IBI-ROOS meeting

20th-22nd February 2008
IMI– Dublin (Ireland)

The 5th IBI-Roos meeting was hosted by IMI in Dublin/Ireland. 28 persons attended the meeting from the 5 countries involved in IBI-ROOS (see list in annex2). The meeting started at 14h00 on the 20th and finished on the 22nd at 11h30. Glenn Nolan welcomed the participants and provided the logistical information for the two day meeting.

1 General Overview of IBI-ROOS activities for 2007

1.1 News from the MOU

S. Pouliquen reported on the coordination of the IBI-ROOS. 12 institutes have signed the MoU, 5 are considering it, one new institute expressed interest, another one declined the invitation and 3 have been so silent that it's worth verifying if they are interested.

<table>
<tr><th>Signed</th><th>Working on it</th><th>Expressed interest</th></tr>
<tr><td rowspan="3">1. AZTI/Spain
2. CONSELLERIA DE MEDIO AMBIENTE e desenvolvemento sostible (XUNTA DE GALICIA)/ Spain
3. Euskalmet-Basque Météorological Agency /Spain
4. I.E.O / Spain
5. Ifremer /France
6. Instituto Hidrografico / Portugal
7. INTECMAR/ Spain
8. IPIMAR /Portugal
9. Irish Marine Institute/ Ireland
10. IST /Portugal
11. Mercator-ocean/France
12. SHOM/ France</td><td>1. Météo-France/ France
2. Puertos Del Estado/Spain
3. NERC /UK
4. Centre for Environment, Fisheries & Aquaculture Science (CEFAS)/UK
5. UK MetOffice /UK</td><td>1. CNRS France</td></tr>
<tr><th>Verify If Interested</th><th>Declined the invitation</th></tr>
<tr><td>1. Centro de Supercomputación de Galicia, Spain
2. Consejo Superior de Investigaciones Científicas (CSIC), Spain
3. Instituto de Meteorologia, Portugal
4. Agencia Estatal de Meteorología Spain
5. University of Cantabria. Spain
6. University of Vigo. Spain</td><td>1. IRD France</td></tr>
</table>

She mentioned that only the institutes that had signed the MoU have their logo displayed on the front page of the IBI WWW site (http://www.ibi-roos.eu). No new potential members were identified.

1.2 News from the IBI WWW site

Then S. Pouliquen presented the new features on the IBI web and the proposal for improvement:

- The GoogleEarth viewing of the IBI area data transmitted to Coriolis is accessible from the data part of the WWW;
- **Each partner is requested to check the WWW links associated with their logo to be sure that they point on the appropriate page for the IBI activities;**
- The meeting talks will be put on the WWW in PDF format unless the speaker denies.

The updated list of the IBI-ROOS observing systems provided by the Observing Working group will be made available on the WWW as well as the updated list of the Data Centres provided by the Data Management Working group. These two lists will at least be revisited during the annual meeting. It has been suggested that the site should provide pointers towards the presently running coastal models.

1.3 Ongoing projects and calls in relation with IBI

S. Pouliquen presented the status of the EU project in which the IBI partners are involved:

- Mycon led by Eurogoos: The purpose is to design the Observing System needed for the IBI area in order to be ready for a GMES call on in-situ observation. It failed but we need to do the job anyway to be ready for the call. Collaboration with NOOS on the issue is considered as appropriate (J Legrand will attend the NOOS meeting on this issue at OI2008 and report to the IBI community);
- Euro-Argo: The purpose is to consolidate the European contribution to Argo . All IBI countries are represented. It started January 1st for 30 months.

1.4 Proposal to set up a steering committee

The chairs expressed the need for a steering committee that would help chairs coordinating the IBI activities between the annual meetings. The idea was agreed but the need for clear terms of reference was expressed. A. Uriate accepted to sketch some to be discussed on Friday. The term of reference, extracted from the Memorandum of understanding and the Data Exchange agreement, was presented by Adolfo Uriarte elaborated together with Enrique Alvarez and Glenn Nolan. It is included in annex 3. It will be distributed for further discussion and opinions. After some debates, the following national representatives were selected (member/ stand-in member):

- → France: Sylvie Pouliquen / Dominique Obaton
- → Spain: Alicia Lavín / Marta de Alfonso
- → Ireland: Glenn Nolan / Marcel Curé
- → Portugal: José Onofre /
- → U.K: Rosa Barciela.

This set of members also covers the working group activities presently setup within IBI-Roos.

1.5 News from the MyOcean project (GMES/MCS call)

D. Obaton from Mercator-Ocean provided feedback from MyOcean which has been accepted but with a significant budget reduction (from 45 to 33,8M€). The negotiation phase will finish end of May and the project will start 1st September 2008 for 3 years.
The Commission asked to re-focus on core services (less models per region, no downstream, no big Service system, demonstrate real operational services). The work packages that are likely to be the most impacted are the Service, and the User involvement WP(WP18-WP19-WP20). Some users will be chosen on thematic expertise (not regional one) with the specific role to contribute to the User Requirement Document to give regular feedback on Marine Core Service products.
P. Gentien declares that the HAB community over the IBI region does not wish any more to be considered in this set of dedicated users, since this would imply too much burden for no money.

It has been suggested by the IBI group to also involve users by the mean of a call for tenders, like it is done in the space agencies. This was reported by S. Pouliquen at the WP meeting on Friday and it is studied within the new WP19 work package (former WP19-WP20).

Two streams have been defined within MyOcean: stream1 for the most operational production units that will have to set up two versions of the system (T0+18 and T0+24); these versions have to go through Eumetsat-type reviews. The stream2 production units will only have one version to provide at T0+24. IBI-MFC is seen as a stream 2 WP which is coherent with the development stage of the IBI-ROOS system.

The rest of the meeting is dedicating to the IBI-ROOS working group activity. The Working group reports are in annexes.

2 Data exchange working group

2.1 First steps on fixed station data exchange within IBI-ROOS

Marta De Alfonso presented, in the scope of a European system, how Puertos Del Estado (PdE) started to integrate data at national level (Puertos Del Estado, IEO, INTECMAR/MeteoGalicia, Basque Country/AZTI). Data are mainly transferred via FTP. Data are either quality controlled automatically and inserted in a common database or, if QC is done by the producer, inserted in the data base directly. Data are then distributed from the database. Up to now it's visible on PdE portal and data will soon be sent to Coriolis (within 2-3 months) and the portal will be strengthened within MyOcean/GMES-MCS. Marta plans to integrate fixed platforms from other IBI countries taking over the Seprise demonstration, for the data integration aspects, as encouraged by EuroGOOS.

Data providers have mentioned that different levels of QC were applied to data leading to different versions of the same data. The WG chairs reminded that we were setting up a data portal and not a data exchange system. Therefore we aim at having on the portal the best version of a dataset and that it's the responsibility of the data centre to provide to the IBI Portals the best qualified dataset.

2.2 Data inventory

Alicia Lavin presented the inventory of the data available for the IBI area that has been performed within ECOOP using SeaDataNet means. This has allowed noticing that there were fixed platforms and repetitive sections that were not registered in the SeaDataNet/EDIOS catalogue. Therefore we need to work on providing regular update to SeaDatanet.

The WG has established a first version of the data centres and dataset that institutes were willing to share freely. This list has been updated and is in annex 4. It will be completed by the FTP sites were the data are available to be integrated into the portal. This list will be updated on a yearly basis prior to the annual IBI-ROOS meeting and accessible from the IBI-ROOS WWW site.

2.3 Toward IBI-ROOS portal

- ECOOP development for In-situ and Product distribution
- Discussion on Building the IBI-ROOS product catalogue

S. Pouliquen presented the developments that were done within the ECOOP project that could help IBI-ROOS partners to set up their data management system, provided that funds for developments would be then sustained at national level. She pointed out that the institutes involved in the TOP (Targeted Operational Period) demonstration will have anyway to connect to the ECOOP system and therefore we should see how we could benefit from these tools on the longer term.

The following items have been identified as long term sustainable work:

- → Using ECOOP development to update the EDIOS Platform catalogue for the IBI area;
- → Benefit from ECOOP for developing the in-situ data portal to IBI data;
- → Agreement to start an IBI-ROOS product catalogue based on ECOOP one;
- → Setting up OPeNDAP/thredds servers to give access to their model products. People asked for guidelines to set up OPeNDAP/thredds servers to be provided as soon as available from ECOOP.

Viewing service has been considered as a second step issue that evolves all the time according to the targeted users. Therefore the group decided to wait for feedback from ECOOP users to define a strategy.

2.4 Value added product Tools within ECOOP

Enrique Alvarez presented the work plan in ECOOP to provide tools to generate value added products based on the generic production by combining different products, solely based on physical variables

so far. IBI partner are welcome to provide feedback to Enrique on his proposal. A 2-year short term position is open in Madrid to implement these products.

2.5 Feedback from SeaDataNet

Elena Tel presented the present status of SeaDataNet. It focuses on common data format, metadata, vocabularies and catalogues for the European seas. IBI system will benefit from the standardization work performed especially on the vocabularies, inventory (platform catalogue) and enhanced quality control procedure. SeaDataNet will provide updated climatology that should interest the IBI community. SeaDataNet is also working on avoiding duplicates by identifying the best version of a specific dataset.

2.6 Discussion on the possibility to set up a Data Exchange Agreement

S. Pouliquen presented the rationale of the Data Exchange Agreement:

- to secure data flow between us: this is particularly important when we speak of providing boundary conditions between institutes or building data portals integrating data from the iBI-partners. The proposal is that people who sign this agreement, commit to provide the data/Product they described according to a protocol and can't stop data provision without noticing in advance.
- to protect data/product providers from re-use of one partner data for another purpose than the one agreed.

It was agreed that this agreement was useful and all present institutes expressed their willingness to sign it. Next step is for each institute to verify the DEA with their legal department and to fill in Annex A and Annex B before end of April 2008.

2.7 Summary of 2008 Actions on Data Exchange activities

1. A data management mailing list to be created:
   since February 29th: **ibi-roos-datamgt@ifremer.fr**
2. Each institute to look at the user manual to check the format, QC in case there is suggestion for improvement;
3. DEA to be checked by members, Annex A and B to be updated by members who are willing to sign by end of April 2008;
4. Each observation provider to update the Data Centre Inventory with the FTP site for Puertos and Coriolis to integrate the agreed data into the IBI portal;
5. P Gorringe/Eurogoos will also provide the list of FTP sites he is already collecting within Seprise so that the transition is done efficiently;
6. Puertos and Coriolis to work on setting up the IBI Portals;
7. Product catalogue to be initiated by Ifremer and filled in by IBI Partners.

3 HAB Detection

The report was prepared by Beatriz Reguera and Patrick Gentien. In 2008 people from Ireland and Portugal will join the group. Patrick presented the complexity of the behavior of the harmful algae and the progress made to improve the forecast toward end users.

The HAB people need two tools:

1. to detect automatically retention zones from hindcast. These zones are likely to be the inoculation (or incubation) of harmful algal species;
2. a proper model of advection of the limit layers in the pycnocline.

It was stressed that, due to the cost of a wrong prediction, this downstream service before going operational must include a feasability study period the length of which should include at least 5 realizations of HAB events.

Even at a developing stage, the results from operational oceanography are already used for improving the sampling strategy. A proper model of limit layers advection may require implementation of local changes in viscosity.

Plan to answer 2 EU proposals: one in Interreg more oriented on observation, one FP7 more on research (joint EU and USA/NSF). It is also suggested to look at the downstream Call of GMES. IBI-ROOS zone should be considered as the region over which it is more likely to build a concrete link between operational oceanography and HAB issues.

4 Observing System working group

Chairpersons are Alicia Lavin and Jacques Legrand.

4.1 Update of the existing and funded observing system for IBI-ROOS

Each country presented the new observing systems that have been set up within their area. All partners expressed their willingness to provide access to these new data to the IBI partners.

Puertos Del Estado presented ICTS centres, 4 of them related to IBI-ROOS activities, with accepted funding but not implemented yet. They should provide enhanced observation capabilities in the Spanish seas. The issue of coordination that was previously handled by ESEOO is not addressed presently in this initiative.

4.2 Satellite Products for IBI-ROOS improved within ECOOP

Yann-Hervé De Roeck presented on behalf of Francis Gohin the SST and Ocean Color regional products that are developed in the IBI Area, together within GHRSST/GODAE, Mersea and ECOOP projects and that will be sustained within MyOcean.
Regional altimetry products are also under development at CLS/France for the IBI area within ECOOP.

