

Tectonic studies in West Java (Indonesia) using GPS

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Along the Java trench the Australian-Oceanic plate is moving and pushing on to and subducting beneath the Java continental crust at a relative motion of about 70 mm/yr in NNE direction. This subduction-zone process imposed tectonic stresses on the fore-arc region offshore and on land of Java, thus causes the formation of earthquake fault zones to accommodate the plate movement. Historically, several large earthquakes happened in Java, including West Java. This research uses data from GPS surveys and Continuous GPS (CGPS) stations to study the inter-seismic deformation related to the Cimandiri, Lembang and Baribis faults. Several GPS campaigns have been conducted to study the inter-seismic deformation of these faults. GPS campaigns in Cimandiri fault had been conducted on December 2006, August 2007, August 2008 and July 2009; in Lembang fault on June 2006, November 2006, August 2007, August 2008 and July 2009; and in Baribis fault on May 2007, November 2007 and August 2009. Preliminary analysis of GPS data indicates the existence of sinistral horizontal displacement of Cimandiri fault with the rate of about a few cm/year. There are no clear and distinct inter-seismic deformations were observed in the cases of Lembang and Baribis faults. These results from GPS surveys are in agreement with the results derived from seven continuous GPS stations of BAKOSURTANAL located at Pameungpeuk, Sagaranten, Ujung Genteng, Jampang Kulon, Cisolok, Lido and Cibinong.

Keywords: Tectonic, Fault, West Java, GPS Survey, Continuous GPS