HERMIONE news
Issue 7, Spring/Summer 2011
www.eu-hermione.net

Exploring the effects of commercial trawling on deep-sea sediments

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From 10 - 14 May 2011, a new HERMIONE oceanographic cruise was conducted by the Spanish RV García del Cid on the Catalan margin (northwestern Mediterranean). This cruise was lead by HERMIONE partner Consejo Superior de Investigaciones Científicas (ICM-CSIC, Barcelona) in cooperation with HERMIONE partner Consorzio Nazionale Interuniversitario per le Scienze del Mare (CoNISMa-ULR, Ancona). Samples were also collected for scientists from HERMIONE partner, University of Aberdeen, who expressed their interest on the cruise but could not join it due to a conflict of dates. The study was primarily focused on the Palamós (also named La Fonera) submarine canyon, but some activities were also conducted in the neighbor Blanes submarine canyon (Fig. 1).

The main objectives of the cruise were: i) to monitor sediment transport processes induced by trawling activities along canyon flanks; and ii) to assess the impact of deep-sea bottom trawling on the sedimentological, biological and biogeochemical properties of surface sediments.

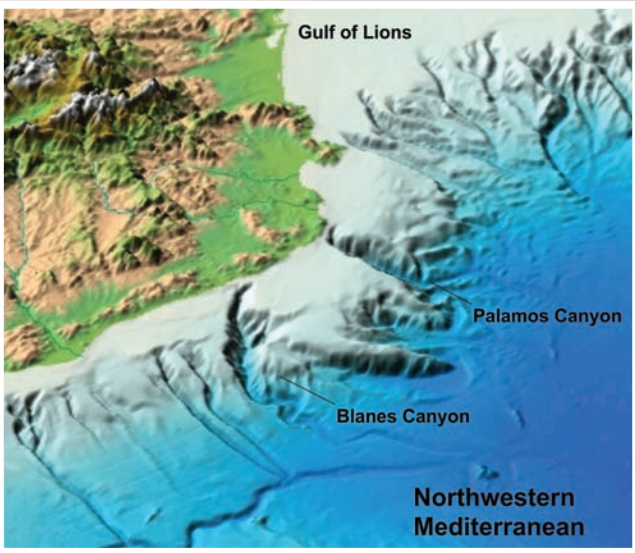

Figure 1. 3D view of northern Catalan margin showing the location of the Blanes and Palamós (La Fonera) submarine canyons.

Figure 2. Picture of the multicorer with a successful recovery of surface sediments.

The sediment-transport monitoring will be conducted during the following four months by two instrumented mooring lines, each deployed in a tributary of the Palamós and Blanes submarine canyons just below the main fishing grounds. Both lines have been equipped with a downward-looking acoustic Doppler current profiler (ADCP) moored at 80 m above the bottom (mab) and three self-contained turbidity sensors moored at 50, 20 and 5 mab. The ADCPs - one of them provided by HERMIONE partner Centre National de la Recherche Scientifique (CNRS-CEFREM, Perpignan) - are measuring current speed and direction at 2 m cells from the instrument height down to the seafloor at 5 minutes sampling interval, while the turbidimeters are recording estimates of suspended sediment concentrations every minute. These time series observations will complement the records obtained during 2010 by a previous mooring deployment in the Palamós canyon

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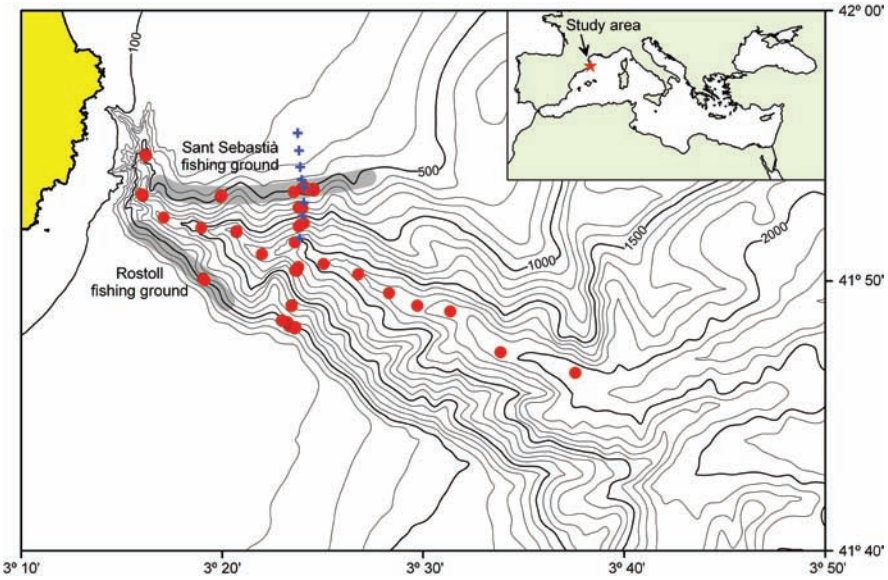

Figure 3. Bathymetric map of the Palamós (La Fonera) submarine canyon with the location of the coring sites (red dots) and the position of the CTD casts (blue crosses). The grey bands illustrate the fishing grounds along the canyon flanks.

flank, during which the ADCP did not work due to a firmware issue (see Martín et al. 2011). Additionally, during the cruise, a hydrographic transect with a CTD was conducted across the northern flank of the Palamós Canyon, crossing a fishing ground, to detect the formation and dispersion of turbid plumes in the water column caused by trawling activities. High concentrated turbid layers could be observed in some of the CTD casts, although restricted to the lowermost part of the water column.

