

**2010 ANNUAL REPORT**  
**OCEAN ANALYSIS AND FORECASTING**

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**2010 ANNUAL REPORT**  
**Mercator Ocean**

**Public Interest Group (disbanded 31/08)**  
**non-profit Company (created 01/09)**

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**2010 ANNUAL REPORT**

**KEY FIGURES**

2010 Key figures

49 staff members in 2010.

22 oceanographers (including 4 experts)

98% operational effectiveness of forecast systems

4 operational systems

14 scientific publications

1.23 teraflops of in-house computer power

170 terabytes of centralised and secured disk storage

15000 visits per month to the [www.mercator-ocean.eu](http://www.mercator-ocean.eu) site

46 national and international users who rely on our weekly deliveries

3000 oceanographic products delivered in 2010

## **Mercator Ocean**

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Pierre Bahurel, Mercator Ocean's General Manager

Mercator Ocean successfully conducted three major changes in 2010 to lay solid foundations for its future development.

It has thus been a very important year for our development.

**Mercator Ocean changed its legal status.** The Mercator Ocean non-profit company was created by the CNRS, Ifremer, IRD, Meteo-France and the SHOM, and took over from the public interest group which had been developing the project since 2002. The adoption of a more suitable legal status for a European level service was a critical stage, and had been recommended by the interministerial committee for the sea in 2009. At the same time, the new company signed a partnership with CNES and a research agreement with the Ministry of Ecology, Sustainable Development, Transport and Housing.

**Mercator Ocean was selected to coordinate the European Marine Core Service beyond 2012.**

Mercator Ocean delivered the first integrated version of the MyOcean European service on time to the European Commission, which then commissioned it for users after favourable review by experts from the major European agencies. It was the project's first major technical milestone which highlighted our legitimacy as coordinator. At the same time, Mercator Ocean was confirmed in its role of leader for the next phase by its European peers. On behalf of a 28 country consortium, we prepared and submitted to the European Commission the "MyOcean2" proposal to continue deployment and operation of the GMES European ocean analysis and forecasting service from 2012 to 2014.

**Mercator Ocean has boosted its system and organisation to meet the high requirements of the GMES Marine operational centres.** The two main analysis / forecasting systems (world oceans and European seas) were redesigned in order to increase and standardise the scientific performance and facilitate operational maintenance. The high resolution world oceans system to be implemented in 2011 was stabilised and the first test forecasts were successfully completed. New products and tools, both for monitoring operations and continuous measurement of product quality, have been implemented. The organisation of the service complies with the international standards adopted for MyOcean.

**These successful changes are three major assets for Mercator Ocean for the coming years. Mercator Ocean has entered 2011 with a new image, new legitimacy and new momentum.**

## 2010 Panorama

A year of changes, decisions and innovations.

A roundup of important events at Mercator Ocean in 2010.

- JANUARY**     **Kickoff of the year's two major projects.** Mercator Ocean prepared the schedule and conditions for implementation of the future non-profit company with the French partners on the 14<sup>th</sup>; and on the 19<sup>th</sup> and 20<sup>th</sup> defined the new version of the MyOcean service, scheduled for December, with its European partners.
- FEBRUARY**     **Improvement of the scientific project.** For 3 days, Mercator Ocean and the Drakkar scientific community shared results and projects related to high resolution modelling of the global ocean using NEMO.
- MARCH**         **Agreement on the transition from public interest group to non-profit company .** The public interest group members held a general assembly on the 11<sup>th</sup> to organise Mercator Ocean's transition to a non-profit company .
- APRIL**          **Ratification for the coordination of MyOcean2.** The MyOcean Board welcomed Mercator Ocean as coordinator of the upcoming MyOcean2 phase. The assessment of the first 12 months of MyOcean was presented to the European Commission. With the consortium's twenty main partners Mercator Ocean set up a team to prepare the proposal for MyOcean2.
- MAY**             **Communication.** A new Marketing and Communication department was created to help the teams promote their work, to provide a better image of Mercator Ocean and to actively communicate on MyOcean.
- JUNE**            **Heading for 2015: ECOMF** Mercator Ocean presented the organisation of the EC service, GMES Marine, to the representatives of the major European agencies in Hamburg; this service, which is based on a European Centre for Ocean Monitoring and Forecasting (ECOMF), will handle technical coordination for Mercator Ocean and its partners.

### Captions:

**August 2010:** commissioning of the new 1/12° global system

**September 2010:** The new logo is presented to the teams

- JULY** **Important summer projects.** The disbanding of the public interest group and the creation of the new non-profit company were decided upon at the beginning of July. All the arrangements were made to ensure the 1<sup>st</sup> September transition. Mercator Ocean finalised the MyOcean2 plans with its partners and divided up the editorial work to be done during the summer. Mercator Ocean published its new qualification bulletin “QuoVadis” which measures, qualifies and comments on all of its operational production.
- AUGUST** **First high resolution forecasts for the entire globe.** The “1/12° global ocean” system is a symbolic objective for Mercator Ocean. The “PSY4” system which was defined at the outset of the project (1995) and developed within the Mersea project (2004-2008), laid the technical foundation for Mercator Ocean’s European leadership. It entered the engineering phase during the first year of MyOcean and a 12 month full-scale test began in May.
- SEPTEMBER** **New image.** On the morning of 1<sup>st</sup> of September, the new non-profit company Mercator Ocean, created by the CNRS, Ifremer, IRD, Meteo-France and the SHOM, took over. A partnership agreement was signed with CNES. The management committee met to finalise the operation. The review group in Darmstadt carefully examined the progress of preparations for the MyOcean version 1, scheduled for commissioning in December 2010.
- OCTOBER** **New cycle of simulations of global ocean references.** The GLORYSv2 reanalysis includes a simulation of the 1993 to 2009 reference: the adjustments were completed and the simulation began. At the same time, the combined physics/biogeochemistry version of the global model was implemented on Meteo-France’s supercomputer. The 3<sup>rd</sup> quarter’s QuoVadis was published.
- NOVEMBER** **Presentation of MyOcean2** (proposal for a European service for 2012-2014). On behalf of the 60 partner consortium, Mercator Ocean submitted the MyOcean2 proposal to the European Commission on the 25<sup>th</sup>. It covers deployment of the GMES Marine community service from April 2012 to October 2014. Mercator Ocean met with members of its scientific community on the 29<sup>th</sup> and 30<sup>th</sup> during the yearly GMMC days. A hundred or so affiliated researchers discussed issues with the Mercator Ocean R&D teams and the Coriolis project.
- DECEMBER** **Inauguration of the new MyOcean service.** The month started with the “MyOcean Science Days” that brought a hundred or so European scientists together in Toulouse. Two general assemblies were held on the 14<sup>th</sup> in Paris: the last GA for the public interest group pronounced its final liquidation and the second GA of the non-profit company approved its 2011 programme of activities and its budget. The kickoff of the new MyOcean service in mid December and the first operations of the new versions of the analysis and forecasting systems were validated by our European “reviewers”.

**Caption:** June 2010 Signing of the articles of incorporation of the new non-profit company .

### MERCATOR OCEAN WITHIN MYOCEAN

Mercator Ocean has been coordinating the MyOcean European project since April 2009 (cf. Page 16). This includes 34 people involved in day-to-day organisation, operations and strategic planning including project management (project manager, finance, planning...), the global ocean production centre, the IBI (Iberian Biscay Ireland) production centre and responsibility for defining user service and communication. Pierre Bahurel also sits on the MyOcean executive board.



## PRODUCTION DEPARTMENT

### Complete upgrade of the production systems

The teams simultaneously consolidated the existing operational systems and significantly increased their capacity in 2010.