Modellers expressed interest for such products and to access the Nausicaa server whose boundaries should be extended to those of the IBI Area (Southwards to Canary Islands, Westwards to 40° for the IMI model). In order to browse Nausicaa, subscribe to;
http://www.ifremer.fr/nausicaa/gascogne/index.htm.

4.3 Towards designing the future IBI-ROOS Observing system

The purpose of this working group is to define the long term (permanent) network useful for the IBI applications.

The first step is to better know what exits: Jacques and Alicia have initiated a Word document with the existing operating systems. They are asking each country to update this document and remove the platforms that are not operated anymore. The updated inventory of the IBI-ROOS observing system is available in Annex 5. It will be put on the WWW and updated at each annual meeting (**A complete update list of IBI-ROOS - Existing observations is accessible at http://www.ibi-roos.eu/Observing/IBIROOS%20Obs_Sys.pdf**).

The second step is to better inform each other on our two year plan in the development of observing systems. This would provide the IBI partner with a better idea of the observations that will be available and give us the opportunity to adapt our plan to avoid duplication of efforts. Therefore each country will provide their two year plans for observation to the group chairs.

When we have a clear vision of what exists or is planned in the near future, the WG will work on identifying the gaps in the observing system. Possible tracks of improvement could be:

- → Try to involve fishermen for Recopesca measurements (French initiative) in other countries;
- → Set up joint glider missions;
- → Set up joint Ferrybox lines and share the operation cost;
- → Define some reference multi-parameter station sustained in time that could be included in the EU GMES calls.

In order to share the workload for identifying these gaps, it has been decided to justify the observation needs for both running the models or applications we pointed out as strategic within the IBI-Plan. The WG chairs will provide a template that will be filled by the different institutes for each field.

1. Model assimilation and validation Mercator-Ocean
2. Tsunami / and High frequency oscillation Puertos

3.	Storm surge	Puertos
4.	Water quality	Ifremer
5.	Climate change	IMI
6.	Safety navigation	HI
7.	Oil spill	AZTI
8.	Renewable energy	HI
9.	Agriculture	IMI
10.	Fisheries	IEO
11.	Coastal erosion	??

For getting unified criteria and links between the different activities of the subtask, A. Uriarte presented a TECHNOLOGICAL ROOT MAPPING including the focus of the subtask and technologies necessary to get those focuses.

Then these inputs will be used to define the Observing System that we need, using the information collected to justify any given observing system; then an implementation plan will be drafted stating what is likely to be done at national level, what will need coordination between nations and what would require for contribution from EU. This will help us to contribute to the GMES-In-situ implementation group that is being set up at EU level, but also provide us with material at national level.

Workplan for 2008

- → Each institute to update the existing platform inventory;
- → Each institute to provide their 2 year plan for setting up new observing system;
- → Observation needed for applications field mentioned above to be filled by the leading institute;
- → The WG chairs to prepare a first synthesis and identify gaps and propose a draft implementation plan.

5 Model Downscaling

5.1 Progress made in 2007 and feedback from ECOOP

Enrique Alvarez presented the improvement in the IBI model community (details can be seen in the Model working group report in annex). The different topics were:

- → Improvement of the different institution models;
- → Wave forecasting;
- → Nesting from regional to local;
- → Storm surge using ensemble forecast: ENSURF and Matroos tools are being implemented and, using statistical methods better forecast, are likely to be elaborated. This activity is carried out in ECOOP. The output will be displayed on the IBI WWW site.

Enrique mentioned that there is insufficient degree of coordination and exchange of information and cross-cutting activities are important to progress. The easiest action decided was to set up a mailing list of IBI modelling activities. Then action should be taken to provide visibility on the IBI WWW of model output. Pedro Montero/Intecmar volunteered to create an interactive atlas of modelled areas at IBI web page. We all agreed that having harmonized delivery of model output (format CF compliant, agreement on levels to be distributed, secure OPeNDAP servers,..) was the foundation that we needed to build, before envisaging other actions such as inter-comparison or enhance networking activities. We should benefit of ECOOP guidelines in this fields.

Dominique Obaton presented the work done within the Easy Intereg project and ECOOP EU project that involve part of the IBI-ROOS partners.

5.2 Future plans

Dominique & Enrique presented the plans for 2008:

- → Continuation of ongoing developments at national level;
- → Creation of an interactive atlas of modelled areas at IBI web page (Intecmar);
- → Implementation of OpenDAP for model data exchange in the framework of ECOOP (EUROMISS) and IBI-ROOS (future IBI WMS);
- → Start operationally the ensemble storm surge forecasting (ENSURF) at ECOOP for the IBI area;
- → Development of ECOOP V1 (improving existing applications), with the TOP demonstration phase to be set up by the end of 2008, and preparation of V2 based on existing work of NEMO 1/36.

6 River Discharge

Chaired by Glenn Nolan and Yann-Hervé De Roeck.
Progress in the data collection and in the actual usage of river data for outflows and discharges has been displayed in the presentation. Namely:

- AZTI has collected metadata of the rivers over the IBI region in the framework of ECOOP (subtask D2.5.1.1 “ECOOP River data catalogues as digital spreadsheets);
- Irland has detailed this updated information for the whole set of Irish rivers. Moreover, a specific instrumentation effort is underway in Galway for getting more RT hydrological information (and also fresh water temperature, important factor locally).
- Portugal is merging two databases, one belonging to the national fresh water authorities and the data collected by IST and IMAR with physical and biogeochemical parameters of 3 river buoys;
- In France, the PREVIMER system uses 9 QRT data for outflows, merged into 4 fresh water sources. They are completed by the monthly climatology of 50 smaller rivers. For nutrients, no RT data but empirical correlation with flows, based on the statistical analysis of delayed datasets.

The recommendations of the WG have expressed the following needs:

- Browse through the spreadsheets with river metadata, in order to assess, with local knowledge of the water basins, the adequacy of the gauges with respect to outflow to the sea;
- Update a database of rivers in IBI area (or in a distributed mode: interoperability of existing databases);
- Be aware that, today, not all river data can be redistributed. Request has to be made for a free distribution by the partners in their respective country;
- Require from water agencies RT data, flow and temperature;
- Require from water agencies more nutrient sensors, and whenever possible in QRT;
- Promote collaborative project with fresh water hydrologists in order to promote operational products in forecast for outflows and discharges.

7 Link with Ospar

Yann-Hervé De Roeck introduced the next Quality Status report that is due in 2010. Although material for this report is provided by each country, we could ease the work by elaborating some information at IBI level: climatology, SST fields, model analysis. Indices (computation of statistical parameters for various parameters) can be extracted from the systems run by the IBI-ROOS partners, at the regional and the coastal scales. However, indicators (combination of indices to assess regionally or locally the physical or biological state of the ocean) belong to the responsibility of experts mandated by their respective national authorities.

It was agreed that national representatives in OSPAR should be contacted to present IBIROOS products available relevant to OSPAR: IEO will contact Spain, IH will contact Portugal and MI Ireland, Ifremer France.

It was also mentioned that we should improve relationship should with the European Environment Agency about Marine Strategy, Inter-calibration and Assessment.

Important deadlines for OSPAR, the Environmental Assessment Report of the EEA and the Marine Strategy Directive should be recalled to all partners. Then the IBI partners should jointly define which products (variables and indices) should be computed for the experts who in turn will build indicators. It is also important (may be not for 2010, but on a longer prospective) to determine the kind of error bars that is expected to be provided with the products in this framework.

8 Wrap session Workplan/actions for 2008

The action plan for 2008 has been discussed during each WG sessions and should serve as the 2008 plan on which each group will report next year.

An abstract has been submitted for the 5th EuroGOOS Conference in Exeter next May. Contributions from the partners are welcomed.

As the Canaries are included in the IBI area, Enrique Alvarez suggested to the chairs to invite a group on INM (Spanish Institute of Meteorology) in Canaries to join IBIROOS as well as a group of the University of Cantabria. Then Vicente Pérez proposed, at the same line, to include a group of the CSIC and University of Vigo.

A try for time table for the Steering group meeting was done, since summer is not a good time for meeting and September very busy. It was proposed to look on October/November to get the common meeting time. Also Lisbon was offered for the meeting celebration by IH.

France offered to host next meeting either in Brest or in Toulouse. Portugal(IH) proposed to host in 2010.

The meeting was closed around 11:30 after thanking the local organizers Glenn Nolan and Marcel Curé of the Irish Marine Institute for the support during the meeting and the invitation to the nice diner organized the previous day.

Annex1 Agenda

Welcome from local host and logistic information

General Issues

- → Report from the chairs on IBI- ROOS activities (MoU, WWW, Involvement in EU projects)
- → New members
- → Discussion on setting up a steering team for IBI-ROOS
- → Feedback on MyOcean (D Obaton Mercator-Ocean)

Data exchange working group Chair Sylvie & Marta

- → First steps on fixed station data exchange within IBI-ROOS: Marta
- → Data Inventory
  - o Data centre inventory Sylvie
  - o Ecoop Inventory Alicia
- → Toward IBI-ROOS portal
  - o Ecoop development For In-situ and Product distribution Sylvie
  - o Discussion on Building the IBI-ROOS product catalogue
- → Value added product Tools within ECOOP Enrique
- → Feedback from SeaDataNet Elena
- → Discussion on the possibility to set up a Data Exchange Agreement
- → Discussion on future Plan on Data Exchange

HAB Detection Patrick/Beatriz

Observing System working group Chair Alicia/Jacques

- → Update of the existing and funded observing system for IBI-ROOS
- → Satellite Products for IBI-ROOS improved within ECOOP
- → Towards designing the future IBI-ROOS Observing system

Model Downscaling Chair Enrique/ Dominique

- → Progress made in 2007 Enrique
- → Feedback from ECOOP Enrique
- → Future plans Dominique

River Discharge Chair Glenn & Yann-Hervé

- → Feedback ECOOP work AZTI
- → Discussion on how to progress

Link with Ospar Yann-Hervé

Wrap session Workplan/actions for 2008

Annex 2 Attendees

Name	Institute	Country
Jacques Legrand	IFREMER	France
Sylvie Pouliquen	IFREMER	France
Yann-Hervé De Roeck	IFREMER	France
Fabrice Lecornu	IFREMER	France
Patrick Gentien	IFREMER	France
Stéphanie Louazel	SHOM	France
Jérome Chanut	MERCATOR-Ocean	France
Dominique Obaton	MERCATOR-Ocean	France
Glenn Nolan	Marine Institute	Ireland
Marcel Cure	Marine Institute	Ireland
José Onofre	INSTITUTO HIDROGRÁFICO	Portugal
Carlos Fernandes.	INSTITUTO HIDROGRÁFICO	Portugal
Carlos Ventura Soares	INSTITUTO HIDROGRÁFICO	Portugal
Luis Fernandes	IST	Portugal
Julien Mader	AZTI	Spain
Adolfo Uriarte	AZTI	Spain
Garbi Ayensa	INTECMAR	Spain
Pedro Montero	INTECMAR	Spain
Marta De Alfonso	Puertos del Estado	Spain
Enrique Alvarez Fanjul	Puertos del Estado	Spain
Manuel Ruiz	IEO	Spain
Elena Tel	IEO	Spain
Alicia Lavin	IEO	Spain
Vicente Perez-Munuzuri	MeteoGalicia	Spain
Adolfo Morais	Basque Government	Spain
Jose A. Aranda	Basque Government	Spain
Patrick Gorringe	Eurogoos	Sweden
Rosa Barciela	UKMO	UK

Annex 3 Term of reference of the steering committee

1. The Board shall meet twice per year (once coinciding with the annual plenary meeting), and shall hold additional meetings at the request of any Partner.

2. In terms of data management, the Board shall be responsible for the effective functioning of the IBI-ROOS Data Exchange Agreement.

3. Review the activities of IBI-ROOS with special focus on the working groups: Data Exchange, Modelling activities, Ocean Observing Systems, River Discharges, HAB.

4. Represent IBI-ROOS in national agencies and multi-national organisations (e.g. ICES, OSPAR).

5. Identify synergies (e.g. coordination between national programmes) and collaborative frameworks to further the objectives of IBI-ROOS.

6. Promote the participation of the IBI-ROOS community in European funded programmes (FP7, INTERREG, etc.).

7. Provide strategic oversight to successfully implement the IBI-ROOS mission.

8. Identify new stakeholders for operational oceanographic products.

9. Encourage the participation of new members where appropriate.

10. Promote scientific and technological capacity building among partners (Exchange of scientists, student training, publications, etc.).

