HERMIONE news

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Trans-Atlantic collaboration in cold-water coral research

Gerard Duineveld, Marc Lavaleye, Furu Mienis, Tjeerd van Weering (NIOZ)

As a contribution to the activities of HERMIONE WP4, NIOZ biologists Gerard Duineveld and Marc Lavaleye, and geologists Tjeerd van Weering and Furu Mienis (presently MARUM, Bremen) established a trans-Atlantic collaboration with the group of Steve Ross at the University of North Carolina (Wilmington, USA) to study and compare structure and functioning of cold water coral (CWC) habitats on both sides of the Atlantic Ocean. Deep coral habitats, dominated by the stony coral Lophelia pertusa, are widespread along the US east coast and in the Gulf of Mexico, and have been subject of many US investigations since 2001, funded by NOAA as part of their Ocean Explorer Program. With the use of submersible Johnson-Sea-Link, these US efforts have led to highly detailed descriptions of the reef systems and their inhabitants. At the same time in Europe, FP6-funded programs like HERMES enabled NIOZ and partners to make progress in unravelling the forcing environmental factors in European CWC habitats by means of long-term bottom-lander observations.

Above: Loading NIOZ landers on the RV Nancy Foster (NOAA) in Pascagoula (MS, USA)

As a first phase in the trans-Atlantic collaboration, similar long-term observations using NIOZ landers were planned at the Viosca Knoll, being the best developed cold-water coral reef in the Gulf of Mexico. For this purpose the NIOZ group, joined by Andrew Davies representing WP4 partner SAMS in Oban (Murray Roberts), participated in a cruise on the RV Nancy Forster (NOAA) vessel in October 2008 to Viosca Knoll. The Nancy Foster ship time was provided by the NOAA Undersea Research Center (UNCW) through a grant to S.W. Ross. General funding for this project was provided by the US Geological Survey Outer Continental Shelf Ecosystem Studies Program.

During this mission, two NIOZ bottom landers were deployed which were subsequently retrieved one year later during a cruise with the RV

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Seward Johnson (Harbor Branch). The landers measured temperature (T), salinity (S), turbidity, fluorescence, current speed and particle flux within the coral habitat and next to it. Whilst many parameters recorded by the landers, e.g. T, S, and current speed, resembled conditions within deep coral habitats along the Irish margin, turbidity and sediment trap particle fluxes were generally much higher on the Viosca Knoll. The timing and composition of the trapped material showed that the sedimentation regime in the area, including the amounts of organic carbon and nutrients, is dominated by the Mississippi River system. During the deployment period, periods of high turbidity and fluxes alternated with events that were characterized by a rapid change in temperature, current speed, and direction from W to E. These events led to upslope transport of relatively cold and less turbid water and consequently lower mass flux. Such periods with clear water could be important for the corals to release themselves of the high particle load to which they are most of the time subject at Viosca Knoll. A high particle load can potentially be a limiting factor for coral growth as polyps produce mucus to reject the particles. Using the data collected by the landers, two possible food sources of Viosca Knoll corals were identified. During April and June several fluorescence peaks were observed near the seabed, indicating export of fresh phytodetritus from blooms in the overlying water column observed by satellites. A second possible food source is migrating zooplankton. Albeit not observed directly, the upward looking ADCP recorded a rhythmic diel vertical migration of a scattering layer to and from the corals at 480 m depth which was attributed to zooplankters.

Results of the joint Gulf of Mexico campaign have partly been published in 2009 in Deep-Sea Research Pt I describing the short-term variation. The outcomes of the long-term lander deployments has been accepted for publication in Deep-Sea Research Pt I. As a follow-up, a second campaign involving the NIOZ bottom landers was undertaken at the Cape Lookout Lophelia reefs off North Carolina where both landers were deployed in December 2009 with the RV Cape Hatteras (NSF/Duke Univ.). In June 2010, both landers were successfully retrieved by RV Pelagia (Royal NIOZ) during a cruise to North Carolina where additional video and sediment samples including piston cores were collected. These samples are presently being analysed and will be published as a part of the NIOZ contribution to HERMIONE.

Above: Photos taken with a ROV (Saab Seaeye Falcon DR by SeaVision Marine Services, CT, USA) on the Viosca Knoll during the RV Nancy Foster cruise (NOAA). A. Lophelia pertusa with a starfish (Brisingia sp.). B. Lophelia framework with epifauna and rockfish C. Dense canopy of stony (Lophelia pertusa) and soft corals provide shelter for fish. D. one of the two NIOZ landers in high turbidity environment.

Megabenthic community of the Håkon Mosby Mud Volcano (the Barents Sea) based on image analysis

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A photographic survey was carried out during the expedition of the FS Polarstern in August 2002 (ARK XVIII/1b) to the Håkon Mosby Mud Volcano (HMMV) (the Norwegian continental slope, the south-west Barents Sea, 1200 m depth). Different habitats inside the volcano caldera were inspected and photographed using the Ocean Floor Observation System (OFOS). Three photographic transects across the volcano caldera were performed and analyzed to characterize the distribution and abundance of megafauna in the HMMV area (Fig. 1). One reference transect (not shown on Fig. 1) was made away from the volcano in the background area.

In total 1369 colour film frames with megafauna were examined using stereomicroscope. Twenty-two animal objects were identified and quantified per square meter. The degree of spatial coverage by three objects (bacterial mats and two species of siboglinid tubeworms, Archeolinum contortum and Oligobrachia webbi) was estimated and grouped into classes. One seafloor characteristic (the sediment colour) was classified and used in the analysis.