"The nominal service availability rate in 2010 for systems operations was higher than 98% for all the weekly systems, and 95% for the daily system (PSY2Q1, including weekends)."

*"At the national and European (MyOcean project) levels, Mercator Ocean is committed to providing strong and high quality ocean forecast services; credibility of service and the confidence of the users are at stake, explains **Eric Dombrowsky**, scientific and technical manager and manager of the Production Department. From now on, to meet the required reliability, Mercator Ocean relies on Meteo-France's operational computer and storage resources: since 2010, Mercator systems use slots having the same level of priority as the weather forecast systems. This operational consolidation applies the same human operating procedures as those employed by the major operational centres such as Meteo-France."*

### A NEW RANGE OF SYSTEMS

For the MyOcean version 1 start-up in December, Mercator Ocean completely renewed its range of systems (1/4° global PSY3 and 1/12° North Atlantic basin and Mediterranean) this year. **Yann Drillet**, Head of Research and Development points out: *"Among the important scientific changes introduced, note that PSY2 now gets the North and South open boundary conditions from PSY3, the use of NEMO3.1 has been generalised (ocean and ice), the introduction of 3 hour forcing (CORE formulation), significant changes in the assimilation process: analysis centred in the middle of the week, IAU initialisation and the addition of a T and S large-scale bias correction method using the variational method."* *"In addition to these scientific improvements, others were made in the test and start-up procedures that have now been documented, tested and improved,"* specifies **Lucas Nouel**, Head of Operations.

#### Captions:

Antarctic ice cover, January 2010  
V0 V1 CERSAT observations

Temperature (C) observation deviations, Evolution of the mean RMS 0-500m during the system evaluation period 2007-2010  
V0 V1 ARIVO (Ifremer) climatology WOA05

*"This system upgrade has enabled a qualitative leap,"* explains **Marie Drévilion**, Head of Product Quality. *"Thus, on average around the globe, including the ocean's first layer of 500m, errors in temperature (forecast / observation deviation) have been reduced by more than 20% in the new systems (black curve) with respect to the old ones (red curve) and are now at an average 0.7°C for the entire globe. The blue and green curves show the advantage of using operational analyses and forecasts rather than climatology: errors can be as much as two times lower than those in climatology. The area of the sea ice at the poles is also represented better, particularly because of the use of atmospheric forcing at a higher temporal frequency and a new elastic-viscous-plastic rheology (EVP)."*

## A REAL-TIME GLOBAL 1/12° SYSTEM

After several years of work fine-tuning the global 1/12° configuration model based on the NEMO code and the assimilation plan adapted to the configuration, the high resolution global analysis and forecasting system entered its production phase in the summer of 2010. As a result, Mercator Ocean now has the capacity to forecast medium-scale whirlpools anywhere on the globe. A 1 year simulation between the summer of 2009 and the summer of 2010 was produced in order to make adjustments and validate the scientific and technical performance of the new system.

*Image illustrating the coherence between the speeds of current forecasted by the system 7 days ahead for the area south of South Africa (background colour in the image) and those deduced from movements of surface floats (the colour of the coloured circles represents the speed and the size represents the proximity to the considered date, i.e. 25 November 2009). The zone is a key region for global circulation where the waters from the Indian and Atlantic Oceans meet. The main current veins, their intensities and the retroflexion of the Agulhas current are represented very well by the system.*

**NEW GLOBAL 17-YEAR REANALYSIS AT 1/4°** Within the framework of the GLORYS project involving a closer partnership between Mercator Ocean and research laboratories (LEGI, LPO...), - which ended in 2009 with the production of the first global 1/4° 7-year reanalysis (2002-2008) –we produced a global 1/4° reanalysis covering 17 years of altimetry data (1993-2009) this year. In addition to the 10 extra years, major improvements were made to the system such as an increase in the number of vertical levels (from 50 to 75), the correction of the large scale bias using the variational method, the use of a new atmospheric forcing set based on the ERA interim reanalysis by CEPMMT and new observation sets (CORIOLIS CORAO3 product for the T/S profiles, new CNES/CLS mean altimetry surface, AVHRR products from NCEP for surface temperatures).

*The difference between temperature forecasts and assimilated observations at a depth of about 300 metres, for 2004. It reaches a maximum in the more energetic zones and remains less than 0.5° for the greater part of the global ocean.*

## QUOVADIS

In 2010 we introduced regular monitoring of product quality through the quarterly publication of the validation bulletins QuO Va Dis (**Q**uarterly **O**cean **V**alidation **D**isplay). At the end of 2010, two editions were published covering the year's 2<sup>nd</sup> and 3<sup>rd</sup> quarters. From now on, the scientific qualification procedure for the systems is based on a **reference document** entitled the 'scientific qualification report' covering the performances and limitations of the analysis and forecasting system for a period in the past (covering at least an annual cycle). The follow-up in the QuO Va Dis consists in applying the same diagnostics to the real-time production and comparing them to the reference document. The immediate qualification (before product distribution) is based on the "error" calculation which is compared to the thresholds that are also included in the reference document. The MoniQua (Monitoring Quality) software developed in 2010 will allow management of an error and threshold data base in 2011 and display of quality indicators for immediate qualification of the real-time production



## PRODUCTION DEPARTMENT

### PREPARATION OF A VERY HIGH RESOLUTION NEAR-ATLANTIC SYSTEM

Several years of European collaboration in R&D - recently with the Spanish from Puerto del Estado – were necessary to develop an innovative, very high resolution near-Atlantic system which includes new high-frequency physical phenomena (tides, storm surges, etc.). In 2010, on time with the MyOcean project schedule, this work led to stabilisation of the NEMO 1/36° (~2 km) regional configuration for the IBI zone (Iberia, Biscay and Ireland). This configuration covers a large part of the north-eastern Atlantic (from the Canary Islands to Iceland) and a part of the western Mediterranean.

The system will be operational in 2011 and will improve the boundary conditions supplied to coastal systems in this zone.

*The image shows sea surface temperature in the English Channel and the Irish Sea on 16 August 2010. We can clearly see the influence of the vertical mixing induced by the tide which cools the surface layers a lot, creating pronounced fronts (such as the Ouessant front off Brittany - shown here).*

### GREEN OCEAN ON THE WAY TO PRODUCTION

For several years now, Mercator Ocean has been working with research teams from the French marine biogeochemistry modelling community within the framework of the GMMC project in a close partnership known as **Mercator Vert**. The project ended in 2010 with the finalisation of a coupled biogeochemistry physics system at the global scale. The biogeochemical constituent (PISCES model) is forced by the physics of the 1/4 ° global system for which the horizontal resolution has been deteriorated to reduce the computing load (from 1/4 to 1 °).

This coupled system will be commissioned in 2011 to provide a biological forecast (primary production) including some geochemical cycles (carbon, oxygen, etc.).

The image shows the concentration of surface chlorophyll in the model forced by the GLORYS reanalysis for May 2002.

It enables us to identify the main regions where modelling problems remain to be overcome. For example, the excessively high concentration in Chlorophyll A in the tropical zone is certainly due to vertical processes that are too intensive in this region.

**Mercator Ocean**

**PRODUCTION DEPARTMENT**

**THE OPERATIONAL FORECASTING SYSTEMS IN IMAGES**

**PSY3V2 Global Model**

Extract: Arctic – Ice concentration

Resolution:  $\frac{1}{4}^\circ$

November 2010

**PSY3V2 North Atlantic Model**

Extract: Tropical zone – surface salinity

Resolution:  $\frac{1}{12}^\circ$

September 2010

**PSY2Q1 Daily North Atlantic Model**

Extract: North Atlantic – Surface temperature

Resolution:  $\frac{1}{4}^\circ$

December 2010

**PSY2G2 Global Model**

Complete zone – Surface temperature

Resolution:  $2^\circ$

July 2010

## SERVICE DEPARTMENT

### A STRONGLY INCREASING DEMAND

In spite of the transfer of user requests to MyOcean in 2010, the services provided by Mercator Ocean increased significantly in comparison to 2009.

