MarinERA Facilitating Cooperation between National Marine RTD Programmes in Europe

Collaborative Projects Funded under the MarinERA Trans-National Call

April 2009

About the MarinERA Trans-National Funding Programme in Marine Research

Five MarinERA partners joined together in a 4.6 million euro virtual pot[1] call for proposals on *Changes in marine ecosystems and functional biodiversity in relation to global change and other anthropogenic impacts* covering the geographical areas (i) North Sea, Channel and adjacent areas; and (ii) Mediterranean and exchanges with adjacent basins.

The call was launched in February 2008 with a deadline for applications on 16 April 2008. Twenty-one proposals for a total requested budget of 12 million euro were submitted to the Research Council of Norway (RCN) which served as the Call Secretariat, through a one-stage submission procedure. Project proposals were evaluated and ranked by international experts and the outcome presented to the management committee, consisting of representatives of the Funding Partners.

"We [Funding Partners] were positively surprised by the quality of the proposals" noted Beatriz Morales-Nin (MICINN). As a consequence, the total grant for funding exceeded the envelop that had originally been provisioned by the Funding Partners by almost 1 million euro. In July 2008, the Funding Partners agreed to fund the top five ranked projects. These five projects are presented in this brochure.

Partners involved in the call were:

Germany - Jülich Research Centre GmBH Project Management Organisation Jülich (FZJ-PTJ)

Greece - Hellenic Centre for Marine Research (HCMR) - In association with and representing the General Secretariat for Research and Technology, Ministry of Development (GSRT)

Norway - Research Council of Norway (RCN)

Portugal - Foundation for Science and Technology (FCT)

Spain - Ministry of Science and Innovation (MICINN)

"*The MarinERA Call has been a very positive exercise for us [Programme Managers]*", says Nina Hedlund (RCN – Norway, responsible for the MarinERA Call Secretariat), *"it demonstrated that barriers to cooperation amongst European Funding Agencies can successfully be overcome without heavy administration".*

During a joint kick-off meeting in Paris (January 2009), the funded projects revealed considerable potential to learn and benefit from each other. As each funded partner participates in at least two funded projects, collaboration on the level of exchange in information and expertise and the development of synergies will be easier to accomplish. A meeting between the project coordinators is foreseen in autumn 2010 to identify and facilitate synergies and avoid duplication.

[1] The funding in the MarinERA call is national: after a joint call and common evaluation, all organisations fund their own national research groups. This funding model follows the *juste-retour* principle, where there is complete control over national funds. All joint activities are funded on an *ad hoc*, voluntary basis.

ECODRIVE

Ecosystem Change in the North Sea: Processes, Drivers, Future Scenarios

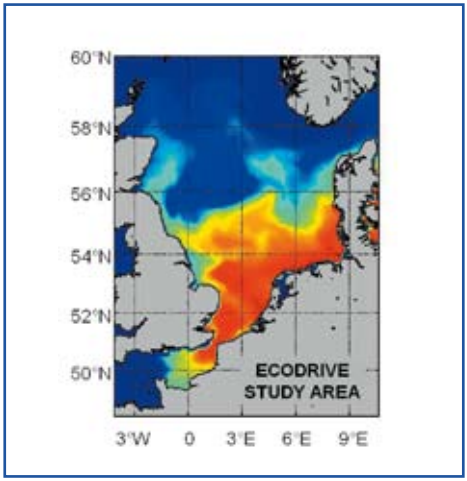
ECODRIVE brings together climatologists, modellers, planktologists, fisheries experts and ecophysiologists with the **aim to** assess and model historical and projected future changes in the trophodynamic structure and function of the North Sea ecosystem. ECODRIVE advances our predictive understanding of the impacts of various drivers of ecosystem change including those acting via climate change and variability as well as those acting more regionally via anthropogenic forcing such as fisheries exploitation and eutrophication.

The **approach** entails a combination of:

- retrospective analysis of long-term (40 to 100 year) time series of key biotic and abiotic variables;
- field studies to obtain indispensable information on the trophodynamic role of new species; and
- a suite of climate, hydrodynamic and ecosystem models to allow the development of future scenarios.

The **focus** will be on the pelagic realm as groups of pelagic organisms (e.g. phyto-, zooplankton and small pelagic fishes) react rapidly and often dramatically to external drivers and play an important role as sentinels of ecosystem change.

