World Geography Academy

Norman, Oklahoma

Wednesday, September 14, 2016

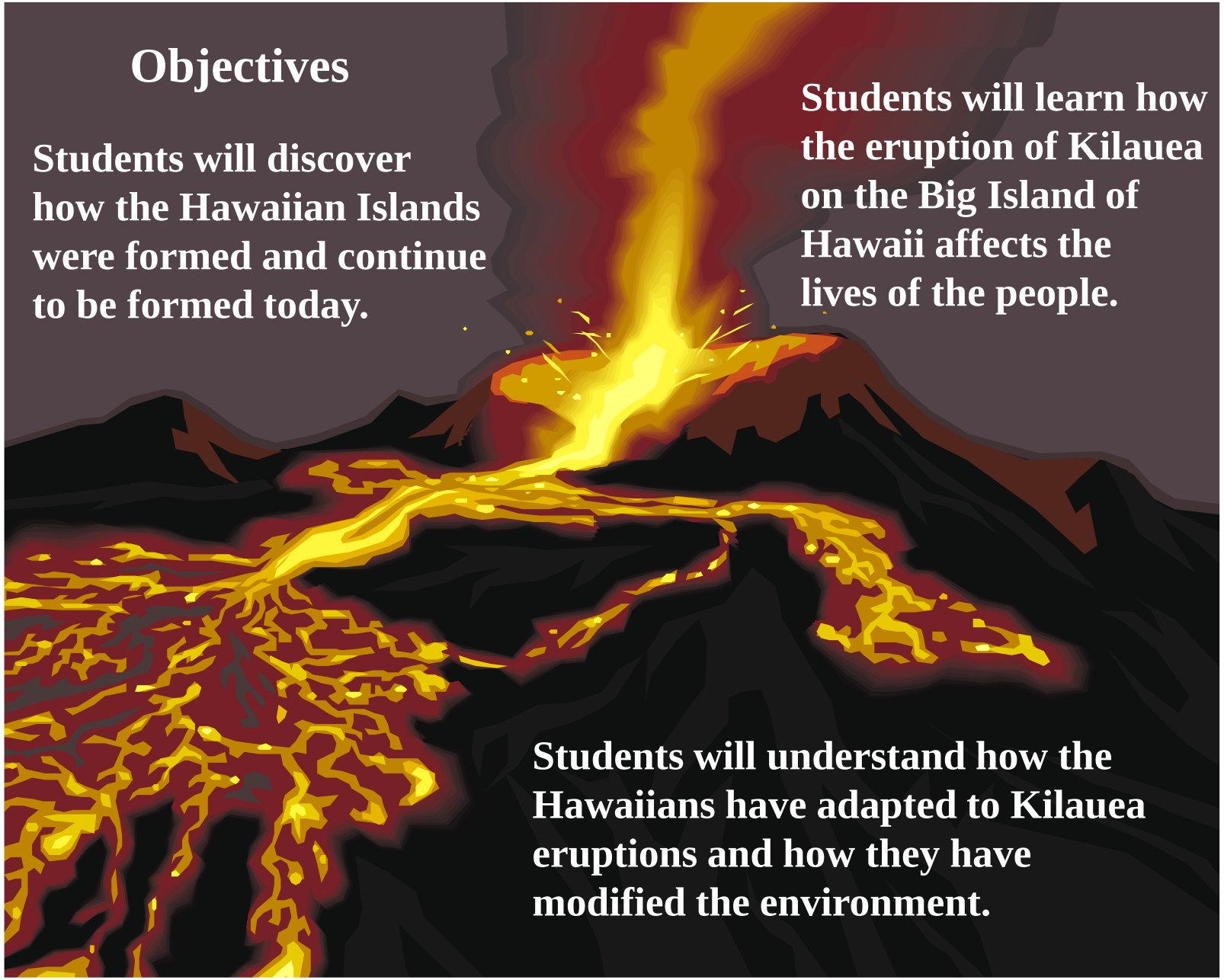
http://earthobservatory.nasa.gov

Volcano by Jimmy Buffet

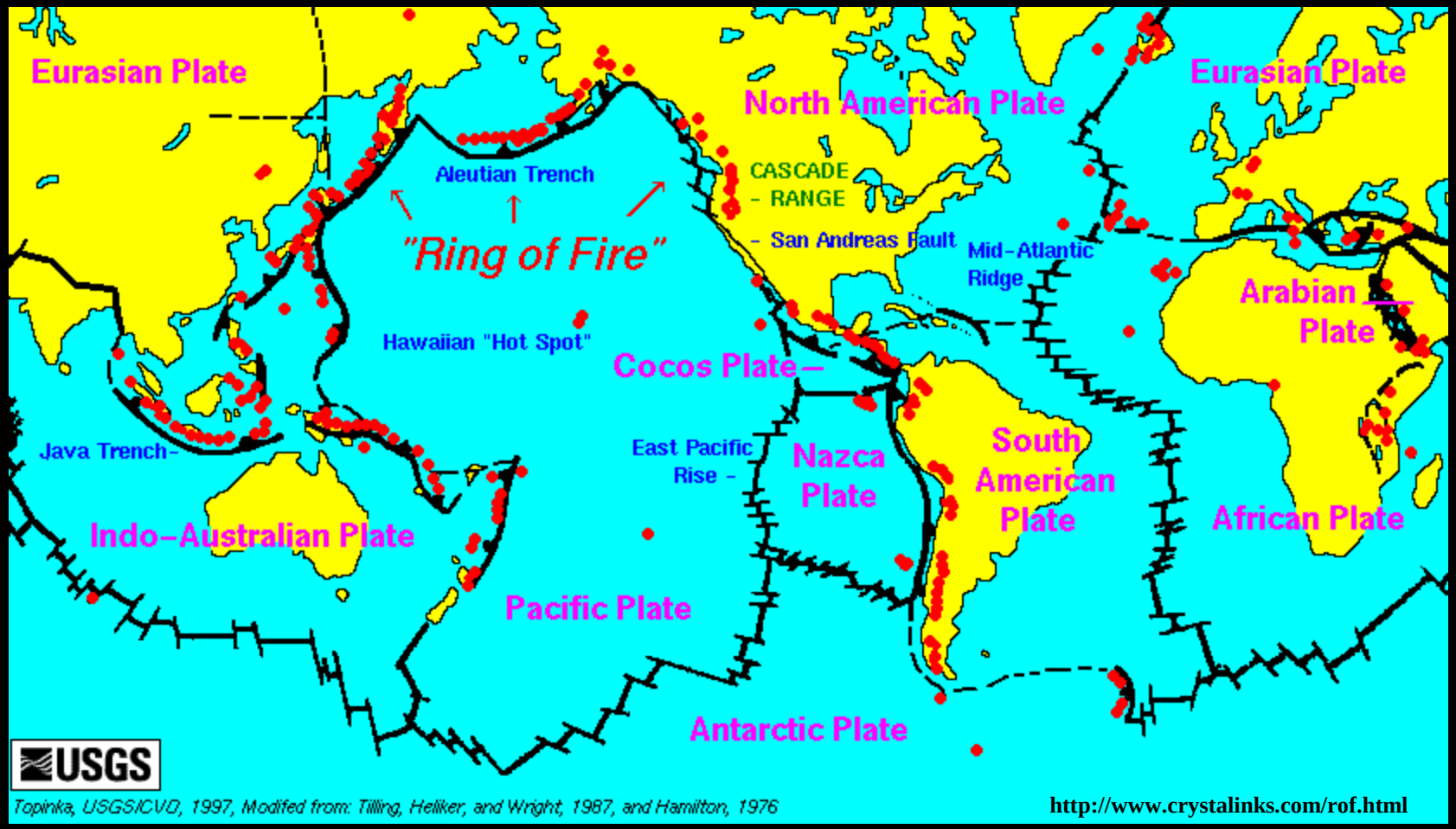
Objectives

Students will discover how the Hawaiian Islands were formed and continue to be formed today.

