

Changes in magma composition and formation process of Minamidake stratovolcano, at Sakurajima volcano, Kyushu, Japan; inferred from paleomagnetic age estimate and chemical composition analysis.

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Sakurajima volcano is a stratovolcano complex situated in south Kyushu, Japan. Fukuyama (1978) divided lava flows of Minamidake stratovolcano which distributed south part of Sakurajima, into M1-M4 in order from the lower. Paleomagnetic ages of M1 and M2 lava were obtained by Miki (1999) as 4 ka, and, 2 ka or 3 ka, respectively. Samples for paleomagnetic measurements and XRF analysis collected from mainly M3 and M4 lava distributed in south and southeast slope of Minamidake. Paleomagnetic age is estimated by comparison between known geomagnetic secular variation and measured paleomagnetic direction and paleointensity. As a result, paleomagnetic ages of M3 and M4 are estimated as about 2.9 ka and about 1.0 ka, respectively. From results of XRF analysis, M4 lava shows 65 wt% of SiO₂ and relatively high P₂O₅ and TiO₂ contents, where about 62 wt% of SiO₂ and relatively low P and Ti contents are observed from lower lavas (M1-M3). These facts are consistent with that products of recent 2000 years in Sakurajima volcano show higher P and Ti contents, pointed out by Uto *et al.* (2005). It is considerable that the main body of Minamidake stratovolcano, consists of M2 and M3 lavas, was formed during several hundred years around 3000 years ago. And, no lava whose age is between about 3 ka and late 8th century is found. Chemical composition of lavas of high P and Ti group including "historic lavas" seems to change systematically, where that of low P and Ti group is uniform. During recent 1300 years, SiO₂ content increased until Bunmei eruption (late 15c), then decreased until present. This may an important information to consider about evolution process of magma chamber of Sakurajima volcano.