Whereas earlier studies usually focused on changes occurring only during the previous 30 years (1970-2000), ECODRIVE emphasizes a wider time window that includes two warm water periods (1930-1960 and the recent one) that exhibit many similarities such as the occurrence of warm water species in the North Sea. ECODRIVE employs regionally-downscaled environmental forcing from global climate models to help project future scenarios of the ecosystem structure of the North Sea.



Study area of the ECODRIVE project

Partners:

- Leibniz Institute for Baltic Sea Research Warnemünde, Germany - Coordinator
- Alfred-Wegener-Institute for Polar and Marine Research (AWI), Germany
- Geophysical Institute, University of Bergen, Norway
- Institute of Marine Research (IMR), Norway
- Institute of Oceanography, Hamburg University, Germany
- Sir Alister Hardy Foundation for Ocean Science (SAHFOS), UK (no funds through MarinERA)
- Wageningen IMARES, The Netherlands (no funds through MarinERA)

Duration: April 2009 – March 2012

Total grant aid: 1,417,500 euro

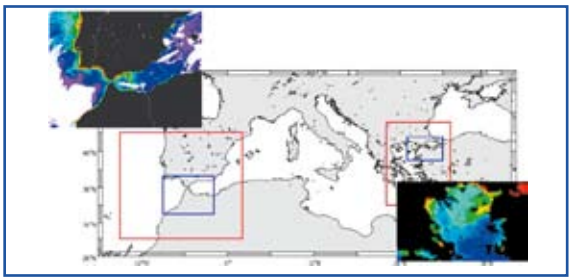
Further Information:

Jürgen Alheit, Leibniz Institute for Baltic Sea Research
e-mail: juergen.alheit@io-warnemuende.de

MedEX

Inter-basin exchange in the changing Mediterranean Sea: Impact on the ecosystem in the vicinity of the Straits connecting the Mediterranean Sea with adjacent Basins

Precipitation reduction across southern Europe and Northern Africa together with global warming are having significant impacts on the hydrology and circulation, affecting the Mediterranean Sea ecosystem to an as yet unprecedented extent. Among all the anticipated changes, the inter-basin exchange will certainly respond, affecting not only the hydrology of the entire Mediterranean Sea, but also the ecosystems in the marginal and communicating seas, like the Gulf of Cadiz and Alboran Sea to the west, and the North Aegean Sea to the east.



Focus area of the MedEX project

MedEx will geographically "zoom" over these areas and **focus** on the changing inter-basin exchange processes impacting the ecosystems. MedEX will complement existing knowledge on local ecosystem dynamics, especially concerning processes directly dependant on the exchange between the Mediterranean and adjacent seas (the north Atlantic and the Black Sea).
In order to achieve this goal, MedEX brings together a team of scientists from a broad range of disciplines and from both ends of the Mediterranean Sea with the **aim** to:

- perform a synthetic description of the physical processes directly associated with the inter-basin exchange between the Mediterranean Sea and the adjacent basins that affect the pelagic ecosystem in the vicinity of the Straits (Gibraltar and Dardanelles);
- depict the main trends of inter-basin exchange in the last 20 years as a regional driver of the marine ecosystems changes;
- implement/adapt an Atmosphere-Ocean-Ecology regional modelling system to investigate and predict ecosystem changes in the vicinity of the Straits, in hindcast/forecast mode, and in a process-oriented perspective, and to assess the predictive skills of existing modelling systems.

Partners:

- Faculty of Sciences of the University of Lisbon, Portugal - Coordinator
- Department of Marine Sciences, University of the Aegean, Greece
- Hellenic Centre for Marine Research (HCMR), Greece
- Institute of Accelerating Systems and Applications (IASA-UAT), Greece
- Institute of Marine Science of Andalucía (ICMAN-CSIC), Spain
- Mediterranean Institute for Advanced Studies (IMEDEA), Spain
- National Institute for Biological Resources (INRB), Portugal
- University of Málaga, Spain

Duration: May 2009 – May 2012

Total grant aid: 811,356 euro

Further Information:

Alvaro Peliz, Faculty of Sciences of the University of Lisbon, Portugal
e-mail: ajpeliz@fc.ul.pt

MedEcos

Decadal-scale Variability of the Mediterranean Ecosystem

The project **aims to** improve our understanding and predictive capacity of the evolution of the Mediterranean Marine Ecosystem at decadal time scales by:

- hindcasting conditions at the vicinity of connecting Straits; and
- developping worst-case scenarios.