*“An average of 46 distinct users are served each month, which is an 18% increase over last year’s figures.”*

*“Our users are Mercator Ocean shareholders and partners; there are also universities and public institutions all over the world who use oceanographic products and services for their own research needs in physics and biology as well as private companies who provide operational services to third parties, the end users,” explains **Dominique Obaton**, manager of the Service Department. “The service we offer includes oceanographic products such as temperature, salinity, current, sea surface height, ice variables calculated using numerical models, for the entire globe and the complete water depth, by 14 day forecasts and time series of several years. We also provide users with expertise, for example, by explaining the circulation in a given zone or by describing a seasonal phenomenon. Depending on the type of delivery, users can select and retrieve the specific zone, variables, depths and time series that interest them.”*

### A MAJORITY OF REGULAR DELIVERIES (PERMANENT SERVICE)

Our user services are provided by a team of 5 people. In 2010, we differentiated our offer from that of MyOcean and forwarded requests to the European project. *“In spite of this, the number of our deliveries has increased tremendously, by more than 50% compared to 2009, which represents 3000 annual deliveries for a total volume of 17.5 Terabytes,”* comments **Gaetan Vinay**, manager of product distribution. On average, 46 different users are served each month, which is an increase of 18% over the previous year.

The functions of our distribution servers were improved, allowing us to identify our users, with relevant details and follow-up on the service provided, to anticipate possible incidents and problems and especially to better control the evolution of our service while keeping users informed. This year, we were able to support our users individually during the modification of our products and distribution systems and to answer their specific questions.

**Caption:** *Monthly deliveries of Mercator Ocean services in 2010*

Légendes à insérer:

Nombre de services	Number of services
Service ponctuel	One-time services
Service permanent	Permanent services

## **FIRST STAGE OF THE MYOCEAN EUROPEAN SERVICE: A SMALL REVOLUTION**

The first stage of the European service, completed on schedule by the end of 2010, was crucial and allowed us to lay the new foundations for an evolving common and centralized service on a large scale.

Thirteen production centres offer complementary oceanographic products covering the globe and European regions. Mercator Ocean produces the global system. For all the projects until now, each centre has handled its own distribution via a common network which described and illustrated the products. With this type of organisation, each production centre works independently of the others for product distribution, monitoring of production, follow-up and assessment of the users served. Any problem a user may encounter with a product or any evolution must be directly handled by the producer. Under these conditions it is difficult to set up a common service rather than merely coordinating a network of distributors who agree to use similar procedures while implementing them themselves.

The choice of modern and evolving techniques has allowed MyOcean to go further and to build a common service with the 13 production centres, half of which have already benefited from the new features. While continuing to ensure an unhindered distribution from producer to user, this extra layer of features allows common developments, supervision of supply and demand (on-line product catalogue, monitoring of the service, precise knowledge of products used by the users, follow-up of production, incidents and problems encountered by users, the choice of all or part of a product by the user, the interactive display of products) and an evolving, simplified, uniform service.

As of December, 2010, the MyOcean user, once registered, now has access to a wide range of products through a single access code. He can consult the on-line catalogue of products and retrieve the ones he wants, obtain real-time knowledge of product modifications and evolutions of the services offered; this information is supplied in a centralized and coherent way and independently of its production centre (presently available at more than half of the MyOcean production centres) on a Web site containing lots of other information: [www.myocean.eu](http://www.myocean.eu)

### **MERCATOR OCEAN IN MYOCEAN**

Mercator Ocean produces the global system, contributes to the IBI system and coordinates the MyOcean service.

*Diagram representing the creation of a centralised MyOcean information system (MIS) to which most of the 13 production centres have been connected since December, 2010. It is a revolution in the MyOcean service: through a single access code, the user is henceforth able to download almost all of the items in the MyOcean product catalogue.*

## **WHAT IS A MERCATOR OCEAN SERVICE?**

A service is a delivery of one or more products and/or expertise, advice to a user / a team for a specific application.

## SERVICE DEPARTMENT

**MERCATOR A LA CARTE SERVICE FOR PRIVILEGED USERS**

For some of our users, among whom the partners in the non-profit company , we offer a more extensive service requiring specific or more advanced developments. In 2010 we started developing our user dedicated Web pages initially for SHOM and Meteo-France. With a few clicks, each of these individualized Web pages allows an overview of Mercator services, details on the current operational service and links to useful documentation for a "premium" user. This type of collaboration will also enable necessary new developments for specific needs while allowing the evolution or validation of the Mercator system. After being developed, implemented or tested with a user, these new features may, when necessary, become a service proposed to all; or, for example, will give us a better understanding of how our ocean model represents an area of the globe. In 2010, we worked with a CNRS laboratory on the development of a simplified configuration model and we currently have 2 projects being developed, again with the CNRS and the IRD.

24%	Coastal modelling
17%	Comparison with observations
16%	Ecosystems and resources
18%	Surveillance
11%	Knowledge of the ocean
9%	Climate studies
5%	Energy

*Our users have extremely diverse needs. Below, the distribution of services by type of application in 2010.*

**SUCCESS OF THE INFOCEAN DESK PROJECT**

*“2010 was the second and last year of the Infocean Desk project; it was co-financed by the Midi-Pyrénées Region, accredited by the Aerospace Valley Cluster and was a success for 4 of the participating partners,” says **Edmée Durand**, Infocean Desk project manager for the Service Department. “Within this framework, Mercator Ocean developed the first tools of a multi-location configuration model, which means that it is able to model a small zone located anywhere on the globe; and, when necessary, with higher-resolution, forcing and more adapted physical parameters than those of the global or regional configuration restricted to its oceanic limits. Several zones were tested and studied to meet our users' needs, including fishing, safety at sea or petroleum operations. During these first developments an HMI was deployed to facilitate and accelerate development of such a multi-location configuration.*

**Mercator Ocean**

**SERVICE DEPARTMENT**

**DELIVERIES TO EVERY CORNER OF THE GLOBE**

**Surveillance of marine environment**

Mercator Ocean helps analyse vital parameters at stake in the marine environment of French Polynesia for the French Marine Protected Areas Agency

**Research campaigns**

Mercator Ocean supplies real-time forecast charts for the PIRATA campaign whose objective is to study ocean-atmosphere interactions in the tropical Atlantic Ocean.

© IRD / Jacques Grelet Pirata -  
Casting-off the Java buoy

**Drift models**

Mercator Ocean delivers data to Meteo-France, in particular, for its MOTHY ocean drift model

© BSAM/French Customs

**Climate study**

Data on currents and surface temperature are used in Iceberg drift models by the Icelandic meteorological agency.

## IT DEPARTMENT

### A STRATEGIC RESOURCE

The IT department ensures the maintenance and management of the computing facilities, the network throughput and the terabytes of disk storage so that the engineers and researchers can concentrate on their core business: oceanography.

