Jurassic Radiolarite Pulses from the Dorsale Calcaire (Internal Rif Belt, Northern Morocco): Lithostratigraphic and Biostratigraphic Review

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A consistent stratigraphic synthesis of radiolaritic sections separately outcropping in distinct units of the Dorsale Calcaire and the J. Moussa Groups has been obtained. In the studied sections, the stratigraphic context has been highlighted on the basis of: i) biochronological control constrained by ammonites and other biochronological markers; and ii) tacking into account sedimentary unconformities that commonly occur in both the underlying and overlying strata, as well as within radiolaritic sections. The main results are: i) the precise evidence about the significance of “radiolarite diachronism” that orderly occurred from the palaeogeographically outermost settings (Predorsalian units) northwards to innermost margin segments and; ii) to interpret this diachronism in the context of a tectono-eustasy forcing radiolaritic sedimentation to occur in discontinuous episodes separated by stratigraphical gaps. The latter proved to be causally linked to paleoenvironmental stress responsible for the main biotic turnovers affecting radiolarian communities and ecosistems.

On the whole, seven radiolarite pulses showing both lithological and biostratigraphical significance were identified in the middle – upper Jurassic section. The main evolutionary turnovers could have occurred during the time span, and stratigraphical gap, separating two given radiolarite pulses, rather than ramdomly during the life-duration of radiolarian multispecies assemblies and their corresponding depositional history. Our approach is consistent with the Biosequence / Golden-Hooks concepts, and most probably represents a complementary approach to the “unitary-association–based biostratigraphy proposed by the Eurorad’s Working Group.

In addition, this approach is expected to provide a clue for both correlation of coeval radiolarite sections throughout the Alpine realm, and application of sequence stratigraphy to cherty-pelagic successions throughout the Jurassic in the same area.

Key words: Dorsale calcaire, Rif, Jurassic, Radiolarites, Biosequences