

SVC070-P31

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Source model for crustal deformation of Kirishima volcano based on GPS Integrated Analysis in Volcanic Region

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Geospatial Information Authority of Japan (GSI) is monitoring the crustal deformation of Kirishima volcano, using GPS observation data of GEONET and GPS observation sites of Japan Meteorological Agency (JMA) and National Institute of Earth Science and Disaster Prevention (NIED). We found the baselines surrounding Kirishima, those are Ebino to Makizono, Makizono to Miyakonojo-2, Miyakonojo-2 to Ebino, started to extend from December 2009. As we recognized this phenomenon means the inflation of the volcano, we submitted a observation results and source models, based on the observation data, to Coordinating Committee for Prediction of Volcanic Eruption on June and October, 2010.

Adding the observation data from JMA sites and NIED sites, and using the for the integrated analysis combining with GEONET data, the source model became more sophisticated. A deep source at the northwest of Karakunidake and a shallow source under Shinmoedake are estimated for the crustal deformation before January 2011. Rapid deflation is observed after the magma eruption from January 26. Although this deflation stage continued until February 1, the shortening of the baseline length was less than the extension for one year before the eruption. The estimated deflated volume of the source is also smaller than the inflated volume before the eruption. In-SAR images from DAICHI, PALSAR show the crustal deformation patterns, which are consistent to GPS observation data and source models. GSI installed an additional GPS observation sites in Kirishima area to monitor the crustal deformation. We have found the baselines surrounding Kirishima is extending in the same rate as that before the eruption, based on the observation date until the middle of March 2011. This means the magma is being supplied into the deep source, constantly.

Acknowledgement

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Keywords: Kirishima volcano, 2011 eruption, crustal deformation, GPS observation, source modeling, integrated analysis