Joint European Research Infrastructure network for Coastal Observatories

First report of the access activity D1.7

Grant Agreement n° 262584
Project Acronym: JERICO

Project Title: Towards a Joint European Research Infrastructure network for Coastal Observatories

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Date: 12-05-2013

Table of Contents

1. Document description

REFERENCES

Annex 1 to the Contract Description of Work (DoW) version of the 22 Feb. 2011

Document information	
Document Name	First report of the access activity
Document ID	JERICO-WP1-D1.7-120513-V2
Revision	2
Revision Date	23 May 2013
Author	Stefania Sparnocchia
Security	

History			
Revision	Date	Modification	Author
V1	12 May 2013	none	Sparnocchia
V2	23 May 2013	Minor corrections (access units and duration in section 5.1.1, update of Table 4)	Sparnocchia

Diffusion list				
Consortium beneficiaries	X			
Third parties				
Associated Partners				
other				

2. Executive Summary

This report describes the activities following the launch of the First TNA Call, carried out under Task 1.6 “User modalities access for the Trans -National Activities” of the JERICO project.

Information on the Calls’ programme, the rules governing the eligibility of user groups and the procedures for the selection and approval of proposals are described in D1.1 (First Call for TNA proposal), together with the facilities participating in the Call.

The launch of the Call was preceded by a long period of preparatory work: the drafting of the required publicity and regulatory TNA documentation, the design of the TNA Web pages and their posting on the JERICO website, and the promotion of the access opportunities offered by JERICO. These activities have been detailed in D11.4 (Interim period activity report).

This document describes the various steps involved in the implementation of the Call, giving an overview of the proposals that were accepted and indicating the state of their progress at the present time.

3. Introduction

The JERICO Consortium offers Transnational Access (TNA) to a number of unique European Coastal Observatories and Calibration Facilities for international research and technology development. The facilities open to users are ferryboxes, fixed platforms, gliders, and associated calibration laboratories. The primary objective of this activity is to enable scientists and engineers to freely access coastal infrastructures not available in their own countries. As long term goals, TNA will contribute to

- building a long-term collaboration between users and JERICO partners, facilitating staff exchange and scientific cooperation;
- building an European facility for science dedicated to innovation (new sensors, new automated platforms), open to Europe and also to countries of common regional interest (South Mediterranean, Black Sea, Baltic Sea);
- promoting the infrastructure by transferring know-how from the partners to users, with a view to future expansion that will include new partners (possibly also from non-European countries).

Free-of-charge access to the facilities specified in the TNA context are granted following the evaluation of proposals submitted by *user groups* for their utilization in response to dedicated Calls during the lifetime of the JERICO project. The evaluation is performed by a Selection Panel composed of international experts in the field.

The access conceded includes logistical, technical and scientific support by the *access provider* (*facility operator*), and any special training that a user group may require to use an assigned infrastructure. Moreover, JERICO is contributing to travel and subsistence costs relating to visits by users. Access is ruled by a written agreement between the *access provider*, the *end user* and the *project coordinator* which delineates the actions to be undertaken by the parties involved, the resources that will need to be allocated, the length of planned user stays (if any), and the period of use.

A first call was launched on January 12, 2012, and nine out thirteen submitted projects were positively evaluated by the Selection Panel and selected for execution.

In the following we describe experience so far for selecting and implementing these projects, and also give some outcomes being achieved.

4. Selection of projects

The first call for access to the JERICO Coastal Observatories and Calibration Facilities was launched on January 12, 2012. Thirteen proposals were submitted and passed through a three-step selection process involving:

i. evaluation of all the submitted proposals by the Selection Panel (SP), particularly with regard to scientific excellence, innovation and impacts on the state-of-the-art;

ii. validation of the proposals by the managers of the targeted facilities;

iii. final assessment by the SP.

4.1 Scientific evaluation

As regards step (i) each proposal was evaluated by three members of the SP. The evaluation procedure was coordinated by the JERICO TNA office, head by CNR, and conducted by email. The proposals were distributed equally among SP members, avoiding nationality conflicts and, as a rule, if a single facility was the target of more than one proposal, at least two evaluators were common to each of the evaluating groups involved. Each evaluator was asked to fill in a form containing a list of selection criteria and respective maximum scores (Table 1). They also could add comments for motivating their scores. A summary scientific evaluation report was compiled for each proposal by the JERICO TNA Office containing the final score for each criterion (calculated as the average of the points assigned by each evaluator) and the comments of the evaluators. These summary reports are included in the TNA Call Evaluation Report and its Addendum (Annexes 1 and 2).

Criterion for Selection	Maximum score
1. Fundamental, scientific and technical value	30
2. Quality of the work program	25
3. Feasibility	20
4. Potential for seeding links with industry	10
5. Quality of users groups	10
6. European representativity	5

Table 1 – Selection criteria with corresponding maximum scores.

4.2 Technical validation

The feasibility of the proposals was evaluated by the managers of the targeted facilities. Their comments and suggestions for adjustments have been assembled by the JERICO TNA Office in a technical evaluation report for each proposal. These summary reports are included in the TNA Call Evaluation Report and its Addendum (Annexes 1 and 2).

4.3 Final assessment

Two proposals were rejected not fulfilling the requisite of minimum score established to pass the selection. One was found to be ineligible when the evaluation was completed. Another one, even if received an excellent scientific evaluation (score 86.8), was withdrawn by the P.I. because not feasible with the targeted facility, requiring a costly upgrade of the facility's equipment to adapt it to the needs of the user. The remaining nine proposals were ranked in accordance with the total score assigned by the evaluators (Table 2), and the corresponding projects approved for implementation.

Both the submitted proposals and the ones approved were published on the JERICO web site in dedicated pages[1,2]. The work of the Selection Panel is detailed in two reports (Annexes 1 and 2).

SCORE	Reference number	Facility ID	Type	Facility Operator	Proponent
87.1	CALL_1_13	COBS 4 POL GLIDER	GL	NERC, UNITED KINGDOM	Ian Allan, NIVA NORWAY
82.1	CALL_1_9	MPLC	FP	CNR, ITALY	Laurent Coppola, Observatoire Oceanographique de Villefranche/Mer FRANCE
76.5	CALL_1_5	OGS-CTO	CL	OGS, ITALY	George Pethiakis, HCMR, GREECE
75.6	CALL_1_11	POSEIDON CAL	CL	HCMR, GREECE	Roberto Bozzano, CNR ISSIA, ITALY
74.3	CALL_1_4	Colour Fantasy	FB	NIVA, NORWAY	Kevin C. Jones, Lancaster University, UNITED KINGDOM
		COSYNA_2 (PILE)	FP	HZG, GERMANY	
72.7	CALL_1_1	POSEIDON BUOYS	FP	HCMR, GREECE	Melchor Gonzales-Davila, Universidad de Las Palmas de Gran Canaria, SPAIN
		POSEIDON CAL	CL		
72.0	CALL_1_8	CSIC-Glider	GL	CSIC, SPAIN	Alberto Ribotti, CNR IAMC, ITALY
70.1	CALL_1_6	MPL Genoa	FP	CNR, ITALY	Emilio Cano Diaz, CENIM/CSIC, SPAIN
68.0	CALL_1_7	CETSM	GL	INSU/CNRS, FRANCE	Ainhoa Caballero Reyes, AZTI Technalia, SPAIN

Table 2 – Approved proposals ranked in accordance of the total score assigned by the evaluators (column 1). The reference number assigned to the proposal is indicated in column 2. The identification code of the facility, the operating organization and the name and nationality of the proponents are in columns 3, 4 and 6. In column 4 the type of facility is indicated, with GL for Gliders, FP for Fixed Platform, FB for FerryBox and CL for Calibration Laboratory.

4.4 Communication of results

Results of evaluation were communicated to the proponents, who also received a copy of the scientific and technical evaluation reports for their proposal. They were also invited to interact with the facility operator to discuss technical adjustments and new experimental arrangements if required.

[1] http://www.jerico-fp7.eu/tna/calls-and-selection/first-call/submitted-projects

[2] http://www.jerico-fp7.eu/tna/calls-and-selection/first-call/approved-projects

5. Implementation of TNA projects

5.1. Agreement between parties

Before starting a project approved under JERICO TNA, a TNA END User agreement has been signed between the institution leading the user group (end user), the JERICO Consortium in the person of the coordinator IFREMER and the beneficiary giving access to its infrastructure (facility operator).

A draft template of the agreement was prepared by CNR and IFREMER, sent to beneficiaries for improvement and approval and specialized with the involved parties when required.

The agreement defines the terms whereby the facility operator will put at disposal to the end user the targeted facility as a platform to carry out the Experiment detailing:

- The access conditions.
- The end user commitments regarding:
  - obligation in case of cancelation of the experiment by its on-site party,
  - documentation of expenses and distribution of funds among members composing the user group,
  - commitments regarding safety rules,
  - reporting obligation after the visit and during the JERICO life-time, including filling the EC on-line questionnaire and proper acknowledgement to grant agreement n°262584 “JERICO”,
  - obligation for data delivery.
- The facility operator commitments regarding the obligation of communicating
  - confirmation of the availability of the facility,
  - its request regarding the insurance policy,
  - applicable safety rules on-site.
- Conditions regarding end user expense reimbursement and the Coordinator role in managing this issue.
- Obligations and rights of the involved parties for what concerns: intellectual property rights, confidentiality, liability and other legal issues regarding the signed agreement.

A detailed working plan is part of the agreement presenting the scope of the work and its schedule.

With the agreement the end user receives also a template to report immediate outcomes after the visit and to provide information useful to fill in the European Commission MS Access database (Appendix I).

5.2 Overview of concluded and running projects

Five out of nine approved user-projects have started at the date of this report and 2 of them have been concluded (Table 3). The rest will start in summer/autumn 2013.

Reference Number	User Project acronym	Title	Start	End
CALL_1_1	MEDACID	Mediterranean Sea ocean acidification time series experiment	March 3, 2013	
CALL_1_5	RTC	Reference Temperature Calibration	February 28, 2012	March 1, 2013
CALL_1_8	GABS	Deep Glider Acquisitions between Balears and Sardinia	October 23, 2012	
CALL_1_9	OXY-COR	Integration of dissolved oxygen concentration measurements in the long term time series data in the Corsica Channel	November 20, 2012	
CALL_1_11	CIEBIO	Calibration and inter-calibration exercise of bio-geochemical sensors	November 26, 2012	November 30, 2012

Table 3 – Concluded and running TNA projects.

5.1.1. Concluded projects

This section contains information on the two TNA concluded projects extracted from the reports provided by the P.I. of the user groups at the end of their access activity.