Focus areas of the MedEcos project (photo: ESA)

To this end, the **approach** of MedEcos encompasses:

- collecting available information on remote and local forcing;
- filling-in existing oceanographic and biogeochemical information and assessing variability;
- concentrating on natural Holocene climate shifts using multi-technique proxy-records;
- analyzing decadal variability;
- developing site-specific circulation and ecosystem models.

The project **focuses** on the geographic areas in the vicinity of the Gibraltar and Dardanelles Straits. Temporally, MedEcos will focus on periods of decadal length extending back to the last deglaciation, as well as the near future.

MedEcos should result in:

- reproductions of the circulation and ecosystem functioning at selected periods of the Pleiocene;
- calibrated worst-case scenario for the next 100 years.

The project results will inform research work in decadal- and regional-scale hindcasting and forecasting and improved exchange of know-how between paleoceanographers, modellers and field researchers.

Partners:

- University of the Aegean, Department of Marine Sciences, Greece - Coordinator
- Hellenic Centre for Marine Research (HCMR), Institute of Oceanography, Greece
- University of Athens, Faculty of Geology and Geo-environment, Greece
- Spanish National Research Council (CSIC), Spain
- Institute of Environmental Science and Technology (ICTA), Spain

Duration: 3 years (2009-2011)

Total grant aid: 512,901 euro

Further Information:

Vassilis Zervakis, University of the Aegean, Department of Marine Sciences, Thalassas
e-mail: zervakis@marine.aegean.gr

Marine phylogeographic structuring during climate change

the signature of leading and rear edge of range shifting populations

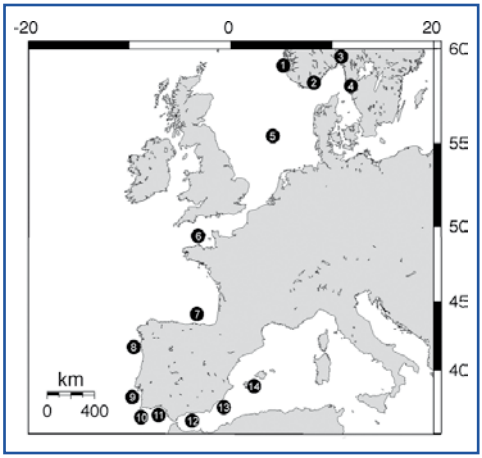
The Marine phylogeographic structuring during climate change project **aims to** monitor, sample and genotype a number of target species, in predetermined rocky-shore stations in the Mediterranean and along West Europe, with special attention to species having distributional limits within this area.

The **approach** of MedEcos is to:

- use both mitochondrial and nuclear markers as well as standard phylogeographic, historical demographic and food web related tools to compare the patterns detected in retreating edges and leading edges of cold temperate and warm water organisms respectively;
- search for changes in distributional records that might suggest changes in abundance during the study period;
- investigate the trophic ecology of each target species in order to detect trophodynamic changes and adaptations along the latitudinal gradient.

Apart from the main objectives this study will help to define the geographical limits of populations that are distinct, thus assisting policy makers to develop conservation schemes and marine protected areas.

Photo: Nicole Aberle-Malzahn (AWI)



Project sample locations

Partners:

- Institute for Applied Psychology (ISPA), Eco-Ethology Research Unit (UIEE) , Portugal - Coordinator
- Biologische Anstalt Helgoland, Alfred-Wegener Institute for Polar and Marine Research (AWI), Germany
- Center for Marine Sciences, University of Algarve, Portugal
- Mediterranean Institute for Advanced Studies (IMEDEA), Spain
- Institute of Marine Research (IMR), Norway
- University of Cadiz, Spain

Duration: January 2009 – December 2011

Total grant aid: 915,987 euro

Further Information:

Vitor Almada, Institute for Applied Psychology (ISPA), Portugal
e-mail: valmada@ispa.pt

