

Simplified table of Mauna Loa historical activity modified from Lockwood and Lipman (1987).

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Note that this table is a “living” document and subject to be updated. See version footnote.

Activity year	Summit first observed start (mo-day)	Summit ^a duration (days, or otherwise noted)	Flank first observed start (mo-day)	Flank duration (days)	Activity area	Short summary	Impacts	Area covered by lava (km ²)	Total volume erupted (km ³)
1984	March 25	< 1	March 25	22	summit, Northeast Rift Zone	Eruption began within summit caldera, then migrated into the upper Southwest and Northeast Rift Zones. Vents opened lower on the Northeast Rift Zone and fed flows that travelled northeast towards Hilo	-	48	0.22
1975	July 5	1	-	-	summit	Eruption within the summit caldera, extended a short way down both rift zones	-	13	0.03
1950	June 1	< 1	June 1	22	summit, Southwest Rift Zone	Summit eruption with fissures that propagated down the Southwest Rift Zone; multiple ocean entries north of Miloli'i and south of Hōnaunau. Lava reached the ocean ~3 hours, 14.5 hours, and 18 hours after the rift eruption began	At least 20 structures destroyed; ~1 mile public road covered	112	0.38 ^b
1949	January 6	144	-	-	summit	Eruption within the summit caldera, built cone and fed small lava flows that travelled a few miles south and southwest of the caldera	-	22	0.12
1942	April 26	< 1	April 28	13	summit, Northeast Rift Zone	Summit eruption followed by Northeast Rift Zone flank eruption with lava flows that travelled northeast towards Hilo	-	34	0.18
1940	April 7	164	-	-	summit	Eruption within the summit caldera, lava lake generated	-	13	0.11
1935–1936	November 21	6	November 23	40	summit, Northeast Rift Zone	Summit eruption followed by eruption of vents on and north of the Northeast Rift Zone; lava flows travelled north-northeast towards the Humu'ula Saddle area and then east towards Hilo	-	33	0.09
1933	December 2	17	-	-	summit	Eruption within the summit caldera, extended a short way down the Southwest Rift Zone	-	6	0.1
1926	April 10	< 1	April 14	14	summit, Southwest Rift Zone	Summit eruption followed by an eruption on the Southwest Rift Zone; lava flows travelled southwest and southeast; ocean entry at Ho'ōpūloa ~4 days after rift eruption started	Ho'ōpūloa Village destroyed; ~0.3 miles public road covered	35	0.12 ^b
1919	September 26	< 1	September 29	38	summit, Southwest Rift Zone	Summit eruption followed three days later by an eruption of vents on the Southwest Rift Zone; lava flows travelled southeast towards Kahuku and southwest, where they entered the ocean north of Ho'ōpūloa ~24 hours after the rift eruption began	Alika Village destroyed; ~0.25 miles public road covered	28	0.18 ^b

1916	May 19	< 1	May 21	10	summit?, Southwest Rift Zone	Eruption on the upper Southwest Rift Zone that began with gas explosions; lava flows travelled towards Honomalino Bay and Kahuku but did not reach the ocean	Bertelmann ranch destroyed	17	0.03
1914–1915	November 25	48	-	-	summit	Eruption within the summit caldera, cone built and lava lake generated	-	5	0.06
1907	January 9	< 1	January 10	15	summit, Southwest Rift Zone	Summit eruption followed by eruption of vents on the Southwest Rift Zone, north of present-day Ocean View Estates; lava flows travelled south-southwest and did not reach the ocean	~1.5 miles public road covered	28	0.12
1903	October 6	62	-	-	summit	Eruption within the summit caldera, generated small lava flow that travelled southwest from the caldera	-	5	0.07
1903	September 1	< 1	-	-	summit	Eruption within the summit caldera	-	1	< 0.01
1899	July 1	4	July 5	20	summit, Northeast Rift Zone	Summit eruption followed by eruption at two vents (nearly a mile apart) on the Northeast Rift Zone, which generated lava flows that travelled north-northeast towards the Humu'ula Saddle area	-	23	0.08
1896	April 21	16	-	-	summit	Eruption within the summit caldera, lava lake generated	-	5	0.03
1892	November 30	~21?	-	-	summit	Eruption within the summit caldera, filled in a crater	-	3	0.01
1890	before July	?	-	-	summit	L.A. Thurston reported evidence of a recent eruption within the summit caldera, after an expedition there in July 1890	-	-	-
1887	January 16	< 1	January 18	14	summit, Southwest Rift Zone	Summit eruption followed by eruption of vents north of Kahuku on the Southwest Rift Zone; lava flows entered ocean north of Kalae 29 hours after rift eruption began	1 house and ranch structures destroyed; ~1 mile public road covered	29	0.13 ^b
1880–1881	May 1	9	November 5	375	summit, Northeast Rift Zone	Summit eruption followed by a Northeast Rift Zone flank eruption six months later. Lava flows travelled northeast towards Mauna Kea and Hilo, and southeast into Ka'ū	At least 1 house destroyed	summit: 5 flank: 51	summit: 0.01 flank: 0.13
1879	March 9	< 1	-	-	summit	Eruption within the summit caldera	-	1	< 0.01
1877	February 14	2	February 24	< 1	summit, radial vent west of summit	Submarine radial vent eruption off the west coast near Kealakekua Bay started approximately 10 days after the summit activity ended	-	7 ^c	0.44 ^{b,c}
1872–1877	August 9	~4.5 years	-	-	summit	Likely continuous low-level eruption within the summit caldera, lava lake generated	-	5	0.63
1871	August 6	~20?	-	-	summit, Southwest Rift Zone?	Anonymous report of an eruption at a crater about five miles southwest of summit caldera	-	3	0.02

