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Reliability of recurrence intervals in slow-moving faults. The case of eastern Iberia

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Paleoseismic studies performed in eastern Iberian Peninsula have revealed the presence of seismogenic faults characterized by slow slip-rate. Evidence of several large prehistoric earthquakes was provided along the El Camp normal fault to the NE (Catalan coastal ranges) and of the left-lateral Alhama de Murcia fault to the southeast (eastern betics) despite the complication of obtaining a long enough and continuous record in such slow-moving faults. In the former, eight trenches were analyzed and three paleo-earthquakes interpreted to be younger than 125 ka being the last possibly not older than 3000 yr. Additionally, a minimum of two pre-125 ka earthquakes (younger than 300 ka) were also detected even though their evidence is poor. Therefore, a recurrence period of 60 ka since 300 ka and of 30 ka since 125 ka is attributed to the El Camp fault.

In the Alhama de Murcia fault two events were detected along four trenches in the central segment of the fault (Lorca-Totana) resulting in a recurrence period of 14 ka, and one in the southern segment (three trenches, in progress). Recurrence values, however, include a large number of uncertainties: little dating constraints, little number of evidence repeated trench to trench, non continuous record (alluvial fans), little amount of earthquakes, etc. Following these uncertainties: Are the recurrence values obtained in such slow-moving faults reliable?.