1) <u>Project CEBIO</u>

General Information	
Proposal reference number	CALL_1_11, Agreement n° 12/1210185
Project Acronym (ID)	CEBIO
Title of the project	Calibration and inter-calibration exercise of bio-geochemical sensors
Host Research Infrastructure	Hellenic Centre for Marine Research – Calibration Laboratory (POSEIDON CAL)
Starting date - End date	26 – 30 November 2012
Name of Principal Investigator **Home Laboratory** **E-mail address** **Telephone**	Roberto Bozzano Consiglio Nazionale delle Ricerche roberto.bozzano@cnr.it +39 010 6475656
Additional users	Sara Pensieri Consiglio Nazionale delle Ricerche

Project objectives
The experiment addresses the main scope of performing a calibration and inter-calibration exercise of bio-geochemical sensors to be operationally and routinely deployed on off-shore marine observatories making part on a continuous basis of the marine monitoring network of the Mediterranean Sea. In particular, the first objective consists in enhancing the accuracy of the in-situ observations on a long term basis of dissolved oxygen, chlorophyll-a and turbidity in the Ligurian basin collected by a multiparametric probes installed on the W1-M3A offshore observing system, constituted by the “ODAS Italia 1” spar buoy and by a close subsurface mooring. The opportunity to install carefully calibrated probes will improve the knowledge about the biogeochemical processes in the upper thermocline and can support with real-time quality controlled observations the developing biogeochemical forecast models for both the phases of assimilation and calibration/validation. The W1-M3A observatory, together with the E1-M3A buoy moored in the south Aegean Sea and the E2-M3A buoy positioned in the South Adriatic, is part of the M3A network, developed within the framework of the MFSTEP project in order to answer to the needs of the Mediterranean Forecasting System of real-time physical and biogeochemical observations of the upper thermocline. Indeed, the possibility to use sensors calibrated with the same procedures installed on the different sites belonging to the M3A network makes feasible a comparison between the involved sites thanks to an homogenous database in order to verify at a quantitative level the observed differences and to enhance the quality of the in-situ observations.

Main achievements and difficulties encountered
The experiment allowed to obtain a calibration in laboratory and at sea for oxygen and fluorescence sensors. More in details in laboratory, the calibration of oxygen probes has been carried out in a tank (800x500x500 mm) furnished by an Haake N2 immersion circulator and two aerators. Two SBE43 oxygen sensors were tested together and Winkler chemical titration served as the reference standard for evaluating performance characteristics. Five calibration points (at 14°C – 17.7 °C – 20.2 °C) have been chosen and three samples for each point have been used for the Winkler analysis. During the one day cruise onboard the R/V Philia three water samples were acquired for the evaluation of both oxygen and chl-a parameters. The results show an underestimation of oxygen probes respect to Winkler samples with an average difference of about 0.43 ml/l for the laboratory test and 0.49 ml/l for the samples taken at sea. The chl-a calibration were performed by means of two reference of chlorella culture and eight concentration points of uranine solution in laboratory and with water samples at sea. The results show a good agreement between tests in laboratory and in field and allowed to calculate a new scale factor for the analyzed sensors. The need of very steady temperature for the oxygen calibration and of accurate reference concentration for chl-a tests extended the schedule of the experiment and didn't allow the calibration of turbidity sensors that has been postponed and has been performed only by HCMR team. The "Calibration and inter-calibration exercise of bio-geochemical sensors project" in the framework of Jerico TNA allows to perform a calibration of oxygen, chlorophyll-a and turbidity sensors both in laboratory and at sea. The achieved results show several discrepancies between the calibration sheet provided by the manufacturer and the in-situ validation and evidence the need of a field calibration especially for chlorophyll-a and turbidity measurement before the deploying of the instruments.

Dissemination of the results
The finalization of a technical report describing the methodologies and the tests performed during the experiment is foreseen by all the involved teams and an abstract containing the description of the M3A network and the results of the experiment has been submitted to OCEANS'13 MTS/IEEE conference.

Use of the Infrastructure/Installation	In situ	By remote
Nr. of Users involved	2	///
Access units (days/months/etc)	Week of 5 days of 8 hours	///
In situ stay day / Remote Access duration	1	///

User project scientific field	
Main field	Earth Sciences & Environment
Scientific description (13)	Marine Science/Oceanography

Preliminary outcomes are described in *Bozzano R., Petihakis G., et al., Bio-geochemical sensors calibration and intercalibration exercise at POSEIDON calibration Laboratory of HCMR in Crete,* published on the JERICO website[1].

2) Project RTC

General Information	
Proposal reference number	CALL_1_5, Agreement n° 12/1210181
Project Acronym (ID)	RTC
Title of the project	Reference Temperature Calibration
Host Research Infrastructure	OGS-Oceanographic Calibration Centre (OGS-CTO)
Starting date - End date	25 February 2013 - 01 March 2013
Name of Principal Investigator **Home Laboratory** **E-mail address** **Telephone**	George Petihakis HCMR Calibration Laboratory gpetihakis@hcmr.gr +30 2810 337755
Additional users	Manolis Ntoumas, Fotis Pantazoglou HCMR

Project objectives
The purpose of the experiment was to acquire expertise, receive guidance, and gain "hands-on" experience in applying the procedures and Best Practice conventions for the calibration of oceanographic temperature sensors using primary reference standards. The OGS-Oceanographic Calibration Centre (OGS-CTO) is the oceanographic testing and calibration facility of the Department of Oceanography of the OGS (Istituto Nazionale di Oceanografia e di Geofisica Sperimentale), located in Trieste (Italy). It provides the scientific and technical infrastructure necessary for high-quality observations of the marine environment using procedures that repeatedly meet recognized international standards of excellence. The ability to calibrate and maintain sea-going instrumentation efficiently is fundamental for the quality of their services. The long-term goal is for HCMR to be able to perform such calibrations on its own premises. This is essential in order to ensure the quality of the data collected by the POSEIDON network (http://poseidon.hcmr.gr) and field surveys performed by HCMR.

Main achievements and difficulties encountered
HCMR has established an in-house calibration laboratory for the evaluation and calibration of its oceanographic sensors and instruments. For the calibration of the temperature sensors, two standard platinum thermometer(s) manufactured by Seabird Electronics, Inc. and a large temperature-controlled bath are employed. However, for proper calibration, the reference standard platinum thermometer(s) should be maintained within specifications by linearization, slope and offset adjustments using primary temperature standards (ITS-90 fixed points). The calibration of oceanographic temperature sensors using primary temperature standards requires expertise, and is a delicate and labour-intensive process, often associated with heavy costs for the operators. The HCMR calibration lab does not currently employ this calibration procedure. The JERICO RTC TNA provided the opportunity to validate and calibrate the two reference thermometer(s which will be used as secondary reference standards for the HCMR calibration laboratory.

Dissemination of the results
A report with the TNA results will be published in the JERICO webpage (http://www.jerico-fp7.eu/tna/calls-and-selection/first-call/approved-projects).

Use of the Infrastructure/Installation	In situ	By remote
Nr. of Users involved	3	///
Access units (days/months/etc)	Week of 5 days of 8 hours	///
In situ stay day / Remote Access duration	1	///

User project scientific field	
Main field	Earth Sciences & Environment
Scientific description [(13)]	Marine Science/Oceanography

Preliminary outcomes are described in *Ntoumas M., Nair R., et al., JERICO TNA Reference Temperature Calibration (RTC) experiment at the "Centro di Taratura Oceanografica" (CTO) of the OGS in Trieste,* published on the JERICO website[2].

5.1.2. Running projects

This section provides information on the three TNA running projects as derived from the approved proposals submitted by the P.I. of the user groups and give some hint on the present status. No activity report is yet available.

1) Project MEDACID

General Information	
Proposal reference number	CALL_1_1, Agreement n° 12/1210180/B
Project Acronym (ID)	MEDACID
Title of the project	Mediterranean Sea ocean acidification time series experiment
Host Research Infrastructure	HCMR Salonicos coastal buoy and HCMR calibration laboratory (POSEIDON BUOYS and POSEIDON CAL)
Starting date - End date	3 March 2013 – in progress
Name of Principal Investigator **Home Laboratory** **E-mail address** **Telephone**	Melchor Gonzales-Davila Universidad de Las Palmas de Gran Canaria mgonzalez@dqui.ulpgc.es +34928452914
Additional users	J. Magdalena Santana Casiano Universidad de Las Palmas de Gran Canaria

Project summary
Coastal waters are badly sampled for carbon dioxide and only some CO2 sensors have been recently deployed along USA coastal waters and North of Europe. In this project, the user group is planning to deploy one of its pH sensors having a 0.001 pH unit reproducibility, on one of the buoy of the HCMR POSEIDON networks, placed in an important region as it is the east coastal Mediterranean seawater. Calibration experiments are also planned at the HCMR calibration facility. The project will add great value to: a) the development of pH measuring system, b) the monitoring of ocean acidification in the Mediterranean Sea and c) the JERICO project (both from the point of view of Trans National activities and co-operation and the development of novel and advanced measuring systems). The main objectives are: 1. Study the daily, monthly, seasonal and inter-annual pH variability in coastal waters. 2. Determination of the main controlling factors affecting the expected acidification. 3. Correlation with physical, chemical and biogeochemical factors controlling the coastal area. 4. Applicability of the pH sensor in coastal areas and for long deployments. 5. Reinforcement of the relations between institutions working in linked activities.

Project schedule
The access will last 8 months following the start on March 3rd, 2013, when the user group accessed POSEIDON CAL for testing their instrumentation, and its deployment on the buoy (planned within May).

2) Project GABS

General Information	
Proposal reference number	CALL_1_8, Agreement n° 12/1210183
Project Acronym (ID)	GABS
Title of the project	Deep Glider Acquisitions between Balears and Sardinia
Host Research Infrastructure	IMEDEA-CSIC Glider platform (CSIC-Glider)
Starting date - End date	23 October 2012 – in progress
Name of Principal Investigator **Home Laboratory** **E-mail address** **Telephone**	Alberto Ribotti Institute for Coastal Marine Environment of CNR alberto.ribotti@cnr.it +39.0783.229015
Additional users	Antonio Olita Institute for Coastal Marine Environment of CNR

Project summary
The proposed research is drawn in the central part of the Algero-Provencal sub-basin that constitutes the central area of the Western Mediterranean Sea. This part can be seen as a buffer area between the northern Provencal sub-basin and southern Algerian one and is mainly characterized by the presence and action of the Balearic Front. So it has a great importance to understand exchanges through the two sub-basins and the complex interactions through eddies. This area is frequented annually by the User Group with oceanographic cruises, and repeated CTD and current-meter data are regularly acquired. They are proposing to integrate their observations by implementing two glider missions in the area using one of the gliders of the CSIC fleet. During each mission, the glider will follow a route from the Minorca to Sardinia along the latitude 39º 49.457' N and will return to Menorca or Mallorca. The main objectives are**:** i) to study the variability of the physical properties of surface and intermediate water masses between the Algerian and the Provencal sub-basins; ii) to evaluate the transport of water, salt and heat through the area and verify if the inter-annual variability of the surface and intermediate water masses is due to climatic changes; iii) to validate the operational hydrodynamic numerical model of the western Mediterranean (http://www.seaforecast.cnr.it/en/fl/wmed.php) through the use of in-situ and satellite data.

Project schedule
• October 23rd, 2012: JERICO TNA first glider mission started in the Balearic Sea. • October 30rd, 2012: Mission temporary suspended due to battery problems; glider safely recovered 45 miles East of Menorca. • January 31st, 2013: Mission re-started from Minorca. • March 16th, 2013: First glider mission ended in Mallorca. The second glider mission is planned in autumn.

More information on this experiment is provided in *Cusí S., Ribotti A. et al., Jerico TNA First Glider Mission,* published on the JERICO website[3].

