



Contribution of high resolution PLEIADES imagery to active faults analysis. Case study of the Longriba Fault System, eastern Tibet.

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High resolution imagery has largely developed during those two last decades allowing the possibility to observe and quantify geological and geomorphological features ranging from meter to few centimeters. Active tectonic and geomorphological studies have greatly benefited from the systematic use of such data. For that reason, we tested the contribution of PLEIADES images to the analysis of an active strike-slip fault system in eastern Tibet. We used 50 cm resolution panchromatic PLEIADES images in order to map active fault segmentation, localize offsets of geomorphic markers and quantify vertical and horizontal displacements.

We propose a preliminary study using PLEIADES images along the Longriba Fault System (LFS). The LFS, located at the eastern Tibetan Plateau margin, is constituted of two NW-SE dextral strike-slip and parallel fault zones: Longriqu and Maoergai, 80 and 120 km-long, respectively. It accommodates ~ 4 mm/yr dextral slip and very few vertical motion.

We used stereo-pairs to build relative Digital Elevation Models (DEMs) (without ground control points) with a horizontal resolution ranging from 2 to 5 m, in order to understand the geometry of the system.

We measured fault segments with lengths ranging from a hundred meters to several kilometers which are relatively close from each others, and several offsets of geomorphic markers (alluvial fans, ridges, rivers) ranging from a few meters to ~ 40 m. According to the segmentation deduced from those results we suggest that the fault has a high seismic potential ($>M_w 7.0$) and that probably many surface rupturing earthquakes occurred along the LFS over the Holocene.