Annex 4 Data Centre Inventory

NB : National focal point is not mandatory: you may decide to provide your data directly to the IBI-Roos portal operated by Ifremer and Puertos Del Estado.

Country	National focal Point	Data centre	Platform	Parameters	Real Time	Delayed Mode	Connected to SeaDataNet
France	Coriolis	Coriolis	Argo, Gosud, Drifter OceanSites	T, S Current,	X	X	X
		Sismer	French Research vessel	ADCP, Cruise data including biogeochemical parameters		X	X
		Previmer	French River	River Outflow	X		Via Coriolis
		Shom ronim Sonel	Tide gauge	Sea Level	2 sites Increasing	X	
		cetmef	candhis	Wave spectrum	X	X	
		Roslit	Marel	T S CHL turbidity	X		
Spain	Puertos Del Estado	Puertos Del Estado	Met-Ocean buoys	Waves, T, S Current, Wind, AirPress, AirTemp	X		
		Puertos Del Estado	Tide gauges	Sea level, wave height and period, T	X		
		IEO	Met-Ocean buoy	Waves, T, S Current, Wind, AirPress, AirTemp	X		X
		IEO	Tide gages	Sea Level	NRT	X	
		MeteoGalicia & INTECMAR	Met-Ocean buoys and platforms	AirTemp, Winds, Humidity, T,S, HDCP/VDCP	X	X	
		Basque Country& Azti	Met-Ocean buoys and platforms	Waves, T, S Current, Wind, AirPress, AirTemp	x	X	
		Coriolis for RT IEO for DM	Cornide de Saavedra TSG	T, S	X	 X	X
	IEO	Coriolis IEO	IEO Research Vessels	Selected CTD casts	X	 X	X
		IEO	IEO Research Vessels	Cruise data including biogeochemical parameters??		X	X

Country	National focal Point	Data centre	Platform	Parameters	Real Time	Delayed Mode	Connected to SeaDataNet
Portugal		IH	Wave Buoys	Sig. Height	X		
				Period	X		
				Dir	X		
				SST	X		
			Tide gauges	Tides	X (some)	X (some)	
		IST	River buoys	T S CHL turbidity ph dissolved O2 inflow	NRT	X	
Ireland		IMI	Tide gages	Sea level SST AirPress	X	X	
			Weather buoys	SST waves SSS	X	X	
		Via BODC	Argo	T, S	X	X	X
UK		NERC	Ferrybox				
			Argo	T , S	X	X	X
		Cefas					

Annexe 5 Existing Observing System in the IBI area (latest update April 2008)

1 Tide gauges: Sea level (Spain IEO)
4 tide gauges in Santander, Coruña, Vigo and Cádiz and 3 in the Canary Island operating since 1940. Near real-time
Mareógrafos, IEO, Spain
www.ieo.es/indamar/mareas/mareas.htm

2 Tide gauges: Sea level (Spain PDE)
9 tide gauges in the Iberian peninsula (IBI area), plus 9 in the Canary Islands.
10 of these are in operation since 1992
1 min/5min real time
Puertos del Estado,
Spain
http://www.puertos.es/en/oceanografia_y_meteorologia/index.html

3 Tide gauges: Sea level (Portugal)
13 stations on continental coast, 5 in the Azores archipelago and 2 in Madeira
Hydrographic Institute (IH)

4 Tide gauges: Sea level (France)
17 tides gauges are installed from Dunkerque to St Jean de Luz.
Ifremer is planning to operate real-time diffusion
2 stations switched to real time (Brest and Le Conquet)
SONEL/RONIM, SHOM,
France
http://www.shom.fr/fr_page/fr_act_oceano/maree/maree14.htm
http://www.sonel.org/english/index.htm

5 Tide gauges: Sea level (Ireland)
5 tide gauges around Ireland Marine Informatics, Marine Institute
www.irishtides.com/

6 GLOSS stations (Ireland)
Once every 5 minutes Department of Communications, Marine and Natural Resources
www.dcmnr.ie

7 Fixed structures: Ocean & meteorological
ADCP, tide gauges, T profile and meteo at 6 locations in the Basque country. Real-time
Ocean-Meteorological stations
Basque Meteorological Agency – Euskalmet and AZTI-Tecnalia, Spain.
http://www.euskalmet.euskadi.net/s07-5853x/es/meteorologia/selest.apl?e=5

7b Fixed structures: Meteorological data
23 coastal meteorological stations
15 automatic stations at coast
National Meteorological Stations Network, IM, Portugal

7c Meteorological Automatic Stations: Air Temperature, Preassure, Wind, Humidity, Precipitation and Sun Radiation
Galicia (NW Spain), each 10 min since 2000. MeteoGalicia, Conselleria de Medio Ambiente, Xunta de Galicia, Spain.
www.meteogalicia.es

7d Coastal Meteorological Stations
6 stations; Dublin Rosslare Valentia, Malin, Roches point, Bellmullet hourly data
Met Eireann
www.met.ie

8b Fixed Buoys and Stations at Galician Rias,
Air Temperature, Humidity, winds, ADCP and CTD. At Arousa and Vigo
Galicia (NW Spain), each 10 min since 2008. INTECMAR & MeteoGalicia, Xunta de Galicia, Spain.
www.intecmar.org
www.meteogalicia.es

9 Automatic buoys: Waves, current & met
11 wave coastal buoys (3 of them with SST) and 8 buoys with meteorological, waves, currents and oceanographic data in deep waters.
Operating since 1996. Real-time hourly transmission.
Puertos del Estado, Spain
http://www.puertos.es/en/oceanografia_y_meteorologia/index.html

9b Automatic buoys: Meteorological, Waves, TS & current profiles
2 buoys at 500 m water depth in the Basque Country
Operating since 2007. Real-time
Basque Meteorological Agency – Euskalmet
http://www.euskalmet.euskadi.net/ (data available in summer)

9c. Automatic buoys: Meteorological, Waves, TS & current profiles
1 buoy at deep water (2850m) of the Southern Bay of Biscay operating since June 2007.
Real-time hourly transmission.
Instituto Español de Oceanografía. Spain.
www.ieo.es

10 Automatic buoys: Waves
20 buoys from Dunkerque to Bayonne. One buoy added in Iroise sea (Pierre Noire)
Real-time Candhis, CETMEF, France
http://www.CETMEF.equipement.gouv.fr/donnees/candhis/

11 Automatic buoys: Waves,
5 ODAS buoys.
Real-time Marine Institute
www.marine.ie/databuoy

11b Automatic Buoys: Waves
3 Stations in Portugal
2 Stations in Madeira islands
4 stations in Azores Islands
Operated by IH, APRAM (Madeira Harbour Authority) and University of Azores
www.hidrografico.pt

12 Temperature and Conductivity
5 ODAS Buoys non real-time (once every 30 minutes)
Marine Institute
www.marine.ie/databuoy

13 Automatic buoys: Meteo data, waves
3 buoys Gascogne, Brittany and Ouessant operated by Meteo France and UKMO
Meteorological programme
www.ndbc.noaa.gov/Maps/France.shtml

14 Automatic buoys and Ships of opportunity: Meteorological data
Buoy data from GTS and ships of opportunity
IM, Portugal

15 Automatic buoys Meteorological
5 ODAS buoys. Real-time Marine Institute
www.marine.ie/databuoy

16 Moorings: Currentmeters,
ADCP and sediments
2 arrays in Nazaré Canyon area
1 CORSED platform in Nazaré Canyon area
EUROSTRATAFORM, IH,
Portugal
MOCASSIM, IH, Portugal

17 Moorings: Currentmeters
1 mooring off Cascais (adjacent zone to Tejo river) SIGAP, IPIMAR's fixed station
for long-term physical,
biological measurements,
Portugal

17b Moorings: Currentmeters
2 mooring, on in the Finisterre Section (43ºN, 11ºW) and in Santander Section (43º 48'N, 3º 45'W). Current meters at the core of NACW, MW and LSW. Moored since 2004.
fixed station for long-term physical measurements,
Instituto Español de Oceanografía
www.vaclan-ieo.es

18 Ships of opportunity: FerryBox, hydrological parameters
Line Portsmouth-Bilbao, Real-time, weekly, NOC at Southampton, UK
www.soc.soton.ac.uk/ops/ferrybox_index.php

19 Ships of opportunity: Plankton CPR
IB and SB lines,
Monthly, since 1958 CPR project,
SAHFOS and IPIMAR, UK and Portugal

19b Ship of opportunity: fishing boat RECOPESCA
Monitoring fishing effort programme
Deployment of low cost sensors attached to fishing gears.

20 Underway Data from Irish Research Vessels Surface
Temperature, Conductivity, Fluorescence
Every 10sec along ship track during survey. Typically Irish waters
Marine Institute

20b Underway Data from Spanish Research Vessels Surface
Temperature, Conductivity, Fluorescence
Every 10sec along ship track during survey. Typically Spanish and Atlantic waters.
Daily send to Coriolis Data Center and IEO web.
http://indamar.ieo.es/

21 Satellite remote sensing: Temperature
The whole area is covered every day AVHRR-NOAA, AZTI Tecnalia
and IEO, Spain
www.teledeteccion-oceanografica-ieo.net

22 Satellite remote sensing: Ocean colour
The whole area is covered every day SeaWIFS, AZTI Tecnalia,
Spain

23 Satellite remote sensing: scatterometer
The whole area is covered every day (QUICKSCAT), AZTI
Tecnalia, Spain

24 Satellite remote sensing: altimetry (sea level)
The same region is covered every week Jason1, GFO, ENVISAT,
AZTI Tecnalia, Spain

25 Satellite remote sensing: Radar
The same region is covered every 10 days SAR/ ESA, IFREMER, France
www.ifremer.fr/cersat/en/data/gridded.htm

26 Satellite remote sensing: Topography
The same region is covered every 10 days Feng Yun, AZTI Tecnalia,
Spain

27 Satellite remote sensing: Monitoring of SST, Chlorophyll using Ocean Colour
Image browser covering Bay of Biscay since 1985 IFREMER, CLS, France
Login: gascogne
Password: gascogne
www.ifremer.fr/cersat/facilities/browse/del/gascogne/browse.htm

28 Satellite remote sensing: Monitoring of SST, Chlorophyll using Ocean Colour
Image browser covering the English Channel since
1985
IFREMER, CLS , France
www.ifremer.fr/cersat/facilities/browse/del/roses/browse.htm

29 Satellite remote sensing: Temperature and Ocean colour
The whole area is covered every day AVHRR-NOAA and SeaWIFSÕrbView2,
DOP-Univ. Açores, Portugal
AVHRR-NOAA and SeaWIFSÕrbView2,
CEM-Univ. Madeira, Portugal
AVHRR-NOAA, IO-Univ.
Lisboa, Portugal

30 Satellite remote sensing: Temperature
The whole area is covered every day AVHRR-NOAA and Meteosat,
IM, Portugal

31 Profilers (lagrangian) : Temperature & Salinity
~10 drifting buoys, 14 days CORIOLIS-ARGO, IFREMER,
IEO, France & Spain
www.coriolis.eu.org/cdc/default.htm

32 Profilers
2 Argo floats Operational since Feb 2004 Martin Ryan Institute, National
University of Ireland Galway
www.nuigalway.ie/eos

32a Profilers
4 Argo floats Operational since March 2008 Marine Institute, Galway
www.marine.ie

32b Profilers
12 new Argo floats (part for the IBIROOS area) to be deployed from 2008.
At least one with O2 probe.
Instituto Español de Oceanografía

33 River discharge (France)
National flood prevention service Ministry of environment, SHAPI
www.ecologie.gouv.fr/article.php3?id_article=119#

34 River Discharge
Approx 1000. Some are digital and some are analogue
OPW, ESB, Local Authorities,
EPA
www.opw.iewww.epa.ie

35 Fixed automated stations in Gironde estuary
4 coastal MAREL stations high frequency
measurement, real-time transmission: temperature,
salinity, DO, turbidity and sea level

IFREMER & Water Agency
http://www.epoc.u-bordeaux.fr/fr/geotransfert/rogir/index.php?page=accueil

36 Fixed automated station in Iroise sea
MAREL buoy high frequency measurement, real-time transmission: temperature, salinity, DO, turbidity, fluorescence, pCO_2
University of Brest,
IFREMER, France
www.ifremer.fr/mareliroise/fr/

