

## Lacustrine Sediments of the Poljanska Locality in the Miocene Climatic Optimum North Croatian Basin, Croatia

**Authors :** Marijan Kovačić, Davor Pavelić, Darko Tibljaš, Ivo Galić, Frane Marković, Ivica Pavičić

**Abstract :** The North Croatian Basin (NCB) occupies the southwestern part of the Pannonian Basin System and belongs to the Central Paratethys realm. In a quarry near the village of Poljanska, on the southern slopes of Mt. Papuk in eastern Croatia, a 40-meter-thick section is exposed, consisting of well-bedded, mixed, carbonate-siliciclastic deposits with occurrences of pyroclastics. Sedimentological investigation indicates that a salina lake developed in the central NCB during the late early Miocene. Field studies and mineralogical and petrological analyses indicate that alternations of laminated crypto- characterize the lower part of the section to microcrystalline dolomite and analcimolite (sedimentary rocks composed essentially of authigenic analcime) associated with tuffites and marls. The pyroclastic material is a product of volcanic activity at the end of the early Miocene, while the formation of analcime, the zeolite group mineral, is a result of an alteration of pyroclastic material in an alkaline lacustrine environment. These sediments were deposited in a shallow, hydrologically closed lake that was controlled by an arid climate during the first phase of its development. The middle part of the section consists of dolomites interbedded with analcimolites and sandstones. The sandstone beds are a result of the increased supply of clastic material derived from the locally uplifted metamorphic and granitoid basement. The emplacement of sandstones and dolomites reflects a distinct alternation of hydrologically open and closed lacustrine environments controlled by the frequent alternation of humid and arid climates, representing the second phase of lake development. The siliciclastics of the third phase of lake development were deposited during the Middle Miocene in a hydrologically mostly open lake. All lacustrine deposition coincides with the Miocene Climatic Optimum, which was characterized by a hot and warm climate. The sedimentological data confirm the mostly wet conditions previously identified by paleobotanical studies in the region. The exception is the relatively long interval of arid climate in the late early Miocene that controlled the first phase of lake evolution, i.e., the salina-type lake.

**Keywords :** early Miocene, Pannonian basin System, pyroclastics, salina-type lake

**Conference Title :** ICS 2021 : International Conference on Stratigraphy

**Conference Location :** London, United Kingdom

**Conference Dates :** November 18-19, 2021