Three nearly concentric zones within the HMMV, characterized by different habitats with different abundance of megafauna, were distinguished (Fig.2). The flat central zone of caldera, a region of intensive methane discharge, was nearly devoid of benthic communities.

Zone I. Around the centre of caldera lies the zone of bacterial mats. This zone is characterized by extensive bacterial mats on grey or yellowish sediment. Squares covered by mats may exceed 50%. Abundance of benthic species in this zone is very low, with the exception of the fish Lycodes squamiventer, which was abundant on patches or fields of bacterial mat.

Zone II. Further away from the centre of caldera is the zone of extensive settlements of siboglinid tubeworms, Archeolinum contortum and Oligobrachia webbi. The relative abundance of some taxa, such as pycnogonids Nymphon macronix, caprellids Metacaprella horrida, unidentified small Lysianassid amphipods and bivalve molluscs, clearly increased on siboglinid fields.

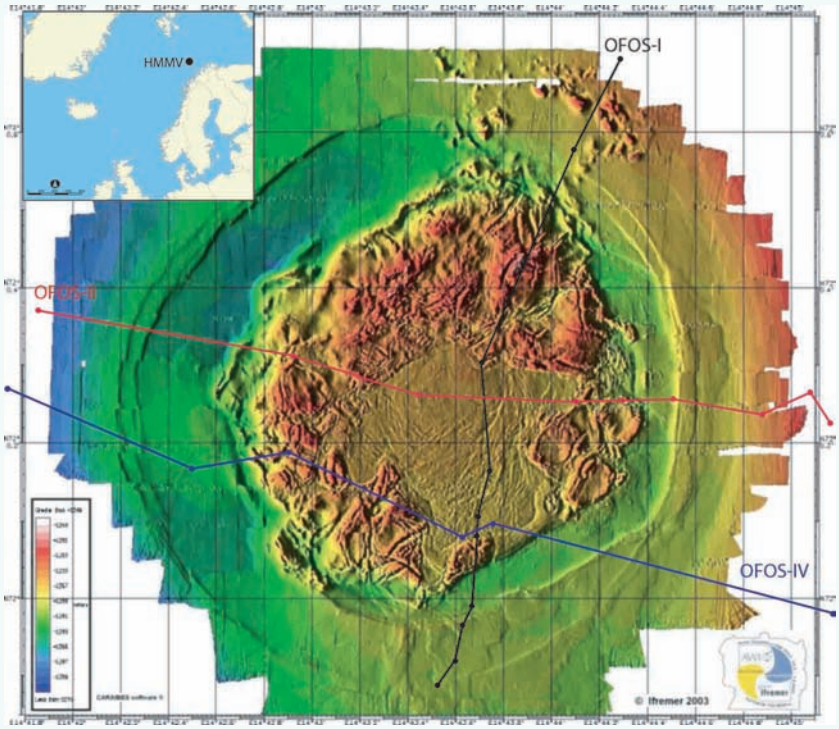

Fig.1: Bathymetry of the Håkon Mosby Mud Volcano; three photographic transects made with the Ocean Floor Observation System shown.

Zone III. The zone of plain light-colour sediment is located farther from the centre of caldera. This zone was numerically dominated by the ophiuroid Ophiocten gracilis. Most of the recorded taxa, first of all the echinoderms, were abundant in this zone.

Five species contributed most significantly to differences in megafauna abundance between the zones: the ophiuroid Ophiocten gracilis, the Lysianassid amphipods, the pycnogonid Nymphon macronix, the caprellid Metacaprella horrida and the fish Lycodes squamiventer (Fig.3). A relatively high abundance of fishes was observed in the zone of bacterial mats: 0.6 ind. m-2; ophiuroids were more abundant on light-colour sediments: 24-44 ind. m-2. The maximum relative contribution of amphipods (Lysianassidae) (26%) and caprellids (0.9-2%) was observed in the zone of siboglinid settlements. Some species, mainly relatively large mobile crustaceans and fishes, were present throughout the caldera and did not form clear associations with any specific habitat.

The bacterial mat zone was characterized by the lowest abundance of megafauna: 1.96-5.7 ind. m-2. Abundance increased by orders of magnitude in two other zones in areas devoid of bacterial mats,

