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Crustal deformation after eruption of Shinmoedake, Kirishima and Continuous GPS Observation

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Blast eruption of Shinmoedake, Kirishima, Japan occurred on January 27, 2011. Before eruption there are four continuous GPS observation sites with three GEONET sites of GSI, two sites of NIED and a site of DPRI, Kyoto University. In order to clarify crustal deformation around Shinmoedake, a GPS site (MNZS) occupied on January 29, two sites (TKCH, KRNO) on January 31, KRYK on February 8. GPS data at four sites set up after the eruption send to ERI, University of Tokyo and/or Kagoshima University through mobile phone once a day. Automatic GPS analysis is carried out by using Bernese GPS Software with Ultra rapid ephemerides once a day. After estimating coordinates of each GPS site, baseline lengths between GPS sites are calculated and then presented on the Web page automatically.

Nakao et al. (2011) estimated the source of crustal deformation before the blast eruption which is located about 4 km WNW from Karakunidake with depth 9.7 km. We compare change rate of baseline length before and after eruption. We estimated rate of baseline length by least squared method in the periods from December 1, 2010 to January 25, 2011 and from February 1 to March 28, 2011. Rates of baseline length, which is bookended the deformation source, do not decrease after the eruption. They are still high rates, say 4 to 5 cm/year and change rates do not decrease after the eruption. Rates of baseline length composed of newly occupied GPS site are also high, 4 to 6 cm/yr, which is bookended the deformation source.

We conclude that it seems that activity of Shinmoedake does not become low. We have to check the crustal deformation associated with magmatic activity.

Keywords: Shinmoedake, GPS