



On Estimation of GPS-based Indonesian Strain Rate Map

Susilo Susilo (1,2), Hasanuddin Z. Abidin (1), Irwan Meilano (1), Benyamin Sapiie (1), and Antonius B. Wijanarto (2)

(1) Institute of Technology Bandung, Faculty of Earth Science and Technology, Geodesy Research Group, Bandung, Indonesia (hzaabidin@gd.itb.ac.id), (2) Geospatial Information Agency of Indonesia, Jl. Raya Jakarta-Bogor Km. 46, Cbinong, Indonesia (susilosarimun@gmail.com)

Using the GPS-derived rates at survey mode (sGPS) stations and continuous GPS stations across Indonesian region, covering the 22 years period from 1993 to 2014, the linear deformation velocities with an accuracy of about 2 to 3 mm/year level are derived. These velocities are corrected to the coseismic and postseismic deformation caused by significant earthquakes in that period. In this study, we use this GPS velocities field to construct a crustal strain rate map without including the physical model yet. An interpolation method was used to compute the velocity model. By differentiation of the continuous velocity model, we derive the strain rate map of Indonesia. At present, our result is only the magnitude of the strain rate. The Indonesian strain rate map is very important for studying the deformation characteristics in the region and to establish a deformation (velocity) model for supporting the implementation of the Indonesian Geospatial Reference System 2013 (IGRS 2013). This is a new semi-dynamic geocentric datum of Indonesia, which uses the global ITRF2008 reference frame, with a reference epoch of 1 January 2012. A deformation (velocity) model is required to transform coordinates from an observation epoch to or from this reference epoch.