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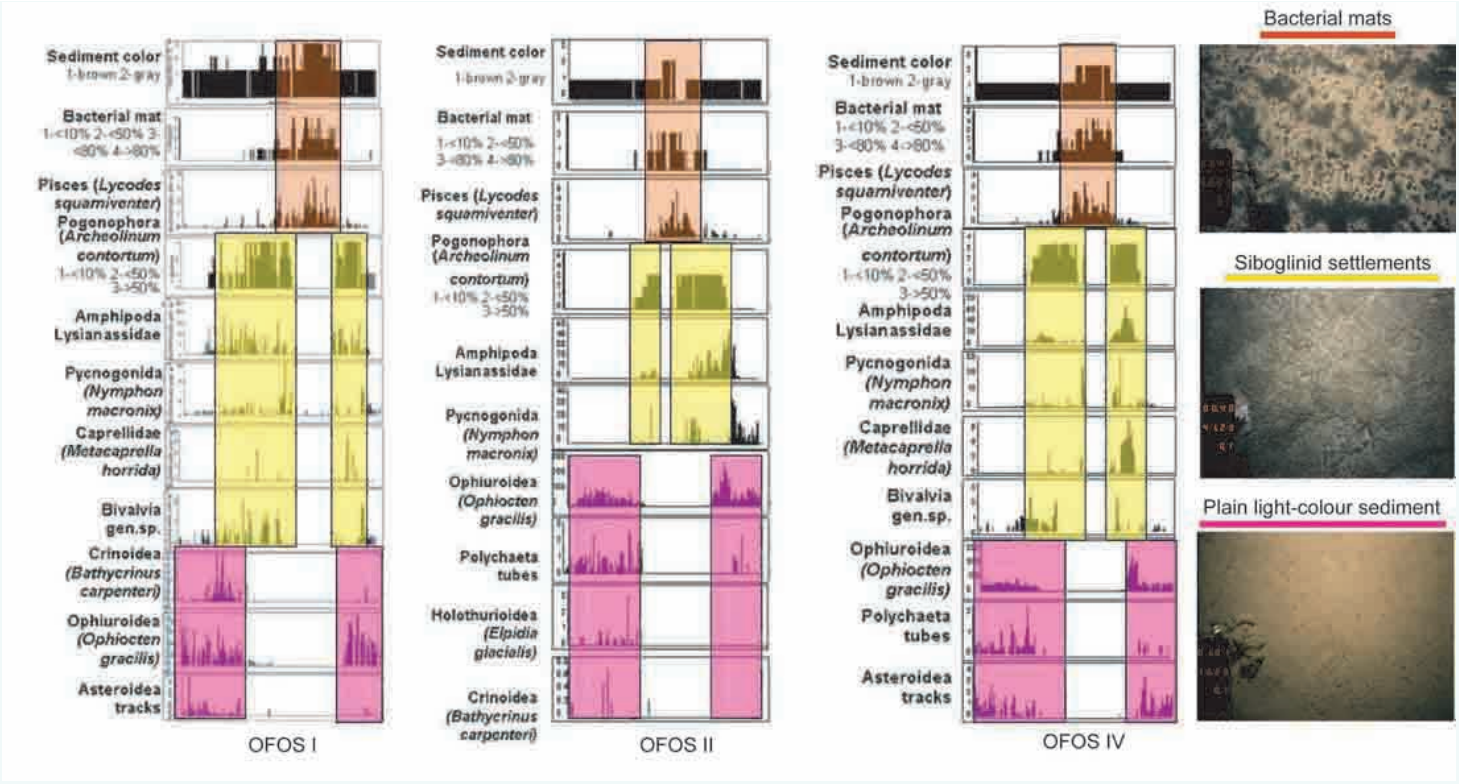

Fig. 2. Mean densities of selected taxa and spatial coverage of some biological objects in the caldera. Typical habitats corresponding to zones are presented; zones are shown in colour: orange - bacterial mat zone, dominant genus Beggiatoa, (coverage >80%), fish Lycodes squamiventer; yellow - siboglinid settlements,

from 16 to 99 ind. m-2. Areas with dense settlements of siboglinids devoid of bacterial mats were characterized by the highest abundance of megafauna (other than siboglinids): 99 ind. m-2.

Overall, the total number of morphospecies was similar inside and outside the caldera, but the abundance of megafauna was significantly higher inside the volcano caldera. The concentric structure of benthic community in the HMMV caldera is more typical to hydrothermal vent habitats; in methane seep habitats benthic communities usually follow a pattern of fluid seeping through the sediment and are less structured.

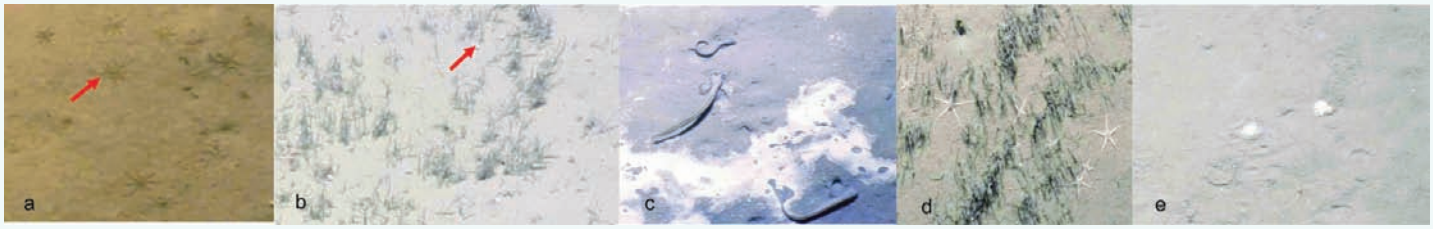

Fig. 3. Examples of the most abundant species in the volcano caldera: (a) - Nymphon macronix (Pycnogonida), (b) - Amphipoda Lysianassidae among siboglinids,

The Seeps Synthesis workshop, Gent 2011

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Chemosynthetic ecosystems in the deep sea are highly diverse and extremely productive habitats which are mainly fuelled by chemical substances rather than primary production that has descended from the sea surface. The many symbioses between species are an excellent example of nature having favoured cooperation above competition in an attempt to survive extreme conditions in habitats such as vents, cold seeps, mud volcanoes and sulphidic brine pools. These ecosystems are incredibly fragmented and appear at many places across the European margins. The fractured nature of these habitats brings questions as to the interconnectivity of these systems and the potential of species to detect and colonise them and hence contribute to the sustenance of the rich communities they comprise.

The multitude of research efforts investigating chemosynthetic ecosystems within the HERMIONE project called for an integrative effort to bring together all results and create a synthesis. The Marine Biology Research Lab at Ghent University was the venue for such an effort - a 2-day HERMIONE workshop on the integration "chemosynthetic results". Two items comprised the agenda: (1) create a synthesis on colonization experiments associated with chemosynthetic environments and (2) Achieve the integration of biodiversity data on microbiota, meio-, macro-, megafauna and symbionts from different seep ecosystems along European margins.

