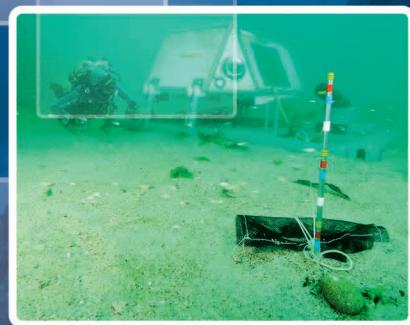
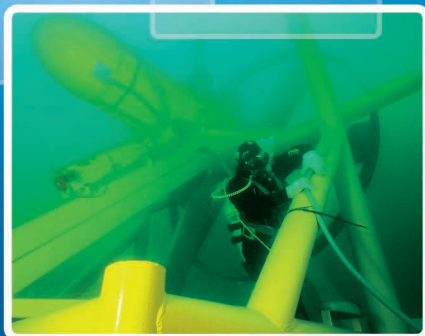
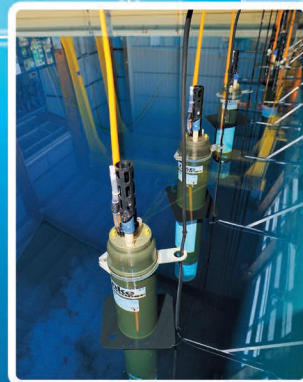
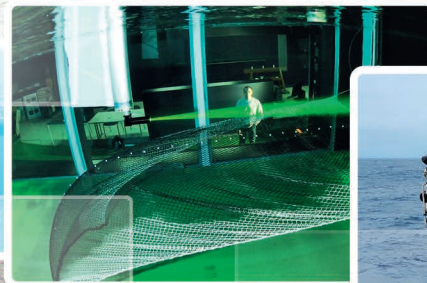


Annual report 2012

In the news
at Ifremer



FOREWORD

As the final year of the four-year contract linking our Institute to the ministries which are its supervisory authorities, for Ifremer 2012 was naturally marked by the launch of the review of our strategic plan in a broadly participatory spirit, both in-house and with our outside partners, now called "Contribution to a European strategy for marine science research".

This choice shows the Institute's will to be ever more resolutely part of the European Research Area, where our teams have long proved their abilities to coordinate numerous, large-scale studies and work (Seadatanet, Eurofleets, Euroargo, and so on) and to win FR7 calls for proposals.

By becoming an active partner in the "Healthy and productive seas and oceans" joint programming initiative, Ifremer is also asserting its ambition to contribute, alongside its French and European partners in marine sciences, to giving marine issues more visibility in the European area, as well as to improve the linkages between different programming levels: inter-organisations and national, particularly thanks to the Sea group in the AllEnvi alliance, both within the French national strategy for research and innovation, and of course the EU framework.



2012 was also the first year that our accounts were certified without any reservations and that of ISO 9000-1 certification covering the entire perimeter of our institution. This is how the Institute is adapting, in such way that, in keeping with its fundamentals, it can fulfil its missions better and better and progressively draw the contours, with the help of all our staff

and in relation with ministries, professional circles in question and local authorities in both metropolitan and overseas France, of a new model for the institution.

This will be one of the challenges set out in our next agreement signed with the French State, which for the first time will be a five-year contract.

Jean-Yves PERROT
Chairman and Chief Executive Officer of Ifremer



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IFREMER FACT SHEET



LOCATIONS

Ifremer is present on twenty-five sites along the coastline of metropolitan and overseas France. It is organised into five centres: Channel-North Sea, Brittany, Atlantic, Mediterranean and Pacific; nineteen stations and laboratories. The head office is in Issy-les-Moulineaux, near Paris

MISSIONS

As the French Research Institute for Exploitation of the Sea, Ifremer contributes, through its studies and expert assessments, to improving knowledge of the oceans and their resources, monitoring the marine and coastal environment and promoting the sustainable development of maritime activities.

To this end, our Institute designs and deploys observational, experimental and monitoring tools and manages oceanographic databases. We also operate a great part of the ocean research fleet, including all underwater systems and large-scale mobile facilities (seismics, penetrometer, etc.). Since March 2011, the UMS fleet unit, whose management has been entrusted to Ifremer for a four-year period, ensures the scheduling and development of the entire French oceanographic fleet (IRD, IPEV, INSU and Ifremer).

Ifremer is the source of knowledge, innovation, monitoring data and expertise for the marine realm, as well as providing support for public policy and maritime economic activity.

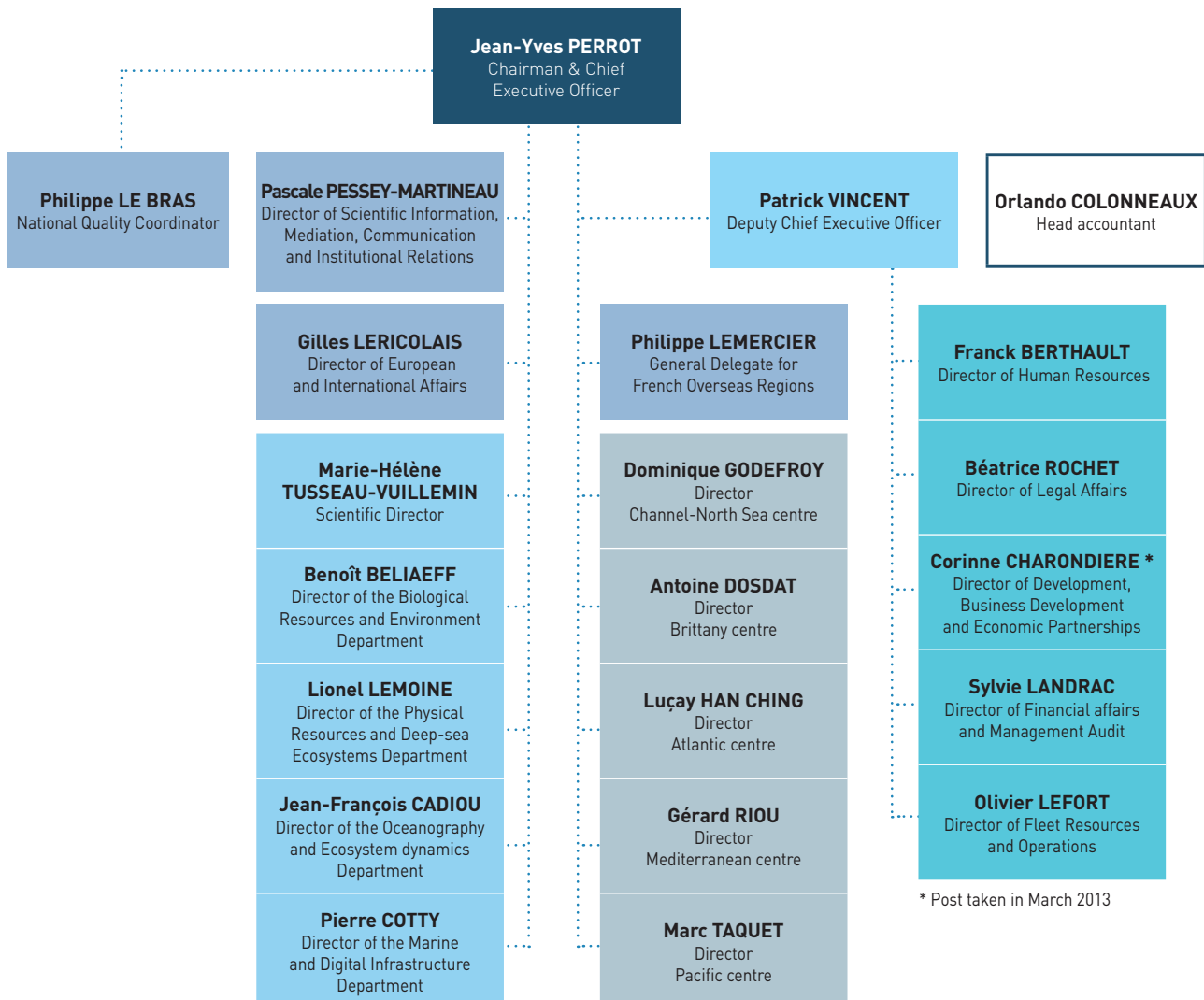
As of 31 December 2012, Ifremer had 1,528 salaried employees and 334 salaried employees for Genavir, the oceanographic fleet shipowner.

Ifremer is a public institute of industrial and commercial nature (EPIC) created in 1984 and placed under the joint supervision of the Ministry of higher education and research and the Ministry of ecology, sustainable development and energy in 2012.



ORGANISATION

As of 31 December 2012, the Institute's organisation chart looked like this:



AN INTEGRATED RESEARCH STRATEGY

The strategic plan, initially published in 2008, was updated in 2012, though the collective, collegial process which had been engaged in 2011. The initial phase of collective thought, discussion and scientific dialogue, enlightened by several Scientific Committee sessions, gave rise to a dozen position papers on timely issues and key subjects.

An underwater photograph showing a diver on the left and a submersible labeled 'Ifremer' in the center. The water is clear and blue. In the foreground on the right, there is a vertical scientific instrument with a black mesh net attached to its base.

A strategic approach for Ifremer

THE STRATEGIC PLAN UPDATE

The Scientific division proposed elements to update the ten orientations of the strategic and working with the relevant departments, identified new stakes and new stakeholders. Plans to update the orientations were discussed and a department seminar was devoted to examining all available contributions, particularly in terms of economics and human resources. By working in this way, the building bricks were assembled for Ifremer's new model as an integrated marine science institute through three prisms, i.e. creating scientific, economic and democratic added value. In fine, this means there are seven scientific orientations, complemented by those concerning databases and the ocean research fleet.



© Ifremer/O. Dugornay

This highly participatory approach was pursued by presenting the strategic plan to a mirror group representing the diversity of jobs and people in our Institute. Day-long feedback sessions, followed by meetings between Ifremer's management and its partners in academic, research, socio-economic and institutional sectors were organised all year long in 2012.

The early results of the strategic approach produced during the first quarter of 2012 provided food for thought for the units which were drafting their assessment-plans for their evaluation by Aeres.

The five-year projects thus designed by the units will in turn serve as the basis for drawing up our organisation's future targets contract, to be produced in 2013.

The setting up of the Fleet joint research unit (*UMS Flotte*) and the study co-piloted by the DGME and DGRI on the economic model of the LSRI for the French oceanographic fleet; progress made in the EU Eurofleets project; taking the AllEnvi alliance's "sea" programme into account through the Ifremer interpretation; and developing a European joint programming initiative for Healthy and productive seas and oceans; are all just examples of elements in context that feed our debate on strategy. The same holds true for the partnerships forged in presenting tenders for the Équipex and Labex calls for projects. France Énergies marines and Greenstars are the long-term projects which won the IEED call for tender, and are two new elements in the landscape where Ifremer will be working.



© Ifremer/C. Jung



HOW IFREMER IS EVALUATED

The research unit assessment process took place from last October to November. Ten of the Institute's own units were assessed, including the Littoral coastal unit, which was not scored, insofar as the specific monitoring and expert assessment missions which are its remit make it impossible to compare it with research units of other institutions.

Paralleling this procedure, the self-assessment document for the institution was sent to Aeres. The process of drawing it up began in July, to define the initial aspects of participation by the various departments and make a collective peer review before dissemination.



AllEnvi

AllEnvi - the national alliance for environmental research - was created on 9 February 2010 on the initiative of the Ministry of higher education and research, to bring together research operators and pool their expertise in the environmental field. Following its first two years of existence, AllEnvi renewed its governance and created five vice-chairmanships and a scientific steering committee.

A vice-chairmanship was created for the Alliance devoted to research overseas and Jean-Yves Perrot, Ifremer's Chairman and Chief Executive Officer, was appointed to the position.

AllEnvi's overseas group/committee was set up in this context. This cross-cutting group has the following objectives:

- **to know more about - and to make better known** through greater visibility - the reality of actions carried out on behalf of overseas regions by Alliance members in the fields of expertise found within the Alliance and in all the environments (terrestrial, coastal and marine) it focuses on;
- **make it possible to be an effective relay** between AllEnvi directing authorities and overseas stakeholders, particularly ministries, State services, local and regional authorities, professionals and NGOs, etc., whose requirements and expectations are part of the remit of AllEnvi;
- **help bring to the fore**, within AllEnvi, proposals for programmes or actions which could be conducted in partnership by Alliance members in response to these expectations.

Tahiti lagoon ▶



After over one year of working together, the members of the AllEnvi Sea group have finalised the programme for the sea, organised in three parts, plus appendices, which mirrors the Oceans joint programming.

GDR Research groups

Ifremer supports several national research consortia (GDR) and European (GDRE) or international (GDRI) research networks for a four-year period. These GDR projects are set up by scientists, working in cooperation with Ifremer's scientific department on newly emerging subjects. There are currently several GDRs underway:

- The aim of the GDR called Marco (Marine French Connection), coordinated by Ifremer and CNRS, is to bring together and structure the French scientific community working on shared themes related to understanding the spatial dynamics of marine populations.
- The GDR called Adequa (improving the quality of *Pinctada margaritifera* pearls in French Polynesia), whose final report was submitted in early February 2013, aimed to conduct global and multidisciplinary studies on the processes involved in pearl formation, in order to optimise grafts and improve *Pinctada margaritifera* pearl quality.
- The Biopolymer research group, which ended in 2012, had the goal of identifying the potential of polysaccharides from various marine biomasses for their use in biotherapies.
- GDR Aquafood, which includes Ifremer, Imares (The Netherlands) and Nofima (Norway), continued its work, after a positive four-year term assessment. It gave rise to joint European projects in the field of living resources (aquaculture, processing of products).
- Ifremer takes part in the European GDRE Phoenix built on a Franco-German initiative on underwater technologies for marine sciences, launched in June 2012. The GDRE federates the activities of AWI and Marum in Germany and the CNRS DT/INSU and Ifremer submarine systems department in France.



▲
Riftia pachyptila polychaete worms from the Siboglinidae family living near hydrothermal vents

- The GDRI called Execo, which includes the universities of Brittany, Le Havre, Angers and Bordeaux, as well as Ifremer, INRA, Ismer and CNRS, aims to study chemical contaminants and their biological effects on natural populations along water to mainland continua. A symposium to share results was held in Canada in May 2013.
- The GDR Ecchis, which was co-managed by CNRS and Ifremer, comprised various French laboratories working in the field of deep-sea biology. Its conclusion was marked by the closing seminar organised last September. This research group's field of action covered the study of deep-sea ecosystems whose food web relies on chemosynthesis, whale falls or other carcasses, sunken wood and other plant debris.

The follow-up to this collaborative work could be European in scope, as well as taking the collective (Ifremer-CNRS) expertise on environmental impacts arising from the exploitation of deep-sea mineral resources into account, theme which will mobilise this scientific community until 2014.

A new GDR proposal, Phycotox, sponsored by Philippe HESS (Ifremer) and H el ene H egaret (CNRS) has been submitted. It brings together most of the French laboratories working on toxic microalgae (hazards for humans and ecosystem) and will involve researchers from the biological station of Roscoff (SBR) and the station in Villefranche-sur-Mer.

UMR JOINT RESEARCH UNITS

Ifremer is an active member of numerous UMR joint research units, like LPO, LM2E, Amure, Lemar, Ecosym, Intrepid, EME and EIO.

With its three current UMRs – Ecosym (university of Montpellier II, CNRS-INEE, IRD, Ifremer), EME (university of Montpellier II, IRD, Ifremer) and Intrepid (Ifremer, Cirad) –, our Institute is seeking to give marine sciences better visibility in the Languedoc-Roussillon region and to implement shifts in strategy for an ecosystem-based approach to fisheries and aquaculture.

In this respect, the dynamic drive of the UMR on exploited marine ecosystems is symbolic of the importance of collaborative research with IRD, particularly in developing shared methodological approaches which apply to various geographical study sites, seeing the Southern hemisphere priorities of the Institute for research and development (IRD). In 2012, the Ifremer Mediterranean fisheries science unit was strengthened to better balance the UMR's

critical mass for Research.

The joint research unit called on "island ecosystems in Oceania" was officially created in June 2012. This is the first UMR which does not rely directly on the organisation metropolitan France, with four partners who are pooling their technical and human resources, i.e. IRD, Ifremer, the university of French Polynesia and the Institut Louis Malardé.

A new UMR project, entitled "laboratory of integrative biology of marine models" and located at the Roscoff biological station (UPMC and CNRS), was filed. Team number 7 of this UMR will focus on the genomics of *Vibrios*, directed by Frédérique LE ROUX (Ifremer).

Discussions are still underway with Agrocampus Ouest, now envisaging extending collaboration to other partners in the framework of a GDR research group.

APPLICATION FOR AN EIGHT-YEAR CONTRIBUTION TO ANR AMORAD

Following the Fukushima accident, the ANR launched a call for projects on "Research on nuclear safety and radioprotection" within the Investments for the future framework. IRSN coordinates a bid on the environmental strand whose four main orientations cover atmosphere, continent, marine and ecotoxicology themes. In this context, Dynéco/Physed has proposed its contribution in the fields of hydrodynamics and sediment dynamics, on English Channel, Biscay, Mediterranean and Japanese study sites, working mostly in collaboration with IRSN and the aerology laboratory in Toulouse. For Ifremer, this means a commitment of 62 employees/month, corresponding to the amount of 641,000 euros requested from the ANR. The project focuses on using observation and modelling to qualify the dispersal of radionuclides in water and their fate in sediment (burial, release and transport), against the backdrop of an accident. Along with the principal contributions, exploratory ecotoxicology workshops will also be organised.

ANR projects

After a Parme study development in the form of an ANR call for proposals dubbed "TransMed", Ifremer helped organise the response to the ANR call for a foresight workshop (ARP). The project selected is called Mermed, with nineteen partners including CNRS, IRD, BRGM, Agropolis and Ifremer forming the core group of drivers. It will be launched in 2013.

Another example is that of the Mistrals (Mediterranean Integrated Studies at Regional And Local Scales) research programme devoted to studying the Mediterranean basin and its environment, jointly directed by CNRS, INSU and IRD. Ifremer is participating directly in the

Mermex (Marine Mediterranean Experiment) programme focusing on biogeochemical trends to come in the Mediterranean Sea, due to natural changes such as socio-economic impacts, and on the way they will influence marine ecosystems and biodiversity. Ifremer's involvement in Mistrals governance was thus embodied in 2012, by our participation in coordinating the Mermex programme. Our institute is also a contributor to the Termex (Terra Mediterranean Experiment) programme, which aims to better understand the interactions between dynamic processes of the lithosphere acting on different timescales, in the context of the Mediterranean.

Équipex NAOS

Ifremer's capacity for scientific and technological integration and development has led to our managing one of the two global ARGO profiling float data centres, as well as securing the Coriolis database's position as European reference for *in situ* physical oceanography data. With the same rationale, the ERIC Euro-Argo (European Research Infrastructure Consortium) currently being set up, thanks to the impetus of Ifremer, and will be headquartered in Brest. Nationally, the delayed-mode strand of Coriolis federating several observation systems (SO) - including SO Argo France steered by the LPO - was awarded AllEnvi's Soere label.

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◀ Testing profiling floats with an oxygen probe in the test tank at the Ifremer centre in Brest

The success of Équipex NAOS, coordinated by Ifremer, has also reinforced the lead partner position of Ifremer teams working on this theme. These activities are carried out in close collaboration with research projects in ocean physics and biogeochemistry. Some of the time series acquired cover more than a decade. Exploiting them, along with satellite data analysis and numerical modelling, is one of Ifremer's major contributions to knowledge about the role the ocean plays in climate changes.

LSRI: EURO-ARGO PASSES THE TEST

Argo France groups all French activities associated with the international Argo network for *in situ* measurements of temperature and salinity from an array of autonomous profiling floats and extends it to biogeochemical measurements.

It is the French contribution to the European research infrastructure called Euro-Argo, approved in 2006 within the first ESFRI (European Strategy Forum on Research Infrastructures) roadmap and is part of the national road map for Large Scale Research Infrastructures (LSRI). Euro-Argo will

evolve into a permanent European legal entity (Euro-Argo ERIC) which will be hosted by France. Argo France is one of the components in the Coriolis inter-agency organisation (CNES, Ifremer, INSU, IPEV, IRD, Météo-France and SHOM).

In this frame, Euro-Argo as a whole was positively evaluated in 2012, by the European Commission, for the ERIC (European Research Infrastructure Consortium) entity to come into being.

EUROPÔLE MER SIG AND LABEX MER

In Brittany, a region whose future is intimately linked with the sea, Ifremer has a strong capacity for leadership and impetus. It exerts this driving force both with companies making up the industrial fabric of the region, especially through the Brittany marine competitiveness cluster, of which Ifremer is the prime partner and Carnot Edrome institute, etc.), and with players in research and higher education. Ifremer is associated in this way with CNRS and the university of western Brittany (UBO) through four UMR joint research units and La Pérouse library; as well as the National museum of natural history, through two jointly run stations (Dinard and Concarneau).

Thus Europôle Mer Scientific Interest Group has played an important role in bringing together the main Breton R & D stakeholders for shared projects, with innovative work plans (chairs, conferences and outreach to make science accessible).

The Labex Mer for "oceans in change" was constructed in taking advantage of this drive. This laboratory of excellence, sponsored by UBO, significantly mobilises our Institute, working in tandem to coordinate five of the seven scientific themes (in particular, those of geobiological interactions in extreme environments, transfers of sediment from the coast to the abyssal plain, the mechanics of sea movements and interactions with marine systems, and so on) and is the top ranking partner by the number of research scientists involved. Ifremer unites the main stakeholders in research and academia in the Brittany and Loire regions.

It currently chairs the board of representatives.

EUROPEAN AND INTERNATIONAL SCIENTIFIC COOPERATION

By 2020

The main instrument for the European Union's research policy, the seventh framework programme for research and technological development (FP7 RTD), began in 2007 and will end in 2013. The future European programme for research and innovation, Horizon 2020 (2014-2020), will replace the current FP7 research frameworks programmes, the CIP competitiveness and innovation framework programme and the European Institute of Technology (EIT), as of 1 January 2014. During the two years of negotiations for this programme, Ifremer will provide support for the scientific community, in order to present the orientations and objectives of Horizon 2020, the rules of participation and the positions taken by the stakeholders (States and research players), etc.

For the preparation of this new framework programme, Ifremer responded to the public consultation launched by the Commission in February 2011. Our Institute is taking part in several national working groups (including the Ministry of higher education and research's European cross-cutting consultation group), thus contributing to establishing the French position.

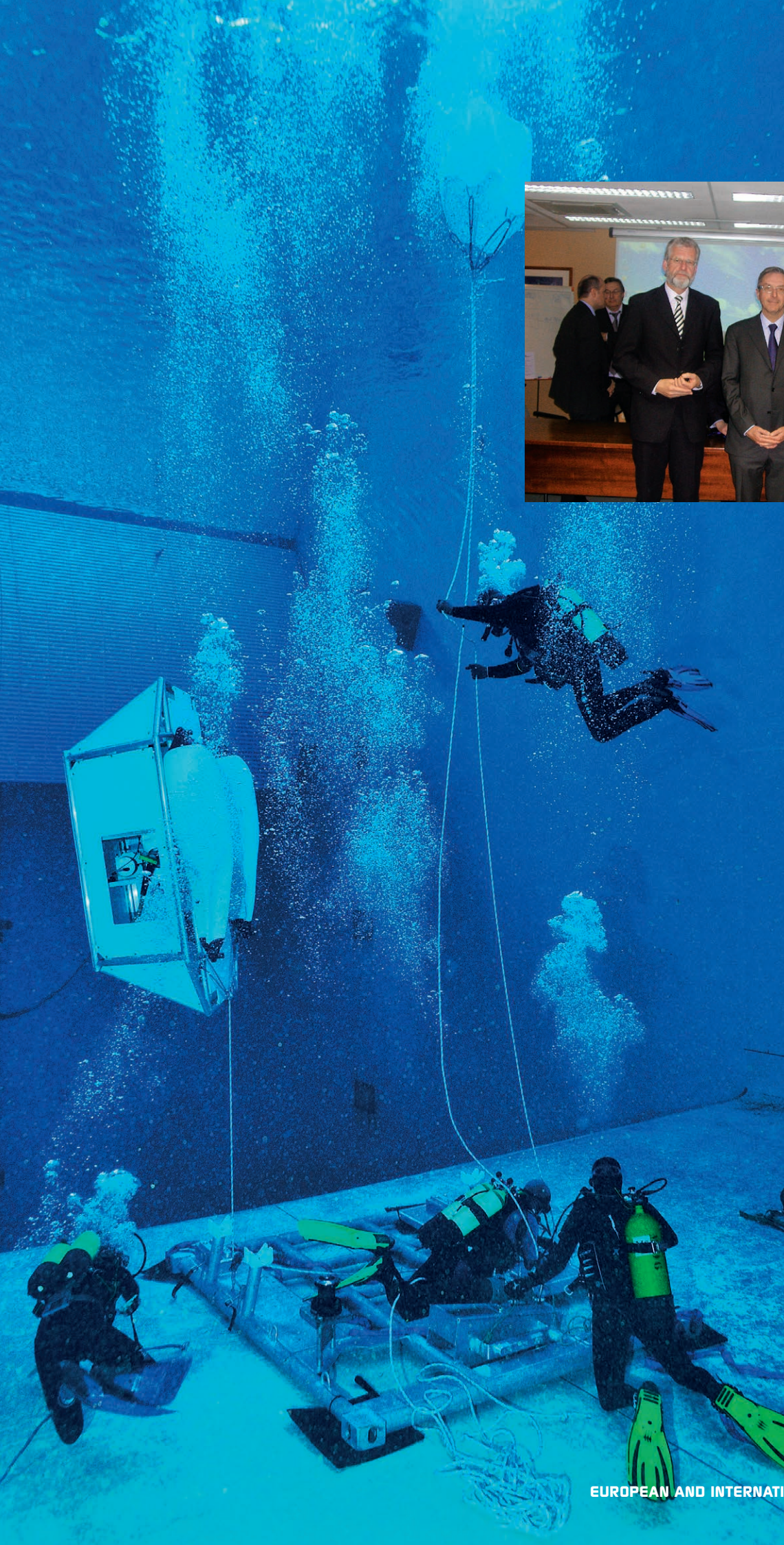
A strategic document, entitled "Marine Sciences: from Challenges to opportunities", which was jointly drafted by G3 partners (NOCS, Geomar, Ifremer), was widely disseminated to various European Commission services as well as to national bodies, with the aim of highlighting the specific needs of the marine science community. This future framework programme will be based on three priorities: scientific excellence, industrial leadership and societal challenges (with six major themes).

In 2012, Ifremer delivered a number of comments and recommendations (rules of participation, Marine Knowledge 2020, Mobility, Gender) in response to the Commission communications distributed since November 2011, to the European Parliament and Council, the European economic and social committee and the Committee of regions. The Institute is counting on our participation in the JPI Oceans "Healthy and productive seas and oceans" initiative, the Marine Board, Efaro, Science Europe and ERA-Nets to make our positions even better known.