37 Fixed automated station in Seine estuary (Honfleur)
MAREL buoy high frequency measurement, real-time transmission: temperature, salinity, DO, turbidity, pH
CETMEF, IFREMER, France
www.ifremer.fr/marel/

38 Fixed automated station in Boulogne/mer
MAREL buoy high frequency measurement, real-time transmission: temperature, salinity, DO, turbidity, fluorescence, pCO_2
City of Boulogne, IFREMER,
France
www.ifremer.fr/difMarelCarnot/

39 Fixed stations and transects: Temperature & Salinity
Deep waters, 3 transects (Galicia & Cantabrian Sea), 2/year since 2004
Deep water standard sections,
IEO, Spain
http://www.vaclan-ieo.es/

40 Fixed stations and transects: Physical & Biological
Coastal waters, 5 transects (Galicia, Cantabrian Sea), monthly since 1988
Radiales, IEO, Spain
www.seriestemporales-ieo.net

41 Fixed stations and transects:CTD, Plankton and harmful algae, nutrients and DOC
Coastal stations, (Galicia), weekly since 1992
INTECMAR, Xunta de Galicia, Spain
www.intecmar.org

41b Fixed stations: Contaminants and hazardous substances
Coastal stations, (Galicia), annual or half-yearly since 1995
INTECMAR, Xunta de Galicia, Spain
www.intecmar.org

41c Fixed stations: Biotoxins
Coastal stations, (Galicia), minimum weekly and diary if necessary since 1995
INTECMAR, Xunta de Galicia, Spain
www.intecmar.org

41d Fixed stations: Faecal contamination in marine invertebrates
Coastal stations, (Galicia), since fornigthly to quaterly since 1995
INTECMAR, Xunta de Galicia, Spain
www.intecmar.org

41e Fixed stations: Patology in aquatic organisms
Coastal stations, (Galicia), yearly and half-yearly since 1998
INTECMAR, Xunta de Galicia, Spain

www.intecmar.org

42 Fixed stations: Contaminants and hazardous substances
~30 stations along Spanish coast sampling water,
sediments and biota
Contamination programme,
IEO, Spain

43 National monitoring networks
RNO/ REPHY/REMI
50 stations from Dunkerque to St Jean de Luz.
Hydrological parameters, chemical pollutants in
sediment and fish/phytoplankton
IFREMER, Ministry of
Environment, France
www.ifremer.fr/envlit/surveillance/index.htm#

44 Fixed stations and transects: Harmful algae
Coastal stations (France) GEOHAB, IFREMER, France

45 Fixed station: Physical parameters and plankton
1 Shelf Station (Cascais), monthly, Temperature,
Salinity, Chlorophyll *a*, Phyto- and zooplankton
communities, copepod egg production.
1 Coastal station (Cascais), bi-monthly, long-term
phytoplankton cysts studies SIGAP and Profit projects,
IPIMAR, Portugal Collaboration in the National
HAB Watch Network, IO,
Portugal

46 Fixed stations and transects: Plankton and harmful algae
28 Coastal Stations (all Portuguese coast), weekly,
HAB
National HAB Watch Network,
IPIMAR, Portugal

47 Fixed stations: Contaminants and hazardous substances
Stations in beaches along the Portuguese coast for
water quality analyses. Sampling started 15 days
before the bathing season and is made weekly, biweekly
or monthly depending of quality conditions.
Monitoring waste water systems along the Portuguese coast
Contaminants studies along the Portuguese continental
shelf, monthly sampling in the mouths of main rivers
VivaPraia Programme, INAG and IA, Portugal
National Programme for Water Supply and Sanitation
Monitoring, Águas de Portugal e Associated Co., Portugal
Contamination of the Coastal Zone Programme, IPIMAR,
Portugal

48 CTD section along 53 deg N on western Irish Shelf
Annually (summer) since 1999 Marine Institute

49 Nutrient Monitoring Programme
Irish and Celtic Sea Annually
Marine Institute
www.marine.ie

50 Phytoplankton monitoring
Weekly during the summer at 60 sites Marine Institute www.marine.ie/HABSdatabase

51 Shellfish Toxins Monitoring Programme
Weekly during the summer at 60 sites Marine Institute
www.marine.ie/HABSdatabase

52 Radionucleids
6 offshore stations seawater samples annually,
5 coastal stations seawater samples quarterly
13 locations where fish species are routinely
monitored
RPII
www.rpii.ie

53 Regular research vessel cruises: Physical & Biological,
including Fish stocks using acoustic methodologies
Continental shelf of Spanish North Atlantic and Bay of Biscay waters,
Spring surveys since 1988 ICES Pelagic fisheries, IEO,
Spain

54 Regular research vessel cruises: Physical & Biological,
including Fish stocks using bottom trawl
Continental shelf of Spanish North Atlantic and Bay of Biscay waters,
Autumn surveys since 1982
ICES Demersal fisheries, IEO,
Spain

55 Regular research vessel cruises: Physical & Biological,
including Fish stocks
(Anchovy)
Continental shelf of inner Bay of Biscay from
Santander to Nantes, Spring
Anchovy evaluation, AZTI
Tecnalia, Spain

55b Regular research vessel cruises: Physical & Biological,
including Fish stocks using eggs and larvae methodologies
Continental shelf of Spanish North Atlantic waters and Spanish
and French Bay of Biscay waters, spring surveys.
Sardine, mackerel Egg Tri-yearly IEO,
Spain

56 Annual cruises ICES Fisheries monitoring, IFREMER, France

57 Regular research cruises:Physical & Biological,
including Fish stocks using
acoustic methodologies
Continental shelf of Portuguese Mainland waters,
Spring and Autumn surveys since 1984
ICES Pelagic fisheries,
IPIMAR, Portugal

58 Regular research vessel cruises: Physical & Biological,
including Fish stocks using
bottom trawl
Continental shelf and slope of Portuguese Mainland
waters, Spring and Autumn surveys since 1979
ICES Demersal fisheries,
IPIMAR, Portugal

59 Fisheries Cruises; Herring
Acoustic, Blue Whiting,
Groundfish, Nephrops
Yearly Marine Institute
www.marine.ie

60 Mackerel Egg Tri-yearly Marine Institute
www.marine.ie

61 HF Radar network: Iroise sea
SHOM

Waves and surface current
http://www.shom.fr/fr_page/fr_act_oceano/vagues/VIGICOTE/temps_reel_f.html

61b HF Radar experience in Sines
IH
Waves and surface currents
www.hidrografico.pt

61c HF Radar network
Basque Country (Cantabrian Sea).
Real-time transmission.
Basque Meteorological Agency - Euskalmet, Spain.
http://www.euskalmet.euskadi.net/ (data available in summer)

62 Coastal Video Monitoring
Waves and morphodynamics
1 station in Mundaka, Urdaibai estuary, Real Time
AZTI-Tecnalia, SPAIN
www.kostasystem.com

9 Working groups Reports

9.1 IBI-ROOS Data Management working group

Members: *Sylvie Pouliquen/Ifremer, Marta De Alfonso/Puertos Del Alfonso, Elena Elena Tel Perez /IEO, Glenn Nolan/ IMI,Carlos Santos Fernandes/ Instituto Hidrgrafico*
No UK representative has been identified yet

At last meeting, the following activities have been identified :

1. Identify the potential IBI-ROOS data providers for real-time and delayed mode data stream, first for physical parameters then for biogeochemical ones.
2. Define a common strategy to offer services and common standards for sharing of data and metadata compatible with MCS ones.
3. Move towards a common data policy which will follow the EuroGOOS data policy, implying free exchange of data among IBI-ROOS partners ; The possibility of setting up IBI-ROOS data-exchange agreement, in which data providers would commit to provide their data according to delivery schedule they committed to, to the partners that would sign the agreement will be studied.
4. Set up an information system that will provide an integrated access to these data to GMES MCS both in real-time and delayed mode.
5. Implement advanced quality control and validation systems taking into account the large volume of collected data in order to ensure the data consistency.

Both Spain and France have worked at national to improve integrated data access to their national data; this is important to prepare the IBI-ROOS integration (especially for Point 1&2 below). Data exchange activities initiated within the Seprise Eurogoos project have continued and some scientists have transmitted data to Coriolis in real-time from research cruises. Nonetheless, we have not progressed as much as we hoped on establishing regular data flow between us as well as an efficient data portal for IBI-Roos

The purpose of this report is to show the progresses we made on each topic.

On point 1 Wiithin the ECOOP project , based on EDIOS and Seadatnet databases, IEO has made an inventory of the observing systems in the IBI-ROOS area and a report is available that provide a lot of interesting maps (see report) . This has pointed out that we should organize between ourselves a yearly update of the EDIOS database that registers the fixed-point platforms. At IBI-ROOS level, we have also made an inventory of data providers for near real-time data and delayed mode. For delayed mode data we have identified the one that are known from SeaDataNet as we would like to interface to SeaDataNet facilities when set up. This inventory will be updated during the meeting.

On point 2 a lot of discussion have taken place within the ECOOP project. A report has been issued by CMRC and the strategy is coherent with the setting of the IBI-ROOS portals handled by Ifremer and Puertos Del Estado. Also the recommended formats are the Coriolis NetCDF and the ODV to be coherent with SeaDataNet. We should decide how we start to implement these portals in 2008. (see ECOOP WP2 reports)

For point 3 A data exchange agreement for IBI-ROOS community has been proposed to the IBI-ROOS partners to be discussed at the meeting . It is derived from the one made by the MOON partnership and written by a lawyer. The purpose of this agreement is:

- to secure data flow between us : this particularly important when we speak of providing boundary conditions between institutes or building data portals integrating data from the iBI-partners. The proposal is that people who sign this agreement, commit to provide the data/Product he described according to a protocol and can't stop data provision without noticing in advance;
- to protect data/product providers from re-use of one partner data for another purpose then the one agreed.

On point 4 Within the ECOOP project, an architecture have been proposed to the European Forecasting centres to provide integrated access to their model output. The development within ECOOP can be used within ECOOP to build a catalogue of the IBI-ROOS products and eventually use the viewing service to show them. (see ECOOP WP8 report)

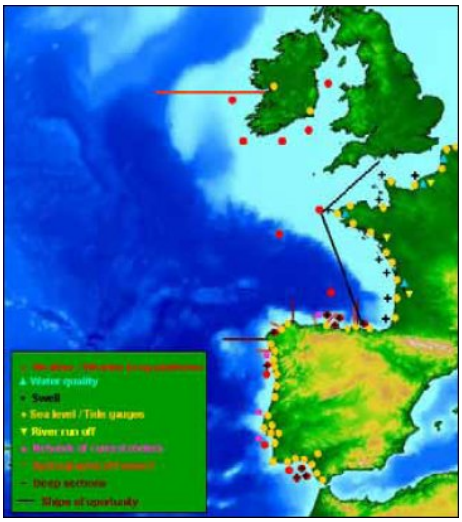
On point 5, no specific work has been carried out by the team but some activities are going on within SeaDataNet or ECOOP/WP2.4 and we should benefit soon from their recommendations.

9.2 IBI-ROOS Observing system working group

Members: Jacques Legrand/IFREMER, Alicia Lavín/IEO, Glenn Nolan/Marine Institute, Carlos Fernandes/Portugal, UK

The IBIROOS Observing System is composed by a Networks of long term (permanent), continuous, automatic instruments for synoptic in situ observations and QC measurements in the area Iberia-Biscay-Ireland designed to have a compressive vision of the area and feed the IBI-ROOS data exchange system.

The main objectives of the Observing System is to have a permanent knowledge of what exists, optimise the coverage in the area and identify and fill possible gaps, harmonise technologies, equipments and operational procedures and reduce expenses sharing operation costs among partners.



IBIROOS Observing system functioning at the beginning of the alliance formation (IBIROOS Plan).

In order to meet the objectives, some actions have been proposed:

- Establish a detailed list of installations in each category and maintain a regular update of changes.

  This list should show:
  - ID, equipment description, measurement characteristics, transmission, data management (details of link to IBI data exchange system,), contact.
  - Update every 6 month
  - Start with EDIOS data base and send update regularly

  The Initial list should be composed by the following systems:

- Shore stations
- Buoys:
  - Shallow
  - Deep
- Repetitive hydrographic sections
- Ferry lines
- Argo floats
- HF RADAR stations

Together a complementary list has been established as follows:

- Pagode profilers
- Gliders
- Ship of opportunity

- Other ?

