



A scientific perspective for the EUR-OCEANS Consortium:
***Building scenarios for marine ecosystems under anthropogenic and
natural forcing in the XXI Century***

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Summary

The EUR-OCEANS Consortium builds on the legacy of the EUR-OCEANS NoE, which contributed during the last four-years to the scientific expertise and dissemination of knowledge on marine ecosystems in a context of global change. Progress in the fast-moving field of marine sciences is revealing new challenges in the basic science needed to assess, project, and manage flows, services and changes of marine ecosystems. While nourishing those fast-moving scientific progresses, the newly launched EUR-OCEANS Consortium is also aiming at the improvement of the science-policy interface which should use existing relevant assessments and the best available multidisciplinary scientific knowledge (encompassing physics, ecology, biology and natural, social and economic sciences). Consequently *the EUR-OCEANS Consortium intends to develop, to integrate, and to promote the development of scenarios for marine ecosystems under anthropogenic and natural forcing in the XXI Century*. The scientific coordination of the Consortium will outline directions and develop activities in the context of the post-Aberdeen process, the Millennium Ecosystem Assessment and the structuring of the European Research Area, in relation with key groups and programmes (e.g. ICES, IMBER, MarBEF, SEA ERA-net...). It will favour and promote integrative science to predict changes in marine ecosystems by awarding 'flagships' to institutions (or clusters of the latter) in charge of a joint programme of activities focussing on significant advancements in 'hot' topics relevant to its scientific objectives, and by organizing symposia, 'foresight' and standard workshops, training activities (notably through summer schools and European doctoral networks) and targeted outreach activities. A particular focus will be put on the training of students and early career scientists. The targeted effort of the Consortium on scenario construction for marine ecosystems should strongly reinforce the Consortium visibility and its effectiveness in coordinating European activities, notably by contributing to the marine perspective of the emerging IPBES (Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services). A first set of tools, activities and calls is presented, as well as mechanisms retained to favour the emergence of initiatives and select future activities.

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1 Context: EUR-OCEANS beyond the Network of Excellence EC funding period

1.1 The EUR-OCEANS transition from an NoE to a new consortium

EUR-OCEANS substantially contributed during the past four years to the development of the European coordination of the scientific expertise on marine ecosystems. From 2005 to 2008, the EUR-OCEANS Network of Excellence (NoE) has brought together 160 principal investigators, 300 associated scientists and 140 PhD students, from 61 research institutes and universities in 25 countries in Europe and beyond. During those 4 years of activity, the main objectives of the Network were to develop knowledge and tools to better understand and forecast the evolution of the oceans ecosystems in a global change context, in order to define a basis for sustainable development at global level, and to achieve long-term integration of European research efforts in this scientific field. Scientific issues were on top of the agenda as well as dissemination of important results towards stakeholders and the youth.

On 12 July 2008, the founding agreement of the EUR-OCEANS Consortium, whose mission is to run on from the NoE and durably extend its activities, was signed by the official representatives of Member Organisations, during a ceremony hosted by Oceanopolis, Brest (France), and chaired by Dominique Le Queau, Director of the National Institute of Science of the Universe (INSU/CNRS). The launch of the Consortium (scheduled for January 2009) was subsequently discussed during an informal meeting held in Rome on 25 November 2008, during the EUR-OCEANS (NoE) final conference. Finally, the EUR-OCEANS Consortium held its first Council meeting in Brussels on 22 January 2009, thus marking the official launch of the Consortium activities. During this meeting, the EUR-OCEANS Consortium Council entrusted the scientific coordination of the Consortium to Philippe Cury, from *Institut de Recherche pour le Développement* (IRD, France) for a two-year mandate (2009-2010). Dr Philippe Cury has coordinated within the EUR-OCEANS NoE the 'Ecosystem Approach to Marine Resources' activities (Work Package 6). He is the current Director of CRH (*Centre de Recherche Halieutique Méditerranéenne et Tropicale*), a joint institute of IRD, Ifremer and the University of Montpellier 2, and the Director of the newly formed joint research unit EME (Exploited Marine Ecosystems).

