MRI E-CONFERENCE

Electronic conference on 'Marine Research Infrastructures (MRI): The need for better Information and Co-ordination'

26-30 April 2004

FINAL REPORT

VLIZ Special Publication 18
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Conference organization

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The topics and issues raised in the electronic conference have been presented to the EUROCEAN2004 meeting held on 10-13 May 200 in Galway, Ireland under the Irish EU presidency. The input coming from the discussions will also be a valuable input to review the European Strategy on Marine Research Infrastructure at higher political levels. The powerpoint presentation is available at http://www.vliz.be/projects/mri/summaries.htm. This volume includes introductions and a final summary of the discussions. All the discussion points raised during the conference can be reviewed by registering onto http://www.vliz.be/projects/mri

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ELECTRONIC CONFERENCE 'MARINE RESEARCH INFRASTRUCTURES (MRI): THE NEED FOR BETTER INFORMATION AND CO-ORDINATION'– FINAL REPORT, 26 TO 30 APRIL 2004

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GENERAL INTRODUCTION

Europe has sizeable marine and coastal resources that are observed, studied and monitored by means of a variety of sophisticated and expensive marine research infrastructures. The optimal use of, and access to these research facilities are a prerequisite to a successful European Research Strategy. The Commission's European Research Area (ERA) initiative is stimulating Members States to join efforts and to contribute also - often in a regional context - to the establishment of a European Marine Research Area, EMRA. This will underpin the networking and help to identify and plan co-ordination for future needs.

The question is: ARE WE ON THE RIGHT TRACK(S)?

The European Strategy Forum for Research Infrastructures, established as high level advisory body to CREST, aims to co-ordinate development and facilitate access to research infrastructures in the ERA concept.

In April 2003 an ad hoc Working Group on Marine Research Infrastructure was appointed by the European Strategy Forum for Research Infrastructure.

The scope of the Strategy Forum is:

- to support a coherent and strategy-led approach to policy making on research infrastructures in Europe;
- to facilitate multilateral initiatives leading to a better use and development of research infrastructures.

The Working Group reported on the 'hot topics' with regard to marine research infrastructure (MRI) that need to be addressed in order to improve the current situation, and thus provide material conditions for the development of the marine science field within the ERA. The EU 6th Framework Programme offers mechanisms that should be used by the marine research community towards the advancement of the marine ERA.

The working group looked into the existing and planned larger marine research infrastructures. What the group couldn't do was to consult the marine scientific community at large on what they feel and expect from a possible common approach for the optimization of the marine infrastructures. Also possible needs in research infrastructures, taking into account the already formulated recommendation from major conferences organised by the commission in the last years (Strasbourg 2000, Hamburg 2000) and the effort made by specific working groups (e.g. ESF/Marine Board).

EurOcean, European Centre for Information on Marine Science and Technology, has officially opened its Internet Portal in March 2003 with a priority given to the compilation of information on marine research infrastructures (go to infrastructures) and the initial focus has been on national research vessels of which the compilation of the specifications is nearly completed. Regarding the information on the other European marine infrastructures, a repertory of existing compiled information is also available. The information collected includes databases, directory of URLS and virtual library."

The introduction of the new funding instruments 'Integrated Project' and 'Network of Excellence' in 6FP is characterised by the stronger networking of highly performing institutes. Several member states adapted their science policy by pooling highly qualified institutes. The restructuring was accompanied by rationalisations of these often well-equipped institutes, and consequently on their infrastructures. Sometimes new possibilities were offered.

The problem is that one has to invest in very large infrastructures, and that these may not always meet the requirements or expectations of the marine science community. To consult this community, an e-conference is an appropriate tool to collect the views out of different stakeholders.

