

**Changes in the Ejected Products of the Eruptions of
Halema'uma'u Crater, Kilauea, in 2009 – 2010:
Implication for Eruption Processes**

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Abstract

The Halema'uma'u eruptive activity from 2009 – 2010 is characterized by near continuous degassing and pulsating eruption of tephra, significantly different than the larger fountain eruptions typical of 20th century Kilauea eruptions. This study focuses on the varying volcanic processes influencing the eruptive activity, including rockfalls, spatter, filling and draining cycles, high standing lava surfaces, and deflation / inflation events. The morphology and size of the ejecta reflect these processes within the vent, and samples are collected almost daily with nine strategically placed buckets. The ejecta have been categorized into five main groups: juvenile vesicular, dense non-vesicular juvenile, recycled juvenile material, fresh / slightly altered wall rock, and heavily altered wall rock. The juvenile vesicular and dense non-vesicular juvenile fluxes reflect the activity beneath the free surface. The fluxes of recycled juvenile, fresh / slightly altered wall rock, and heavily altered wall rock reflect the stability of the vent walls. The varying componentry fluxes can be attributed to three major influences, the stability of the vent walls, the fluctuating supply of deeper magma, and influences of near surface activity.