

P031 Anammox in the past oceanic nitrogen cycle
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Marine anaerobic ammonium oxidising bacteria (anammox) are a major sink of fixed inorganic nitrogen in the oceans. Extrapolation of present day conditions indicates that anammox may have been even more important in past times, e.g. during oceanic anoxic events in the Jurassic and Cretaceous periods. In the sub-oxic zone of the Black Sea, 16S rRNA gene analysis, FISH, the distribution of specific anammox membrane lipids, nutrient profiles, and tracer experiments with ¹⁵N-ammonia and ¹⁵N-nitrite showed the link between the anammox reaction and only one marine species of anammox, *Candidatus "Scalindua sorokinii"*, which is closely related to other *Candidatus "Scalindua"* species from a wastewater treatment plant. In order to investigate ecophysiology and lipid composition we have started enrichment cultures of *Candidatus "Scalindua"* bacteria. The cytoplasm of all anammox bacteria contains membrane-bounded compartments, which are surrounded by unique ladderane lipids. Because of their uniqueness, ladderane molecules are excellent candidates for biomarkers for past and present anammox activity. Together with geochemists we aim to develop a proxy for past anammox activity on the basis of the ladderane molecules.