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Long- and short-term deformation along the active northern margin of the hyblean plateau (se sicily) from multidisciplinary data: evidence for a new potential seismogenic source

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A geologic and geodetic integrated analysis of the northern margin of the Hyblean Plateau (SE Sicily) has been carried out in order to test the relation of the active deformation, recorded by GPS data, and the long-term tectonic evolution, recorded by structural and morphological data, with potential seismogenic sources of the region, where high level (MCS I0 = X – XI) historical seismicity occurred. To date, seismotectonic models have alternatively related the main seismogenic sources to the incipient rifting that reactivated the Malta Escarpment in the Ionian off-shore or to the still active NW-SE trending Nubia-Eurasia convergence, that remobilized the northern tectonic boundary of the Hyblean Plateau. In this region, the new data reveal that the active deformation can be framed in the flexural tectonics developed during the late stages of the Nubia-Eurasia plate convergence. Geodetic and geological data provide a coherent kinematic picture that is compatible with the occurrence of a blind ramp thrust along the NW margin of the Hyblean Plateau. This study demonstrates that the onshore seismicity of the Hyblean region can be confidently referred to active compressional dynamics. Additionally, our data candidate the inferred blind thrust, located to the south of the Scordia-Lentini graben, as a major potential seismogenic source that might be considered in interpreting the historical seismicity of the region.