GEOG 3B
Land Water and Life
Summer 2016
Review Session II

Gengchen Mai
08/29/2016

- Time is flying so fast.
- Learning all the basic concepts within five weeks is very challenging.
- The final will NOT be an accumulated exam.
- Final -> Biogeographic processes to Fossil Fuels
- Hope you find these TA sessions useful

- * Comprehensive understanding is not required

Overview

- 882- E: Green scantron
- Multiple choice
- 35 questions

- Introduction to Geology
- Plate Tectonics and Volcanoes
- Earthquakes and Tsunamis
- Weathering, Karst Landscapes, and Mass Movement
- Soil Characteristics and Properties
- Soil Order

- TA Evaluation

Introduction to Geology

- Geologic time scale *
- Earth's Structure and Internal Energy
  - Isostasy and Buoyancy
- Geologic Cycles (attributes, process)
  - Igneous(extrusive/intrusive, continental/oceanic)
  - Sedimentary
  - Metamorphic
  - The Rock Cycle
- Plate tectonics
  - Formation of and Breakup of Pangaea

Plate Tectonics and Volcanoes

- Divergent Plate Boundaries (Red Sea)
  - Sea-Floor spreading centers
  - Upwelling forms new seafloors at mid-ocean ridge
  - **Construction** process of new land (Not Mountain)

