

- A Depositional Model for the Southern Balearic Margin during the Late Quaternary

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ABSTRACT

A Late Quaternary depositional model for the passive southern Balearic margin is proposed. We characterise three groups of genetically related sediments: 1) gravitite sediment types, 2) suspensites, and 3) contourites and other winnowed sediments. We postulate that long-term depositional processes control the distribution patterns of the different sediment types while short-term temporary events control the final geometry of the Late Quaternary sedimentary cover over the margin.

RESUME

Un modèle de dépôt des sédiments du Quaternaire supérieur de la marge sub-baléare est proposé. Dans cette marge passive, nous avons caractérisé trois groupes de sédiments génétiquement liés: 1) des gravitites, 2) des suspensites, et 3) des contourites et autres sédiments qui ont subi l'action des courants profonds. Nous proposons l'hypothèse que la distribution et l'accumulation des différents types de sédiments sont contrôlés par des processus de sédimentation de longue durée, tandis que la géométrie finale des dépôts est contrôlée par des événements d'une durée très courte, comme d'importants glissements en masse.

DIGEST OF THE COMMUNICATION

A Late Quaternary depositional model for the southern Balearic margin, a passive-type of starved margin, is proposed on the basis of sediment distribution observed in piston cores complemented by the analysis of high resolution seismic profiles. Three groups of genetically related sediments can be defined in several depositional environments of this margin. These groups include: 1) gravitite sediment types due to several types of density currents, high to low density and short to long term; 2) suspensites, including hemipelagic sediments, result from differential pelagic

settling of suspensions; suspensites predominate in highs and protected areas, such as deep-sea ridges and mounts, and 3) deposits from contour and bottom currents, which are scarce in the southern Balearic margin, but cover broad areas in the Minorca Scarpment, an area of strong currents. The gravitite group (1) is the most complex; it includes : (1a) spill-over coarse sands deposited at the shelf-edge and the upper slope, (1b) interbedded turbidite silty sands and muds preferentially located on the middle and lowermost slope, and in the Minorca fan, and (1c) fine gravitite sediments which predominate on the middle slope and the continental rise.

Gravitites and suspensites (groups 1 and 2) gradually decrease down in the slope due to progressively reduced sediment flows. The comparison between sedimentation rates and total thickness of the Plio-Quaternary sedimentary cover enhances these interpretations.

In our model, long-term depositional processes are responsible for the distribution patterns of the different sediment types in the continental margin, but short-term temporary events, such as large mass sliding, control the final geometry of the sediment distribution in the entire margin.
