

# **The possible contribution of fresh water cyanobacteria to Northern Alpine Hauptdolomite sedimentation**

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The facies of the Northern Alpine Norian Hauptdolomite is often compared to the Holocene carbonate sediments of the Bahama platform. But there is one major difference: while the Bahamas are an isolated platform, the Hauptdolomite was connected to the North with the extensive Keuper Hinterland.

Under the climatic conditions of the Upper Triassic one should therefore expect indications for the influence of fresh water runoff at least in the northern parts of the platform. Some fresh water influence is documented by the occurrence of a non-marine fish fauna and of characeans in some micrites.

We suggest that it could also be less obviously documented in some structureless micritic beds, lacking marine fossils. Looking at the modern precipitation of micrite by cyanobacteria in the fresh water areas of the Everglades, Florida, USA, it can be seen that the sedimentation rates are with 1.8 to 24 cm in 1000 a comparable to sedimentation rates of marine algal muds. The stable isotope composition of the micrites does not show a fresh water signature.

Oxygen ( $\delta^{18}\text{O}$  1.65 to -0.793 permil) is too heavy due to intensive evaporation and the carbon values fall within the marine range because of preferred uptake of the lighter isotope for photosynthesis by the cyanobacteria ( $\delta^{13}\text{C}$  0.79 to 1.24 permil). Most organic material in those micrites would be algal or cyanobacterial material with only a minor contribution by higher plants. The same was found in the Hauptdolomite.

Keeping in mind that considerable amounts of fine grained carbonates can be produced under fresh water conditions, which are not readily distinguished from marine micrites, it might be worth looking at the Hauptdolomite in comparison with southernmost Florida, with its fresh water algal marshes and the shallow marine, supra- to subtidal Florida bay.