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Diversity of mat-forming giant sulfide-oxidizing bacteria in chemosynthetic ecosystems along Europe's continental margins

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Marine chemosynthetic habitats are excellent natural laboratories to investigate how biodiversity contributes to ecosystem functioning. Deep-sea chemosynthetic ecosystems are dominated by one or few focused energy sources (e.g. methane and sulfide), which are utilized by a considerable diversity of microorganisms. The aim of this study is to analyze and compare the diversity of mat-associated bacterial communities in different chemosynthetic ecosystems like the Håkon Mosby Mud Volcano (Norwegian Sea) and the Amon Mud Volcano (Nile Deep Sea Fan). We combine these biodiversity studies with *in situ* analyses of biogeochemical parameters, to identify and characterize typical habitats of different mat-forming giant sulfide oxidizers as well as to investigate their link to the geological drivers of the ecosystems. So far microscopical analyses of the composition of microbial mats revealed a much larger variety of giant sulfide-oxidizing bacteria as well as unknown morphotypes than previously anticipated. Our first results based on 16S rRNA gene analyses indicate that there can be wide differences in the community composition of microbial mats. In the investigated coastal ecosystem mat-forming bacteria were found to be phylogenetically widely distributed among the whole group of marine giant sulfide oxidizers, but the diversity associated with the mats found at the Håkon Mosby Mud Volcano seems to be restricted to only a few certain types of those bacteria. Future investigations will try to explain how much those different distribution patterns may be correlated to environmental parameters and to ecological features specific to each mat.