



InSAR measurements for the 2014 Mw 6.0 Jinggu, Yunnan Earthquake

Jiajun Chen (1), Wanpeng Feng (2), Samsonov Sergey (2), Motagh Mahdi (3), Zhenhong Li (1), and Peter Clarke (1)

(1) COMET, School of Civil Engineering and Geoscience, Newcastle University, NEWCASTLE UPON TYNE, United Kingdom (j.chen26@ncl.ac.uk), (2) Canada Centre for Mapping and Earth Observation, Natural Resources Canada, Ottawa ON, Canada, (3) Department of Geodesy and Remote Sensing, Helmholtz Centre Potsdam, GFZ German Research Centre for Geosciences, German

An earthquake occurred in the southwest of Yunnan, China on 7 October 2014 at 21:49 local time, measured as Mw 6.0 by the United States Geological Survey and Mw 6.1 by the European Alert System. Strong earthquakes are common in this region because of the continental collision between the India and Eurasia plates with a relative convergence rate of 40-50 mm/yr. A detailed study of this earthquake will therefore allow better understanding of regional fault properties.

For the first time, Radarsat-2 (RS2) data was employed to investigate co-seismic surface movements of this event. Two ascending RS2 images acquired on 2 October 2014 and 19 November 2014 were used to generate an interferogram, revealing line-of-sight (LOS) displacements with a maximum value of 0.13 m (towards the satellite) in the NW sector.

We use PSOKINV to determine fault geometric parameters and slip distribution. First, fault parameters are determined using improved particle swarm optimization. Second, slip distribution over the fault plane is retrieved using an iterative strategy for estimating optimal dip angle and smoothing factors [Feng et al., 2013]. The comparison between the modelled LOS changes and the measured ones shows a good fit, with residuals smaller than 0.02 m. The best-fitting model suggests that the rupture occurred on a left-lateral strike-slip fault with a strike of 323° . The total released moment is equivalent to Mw 6.1 and the main slip zone is confined between depths of 2-8 km. A maximum slip of 1.1 m appears at a depth of 4.3 km, with a rupture length of about 10km.

Reference:

Feng, W., Z. Li, J. R. Elliott, Y. Fukushima, T. Hoey, A. Singleton, R. Cook, and Z. Xu (2013), The 2011 MW 6.8 Burma earthquake: fault constraints provided by multiple SAR techniques, *Geophysical Journal International*, doi:10.1093/gji/ggt254.