



Spatiotemporal evolution of transient slip on the Xianshuihe fault zone in Southwestern China

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The Xianshuihe Fault zone is located at the eastern-boundary of the Sichuan-Yunnan Block, where is a seismically high active area with several strike-slip fault zones in Southwestern China. Since 1700 there are eight earthquakes $M \geq 7$ occurrence at the Xianshuihe Fault zone. About 20 GPS sites are distributed around the Xianshuihe fault zone, which are part of the Crustal Movement Observation Network of China starting observation from 1994. In addition, there are 11 sets of traditional geodetic measurements starting observation in 1980s.

The length of the Xianshuihe Fault zone is about 300km in strike direction and its width is about 50km in dip direction. To evaluate the spatial distribution of slip by the method of Extended Network Inversion Filter (NIF), the surface of the fault zone is divided into the size of grid with 10km by 10km, the Xianshuihe Fault zone is specified as left lateral slip with no dip slip and tensile component. The direction of dip and strike are known and the Poisson's ratio is given as 0.25. The Green Function forms the relationship between the slips of these grids and deformation of the sites on the surface. The slips are obtained on the each grid, and grids with high slip rate are detected, simultaneously the surface deformation is gained caused by tectonic action.

This work is supported by grants from the National Basic Research Program of China (2004CB418405) and Young Scientist Fund of Institute of Earthquake Science, China Earthquake Administration (QN200406).