The sediment sampling was conducted exclusively on the Palamós Canyon using a KC multicorer with six collecting tubes (Fig. 2) and also using a box corer. During the cruise, 22 coring sites were sampled; some of them just once, but in key areas devoted to biological analysis, triplicates and even three stations (500 m apart) with triplicates per site were obtained. A total of 59 successful deployments could be achieved, covering from 500 m depth down to 2100 m depth, both in the canyon flanks and along the canyon axis (Fig. 3). On each site, one sediment core was sliced at 1 cm interval for further sedimentological and biogeochemical analysis and a slab with a rectangular section was taken for X-radiograph analysis. On the sites devoted to biological sampling, replicate sediment samples were collected for immediate analyses of extracellular enzymatic activities and viral production or stored for subsequent analyses of organic matter quantity and biochemical composition as well as of prokaryotic and meiofaunal abundance, biomass and diversity. Additionally, surface sediments from 500 m depth, both from trawled and non-trawled sites were sieved through a 250-micron mesh for macrofaunal analysis, which will be conducted by the University of Aberdeen.

Although the analysis of such a large sediment sampling effort will take several months to be finalized, visual observations from the obtained cores suggested a sharp contrast between trawled and un-trawled sites. Surface sediments at the un-trawled sites were basically bioturbated soft mud, while in the trawled sites they showed a distinct surface deposit in the uppermost centimeters of liquefied mud or a layer of sandy sediments (mostly shell fragments) that suggest a progressive winnowing of fine sediments as a result of the trawling-induced resuspension. Below those sandy or liquefied mud layers, there was an over-consolidated (i.e. old) mud, indicating sustained erosion of recent sediments. In fact, in one of the trawled sites these over-consolidated sediments were so stiff that the multicorer was unable to penetrate and we had to use the box corer instead. On the contrary, surface sediments deposited along the canyon axis were remarkably unconsolidated, to the point that most of the multicorer ballast (lead weights) had to be removed in order to prevent the overfilling of the tubes. These facts suggest that the canyon axis is at present receiving and trapping large amounts of recent sediments presumably delivered by the trawling activities that are eroding the canyon flanks, as previously suggested by Martín et al. (2008). Further analyses of the cores collected on this cruise will provide information of how thick are these deposits, if a depocenter exists, and how far and deep the biogeochemical effect of the trawling activities can be detected along the canyon axis.

Figure 4. The cruise team

References:

Martín, J, Puig, P., Palanques, A., Masqué, P., García-Orellana, J. 2008. Effect of commercial trawling on the deep sedimentation in a Mediterranean submarine canyon. Marine Geology, 252: 150-155.

Martín, J., Puig, P., Palanques, A., Company, J.B., Ribó, M. 2011. Deep-sea commercial trawling: heavy physical impacts on fishing grounds and beyond. HERMIONE Newsletter, 6: 9-10.

The joys of working with Lophelia pertusa

Autun Purser, Jacobs University Bremen. Email : a.purser@jacobs-university.de

Despite the key role *Lophelia pertusa* plays in the support of European cold-water coral ecosystems, surprisingly little is known about its physiology and behavior in the environment. Although we do know that direct damage to the animal by bottom trawling can occur, the possible risks to the organism posed by a host of other human activities (such as drilling by the oil and gas industry in the vicinity of reefs, or resuspending seabed sediments adjacent to reefs by bottom trawling) is poorly understood. By answering some of these outstanding questions, HERMIONE scientists are providing information which can be used by regulatory bodies to develop successful management plans for these diverse ecosystems.

Aside from field observations of *Lophelia pertusa* reefs in situ, laboratory studies of prey capture rates of the organism, its susceptibility to particulate exposure and sensitivity to environmental changes are key in developing our understanding of its functioning. Unfortunately for researchers, *Lophelia pertusa* is a tricky beast to work with experimentally….

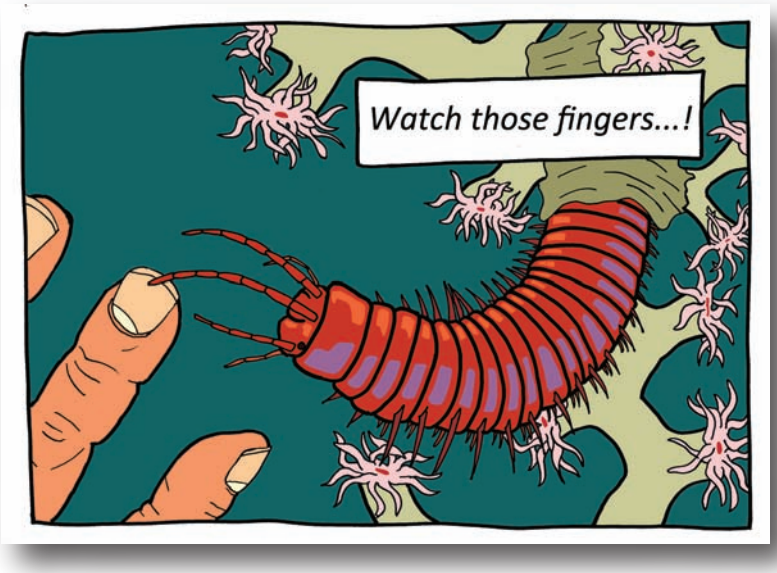

Figure 1 - Eunice norvegica, large symbiotic polychaete is not keen on having its living space manhandled.

Collection and preparation of samples

The first problem faced when working experimentally with *Lophelia pertusa* is how to best collect samples. Reefs are often a considerable distance offshore and coral polyps are usually only found in high densities at depths of several hundred meters. Also, as slow growing organisms, researchers must take every effort to minimize their impact on the ecosystem. Expensive ROV's are perhaps more useful for collection than box cores or video grabs, as they allow skilled pilots to break off coral fragments with manipulators causing little damage.

