

Suggested relationship between deflation of Miyake island and emission of SO₂ since September 2000

Makoto Murakami[1], Takuya Nishimura[2], Shinzaburo Ozawa[3]

[1] Crustal Deformation Lab., The GSI, [2] GSI, [3] Geographical Survey Institute

<http://www.gsi.go.jp>

Since September 2000, significant gas emission continues from a central vent of Miyake volcano. Crustal deformation suggesting deflation of the volcano is observed by GPS. In this paper we test a hypothesis that the deflation is caused by decrease of volume due to gas emission in the magma chamber. We also examine any possibility of change of deflation rate which may suggest change of gas emission rate.

In the summer of 2000, a series of geodynamical events, i.e., eruption and caldera formation of Miyake volcano and large-scale earthquake swarm including several M6 class ones near Kozu island occurred in the northern portion of Izu-Bonin Islands. This series of events started with a sharp increase of seismicity in Miyake island in the evening of June 26, 2000. Significant deformations were deflation and subsidence of Miyake island (volcano), rapid expansion of distance between Kozu island and Nijima island, and associated deformations in Boso peninsula, Izu peninsula and Tokai region. The pattern of crustal deformations suggest a deflation of magma chamber and dike intrusion at the ocean bottom between Miyake and Kozu islands. Since September 2000, significant gas emission continues from a central vent of Miyake volcano. Crustal deformation measured by GPS (JMA and GSI, etc.) suggesting deflation of the volcano is observed by GPS. In this paper we test a hypothesis that the deflation is caused by decrease of volume due to gas emission in the magma chamber. We also examine any possibility of change of deflation rate which may suggest change of gas emission rate.