



## **Late Quaternary tectonic activity and paleoseismicity of the Eastern Messinia Fault Zone, SW Peloponessus (Messinia, Greece).**

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The southwestern part of Peloponessus, Messinia and Laconia, is an area of significant tectonic activity situated near the Hellenic trench. Most of the deformation in this area is accommodated by the Eastern Messinia Fault Zone, bordering the western part of Taygetos Mt range and the west coast of Mani peninsula. The Eastern Messinia Fault Zone (EMFZ) is a complex system of primarily normal faults dipping westwards with a strike of NNW-SSE to N-S direction attaining a total length of more than 100 km from the northern Messinia plain in the north to the southern part of Mani peninsula in the south. The continuity of the EMFZ is disrupted by overlapping faults and relay ramp structures. The central part of the EMFZ, from the town of Oichalia to the city of Kalamata, was investigated by detailed field mapping of fault structures and post-alpine sediment formations together with re-evaluation of historical and modern seismicity. Several fault segments with lengths of 6 to 10 km were mapped, defined and evaluated according to their state of activity and age. Analysis of fault striation measurements along fault planes of the fault zone shows a present regime of WSW-ENE extension, in accordance with focal mechanisms from modern seismicity. Known faults like the Katsareika and Verga faults near the city of Kalamata are interpreted as older-generation faults that are re-activated (e.g. the 1986 Ms 6.0 Kalamata earthquake on Verga Fault) as part of a system of distributed deformation. New fault segments, some of them previously unmapped like the Asprohoma fault to the west of Kalamata, and offshore faults like Kitries and Kourtissa, are being assigned to the EMFZ. Moreover, a paleoseismological trench was excavated in the northern part of Pidima fault segment, one of the most prominent active segments of the central part of the EMFZ, in order to examine the paleoearthquake record of the fault system. A significant number of historical and instrumental earthquakes in the area of the EMFZ is re-evaluated and assigned to specific fault segments.

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