© Jamstec/Mizue IJIMA

▲
An Ifremer delegation visiting the facilities at Jamstec



© Ifremer/S. Sergent

▲
Jean-Yves PERROT, with Peter HERZIG, director of the Geomar institute on his right and Ian WRIGHT, NOC deputy director of science and technology on his left, during the G3 meeting on the 15 and 16 February 2012 at Ifremer headquarters

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IFREMER AT THE HEART OF THE “OCEANS” JOINT PROGRAMMING INITIATIVE

Ifremer had indicated its willingness to take part in setting up a European research joint programming scheme based on marine and maritime research activities.

As of 2008, with the consent of the Ministry of Research, it promoted the joint programming initiative called “Healthy and productive seas and oceans” (JPI Oceans). This initiative is also in keeping with the preparation of the Marine sciences (SEAS-ERA) ERA-Net. In 2012, JPI Oceans began its preliminary phase of implementation by coordination and support (CSA Oceans) action funded by FP7 R&D.

Working hand in hand with the Research Council of Norway (RCN), Ifremer took part in launching this joint programming initiative, which had been formally adopted by the European Ministers of Research who met in the Competitiveness council in December 2011.

Today, the initiative gathers eighteen Member States and Associated Countries, covering all European sea basins: Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Lithuania, Norway, Poland, Portugal, Romania, Spain, Sweden, The Netherlands, Turkey and United Kingdom,.

Ifremer is continuing to be a driving force within the framework of this initiative. Firstly, this is through its involvement in the CSA Oceans project (work package leader, research infrastructure), aiming to draw up the Strategic Research and Innovation Agenda for JPI Oceans, the tools and means of implementing it, and launching a pilot action for joint programming; and secondly, Ifremer has made one of its employees available on secondment to the JPI Oceans secretariat, based in Brussels and hosted by the Research Council of Norway (RCN).

Marine ERA-Nets

Six “joint programmes” were begun in Work Package 7 of the MariFish ERA-Net, coordinated by Ifremer, to test and develop the ways that Member States can cooperate, on the basis of various existing national programmes. The experience acquired was positively taken into account in the SEAS-ERA network (2010-2014), where Ifremer, in partnership with ANR, worked as of 2011 to build collaborative programmes in the framework of regional approaches (Atlantic and Mediterranean). JPI Oceans’ implementation will benefit from the reflections and results of the MariFish and SEAS-ERA networks.

The MariFish ERA-Net fostered contacts between financial backers, managers and scientists in order to find solutions to future fisheries management challenges. Within the project, Ifremer is well positioned for fisheries research strategy actions.

Success rate for FP R&D proposals (Finance Act LOLF/P 187) and percentage of European Union project coordination (LOLF/P 187)

Year	Projects submitted	Projects selected (Ref.: year N)	Coordinated* by Ifremer	Rate of success
2007	33	10	2	30%
2008	28	11	2	39%
2009	21	12	2 (+ 1 ERC)	57%
2010	30	16	2	53%
2011	31	16	2	52%
2012	25	10	2	40%

* meaning coordinating a consortium of partners

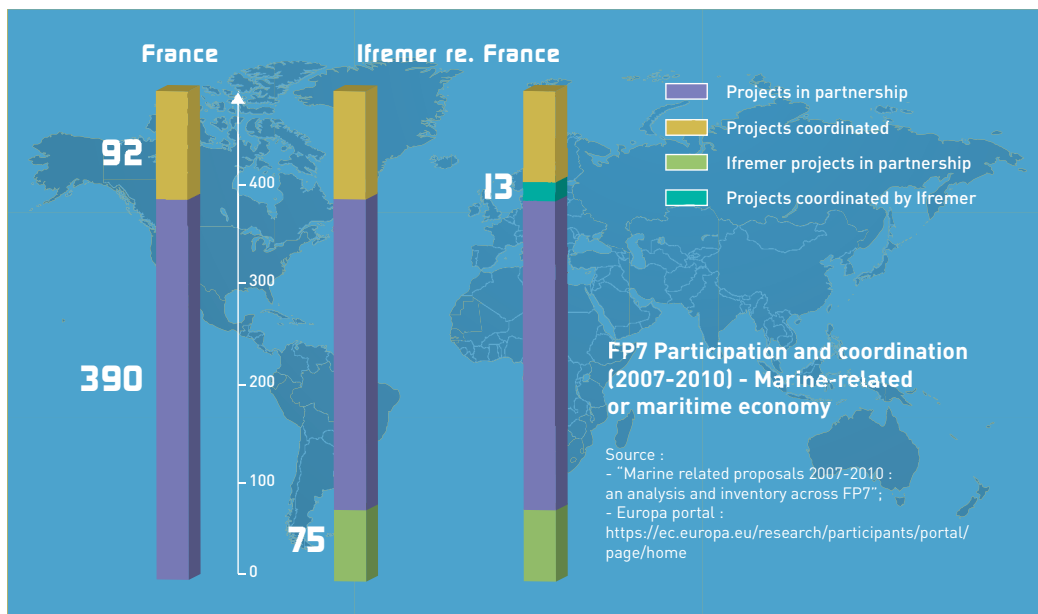
Projects not within FP R & D: European (DG MARE, ENV, REGIO) and international windows

Year	Projects submitted	Projects selected (Ref.: year N)	Coordinated* by Ifremer	Rate of success
2009	40	23	2	57%
2010	32	11	0	34%
2011	24	15	2	63%
2012	21	15	3	71%

* meaning coordination of partners

PARTICIPATION BY IFREMER IN FP7 RTD FOR PROJECTS WITH MARINE AND MARITIME COMPONENTS

The Commission also published an inventory of maritime and marine-related European projects in the broad sense of the term. France took part in 482 projects, coordinating 92 of them; Ifremer was present in 88 of these projects and coordinated 13 (see below).



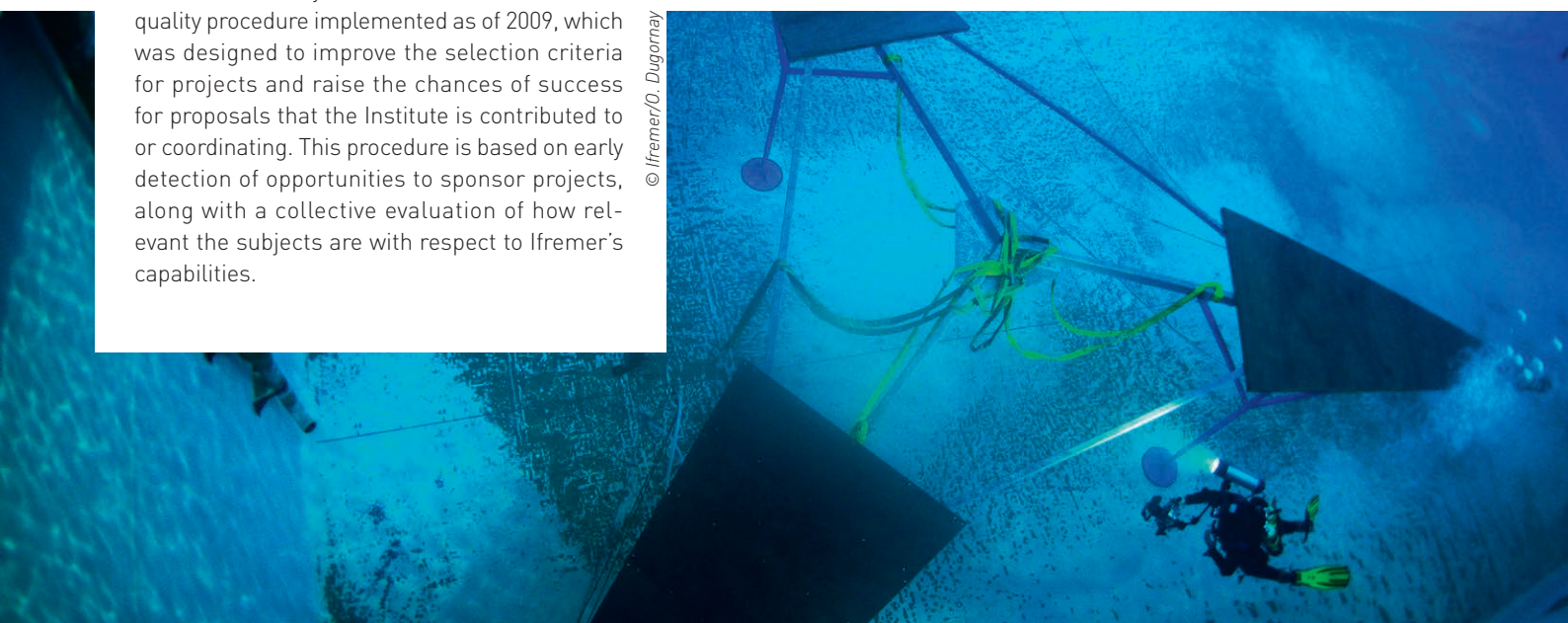
◀ *Comparison for the period from 2007-2010 of Ifremer's position in European marine-related European projects including potential maritime applications (all types)*

Ifremer's evaluation over the entire R&D framework programme shows a relatively constant success rate within FP7 R&D (~ 45%). The apparent drop in the success rate in 2012 is actually due to fewer calls for proposals for marine and maritime activities in the field of our Institute's research.

One orientation which is being improved to prepare for starting up the new framework programme called Horizon 2020 is to further professionalise the in-house consultants unit set up by the DAEI. They are there to advise future European project coordinators for the setting up and administration of their project.

These satisfactory outcomes are the result of a quality procedure implemented as of 2009, which was designed to improve the selection criteria for projects and raise the chances of success for proposals that the Institute is contributed to or coordinating. This procedure is based on early detection of opportunities to sponsor projects, along with a collective evaluation of how relevant the subjects are with respect to Ifremer's capabilities.

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International scene

France's proactive policy towards marine research in the 1960s and 1980s by creating Cnexo, then Ifremer and giving it substantial resources has enabled our Institute to establish a position of international recognition.

Ifremer maintains a representative role in the international bodies and networks it is commissioned for. It has signed a number of agreements for international cooperation in marine research and promotes mobility for its employees in the framework of bilateral research contracts.

Ifremer also intervenes in the context of major multilateral agreements which govern research over large geographical areas (Mediterranean, Oceania, West Africa, etc.), working in relation with the scientific network of embassies. Ifremer

countries, and particularly in international calls for proposals targeted by these agencies (*i.e.* Ecotech for China, Flash for Japan, CNPq for Brazil, etc.).

Ifremer continued to act in a representative capacity through its facilitation of joint committees. Ifremer is also pursuing cooperation with Russian partners in various fields, like marine geosciences (deep-sea mineral resources), physical and spatial oceanography, oceanographic data management and aquaculture techniques.

Ifremer also facilitated two joint Franco-Japanese committees over the past four years, the most recent being held in Issy-les-Moulineaux in February 2012, confirming the good relationship between Ifremer and Jamstec (Japan

Agency for Marine-Earth Science and Technology) in shared fields of interest (physical oceanography, underwater technology, exploration and observation of deep-sea ecosystems, etc.). Sharing of ship time on our respective vessels was mentioned and will be given a thorough examination. A proposed agreement between Ifremer and the Japanese Fisheries Research Agency is being examined, with the aim creating a framework of scientific cooperation which would span several fields related to managing and protecting biological resources (fisheries and aquaculture) and integrated coastal zone management.

Meeting of the joint Franco-Japanese committee at Ifremer headquarters



© Ifremer/DAEI

also follows and takes part in the ANR's international policy, especially in agreements between the ANR and funding agencies in third party



GREATER COLLABORATION WITH BRAZIL

In keeping with the priorities set out in the four-year contract, Ifremer has continued to further its collaboration with Brazil in the fields of geoscience (preparing the Magic cruise off Brazil) and operational oceanography.

Two framework agreements, mainly concerning geoscience, the deep sea environment and organisation of joint cruises, were signed for a period of five years with the University of Brasilia and with the Brazilian geological service (CPRM), which reports to the Ministry of energy and mines.

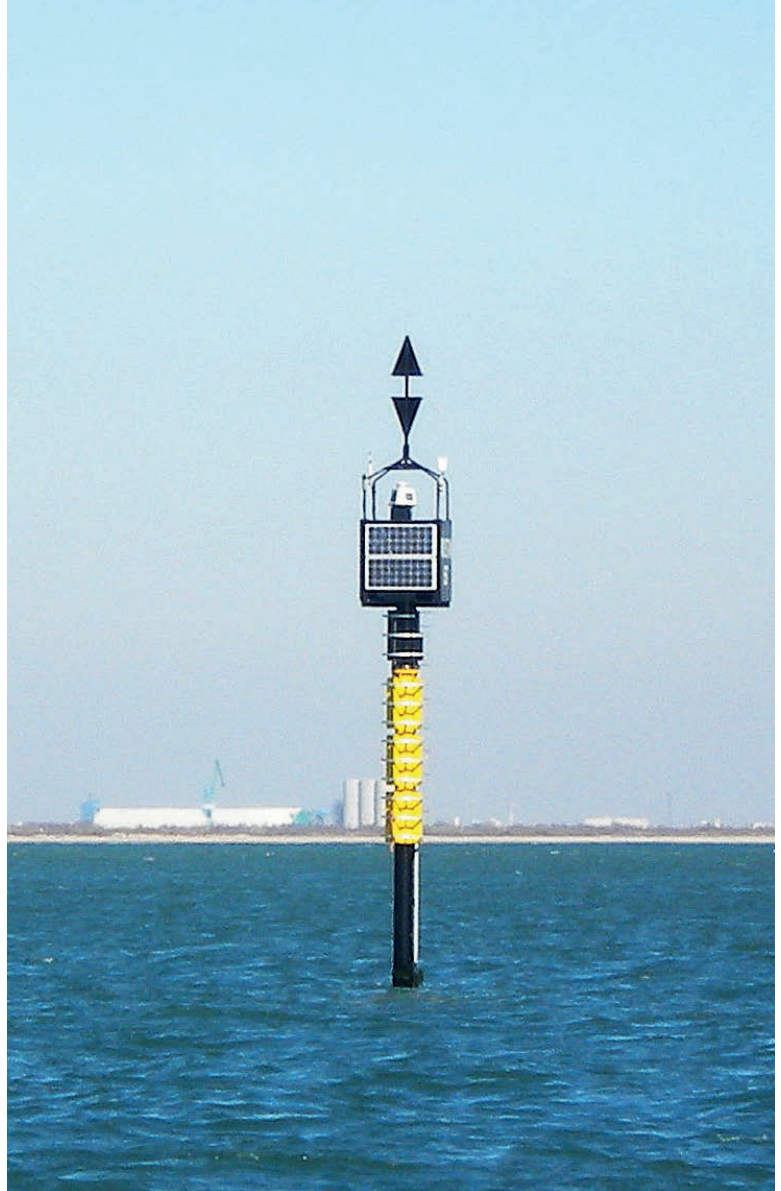
A SPECIAL PARTNERSHIP IN THE MEDITERRANEAN

In order to better consolidate our experience in the Mediterranean and maintain our special ties with partners there, Ifremer signed an agreement on 23 October 2012 with the sustainable development observatory in the Mediterranean called the Blue Plan, taking on the functions of a Regional Activity Centre under the Mediterranean Action Plan (United Nations environment programme, UNEP/MAP). This renewable agreement provides for making an expert available for a three-year period (2009-2012) to be in charge of developing the Blue Plan's marine programme on the sustainability of maritime economic activities in the Mediterranean related to marine ecosystems. In this field, Ifremer's studies focused on the socio-economic analysis of the fisheries and aquaculture sectors in the Mediterranean.

The special partnership with Mediterranean stakeholders took tangible form through the Blue plan and Ifremer's participation in the European FP7 Perseus (Policy oriented marine environmental research for the southern European seas) project launched in 2011 following the Ocean 2011-13, programme aiming to promote the Marine Strategy Framework Directive's principles in the Mediterranean and the Black Sea.

Ifremer was able to further foster this special partnership by maintaining, renewing or setting up bilateral agreements with countries on the southern shores of the Mediterranean. For instance, our active participation in the "association agreement" (PA3) signed by Algeria and the European Union which sets out the framework for relations in terms of economic, trade, social and cultural policies.

An association between French and Italian partners was selected by a call for proposals. Coordinated by DPMA at the French Ministry for agriculture and fisheries, this twinning was secured in 2012 and calls upon numerous Ifremer experts.

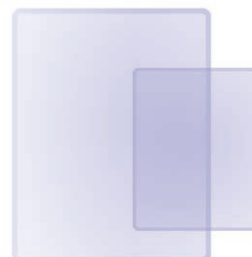


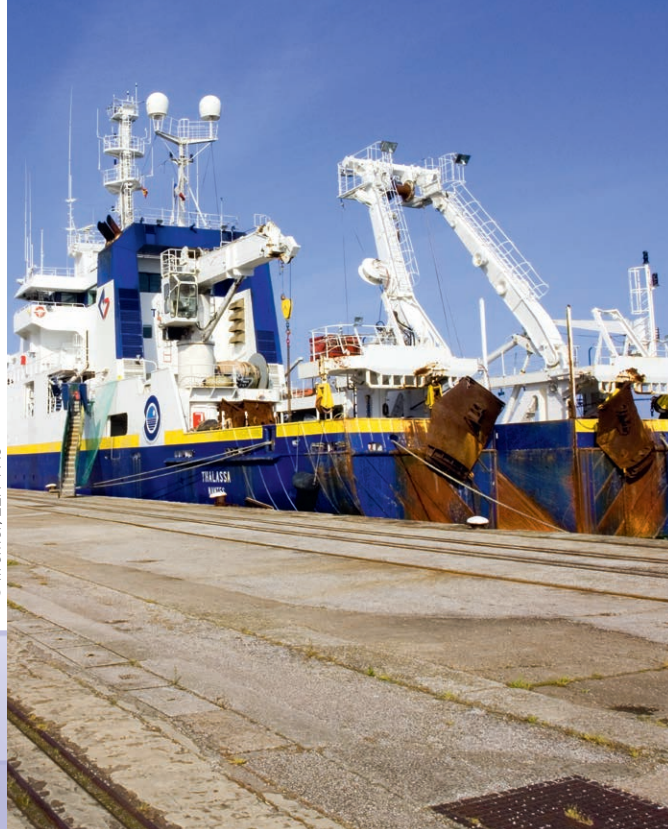
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Discussions between CNRDPA researchers and managers and experts from Ifremer will be a fulcrum for future cooperation in terms of fisheries and aquaculture research, including the fields of managing and organising research cruises and scientist exchanges.

Relations with Algeria are ongoing for the surveying of margins and understanding of hazards, with research cruises performed for the Spiral project, working in collaboration with the government of Algeria and the Algerian oil company Sonatrach.

▲
Mesurho instrumented buoy, installed at the mouth of the Rhone river





Another important relationship developed by Ifremer in the context of partnerships with southern Mediterranean countries involves monitoring and organisation of joint committees between the Moroccan national institute for fisheries research (INRH) and Ifremer. This French-Moroccan cooperation has been qualified as exemplary, particularly in terms of the wide range of themes covered and its regular joint committee meetings. The Mirror cruises to study the structuring of margins, in cooperation with the university of El Jadida, have enabled a significant marine geoscience link to be established with Morocco.

Following recent events in the North Africa, Ifremer is continuing its collaborative work with Tunisia. One example of this is the thesis on optimising methods in order to reduce the risk linked to shellfish contaminated by fast-acting neuro-

toxins, co-supervised by Ifremer's Phycotoxins laboratory and the Tunisian national institute of marine sciences and technologies (INSTM).

These partnerships with countries to the south of France are maintained through cooperation with northern Mediterranean countries as well. Ifremer keeps up this type of work in partnership with Spain, Italy and Greece in the context of numerous European projects in joint studies in the Mediterranean. And in terms of bilateral relations, Ifremer and the Spanish institute of oceanography (IEO) have indicated their will to strengthen the traditional fields of their cooperation though the shared use of facilities (RV *Thalassa*) and by developing programmes on the ecosystem-based approach to fisheries in the context of the new Common Fisheries Policy (CFP). They are seeking to extend cooperation to new fields (MSFD, farming of tuna, etc.) and are envisaging joint actions and proposals in the European framework (JPI Oceans, ERA-Net and large scale research infrastructures). The plan is to develop tools to promote and exchange scientific and technological excellence between the research laboratories of our two countries.

On the edges of the Eastern Mediterranean, Ifremer has also developed cooperative work with Turkey for studies on seismic hazards in the Marmara Sea and further northward also works in the Black Sea (derived from the Paratethys, Mediterranean counterpart).

For the Black Sea, Ifremer signed a new cooperation agreement with the GeoEcoMar institute, which is the institutional framework for Franco-Romanian scientific exchanges in marine (existing since 1991).

WITH NORTH AMERICA

Cooperation with NOAA is continuing, though Ifremer's funding begun in 2010 of three post-doc fellows working on the strategic themes of the environment and deep sea coral, toxic algae blooms and observation of the South Atlantic.

In the framework of the NOAA/Ifremer Memorandum of Understanding, a workshop on various means of recovering data from PIES (Pressure Inverted Echo Sounder) was held at NOAA's Atlantic Oceanographic and Meteorological Laboratory (AOML) in Miami, on 31 May and 1st June. The need to exchange technical information about the different possibilities to retrieve PIES data when the instruments are deployed is a significant challenge, since they can remain in the water for up to four years. The idea was to bring together the PIES users involved in utilising and developing tools for this data recovery. Many of the participants are also involved in the Samoc (South Atlantic Meridional Overturning Circulation) project.

International conferences and symposia

“DURABILITY OF COMPOSITE MATERIALS IN A MARINE ENVIRONMENT” WORKSHOP

The RDT/MS materials and structures service and the US ONR (Office of Naval Research) jointly organised a workshop on composite material durability in the marine environment. The workshop took place at the Ifremer centre in Nantes on 23-24 August 2012 attended by sixty-three participants from twelve countries (Germany, Canada, the United Kingdom, Ireland, Denmark, New Zealand, Italy, USA, Japan, the Netherlands, Norway and France).

It provided a view of the state of international research on the subject, sharing of outcomes from studies made, discussions about projects underway and round table discussions to draw up the priorities for studies to be undertaken.

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MEETING (SPATIAL OCEANOGRAPHY)

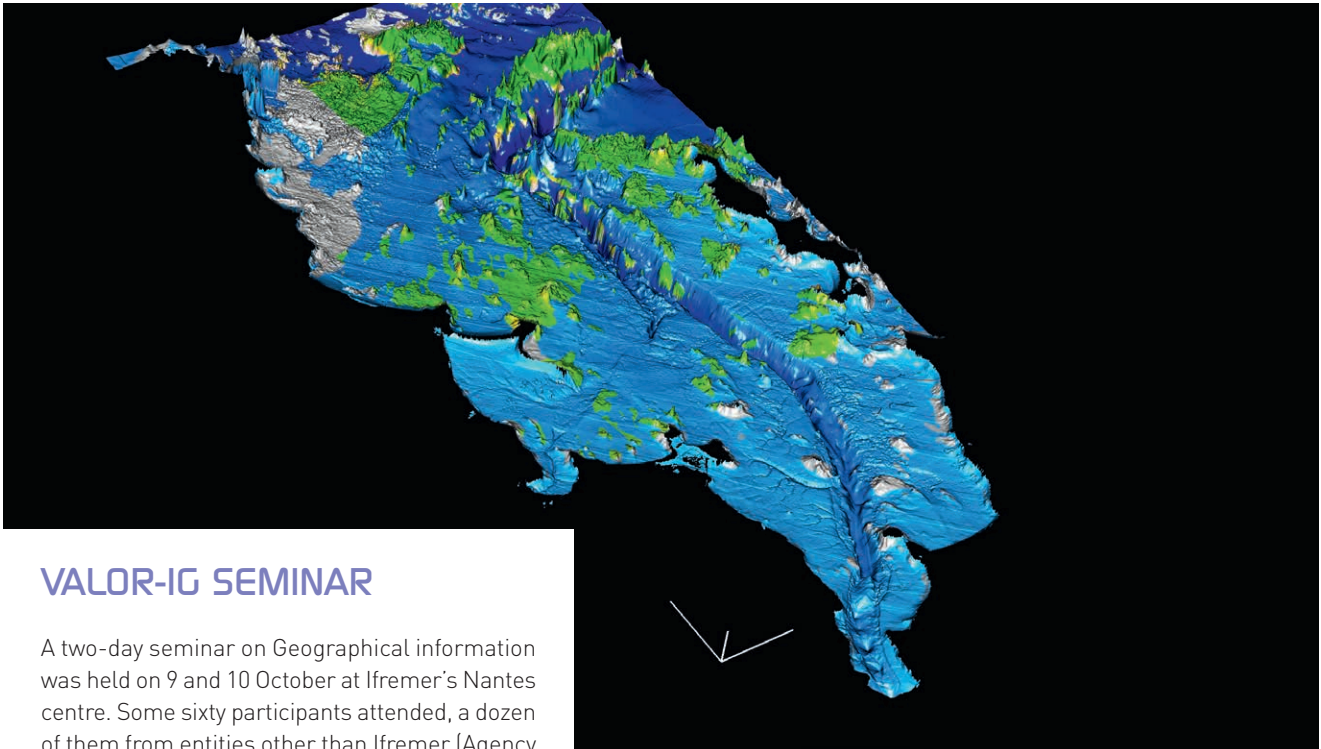
The symposium on “Twenty years of progress in radar altimetry”, organised by the European Space Agency and French Space Agency, CNES, was held in Venice from 24 to 29 September with more than six hundred people in attendance. Ifremer took part in presentations and discussions on an appraisal of altimetry for operational oceanography and research, perspectives within the European GMES programme and contributions from new missions.

In the framework of this symposium, Ifremer and its European (Euro Argo) and international (Argo international) partners organised the 4th Argo international scientific workshop. It brought together 200 participants to review the most recent results from Argo data analysis and discuss how Argo will evolve over the next decade. The papers presented have been published on the Euro-Argo website: <http://www.euro-argo.eu/News-Meetings/Meetings/ASW4-Venice>

16TH INTERNATIONAL JONSMOD WORKSHOP

The sixteenth international Jonsmod (Joint North Sea Modelling Group) workshop was hosted by Ifremer in Brest. Some fifty papers on coastal modelling were presented by researchers from a dozen different countries. The subjects ranged from applied studies to theoretical approaches and numerical operators. Amongst the presentations can be mentioned that of Ivane PAIRAUD (Ifremer, Mediterranean centre) which foreshadows a novel approach to the regionalisation of climate change: “NW Mediterranean sea model toward the study of the climate change impacts on the coastal ecosystems”. Ulf Grawe offered a critical analysis of Lagrangian transport numerical schemes frequently used to model ecosystems in: “Why the Euler-scheme in particle-tracking is not enough: the shallow-sea pycnocline test case”. Abstracts and papers can be accessed on the Jonsmod website: <https://publicwiki.deltares.nl/display/JONSMOD/JONSMOD+2012>.





VALOR-IG SEMINAR

A two-day seminar on Geographical information was held on 9 and 10 October at Ifremer's Nantes centre. Some sixty participants attended, a dozen of them from entities other than Ifremer (Agency for marine protected areas, SHOM, Ministry of ecology and CETE Normandie). The full days' events were entirely translated in French sign language, thus enabling a colleague to attend all of the presentations. On the first day's schedule were feedback from users, two technical workshop sessions (one on the 3D-viewer for the Globe software developed by Ifremer and the other on using Netcdf data in ArcGIS), a presentation on deploying the QGIS open source software package within MEDDE and finally, a debate about the future of GIS at Ifremer. The second day focused on what is new in terms of producing reference marine data and their dissemination (one session on "benchmark data" and a second on "inter-thematic systems"). See <http://www.ifremer.fr/sextant/fr/web/guest/actes-des-journees-valor-ig-2012>.