1.2 Statutes, governance

The consortium relies on an agreement between, and on in-cash or in-kind contributions from, its member institutions. IRD is the coordinating institution for the 2009-2010 period. An executive committee elaborates the activity plan and is responsible for finalizing calls and for organising the selection of 'flagships'¹ and activities². A council comprising all the 'core' (paying) members votes the activity plan and the budget. Consensus decisions are sought. The current organisational chart is represented in *Figure 1*. The project office will seek to expand Consortium finances, notably by contributing to the preparation of proposal for EC calls.

1.3 Launch of the Project Office

During its first meeting, the Council decided to hire an executive director for the Consortium. Three candidates were audited on 27 March 2009 by a committee comprising representatives from four member organisations (AWI, Germany; Ifremer and IRD, France; AZTI, Spain). Pierre-François Baisnée (former WP6 and System 7 assistant) was selected as the Executive Director of the Consortium, starting 1 April 2009. The tasks of the Executive Director include: assisting the Consortium Scientific Coordinator in implementing the EUR-OCEANS strategy, organising and servicing meetings of the bodies of the Consortium, conferences, workshops and other activities; liaising with international partners (including IMBER, ICES and other relevant organisations in Europe); seeking, managing project finances and transparently reporting on them to the Council; representing the project at international meetings; maintaining the project website and interacting with the member organisations. In September, the project office should include an administrative assistant; it can also count with the (part-time) services of a graphic designer (both are in-kind contribution from IRD). A new website (based on a content management system, or CMS) should be developed by a service provider and then maintained and extended by the project office.

¹ Cf. Section 3.1.

² During the first Council meeting it was decided that the Executive Committee would launch activities, and that the creation of a Scientific Steering Committee would be considered as activities develop.

