

## Seismo-stratigraphic analysis of middle-late Quaternary shelf margin prograding deposits in the Western Sicily offshore (central Mediterranean Sea)

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Using seismic reflection profiles for the detailed seismo-stratigraphic analysis of prograding systems is a widely used technique also in the Adventure Plateau, characterized by a wide, shallow water, submerged plateau in the Sicily Channel offshore (central Mediterranean Sea) (Colantoni et al., 1985).

Here, we analyse a couple of shelf margin prograding systems, using Ultra High Resolution (UHR) seismic reflection profiles (acquired with a 48-channel sparker seismic source) which allowed a high-quality spatial resolution seismo-stratigraphic analysis.

One of these prograding systems is located along the western Sicily mainland continental shelf edge and consists of only one, wedge shaped, sedimentary unit made up by a succession of clinoform reflectors; the wedge, which is up to 25 m thick, pinches out at - 135 m water depth at its landward termination and at - 157 m water depth at its seaward termination. The basal surface is characterized by enhanced erosional truncation of underlying reflectors and by downlapping terminations of the overlaying clinoforms which display an oblique-tangential geometry and erosional truncation of upper termination.

The other prograding system, in the northern margin of the Adventure Plateau, displays a more complex internal geometry: indeed, it consists of four laterally stacked wedges with clinoform reflectors displaying oblique-tangential configuration with downlap and erosional truncation as bottom and top termination respectively. To separate two adjacent prograding wedges, a thin lens of high frequency, continuous, prograding-to-aggrading reflectors lies in between of them. The four wedges show different width and vertical thickness, both controlled mainly by depth and dip of the bottom surface. The outermost wedge is up to 13 m thick and pinches out at - 140 m water depth at its landward termination and at - 163 m water depth at its seaward termination.

The analysed sedimentary systems show many similarities with other prograding depositional wedges observed along the Mediterranean continental shelf margins (Chiocci et al., 1997, 2004). Based on their stratigraphic relationship, seismic facies, and internal depositional geometry, we suggest the prograding wedges accumulated as shallow water deposits during sea level falling to lowstand stages related to high frequency (about 100 ky) and high amplitude (about 100 m) glacio-eustatic changes occurred during middle-late Quaternary.

The above illustrated differences in thickness, lateral extension, and seismic facies can be attributed to the different physiography of the margins on which the prograding systems developed, to their opposite exposure to fetch, and to the different sedimentary supply, also considering that during the highstands stages, the prograding depositional system of the Adventure Bank remained completely isolated from the emerged mainland (Civile et al., 2015).

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