

Investigation on the vegetation and lava by observing the structure of tree molds

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Tree molds are a record of both vegetation and interaction phenomena between lava flow and standing tree. The observation of tree mold diameter distribution can predict the vegetation succession phase at the eruption time and estimate the interval from the former eruption of lava flow if one piled up another. The diameter distribution study of 430 tree molds of Higashi-Usuzuka lava flow ejected on the southern flank of Mt.Fuji shows 1000 to 1500 years lapse after the former eruption of Kotengu lava flow.

By observing also the structure of tree mold, lava flow characteristics such as lava thickness, flow speed, flow direction etc., can be deduced. Here, the speed and viscosity of the basaltic lava flow of Higashi-Usuzuka were estimated by supposing that all the tree of diameter below the minimum diameter of the existing tree mold has been thrown down with collision of lava flow. From this diameter, the speed of lava flow was estimated as about 4m/sec. Substituting the slope angle, lava flow thickness and density of lava to the simple slope flow equation, the viscosity of lava can be obtained. The estimated viscosity was about 4000 poise, which seems to be reasonable as viscosity of low fraction silica content basaltic.