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The gravity footprint of the Sumatra-Andaman and Nias earthquakes - detection and interpretation

I. Einarsson, A. Hoechner, R. Wang, and J. Kusche
GeoForschungsZentrum, Potsdam, Germany (indridi@gfz-potsdam.de)

Over four years have passed since the 2004 earthquake and tsunami offshore Sumatra, which a few months later was followed by a large earthquake by the island Nias. Earthquakes of this size cause mass-dislocation on such a scale, that it is measureable by the GRACE gravity satellite mission. Furthermore, the dislocated masses disturbs the isostasy equilibrium of the crust, thus triggering a long-term relaxation process, the postseismic relaxation.

We discuss the problems related to identifying and separating the footprints of the co- and postseismic gravity signals of both earthquakes. We also compare those to predicted gravity signals by a viscoelastic model calibrated by dislocation of GPS stations and other data.