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# Micro-facies of Dead Sea sediments

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Lacustrine sediments infilling the Dead Sea basin (DSB) provide a rare opportunity to trace changing climates in the eastern Mediterranean-Levant region throughout the Pleistocene and Holocene. In this context, high-resolution investigation of changes in sediment micro- facies allow deciphering short-term climatic fluctuations and changing environmental conditions in the Levant.

The Dead Sea is a terminal lake with one of the largest drainage areas in the Levant, located in the Mediterranean climate zone and influenced also by the Saharo-Arabian deserts. Due to drastic climatic changes in this region, an exceptionally large variety of lacustrine sediments has been deposited in the DSB. These sediments, partially the results of changing lake levels, primarily represent changes in precipitation (e.g. Enzel et al., 2008). Evaporites (halite and gypsum) reflect dry climatic conditions during interglacials, while alternated aragonite-detritus (AAD) is deposited during glacial lake level high-stands.

Here we present the first micro-facies inventory of a $\sim$450 m long sediment profile from the deepest part of the northern DSB (ICDP site 5017-1, $\sim$300 m water depth). The sediment record comprises the last two glacial-interglacial cycles, with mainly AAD facies in the upper part of the Amora Formation (penultimate glacial) and the last glacial Lisan Formation. The last interglacial Samra and the Holocene Zeelim Formations are predominantly characterized by thick bedded halite deposits, intercalated by partly laminated detrital marl sequences. Representative sections of the different facies types have been analyzed for micro-facies on petrographic thin sections, supported by high-resolution $\mu$XRF element scanning, magnetic susceptibility measurements and microscopic fluorescence analysis. Furthermore, Holocene sediments retrieved at the deep basin core site have been compared to their shallow-water counterpart at the western margin of the lake (core DSEn; Migowski et al., 2004, 2006). Combining micro-facies analyses of these shallow and deep basin environments allows depicting sedimentation processes and is a key for understanding climatically-induced sediment formation in the DSB at sub-annual timescales.

Enzel et al., 2008. Global and Planetary Change 60, 165-192.
Migowski et al., 2004. Earth and Planetary Science Letters 222, 301-314.
Migowski et al., 2006. Quaternary Research 66 (3), 421-431.