Geology of the Hawaiian Islands
Class 9
10 February 2004

Any Questions?

Homework #3
- Web assignment
- Measuring Tilt on volcanoes
- Due Thursday
Life Stages of Hawaiian Volcanoes

- Hawaiian volcanoes evolve thru a number of characteristics during their lifetimes.

3 major stages that Hawaiian volcanoes go through

- Shield-building
- Post-caldera
3 major stages that Hawaiian volcanoes go through

- **Shield-building**
- **Post-caldera**

Principal Period

- **Principal Period**

Erosion

Streams and waves attack the volcanoes

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Example: Oahu (Ko`olau Volcano)

- Evolved through the submarine and subaerial shield-building stages and then became dormant.
- Erosion for about 1-2 my.

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- Rejuvenated New Volcanism
Example: Oahu (Ko`olau Volcano)
- Renewed volcanic activity
- More than 30 eruptions:
  - Cinder, spatter, tuff cones
  - Diamond Head, Koko Head, Punchbowl
- Post-erosional Honolulu Volcanic Series is ~30,000 to 1.1 my old

Example: Oahu (Ko`olau Volcano)
- Youngest flow may be 30,000 yrs old (Sea Life Park - Makapu`u)
- Round Top, Tantalus, Sugarloaf active about 67,000 yrs ago

Stage 1 -- Deep Submarine Stage
Lava initially tholeiitic
Dominated by pillow lavas
Stage 1 -- Deep Submarine Stage
Example: Loihi

Stage 2 -- Shallow Submarine Stage

Shoreline lava activity

Stage 3 -- Subaerial Shield-building Stage
Example: Mauna Loa
Mauna Loa: Classic shield volcano
Broad, gentle slopes

Stage 3 -- Subaerial Shield-building Stage
Lavas still mostly Tholeiitic

Stage 3a -- Giant Landslide Stage
Example: Kilauea

Stage 4 -- Post-caldera Stage
Examples: Haleakala, Mauna Kea
Stage 4 -- Post-caldera Stage
Lavas are usually alkalic
Stage 5 -- Erosional Stage
Example: Kauai

Stage 6 -- Reef growth Stage
Example: Kohala
Stage 7 -- Post-erosional Stage
Examples: Haleakala, Ko`olau

Alkalic lavas common
Nephelinitic lavas also occur
Stage 8 -- Atoll Stage
Example: Midway

Questions??

Homework #3
- Web assignment – See GG103 page
- Measuring Tilt on volcanoes
- Due Thursday (12 February)
Earth Systems Today CD
As a supplement for exam study, work through sections on:
Volcanism
Atoms & Crystals
Rocks & Rock Cycle

First Exam
one week from Today
(February 17th)
- Will be less than 1 hour long
- Will cover all material so far including Homework and Field Trip
- Review on Thursday – come with questions