

Phytoplankton blooms provide the sole source of energy viz. particulate fluxes to the majority of deep sea communities. These communities are reliant on biogenic fluxes for growth, reproduction and recruitment. Productivity exerts controls on biodiversity and ecosystem function, with peaks in biodiversity occurring at intermediate water depths (~3000m). Environmental forcing has led to long term changes in community composition at the Porcupine Abyssal Plain and Pacific. In this study we aim to assess the role of productivity in biodiversity and ecosystem functioning in an abyssal (3000m) and continental slope (1200m) setting at two contrasting sites: the oligotrophic W. Mediterranean and the more eutrophic Galicia Bank. The approach will involve: (1) the use of stable isotopes and biomarkers to assess the quality and origin of the food source (2) biomarkers with both bulk and compound specific isotope analysis in order to assess the response of the fauna to the food source. We hypothesise that: (1) biodiversity will peak at abyssal sites and at Galicia Bank (2) productivity exerts greater control on ecosystem function at Galicia Bank. Preliminary results are presented.

Session 2.4. Broad Scale Patterns And Sources Of Variation In Biodiversity-Ecosystem Functioning Relationships

Chairs: Magda Vincx; Katja Philippart; Tasman Crowe; Steve Hawkins; Lisandro Benedetti-Cecchi

THE IMPACT OF SEABED DISTURBANCE ON THE DIVERSITY OF MEIOFAUNA COMMUNITIES ? LINKING FIELD AND LABORATORY OBSERVATIONS.

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Broad Scale Patterns And Sources Of Variation In Biodiversity-Ecosystem Functioning Relationships.

CHANGES IN BENTHIC DIVERSITY AND ECOSYSTEM FUNCTION IN RESPONSE TO ORGANIC ENRICHMENT FROM FISH FARMING.

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The benthic enrichment gradient was studied in four Mediterranean areas affected by fish farms. In every area the macrofauna species composition, abundance and biomass was determined at 6 sampling stations and a series of diversity metrics were calculated. For better understanding of the environmental change, in addition to the biotic indices, a number of geochemical variables (redox potential, labile and refractory organic matter, MD, sulfide concentration, Phosphorus concentration etc) and ecosystem processes (oxygen consumption, mineralization of nitrogen) were measured for every gradient. The nonparametric rank correlation analysis between all possible pairs of diversity, geochemical and ecosystem function variables in the data set showed a large number of significant positive or negative correlations. Furthermore, in order to study the combined effect of changes in sediment geochemistry and biodiversity metrics we used multiple stepwise regression using ecosystem function descriptors (O₂ consumption, N mineralization) as dependent variables. This analysis resulted in multiple regression models explaining a large proportion (60-90%) of the variability of the data. Our results indicate that ecosystem function changes considerably in response to both geochemical variables and biodiversity metrics.

NEMATODE SIZE AND SHAPE FROM THE SHELF TO THE DEEP SEA: ADAPTATIONS TO BENTHIC ECOSYSTEM FUNCTIONING.

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