TEST 2 Review G709 Summer 09

What's inside? (Chapter 6)

deep canyons

regolith
bed rock — cover (rocks form @ surface
\ basement (rocks form @ depth

drill — cont basement – "granite"
ocean basins – "basalt"

xenoliths peridotite

seismic waves
- refract
- reflect
- split

cross rock types

refract { slow-fast ⇒ bend towards boundary
fast-slow ⇒ bend away from boundary

discover: – MOHO — slow crust / fast mantle
cont crust THICK 30-70km
ocean crust thin 6-10km
– core mantle boundary — fast mantle / slow core
– outer core-inner core bound — slow outer core / fast inner core

→ shadow zones
P-wave (103 to 143) refracted into core then out again
S-wave (103 to 180°) liquid outer core

Ray Paths (activity)

P - P wave mantle
S S wave mant
c reflected from CMB
K P wave OC
i reflected from IOB
I P wave ~~inner core~~ IC
J S wave IC

Earth Structure { crust, mantle, outer core, inner core } known comp of each layer.

seismic velocity varies w/ ρ — density → high ρ → slow
κ = bulk modulus } high κ/μ → fast
μ = shear modulus }

& ρ κ/μ varies w/ composition controls ρ
T — high T
P — high P higher ρ

- compare { predicted travel time, observed travel time } ⇒ lateral heterogeneities warm & cold spots in mantle

"tomography"

Plate Tectonic Chpt 7

Sea Floor Features - trenches
ridges
abyssal plains
cont shelves

Sea Floor Spreading
- crust created at ridges
- crust subducted @ trenches
- evidence → magnetic Stripes
- explains young seafloor (oldest ~200 m.y.)

Plate Tectonics
BASIC IDEA surface broke into plates
plates move independ
@ edges - EQ volc, mtn
@ center - stability

defining plates
edges { seafloor feature
EQ
volcanoes
mtns
bottoms: lithosphere (high velocity rigid
asthenosphere (low velocity partially melted)

types of boundaries
know { motion
features
& EQ assoc
w/ each

divergent
transform
convergent

EQs & volcanoes & tsunamis (Chapt 9)

Volcanoes

Eruption Prediction:
- MSH learning exp
- Nevado Del Ruiz - Tragedy
- Mt Pinatubo - Success

- EQs → precede eruptions for weeks
  - may peak prior to BIG ERUPTION
  - harmonic tremors → movement of magma Q inc.
  - focii - outline magma chambers Q?

Tsunami (activity [illegible] that Shook the world)

generation - EQ, landslide, impact
↳ EQ volc trigger

Essay: how come tsunami will not affect [illegible] when [illegible] so [illegible] @ shore

travel - open ocean - shallow water wave
period 15-30min, amplitude - a few feet
wavelength - 100s of miles speed ~500 mph.

@ coast - slow, shorten, steepen, heighten

PNW EQs

Prediction