1868	March 27	< 1	April 7	5	summit, Southwest Rift Zone	Southwest Rift Zone eruption in Kahuku started approximately 11 days after summit activity ended; lava reached the ocean north of Kalae 3.5 hours after rift eruption began. Local tsunami generated from the Great Ka'ū earthquake, magnitude 7.9	Captain Brown's ranch destroyed; ~1.5 miles public road covered; 100 structures destroyed during earthquake	24	0.12 ^b
1865–1866	December 30	~122	-	-	summit	Light reported visible at the summit, but no direct observation of the activity or reports of lava flows	-	5	0.05
1859	January 23	< 1	January 24	~300	summit, radial vent north of summit	Brief summit eruption followed by eruption of a radial vent north of the summit; lava flow travelled northwest towards Waikoloa, where it entered the ocean 8 days later	Wainanali'i village destroyed; at least 1.75 miles public road covered	91	0.38 ^b
1855–1856	August 11	< 1–4	August 14	~444	summit, Northeast Rift Zone	Summit eruption followed by Northeast Rift Zone eruption; lava flow travelled northeast, in the direction of Hilo	1 death	66	0.28
1852	February 17	< 2	February 20	17	radial vent north of summit, Northeast Rift Zone	Eruption of radial vent north of summit followed by Northeast Rift Zone eruption; lava flow travelled northeast, in the direction of Hilo	-	33	0.18
1851	August 7	3–4	-	-	summit	Summit eruption; generated a lava flow that traveled a short distance west from summit, in the direction of Hōnaunau	-	12	0.04
1849	May 9	> 27	-	-	summit	No lava flow or earthquakes reported, only a lofty column	-	5	0.03
1843	January 9	~5	January 14	> 23	summit, Northeast Rift Zone	Summit eruption followed by eruption from the Northeast Rift Zone; lava flow travelled north, reached the Humu'ula Saddle area	-	45	0.20
1832	June 20	14–21	?	?	summit, unknown	No lava flows have been identified, although Goodrich (1834) reported that lava was "seen running out of the sides of the mountain"	-	-	-

^aSummit eruptions are defined as those that occur on the part of the volcano above 3,660-m (12,000 ft) elevation, including Moku'āweoweo Caldera and the uppermost parts of the Northeast and Southwest Rift Zones (as defined in Lockwood and Lipman, 1987).

^bEruption generated an ocean entry. The total erupted volume reported in the table includes subaerial and submarine volumes. Submarine volume estimates (km³) for each eruption are (Lockwood and Lipman, 1987): 1859–0.095; 1868–0.05; 1877–0.007; 1887–0.01; 1919–0.1; 1926–0.005; 1950–0.07.

^cValues are submarine, from Wanless and others (2006)

Version Notes: Version 1, posted June 4, 2020.

References:

