



## **1 Morphology and surface geology of the Augusta Bay (Eastern Ionian Sea): results of geophysical surveys.**

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Morpho-bathymetric and very high resolution seismic data collected on the continental shelf and upper slope, enabled the recognition of the submarine topography and of the acoustic basement and recent sedimentary cover of the Augusta Bay (Eastern Ionian Sea). The main objective of the study was to acquire geological and morphological information on the area (Geosed, Cluster 10, Miur), in support of a multidisciplinary research program (Decembrini et al., 2004) intended to describe the coastal ecosystem of the bay in the presence of the complex industrial activity. This work constitutes the first geological survey of the Augusta offshore using modern methodologies and reveals some unforeseen results related to the topography of the area and to the impact of human activity.

The inner shelf exhibits an uneven topography consisting of large morphological terraces at depth of 30/35 m and 60 m of water depth, engraved by channels. Along the shelf edge, several morphologies appear, and likely consist of relic littoral bars and dunes, trending parallel to the coast and standing few meters out of the seabed. The slope abruptly dips toward the Malta abyssal plain and forms the Ibleo-Maltese escarpment, a structural morphology related to the Cretaceous - Neogene ramp of the carbonatic reef margin (Cita et al., 1980; Cita et al., 1982; Casero et al., 1984). Multi-

beam data reveal a dense net of gullies engraving the slope with a herringbone pattern, merging at increasing depth into deep channels. Gullies have typical relief of tens of meters and distances of 100 m or more. Channels deep down-slope and set up following a radial path. Several semicircular scars are evident at the shelf break, topping the gullies and let to suppose a retrograde erosion of distinctive sectors of the shelf (together with the high gradients of the slope) and an up to recent active feeding of the gullies.

Two large slope embayment merge at the center of the bay and might result from the maximum retrogradation of the slope. A shelf promontory occur here and might represent a morphological relict of the shelf ( $1^{\circ}$  -  $1.2^{\circ}$ ) and of the paleo-slope with angle of  $2.5^{\circ}$ - $3.5^{\circ}$ , preserved by erosion (more cohesive lithologies, structural framework).

#### References

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