the single species from monocultures with the communities reveal that the most productive species was competitively superior only in high light intensities. However, source sink dynamics maintained this species throughout the whole region and thereby decreased local diversity and increased local productivity.

11:45 12:00 COMPLEX POSITIVE CONNECTIONS BETWEEN FUNCTIONAL GROUPS ARE REVEALED BY NEURAL NETWORK ANALYSIS OF ECOLOGICAL TIME-SERIES

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The relationships between functional linkages within communities and community dynamics are fundamental to biodiversity-stability relationships. By teasing apart the 'hidden layers' within artificial neural networks (ANNs), we developed webs defining how functional groups influence each others temporal dynamics. ANNs were based on 15 years of bimonthly monitoring of macrobenthic communities on three intertidal sandflats in Manukau Harbour (New Zealand). Sites differed in web topology, and diversity, with the site dominated by one functional group exhibiting only a few strong links, the lowest á-, â- and ã diversity and the highest temporal stability in á-diversity. However, positive interactions between functional groups, non-concordant with harbour-wide or site-specific environmental variables, always dominated the interaction webs. The increased number of links we observed with increased temporal variation of species richness within functional groups and overall diversity supports the insurance hypothesis. While our findings suggest there may be no consistent model characterizing the topology of temporal interactions between functional groups, decreasing diversity is likely to decouple interactions between functional groups and decrease ecosystem functionality.

12:00 12:15 SPECIES DIVERSITY PATTERNS ON ROCKY SHORES IN UK AND IRELAND: THE INFLUENCE OF PELAGIC PRIMARY PRODUCTIVITY AND TEMPERATURE

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Moore, Pippa; Leaper, Rebecca; Marine Biological Association of the United Kingdom, UK
Kendall, Michael, Plymouth Marine Laboratory, UK
Simkanin, Christina; Department of Life Sciences, Galway-Mayo Institute of Technology, Ireland
Anne Marie, Power, Martin Ryan Institute, National University of Ireland –Galway, Ireland
Davenport, John,; Myers, Alan; Zoology, Ecology and Plant Science, University College Cork, Ireland
Mc Grath, David, Department of Life Sciences, Galway-Mayo Institute of Technology, Ireland
Hawkins, Stephen, School of Ocean Sciences, Bangor University, UK

Rocky shore species were recorded at 682 sites around Ireland and the UK between 2002 and 2006. Present-day distributions were compared with those in 1950-60s to assess climate-related changes in abundance and geographical limits. Multivariate analysis of community data from Scottish sites showed that change in community composition along wave exposure gradients explained the largest fraction of variance. The next largest portion was associated with species diversity, mostly positively with macroalgae, and negatively with filter feeders (mussels and barnacles). This measure of species diversity was negatively related to pelagic primary productivity from satellite data. To extend this analysis to the whole of the UK and Ireland, we identified a smaller proxy set of species that predicted overall species diversity. The abundance of 21 species predicted this measure very well (R2=0.86). Predicted diversity was negatively related to within-region productivity patterns, with big differences in overall diversity among regions correlated positively with sea surface temperature in February. We propose that productivity-induced high abundance of filter feeders may have a negative impact on the diversity of intertidal macroalgae and associated species.

12:15 12:30 THE EFFECT OF INCREASED RAINFALL ON MEIOFAUNA ASSEMBLAGES: IS THERE A UNIFORM RESPONSE TO ENVIRONMENTAL PERTURBATION?

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Compinas-Bezerra, Tania; Van Gansbeke, Dirk; Steyaert, Maaike; Vanaverbeke, Jan. Department of Biology, Ghent University, Belgium
Dgras, Aleksander; Urba-Malinga, Barbara. Department of Fisheries Oceanography and Marine Ecology, Polish Sea Fisheries Institute, Poland

Kuhnert, Jutta; Veit-Köhler, Gritta. German Centre for Marine Biodiversity Research, Senckenberg Research Institute, Germany
Lampadariou, Nikolaos, Institute of Oceanograph, Hellenic Centre for Marine Research, Greece
Schratzberger, Michaela, Lowestoft Laboratory, Centre for Environment, Fisheries & Aquaculture Science, UK
Whomerley, Paul, Burnham Laboratory, Centre for Environment, Fisheries & Aquaculture Science

Sandy beaches represent a dynamic interface between the marine, terrestrial and groundwater systems which may be rapidly influenced by rainfall events. The meiofauna of beach sediments are responsive to changes in salinity, drying and periods of emergence and may be ideal organisms for modelling the direct effects of climate change. Recent research suggests that patterns of rainfall over Europe have changed over the 20th century influenced by human activities, with northern Europe becoming wetter and southern Europe drier. Models also indicate that rainfall events may changes in frequency and intensity. We will describe and present results from the largest fully standardised and replicated field experiment ever undertaken in meiofaunal ecology; a recently completed MarBEF/Manuela study undertaken at four European locations in Belgium, Poland, Portugal and Crete. The study aimed to examine whether meiofaunal assemblages would respond in a universal manner to an environmental perturbation, modelled experimentally through artificial rainfall events. Such responses have often been assumed, but results have often been contradictory and a greater understanding of meiofaunal responses to disturbance is central to developing predictive models for the future.

12:30 12:45 BIODIVERSITY PATTERNS OF MARINE INVERTEBRATE METACOMMUNITIES IN THE MEDITERRANEAN SEA.

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A dynamic metacommunity model was designed to link processes governing interactions between benthic invertebrate populations and their environment. It combined in the same approach the landscape, hydrological environment and metacommunity complexities. Our objective was to understand how a structure in coastal marine communities and metacommunities emerges from interacting population dynamics. It is now used to investigate underlying processes that structure metacommunities in the Mediterranean Sea. Coastal benthic ecosystems were considered as a mosaic of habitats with different types of substrates described by a typical community of interacting organisms. The connectivity between communities was ensured by a stochastic larval dispersal in the water column. The model is based on simple population dynamics, incorporating discrete synchronized recruitment. Interactions (competition, predation, mutualism) were determined by the metacommunity trophic structure. The oligotrophy, supposed to be a strong structuring factor, was introduced by limiting growth parameters. Simulations have shown that interactions stabilised the dynamics and that the level of connectivity controlled the density levels, suggesting that oligotrophy might not be the only factor to explain the high diversity-low biomass Mediterranean patterns as it was observed.

12:45 13:00 GLOBAL TRENDS IN INTERTIDAL MACROALGAL BIODIVERSITY

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Milne, Rebecca, Huntsman Marine Science Centre, Canada
Miloslavich, Patricia, Universidad Simón Bolivar, Venezuela
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Within the last decade the need for nearshore biodiversity studies on a large spatial or even global scale has become increasingly obvious but studies are lacking, partly because comparisons can be hampered by the use of different methods. For a comparative biodiversity assessment on various spatial and temporal scales, a unified approach is preferred. NaGISA, the nearshore component of the Census of Marine Life (CoML), was established to examine biodiversity in macroalgal and seagrass communities on a global scale. Here, we present our first attempt to compare intertidal macroalgal communities sampled at various sites around the world using the NaGISA protocols. All sites had rocky substrates and were considered typical for each region. We used multivariate analyses to examine spatial trends in macroalgal community structure based on species composition (and higher taxonomic levels) and biomass. These types of analyses allow us to compare macroalgal diversity levels on latitudinal and longitudinal scales in an attempt to discern whether clear large-scale patterns exist.