▲
3D visualisation with R software: example predicting the distribution of laminaria seaweed (green) on rocky bottom in the underwater La Penzé river valley (Bay of Morlaix).



8TH ISOECOL CONFERENCE

The unit, working with IUEM, organised the eighth Isoecol conference which was held for the first time in France in the Conference centre in Brest from 20 to 24 August. Every two years, this international conference brings together an international community of researchers working to understand ecological and biological processes by using natural stable isotopes (mainly ¹³C, ¹⁵N, ³⁴S, ¹⁸O and ²H) as a tool. This time the event drew 232 research scientists and students from thirty-seven countries. It was an opportunity to present the progress made in isotopic ecology and to showcase French marine ecology research, since a large number of the tool's users work in research centres in Brittany (Ifremer, IUEM and Roscoff).



“TIME-SERIES ANALYSIS IN MARINE SCIENCE AND APPLICATIONS FOR INDUSTRY” WORKSHOP

Working in collaboration with Europôle Mer, the University of Tromsø (Norway) and CNRS/INSU, Ifremer organised a Gordon-like conference from 17 to 21 September 2012 in Brittany on the topic of “Time-series analysis in marine science and applications for industry”.

In the marine science field, analysing time series is one of the keys to understanding the mechanisms which control ocean dynamics. Not only does it help identify phenomena represented by observation sequences, but can also be used to forecast events by providing data for models. Thus, places like the Arctic where climate change has an accelerated impact, or those potentially exposed to high natural risks, such as Istanbul, hold special interest.

The objective of this conference was to bring together the scientific community working in various marine science fields (physical oceanography, marine chemistry, biology, ecology and geology) to discuss and share their knowledge and experience in terms of analysing and interpreting time series (acquired over several months, years or decades) and to improve and increase the interactions between these disciplines, as well as collaborative work.

The following conference themes were presented:

- “low” to “high” frequencies signals in oceanography
- geosciences and seismic monitoring: low-frequency and high-frequency signals
- passive and active acoustic ecology
- marine ecology from coastal to deep-sea ecosystems
- applications for industry.



DEVELOPING PARTNERSHIPS ON REGIONAL LEVELS



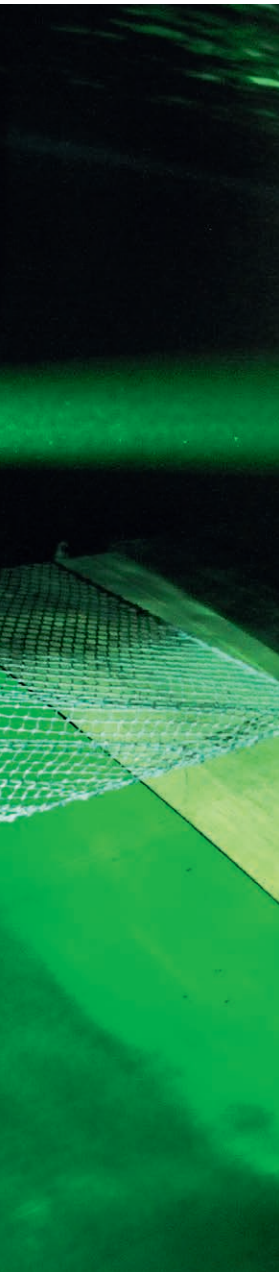
Channel-North Sea regions

The projects and infrastructures developed in the English Channel-North Sea area focused on three themes:

- “seafront identification” in fisheries science for the Eastern Channel and North Sea within a national organisation, to reinforce the “English Channel” study strategy, particularly in terms of available skills and expertise, by consolidating the national- and international-reaching laboratory for sclerochronology, the “zooplankton” laboratory and that working on the food web.
- research and technological development based on the Test tank tool (in the Carnot Edrome network) in two fields, *i.e.* fishing gear technology with respect to the need for selectivity and impacts on power consumption and MRE technology for aspects concerning marine current, wave power and tidal energy.
- shellfish farming, mostly oyster farming and mussel farming, and its environment, which led Ifremer to join the Normandy CRH oyster reference centre in order to reinforce and develop this theme for local research teams in Port-en-Bessin.



*Test tank at Ifremer's
Channel-North Sea centre
in Boulogne-sur-Mer*



© Ifremer Boulogne

ORGANISING RESEARCH AND OUR PARTNERSHIPS

This involves participating in constructing various regional strategies for research and innovation (SRE- SRI), as well as in different territorial foundations of higher education and research in Upper and Lower Normandy and in the Nord Pas de Calais area.

Discussions with the presidents of the two PRES clusters of the university of Normandy and of the university of Lille Nord de France, provided an opportunity to restate our Institute's strategy and reinforce local level ones, via various federating organisations like the Federating research structure called "Scale" in Upper Normandy and the "Campus of the sea" SIG in Nord Pas de Calais.

The main workshops and conference held in the region were:

- on 8 March, the first conference on maritime policies in Lower Normandy entitled the Sea our future; on the importance of the sea in this region, protecting humans and natural spaces, reinforcing and developing maritime activities and developing a comprehensive and coordinated approach;

- on 30 March, an international workshop organised by Capecure 2020, on the CFP reform; tomorrow's no-discards fisheries; programmes for selectivity, European practices, what are the impacts for vessels and work on board, what are the consequences for onshore management and what opportunities will there be downstream for the value chain;
- on 12, 13 and 14 June: the English Channel and its marine resources, driving research to serve the community: day-long conferences on the Channel Programme and its related projects like Charm, Cresh, Comanche, etc.;
- on 29 and 30 November, workshops on major research networks in Upper Normandy, methods to build them and the stakes for a networked scientific strategy, large-scale research networks and their regional, inter-regional, national and international ranking, PhD studies; challenges, assessments and perspectives, how to improve the creation of value from research and stimulate innovation in large research networks.

COOPERATION WITH THE AGENCY FOR MARINE PROTECTED AREAS

The MPA named *Parc naturel marin des estuaires picards et de la mer d'opale* was created on 11 December 2012.

Setting up this marine nature park led the Ifremer Channel-North Sea centre, following two years of contribution to consultation and discussion and after the public inquiry was carried out, to provide its expertise on the management board, particularly in the field of fisheries science, as well as more generally, to meet the need for knowledge, marine environmental protection and sustainable development of maritime activities.



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▲ Cliffs between Cap Gris Nez and Boulogne



SEA FOR SOCIETY PROJECT

On the 6, 7 and 8 June, Ifremer helped with the project launch meeting with representatives of the twenty-seven other members, hailing from eleven European countries. The kick-off meeting provided an occasion to talk about the project's objectives and organise its implementation (<http://seaforsociety.eu/>).

The Sea For Society project is coordinated by the Nausicaa Centre of the Sea. It will run for three years, with a €4m budget and twenty European partners. Its objective is to increase the involvement and accountability of research scientists, policy makers, economic stakeholders, representatives of civil society and citizens (especially the youngest ones), through dialogue, mutual learning and joint action based on a new way of looking at the sea and oceans, that of a Blue Society. This must combine both the will and the need for development, in the spirit of sustainability and stewardship of resources.

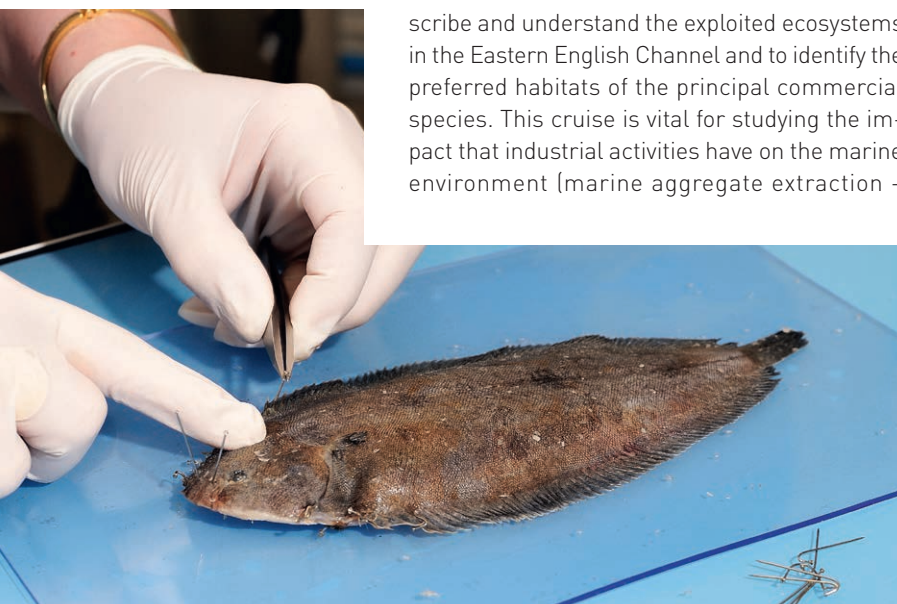
Funded by the European Commission's DG Research, Sea For Society will better identify the research themes and forms of innovative governance to be implemented within the frame of sustainable management of the oceans. The aim is to define the foundations of a Blue Society based on a healthy environment which can provide new jobs for sustainable livelihoods. As of 2013, a consultation phase involving young people, the general public and economic and political stakeholders in marine issues, will be launched in nine European countries, including France, where Nausicaa, assisted by Ifremer, will coordinate this work. There will be a mobilisation campaign in 2014 and a European conference on "Blue Society" in 2015. It will gather the results and the actors of this new vision of the oceans.

AND OF COURSE, OUR RESEARCH CRUISES...

- Comor (Eastern Channel scallops) enables the direct assessment of King scallop stocks in the Bay of Seine on classified beds harvested by Normandy fishermen.
- CGFS (Channel Ground Fish Survey) is used to obtain indicators of the health status of main living marine resources and to know their spatial distribution and the factors which influence their geographical distribution. It is one of the main sources of information which can be used to describe and understand the exploited ecosystems in the Eastern English Channel and to identify the preferred habitats of the principal commercial species. This cruise is vital for studying the impact that industrial activities have on the marine environment (marine aggregate extraction –

Multiannual agreement signed by the Ministry of industry, Ifremer and BRGM). It makes it possible to provide the demographic age-structures used by ICES (International Council for the Exploration of the Sea) working groups in charge of assessing fish stocks.

- Each winter, the IBTS (International Bottom Trawl Survey) assesses the abundance of the main fish species caught by countries bordering the North Sea and Eastern English Channel. The time series built over several decades enable trends and interannual variations to be estimated for different stocks of commercial fish exploited in the North Sea (whiting, cod, haddock, Norway pout, herring sprat, mackerel and plaice). The data from these surveys are also used in numerous research studies on the spatial dynamics and biology of these species. This has become a multidisciplinary cruise, including specialists of the benthos, zooplankton and phytoplankton, marine mammal observers and acousticians, as well as professional fishers, in a context of exchanges, experience and communication.



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- ◀ *Tissue samples taken in fish for isotopic analyses in the framework of the food chain study in the Food webs laboratory*

PN-PANAMA, NATURE CONSERVATION- MARINE NATURE PARKS

In the context of missions to support public policies, the MPA agency launched a participatory foresight exercise involving the stakeholders in marine area management. Ifremer's regional teams took an active part in this foresight project within the PNM on Building long-term scenarios based on the stakes for nature protection in natural marine parks.

THE CHANNEL-NORTH SEA CENTRE INCREASINGLY ACTIVE ON THE REGIONAL RESEARCH SCENE

The scientific interest group (SIG) Campus international de la mer et de l'environnement littoral is based on three coordination structures, including the SIG board. The first meeting was held on 12 September 2012 at the Campus de la Mer head office, located at the Capécure university centre in Boulogne-sur-Mer.

All the signatories of the agreement to create the SIG were present at the first meeting: PRES Lille Nord de France cluster, university of Littoral-Côte d'Opale, university of Lille I, university of Lille II (Law and Health), Ifremer, Haliomer, Anses, Aquimer competitiveness cluster, Nausicaa, Nord Pas-de-Calais regional council, Côte d'Opale joint consortium (SMCO), Boulonnais greater urban council (CAB) and the Chamber of Commerce and Industry of Côte d'Opale Nord de France (CCI CO).

Dominique GODEFROY, the Director of Ifremer's Channel-North Sea centre was unanimously elected as chairman of the board for the SIG Campus de la Mer.



DEVELOP INTERNATIONAL COOPERATION

This is the case at the national sclerochronology cluster which led the Salmocodage project financed by the French ministry for Overseas France and the territorial council of Saint-Pierre-et-Miquelon. Three Canadian partners (the Maurice Lamontagne institute, Northwest Atlantic Fisheries Centre and the Québec ministry of natural resources and wildlife) also took part.

France and Canada are working together to assess the populations of cod (*Gadus morhua*) and salmon (*Salmo salar*) in the North West Atlantic region which includes the territory of Saint-Pierre-et-Miquelon (sub-division 3Ps). During a workshop held at Saint-Pierre-et-Miquelon from 10 to 14 September 2012, French and Canadian scientists were able to identify sources of error and thus draft a joint protocol which will improve the accuracy of these data. This was the first time this sort of work has been done between France and Canada for cod and salmon. The project's results were presented during the NAFO (North West Atlantic Fisheries Organization) meetings in 2012.



Brittany region

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PROPERTY MAINTENANCE

Like all operators for the French State, Ifremer adopted a multiannual real estate strategy plan for optimal management of its property to reduce spending within a sustainable development perspective. In 2012, 2 million euros were invested in the upkeep and renovation of the buildings and property in the Brittany centre.

Two examples of major work carried out were the renovation of the ocean physics laboratory (LPO) joint research unit's lab, the repainting of Argenton experimental site buildings and those of the test tank, as well as upgrading many electrical installations to bring them into compliance with standards.

Guidelines from the Grenelle environmental summit meetings to achieve energy savings and the standards for disabled users (law 2005-102) were also taken into account. In this context, the main work undertaken was to replace uninsulated doors and frames in eight buildings, insulation and air- and water-proofing of terraces, renewing generator sets, inauguration of a new video-conference room, replacing air compressors with high performance machines, continuing the renovation of buried electrical grids and replacing lifts, including to make them compliant with standards for disabled access.



◀ Concarneau station



INAUGURATION OF IFREMER'S NEW PREMISES IN CONCARNEAU

As an outcome of cooperation between the MNHN national museum of natural history and Ifremer in the framework of the 2005-2012 State-region plan contract, Ifremer's Concarneau station moved into the north wing of the Concarneau biological station's buildings. This move closer endorses our two institutes' collaborative work in studying marine biodiversity. With the Dinard station (Cresco), which was inaugurated in 2008, this second operation is characteristic of the ambition shared by our national institutes for studies on ecosystems in Brittany.

The first floor of this wing was entirely revamped to enable some fifteen scientists and technicians to work there. The investment of 650,000 euros made to create the new cluster (Pidetox) specialised in the identification of toxic microalgae, was financed for €450,000 by the contract for the 2007-2013 State-Brittany region plan, and Ifremer contributed the remaining €200,000.

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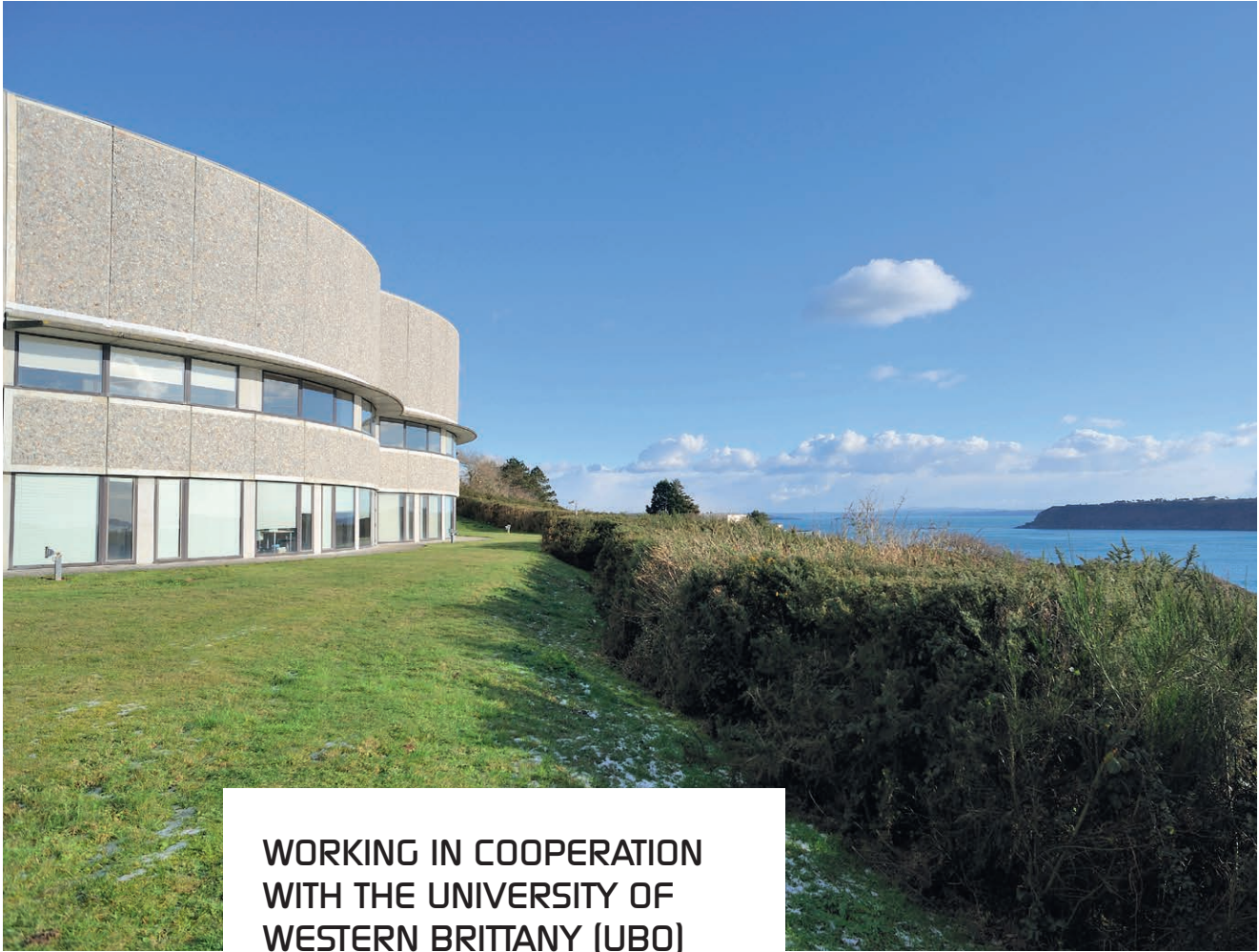
A NEW CHAIRMAN AND NEW STRATEGIC ROADMAP FOR EUROPÔLE MER

In the period from 2005-2012, the Europôle Mer SIG was an instrument which federated the scientific community in Brittany by financing collective studies which were scientific in nature (chairs), scientific foresight (two international conferences on the analysis of time-series data and continent-sea interactions in 2102) or for popular scientific outreach (films). The Scientific Interest Group officially comes to its term at the end of 2013, but its legacy has been directly taken up by the laboratory of excellence for the Sea in the framework of the "Investments for the future" programme. Thus, 2012 was the opportunity to redefine the SIG's aims and ambitions, complementing the other organisations for scientific cooperation. The Brittany regional council and the "European university of Brittany" PRES cluster assisted Europôle Mer by creating a theme-based research network, thus enabling the SIG to define a new strategic roadmap aiming to consolidate scientific partnerships within multidisciplinary projects, to collectively promote the ambitions of its members in terms of scientific foresight, regional, national, European and international projects and to propose to coordinate infrastructures and facilities of supra-national interest. In 2012 the SIG's territorial base was broadened, with the arrival of the Nantes and Rennes metropolis conurbations as members. The year 2013 will see a new economic and governance model established for the SIG.



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▲ Antoine DOSDAT, the new director of Ifremer's Brittany centre



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WORKING IN COOPERATION WITH THE UNIVERSITY OF WESTERN BRITANNY (UBO) AND PIERRE & MARIE CURIE UNIVERSITY (UPMC)

Pursuing its objectives of cooperation and working more closely with the University of western Brittany, in 2012 during the “Tonnerres de Brest” festivities, Ifremer signed three agreements with UBO, with the marine science theme being given high priority:

- a general cooperation agreement, reviving the former agreement by integrating joint research units, shared infrastructures, the laboratory of excellence dedicated to marine sciences marines, possible pooling and the development of interactions between our services. In this framework, a monthly meeting will able Ifremer’s and IUEM’s management to consolidate their outlooks and foster this partnership;
- an agreement to jointly manage the La Pérouse library, also shared with IRD;

- an agreement framing the hosting of Ifremer staff in the future IUEM building, in return for transferring the plot of land, which should primarily accommodate UMR Amure and LPO teams.

Within the cooperation agreement with UPMC, Ifremer is taking part in creating a young joint team to be located in Roscoff. They will work on the determining factors of the pathogenicity of marine bacteria from they *Vibrio* genus. There are numerous species and genotypes of these bacteria which are involved in numerous diseases in molluscs and fish. Some species also affect human health.



BREST AS HOST SITE FOR MARINE SCIENCE EVENTS AND INTERNATIONAL CONFERENCES ON THE SEA AND OCEANS

By reason of its maritime calling and its desire to enhance and grow the value of its resources in terms of research and development of the maritime economy, Brest's urban council organised three international conferences for which Ifremer provided scientific, technical and logistic support:

SCIENCE VILLAGE DURING THE TONNERRES DE BREST EVENT, FROM 13 TO 19 JULY 2012

A Village of marine sciences and technologies was in residence for a full week at the heart of the big maritime festival called "Tonnerres de Brest". Focused on raising the general public's awareness of an innovative maritime Brittany, the event endeavoured to present scientific research and industrial know-how in ways that are fun, easy to understand and interactive.

In partnership with SHOM, IUEM-UBO, IRD, Iroise marine nature park, biological station of Roscoff, IPEV, Pôle Mer Brittany marine cluster, CNRS, Technopole Brest Iroise science park, Ensta Bretagne, Cèdre, enterprises belonging to a marine cluster and of course, the Village of marine sciences and technologies was coordinated by the Pôle Mer marine cluster and Océanopolis.

ATLANTIC FORUM, 29 AND 30 OCTOBER 2012

The Atlantic forum was created by the European Commission to bring together the key European stakeholders to support it in preparing the action plan for this strategy in the framework of its integrated maritime policy aiming to support and stimulate coastal and maritime economies of Member States along the Atlantic coast. Five meetings were organised throughout Europe. The forum's second event was held on the theme of "Innovation, marine science and technology at the service of a low carbon economy", in Brest.

Marine renewable energies (MRE), sustainable shipping and maritime safety and security were the three topics for discussion at this second of five meetings, which attracted several hundred participants: representatives of national authorities, local and regional authorities, private-sector enterprises, research organisations, etc.

▲
Science village during the "Tonnerres de Brest" 2012 event

SEA TECH WEEK, FROM 8 TO 12 OCTOBER 2012

2012 was the year of the eighth Sea Tech Week event organised as a forum where scientists and entrepreneurs in the maritime economy can meet. Although its fundamentals remain scientific and technical in nature, the event has evolved over the past sixteen years. Today, it is more clearly linked to policies of economic development in the maritime field. The choice of focusing part of the conferences on marine renewable energy in 2012 illustrates this evolution. The first *Marine Energy 2012* symposium, bringing together the main players in the value chain, was organised within the Sea Tech Week forum.

In addition to the numerous papers presented by researchers from our Institute, Ifremer tours on the theme of MREs, materials, test facilities, databases, Ifremer's subsidiary CLS, and the presentation of research conducted in various fields given high-priority at Ifremer, were organised during these conferences.

Ifremer's expertise in regional institutions



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IDMER

The technical Institute for the development of seafood products is an association based in Lorient since 1987. It provides technical assistance technique in fields enhancing the value of products from fisheries and aquaculture. In 2012, regional council, as the main stakeholder, proceeded to strategically reorganise the institute to refocus on its core businesses, i.e. advice and innovation, while stopping the activity devoted to the processing of products. As a member of the association, Ifremer supported this change.

CESER

In 2012, the economic, social and environmental council of the Brittany region called the Ceser, to which Ifremer is a contributor, produced two reference documents on activities linked to the sea:

- in March, a study carried out with the Atlantic seafront Ceser organisations (Arese) on the oyster farming supply chain entitled *Quel avenir pour la filière ostréicole dans les régions de la façade atlantique française ?* (What future for French Atlantic seafront oyster farming value chains?), explaining the difficulties for the sector and reviewing proposals to maintain the production potential over time, better coordinate research and technical support, meet environmental and health challenges, improve the value chain's visibility and coordinate interventions between local authorities;
- in October, an updated version of the study on marine renewable energies called *Des énergies marines en Bretagne : concrétisons la filière* (Let's make the MRE value chain in Brittany materialise), to shed new light on the crucial decisions ahead for the industrial future of the Brittany region. The report defends setting up a regional road map which is both aggressive and collective in nature (regional institutions, economic players, the State, civil society).



Atlantic regions

Loire Region

INTEGRATED COSELMAR PROJECT

Focusing on the “understanding of coastal and marine socio-ecosystems for marine resource value enhancement, prevention and risk management”, this is the flagship project for the research federation of the IUML university institute for sea and coast, sponsored by Ifremer and the university of Nantes.

Research efforts deal jointly with three complementary lines of work (biodiversity and the coastal environment; utilisation and creation of value from marine resources; new risks and new uses of the maritime and coastal area) and an integrating theme.

This four-year project involves some thirty research staff members and receives a grant of over 2 million euros from the Pays de la Loire regional council.

The expected outcomes are to strengthen the structuring of IUML teams and its research themes, as well as developing collaborative work with foreign laboratories. An expertise platform integrated technical know-how and ecological and socio-economic knowledge, further nourished by the three theme-based orientations, will be made available to professionals and managers of marine and coastal areas for better stewardship of natural and anthropogenic risks and hazards.



© L. Barillé

▲
Scientist taking ground measurements to validate maps produced by remote-sensing and to assess diatom microalgae which are an important food source for the growth of farmed oysters

HERITAGE DAYS AT IFREMER'S NANTES CENTRE (15 AND 16 SEPTEMBER 2012)

This year during the heritage days event, the Council for architecture, urban planning and the environment (CAUE 44) decided to highlight “hidden heritage” in Nantes and invited Ifremer to be part of the tour.

The buildings at Ifremer's Atlantic centre do indeed attract a lot of attention. They date back to the 1970s, designed by the architects Olivier VAUDOUE and Reymond LUTHI who worked with the engineer Jean Prouvé, and have not undergone the slightest architectural modification since they were built. Today, the will to fit into the surrounding landscape, using the building materials and styles of the time is still visible.

