

Times Standard

Not My Fault: June eruptions in Hawaii and Iceland

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Kilauea eruption, Hawaii - June 2, 2024



Sundhnúkur eruption, Iceland - May 29, 2024

June is busting out all over – in a volcanic sense. Volcanoes are always erupting somewhere on the planet, but in the past two weeks, two of the better known have made eruptive re-appearances.

Kilauea on the south coast of Hawaii is considered earth’s most active volcano. I use “active” to mean a volcano that is currently erupting and most active means that its eruptions are more frequent. Kilauea has been in eruptive mode for much of the last millennia. The name Kilauea means “spewing” in Hawaiian, a reference to its eruptive character since peoples first arrived about 1000 years ago.

The longest known Kilauea eruptive sequence lasted from 1983 to 2018. It was centered on the east rift zone. That eruption period produced extensive lava flows that added more than 1300 acres of new land to the coastline. Since 2018, Kilauea has produced shorter-lived eruptive episodes in the summit area and at Halema’uma’u, a pit crater within the summit home to intermittent lava lakes.

On June 3, shortly after midnight, the latest of these apparently brief eruptions occurred. Centered on the southwest rift zone, a series of four vents opened along a mile-long system of fissures, producing lava fountains that reached tens of feet into the air and clouds of steam and volcanic gasses.

The eruptive phase lasted less than nine hours and produced only modest amounts of lava, enough to cover a third of a square mile. The USGS describes the current status as a pause, and that because of continued inflation of the ground surface near the summit, eruptive activity could resume at any time.

For such a small eruptive event, why is it newsworthy? For most of the past century, volcanic activity has been concentrated to the east of the Kilauea summit along the east rift zone. The southwest rift zone has been historically less active. The most recent eruption prior to this week was fifty years ago. It also only lasted a few hours. There is no way to forecast what will happen next. The site could go back to relative dormancy, the term used for potentially active volcanoes in between eruptive outburst. Or this could become the active rift system of the future.

A quarter of the way across the globe and in another ocean, Iceland's Reykjanes Peninsula is putting on another show. On May 29th, the latest burst of volcanic activity occurred at the Sundhnúkur craters. This is the fifth eruptive cycle since this zone re-activated in December 2023 and the eighth eruption on the Reykjanes Peninsula since 2021.

I've been fascinated with Icelandic volcanism since my husband and I visited last July and were greeted by the third eruption in this sequence when our plane landed at Keflavík International Airport, less than 20 miles from the vents. While all of Iceland is volcanic and eruptions have occurred throughout the Island, the Reykjanes area had been dormant for over 800 years when activity resumed in 2021.

The first three eruptions, spaced nearly a year apart, occurred in an area of no structures or infrastructure. They were the perfect tourist eruptions, producing gas clouds that could be seen from the capital Reykjavik but causing no disruption to daily life. The most recent sequence has not been so benign. Centered ten miles west of the eruption I witnessed and only three miles from the town of Grindavik where we ate lunch on our first day in Iceland, it has wreaked havoc on roads and infrastructure.

The Sundhnúkur eruptions have occurred along a 3-mile-long rift zone northeast of Grindavik and just east of the Svartsengi power plant that provides geothermal power and hot water to the airport and towns in the area. After unrest was detected in November 2023, the government has built a series of walls, dikes and structures to divert lava flows away from the power plant and Grindavik. The December eruption did cut off the hot water lines for over a week, but for the most part, the diversions have performed well.

The eruption that began ten days ago is the most voluminous to date. Lava fountains from several vents along a 2.5-mile rift reaching 150 feet high and gas plumes over two miles have been observed. The eruption reacted with groundwater at its southern end, sending ash plumes into the air. The most intense eruptive activity was during the first day, since then only one crater continues to be active.

There are several of similarities between the recent eruptions in Hawaii and Iceland. Both are related to oceanic hotspots, zones of concentrated heat that extend deep into the earth's mantle and produce extended volcanic activity over tens of millions of years. The primary eruptive product is basalt lava that is effusive and flows readily over the ground surface. Lava flows are the primary hazard and are generally less explosive and unpredictable than other volcanic systems.

The U.S. and Iceland have the resources, technology, and expertise to closely track seismicity, ground deformation, gas emissions and monitor volcanic activity. Both have volcano warning systems that allow for quick closures and evacuations of danger areas. Grindavik has been evacuated five times during the current eruptive sequence. It took only five minutes to clear all residents from the area before the May 29th eruption.

Hawaii and Iceland may have grabbed the headlines, but there were more hazardous eruptions in the past few weeks. The most recent Smithsonian/USGS weekly Volcanic Activity report included 23 volcanoes erupting right now. That is just about average for our tectonically active planet. Fortunately, most are far from population centers. But two have displaced far more people than Iceland. The Philippines Mt. Kanlaon has exhibited 11 periods of volcanic unrest this century. On June 3, an explosion occurred near the summit, prompting evacuations of over 3500 people, flight cancellations and sulfur contamination of crops nearby.

Nearly 700 miles to the south, Indonesia's Mount Ibu on the island of Halmahera erupted on June 1 producing a 3-mile-high ash plume and triggering the evacuation of seven village. Three more eruptive blasts occurred five days later with some ash clouds reaching over 4000 feet high.

There is nothing unusual about the volcanic activity of the past few weeks, and contrary to several rumors on social media, has nothing to do with the Mexico – Southern U.S. heat dome and unusually warm June temperatures. Our climate is controlled by the sun, the atmosphere, and ocean conditions. Internal heat fuels plate tectonics, volcanic activity, and earthquakes but has nothing to do with surface temperatures

Note: information about the Hawaiian and Icelandic eruptions drawn mainly from the USGS Hawaii Volcano Observatory <https://www.usgs.gov/volcanoes/kilauea/volcano-updates> and the Icelandic Meteorological Office <https://en.vedur.is/about-imo/news/volcanic-unrest-grindavik>.

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