

biodiversity. These results suggest that a higher biodiversity supports higher rates of ecosystem processes and an increased efficiency with which these processes are performed. The relationships presented here, being consistent across a wide range of deep-sea ecosystems, suggest that mutually positive functional interactions (ecological facilitation) can be common in the largest biome of our biosphere and indicate that interactions among species occur also across different Kingdoms and life forms. This study provides scientific evidence of the intimately connections among all forms of biodiversity and suggests that conservation of deep-sea biodiversity as a whole is a priority for a sustainable functioning of the worlds' oceans.

17:00 17:15 DIVERSITY AND COLONIZATION PROCESSES OF OSEDAX SPECIES ON WHALE FALLS

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Sunken whale carcasses are believed to have acted as evolutionary stepping-stones for the colonization of deep chemosynthetic environments because of the zoological and ecological affinities observed between communities developing in these extreme environments. Siboglinid polychaetes are one of the major family found in chemosynthetic environments where they survive using symbiosis. At whale falls, they are represented by the *Osedax* genus, a highly specialized taxa feeding on bones. This genus appears to be world-wide distributed, but dispersal and colonization processes remain unknown. We investigated *Osedax* diversity on a sperm whale carcass sunken at 950 meters off Japan coast, in the Pacific Ocean. Seven species were identified using molecular data. Among early colonists, 2 species are also reported from carcasses in the East Pacific, more than 5000 km away. Later colonists, on the other hand, are all new species, and may have a more local distribution. Therefore, in addition to ecological preferences, different dispersal strategies may also explain succession patterns. Observation of embryonic development and larvae will also be presented and discussed in this regard.

17:15 17:30 COLONISATION EXPERIMENTS IN CHEMOSYNTHETIC ECOSYSTEMS IN THE DEEP-SEA: BIOLOGICAL AND ECOLOGICAL ASPECTS

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Chemosynthetic ecosystems in the deep-sea are new type of ecosystems where communities of organisms live in extreme environment dependant either on sulphur and methane or both. The key question is how these organisms are colonising these ecosystems? Which species arrive first? Which is the functioning of this newly formed community structure and depending on which environmental factors? We have deployed for one year since 2006 a series of identical colonisation devices ranged from 1700 to 2400m depth, within Europe from the Nordic Sea (Haakon Mosby Mud Volcano), the Mid-Atlantic (MoMar), to the Mediterranean (Nil deep-sea fan brines). During this period, microbial to metazoan communities have established. Colonisation devices were filled separately with different substrate (mineral or organic) and were then recovered during several cruises in 2007. Identification of fauna has been undertaken by using various techniques (MEB, TEM and Fluorescent hybridization in situ. Environmental parameters such as sulphide and temperature were also recorded during both deployment and recovering of the colonisation devices. A comparison in biodiversity of newly established species depending on substrate and on environmental parameters will be exposed.

17:30 17:45 THE TROPHODYNAMIC ROLE AND COLONISATION CAPACITY OF NEMATODE COMMUNITIES IN DIFFERENT ARCTIC DEEP-SEA ENVIRONMENTS

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Up to 30% of the photosynthetic derived organic matter sinks out of the surface waters and serves directly or indirectly as food for benthic organisms. This holds true for most of the deep-sea floor. There are however so called "extreme environments" where the benthos additionally or mainly profits from chemosynthetically derived energy. This is the case in hydrothermal vents and cold seeps where bacteria oxidise reduced elements. Invertebrates may feed on these bacteria directly or harbour them as endosymbionts. Meiofauna represents an important and very diverse group of inhabitants of the deep-sea floor. Within the meiofauna, Nematoda are the most abundant taxon, generally dominating in biomass and densities. Therefore they are expected to play an important role in the transfer of carbon. However there is still very little known about their trophodynamic role in the ecology of deep-sea environments. During this study in situ colonisation enrichment experiments as well as ex situ enrichment experiments were performed. This was done at the Hausgarten site and at the Håkon Mosby Mud Volcano in order to study the reaction on organic carbon input and the uptake of potential ¹³C labeled food sources (diatoms and bacteria) based on stable isotope and fatty acid analyses.