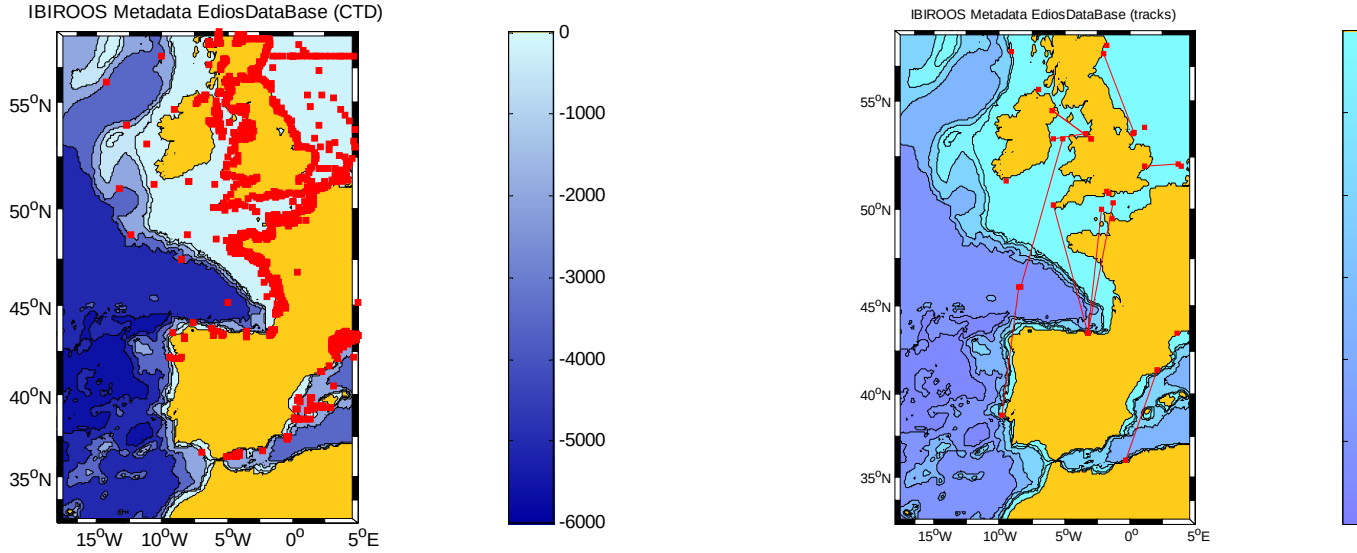
File Name	CTD	XBT	Glider	Moored Buoy	ARGO	TSG	Station	Unspe-cified	Total
IBIROOS									
2003_IBIROOS_Metadata	149	0	0	0	143	0	0	0	292
2004_IBIROOS_Metadata	174	86	0	0	143	0	0	0	403
2005_IBIROOS_Metadata	225	12	0	0	366	0	0	0	603
2006_IBIROOS_Metadata	0	0	0	0	1479	0	0	0	1479
IBIROOS_Metadata_EdiosDataBase(ctd)	2170	0	0	103	0	0	33	7	2313
IBIROOS_Metadata_EdiosDataBase(tracks)		0	0	0	0	29	0	0	29

-

A complete update list of IBI-ROOS - Existing observations is accessible at http://www.ifremer.fr/ibi-roos/Observing/IBIROOS%20Obs_Sys.pdf .

In the WP 1 of the E.U. project ECOOP (European COastal-shelf sea OPerational Observing and forecasting system Integrated Project), an update T/S meta dataset in European Seas was compiled in the five European regional Seas for a three year period. A common format was designed and data were extracted from SEADATANET, Edios, BODC, Coriolis… In the IBIROOS area CTD and ARGO Metabase were extracted from SEADATANET. There are more information on XBT, CTD and glider available in the IBIROOs area from Coriolis and others data Centers. SeaDatanet is under development now.
Repeated stations and tracks were provided by EDIOS database.

The information compiled in the IBIROOS area is as follows:



Left panel: IBIROOS metadata of repeated CTD stations, right panel: metadata of TSG tracks. This meta database needs to be completed in IBIROOS

Information about new activities related with the Observing System has been elaborated by countries report in the National report section.

9.3 IBI-ROOS Model downscaling working group activity report for 2007

Dominique Obaton/ Enrique Álvarez Fanjul

1) Overall activity

The year 2007 has been active with developments in:

- Wave modeling: new nested applications and research work carried out;
- Circulation modeling: New research work, new codes and new interfaces;
- Joint effort to improve storm surge modeling by ensemble technique in the frame of ECOOP.

2) Specific developments

2.1) Wave modeling

- **Meteogalicia**: High Resolution Wave Experiment in the Coruña Region.
- **Shom**: Ongoing development of wave model as part of PREVIMER:
  - Implementation of Iberian shelf and North Sea 2-way nested zooms:
  - Calibration of new dissipation source function. A new set of parameterizations is being developped to reduce errors in certain areas
- **Marine Institute**: New Local Galway Bay ROMS and SWAN Operational Models. Models are the first part of part of the Marine Institutes SmartBay programme, which will include a sea bed cabled observatory, databuoys and test platforms for new sensors.

2.2) Upgrade of web pages

- **Ifremer:** Upgrade in web interface and system with additional products:
  - Extension from Biscay to the Channel of the 3D forecast
  - Ecological modelling of nutrients and phytoplankton
  - An automatically generated daily report for the Iroise
  - A monthly bulletin with comments over physical and biological events

2.3) Upgrades in circulation systems

- **Marine Institute:** Improvements to Atlantic ROMS model by means of New sediment transport model. Main aim to provide a variable frictional dissipation in model to improve predictions of SSH and tidal streams.
- **SHOM:** Development of the HYCOM based «MOUTON» model: a very high resolution model of the eastern north Atlantic. Focus on internal tide generation in the Bay of Biscay.
- **AZTI:** Introduction of fresh water river outflow. Important impact detected
- **IEO:** Cantabric sea model operational since April 2007. Used to support scientific cruise activities and for managers in the fields of fisheries and HAB alerts.
- **MeteoGalicia:** Further development of the nesting system in the Galicia Rías
- **IST:** Downscaling to the Azores archipelago with Mohid in the frame of Easy project: Improvement of nesting techniques in MOHID, New data assimilation module in MOHID, etc.
- **IFREMER:** nesting of PREVIMER with MERCATOR boundary conditions.

2.4) Joint modelling activities

- **Meteogalicia, Marine Institute, Puertos del Estado, MeteoFrance, Met-No, CNRS-POC, DMI, Deltares and POL:** Storm surge ensemble modeling

Objective: To improve the quality, reliability and accessibility of storm surge at the European level by means of multi-model and super-ensemble forecasting. Creation of the ENSURF system: applications that provide an improved storm surge forecast by ensemble of existing systems.

Implementation for Ibiroos. Work status:

- Matroos software, the basis of EVNSURF, was implemented in Puertos del Estado by RIKZ in October 2007
- At this moment, output of sea level forecasts of Nivmar and ESEOAT (Puertos del Estado) and MeteoGalicia operational systems are already included in the system in Puertos del Estado
- Total sea level is compared between models and with already available sea level data from the tide gauges

3) Plans for 2008

- Continuation of ongoing developments at national level. Amongst others:
    - Shom: Unstructured grids in WW3 and operational Hycom for Previmer
    - Coupling of ROMS to WRF and use of new machine at MI
    - Web page for IEO model
    - Bilbao Harbour model (ESEOAT + AZTI + Puertos/LIM)
- Mailing list of modelers at IBIROOS
- Creation of an interactive atlas of modeled areas at IBI web page (Intecmar)
- Implementation of OpenDAP for model data exchange in the frame of ECOOP (EUROMISS) and IBI-ROOS (future IBI WMS). Some documentation available already at ECOOP (University of Cyprus)
- Start operationally the ensemble storm surge forecasting (ENSURF) at ECOOP for the IBI area, including BMA

Development of ECOOP V1 (improving existing applications) and preparation of V2 based on existing work of NEMO 1/36

9.4 IBI-ROOS River Discharges Working group

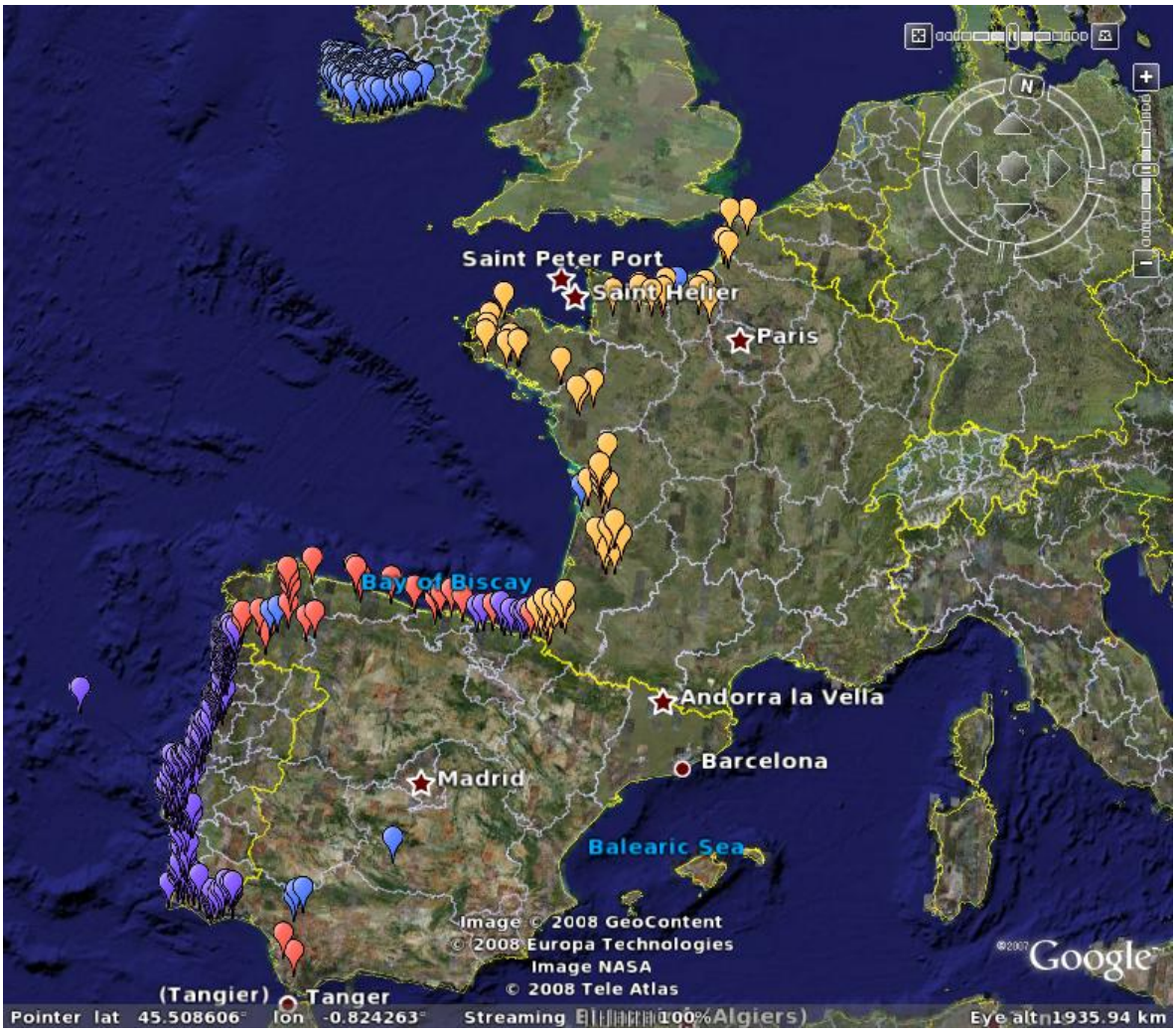
Members: *Glenn Nolan / IMI, Yann-Hervé De Roeck / Ifremer, Manuel Ruiz / IEO, Antonio Silva / IH, Liam Fernand / CEFAS*

At last meeting the following activities have been identified:

1. Inventory of important rivers in IBI-ROOS and data availability
2. Look relation between discharges and nutrients
3. FTP to share the data for Operational modelling or Forecast of River discharge.

The purpose of this report is to show the progresses we made on each topic.

