SOUTH WEST ADRIATIC MARGIN MORPHOLOGY AND DEEP-SEA MACROBENTHIC ECOSYSTEMS

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Abstract

The integration between high-resolution multi beam bathymetry, side scan sonar data, high resolution chirp sonar provide a frame functional to the identification and mapping of a variety of deep -sea benthic habitats including healthy Lophelia, Madrepora, Dendrophyllia and Desmophyllum often associated with sponges and polychaetes. Coral growth took place in areas of irregular topography, created by large slide blocks such as Gondola slide, or on the steep flanks of Bari canyon and Dauno seamount. In both cases a key factor is the concurring action of dense NAdDW water mass impacting seasonally the SW Adriatic margin.

Keywords: Continental Slope, Currents, Swath Mapping, Deep Sea Ecology

The SW Adriatic Margin stretches NW-SE for about 150km and it is affected by numerous failure events that generated slide scars up to 10 km wide and extensive slide deposits with run out distances greater than 50 km from the shelf edge to the slope base (Gondola slide). On the open slope, the interaction between cascading and contour-parallel bottom currents with the irregular morphology of the margin leads to the definition of locally enhanced energetic condition at the sea-floor, as suggested by a suite of intermingled bottom current deposits and related erosional features (sediment drifts, bifurcated sediment waves, furrows and scours) ([3]). Bari Canyon is the main sediment conduit deeply entrenched in the SW-Adriatic Margin formed approximately 400ky ago through mass failures and turbidity-current down cut during successive glacial sea-level low stands (Fig. 1).

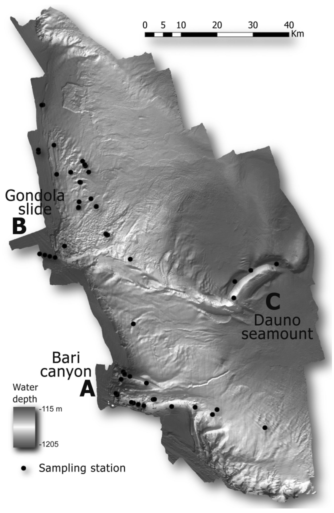

Fig. 1. High Resolution Multi Beam Bathymetry of the SW Adriatic Margin (Grid size 20m).

The integration between high-resolution multi beam bathymetry, side scan sonar data, high resolution chirp sonar provide a detailed morphological reconstruction of the entire margin and the characterization of the main geological features and sedimentological processes. Furthermore, it provided a frame functional to the identification and mapping of a variety of deep-sea benthic habitats ([2]). Under this respect noteworthy is the discovery along the SW Adriatic margin of a number of deep-water coral occurrences including healthy *Lophelia*, *Madrepora*, *Dendrophyllia* and *Desmophyllum* often associated with sponges and polychaetes ([1]). Coral growth took advantage of the irregular topography with positive relief created by large mass wasting deposits, such as Gondola slide and the concurring action of dense NAdDW water mass on the irregularly shaped SW Adriatic margin (Fig. 2).

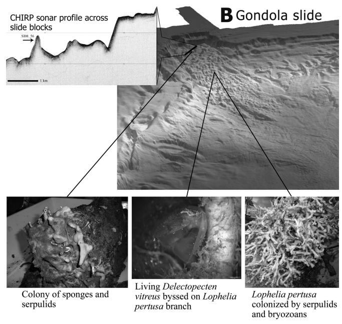

Fig. 2. Multi beam Bathymetry of the Gondola slides integrated with chirp profile and coral occurrences. Coral growth took advantage of the irregular topography with positive relief created by large mass wasting deposits

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