



Traces of microbial activity in the deep sediment of the Dead Sea: How is life influencing the sedimentary record of this hypersaline lake ?

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As part of the ICDP-sponsored Dead Sea Deep Drilling Project (DSDDP), a multi-disciplinary study has been carried out to understand the influence that microbial communities can have on the Dead Sea sedimentary record. Organic matter (lipids) and DNA extraction have been performed along the main core retrieved from the center of the modern Dead Sea. They revealed different associations of microbial communities, influenced by changing climatic and limnological regimes during sedimentation. Moreover, imaging and chemical characterization of authigenic iron-sulfur minerals have revealed the unexpected presence of an active sulfur cycle in the sediment. In particular, their morphology and Fe/S ratios are coherent with incomplete sulfate reduction, limited by sulfur reduction, and often resulting in the preservation of greigite. In glacial period intervals, pyritization may be complete, indicating full sulfate reduction probably allowed by significant accumulation of organic matter in the alternating aragonite and detritus (aad) facies. The DSDDP core provides a unique opportunity to investigate deep diagenetic processes and to assess the role of microbial activity in the Dead Sea hypersaline sediment. Our study shows that this microbial activity influences the carbon and sulfur phases, as well as magnetic fractions, potentially affecting proxies used for paleoenvironmental and paleoclimatic reconstructions.