

Jurassic and Cretaceous radiolarian biostratigraphy and sedimentary evolution of the Budva Zone (Dinarides, Montenegro)

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The Budva Zone is the northernmost part of a long belt of Mesozoic basinal deposits, which extend southward to the Krasta Cukali Zone in Albania and Pindos Olonos Zone in Greece.

Lowermost Jurassic to middle Cretaceous formations are defined and described. Radiolarians from 105 samples collected in ten sections allowed us to date pelagic sequences and to constrain ages of intervening carbonate gravityflow deposits.

Systematics of about 200 recorded radiolarian species is discussed and supported by illustrations. For the Middle Jurassic to Turonian time interval, a local radiolarian zonation is constructed by means of the Unitary Association Method (Guex, 1977, 1991). One hundred and thirty-nine taxa were used in the database. Forty-eight Unitary Associations are established and grouped into 15 distinct "zones". The calibration is based on the existing zonations.

The Budva Zone formations are correlated to time-equivalent lithologies in the tectonically overthrusting High Karst Platform. The correlation reveals a close relationship between the sedimentary and tectonic activity of the High Karst Platform margin, and facies evolution in the adjacent Budva Basin.

The Hettangian to Sinemurian lime-poor "Passée Jaspeuse" Formation coincides with a subsidence of the High Karst Platform margin. In the Pliensbachian to lower Toarcian the entire basin was characterized by resedimented carbonates (Lower Bar Limestone Member). The margin-ward propagation of radiolarite sedimentation (Lastva Radiolarite) and retreat of resedimented carbonates (Upper Bar Limestone Member) in the Middle Jurassic are related to a development of continuous oolitic bars on the platform. The maximum expansion of radiolarites was attained in the Oxfordian and Kimmeridgian, when the platform margin was fringed by a large reef complex. Most of the carbonate mud in the Jurassic basinal succession was probably of platform origin. Periods of reduced periplatform-ooze supply were characterized by lime-poor to lime-free basinal sedimentation.

In the late Tithonian, distal sequences show a transition from siliceous to carbonate deposition (Praevalis Limestone). In the Hauterivian-Barremian, again, radiolarite sedimentation (Bijela Radiolarite) progressively replaced pelagic carbonates and persisted to the Turonian. These facies changes are correlative with synchronous shifts in the Southern Alps and Apennines. The Budva Basin, however, differs from other Tethyan basins by a lower proportion of carbonate in the Upper Jurassic and Cretaceous sequences.

The composition and distributional pattern of resedimented carbonates changed significantly by Late Jurassic time. Prior to that time, in the Early and Middle Jurassic, carbonate gravityflow deposits were composed of remobilized pelagic sediments and penecontemporaneous platform debris. Contrary to this, since the Tithonian the bulk of the resedimented carbonates was derived from the erosion of lithified shallow water limestones. Coarse grained calcareous turbidites became restricted to the northwestern depositional area. This facies change is believed to reflect the evolution from an extensional to a compressive regime in the internal domains of the Dinaric Tethys, which induced a differential uplift of the High Karst Platform.