

light elements (C, N) and e.g. P, S, and Fe. These filters are of matrix types which cause some absorption problems. Using Anodisc filters (Al filters, 0.2 µm pore size), have a high level of phosphorus but they are relatively good for other biological macro elements. Elemental composition of size fractions are obtained by fractionated filtrations on Polycarbonate filters in series of 10, 5, 1 and 0.2 µm pore sizes. We use 47 mm filter size and depending on the biomass we harvest particles from 50 ml - 1000 ml. The major challenge with this method is the calibration and the detection level for N due to absorption corrections needed.

Payet, J. P., University of British Columbia, Department of Earth and Ocean Sciences, Vancouver, Canada, jpayet@eos.ubc.ca;

Suttle, C. A., University of British Columbia, Departments of EOS, Microbiology and Immunology, and Botany, Vancouver, csuttle@eos.ubc.ca

LYSOGENIC VERSUS LYTIC VIRUS LIFE STRATEGIES ARE STRONGLY RELATED TO SEASONAL AND SPATIAL DIFFERENCES IN PRODUCTIVITY IN ARCTIC OCEAN COASTAL WATERS

Despite the importance of viruses in aquatic ecosystems, the controls on lysogenic versus lytic strategies of viral infection are not well characterized. Potentially, the trophic level of the system affects the relative proportion of lysogenic cells. Here we show results from experiments conducted over several months at several locations in coastal Arctic shelf waters that ranged widely in productivity. Highest lytic viral production rates (ranging from 0.4×10^6 to 77×10^6 viruses $L^{-1} d^{-1}$) occurred in productive stratified waters, where viruses were estimated to lyse up to 26% of the bacterial standing stock per day. In contrast, the highest proportion of lysogens prevailed in well-mixed cold oligotrophic waters, and ranged from 3 to 34% of the bacterial cells. Additionally, lysogeny and viral lytic infection were inversely related. Overall, these results suggest that the relative importance of lysogenic versus lytic viral life strategies vary seasonally and are strongly influenced by the productivity of the system.

Pecceu, B., Katholieke Universiteit Leuven, Leuven, Belgium, Bert.Pecceu@bio.kuleuven.be;

Declerck, P., Katholieke Universiteit Leuven, Leuven, Belgium, priscilla.declerck@bio.kuleuven.be;

Mergeay, J., Katholieke Universiteit Leuven, Leuven, Belgium, joachim.mergeay@bio.kuleuven.be;

De Meester, L., Katholieke Universiteit Leuven, Leuven, Belgium, luc.demeester@bio.kuleuven.be

COLONIZATION, LINEAGE SORTING AND PRIORITY EFFECTS IN BACTERIAL COMMUNITIES – AN OUTDOOR MICROCOSM EXPERIMENT

We use experimental microcosms to study the spontaneous colonization and priority-effects of the bacterial community in the aquatic ecosystem. In a first outdoor experiment, three-liter glass bottles were filled with sterilized pond water. Two different starter communities were used to look at the impact of a different inoculum on the development and structure of bacterial communities. We also monitored community assembly in microcosms that were not inoculated so as to monitor the rate of successful colonization. In addition to bacterioplankton we also study the taxon composition of microbial community in biofilms, using PVC slides as a substrate. Taxon diversity and composition in the bacterial communities were analyzed using denaturing gradient gel electrophoresis. Our observations will be presented in a context of metacommunity biology, focusing on patterns of lineage sorting, priority effects and dispersal limitation.

Pécseli, H. L., University of Oslo, Oslo, Norway, hans.pecseli@fys.uio.no;

Trulsen, J. K., University of Oslo, Oslo, Norway, j.k.trulsen@astro.uio.no;

Fiksen, Ø., University of Bergen, Bergen, Norway, Oyvind.Fiksen@bio.uib.no

MOVING IN TURBULENT WATER: AN ANALYTICAL MODEL AND A NUMERICAL TEST

In aquatic environments the encounter rates between small predators and their prey are increased by turbulence. We derive an expression for the flux of prey into the detective sphere of a small self-propelled predator. The model is then tested by a direct comparison of theoretical encounter rates and predictions from a numerical experiment where the Navier-Stokes equation is solved explicitly for a low Reynolds number turbulent flow. This allows us to estimate encounter rates under realistic small-scale flow environments, and to explore the accuracy of a simple theoretical formulation of this process. We find that the analytical model yield surprisingly accurate predictions independently of the assumptions made about the shape of the predator's reactive sphere and turbulence conditions. Two different motion strategies are considered, one with cruising and one with spiralling motions.

Pede, A., Lab. Protistology & Aquatic Ecology, Department of Biology, Ghent University, Krijgslaan 281-S8, Ghent, Belgium, ajpede@ugent.be;

Gillan, D., Marine Biology Laboratory, Université Libre de Bruxelles, 50 Av Roosevelt, Brussels, Belgium, ;

Gao, Y., Department of Analytical and Environmental Chemistry, Vrije Universiteit Brussel, Pleinlaan 2, Brussels, Belgium, ;

Billon, G., Université des Sciences et Technologies de Lille, UMR-CNRS 8110, Lille, France, ;

Lesven, L., Université des Sciences et Technologies de Lille, UMR-CNRS 8110, Lille, France, ;

Leermakers, M., Department of Analytical and Environmental Chemistry, Vrije Universiteit Brussel, Pleinlaan 2, Brussels, Belgium, ;

Baeyens, W., Department of Analytical and Environmental Chemistry, Vrije Universiteit Brussel, Pleinlaan 2, Brussels, Belgium, ;