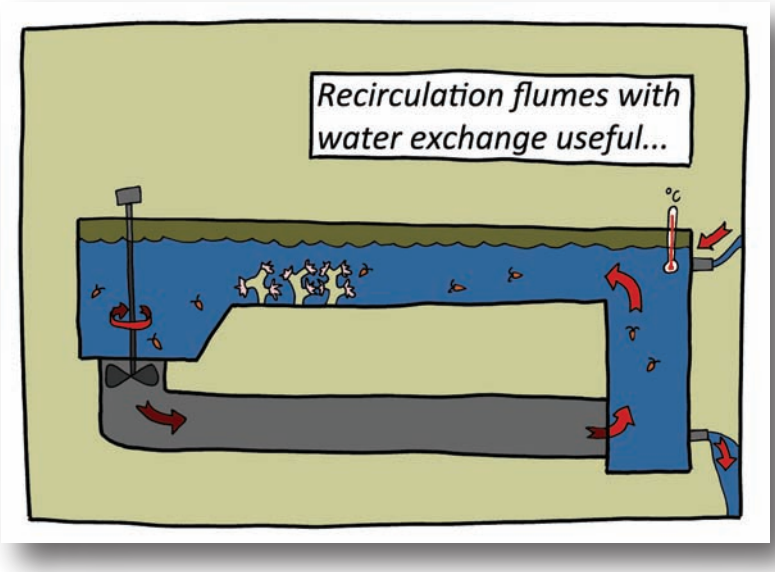

Figure 2 – Recirculation flumes with inflow of fresh, temperature controlled water can be useful for maintaining Lophelia pertusa in the laboratory.

With frustrating regularity however, the calcium carbonate skeleton of the coral can shatter at an inopportune moment, the researchers left watching the small coral polyp fragments slipping helplessly from the manipulator arm as technicians curse.

Following a successful collection, the corals must be transported back to the laboratory as swiftly as possible. The animals are sensitive to temperature changes and ideally should be stored in bottom waters collected from the vicinity of the reef for transport.

On arrival at the lab, it is unlikely that the coral polyp branches collected will be of the requisite number and uniform biomass required for the carefully planned experimental runs… The coral

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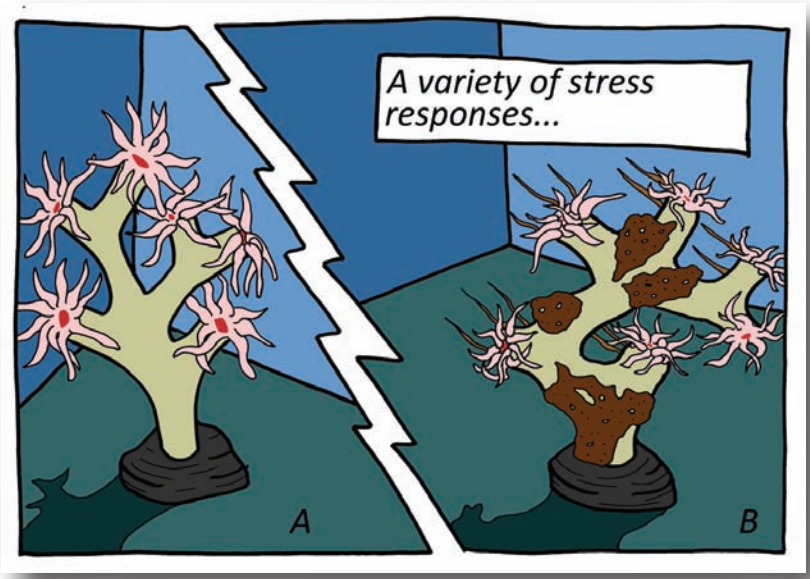


Figure 3 – Stress response can vary with stimuli. A – increase in temperature leads to polyp expansion. B – Particulate exposure can lead to mucus production and eventual coverage by material.

branches must therefore be broken to size. How to best go about doing this is open to debate – although it is clear that the sides of the coral branches should be exposed to as little pressure or abrasion as possible, as these surfaces are covered by a thin, easily damaged living 'coenosarc' membrane. A common practice which seems successful is to wedge some closed pliers between branches and apply opening pressure… with luck this will crack the skeleton in exactly the directions the researcher desires. In addition to the concern the researcher may have for possibly damaging the coral, there are his or her fingers to be considered: *Lophelia pertusa* colonies are often symbiotically associated with the sizable polychaete worm *Eunice norvegica*, which can give a nasty nip to the unwary…

Maintenance of samples

Lophelia pertusa is a fussy laboratory tenant. If the new environment is not ideal, the animal can signal its annoyance in a host of experiment wrecking ways. Given an ideal aquaria, with correct temperature, a clean through-flowing water supply, low illumination, low vibrations, plenty of food (but not too much) and a bit of space from its neighbours the researcher may expect the tentacles on a polyp branch to be flowing freely and aesthetically in the ambient currents… with luck, the content tenant may grow at a glacial rate of 0.002 % day! Change anything, and this happy picture can rapidly change. Increase temperature too much and the coral tentacles will further extend and bloat outward in an effort to maintain respiration, supply the wrong water type and the coral will eventually become sickly and die, provide too much illumination and algal contamination will occur, walk too quickly or noisily and the coral will retract its tentacles for in excess of half an hour, feed it not enough.… actually feeding it not enough has no significant impact on timescales of less than six months… Feed it too much and it will vomit curious detrital packages onto the aquarium floor…packages which do not appear to represent solely what was fed to the organism… packages perhaps containing some internal components the coral really should have kept within itself for proper continued functioning…

Statistics

Even if the researcher has managed to collect a number of polyps which appear to be of similar age, be in similar condition etc, the actual weight of the fleshy polyps hidden mostly within the skeletal structure can be hugely variable. Unfortunately, it is not possible to separate the weight of the skeleton from the weight of the living animal until after an experiment is over… where this leaves the researchers attempts to perform statistical investigations is also hugely variable.

