

## Diversity of volcanic activities in Kyushu

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Kagiyaama and Morita (2008) set up the following hypothesis on a preparing process of caldera forming eruptions. Volcanism has a wide range of diversity represented by two typical end members controlled by the easiness of magma storage beneath volcano; 'Eruption dominant (ED) volcanism' in difficult condition and 'Geothermal activity dominant (GD) volcanism' in easier condition. Basic magma has been stored repeatedly after intrusive events in GD volcanism, and has changed into silicic magma. After repeated events, newly supplied basic magma hits the stored magma and causes a huge eruption. Kagiyaama and Morita (2008) proposed to examine this hypothesis to understand a preparing process of caldera forming eruptions. This paper partly examines this hypothesis from the viewpoint of diversity of volcanic activity in Kyushu.

Sakurajima Volcano is a typical example of ED volcano, because it has frequent magmatic eruptions. In this volcano, magma of ten million cubic meters a year is supplied from deeper part. On the other hand, Beppu geothermal area discharges thermal energy several hundreds MW, though Tsurumi and Garan Volcanoes near from Beppu have no magmatic eruptions in historic times. This discharge rate corresponds to the cooling of magma of several millions cubic meters a year. This evidence indicates that Sakurajima discharges thermal energy by eruptions, while Beppu discharges in geothermal activity.

Similar diversity in volcanic activity is recognized between volcanoes in Kirishima Volcanic Group. The Volume of erupted products in recent 1200 years in Ohachi, Shinmoe-Dake and Iwo-Yama, which are members of Kirishima Volcanic Group, is estimated as 255, 94 and 9.3 in million cubic meters, respectively. On the other hand, heat discharge rates were estimated as 2MW, 22MW and 61MW, respectively. This result indicates reverse relation between magma eruption rate and heat discharge rate. According to Kagiyaama et al. (1997), Iwo-Yama and Shinmoe-Dake have low resistivity zones at 10km depth, while Ohachi has no conductive zone. This evidence suggests that magma stagnate beneath Iwo-Yama and Shinmoe-Dake, while most magma rise to erupt in Ohachi. This paper examines a part of volcanoes, but it may suggest that diversity of volcanic activity is controlled by the easiness of magma ascend beneath volcanoes.