Above: Amon Mud Volcano (SW Rim) cold seep site in the Eastern Mediterranean Sea, representing a typical chemosynthetic habitat - a white thiotrophic bacterial mat. Picture taken during the MSM13/3 expedition. Source: MARUM, University of Bremen/MPI for Marine Microbiology.

During the HERMIONE project various experiments were conducted to investigate the colonization processes associated with chemosynthetic environments, e.g. the potential of species to colonize different types of substrates and establish themselves. Experimental approaches included the deposition of large organic falls on natural substrates - as they would occur under natural conditions such as whale carcasses - and the deployment of experimental units with different organic and inorganic substrates such as wood and carbonates amongst others, in small but standardized amounts and on, in or above the seafloor.

Thanks to these experiments we have now gained a better insight into the colonization of chemosynthetic ecosystems and the diversity and ecology of species assemblages that comprise them as well as the biology and diversity of the symbiotic organisms on which the fauna is often dependent for energy. We are starting to understand more about these systems and how they are able to be sustained, yet answers to important questions remain incomplete. More research is urgently needed so to understand better (1) which species colonize available chemosynthetic habitats first and which colonisation

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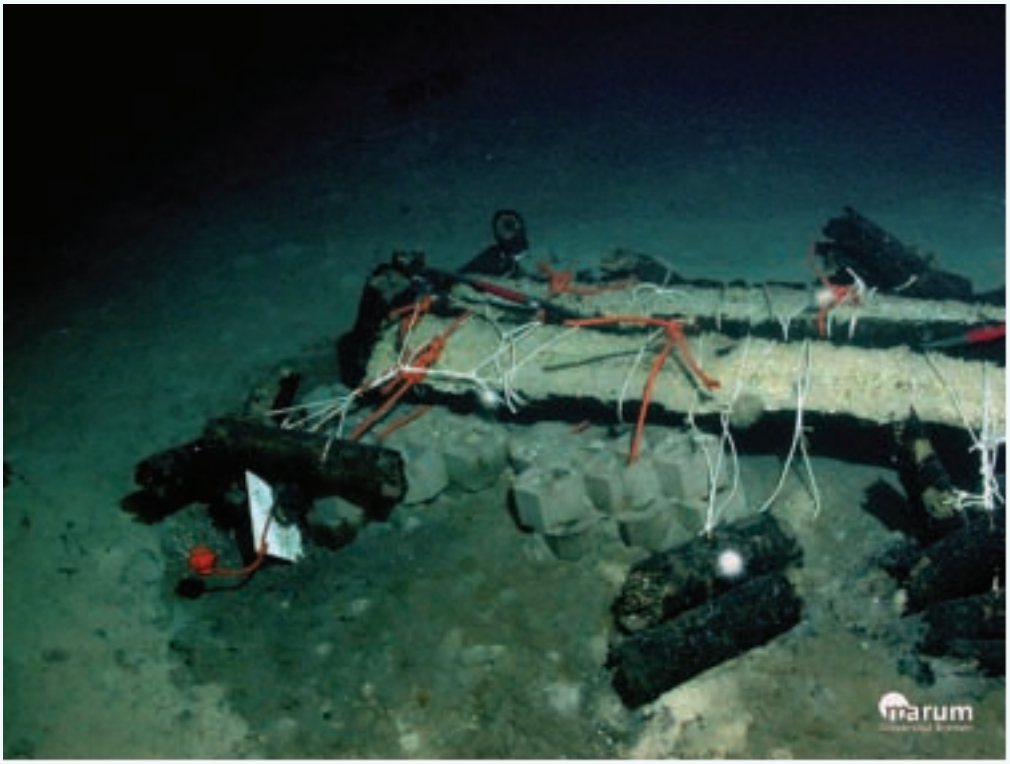

Above: Wood colonization experiment deployed at the Amon Mud Volcano (SW Rim) in the Eastern Mediterranean Sea. The wood fall was deployed in 2006 during the Bionil cruise. During the MSM 13 cruise in 2009 the site was revisited – after 3y of immersion, the wood is highly degraded and colonised by various organisms. Pictures taken during the MSM13 expedition. Source: MARUM, University of Bremen/MPI for Marine Microbiology

Left: the workshop participants strike a pose.

processes and patterns shape established chemosynthetic communities , (2) the cues that attract colonising species to chemosynthetic habitats, (3) the environmental, oceanographic and geographical controls that influence colonization and sustainability of the seep environments, (3) where the colonising propagules originate from and what limits of stimulates their dispersal.

In recent years, a great deal of biological and environmental data on chemosynthetic ecosystems has been collected and these are generally available through PANGAEA, the HERMIONE partner responsible for data management. During the workshop a data integration strategy was approved in order to compile all chemosynthetic biodiversity data across all organism size-classes and the many diverse chemosynthetic habitat types along the European margins. This effort which will result in an integrated study on chemosynthetic deep-sea biodiversity along European margins in the near future.

Policy demands for value evidence on deep-sea environments

AUTHOR: Rob Tinch, Median SCP

Ensuring conservation and sustainable use of deep-sea ecosystems is a major challenge that will require concerted efforts from diverse stakeholders and the use of arguments from a broad spectrum of perspectives, including both conservation ethics and utilitarian arguments regarding ecosystem services. Deep-sea governance structures and tools are evolving and the specific roles of valuation evidence within them are yet to be defined.

To explore these issues, HERMIONE scientists combined desk research with a workshop and round-table discussions held as a fringe event at a 2010 OSPAR and UNEP Regional Seas meeting. Discussions primarily focused the need to convince decision makers of the importance of marine conservation.