The tours guided by Dominique AMOUREUX, a historian who is specialised in 20th century architecture, were a big success over the two-day event. The personnel from the centre were included in this approach, particularly through a conference which highlighted the architectural features of these buildings.

Finally, a fifty-six page booklet was published by CAUE 44, in cooperation with Ifremer, and was distributed to visitors and to the entire staff in Nantes.

ROUND-TABLE ON THE PAST AND POSSIBLE FUTURE OF FISHERIES DISCARDS, 19 JUNE 2012 IN NANTES

A scientific round table discussion open to everyone on the theme of fisheries discards at sea was organised by the French fisheries science association AFH and with the title "*Passé et futurs possibles des rejets de la pêche*" ("Past and possible future of fisheries discards") and held on 19 June at the Ifremer centre in Nantes.

The question of discards, which are defined as any catch which is put back in the water and therefore not landed, is a core fisheries issue today. The reform of the common fisheries policy currently underway includes measures concerning these discards. At the same time, there has now been sufficient data acquired in the context

of the data collection framework directive to establish more thorough knowledge.

Several scientists from Ifremer were involved in organising the event, as either members of the AFH and/or as specialists on the topic.

The round table discussion provided the opportunity to discuss the issue of discards from every angle, through the scientific presentations given in three sessions on:

- quantifying and characterising discards,
- the role discards play in the impact fisheries have on ecosystems,
- the issue of discards in fisheries management.

► A scientific observer from Ifremer aboard a professional fishing vessel to estimate the proportion of discards related to fisheries activity, a core theme for the round table session organised by AFH



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REGIONAL PLATFORM AT BOUIN

The Bouin station underwent renovation and large-scale extension thanks to funding from the Pays de la Loire regional council in the framework of its policy to support regional innovation platforms (PRI). It will be operational in the spring of 2012 for the deployment of the project called Score, dealing with collective selection of Pacific oysters for purposes of guided spatfall and hosting two staff members from the National shellfish farming committee (CNC) for a three-year period. As of today, over 160 families of oysters have been produced within the structure of this project.

2012 was also a year used to fit out the other parts of the station and make them operational (out-growing area, multi-purpose experimental area, and laboratories for ecophysiology and/or ecotoxicology analyses). These additional facilities and equipment were installed thanks to cofinancing of the total amount of €230,000 by the Pays de la Loire regional council (60%), the Vendée county council (20%) and Ifremer (20%).

The Bouin station is taking part in other regional projects like Pandha, on the antimicrobial properties of *Haslea ostrearia*, working in collaboration with the universities of Le Maine and Nantes, thanks to the financing by the Pays de la Loire region via Smidap, and ANR-Gigassat on determining the effects of pathogenic host parameters the transmission of diseases and oyster mortality, or European projects like Bivalife: controlling infectious diseases in oysters and mussels in Europe.

The importance given to the Bouin PRI by the Pays de la Loire region was furthermore shown by the visit from the regional council's chairman Jacques Auxiette at the termination of work on 1st March 2012, with shellfish farming professionals from the CRC, the Bouin hatchery and the Vendée producers' organisation in attendance.



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PRI CAP ALIMENT LAUNCHED

On 22 June the Pays de la Loire region officially launched the creation of the Cap Aliment (non-profit organisation status) regional innovation platform, devoted to innovation in the food value chain. Its members include players from academia of the Alimentation-Nutrition Ponan cluster in Nantes (INRA, Oniris, university of Nantes and Ifremer), technical centres and industrial firms who are part of Ligeriaa (the regional association of agrifood industries of the Pays de la Loire).

This one-stop PRI platform for innovation in the field will be headquartered on the Géraudière site, where INRA, Oniris and a training centre of the university of Nantes are located.

A construction project is underway for a transfer and development complex designed for outreach,

convergence and collaboration between stakeholders in the value chain by 2015.

Ifremer is involved via the STBM (marine biomass sciences and technologies) laboratory of the Biological resources and environment department, whose studies on proteolysis and biopreservation contribute to protecting and creating value from marine products and by-products. Interest will be even greater for these topics with the perspective of the common fisheries policy on zero-discards at sea.

▲ *A pilot line related to biotechnologies applied to bio-resources, developed by teams at Ifremer*

ATLANPOLE BLUE CLUSTER FORUM

The forum was held on 2 October at La Baule, in partnership with the Brittany marine cluster, a yearly high point for members of the network, bringing together industrial firms, SMEs and research laboratories (120 participants).

Ifremer teams who work on microalgae and fisheries by-products took an active part in the three round table discussions held on marine bio-resource themes, i.e.:

- for use in health foods,
- as therapeutic supplements,
- as an energy source.

The Atlanpole Blue Cluster value chain focuses on preserving, producing and creating value from marine eco-resources. It was created in 2008 and is made up of 48 SMEs, 33 research laboratories, six training organisations and 18 platforms extending over the Pays de la Loire and Poitou-Charentes regions. Ifremer is also on the Cluster steering committee.

Poitou-Charentes

REPAMO MEETINGS

The Repamo 2012 event was organised by the genetics and pathology laboratory on 9 and 10 October at the Ifremer Atlantic centre.

These two days attracted all the current and future stakeholders for the marine mollusc health monitoring system: Ifremer, DGAL, DPMA, DDTM, CNC, CRC, analysis laboratories and technical centres. Presentations were made on the way monitoring operations are currently organised as well as the short- to medium-term outlook for the diagnosis of infectious agents covered by regulations.

A special day was devoted to the accredited and recognised laboratories which perform diagnostic analyses to detect certain infectious agents affecting marine molluscs (*OsHV-1* and *Vibrio aestuarianus*).



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◀ *Observation of oyster larvae under transmission electron microscope to find viruses*

WORKSHOP DEBATE ON MANAGING HEALTH HAZARD IN EXPLOITED SHELLFISH IN THE PERTUIS CHARENTAIS AREA

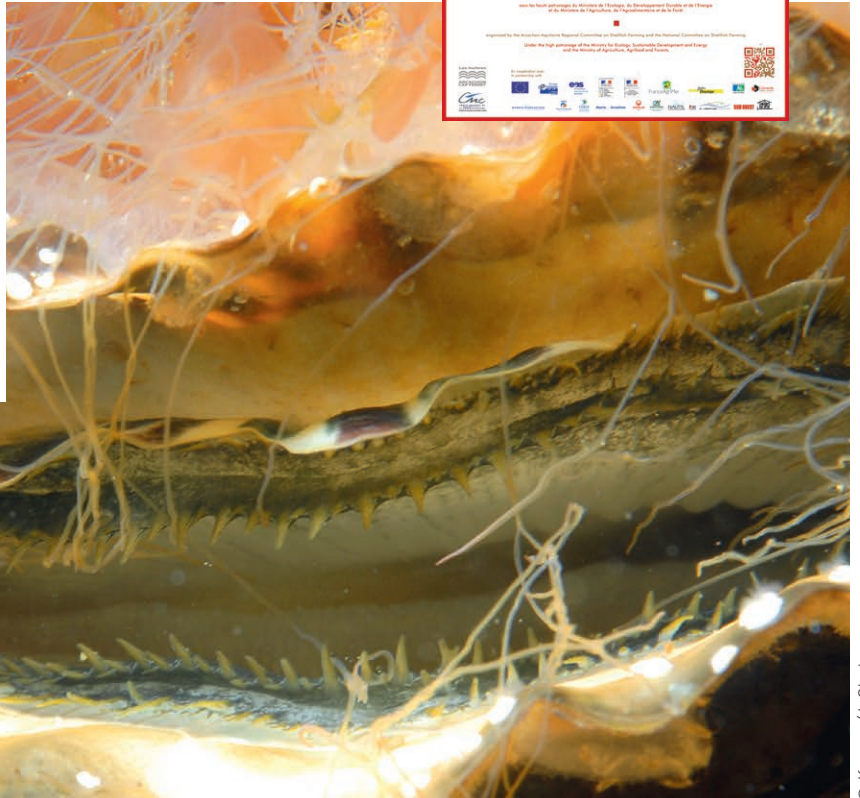
At the request of the Poitou-Charentes regional council, the LER/PC lab organised workshops where the various users and managers of the "Pertuis charentais sea" could exchange their ideas and viewpoints on a theme proposed and facilitated by Ifremer. Regional representatives had clearly expressed their wish that the Institute lead this think-tank process, calling on its expertise and studies made in the frame of the project for Sustainable development of fisheries and shellfish farming in Pertuis charentais, financed by the Poitou-Charentes region via the State-regional plan contract (CPER).

The general topic chosen was "*Les coquillages exploités des pertuis charentais, gestion du risque sanitaire*" (Exploited shellfish in the Pertuis charentais area, management of health hazards) further broken down into two parts, the first devoted to harvested and farmed shellfish and the microbiological quality of the Pertuis charentais area and the second to harvested and farmed shellfish and phycotoxins in this same area. The two strands were presented in three complementary parts, with an introduction by speakers from Ifremer followed by discussions. These workshop debates were scheduled at times taking account of the tide, to make it easier for fisheries shellfish farming professionals to attend.

Aquitaine

FIRST OYSTER WORLD CONGRESS IN ARCACHON

This event was organised by the Regional shellfish farming committee and its chairman Olivier LABAN and took place from 28 November to 2 December 2012. Over 350 shellfish-farming professionals and specialists from twenty-five countries attended it. Ifremer was very well represented, supplying both moderators for the themes on the status and future of oysters, health and illnesses and “from farm to consumer” and speakers or participants in the round table discussions. The event also provided an occasion to tour oyster farms in the Arcachon basin and for productive discussions with foreign oyster farmers particularly about shellfish farm mortality.



▲
Close-up view of Pacific cupped oyster



THE EIGHTH MARITIME AND COASTAL ECONOMY CONGRESS

The meetings were held in Bayonne and Biarritz on 20 and 21 November 2012, gathering some 1,200 participants hailing from the political and economic sectors of the maritime realm.

Ifremer was present as a partner and ran an exhibition stand. Our Chairman and Chief Executive Officer spoke at a round table event on how knowledge of the sea can serve to develop the maritime economy.

As a prelude to these events, the Pyrénées-Atlantiques general (county) council organised the local meetings for fisheries for professionals and elected officials from local and regional authorities in Aquitaine. Ifremer was there, with two presentations: one on macro-algae and the other on using chitin and other compounds to create value.

Mediterranean regions



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In 2012, Ifremer was extensively involved in dossiers concerning the Mediterranean seafront, in the three French regions there, like the regional research meetings, and in work done by the maritime council for the seafront to set up and implement the MSFD. The Institute also supported State services by contributing to the review of the regional mariculture development scheme for the Mediterranean seafront.

▲ *The European centre for underwater technology*

Provence-Alpes-Côte d'Azur

The European underwater technology centre (CETSM) project was completed in 2012. The project is supported by the PACA regional council, the Var county council and the Toulon Provence Mediterranean urban community and receives European ERDF funding. The building was officially inaugurated in September 2012, with Ifremer's Chairman and CEO and the presidents of the local and regional authorities which contributed to its achievement in attendance. The last of the equipment which will

be shared by marine research laboratories has now been acquired and studies have continued, in cooperation with the ECA company, to build a "hybrid" underwater vehicle that could be deployed either by remote control or autonomously. An agreement was signed with the university of Bremen (Germany) Marum research centre to work together to build a second hybrid ROV for polar exploration under the ice.

In Toulon in November 2012, with the support of the regional council, Ifremer organised the MSI international symposium on marine and sub-marine infrastructures to support marine research. Twenty-four participants, most of them European, attended this symposium.

► *Inauguration of the CETSM*



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ANR PROJECTS

After the transfer of value from the Parme study in the form of the ANR TransMed call, Ifremer contributed to organising the submission to the ANR call for proposals for a foresight workshop (ARP). The project selected is called Mermed, with nineteen partners including CNRS, IRD, BRGM, Agropolis and Ifremer forming the core group of drivers. It will be launched in 2013.

Another example is that of the Mistrals (*Mediterranean Integrated Studies at Regional And Local Scales*) research programme devoted to studying the Mediterranean basin and its environment, jointly directed by CNRS, INSU and IRD. Ifremer is participating directly in the Mermex (*Marine Mediterranean Experiment*) programme focusing on biogeochemical trends to come in the Mediterranean Sea, due to natural changes such as socio-economic impacts, and on the way they will influence marine ecosystems and biodiversity. Ifremer's involvement in Mistrals governance was thus embodied in 2012, by our participation in coordinating the Mermex programme. Our institute is also a contributor to the Termex (Terra Mediterranean Experiment) programme which aims to better understand the interactions between dynamic processes of the lithosphere acting on different timescales, in the context of the Mediterranean.



MARINE EXPERTISE IN THE REGION

The Institute was asked for advice about the operations to expand aquaculture areas and for the implementation of several Bay contract schemes (renewal of that for Toulon, Baie d'Azur), as well as waste from dredging and experimental operations for *in situ* biological treatment of harbour sediments in the Alpes maritimes area.

In 2012, in the Water Framework Directive context on behalf of the Rhone-Mediterranean-Corsica water agency, Ifremer conducted the third survey to inspect environmental quality on the scale of the seafront.

AN ACTIVITY LINKED TO THE REGIONAL ECONOMY

The Girac project, approved by the PACA marine cluster and led by Veolia, came to its conclusion in 2012 with the delivery of a hydrodynamic model for the bay of Toulon and the simulation of the drift of bacteriological contamination plumes taking account of meteorological conditions and scenarios of bacterial concentrations and discharge flows developed by Veolia.

Ifremer is a partner in the Sycie project which received the PACA marine cluster's seal of approval.

In the frame of a service provision contract, Ifremer hosted the recently created Navyclean firm which is developing a robot system to clean the hulls of ships using ultrasound. The robot was assembled in 2012 and trials at sea are planned for 2013.





REGIONAL AND INTERNATIONAL SCIENTIFIC COOPERATION

Scientific cooperation on the regional scale continued, particularly with the university of Aix-Marseille, IRSN and USTV's MOI laboratory working to develop combined coastal modelling including hydrodynamics, biogeochemistry and chemical contaminants. These studies receive the help of a grant holder who is co-supervised by AMU and Ifremer, with financial support from the regional council.

Ifremer's environment resources laboratory based at La Seyne-sur-Mer joined the board of the Mermex (Marine Ecosystems Response in the Mediterranean Experiment) thematic programme within the inter-organisational Mistral programme.

In 2012, a cooperation agreement was signed by Ifremer and the Ministry of defence procurement agency (DGA) in the field of drones and underwater acoustics, on projects for research and operational deployment of equipment.

Ifremer and the Rhone-Mediterranean-Corsica water agency renewed their cooperation agreement for the period of 2012-2015. It consolidates and extends this well-established cooperation, based on:

- improving knowledge about the Mediterranean coast, particularly that concerning the fate of contaminants and ecological restoration of degraded habitats;
 - monitoring, which differentiates help in defining and optimising monitoring networks, defining new quality indicators, interpreting and enhancing the use of data;
 - technical expertise and scientific support for the water agency in the framework of its coastal policy.
-

Languedoc-Roussillon

AN ACTIVITY SUPPORTED BY LOCAL AND REGIONAL AUTHORITIES

The Languedoc-Roussillon regional council demonstrated its interest and provided financial support for several actions led by Ifremer. More specifically in 2012, this involved:

- continued co-funding for a PhD thesis entitled "Study of multi time-scale hydrodynamic and sediment dynamics processes in a coastal lagoon ecosystem: application on étangs palavasiens-étang de l'Or-canal du Rhône à Sète ecosystem";
- co-financing of a post-doc grant called "Restolag" on the restoration of lagoon ecosystems, assessing the role of sediment and phanerogam meadows. This study's objective is to estimate the internal stocks of nitrogen and phosphorous in the sediments and describe the intensity of exchanges between the benthic compartment and

the water column, in order to define typical scenarios for restoration and restoration times for Mediterranean lagoons;

- financing the 2013 action programme for the Lagoon monitoring network (2007-2013 contract);
- co-financing the ICES (2011-2012) ICES "Impact of farming conditions on Pacific oyster survival in the Thau lagoon" project, in partnership with the Hérault county council, France Agrimer and the Mediterranean regional shellfish-farming committee. The objective was to examine the spatial structure of Pacific oyster mortality in the Thau lagoon, in relation to pathogen detection and energy reserves. The mortality of a batch of uninfected oysters was monitored over 106 stations deployed in the Thau lagoon in 2011. The second aim was to examine the effect of farming practices on oyster mortality and the transmission of pathogens in the Thau lagoon on the scale of the basin.

The town of Sète, between the Thau lagoon and the Mediterranean Sea





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MARINE EXPERTISE IN THE REGION

In 2012, Ifremer contributed its marine expertise, by participating in:

- the observation of small pelagic (anchovy, sardine), demersal (hake, etc.) and benthic (red mullet, angler fish, etc.) species. These observations, which are independent from fisheries catches, are made aboard a fisheries research vessels on the Mediterranean seafront using acoustics for the small pelagic fish (Pelmed) and conventional trawling for other species (Medits);

- the regional scientific council for natural heritage set up by the Languedoc-Roussillon region's Prefecture;
- the managing board of the marine nature park in the Gulf of Lion;
- in providing expert advice, at the administration's request, on the status of fish stocks, particularly for large pelagic (bluefin tuna, swordfish) demersal (hake, red mullet) and small pelagic (sardine, anchovy) species.

▲ *Trawling aboard the inshore research vessel L'Europe during the Medits cruise*

AN ACTIVITY LINKED TO THE REGIONAL ECONOMY

Several activities and iconic projects illustrate how bringing together research and innovation can benefit the surrounding region.

- participation in Vasco (valorisation and storage of CO₂). It is a collaborative project between industrial firms and research centres, aiming to study several solutions to reduce industrial discharges of CO₂ into the atmosphere. Ifremer is in charge of the CO₂ bioremediation strand using the production of microalgae in open fields. The first phase of the project, lasting ten months, should identify the avenues of research to be developed in the second phase, by identifying the key parameters in the different value chains for remediation or sequestration;
- supporting the shellfish-farming profession via the Pronamed 2 project on spat production in the Mediterranean (co-contracted by Ifremer-CRCM). This project aims to progress in our understanding of determinism in natural recruitment of *Crassostrea gigas* cupped oysters in the Thau lagoon. It is seeking to help oyster farmers who want to devote part of their commercial activity to natural spat collection and to better understand the determining factors in the success or failure of Pacific oyster recruitment. Several hypotheses which could explain this variability, involving hydro-climatic, trophic, ecological and pathological aspects, will be studied in 2013;
- significant involvement in all aquaculture training courses given in Languedoc-Roussillon;
- by the Arema (acoustics and robotics for the marine environment) project, co-funded by the European Union (ERDF), whose objective is to modernise the facilities aboard the oceanographic research vessel *L'Europe* by installing modern acoustic prospection equipment and giving it an innovative remote-operated vehicle. This upgrading of the equipment will have an impact on the acquisition of data which are useful to fisheries professionals and to scientists.

▼ *Crassostrea gigas spawns on the scale of an oyster farm rack, Thau lagoon*



© Ifremer/F. Lagarde

Well, cooperation with the world of academic research took many forms in 2012. These include:

- the contribution to drawing up the IEED Greenstars application, which aims to accelerate work on research and commercial utilisation of microalgae;

- the Meditera project (co-funded by EU-Cirad), whose objective is to bring together public- and private-sector regional partners involved in research, education and training around an experimental facility (Ifremer's Palavas-les-Flots platform for aquaculture) in order to develop the sustainable farming of Mediterranean and tropical species;
- the Vegeaqua project, co-financed by the regional council, which aims to replace all or some of the marine raw materials (fish meal and oils) by raw ingredients from plant sources in feeds for aquaculture.

Partnership with an innovative company for experimental culturing and harvesting of microalgae in the framework of Greenstars



© Coldep / Julien Jacquety

Coast in Corsica



Corsica

MARINE EXPERTISE IN THE REGION

Ifremer continued to implement environmental quality monitoring networks along the Corsican coast. In the context of monitoring for emerging toxins, the Diane centre point was chosen as the baseline point. In this framework, mouse tests and chemical analyses are run simultaneously on a monthly basis. It was noted that the *Dynophysis* spp. microalgae was less present in the Diane than in previous years.

Ifremer's Bastia laboratory is the reference lab for the MSFD's marine litter strand. In 2012, methods to measure marine litter using submerged video cameras or surface nets were developed by this laboratory. Spatial assessments are supplemented by modelling to estimate the transport of litter.

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In 2012, Ifremer completed the “pesticides in lagoon” project which was conducted with the financial support of the Corsican environment office and Rhone Mediterranean Corsica water agency. The project aimed to study possible contamination of the lagoon by pesticides and to compare the values obtained with those recorded in several lagoons in mainland France. The analyses made revealed that four active molecules of pesticides (atrazine, diuron, terbutryn and clorothalonil) were present in low concentrations. Comparisons showed that the Diana lagoon is less affected than those of Thau or Berre.



AN INTEGRATED SYSTEM TO MEASURE THE IMPACT OF HUMAN ACTIVITY ON THE MARINE ENVIRONMENT

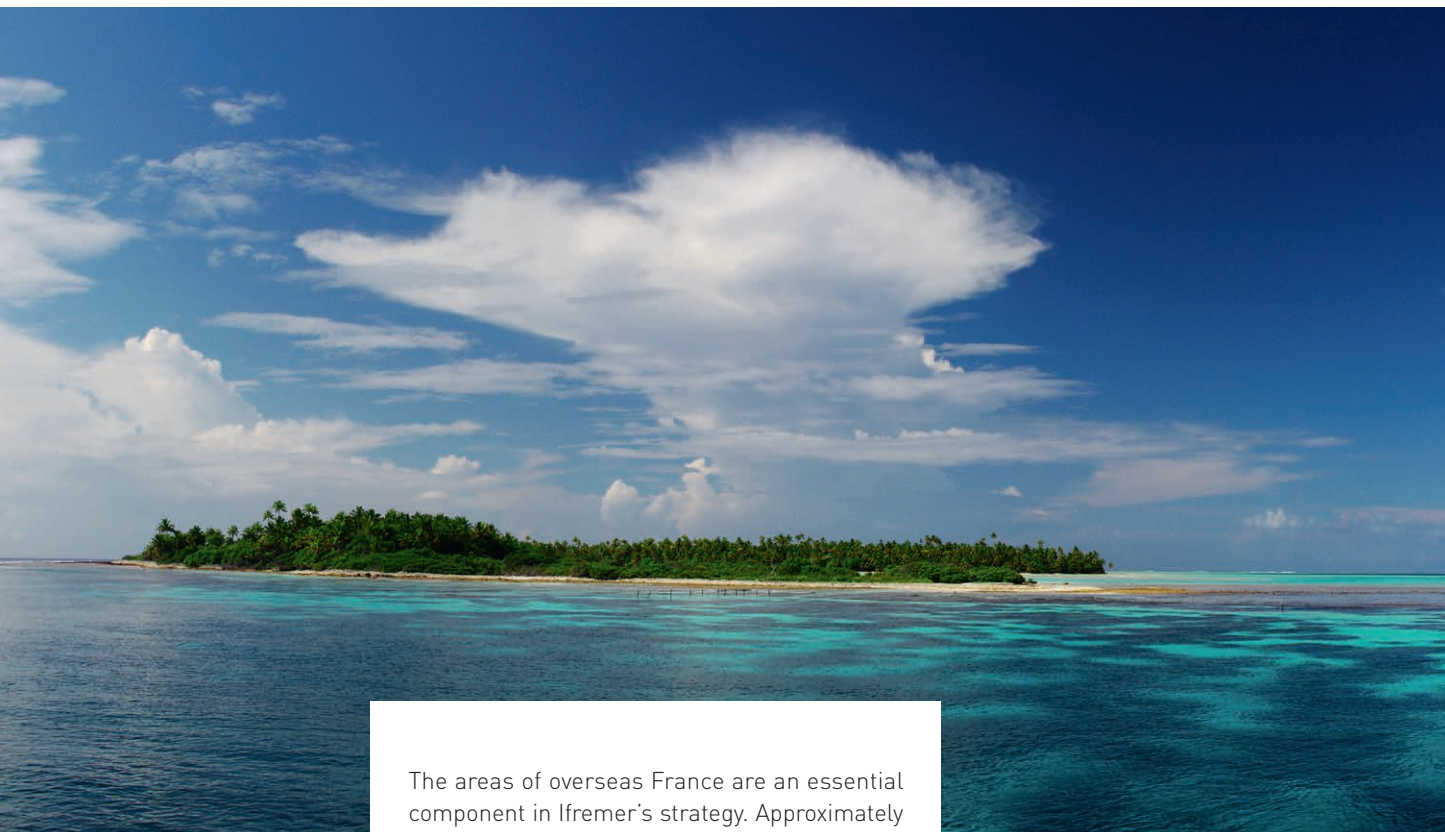
In the CPER Stellamare project framework, hydrodynamic modelling studies went on. In particular, a research cruise was conducted in the Bouches de Bonifacio strait to test the models and specify the exchanges between the western and eastern water bodies of the strait. This cruise also made it possible to assess the contamination by micro-plastics and characterise the ichthyoplankton of southern Corsica.

The EU-funded Momar programme which involved research teams from Tuscany, Liguria, the Ifremer laboratory in Bastia and the university of Corsica came to an end in 2012. It enabled the development of an integrated system to measure the impact of human activities on the marine environment, by combining chemical analyses, bioassays, hydrodynamic modelling and satellite imagery.

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Partnerships with local and regional authorities in overseas France



© Ifremer/X. Gueguen

▲
*Lagoon in
French Polynesia*

The areas of overseas France are an essential component in Ifremer's strategy. Approximately 10% of our Institute's statutory personnel are located overseas, where their activities target three main objectives:

- contributing to local socio-economic development through scientific support for local supply chains which already exist or are emerging;
- conducting more research and better utilising the scientific added-value that these outermost environments can provide, especially in the fields of the environment and biodiversity, the overseas territories are an integral part of the Institute's scientific plan;
- pursuing and developing observation and monitoring activities in response to requests from the highest authorities, and providing advice and expert assessments to support public policies.

The studies conducted give priority to the following orientations:

- progressively developing research in the fields of coastal environment, biodiversity, marine renewable energies and mineral and energy

resources, while maintaining the aquaculture practices which have long existed and best utilising the tropical environments which often have no qualitative equivalent in metropolitan France;

- developing scientific cooperation with other French scientific institutions and universities involved overseas, particularly within AllEnvi;
- developing scientific cooperation with neighbouring countries in the area and thus contributing to the regional integration of French ROM-COM overseas regions and local authorities.
- developing scientific cooperation between our overseas teams and those in metropolitan France so that the latter can provide more effective support for them;
- contributing to greater integration of the overseas territories in the European research area (ERA), within the perspectives for 2020.



AllEnvi and overseas regions

Proposals for action overseas were specifically drawn up by Ifremer and IRD, in the framework of the Alliance's sea programme.

Overseas committee created within the Alliance

AllEnvi's development led to the creation of three vice-chairmanships - one of them for overseas France. The Ifremer's Chairman and Chief Executive Officer was appointed to the position.

