org/wiki/Plate_tectonics
Background on Tsunami (Section I Conceptual Framework)

Types of plate boundary:
Background on Tsunami
(Section I Conceptual Framework)

What are the impacts of Tsunami?

It is destructive!
Background on Tsunami (Section I Conceptual Framework)
But how do we measure the tsunami?

**Tsunami run-up**: the height above sea level to which a tsunami reaches.

**Inundation**: the distance from shore inland to which a tsunami reaches.
Experiments
(Section II Google Earth)

Case: Tsunami in Indian Ocean on December 26, 2004.

Tools: Google Earth

Files: Boxing Day Tsunami KMZ file
       NGDC Wave Travel Time Overlay
       (download them from GS, and open them!)
Experiments (Section II Google Earth)

Several tools you need to know:

**Ruler**: measure distance

**Search bar**: search the place you are interested.

**Layer**: you could check/uncheck the layer to control the appearance or disappearance of it.

**Little arrow**: You could click it to unfold the file, then you could see and manipulate the sub-layers.
Next week
Final Review! (Practice Exam 2)

No cheating and plagiarism!

Due for Lab 5 is NEXT WEEK!
Submit it at the beginning of the section.