



## **A 14-kyr-long seismic history for the Jordan Valley segment of the Dead Sea Fault**

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The Dead Sea fault is one of the major active strike-slip faults in the world. The Jordan Valley segment, defined by the Sea of Galilee to the north and the Dead Sea to the south is capable of producing large and destructive earthquakes ( $M_w > 7.2$ ), the most recent having occurred in A. D. 1033.

At Ghor Kabed, paleoseismic trenches dug across the bounding faults of a pull-apart basin show that at least two fault movements have occurred between A.D. 560 and A.D. 1800 ( $2\sigma$ -calibration) and can be attributed with the A.D. 749 and A.D. 1033 large earthquakes ( $M > 7$ ) that struck the Jordan Valley. Further north, at the archeological site of Tell Es-Saidiyeh,  $\sim 7$  m and  $\sim 114$  m cumulative left-lateral offsets of a drainage pattern indicate the succession of fault movements and related past large earthquakes. Paleoseismic trenches evidence up to 8 surface-rupturing events during the last 14 ka, of which the most recent is radiocarbon dated and may be correlated to the historical A.D. 1033 earthquake. A critical reinterpretation of archeological observations from 10 sites, half of which located in the close vicinity of the fault provides evidence for 9 to 12 destructive events since  $\sim 2900$  B.C.. We combine historical, archeological and paleoseismic data to build a composite catalogue of destructive earthquakes in the Jordan Valley. Its analysis reveals clusters of seismicity and quiescence periods as well as a 600- to 1000-yr-long recurrence interval for large earthquakes in the last 14 ka.