AllEnvi's overseas group/committee was set up in this context. This cross-cutting group has the following objectives:

- to know more about, and make better known, the reality of actions carried out by Alliance members on behalf of overseas regions, in the fields of expertise found within the Alliance and in all the environments (terrestrial, coastal and marine) where it works;
- make it possible to be an effective relay between AllEnvi directing authorities and overseas stakeholders, particularly ministries, State services, local and regional authorities, professionals, NGOs, etc., whose requirements and expectations are matters within the remit of AllEnvi members;
- help bring to the fore, within AllEnvi, proposals for programmes or actions which could be conducted in partnership by Alliance members to meet these expectations.

RELATIONS WITH LOCAL AND REGIONAL AUTHORITIES IN OVERSEAS FRANCE

In the context of the contacts established between Ifremer and ACCD'OM (Association of towns and local authorities of overseas France), the general delegate for Ifremer overseas held a conference in Paris for the ACCD'OM executive board members on the theme of Ifremer's overseas activities, then at the ACCD'OM annual congress in Réunion Island.

This type of relations, like those hearings mentioned above, enables our Institute to raise the awareness of elected officers about our actions and the stakes for the marine environment.

MARINE RENEWABLE ENERGIES IN OVERSEAS FRANCE

Studies on the Hao atoll in Polynesia, the ongoing pilot project by DCNS on ocean thermal energy conversion in Martinique, as well as the symposium organised in November at Réunion in the Gerri programme all confirm the major interest that the marine renewable energies theme presents in overseas France and the opportunities it can provide for our Institute.

Ifremer also took part in the PECC (Pacific Economic Cooperation Council) seminar held in Hawaii in 2012.

AN IFREMER TROPHY FOR STUDIES CONDUCTED OVERSEAS

Through the PhD trophy awarded to Caroline JOUBERT, for a study on pearl farming carried out in at the Ifremer centre in the Pacific, it is overseas France as a whole which is given pride of place. The special Ifremer prize was awarded to the "*Ressources minérales dans les grands fonds océaniques*" (Deep sea mineral resources) which once again serves as a reminder of the major stakes for the future linked to our overseas regions, and was another opportunity to honour the remarkable work done by Ifremer overseas.



© Ifremer/J.C. Cochard

▲ Pearl oyster juveniles

MEMORANDUM OF AGREEMENT TO EXPLORE NATURAL RESOURCES IN THE WALLIS & FUTUNA ZONE

Numerous meetings were held with the consortium partners (especially by Ifremer and Technip) during the third quarter to define the programme's continuation in the Futuna zone. As provided for in the memorandum of agreement, a step of analysis of the results following the first three cruises is currently underway. For the next steps, Eramet may submit an application for an exclusive research licence in the zone in order to protect the partners' interests.

This application is accompanied by the definition of a five-year programme which includes three prospection cruises (geophysics, drilling, environmental study) which could take place on the targets identified during the first three cruises. Other partners could join the consortium in 2014.

These studies justify the growing interest overseas for the subject of deep sea mineral and energy resources, which will lead to a national strategy for the exploration of deep seafloors, within which the Institute should be a major player.

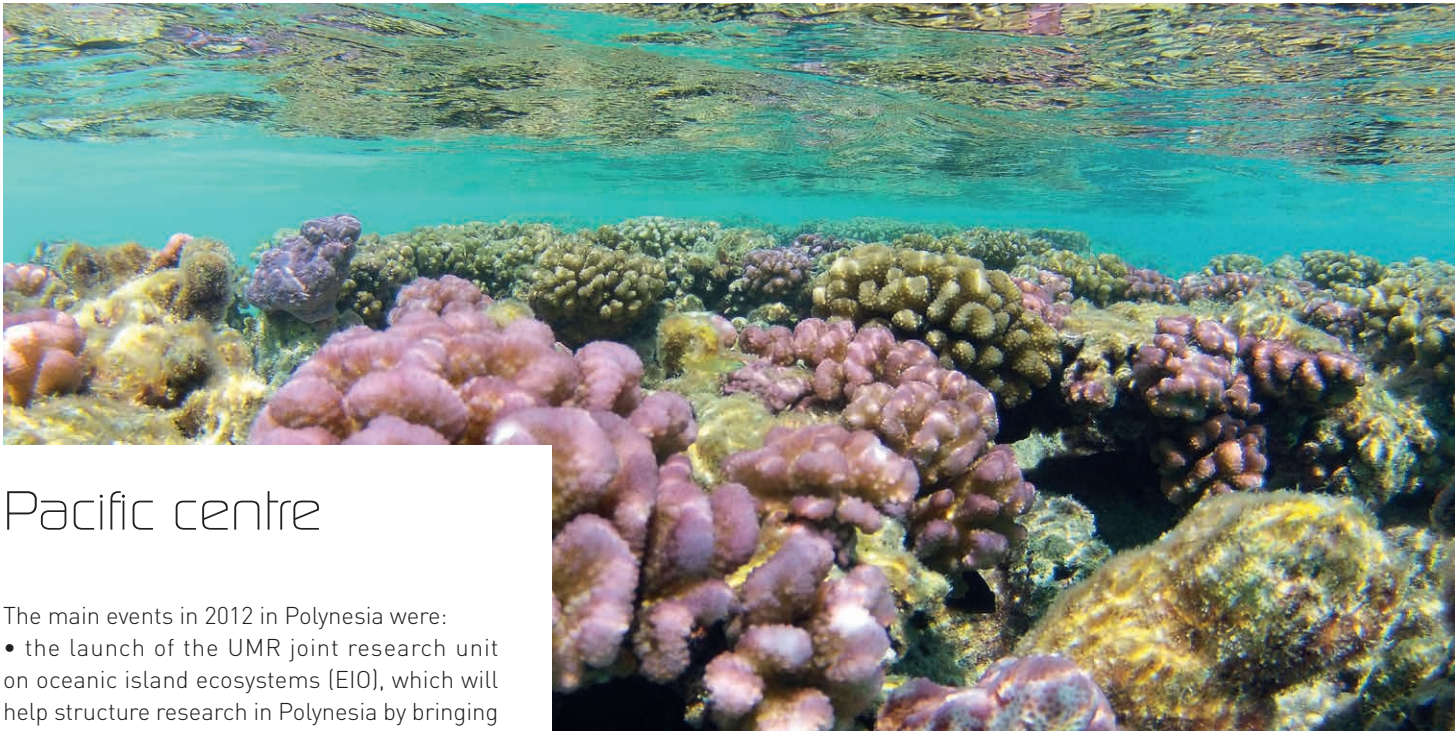
Ifremer's participation in the PECC (Pacific Economic Cooperation Council) seminar in Auckland is also worthy of note.



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MARINE ENERGY AND MINERAL RESOURCES IN OVERSEAS FRANCE

As global markets for raw materials undergo significant changes, new perspectives are coming to the fore for potential marine energy and mineral resources, thus opening up a field for future deep sea mineral resource exploration. This is the context in which a series of three oceanographic cruises was conducted between 2010 and 2012 off Wallis & Futuna, in the framework of a public-private partnership (PPP), with the objective of exploring the potential for mineral resources in this zone which is almost untouched in terms of our knowledge about the seafloor. The third cruise ended last June, marking the successful completion of the first phase of promising exploration.



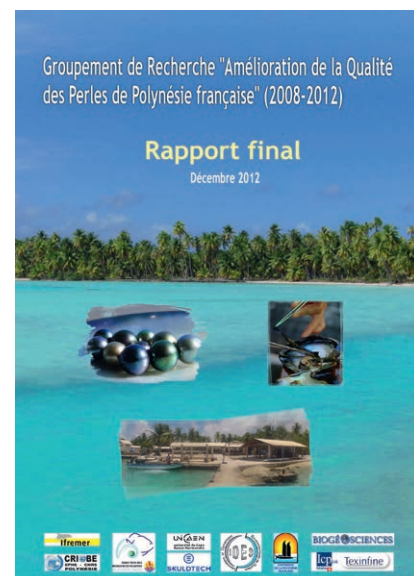
Pacific centre

The main events in 2012 in Polynesia were:

- the launch of the UMR joint research unit on oceanic island ecosystems (EIO), which will help structure research in Polynesia by bringing together the four principal stakeholders with Ifremer, UPF, IRD and ILM;
- the signing of the 2012-2015 cooperation agreement by the government of French Polynesia and Ifremer. In the framework of this agreement, which engages us along with the Marine resources directorate of the Ministry of research, resources and mines, we are conducting studies in the following sectors: pearl farming, sustainable development of aquaculture (shrimp farming, fish farming), marine biodiversity and environment (chemical contaminants in lagoons, scientific support for developing forms of marine renewable energy) and research on deep sea mineral resources, locally relaying Ifremer's Geoscience teams;
- the first "Aquaculture" application agreement in the new Ifremer/French Polynesia framework contract was signed;
- pearl farming studies continued, particularly in the context of the Regenperl (Polynesian pearl farming genetic resources) project, whose objectives were to:
 - evaluate the impact of pearl farming on the genetic variability of wild populations,
 - analyse the mechanisms for pearl oyster biodiversity's evolution in the lagoons which are used to farm them,
 - pursue studies aiming to optimise spat collection and spat production in hatcheries.

- studies completed and final report from GDR Adequa research grouping (ten partners);
- the new ANR project Polyperl (Integrated management and adaptation of pearl farming industry in French Polynesia in the global change context: environmental, economic and social approach);
- Ifremer's participation (in February 2012) in the *Pakaihi I Te Moana* cruise on biodiversity of the Marquesas Islands (off-shore part) financed by the Agency of marine protected areas and carried out in collaboration with the French Polynesia DRM, IRD (Nouméa), Criobe, CNRS and Comex. During a call at Ua Pou, Mrs. PENCHARD, the Minister for overseas came on board. The Institute also participated in regional (Nuku Iva and Papeete) and national (Paris) final conferences.

▲
Lagoon in French Polynesia



New Caledonia delegation

© Ifremer/L. Loubersac



THE WATER FRAMEWORK DIRECTIVE (WFD) IN OVERSEAS FRANCE

Ifremer pursued the procedure to make New Caledonian decision-makers aware of the Quadrige² database, even drawing up a special agreement for Quadrige to be used to store data from lagoon environmental quality monitoring. This agreement should be signed in 2013 in the context of the 2012-2015 framework agreement.

On 9 August, a new framework agreement between Ifremer, the French State, the government of New Caledonia and the three New Caledonian provinces, was signed for the period of 2012-2015. The signatories have committed to a programme to enhance the value and utilisation of the marine resources and environment of New Caledonia. This new agreement indicates the partners' orientation towards diversification, based on three themes:

- support, development and innovation to grow the value of marine biological resources, particularly with respect to existing aquaculture supply chains (giving priority to shrimp farming), and for diversification (fish farming) or future developments (microalgae and marine biotechnologies);
- development and setting up research, methods and tools to help with the environmental management of coastal areas and lagoons, in order to better protect the marine natural heritage (marine protected areas, listed world heritage sites), provide better databasing and retrieval of data and develop simulation tools (modelling);
- exploration of semi-deep and deep sea environments in maritime areas to improve our knowledge about these little-known environments and to anticipate their possible future exploitation (mineral and energy resources, etc.).

In the field of shrimp farming, the report from the independent audit of the shrimp farming value chain strengthened Ifremer's position for scientific support for the sector, thus upstream of the development and transfer actions which will be ensured by a local organisation (Adecap).

Working with IRD and the university of New Caledonia, Ifremer produced the *Guide méthodologique pour le suivi du milieu marin en Nouvelle-Calédonie* (methodological guide for marine environmental monitoring in New Caledonia) which is intended for environmental players in both public and private sectors and which was much publicised in the presence of the stakeholders from mining firms, environmental managers, scientists, consultancies and local authorities.



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◀ *Signing of the framework agreement aboard RV L'Atalante at quay in Noumea on 9 August 2012. From left to right: Islands province, South province, President of the government, High Commissioner, North province*

French Guiana delegation

In 2012, work on the fisheries information system continued, as did studies on stock monitoring within the ecosystem-based approach, in particular with the ANR-Adhoc project.

The “Mer” (Sea) workshop which Ifremer co-organised in the GIS-Irista framework set out to define and set up a scientific umbrella programme on the sea which the future marine cluster will be based on. This marine cluster is amply justified by the fisheries and environmental stakes, seeing the perspectives for oil exploitation in French Guiana in the medium-term.

Outreach communications to inform the regional fisheries committee and wholesale fish merchants of French Guiana began, taking advantage of the presentation of the economic survey launched on small-scale coastal fisheries.



© Ifremer/L. Baulier

▲ Pirogues and Creole fishing boats at the landing point called “La Crique” in Cayenne

French West Indies delegation

FISHFARMING

The general delegate of Ifremer for overseas France, accompanied by the head of the Biological resources and environment department, went to Martinique to explain to local professional and institutional partners how the Institute’s position has evolved in the aquaculture sector. Ifremer is aiming to focus more on scientific research to support the development of the value chain, since the development and transfer aspect will be progressively taken over by local stakeholders.

FISHERIES SCIENCE

The year’s work was mostly devoted to the ongoing FIS fisheries information system and to the international Magdelesa project (funded by Interreg).

In addition, the Delegation took part in numerous local meetings with local and regional authorities, State representatives and professionals, e.g. the basin committee, steering committee of the southern area coastal contract, etc.

ENVIRONMENT

In 2012, the actions undertaken to support the national Chlordecone plan, in particular concerning the contamination of fish fauna were continued. Overall, the teams from the main research organisations who are joining forces on this subject (Cirad, IRD, UAG, BRGM and Ifremer) agree on the research priorities and they plan to organise a workshop under the aegis of AllEnvi as soon as possible. Ifremer regularly mobilises its forces locally for communication outreach meetings, under the Sea directorate (DM) umbrella, with representatives from the French Administration and the profession.

© Ifremer/O. Dugornay



◀ Breeding tank for red drum at Le Robert station



© Ifremer/J. Bourjéa

▲
Intervention sur DCP

Réunion delegation

FISHERIES SCIENCE

Along with the implementation of the fisheries information system, in 2012 several research studies on the monitoring and management of exploited coastal and large pelagic fish stocks were finalised:

- the Ancre programme to analyse Réunion island coastal fisheries, with three projects respectively dealing with traditional fisheries in the Marine nature reserve, on deep demersal fisheries and on fishing large pelagic species around fish aggregating devices;
- the IOSSS-Espadon project on the structure of swordfish stocks in the Indian Ocean based on a population genetics approach.

ENVIRONMENT

The landmark event of the year 2012 was the signing of the "Sextant ReMaTa" pact by the three

prefects of the Indian Ocean (Réunion, Mayotte and TAAF). This highly structuring agreement makes Sextant the database for storing and exchanging all the marine geographical data that will serve as a reference for all French State services in the Indian Ocean. With the same rationale of making data management tools available, a similar agreement was signed with the Réunion Island marine nature reserve PIG to develop a dedicated Sextant catalogue for the Reserve's territory and actions.

As concerns the Water Framework Directive, significant work was done within the regional expert groups coordinated by Ifremer, in order to produce methodology booklets to structure the monitoring programme coastal waters of La Réunion, thus supporting the water authority office which now acts as main contractor. The methodology studies also focused on defining environmental status indicators, including specific ones for the reef platform ("Good status" and "Bioindication" projects).

2012 was also a year for major work in developing modelling tools (HydroRun project) and characterisation of shallow coastal seafloors using hyperspectral data (Spectrabenth OI project) in partnership with the scientific departments in metropolitan France.

BIODIVERSITY

In order to draw up a sea turtle conservation plan in the French territories of the South-West Indian Ocean, in 2012 Ifremer continued to contribute to the partnership-based actions aiming to better understand the inshore and offshore movements of sea turtles by tagging them with Argos beacons and tracking their migrations, spawning grounds or accidental captures towards other zones and habitats in their life cycle.

Moreover, in partnership with several countries with shores on the SW Indian Ocean, the project on the connectivity of marine protected areas (CAMP) performed genetic characterisations of the populations of three model-species of reef fish within the various marine protected areas in order to assess the exchanges between these zones or their degree of isolation, with the perspective of identifying effective units to manage marine biodiversity.

PARTNERSHIPS

Amongst the milestones of 2012, should be mentioned:

- the continuation of discussions with various local partners (scientific stakeholders and relevant services of the regional council) to set up the future Réunion marine cluster (PMR);
- the partnership with the Globice association with regional expertise on marine mammals, to provide training on population genetics analyses and the involvement of the delegation's genetics laboratory;
- taking part in various meetings about timely subjects and projects with local and regional authorities, State services, and scientific stakeholders;
- participation in the committee granting the Qualitropic competitiveness cluster's label of approval for projects.

Mayotte

AQUACULTURE

In the framework of the project for scientific support from Ifremer for the sustainable development of marine finfish farming in Mayotte, our Institute continued its work in collaboration with the local partner Aquamay to design and build the future research and development centre for overseas aquaculture called Credau. A framework-agreement for scientific cooperation was signed with Aquamay in December 2012.

ENVIRONMENT

Ifremer took part in working groups set up by the Mayotte marine park, making its contribution to preparing the future management plan.

Saint-Pierre-et-Miquelon delegation

The main events in 2012 were:

AQUACULTURE SECTOR

Work continued to provide scientific support for the sustainable development of scallop farming.

FISHERIES SECTOR

An audit, led by Ifremer, was performed on the fisheries sector in Saint-Pierre-et-Miquelon, with the aim of creating a single processing cluster (audit conducted on site in March 2012).

LEGAL EXTENSION OF THE CONTINENTAL SHELF

Following the SPMplac cruise conducted in July 2011 with RV *Suroît* in the frame of the national Extraplac programme, a technical document was prepared during the year and sent to the secretariat general for the Sea. This means that France now has a claim which can be submitted to the United Nations Commission on the Limits of the Continental Shelf.

The stakes for overseas France

Seeing the growing awareness of the wealth and stakes related to our overseas territories, Ifremer was auditioned by various authorities about its overseas activities. Amongst others can be mentioned the hearings by the French senatorial delegation for overseas, the CESE economic, social and environmental committee and the National Assembly's sustainable development commission.

These hearings focused especially on the following subjects: fisheries, aquaculture, marine renewable energies, mineral and energy resources, sustainable development policy, and so on.



© Ifremer/S. Robert

▲ C3 fluorimeter (Research and Development mission for king scallop aquaculture)

A DEDICATED OCEAN RESEARCH FLEET



© Ifremer/RBE/Laboratoire de Biologie halieutique

▲
The oceanographic launch Haliotis with the research vessel Pourquoi pas? in the background during the "Tonnerres de Brest" 2012 event

▲
The last sea voyage of RV Thalassa 1



© Ifremer/S. Lesbats

Major facilities serving ocean research

Ifremer acts as a resource agency in ensuring the mission of managing and maintaining a high level of quality for a significant part of the French offshore and inshore fleet, as well as underwater equipment and vehicles.

This fleet is used to perform scientific research and observations in the fields of marine geosciences, physical and biological oceanography, biogeochemistry, ocean chemistry, fisheries science and marine biodiversity. It also fulfils the requirements for monitoring, expert assessments on behalf of the State or technology transfers for industrial partners, making it possible to address topics such as the coastal environment, mineral, energy and petrographic resources and to appraise seismic or volcanic hazards.

Over many years, Ifremer has developed profitable forms of cooperation, within the framework of interministerial think tanks, to utilise certain major seagoing facilities (RV *Pourquoi pas?* and RV *Beautemps-Beaupré*) with the French Navy and SHOM.

However, although Ifremer is the shipowner and manages most of the oceanographic fleet on behalf of the French scientific community, it is not the only organisation to hold such means. IPEV, IRD, CNRS and Irstea also operate seagoing facilities.

Since December 2008, the French ocean research fleet has been identified by the Ministry of research and high education in the French roadmap for large-scale research infrastructures (LSRI). At the request of the supervisory authorities, the four main fleet operators created a joint service unit for the French oceanographic fleet, called the UMS FOF, in 2011 to optimise fleet management.

The consolidation of this UMS French oceanographic fleet (UMS FOF) and the exceptional schedule for Ifremer's seagoing facilities, especially offshore vessels, which was the best in ten years, marked the year 2012.



UMS: a coordination structure coming of age

UMS FOF CONSOLIDATION

Creating the UMS means that use of the fleet can no longer be approached from Ifremer's point of view alone. However, each of the operators remains subject to the authority of their respective board of directors, who have the final word on validating the budgetary decisions ensuing from choices made by the UMS.

Amongst other missions, the UMS has the remit to draw up the integrated scheduling for the fleet and coordinate the fleet development plan.

2012 was a good year for the UMS partners to demonstrate their ability to share and pool scheduling and resources, as well as to draw up a long-term renewal strategy by considering the fleet now as a coherent whole.

In spite of different management methods (technical operator), the scheduling of the entire ocean research fleet was done in a concerted

manner during the 2011 operating year and was carried out over a complete operating year in 2012.

The procedures for fleet access, which had been harmonised in 2011 to make them simpler and reduce the tasks of chief scientists, are now in effect for the new call for tender.

The two national assessment commissions (CNFH and CNFC) took account of this new UMS governance scheme. They maintained a highly positive dialogue with the operators in their role devoted exclusively to evaluating cruise requests - an essential step to gain access to the vessels.

The scientific consultation entity for the UMS strategic and scientific fleet guidance committee (COSS) enlightened the operators about major scientific trends for the future, through its opinions and independently conducted studies.

THE FLEET DEVELOPMENT PLAN (PEF)

In 2012, Ifremer chaired the UMS and encouraged joint reflection by the three other LSRI operators, as well as drafting a shared, long-term strategy to keep the fleet at a high level of performance.

In February 2012, the UMS submitted the first document on renewal of the fleet to the Ministry of research, entitled "*Feuille de route des investissements flotte à l'horizon 2021*" (Fleet investment road map for 2021). It was based on the inventory made of requirements by the strategic and technical committee for French offshore and inshore fleets (CSTF) in 2010.

In April, the ministry and the UMS steering committee requested that this first draft be reviewed with the perspective of the multi-annual 2013-2016 budget and broken down into three alternative scenarios which are financially more realistic in the light of an increasingly tight national budget framework.

After discussion within COSS, in July 2012, the FOF operating organisations sent the Ministry of research a consensual plan for the fleet's development, using a single scenario. It consisted in building one 50-m regional research vessel intended to replace RV *Le Suroît* (with geoscience, physical oceanography, fisheries science and lightweight vehicle deployment capabilities), transforming RV *Thalassa* to enlarge its scope for scientific missions and building one 35-m inshore vessel to replace those in service in the English Channel-Atlantic area (RV *Gwen Drez* and RV *Thalia*). The plan will continue to be examined in 2013 with the General directorate for research and innovation (DGRI).

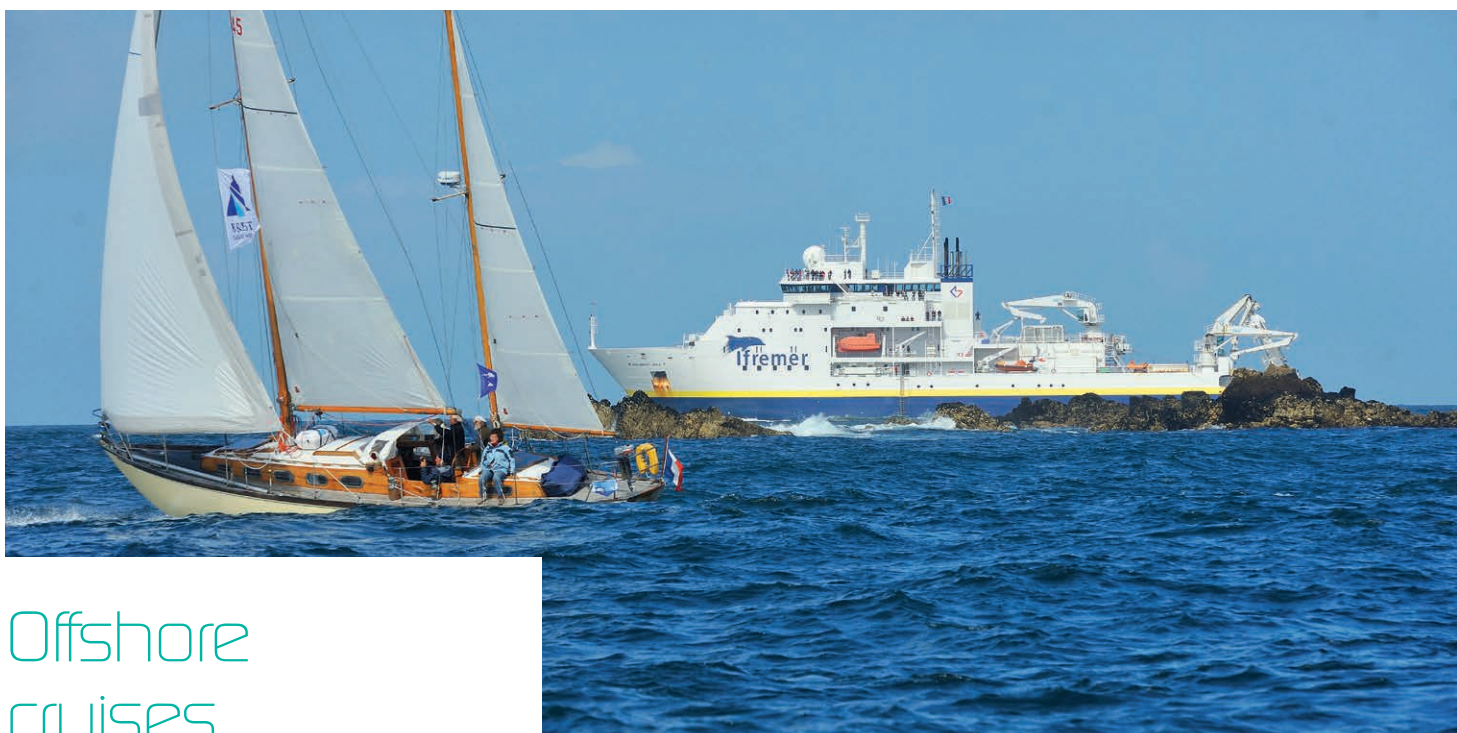
IFREMER FLEET SCHEDULE

There had been a clear improvement for the deployment of fleet resources in the financial year 2011 with 742 days of scientific missions. 2012 simply developed this further, with 794 mission days, reaching a level of activity which has been unmatched since 2000. This outstanding outcome for 2012 was secured thanks to detailed and accurate scheduling which required regular review and modification of cruise dates with the chief scientists in order to optimise the fleet and its facilities by limiting transits without piggybacking and through favourable financing decisions made within Ifremer itself.

Thus, in 2012, the scheduling carried out made it possible for the French blue water fleet to be present again "on every ocean" as well as providing a Pacific-zone presence, as requested by the national assessment authorities and the relevant ministries reported to.

This means that the trend set by the four-year contract for 2009-2012, envisaging a rise from the previous four-year contract taken in its last year of performance in 2008, was achieved. It was complied with whilst fulfilling not only the missions of public service and scientific cruises based on calls for proposals, but also the requests from public-private partnerships which are strongly recommended by the Ministry of research.