Three topics will be considered:

- Bottom up approach: what does the Marine Scientific Community expects from optimising MRI and perspectives related to new developments (both institutional and infrastructures); Input into the decision making process; improving co-ordination and collaboration, with a view to optimise the use.
- Rationalisation of information. Optimise by integration of information and avoid duplication. Several NoE and ERA-nets have similar work packages. Some of the deliverables need action beyond the competence and possibilities of the single activity. Need for a single platform with is integrating information, data and services. This requires a more complex architecture than an "ocean portal" and this is the challenging task undertaken by EurOcean through its website.
- New technologies: What could be expected from new technologies + their needs for information, data management and products & services?

This e-conference is a VLIZ - AWI co-operation with the collaboration of EurOcean, ESF/Marine Board and IOC/UNESCO.

The web site URL is http://www.vliz.be/projects/mri/index.htm. Webmaster and board manager Ward Appeltans from the Flanders Marine Data and Information Centre of the Flanders Marine Institute performed the practical organisation of the e-conference.

The outcome will be reported to the marine science policy conference
EurOCEAN 2004 in Galway.

INTRODUCTION TO THEME 1: BOTTOM UP APPROACH - WHAT DOES THE MARINE SCIENTIFIC COMMUNITY EXPECT?

The ad hoc Working Group on Marine Research Infrastructure, appointed by the European Strategy Forum for Research Infrastructure, reported on the 'hot topics' with regard to marine research infrastructure (MRI) that need to be addressed in order to improve the current situation, and thus provide material conditions for the development of the marine science field within the European Research Area (WG-MRI Report, April 2003).
The working group looked into the existing and planned larger marine research infrastructures. What the group couldn't do was to consult the marine scientific community at large on what they feel and expect from a possible common approach for the optimisation of the marine infrastructures.

The group fully endorses the recommendations made by ESF-Marine Board in the milestone contribution 'Integrating Marine Science in Europe' (ESF-MB, 2002).
The working group MRI has forwarded four strategic visions:

- Research Vessels and associated equipment
- Marine observing and monitoring networks
- Marine Data, Computer Centres and laboratories
- Integrated and interactive information systems

The introduction of the new funding instruments 'Integrated Project' and 'Network of Excellence' in 6FP is characterised by the stronger networking of very performing institutes. Several member states adapted their science policy by pooling highly qualified institutes. The restructuring was accompanied by rationalisations of these often well-equipped institutes, and consequently on their infrastructures. Sometimes new possibilities were offered.
The problem is that one has to invest in very large infrastructures, and that these may not always meet the requirements or expectations of the marine science community. The following question may be considered:
What does the Marine Scientific Community expects from optimising MRI and perspectives related to new developments (both institutional and infrastructures – including the integration of the facilities offered by the new member states)?

What can contribute to the decision-making process, improving co-ordination and collaboration, with a view to optimise the use?

Do we have to reconsider to incorporate the support of research infrastructure back into the thematic programmes?

Important and often overlooked: how to stimulate and better integrate the participation of third countries, especially the developing countries?

Access to infrastructure in the different training modalities - offered in the new instruments and the Human Resource and Mobility programme.

References:

- European Strategy on Marine Research Infrastructure. Report ad hoc WG on MRI (April 2003). Publications of the academy of Finland 6/03. 42pp.
- ESF-MB (2002) Integrating Marine Science in Europe. ESF Marine Board Position Paper 5. 148pp.

There were 25 messages posted on theme 1:

