Big Island of Hawaii - 2017 Spring Break Field Trip Course (CE45200)

During the 2017 Spring Break week (March 11th - 18th), Prof. Antonio Simonetti led an undergraduate field trip to the Big Island of Hawaii. Students participating in the field trip are required to take Prof. Simonetti’s Earth Materials/Petrology course (CE30540) and associated lab (CE31540) as a co-requisite. This provides the students with a valuable opportunity to apply concepts and materials covered during lectures and labs in a natural field setting. In particular, half of the Earth Materials course covers the petrology of igneous rocks, which originate from magma/lava. Thus, there is no better natural laboratory to explore magmatic processes than to visit the active volcanism presently taking place on the Big Island of Hawaii.

In brief, the Hawaiian Islands are situated in the middle of the Pacific Plate on top of a ‘hot spot.’ The Pacific Plate is presently moving northwestward at a rate of several centimeters per year, and this motion over a stationary "hot spot," or mantle plume, has produced a series of volcanic islands. This chain of volcanic islands is referred to as the Hawaiian Archipelago that consists of eight major islands and from west to east, these islands are: Niʻihau, Kauaʻi, Oʻahu, Molokaʻi, Lanaʻi, Kahoʻolawe, Maui, and the Big Island of Hawaii.

Hawaii is the youngest island in this chain, which began forming over a million years ago as five separate volcanoes on the ocean floor. Over time, the five volcanoes erupted new sheets of lava spread upon the old, and thus building the volcanic heads as these emerged from the sea.

The Big Island's largest shield volcano, Mauna Loa, makes up approximately 51% of the island. The students and Prof. Simonetti did not make the 2-day hike up to Mauna Loa’s summit, but they did visit the summit of Mauna Kea at 13,796 feet above sea level, Hawaii’s other prominent shield volcano. Mauna Kea is therefore the highest point in the Pacific Ocean and the world’s tallest mountain from base (ocean floor) to summit, and is home to all the major civilian astronomical telescopes, and many of the world's finest telescopes. The group also visited Kilauea Volcano and other craters within Volcanoes National Park; Kilauea is the world’s most active volcano, erupting continuously since 1983. Other notable stops the group made included Waipio Valley, South Point, Kumana Lava Tube Caves, and Green Sand Beach. The trip provided students with an unforgettable experience and providing ample opportunity to examine abundant and extremely fresh pahoehoe and Aa lava flows!