Students will learn how the eruption of Kilauea on the Big Island of Hawaii affects the lives of the people.



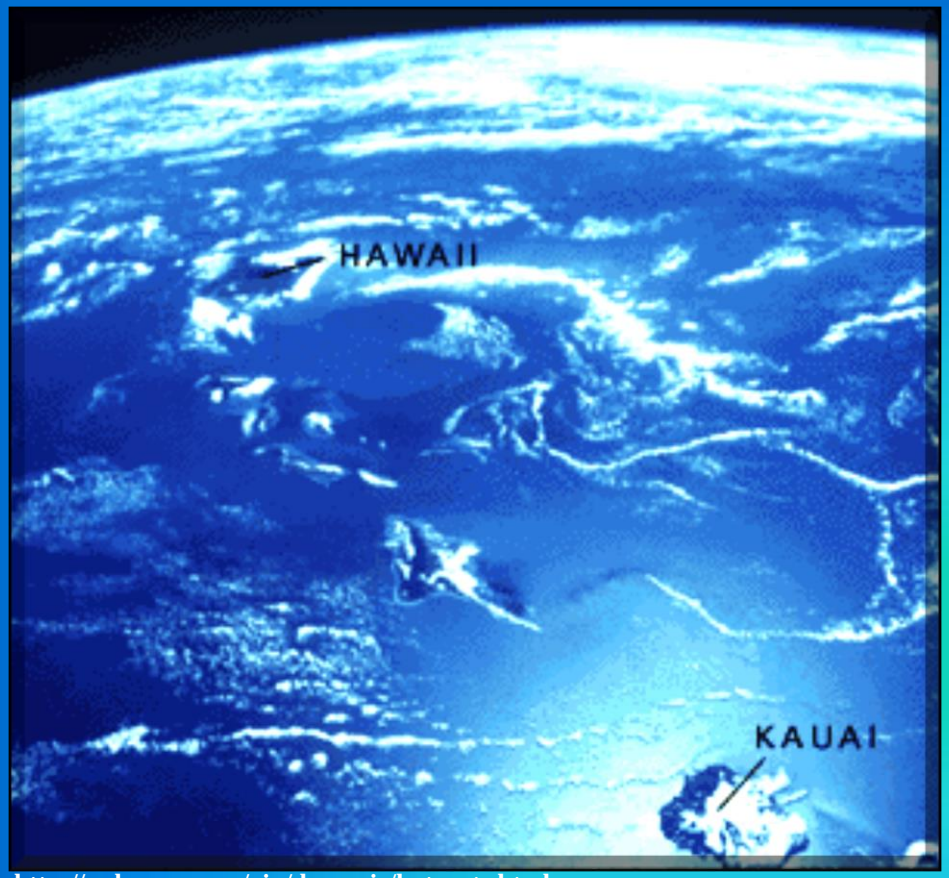
Students will understand how the Hawaiians have adapted to Kilauea eruptions and how they have modified the environment.