Message	Date	Posted by
Welcome and introduction to the session 'Bottom up approach'	26 Apr 04	Rudy Herman
My reply contains Rudy's question followed by my answer:	26 Apr 04	Mark Costello
agree and +	26 Apr 04	Gabriel Gorsky
Funding Research Infrastructures	27 Apr 04	Rudy Herman
Bottom-up to influence top-down	26 Apr 04	Keith Hiscock
Bottom-up to influence top-down	27 Apr 04	Rudy Herman
MRI with real on-line data bases	27 Apr 04	Igor S. Smirnov
Or top down?	26 Apr 04	Raymond Schorno
Top down or bottom up	26 Apr 04	Luca Ancel van Duren
European flag ships	26 Apr 04	Nieuwejaar Per Wilhelm
BONUS ERA-NET Project with common use of marine research inf	29 Apr 04	Johanna Argillander
OR TOP DOWN (BIS)	27 Apr 04	Rudy Herman
What is more important in scientific research than Human Res	26 Apr 04	Dulce Subida
Researcher Careers + Auto-sustainable research systems	27 Apr 04	Rudy Herman
What about pure "research companies"?	27 Apr 04	Dulce Subida
Research or development	28 Apr 04	Nick Morley
Research for Development	28 Apr 04	Dulce Subida
Small Research vessels	27 Apr 04	Ahto Jrvik
small research vessels	28 Apr 04	Andre Cattrijsse
Coastal Research vessels	29 Apr 04	Laurent d'Ozouville
Some musings	27 Apr 04	Nick Morley
The role of Marine field research stations	27 Apr 04	Lars Golmen
Coastal v Deep ocean + a thought about budgets	27 Apr 04	Nick Morley
The role of research infrastructures in Education	29 Apr 04	Marta Rufino
Educational outreach in Arctic coring, ACEX	29 Apr 04	Dan Evans

INTRODUCTION TO THEME 2: RATIONALISATION OF INFORMATION: INTEGRATION OF INFORMATION, DATA AND SERVICES

The introduction of the new funding instruments 'Integrated Project' (IP) and 'Network of Excellence' (NoE) in 6FP has been a challenge for many large institutes. The fact that these new instruments all include coordination and information tasks, engaging research teams and often the institutes to a closer co-operation.

Moreover, the successful introduction of the ERA-net scheme foster this co-operation at the institutional level, stimulating by preference the funding agencies of the member states to join efforts in well defined research areas.

Several NoE and ERA-nets have nearly similar work packages. This put into question how to optimise by integration of information and avoid duplication. Some of the deliverables need action beyond the competence and possibilities of the single activity. This is in particular true for the ERA-nets. Often the required adaptation of regulations and measurements are out of the competence of the Science policy departments, but needs negotiation between other departments (e.g. Finances, Jurisdiction and Law, Social affairs,…)

Need for a single platform, which is integrating information, data and services is therefore a very high priority. This requires a more complex architecture than a simple directory of useful URLs. Continuity in providing information is also essential and can't be limited to the duration of an EC contract.
Facilitating the access to information in marine research is a requisite to any initiatives aiming to structure the coordination and the cooperation of marine research infrastructure in Europe. This goal could be fulfilled through an electronic focal point or Internet portal, which should facilitate the creation, circulation and maintenance of information for the scientific community, the operators and the decision makers. This should also facilitate exchange of information with the industry and small and medium enterprises.

The information should be tailored according to the requirements of the end-users and the appropriate tools such as search engines, automatic mailings, forum, news, should be made available for a friendly and efficient use.

Good co-ordination only will persist when based on accurate and complete information. This will be a challenge to work this out for the marine research infrastructure. What is available where, when, and how to get access.
Does the new CORDIS 'Infrastructures Service' really meet the needs of the marine science and technology community?

Or is the present architecture and content of the EurOcean webpage dedicated to marine infrastructure more appropriate? (go to http://ioc.unesco.org/eurocean/categories.php?category_no=12)

There were nine messages posted on theme 2:

Message	Date	Posted by
Welcome and introduction to the session 'Rationalisation of	27 Apr 04	Rudy Herman
A single platform would be wunderful	27 Apr 04	Raymond Schorno
Communication for no- overlapping	27 Apr 04	MICHELE BARBIER
reaction from Catherine Maillard	27 Apr 04	Catherine MAILLARD
DATA CENTRES: BUILDING FURTHER ON SUCCESFUL INITIATIVES	27 Apr 04	Rudy Herman
Data and information	27 Apr 04	Laurent d'Ozouville
BONUS Project and website	29 Apr 04	Johanna Argillander
Not only share information but also share knowledge and expe	29 Apr 04	Job Dronkers
Johannes Post; HYDROMOD; Germany	29 Apr 04	Johannes Post

INTRODUCTION TO THEME 3: WHAT CAN BE EXPECTED FROM NEW TECHNOLOGIES AND WHAT ARE THEIR NEEDS FOR INFORMATION AND DATA MANAGEMENT, PRODUCTS AND SERVICES?