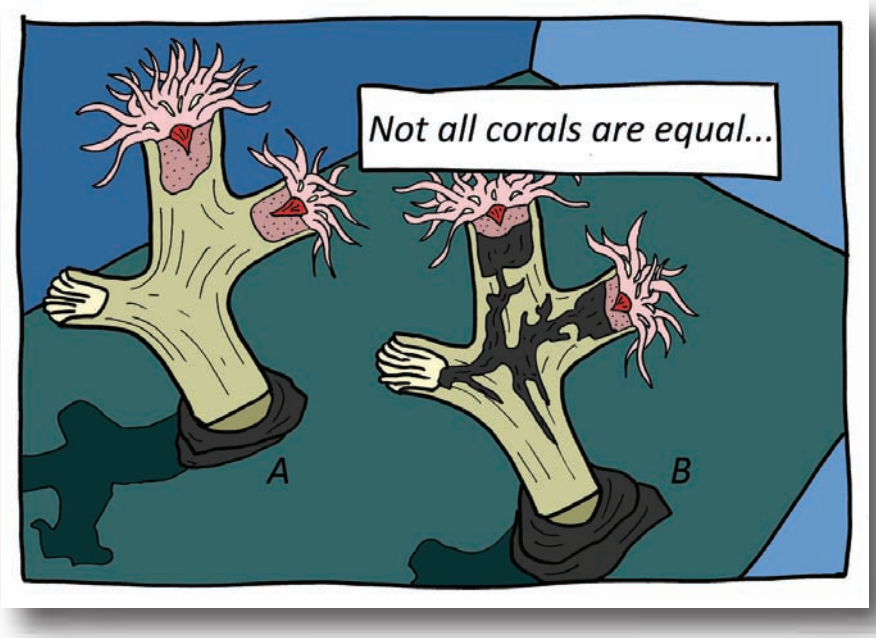
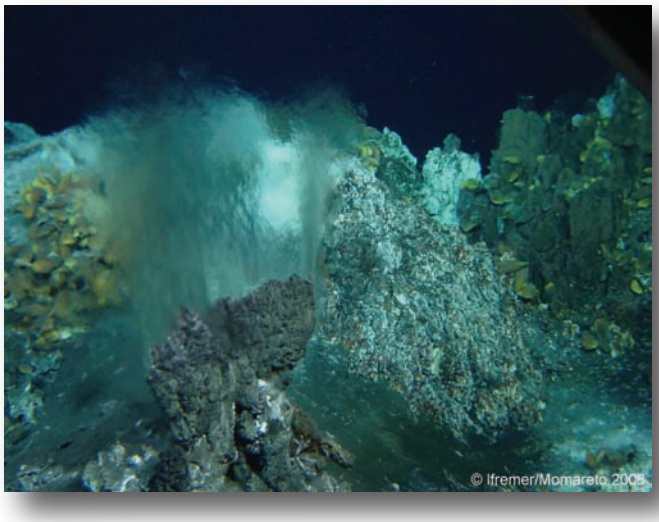


Figure 4 – Despite similar external appearance, coral branches can be very different internally. In this case, branch A is healthy, whereas branch B has been invaded by a parasitic sponge or fungus, with polyps damaged and reduced in mass.

Adaptation strategies of hydrothermal vent mussel Bathymodiolus azoricus to metal exposure

Inês Martins, Department of Oceanography and Fisheries, University of Azores

Since the discovery of benthic communities associated with deep-sea hydrothermal vents the scientific community has concentrated efforts to understand how the organisms can survive in such hostile environment. The hydrothermal vent organisms have to cope with low pH, low O2 concentrations, elevated temperatures, high concentrations of CO2, CH4, toxic compounds as sulfide (H2S) and high concentrations of metals. As a strategy to endure an environment with no light and chemically harsh, aerobic megafauna species live in symbiosis with specialized bacteria that oxidize compounds like H2S and CH4 creating energy for the host. The vent mussel Bathymodiolus azoricus is the dominant megafaunal species of Mid Atlantic Ridge hydrothermal fields. They inhabit highly reactive zones where short temporal and spatial gradients of physico-chemical conditions occur and may critically affect the concentrations of substrates used as energy and carbon sources for chemosynthetic processes. They overcome the fluctuating supply of O2, CO2 and H2S and CH4, by pumping and trapping significant amounts of water in their shell cavity. Thus, these compounds diffuse through the gills providing the endosymbionts with the essential substrates for chemosynthetic primary production. Other remarkable adaptations of B. azoricus include the persistence of a functional digestive system enabling nutrition from selected organic particles. Both mechanisms developed by the vent mussel not only fulfill their nutritional needs but also represent potential pathways of metal accumulation. The water that surrounds mussel beds is enriched in particulate metals (mainly metal-sulfides complexes) and dissolved metals (complexes that undergo oxidation/dissolution reactions at oxygen-enrich mixing zones). However, such unpredictable environmental conditions and prolonged exposure to both forms of metals seems not to inflict deleterious effects on the vent mussel. In fact they have developed several physiological mechanisms that help to cope with such stress. Namely, the storage of metals ions in intracellular organelles and the synthesis of metallothionein proteins. Such mechanisms limit the occurrence of metal free ionic forms in the cytoplasm, which can catalyze the production of toxic free radicals and inactivate essential enzymes. Moreover, B. azoricus are able to adapt their metal handling strategies to the environmental bioavailable metals. The flexible feeding regimes based on mixotrophy well adapt to physico-chemical fluctuations and the successful cellular metal handling allows B. azoricus mussel to be the most successful and widespread species in MAR hydrothermal vents.