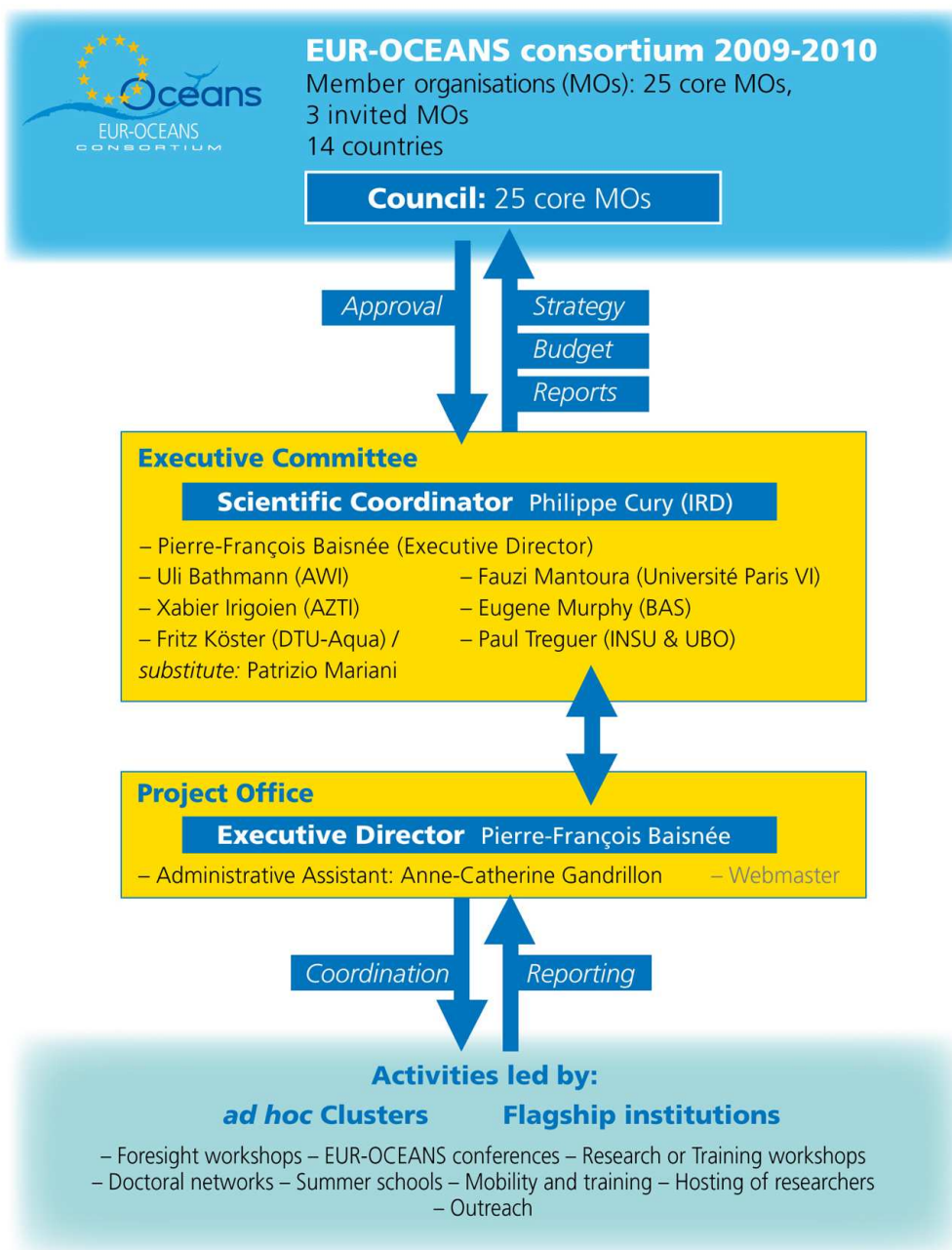


Figure 1. Organisational chart of the Consortium

2 Scientific Perspective of the Consortium

The newly formed EUR-OCEANS Consortium is built to integrate a long-lasting scientific expertise on marine ecosystems. It starts with relative modest means as it is entirely funded by a fraction of the European institutions that constituted the former NoE. Consequently, we think that we need to develop a scientific strategy focussing on innovative, strategic and integrative research, which first integrates the EUR-OCEANS background, but also promotes an innovative and strategic framework that can help moving towards international objectives and responding to EU calls.

The creation of the Intergovernmental Panel on Climate Change (IPCC), some 20 years ago, gave a useful model to science on how to inform the public and empower governments to act on climatic issues. It was imperative for the scientific community to be engaged actively with politicians and policymakers to help the latter to make better decisions, and to develop mechanisms for the scientific community to obtain advice from policymakers, ensuring that information flowed both ways in a genuine dialogue.

Today, the goals of reducing significantly the rate of biodiversity loss globally, of implementing the ecosystem approach to marine resources and the restoration of the latter, and of implementing marine reserves, have been set at the World Summit on Sustainable Development in Johannesburg in 2002. Consequently, it appears crucial to understand how science, research and knowledge could best be brought to the policy level with regard to the future use and management of biodiversity and ecosystem services in marine ecosystems.

An international context is rapidly emerging regarding ecosystem assessment. The Millennium Ecosystem Assessment (MA) introduced a new framework for analyzing social-ecological systems that has had wide influence in the policy and scientific communities. Studies after the MA are taking up new challenges in the basic science needed to assess, project, and manage flows of ecosystem services and effects on human well-being. The ad hoc Intergovernmental and Multi-Stakeholder Meeting on an Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) that was held in Malaysia 10–12 November 2008, proposed a missing piece of the science-policy jigsaw that would enable scientific discourses to respond to specific questions. The proposed platform represented a chance to make history by creating a new body based on ecosystem services and establishing deeper scientific connections between such agreements as a fundamental basis for synergies and interlinkages. It would then be a hybrid of the Millennium Ecosystem Assessment and the international mechanism of scientific expertise on biodiversity. In this sense the role of a science-policy platform should be to compile, assess and synthesize existing scientific knowledge, thereby identifying areas of science requiring further development, and to provide policy-relevant information to multiple stakeholders, including multilateral environmental agreements, without being policy-prescriptive.

Progress in the fast-moving field of marine sciences is revealing new scientific questions arising from the urgency and importance of accelerated efforts to understand the dynamics of marine ecosystems in a context of global change, such as:

- What are the relevant scales for constructing scenarios for ecosystems (global scale, mesoscale, pattern-oriented scale...)?
- How can 'ecological surprises' (unforeseen evolutions observed in a context of global change, such as invasive species, disruption of match-mismatch patterns...), which strongly affect the structure and dynamics of marine ecosystems, be implemented for scenario testing?
- Is it possible to predict regime shifts resulting from global change (climate change in synergy with overexploitation)?
- What ecosystem models are required to build scenarios (processes to be implemented, degree of complexity, diversity of models, required data, multidisciplinary aspects...)?
- How can scenarios contribute to ecosystem valuation and help to bring together social and ecological disciplines?
- For a given ecosystem, what drivers can be managed, and how?
- How do human choices and actions affect local flows of ecosystem services and spill over to affect other regions?
- How to communicate scenarios to stakeholders (indicators, dashboards, dynamic maps, dissemination...)?