There is an overall emphasis on prioritising scientific understanding over public attitudes or values - often even a sense of paternalism, with priority given to expert judgement. Specifically for the deep sea, there is a view that unfamiliarity can lead to unreliable valuations (unlike the case of market goods or more familiar resources).

That said, there is recognition of the importance of public opinion to politicians and advisers in certain regions and institutional settings. This is translated in to emphasis on communicating the importance of deep sea environments to the general public, but not necessarily to a desire to quantify public values for deep sea environments.

As is to be expected in any group exercise, there were some divergent opinions. Some were keen to see greater use of valuation evidence, as a means of promoting conservation and improving decision making; some were quite antagonistic, seeing conservation qua conservation as paramount, and rejecting the validity and accuracy of valuation arguments.

Overall, however, most participants were somewhere in between – there is little appetite for valuation for its own sake, but a willingness to use it if and when it can help to advance the fundamental issues facing governance and management of deep sea systems. The choice of arguments is seen as dependent on political and governance contexts and processes, public familiarity with ecosystem, and also with participation and democracy.

And this is perhaps as it should be: as we noted in our earlier report on deep sea valuation (Armstrong et al 2010), valuation should be seen as one step in a continuum of ways of better organizing information to help guide decisions, but it is not an end in itself, and is only one tool in the decision-makers' tool box, to be used with skill and care, as and when appropriate.

Orange roughy: From deep sea (image:Tomas Lundalv, UGOT), to deck (www.sustainablewaters.com) to dish (www.marylandmeals.com)

Attitudes to cold-water corals: focus group analysis

AUTHOR: Naomi Foley and WP6

Economic valuation is a tool to make the range of services provided by ecosystems visible in management processes. Previous studies have shown that it is difficult for the general public to have opinions about the deep sea, assess values, or form preferences due to inaccessibility and limited knowledge. This hampers efforts at trying to capture the value of cold water coral (CWC). The consequence could be that ecosystem services contributing to our welfare will be undervalued or even lost altogether.

In order to address this, HERMIONE researchers will conduct a survey in order to value CWC. As a first step in the valuation process, to improve survey design and obtain precise valuation results, focus groups have been carried out. Focus groups involve getting a handful of individuals (in this case members of the public) together to discuss deep sea ecosystems hear how they relate to them and to the goods and services they provide. The objective is to test various aspects of the survey including flagging up any valuation issues and providing HERMIONE researchers with ideas on how best to present information in the questionnaire. A total of six focus groups have been held so far in Norway and Ireland involving people living on the coast as well as people living inland. Three meetings were held in Ireland with members of a sailing club, a dive club and an inland art group. A further three were held in Norway with sailors, fishermen and an inland choir. Each meeting had between six to ten participants. A final meeting is planned with Irish fishermen in the next month. Some interesting common themes arose throughout the discussions, including the need for more information, the protection of fisher livelihoods and property rights of CWC.

The focus group gets underway

The precautionary principle is particularly relevant to the management of CWC because of the lack of knowledge on how they contribute to human wellbeing, and because their long recovery time implies that if destroyed, the coral is in practical terms lost for ever. HERMIONE wants to investigate attitudes to the use of the precautionary principle in protecting CWC ecosystems. Results from the focus groups reveal that while participants acknowledge the importance of protecting CWC due to the services they may provide and/or for moral reasons, a high level of concern was expressed regarding fishers' livelihoods in both countries. Respondents were respectful of the rights of fishermen to make a living from fishing and were protective of their livelihoods. When asked if they supported closures while areas are mapped for CWC, focus group members pressed for the need for more information on the precise function, coverage and values of CWC before supporting such management action. The focus groups in both countries were unanimous on this issue.

Lophelia pertusa: a cold-water coral whose future is uncertain

In terms of rights and duties issues related to CWC, respondents were in full agreement that the Irish and Norwegian governments are responsible for the care and protection of CWC in their respective waters but

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HERMIONE policy news

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that fishermen must accept responsibility regarding the protection of CWC. There was some agreement from the focus group members regarding a ban being placed on some fishing gear types and a feeling that fishermen should be better educated about the impact their fishing practices have on CWC.

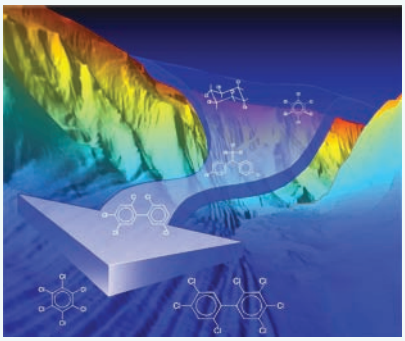
There was a keen interest within the groups to find out as much as possible about CWC. Questions were asked about the functions and services of CWC such as how they survive, their actual value, scarcity, texture and their use as an indicator of climate change. Requests were made by the participants for more information and educational material on CWC and other deep water ecosystems through the use of aquariums, school visits, computer games and documentaries. Awareness was believed to be a key tool and vehicle for people to be willing to protect these ecosystems.
The next step of the research is to use the information from the focus groups to aid the design of a survey capturing what values people place on cold water corals.

HERMIONE publications

HERMIONE AND HERMES SCIENTISTS PUBLISH SPECIAL CANYONS VOLUME

This special issue from the HERMES and HERMIONE teams contains 13 papers that explore the biotic and abiotic environments in the Portuguese canyons and the relationships between them. Guest editors Prof. Doug Masson and Prof. Paul Tyler noted that the volume of work carried out and published here only reinforces the realisation that in such heterogeneous environments, there may be much more waiting to be discovered, and more research is needed on a global scale.