http://www.crystalinks.com/rof.html

The Ring of Fire, a zone of frequent earthquakes and volcanic eruptions encircling the basin of the Pacific Ocean, is a direct consequence of plate tectonics and the movement and collisions of crustal plates.

Ring of Fire by Johnny Cash



http://pubs.usgs.gov/gip/dynamic/hotspots.html

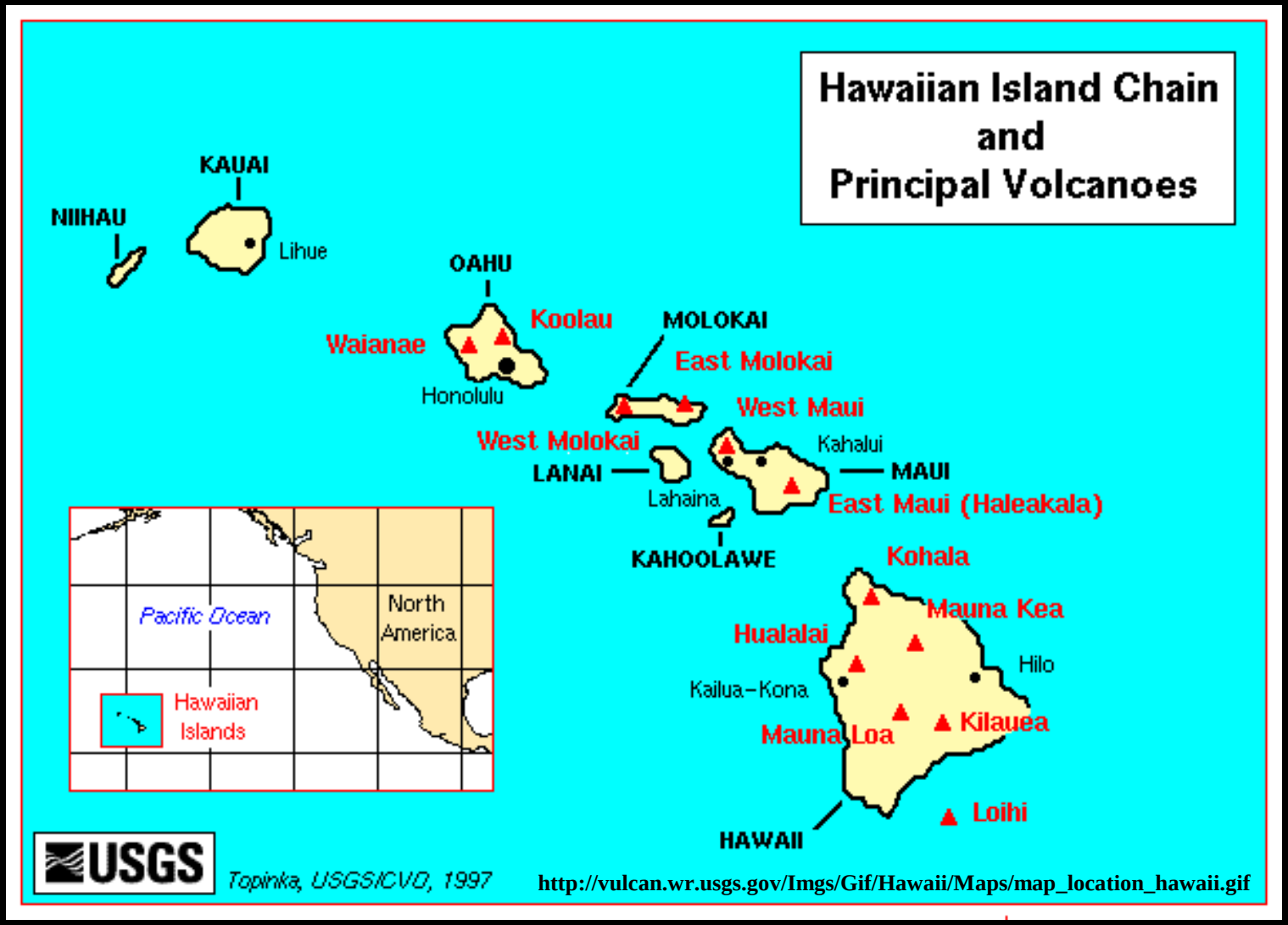
The Hawaiian Islands, which are entirely of volcanic origin, have formed in the middle of the Pacific Ocean more than 3,200 km from the nearest plate boundary.