3) Project OXY-COR

General Information	
Proposal reference number	CALL_1_9, Agreement n° 12/1210184
Project Acronym (ID)	OXY-COR
Title of the project	Integration of dissolved oxygen concentration measurements in the long term time series data in the Corsica Channel
Host Research Infrastructure	CNR – Corsica Channel mooring (MPLC)
Starting date - End date	20 November 2012 – in progress
Name of Principal Investigator **Home Laboratory** **E-mail address** **Telephone**	Laurent Coppola Oceanographique de Villefranche/Mer coppola@obs-vlfr.fr +33493763988
Additional users	Dominique Lefevre Mediterranean Institute of Oceanography

Project summary
The DYFAMED site (DYF, 2350m depth) and the CORSICA Channel (CC, 445m depth) are permanently monitored since 1988 and 1985 respectively to observe the water masses evolution and more specifically the shift of the LIW property due to the climate change. These observations are done through fixed moorings regularly maintained to record temperature, salinity and currents data. Since 2005 and 2009, the CC and DYF moorings are respectively equipped with precise sensors Seabird SBE37 (0.001°C), and both of them are maintained every year through annual/semi-annual scientific cruises in order to collect T-S data, to clean and to calibrate the sensors and to repair the mooring line. The objective of the proposal is to implement dissolved oxygen concentration measurements at 400m depth in the Corsica Channel mooring, installing an oxygen optical sensor (optode 4330 Aanderaa), as it will be done also at the Dyfamed mooring (400m and 2000m). Integrating these measurements in the long term time series data in the Ligurian basin will allow to track the water mass variability, the impact of the water mass change on the oxygen content and to estimate the time lag between the eastern (Corsica Channel) and the western (Dyfamed) part of the Ligurian Sea.

Project schedule
• November 20th, 2012: an optical dissolved oxygen sensor (OPTODE 3975 Aanderaa) was installed on the underwater station at 400 m depth during a periodical maintenance cruise conducted by CNR. • June, 2013: 2013 the underwater station will be maintained again and a second sensor (OPTODE 4330 Aanderaa) will be installed at the same position for simultaneous measurements and comparison. The experiment is planned to last for twelve months under the aegis of JERICO TNA and then will continue for at least other six months as collaboration among the involved institutions. Data will be recovered at each mooring maintenance, when dissolved oxygen concentrations will be also measured by Winkler titration in order to calibrate the automatic DO measurements. This operation is essential in order to check the quality of the DO data acquired by the sensor. After validation, DO data will be analysed along with other parameters measured in the site after each period.

More information on this experiment is provided in *Schroeder K., Coppola L., et al., JERICO TNA Dissolved Oxygen measurements in the Corsica Channel,* published on the JERICO website[4].

[1] http://www.jerico-fp7.eu/news-rss/169-bio-geochemical-sensors-calibration-and-intercalibration-exercise-at-poseidon-calibration-laboratory-of-hcmr-in-crete

[2] http://www.jerico-fp7.eu/news-rss/181-jerico-tna-reference-temperature-calibration-rtc-experiment-at-the-centro-di-taratura-oceanografica-cto-of-the-ogs-in-trieste

[3] http://www.jerico-fp7.eu/news-rss/149-jerico-tna-first-glider-mission

[4] http://www.jerico-fp7.eu/news-rss/159-jerico-tna-dissolved-oxygen-measurements-in-the-corsica-channel

6. Concluding remarks

The First Call was successful and has assigned to approved projects about 53% of the total available access time (Table 4, 6th column). However, at present, only 15% of the scheduled access has been delivered (Table 4, last column). This is due to several reasons. Some of the projects were late to start or haven't started yet, because of specific requirements of the planned scientific activities. The need to harmonize assigned periods with the regular operating schedules of targeted facilities was another cause of delays. In one case, there were some problems related to the definition of the agreement between the end user and the facility operator.

Org. Short name	Country	Installation	Unit of access	Available min. quantity of access	Scheduled access time (1st Call)	Delivered access time
IBWPAN	Poland	CRS Lubiatowo	24 HOUR DAY	54	0	0
NIVA	Norway	NorFerry 1 Norbjorn	24 HOUR DAY	15	0	0
		Color Fantasy	24 HOUR DAY	15	14	0
OGS	Italy	OGS-CTO	WEEK OF 5 DAYS OF 8 HOURS	10	1	1
CNR	Italy	ACQUA ALTA	24 HOUR DAY	50	0	0
		MPLS	6 MONTHS	0.5	0	0
		MPLC	6 MONTHS	0.5	0.5	0.25
		MPL Genoa	24 HOUR DAY	65	183	0
		MPL CAL 6	8 HOURS DAY	10	0	0
		MPL CAL 7	8 HOURS DAY	10	0	0
HCMR	Greece	POSEIDON BUOYS (1&2)	1 BUOY FOR 1 MONTH	3	4	0.2
		POSEIDON CAL	WEEK OF 5 DAYS OF 8 HOURS	3	3	2
NERC	United Kingdom	COBS 1 POL BUOY	24 HOUR DAY	cancelled		
		COBS 3 POL FB	24 HOUR DAY			
		COBS 4 POL GLIDER	24 HOUR DAY	30	15	0
HZG	Germany	COSYNA_1 (FB)	24 HOUR DAY	20	0	0
		COSYNA_2 (PILE)	24 HOUR DAY	30	14	0
		COSYNA_3 (GLIDER)	24 HOUR DAY	80	0	0
CSIC	Spain	CSIC-Glider	24 HOUR DAY	90	98	56
INSU	France	CETSM	24 HOUR DAY	240	56	0

Table 4 – Initially available access time for each installation participating in TNA activity (5th column), the amounts scheduled and delivered after the first call (6th column and 7th columns) expressed in the units indicated in the 4th column.

The First Call was a convenient platform to test the management scheme for TNA activities in JERICO. It has served to assess the effectiveness of employed procedures as well as to correct or render more comprehensive the accompanying support documentation.

The implementation of the first call brought to light a series of issues that required attention. The most important of these are reported below.

1) The procedure adopted in the First Call provided scientific evaluations of proposals before their feasibility assessments by operators. This resulted in a huge workload for the user groups and operators of some proposals evaluated as being scientifically valid by the SP, since they were hard pressed to design a final working plan that was feasible for the facility and could meet the declared scientific/technical goals. This extra work also delayed the start of some projects. In one case, the proposal was finally withdrawn by the P.I., because the targeted facility required a costly upgrade of equipment that the operator couldn't tackle to meet the scientific needs of the user.

   During the meeting held in Heraklion (Crete) on 1 October 2012, the SP discussed this issue, and ruled to invert the order of steps (i) and (ii) in the evaluation procedural sequence. Moreover, the obligation of the user group to contact the facility operator while preparing the proposal was introduced as a mandatory requirement for access.

2) There is a problem in handling access to gliders. It was easy to manage the part related to accessing the facility maintaining a glider (where all the pre- and post- deployment activities are performed), but some issues arose concerning the transport of the glider and the transfer of the supporting staff to and from its base to the effective area/s of operation/s. This often involves high costs that cannot be directly reimbursed. This may represent a serious obstacle to the sharing of this component of coastal observatories.

3) The definition of the regulatory agreements between the parties involved in the TNA projects was another tricky issue. Even if a general template was prepared by CNR and IFREMER, it needed to be adapted case by case. This required a lot of interaction between the JERICO TNA Office, the project Coordinator, the facility operators and the end users, that heavily affected the timings of the planned experiments/activities.

Appendix I - TNA PROJECT REPORT

(1st Call, 12 January – 3 April, 2012)

A) General Information

Proposal reference number[1]	
Project Acronym (ID) [2]	
Title of the project[3]	
Host Research Infrastructure[4]	
Starting date - End date[5]	-
Name of Principal Investigator[6] **Home Laboratory** **E-mail address** **Telephone**	
Additional users [7]	

B) Project objectives (max. 250 words) [8]

C) Main achievements and difficulties encountered (max. 250 words) [9]

D) Dissemination of the results [10]

E) Use of the Infrastructure/Installation [11]

	In situ	By remote
Nr. of Users involved		
Access units (days/months/etc)		
In situ stay day / Remote Access duration		

F) User project scientific field

Main field [12]	
Scientific description [13]	

H) Technical and Scientific preliminary Outcomes (max. 2 pages) [14]

Guidelines for the TNA Project Report

This report is due within one month after the completion of the JERICO TNA project by the User Group Leader (P.I.) and should be submitted to the **JERICO TNA Office** (jerico.tna@ismar.cnr.it) and the **Scientific Site Coordinator** at the hosting facility with a copy to the **JERICO Coordinator** (jerico@ifremer.fr).

An online "user group questionnaire" has also to be completed by each **Group Leader** of a user-project supported under JERICO as soon as an experiment has come to an end - you will find it here: http://cordis.europa.eu/fp7/capacities/questionnaire_en.html#fnote.

NOTES:

Refunding of the TA reimbursement will be processed as soon as the JERICO TNA Office, the Scientific Site Coordinator and the JERICO Coordinator will received this report.

Part of the information collected with this report will be used to fill in the European Commission MS Access database. Following article 4.4.2, the User Group PI will be asked by the JERICO Coordinator to update it at the reporting deadlines.

Notes for the compilation

1. It is the reference number assigned to the proposal by the TNA-Office.
2. It is the user-project identifier and must be unique under the grant agreement and for its lifetime. The length cannot exceed 20 characters.
3. Specify a title for the approved proposal. The length cannot exceed 255 characters.
4. Name of the installation/infrastructure accessed with this project. If more than one. installations/infrastructures are used by the same project; please list them in the box.
5. Specify starting and end date of the project (including eventual preparatory phase before the access).
6. Fill with the full contact of the Principal Investigator (user group leader).
7. List the full users team (name and affiliation) that made direct use (physically or remotely - please specify) of the installation/infrastructure under the direction of the group leader.
8. Write the short-term, medium and long-term objectives of project. Use no more than 250 words.
9. Describe briefly the main achievements obtained and possible impacts, as well as possible difficulties encountered during the execution of the project. Use no more than 250 words.
10. Describe any plan you have to disseminate and publish the results resulting from work carried out under the Transnational Access activity in JERICO: scientific articles, books - or part of them -, patents, as well as reports and communication to scientific conferences, meetings and workshops. Highlight peer-reviewed publications. Users supported under the transnational access activity are encouraged, as far as possible, to make available on open repositories their publications. Acknowledgement to EC and JERICO is requested following article 4.5 of the "End-User" Agreement.
11. Indicate the number of users involved in the activity (the P.I. plus the users described at point 6), the amount of access to the installation/infrastructure and the length of in-person stay at the installation or the operator laboratory (e.g. for preparing the experiment).
12. See Annex, First column.
13. See Annex, Second column.
14. Describe in detail results and main findings of your experiment at the present stage.

User-Project Scientific fields

Main field	Scientific description
Physics	Astronomy/Astrophysics/Astroparticles Atomic & molecular physics Condensed matter physics High energy and particle physics Nuclear physics Plasma physics Quantum electronics & optics Other - Physics
Chemistry	Chemistry
Life Sciences & Biotech	Food quality & safety Agriculture & Fisheries Medicine Veterinary sciences Molecular & cellular biology Other - Life Sciences & Biotech
Earth Sciences & Environment	Global Change & Climate Observation Ecosystems & Biodiversity Natural Disaster & Desertification Marine Science/Oceanography Water Science Hydrology Other – Earth Science Other – Environment
Engineering & Technology	Aeronautics Space New production processes Nanotechnology & Nanosciences Transport Other - Engineering & Technology
Mathematics	Mathematics
Information & Communication Technologies	IST for citizens, businesses & organizations Trust & Security Communication & Networks Computing & software technologies Components & Micro-systems Knowledge & interface technologies Other - ICT
Material Sciences	Knowledge based multifunctional materials Other - Material Sciences
Energy	Sustainable energy systems Fusion Other - Energy
Social Sciences	Economics Political Sciences Educational sciences Law Demography Other - Social Sciences
Humanities	Arts Hystory Languages Other - Humanities

Annexes

1 - First TNA Call Evaluation Report (25-10-2012, 192 pages)

2 - First TNA Call Addendum to the Evaluation Report (27-10-2012, 48 pages)

JOINT EUROPEAN RESEARCH INFRASTRUCTURE
NETWORK FOR COASTAL OBSERVATORIES

FIRST TNA CALL EVALUATION REPORT

Grant Agreement n° 262584
Project Acronym: JERICO

Project Title: Towards a Joint European Research Infrastructure network for Coastal Observatories

Coordination: P. Farcy, IFREMER,

jerico@ifremer.fr, www.jerico-fp7.eu

Author: Stefania Sparnocchia
Involved Institution: CNR, CNRS/INSU, Ifremer, NIVA
Date: 2012-10-25

Table of Contents

1. Document description

REFERENCES

Annex 1 to the Contract: Description of Work (DoW) version 2011-02-22

Document information	
Document Name	First TNA Call – Evaluation Report
Document ID	***JERICO-WP1-First TNA CALL evaluation-V3***
Revision	3
Revision Date	2012-10-25
Author	Sparnocchia
Security	

History			
Revision	**Date**	**Modification**	**Author**
1.0	2012-06-22	Version presented to the JERICO TNA management team	Sparnocchia
2.0	2012- 7-11	Version presented to the Selection Panel	Sparnocchia
3.0	2012-10-25	Version approved by the Selection Panel, typo editing and formatting	Sparnocchia

Diffusion list				
Consortium beneficiaries	X			
Third parties	TNA Selection Panel			
Associated Partners				

2. Executive Summary

2.1 First call and submitted TNA proposals

The first Call of JERICO for project proposals requesting Trans National Access (TNA) to a chosen number of infrastructures/installations operated by the Consortium (http://www.jerico-fp7.eu/tna/accessible-facilities) was open from 12 January to 3 April 2012.

