

**Chapter 5
Volcanoes and
Other Igneous
Activity**

Today/Friday

- What are the different materials that come out of a volcano? What are the compositions involved?
- What are different kinds of volcanoes?
- Where do they erupt?
- What makes a volcano erupt the way it does?

First, a video on volcanic hazards

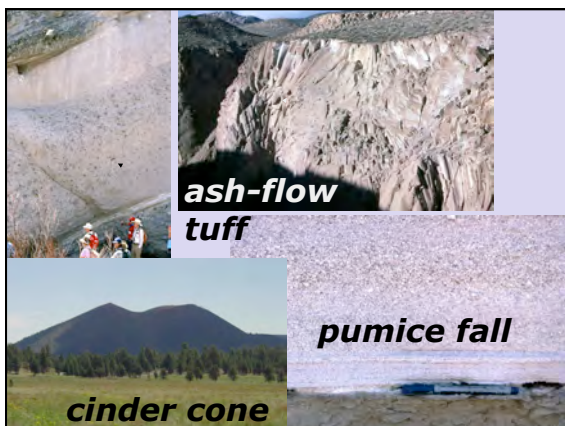
(If you like amazing footage of cool places, you'll like this movie)

- Seven kinds of volcanic hazards are outlined -- list and describe each on a piece of paper
- Put them in a list of least dangerous to most dangerous and include a sentence about why you ordered them as you did

What are the different materials that come out of a volcano?

Terms to memorize...

- **Pyroclast**: anything **exploded** out of the vent
 - **ash** (very small fragments)
 - **lapilli** (small rocks) and **bombs** (large rocks)
 - **pumice** and **cinder**
 - **ash flow**, also called **pyroclastic flow**
 - **ash-flow tuff**, also called **pyroclastic -flow deposit**



What are the different materials that come out of a volcano?

Terms to memorize...

- **Lava**: magma that is **effused** (that flows) out of the vent, no explosion
 - crystal size depends on cooling speed
 - basalt
 - a'a
 - pahoehoe
 - rhyolite, andesite



lava flow

Andesite a few thousand years old




Basalt a few thousand seconds old


What are the different materials that come out of a volcano?

Terms to memorize...

- Lahar: Indonesian word for volcanic mudflow: ash + water, + whatever else is around; needs a slope





Mount St. Helens, 1980



Candi Morangan, Indonesia, where lahar met a Hindu temple in ~860 AD

What are the different materials that come out of a volcano?

- **Gases**
 - dominantly H₂O and CO₂, plus CO, SO₂, H₂S ± HF, HCl



- The gas from Kilauea (hot spot) is 37% H₂O, 49% CO₂, and 12% SO₂
- The gas from Erta' Ale (rift zone) is 77% H₂O, 11% CO₂, and 8% SO₂
- The gas from Motombo (convergent) 97% H₂O, 1.5% CO₂, and 3% HCl



nice-looking lake, yes?