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Crustal deformation due to the 2008 Iwate-Miyagi Nairiku earthquake and its driving mechanism

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Many observations and data analysis have been done for the Iwate-Miyagi Nairiku earthquake (Mj 7.2) that occurred on 14 June 2008 (JST), and some fault models have been proposed. We have constructed a fault model using synthetic aperture radar (SAR) analysis (ALOS/PALSAR). To explain very complicated crustal deformation detected by SAR, we required five fault planes of which one dips to the east while others dip to the west (Takada et al., 2009). In this paper, we claimed that the fault slip involved with this earthquake did not occur on a single plane but several fault planes that differ in geometries each other. The east dipping fault, as well as west dipping ones, in our fault model manifests itself as a steep gradient in the range offset field and spatial pattern of the aftershock hypocenters. This time, we improved our fault model with more precisely re-determined data sets (e.g., hypocenters, moment solutions, etc.) and 3-dimensional displacement field inferred from pixel offset measurements, which enables us to clarify physical relationships between the loading mechanism of inland earthquakes and the geological background in and around Mt. Kurikoma (e.g., Takada and Furuya, 2010).

References:
Y. Takada and M. Furuya, Aseismic slip during the 1996 earthquake swarm in and around the Onikobe geothermal area, NE Japan, 2010, Earth Planet. Sci. Lett., vol. 290, 302-310.

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