

# On strain rate deduced from GEONET in Kyushu, Japan

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Geographical Survey Institute(GSI) has been operating a nation wide GPS observation network (GEONET). In Kyushu island there are about 150 GEONET sites and their daily site coordinates since 1996 are opened in the GSI's web site. We estimate the site velocities from these daily coordinates from 1996 to 2002 extracting annual and semi-annual components simultaneously to reveal strain-rate field in Kyushu. Using the same method as Sato et al. (2002), site velocities at grids with every 5 minute interval are estimated with BLOCKMEAN and SURFACE commands implemented in the Generic Mapping Tools (GMT) by Smith and Wesson (1991), and strain rate field is then calculated. Iguchi (2003) estimated velocities of the temporary GPS sites in and around Kinko Bay, Kagoshima by using GPS campaign observation from 1998 to 2003. We include these data in our analysis.

Tada(1993) and Kato et al.(1998) pointed out that there exists north-south extensive strain field in Beppu-Shimabara Graben from the triangulation data during about 100 years, and GEONET data from April, 1996 to March, 1997, respectively. In our analysis, NS extensive strain is prevailing in the whole Kyushu island, while EW contraction with magnitude of about twice larger than that of NS extension is also dominant except for the areas around Aira caldera and Ariake Sea. Distinctive dilatation is detected in Aira caldera, however, negative dilatation is obtained in Aso and Kuju Mountain. This suggests that inflation and deflation sources are now governing beneath those area, respectively. Kakuta et al.(1992, 1995) pointed out that there is a narrow seismic zone of crustal earthquakes along the north latitude of 32 degree, where we derive large maximum shear strain especially near the focal area of in the 1997 Kagoshima-ken Hokuseibu earthquake and the south of Kirishima volcano.