© Ifremer/S. Lesbats



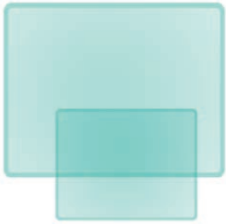
Offshore cruises

RV *Pourquoi pas?* and RV *L'Atalante* contributed quite greatly to this result. RV *Thalassa* proved it was possible to reorient its activity, which was exclusively that of fisheries science until now, for stock assessments for France and Spain. These missions kept it in the Bay of Biscay. The lower demand by the IEO institute in Spain, whose activity was cutback for national budgetary reasons, thus made it possible to continue the move towards redeployment, with *Victor 6000* being

implemented by this vessel. RV *Le Suroît* received insufficient demand. Finally, Ifremer scheduled a scientific cruise for CNRS aboard the French Navy's research vessel *Beautemps-Beaupré*, having accumulated over several years the right of access to this vessel. Since it was working for several weeks in the Indian Ocean, this made it possible to "economise" a round trip transit by one of Ifremer's ships.

▲
The oceanographic vessel Pourquoi pas? in the company of classic and tall ships during the "Tonnerres de Brest" 2012 event

POURQUOI PAS?



Congolobe, co-directed by CNRS and Ifremer (12 December 2011 to 10 January 2012, Port Gentil), studied the ecosystems of terminal lobe (a special form of deposit by bottom currents) in the Congo River submarine canyon and the fate of the river material exported by this canyon, by exploring five sites at depths of 4,700-5,000 m with the ROV *Victor 6000*. The biological and geological structures there were visualised and highly accurate measurements and samples were taken.

Bivalve molluscs
and anemones



© Ifremer-Victor/Campagne Congolobe 2012

Egina, was directed by Ifremer (13 January, Port Gentil to 3 February, Abidjan), and studied geotechnics in the Gulf of Guinea in the context of an industrial partnership with the Total company. Since the vessel's working zone was located off the coast of Nigeria, in an area where acts of piracy occur frequently, the safety and security of the ship and the crews required that a request be filed with the French Navy staff to secure the assistance of a vessel protection detachment (VPD).

Mocosed was a SHOM mission with the university of Bordeaux taking part. It is designed to take hydrographic surveys and sediment samples (29 February to 19 March, Toulon) in the Mediterranean and Ionian Seas, in order to characterise the acoustic properties of the Mediterranean seabed. The Mocosed (French acronym for modelling of sedimentary layers) cruises thus made it possible to create models of regional geo-acoustic characteristics.

Sonmar (3 May, Brest to 12 May, Brest) performed technical trials on acoustic equipment in the framework of cooperation between the French Navy, the French MoD procurement agency (DGA) and the British Ministry of Defence.



© Ifremer/S. Lesbats

Ocean research vessel *Pourquoi pas?* with *RV Beautemps-Beaupré* in the background

Shoman-2012 (15 May, Brest to 17 July, Brest) was a SHOM mission in the North Atlantic on the contingent of days set out in the agreement between the State (Ministry of defence) and Ifremer related to the utilisation of *Pourquoi pas?* and *RV Beautemps-Beaupré*.

Magic (5 August, Fortaleza-Brazil to 21 September, Sao Luis), directed by Ifremer, involved an integrated study (kinematics, paleogeography, stratigraphy, structure, sediments and paleoclimate) of the Equatorial Atlantic Ocean in partnership with the universities of Lisbon and Rennes and those of Brazil in particular, in the framework of a research-industry partnership with the Brazilian oil group Petrobras.

Proteus Dune (7 October, Lisbon to 25 October, Lisbon), directed by SHOM, assessed the displacement of sedimentary structures. Samples were taken, moorings deployed and various measurements made using multibeam echosounders over the entire duration of the mission.

Ulysse (4 November, Heraklion to 25 November, Toulon) was a Franco-Greek, multi-channel seismics cruise devoted to the observation of active faults on the south-western segment of the Hellenic subduction zone (from the Peloponnese to Crete). Several large-scale earthquakes took place in past centuries on this segment. These deep-sea structures are still poorly known today.

Antares (28 November, Toulon to 2 December, Toulon) was an operation for maintenance of the subsea electro-optical cable with the ROV *Victor 6000* on the Antares site (IN2P3) to the south of Porquerolles island (Var).

L'ATALANTE

Equa/Atacames was an IRD mission which, following the transit leg from 1st to 12 January (Guayaquil), took place from 15 January to 19 February (Guayaquil). It analysed the deformation of emerged and submerged reefs on an active margin under the tectonic influence of subduction of a ridge. At the outcome of this mission, RV L'Atalante performed bathymetric surveys for SHOM during its leg in transit to Manzanillo.

Bionod (28 March, Manzanillo to 11 May, Suva-Fiji) is a European collaborative project with co-financing from *Bundesanstalt für Geowissenschaften* (Germany), to keep up the permits of pioneering investors from both countries (France and Germany) in their zones for polymetallic nodule prospection. This mission included a scientific strand designed to describe the abyssal fauna and its environment in the permit zones and to assess changes in the communities studied in 2004 during the Nodinaut cruise and in 2010 during the German Mahgan mission.

Mescal (French acronym for extreme environments: strategies for colonisation and adaptation in a hydrothermal environment) consisted in completing the previous Mescal cruise (April-May 2010) on the East Pacific Ridge. This mission (11 to 26 March, Manzanillo) for Pierre & Marie Curie university is one part in a series of Franco-American cruises which have been deployed in this zone since a volcanic eruption in 2006, to monitor its colonisation and environmental characteristics. The *Nautilie* submersible was deployed for ten dives in order to understand the relationships between organisms and habitat on the walls of the smoker chimneys. These species have evolving natures without any equivalent in the deep sea and an ability to colonise a habitat whose physical and chemical variability is extreme (the temperature frequently exceeds 100°C).

Futuna-4 (16 May, Suva, Fiji to 22 June, Nouméa), under the direction of Ifremer, pursued exploration and research on deep-sea hydrothermal activity and sulphide mineralisations in the French exclusive economic zone of Wallis & Futuna. Twenty dives with *Nautilie* and seventeen dives with one of the AUVs were made on the targets identified during Futuna-3. This cruise was part of a partnership with the Ministry of ecology, sus-

tainable development, transport and housing, the Agency for marine protected areas and French industrial partners (Areva, Eramet and Technip). This research-industry partnership also enables geological maps of mineralised zones to be produced and their economic potential assessed, in order to draw up a mining pilot project.



Pandora (27 June, Nouméa to 7 August, Nouméa) was an IRD mission, located between New Caledonia and Papua New Guinea, to describe surface and subsurface circulation combined with equatorial circulation and evaluate the transformation of bodies of water and their mixing. Moorings were deployed in straits to obtain the temporal variability of this circulation. It was possible to schedule this mission in the West Pacific thanks to RV L'Atalante's position in the zone due to the Futuna mission.

Shompol (22 August, Papeete to 31 August, Papeete), was a SHOM mission which established the precise bathymetry of Polynesia atolls at depths of less than 200 m, to be able to model the consequences of a tsunami or waves generated by tropical storms.

After a technical stop for engine maintenance in Santo Domingo harbour (11 October to 21 November), **Haiti-SIS** (23 November, Santo Domingo to 24 December Fort-de-France), for CNRS, consisted in characterising the North Caribbean transform zone overall around the area of Haiti and more specifically in the area surrounding the failure zone which occurred on the peninsula of Haiti on 12 January 2010.



THALASSA

IBTS-12 (13 January to 14 February, Brest) was a recurrent observation mission for Ifremer to calculate abundance indexes for each of the main commercial finfish species exploited in the North Sea. Knowledge about that status of fish stocks is a prerequisite for defining management measures. The analyses performed during these IBTS cruises inform the proposals which ICES (International Council for Exploitation of the Sea) working groups send to the European Union for the management of European Union fisheries.

Pelacus was an acoustic assessment mission (24 March, Brest to 22 April, Santander) for the Spanish oceanographic institute (IEO), which has conducted acoustic cruises each Spring since 1983 to assess sardine stocks using echo-integration on the coast of

northern Spain. Various biological studies were made on other species, as well as the inventory, distribution and behaviour of marine mammals and birds over the entire area covered.

Pelgas-12 was a recurrent Ifremer mission (25 April, Santander to 5 June, Brest) on acoustics and egg counts based on strategies and methods which remain identical for each cruise, in order to monitor the distribution and abundance of pelagic species fished in the Bay of Biscay. The mission is the French contribution to the international Globec (Global Ocean Ecosystem Dynamics) programme and is part of ICES studies in which France, Spain and Portugal are simultaneously taking part to cover the potential area in which small pelagics are present in spring, between Brest and Gibraltar. The cruise data are made available to all ICES working groups.

ICE-CTD (Icelandic Coral Ecosystems, Climate and Thermocline Depth Ocean) was a CEA mission (10 June, Brest to 7 July, Ponta Delgada) to study the development of coral reefs in three sectors of the North Atlantic which are characterised by variable environmental conditions (Rockall Basin, southern Iceland and the northern Azores with the Seldo seamount). In order

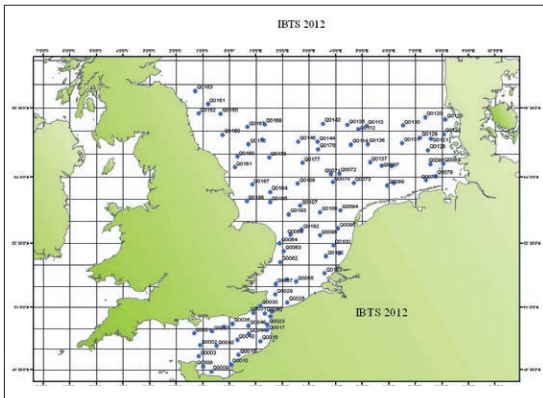
to observe deep-sea coral habitats, the possible impact of deep-sea fisheries, etc., the ROV *Victor 6000* was used for the first time aboard *RV Thalassa*, thus confirming its calling as a multi-disciplinary vessel.

MoMAR (10 July, Ponta Delgada to 25 July, Ponta Delgada) was co-directed by IPGP and Ifremer, with dives by *Victor 6000* to depths of 1,700 m to monitor a seafloor observatory in the Lucky Strike hydrothermal field. More specifically, its aim was to retrieve the instrumentation moored in 2011 and then redeploy it for another twelve months. The MoMAR project's objective is to characterise the evolution over time of various parameters (seismicity, deformation, volcanic activity, fluxes, temperature and composition of hydrothermal fluids, larval fluxes, micro-organism diversity, range of habitats, etc.).

Hydrobs-MoMar (Hydrophone Observatory on the MoMar area) was a cruise directed by the university of Brest (31 July, Ponta Delgada to 13 August, Las Palmas) for long-term monitoring of the seismicity in the MoMar zone on a regional scale and to establish links between this seismicity and active hydrothermal processes on MoMar sites. Here, the hydrophones deployed during the Hydrobs-MoMar cruise in 2009 were recovered and then redeployed for a two-year period.

Strasse (Sub-tropical Atlantic surface salinity extremum) was a CNRS mission (15 August, Las Palmas to 14 September, Ponta Delgada) to study the variability on salinity in the surface layers of the sub-tropical North Atlantic. This cruise was a component of the international Spurs (Salinity Processes in the Upper-ocean Regional Studies) project, aiming to collect data to study the air-sea interface in order to assess the balance of ocean salinity and evaporation.

Evhoe 12 (18 October, Lorient, 2 December, Brest): this Ifremer mission took place in the Bay of Biscay and in the Celtic Sea. It was the twenty-third cruise and included 160 standardised trawl hauls in daytime along with the associated hydrological profiles (temperature, salinity). Occasional pelagic trawling was performed to observe the fauna and sediment samples were taken. Bathymetric profiles were recorded along with the trawl hauls.



Map of work carried out on 10 February 2012



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LE SUROÏT

Upsen was an IRD mission (6 March, Dakar to 18 March, Dakar) aiming to locate and describe the physical structure of the upwelling on part of the southern coast of Senegal. Several drifting devices or vehicles, a glider and Argos profiling floats, were deployed along the leg.

Pirata-22 is a recurrent operational oceanography mission conducted by teams from IRD (19 March Dakar to 2 May, Abidjan). In the framework of the international Clivar (Climate Variability and predictability) programme, it studies ocean-atmosphere interactions in the tropical Atlantic and their role in regional climate variability. This mission provides an example of simplified access and optimised scheduling in the UMS framework, since it is usually performed aboard IRD vessels.

Moose is a mission by the university of the Mediterranean (23 July to 9 August, Toulon) designed for the observation and monitoring of the long-term evolution (over more than ten years) of the North-Western Mediterranean Sea. Two zones were identified, i.e.: the central and western part of the Ligurian Sea, a homogeneous system which is isolated from direct coastal inflows of rivers and thus with predominantly atmospheric inputs and the

central area of the Gulf of Lion, where winter cooling leads to vertical mixing over 2,000 m. An array of mooring lines was deployed on these sites, equipped with a large number of sen-



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sors, current meters, probes and particle traps. Maintenance work must be performed on these moorings at least once a year, and for some of them, every six months, especially to ensure that their calibration remains consistent.

▲
Ocean research vessel Le Suroît quayside at Ifremer's Mediterranean centre

BEAUTEMPS-BEAUPRÉ

Owen-Marge Aden was a mission for Pierre & Marie university and CNRS with RV *Beautemps-Beaupré*. This naval vessel, which is very similar in its architecture to RV *Thalassa*, is managed by the French Navy. It was co-financed for 5% by Ifremer, giving the Institute the right of use for ten days¹ each year. Out of this quota of days reserved for the scientific community through the agreement signed in May 2003 by the Ministry of defence (French Navy) and Ifremer, RV *Beautemps-Beaupré* made this research cruise (1st March to 30 March, Salalah, Sultanate of Oman) which carried on from the study begun in 2009 to map the boundary of active plate between Arabia and India called the Owen fracture zone (North-East Indian Ocean). The Gulf of Aden is one of the study sites of the coordinated French margin project Actions-Marges, aiming to identify the structures (opening kinematics, modes of segmentation and surface and deep structure of the margins between fracture zones) in an unknown zone where the splitting of the Arabo-African occurred 18 million years ago, reaching Afar, over a distance of more than 1,200 km.

¹ To make optimal use of these days at sea, Ifremer chose to capitalise these drawing rights over two or three years and propose a more substantial cruise for the scientific community.

INSHORE CRUISES

Three research vessels (*L'Europe*, *Gwen Drez* and *Thalia*) joined by the oceanographic launch *Haliotis*, make up Ifremer's inshore coastal fleet. Their activity ranges over the three French sea-fronts, with RV *L'Europe* being dedicated to missions in the Mediterranean. *L'Europe* was built in 1993 and is the most recent of the three inshore vessels, with the ability to sail all year round, whereas the other two vessels, like *Haliotis*, are not used during the winter period.

Each application for a scientific mission is assessed by a national commission called the CNFC, which was created by merging the two inter-regional English Channel-Atlantic and Mediterranean committees. Taking the principle of scientific excellence as its basis, the CNFC es-

The themes that Ifremer's coastal fleet is called to work on are varied, but its activity remains marked by its primary calling to serve fisheries research: for living resources with stock assessments, king scallops in particular, and technological trials on increasingly selective fishing gear in order to limit the catches of certain species. Over the past twenty years, coastal environment or observation missions have developed, in order to assess chemical contamination and its toxic effects on the marine environment and to comply with national or European regulations, particularly with the Water Framework Directive (WFD) which requires that "good environmental and chemical status" of water bodies be reached in 2015 for coastal and transitional waters. Technology trials also take place each year aboard these vessels.

This was once again the case this year, with trials to test the technical and operational performances of AUVs at seabed depths between 300 and 2,500 m. And finally, private-sector enterprises or consultancies solicit Ifremer to charter them.

The creation of the UMS in 2011 made it possible to increase coordination efforts with CNRS-INSU in scheduling the inshore fleet and more especially, to make

better use of the CNRS's new generation station vessels for some utilisations, which means that a larger vessel need not be mobilised for missions that are short or near the coast.

Thalia ►



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timates the request for access to these vessels, in accordance with very similar rules to those in effect for the offshore fleet.

During 2012, the four vessels logged 679 days at sea, which is down from the previous year when they had recorded 715 days of activity.



Eurofleets: a project aiming for European fleet integration

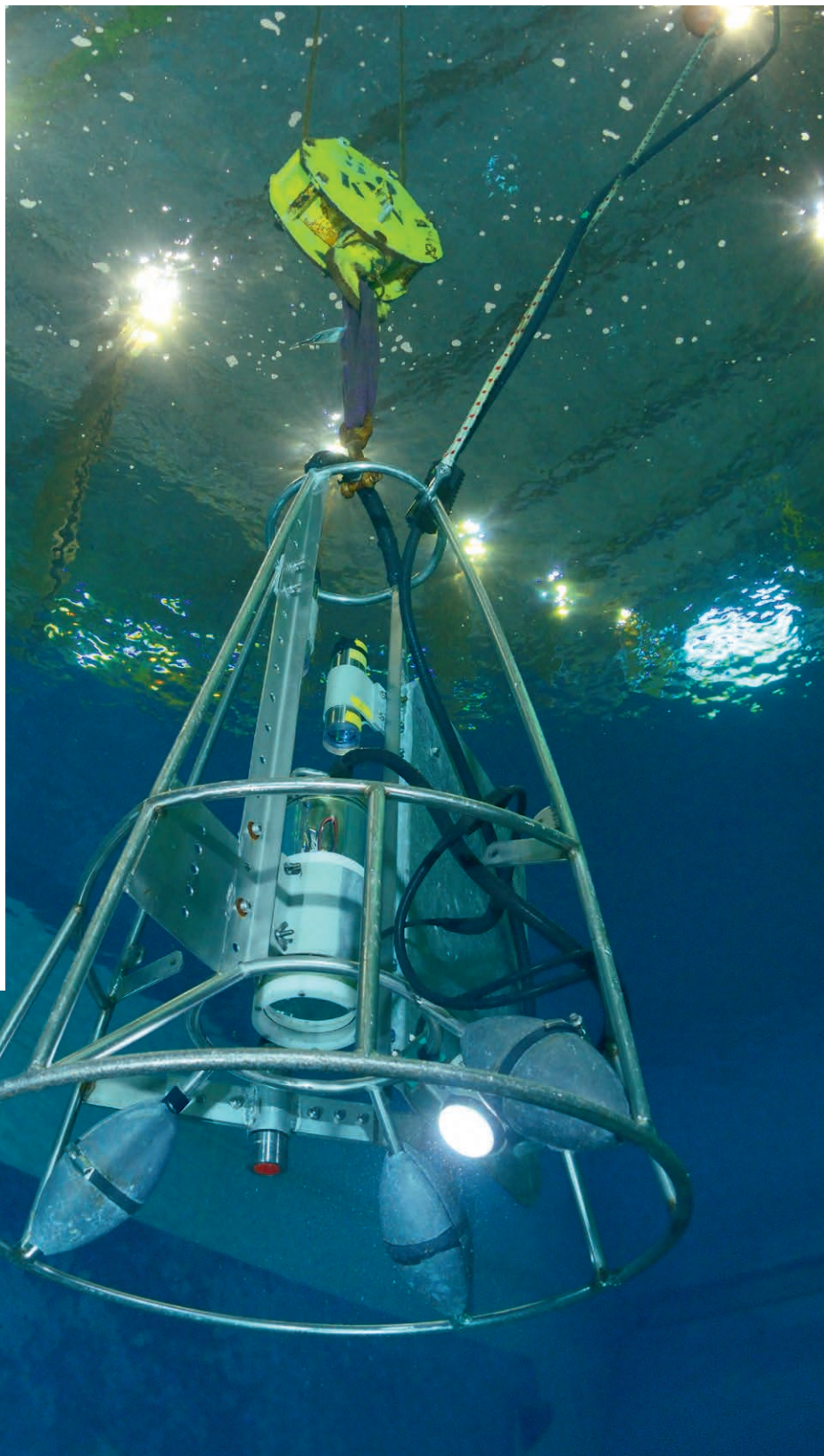
This European project brings together twenty-four partners from sixteen European countries. Ifremer is the coordinator. The main objective is to promote the integration of European research fleets. It is financed by the European Union to the amount of 7.2 million euros in the context of the FP7 R&D (framework programme for research and development).

The project's fourth general assembly meeting was held in Potsdam (Germany), at the invitation of AWI (*Alfred Wegener Institut für Polar und Meeresforschung*), from 22 to 25 October 2012.

The amendment to the contract for the grouping, required to finance the sea cruises effectively planned following the three calls for tender, was notified by the European Commission in late November 2012.

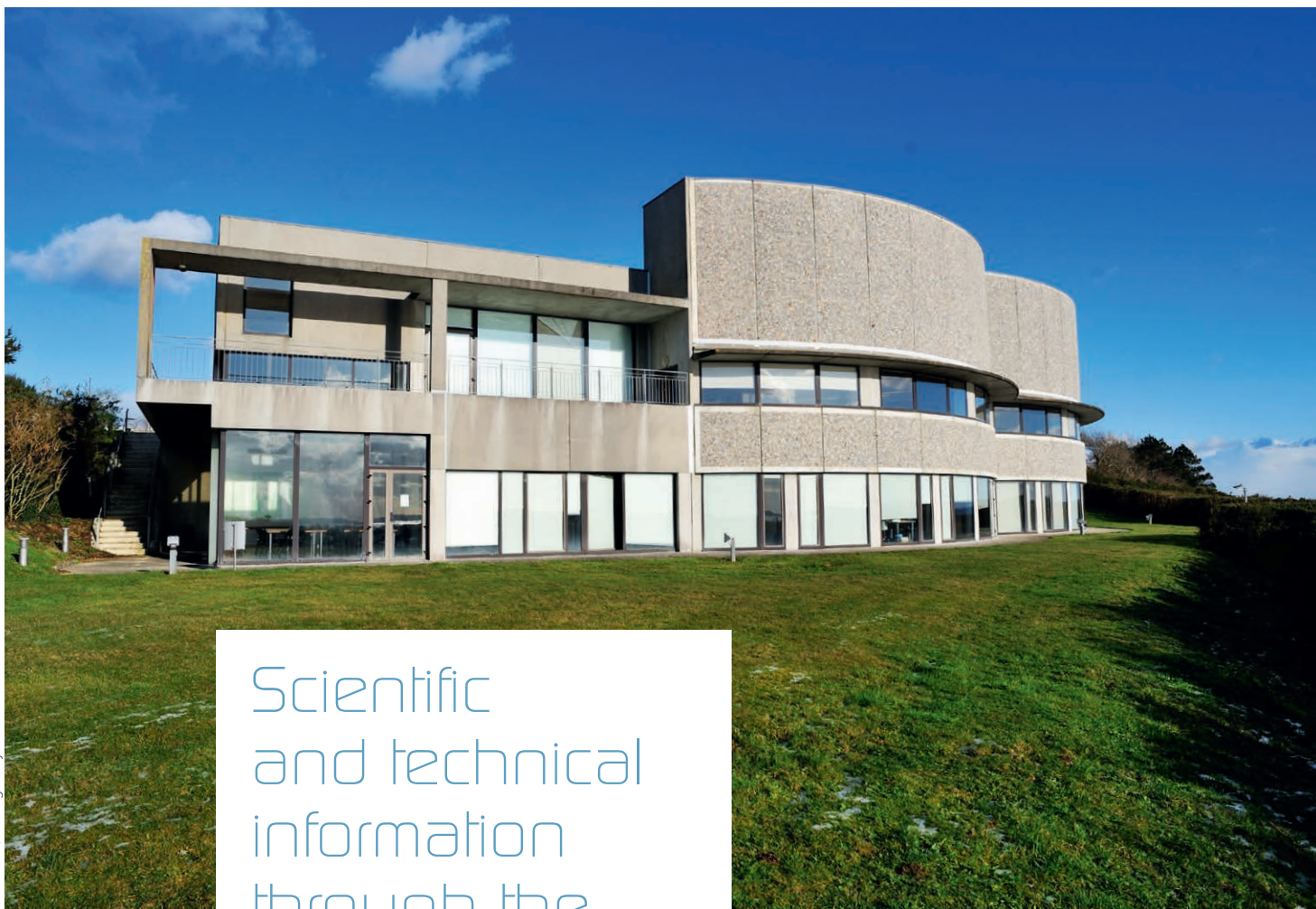
Sixteen of the eighteen scheduled cruises were successfully achieved aboard fourteen European research vessels, including *L'Atalante* and *Haliotis* for Ifremer. The last two cruises are slated for June 2013 aboard RV *Marion Dufresne* (IPEV vessel which is part of UMS FOF) for coring operations.

By the end of the Eurofleets project, nearly two hundred European and international scientists will have had access to the most modern European research vessels, from the Black Sea to the Atlantic Ocean.



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TECHNOLOGY TRANSFERS TO SOCIETY



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Scientific and technical information through the La Pérouse library

▲
La Pérouse library,
Brest

The BLP library strengthened the broadening of its activities and its audiences, begun thanks to its closer connection with the Institute's Communications management.

- The physical library itself now has a staff of five to receive users, provide training and hold outreach events, to the benefit of other activities devoted to scientific and technical information.

- The virtual library is ramping up, with the BLP website receiving as many virtual visits as the number of visits to the building (18,000 each).
- The electronic library takes the form of on-line journals and databases. It gives priority, first and foremost, to Ifremer's scientific community. Over 200,000 downloads in 2012 amply demonstrate the interest for our teams.
- Finally, new, high value-added services offered by the BLP are now clearly acknowledged as being an integral part of the Institution's know-how, i.e.: bibliometrics, bibliographic intelligence and the Archimer open repository.

BIBLIOMETRIC DATA FOR 2012

The number of publications increased in 2012, with 438 compared to the previous two years (respectively 416 and 411).

Ifremer has maintained its position, as was defined for the four-year contract indicator, with respect to scientific research in the oceanographic sector, on national, European and international levels alike.

Most of the publications are related to the four-year contract's Objective 8 on Fisheries and sustainable aquaculture.

The number of publications corresponding to two other objectives, i.e. on Ocean circulation, global change and Knowledge about tropical environments, was doubled.

Four-hundred-fourteen publications, making up 94.5% of those produced in 2012, were jointly authored.

A slight decrease was noted in terms of European partnerships, whereas national and international partnership actions outside of Europe grew significantly.

Teams from CNRS and those from French universities remain our prime partners. Partnerships with European universities are relatively stable, whilst those with French and international universities outside of Europe are constantly increasing.

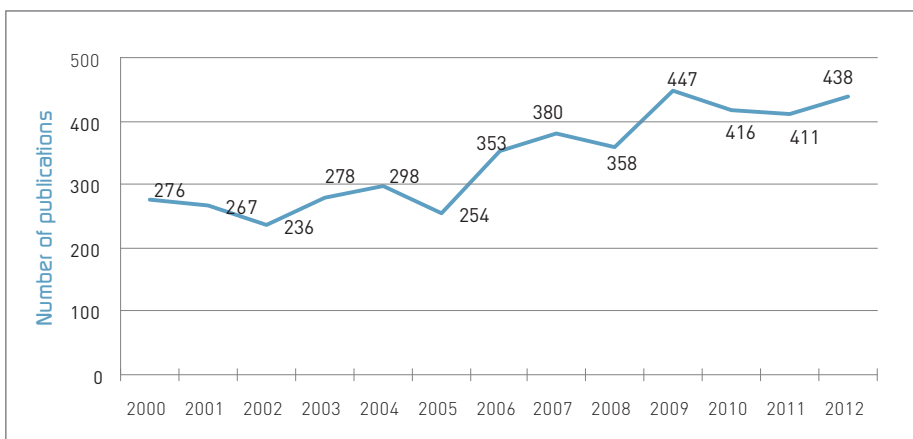
A significant rise was seen in the number of co-publications with CLS (*Collecte Location Satellites*), going from five in 2011 to fourteen in 2012, as well as with Woods Hole Oceanographic Institution, i.e. four in 2011 and ten in 2012.