More generally, the questions that face us are as follows: How will global change (i.e. climate change, overexploitation, global markets) affect marine productivity, and which possible management and mitigation options, with focus on productivity, stability and resilience of aquatic ecosystems should be envisaged? A new field of integrative science is emerging (Cury et al. 2008³, Carpenter et al. 2009⁴) that is aiming at integrating population and food-web dynamics with environmental and anthropogenic forcing to understand and predict changes in marine ecosystems. Within such a context, science is expected to provide a strong input to identify and quantify ecological and social-economical controls and their dynamics. This new approach is embracing ecosystems from high to low trophic levels, from observed emergent patterns to ecological processes, and from economical to social dynamics.

³ Cury P. M., Y.-J. Shin, Benjamin Planque, J. M. Durant, J.-M. Fromentin, S. Kramer-Schadt, N. Ch. Stenseth, M.Travers and V. Grimm. 2008. Ecosystem Oceanography for global change in fisheries. *Trends in Ecology and Evolution* Vol.23 No.6, 338-346.

⁴ Carpenter S.R., and 14 co-authors. 2009. Science for managing ecosystem services: beyond the Millennium ecosystem Assessment. *PNAS*, (5), vol. 106: 1305-1312.

Recognizing that it will require keeping focus and interest in the scientific dynamics, it will serve to bring together different disciplines together towards a focussed scientific strategy. The EUR-OCEANS Consortium will thus develop its strategy and activities in the direction of *scenarios construction for marine ecosystems under anthropogenic and natural forcing in the XXI Century*. An objective is to improve the science-policy interface, which should use existing relevant assessments and the best available multidisciplinary knowledge. Such research, focussing on scenarios and the science-policy interface, will expand our capacity to address fundamental questions about complex social-ecological marine systems while evaluating assumptions of ecosystem services. It is highly expected at the European level, and will help the scientific community to integrate disparate knowledge and match quantitative models to conceptual goals in marine ecosystems.

3 What will the Consortium offer?

The EUR-OCEANS Consortium aims – as its parent NoE – at facilitating the long-term harmonization of the efforts of European marine research institutes and universities on ocean ecosystems research under anthropogenic and natural forcings, with a particular focus for 2009-2010 on scenario construction. The Consortium will facilitate the promotion of: (1) early career scientists, and top-level scientific research on the impacts of anthropogenic and natural forcing on ocean ecosystems, fostering collaborations across the European Research Area; (2) optimal use of shared technical infrastructures and scientific facilities; and (3) activities to spread excellence (including training of scientific personnel and students, and dissemination of knowledge to the public at large and to socio-economic users). It will do so using a number of funding mechanisms and types of activities representing a toolkit, which includes tools already available in the EUR-OCEANS NoE, and three new tools (Flagships, Foresight workshops, EUR-OCEANS conferences). However, to adapt to the new budgetary context, the usage of these tools will preferentially be targeted towards specific themes. The Consortium will also have to obtain additional resources (such as PhD and post-doc grants) before some tools can be fully put to use.

3.1 EUR-OCEANS 'Flagships'

The concept of 'Flagship' is central to the EUR-OCEANS Consortium. It is a tool devised to focus resources and mobilize several of the other 'tools' in the EUR-OCEANS 'toolkit' (workshops, conferences, summer schools, exchange visits...) on specific and important topics to achieve significant advances.

The Consortium will competitively and annually award one or several EUR-OCEANS Flagships, for a period of one or two years, to the institute/university (or cluster of the latter) which coordinates the Joint Programme of Activities (JPA) of a set of institutes/universities acting together to allow significant advances on an important topic of marine science.