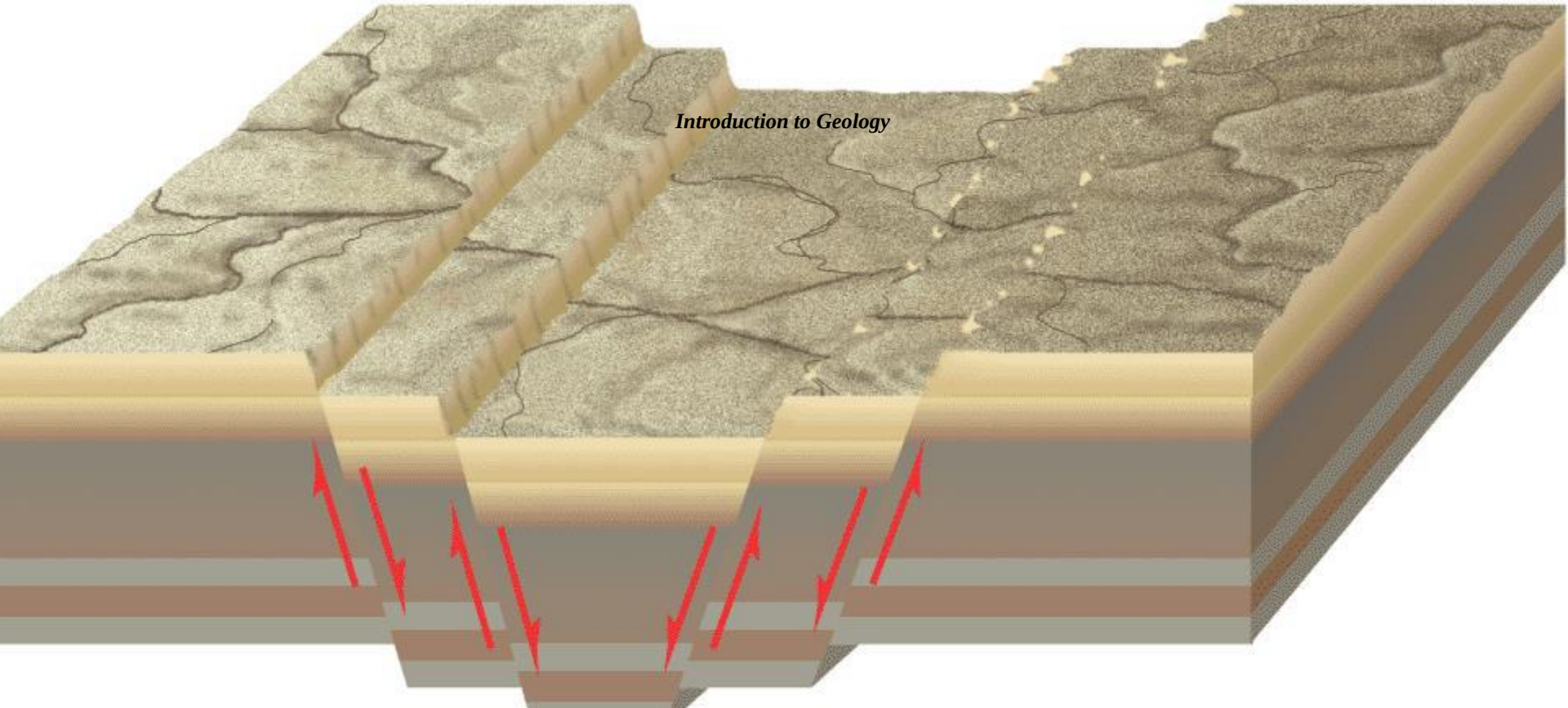


Plate Tectonics and Volcanoes

- Convergent Plate Boundaries
  - Compressional forces result in collision zones (where 2 plates collide)
  - **Destruction** processes of land
  - Oceanic – oceanic (Subduction Zone, Japan)
  - Oceanic – continental (Subduction Zone, Andes-Cascades)
  - Continental – continental (Not Subduction Zone, Himalaya)

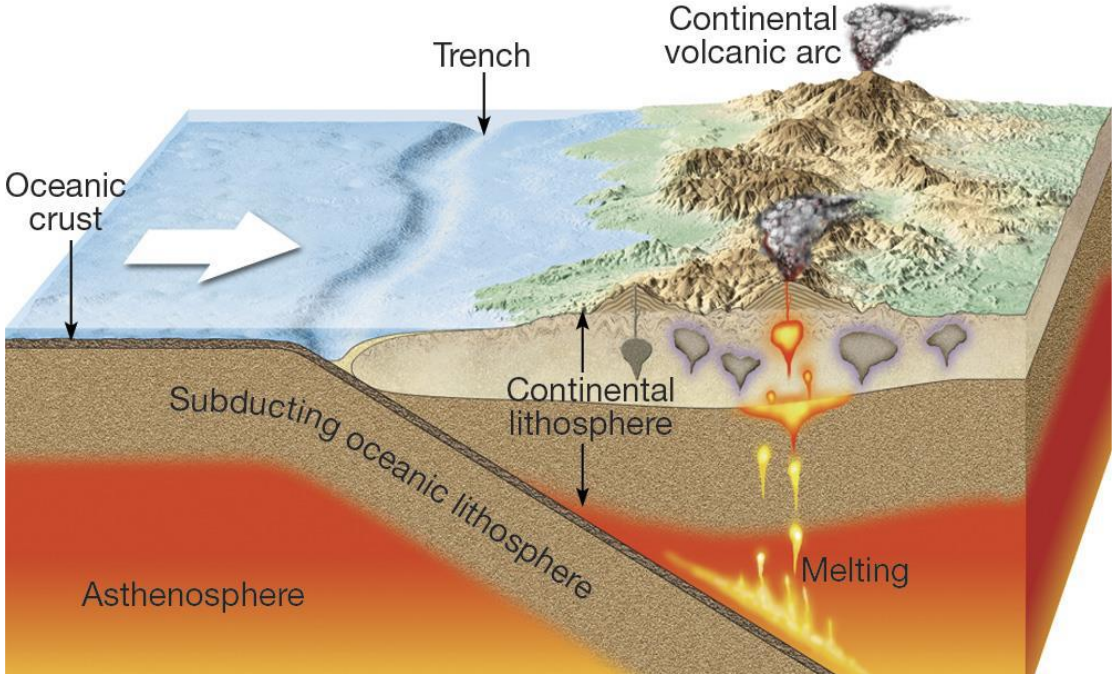


Plate Tectonics and Volcanoes

- Transform Plate Boundaries (San Andreas Fault)
  - Shear forces result in two plates sliding past each other