The "hotspot" theory says that the Hawaiian Islands resulted from the Pacific Plate moving over a deep, stationary hotspot in the mantle, now located beneath the Island of Hawaii.

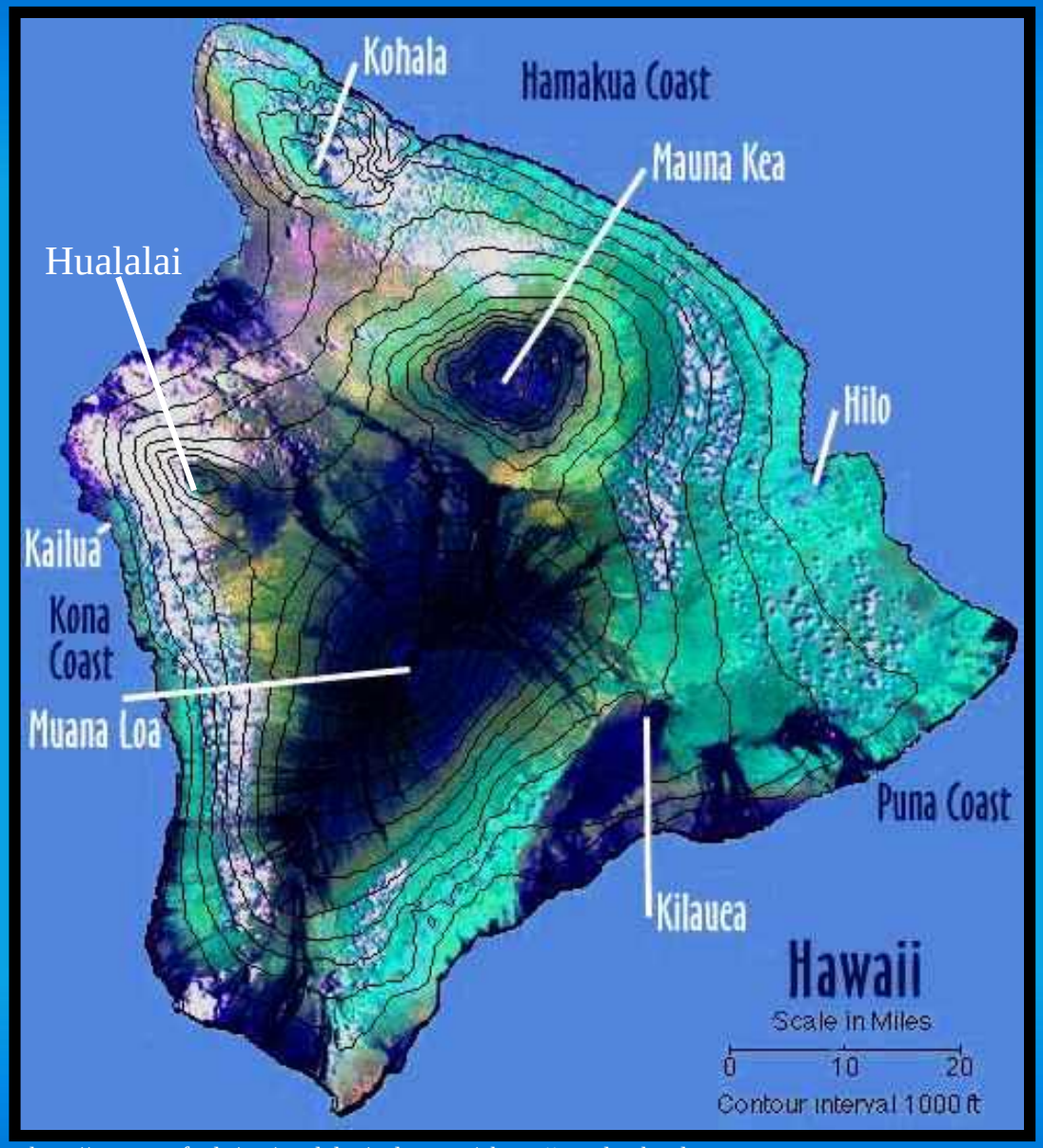
Heat from the hotspot produces magma which erupts and over time forms an island volcano. The continuous plate movement carries the island beyond the hotspot. As one island volcano becomes extinct, another develops over the hotspot and the cycle is repeated—thus Kauai is the oldest island and Hawaii is still forming.

