

Analysis of volcanic deformation at Tokachi-dake volcano by using 3-D boundary element method

*Ryohei Kawaguchi¹, Yosuke Miyagi¹

1.NIED

Recent geodetic observations at active volcanoes succeeded in detecting small volcanic deformations associated with volcanic activities. These data can be used for quantitatively understanding the magma dynamics before eruptions. In this study, we calculated the volcanic deformation on the basis of 3-D boundary element method to explain the volcanic deformation data at Tokachi-dake volcano detected by SAR observation (Miyagi et al., 2016). Assuming an ellipsoidal shape pressure sources below the Maetokachi, deformation field at Tokachi-dake area, our forward modeling shows that ellipsoidal shape pressure source was locating at 300 m depth with about 3,000 m³ volume increase could explain the deformation field observed at Tokachi-dake from SAR data. Using the temporal changes of ground deformation such as detected from GNSS data will enable us to constrain the pressure sources, which may give a new constraint on magma process prior to eruption.

Keywords: Tokachi, volcano deformation, BEM