

Geodetic aspects in difficulties of eruption scenario inferred from Shinmoedake events in 2011

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Japan Meteorological Agency monitors activity of volcanoes in Japan and issues information to mitigate damage from volcanic disasters, one of which is the Volcanic Alert Level based on an eruption scenario for each volcano. In these days, geodetic observation to detect deformation of volcanic body plays an important role in assessment of volcanic activity, however, an occurrence of anomalous deformation is rarely described in the eruption scenario, because no deformation event has observed in most of volcanoes. For rapid and adequate determination of the Volcanic Alert Level, it is desired to understand a condition of underground magma more quantitatively by the volcano geodetic observation.

A subplinian eruption occurred at Shinmoedake, Kirishima Volcanic Group in January 2011. Preceding the eruption, GPS observation revealed an inflation centered at about 10 km northwest from Shinmoedake. Though the inflation seemed to be caused by a magma supply from the depth to a chamber, this kind of event did not appear in the eruption scenario, and hardly expected a relation to the activity of Shinmoedake because the inflation took place in rather distant area from the volcano. After the subplinian eruption and following lava effusion, a simultaneous deflation was found out and it became clear that the erupted magma was supplied from this distant magma chamber. Here we make an attempt to summarize the condition of magma quantitatively in order to make use of the geodetic observation for the eruption scenario in future.

Keywords: eruption senario, Shinmoedake, volcanic deformation