

Pre-eruptive process of 2000 eruption in Miyakejima Volcano, deduced from campaign GPS data between 1995 and 1999

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Miyakejima Volcano has been surveyed by means of leveling and GPS measurements after the previous eruption in 1983 through the latest eruption in 2000. University of Tokyo, Nagoya University and Kyushu University carried out annual GPS campaigns at Miyakejima Volcano between 1995 and 1999. A GPS network composed of about 20 sites was established on Miyakejima Island. Horizontal displacements resulted from these repeated GPS campaigns showed a rough outward pattern, especially at the western part of the island. Vertical displacements showed uplift, although they had large errors. We hoped compared campaign GPS data to leveling or continuous GPS data supplied by Geographical Survey Institute or Tokyo prefecture. However the results from campaign GPS data seemed to have a lot of problems, and did not show a good agreement with them. In this study, we re-process the campaign GPS data and try to compare with the other geodetic data, taking into consideration the selection of fixed station and possibilities of site effects at each site.

Nishimura et al., [2002] modeled continuous GPS data and leveling data during 1997-1999, and estimated an inflation source located at the depth of ~9.5km around the southwest region of the island. Kimata [2003] modeled just the horizontal components of campaign GPS data during 1995-1999, and estimated a combination of sill- and dike-type pressure source in almost same region as above. In this study, we also try to model both horizontal and vertical components of the re-processed campaign GPS data, and compare it to previous results.