



What we can learn about the Andaman-Sumatra 2005 earthquake using GRACE gravity models?

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The GRACE data on temporal variation of the Earth gravity field deliver important independent information about geodynamic processes occurring in the Earth interior. According to our estimates, variations of the global gravity field due to various tectonic processes are weak compared to gravity signals from the atmosphere or fluid envelope. Nevertheless, their spatial and temporal signatures differ from other signals and they can be separated by applying dedicated data processing and analysis methods. Here, we study the gravity signature of the Andaman-Sumatra earthquake of 2005 using GRACE gravity models for the end of 2004 – beginning of 2005 compiled by CNES/GRGS (Biancale et al, 2005).

Our approach includes several steps. First, we correct the data for known non tectonic processes (atmosphere, ocean, hydrology). Second, we compute synthetic gravity signals associated with different possible geodynamic processes. For the Andaman-Sumatra earthquake we considered the fault plane models suggested by different authors in result of analysis of seismology and regional geodetic data. As a third step, we select the best fault-plane model from the set of considered ones on the basis of a probabilistic analysis.