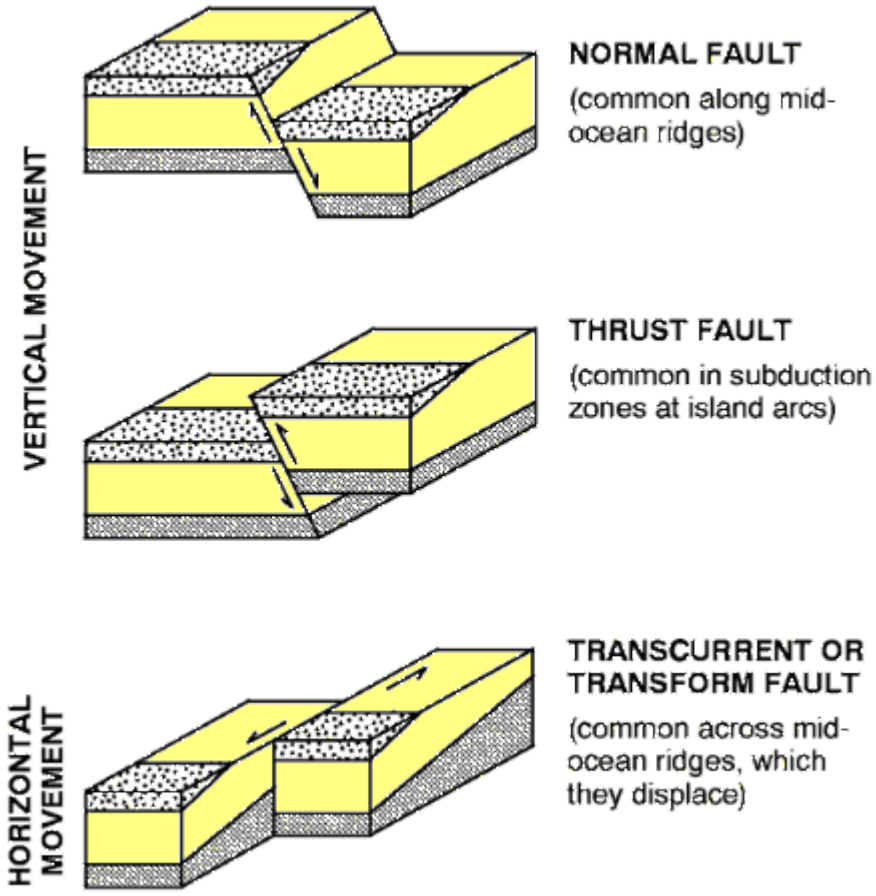
- Smooth edge – converge zone
- Zigzag edge – divergent zone
- San Andreas – transform plate boundaries

Plate Tectonics and Volcanoes

- Volcanic activities
  - Formation:
    - Along subduction boundaries
    - Along sea-floor spreading centers on the ocean floor and rifting of continental plates
    - At Hotpot
- Shield vs. Composite Volcano (example)

