



Reconciling geodetic and geologic slip rates along the Carboneras fault in the Betics: work in progress

Giorgi Khazaradze, Robert López, Raimon Pallàs, Jaume Bordonau, and Eulàlia Masana

University of Barcelona, Faculty of Earth Sciences, Department of Earth and Ocean Dynamics, Barcelona, Spain
(gkharzar@ub.edu)

As part of the recently initiated research project we are in the process of studying in detail the geodynamic behavior of the Carboneras fault in the SE Betics in Spain. Specifically, we plan to quantify the geodetic and geologic slip rates for the onland section of the fault, as well as getting some insight on the state of locking of the fault. As a result of our previous GPS observations, we have been able to illustrate the continuing tectonic activity of the Carboneras fault, expressed mainly as a left-lateral strike slip motion of 1.3 ± 0.2 mm/yr (Echeverria et al., 2015). To reveal how the deformation is partitioned between different structures, 3 new continuous GPS points are being established along fault-perpendicular profile. In addition, since summer 2016, we have conducted surveys of the nearby CuaTeNeo and IGN Regente points. We have also established and measured several new geodetic points in the vicinity of the fault, with the aim of increasing the spatial coverage around it.

The above-mentioned geodetic, short-term, slip rates are in surprisingly good agreement with the estimates of geologic slip rates based on paleoseismic studies, which indicate a minimum strike-slip rate of 1.31 mm/yr and a dip-slip rate of 0.05 mm/yr since 110.3 ka (Moreno et al. 2015). In order to increase the paleoseismic event database, 6 new sites have been identified along the fault, where further paleoseismic trenching surveys will be conducted within the coming years. These new data, combined with the findings of the recent geomorphological study of river offsets (Ferrater, 2016) and new GPS observations, should significantly improve the reliability of the existent deformation data and as a consequence, contribute to better understanding the seismic hazard posed by the Carboneras fault in the SE Betics.

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