

Miocene tectono-sedimentary evolution of the eastern external betic cordillera (Spain)

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An interdisciplinary study of Miocene successions in the eastern External Betic Zone (South Iberian Margin) was carried out. Evidences of syn-sedimentary tectonic activity were recognized. The results enabled a better reconstruction of the stratigraphic architecture (with an improved chronostratigraphic resolution) in the framework of the Miocene foredeep evolution of the eastern EBZ. Two main depositional sequences were dated as uppermost Burdigalian-upper Serravallian p.p. and middle-upper Tortonian. p.p., respectively. The vertical and lateral diversification of lithofacies associations and thicknesses resulted from the syn-depositional tectonic complexity of the area. A great variety of sedimentary depositional realms is due to different subsidence rates, and the growing of anticlines and synclines during the Langhian p.p.-Serravallian. After a regression with an early Tortonian erosional gap, platform to hemipelagic realms developed during the middle Tortonian. The end of the sedimentation coincided with the emplacement of an important olisthostrome-like mass consisting of Triassic material related to either the development of thrust systems or diapirs emerged in the middle-late Tortonian, during the nappe emplacement. Correlations with other external sectors of the Betic Chain, and the external domains of the Rif, Tell, and northern Apennine Chains highlighted a similar Miocene foredeep evolution during the building of these orogens. © 2018 The Author(s).

Depositional sequences

Foredeep record

Sedimentary supply

Tectono-sedimentary evolutionary model

Western mediterranean

chronostratigraphy

complexity

depositional sequence

emplacement

interdisciplinary approach

lithofacies

Miocene

nappe

orogeny

reconstruction

regression

sediment budget

sedimentation

subsidence

tectonic evolution

tectonostratigraphy

Atlantic Ocean

Betic Cordillera

Iberian Margin

Spain