

# Sedimentological evidence of climatic changes during the Miocene Climatic Optimum in the North Croatian Basin (SW Pannonian Basin System, Croatia)

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ABSTRACTS BOOK



12–16 June 2023, DUBROVNIK, CROATIA

**36<sup>th</sup> International Meeting of Sedimentology**  
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# ABSTRACTS BOOK





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## Sedimentological evidence of climatic changes during the Miocene Climatic Optimum in the North Croatian Basin (SW Pannonian Basin System, Croatia)

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The North Croatian Basin (NCB) occupies the south-western part of the Pannonian Basin System, and belongs to the Central Paratethys realm. Detailed sedimentological field studies and mineralogical and petrological analyses showed that a 40 m thick section composed of well-bedded mixed, carbonate–siliciclastic deposits with occurrence of pyroclastics indicate three evolutionary stages of lake development. The first evolutionary stage evolved in the late Early Miocene. It was characterised by mainly dolomite precipitation directly from the water body, and are associated with tuffites and marls, together with minerals such as analcime, hydrous Ca-bearing magnesium carbonate, and natrolite. This indicates deposition in a shallow, hydrologically closed lake of highly alkaline waters controlled by an arid climate. The second evolutionary stage is represented by the intercalation of dolomites and sandstones, indicating changes of hydrologically open and closed lacustrine environments as result of the frequent alternation arid and humid climates. The third stage, characterized by deposition of siliciclastics by gravity flows indicates the formation of a long-lived, hydrologically open lake that probably commenced in the Middle Miocene. The whole investigated lacustrine depositional sequence coincides with the Miocene Climatic Optimum generally characterized by hot and warm, and humid climates. However, the evolution of the closed lake that is correlative with similar lakes in northern Bosnia and central Serbia, indicates the existence of an arid zone in the region that was confined by areas characterized by a more humid climate in the late Early Miocene.