

Petrological comparison between the earliest product of Aso-4 pyroclastic flow and its precursory lava extrusion, in cen

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Oyatsu pumice flow represents the earliest stage of Aso-4 pyroclastic eruption (89 Ka) that produced Aso caldera, and shows an interesting contrast with precursory extrusion of Takayubaru lava flow (90 Ka). The petrological comparison of the two magmas will provide important information of the magma supply system that lead to an ultra-Plinian eruption.

Both Oyatsu white pumice flow deposit and Takayubaru lava have phenocryst assemblage of plagioclase, clinopyroxene, orthopyroxene, hornblende and opaque minerals. However, Takayubaru lava contains opacitized hornblende and fractured plagioclase.

Both Oyatsu white pumice and Takayubaru lava show short but well-defined fractionation trends in the compositional plots. However, the former does not plot on the extension of the latter trend. This indicates Oyatsu and Takayubaru magmas do not show genetic relationship by fractional crystallization.

Bulk distribution coefficients estimated from the logarithm plots of trace elements (e.g. $\log(\text{Rb})-\log(\text{Sr})$, $\log(\text{Rb})-\log(\text{Zr})$, $\log(\text{Rb})-\log(\text{Ba})$) are different between Oyatsu pumice and Takayubaru lava. Thus although the phenocryst assemblage is the same, the proportion of subtracted phases seem to be quite different.

We conclude that the precursory Takayubaru magma did not form a part of huge Aso-4 magma supplying system which erupted Oyatsu pumice.

Keywords: Aso-4 pyroclastic flow deposits, Takayubaru lava, magma supplying system