THE ROLE OF DENSE SHELF-WATER CASCADING IN THE TRANSFER OF ORGANOCHLORINE COMPOUNDS TO OPEN MARINE WATERS



Settling particles were collected in a network of sediment trap moorings deployed along the Cap de Creus (CCC) and Lacaze-Duthiers (LDC) submarine canyons and the adjacent southern open slope (SOS) between October 2005 and October 2006. This network collected particles deposited during sedimentation by common vertical water column processes or episodic internal waves and storms and particles dragged to deep waters by dense shelf water cascading (DSWC). Polychlorobiphenyls (PCBs), DDTs, chlorobenzenes (CBzs) –pentachlorobenzene and hexachlorobenzene- and hexachlorocyclohexanes were analyzed in all samples. The results show much higher sedimentation of these compounds during DSWC than in the absence of cascading. The area of highest deposition was located between 1000 and 1500 m depth and extends along the canyons and outside them showing that canyons channel these episodes but there are obvious overflows. Higher fluxes were observed at 30 m than at 500 m depth above sea bottom which is consistent with the physical characteristics of the dense waters that generate the cascading events. DSWC involved the highest deposition fluxes of these compounds ever described in a marine open sea area, e.g. peak values of PCBs (960 ng·m-2·d-1), DDTs (2900 ng·m-2·d-1), CBzs (340 ng·m-2·d-1) and lindane (180 ng·m-2·d-1).

Salvado JA, Grimalt JO, Lopez JF, Palanques A, Heussner S, Pasqual C, Sanchez-Vidal A, Canals M. (subm.)

The HERMIONE display on deep-sea floor exploration: open from September 2011 at CRETAquarium

AUTHOR: Nikolaos Lampadariou and Thalia Polychronaki, Hellenic Centre for Marine Research

Have you ever wondered how scientists gather information from the cold, dark and remote regions of the deep sea in order to study this alien world? Now is your chance. Visit the HERMIONE display at CRETAquarium that opened in September 2011. Come plunge into the dark mysteries of deep ocean exploration.

The major aims of the display are:
- To inform the public about HERMIONE and its research activities
- To fascinate the visitors about the deep sea, its peculiarities and the ways we can approach and study such a remote and hostile environment
- To inform the visitors about life in the sea and increase public awareness about the sustainable management of our oceans

Visitors learn about the European project HERMIONE and the importance of researching and caring about the deep-sea. The major aims of the project are clearly posted emphasizing the vulnerability of these remote ecosystems and the importance of human impacts upon them.

The display, consisting of a synthesis of various disarmed oceanographic instruments, portrays part of the deep-sea floor where such instruments have been deployed to collect samples. An impressive sediment trap mooring including an Aanderaa RCM 7 current meter is hung by the ceiling and anchored on the portrayed sea floor by a large metal chain. Next to the trap lies a benthic lander equipped with its buoyancy spheres and several instruments such as: (i) a chamber for community oxygen consumption measurements; (ii) a Niskin bottle for collecting water samples; (ii) an acoustic releaser; (iv) an Acoustic Doppler Current Profiler; (v) a camera and its light source for acquiring time lapse photographs. The necessary deck unit used to communicate with the acoustic releaser that detaches the lander from its weight allowing it to surface, is also part of the display.

All the instruments are clearly labeled informing the visitors of their function and necessity.

CRETAquarium belongs to the building complex of THALASSOCOSMOS of the Hellenic Center for Marine Research (HCMR), the leading organization for marine science in Greece and one of the main research centers in Europe. As an extension of HCMR, one of CRETAquarium's major objectives is to inform the public about

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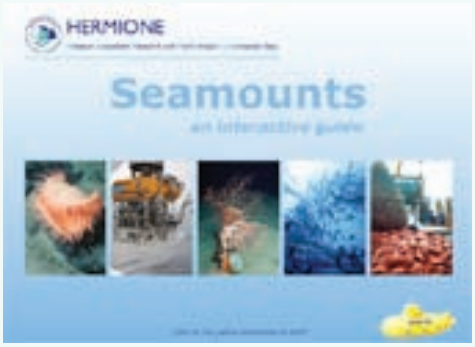
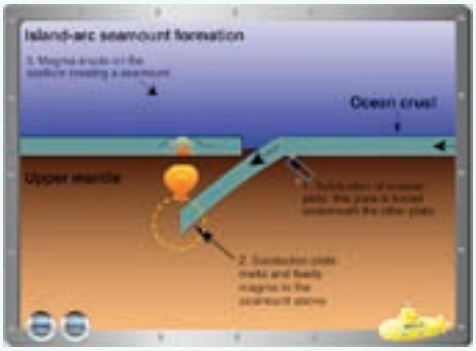
issues concerning the marine world, especially the Mediterranean and Greek Seas, and to disseminate relative scientific knowledge.