The provision of top class research infrastructure is condition sine qua non to maintain top-level research. Regarding the diversity in Europe one has to strive for a balance between local/sub-regional pooling of infrastructure and international networking and pooling at a EU or even a global level. This is true for the classic suite of marine infrastructures (research vessels, submersibles, coastal and marine observatories, databases etc…).

New emerging technologies like biotechnology or nanotechnology may need a different nature of infrastructure approach in international networking and using different research infrastructures.

HAP (= High Altitude Platforms = small airplanes), which may contain different payloads, according to the research or survey needs, is an important new development in Earth observation. (They also can be operated from a mobile ground or ship-based stations).

Next to this we have the high potential communication technologies to create e.g. virtual labs and interactive information and communication centres at different scales (local, regional, EU).

Other new technologies to improve the marine research fabric are linked to e.g.:

- Development of new sensors (Biological & Chemical)
- Standardisation and calibration (by preference beyond EU borders)
- Cost effectiveness (= LT-component & high spatial dimension)

New forms of co-operation with industrial partners are hereby a major concern.

As a last point: How to improve our ability how to be aware of and access new technology which is developed in other domains that marine science and which could be of great interest for marine scientists.

There were 11 messages posted on theme 3

Message	Date	Posted by
Welcome and introduction to the session 'New technologies'	28 Apr 04	Rudy Herman
long-term monitoring of deep-seafloor environments call for	28 Apr 04	Mathilde Cannat
Europe and Mission specific Platforms for IODP	28 Apr 04	Dan Evans
EU long term financial commitments	28 Apr 04	Laurent d'Ozouville
Oceanography from space	29 Apr 04	Dera Jerzy
Science progress rate limited by lack of human taxonomic exp	28 Apr 04	Phil Culverhouse
Long term and underlying studies	28 Apr 04	Nick Morley
new ways to do sampling	29 Apr 04	Viktoras Didziulis
Visual recognition of biological specimens	29 Apr 04	Phil Culverhouse
long term deep seafloor observatories	30 Apr 04	Jacques LEGRAND
Installation of observatories	30 Apr 04	Dan Evans

SYNTHESIS: OPEN FOR REACTION CONCERNING ANY OF THE THREE THEMES

Last topic 'Synthesis' received 12 contributions:

Message	Date	Posted by
Some preliminary facts and statistics on the MRI E-conferenc	29 Apr 04	Rudy Herman
Some remarkable quotes, we invite you to react to:	29 Apr 04	Rudy Herman
Response to Igor Smirnov'c comment	29 Apr 04	Bob Williams
Results from previous EU support to MRI	29 Apr 04	Clelia Booman
Marine vs. oceanographic	29 Apr 04	Clelia Booman
Why vs?	29 Apr 04	Nick Morley
Application of marine infrastructure to policy development	30 Apr 04	Stephen Atkins
marine biology vs biological oceanography	30 Apr 04	Ferdinando Boero
Marine xxxist ; xxxal Oceanographer	01 May 04	Nick Morley
Useless fight	02 May 04	Ferdinando Boero
useless fight some more	02 May 04	Ferdinando Boero
Communication between the various actors of the marine domai	30 Apr 04	Laurent d'Ozouville

FINAL SUMMARY OF THE DISCUSSIONS

Although the E-conference on 'Marine Research Infrastructures (MRI): The need for better Information and Co-ordination' was open for only one week, we had 189 registered participants (from 35 different countries, 21 of which are EU Member States). There were 57 contributions to the discussions. It was encouraging to see that several contributions came from researchers not directly involved in the MRI decision-making processes. As for ourselves, we learned something from this electronic conference and we hope that all of you - contributors and non-contributors - enjoyed the same feeling.