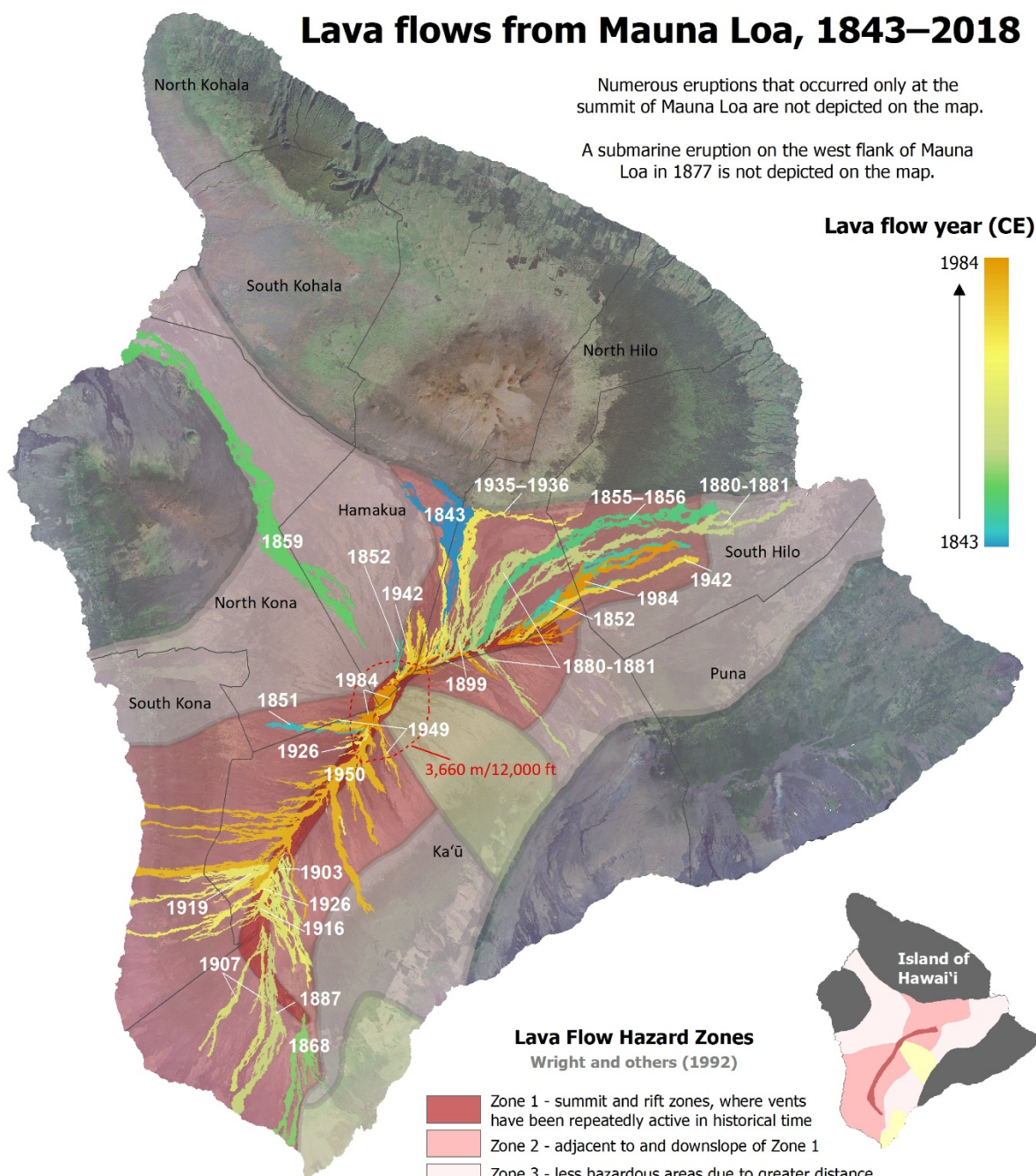
Lockwood, J.P., and Lipman, P.W., 1987, Holocene eruptive history of Mauna Loa Volcano, chap. 18 of Decker, R.W., Wright, T.L., and Stauffer, P.H., eds., *Volcanism in Hawaii*, 2 v.: U.S. Geological Survey Professional Paper 1350, v. 1, p. 509-535, accessed at https://pubs.usgs.gov/pp/1987/1350/pdf/chapters/pp1350_ch18.pdf.

Wanless, V.D., Garcia, M.O., Trusdell, F.A., Rhodes, J.M., Norman, M.D., Weis, D., Fornari, D.J., Kurz, M.D., and Guillou, H., 2006, Submarine radial vents on Mauna Loa Volcano, Hawai'i: *Geochemistry, Geophysics, Geosystems (G3)*, v. 7, no. 5, paper no. Q05001, 28 p., doi:10.1029/2005GC001086.

Lava flows from Mauna Loa, 1843–2018

Numerous eruptions that occurred only at the summit of Mauna Loa are not depicted on the map.

A submarine eruption on the west flank of Mauna Loa in 1877 is not depicted on the map.



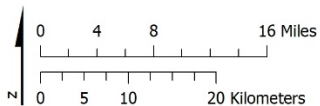
Lava Flow Hazard Zones Wright and others (1992)

- Zone 1 - summit and rift zones, where vents have been repeatedly active in historical time
- Zone 2 - adjacent to and downslope of Zone 1
- Zone 3 - less hazardous areas due to greater distance from recently active vents and (or) because of topography
- Zone 6 - protected by topography

Lava flow hazard zone boundaries are approximate and gradational. They are not distinct as portrayed on the map.

Lava flow polygon data from Wolfe and Morris (1996) and unpublished HVO data.

Wolfe, E.W., and Morris, J., 1996, Geologic Map of the Island of Hawaii: U.S. Geological Survey IMAP 2524. Wright T.L., Chun J.Y., Esposito J., Heliker C., Hodge J., Lockwood J.P., and Vogt S.M., 1992, Map showing lava-flow hazard zones, Island of Hawaii: US Geological Survey Miscellaneous Field Studies Map 2193.



Base map source: LANDSAT 15 m satellite image obtained from Hawaii Statewide GIS Program

Map showing the subaerial extents of historical lava flows from Mauna Loa. Lava flow hazard zones and districts of the County of Hawai'i are also depicted.