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Erosional landforms and biological structures in tectonically stable areas in the Mediterranean basin

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The Mediterranean basin displays a variety of neotectonics scenarios leading to positive or negative vertical displacement, which change the vertical position of former coastlines. As a result, the best locations to evaluate former sea levels and validate sea-level models are tectonically stable areas. There are a number of coastal areas considered to be stable based on the elevation of paleo sea-level markers, the absence of historical seismicity, and by their position far from major Mediterranean faults. We report here the results of swim surveys carried out at such locations following the Geoswim approach described by Furlani (2020) in nine coastal sectors of the central Mediterranean Sea (Egadi Island - Marettimo, Favignana, Levanzo, Gaeta Promontory, Circeo Promontory, North Sardinia - Razzoli, Budelli, Santa Maria, NW Sardinia – Capocaccia, Maddalena Archipelago, Tavolara Island, East of Malta - Ahrax Point, Bugibba-Qawra, Delimara, Addura, Palermo, Ansedonia Promontory). All the sites are considered to be tectonically stable, as validated by the elevation of sea-level indicators. In fact, modern and MIS5.5 (last interglacial) m.s.l. altitudes fit well with accepted figures based upon field data and model projections. Starting from precise morphometric parameters such as the size of tidal notches and indicative landforms and biological structures, we have developed a procedure that integrates multiple geomorphological and biological descriptors applicable to the vast spectrum of locally diverse coastal situations occurring in the Mediterranean Sea. We took detailed measurements of features such as modern and MIS5.5 tidal notches at 146 sites in all the areas, the absence of modern tidal

notch at Circeo promontory, shore platforms, and MIS5.5 marine terraces at Egadi islands, Malta, and Palermo. Biological structures were also measured. In particular, vermetid platforms at Egadi, Palermo and Malta. The morphometric characteristics of these indicators depend on 1) local geological and structural constraints, 2) local geomorphotypes, 3) climate, sea, and weather conditions that affect geomorphic and biological processes, and 4) the sea level change history.

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