The JPA of a cluster that competes for a flagship notably comprises: (1) the writing of science key-note/synthetic manuscripts on the selected hot topic, to be submitted to high-impact international journals; these papers are preferably prepared by confirmed young scientists appointed by the EUR-OCEANS Consortium, whom will work together with senior scientists of members organisations of the cluster; and (2) the dissemination of new knowledge resulting from the JPA, notably through the organisation of one or more of the following activities: summer school, EUR-OCEANS conference, workshops.

The EUR-OCEANS Consortium and/or its member organisations will support logistically these activities. It will fund or co-fund the different activities of the JPA. It will also possibly fund or co-fund the selected cluster to cover post-doc salaries linked to the writing of target papers, and extra expenses linked to computer time or new experiments.

To identify or refine topics that will lead to a call for Flagship candidates, the EUR-OCEANS Consortium might convene or issue a call for foresight workshops. However the Consortium could pragmatically take the initiative to directly publish a flagship call on already identified and well determined topics.

3.2 EUR-OCEANS 'Foresight workshops'

The Consortium will organise EUR-OCEANS 'Foresight workshops', focussed on emerging and important topics in marine ecosystem studies, which address the EUR-OCEANS scientific themes and require European-wide coordination, with the purpose of establishing a scientific vision or a roadmap at the scale of a decade. The format of foresight workshops is flexible; it may be different and more informal and interactive than that of standard conferences or workshops. Small groups (~10 persons) are envisioned. Foresight workshops might notably be used upstream of flagships or conferences, e.g. to pave the way

for EUR-OCEANS calls. They might also be used for punctual prospective/coordination exercises whose output would be directly useful (i.e., which would not necessarily lead to a subsequent EUR-OCEANS flagship or conference).

3.3 EUR-OCEANS conferences

The Consortium will organise EUR-OCEANS conferences which will gather during a week a hundred scientists to work on important multidisciplinary topics in the marine field. These conferences will typically last 5 days, gather around 110 persons, leave ample room for discussion and informal interaction, and fund the participation of young scientists and PhD students. They should be ideal niches to launch new programmes, to prepare proposals for the European Research Council or for the European Commission Framework Programmes, and could favour the emergence of think tanks.

3.4 Training activities

The Consortium will organise training workshops and exchange visits (particularly for researchers from developing countries, for capacity building in these countries). It will strive for the emergence of doctoral networks, such as MENTOR,⁵ to coordinate the PhD programmes of several organisations and organise specific activities for PhD students, such as mobility assistance, multidisciplinary education, and post-doc preparation. *Note: these and the following activities will be more targeted than in the NoE, and notably channelled through flagships, to accommodate to the overall budget.*

3.5 Outreach activities

The Consortium will also develop transfer of knowledge to socio-economic users (fact-sheets, preparation of reports for policy makers, database of experts among other activities) and dissemination of knowledge to the public at large through a network of aquaria, www.eur-oceans.info.

3.6 Shared databases and infrastructures

The Consortium should take over some of the integrating activities of the EUR-OCEANS Network of Excellence: databases and data rescue, Model Shopping Tool (Most) containing datasheets on ecosystem models and data bases on computed vital rates and model equations including parameter values and references), Shared Facilities Portal giving access to 100+ facilities (mesocosms, seagoing gear, culture facilities and analytical equipment).

3.7 Website

The Consortium will have to develop a new EUR-OCEANS website, but will strive to integrate in the latter relevant EUR-OCEANS NoE products, databases and tools. The NoE website will remain active in a transitional phase.

4 Activity plan (as of June 2009)

4.1 Origine – General perspective on calls and selection of activities

During its first Council meeting (22 January 2009), the Consortium selected a first set of scientific activities to be funded and carried out in 2009-2010 (these activities appear below in dark red fonts), and validated some high priority topics. Other activities (to be held in 2009 only) have since been planned by the Executive Committee, to expand on the previous plan. **Future activities will be determined, as far as possible, by the Joint Programme or Activity of competitively selected flagships. Calls for proposals for foresight workshops and flagships will be launched on a yearly basis. Flagship and foresight workshop proposals will be evaluated and ranked according to a number of criteria by a scientific panel comprising scientists from member organisations as well as external experts. Final decisions will be made by the executive committee based on the scientific evaluation. To allow for the emergence and consideration of additional bottom-up initiatives, the website will host a permanent forum for the suggestions of flagships, foresight workshop or activities in general.**

⁵ The Marine European Network for Training Of Researchers (MENTOR) is a collaboration among European post-graduate Schools in Oceanography based at the universities of Bergen (Norway), Bremen (Germany), Brest (France), Kiel (Germany), and Southampton (United Kingdom) in order to establish a network of education and research, thereby structuring existing high-quality initial research training capacity in Marine Sciences.