The discussions on the first day were focused on what the European Marine Scientific Community expects from optimising MRI and on perspectives related to new developments (both institutional developments and new infrastructures – including the integration of the facilities offered by the new member states).

Keith Hiscock stated: 'Get the bottom-up right and good top-down will follow'. In my opinion this is very valid. Several contributors (also from other sessions) underlined the importance of the willingness to co-operate within the scientific community, both at regional and pan-European scales. Information and networking are important: knowing and involving the key players who can contribute their experience and knowledge to the development of infrastructures makes that it will work and become a de facto standard.

The scientific community recognizes that the new instruments within FP6, such as 'Networks of Excellence' and ERA-NETs, will play an essential role in developing infrastructures and infrastructure standards.

The funding of these new developments may come from pooling existing nationally funded infrastructures to obtain a minimal critical mass - also at an operational scale - and the joining of funds from Member states and the EU for new infrastructures and their operation and use, including education and training. When there is enough political will to bring together these different financial resources, an improved planning of the development and use of MRI at mid- to long-term scales could be secured. Criteria for continued funding could include usage statistics and research outputs (a.o. graduate training, databases, publications).

There was no elaboration on how to integrate the participation of third countries, especially the developing countries. Europe committed itself to be active in supporting sustainable development. For MRI, the Commission needs to work out specific measures to increase participation and to support the sharing of MRI when partners from third countries participate in projects.

Some contributors argued that private companies and organisations that have viable product(s) should not rely on funding from the European Research budgets. Other funds are available for commercial development (unless they really contribute to research).

Special attention was given to small research vessels (RV's). These are generally considered to be very important and specific infrastructure facilities in marine science. The larger ocean going RV's are subject to different collaboration schemes between

several member states. The further development of the equipping of those vessels is part of the EU business. The role and the importance of coastal research vessels in Europe is not very visible, although their number is 90+, representing 45% of the research fleet in Europe. The need for co-operation between smaller coastal research vessels is maybe as high as that for large ocean going ships. As Per Nieuwejaar explained, it is an issue of decision making rather than infrastructure. A system - preferably adapted for the regional scale - that allows for "exchange" of ship time between countries would increase mobility, co-operation and the use of facilities.

The suggestion to standardise the coastal sea RV's facilities as one of the objects of EU marine research development plans was well received. An initial step towards the standardisation of these coastal RV's and the exchange of ship time is to have an inventory of the European RV's and of their specifications, to identify how and where they operate. Standardisation of RV's would be beneficial for scientists but necessitates a clear unambiguous definition of what the standards include. At least, research and other data generated using small RV's should be comparable.

Another important issue is the use of coastal stations as bases for long term observing and monitoring activities and networking in Europe. These stations are very cost effective in carrying out specific types of research, and they constitute a perfect basis for establishing links with local stakeholders and for public awareness building. The latter aspect is very important, since communicating science to the public at large and to the classrooms becomes a challenging task. MRI can play an important role in making this communication more attractive, being a focal point where new technologies, research, education and information interact, by preference in a participative approach.

The topic of the second day of the conference was 'Rationalisation of information: Integration of information, data and services'. Discussions revealed the need for a single platform. This requires a more complex architecture than an 'ocean portal' alone.

The new funding instruments 'Integrated Project' (IP), 'Network of Excellence' (NoE) and ERA-NET partly meet this requirement. Internet tools are very attractive, when used correctly to meet the needs. But even more important is to bring the people together. Several NoE's and ERA-NETs have highly similar work-packages. There is a need to avoid duplication and to optimise efforts by integration of information. Some of the deliverables need actions beyond the competence and possibilities of the single activity. This is particularly true for the ERA-NETs.

It is important to make a distinction between marine (or oceanographic) data centres and marine (or oceanographic) information centres.

The efforts that have been undertaken for a long time at national, European and international levels for the implementation of oceanographic data centres and the organisation of data exchange have to be acknowledged.

