

Possibility of real-time volcanic plume monitoring using GNSS phase residual and SNR data

*Yusaku Ohta¹, Masato Iguchi²

1. Research Center for Prediction of Earthquakes and Volcanic Eruptions, Graduate School of Science, Tohoku University, 2. DPRI, Kyoto University

A volcanic explosion is one of the largest energy release phenomena on earth. The ash fall can seriously affect human activity. Thus, the monitoring and prediction of ash fall is very important. Unfortunately, visible light cameras cannot be used to observe eruptions that occur at night and/or when skies are cloudy. Several researchers have investigated the applicability of meteorological radar to the monitoring of the spatiotemporal distribution of eruption clouds, including the ash. Global Navigation Satellite System (GNSS) data provide a useful alternative to meteorological radar for detecting volcanic plumes (e.g. Ohta and Iguchi, 2015).

Recently, the GSI and Tohoku University have developed a nationwide (>1200 sites) real-time crustal deformation monitoring system (REGARD), based on kinematic GNSS analysis, to determine the coseismic fault model of large earthquakes. We will discuss the possibility of the real-time volcanic plume monitoring using GNSS phase residual and SNR data based on the REGARD system.

Keywords: GNSS, volcanic plume, real-time