Thirteen proposals were submitted to the email address indicated in the call (jerico.tna@ismar.cnr.it), involving eleven out of eighteen available facilities. After reception, the JERICO TNA Office, composed by Stefania Sparnocchia and Sara Ferluga at CNR-ISMAR in Trieste, registered each proposal and sent an acknowledge of receipt to the Proponent communicating also the assigned Reference Number.

The submitted proposals are collected in the Annex and summary information is listed in the following:

Reference Number	Facility ID	Type	Facility provider	Proponent
CALL_1_1	POSEIDON BUOYS	FP	HCMR GREECE	Melchor Gonzales-Davila – Universidad de Las Palmas de Gran Canaria SPAIN
	POSEIDON CAL	CL		
CALL_1_2	ACQUA ALTA	FP	CNR ITALY	Giuseppe Zibordi – Joint Research Centre ITALY
CALL_1_3	POSEIDON CAL	CL	HCMR GREECE	Rajesh Nair – OGS ITALY
CALL_1_4	Colour Fantasy	FB	NIVA NORWAY	Kevin C. Jones – Lancaster University UNITED KINGDOM
	COSYNA_2 (PILE)	FP	HZG GERMANY	
CALL_1_5	OGS-CTO	CL	OGS ITALY	George Pethiakis – HCMR GREECE
CALL_1_6	MPL Genoa	FP	CNR ITALY	E. Cano Diaz – CENIM/CSIC SPAIN
CALL_1_7	CETSM	GL	INSU/CNRS FRANCE	Ainhoa Caballero Reyes – AZTI Technalia SPAIN
CALL_1_8	CSIC-Glider	GL	CSIC SPAIN	Alberto Ribotti – CNR IAMC ITALY
CALL_1_9	MPLC	FP	CNR ITALY	L.Coppola - Observatoire Oceanographique de Villefranche/Mer FRANCE
CALL_1_10	COBS 4 POL GLIDER	GL	NERC UNITED KINGDOM	Anna Wahlin – Dep. Earth Sciences Univ. Gothenburg SWEDEN
CALL_1_11	POSEIDON CAL	CL	HCMR GREECE	Roberto Bozzano –CNR ISSIA ITALY
CALL_1_12	ACQUA ALTA	FP	CNR ITALY	Salud Deudero – Instituto Espanol de Oceanographia RESMARE SPAIN
CALL_1_13	COBS 4 POL GLIDER	GL	NERC UNITED KINGDOM	Ian Allan – NIVA NORWAY

FB = FerryBoxes; FP = Fixed Positions; GL = Gliders; CL = Calibration Laboratories

The list of submitted projects was promptly published after the call completion on the JERICO web site (http://www.jerico-fp7.eu/tna/calls-and-selection/first-call/submitted-projects).

2.2 Procedure for evaluation of TNA proposals

Submitted projects were subjected to a three-step selection process involving:

i. evaluations of all the submitted proposals by the Selection Panel (SP), particularly with regard to scientific excellence, innovation and impacts on the state-of-the-art;
ii. validation of the proposals by the managers of the targeted facilities;
iii. final assessments by the SP.

The composition of the SP was the same communicated in deliverable D1.1 – First Call for TNA V1 and published on the JERICO web site http://www.jerico-fp7.eu/tna/calls-and-selection.

As regards step (i) each proposal was evaluated by 3 member of the SP. The proposals were distributed equally among SP members, avoiding nationality conflicts and, as a rule, if a single facility was the target of more than one proposal, at least 2 out of 3 evaluators were common to each of the evaluating groups involved.

Each evaluator was asked to fill a form containing a list of selection criteria and respective maximum scores, as in the following:

1. Fundamental, scientific and technical value (max 30)
2. Quality of the work program (max 25)
3. Feasibility (max 20)
4. Potential for seeding links with industry (max 10)
5. Quality of users groups (max 10)
6. European representativity (max 5)

and he/she was informed that the proposals would be considered if received a score greater than 60, a threshold stated by the JERICO Steering Committe during its first meeting on 23-24 January 2012.

A summary scientific evaluation report was compiled for each proposal by the JERICO TNA Office.

The feasibility of the projects was evaluated by the managers of the targeted facilities. Their evaluations and suggestions have been assembled by the JERICO TNA Office in a technical evaluation report for each proposal.

Step (iii) is ongoing and the approval of this report by the SP is a part of it.

3. Evaluation Summary

This chapter is organized in one section for each TNA proposal containing summary information which includes some “General Comments” highlighting the major issues coming from the scientific and technical evaluations and remarks about the eligibility with respect to the section III.3 of ANNEX III of the Grant Agreement (“Specific provisions for transnational access activities”, hereinafter referred to as GA ANNEX III).

Summaries of the scientific and technical evaluations are also reported for each proposal.

3.1. Proposal number CALL_1_1

(For the full text see the Annex)

User Group

Principal Investigator (user group leader):

Prof. Melchor Gonzalez-Davila
Universidad de las Palmas de Gran Canaria, QUIMA Group, Spain
mgonzalez@dqui.ulpgc.es
Telephone +34 928452914 Fax +34 928452922

Other members of the team :

1) Prof. J. Magdalena Santana Casiano
Universidad de las Palmas de Gran Canaria, QUIMA Group
jmsantana@dqui.ulpgc.es

Summary of the proposal

Coastal waters are badly sampled for carbon dioxide and only some CO_2 sensors have been recently deployed along USA coastal waters and North of Europe. In this project, the user group is planning to deploy one of its pH sensors having a 0.001 pH unit reproducibility, on one of the buoy of the HCMR POSEIDON networks, placed in an important region as it is the east coastal Mediterranean seawater. Calibration experiments are also planned at the HCMR calibration facility. The project will add great value to: a) the development of pH measuring system,
b) the monitoring of ocean acidification in the Mediterranean Sea and
c) the JERICO project (both from the point of view of Trans National activities and co-operation and the development of novel and advanced measuring systems).
The main objectives are:
1. Study the daily, monthly, seasonal and inter-annual pH variability in coastal waters.
2. Determination of the main controlling factors affecting the expected acidification.
3. Correlation with physical, chemical and biogeochemical factors controlling the coastal area.
4. Applicability of the pH sensor in coastal areas and for long deployments.
5. Reinforcement of the relations between institutions working in linked activities.

General Comments

The user group is eligible to benefit from access to the infrastructure having satisfied the conditions a) and b) of point 1 under section III.3 of GA ANNEX III.

The User Group has not previously used the facility, and even if similar platforms (buoys) exist in their country, the specificity of the site (very oligotrophic) is useful for them to test their equipment in a different environment.

The proposal is approved but minor technical adjustments suggested by the access provider (see Technical Evaluation) have to be taken into account in the final description of work.

Scientific Evaluation

Scores

Criterion for Selection	Rev. #1	Rev. #2	Rev. #3	Averaged scores
Fundamental, scientific and technical value (max 30)	25	20	23	**22.7**
Quality of the work program (max 25)	20	15	17	**17.3**
Feasibility (max 20)	15	12	17	**14.7**
Potential for seeding links with industry (max 10)	5	8	5	**6.0**
Quality of users groups (max 10)	10	8	8	**8.7**
European representativity (max 5)	1	4	5	**3.3**
SUM	76	67	75	**72.7**

Comments

Rev. #1: This is a nice proposal with good expectations for success. It has a fundamental and high scientific value. The area considered is of high relevance due its low primary productivity. The technical details seem to be under control although a few adaptations and technical requirements are needed. The group has a high scientific output. Proposal should be considered for realization.

Rev. #2: It seems a good innovation for testing a new developed system for monitoring pH. The group has good fundaments and both integrates are a very well reputed scientist CV.

Technical Evaluation

by George Pethiakis HCMR

Technical Feasibility

The sensor developed by the QUIMA-ULPGC group can be mounted on any buoy with a power supply of 12-19V and is able to transmit real time data of pH in total scale at in situ temperature, sea temperature and salinity to the central unit of the buoy. Considering that HCMR buoys are commercial products there should be no problems incorporating the sensor. Furthermore the acquired experience during the mounting of the CONTROS CO2 sensor will ensure a successful installation.

Technical Adjustments

Adjustments will have to be made on the mounting frames as well as on the sampling frequency. The CO2 and pH sensors will increase the power consumption by approximately 24%, which is expected to be covered by the buoy's solar panels. However prior to the deployment the sensor will be extensively tested on a spare buoy at HCMR headquarters ensuring the functionality of the system. During those tests the sampling frequency will be determined.

Availability

The suggested dates by the users are accepted by HCMR. After the approval of the TNA, partners will choose the exact dates to their convenience while as mentioned above prior to the deployment the sensor will be shipped to HCMR for land testing.

3.2. Proposal number CALL_1_2

(For the full text see the Annex)

User Group

Principal Investigator (user group leader):

Dr. Giuseppe Zibordi
Joint Research Centre, Institute for Environment and Sustainability, Ispra, Italy
Giuseppe.zibordi@jrc.it
Telephone +39 0332 785902 Fax +39 0332 789034

Other members of the team :

None

Summary of the proposal

The proposed activity is intended as the continuation of a measurement program named *Coastal Atmosphere and Time-Series (CoASTS)*, using the CNR Acqua Alta facility. The program started in 1995 with the objective of creating a time series of comprehensive in situ measurements to support satellite ocean color multi-mission programs. Primary objective of the proposed activity is the comprehensive collection of seawater apparent (i.e., reflectance, diffuse attenuation coefficient, normalized water leaving radiance, Q-factor) and inherent (total sweater absorption, attenuation and scattering coefficients) optical properties, together with the contemporaneous collection of water samples for the determination of pigments concentration through High Performance Liquid Chromatography (i.e., chlorophyll a, chlorophyll b, chlorophyll c1+c2 ,chlorophyllide a, fucoxanthin, diadinoxanthin, beta-carotene, zeaxanthin, alloxanthin, 19'-butanoyloxyfucoxanthin, 19'-hexanoyloxyfucoxanthin and diatoxanthin), and additionally absorption coefficients of colored dissolved organic matter and particulate matter through spectro-photometric techniques.