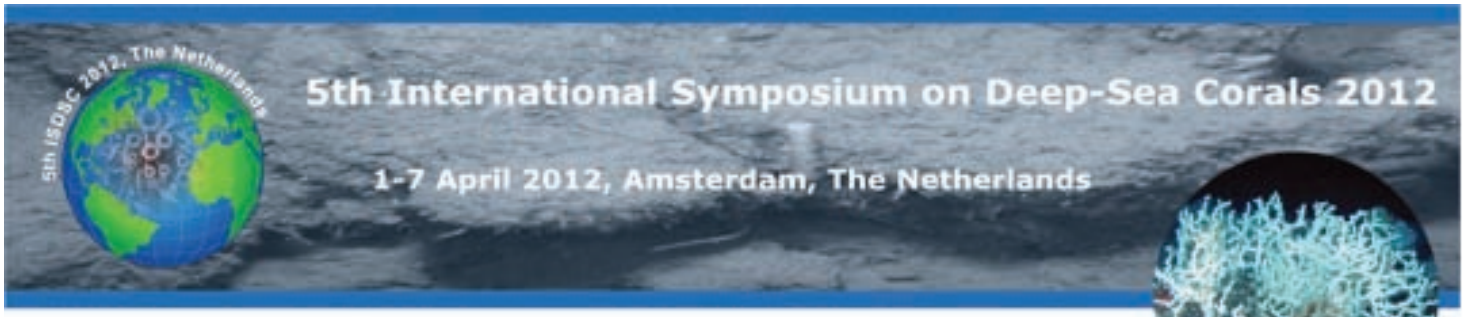
CRETAquarium first opened its doors to the public in December 2005. It has recently undergone extensive renovation, involving the addition of new tanks, species, educational programs and innovative services. As one of Europe's largest aquariums, CRETAquarium offers visitors a unique opportunity to explore the magnificent underwater world of the Mediterranean. It is situated in the grounds of the former American Base at Gournes, 14km from the city of Heraklion and very close to major tourist resorts. Each year approximately 280000 people of all ages visit CRETAquarium, 40% being tourists from all over the world. With such rates we hope to help spread awareness throughout the world.

Seamounts: interactive learning module online





An interactive learning module on seamounts has been completed and is now available on the HERMIONE website. The material was developed at NOC with input from our partners working on seamounts research and comprises a series of four interlinked 'units' that allow the user to learn about different aspects of seamount development, importance and protection. The seamounts module complements those on cold-water corals and submarine canyons that were developed during the HERMES project. Navigating through the module, you can gather general information about seamounts, how they were formed, what lives there, what hydrodynamic processes occur there, and how man impacts them. Log on to www.eu-hermione.net/interactive-resources to find out more!



ISDSC 5

The 5th International Symposium on Deep-Sea Corals (ISDSC 5) will be held in the Artis Conference premises, Amsterdam from 1-7 April, 2012. The meeting will be a valuable opportunity to demonstrate and apply the latest research results of cold-water coral research.

ISDSC has become the major conference for all aspects of cold-water coral research. Crossing the boundaries between marine geology, biology, chemistry and physics, the meeting will address key scientific issues such as ecosystem functioning, biodiversity, environmental forcing factors, coral carbonate mound initiation, and their role in past and present biogeography, deep-water reef development and diagenesis as well as more applied aspects including (potential) reservoir capacities of carbonate mounds (under past and present constraints) and the effects of climate change. All the issues will be discussed in a global context alongside dedicated science-policy interface sessions outlining the most recent developments in management and conservation. For more information visit the website www.deepseacoral.nl.

The topics to be discussed include four overriding themes:

(1) Biodiversity and Ecosystem functioning
(2) Environmental conditions and constraints
(3) Paleoceanography and climate change
(4) Policy, Management and Conservation

Call for abstracts and registration

The early registration and submission of abstracts for the ISDSC 5 will open on the 15th of September 2011.

Please note that only 250 participants can be accommodated (in plenary session mode) and that reservations will be made upon order of receipt of payment of registration. We thus encourage early registration!

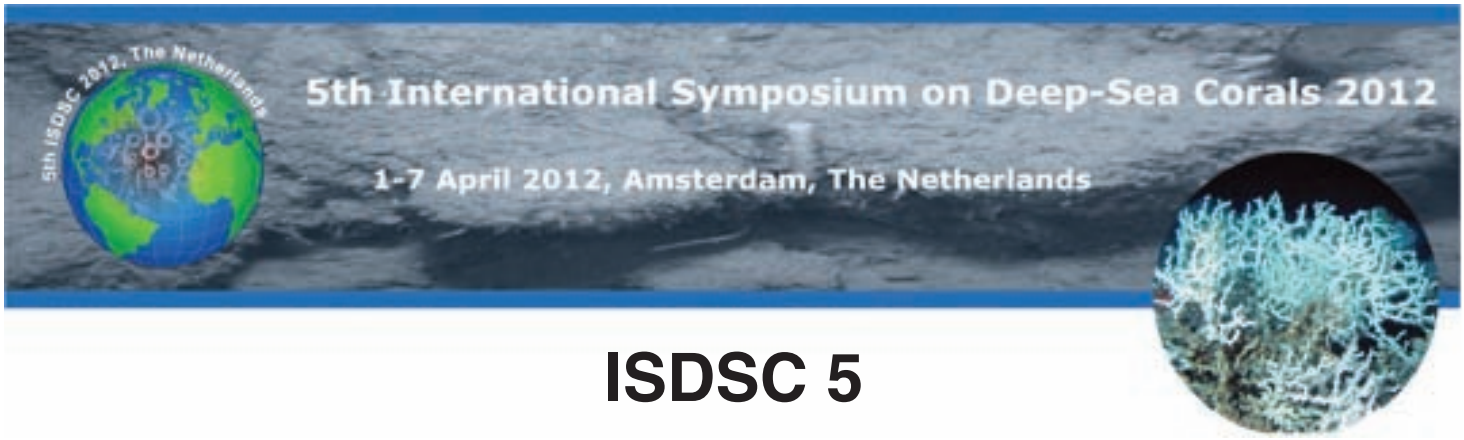
The Registration fees include all coffee/tea breaks and lunches, a conference book of abstracts/USB-stick and access to the Icebreaker party.

