Crustal deformation by continuous GPS observation in northern part of Kinko Bay, Kagoshima

Shigeru Nakao[1]

[1] Kagoshima Univ.

Continuous GPS observation by Kagoshima University started around Kinko Bay, Kagoshima in 1993. In Northern part of Kinko Bay there is a most active volcano Sakurajima and Aira caldera. Eto et al. (1999) reported that there is pressure source beneath the Aira caldera according to leveling and EDM observations. Small eruptive activities occurred in Showa volcanic vent in June, 2006.

There are four sites named NOEV, TAKT, USKI and KD2H around Sakurajima Volcano. Observation at KD2H starts in April, 2002. Daily coordinates of the sites are calculated with GEONET sites by Bernese GSP Software Ver. 5.0 from April, 1996 to March, 2006. Troposphere parameters are estimated every 1 hour and tropospheric gradient parameters are also estimated every day. We adopt minimum constraint solution method for the datum definition (ITRF2000) of our network. This type of definition is based on Helmert constraints on coordinates of sites (TSKB, PETP, GUAM and LHAS) with respect to a reference frame.

Velocity of sites which is located near the Aira caldera is from 3.4 to 4.6 cm/yr with southeastward direction. Two triangles are composed by GPS sites, one is on the Aira caldera, the other is on Sakurajima volcano. Strain changes are calculated in the triangles using displacement results. In both triangles expansion occurs. EW component of strain rate in Aira caldera is larger than NS component. While the other hand NS component is lager than EW component in Sakurajima.