Haleakala Crater

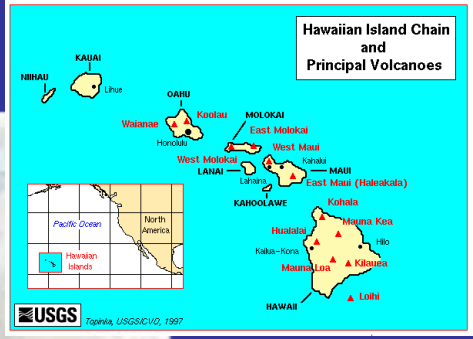
Haleakala, located on Maui, is the world's largest dormant volcano. There have been at least ten eruptions in the past 1000 years which indicates that the volcano will erupt in the future.



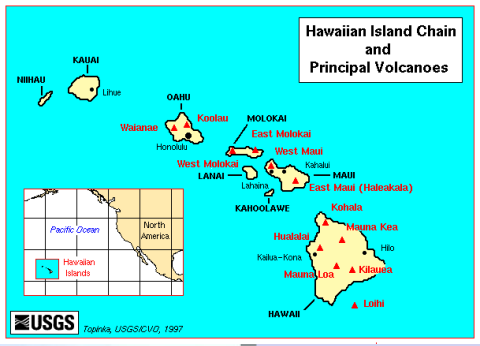
Kilauea Volcano on the Big Island is currently situated above the hotspot. Kilauea has been erupting almost continuously since January 1983.



http://www.cotf.edu/ete/modules/volcanoes/vhawaiioverlay.html



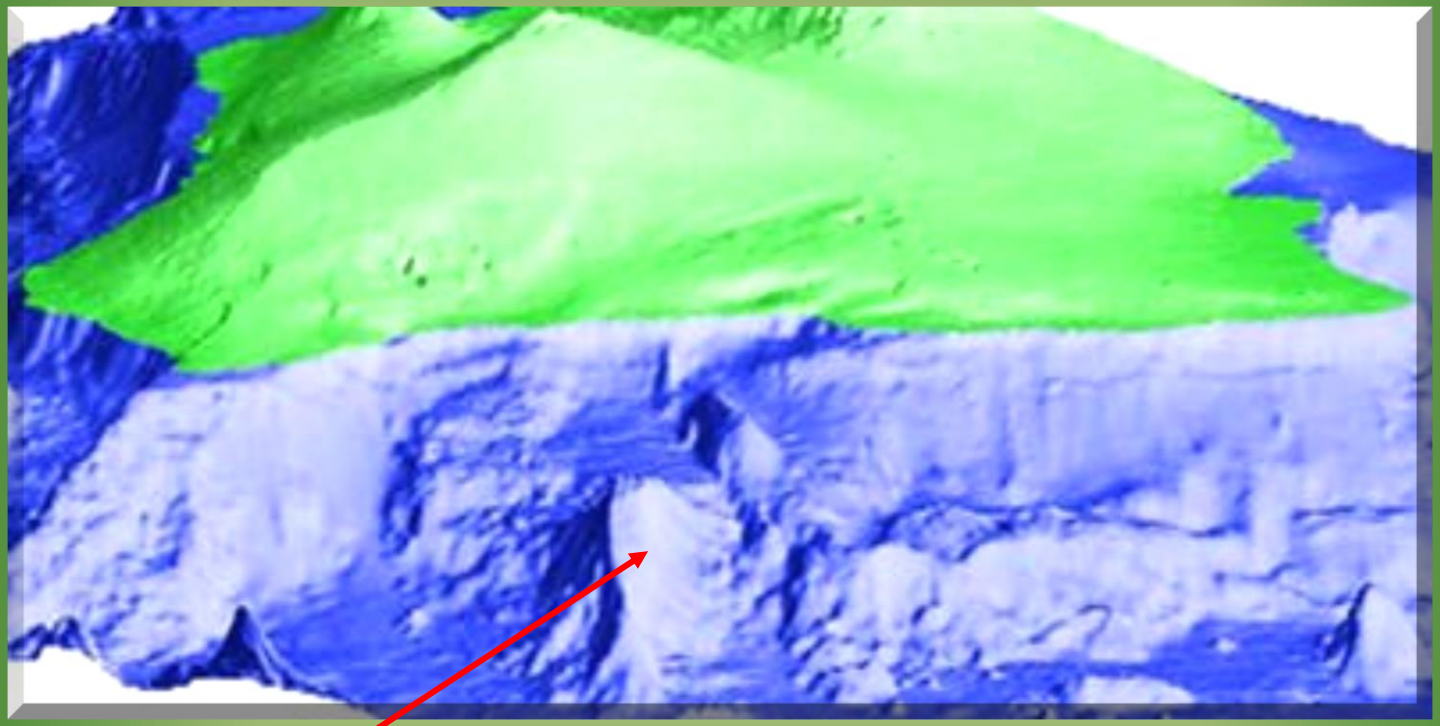
Mauna Kea, the tallest volcano on the island of Hawaii, is depicted with snow on its summit. Mauna Kea is considered a dormant volcano with the last eruption occurring about 3,500 years ago.



http://hvo.wr.usgs.gov/maunaloa/

Mauna Loa, the largest volcano on earth, covers half the Island of Hawaii. It has erupted 33 times since 1843 with the last eruption occurring in 1984. Mauna Loa is certain to erupt again and is carefully monitored for signs of unrest. Mauna Loa means "long mountain".