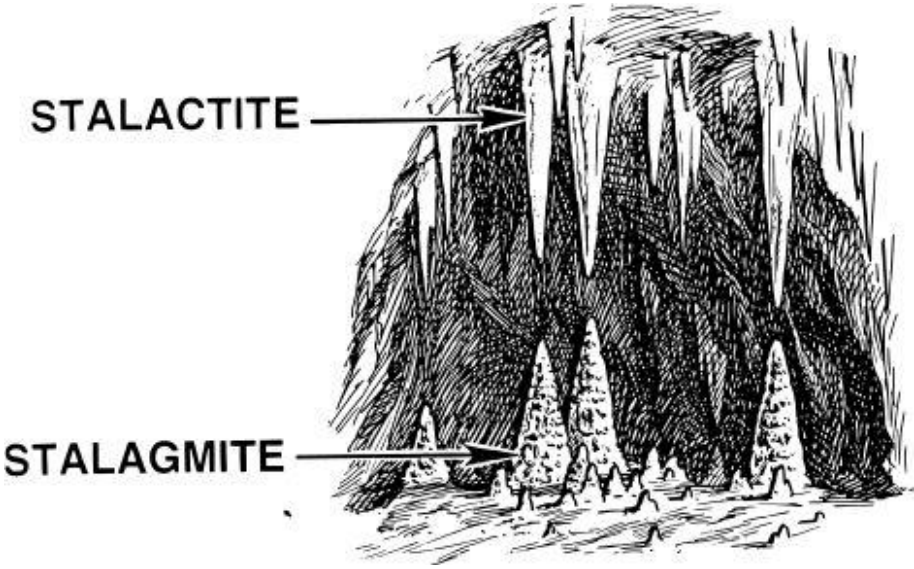
Earthquakes and Tsunamis

- Fault
  - 3 types of faults
    - normal – divergent
    - Reversing - convergent
    - strike-slip - transform
  - Hanging wall/food wall
- Earthquakes
  - Seismic Waves
    - Body waves
    - P and S
    - Surface waves
    - R and L
  - Epicenter/focus
  - Ring of Fire
- Tsunamis
  - Japan earthquake and



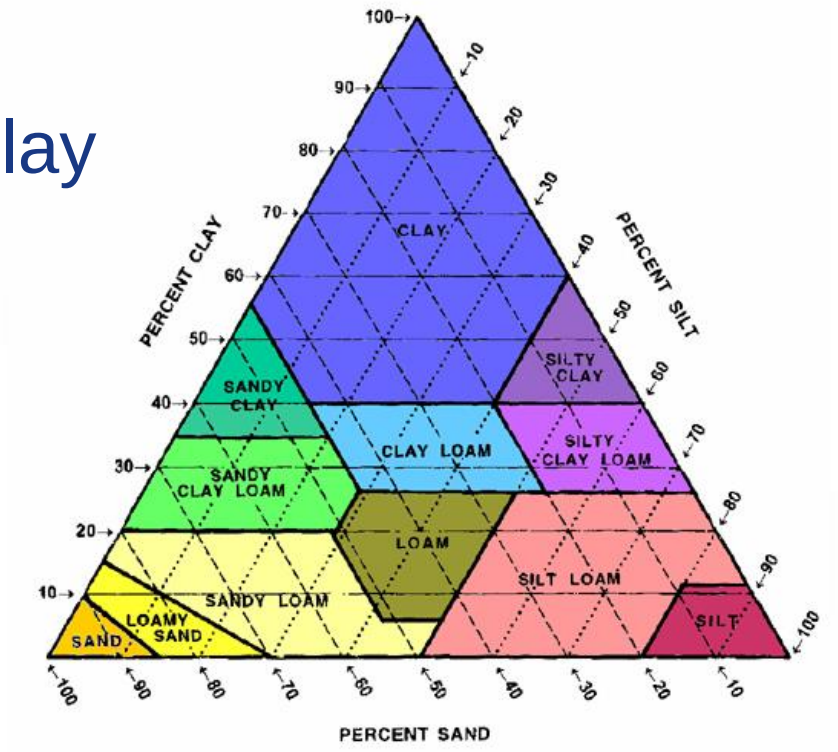
Weathering, Karst Landscapes, and Mass Movement

- Landforms and Landscapes
- Weathering Processes
  - factors
    - Physical Weathering
      - Frost action
      - Root Wedging and Fire
      - Crystallization
      - Pressure-Release Jointing
      - Exfoliation
    - Chemical Weathering
- Karst Landscapes
- Mass movement
  - Landslides
  - Fire and rainfall



Soil Characteristics and Properties

- Major Soil Horizons (OAEBCR)
- Influences on Soil Formation
  - S=ClORPT(H)
- Young vs Mature Soils
- Permeability: Sand, Silt and Clay
- Soil Texture Triangle



Soil order

- Climate influences on soil orders
- Unique properties of Aridisols, Oxisols, Gelisols, Histosols, Andisols, Mollisols and Entisols
- Soil order
  - Orders With Unique Parent Materials
  - Orders Formed in Unique Environments/Climate
  - Orders by Age
  - Orders Developed Under Unique Vegetative Ecosystem