

Earthquakes, landslides, and rivers: Making the steep Longmen Shan margin, eastern Tibetan plateau

Jing Liu, Mar. 11. 2014, TO seminar

The Longmen Shan margin of the Tibetan Plateau is impressively steep and deeply dissected, comparable to the west Kunlun, and lesser-high Himalaya. The dramatic topographic gradient across the Longmen Shan plateau margin has motivated controversial hypotheses for tectonic and erosional processes responsible for building and maintaining it. Quantifying spatial and temporal patterns of erosion at various locations and scales is important for understanding the role of erosion in shaping the landscape. The margin-bounding Longmen Shan reverse fault belt was reactivated during the devastating 2008 Mw 7.9 Wenchuan earthquake. Coseismic landslides due to strong ground shaking are massive and extensive, providing an excellent opportunity to observe the process how tectonic events, landslides, and rivers act together to build mountain topography. In this talk, I summarize the Myr- and Kyr-scale and modern erosion rates of the region, transient heightened erosion following a morphogenic earthquake, in conjunction with information of structures and deformation history, our current understanding of evolution of the Longmen Shan margin topography.