

# Stratigraphy and Toarcian marine fauna (ammonites and brachiopods) of the South Rifian Ridges, northern Morocco

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## Abstract

The South Rifian Ridges (25 km north of Meknes) corresponds to several small massifs with Triassic to Middle Jurassic deposits widely covered by upper Miocene marls. Faugères (1978) has distinguished in this area three lithostratigraphic units equivalent to three paleogeographic domains, which are from the periphery to the center of the Jurassic basin: *Peripheral unit*, consisting of two formations: red silty clays with evaporates of Triassic (100m) and Liassic neritic limestones (100m); *Intermediate unit*, more complete, showing in addition of the two previous formations, a thick series (300m) of Toarcian to Middle Bajocian, constituted of silty marl-limestones, sandstones and bioclastic or oolitic limestones, often with benthic fauna; and *Central unit*, corresponding to the axial zone of the South Rifian basin, showing pelagic deposits from the lower Pliensbachian to the Middle Bajocian. In this unit, particularly to the east and the west of Jbel Dehar En Nsour anticline, Faugères (1974, 1978), and Elmi and Faugères (1974) reported some Toarcian ammonite specimens. For its pelagic facies often rich in ammonites, we were interested in the study of the Toarcian sequence and faunal assemblages of this unit. More than ten outcrop sections were sampled bed-by-bed. The main collected ammonite species: *Calliphyloceras nilsoni*, *Cleviceras* aff. *exaratum*, *Dactylioceras laticostatum*, *D. simplex*, *D. (Orthodactylites) semicelatum*, *Juraphyllites (Meneghiniceras) lariense*, *Lioceratoides serotinus*, *Maconiceras soloniacense*, *Neolioceratoides schopeni*, *Protogrammoceras paltum* and *Harpoceratinae* indet., allowed characterizing the Mirabile and Semicelatum subzones of the Polymorphum Zone and have already been described and illustrated in Bardin et al. (2015). Belemnite specimens: *Passaloteuthis bisulcata* and *P. zieteni* of the same stratigraphic levels were also the subject of the article, Sanders al. (2013) and a palynological study on the same sections was realized by Chahidi et al. (2016). Recent investigations allowed to collect a new interesting paleontological material composed of lower Toarcian pyritic ammonites and middle to upper Toarcian brachiopods (Rhynchonellidae, Zelleridae, and Terebratulidae), currently under study.

**Keywords:** Stratigraphy; Marine fauna; ammonites, Brachiopods, Toarcian; South Rifian Ridges; Northern Morocco.