

## Reexamination of the volcanic sequence based on the borehole core excavated in Manazuru-cho, SE Japan

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The southeastern part of Hakone volcano was formed about 130 to 230 thousand years ago by some monogenetic volcanic eruptions. The area is widely covered by younger lava flows and studies on borehole core samples should contribute to clarify the volcanic sequence. In this study, we examined borehole samples excavated in 706, Iwa, Manazuru-cho, Kanagawa Prefecture, as well as samples derived from surface exposures along the coast.

Methods are macro-scopic observation, thin section observation, XRD analysis, and whole-rock chemical analysis by XRF.

Three lavas were recognized in the borehole. Thin section observation revealed that lavas in the borehole were aphyric to nearly aphyric andesites with plagioclase, Cpx, Opx and opaque mineral. The mineral assemblages obtained by XRD is plagioclase, cristobalite, tridymite, Cpx, and Opx. The results of whole-rock chemical analyzes by XRF are as follows. The andesite samples between 2.6 and 13.2 m depth are rich in TiO<sub>2</sub>, Fe<sub>2</sub>O<sub>3</sub>, MnO, P<sub>2</sub>O<sub>5</sub>, and Al<sub>2</sub>O<sub>3</sub> and K<sub>2</sub>O are relatively poor. Between 35.2 and 44.6 m depth, andesites are similar to the andesite mentioned before. They are rich in TiO<sub>2</sub>, Fe<sub>2</sub>O<sub>3</sub>, MnO, P<sub>2</sub>O<sub>5</sub> and Al<sub>2</sub>O<sub>3</sub> content is relatively low. In contrast, andesites between 54.7 and 70 m depth are rich in TiO<sub>2</sub>, Fe<sub>2</sub>O<sub>3</sub>, MnO, K<sub>2</sub>O, P<sub>2</sub>O<sub>5</sub> and Al<sub>2</sub>O<sub>3</sub> content is relatively low.

There are three eruptions accompanied with andesitic lava flow. The first (2.6 -13.2 m depth) and second (35.2 ? 44.6 m depth) lava flows are attributed to Iwa lava group and third one (54.7 ? 70 m depth) is attributed to Nebukawa lava group based on lithology and chemical compositions compared to the previous studies (e.g., Nagai and Takahashi , 2007).

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