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Martins I., A Colaço, R Serrão Santos, F Lesongeur, A Godfroy, PM Sarradin, RP Cosson (2009). Relationship between the occurrence of filamentous bacteria on Bathymodiolus azoricus shell and the physiological and toxicological status of the vent mussel. JEMBE 376, 1-6

Martins I, R Bettencourt, A Colaço, PM Sarradin, RS Santos, RP Cosson. The influence of nutritional conditions on metal uptake by the mixotrophic dual symbiosis harboring vent mussel Bathymodiolus azoricus (2011). Comp Biochem Physiol C 153, 40-52

Martins I, RP Cosson, V Riou, PM Sarradin, J Sarrazin, RS Santos, A Colaço (2011) Relationship between metal levels in the vent mussel Bathymodiolus azoricus and local microhabitat chemical characteristics of Eiffel Tower (Lucky Strike). Deep-Sea Res 58, 306-315

Submersed hills are not like seamounts!

Antonio Pusceddu, Cristina Gambi, Fabio Trincardi, Roberto Danovaro
CoNISMa, Università Politecnica delle Marche

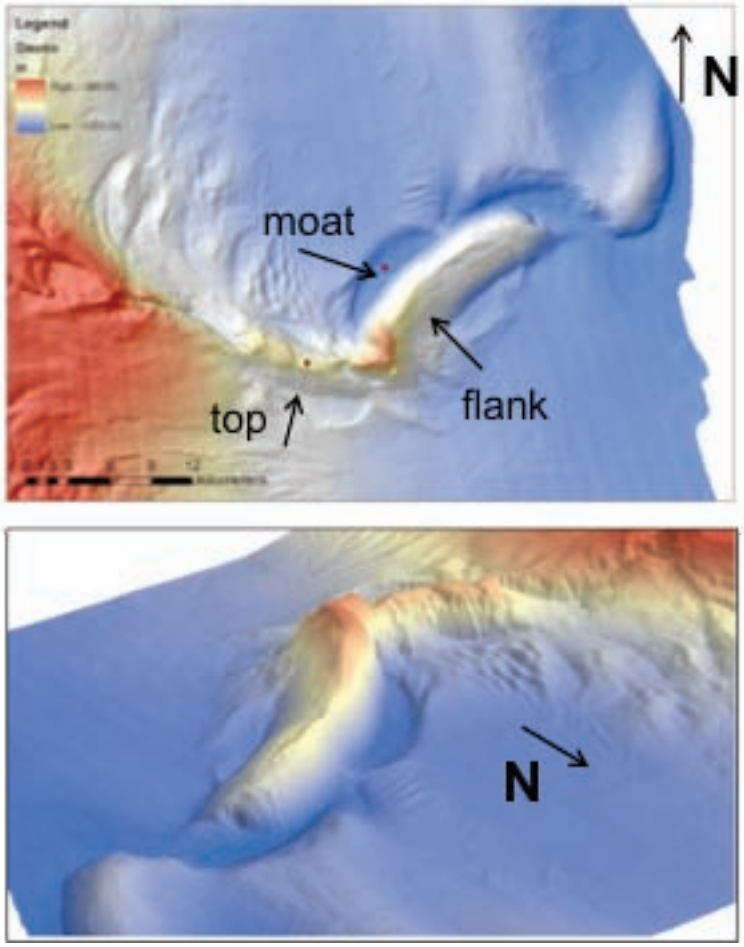

Figure 1. The Dauno Seamount and location of sampling stations (Image courtesy of F. Foglini, CNR Italy).

In the frame of the SASSI_08 cruise carried out aboard the R/V Urania, sediments were collected by means of a box-corer in four areas of the Dauno Seamount (Southern Adriatic Sea) and analyzed for the composition of sedimentary organic matter, abundance, biomass and community structure of meiofauna and nematode biodiversity. Using uni- and multivariate analyses, differences were investigated: i) between two areas at the top of the hill, and 2) between the areas of the hill characterized by incoherent sediments and the adjacent bathyal plain. Redundancy analysis was then conducted to identify the role of environmental variables on the structure of meiofaunal communities and nematode assemblages. Statistical analyses showed the presence of significant differences in the quantity and biochemical composition of sedimentary organic matter, extracellular enzymatic activities and prokaryotic C production between the two habitats at the top of the hill, but no significant differences in terms of organic matter bioavailability, abundance and community structure of the meiofauna, nematode species richness and assemblage structure. These analyses revealed also the presence of values of nematode alpha- and beta-diversity along the flank of the seamount significantly higher than in all other areas and significant differences in the composition of rare meiofaunal taxa communities between areas. The redundancy analysis revealed that variations in the composition of the nematode assemblages were significantly explained by environmental variables (27% of the total variance) and by changes in trophic status (20%) and ecosystem functioning (28%). The results of this study indicate that, conceivably due to its small elevation from the bathyal plain, differences between the different habitats of the Dauno Seamount and the adjacent bathyal plain are relatively modest Fig. 2). These results distinguish the Dauno Seamount from many other proper seamounts, which, generally, act as "hot spots" of benthic biomass and diversity and suggest the submersed hills might behave differently from proper seamounts.