4.2 EUR-OCEANS flagships

Pragmatically, for 2009, given the consensus expressed during the first formal meeting of the EUR-OCEANS Consortium Council held in Brussels in January 2009, **two topics will be retained, and a call for flagship candidacies under each of these topics will be issued in June-July 2009.**

The first flagship will be focussed on the *elaboration of scenarios to better quantify the impacts of climate change on marine ecosystems*, similarly to the IPCC approach.

The second flagship will be focussed on the *influence of meso- and sub-mesoscale ocean dynamics on the global carbon cycle and marine ecosystems*.

Other flagships could derive from foresight workshops held in 2009-2010 (see below).

4.3 EUR-OCEANS foresight workshop

A call for proposal of foresight workshops (FSW) will also be launched in June-July 2009. Three FSW will be funded. Two FSW will be selected on open topics, and one on a topic identified by the Executive Committee as requiring further European coordination following the international polar year (IPY), i.e. *global change and polar systems*. As already mentioned, the FSW could notably aim at the preparation of a 2010 or 2011 flagship (WS should then preferably be held by Fall 2009), or at a synthesis or crystallisation of ideas useful *per se*.

4.4 EUR-OCEANS conferences

Three EUR-OCEANS conference proposals, selected during the January 2009 Council meeting, should be held in 2010:

- *The next big climate challenge: influence of meso- and sub-mesoscale ocean dynamics on the global carbon cycle and marine ecosystems* (formerly titled *Dynamics and role of mesoscale and/or sub-mesoscale activity in ocean productivity in a global change context*) – with and hosted by the cluster of excellence EuroPôle Mer; Coordinator: Pascal Rivière (LEMAR/UBO); 30 May–3 June 2010, Centre de la Mer, Aber Wrac’h, France
- *Integration of Biogeochemistry and Ecosystems: Comparison across Regional Programs* – with IMBER and BAS; hosted by HCMR; Greece, Summer 2010.
- EUR-OCEANS Conference (or workshop) on *Indicators for an ecosystem-based fisheries management (EBFM)*; venue to be determined.

Additional EUR-OCEANS conferences will be held in accordance with the joint programme of activities of selected flagships.

4.5 Workshops, special sessions

- Joint EUR-OCEANS & MEECE WS: *OSMOSE model : parameterization, calibration, coupling*, 14-15 May 2009, CRH, Sète, France
- Joint ICES & EUR-OCEANS Session F during ICES Annual Conference: *How does fishing alter marine populations' and ecosystems' sensitivity to climate?* Conveners: Benjamin Planque and Miguel Bernal, 21–25 September, 2009, Berlin, Germany

4.6 Training activities

- Advanced summer course (NMA / EUR-OCEANS / DTU-Aqua): *Climate impacts on the Baltic Sea - from science to policy*, 27 July to 5 August 2009, Nexø (on the Baltic island Bornholm), Denmark - www.aqua.dtu.dk/baltic2009
- Summer school of the HMAP program (History of Marine Animal Populations), 31 August-4 September 2009, Trieste, Italy - <http://www.hmap-medbs-summer-school2009.org/>
- Advanced course (EUR-OCEANS / IRD): *Economic versus ecological networks: integrating economy and ecology in scenario building for marine ecosystems – An advanced course in economic and ecological modelling drawing on the theory of network economics*, October or November 2009 (to be confirmed), CRH, Sète, France
- Project to develop a PhD network (and possibly a joint PhD programme) in 'quantitative marine ecology'

4.7 Outreach

- Continuation of the fact sheet series (first one on the Consortium objectives, others on flagship topics and other salient activities or ‘products’)
- Continuation of the research highlights series (a series of 34 ‘digests’ of articles corresponding to ‘EUR-OCEANS science’)
- The continuation of movies and other joint activities with Oceanopolis will be explored
- Maintenance (possibly jointly with the MEECE programme) of the EUR-OCEANS NoE WP10/Knowledge Transfer Unit contact database (organisations having an interest in activities and outputs of EUR-OCEANS)