Application frameworks of the collected in the situ time series are:

1. the development of bio-optical algorithms applicable to primary satellite ocean color radiometric data for the generation of derived quantities of relevance for climate and environmental studies; and

2. the validation of derived satellite ocean color product (both primary and derived products).

General Comments

The eligibility of the *user group* is called into question because of a breach of the Specific Provisions for Transnational Access Activities in Annex III of the the FP 7 Grant Agreement, particularly article III.3, owing to the following:
1/ the user group leader and the majority of users work in Italy (JRC - Ispra)
2/ the legal entity operating the infrastructure is established in Italy
3/ the access provider is neither an International Organisation nor the JRC
4/ this is not remote access to a distributed set of infrastructures offering the same services

Such being the case, the "mobility" requirement for the TNA applicant (art. III.3.1.b) applies, and the user group is NOT eligible.

However, as regards Integrating Activity, "The objective is to optimise the use and development of existing research infrastructures, in all fields of science and technology, including ICT-based e-infrastructures, and to facilitate the access of research teams from all over the EU to these infrastructures." (Work Programme 2010). Should the applicant (or the access provider) provide evidence that there are clear and significant access restrictions for users working in JRC (because of legal entity not established in Italy or any other reason related to the "non national" nature of the institution), the "mobility" requirement would be against the spirit of the activity and an exemption to this requirement could be considered, the same way it has been explicitly foreseen when JRC is the access provider (to the benefit of users working in Italy in this particular case).
If such evidence is provided, it is up to the Selection Panel and the Steering Commitee to be convinced and make the final decision on the eligibility. The final decision will be taken at the next TNA meeting during the GA in Crete (October 2012). Related documentation should be archived in case of audit.

The User Group has previously used the facility, this makes it of a secondary priority in the competition with others.

Scientific Evaluation

Scores

Criterion for Selection	Rev. #1	Rev. #2	Rev. #3	Averaged scores
Fundamental, scientific and technical value (max 30)	20	30	25	**25.0**
Quality of the work program (max 25)	10	25	20	**18.3**
Feasibility (max 20)	10	20	20	**16.7**
Potential for seeding links with industry (max 10)	3	7	3	**4.3**
Quality of users groups (max 10)	7	9	8	**8.0**
European representativity (max 5)	5	3	5	**4.3**
SUM	55	94	81	**76.6**

Comments

Rev. #1: The proposal has relevance for calibration of the satellite instrument. Diffusivity will be high.

Rev. #2: This project is a nice “marriage” of field and remote sensing data to assure broader use and accuracy of remote sensing data. Essentially they will be making in water optical property measurements and correlating those with the satellite ocean color data to validate and improve algorithms. They have a well-networked team,

and the capacity to improve bio-optical modelling in complex coastal waters.

I think the fundamental science and technical value is tops, and the PI seems well qualified and very well networked globally. It is definitely feasible. Re links for industry, this was not asked for on the application, but better satellite data does have potential for industry applications. As said, the PI and his network is high quality. I don't know how well there is European representation, but it appears to be international. They are not requesting shipment or travel funds, making this a very attractive proposal with broad pay-off for increasing satellite ocean color data accuracy badly needed in coastal waters.

Technical Evaluation

by Mauro Bastianini CNR

Technical Feasibility
The proposal is technically feasible.
Technical Adjustments
The tower is already equipped with all the facilities required therefore no technical adjustments are required
Availability
The time schedule proposed by the user is in agreement with the availability of the facility.

3.3. Proposal number CALL_1_3

(For the full text see the Annex)

User Group

Principal Investigator (user group leader):
Mr. Rajesh Nair
OGS Istituto Nazionale di Oceanografia e di Geofisica Sperimentale, Department of Oceanography, Italy
rnair@ogs.trieste.it
Telephone +39 040 2140323 Fax +39 040 2140266

Other members of the team :
1) Mr. Nevio Medeot
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2) Mr. Stefano Kuchler
OGS Istituto Nazionale di Oceanografia e di Geofisica Sperimentale, Department of Oceanography
skuchler@ogs.trieste.it
3) Mr. Paolo Mansutti
OGS Istituto Nazionale di Oceanografia e di Geofisica Sperimentale, Department of Oceanography
pmansutti@ogs.trieste.it

Summary of the proposal

Chlorophill a, turbidity and dissolved oxygen are rapidly becoming staple parameters in marine observing programmes. Taken togheter they can provide valuable information on the biological and ecological status in a monitored area. A main difficulties when dealing with these parameters is the lack of consensus regarding the validity of measurements, owing to the dearth of adequate reference material and reproducible calibration metodologies for sensors. There is a real need for developing standard operating procedures for these type of sensors, as an essential step towards ensuring overall data quality for these demanding parameters. The User group is proposing to have access to the HCMR calibration facility in Crete, to develop standard operating procedures for in-house calibration of field sensors used for measuring chlorophyll a, turbidity and dissolved oxygen.

General Comments

The user group is eligible to benefit from access to the infrastructure having satisfied the conditions a) and b) of point 1 under section III.3 of GA ANNEX III.

The User Group has not previously used the facility and similar facilities don't exist in their country.

Technical adjustment are suggested by the access provider to improve the experiment, scientific evaluation contains some criticism.

This proposal doesn't reach the threshold to be considered for evaluation (total score >60) and is rejected.

Scientific Evaluation

Scores

Criterion for Selection	Rev. #1	Rev. #2	Rev. #3	Averaged scores
Fundamental, scientific and technical value (max 30)	20	20	18	**19.3**
Quality of the work program (max 25)	10	15	17	**14.0**
Feasibility (max 20)	10	20	12	**14.0**
Potential for seeding links with industry (max 10)	5	1	0	**2.0**
Quality of users groups (max 10)	5	8	8	**7.0**
European representativity (max 5)	1	2	5	**2.7**
SUM	51	66	60	**59.0**

Comments

Rev. #1: This proposal is rather poor in its quality of the work program, which makes the feasibility difficult to estimate. Although the questions raised reg the need for calibration for chlor-a, turbidity and oxygen sensors are relevant, the poor working programme and low feasibility will not lead to success for this proposal. The quality of the user groups is unclear, there are no initiatives for seeding links with industry and European representativity, although it is a common problem of operational services is not worked out.

Rev. #2: The variables are standard variables in many monitoring programmes since decades. There is also a long industrial tradition to produce and calibrate the sensors. However, there is a value to have well trained internal/national calibrations laboratories.

Technical Evaluation

by George Pethiakis HCMR

Technical Feasibility

Although chlorophyll a, turbidity and dissolved oxygen sensors are widely used all over Europe the calibration procedures involved are showing significant differences between the institutions that perform it. These differences include not only different approaches and methodologies but the use of a variety of reference

materials/solutions too. These calibration TNA's will be an opportunity to further investigate and compare the different procedures used and validate it in order to produce a common SOP that will contribute to the overall data quality. The proposed experiments technically are feasible since HCMR has long experience on this field and has performed the experiments many times in the past.

Technical adjustments

Chlorophyll a and turbidity: The proposed TNA will be a great opportunity to test and validate different standards and solutions including cell cultures as well as commercial reference solutions. Special care should be given to the calibration data range in order to focus in the actual deployment site environmental conditions. Although HCMR uses only one type of sensor – Wetlab FLNTU – it will be an added value to the experiment if the facility users could provide sensor/s from different manufactures for inter comparison of the results.

Dissolved Oxygen: Regarding DO sensors the experiments will include two point calibration (0 and 100% saturated) for Aanderaa optodes and temperature gradients, in respect to DO concentration, in a temperature control seawater bath for both Seabird 43 DO sensors and Aanderaa optodes – HCMR uses both . Special interest should be given in the examination of the influence of pressure and salinity to the Aanderaa optode measurements.

It is suggested by HCMR, after the calibration experiment, to perform a field validation with the sensors deployed, mounted in a CTD, and water sampling for comparison.

Availability

The suggested dates by the users are accepted by HCMR. After the approval of the TNA partners will choose the exact date to their convenience.

3.4. Proposal number CALL_1_4

(For the full text see the Annex)

User Group

Principal Investigator (user group leader):

Prof. Kevin C. Jones
Lancaster University, Lancaster Environment Center, United Kingdom
k.c.jones@lancaster.ac.uk
Telephone +44 1524 512030 Fax +44 1524 593300

Other members of the team :

1) Dr. Luca Nizzetto
Norwegian Institute for Water Research, Norway
luca.nizzetto@niva.no

Summary of the proposal

The project aims testing and deploying a novel passive water sampler with a novel design of sampler unit aboard ferries and fixed platforms. The prototype of sampler called “Chem-Mariner” was developed at NIVA and is already under test on ferryboxes. The group will continue to test the device onboard a FerryBox installed onboard the “Color Fantasy” ferry and managed by NIVA and on a fixed platform operated by HZG.

Main objectives are:

1. Validate the sampler for applications in sea water;
2. Test the configuration of the sampler in the flow through sampler;
3. Deploy it in a pilot study aboard the NIVA “Color Fantasy” ferry;
4. Evaluate the results preparing, if appropriate, joint publications;
5. Consider joint bid for further funding and wider applications.

General Comments

The user group is eligible to benefit from access to the infrastructure satisfying conditions a) of point 1 under section III.3 of GA ANNEX III.

As regards condition b) “the user group leader and the majority of the users must work in a country other than the countries where the legal entities operating the infrastructure is established”, it is verified only for the access to the German fixed platform.

There are technical comments and suggestion to take care of, including a different choice of fixed platform by HZG and the unavailability of a sensor marked by NIVA.

Though the final score is good, there is some criticism couched by the reviewers regarding technical details not well described, for example the collaboration with the Cosyna_2 fixed station is not clearly planned as also respective costs.

This project needs to be revisited by the proponent with the aid of the Facilities Operators before final approval to be decided at the next TNA meeting during the GA in Crete. Also the offer of a different fixed platform by HZG will be discussed in Crete requiring an amendment of the DoW.

Scientific Evaluation

Scores

Criterion for Selection	Rev. #1	Rev. #2	Rev. #3	Averaged scores
Fundamental, scientific and technical value (max 30)	20	25	30	**25.0**
Quality of the work program (max 25)	15	15	25	**18.3**
Feasibility (max 20)	10	12	10	**10.7**
Potential for seeding links with industry (max 10)	8	6	10	**8.0**
Quality of users groups (max 10)	8	8	9	**8.3**
European representativity (max 5)	4	3	5	**4.0**
SUM	65	69	89	**74.3**

Comments

Rev. #1: It seems a good innovation for develop a new system for monitoring organic compost.
It has good fundaments and the IP is a very well reputed scientist.

Rev. #2: This sounds a good opportunity to test out a novel low-cost technique for detecting organic pollutants in marine waters. Operating alongside the only operational equivalent system on board the Colour Fantasy should provide the necessary ground truth data to access this prototype.

The proposal only describes how collaboration with the Colour Fantasy will be achieved, there is no mention of the means of collaboration with the Cosyna_2 fixed station, or any plan/costs associated with this.

If the trials prove successful (or at least promising) then there is potential for good links with industry as low-cost monitoring devices will be required for EU partners to meet the requirements of MSDF.

Chemical risk identified but not specified.

Rev. #3: This project could yield an innovative technological solution to the problem of getting micropollutant measurements in coastal waters in a cost effective and spatially relevant way. I would consider it high-risk, but high-payoff. They propose to use new technology (DGT) to measure organic substances thus advancing our technological capabilities in a whole new way.

