

Coseismic slip from the January 4,2009, Mw7.6 Papua, Indonesia, earthquake as constrained by InSAR Observation

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On 4 January 2009, at 19:43 UTC a Mw7.6 earthquake occurred about 10 km north of bird head of Papua, Indonesia. This event was remarkable in many respects. First, it caused significant damage on cities at bird head, and generated a tsunami whose run-up detected 50 cm on Japanese Island. But perhaps more interestingly, it took place along a section of Manokwari Through (MT) where no record of major earthquake prior to its occurrence. The earthquake brought important implication on tectonic setting in this region.

We analyze radar interferometric displacement field and invert for the distribution of slip along the coseismic fault plane. We estimate the fault geometry by using genetic algorithm and constrained linear inversion for the slip distribution. The strike, dip, slip distribution and seismic moment of our preferred model are generally consistent with previous seismic inversion, although significant difference do exist. Our inversion reveals that the location and earthquake slip direction might be influenced by oblique convergence of bird head-pacific plate.