



Role of flood dominated fan deltas in the shallow marine facies architecture off rocky coasts: examples from the Sorrento peninsula, Southern Italy

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The Sorrento Peninsula is a major Quaternary morpho-structural unit of the western flank of Southern Apennines and forms a narrow and elevated mountain range (up to 1400 m) that separates two major embayments of the eastern Tyrrhenian margin (the Naples and Salerno Bays). It is mostly formed by a pile of Mesozoic carbonate rocks, covered by Tertiary to Quaternary siliciclastic and pyroclastic units and is deeply cut by a complex pattern of bedrock rivers and channels characterized by relatively small catchment areas and pronounced disequilibrium of the stream profiles. In this setting, the volumetric flux of particles ultimately transported to the continental shelf is extremely sensitive to the rates of mountain slope processes (such as bedrock or siliciclastic/pyroclastic cover-involved landsliding) that deliver sediment to rivers. As a consequence, a number of permanent/ephemeral fan deltas are formed in the inner-mid continental shelf that may be regarded as a result of periodic input of large volumes of sediments deposited at the river mouth following average periodic to exceptionally catastrophic flooding events. The aim of this study is to document the internal architecture and morphology of a number of flood dominated fan deltas off the southern flank of the Sorrento Peninsula based on interpretation of ultra-high resolution seismic reflection profiles. The unlocking of stratigraphy and the facies stacking patterns of elementary units within fan delta bodies represents a key factor in helping to prescribe flow and sediment regulations, assess corresponding ecological impacts, and recommend restoration strategies for regulated bedrock rivers.