Tectosedimentary Features in Pelagic Swells During Late Jurassic (External Subbetic, SE Spain)

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The External Subbetic Mountains resulted from Mesozoic and alpine evolution of the South Iberian Continental Palaeomargin. Tectono-stratigraphic units show platform and pelagic carbonates deposited on swells throughout the Jurassic. A complex fini-Bathonian event is recorded in swell limestones. This event resulted from the turnover from the "main intracontinental rifting stage" to the "transform continental margin stage" (Vera, 2001). The associated firstorder unconformity involves stratigraphical gaps ranging between upper Bathonian (minimal) and middle Bathonian – lower Kimmeridgian (maximal). Hardgrounds, Fe-Mn crusts, condensed levels, palaeokarst features and neptunian dykes occur, typically associated to the unconformity surface.

Late Jurassic tectonics increased the trough-and-swell relief. Deposition on pelagic swells resulted in Ammonitico Rosso (AR) facies showing marly (Oxfordian) and nodular limestone (AR s.s.) subfacies (Kimmeridgian – Lower Berriasian). Syn-sedimentary movements affected AR-deposits forcing slumps, pebbly mudstones and mass sliding. Scar surfaces related to sliding sheets and slumps, also occur. Palaeoslope data within a tectonic unit are compatible but differ from those obtained from nearby ones, revealing block tectonics and/or alpine tectonic rotation.

Pelagic swells were affected by normal and wrench faulting and, occasionally, diapirism has been recognized in transitional zones between pelagic swells and troughs. Without correction of alpine rotation, present orientation of External Subbetic units shows the mean strike of normal faults changing between N70ºE and E-W. The wrench faults are arranged almost at right-angle in respect to normal faults.

References:

Vera, J. A., 2001. Evolution of the South Iberian Continental Margin. In: P. A. Ziegler, W. Cavazza, A. H. F. Robertson & S. Crasquin-Soleau (eds.), Peri-Tethys Memoir 6: Peri-Tethyan Rift/Wrench Basins and Passive Margins. Mém. Mus. Natn. Hist. nat., 186: 109-143.

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