Project website:

http://biocongroup.eu/MarinEra/Welcome.html

ReDEco

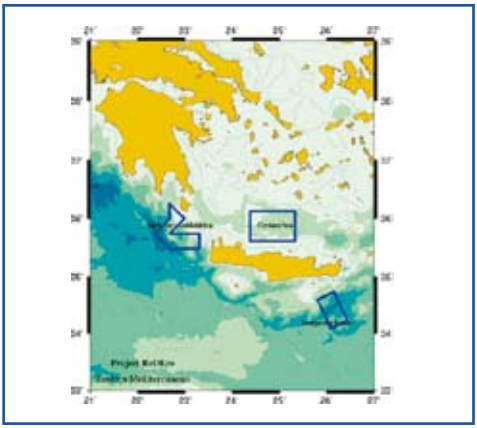
Regional Drivers of Ecosystem Change and its Influence on Deep-Sea populations in the Mediterranean

ReDEco brings together a consortium of six partners from four European countries with the **aim to** study the effects of regionally-driven ecosystem changes in selected deep-sea habitats of the Mediterranean Sea. The project focus is on key drivers of climate change such as temperature changes, shifts in surface productivity and cold water cascading, and examines their impacts on deep-sea populations.

The **principal objectives** of the research programme are to:

- understand the effects of climate change on deep-sea ecosystems in relation to climate-driven regional key factors and events;
- examine the variation of total particle flux to the seabed and understand how this may affect the micro-, meio-, macro-, and megabenthic communities;
- study benthic community responses to varying food supply;
- examine the effects of climate induced changes on deep-sea communities over shorter and longer timescales (more than a decade);
- investigate historical demography and biogeography of selected species with distinctive dispersal capability and reproductive strategy;
- integrate available historical data, time series measurements and newly acquired data in a conceptual model to predict the impact of climate change on various physicochemical and/or biological parameters.

ReDEco will improve our understanding and prediction of decadal-scale fluctuations and their impact on biological communities and ecosystem functioning, which is essential for identifying vulnerable systems and pursuing options to enhance resilience and human well-being.



Key study areas in the ReDEco project chosen specifically to include areas of dense shelf water cascading (Kithira-Antikithira straights) and areas were long-term monitoring is going on (Cretan Sea – Ierapetra Basin)

Partners:

- Hellenic Centre for Marine Research (HCMR), Greece - Coordinator
- Institute of Marine Research (IMAR), Portugal
- University of de Aveiro, Centre for Environmental and Marine Studies (CESAM), Portugal
- University of Barcelona / Faculty of Geology (UB), Spain
- University of Piraeus, Department of Maritime Studies (UP), Greece
- National Centre for Scientific Research (CNRS), CEFREM, France (no funds through MarinERA)

Duration: April 2009 - April 2012

Total grant aid: 924,753 euro

Further Information:

Nikolaos Lampadariou, HCMR
e-mail: nlamp@her.hcmr.gr

MarinERA Facilitating Cooperation between National Marine RTD Programmes in Europe

The MarinERA Network consists of leading Marine Research Funding Organisations from 13 European countries, coordinated by Ifremer and the Marine Board-ESF

MarinERA Partners

- French Institute for Exploitation of the Sea (Ifremer) - France
- Marine Board-ESF
- Marine Institute - Ireland
- Research Council of Norway (RCN) - Norway
- Jülich Research Centre GmbH - Project Management Organisation Jülich (FZJ-PTJ) - Germany
- Spanish Ministry of Science and Innovation (MICINN) - Spain
- Academy of Finland (AKA) - Finland
- Netherlands Organisation for Scientific Research (NWO) - The Netherlands
- Natural Environment Research Council (NERC) - UK
- General Secretariat for Research and Technology, Ministry of Development (GSRT) - Greece
- Foundation for Science and Technology (FCT) - Portugal
- Belgian Federal Science Policy (BELSPO) - Belgium
- Flemish Economy, Science and Innovation Administration (EWI) - Belgium
- Malta Council for Science and Technology (MCST) - Malta
- National Center for Research and Development (NCBiR) - Poland
- Institute of Oceanology of the Polish Academy of Sciences (IO-PAN) - Poland

Cover page pictures from large to small: Fish catch - Mick Mackey (CMRC) / ENVISAT image of the Strait of Gibraltar - ESA / L'île d'Ouessant, France - Aurélien Carbonnière (Marine Board) / Spanish Research Vessel Sarmiento de Gamboa - CSIC / Nematode - Nikolaos Lampadariou (HCMR).

SIXTH FRAMEWORK PROGRAMME

Prepared by Jan-Bart Calewaert
(Marine Board-ESF)
MarinERA Secretariat
Wandelaarkaai 7
8400 Ostend - Belgium
Website: www.marinera.net

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