The management of information has not been recognised as a priority until quite recently. Access to information on marine science and technology in Europe,

particularly in the domains related to marine infrastructures and national programmes, should be facilitated. At this moment access to this information – when it exists - is difficult and dispersed. Standards are also missing to compare and to compile information related to the same topics but having different sources. These are some of the very reasons to create a single focal point for information on marine science and technology.

Next to a better management of information, a similar effort should be envisaged to share knowledge and experience.

The central question of theme 3 was 'What can be expected from new technologies and what are their needs for information and data management, products and services? '

One emerging new way to do science in the deep seafloor is to install long-term observatories equipped with multidisciplinary arrays of sensors. New sensors adapted to long-term deployment on the seafloor will have to be developed. These will furthermore have to be maintained on a regular basis. This calls for a programme of planning cruises and the use of large marine facilities.

Next to this, there is a constant demand from marine scientists for scientific ocean drilling. ECORD is the European answer to this, offering the provision of Mission Specific Platforms to IODP.

A lot of attention was given to taxonomy-related issues, such as the lack of human resources (taxonomic expertise) and the need to apply the latest techniques for imaging and species categorisation to improve automatic species identifications. Automation is clearly an issue for existing marine science, especially for physical oceanographers. Analysis of taxonomical data will have to be automated, although visual identification is a very difficult and complex task. People are incredibly good at visual identification, but unfortunately marine scientists do not like technology that appears to replace their expertise.

During the last day, the conference saw an interesting discussion between marine biologists (mostly linked to coastal stations) and biological oceanographers (operating from vessels). Their MRI-needs are different and their languages are not fully compatible. But both communities study the same system and they are complementary. Despite some perceived differences, we all may learn from each other.

Categorical questions brought forward by Stephen Atkins (Irish Sea Project) are related to application of marine infrastructure to policy development and still need an answer.

What enhanced role should marine infrastructure play in the provision of the data and information required for high quality policy development?
How do we increase the links between the operators of infrastructure and those developing the policy so that the data collected is more relevant to policy needs?
How do we increase the efficiency of the system so that we make the most cost effective use of the infrastructure, avoiding gaps and duplication?

We may find part of the answers as the outcome from the activities within the NoE and ERA-NETs. In addition to this, information technology and management is the appropriate approach to weave the links between the operators of the infrastructures and those developing the policy.

The information on all the existing marine infrastructures in Europe should be made available on the WWW. This is presently not the case. Such information must include, amongst others, inventories of all infrastructures, technical specifications, operating conditions and administrative rules. Furthermore, the information has to be tailored according to the end users, be it decision makers, operators or scientists. Efforts towards this goal are presently engaged by various actors in Europe.

We need a European focal point for information, where end-users have easy access to coherent, reliable and updated information.

Some findings and recommendations:

- The ANSWER to the initial question from the general introduction: Yes, we are on the right track.

- The new funding instruments are very suitable to meet MRI requirements, since all of them are based on an integrating approach. They can play a key role in the design, standardization and development of new MRI.

- Small research vessels are very important and specific infrastructure facilities in marine science. They could be operated by preference at a regional scale. Criteria to meet a number of standards need to be developed at a pan-EU scale.

- Coastal research stations can and should be revaluated.

- Issues related to long term monitoring (for coastal as well as for the deep ocean) should be dealt with: requirements for new technology, installation, maintenance, long term financing, data management and exchange.

- Integration of MRI in the communication strategy towards education and the public at large is recommended.

- Human resources are part of the marine 'infrastructures'. Attracting young scientists in marine science is essential.

- Better management of information is required for: 1) sharing knowledge and experience efficiently; 2) developing scientific dialog across countries and continents.

- Integration of information, data and services revealed the need for a single platform, overarching the initiatives within the new instruments.

LIST OF REGISTERED PARTICIPANTS

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Golmen	Lars	NIVA-Norwegian institute for water reseach	Norway
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