I think the fundamental science and technical value is very exciting and could yield revolutionary results, if successful, or bring them 'back to the drawing board' if not. The PI appears to be extremely well qualified but I do worry that the PhD student is the one to conduct the trials. I ranked it in the middle re feasibility because it may or may not work. The step-wise plan they have, lab, flow-through sampler, ferry, is smart. The risk is that both manuscripts are not published and the technology is not tested. On the other hand, if this works, it will be a great contribution to environmental monitoring. Re links for industry, this was not asked for on the application, but obviously, a new sampler would have strong potential for industry applications. He lists a Norwegian colleague, who he publishes with, but I did not find his role for this project. Request is 3700 Euros.

Technical Evaluation 1

by Wilhelm Petersen HZG

Technical feasibility

The proposal sounds scientifically interesting and feasible for both the aimed FerryBox system and the COSYNA pile.

Technical adjustments

We only suggest a modification of the location within the COSYNA observatory. Instead of the COSYNA_2 PILE in the Wadden Sea we recommend to install the sampler at the coastal station in Cuxhaven at the mouth of the Elbe River (www.cosyna.de). This is not a pile but a station with a fully equipped stationary FerryBox together with an active sampler (mussels) operated by the group 'Marine Bioanalytical Chemistry'at HZG (http://www.hzg.de/institute/coastal_research/structure/biogeochemistry_in_coastal_seas/marine_bioanalytical_chemistry/index.html.en).

Further information about the active sampler can be provided by Daniel Pröfrock (daniel.proefrock@hzg.de)

The advantages of choosing this station will be:

- easier access (by car, the pile needs extra ship time)
- close to the coast
- cooperation with the group operating active samplers
- comparison of the results between active and passive sampling
- extended data set from the FerryBox compared to the pile (data of Cuxhaven station: http://tsdata.hzg.de/index.cgi?seite=plot_form;category=LandStation)

Availability:

The platform Cuxhaven will be available around the year and the proposed sampler can be installed at every time. Nevertheless if the platform Pile2 will be preferred this station will be available as well. However, the access to this platform will be limited and may be not fully fit with the proposed time schedule of the experiments. The pile will be not available in the winter months (November to February).

Technical Evaluation 2

by Kai Sorensen NIVA

Technical Feasibility and Adjustments

The proposal is generally feasible but no continuous pH sensor is available only one in the pipeline. NIVA runs periodically a pCO2 sensor and during the test trip planned in the proposal they can install additional sensors or make manual analysis.

The costs estimated by the user are probably low and they need to be re-evaluated when the number of trips is also defined.

Availability

No dates are proposed and in the final plan it has to be considered that one roundtrip is 3 days and the starting harbour is in Oslo. Moreover, the experiment has to be planned in due advance since during high season there are reduced capacity for cabins onboard the ferry.

3.5. Proposal number CALL_1_5

(For the full text see the Annex)

User Group

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Summary of the proposal

HCMR manages an in-house laboratory for the evaluation and calibration of the oceanographic sensors and instruments. For temperature sensors there are two distinct levels of calibration and standardisation. Calibration laboratories use a standard platinum thermometer to calibrate the sensors used in the field (second level) and every year or on well defined intervals of time or usage this reference sensor is standardised either by the manufacturer or by a certified facility using triple point method (first level).
HCMR calibration laboratory focuses only on the second level of calibration, using a standard platinum thermometer manufactured by Seabird Electronics and a large temperature control bath. Due to the importance of the temperature measurements as a basic environmental parameter, the accuracy of the reference thermometer is a key factor for the overall performance of the calibration procedure not only for temperature but also for the majority of the field-measured parameters. Future plans are to integrate the whole calibration procedure by setting up also the first level of calibration and become a certified metronomy laboratory. Some of JERICO partners operating calibration laboratories have developed both levels of calibration for temperature with a significant experience on the processes. In particular OGS uses TPW (Triple Point of Water; 0.01 °C) and MPGa (Melting Point of Gallium; 27.7646 °C) with high precision equipment while their acquired knowledge in the uncertainty estimation is pioneering within the network.
The aim of this proposal is to have access on the first level calibration equipment in OGS and acquire the necessary knowledge, which will help the User Group to develop a similar facility in the future at HCMR.

General Comments

The user group is eligible to benefit from access to the infrastructure having satisfied the conditions a) and b) of point 1 under section III.3 of GA ANNEX III.

The User Group has not previously used the facility and even if similar facilities exist in their country, and are run by the User Group, the targeted facilities offer and improvement in the methodology and will help HCMR to acquire knowledge for future developments.

One of the Reviewers complains the lack of an evaluation in a global perspective for developing an advanced level calibration facility at HCMR.

No technical adjustment is suggested by the access provider and the proposal is approved in the present form.

Scientific Evaluation

Scores

Criterion for Selection	Rev. #1	Rev. #2	Rev. #3	Averaged scores
Fundamental, scientific and technical value (max 30)	20	23	25	**22.7**
Quality of the work program (max 25)	20	22	20	**20.7**
Feasibility (max 20)	15	17	20	**17.3**
Potential for seeding links with industry (max 10)	5	5	5	**5.0**
Quality of users groups (max 10)	5	8	9	**7.3**
European representativity (max 5)	3	5	2.5	**3.5**
SUM	68	80	81.5	**76.5**

Comments

Rev. #1: This proposal is fundamental, because of the importance of exact temperature measurements. The quality of the work programme and its feasibility are good. It is unclear to which extent links with industry are established. The quality of the cooperation and calibration lab is very good. It is difficult to judge the quality of the PI, because his papers are co-authored ones and rather technical.

Rev. #3: Apart from a moderate cost for shipping instruments, the budget is for supporting the travel and stay of two HCMR personnels at OGS.

Although quite obvious from the point of view of HCMR scientists and technician, the need for a second level calibration facility at HCMR for temperature could have been analysed in terms of cost/benefit, fulfilments of local/regional needs, etc. In addition, the need for calibration of other sensors is certainly as high as for

temperature for which simple alternative strategies exists. So it should have been interesting to present the proposed work in a global perspective for developing an advanced level calibration facility at HCMR - or for sharing with existing ones in other institutions at a regional level - for the benefit of the POSEIDON network and other needs.

Technical Evaluation

by Rajesh Nair OGS

Technical Feasibility

We are fully able to meet the requirements of the Proposal, barring unexpected or unforseen events.

Technical Adjustments

The Proposal has already been discussed and reviewed by us together with the Proposer prior to submission; as such, it already includes the technical adjustments that were needed to make it workable.

Availability

The availability of our facility on the dates proposed by the user or your re-scheduling according to your access calendar. The total access time requested by the Proposer is 1 week (5 working days, Monday to Friday). In the submitted Proposal, the exact access dates were purposely left open so that they could be defined with the Proposer in a mutually acceptable manner once the Proposal passed the selection process.

3.6. Proposal number CALL_1_6

(For the full text see the Annex)

User Group

Principal Investigator (user group leader):

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Summary of the proposal

The main objectives of the project are to define advantages and limits of innovative protective treatments and to standardize a specially adapted electrochemical methodology for assessing their effectiveness in comparison with treatments nowadays used. Among the different treatments tested, a human- and eco-friendly biological treatment which creates protective patinas on copper artefacts will be evaluated. This project will contribute to a better conservation-restoration of metallic artefacts by means of the advance in the application of electrochemical techniques and to extend the knowledge on efficacy of biological interventions. Through this, the overall idea is to enhance research in the field of metal conservation-restoration promoting a dialogue among conservators and scientists, to encourage the use of electrochemical techniques as well as new treatments based on clear scientific and ethical criteria (efficiency, harmless, respect of the aesthetic and historical values) and to enhance conservation activities in their social and economical aspects with the development of ready-to-use treatment kit for conservators-restorers.
The targeted facility is the MLP Genoa, inside the harbour and representing an unique exposure site in an urban-marine environment.
The following aspects will be investigated:
- Selection and characterization of metal standards to be used,
- Definition of the human- and eco-friendly innovative treatments and identification of the best conditions of application,
- Evaluation upon ageing of the developed method on standards coupons and comparison with the most commonly used treatments.
- Standardization of an electrochemical methodology for in situ assessment.

General Comments

The user group is eligible to benefit from access to the infrastructure having satisfied the conditions a) and b) of point 1 under section III.3 of GA ANNEX III.

The User Group has not previously used the facility and even if similar facilities exist in their country, they highlight the peculiarity of the Genoa site as regards the urban/marine character and the extreme aggressiveness.

One of the Reviewers points out that the proposal has nothing to do with marine science except for the corrosive atmospheric conditions. However, he/she finds it intriguing because a facility of JERICO is used for a purpose not covered in any other proposal.

No technical adjustment is suggested by the access provider and the proposal is approved in the present form.

Scientific Evaluation

Scores

Criterion for Selection	Rev. #1	Rev. #2	Rev. #3	Averaged scores
Fundamental, scientific and technical value (max 30)	25	18	20	**21.0**
Quality of the work program (max 25)	20	17	20	**19.0**
Feasibility (max 20)	15	12	15	**14.0**
Potential for seeding links with industry (max 10)	2	5	7	**4.7**
Quality of users groups (max 10)	8	8	7	**7.7**
European representativity (max 5)	2	5	4	**3.7**
SUM	72	65	73	**70.1**

Comments

Rev. #1: This is a proposal which has nothing to do with marine science but is intriguing because a facility of JERICO is used for a purpose not covered in any other proposal. I'am not an expert in material corrosion, but I do realize the importance of corrosion in the marine realm. However this proposal has nothing to do with marine science except for the corrosive atmospheric conditions. It is unclear whether samples are exposed directly to seawater. The scientific quality of the proponent and his group seem to be outstanding.

Rev. #3: As non-chemist I can not judge how unique this project is. Judging from the what is written in the application I find the project valuable.

Technical Evaluation

by Pierluigi Traverso

Technical Feasibility

The proposal fits the kind of weathering exposure usually performed at SMS. No change is required to the access plan for feasibility.

Technical Adjustments

No adjustments is needed.

Availability

The amount of space required for the exposure (48 samples, 60x60mm) is available for the proposed time schedule.

3.7. Proposal number CALL_1_7

(For the full text see the Annex)

User Group

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Summary of the proposal

During winter, an anticyclonic eddy is generated in the SE Bay of Biscay that instead of migrating, remains between 3°W and 4°W for several months. This mesoscale structure corresponds to the stationary SWODDY (Slope Water Oceanic eDDY) previously described by Pingree and Le Cann (1992). A recent analysis of a time series of satellite altimetry maps, Sea Surface Temperature maps and outputs from ROMS simulations, in the framework of the ESTIBB project, suggests that these stationary eddies could be generated in the bathymetric and discontinuities of the Cape Breton canyon system, or further to the east, between this canyon and the Ajo and Mayor Capes. Besides this, there are evidences that indicate that these eddies retain plankton, including differentiated densities of ichthyoplankton (early development stages of different fish species spawning in this area).
The main objective of this project is to study, in detail, the characteristics of this eddy, both in the surface and in the vertical, through an extended series of remote sensing, routine in-situ measuring systems (two slope buoys and a HF radar array), two field campaigns with drifting buoys of the User Group and a field campaign using an underwater Glider of the ICSU National Glider Facility (CETSM).
In-situ measurements will be used as well to validate ROMS simulations in the area to allow further research based on model results.

General Comments

The user group is eligible to benefit from access to the infrastructure having satisfied the conditions a) and b) of point 1 under section III.3 of GA ANNEX III.

The User Group has not previously used the facility. Similar facilities exist in their country, the purpose of strengthen existing scientific collaboration between France and Spain is not a strong argument. This makes it of a secondary priority in the competition with others but is not an obstacle for approval.

