



## Deep eastern Mediterranean hypersaline anoxic brine lakes sampled during 2008 DOPPIO cruise with RV Pelagia.

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During the DOPPIO cruise (October – November 2008) in the Gulf of Taranto and in the Ionian anoxic brine basins a multidisciplinary study has been done within the MOCCHA and MIDDLE projects.

Within the deep waters of the Eastern Mediterranean several distinct brine basins occur. These are characterized by extreme conditions with high pressure, steep density gradients, redox interfaces, and high dissolved salt concentrations. These hypersaline anoxic basins are thought to result from dissolution of underlying Miocene salt deposits. The high densities of the hypersaline brines limit mixing with the overlying oxic seawater. As a consequence, permanent anoxia occurs in these basins and macro benthos is absent, but several communities of adapted microbes appear to thrive at specific conditions. Despite the enhanced dissolved sulphate concentrations in all brines, substantial concentrations of methane have been found in all brines ranging from 0.1 - > 10 mM (or 50.000 to >5.000.000 times background seawater methane concentration). In addition, distinct differences occur in sediment composition between the various basins, which may in part be related to differential preservation of suspended matter fluxes, to early diagenetic reactions and the production of minerals, and to different brine composition and density. Characterization of composition and in particular of associated processes are important links to the diverse microbial communities and their specific habitat.

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