



Eocene – Miocene geologic evolution of the Alps-Apennines junction wedge top basin in northwest Italy

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The sedimentary fill of foreland wedge-top basins is characterized by an intricate depositional architecture, resulting from superposition of tectonics and sedimentation. This study explores the relationship between tectonics and basin evolution through the analysis of the Eocene-Miocene depositional systems formed in the Alps-Apennines junction wedge-top basin (northwest Italy). We implemented a 3D geologic model, providing thickness and lateral facies variations, as well as the architecture of these systems. To this aim, we analysed subsurface and surface data, including seismic reflection profiles, field observations, and facies analysis of the outcropping successions. Five major units were identified within the basin, which are representative of key stages in its tectonic evolution. An initial phase of basin subsidence (Eocene-Oligocene) culminated in the establishment of a widespread deep-water environment, characterized by high efficiency turbidite systems (Burdigalian). Afterwards, the progression of Apennine deformation led first to basin tilting and then basin inversion and progressive shallowing (Middle to Late Miocene). The 3D model is the basis for a quantitative characterization of the relationship between tectonic subsidence and sediment accumulation, useful to understand the complex evolution of this and analogue sedimentary basins.