There are technical aspects highlighted both in scientific and technical reviews (including unavailability of gliders in the planned period), and the need to work out them in the final plan by interaction with the glider provider before final approval.

Scientific Evaluation

Scores

Criterion for Selection	Rev. #1	Rev. #2	Rev. #3	Averaged scores
Fundamental, scientific and technical value (max 30)	20	28	15	**21.0**
Quality of the work program (max 25)	20	25	10	**18.3**
Feasibility (max 20)	15	20	10	**15.0**
Potential for seeding links with industry (max 10)	3	5	0	**2.7**
Quality of users groups (max 10)	10	10	5	**8.3**
European representativity (max 5)	2	5	1	**2.7**
SUM	70	93	41	**68.0**

Comments

Rev. #3: This proposal requests access to a French glider to complement a Spanish study of a SWODDY in the Bay of Biscay. It is not clear what outcome the use of the glider will provide. Not sure if the PI has done homework on glider transect rates but 2-4 weeks (or possibly 2 weeks as proposed) does not seem sufficient time to carry out the proposed 'repeated' transects shown in the figure. It is not clear whether the feasibility of the glider mission has been discussed with the operator (CETSM), and the assumption that because they (CETSM) have run a glider mission in the Bay of Biscay guarantees the success of this application is ill-founded.

It is not clear how the glider will be deployed or recovered, or how or who by the data will be processed, evaluated.

The PI mentions two glider operators in Spain, SOCIB and PLOCAN, but only describes why SOCIB are unable to supply a glider.

There is no indication of costs involved. No risks identified.

Technical Evaluation

by Pierre Testor

Technical feasibility and suggestions for technical adjustments

The experiment is interesting and is certainly feasible roughly how described in the proposal. Note the proposed red track would likely be completed in 2 weeks, and this is the same for the blue track. Considering the time frame of 2-4 weeks proposed by AZTI and the necessity to repeat the tracks, I think the TNA should concern at least 2 gliders.
The type of access should not be 'remote' but at least 'partially remote' or better 'in person/hands on', since the deployment of the gliders will have to be supported locally for the operations at sea.
Note that the logistics could be managed from our facilities to the operation site and return as well as launch/recovery operations of the gliders, only if the operation site is in the vicinity of DT-INSU gliders facilities (NW Mediterranean). Otherwise only assistance will be provided and the user would have to provide the extra costs (shipping, boat access, travels for 2 CETSM engineers for deployment/recovery).
Since the operations will be done in a region distant from our facilities, we have no contingency plans in case of emergencies with gliders. I would like AZTI proposes a scenario in case a glider needs an emergency recovery.
The box for one glider is 220cmx150cmx150cm and weights about 100kg. A rough estimate of the costs for shipping would be 1500 euro (one way and return). The travels for the CETSM engineers would be about 3000 euro. These costs would have to be covered by AZTI in addition to the provision of a ship (at least a 9m rubber boat) for deployment and recovery operations.

Availability of the facility on the dates proposed by the user

The period of February 2013 to May 2013 is not a good period for the INSU/CETSM facility since we are already engaged with a lot of glider activity between September 2012 and May 2013 and it is unlikely we could have available gliders during this period. We propose to postpone the TNA to the end of June 2013 or later.

3.8. Proposal number CALL_1_8

(For the full text see the Annex)

User Group

Principal Investigator (user group leader):

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Summary of the proposal

The proposed research is drawn in the central part of the Algero-Provencal sub-basin that constitutes the central area of the Western Mediterranean Sea. This part can be seen as a buffer area between the northern Provencal sub-basin and southern Algerian one and is mainly characterized by the presence and action of the Balearic Front. So it has a great importance to understand exchanges through the two sub-basins and the complex interactions through eddies. This area is frequented annually by the User Group with oceanographic cruises, and repeated CTD and current-meter data are regularly acquired. They are proposing to integrate their observations by implementing two glider missions in the area using one of the gliders of the CSIC fleet..
Objectives**:**

i) study the variability of the physical properties of surface and intermediate water masses between the Algerian and the Provencal sub-basins;
ii) evaluate the transport of water, salt and heat through the area and verify if the interannual variability of the surface and intermediate water masses is due to climatic changes;
iii) validate the operational hydrodynamic numerical model of the western Mediterranean (http://www.seaforecast.cnr.it/en/fl/wmed.php) through the use of in-situ and satellite data.

General Comments

The user group is eligible to benefit from access to the infrastructure having satisfied the conditions a) and b) of point 1 under section III.3 of GA ANNEX III.

The User Group has not previously used the facility and similar facilities don't exist in their country.

Both a referee and the access provider suggest to reduce the number of travels to Mallorca since staff training is not the main scope of this call.

The proposal is approved but some adjustment is required in the final description of work as a consequence of suggestions coming from scientific and technical reviews.

Scientific Evaluation

Scores

Criterion for Selection	Rev. #1	Rev. #2	Rev. #3	Averaged scores
Fundamental, scientific and technical value (max 30)	20	28	20	**22.7**
Quality of the work program (max 25)	15	25	20	**20.0**
Feasibility (max 20)	12.5	20	15	**15.8**
Potential for seeding links with industry (max 10)	2.5	5	0	**2.5**
Quality of users groups (max 10)	7.5	10	6	**7.8**
European representativity (max 5)	2.5	5	2	**3.2**
SUM	60	93	63	**72.0**

Comments

Rev. #1: The budget concerns two travel/stay of a technician from IAMC-CNR to the IMEDEA-CSIC facility. Given the scientific objectives of the proposal, it is not clear why two stays of a technician at the IMEDEA-CSIC facility are needed. This could have been motivated by the perspective to invest at IAMC-CNR in the glider technology, which is not apparently the case, despite some mention of a future sustained collaboration between both institutes.

The plans for exploiting the glider data to fulfil the objectives of the proposal are not described nor the exact mission (trajectory, parameters to be measured, ...) of the glider in the region of interest. Given the complexity of the circulation in this region which is dominated by mesoscale, this should have been investigated into details. The proposed period of deployment for two missions must also be documented in relation to other field activity to be carried out in the Western Mediterranean.

Nevertheless, given the present effort of several institutions, in particular IMEDEA-CSIC and the SOCIB facility, to develop a sustained monitoring system in the Western Mediterranean, having a first attempt of a glider mission in this region certainly deserves interest. It is recommended that the proposer investigates better the rationale for glider transects in this region in closer collaboration with the institutions in France, Italy and Spain active to monitor the Western Mediterranean basin.

Rev. #3: This is a feasible glider mission, well thought out, although I have some doubts that objective (ii) can be achieved. Clearly contact has been made with the IMEDEA group regarding personnel training. Costings are reasonable, risks are identified.

Technical Evaluation

by Simón Ruiz

Technical Feasibility

The mission and work plan proposed is technically feasible. The mission proposed (Balearic Islands-Sardinia-Balearic Islands) could be done in about 60-70 days, depending on the environmental conditions (ocean currents) during the mission period. Details on glider sensors available and sampling frequency to accomplish the scientific objectives optimizing the energy consumption of the autonomous platform are provided in a separate document.

Technical Adjustments

4 travels of 1 CNR researcher/technician to Mallorca seem not necessary since training is not the main scope of this call. We suggest reducing the number of travels (e.g. 2 travels).

Availability

A glider mission is requested in 2012 and a second one in 2013. The proposal does not specify a particular date for those missions. The glider would be available from June-July 2012 onwards.

3.9. Proposal number CALL_1_9

(For the full text see the Annex)

User Group

Principal Investigator (user group leader):

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Summary of the proposal

The DYFAMED site (2350m depth) and the CORSICA Channel (445m depth) are permanently monitored since 1988 and 1985 respectively to observe the water masses evolution and more specifically the shift of the LIW property due to the climate change. These observations are done through fixed moorings regularly maintained to record temperature, salinity and currents data.
Since 2005 and 2009, the CC and DYF moorings are respectively equipped with precise sensors Seabird SBE37 (0.001°C). Both moorings are maintained every year through annual/semiannual scientific cruises in order to collect T-S data, to clean and to calibrate the sensors and to repair the mooring line.
The objective of the proposal is to install on oxygen optical sensor (optode 4330 Aanderaa) on the Corsica Channel mooring at 400m depth as it will be done from 18 to 27 July 2012 (cruise MOOSE GE) at the Dyfamed mooring (400m and 2000m). The implementation of the DO sensor can be done during the Urania cruise which is planned by CNR from 16-25 November 2012 to maintain moorings in the Tyrrhenian Sea, the Sicily strait and the Corsica Channel.
Integrating the dissolved oxygen concentration in the long term time series data in the Ligurian basin will allow to track the water mass variability, the impact of the water mass change on the oxygen content and to estimate the time lag between the eastern (Corsica Channel) and the western (Dyfamed) part of the Ligurian Sea.

General Comments

The user group is eligible to benefit from access to the infrastructure having satisfied the conditions a) and b) of point 1 under section III.3 of GA ANNEX III.

The User Group has not previously used the facility. Even if submersed moored installations exist in France, e.g. Dyfamed, the dynamical and environmental conditions of the sites are different and this make each of them a special observatory.

No technical adjustment is suggested by the access provider and the proposal is approved in the present form.

Scientific Evaluation

Scores

Criterion for Selection	Rev. #1	Rev. #2	Rev. #3	Averaged scores
Fundamental, scientific and technical value (max 30)	20	30	27	**25.7**
Quality of the work program (max 25)	16	25	25	**22.0**
Feasibility (max 20)	16	20	20	**18.7**
Potential for seeding links with industry (max 10)	0	7	5	**4.0**
Quality of users groups (max 10)	5	9	10	**8.0**
European representativity (max 5)	3	3	5	**3.7**
SUM	60	94	92	**82.1**

Comments

Rev. #1: I think it will increase the interest of the mooring with a low price. DO measurement are very interesting. The only complaint is the low publications of the Principal Investigator, with just one published and two in revision.

Rev. #2: This project is simple, yet will yield some very important information on the oxygen dynamics, with implications to a wide array of applications (climate change, ecology, physical dynamics of water masses), in the Mediterranean Sea. They propose to outfit two moorings with optode oxygen sensors for a year, measuring in companion with other physical sensors. This seems like a very important addition to these mooring in key locations to monitor change, which can then be researched as to the underlying cause with the larger data set. I would think these sensors should already be standard on these moorings but evidently these are not. I am in strong favour of adding these sensors to these moorings.

The fundamental science and technical aspects are sound. There is low-no risk here. This is not cutting edge science, but these basic measurements should be available from these moorings to advance understanding of this key oceanographic variable. The Aanderra optodes are the right technology for this application and they have proper calibration procedures identified to follow. Changes in the oxygen content of the deep see would have major consequences and will help to assess the impacts of climate change. The PI appears to be well qualified. This is very feasible and has been done at other sites. Re links for industry, this was not asked for on the application; this is to deploy a commercially available sensor in a strategic location with high scientific payoff. I'm sure the manufacturer can cite this application once the data are available/published. Both participants are French but it seems the program is well networked internationally and the data affect the Western Mediterranean. Request is 3300 Euros.

Technical Evaluation

by Mireno Borghini and Katrin Schroeder

The proposal is technically feasible, therefore no technical adjustments are required and the time schedule proposed by the user is in agreement with the availability of the facility.

