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Ground deformation measurements in Izu-Oshima volcano (2)

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In Izu-Oshima volcano, inflation continues over 20 years since the end of the last eruption in 1986-87, suggesting magma accumulation for future eruptions. Recent continuous GPS observations revealed repetition of shorter term of deflation ? inflation events of the volcano. Meteorological Research Institute has been reinforcing the ground deformation observation such as GPS and APS. On February of 2009, dense GPS network was installed in the caldera area to enhance spatial resolution of ground deformation and source parameter estimations.

Deflation and inflation events occurred in 2009-2010. GPS and APS baseline lengths whole the island started to shorten around October of 2009 and continued until April of 2010. Then, baseline lengths reversed to extend and the number of earthquakes increased. Horizontal strain distributions derived from GPS baseline length results suggest deformation sources of both deflation and inflation events locate beneath the northern part of the caldera. If the Yamakawa-Mogi source located at 5 km-depth is applied, 2.4 million cubic-meters of volume decrease and 4.2 million cubic-meters of volume increase are estimated for the deflation and inflation events, respectively. However, calculated horizontal displacements at the northern and southern coastal areas do not fit well to the observed ones. This may indicates existence of another deeper deformation source.

Keywords: Izu-Oshima volcano, ground deformation, GPS