

THE ONGOING ERUPTION OF PU'U 'O'O
ON KILAUEA'S MIDDLE EAST RIFT ZONE*

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The current eruption of Kilauea Volcano began in January 1983 and has produced 45 episodes of vigorous fountaining. During the past two years, the average eruptive episode has lasted 13 hours, with an average repose period of 26 days. Since June 1983, the activity has been localized at the Pu'u 'O'o vent, producing a cone 255 m high, which is now the most prominent landmark on the East Rift Zone. Lava flows cover more than 38 km² and have entered the Royal Gardens subdivision during six episodes.

The Pu'u 'O'o vent is fed by magma from a reservoir centered beneath Kilauea's summit and supplied by the mantle. When the pressure in the summit reservoir reaches a critical level, the magma moves laterally into the East Rift Zone along a well-established conduit to Pu'u 'O'o. The eruption ends once the pressure in the summit reservoir is relieved.

Prediction of eruptive episodes at Pu'u 'O'o is based primarily on ground deformation measurements, seismic data, and visual observations at the vent. Re-inflation of the summit reservoir during repose periods causes bulging of the ground surface, which is measured by tiltmeters at the summit. The combination of tiltmeter readings and the number of summit microearthquakes provides a rough index of how far the re-inflation cycle has advanced.

*ABSTRACT