Geophysical Research Abstracts
Vol. 18, EGU2016-6042, 2016
EGU General Assembly 2016

GPS-constrained inversion of present-day slip rates along major faults of eastern Tibet

Yanzhao Wang (1), Zheng-Kang Shen (2), and Min Wang (1)

(1) State Key Laboratory of Earthquake Dynamics, Institute of Geology, China Earthquake Administration, Beijing, China (wangyanzhao@ies.ac.cn), (2) Department of Earth and Space Sciences, University of California, Los Angeles, Los Angeles, USA (zshen@ucla.edu)

Constrained by a GPS-derived horizontal velocity field, the contemporary slip rates along major active faults of eastern Tibet (90°-110°E, 20°-42°N) are inverted for using a linked-fault-element model. The model is based on known fault geometry, imposing finite constraints on slip rates of adjacent fault elements. During the eastern extrusion of the Tibetan Plateau, sinistral and dextral slips are detected across the NWW- and NNW-trending faults located north of the East Kunlun fault, while those located south of the fault are primarily characterized by left and right slips in the eastern and western areas. Left slip rates are estimated as 1.6±1.2, 3∼5, 3∼10, 0.5∼11, 13∼18, 4.6±3.9, 3.4±3.1, 6.7±2.3, 12.5±1.5, and 6.0±2.8 mm/a across the Northern Qilian, Haiyuan, East Kunlun, Ganzi-Yushu, Xianshuihe, Anninghe, Zemuhe, Daliangshan, and Xiaojiang faults and its southwest extension, respectively. Slip rates are generally lower across right-slipping faults. In conclusion, the deformation field in eastern Tibet is characterized by active micro-blocks separated by numerous faults with slip rates lower than ∼15 mm/a.