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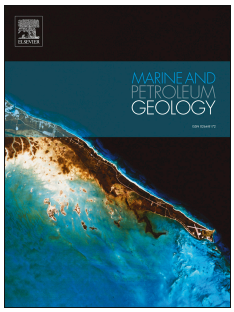

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Capo Granitola-Sciacca Fault Zone (Sicilian Channel, Central Mediterranean): structure vs magmatism

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Abstract

The tectonic framework of the northern sector of the Capo Granitola-Sciacca Fault Zone (CGSFZ), a NNE-oriented lithospheric strike-slip fault zone located in the Sicilian Channel (southern Italy), has been reconstructed with the aim to clarify the relationships between geometry and kinematics of the structures and the occurrence and distribution of the magmatic manifestations observed in the area. This has been achieved by the interpretation of a large dataset composed of 2-D multichannel seismic profiles, Chirp profiles, magnetic data and borehole information. In addition to the volcanic edifices known in the Graham and Terribile banks, this study has allowed to recognize several other magmatic manifestations. The magmatic occurrences consist of small volcanic cones, buried magma ascents and potential igneous sills.

The CGSFZ is bounded by two strike-slip fault systems, the Capo Granitola Fault System (CGFS) to the west and the Sciacca Fault System (SFS) to the east, dominated by positive flower structures generated by tectonic inversion of NNE-oriented late Miocene extensional faults. Only the southern part of the CGFS shows the presence of a sub-vertical, N-S oriented strike-slip master fault. The sector between the two fault systems does not show a significant Pliocene-Quaternary tectonic deformation, except for its southern part hosting the Terribile Bank, which is dissected by WNW to NW-trending normal faults developed during late Miocene and later reactivated. This set of faults is