

Postseismic deformation of the 2007 Bengkulu Earthquake series from GPS and InSAR method

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Two earthquakes were hit the southern part of Sumatra on September 12, 2007 near the capital of Bengkulu Province, Sumatra, Indonesia. Bengkulu City is located approximately 130 km North-East from the epicenter of the first earthquake, Mw 8.4 on 11:10:26 UTC and approximately 210 km South-East from the epicenter of the second earthquake Mw 7.9 on 23:49:04 UTC.

The rupture initiated at the southeastern edge of a patch of the subduction interface that had been shown to be strongly locked from geodetic and paleogeodetic interseismic measurements. The rupture propagated unilaterally to the north as a sequence of Mw 6 and Mw 7 earthquakes.

To assess the ground deformation around Bengkulu City after the earthquakes three Fine Beam mode PALSAR data were processed. The data were observed on January 29, 2007, September 16, 2007 and November 1, 2007. The data were processed using GAMMA SAR Software and utilize the SRTM data as additional DEM.

This paper will describe the ground deformation assessment around Bengkulu City from GPS data analysis completed with the differential InSAR method. The maximum coseismic displacement from GPS result was 1.5m southwestward and 0.6 m uplift at Pagai Island. Significant postseismic uplift suggest afterslip occurred around coseismic area and it's downdip extension.