*"A team of 4 engineers maintains 75 work stations, 30 servers, 170 TB of centralized disk storage, 1 backup robot with a 500 TB capacity and 2 supercomputers in operational condition."*

The IT Department first was initially responsible for maintaining and upgrading the computer equipment to meet the needs of the various teams. "The multi-site computer facilities deployed at the headquarters and at Meteo-France (2 frontals and 1 operational computer, 1 R&D supercomputer) were maintained to handle trouble-shooting and upgrades in an operational context," specifies **Bertrand Ferret**, manager of the IT Department. To improve the reliability of all the computing services and control the cost of system maintenance, the general services such as the messaging system, the firewall, and access to the external network, backup / archiving were strengthened and a crash recovery plan was designed.

#### Noteworthy events

##### >> Increase of the network's Internet bit rate

The increase of the Internet bit rate from 4 to 20 Mbits/s allowed more rapid FTP data retrieval by our various customers and the implementation of a video conference that was accessible to the entire staff.

##### >> Additional disk storage

The centralised and secured disk storage capacity of the Production and Service Departments was increased to 170 working TB to satisfy needs related to company activities.

##### >> Installation and follow-up of "Enterprise Resource Planning"

The IT Department helped set up the CEGID ERP: implementation of a server and applications, development of software for the Administration and Finance Department.

## MIGRATION AND OPTIMISATION OF OPERATIONAL PARALLEL CODE

For High Performance Calculation, the IT Department maintained the SGI Altix 4700 supercomputer and the local Fujitsu cluster in operational condition. The department managed access to accounts on different external supercomputers (Meteo-France, CEP, IDRIS...). Lastly, the migration and optimisation of our code onto the new array processor at Meteo-France (change from NEC SX8R to NEC SX9) and the scalar processor at CEP (IBM Power 6) were finalised.

Numerous actions were undertaken in the following areas: training in the development and optimisation of HPC software applications (Modelling team) and support for the industrialisation of operational systems (Operations team).

The objective of all these initiatives was to optimise the use of the computer facilities, which is fundamental for MERCATOR OCEAN's activity.

#### Caption:

*To satisfy the R&D computing power needed for the 1/12<sup>th</sup> model, MERCATOR OCEAN purchased a SGI Altix 4700 supercomputer having a theoretical power of 1, 23 Teraflops (192 processors, 960 GB of random access memory and 40 TB of disk storage) in June, 2007.*

Mercator Ocean start here

# ADMINISTRATION AND FINANCE DEPARTMENT

## A challenging new direction

The Administration and Finance Department worked with the Executive Board on the transformation from a public interest group to a non-profit company . Restructuring the financial arrangements and human resources to adapt the organisation to its new status was both challenging and difficult.

Laying the foundations for a long-lasting legal structure requires 3 ingredients: energy, staying power and a long-term vision. “An ad hoc workgroup was created as early as 2009 to orchestrate this change. It included a representative of each organisation and a legal expert, ” comments **Lydie Marty**, Administration and Finance Manager. Taken up with anticipating, preparing and coordinating, the year 2010 included three general assemblies of the public interest group, two general assemblies of the non-profit company , a board meeting of the public interest group, four meetings of the Advisory Board and four meetings of the work group. Along with a team of external legal experts (specialised in public law, corporate law, intellectual property laws, labour legislation), the Administration and Finance Department helped the new manager through the legal groundwork for the transfer while managing the administrative side of the project to enable the organisation to slide smoothly from one status to the next.

*“To successfully make the change from the public interest group to the non-profit company the members of the board of directors, the Executive Board and the new Mercator Ocean manager needed constant support from the Administration and Finance Department .”*

### Milestones for the change in status

non-profit company	3 June Registration	5 July Transfer of property		1 September Start up	
public interest group		Signature Licence and partnership agreements	31 August Liquidation		14 December Final close-out

## ORGANISING THE NON-PROFIT COMPANY 'S ADMINISTRATION AND FINANCE DEPARTMENT

The Administration and Finance Department implemented resource management software (an ERP) in order to:

- comply with private company accounting obligations,
- provide quick and reliable financial information,
- generate project cost statements.

Specification, deployment and training took the equivalent of 2 man-months of work out of an 8 month period. This allowed the same administrative team of 3 people to learn the same procedures previously handled by the accountant of the public interest group.





## **BUILDING HUMAN RESOURCES MANAGEMENT**

When activities are transferred from one organisation to another, people often lose their jobs. In our case however, the knowledge and skills of the men and women at Mercator Ocean are essential to its programme. After having built up a team of committed experts, we then had to set up a Human Resources Department (because of its limited mandates the public interest group had not done so). The Administration and Finance Department (AFD) thus drew up a plan for concerted action: first, the executive board defined the company's major functions (objective, missions and activities). After this work, the team leaders redefined the job descriptions. Lastly, the AFD offered the employees new work contracts and set up the annual performance interviews and the first annual training plan.

52% Oceanographers  
11% Expert Oceanographers  
17% IT Engineers  
20% Secretarial and administrative jobs

The men and women at Mercator Ocean:  
Specialised profiles

## MYOCEAN PROJECT

### A decisive step

Launched in April, 2009, the objective of the MyOcean project is to pool the resources of the various European ocean forecast centres to build an operational European Oceanographic Service by 2014. Mercator Ocean is the MyOcean coordinator.

*"The challenge in 2010 consisted in standardising a range of "product offers" for each of the production centres, to adopt European data formats and standards and then to interconnect these sub-systems and integrate them into a central system."*

"Among the 61 European partners in the MyOcean project, a dozen production centres already provide users with observation or analysis data and forecasts for their particular geographical zone ", explains **Frédéric Adragna**, MyOcean project manager. Thus, in 2010, it was necessary to develop, test and make the first operational version of the MyOcean service ("V1"): this was a **central component ("MyOcean Information System" or MIS)** linking all of the production centres together. It simultaneously allows supervision of production, updating of the real-time products catalogue, managing of data access (switching to the nominal solution or to a backup solution), including detailed and centralised monitoring of access to products; a **common interface (MIS GateWay)**, developed centrally prior to deployment in the distribution centres; **A Web portal** including an 'editorial' or home page (presentation of the service, the interactive catalogue, news, etc.) and a data access interface for all the users allowing them to register, to display oceanographic products, and to download them free of charge.

## PROJECT MANAGEMENT

**REVIEWS.** A project like this requires very prompt and regular administrative and financial reporting and internal and external reviews (with our European expert assessors). Four external project reviews took place in 2010 to validate the design of the V1 service according to the users' needs, its development, the integration tests and verifications. At the last review, our European assessors gave us the green light to put the latest V1 version of the MyOcean service on line for users. Like the home-stretch in a race, the qualification took place at the end of year, on 15 December.

**PROCEDURES.** New procedures were introduced for everyday operation of the service including incident management, change management, improvements to the Service, qualification and addition of new products. The difficulty of this last item lies in the heterogeneous experience and habits of the various stakeholders which had to be overcome in order to write a common "Operational Procedures Manual" (OPM).

**Caption:** Qualification review of the MyOcean service V1 in Brussels, December 2010

## A NEW WEB SITE EDITORIAL

Mercator Ocean coordinates external communications for MyOcean

The editorial part of the Web site (more use oriented) was enhanced with new features such as Agenda & News, product illustrations, information on the real-time service and an education section with help from the *Couleur Citron* communication agency.

Since its opening in December 2009, the number of distinct visitors has doubled.

**Caption:** 1<sup>st</sup> annual review by MyOcean partners in Exeter (UK), April 2010

**Mercator Ocean**

## **MARKETING AND COMMUNICATIONS DEPARTMENT**

### **Developing our visibility**

Mercator Ocean is henceforth a non-profit company . This framework opens up a long-term perspective which means that it can build a new image and suitable market position for developing uses for its products and services, while remaining faithful to its public interest mission. A new Communication team is already hard at work.