On point 1: Within the ECOOP project, Task 2.5, AZTI-Tecnalia has made an inventory of the river fluxes measurements specifically in the IBI-ROOS, and together with an XLS spreadsheet, the following map has been issued:



= unchanged (GRDC archive info) or uncertain

= updated only NRT data info

= updated only archive data info

= updated NRT and archive data info

Figure 1: IBI-ROOS River Data Catalog v 1.01, published over the task 5.2 WIKI of the ECOOP project

The goal of this work was to:
- Visualize the observing network and coverage.

- Help to identify relevant stations (this task has to be performed cautiously, since the relevant station has to be the closest to the mouth of the river. If not, correlations with neighbouring rivers should be stated).
- Make the information more easily accessible to others.

On point 2: Ifremer has described, in Annex 1 of this document, how the QRT discharges and the archived nutrient loads can be utilised to asses an RT load. The PREVIMER system uses these algorithms, as well as watershed models, in order to have a short forecast at hand.
For point 3 No data exchange agreement for IBI-ROOS community has been set up yet.

Recommendations for 2008 activities in the WG:

- Browse through the spreadsheets with river metadata, in order to assess, with local knowledge of the water basins, the adequacy of the gauges with respect to outflow to the sea;
- Update a database of rivers in IBI area (or in a distributed mode: interoperability of existing databases);
- Be aware that, today, not all river data can be redistributed. Request has to be made for a free distribution by the partners in their respective country;
- Require from water agencies RT data, flow and temperature;
- Require from water agencies more nutrient sensors, and also in QRT;

Promote collaborative project with fresh water hydrologists in order to promote operational products in forecast for outflows and discharges.

10 National Reports

10.1 National Reports on improving IBI-ROOS Observing system

France report

In the framework of the PREVIMER Project, the following items are identified as sources of in situ data needed to validate the models and more generally, useful to the users of operational oceanography activities. Some are in operation, some are under development. Both Ifremer and SHOM are involved in these actions.
A monthly bulletin is planned, starting in February on the model of n°0 issued in October 2007.

1- Ship of Opportunity – Ferry Box

Plans are to be conducted in 2008: a phase 0 study on the line Roscoff – Plymouth – Cork – Santander sailed by the *Pontaven*, owned by Brittany Ferries. The objective is to start exploitation in 2009 in a multi-partners organisation (Ifremer, POL, IEO, IMI) to be defined.

2- Coastal profilers (2 types)

Four ARVOR-C (T-S) profilers are under construction. They are a simplified version defined as an extension to coastal conditions of the deep sea ARVOR profiler. They will be deployed in the frame of the ASPEX/Epigramme scientific project in 2008.
The technical development of the PAGODE profiler integrates capabilities to host additional sensors (fluorescence, DO, turbidity). This technical development is done in close collaboration with the company Kannad (previously MARTEC).

3- Fix automated stations

The development of the MOLIT station has been achieved. After a test in the Rade de Brest, the station was installed in the Bay de Vilaine. The functioning of the station is satisfactory. Sensors need calibration. Data are expected very soon in real time at the data centre CDOCO and on the *Previmer* website. The objective is to set up the local organisation to operate this station on an operational basis. MOLIT measures T, S, DO, Chl-a, turbidity at the sea bottom and at the surface every 20 minutes. Additional sensors will be installed in 2008: ADCP and nutrient FIA analyser. SHOM plans to buy one or more of this kind of buoy in 2009/2010.

4- Voluntary fishing boats network (RECOPESCA project)

The deployment of TS low cost sensors is continuing. A development of a turbidity sensor is planned in 2008 and will complete the set of parameters.

5- ADCP and turbidity measurement station

6- HF Radars

SHOM together with Actimar continues the exploitation of the 2 WERA Radar stations which cover the Iroise Sea since 2006. Inter comparison of surface current data with 3 different models is scheduled for 2008. The use of CODAR technology is foreseen in the coming years.

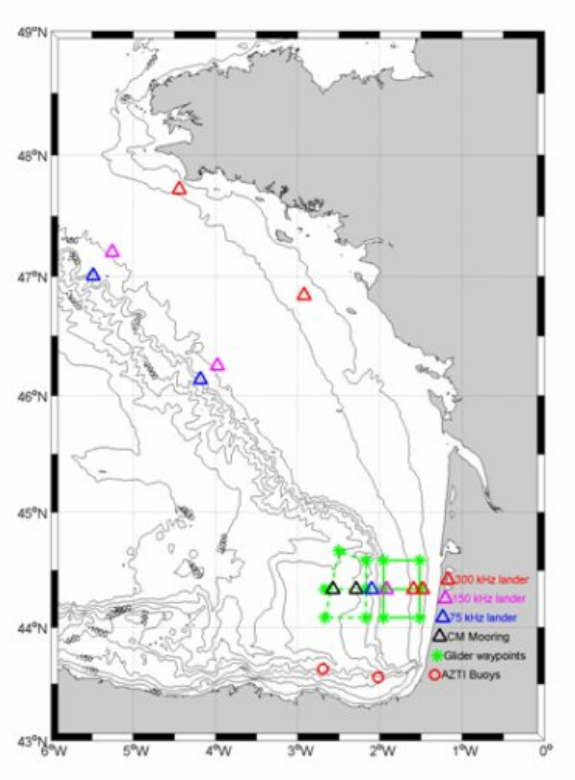
7- Tide gages

A study of offshore water height measurements is planned by SHOM for 2008.
Switch of tide gauges to real time will be pursued with a multiannual plan targeting 2012 for a complete real time network.

8- Waves buoys

SHOM is planning to buy few wave buoys as complements to the existing Candhis network operated by CETMEF.

Besides these actions scheduled within PREVIMER, a number of cruises both in the Bay of Biscay and the Channel will bring many valuable additional data useful for monitoring and model validation. In particular, a scientific project (2008-2012) named ASPEX / EPIGRAM plans to deploy:



- ADCP
- current meters moorings
- glider (?)
- PAGODE
- fix buoys.

with the objective to study:

- the dynamics of the circulation and water masses on the shelf front and the plateau,
- the processes and fluxes at the southern frontier of the plateau.

Spanish Report

Following the same line, here we describe ongoing activities on observing systems in Spain. Some are in operation, some are under development.

1. Ships of Opportunity – collaboration with the NOC Ferry Box Pride of Bilbao.
NOC keeps the FerryBox line from Porstmouth to Bilbao. IEO is collaborating in the analysis and use of chemical data within the Santander Section. Future Plans on collaboration in new FerryBox lines.

   TSG on near real time on board R/V *Cornide de Saavedra*: daily transmission of data into Coriolis and the IEO web page (www.ieo.es).

   TSG data on board R/V *J.M. Navaz*. In near real time www.indamar.es.

2. Hydrographical standard sections: IEO has maintained coastal 'Radiales' and 'Deep Sections' around the Spanish IBIROOS area. Uncalibrated CTD data from the cruise RADPROF0208 has been transmitted to 'Coriolis' in 'quasy real time' from R/V *Cornide de Saavedra* for operational use in ongoing models. Next autumn a new hydrographic cruise, RADPROF0908, will cover the Western Galicia and Bay of Biscay area. One year of LSW, MW and NACW current information will be recover in deep water (2500m) of western Galicia (43ºN, 11ºW) and Southern Bay of Biscay (43º 50'N, 3º 45'W).

3. HF Radars.
   Codar HF radars deployed on the western Galician coast by Puertos and Meteogalicia. Basque Meteorological Agency - Euskalmet had established an HF Radar network in the Basque Country (Cantabrian Sea) with Real-time transmission. Data will be available in summer

4. Tide gages
   Puertos del Estado: The Tide Gauge network of Puertos del Estado (REDMAR) is being upgraded to a new radar based sensor. 18 of them are in the Ibiroos area (9 in the Canary

Islands). All the stations transmit 5min or 1min data in real-time. The new radar stations (11) follow the requirements of the ICG-NEAMTWS of UNESCO, transmitting 1-min data with 1-min latency.
IEO has updated the network and data are transmitted in near real time.
Basque Meteorological Agency - Euskalmet has ADCP, tide gauges and meteorological data at 6 locations in the Basque Country (Cantabrian Sea). AZTI transmits sea level data and other parameters, from the Pasaia fixed station. The stations transmit in Real-time Ocean-Meteorological stations.

5. News on multipurpose buoys

Puertos del Estado has completed deep waters buoy network with a total number of 8 met-ocean buoys with real time hourly transmission. Coastal buoy network is still being upgraded with directional buoys and, in some cases, incorporating SST sensors.

The Basque Meteorological Agency (Euskalmet) in collaboration with AZTI have moored two automatic wave-buoys (43º 33.8'N, 2º 01.4'W and 43º 37.9'N, 2º 41.6'W) with meteorological, waves, currents and oceanographic data, at the end of 2006 on the shelf-break (550-630m), buoys are equipped with real-time transmission. Data will be available in summer

IEO oceano-meteorological AGL buoy (43º 50.67'N, 3º 46.20'W) was moored on June 27 at 22 miles North of Santander (2850 m depth) and transmits data by Inmarsat C. Oceano sensors record waves, T, S, 300kHz ADCP, Chl, and DO. Quality controlled real time data are integrated in the Puertos del Estado buoys network web side. IEO web real time data is under development.

Three new ocean-meteorologic stations have been deployed in Galician Rias by INTECMAR and MeteoGalicia together. One has been installed in Ria de Arousa (42°37'32.40"N, 8°47'1.50"W) and it is equipped with two CTDs and one HADCP plus a meteorologic station. Another one has been placed in Ria de Vigo (42°17'11.69"N, 8°39'36.69"W) and was equipped with another met station and two CTDs (3 CTDs and one HADCP soon). The next buoy will be deployed at the mouth of Ria de Vigo (42º 10'N 8º54,8' W) with 3 CTDS and a ADCP. All of this data can be displayed via web and they are sent to Puertos del Estado to be inserted in Coriolis Data Base.

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6. Floats

ARGO floats. IEO is involved in EuroArgo and an action of Argo-Spain has been funded, as result several Argo floats will be launched in the IBIROOS area, at least one equipped with O_2 probe.

Salinity related developments for SMOS (Soil Moisture and Ocean Salinity): Collaboration to improve the sea surface salinity measurements has been established within the frame of the SMOS development (Sea Surface salinity by Satellite). The SMOS sensor is supposed to be launched in spring 2009. Floats with 'real time transmission' have been launched in the IBIROOS and Atlantic area in the frame of the French project SMOS /CAROLS. IEO is collaborating with it in the cruise GOGASMOS April-June 2009. I.P. G. Reverdin LOCEAN, France. Data from the AGL buoy will be used to validate SMOS data.

7. Use of data from routine fisheries monitoring cruises (especially spring cruises, SAREVA, JUREVA) for monitoring hidrography.

8. Coastal Video Monitoring. A station on waves and morphodynamics is located in Mundaka, Urdaibai estuary installed by AZTI. Data will be in real time.

Portuguese Report

1) **MONICAN (Monitoring of the Nazare Canyon Area)**
The project MONICAN was submitted to the EFTA states financial mechanism and approved. It's planned to start in June 2008 with a budget of one million EURO. The project will be done in cooperation between the IH (project coordinator) and SINTEF – Norway.
Based on the IH experience the current proposal aims to establish a monitoring network off Nazare,
The main activities of MONICAN will be:

(1) Implementation of the oceanographic in-situ network - Offshore buoy in deep water with directional wave, meteorological, physical and chemical sensors. Coastal buoy in shallow water in Nazare with ADCP, directional wave sensor and oceanographic sensors. Tide gauges in Nazaré and Peniche. Additional bottom sensors to monitor the deep sea conditions, important for heavy metals deposits and contaminants.
(2) Real time Monitoring - Set up network transmission of data. Conceive and run an information distribution system by integrating the data from already operating tidal gauges (12), waverider buoys (3), meteorological coastal stations (4) and the proposed network.
(3) Quality Control - To develop and maintain a WEB site allowing general public access to network and environmental results and information and last valid results/ data, updated at least twice a day.
(4) Prediction system - Establish short term prediction schemes based on statistical adaptive prediction filters. Implementation models for the Nazare area for ocean wave prediction, ocean circulation and oil spill forecasting models, using the experience of the IH in the modelling area.
(5) Co-ordination - Co-ordinate the several tasks, provide on-line wave, temperature and currents forecasts and data transfer to end-user.

2) CODAR DEMONSTRATION
IH, Qualitas Instruments and CODAR are setting up a demonstration of this technology in Sines. The system is already installed and it's planned to start working in February until May. The goal of this demonstration is to make the appropriate publicity of the system to identify future national fundings.
The data series obtained will contribute to develop the IH modelling activities in currents and oil spill models. Research in the CODAR data assimilation will be very important to improve model forecast.

