# Innovation Through Dissemination and Exploitation of EC Project Results
## – Best Practice Examples from Marine Research –

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## Introduction:

The poster presents some results of three European research projects, METROL and COSA which are already finished, and one ongoing project MetaFunctions. Strong stakeholder involvement and active dissemination were main points adressed in very different ways, leading to different innovative outcomes.

In all three best practice examples policy makers and stakeholders are being addressed by visually appealing means like

5. maps, films, factsheets or brochures;
6. organisation of specific workshops or sessions at international conferences, and
7. activities for the general public including school children.

COSA studied coastal sands to determine their activities and capabilities. It involved two nature protection agencies as partners, so that results quantifying the filter function of two coastal areas under their remit could be integrated into management and dissemination.

METROL had industry, environmental and resource management agencies as partners. Links between industry, biodiversity and sub-surface geological research as well as new monitoring tools were created. It was the first project systematically addressing the microbiological and geological controls on methane escape from the seafloors of different European seas.

MetaFunctions, a NEST Adventure project, has a different focus as awareness still has to be created for the emerging area of metagenomics, also called environmental or ecological genomics.


Direct hands-on contact between a scientist and a young investigator

COSA "COastal SAnds as Biocatalytical Filters"

This project involved two nature protection agencies from Germany and Poland as partners.

Results quantifying the filter function of two coastal sandy sites were directly integrated into their management & dissemination practices.

COSA research was covering the whole array from sophisticated methods and tools to clear cut messages for local press and population, tourists, school classes, and the general public

Input was given to scientific, policy and public meetings in the form of posters, lectures, information boards, open days, films and diverse other activities. The involvement of local press was a key feature, as were direct contact to scientists with hands-on activities.

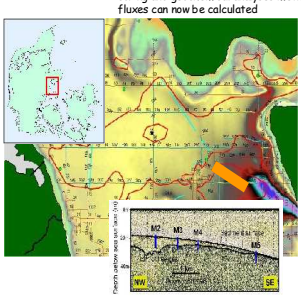
The general public values sandy ecosystems for their recreational value, COSA showed them how these ecosystems function and their important role in maintaining environmental health

COSA results were promoted in the form of public posters, lectures, and diverse hands-on activities.

METROL: "METhane fluxes in ocean margin sediments: microbiological and geochemical contROL"

This project had industry, environmental and resource management agencies as partners.

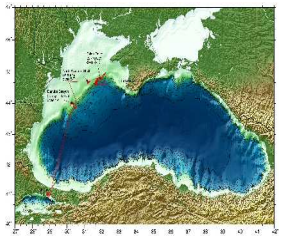
- Use of a manned submersible provided unique footage of the bottom of the Black Sea.
- Using GIS made it possible to map the extension and depth of shallow gas in the sea bed. Combined with targeted sediment coring and geochemical analyses methane fluxes can now be calculated



Manned Submersible Jago


### Black Sea Cruise:

In comparison to the Baltic Sea the Black Sea is mostly anaerobic and thus a lot of methane is produced, which is escaping in the form of gas bubbles in many places.



Danube Canyon chimneys :
These carbonate structures are formed by anaerobic methane oxidation in the Black Sea

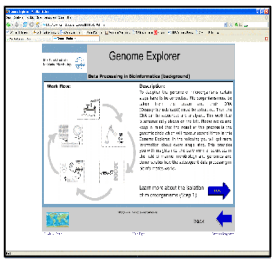
The Baltic Sea and other enclosed seas are highly eutrophied and continuously accumulate organic material which may enhance methane production and decrease the capacity of the sediments to retain it.
METROL identified hot spots of potential methane accumulation and emission from the sea bed in the Black and Baltic Sea
METROL was the first project to calculate maps of methane flux.

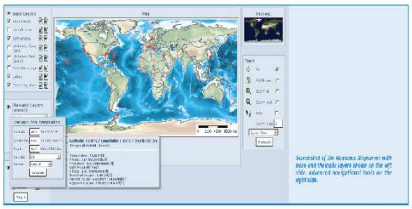
www.metrol.org

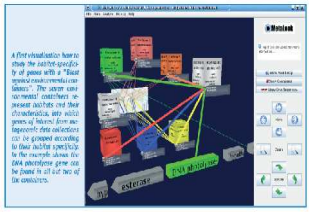
MetaFunctions is a NEST Adventure project on "Environmental and metagenomics: a bioinformatics system to detect and assign functions to habitat-specific gene patterns".
It combines bioinformatics with environmental parameters of the sites where the samples were taken, also using a GIS.
The objective is to uncover new functions of the plentitude of unknown genes.
Albeit this being a young project major interest has been shown by the press, related initiatives like Marine Genomics Europe (a European network of excellence), the International Census of Marine Microbes (ICOMM) initiative and CAMERA, a major recent US-initiative.

A joint exploratory workshop on Genomics and Diversity was organized;
A database was set up and standardization efforts with the UK and the USA are ongoing;
A public version of the Genome Mapserver is available under www.megx.net/gms as well as

- a fact sheet for the interested public and
- a simplified computer game-like demonstration, German and English for children: The Genome Explorer.





This game shows interactively, how modern genome research helps to understand the
genetic adaptation processes of microorganisms to changing environmental conditions
as well as the bioinformatic background of genome analysis.

Acknowledgements:

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Conclusions for Policy Makers:

The results of METROL furthered our understanding of the regulation of methane fluxes in ocean sediments. Climate change will lead to enhanced ebullition of methane out of the sediment. Qualitative predictions foresee more greenhouse gas emission and even fish kills, due to hydrogen sulfide, driven out with the methane.
Therefore next step should be:

- Quantitative modeling of methane cycle embedded in
- Studies to understand how long-term eutrophication and climate change may increase the risk of methane release from coastal sediments along the European margin.

COSA measured high rates of primary production in sandy ecosystems proving these sediment to be biologically highly active. This high activity is possible due to the water flow through the upper sediment layers enhancing also the mineralization process and converting sandy sediments into large biocatalytical filters. Thus they are a valuable source of nutrition and clean water for commercially important species.

Both projects helped to develop appropriate techniques to monitor key processes, providing information and recommendations for managers for monitoring and management strategies.

MetaFunctions for the first time integrates geographical and DNA sequence data in the field of marine microbial ecology into a single resource. This allows to interpret the exponentially growing body of genomic data in an ecological context. MetaFunctions will ultimately help to systematically find correlations between habitat parameters and genetic potential of microorganisms, a resource still largely untapped.

Dissemination: use of maps, photos, diagrams and other visual aids targeted to each stakeholder group, combined with direct contact to scientists, i.e. during diverse local events, leads to successful dissemination. Goals are: to establish contacts to stakeholders, to promote multi-disciplinary networking between scientists and to enhance public awareness.