Lo'ihi Seamount
Hawaii's Youngest Submarine Volcano



http://hvo.wr.usgs.gov/volcanoes/loihi

The "Big" Island of Hawaii is at the top in green. Lo'ihi Seamount is at bottom center. Lo'ihi will not appear at surface for tens of thousands of years.

Kilauea eruption, March 30, 1984

Photo by Bob Seibert, Hawaii Volcanoes National Park

Kilauea is the youngest of the Hawaiian volcanoes. The eruption of Kilauea that began in 1983 continues today. It ranks among the world's most active volcanoes.

Kilauea eruption, March 30, 1984

Mauna Loa Eruption, March, 1984
Lava tube is near the vent.

Photo by Scott Lopez, Hawaii Volcanoes National Park

Mauna Loa - Kilauea Dual Eruption March 30, 1984

Homes in the lava flow path are destroyed.

Lava Flow From Tube

Example of Pahoehoe (ropy) lava

All photos without URLs are by Glenda Sullivan

Covers Highway

Lava Flow

Cooled, Hardened Lava

People have built homes atop some of the hardened crust where previous neighborhoods were destroyed by lava flows.

Hot Lava Flows From Tube Into Cold Ocean

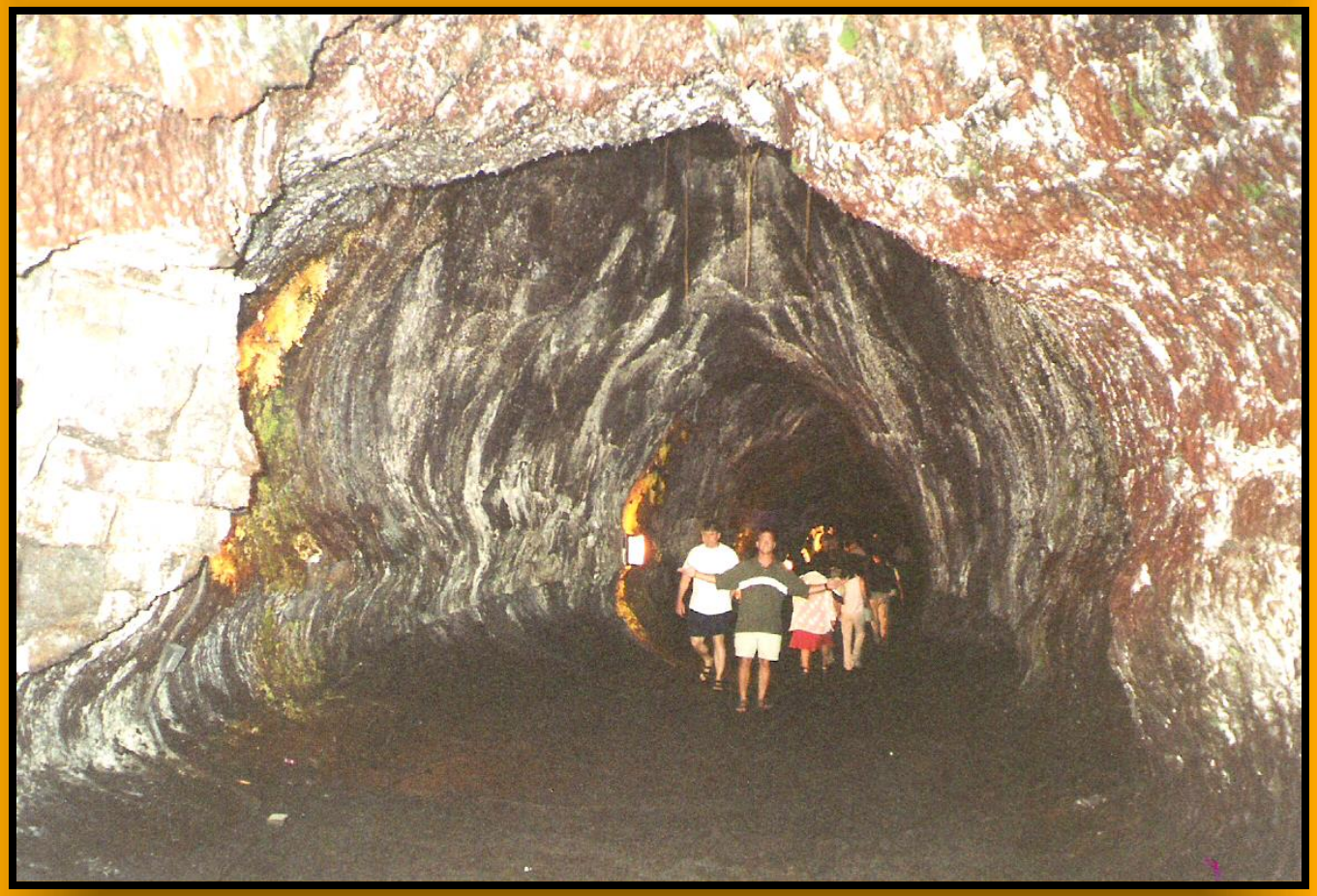
The steam plume is hazardous. It contains hydrochloric acid and volcanic glass particles which can irritate eyes and skin and cause respiratory problems.