*“The involvement of the scientists at Mercator Ocean in its external communication is a positive factor. Depending on their speciality, they must be stakeholders in the communication projects (articles, exhibitions, books).”*

*“A company begins with a tight-knit team. For several years, this has been the case at Mercator Ocean, ” notes **Cécile Thomas-Courcoux**, manager of the Marketing and Communication department. “The new structure nonetheless requires that we pay more attention to internal communication.”* An internal poll was made in the second quarter to determine the needs for internal communication. Following this poll, and with the help of the IT Department, the existing intranet was revamped in response to these expectations (featuring Organisation, current events, etc.). Also, we have started organising regular short information meetings (5 in 2010).

### **A VISUAL IDENTITY IN LINE WITH THE STRATEGIC OBJECTIVES**

In becoming a non-profit company , Mercator Ocean is heading in a new direction and that justifies a new visual identity. As of 2010, Mercator Ocean has a new logo (the old one was 15 years old), a graphic identity in line with its public interest mission as an oceanography reference, its know-how and its international influence, and a graphic charter. The Logo is the result of a joint effort led by a young communication agency (Comm'In). Instead of invoking a concept the logo's signature highlights professional experts the "Ocean Forecasters". The next step will be devoted to the future Web site which will be an important opportunity for addressing new users or anybody who wants to learn more about the ocean (in May, 2011).

### **COMMUNICATING VIA IMAGES**

Fabrice Messal, who is in charge of the multimedia projects, enhances Mercator Ocean products with images or illustrations which are great communication vectors. The releases of Mercator Ocean models or analyses can be reprocessed by dedicated systems or by computer graphics to create HD animations (Mira Production). Thus, we can illustrate evolutions of ocean temperature, ocean currents and also abnormal temperatures. It is media that is both informative and didactic. Thus, Mercator Ocean is referenced in books on Physics, Chemistry and Life Sciences used in the fifth form curriculum and published by Hachette. These animations are regularly posted on *Daily Motion* and are used for press articles and conferences.

**Caption:** *Salinity in the Amazon Delta*

## STRATEGY AND INFLUENCE

### Science at Mercator Ocean

Mercator Ocean contributes to scientific breakthroughs in oceanography by leading three types of actions: in-house R&D projects, R&D projects in partnership with research laboratories and projects within the research community.

Among the R&D projects of particular interest in 2010 are:

- As part of a project with SHOM, an engineer from Mercator Ocean embarked on the '*Pourquoi Pas?*' oceanographic vessel for the third leg (from Lisbon to Brest) of the PROTEVS campaign (measurements to validate oceanic modelling in the coastal domain).
- Participation of 4 teachers and 2 students from Mercator Ocean in the GODAE OceanView international summer school (a legacy of the Global Ocean Data Assimilation Experiment project) organized in Perth (Australia). It brought together 66 students and 41 teachers around operational oceanography themes such as observations, modelling, assimilation and applications. The courses will be published in 2011 in a book that Mercator Ocean helped to write.
- Contribution to the Summer school on coastal oceanography organized in March 2010 in Istanbul (Turkey) within the ECOOP project (European Coastal Sea Operational Observing and Forecasting System).
- Organisation of 2 sessions dedicated to operational oceanography: in February, a session of the AGU (American Geophysical Union) Ocean Science meeting in Portland (USA) and in April, a session of the EGU (European Geosciences Union) in Vienna.
- Organisation, with the CNRM (National Centre for Meteorological Research), of a one-day scientific meeting with Meteo-France, bringing together 80 experts at the Météopôle in Toulouse on 14 June, 2010.  
The objective of this meeting was to further the scientific collaboration between Meteo-France and Mercator Ocean in common areas of research. The project, supported by the MEEDTL (Ministry of Ecology, Sustainable Development, Transport and Housing), for ocean / atmosphere coupling in the zone around Reunion Island, including a doctoral thesis in partnership with Meteo-France, is a direct spin-off from this day.
- As in previous years, Mercator Ocean actively participates in various national and international bodies such as the Ocean group in the TOSCA programme at CNES (Earth, Ocean, continental Surfaces, Atmosphere), the NEMO (Nucleus for European Modelling of the Ocean) group, the OST-ST team (Ocean Surface Topography-Science Team), the Canadian, GOAPP (Global Ocean-Atmosphere Prediction and Predictability) research network and the regional communities, MOON (Mediterranean Operational Oceanography Network), and IBI-Roos (Ireland-Biscay-Iberia Regional Operational Oceanographic System).

## **GMMC, A SCIENTIFIC INCUBATOR**

The Mercator Coriolis Mission Group (GMMC) brings together about one hundred researchers with some turnover each year following a call for scientific proposals (this has been done jointly with Coriolis since 2002). *“Its task is to support the Mercator and Coriolis scientific activities and to participate in product validation,”* explains Pierre Brasseur, chairman of the GMMC scientific council. *“This is a rich field of research which feeds directly into Mercator and offers a strong link between operations and research. The results of the studies undertaken since 2008 were presented at the annual GMMC meeting organised in Toulouse in November, 2010. This event brought together more than 120 participants and was followed by the MyOcean Science Days, the first European conference on operational oceanography organized within the framework of MyOcean (cf. page 16).”*

The Call for projects, broadened to include the coastal domain since 2009, was renewed in 2010 in a research context in which the scientific community is already deeply involved in association with Mercator and Coriolis, in particular, through several reinforced partnership projects (PPR) (GLORYS reanalyses, VODA variational assimilation, SiMED Mediterranean, PABIM-II and Mercator Vert biogeochemistry). The number of permanent researchers in the scientific community contributing to the active GMMC projects in 2010 has been estimated at 64 full-time equivalent Jobs. The number of responses to the 2010 Call for projects was very satisfactory with 15 new proposals submitted including 3 reinforced partnership plans (extensions to GLORYS, Mercator Vert improvements and SiMED second phase).

An assessment of past activities and forecast of prospects for Mercator Ocean’s scientific activities for 2011-2013 were undertaken in conjunction with the Scientific Council. The analysis covered more specifically the development of Global Ocean, regional modelling, the development of BIOMER, data assimilation, oceanic reanalyses, the analysis and forecasting systems and the Cal / Val (calibration / validation) activities. A set of recommendations was issued by the Scientific Council and passed on to the R&D teams who will specify the scientific work plan for the coming years.

## STRATEGY AND INFLUENCE

### National and European leadership

Mercator Ocean is the legitimate national and European operator for operational oceanography.

### EUROPEAN LEADER

Mercator Ocean was confirmed in its role as European operator of the operational oceanography service in 2010. This confirmation concerns, in particular, the European Union's GMES<sup>(1)</sup> programme which was formally promulgated in November 2010, along with the governing and financial mechanisms to ensure its long-term continuation.

The European operational oceanography service was defined as early as 2005 by the European Commission as one of three constituents of GMES considered to be a priority.

*"This gradual implementation, covering the period from 2009 to 2014, being done within the MyOcean project and its follow-on, MyOcean2, is co-financed by the EU's 7th Framework Programme for Technical Research and Development (PCRD) for which it is one of the biggest projects,"* explains **Alain Podaire**, Head of GMES.

*"Mercator Ocean is the main partner in the MyOcean project; first, because its European partners (the main national operational oceanography centres) entrusted it with the project coordination and its programmatic logistics, second, because it is responsible for some essential functions, in particular, the global ocean analysis and forecasting system. Consequently, Mercator Ocean has first tier EU co-financing of this project."*

The MyOcean2 project will enhance the operational effectiveness of the GMES operational oceanography service and the consolidation of its supply plan. The confirmation of Mercator Ocean as coordinator of the MyOcean2 project, and, if confirmed by the European Commission, the migration of certain essential functions of the European service towards Mercator Ocean, will further strengthen the non-profit company's role as leader of this European service.