3) ICG-NEAMTWS
The IH is a very active partner in this group that plans to implement a tsunami early warning network in Europe. Portugal is one of the most critical area in Europe for this phenomenon and this system could help to save lives.
IH is a member of the working group 3 (Tides and offshore early warning buoys). The efforts during 2007 were to create some real time tide stations with a sampling rate of 1 minute or better. The IH developed the software for data transmission and implemented 2 stations (Sines and Sesimbra) in real time with a data sampling of 30 seconds. For 2008 there are plans for more stations.

Ireland report

1. ARGO floats

The Marine Institute will deploy 4 ARGO floats in the Rockall Trough in February 2008 from the RV Thalassa. We hope to deploy a further 8 in the next 24 months.

2. Autonomous Glider

We will take delivery of a 1000m rated Webb Research Glider in April 2008 and plan to use it on a shelf cruise in May 2008 to evaluate its performance. It is envisaged that we will deploy this on a repeat transect from the Irish shelf into the deep ocean in late 2008.

3. Irish offshore weather buoys

The M1 weather buoy (west of Galway) has been offline for several months now. The other 5 buoys in the network remain operational including the sentinel buoy M6 at the Porcupine Bank. We hope to add several CTD sensors at depth on the M6 mooring in the coming year to monitor water masses at the Porcupine Bank.

We are also in the process of upgrading two buoys to completely new FugroOceanor systems to move to a next generation system by 2012.

4. Tide gauge network

Development of this network continues at pace. There are currently 11 gauges delivering real-time information to our database and a further 7 planned installations in 2008.

5. Inshore buoy network

In summer 2008, Ireland will deploy 3 additional buoys nearer shore to initialise our inshore buoy network. The locations are on the west and northwest coasts (final positions to be defined) and will measure a full suite of oceanographic and met data as well as nitrates and water samples.

6. Waves buoys

Marine Institute will have spectral wave measuring capabilities on the two buoys in the offshore weather buoy network, the inshore network buoys and on one dedicated ocean energy site in Galway Bay by the end of 2008.

We have two principal research cruises in 2008. The first will take place on the RV Thalassa in late February, focusing on the deeper waters of the Rockall Trough. The second will concentrate on shelf processes and in scheduled for late May 2008 on the RV Celtic Explorer.

10.2 Annex to the IBI-ROOS River Discharges Working group: River flows and discharges for the French operational system PREVIMER over the Bay of Biscay: progress in 2007

Y.-H. De Roeck with contributions from A. Bonnat, J.-F. Guillaud, A. Menesguen, C. Penard.

In order to run the PREVIMER system, www.previmer.org, that since summer 2007 broadcasts information on the hydrodynamical circulation **and** the biogeochemical state of the coastal waters over the shelf part of the Bay of Biscay, the flows and nutrient loads of the main Atlantic rivers are collected.
For this operational system, the methodology differs for the flows, which are updated in quasi real time, and for the biogeochemical loads, which are firstly estimated by correlation with the flows; the available assessments by measurements are then gathered into a database once or twice a year, and can be used for analysis.

→ *River flows*

For the 9 following rivers along the Bay of Biscay, a daily update of the quasi real time data collection is performed: Adour, Dordogne, Garonne, Gave-de-Pau, Gave-d'Oloron, Loire, Luy, Nive, Vilaine. After an initial development cost for the PREVIMER data centre in order to secure the various information pipelines, these data can now be broadcast freely.
The data centre hosts historical records as well, from remaining smaller rivers. For 75 recording locations, most of them just before the estuarine part of the rivers, an average of 29 years of records are stored, for up to 66 years for the Rance and 146 years for the Loire.
There are then two ways for exploiting this information: either a correlation can be built on these long series between rivers, and the operational system uses the closest QRT record to update the flow of neighbouring rivers; or, a watershed model can be run, using meteorological forecast of rainfall, the hydrogeological model parameters being tuned with respect to the historical data.
Along the coasts of Britanny, this second method has been implemented by C. Penard and A. Menesguen, in order to activate a fine scale biogeochemical model to estimate eutrophication risks in this region, Fig. 1.

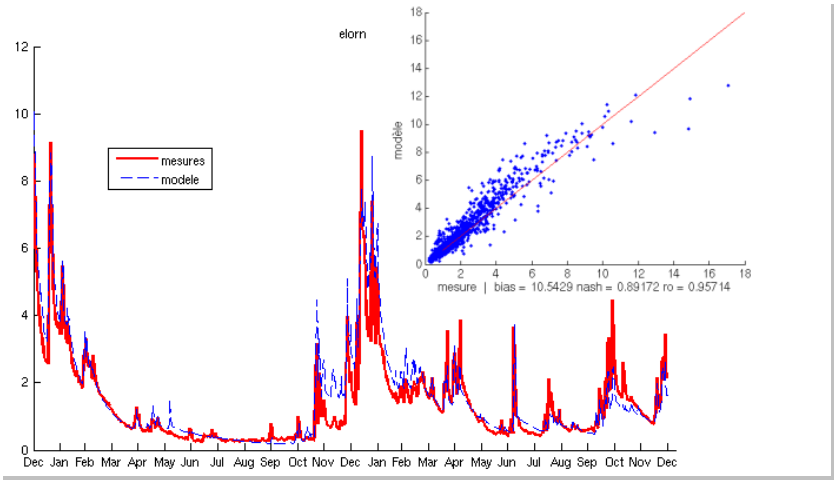

Figure 1: Modelling of the Elorn river flow by a watershed model, Penard et al. (2007). Measurements of river flow are in red, calculed values in blue.

→ *River nutrient inputs*

The model of phytoplankton production implemented along the French Atlantic coast needs real time boundary conditions notably in term of river flow and riverine nutrient concentrations.

The analytical delay to obtain these data implies that estimations only are given thanks to an empirical relationship between river flow and nutrient concentrations. This time, the data centre only stores historical data of nutrient loads. However, 59 locations are registered, and time series have an average duration of 15 years, the maximum being over 34 years.
The operational use of these data also comes from an empirical relationship between the flow and the nutrient concentration, leading for instance for nitrate to the scattered plot on Fig. 2.

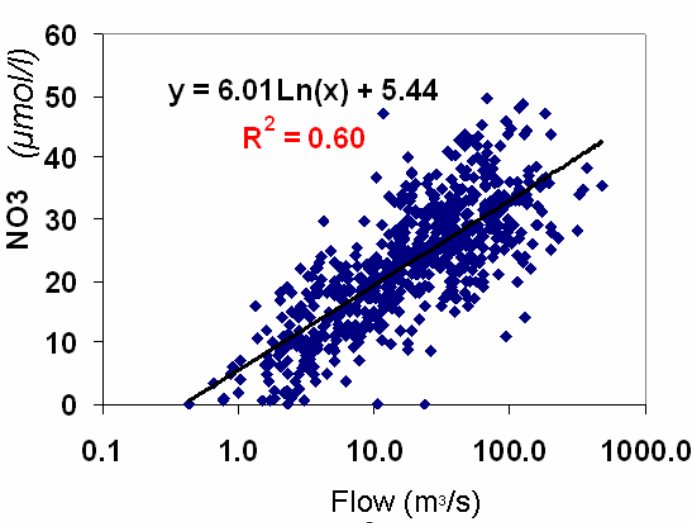

Fig. 2: Relationships between river flow (m^3/s) and nitrate concentration (µmol/l) in the Aulne river.

A term of pluriannual trend of nutrient concentration can also be taken into account (Guillaud and Bouriel, 2007) and the nutrient estimation is then in the form of the following equation:

[Nutrient concentration] = a + f(streamflow) + g(date)

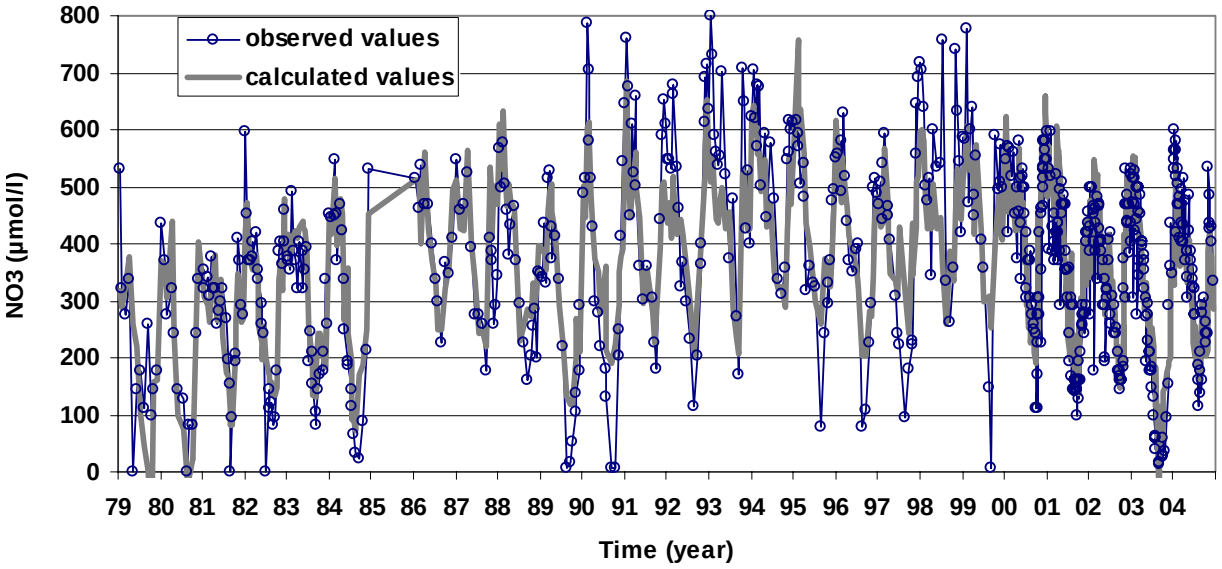

Fig. 3: Observed and calculated nitrate concentrations in the Aulne river.

Finally a real time estimation of nutrient fluxes can be done multiplying river flow by the estimation of nutrient concentration (Fig. 4).

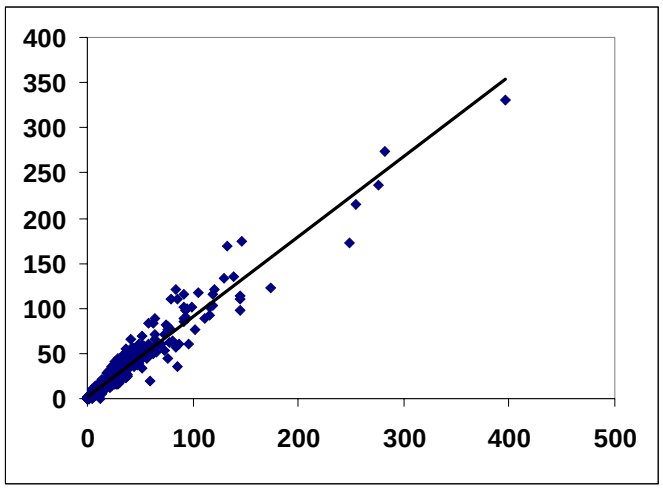

Fig. 4: Relationship between nitrate flux (t/d) observed (x axis) and nitrate real time flux estimation (y axis) in the Aulne river

In this manner, the real time nutrient fluxes (N.NO3, N.NH4, Si, P.PO4, Part.P) are available for the 15 main rivers along the French Atlantic coast.

Figures 4 and 5 display the daily output of the PREVIMER system based on these processed data.

→ **References**

Guillaud J.F. and Bouriel L. 2007. Relationships between nitrate concentration and river flow, and temporal trends of nitrate in 25 rivers of Brittany (France). Journal of Water Science, 20 (2): 213-226.

Pénard C., Ménesguen A., Dumas F., Guillaud J.-F., 2007. Vers une modélisation opérationnelle du devenir des nutriments dans la bande côtière bretonne. La Houille Blanche (in press).

Perrin C., Michel C. and Andreassian V. 2003. Improvement of a parsimonius model for streamflow simulation. Journal of Hydrology, 279: 275-289.