Two Lava Tubes Empty Into Pacific Ocean

A broad lava flow field often consists of a main lava tube and a series of smaller tubes.

Black Lava Beach On Big Island

Lava Tube



Lava tubes are natural conduits through which lava travels beneath the surface of a lava flow. Tubes form by crusting over of lava channels and pahoehoe (smooth, ropy lava) flows.

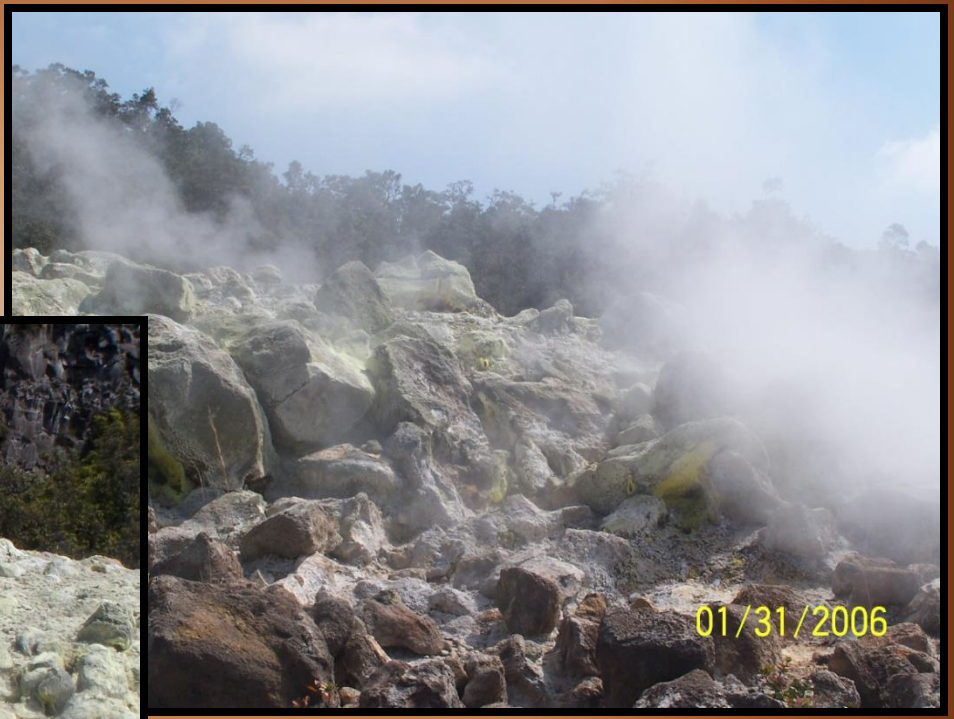
Old Lava Tube

Old lava tube was cut in half so the highway could be replaced.

Kilauea Caldera

Steam vents are scattered over Kilauea Caldera. Rainwater sinks through the ground and is heated by rocks which carry heat from the magma below. Steam rises through fissures.

Steam Vents Contain Hydrogen Sulfide

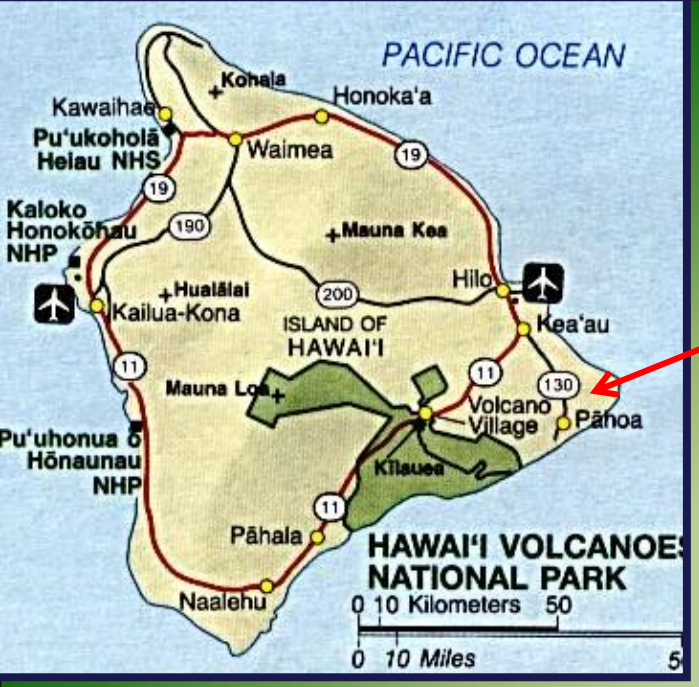


Hydrogen sulfide is a gas that smells like rotten eggs.