This strong European position, resulting from a long term strategy and national efforts, benefits all the French institutions and companies involved in operational oceanography. First of all, because the position of the principal partners of the national operational oceanography system in Mercator Ocean's wake will be strengthened on European and national levels; this is true for CLS / CNES, IFREMER, Meteo-France and the SHOM through the *in-situ* satellite observation by-products. Second, because the implementation of a national service for operational coastal oceanography could be based on the same approach used for Mercator Ocean, whose experience should make things easier.

The programmatic and technical headway achieved in 2010 through Mercator Ocean are completely in-line with the actions planned for the national and European joint maritime policy by the Interministerial committee for the sea in December, 2009.

Mercator Ocean also strives, namely through its participation in the strategic groups of the EuroGOOS<sup>(2)</sup> alliance, to spread this model of nested national and European functions and activities.

(1) Global Monitoring for Environment and Security  
(2) The European Global Ocean Observing System

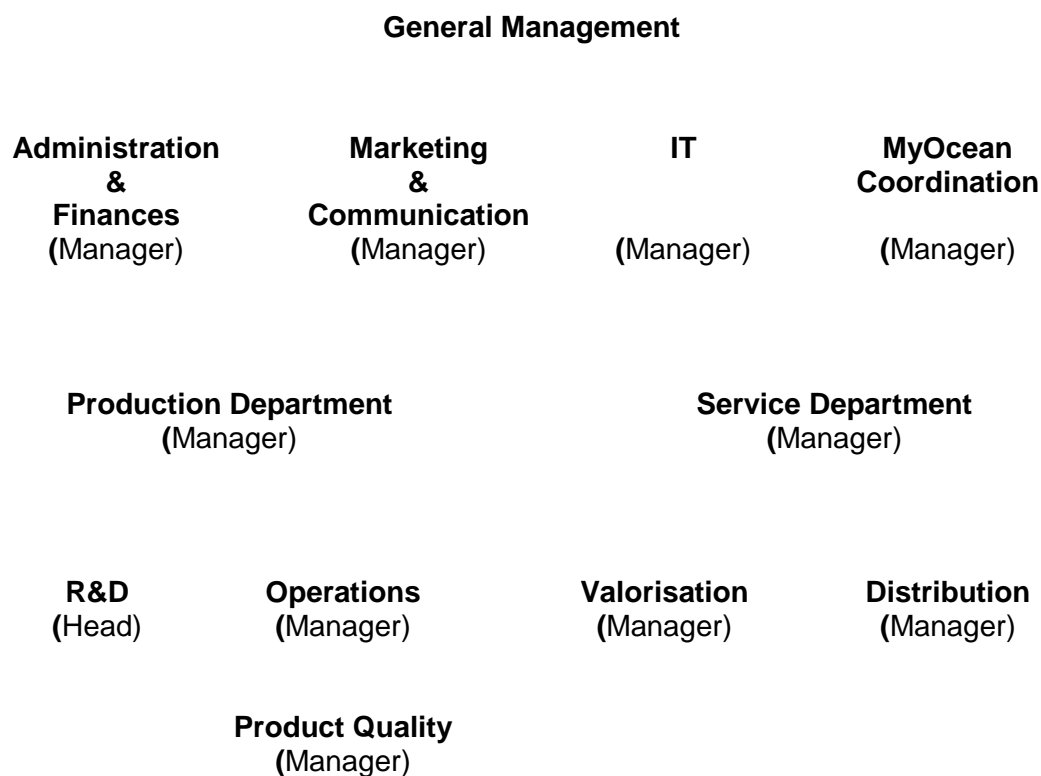
## **STRONG LOCAL AND NATIONAL INVOLVEMENT**

Mercator-Ocean's headquarters in the Midi-Pyrénées Region benefit from the local technical, scientific and academic environment. The partners will benefit from its confirmed role of European leader in operational oceanography which will consolidate the triptych, education-research / public utility / trade services.

This regional vocation of Mercator Ocean also takes into account existing capacities in other French regions. By helping to coordinate relations between the Aerospace Valley Cluster (working with the Aquitaine partners) and the Mer Bretagne and PACA clusters, mainly by defining a well-balanced distribution of activities between the various regional public and private actors, and setting up common projects to strengthen the overall balance, Mercator Ocean plays a part in shaping a dynamic national and regional strategy for operational oceanography.



## Organisation chart



(\*) J Beuvier (arrival autumn 2010) – S Buarque (left end of summer 2010)

## Finances

2010 income		2010 expenses	
<b>54.4%</b> <b>Shareholders</b>	<b>7.7 million</b> <b>Euros</b>	<b>42%</b> <b>Operations</b>	
<b>17%</b> <b>Partner (CNES)</b>		<b>3%</b> <b>Missions</b>	
<b>26.5%</b> <b>MyOcean</b>		<b>41%</b> <b>Personnel</b>	
<b>2%</b> <b>Other</b>		<b>14%</b> <b>Investment</b>	

## Projects in 2010

Project in 2010	Framework or Financing	Leader	Leader or Mercator Ocean Contributor
ALTIKA (CLS PI, G. Dibarboure)	CNES call for opportunity	CLS, France	Eric Dombrowsky
BOSS4GMES (European Commission)	FP6 European Commission	Infoterra, UK	Fabrice Messal
AF447 Drift (BEA)	BEA		Marie Drévilion
DRAKKAR (LEGI/LPO)	National Project	LEGI/LPO, France	Yann Drillet
Easy-co	Interreg Project		Dominique Obaton
ECOOP (European Commission)	FP6 European Commission	DMI, Denmark	Sylvain Cailleau
PROTEVS Campaign (SHOM)	EPIGRAM	SHOM, France	Bruno Levier
HYMEX (Meteo-France)		Meteo-France	Jean-Michel Lellouche
Infocean desk (Aerospace Valley)	Competiveness Cluster	CLS, France	Edmée Durand
MyOcean (European Commission)	FP7 European Commission	Mercator Ocean	Pierre Bahurel
- <i>Harmony on ice (MyO WP3 Open Call #1, NERSC)</i>	MyOcean Open Call	NERSC, Norway	Gilles Garric
- MESCLA (MyO WP3 Open Call #1 CNR)	MyOcean Open Call	CNR, Italy	Yann Drillet
- <i>Wave-dependent momentum fluxes (MyO)</i>	MyOcean Open Call	Met.no, Norway	Nicolas Ferry
OST-ST Jason II (CLS PI, G. Larnicol)		CLS, France	Eric Dombrowsky
OST-ST Jason II (LOCEAN PI Ch. Provost, pro-		LOCEAN, France	Eric Dombrowsky
OST-ST Jason-II (Mercator Océan PI)		Mercator Ocean	Eric Dombrowsky
PPR GLORYS (LEGI)	PPR Mercator Ocean	LEGI, France	Nicolas Ferry
PPR Mercator Vert (LSCE)	PPR Mercator Ocean	LSCE, France	Abdelali Elmoussaoui
PPR SiMED (ENSTA)	PPR Mercator Ocean	ENSTA, France	Romain Bourdalle-Badie
PPR Variational (INRIA)	PPR Mercator Ocean	INRIA, France	Elisabeth Remy
Drift thesis (Meteo-France)	Midi-Pyrénées / Meteo- France/Legos	Mercator Ocean	Stéphane Law Chune
VORTEX (Meteo-France)		Meteo-France	Lucas Nouel
Previmer (Ifremer PI, F. Lecornu)		Ifremer	Pierre Bahurel
Field_AC (UPC, A.Sanchez- Arcilla)	FP7 European Commission	UPC, Spain	Pierre Bahurel

