ESS 106 Living with Volcanoes

Review Material for First Examination

Wednesday, 30 January 2019, 1:30 to 2:15 PM

Any material from the lectures and reading may appear on the midterm exam, which will be closed. The exam will be multiple-choice. Bring a standard UW purple Scantron sheet and at least one #2 pencil. The exam will cover everything reached by the end of the lecture on Monday, 28 January.

Likely topics, with some examples, include:

- early development of the solar system and initial differentiation of Earth
  
  Example: What was the Great Iron Catastrophe?

- direct and indirect methods of examining Earth’s deep interior
  
  Example: How do seismic waves indicate that the outer core is fluid?

- Earth’s large-scale structure from a compositional and a behavioral viewpoint
  
  Example: What is the difference between the lithosphere and the asthenosphere?

- plate tectonics, particularly types of plates and plate boundaries
  
  Example: What volcanic processes occur (or don't occur) at various boundaries?

- formation of oceanic crust at mid-ocean ridges
  
  Example: What is the source of magma at mid-ocean ridges?

- magnetic seafloor stripes and their relation to volcanism
  
  Example: Why does Earth's fluctuating field produce seafloor stripes?

- hotspots, particularly the Hawaiian-Emperor and Yellowstone systems
  
  Example: How does the age of hotspot volcanoes indicate plate direction?

- types of plutons
  
  Example: How would one identify a sill?

- igneous rock textures and compositions (bulk chemistry, not specific minerals)
  
  Example: How does igneous grain size relate to magmatic cooling rate?
sources of magma from decompression and from heating

*Example: How is magma produced at a subduction zone vs. at a mid-ocean ridge?*

the relationship between composition and eruptive styles in various settings

*Example: How does viscosity relate to likely eruptive style?*

general behavioral differences between mafic, intermediate, and felsic volcanism

*Example: How do the eruptive temperatures of magmas differ?*

eruptive history of Mt. St. Helens, range of styles, trends

*Example: How does St. Helens compare to the other major Cascade peaks?*

St. Helens events leading up to 18 May 1980, monitoring, responses

*Example: What and where was The Bulge?*

St. Helens events of 18 May 1980, sequences, effects, consequences

*Example: Which part of the eruption produced widespread flattened trees?*

St. Helens since 18 May 1980 and applicability elsewhere

*Example: Approximately when were the two episodes of dome building?*