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## Seismotectonic interpretation and edge detection of the potential fault on the SE Aegean Sea using the total horizontal derivative method

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The faults and the fault zones are essential to determine the seismotectonic features and the regime of a region and to produce seismic hazard and risk maps. Many geophysical methods, such as seismic, magnetic and gravity are used to determine the location and direction of faults. This study aims to detect potential fault edges located in the south-southwest of Nisyros Island and west of Tilos Island in the southeastern Aegean Sea and to interpret the seismic activity and faulting characterization. To this end, the potential fault edges were initially detected using the total horizontal derivative method on the gravity dataset collected from the WGM2008 database. The obtained spatial locations were combined with the seismicity and the focal mechanisms of the earthquakes. The detected fault has a northeast-southwest orientation with normal faulting. It was proved that this obtained fault is not included in the active faults of the Eurasia database (AFEAD), European Fault - Source Model 2020 (EFSM20) database and the Mineral Research and Exploration General Directorate (MTA) active fault map. Moreover, this observed fault was detected as longer than the fault shown on the National Observatory of Athens (NOAFAULTs) in terms of length. Consequently, it is highly recommended that this potential fault, which produces earthquakes with a moment magnitude greater than 4.0 (on instrumental period) must be added to such fault databases to increase and spread the knowledge of seismological and seismotectonic research.