



The April 2007 earthquake swarm near Lake Trichonis and implications for active tectonics in western Greece

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We study the April 2007 earthquake swarm (Mw 5.2) in Lake Trichonis (western Greece), where in June -December 1975 a strong (Mw 6.0) sequence had also occurred. The relocated epicentres of the 2007 swarm, obtained using phase data from the Hellenic Unified Seismic Network (HUSN), show distinct NNW-ESE trending clusters along the eastern banks of the lake. We applied teleseismic body waveform inversion, to obtain the focal mechanism solution of the 31 December 1975 (Mw 6.0) event, and regional moment tensor inversion to obtain the focal mechanisms of the strongest 2007 events. Our results indicate: a) the 31.12.1975 Mw 6.0 event was produced by a NW-SE normal fault, dipping to the NE, with considerable sinistral strike-slip component; its relocated epicentre using ISC phase data is 38.486°N, 21.661°E; while using the available macroseismic data the macroseismic epicentre is 38.49°N 21.63°E close to the strongly affected village of Kato Makrinou; b) the 2007 swarm earthquakes indicate that the main structure activated has a NNW – SSE strike, parallel to the eastern banks of the lake, dips to the NE and is characterized by mainly normal faulting, occasionally combined with sinistral strike-slip component. The 2007 swarm did not rupture the well documented E-W striking Trichonis normal fault that bounds the southern flank of the lake, but on the contrary it is due to rupture of NW-SE normal fault that strikes at a $\sim 45^\circ$ angle to the Trichonis fault. The moderate left-lateral

component of faulting is mapped for the first time to the north of the Gulf of Patras, previously regarded as the boundary for strike-slip motions in western Greece.