

Postseismic deformations following the Sumatra-Andaman earthquake in SE Asia during three and half years

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Since the occurrence of the 2004 Sumatra-Andaman earthquake (Mw9.2), the Sumatra-Andaman Subduction zone has attracted geophysicists' attention. We have been carrying on CGPS observation in Thailand and Myanmar to detect postseismic deformation following this gigantic event. Since CGPS on land is not enough to clarify the detailed image of postseismic deformation, we also make InSAR analyses in Andaman and Phuket Islands.

We have analyzed CGPS data up to the end of 2007 and detected postseismic displacements all over the Indochina peninsula. Phuket, which suffered from about 26cm coseismic displacement, has shifted more than 30cm southwestward till July, 2007. Postseismic transient is clearly recognized and already exceeds coseismic movements at remote sites such as Bangkok and Chiang Mai in Thailand.

We try to invert observed postseismic displacement and estimate distribution of afterslip using Yabuki and Matsu'ura's(1992) scheme. Afterslip may have rapidly decayed in and around the source region of the Nias earthquake and beneath the Andaman Islands, while it still continues beneath the northern tip of Sumatra and Nicobar Island. This result implies spatial variation in frictional property on the plate interface.

Our GPS sites are located in far field and the afterslip distribution obtained above does not have enough resolution in the depth direction. In order to examine near-field displacement, we also process 3 ALOS/PALSAR images acquired during Jun.19, 2007 and May 6, 2008, in Andaman Islands in order detect postseismic transient. The result shows a negative line-of-sight displacement in the southern part, which is consistent with CGPS observation by Paul et al.(2007). This movement can be simulated by an afterslip on the plate interface SE off the Andaman Island.

