

VOLCANOS

Island of Hawai'i, Hawai'i, USA, Earth

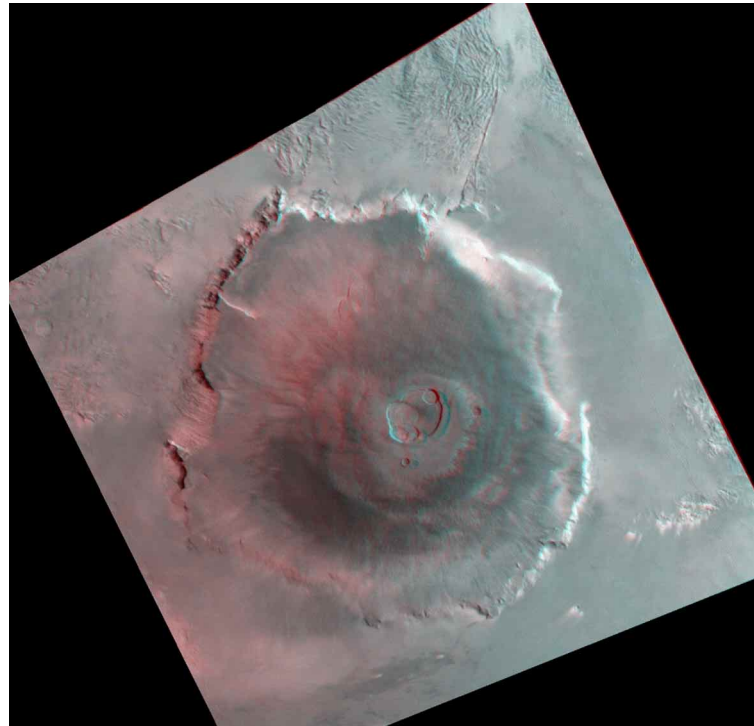
The island of Hawai'i rises 9 kilometers above the ocean floor although only 4 kilometers are visible above sea level. The island is probably the largest mountain on Earth and consists of five distinct overlapping basaltic shield volcanos. The greatest of these volcanos is Mauna Loa, a classic shield volcano characterized by broad gentle slopes of 4° – 10° that last erupted in 1984. Kilauea is the youngest of these five volcanos and may be the most active on Earth. Kilauea has been erupting almost continuously since 1983. The magma reservoir for Kilauea is 3–7 kilometers deep and frequently feeds lava along the two radial rift zones. The current eruption (as of 1997) is occurring along the East Rift Zone.

Hawai'i is the largest and youngest of some 110 volcanos that form the Hawai'i-Emperor underwater volcanic chain. This linked chain of islands and seamounts stretches 6000 kilometers from the center of the Pacific Basin to the eastern shore of Russia. The oldest known volcano in the chain dates back nearly 80 million years. These volcanos formed over a hot spot rising from deep in the Earth's mantle. The hot spot is stationary, but the oceanic Pacific plate on which Hawai'i sits is moving northwestward at 10 centimeters per year. As this movement carries each volcano off the hot spot location, the next volcano begins to form, and so on. A new volcano is already beginning to form off the southeast coast of Hawai'i.

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Olympus Mons, Tharsis Montes, Mars

Olympus Mons is the largest of the more than 12 large volcanos in the Tharsis Montes volcanic province. At 600 kilometers across and 21 kilometers high, Olympus Mons is also probably the largest volcano in the solar system. In contrast, the largest volcano on Earth, Mauna Loa, is 120 kilometers across and 9 kilometers high.

Olympus Mons is a classic broad shield volcano with slopes averaging 4° and ranging up to 10° . The large complex summit caldera is 65×85 kilometers wide. The general characteristics of Olympus Mons resemble those of the great Hawai'ian volcanos and suggest that its lava may be basaltic or basaltic andesite in composition. Some of the lava flows on Olympus Mons probably formed in the last 200 million years and are among the youngest features on Mars.

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