The visibility of Ifremer publications grew, with the three-year citation index continuing to show a rising curve from 2005 (1.42) to 2012 (2.28).

Publications

PRODUCTION

The graph below shows the annual trend in the number of Ifremer publications.



The peak reached in 2009 can most likely be explained by the publishing of two special issues on fisheries in the *Aquatic Living Resources* journal, one of which was devoted to research by Ifremer, and an issue of *Deep Sea Research* on the theme of "Deep sea benthic ecosystems of the equatorial African margin", in which fifteen articles were written by Ifremer research scientists.

The breakdown of 2012 publications by theme (ranked by the four-year contract objectives) is as follows: 103 dealt with ocean circulation and global change; 63 with biodiversity; 54 with enhancing value and transfers of biological resources; 154 with fisheries and aquaculture; 66 with mineral and energy resources; 88 with global monitoring; 38 with environmental forecasting in the coastal environment and 31 with tropical environments (source: Archimer).



COLLABORATIVE WORK

In 2012, 94.5% of articles were co-published with other organisations, hailing from fifty different countries. The following list indicates the number of corresponding joint publications, in descending order: United States (55), Spain (42), Germany (37), United Kingdom (36), Canada (24), Italy and Norway (21), Australia and the Netherlands (17), Portugal (13), Belgium, Russia and Mexico (12), Ireland and South Africa (11), Denmark and Greece (10), Japan (9), Turkey (8), Sweden (7), New Zealand (6), Switzerland, Ukraine and Brazil (5), Finland, Iceland, Poland, Taiwan and Tunisia (3), Algeria, Chile, China, Israel, Czech Republic and Lithuania (2), Austria, Bulgaria, Belorussia, Djibouti, Kuwait, Macedonia, Malta, Peru, the Philippines, Romania, Serbia, the Seychelles, South Korea, Vietnam and Yemen (1).

BIBLIOMETRICS FOR CRUISES

A link between Archimer and research cruises

In 2012, the technical connection was established between Archimer and the "Oceanographic cruises" database which references the cruises made by vessels in the Ifremer, IRD, CNRS and IPEV fleet. This project should lead to all publications using data from UMS research cruises being filed in Archimer. Ultimately, each of these documents will be associated with one or several cruise sheets in the Oceanographic cruises database. This development should thus provide:

- greater mutual visibility for Archimer and for the Oceanographic cruises site using a cross-linking system which will be implemented between the two systems,

The identification of 2012 publications produced from ocean research cruises will begin in early 2013. Several initiatives will be simultaneously conducted in an attempt to identify as many publications as possible:

- searching for the names of fleet vessels within the full text of publications,
- automated cruises and e-mails sent to Ifremer scientists and chief scientists for the cruises.

Bibliometrics also means:

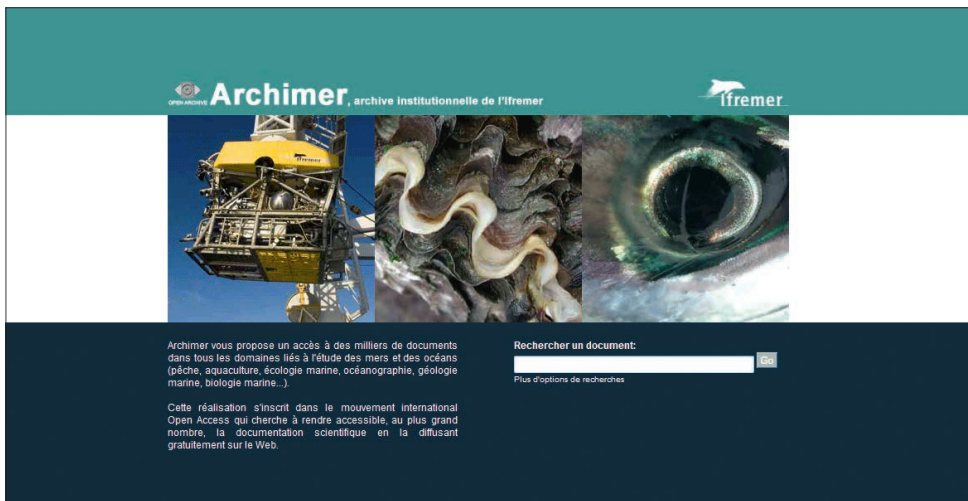
Optimising the visibility of Ifremer studies in the Web of Science or WOS (literature monitoring, requests for corrections and reminders to scientists of rules for writing affiliations). Over a hundred corrections related to address writing are submitted each year to the WOS.

Producing the bibliometric indicators of the four-year contract (publications) in the framework of Ifremer's annual report: production indicators, partnership indicators and visibility indicators.

Drafting the annual production assessment for the 2011 publication year for Ifremer's work (publications and opinions/expert reports)

Working in consultation with OST to supply indicators in the LOLF French finance act framework:

- automatic removal of doublets for publications based on data from several cruises,
- access to Archimer's search and analysis functions to study the qualitative and quantitative evolution of publications from ocean research cruises.
- automated identification from Archimer of Ifremer 2011 publications in the OST database
- listing in Archimer of baseline state documents for "characteristics and environmental status".
- processing of "opinion and expert reports" data for 2011 and 2012 taken from Archimer.



LITERATURE MONITORING

In 2012, there were new special requests, from both inside and outside of Ifremer, for this new sector. The monitoring was done based on multiple resources (A-rank publications, grey literature, patent-type references) and utilising innovative, dedicated tools for surveillance, mapping, information searches on the web and analyses.

The growing need for cross-compared information around this monitoring as well as the wide

range of themes require a dedicated tool so that all the monitored resources can be centralised and efficiency is improved.

Developments and collaborative work based on this service will continue, to support the research orientations and European projects which Ifremer researchers are part of, as well as for economic partners, in the context of specific service provision.

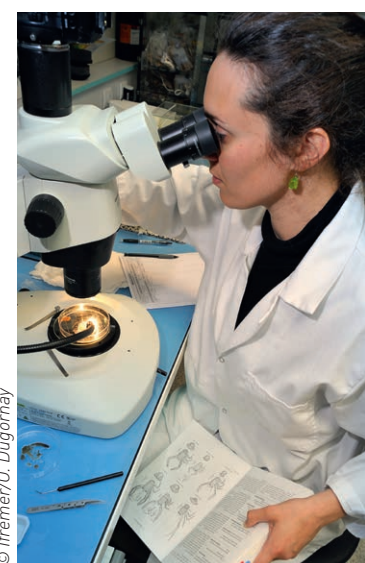
Fueling the dialogue between science and society

Science is part of our daily lives, not just through the technologies which are now available to us, but also and above all because it is at the very core of our societal stakes: health, energy, food, environment, economy, digital technologies, and so on.

Scientific, technical and industrial culture, in the many ways that it is disseminated, ranging from outreach events, exhibitions, films, conferences, workshops and so on, provides leverage to make the public, or rather various types of

public, aware of the nature and meaning of our results. This can help them understand and take ownership of these results, as well as providing true added value in awakening scientific callings in younger generations.

It has become essential for scientists to speak out in order to explain phenomena, impacts and solutions, and not just in crisis situations, and to strengthen the ties of trust and confidence that society has for scientific progress and expertise.



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IFREMER PERSONNEL DIRECTORY

In March 2012, Ifremer opened a staff directory on its Internet portal which is interconnected with Archimer. Administrative information is collected automatically from Ifremer's LDAP server. The individuals concerned can use a website to hide part of the administrative information concerning them (e.g., phone number) and if desired, to complete a fact sheet, filling a series of predefined sections (e.g., duties, fields of research, teaching activities, etc.). The "bibliography" sections of the profiles are drawn up automatically from the documents filed in Archimer.

The project has been massively successful with Ifremer scientists, as well as having a considerable impact on submissions to the Archimer repository. Indeed, many scientists have filed all of the documents they have produced in Archimer, so that their full bibliography is present in the Directory.

Following the launch of this first version, BLP has begun to develop a new Intranet and Internet version of the directories for teams and units. In these directories, each entity (author, department, unit, team and site) will have a bibliography which is automatically produced using Archimer. This new version is slated to be launched in February 2013.

Other developments, which will highlight the publications produced following oceanographic cruises, are underway.



Cultivating talents

THE IFREMER TROPHIES

For the fourth year running, Ifremer organised the Ifremer Trophies, aiming to hail scientific excellence and its employees' collective sense of spirit. The Trophies are also an opportunity to make Ifremer's work better known and to present its teams, achievements and individual or collective research from a new perspective. The ceremony was held on Monday 19 November at the *Musée des Arts et Métiers* in Paris, where Ifremer was a partner in the exhibition called "*Et l'Homme créa... le robot*" (And man created...the robot) on show until 3 March 2013.

The 2012 awards were as follows:

The Industrial partnership trophy was awarded to the team at the Ifremer Palavas-les-Flots station for their participation in the Vasco (valorisation

The Scientific achievement trophy was awarded to Philippe CURY and Sylvain BONHOMMEAU for the scientific article "One third for the birds" they published in *Science* in December 2011.

The Scientific, technical or technological innovation trophy rewards an innovation which could give rise to a patent being filed or the development of new know-how. The scientific or technological scope, the innovation's potential for development, the possibility of intellectual and industrial property, the teams mobilised, the target markets identified and the vision of possible applications are the main criteria for selection.

It was awarded to the Caliste system which is truly a "floating recovery cage" for autonomous vehicles developed in the "*Systèmes sous-marins*" (subsea systems) unit at the Ifremer Mediterranean centre.

In 2012, Ifremer also gave a "special prize" to reward the person or team whose dossier presented was considered to be the most symbolic in terms of scientific, partnership-related, economic and democratic added value. This Special prize was awarded to the dossier called "*Ressources minérales dans les grands fonds océaniques*" (Deep sea-

floor mineral resources), including the national Remima foresight study on mineral resources coordinated by Ifremer, and for field actions financed in the framework of a public-private partnership, *i.e.*, the Futuna project. Between 2010 and 2012, three cruises were conducted at sea in order to find mineralised indicators in the French exclusive economic zone of Wallis & Futuna.

The Trophy for a PhD thesis was awarded to Caroline Joubert for her study of pearl oysters. Caroline Joubert did her thesis in the Pearl



© Ifremer/M. Gouillou

▲ The 2012 Trophies winners

and storage of CO₂) project, whose objective is to reduce and find uses for CO₂ emitted into the atmosphere, in the Fos Lavéra Gardanne area (Bouches du Rhône).

The Innovation trophy went to the Ifremer teams in Seyne-sur-Mer for the filing of two patents on the Caliste technology (recovery system for marine or underwater vehicles), which were then transferred to an industrial firm in the sector in the form of a licence to manufacture and commercialise the system.



collaboration with the Ministry of ecology, sustainable development and energy and the Agency for marine protected areas, and is jointly responsible for the European Stages project.

farming ecosystems laboratory at the Ifremer Pacific centre, under the supervision of Yannick GUEGUEN and Marcel LE PENNEC.

The Scientific career prize was given to évelyne Bachère, who has been a research scientist at Ifremer since 1982. She is currently working in the joint research unit UMR marine coastal system ecology (CNRS-IRD-UM2-Ifremer-UM1) at the university of Montpellier II.

The jury also conferred a special award on Patrick CAMUS, for his rich career and the wide range of actions he has led for our Institute. He is currently steering the project for Implementation of the Marine Strategy Framework Directive in

The Scientific mediation prizes rewards an operation (publication, conference, exhibition, outreach event, etc.) performed by a team, between the 1st September and 30 September 2012. The principal selection criteria are general interest, originality, quality and scope of the action for mediation, its relevance with respect to Ifremer's strategic issues, its clarity, readability and effectiveness for an uninitiated lay audience, and lastly, its impact and contribution to the dissemination of science.

This Trophy was presented to the team who organised the Information day for exchanges on excess mortality of Pacific oyster spat.

PICTURES AT IFREMER

The ever-growing number of structuring partnerships, such as co-producing documentaries or films for the cinema, also contributes to the reputation of Ifremer and its work, as well as to an educational approach that everyone can understand about the challenges for the marine environment.

Enriching the selection of Ifremer's on-line photo collection means there is now public access to nearly 3,000 photos (on Internet) which are representative of the 54,500 photos in our archives.

In addition, nearly seventy reports, photos and videos, the making of sixty-eight films presenting us and thirty-four video clips were spotlighted via Ifremer's web TV, which can be accessed via the Institute's web portal.

With its 720 images supplied in 2012, sixty agreements for filming and reportage with Ifremer's scientists on our various sites, our Institutes activities are relayed via numerous media (magazines, television, and so on).





EXHIBITION «ET L'HOMME CRÉA... LE ROBOT» AT MUSÉE DES ARTS ET MÉTIERS

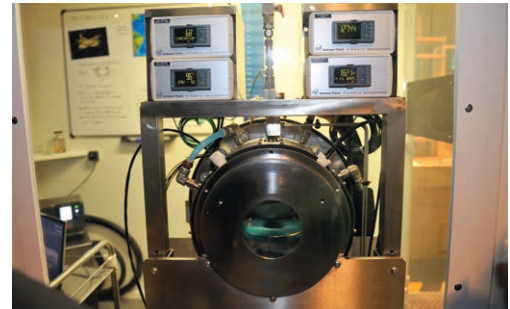
The museum of the Conservatoire national des Arts et Métiers of Paris presented from 30 October 2012 to 3 March 2013 a temporary exhibition on robotics entitled "Et l'homme créa le robot" (And man created...the robot), in partnership with Ifremer and more particularly the subsea systems unit base in La Seyne.



A large number of actions have been conducted for CCSTIs, museums and aquariums, ranging from supplying images to setting up exhibitions-cum-conferences with our partners, not to mention supplying our scientific expertise in the drawing up of projects. These actions provide better visibility for the Institute's activities and know-how to the broadest possible public. Here are a few of the forms this took:

- Océanopolis Brest: permanent exhibition called "Abyssbox" (starting in spring 2012)

- Universciences (Paris): temporary exhibition called "Océan, climat et nous" (Ocean, climate and us) with Ifremer as main partner (April 2011-June 2012)
- Biarritz océan: «*Prestige dix ans après*» (*Prestige, 10 years later*) (November 2012-February 2013).



© Ifremer/S. Lesbats

- ▲ Inauguration of the "Abyssbox, life under pressure" permanent exhibition at Océanopolis (Brest)
Display of pressurized chambers with live specimens of shrimp from deep seafloors taken during ocean research cruises

Ifremer photo exhibitions

Travelling photo exhibitions which are now part of Ifremer's on-line offerings contribute to awareness about our Institute known and better knowledge about its research activities. They are increasingly valued by municipalities and local associations all over France, who see them as a high quality approach to better understand the sea and its stakes for science and society, and this includes, of course, locations which are not on the coast.

BIOFILMS, WHEN MICROBES GET ORGANISED

Biofilms are everywhere! In our surroundings, in hospitals, our gardens, our bathrooms and our fridges... they're all around us, but also inside us. Living on a daily basis with biofilms means numerous beneficial effects, but they can also be a hazard for humans, our health and even our buildings. Where are their favourite places? In natural habitats, food production lines and water distribution systems. But let's stay optimistic, because biotechnology can also control biofilms (water treatment, fermentation, turning wine to vinegar). Catherine Dreanno, from the Interfaces and sensors service at Ifremer's Brittany centre is one of the authors.

Editions Quae, Carnets de sciences Collection 16.5 x 22 cm, 200 pages, 24 euros.

EDITIONS QUÆ ENRICH THEIR OFFER

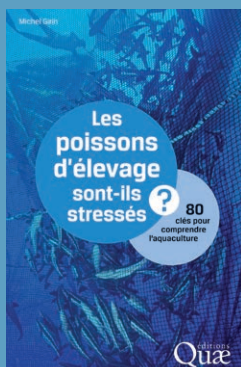
Editions Quæ is part of the drive for diversification of our means, to ensure that we can propose relevant and competitive content, in print and on line, for a very narrow scientific publishing market, particularly based on:

- developing a new editorial strategy, moving from “spontaneous manuscripts” to “ordering of manuscripts” on topical themes in order to highlight the Institute’s research activities and renown;
- diversifying the channels of distribution and dissemination to boost sales in general and more especially, those of the English versions of our books, now available on the Springer platform;
- encouraging researchers and those who will soon retire to leave a trace of their experience and know-how;
- stepping up the digital publishing process, by producing enriched publications (e-pub), available on platforms and which can be read on Kindle-type e-readers, e-phone, e-pad, and other such terminals.

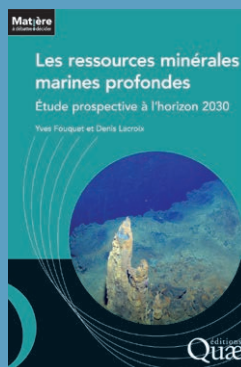
In 2012, Ifremer published ten books in the *Clés pour comprendre* (Keys to understanding) Quæ’s flagship collection, *Matière à débattre et décider* (Matter for debate and decision) and *Guide pratique Nature* (Practical nature guides) as well as two books not in collection and two map portfolios, one of them with an accompanying booklet.



“Clés pour comprendre” (Keys to understanding) collection



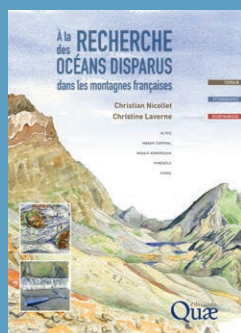
“Matière à débattre et décider” (Matter for debate and decision) collection



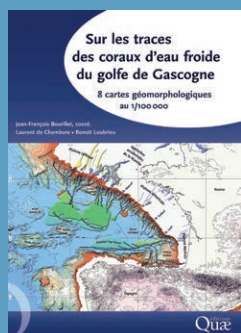
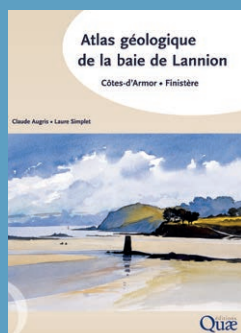
“Guide pratique Nature” (Practical nature guides) collection



Books not in collections:



Atlases and maps:



SEA FOR SOCIETY, SEA YOUR FUTURE

The project was submitted in early 2011 and positively evaluated by the European Commission in May 2011. "Sea for society, Sea your future" was then officially launched on 8 June 2012 on World Oceans Day.

It is part of the Framework Programme 7 on "Science in Society", focusing on mobilisation

and mutual learning actions in "Action plans on societal Challenges" and is falls more specifically under the challenge 3 "Marine resources, inland activities and

sustainable development " of the call for projects SiS-2011-1.0-1.

Coordinated by Nausicaa, the Sea for Society (SFS) project has twenty-one partners from eleven countries representing marine research institutes, funding agencies, Science museums and aquariums, NGOs or Civil Society Organisations, higher education institutions and institutes, business networks and others. Based mostly on open dialogue and joint actions, SFS will mobilise research scientists and stakeholders on land and sea, citizens and individuals from civil society and local authorities as well as young people, in a mutual learning process which will lead to new solutions

proposed to meet various challenges, and which will enable European citizens to sustainably manage the services rendered by marine ecosystems. The purpose of Sea for Society is also to succeed in defining a new concept - that of a "Blue Society" - as well as aiming to improve governance in the research conducted on seas and oceans.

The scientific information, communications, mediation and institutional relations division, supporting the partnership on behalf of Ifremer, enlisted three scientists (Y. Hénocque, Gilles Bocquéné and François Galgani) to work in various phases of the project.

In the context of its scientific mediation activities, DISCOMRI associates the Institute's teams of scientists in the operations set up by associations and groups of local partners.

It helps organise outreach events where technicians, researchers and engineers from Ifremer, all of them volunteers, go and meet different audiences directly to discuss various subjects.

For many years now, Ifremer has organised conference cycles of lectures for the general public. Their themes illustrate Ifremer's research work and respond to people's need for knowledge in order to understand how science can also answer societal questions.



sea for
SOCIETY • EU
TOWARDS A BLUE SOCIETY

PARTICIPATORY SCIENCE

Ifremer laid the foundations during the year 2012 for a participatory science project originally called Domino (French acronym for marine environment observation data: naturalist information and tools) and since renamed Phénomèr. The scientific objective for this action is to make microalgal biodiversity better known, through more extensive monitoring and sampling coverage thanks to help from associations, civil society organisations, schools and the general public. The monitoring will include, in particular, remarkable blooms, e.g. coloured waters. An experimental phase will be implemented in 2013.

Another example of participatory sciences is the partnership with the sailor Philippe Poupon, on Fleur australe, to analyse marine litter in the zones his sailing boat will cross, thanks to a system of mini-video cameras financed by a grant from GDF-Suez. The data collected will enable François Galgani, our expert, to supplement the database on marine waste and litter in the surface waters of poorly known areas.



© Ifremer/F. Galgani

IFREMER IN THE HEADLINES...

With the dissemination of 44 press releases and press kits and over 3,500 citations for Ifremer (approximately 12% being direct press plays based on our communications) in the media in 2012, the objective of highlighting our Institute's activities of excellence and research results was pursued.

The pace of communications 2012 was marked by communications on highly varied subjects, leading to citations in the regional and national press, for instance the record distance sailed by the smart sail boat *Vaimos*, the launch of France Energies marines (whose communications were ensured by Ifremer until its approval as an institute of excellence), celebrating the hundredth anniversary of the *Titanic* and recalling the various interventions by Ifremer on the wreck.

Ocean research cruises continue to attract significant media interest: Pelgas, whose communications ensured jointly with fisheries professionals were crowned with success, Benthoclim on climate change in the English Channel and WFD 3 on Mediterranean environmental monitoring and quality are some examples.

Underwater technologies are also subjects that journalists like and the sonar surveys performed on the Lune shipwreck and on the inauguration of the European underwater technology centre received good coverage.

...AND WEAVING ITS WEB

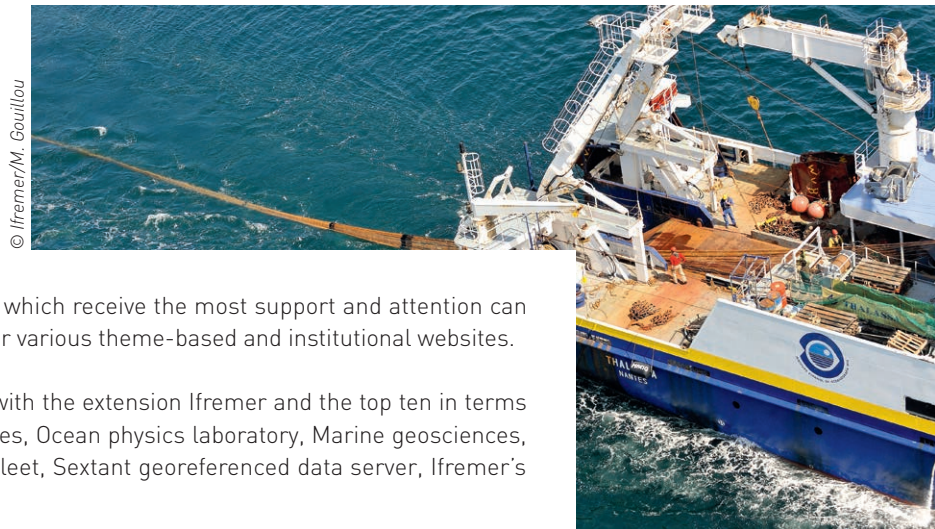
The attractiveness of our Institute and the topics which receive the most support and attention can be seen through the number of connections on our various theme-based and institutional websites.

There are 281 websites under the domain name with the extension Ifremer and the top ten in terms of visits are the Institute's portal, fisheries websites, Ocean physics laboratory, Marine geosciences, Sismer database, underwater technologies, the fleet, Sextant georeferenced data server, Ifremer's web TV and La Pérouse library.

These sites alone accounted for 1,235,290 visits in 2012, i.e. 62% of the sample, compared to 38% for the 271 other sites (a reminder that in 2011, it was: 53% for the top ten sites and 4% for the rest).

The number of visits has risen for all of these ten websites. After the Institute's portal site, the websites for Fisheries (+ 69%), LPO (+ 26%) and Marine geosciences (+ 38%) remain those which are visited most and continue to progress. They all passed the 100,000 visits mark over the year 2012.

Amongst the other websites, with lower numbers of visits, a strong increase was noted for the Web TV (+ 87%) and Sextant (+ 88%) sites.



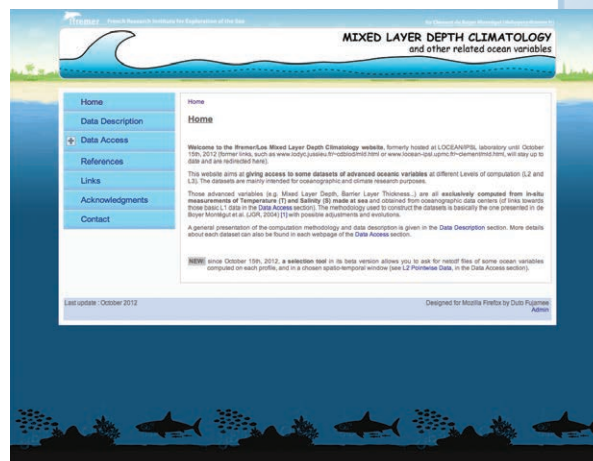
© Ifremer/M. Gouillou

The oceanographic vessel Thalassa to the south of Groix island during the Pelgas cruise

AN OCEANOGRAPHIC DATA WEBSITE IN SITU

The spatial oceanography laboratory has set up a website devoted to oceanographic research and the climate. The aim is to give access to some MLD/BLT climatology datasets, which have existed since 2004 (hosted at Locean/IPSL laboratory until now). A page was added to obtain ocean variables calculated at each point of the profiles (for the moment, T10, S10, MLD criteria of temperature and density) and on the desired study zone.

See: www.ifremer.fr/cerweb/deboyer/mld



PRODUCTION OF PRÉVIMER PRODUCTS CATALOGUE VERSION 1.0

The pre-operational Prévimer system aims to provide a wide range of users, from private individuals to professionals, with short-term forecasts for the coastal environment along the French seafronts, *i.e.*, the English Channel, Atlantic Ocean and Mediterranean Sea. A series of observations and numerical modelling tools make it possible to supply forecasts on time-scales starting with four days (96 h) on the sea state, currents, water levels, temperature and primary production. In partnership with SHOM (French Navy hydrographic and oceanographic service), Météo France, Cetmef (marine and

river technical studies centre), Mercator Ocean, BRGM (geological and mining research bureau), IRD (institute of research for development) and the Brittany and PACA marine clusters, Ifremer is setting up the technologies needed to constitute this relevant information, which is web-cast daily and archived at the Centre for operational coastal oceanography data. Since 2006, Prévimer has progressively disseminated the results of models assigned to geographical areas ranging from seafronts of metropolitan France to zones of special interest. The service provided remains experimental.

