Geophysical Research Abstracts
Vol. 20, EGU2018-7146, 2018
EGU General Assembly 2018

Tectonic setting, coastal landscape and patterns of shelf erosion and multi-scale canyon incision along Calabria and NE Sicily (Southern Tyrrhenian Margin)

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The Southern Tyrrhenian Sea lays within a tectonically active region of the Mediterranean including the Calabria-Peloritani terrain (overriding the accretionary prism of the Ionian subduction zone), the Aeolian Volcanic Arc and the Marsili Back-arc Basin. Regional uplift of the Calabria-Peloritani terrain, together with Quaternary climate and sea level changes, have caused rapid rearrangement of drainage areas and modification of source-to-sink paths. These environmental changes primarily affect sediment flux and sedimentation rates, which may be drastically different in front of, and away from riverine sources, also depending on the tectonic setting of coastal sector where deltas develop.

The continental margins of the Southern Tyrrhenian provide evidence of bedform fields including megaripples to large sediment waves and erosional features ranging from gullies to submarine canyons. We compare the stratigraphy and seafloor geomorphology along the Tyrrhenian margin of Calabria and NE Sicily in order to unravel the relationships between regional setting, local sedimentary processes and the varied, multi-scale geomorphic shaping of the shelf and upper slope. The understanding of these relationships is essential for defining how modern processes are pre-conditioned by inherited tectonic/geomorphic features, and to what extent present-day landscape reflects modern processes actually impacting the seafloor.