4.8 Databases – Facilities...

The following NoE products should be maintained or extended:

- Data Portal: online, free, public access to datasets using the information system PANGAEA (and specific EUR-OCEANS interface)
- Sharing Facilities database – Data Distribution System (DDS): inventory / system to share facilities across eur-oceans NoE member institutions
- Model Shopping Tool: database describing 59 models (of which 15 with equations)

4.9 EUR-OCEANS Website

For technical and practical reasons, the development of a new website in 2009 is a constraint. The former NoE website will remain active during the transition period.

5 Calendar (as of June 2009)

2009

- 14–15 May 2009: **joint EUR-OCEANS & MEECE workshop**: *OSMOSE model: parameterization, calibration, coupling*, CRH, Sète, France
- 28 May 2009: audio-conference of the Executive Committee
- June-July 2009: specifications and third party selection for development of new (CMS-based) website
- June-July 2009: **EUR-OCEANS 2009 calls** (2 flagships on pre-identified topics; 2 foresight workshops on open topics; 1 foresight workshop on a pre-identified topic)
- June 2009: launch of PhD network project in quantitative marine ecology
- June-July 2009: liaising with ICES, IMBER, MARBef, Marine Genomics Europe – preparation of potential proposal for EC call
- July 2009: preparation of financial annex to Consortium agreement (to ease financial fluxes within the Consortium)
- ~July 2009: **selection of foresight workshops**
- September 2009: administrative assistant joins project office
- 27 July–5 August 2009: **advanced summer course** (NMA / EUR-OCEANS / DTU-Aqua): *Climate impacts on the Baltic Sea – from science to policy*, Nexø, Denmark – www.aqua.dtu.dk/baltic2009
- 21–25 September 2009: **joint ICES & EUR-OCEANS Session F during ICES ASC 2009**: *How does fishing alter marine populations’ and ecosystems’ sensitivity to climate?* Conveners: Benjamin Planque & Miguel Bernal, Berlin, Germany
- 31 August–4 September 2009: **Summer school of the HMAP program** (History of Marine Animal Populations), Trieste, Italy - <http://www.hmap-medbs-summerschool2009.org/>
- ~September 2009: **selection of flagships**
- October or November 2009: **advanced (EUR-OCEANS / IRD) course**: *Economic versus ecological networks: integrating economy and ecology in scenario building for marine ecosystems – An advanced course in economic and ecological modelling drawing on the theory of network economics*, CRH, Sète, France

2010

- ~May 2010: annual call for flagships / foresight workshops
- 30 May–3 June 2010: **EUR-OCEANS conference** (with and hosted by the cluster of excellence Europôle Mer), *The next big climate challenge: influence of meso- and sub-mesoscale ocean dynamics on the global carbon cycle and marine ecosystems*, Centre de la Mer, Aber Wrac'h, France; Coordinator: Pascal Rivière
- Summer 2010: **EUR-OCEANS conference** (with IMBER and BAS), *Integration of Biogeochemistry and Ecosystems: Comparison across Regional Programs*, Greece
- 2010: **workshop**, *Indicators for an ecosystem-based fisheries management (EBFM)*, date and venue to be confirmed (requalified from a EUR-OCEANS conference to a workshop)
- Other activities as determined after 2009 calls.

6 Links

EUR-OCEANS website:

<http://www.eur-oceans.eu>

Consortium section of the EUR-OCEANS website:

http://www.eur-oceans.eu/project/EUR-OCEANS_Consortium.php

Pointers to specific Consortium documents on the EUR-OCEANS website:

- [Letter of Philippe Cury \(Scientific Coordinator of the Consortium for 2009-2010\) to member organisations](#) (3 Feb. 2009)
- [Record of the Consortium Council meeting in Brussels](#) (22 Jan. 2009)
- [Record of the informal Consortium meeting in Rome](#) (25 Nov. 2008)
- [List of EUR-OCEANS Consortium members](#) (as of 25 Nov. 2008)
- [Founding agreement of the EUR-OCEANS Consortium](#)

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