Trees in Lava Flow Path

Photo by Bob Seibert, Hawaii Volcanoes National Park

Kilauea Volcano Flow 2002



http://www.lib.utexas.edu/maps/national_parks/hawaii_island.jpg

Lava entered Pahoa Village on 10-29-14.

http://www.newstonight.co.za/content/lava-approaches-homes-hawaii

Kilauea volcano lava has destroyed more than 100 homes since erupting in 1983.

http://bashny.net/uploads/images/00/00/45/2014/03/28/23acee6df0.jpg

http://i.telegraph.co.uk/multimedia/archive/01685/burning-house_1685715c.jpg

Lava Creates Fertile Soil

Lava Golf Course

Humans take advantage of old lava flows by creating a golf course using the lava deposits as natural hazards in the game.

Pineapple Field

Taro Fields

Coffee Beans

Bougainvillea

Bird of Paradise

Plumeria

Flame Tree

Hibiscus: Hawaiian
State Flower

The silver sword is an endangered plant native only on Maui and the Big Island. It lives 40-50 years, then sends up one spectacular yellow bloom before dying.

Hawaiian Monk Seal

Humuhumunukunukuapua'a
Hawaiian State Fish

My Little Grass Shack in Kealakekua, Hawaii by Palani Vaughan

Humpback Whale

Bottlenose
Dolphin
06/21/2005

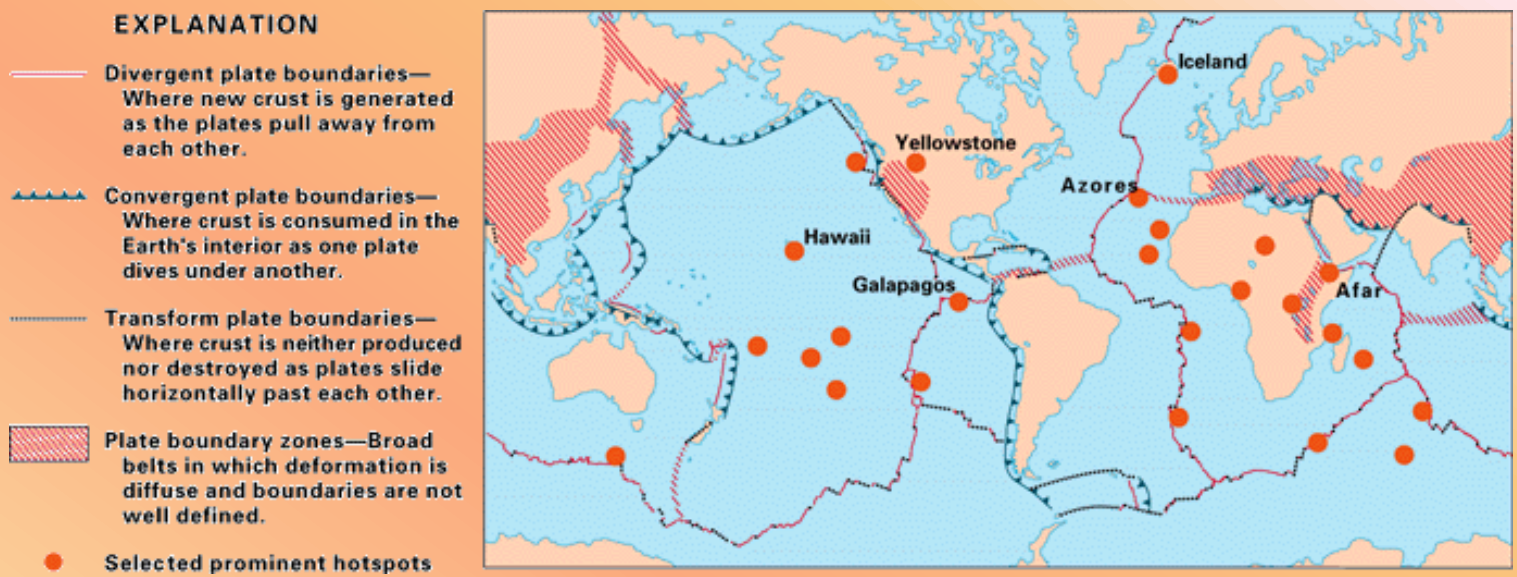
The toes of the gecko adhere to a wide variety of surfaces.

Nene—Hawaii State Bird

The Nene, once found in abundance in Hawai, was recognized as an endangered species in 1967 with only 30 or less left.

ALOHA
All Photos without URLs are by Glenda Sullivan

Prominent World Volcanic Hotspots



http://pubs.usgs.gov/gip/dynamic/world_map.html

Most hotspots are located under plate interiors, but some occur near diverging plate boundaries, such as beneath Iceland, Azores and Galapagos Islands.

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