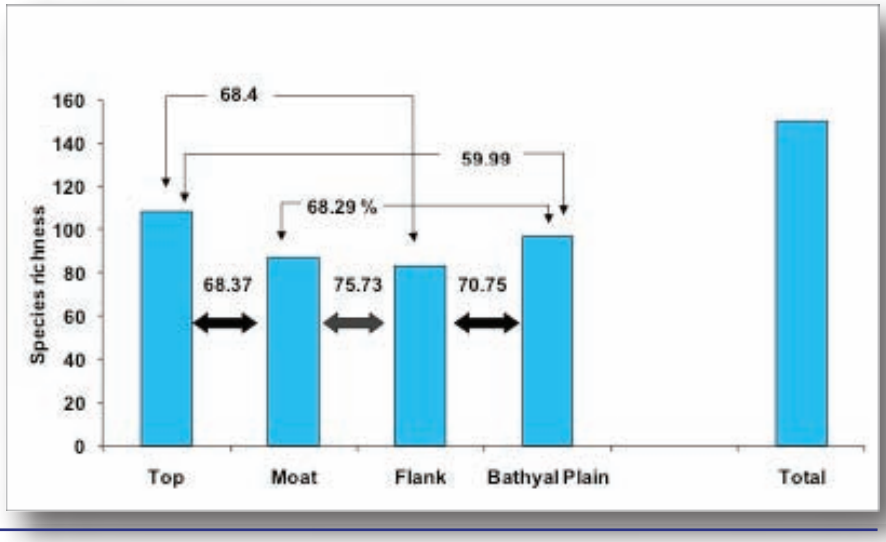

Figure 2 (right). Species richness in three habitats (top, moat and flank) on the Dauno Seamounts and in the adjacent bathyal plain. Percentages indicate similarity of nematode assemblages in the four different habitats

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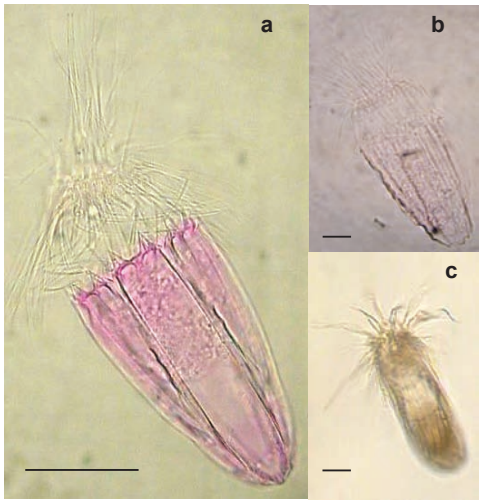
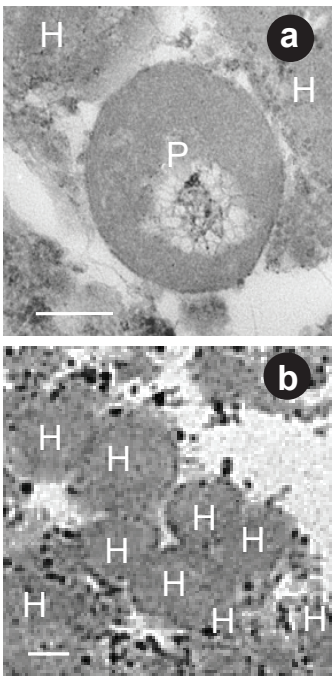
CoNISMa, Ancona



Loricifera retrieved from the deep hypersaline anoxic L'Atalante basin. Reported are the species of Loricifera, new to science, belonging to (a) the genus Spinoloricus; (b) the genus Rugiloricus; and (c) the genus of Pliciloricus. Scale bar: 50 µm.

The 2010 Biology Award of BioMedCentral, one of the most important scientific publisher in biology and medicine, has been awarded for the first time to a working group of Italian researchers leaded by Roberto Danovaro and including Antonio Dell'Anno, Cristina Gambi and Antonio Pusceddu (Fig. 1). The prize was assigned for the discovery of three new species of the phylum Loricifera that can live without oxygen in the deep hypersaline anoxic L'Atalante basin (Mediterranean Sea, to over 3500 m deep)1 (Fig. 2). The discovery was achieved thanks to investigations carried out in the framework of the Hermione project, during which the ultra-structural analyses on those loriciferans allowed the identification of the sub-cellular traits of adaptation to survive in absence of oxygen. These adaptations include the lack of mitochondria, which are replaced by hydrogenosome-like organelles associated with symbiotic prokaryotes (Fig. 3). These findings challenge existing theories on the evolution of life on Earth, that would be possible only with the appearance of oxygen2, and open new perspectives for the astrobiology and the search for life forms in other extreme environemnts3. The award represents a significant recognition of the global relevance of one of the main topics currently addressed by the Hermione project: the biological capacity of marine organisms. The winners of the 5th BioMedCentral Annual Research Awards were announced last 5th May 2011 at the beautiful surroundings of the London Zoo, in Regent's Park, London (UK). Celebrating the very best research, more than 120 guests attended the prestigious ceremony including leading researchers, shortlisted authors and science journalists from around the world. The winners were selected from 214 BioMed Central journals which published more than 17,000 peer-reviewed open access articles over the last 12 months.

All winners of the 5th Annual Awards of BioMedCentral. From the right side: Cristina Gambi, Antonio Dell'Anno, Antonio Pusceddu and Roberto Danovaro (Polytechnic University of Marche, CoNISMa).



Above: Ultra-structural characteristics of Loricifera living in permanently anoxic sediments. Reported are (a) possible prokaryote (P) in proximity of the hydrogenosome (H) and (b) a field of hydrogenosomes-like organelle. Scale bar: 0.2 µm.