WEB 2.0

La Boussole twitter account:	Archimer twitter account :	Ifremer.fr twitter account:
Number of followers:	Number of followers:	Number of followers:
In 2011: 13	In 2011: 139	In 2011: 152
In 2012: 18	In 2012: 254	In 2012: 870
Number of tweets:	Number of tweets:	Number of tweets:
In 2011: 280	In 2011: 713	In 2011: 58
In 2012: 374	In 2012: 1,110	In 2012: 172



Developing links between public and private-sector research

In 2012, Ifremer promoted its products, services, facilities and know-how at five major trade shows:

- Oceanology International in London: presenting vessels (with the *Haliotis* launch present) and autonomous underwater vehicles (AUVs), shipboard software and the full range of our Institute's test facilities;
- ICOE 2012: presentation of Ifremer's action in terms of marine renewable energies (test facilities, materials studies, European projects Marinnet and Merific);
- Euronaval in Le Bourget: presenting our sea-going facilities;
- Sea Tech Week in Brest: presenting our general range of services with special focus on the *Haliotis* inshore vessel on display on the esplanade outside the exhibition centre;
- CBO in Brazil: showing our offers in the offshore field.

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CORE NEGOTIATIONS

Continuing on from actions undertaken over the last two years of the four-year contract, in the context of the "Investments for the Future" calls for projects, in 2012 the DDVPE (Development, technology transfer and economic partnerships division) invested particular efforts in setting up two projects for institutes of excellence in carbon-free energies (IEED), i.e.:

- *France énergies marines*, designed to bring together all public- and private-sector stakeholders in the marine renewable energy value chain while taking part in drawing up a strategy for intellectual property;
- *GreenStars*, whose goal is to construct an industrial value chain in the field of microalgae, by participating in the drafting of legal and financial charter documents for the company to be created.

Nearly forty agreements for consortia and co-operation, licensing contracts based on use of patents and know-how from our laboratories and transfers of biological materials were negotiated in 2012 and twenty-seven of them were signed during the year.

Ambitious partnership agreements were signed in 2012. For instance, Ifremer took part in assessing and setting up a new public-private partnership involving Areva, Technip and Eramet in the Futuna 2012 cruise. Negotiations continued with Petrobras for exploratory cruises off Brazil, and the Magic cruise took place in September 2012. Ifremer also ensured the preparation and negotiation cruises for Total.

Trials were preceded by several developments on behalf of companies in the Alcen group and industrial firms such as Cybernetix or DCNS.

Our Institute made a major contribution in bringing new research projects to the fore, in the frame of five competitiveness clusters - Brittany marine, PACA marine, Aquimer (Nord-Pas de Calais), Atlantic Biotherapies and Valorial (Brittany) - thus aiming to promote partnership-based research.



CARNOT



The Institut Carnot Ifremer-Edrome department was renewed. It conducts research in the fields of prospection and sustainable use of mineral, energy and biological resources from the oceans, all highly strategic and extremely competitive sectors. It brings together Ifremer's renowned skills and expertise in key disciplines of marine sciences and technologies, with its own novel test facilities and laboratories.

In 2012, Institut Carnot Ifremer-Edrome realised a turnover of 10,080,000 euros, of which €136,000 was made with SMEs and €74,000 from licence fees.

Thanks to additional Carnot funding, Carnot Ifremer-Edrome was able to broaden its analytical, data processing tools and modelling capabilities, with the development of tools to explore and study the underwater environment, some of them unique worldwide.

Carnot Ifremer-Edrome grew its academic research relations and increased the number of post-doc fellows hosted. Furthermore, this top-up Carnot funding made it possible to launch scientific collaborative work which often leads to participation in ANR or European projects.

PARTNERSHIPS WITH REGIONAL ORGANISATIONS FOR TECHNOLOGY TRANSFER

Following numerous exchanges with other research organisations (Irstea, university of Paris VI, IRD, Cirad and INRA) and with the entities which coordinate the setting up of SATTs (technology transfer accelerator firms), at this stage Ifremer's position is that of a special strategic partner for SATT Ouest Valo and SATT Paca.

In framework of alliances, consortia for thematic technology transfers (CVT) were also created. These CVT structures are organised on the basis of strategic technology transfer fields (DVS) with the purpose of carrying out targeted economic

intelligence studies. As a member of the AllEnvi and Ancre consortia, Ifremer could propose study themes like microalgae, metrology, environmental monitoring (deep sea and via satellite), etc.

Ifremer supported twelve projects in terms of bringing their technological (proof of concept) or commercial (market study) to maturity. The projects were chosen especially with respect to the initial results obtained, holding promise in terms of the perspectives for their industrial and commercial exploitation.



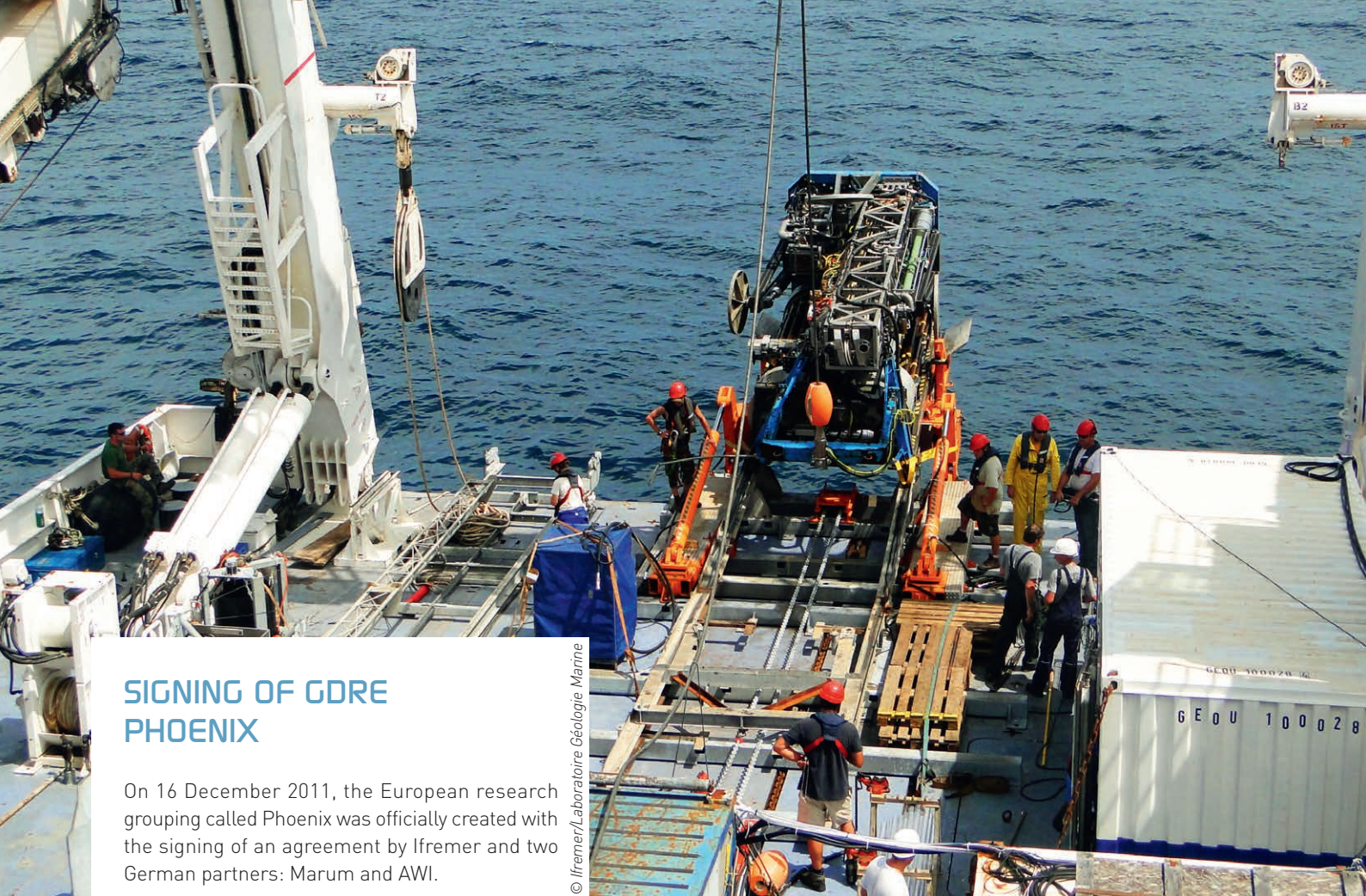
Institutional meetings

SIGNING OF A FRAMEWORK-AGREEMENT BETWEEN IFREMER AND THE CONSERVATOIRE DU LITTORAL

The Chairman and Chief Executive Officer of Ifremer and the Director of the Conservatoire du littoral coastal protection agency signed a partnership framework-agreement on 22 June in Rochefort (Charente-Maritime), in order to pursue their collaborative work begun in 2007 and to work closely together in the next three years. They cooperate in managing, protecting and enhancing natural areas on the French coast.

Their fields of cooperation are built around the following two orientations:

- shared knowledge about the intertidal and marine environment: studying how intertidal ecosystems respond to global climate change (rise in sea level, biodiversity, etc.), studying natural marine habitats, observation methodology for small Mediterranean islands, developing indicators on marine biocenoses and water quality; work on characterizing the environmental status of lagoons; studying tropical environment ecology and more specially, ecosystems located at the interface between catchment basins and marine waters;
- expertise and support for management approaches: backing up integrated approaches on "pilot" sites in metropolitan France: Chausey, Arcachon basin, Mediterranean and Corsican lagoons; Ifremer expertise on marine habitats, environmental or health quality and uses in the coastal zone; support for sustainable management of coastal ecosystems in overseas France: Guadeloupe, Martinique, French Guiana and Mayotte, in particular in the fisheries field and internationally, setting up a "Small islands" observatory in the Mediterranean basin.



SIGNING OF GDRE PHOENIX

On 16 December 2011, the European research grouping called Phoenix was officially created with the signing of an agreement by Ifremer and two German partners: Marum and AWI.

It focuses on the field of underwater systems and related technologies and is the logical follow-on to a number of other joint projects developed through partnership.

The main cooperation programmes underway with German institutes involve:

- Marum (university of Bremen): major cooperation involves AUVs and interlinked development of our two HROVs. Marum has purchased an AUV just like Ifremer's (except for the immersion depth) and licences for Ifremer software for its deployment. Ifremer took part in acceptance testing for the German system and in training the German teams; scientific cruises were performed jointly and Ifremer was paid royalties for the construction of this vehicle by our industrial partner ISE. Today, Marum wants to acquire an HROV, in cooperation with Ifremer. It provides a meaningful contribution for biogeochemical payloads. The cooperation agreement signed in 2011 on this subject continued in 2012, with the installation of the MEBO (seafloor drilling system) aboard RV *Pourquoi pas?*. Marum is an important partner in the EU Eurofleets 1 project and is resolutely engaged in Eurofleets 2.

- AWI (*Alfred Wegener Institut*): our cooperation especially involves the interoperability of systems, seeking to standardise the interfaces of payloads, procedures and means to deploy equipment, such as making adaptations for the deployment of *Victor 6000* aboard RV *Polarstern* several times since 1999. In the Eurofleets 1 framework, AWI is contributing, along with Marum and Ifremer, to the development of interfaces for shared biogeochemistry instrumented payloads.

The GDRE could be joined in future by other partners, with whom, however, cooperation has not sufficiently moved forward.

▲
Mebo corer aboard RV Pourquoi pas? during the Guineco-Mebo cruise



PROACTIVE SUPPORT FOR THE INSTITUTE

Human resources



EMPLOYER-UNION DIALOGUE

Elections for employee representatives were held in February 2012: 70 people were elected as members of the works councils and 101 as staff representatives.

These elections are organised within the UES Ifremer/Genavir economic and social unit framework, and led to an additional works council being set up specifically for Genavir seamen staff members, making six works councils in all.

Two trade unions remain representative, *i.e.* the CFDT and CGT, with the CFDT holding the majority.

The last multi-annual agreement on Ifremer's pay policy reached its term on 31 December 2011. Negotiations were opened in late 2012. A wage agreement for the year 2012 was signed with the CGT in the frame of the compulsory annual negotiations. Within this agreement, the management, whilst taking the macro-economic and budgetary context into account, wanted to maintain certain principles, like ensuring purchasing power and preserving promotions based on merit.

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PROFESSIONAL EQUALITY

Ifremer sets great store by professional equality between men and women. The number of women in the population has grown constantly. Women now represent 44% of the staff and 36% of executives.

In fact, over the past few years, more women have joined the board of directors.

The institute wants to promote professional equality and gender balance throughout all jobs and professional categories.

RECRUITMENT

Ifremer's management also wants to ensure full equality for men and women from the moment they join our Institute, by promoting gender balance within the hiring, mobility and promotion committees as well as in all bodies set up to advise on and supervise career management.

For better visibility of opportunities for mobility and to promote external staff movements, while

developing the Institute's hosting capacities, in March 2012 the HR department organised a working group with fifteen other State-owned industrial and commercial establishments (Ademe, Andra, BRGM, CEA, Cirad, CNES, CSTB, EFS, IFP, Ineris, IRSN, LNE, Onera, Universcience and ANR), to exchange information about job offers and competitive examination recruitment drives for research scientists.

CAREER MANAGEMENT

The arrangements to organise working time, like individualising work schedules and working part time by choice, aim to reconcile professional life and family life. Parenthood should not hinder career progression.

Financial aid for child care and remedial courses (up to sixteen years of age), in the form of a service voucher (CESU), has also been set up for the salaried employees concerned.

EMPLOYMENT

The Human resources department is engaged in strategic workforce planning and organises regular meetings of the Jobs and careers strategic committee, held since October 2011.

A meeting is held every four to five months, designed to present the general management with a list of positions open for in-house staff movements and vacant positions. It is attended by the directors of scientific departments, directors of centres and staff managers.

In the demographic context where over a quarter of our workforce will have to be renewed in the next ten years, organising this sort of meeting enables the Institute to get additional food for thought in terms of our methods and approaches for managing jobs. It gives a more integrated vision of scientific, technical and administrative requirements, and thus improves our ability to decide on positions with respect to strategic orientations when choices must be made.

FURTHER EDUCATION AND TRAINING

In 2012, Ifremer devoted 3.11% of its payroll to actual spending on further training (the legal obligation being 1.6%).

A few figures and ratios for 2012:

- number of training courses 1,398
- number of paid training hours: 23,121
- individual training expectation: 15 hours
- access to training: 56% of staff
- training budget per employee: 949 euros.

Breakdown of training hours by main themes:

- science and technology: 46%
- IT: 21%
- management-communications: 13%
- foreign languages: 11%
- administrative and financial management: 9%

Trainees by staff group

54 % of executive staff and 60% of technical and administrative personnel received training.

Trainees by gender

54% of male staff-members and 59% of female staff-members received training.

Main collective action achieved

Several training courses were organised either with other companies or in-house - i.e. held specifically for Ifremer employees and run by an outside training provider or by an in-house trainer.

These training actions focused on tools (databases, software) like R statistical software, Python programming language, Quadriga, Sextant and GIS, and techniques or methods, like statistics. Cross-cutting training courses were given in management, psychosocial risk prevention and media communications. And finally, staff members in the financial section took a course on the revenue collection process.

Training for degrees, PhDs and HDR accreditation

Ifremer gives its employees the opportunity to prepare long courses of study or training, leading to degrees or qualifications, as well as PhD theses and accreditation to supervise research. This arrangement enables the enhanced value and utilisation of skills acquired, as well as developing career perspectives.

Certificate or degree courses: in 2012, thirty training courses leading to qualifications were underway, seventeen of them for up to master's level (four or five years after high school), ten for courses equivalent to two or three years of higher education and three high school A-levels.

Twenty-one certificate courses are being done in an Accreditation of Prior Experiential Learning (APEL) programme which makes it possible to validate all or part of a degree qualification.

Half of these training opportunities will lead to the employee being promoted to executive status.

Twenty-four HDR courses and ten PhDs were underway in 2012.



Legal matters

The department of legal matters, above and beyond its recurrent activity of negotiating and drawing up all sorts of contracts related to Ifremer activity, played a part in a number of important dossiers which help structure the Institute.

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The first of these cases brought all the legal experts from the department together to review and overhaul the regulation of contracts, setting out the principles Ifremer applies for its purchases and procurement. The text drawn up for this examination was validated by the advisory committee for Ifremer's tenders and contracts, and then approved by the Institute's Board of Directors.

Amongst the various operations related to the Grand Emprunt national loan scheme, Ifremer put particular efforts into setting up two IEED institutes of excellence, i.e. France Energies marines (FEM) and Greenstars. In both cases, the contribution made by the department of legal matters focused on the choice of the most appropriate legal structure to meet the Grand Emprunt requirements, on negotiating the rules of governance and industrial property with other partners from the public or private sectors; and on the legal environment to comply with, especially on the European issue of State aid, through knowledge about and compliance with tax laws.

In the framework of partnerships between Ifremer and the world of industry, the Department of legal matters provided its advisory and negotiating support for the contract signed with Petrobras for the Salsa cruises. This type of arrangement requires that agreements be established between the various divisions and departments concerned, since issues of science, technology transfers and use of an Ifremer fleet research vessel are all involved.

The fleet was also in the fore of the department's activity, since the contract with Genavir was renegotiated for a two-year period. The new contract was drawn up on the basis of the experience gained from the previous contract and was meant to be much more specific about the conditions for performance of service provision by Genavir. It was validated by the CCM.

In providing assistance for the general management's large-scale projects, the Department of legal matters was called upon to manage a competitive dialogue procedure to choose an ERP (Enterprise Resource Planning software package) project proposal. This procedure lasted several months, and enabled Ifremer as the dialogue went on to draw up specifications corresponding to our requirements. This is crucial for a project with a highly structuring role to play throughout the institution. The procedure was validated by the CCM.

In terms of assistance for Ifremer centres' requirements, the use of the Bouin station's extension led to drawing up an agreement with the National shellfish-farming committee, giving the latter the right to utilise part of the premises for the needs of research to benefit professionals. This provided an opportunity to think about the general rules, like those related to setting a price for making premises available or sharing of responsibility or liability to be applied in this sort of situation.

Ifremer quality

IFREMER'S QUALITY MANAGEMENT SYSTEM IS AWARDED ISO 9001 CERTIFICATION



At the official certification ceremony on 19 December 2012, Ifremer's Chairman and CEO Jean-Yves PERROT recalled that "the Quality approach concept existed at Ifremer. It effectively started in the coastal environment field. Along with the certification of accounts already in effect, obtaining the ISO 9001 standard today reflects Ifremer's will to constantly improve the way it works to better fulfil the missions in its remit. In particular, setting up this system will help enable Ifremer to bid in calls for tenders, especially international ones, more effectively while giving our Institute new strengths for creating partnerships with the private sector."

For Philippe LE BRAS, Ifremer's national Quality coordinator, "obtaining overall ISO 9001 certification for all our sites and all our activities is a starting point for harmonising in-house practices to make them more consistent and thus increase

our efficiency in performing various tasks. Above all, it makes it possible to better assess Ifremer's performance, so that our Institute appropriately fulfils its role for the community. Indeed, this certification brings public recognition which can establish and maintain true ties of trust with our different partners. And finally, because dysfunctions are more clearly identified, they can thus be more fully corrected. It is now up to each one of us to take personal ownership of this approach, and that means that this is just the beginning... ».

From now on, the challenge will be to bring the Quality system to maturity, keep it alive and incorporate it as a tool serving one and all, to improve the way Ifremer operates. Buy-in of this approach by the entire staff of the Institute will be a major stake during the upcoming five-year contract.

A plan for sustainable development

After creating a dedicated website, Ifremer organised events during Sustainable Development week and in 2012 launched a training plan on the hiring and management of disabled employees.

Furthermore, an initial approach was made to estimate the percentage of Ifremer's written publications which contribute to Sustainable Development and CSR, on the basis of cross-checked criteria for environmental social and economic responsibility and accountability. A study conducted with the BLP library highlighted the fact that approximately 20% of our A-rank publications are directly linked to the Corporate Social Responsibility approach. This is the case for 97% of the advice and expert reports made by Ifremer. The study is to be continued, particularly in collaboration with the Scientific department in order to further refine query key words and link these results with our research strategies.

In conclusion, we can add that in terms of its governance, Ifremer developed a strategy in 2012, which takes the concept of sustainable development and CSR environmental, social and economic aspects of corporate responsibility, both for its operations and scientific and technological outputs and for its relations with partners. The first report on the subject will be drafted soon.

The existence of an awareness-raising or training module for Sustainable Development: Ifremer has created an intranet site, organises demonstrations and events during SD week and in 2012 launched a training plan on hiring and managing disabled people.

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ENERGY CONSUMPTION TRENDS

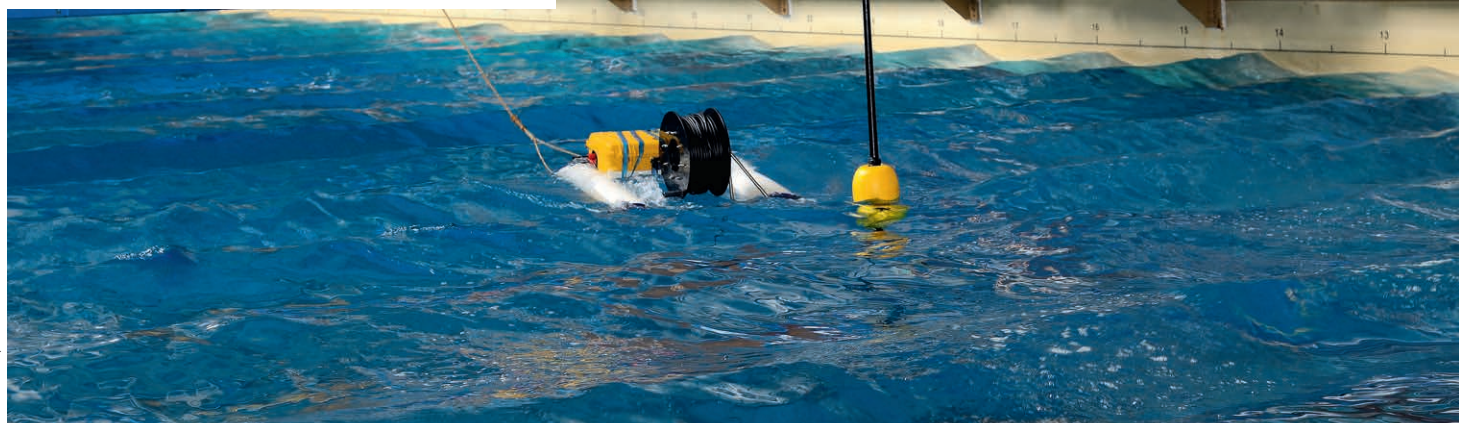
The results for 2012 in metropolitan France were:

- 281 xWh/m² (calculated on the basis of consumption of electrical power, natural gas and heating oil for premises in metropolitan France; net floor area (NFA): 99,000 m², value as of 1st January 2012. Calculations were based on the same parameters used in 2010 to enable the values to be compared). Under these conditions, consumption dropped by 9% compared to 2010.
- 3,260 video-conferences, i.e. on the increase by 19% since 2010 and by 17% since 2011, thanks to Ifremer's proactive policy in this respect.
- 75% of waste has been recycled for several years, with this percentage remaining constant.

Moreover, Ifremer organised its work to be able to supply several additional indicators listed in the "exemplary administration" plan (PAE), covering our entire scope of action (overseas and metropolitan France):

- number of videoconferencing systems (twenty-four, compared to sixteen in 2011);
- number of printers for per person: 0.28 (making 387 network printers for 1,370 employees). Under the PAE, a number less than 0.80 is considered as successfully meeting the plan;

- number of kilometres in air travel per employee: 3,500 km on average (based on 4.8 million kilometres for 1,370 employees; data transmitted by the Legal matters department). For the PAE, filling in the figure counts as a success.
- our emissions were 3 tonnes equivalent CO₂ per employee and 0.8 tonne equivalent C per employee for Ifremer as a whole (overseas and metropolitan France). These figures are the result of a greenhouse gas (GHG) emission assessment, performed for the first time in 2012, on the basis of data from 2010.
- water consumption: filling in the amount is considered as a success for the PAE. This is the case at Ifremer and we will soon be able to provide the figures, once the amounts for our Atlantic, French Polynesia and New Caledonia centres have been completed.

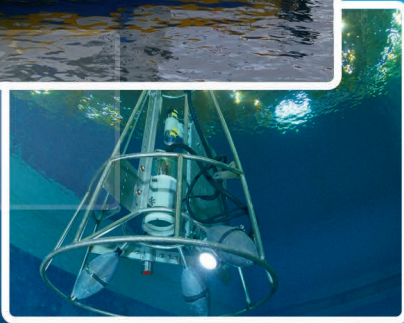


ACRONYMS AND ABBREVIATIONS

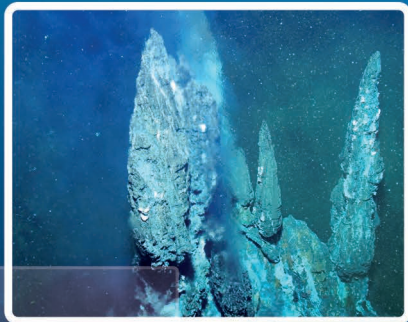


ACCD'OM	association of overseas municipalities and local authorities
AllEnvi	national environmental research alliance
AOML	Atlantic Oceanographic and Meteorological Laboratory
AWI	Alfred Wegener Institut
CCSTI	scientific and technical cultural centre
Ceser	Brittany's regional economic, social and environmental council
CLS	satellite-based data collection and location provider
CNC	national shellfish-farming committee
CNPq	national council for scientific and technological development (Brazil)
CNRS	national centre for scientific research
CPRM	<i>Companhia de Pesquisas de Recursos Minerais</i> (Brazil)
CRCM	Mediterranean regional shellfish-farming committee
CSR	Corporate Social Responsibility
CVT	consortium for thematic technology transfer
DDVPE	Development, technology transfer & economic partnerships division
DGAL	directorate-general for food
DGME	directorate-general for modernisation of the State
DGRI	directorate-general for research & innovation
DPMA	maritime fisheries and aquaculture division
DVS	strategic technology transfer field
ERA	European Research Area
FTE	Full Time Equivalent
GDR	research group
IEED	institutes of excellence in carbon-free energy
Imares	Institute for Marine Resources and Ecosystem Studies (The Netherlands)
INSU	national institute of sciences of the universe
IPEV	Paul-Émile Victor Polar institute
IPGP	earth physics institute in Paris
IRD	institute of research for development
IRSN	institute for radioprotection and nuclear safety
IUEM	European university institute for the sea
LSRI	Large-scale Research Infrastructures
MSFD	Marine Strategy Framework Directive
NGO	Non-Governmental Organization
NOAA	National Oceanic and Atmospheric Administration
Nofima	Norwegian Institute of Food, Fisheries and Aquaculture Research
PIES	Pressure Inverted Echo Sounder
Samoc	South Atlantic Meridional Overturning Circulation
SHOM	Hydrographic and Oceanographic Service of the French Navy
UMR	joint research unit





*Discover
the oceans
with Ifremer*



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