

# **Climate, Sediment Supply, Accommodation, and Sea Level as Controlling Parameters on the Architecture and Sequence Stratigraphic Development of Slope Systems: A Comparison between Ebro and Nile Delta-Fed Slope Systems**

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A comparison has been made of the 3-D geometries and stratigraphical relationships that characterize the Tertiary-Quaternary slope systems of the Ebro and Nile Deltas in the northwestern and southeastern Mediterranean, using conventional 3-D seismic reflection data. This seismic stratigraphic analysis allows the assessment of the major controls on the evolution of delta-fed slope systems and the wide-ranging implications for the distribution of sand-prone units.

Although these sedimentary successions evolved along the Mediterranean 'passive' margins at approximately the same time, their sedimentation histories are markedly different. Seismic profiles of the Pliocene-Pleistocene succession of the Ebro Delta display well-developed oblique to sigmoidal clinoform reflections and internal seismic facies variations indicative of the southeastward progradation into the Valencia Trough (Western Mediterranean). The Late Quaternary development of this succession results from the interplay between channel-related and mass-wasting processes caused by the oversteepening of clinoforms. In contrast, the seismic profiles of the Nile Delta in the southeastern Mediterranean Sea show a succession characterized by mass transport deposits and channel-levee systems. This slope turbidite system is controlled at a regional scale by tectonics and climate, where the succession is pinned by the Rosetta Fault, and where the Quaternary climate oscillations affected the numerous climatic zones in the drainage basin.

In general, periods of rise or fall of sea level fit with major destabilization phases on the slope. Because both deltas have a common sea-level history, the role of other forcing parameters (tectonics, climate, and sediment supply) can be more easily assessed.