

Crustal deformation in and around Beppu-Shimabara Graben by continuous dense GPS Network

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Beppu-Shimabara Graben located in central Kyushu. In this area, there is north-south extension field. It is important to study the crustal deformation in this area to research tectonics in Kyushu district. We started 20 continuous GPS observation added to GEONET sites from 2009 in and around Beppu-Shimabara Graben.

GPS data observed at our stations, GEONET and 15 IGS sites are analyzed by Bernese GPS Software Ver. 5.0 (Dach et al., 2007) with IGS precise orbit and Earth rotation parameters. We can get daily coordinates of the sites (Nakao, et al., 2010).

Displacement velocities, which are coefficient of linear trend, are estimated by least squares method.

When these velocities, which are relative to 960688 GEONET site, plotted, clear boundary can see. 960688 GEONET site is located in the northern part of Kyushu. The displacement velocities of northern part from this boundary, where fixed site 960688 is located, are almost zero. On the other hand, those of southern part are from several to 10 mm. This boundary is from the northern part of Beppu Bay to Uki City in Kumamoto Prefecture via Aso Volcano. There are a lot of active faults on this boundary. The western part of this boundary seems the south boundary of Beppu-Shimabara Graben. However, the eastern part is not the south boundary but the north boundary.

There is the clear boundary of crustal deformation in Beppu-Shimabara Graben..