## 2010 LANDMARKS

## Programmes in 2010

Programmes	Subject	Mercator Ocean Contributor	Contribution
<b>EuroGOOS</b> (European Global Ocean Observing Systems)	European association including 34 national agencies, dedicated centres or operational oceanography research centres. Members of EuroGOOS provide operational services or conduct research programs in operational oceanography.	Pierre Bahurel (Board)	European coordination
<b>MOON</b> (Mediterranean Operational Oceanography Network)	EuroGOOS network in the Mediterranean area	Pierre Bahurel (Co-Chair)	Regional coordination
<b>IBI Roos</b> (Ireland-Biscay-Iberia Regional Operational Oceanographic System)	EuroGOOS network along the Atlantic Coast	Jérôme Chanut	Research
<b>NEMO</b> (Nucleus for European Modelling of the Ocean)	Reference for modelling oceanographic research, operational oceanography, studies on the climate and seasonal forecasts. The NEMO group works on the improvement and development of systems. NEMO has 6 members among which the CNRS and Mercator Ocean.	Pierre Bahurel (Board) Yann Drillet Clément Bricaud	Coordination and research
Canada/CONCEPTS	Canadian operational oceanography programme associating Environment Canada, DFO and universities	Eric Dombrowsky	Coordination and research
OceanView	International coordination for the improvement of oceanic analysis and forecasting systems in the world.	Eric Dombrowsky Nicolas Ferry Fabrice Hernandez	Coordination and research
<b>ICES/WGOOFE</b> (International Council for the Exploration of the Sea / Working Group on Operational Oceanographic Products for Fisheries and Environment)	Work group matching the needs for research on marine resources with the capacities of operational oceanography systems	Dominique Obaton	Work groups
<b>JCOMM/ETOOFS</b> (Joint Technical Commission for Oceanography and Marine Meteorology/Expert Team on Operational Ocean Forecast Systems)	Group of experts from the intergovernmental agency which ensures coordination between the suppliers of oceanic observation and marine forecasting services and the oceanographic and meteorological communities.	Eric Dombrowsky	OO expertise

## Scientific publications

### Articles published in 2010

- Marin, F., E. Kestenare, T. Delcroix, F. Durand, S. Cravatte, G. Eldin and **R. Bourdallé-Badie**, 2010: "Annual Reversal of the Equatorial Intermediate Current in the Pacific: Observations and Model Diagnostics" *J. of Phys. Oceanogr.*, Volume 40, Issue 5 (May 2010) pp. 915-933 doi: 10.1175/2009JPO4318.1
- Béranger, K., **Y. Drillet**, M. N. Houssais, P. Testor, **R. Bourdalle-Badie**, B. Alhammoud, A. Bozec, L. Mortier, P. Bouruet-Aubertot and M. Crepon, 2010: "Impact of the spatial distribution of the atmospheric forcing on water mass formation in the Mediterranean Sea" *J. Geophys. Res.*, 115, C12041, doi:10.1029/2009JC005648.
- Herrmann, M., F. Sevault, **J. Beuvier**, and S. Somot, 2010, "What induced the exceptional 2005 convection event in the northwestern Mediterranean basin? Answers from a modelling study", *J. Geophys. Res.*, 115, C12051, doi:10.1029/2010JC006162.
- Minvielle, M., C. Cassou, **R. Bourdalle-Badie**, L. Terray and J. Najac., 2010, "A statistical-dynamical scheme for reconstructing ocean forcing in the Atlantic. Part II: methodology, validation and application to high-resolution ocean models", *Climate Dynamics*, doi.1007/s00382-010-0761-y

### Articles accepted in 2010

- Hurlburt Harley E., E. Joseph Metzger, James G. Richman, Eric P. Chassignet, **Yann Drillet**, Matthew W. Hecht, **Olivier Le Galloudec**, Jay F. Shriver, Xiaobiao Xu, and Luis Zamudio, 2010, "Dynamical evaluation of ocean models using the gulf stream as an example", to appear as a chapter of the book "Operational Oceanography in the 21st Century", based on the International GODAE OceanView Summer School 11-22 January 2010 University of Western Australia Perth.
- **Dombrowsky E.**, 2010, "Overview global operational oceanography systems", to appear as chapter 16 of the book "Operational Oceanography in the 21st Century", based on the International GODAE OceanView Summer School, 11-22 January 2010, University of Western Australia, Perth.
- **Hernandez, F.**, 2010, "Performance of Ocean Forecasting Systems—Intercomparison Projects", to appear as chapter of the book "Operational Oceanography in the 21st Century", based on the International GODAE OceanView Summer School 11-22 January 2010 University of Western Australia Perth.
- Berx B., M. Dickey-Collas, M. D. Skogen, Y.-H. De Roeck, H. Klein, R. Barciela, R. M. Forster, **E. Dombrowsky**, M. Huret, M. Payne, Y. Sagarminaga, and C. Schrum, 2010, "Does Operational Oceanography Address the Needs of Fisheries and Applied Environmental Scientists?", *Oceanography*, to appear
- Brankart J.-M., E. Cosme, **C.-E. Testut**, P. Brasseur and J. Verron, 2010, "Efficient adaptive error parameterizations for square root or ensemble Kalman filters: application to the control of ocean mesoscale signals", *Mon. Weather Rev.*, to appear.

### Articles submitted in 2010

- Brankart J.-M., Cosme E., **Testut C.-E.**, Brasseur P. and Verron J., 2010, "Efficient local error parameterizations for square root or ensemble Kalman filters: application to a basin scale ocean turbulent flow", submitted to *Mon. Weather Rev.*
- Haines, K., J. A. Johannessen, P. Knudsen, D. Lea, M. H. Rio, L. Bertino, F. Davidson, **and F. Hernandez**, 2010, "An ocean modeling and assimilation guide to using GOCE geoid products". Submitted to *Ocean Sci.*

## Articles published in Mercator Ocean and CORIOLIS newsletters

- **Nicolas Ferry, Laurent Parent, Gilles Garric**, Bernard Barnier, Nicolas C. Jourdain and the Mercator Ocean team, Mercator Global Eddy Permitting Ocean Reanalysis GLORYS1V1: Description and Results, 2010, Mercator Ocean Quarterly Newsletter#36 – January 2010, pp 15-27 [http://www.mercator-ocean.fr/documents/lettre/lettre\\_36\\_en.pdf](http://www.mercator-ocean.fr/documents/lettre/lettre_36_en.pdf).
- **Elisabeth Remy**, Large scale ocean variability estimated from a 3D-Var Reanalysis: sensitivity experiments, Mercator Ocean Quarterly Newsletter#36 – January 2010, pp 8-14 [http://www.mercator-ocean.fr/documents/lettre/lettre\\_36\\_en.pdf](http://www.mercator-ocean.fr/documents/lettre/lettre_36_en.pdf)
- Cécile Cabanes, Clément de Boyer Montégut, Christine Coatanoan, **Nicolas Ferry**, Cécile Pertuisot, Karina Von Schuckmann, Loic Petit de la Villeon, Thierry Carval, Sylvie Pouliquen and Pierre-Yves Le Traon, CORA (CORIOLIS Ocean Database for re-Analyses), a new comprehensive and qualified ocean in-situ dataset from 1900 to 2008 and its use in GLORYS, 2010, Mercator Ocean – CORIOLIS Quarterly Newsletter - Special Issue#37 – April 2010, pp15-19 [http://www.mercator-ocean.fr/documents/lettre/lettre\\_37\\_en.pdf](http://www.mercator-ocean.fr/documents/lettre/lettre_37_en.pdf)
- Karina von Schuckmann, **Marie Dréville, Nicolas Ferry**, Sandrine Mulet and Marie Hélène Rio, Global Ocean indicators – CORIOLIS Quarterly Newsletter - Special Issue#37 – April 2010, pp20-28 [http://www.mercator-ocean.fr/documents/lettre/lettre\\_37\\_en.pdf](http://www.mercator-ocean.fr/documents/lettre/lettre_37_en.pdf)
- **Sylvain Cailleau, Jérôme Chanut, Bruno Levier**, Claire Maraldi, **Guillaume Reffray**, 2010, The new regional generation of Mercator Ocean system in the Iberian Biscay Irish (IBI) area, Mercator Ocean Quarterly Newsletter#39 – Octobre 2010, pp 5-15. [http://www.mercator-ocean.fr/documents/lettre/lettre\\_39\\_en.pdf](http://www.mercator-ocean.fr/documents/lettre/lettre_39_en.pdf)