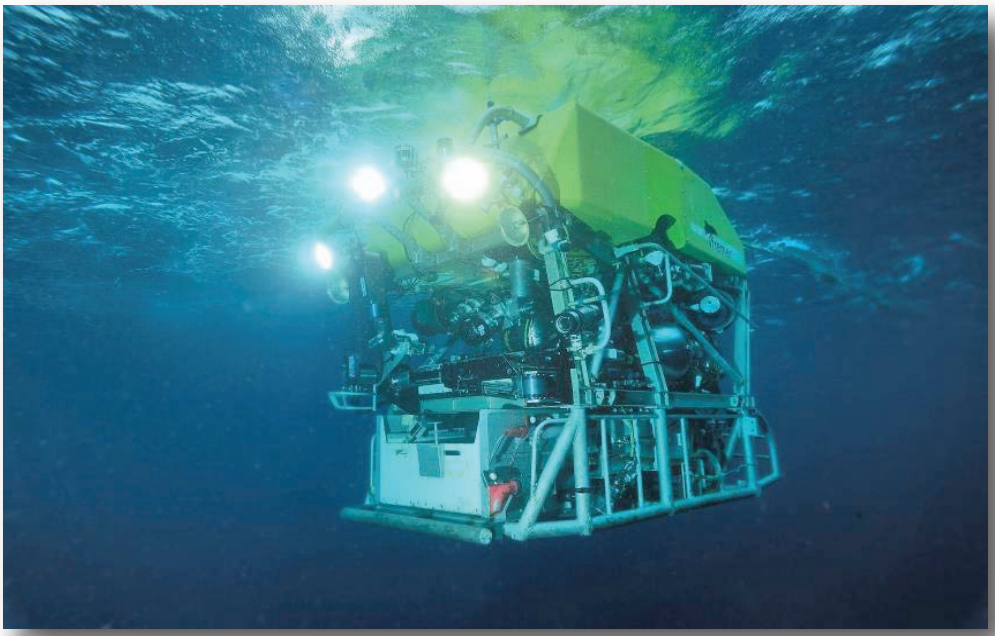
1 Danovaro R, Dell'Anno A, Pusceddu A, Gambi C, Heiner I, Kristensen RM (2010) The first metazoan living in permanently anoxic marine sediments. BMC Biology 8:30
2 Levin LA (2010) Anaerobic Metazoans: No longer an oxymoron BMC Biology 8:31
3 Mentel M, Martin W (2010) Anaerobic animals from an ancient, anoxic ecological niche. BMC Biology 8:32

The SISMER and the submersible data management

Catherine Borremans (Ifremer, SISMER)

Providing access to good quality marine data is essential for future use in global change studies, research projects and operational services. Furthermore, these data represent unique and highly valuable measures because they are often generated during "one-shot" cruises and result from the implementation of complex and expensive machines and instruments. Compilation, safeguarding and dissemination of marine environmental datasets constitute then major issues for the scientific community.

Within the HERMIONE project, the data flow is organised by the data management workpackage and its members: Ingo Schewe (AWI, PANGAEA), Janine Felden (MPI) and Catherine Borremans (Ifremer, SISMER).



As a part of the data management team, the SISMER (Scientific Information Systems for the sea) offers support in the management of submersible dive-metadata homogenisation and of the long term archiving of dive related datasets (navigation, videos, microbathymetry, ...).

The "submersible" term includes towed or remotely operated vehicles (ROVs,…), autonomous vehicles (AUVs,…) and propelled manned submersibles (the Nautile for example).
Practically, the SISMER collects and imports dive-metadata from the partners who use the software Alamer or the SISMER metadata template, which will be available soon on the HERMIONE website, to gather dive-metadata as well in a standardised way. Dive-metadata are special. In addition to the submersible name, the dive number, the position (zone) and the date/time of the dive, it is necessary in most cases to register the dive-actions as sub-events. The submersible data themselves are archived in a Hierarchical Storage Management (HSM) system. This system allows storage and back up of huge volumes of data, such as ROV videos for example. Once published, submersible data archived in the SISMER will be disseminated according to the HERMIONE data management policy.

In the next weeks the data management website will be slightly updated to provide more specific information about the submersible data submission. All the partners generating submersible data are encouraged to visit the website and to submit their data to the HERMIONE data management (even if the data are not yet published, see the HERMIONE data management guidelines).

During our last annual meeting someone said: "The more data we have, the more questions we can answer"…this sentence emphasizes the importance of publishing data through central information systems and it reminds us that the entire scientific community can draw benefits from this sharing of knowledge.

...So who's driving?

Samuele Tecchio and Eva Ramírez-Llodra, ICM-CSIC, Spain

In striking difference with the deep Atlantic bottoms, colloquially termed the "kingdom of the holothurians", the deep Mediterranean Sea hosts a highly diverse benthic fauna dominated by bony fishes and decapod crustaceans. Since the start of intense deep-sea exploration of this basin in the mid-80s, it was thought that the particular environmental conditions of mare nostrum (temperature constantly above 13 °C, increasing oligotrophy from west to east) would be pivotal in influencing benthos composition.

In a study that is being reviewed currently for publication (Tecchio et al., in review), a series of factors have been considered as possible drivers on megabenthos diversity and community composition in the deep Mediterranean, along a bathymetric (1200, 2000 and 3000 m depth) and longitudinal (Western, Central and Eastern Mediterranean) gradients. Diversity and community composition data were collected using a benthic otter trawl (OTMS) and an Agassiz dredge in the framework of the BIOFUN (ESF-EuroDEEP) and PROMETEO (CYCIT, ES) projects, linked to HERMIONE. At the same time, environmental characteristics of the water column, sediment and surface plankton were collected.

Ninety-nine species of megafauna belonging to 10 phyla were identified. Fish and decapod crustaceans were the most abundant groups, as reported previously, followed by mollusks (especially gastropods and cephalopods). The number of taxonomic groups observed decreased from the western to the eastern basin. In addition, benthic biomass decreased dramatically following the same pattern of decreasing detritus input at the bottom. Diversity followed less interpretable patterns but, at a regional scale, it was shown to be high, with important dissimilarities between each basin.

Depth has long since considered the main implied factor in species zonation and distribution, but logically a series of physical variables are covariant with it. Our starting point was to prescind from the mere pattern of depth and longitude, and analyze which of the distinct environmental variables that characterize each depth stratum and area were influential.
Results show that food supply from the upper layers and sediment carbon content are the best predictors of megafauna community differences among basins. The deep Mediterranean confirms itself as a large reservoir of biodiversity also for large-sized faunal classes, which from these data seems region-wide pooled. This diversity is in turn modeled by the distinct environmental conditions of each basin. Still, only a constant and prolonged effort in sampling the deep seafloor will help to fully disentangle the relationships between environment and deep biota.

