



Meet the Goddess Pele

Purpose:

CTo identify volcanically active zones on the earth's crust.

Materials: (for groups of two or three)

Cpencil

Cblank map of the world (supplied)

CInternet access (optional)

Scientific Processes:

Cmap skills

Cextrapolating

Cinferring

Canalyzing

Chypothesizing

CUse of the Internet (optional)

Safety Information:

No safety concerns are anticipated.

National Science Standards:

Teaching Standards B, D, E; Assessment Standards A, E; Content Standard D.

Related NASA Resources:

On the Move: Continental Drift and Plate Tectonics Website;

<http://kids.earth.nasa.gov/archive/pangaea/index.html>

Volcanic Features of Hawaii and Other Worlds Slide Set

<http://cass.jsc.nasa.gov/publications/slidesets/hawaii.html>



Volcanoes: A comparison of Olympus Mons (Mars) and Kilauea (Hawaii)
http://cass.jsc.nasa.gov/education/MarsMillennium/volcanos_adv.pdf

SIR-C/X-SAR Volcano Images
<http://www-a.jpl.nasa.gov/radar/sircxsar/volcanoes.html>

Advance Preparation:

As with the previous module of this series ("Does the Earth Have *the Shakes?*"), students' achievement will be enhanced by basic geographic aptitude. As before, be prepared to reintroduce (or familiarize) students with the latitude/longitude coordinate system before attempting this activity.

Reading Level of Original English-Language Version:

Flesch-Kincaid Grade Level 8

Procedure Notes:

Encourage students to work together when attempting to locate the 40 volcanoes. When analyzing the outcome, invite creative answers which are also scientifically sound.

Some students may want to use White-Out or Liquid Paper in order to better view the dots which lie on the (relatively dark) land masses.

A table showing forty recent epicenters is included in this document, however, it is highly suggested that students obtain current earthquake information from Internet sources. An excellent site is the Smithsonian Institution's Global Volcanism Program. This database contains over 1500 volcanoes, that have erupted during the Holocene time. The database may be accessed at the following URL <http://nmnhwww.si.edu/gvp/volcano/vbd_alph.htm>; it may be downloaded and sorted by any one of its fields. Any volcano that lists "historical" as its status has been active in the last few hundred years.

Another fine source of data is Michigan Technical University's Active Volcanoes page. It is accessible at <http://www.geo.mtu.edu/volcanoes/world.html>, and requires a bit more navigation through links to obtain coordinates of active volcanoes. Unlike the Smithsonian data, however, the MTU site includes only recent eruptions, including dates.

Note that latitude/longitude coordinates in these lists are given in *decimal degrees*.



Code	Name	Latitude	Longitude	Code	Name	Latitude	Longitude
1	White Isl.	37°S	177°E	21	Llaima	38°N	15°E
2	Fournaise	21°S	56°E	22	Etna	61°N	152°W
3	Tarawera	38°S	176°E	23	Spurr	54°N	168°W
4	Merapi	8°S	111°E	24	Bogoslof	17°N	93°W
5	Rabaul	4°S	152°E	25	El Chichón	38°N	119°W
6	Langila	6°S	148°E	26	Long Valley	40°N	122°W
7	Manam	4°S	145°E	27	Lassen	41°N	122°W
8	Iliboleng	8°S	123°E	28	Shasta	42°N	121°W
9	Awu	4°S	125°E	29	Medicine Lake	39°N	15°E
10	Pinatubo	15°N	120°E	30	Stromboli	44°N	146°E
11	Taal	14°N	121°E	31	Mendeleev	55°N	162°W
12	Unzen	33°N	130°E	32	Pavlof	53°N	168°W
13	Kirishima	32°N	131°E	33	Okmok	8°S	120°E
14	Kilauea	19°N	155°W	34	Anak	35°N	139°E
15	Coso Mtns.	36°N	118°W	35	Oshima	31°N	131°E
16	Colima	20°N	104°W	36	Sakurajima	5°S	151°E
17	Turrialba	10°N	84°W	37	Ulawun	39°S	175°E
18	Arenal	11°N	85°W	38	Ruapehu	39°S	175°E
19	Galeras	1°N	77°W	39	Fuego	14°N	91°W
20		39°S	72°W	40	Telica	13°N	87°W
					Ruiz	5°N	75°W

Answers to Questions:

1. Students should observe that volcanic activity occurs in "zones," and is most apparent, but not confined to, the edges of continents.
2. Students may observe that the most seismically hazardous areas (from "Does the Earth Have the Shakes?") generally coincide with areas of great volcanic activity. Areas surrounding the Pacific Ocean and the Middle East (among others) are particularly vulnerable.
3. The edges of continents are more volcanically active than their central regions.
4. Mount St. Helens is part of the Cascade Range, and is therefore part of a chain of volcanoes within the "Ring of Fire" surrounding the Pacific.



5. Answers will vary, depending on the geographic area in which this activity is conducted.

6. Volcanoes and earthquakes might be related by some earth processes.

Conclusions:

Volcanoes occur mostly in distinct zones; tie this lesson in with "Does the Earth Have *the Shakes?*" for reinforcement. It's advised to complete the module entitled "This World Is Coming Apart at the Seams!" next.



Paula Messina

