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# Active normal fault network of the Apulian Ridge (Eastern Mediterranean Sea) imaged by multibeam bathymetry and seismic data

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The Apulian ridge (North-eastern Ionian margin – Mediterranean Sea) is formed by thick cretaceous carbonatic sequences and discontinuous tertiary deposits crosscut by a NNW-SSE penetrative normal fault system and is part of the present foreland system of both the Apennine to the west and the Hellenic arc to the east.
The geometry, age, architecture and kinematics of the fault network were investigated integrating data of heterogeneous sources, provided by previous studies: regional scale 2D seismics and three wells collected by oil companies from the ‘60s to the ‘80s, more recent seismics collected during research projects in the ‘90s, very high resolution seismic (VHRS - Sparker and Chirp-sonar data), multi-beam echosounder bathymetry and results from sedimentological and geo-chronological analysis of sediment samples collected on the seabed. Multibeam bathymetric data allowed in particular assessing the 3D continuity of structures imaged in 2D seismics, thanks to the occurrence of continuous fault scarps on the seabed (only partly reworked by currents and covered by landslides), revealing the vertical extent and finite displacement associated to fault scarps. A penetrative network of relatively small faults, always showing a high dip angle, composes the NNW-SSE normal fault system, resulting in frequent relay zones, which are particularly well imaged by seafloor geomorphology. In addition, numerous fault scarps appear to be roughly coeval with quaternary submarine mass-wasting deposits colonised by Cold-Water Corals (CWC). Coral colonies, yielding ages between 11 and 14 kA, develop immediately on top of late Pleistocene mass-wasting deposits. Mutual cross-cutting relationships have been recognized between fault scarps and landslides, indicating that, at least in places, these features may be coeval.
We suppose that fault activity lasted at least as far as the Holocene-Pleistocene boundary and that the NNW-SSW normal fault network in the Apulian Plateau can be considered active (or at least active till the Holocene-Pleistocene boundary), and that the cumulative horizontal displacement is consistent with a relevant WSW-ENE stretching, that can be associated to the bending moment applied to the Apulian Plate by the combined effect of the Appennines and Hellenides subduction.