

Paleoseismic investigations along the Kera fault, Western Crete: Implications for seismic hazard assessment

¹MOUSLOPOULOU, V., ¹ANDREOU, C. and ¹ATAKAN, K. ¹
Institute of Solid Earth Physics, University of Bergen, Allegt.41, N-
5007 Bergen, Norway, E-mail: atakan@iff.uib.no

Western Crete is dominated by extensional tectonics as expressed by the N-S oriented normal faults on the north-western part of the island. Paleoseismic investigations performed along the Kera fault scarp, which is part of a N-S oriented fault system along the Spatha peninsula, show clear evidence of repeated normal faulting events. Five distinct episodes of faulting is observed, where the first two are probably of Middle-Miocene or younger age representing older tectonic episodes, whereas the last three indicate co-seismic displacements most likely during the Pleistocene and Holocene. This is in good agreement with the previous estimates of Holocene average slip rate and the recurrence time estimate of large earthquakes in the order of ca.1mm/yr and 3000 yrs. The Kera fault represents a NE-SW oriented bend in a N-S fault system and therefore has a minor left-lateral strike-slip component. Occurrence of recent earthquakes as well as the recent paleoseismic results clearly demonstrates the need of revising the seismic hazard potential. The length of the N-S oriented fault system, where the Kera fault represents the middle segment, reaches to a total of 30 km., and is capable of generating an earthquake of magnitude in the range 6.0-6.7. Such a (shallow) earthquake occurring at a short distance to the densely populated north-western coast of Crete (including the population centres such as Chania and Kastelli), is likely to have tragic consequences.