O26 Meiofaunal community compositions and their food sources around hydrothermal vents in three seamounts in NW Pacific – copepods like 'hot' food, but nematodes do not?

Motohiro Shimanaga[1], Reina Senokuchi[1], Yuki Uejima[1], Hidetaka Nomaki[2], Hiromi Watanabe[2], Tomo Kitahashi[2]

[1]Kumamoto University, Kumamoto, Japan

[2]Japan Agency for Marine-Earth Science and Technology, Yokosuka, Kanagawa, Japan

In contrast to specific large benthic invertebrates in chemosynthetic ecosystems around deep-sea hydrothermal vents, meiofaunal communities in such habitats have only recently been included in studies of those environments. This is especially true in the Northwest Pacific Ocean, even though there are many seamounts with active vents in their calderas. We studied the variations in meiofaunal composition and their nutrition sources around hydrothermal vents on chimney-like structures (chimneys) and in the adjacent non-vent fields in the calderas of three neighboring seamounts (Bayonnaise Knoll, Myojin Knoll, and Myojin-sho Caldera), in Izu-Ogasawara Arc, NW Pacific. A typical meiofaunal composition (nematodes as the most abundant taxon; harpacticoid copepods as the second) was observed in the sediments on sea-floor in the non-vent (control) fields, and even in the sediment at the base of chimneys. On the surfaces of chimneys, *Stygiopontius* (Dirivultidae, Siphonostomatoida), a typical vent copepod group, was predominant. Genetic analyses on *Stygiopontius* collected from Bayonnaise Knoll and Myojin-sho Caldera showed they are sharing the same or almost identical mitochondrial COI sequences, suggesting they belong to the same species, even though they are separated from each other at 30 km scale. Stable carbon and nitrogen stable isotopic ratios and radiocarbon abundances of meiofauna revealed the dirivultid copepods around hydrothermal vents utilized mainly chemolithoautotrophic microbes ('hot' food). The other copepods (mainly harpacticoids) at the same habitats rely on them to a certain degree. Nematodes, however, showed no preference to chemolithoautotrophic products even on the chimneys.

O27 Nematodes stimulate the growth of a mixed diatom biofilm

An-Sofie D'Hondt, Lander Blommaert, Willem Stock, Koen Sabbe, Tom Moens

Ghent University, Biology Department, Marine Biology Research Group, Ghent, Belgium

In intertidal sediments, nematodes are usually the most abundant and diverse metazoans, reaching densities up to several million ind/m^2. Despite their abundance, there still is considerable debate as to whether and how they affect the production, activity and community structure of microphytobenthos (MPB) and bacteria, for instance through grazing impacts, bioturbation and excretion of nutrient rich compounds. The aim of this study was to examine the influence of nematodes on the growth of a mixed-species diatom biofilm in an intertidal system. During a 15-day experiment, a diatom assemblage composed of four different species (*Navicularenaria*, *N. phyllepta*, *Seminavis* sp. and *Amphora* sp.) and a natural mixed

nematode community were incubated both separately and together. The experiment was carried out in a novel type of microcosm which allows simulation of a tidal regime while excluding immigration and emigration of the organisms at stake. Using PAM fluorometry, the increase in diatom biomass was assessed daily. At the end of the experiment, additional sediment samples were taken to compare the Chl a and EPS content and bacterial community structure between treatments. Results show that nematodes had a positive impact on the increase of microphytobenthic biomass. They also influenced diatom assemblage composition: *Seminavis* sp. growth was stimulated by nematodes, whereas the relative abundance of *Amphora* sp. decreased compared to the control. These results complement earlier though separate results which showed that nematodes either affected bacterial activity, abundance or assemblage structure. While the underlying mechanisms remain unclear, this demonstrates that nematodes are able to affect key players in tidal flat ecology and hence most likely also the ecosystem functions these key players have, such as primary production and sediment stabilization.

Metazoan meiofauna communities from nodule fields of polymetallic nodules (Clarion-Clipperton Zone, Pacific) and their dependence on abiotic parameters at local and regional scale

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Annika Janssen[1], Dmitry Miljutin[1], Katja Uhlenkott[1], Carsten Rühlemann[2], Pedro Martínez Arbizu[1]

[1]Senckenberg am Meer, German Centre for Marine Biodiversity Research, Wilhelmshaven, Germany

[2]Federal Institute for Geosciences and Natural Resources, Hannover, Germany

Manganese nodule deposits in the Clarion-Clipperton Fracture Zone (CCZ) of the eastern Pacific Ocean are of particular economical interest for the recovery of metals, such as Mn, Ni, Cu and Co. Future commercial mining of polymetallic nodules would cause a severe intrusion into the deep-sea environment and will have significant and long-lasting consequences through direct (seabed disturbance, nodule clearance) and indirect (operational and discharge plumes) impacts. Prior to mining-related exploitation, there is a need to obtain baseline data on the diversity, abundance and distribution of the resident fauna in order to assess and predict potential responses to changing environmental conditions. This region is characterized by heterogeneous environmental conditions (such as differences in surface-productivity, topography and sediment characteristics), and thus comprises a great variety of (micro-) habitats. Differences in standing stocks of the metazoan meiobenthos inhabiting the German and French license area of polymetallic nodules in the CCZ were analyzed both at local scale (between different working areas within the same license area) and at regional scale (between German and French license area separated by 1300 km). Environmental factors in terms of displacement volume of nodules, sediment characteristics and total organic carbon have been investigated. One of the main factors determining the total meiobenthic density at the local scale was the presence or absence of nodules in the sampling site, whereas size and abundance of nodules