

Layer Name: Lava Flow Hazard Zones

Coverage Name: VHZONES

Layer Type: Polygon, Arc

Status: Complete

Geog. Extent: Island of Hawaii

Projection: Universal Trans Mercator, Zone 4 (Meters)

Datum: NAD 83 HARN

Description: Lava Flow Hazard Zone Maps

Source: U.S. Department of the Interior / Geological Survey

History: Digitized by the Office of Planning for the USGS, Hawaii Volcano Observatory, 1991. See Notes, below.

NOTES: (From original lava flow hazard map publication, 1991)

"This map depicts a lava-flow hazard zonation developed for the five volcanoes on the Island of Hawaii. Volcano boundaries are shown as broad black bands, reflecting the interleaving of lava flows from adjacent volcanoes along their common boundary. Hazard zone boundaries are drawn as double lines because of the geological uncertainty in their placement. Most boundaries are gradational, and the change in the degree of hazard can occur over a distance of a mile or more. The general principles used to place hazard zone boundaries are discussed by Mullineaux and others (1987) and Heliker (1990). The difference between the boundaries presented here and in Heliker (1990) reflects the completion of the geologic map of the Island of Hawaii (Wolfe and Morris, in prep.).

"The primary source of information for volcano boundaries and generalized ages of lava flows for all five volcanoes on the Island of Hawaii is the geologic map of Hawaii (Wolfe and Morris, in press). More detailed information is available for the three active volcanoes: for Hualalai see Moore and others ((1987); for Mauna Loa see Lockwood and Lipman (1987); for Kilauea see Holcomb (1987) and Moore and Trusdell (1991).

"Lava flow hazard maps are based on:

1. Location of past eruptive events
2. Past lava coverage
3. Topography

"Hazard zone boundaries are approximate and gradational. These boundaries are not specific enough to determine the absolute degree of danger at any particular site. Lava flow hazard maps are designed to show relative hazard across the Island of Hawaii and are meant to be used for general planning purposes only."

Attributes:

Polygons:

AREA	area of polygon (sq. meters)
PERIMETER	perimeter of polygon (meters)
VHZONES#	Polygon internal number (for Arc/Info use)
VHZONES-ID	Polygon ID (for Arc/Info use)
HZONE	Lava Hazard Zone Number
MZONE	Mountain / Volcano Code

HZONE Definition

Note: (Hazard Zones are ranked from 1 (highest) to 9 (lowest))

- 1 Summits and rift zones of Kilauea and Mauna Loa, where vents have been repeatedly active in historic time. Boundaries are defined by eruptive fissures, cinder cones, pit craters, and graben and caldera faults. Zone 1 is where lava flows originate.
- 2 Areas adjacent to and downslope from Zone 1. Fifteen to twenty-five percent of Zone 2 has been covered by lava since 1800, and 25-75 has been covered within the last 750 years. The relative hazard within Zone 2 decreases gradually as one moves away from Zone 1.
- 3 Areas gradationally less hazardous than Zone 2 because of greater distance from recently active vents and/or because the topography makes it less likely that flows will cover these

areas. One to five percent of Zone 3 has been covered since 1800, and 15-75 percent has been covered within the last 750 years.

- 4 Includes all of Hualalai. Moore and others (1987) estimate that large eruptions reach the ocean about once every 300 years, a recurrence interval significantly lower than for either Kilauea or Mauna Loa. Lava coverage is proportionally smaller, about 5 percent since 1800, and less than 15 percent within the last 750 years.
- 5 An area on Kilauea currently protected from rift- or summit-derived lava flows by north-facing fault scarps, south of Kilauea summit.
- 6 Two areas on Mauna Loa, both protected from rift- or summit-derived lava flows. The area south of Mauna Loa summit is analogous to Kilauea's Zone 5. The northwest flank of Mauna Loa is also protected from eruptions originating on the summit or rift, but three eruptions have originated high on this flank in the last two centuries. Thus we have included the northwest flank in Zone 3. The area near the south point of the island is protected from southwest rift zone eruptions by a completely faulted topography. The lava underlying this Zone 6 are all older than 4,000 years.
- 7 The younger part of the dormant volcano Mauna Kea. Twenty percent of this area was covered by lava 3,500-5,000 years ago.
- 8 The remaining part of Mauna Kea. Only a few percent of this area has been covered by lava in the last 10,000 years.
- 9 Kohala Volcano, which last erupted over 60,000 years ago.

MZONE	Definition
1	Hualalai
2	Kilauea
3	Kohala
4	Mauna Kea
5	Mauna Loa

Arcs:

FNODE#	From Node Number (for Arc/Info use)
TNODE#	To Node Number (for Arc/Info use)
LPOLY#	Left Polygon Number (for Arc/Info use)
RPOLY#	Right Polygon Number (for Arc/Info use)
LENGTH	Length (meters)
LUDB95#	Arc Internal Number (for Arc/Info use)
LUDB95-ID	Arc ID (for Arc/Info use)
BOUN	Type of boundary line

BOUN	Definition
0	Coastline boundary
1	Volcano Boundary
2	Zone 2 - 9 Boundary
3	Zone 1 Boundary

IMPORTANT NOTE:

USGS would like the volcano hazards plotted at scales no larger than 1:250,000. In addition, lines should be plotted at the following widths:

Boundaries between volcanoes:	1 mile
Boundaries between Zone 1:	1/2 mile
Boundaries between Zones 2-9:	1/4 mile

Note: For more complete information/documentation, please contact the Hawaii Volcanoes Observatory, Volcano, Hawaii.

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