Conference registration fees:

Early Registration full member	400 Euro
One day (Early) Registration	150 Euro
PhD Student Early Registration	275 Euro
Graduate Student Early Registration	250 Euro

Note that student registration will only be accepted if accompanied by a letter of the university or institute.

The abstract submission and early registration deadline is 16 December 2011. For detailed information regarding registration visit the conference website www.deepseacoral.nl.



ISDSC 5

Abstract submission

Those wishing to submit an abstract of a contribution for either an oral or poster presentation must register simultaneous with or before submission of the abstract. For submission of an abstract consult the registration section of the website and follow the instructions. No abstracts will be accepted without prior registration and payments of fees.

Conference participants can submit up to two abstracts as first author, however only one abstract will be accepted with preference for an oral presentation. No abstract fees are charged. After submission you will receive a confirmation of receipt by e-mail. Authors will be informed of acceptance 6 weeks after the abstract and registration closure date (half January 2012).

Workshop

A workshop 'Identification of deep-sea corals from imagery data' focusing on deep-water coral identification from imagery, convened and organised by Ifremer in association with the French Marine Protected Areas Agency, CoralFISH, NOAA and the University of Plymouth will take place on Sunday 1 April in the Artis conference premises.

Participants can register through the ISDSC 5 website, the associated cost is €100. The workshop is open to all, but the number of places is limited to 40 participants, and prior registration for ISDSC 5 is obligatory. Detailed information on this workshop can be found on the ISDSC 5 conference website and can be obtained from Inge van den Beld (Inge.Van.Den.Beld@ifremer.fr) or Jaime Davies (Jaime.Davies@ifremer.fr) .

Keynotes

Keynote lectures during ISDSC 5 addressing the themes of ISDSC 5 will be given by Pål Buhl-Mortensen, Rhian Waller, Scott France, Ashley Rowden, Conny Maier, Murray Roberts, Andy Davies, John Guinotte, Norbert Frank, Martin Hovland, Laura Robinson,and Bodil Wesenberg-Lauridzen while we await confirmation of two other talks. Titles of talks will be shortly included on the website

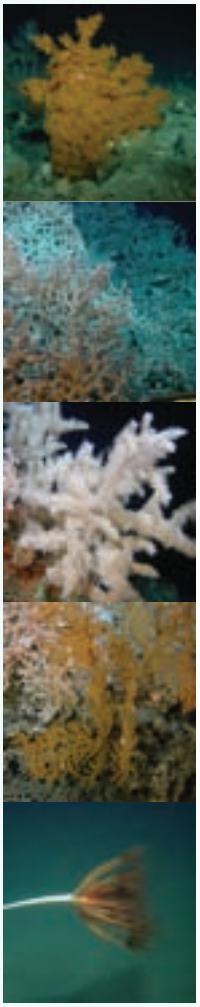
We gratefully acknowledge our main sponsors Statoil, Shell, NWO, NOAA and Royal NIOZ and our associated sponsors Kongsberg, IAS, KNDV, DECO Geophysical and Ifremer.

Looking forward to meet you in Amsterdam,

The Organizing Committee,
Prof. Dr. Tjeerd C.E. van Weering (NIOZ, The Netherlands)
Chair Organizing Committee 5th International Symposium Deep Sea Corals (ISDSC5)
and Dr. Furu Mienis (MARUM/Bremen)

The ISDSC 5 is hosted by NIOZ Royal Netherlands Institute for Sea Research and sponsored by Royal NIOZ, NWO, Statoil , Shell and NOAA. Associated sponsors are Kongsberg, IAS, KNDV, DECO Geophysical and Ifremer.

Workshop: Identiication of deep-sea corals from imagery data



A workshop 'Identification of deep-sea corals from imagery data' focusing on deep-water coral identification from imagery, convened and organised by Ifremer in association with the French Marine Protected Areas Agency, CoralFISH, NOAA and the University of Plymouth will take place on Sunday 1 April in the Artis conference premises.

Overview

The use of optical imagery as a non-destructive sampling tool is now widely used and essential in deep-sea research. Systems ranging from Remotely Operated Vehicles to towed cameras with varying quality digital imagery acquired pose the advantage of more rapid, less destructive means of understanding deep-sea ecology.

It is not always possible to use traditional taxonomy during analysis of optical imagery and thus a level of expertise/training is necessary. The identification of species from images is difficult and in some cases impossible without physical specimens, it is possible in some instances to identify organisms as distinct morpho-types. To allow consistency in identification it is important to keep a visual species catalogue, an example will be presented during the workshop.

While a previous workshop hosted by MBARI (classification and identification of marine organisms from image and video) in 2009 covered all taxa and regions, this workshop will focus on Atlantic deep-water corals.

Format

The aim of this workshop is to bring together international coral taxonomy experts and professionals working in the field of image analysis to allow an applied approach to using imagery for coral identification. The workshop will involve presentations from coral experts covering the various coral groups highlighting the main morphological features which can be used to identify coral species from imagery, as well as diagnostic features that may be used to differentiate between similar taxa. Participants are also encouraged to bring example images which either they need help to identify or show useful diagnostic features for the identification of a species.

Registration

Participants must register through the ISDSC website (www.deepseacoral.nl) and costs are €100. The workshop is open to all but spaces are limited to 40 participants, and registration of ISDSC 5 is necessary.
For further information please contact Jaime Davies (Jaime.Davies@ifremer.fr)
or Inge van den Beld (Inge.Van.Den.Beld@ifremer.fr).