Vyverman, W., Lab. Protistology & Aquatic Ecology, Department of Biology, Ghent University, Krijgslaan 281-S8, Ghent, Belgium, ;

Sabbe, K., Lab. Protistology & Aquatic Ecology, Department of Biology, Ghent University, Krijgslaan 281-S8, Ghent, Belgium,

SPATIAL AND SEASONAL VARIATION IN MICROBIAL DIVERSITY IN MARINE SUBTIDAL SEDIMENTS IN RELATION TO SEDIMENT GEOCHEMISTRY AND HEAVY METAL POLLUTION

Very little information is available on the diversity and structure of microbial communities in marine subtidal sediments, especially for micro-eukaryotes. In the framework of the Belgian MICROMET project, we investigated spatial and seasonal (February vs July) variation patterns in the molecular diversity of archaeal, bacterial and eukaryotic communities in 9 subtidal stations in the Belgian Continental Plate (BCP) in relation to sediment granulometry, geochemistry and metal contamination. Microbial diversity was determined using DGGE and clone libraries based on the SSU rDNA gene; metals were determined using DET/DGT. Sediments ranged from sandy and well oxygenated to muddy, anoxic and heavily metal contaminated. Eukaryotic diversity was surprisingly high (20-50 phylotypes per station) and was dominated by Stramenopila (mainly diatoms), Metazoa and Fungi, and to a lesser degree by Protozoa (Alveolata, Cercozoa, Foraminifera). While no clear trends in eukaryotic diversity between stations or seasons were found, community composition showed pronounced differences between sandy and muddy stations; seasonal differences were less marked. Archaeal diversity was very low to non-detectable in all stations. Bacterial diversity was dominated by - and -Proteobacteria and CFB bacteria; eubacterial diversity was significantly reduced in the muddy sediments.

Pedersen, O. P., University of Tromsø, Tromsø, Norway, olepp@nfh.uit.no;

Gaardsted, F., University of Tromsø, Tromsø, Norway, fga000@nfh.uit.no;

Odegaard, O., Norwegian University of Science and Technology, Trondheim, Norway, oyvind.t.odegaard@ntnu.no;

Tande, K. S., University of Tromsø, Tromsø, Norway, kurt@nfh.uit.no

THE INTEGRATION AND APPLICATION OF A LOPC ON AN AUTONOMOUS UNDERWATER VEHICLE - A CASE STUDY FROM THE BARENTS SEA

This presentation reports on a pilot study combining an advanced, autonomous instrument platform (AUV) with a laser based instrument (LOPC) able of making automated sampling of zooplankton size spectra, abundance and hydrographic variables. A test survey was undertaken on the Norwegian shelf-break targeting the diapausing population of meso-zooplankton in the North-Norwegian Sea, and in particular the subsurface 'hot-spots' previously detected in this region. Different sampling strategies were tested, and the performance of the integrated platform was analyzed. The long-term objective of this project is to develop a marine platform, which can be instrumental in ecosystem based management on the lower trophic levels, and be applied on a routinely basis.

Peeken, I., AWI/MARUM, Bremerhaven, Germany, Ilka.Peeken@awi.de;

Gros, V., CEA-CNRS, Paris, France, ;

Sarda-Esteve, R., CEA-CNRS, Paris, France, valerie.gros@lscce.ipsl.fr;

Bluhm, K., IFM-GEOMAR, Kiel, Germany, ;

Zoellner, E., IFM-GEOMAR, Kiel, Germany, ;

Bonsang, B., CEA-CNRS, Paris, France,

- PLANKTON - A SOURCE OF CARBON MONOXIDE IN THE OCEAN

Carbon monoxide (CO) is produced from the ocean surface and this source, which can have impact on the remote atmospheric chemistry, needs to be better characterized. In the framework of the European project OOMPH, we found in laboratory studies CO production from cultured algae following a daily light-cycle. During a ship campaign on-board the FS Meteor in 2006 (Mauritanian upwelling region) CO was again produced by active growing phytoplankton in decks incubations. The magnitude of this CO production however seemed to be governed by two processes, the incoming light and the species distribution in the water. A group dependant CO production was also found during a campaign on-board the R/V Marion Dufresne in 2007 (Cape Town-Punta Arenas), where during the passage over a phytoplankton bloom (along Argentinean coast) in situ CO levels reached up to 20 nmol L^{-1} , thus 20 times higher than background values and co-varied with the occurrence of pelagophytes. In conclusion beside the previous known light dependant photochemical production of CO a new biological based production of CO needs to be considered in modelling studies.

Peltomaa, E. T., University of Helsinki, Department of Ecological and Environmental Sciences, Lahti, Finland, elina.peltomaa@helsinki.fi;

Ojala, A. K., University of Helsinki, Department of Ecological and Environmental Sciences, Lahti, Finland, anne.ojala@helsinki.fi;

Holopainen, A., University of Joensuu, Ecological Research Institute, Joensuu, Finland, anna-liisa.holopainen@joensuu.fi;

Salonen, K., University of Jyväskylä, Department of Biological and Environmental Science, Jyväskylä, Finland, arisalon@jyu.fi

ENVIRONMENTAL CHANGES AS A STUMBLING STONE FOR GONYOSTOMUM SEMEN (RAPHIDOPHYCEAE)

The raphidophyte *Gonyostomum semen* (Ehr.) is a well known bloom forming alga in acid brown water lakes in Northern hemisphere. Due to the water color, these strongly stratified lakes have poor light penetration restricting photosynthesis. Hypolimnetic anoxia through decomposition of organic matter is also common. In the absence of oxygen phosphorus bound in sediments is released to dissolved form and thus, strong nutrient