



The Dynamic Pattern of the Honghe Fault Combined PS-InSAR with GPS

Jingfa Zhang (1), Zhenhong Li (2), and Yunfeng Tian (1)

(1) Institute of Crustal Dynamics China Earthquake Administration, Beijing 100085; China (zhangjingfa@hotmail.com), (2) School of Geographical and Earth Sciences, University of Glasgow, Glasgow G12 8QQ, United Kingdom

The Honghe Fault Zone is a gigantic slide-slip fault zone extending up to 1000km from Tibet to South China Sea. It is complicated, and is dominated by right-lateral strike-slip displacement. The fault exist an extensional component of displacement and its northern part is strong and the southeast part is weak.

To detecting the deformation information of this fault is significant to study the dynamic pattern of the fault. The detection accuracy of the surface deformation by Persistent scatterers (PS) InSAR technique can reach centimeter and even millimeter scale and it can overcome the traditional DInSAR technology's restrictive factors, including the temporal and spatial decorrelation and the atmospheric effects. GPS also possesses more goodness. It is useful combined PS InSAR with GPS. It is obvious that results from both can be contrasted and complemented each other.

There are many SAR data on file and many GPS stations in this area. Therefore, there is the good condition join PS InSAR and GPS technique.

In this paper, about 60 scenes ENVISAT ASAR data were collected that covering several tectonic basins of Honghe Fault area, for example, Eryuan, Dali, Midu and so on.

The result by PS InSAR method shows that velocity in the edge of the basin is bigger than the place in the flat area. The maximum upward velocity reached 6.6mm/year (LOS) and the maximum downward velocity reached 6.5mm/year (LOS).

The result by GPS method shows that the value of north orientation component is decreased gradually from north to south and the value of east orientation component is decreased gradually from west to east in velocity vector map by data inversion.

Research conclude that the crustal dynamics is affected by Honghe fault activity and fault tectonic properties.