



## **Holocene normal faulting in Crete (Greece): insights for the regional seismotectonic behaviour**

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Based on the occurrence of typical morphotectonic features testifying the recent seismic activity, several case studies of normal faults affecting the island of Crete have been selected and investigated in order to obtain their principal seismotectonic parameters. The studied faults are commonly associated with major escarpments, hundreds of meters high and tens of kilometres long, separating uplifted Mesozoic rocks from Quaternary deposits. Due to the intense cryogenic processes that prevailed during Pleistocene, the mountain slopes were generally regularised, but during Holocene, the morphogenic activity of these faults was relatively faster and 5 to 15 m high fresh scarps thus formed at the base of the major escarpment. Based on our field observations and following empirical relationships between magnitude, surface rupture length and maximum co-seismic vertical displacement, it is possible to infer all principal seismotectonic parameters for the investigated case studies. The obtained values for all faults range between 0.5 and 1.3 mm/a for the long-term slip-rates, between 6.3 and 6.6 for the maximum expected magnitude (or 6.5 and 6.8, considering the worst case scenario) and between >260 and ca. 840 years for the mean recurrence interval. These estimates are in good agreement with the historical and instrumental seismicity and contribute to improve our knowledge on the crustal seismotectonic behaviour of Crete Island and surroundings. Horizontal extension-rates could be also inferred from our geological data and compared with the few available GPS data.