



Wood colonization experiments in the Eastern Mediterranean deep sea

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Most of the deep-sea floor is highly oligotrophic and therefore nutrient limited. Exceptions are vent and seep ecosystems fuelled by focused sources of chemical energy such as methane and sulfide, which attract high biomasses of chemosynthetic organisms. Large organic food falls such as whale carcasses, wood and kelp can also lead to the development of chemosynthetic environments in the deep sea that might act as stepping stones in the evolution and distribution of chemoautotrophic communities. Sunken wood provides a concentrated, locally restricted input of organic material to the deep sea, but so far it was not well understood how and when its degradation could lead to reducing conditions and high sulfide concentrations attracting chemosynthetic organisms. Starting in 2006 (BIONIL), systematic deployments of large wood colonization experiments were for the first time undertaken in the Eastern Mediterranean deep sea. Pieces of Douglas fir were deployed in a chemosynthetic active area as well as on surrounding seafloor to investigate differences in the quality and quantity of colonization of the woods according to geochemical gradients. The site was revisited one year later in 2007 (MEDECO-2) to recover parts of the wood experiments. For a characterization of the sediments around the wood experiments *in situ* and *ex situ* measurements of sulfide and oxygen fluxes as well as pH measurements were conducted and sediment cores retrieved. First results of these measurements will be presented, e.g. where clear differences can be seen in the penetration depth of oxygen in sediments close to the wood and some metres away. The macrofaunal colonization of the woods was quantified and an overview of the results will be shown. Pieces of wood were sampled for molecular analyses of the microbial biodiversity. A proto-

col for the extraction of bacterial DNA from wood pieces and subsequent molecular analyses including ARISA (Automated Ribosomal Intergenic Spacer Analysis) is being established. With a combination of biogeochemical measurements and microbial biodiversity analyses we will be able to analyze correlations between microbial communities and biogeochemical environments on and around deep-sea wood falls. In the future these results can be used for comparisons with similar wood deployments in other oceanic regions, e.g. the Barents Sea, Mid-Atlantic Ridge (Logatchev vent) and the Black Sea, as well as with colonization patterns on whale falls and in other chemosynthetic habitats. This is a contribution to the ESF EUROCORES EuroDeep Project “Colonization processes in chemosynthetic ecosystems – CHEMECO” and the MPG-CNRS GDRE „Diversity, establishment and function of organisms associated with marine wood falls – DIWOOD”.