

Seismic-stratigraphy of Quaternary lowstand prograding wedges on the western margin of the Adventure Bank (central Mediterranean Sea)

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Based on recently carried out morpho-bathymetric and high resolution seismic investigations, a large field of coastal prograding sedimentary wedges has been discovered and investigated along the north-western sector of the Adventure Bank in the south-west Sicily offshore.

The Adventure Bank is located in the north-western sector of the Sicily Channel and represents a wide shallow waters area with average depth of 70-100 m; along its northern margin, the shelf edge lies at a depth between 80 and 170 m, and it is scoured by a few canyons headscarpements (Mazara del Vallo canyons, Egadi Valley).

During the sea level lowstands related to the cyclic eustatic changes occurred in the middle-late Quaternary, the Adventure Bank formed a wide emerged plateau and, along its north-western margin, a stack of wedge shaped, progradational sedimentary units developed.

The observed sedimentary wedges are composed of large dipping strata which prograde seawards downlapping on an extensive marine-to-subaerial erosional surface; individual clinoform horizons are up to 15 m high and display tangential or sigmoidal geometry; parallel to the shelf margin elongation, individual wedge displays lateral continuity up to 4,5 km. The top of the prograding wedges is truncated by a sharp ravinement surface that, landward, is draped by a thin, up to 2 m thick, seismic unit of gently dipping reflectors.

On the whole, the entire package of progradational wedges consists of superimposed levels of prograding clinoformed units separated by main downlap surfaces, and its deposition accounted for up to 1,5 km frontal accretion of the continental shelf margin.

A sequence-stratigraphy analysis of this sedimentary prograding package and a comparison with similar and coeval stratigraphic setting of others Mediterranean continental shelf margins, suggest these prograding wedges accumulated in a coastal environment as forced regressive sedimentary bodies during falling and lowstand stages related to the late Quaternary glacioeustatic sea-level changes generated by global climatic changes. The growth of shelf margin wedges has been largely controlled by paleotopography of the bottom downlap surface and by location of sediment supply entry points.