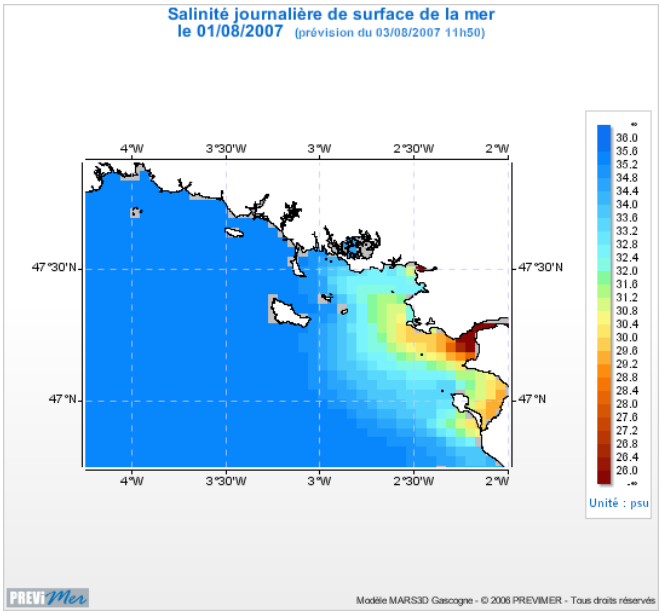

Figure 4: Nested models of the hydrodynamic coastal environment give the 3D response of the extension of the plumes of the main rivers. This salinity map near the mouth of the Loire river shows an unusual extent of the plume in August 2007, although in the low water period, due to rainy summer. Forecast and analysis are updated daily.

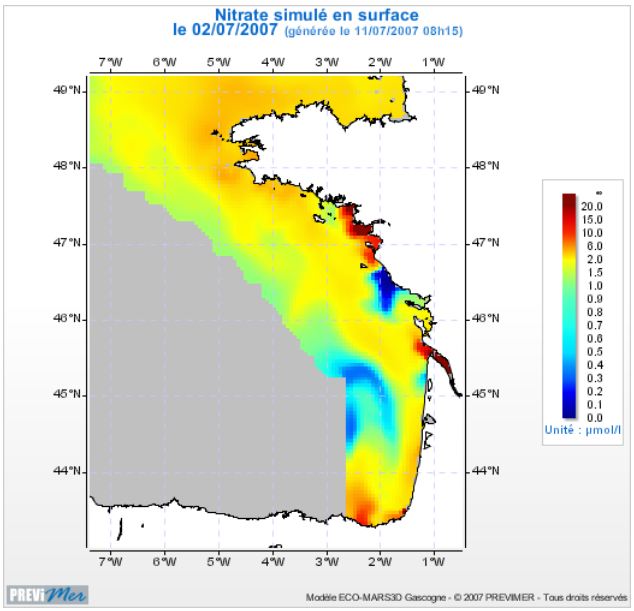

Figure 5: Daily update of biogeochemical parameters over the Bay of Biscay, at 5km resolution. This map shows the total nitrate content over the shelf of the Bay of Biscay. A monthly analysis report is also online.

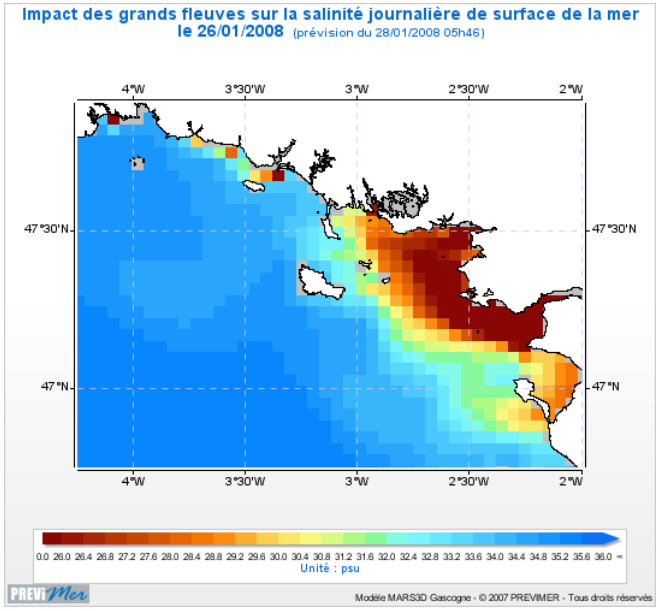

Figure 4: Nested models of the hydrodynamic coastal environment give the 3D response of the extension of the plumes. This salinity map near the mouth of the Loire River shows the large extent of the plume in February 2008. The plume combines discharge from the Vilaine River. Much smaller plumes are present all along the coast, where secondary rivers are taken into account through monthly climatological data.

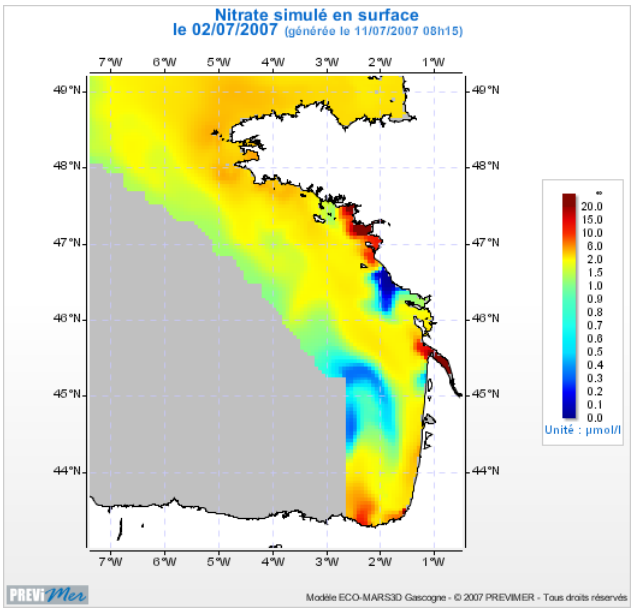

Figure 5: Daily update of biogeochemical parameters over the Bay of Biscay, at 5km resolution. This map shows the total nitrate content over the shelf of the Bay of Biscay. A monthly analysis report is also online.

Portugal National report

NEW DEVELOPMENTS AT THE PORTUGUESE HYDROGRAPHIC INSTITUTE (IH)

1) **MONICAN (Monitoring of the Nazare Canyon Area)**

The project MONICAN was submitted to the EFTA states financial mechanism and approved. It's planned to start in June 2008 with a budget of one million EURO. The project will be done in cooperation between the IH (project coordinator) and SINTEF – Norway.

Based on the IH experience the current proposal aims to establish a monitoring network off Nazare, an extremely important area due to future economic developments in the area of wave energy (future establishment of a pilot area for wave energy production), tourism, off-shore drilling, commercial and leisure navigation, fishing, aquaculture and marine preservation due to the existence of a protected area (Berlenga marine reserve). It will cover a large area from deep sea to coastal areas.

The system is intended to provide the data information required to achieve six major goals:

(a) Improve predictions of climate change and its effects on coastal populations; (b) Mitigate more effectively the effects of natural hazards;
(c) Improve the safety and efficiency of marine operations;
(d) Reduce public health risks;
(e) More effectively protect and restore healthy coastal marine ecosystems;
(f) Sustain living marine resources.

An integrated observing system consists of three closely linked subsystems:

(a) the measurement (monitoring) subsystem;
(b) the data management and communications subsystem;
(c) the data analysis-modeling subsystem.

The following core variables were given high priority for incorporation into the MONICAN system:

(a) Physical: salinity, temperature, bathymetry, sea level, surface waves, vector currents, bottom characteristics, optical properties, chlorophyll and radioactivity;

(b) Chemical: water column contaminants, dissolved inorganic nutrients, dissolved oxygen and hydrocarbon measurements.

In addition to those variables required to characterize the marine environment, the following variables are required to quantify the external drivers of change on a regional scale:

(a) Meteorological: vector winds, temperature, pressure, precipitation, humidity; (b) Terrestrial: river discharge

The MONICAN interface for most users will be the data management and communications subsystem. This subsystem will link every part of the observing system from the instruments to the users, and will contribute to defining the quality of the end products. It is a crucial component of the observing system, and its design should ensure that both users and contributors are an effective part of the data management and communications process. The main task will be the design and implementation of an enhanced, distributed data and information management system that links all observations and data management systems to all data users. A dedicated website will be implemented to disseminate all the real time data and ocean modelling (Waves, currents, algae blooms etc.).

The operational service is aimed at the protection of marine and coastal resources from environmental hazards including harmful algal blooms, oil spills and other acute pollution, extreme weather and sea state conditions. The routine operation of the system will integrate real time data with results from traditional in situ monitoring of marine biology and chemistry, meteorology, numerical modelling of hydrodynamics and plankton ecology, and satellite remote sensing of sea surface temperature.

SINTEF Fisheries and Aquaculture (SFH) will be a very important partner in this project bringing their experience from the implementation and more than 15 years operation of an environmental monitoring and forecasting service in Norway.
The main activities of MONICAN will be:

(6) Implementation of the oceanographic in-situ network - Offshore buoy in deep water with directional wave, meteorological, physical and chemical sensors. Coastal buoy in shallow water in Nazare with ADCP, directional wave sensor and oceanographic sensors. Tide gauges in Nazaré and Peniche. Additional bottom sensors to monitor the deep sea conditions, important for heavy metals deposits and contaminants.

(7) Real time Monitoring - Set up network transmission of data. Conceive and run an information distribution system by integrating the data from already operating tidal gauges (12), waverider buoys (3), meteorological coastal stations (4) and the proposed network. Implement computer capacity necessary to support operational runs for numerical models, receiving station for real-time data and server for data and forecast distribution. Maintenance operations of the in-situ equipments.

(8) Quality Control - To develop and maintain a WEB site allowing general public access to network and environmental results and information and last valid results/ data, updated at least twice a day. Execute regular cross-validation of model and measured data as a kind of health check for the system. This should be done at least every 3 months, but, if possible, it should be automated so that an assessment can be made at any time.

(9) Prediction system - Establish short term prediction schemes based on statistical adaptive prediction filters. Implementation models for the Nazare area for ocean wave prediction, ocean circulation and oil spill forecasting models, using the experience of the IH in the modelling area. Training in operating and interpretation of model results. Training in operational oceanographic forecasting. Maintain a forecast/nowcast validation by estimating errors from observations (buoys, satellite and cruise data).

(10) Co-ordination - Co-ordinate the several tasks, provide on-line wave, temperature and currents forecasts and data transfer to end-user. Provide a basis for environmental assessment studies. Provide data reports every six months and network integrated reports every year. Establish direct links with end-users, namely local authorities, Civil Protection, Search and Rescue teams, Oil spill readiness teams, Harbours, Meteorological service, tourism operators, sports marine activities, research groups among universities and industry.

2) OCEANOGRAPHIC MODELLING

With the implementation of MONICAN the modelling work done at IH will increase significantly. Currently the wave models are operational with daily forecast published on the internet. There are several areas covering basin models and coastal models in the following domains: North Atlantic, South Atlantic, Portuguese EEZ, North of Portugal and part of Galicia, Central Portugal, Algarve and part of Andalucia.
The circulation models are implemented but not operational. During 2008 the effort will be to create automatic routines in order to turn the circulation models operational with the appropriate dissemination on the internet. There will be a domain covering all the Portuguese EEZ and also appropriate downscaling to coastal areas.

MAIN NEW ACTIVITIES at IST DURING 2007

1. IST signed the IBI-ROOS Memorandum of Understanding in May 2007.
2. First tests of coupling a biogeochemical model to the operational circulation model for the Portuguese Coast (http://data.mohid.com/data.xml)

3. Improvements in MOHID code in terms of nesting techniques, namely the ability to use different vertical discretization (resolution and/or coordinate systems) between father and son domains
4. Implementation of a new data assimilation module in MOHID code with extended Kalman filters (SFEK, SEEK) in addition to a data assimilation pre-processing tool capable of EOF analysis, computing EOF inertia and state reconstruction. Under validation using twin tests in a Tagus estuary application
5. Wave forecast in the Tagus mouth estuary using SWAN downscaling from WWIII operational model under validation.
6. Installation of river buoys (Tagus, Mondego and Guadiana) providing data in near real time (temperature, salinity, pH, turbidity, dissolved oxygen, chla, water level, currents, flow).

Ongoing projects

IST is participating in 3 EU projects with interest for IBI-ROOS:

1. EASY project (INTERREG IIIB 2007-2010) – project leaders
2. INSEA (FP6 2006-2009) – project leaders (Integration of downscaling, remote sensing, data assimilation and data management in relation with eutrophication studies)
3. ECOOP