

## Postseismic Deformations Following the Sumatra-Andaman and Nias Earthquakes Detected by Continuous GPS Observations in Southeast Asia

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We analyzed continuous GPS data from 14 sites in Thailand, Sumatra and Myanmar with IGS sites in surrounding regions following the Sumatra-Andaman earthquake of December 26, 2004 to detect postseismic deformations. Large postseismic displacements that have similar directions to coseismic displacements are observed at Phuket and Sampari before the Nias earthquake. However the ratio of the former to the latter is three times larger than the latter, while it is about two for the coseismic displacements. This suggests that the spatial distribution of afterslip is different from the coseismic slip distribution. Wider fault plane than 200km is preferable to explain the postseismic displacements, which activation of afterslip in the deep extension of the plate interface. Slip was dominant on the segment beneath the Nicobar Islands and southern Andaman Islands during this period, which suggests afterslip propagated toward north. These displacements suggest about 1.7~2.7m slip on a shallow dipping thrust fault. However northernmost segment beneath the Great Andaman Island has no significant afterslip. Equivalent moment release is estimated to be 2.11x1022Nm (Mw=8.82). Postseismic displacement toward SW is dominant at Sampari after the Nias earthquake, while those from the Sumatra-Andaman earthquake are prevailing in Thailand. It is worth noting that no remarkable postseismic displacement is found in Yangon, Myanmar. Equivalent moment release is estimated to be 4.23x1022Nm(Mw=9.02) including afterslip following the Nias earthquake during the period from December 27, 2004, and the end of September 2005. We fit a curve based on ductile creep rheology by Motesi (2004) to time series of postseismic displacements. The results imply short time constants and negative exponents which imply significant reloading effects. Acknowledgements: This work is done by the cooperation with the following people in Thailand, Myanmmar and Indonesia: Dr. Yuichi Otsuka(STE Lab. Nagoya University), Dr. AungKyi(Department of Meteorology & Hydrology, Myanmar), Prof. Sununtha Kingpaiboon(Khon Kaen University), Prof. NarongHemmakorn(King Mongkut's Institute of Technology Ladkrabang), Prof. Tharadol Lomolmis(Chiang Mai University), Drs. Takashi Maruyama and Masabumi Kawamura(NICT) and Dr. Peiming Wu(JAMSTEC).