Tecchio S, Ramírez-Llodra E, Sardà F, Company JB, Palomera I, Mechó A, Pedrosa-Pàmies R, Sanchez-Vidal A. Drivers on deep Mediterranean megabenthos communities along longitudinal and bathymetric gradients. Mar Ecol Prog Ser: in review.

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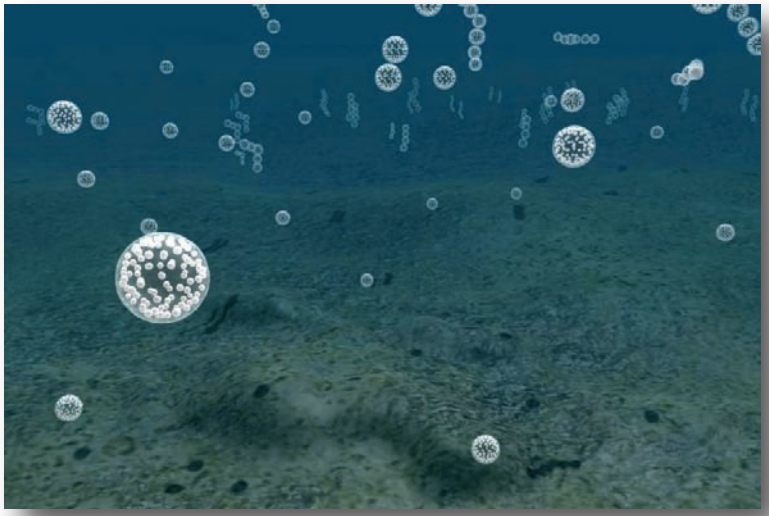
HERMIONE publications

Diversity and spatial distribution of prokaryotic communities along a sediment vertical profile of a deep-sea mud volcano.

Pachiadaki MG, Kallionaki A, Dählmann A, de Lange GJ, Kormas KA (2011)
Microbiol. Ecol. DOI: 10.1007/s00248-011-9855-2

Although we know quite a lot on the prokaryotic communitiy, that is Bacteria and Archaea, of deep-sea mud volcanoes, little information is known reagrding their spatial and temporal variability. By standing changes of the species compostion over time and at different spatial scales, we can recognise foundation or key-stone species and be able to have a rough estimate on the successional stages of these communities, which in turn is important for the ecosystem services of a specific habitat. HERMIONE gave us the chance to directly compare the spatial variability at the top 30 cm of sediment of the two most important mud volcanoes in the Anaximander Mountains, East Mediterranean Sea. In a recent paper (Pachiadaki et al., in press), we compared the 16S rRNA gene diversity at the most active site of the Amsterdam MV with the a similar site at the Kazan MV. Archaea were once again dominated by the expected but yet-uncultivated anaerobic methanotrophs while the much more complex Bacteria community consisted of 20 phylogenetic groups at the phylum/candidate division level, with Proteobacteria dominating overall. In most sediment layers, the dominant phylotypes of both the Archaea and Bacteria communities were found in neighbouring layers, suggesting some overlap in species richness. The direct comparison of the retrieved phylotypes with those from the Kazan mud volcano of the same field revealed that 40.0% of the Archaea and 16.9% of the Bacteria phylotypes are common between the two systems. The majority of these phylotypes are closely related to phylotypes originating from other mud volcanoes, implying a degree of endemicity in these systems. Ongoing research under the HERMIONE framework will try to unveil whether some of these key players show any pattern of temporal presence in these systems. So keep an eye...



Computer-generated image of Thiomargarita sp., deep-sea chemosynthetic bacteria. Image courtesy of ArchimediX / P. Möckl

Events...

Lunch debate:

Maritime spatial planning and integrated coastal zone management

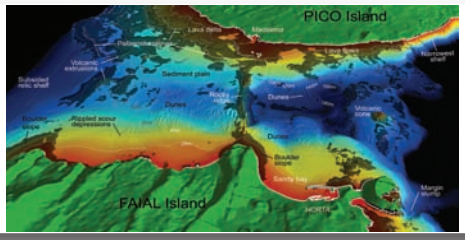
European Parliament
15 June, 12:30 - 14:30

For information and registration please contact carol.thomas@crpm.org by 9 June

Coastal areas

HERMIONE Annual Meeting 2011





Spring 2011 kicked off with our second HERMIONE annual meeting, held in Estepona, Spain, at the Gran Hotel Elba (11-15 April). Over 100 delegates were able to participate, representing almost all our partner institutions as well as our partner project, CHONe, and industry partner Statoil. The talks programme was packed with 54 interesting oral presentations, and complemented by keynote speeches by CHONe's coordinator Paul Snelgrove, and Ricardo Santos from University of the Azores. Most of these presentations are now available to download from the website.

Prior to the main meeting we held our second HERMIONE training workshop: "Science communication and the media", which was run by Jon Copley and Claire Ainsworth of SciConnect. Delegates learnt how best to write for the media, how to conduct radio and television interviews, and even how to create podcasts for broadcasting their science – watch out for the podcast clips on our website!

The second annual image competition was a success with more than 40 entries, and strong competition for the top spots in each category. Winners were picked by vote, and were Claudia Wienberg (MARUM) with an octopus for "underwater images", Alex Icardi (HWU) with the microscopic Branchiomma bombyx for "lab/specimen images", Fernando Tempera (UAzores) with an image of the Faial-Pico Passage for "technical images", Marianne Jacob (MPI) with the flying AUV for "science in action", and Antje Boetius (MPI/AWI) with a video of the Håkon-Mosby Mud Volcano for the "videos" category (see images at top). The annual poster competition was won by Will Hunter (UniABDN) for his poster entitled "Phytodetritus and macrofauna in the Whittard Canyon".