

The duration of the shield stage of Hawaiian volcano; unspiked K-Ar dating of the submarine tholeiites from Koolau volcano

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The determination of the duration of the shield-stage volcanism of Hawaiian volcanoes has a great importance to evaluate the size of the plume conduit. The duration of shield stage has estimated to be ~ 0.7 Ma by volcano growth model. However, no studies have ever determined the onset of the shield stage because of the difficulty of approaching the submarine shield stage lavas. We report unspiked K-Ar ages for lava samples collected from the submarine flank and offshore landslide block of the Koolau volcano, Hawaii. The K-Ar dating results suggest that the onset of Koolau shield-stage volcanism was no later than ~ 3.3 Ma. Since the end of the shield stage is regarded to be 2.1 Ma by dating the subaerial lavas, the duration of the shield stage is at least 1.2 m.y.