

Variation of fissure eruptions (Part 2): Activity of a fissure eruption

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After an eruption, fissure length, erupted volume, duration, and eruption rate become more important for volcanic hazard. Using analog experiments, simple fissure eruptions without volatile effect under various stress conditions were demonstrated. Fissure eruptions were observed from cracks filled with silicon oil in gelatin as elastic material. A silicon oil-filled crack erupts from longer fissure under strong extensional condition than under weak extensional condition. Eruption rate from a closed crack decreases with time exponentially, which is supported by theoretical studies. The results on analog experiment support observations of natural fissure eruptions. Various activities of a fissure eruption, such as Hawaiian volcanoes, Icelandic volcanoes, Etna, and Piton de la Fournaise were compiled to compare with the results of analog experiments.