## 2010 LANDMARKS

### The Public Interest Group

(Disbanded August 31<sup>st</sup>)

#### MEMBERS

Sitting at the group's **General Assembly**:

- The National Centre for Scientific Research (CNRS), represented by Mr. Jean-François Stéphan, acting Director of the INSU
- The French Research Institute for Exploration of the Sea (IFREMER), represented by Mr. Jean-Yves Perrot, acting President-Managing Director
- The *Institut de Recherche pour le Développement* (IRD) represented by Mr. Michel Laurent, acting Chairman
- Météo-France, represented by Mr. François Jacq, acting Chief Executive Officer
- The *Service Hydrographique et Océanographique de la Marine* (SHOM), represented by Mr. Bruno Frachon, acting Director General
- The French Space Agency (CNES), represented by Mr. Richard Bonneville, acting Head of Strategy

#### BOARD OF DIRECTORS

Member representatives:

- Mrs. Pascale Ulte-Guerard, CNES
- Mr. Patrick Monfray, CNRS
- Mr. Patrick Vincent, IFREMER
- Mr. Pierre Soler, IRD
- Mr. Joël Poitevin, METEO-FRANCE
- Mr. Michel Le Gouic, SHOM

Participants with consultative vote:

- Chairman of the board of directors: Mr. François Gerard
- Chief Executive Officer: Mr. Pierre Bahurel
- Chairman of the scientific council: Mr. Pierre Brasseur
- Accountant: Mr. Daniel Guezennec
- General Controller: Mr. Claude Brechard
- Government Commissioner: Mr. Roland Morancho

## **Mercator Ocean**

### **The non-profit company**

(Activated 1 September)

#### **SHAREHOLDERS**

Sitting at the organisation's **General Assembly**:

- The National Center for Scientific Research (CNRS), represented by Mr. Alain Fuchs, acting Chairman
- The French Research Institute for Exploration of the Sea (IFREMER), represented by Mr. Jean-Yves Perrot, acting President-Managing Director
- The Institut de Recherche pour le Développement (IRD) represented by Mr. Michel Laurent, acting Chairman
- Meteo-France, represented by Mr. François Jacq, acting Chief Executive Officer
- The Service Hydrographique et Océanographique de la Marine (SHOM), represented by Mr. Bruno Frachon, acting Director General

#### **THE EXECUTIVE BOARD**

- Mr. Jean-Marie Flaud, CNRS
- Mr. Patrick Vincent, IFREMER
- Mr. Yves du Penhoat, IRD
- Mr. Joël Poitevin, METEO-France
- Mr. Albert Le Roux, SHOM

#### **Caption:**

First Executive Board meeting (9 September 2010)

The Mercator Ocean teams with members of the Executive Board : Patrick Vincent (Ifremer), Yves Du Penhoat (IRD), Joël Poitevin (Meteo-France), Albert Le Roux (SHOM) and Patrick Monfray (CNRS, Jean-Marie Flaud's predecessor)

## Partners

### Shareholders of the on-profit Company

CNRS / INSU: National Institute for Earth Sciences and Astronomy – Paris

IFREMER: French Research Institute for Exploration of the Sea – Paris/Brest

IRD: Institut de Recherche et de développement – Marseilles

Meteo France: Paris/Toulouse

SHOM: Service Hydrographique et Océanographique de la Marine – Brest

### National scientific partners

CNES: The French Space Agency – Paris/Toulouse (Mercator Ocean public interest group-founding member)

CERFACS: Centre Européen de Recherche et de Formation Avancée en Calcul Scientifique - Toulouse

CLS: Collecte Localisation satellites – Toulouse

CEA: French Alternative Energies and Atomic Energy Commission – Paris

ENSTA: Ecole Nationale Supérieure de Technique Avancées – Paris

LEGI: Laboratoire des Ecoulements Géophysiques et Industriels – Grenoble

LEGOS: Laboratoire d'Etudes et Géophysique et Océanographie Spatiale – Toulouse

LOCEAN: Laboratoire d'Océanographie Dynamique et de climatologie - Paris

LPO: Laboratoire de Physique des océans - Brest

LOV: Laboratoire d'Océanographie de Villefranche – Villefranche s/mer

Météo France / CNRM: Centre National de Recherche Météorologique – Toulouse

Observatoire Midi Pyrénées / Laboratoire d'Aérodynamique – Toulouse

UJF: Université Joseph Fourier – Grenoble

USTV: Université du Sud Toulon Var – La Garde (83)

### National institutional partners

Ministry of Ecology, Sustainable Development, Transport and Housing

Midi-Pyrénées Regional Council – Toulouse

Aerospace Valley World Competitiveness Cluster

Pôle Mer Bretagne—PACA



### **Main foreign partners**

DMI: Danish Meteorological Institute – Denmark

Environnement Canada - Quebec

Instituto Hidrografico / Divisao de Oceanografia – Portugal

INGV: Istituto Nazionale di Geofisica & Vulcanologia –Italy

Met'Office – United Kingdom

Met'No: Norwegian Meteorological Institute - Norway

NERSC: Nansen Environmental and Remote Sensing Center – Norway

Puertos del Estado: Area de Medio Fisico – Spain

SMHI: Swedish Meteorological & Hydrological Institute – Sweden

ECMWF: European Centre for Medium-Range Weather Forecasts

EEA: European Environment Agency

EMSA: European Maritime Safety Agency –Portugal

ESA: European Space Agency – Netherlands

IOC: Intergovernmental Oceanographic Commission (UNESCO)

Commission Européenne

### **National support service partners**

COMM'IN, Toulouse

MIRA PRODUCTION, Toulouse

COULEUR CITRON, Toulouse

EURHEA CONSEIL, Toulouse

FIMAC (CEGID provider), Toulouse

FIDAL, Toulouse

Imprimerie CAZAUX, Muret

LINAGORA, Toulouse

## **2011 Perspectives**

Ensure the distribution of new products

### **MEET NEEDS IN THE COASTAL DOMAIN**

Strengthen the European, national and regional alliances

Guarantee the operational exploitation of the PSY3V3 and PSY2V4 systems (weekly and daily)

Successfully achieve the complementarity and harmonisation of the Mercator Ocean and MyOcean services

Launch a new web site

Pursue the implementation of human resources management

Develop Mercator Ocean's visibility

Implement worker councils

Consolidate the MyOcean Service

Guarantee the implementation of new systems: IBI, BIOMER and PSY4V2

### **CONVINCE THE EUROPEAN COMMISSION TO DEPLOY MYOCEAN 2**

Successfully set up and run the first MyOcean User Forum