

Lower Jurassic (Domerian) calcareous nannoplankton biogeography in the western Mediterranean area

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Quantitative studies have been carried out on Lower Jurassic calcareous nannofossils in order to assess a biogeographical distribution pattern within the western Mediterranean area. Four sections have been studied in different paleogeographic settings, namely Peniche in the Lusitanian Basin, Marcoux in the French Subalpine Basin, Burano in the Umbria-Marche Basin, and Trionto in the Ligurian-Piedmont Basin.

A total of 118 samples were analyzed for absolute and relative abundance, Shannon diversity index, and wt%CaCO₃. Correlations between the sections have been done by means of well-established nannofossil and ammonite integrated biostratigraphy. A careful checking of preservation state has been performed in each analyzed sample.

In the Lower Jurassic, calcareous nannoplankton species are commonly considered to be cosmopolitan. However, significant changes in relative abundance of species can be observed in different localities. Our study indicates that *Schizosphaerella* spp. (a probable calcareous dyncyst) dominates the assemblages in all studied sections, with percentage attaining 85%. This taxon is eurytopic but its relative abundance is systematically higher in the Umbria-Marche Basin (Burano and Trionto sections) than in the Lusitanian and Vocontian Basins. Within the coccoliths, the taxa showing the most significant biogeographic differences are: *Crepidolithus crassus* and *Mitrolithus jansae*. *Crepidolithus crassus* exhibits higher relative abundances within the Lusitanian and Vocontian basins testifying to an affinity for the NW European settings. Conversely, *Mitrolithus jansae* dominates the assemblages in the Burano and Trionto sections, and is therefore associated with the Mediterranean domain.

Lower Jurassic palaeogeographic reconstructions indicate the existence of seaway connections between the NW European and Mediterranean domains. Therefore, differences in relative and absolute abundances of specific taxa within the studied area suggest a control of environmental conditions on nannoplankton distribution. Several parameters may control nannoplankton distribution in the water column. However, the most important parameter in the studied localities seems to be related to nutrient supply in the different paleogeographic settings.

The Mediterranean domain was characterized by peri-oceanic carbonate platforms, without surrounding emerged lands. This region was therefore characterized by generally oligotrophic conditions in the considered time interval. Conversely, the NW European domain was represented by shelves and shallow epi-continental basins, where more or less constant nutrient supplies were provided by surrounding emerged lands.