



Lower Badenian red algal limestones in the Carpathian Foredeep in Moravia, Czech Republic – reflection of basin paleogeography, tectonics and climate

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Biofacial, lithofacial and spatial characterization of red algal limestones (RAL) in Moravia (Czech Republic) reflect the Lower Badenian Carpathian Foredeep (CF) palaeogeography, tectonics and climate.

At the w. and nw. margins of the present CF shape on the Bohemian Massif, the RAL are represented mainly by the facies with predominating branched forms of red algae and with sporadic small compact rhodoliths and they probably originated in relatively shallow waters (middle infralittoral). They can be connected with the prograding coast line, and so their positions in the profiles need not be strictly isochronous. RAL occurrences on the e. margin of the CF in front of the flysch nappes consist predominantly of rhodoliths with alveolar structures and faunistic groups indicating the environment of deeper circalittoral. Sometimes even graded bedding occurs in them indicating the gravitational transport of their material into the basin. No connections of RAL with the regressive tendencies in the basin have been proved in any position (Doláková et al. in press).

The areal extension of RAL indicates the marked differences between the CF sections south and north of the Moravian Gate (MG). South of the MG, the relative abundance of RAL (more than 50 outcrops together with the layers in boreholes) contrasts with their practical absence in the MG and north of it. These differences can be caused partly by primary tectonically dependent variations of CF configuration during the Lower Badenian, partly by different post-Lower Badenian development of both areas. North of the MG, CF develops as a rapidly deepening trough restricted by dislocations and accompanied by an intensive uplift of the Slavkov-Těšín ridge in the E (Eliáš

et Pálenský 1998; Eliáš 2000). The nappe overthrusting continued even after Lower Badenian in this area.. The CF south of the MG represents a significantly broader basin with the s. part of the Slavkov-Těšín ridge uplift culminating only after the Lower Badenian (Stráník et Brzobohatý 2000). In the axial and e. parts of the basin, the original palaeogeographic features of the s. part of the CF are probably hidden by the post-Lower Badenian compression tectonics (Tomek 1998) as well as by a strong denudation of the nappe fronts or perhaps even of their immediate outer margin (Jiříček 1995), where the Lower Badenian marginal facies were originally situated. The preservation of more numerous RAL occurrences on the Bohemian Massif in this part of the CF is probably caused by the fact, that the post-Lower Badenian nappe overthrusting were not so intensive as in the N, as well by the pre-Badenian relief morphology.

By contrast with the Polish part of the CF in front of the flysch nappes, the RAL thicknesses and geographic extents in Moravia are smaller. They accumulated in a more diversified basin with stronger depth differences. Their biofacial and lithofacial analyses confirm the sedimentation in the warm-temperate to subtropical climate. The sporadic presence of some groups (corals, green algae) indicates somewhat warmer waters than in the Polish part of the CF. This fact, together with the geographic position, documents a transit position of the studied area between the northern margin of the Central Paratethys (CP) in Poland and the basins situated more southerly with small coral reefs. It represents even another evidence of the existence of a N-S oriented climatically dependent gradient in the CP.