Geophysical Research Abstracts
Vol. 17, EGU2015-2596, 2015
EGU General Assembly 2015

Evidence of non-characteristic slip for the 2010 Yushu earthquake along the Yushu fault, Eastern Tibetan Plateau

Chuanyou Li
Institute of Geology, China Earthquake Adminstration, China (chuanyou@ies.ac.cn)

The 2010 Ms7.1 Yushu earthquake generated a 30-km-long surface rupture along the Gyêgu segment of the Yushu fault within the eastern margin of Tibet Plateau. Comparison of surface slip distribution from this earthquake with cumulative slips provides a basis to examine repeated activity through several earthquake cycles along the Yushu fault. To better understand the seismic behavior of the Yushu fault, I conducted geomorphological and geological investigations on the 2010 slip and cumulative offsets along the fault at several typical sites. Field observation and satellite image interpretation shows clearly that the 2010 Yushu earthquake rupture zone is restricted by the pre-existing Yushu fault, but the coseismic surface ruptures typical of this earthquake are discontinuous and usually do not show distinct slip at places where the accumulated displacements are large. Measurements made both in the field and on the satellite images show that the surface slip of the 2010 event was comparatively small and contributed little to cumulative displacement of the fault. Repeated offsets of 7-8 m characterize slip associated with events prior to 2010 along the Yushu fault, whereas the 2010 earthquake produced offsets only on the order of 1 m. In addition, surface ruptures from the magnitude 7.1 event involved the failure of less than half of the Gyegu fault segment and did not terminate at major geometrical and geological breaks in the fault zone. Geomorphic evidence implies that the fundamental behavior of the Gyêgu fault segment is typically expressed as full-length rupture activity. Thus, data from this study suggests the Ms 7.1 earthquake was not likely a characteristic event along the Yushu fault.