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# Expanding extension, subsidence and lateral segmentation within the Santorini – Amorgos basins (central – south Aegean Sea, Greece) during Quaternary.

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New bathymetric and seismic reflection data from the Santorini–Amorgos Tectonic Zone in the southern Cyclades have been analysed and a description of the morphology and tectonic structure of the area has been presented. The basins of Anhydros, Amorgos and Santorini–Anafi have been distinguished together with the intermediate Anhydros Horst within the NE-SW oriented Santorini–Amorgos Tectonic Zone which has a length of 60-70km and a width of 20-25km. The basins represent tectonic grabens or semigrabens bordered by the active marginal normal faults of Santorini–Anafi, Amorgos, Ios, Anhydros and Astypalaea. The Santorini–Anafi, Amorgos and Ios marginal faults have their footwall towards the NW where Alpine basement occurs in the submarine scarps and their hangingwall towards the southeast, where the Quaternary sediments have been deposited with maximum thickness of 700m. Six sedimentary units 1-6 have been distinguished in the stratigraphic successions of the Santorini–Anafi and the westerrn Anhydros Basin whereas in the rest area only the upper four units 3-6 have been deposited. This shows the expansion of the basin with subsidence during the Quaternary due to ongoing extension in a northwest-southeast direction. Growth structures are characterised by different periods of maximum deformation as this is indicated by the different sedimentary units with maximum thickness next to each fault. Transverse structures of northwest-southeast direction have been identified along the Santorini–Amorgos Tectonic Zone with distinction of the blocks/segments of Santorini, Anhydros/Kolumbo, Anhydros islet and Amorgos.
Our study shows that the active geodynamic regime is an ongoing process evolved during the last 2-3myears with well-defined periods of expanding, extension and subsidence of a rift zone which however has been segmented by transverse structures separating different geodynamic processes of faulting, tilting, volcanism and morphogenesis.