

Post-caldera volcanic products from the western part of Aso volcano-Stratigraphy and composition of lavas-

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Post-caldera volcanic products from the western part of Aso volcano are characterized by the silicic composition, contrasting to those from the central part, which are mostly basaltic. Among all the lavas, those comprising the Hill of Kyoto University Volcano Observatory are rhyolitic, thus probably of different origin from the basaltic end member from the active Nakadake cone.

We studied stratigraphy, petrography, and chemistry of post-caldera lavas distributed in the western part, for the purpose of future correlation of lavas between the surface outcrops and drilling cores from the Hill of Kyoto University Volcano Observatory.

Lavas distributed in the western part of the caldera include Ayugaerinotaki, Yoshioka, Akase and Kishimadake lavas, which are basaltic to basaltic andesite; Tochinoki, Tateno, and Sawatsuno lavas, which are andesitic to dacitic; and rhyolitic Takanoothane lava. The eruption order of the following Western Aso lavas is confirmed from the stratigraphic sections; (1) Tateno lavas, (2) Takanoothane lavas, and (3) Sawatsuno lavas. Tochinoki and Tateno lavas are possibly distributed

beneath the hill of Kyoto University Volcano Observatory, which are covered by Takanoothane lava. In addition to Kishimadake lavas (vent = Kishimadake cone) and Takanoothane lavas (vent = Hill of Kyoto University Volcano Observatory), whose vent is clear, the eruption centers of the other lavas were estimated from the stratigraphy, geomorphology, and petrography of lavas.

The eruption history of Western Aso volcano is :

1. Ayugaerinotaki lava (vent location, unspecified)
2. Tochinoki lava (vent: east of the Hill of Kyoto University Volcano Observatory)
3. Tateno lava (vent: Hill of Kyoto University Volcano Observatory or the vicinity)
4. Takanoothane lava (vent: Hill of Kyoto University Volcano Observatory)
Yoshioka lava (vent location, unspecified)
5. Sawatsuno lava (vent: Kusanrigahama crater)
Akase lava (vent: Janoo or Kometsuka cones, or the vicinity)
6. Kishimadake lava (vent: Kishimadake cone)

The result of chemical analyses shows narrow compositional variation for each lava except for Sawatsuno lavas whose silica content varying between 56-62 wt.% and 65-67 wt.%. Silica content of other lavas are as follows. Ayugaerinotaki lava (51-53 wt.%), Tochinoki lava (60-62 wt.%), Tateno lava (65-67 wt.%), Yoshioka lava (52-53 wt.%), Takanoothane lava (70 wt.%), Akase lava (54wt.%), Kishimadake lava (52-53 wt.%). The western Aso lavas as a whole show a single fractionation trend, however in detail, some lavas show distinct trend crosscutting the whole trend.

This indicates shallow fractionation trends separating from the trend from the deep reservoir, thus supporting the multiple magma reservoir model of Ono and Watanabe(1983).