3.10. Proposal number CALL_1_10

(For the full text see the Annex)

User Group

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Summary of the proposal

The conditions in Kattegat are crucial for the water exchange with the Baltic Sea. In the northern part the relatively fresh Kattegat water masses are separated from the more saline Skagerrak water by a front. The dynamics of this front is of special interest since it may have an impact on the Baltic Sea inflow. The front also plays an important role for many biological processes for example, the spreading of larvae by the frontal current. More recent observation techniques have increased the amount of data considerably, so that it is now possible to evaluate existing process models for the position and motion of the front. In the present project the vertical extent of the front and water masses will be examined and the data compared to time series of remote- and underway measurements.
Main objectives:

- To detect the position of the Kattegat-Skagerrak front using in situ observations from autonomous gliders and research vessel, as well as satellite images.
- To correlate the position and variability of the front with possible driving mechanisms and apply a conceptual model for the transport along the front.

- Determine the three-dimensional properties of the front and correlate the hydrography to the biology.
- To investigate the distribution of phytoplankton using chlorophyll fluorescence as a proxy for phytoplankton biomass. Coccolithophorids has a special focus and turbidity will be used as a proxy.
- To investigate the distribution of zooplankton including jellyfish.

General Comments

The user group is eligible to benefit from access to the infrastructure having satisfied the conditions a) and b) of point 1 under section III.3 of GA ANNEX III.

The User Group has not previously used the facility and similar facilities don't exist in their country.

The scientific evaluation is excellent, but there are severe technical problems pointed out by the Operator, regarding the possibility of equipping their glider with the complete set of sensors requested by the User Group and the unavailability of a glider before May 2013. The P.I. of the User Group and the Operator must to evaluate these problems, and eventually consider of submitting a revised proposal at the second call.

The P.I. is asking support for moving the glider and the operator team from UK to Sweden but this request cannot be satisfy owing to art III.9.1 of GA ANNEX III which provides that Community financial contribution may only cover the travel and subsistence costs related to visits by *users* while the costs of providing access is reimbursed to the Facility Operator in agreement with the DoW (WT9: Summary of transnational access / service provision per installation).

Scientific Evaluation

Scores

Criterion for Selection	Rev. #1	Rev. #2	Rev. #3	Averaged scores
Fundamental, scientific and technical value (max 30)	27.5	26	30	**27.8**
Quality of the work program (max 25)	25	25	20	**23.3**
Feasibility (max 20)	18.5	20	15	**17.8**
Potential for seeding links with industry (max 10)	5	5	4	**4.7**
Quality of users groups (max 10)	9	10	10	**9.7**
European representativity (max 5)	2.5	5	3	**3.5**
SUM	87.5	91	82	**86.8**

Comments

Rev. #1: This is an excellent proposal and I strongly recommend it for support by the JERICO TNA. Just to be mentioned : the proposers do not present how the glider data will contribute to investigate the zooplankton and jellyfish distribution (investigated by the ship cruise) in the area. This is an important question for which gliders equipped with adequate sensors certainly have a potential which still need to de demonstrated.

Given the complexity of the mission in a very energetic area (and probably with high maritime traffic), it is recommended that safety issues are carefully taken into account.

Rev. #3: As evaluator I may be partial, since I know well both the scientific/technical challenge and the research group well. The experiment is dealing with a classical case for creation of algal blooms.

Technical Evaluation

by Phil Knight NERC

Technical Feasibility

Objective: Detect the position of the Kattegat-Skagerrak front. (Between Sweden and Denmark)
Platform requirement: Standard shallow water glider (either 117 or 194) and Glider fitted with the turbulence package (175)
At the moment the Glider fitted with the turbulence package is not available since it is still undergoing development.
The area of study is in a region where the density differences are greater than the glider capability. The Slocum Webb glider normally operates between +- 4 sigma units i.e., it has an 8 sigma unit range.
Although the location is very challenging for us in terms of the glider set up we would still be able operate it within its capability of 8 sigma units, although this would mean that we could not do full profiles from one density extreme to another.

Technical Adjustments

Another option is to try using a new 800cc displacement pump (the standard pump is 460cc). This would give the glider a larger operating density range. At the moment it is still in development at Teledyne Webb, however they tell us that it might be available as an add on option by 2013. This pump would only be available for use in the range 0-100m which is fine for the suggested location. Cost is an estimate $5000.

Availability

At the moment we can accommodate a glider deployment between 20 May and 14 June 2013.

3.11. Proposal number CALL_1_11

(For the full text see the Annex)

User Group

Principal Investigator (user group leader):
Dr. Roberto Bozzano
National Research Council
ISSIA, Via dei Marini 6, 16149 Genova, Italy
roberto.bozzano@cnr.it
Telephone +39.010.6475656 Fax +39.010.6475600

Other members of the team :
Mrs. Sara Pensieri
National Research Council
ISSIA, Via dei Marini 6, 16149 Genova, Italy
sara.pensieri@ge.issia.cnr.it

Summary of the proposal

The proposed project addresses the main scope of performing a calibration and inter- calibration exercise of bio- geochemical sensors to be operationally and routinely deployed on off- shore marine observatories making part on a continuous basis of the marine monitoring network of the Mediterranean Sea.
The calibration facility of HCMR will be accessed by the user group to perform carefll calibration of Dissolved Oxygen, Fluorescence and Turbidity probes that are part of the equipment of W1M3A offshore observing system moored in the Ligurian Sea.
The first objective consists in enhancing the accuracy of the in-situ observations on a long term basis of dissolved oxygen, chlorophyll-a and turbidity in the W1-M3A site.
A further aim consists in the exchange of expertise for the configuration of instruments to be developed in oceanic observatories with respect to the most valuable and efficient anti-fouling techniques.
Moreover, the proposed research will contribute to the improvement of the overall quality of the Mediterranean Sea observations by sharing the collected calibrated in-situ data from W1-M3A observing system through several data centers, such as Coriolis (INFREMER, France) and the In-Situ Thematic Assembly Center of the MyOCEAN GMES Core Marine Service managed by the Hellenic Centre of Marine Research.

General Comments

The user group is eligible to benefit from access to the infrastructure having satisfied the conditions a) and b) of point 1 under section III.3 of GA ANNEX III.

The User Group has not previously used the facility and similar facilities don't exist in their country.

The proposal is approved but minor technical adjustments suggested by the access provider (see Technical Evaluation) have to be taken into account in the final description of work .

Scientific Evaluation

Criterion for Selection	Rev. #1	Rev. #2	Rev. #3	Averaged scores
Fundamental, scientific and technical value (max 30)	30	25	18	**24.3**
Quality of the work program (max 25)	20	20	17	**19.0**
Feasibility (max 20)	18	15	12	**15.0**
Potential for seeding links with industry (max 10)	8	2	5	**5.0**
Quality of users groups (max 10)	10	7	8	**8.3**
European representativity (max 5)	4	3	5	**4.0**
SUM	90	72	65	**75.6**

Comments

Rev. #1: This is an excellent proposal which deserves consideration. It covers the most important issues to be measured in the marine realm. The setup of the experiments is well prepared, the only critical issues maybe the availability of algal cultures which need to be properly prepared in advance. The dimension of this proposal is of utmost relevance for the automatic and especially long term measurement of important marine parameters. I strongly recommend execution of this proposal.

Rev. #2: Sensor calibration for bio-physical parameters is an essential process to ensure local conditions are correctly monitored. Datasets thus collected can contribute significantly to regional algorithms for satellite-sensed ocean colour and to biogeochemical model validation. Proposer is well qualified to progress the work in association with the Facility.

Costs are minimal and risks are identified.

Technical Evaluation

by George Pethiakis HCMR

Technical Feasibility

Although chlorophyll a, turbidity and dissolved oxygen sensors are widely used all over Europe the calibration procedures involved are showing significant differences between the institutions that perform it. These differences include not only different approaches and methodologies but the use of a variety of reference materials/solutions too. These calibration TNA's will be an opportunity to further investigate and compare the different procedures used and validate it in order to produce a common SOP that will contribute to the overall data quality. The proposed experiments technically are feasible since HCMR has long experience on this field and has performed the experiments many times in the past.

Technical adjustments

Chlorophyll a and turbidity: The proposed TNA will be a great opportunity to test and validate different standards and solutions including cell cultures as well as commercial reference solutions. Special care should be given to the calibration data range in order to focus in the actual deployment site environmental conditions. Although HCMR uses only one type of sensor – Wetlab FLNTU – it will be an added value to the experiment if the facility users could provide sensor/s from different manufactures for inter comparison of the results.
Dissolved Oxygen: Regarding DO sensors the experiments will include two point calibration (0 and 100% saturated) for Aanderaa optodes and temperature gradients, in respect to DO concentration, in a temperature control seawater bath for both Seabird 43 DO sensors and Aanderaa optodes – HCMR uses both . Special interest should be given in the examination of the influence of pressure and salinity to the Aanderaa optode measurements.
It is suggested by HCMR, after the calibration experiment, to perform a field validation with the sensors deployed, mounted in a CTD, and water sampling for comparison.

Availability

The suggested dates by the users are accepted by HCMR. After the approval of the TNA partners will choose the exact date to their convenience.

3.12. Proposal number CALL_1_12

(For the full text see the Annex)

User Group

Principal Investigator (user group leader):

Dr. Salud Deudero
Instituto Espanol de Oceanografia
Centro Oceanografico des Baleares/Grupo RESMARE, Spain
salud.deudero@ba.ieo.es
Telephone +34-971133720 Fax+34-971404945

Other members of the team :

None

Summary of the proposal

Construction and operation of offshore wind farms (OWF) generate several impacts, such as noise, electromagnetism and the incorporation of new hard substrate in the marine environments. These impacts can affect marine environment and biota, so it is essential to study these effects and to adopt measures for proper functioning of wind farms.
The main aim of the proposed research is to assess offshore wind farms effects on marine biota performing experiments from the Acqua Alta Oceanographic Tower operated by CNR in the North Adriatic Sea. Specific objectives involve:

- Combination of visual and acoustic methodologies for fish quantification associated to artificial substrates simulating OWF.
- Testing fish communities naturally associated to an existing Mediterranean offshore platform in function of oceanic parameters.
- Developing a set of experiments to quantify fish responses to noise disturbance associated to a Mediterranean offshore platform in function of oceanographic parameters.

General Comments

The user group is eligible to benefit from access to the infrastructure having satisfied the conditions a) and b) of point 1 under section III.3 of GA ANNEX III.

The User Group has not previously used the facility and similar facilities don't exist in their country.

Some criticism is expressed by the Reviewers, and technical problems have been enlighten and suggestion offered by the operator.

This proposal doesn't reach the threshold to be considered for evaluation (total score >60) and is rejected.

Scientific Evaluation

Scores

Criterion for Selection	Rev. #1	Rev. #2	Rev. #3	Averaged scores
Fundamental, scientific and technical value (max 30)	20	20	15	**18.3**
Quality of the work program (max 25)	15	15	13	**14.3**
Feasibility (max 20)	5	15	12	**10.7**
Potential for seeding links with industry (max 10)	8	5	5	**6.0**
Quality of users groups (max 10)	7	8	5	**6.7**
European representativity (max 5)	4	4	2	**3.3**
SUM	59	67	52	**59.3**

Comments

Rev. #1: it seems a good innovation for develop a new system for test the impact of marine offshore wind artefacts. It seems to be a good opportunity for perform the test.

Rev. #2: This project certainly addresses an important issue, fish impacts from offshore wind devices (OWD), but I am less convinced on the suitability of the approach to investigate what would happen from OWDs. The approach is to use an existing tower to investigate behaviour and to pipe in mimicked sounds. I think the problems are that it would be investigating an existing situation, not a new structure. I'm not sure correlations of fish abundance with waves, currents, temperature, etc will reveal what we need. Also, I worry that the piped in noise simulating the OWDs will be the same as an actual OWD, since I wonder if vibration through the OWD in addition to the noise is important. There are good ideas here, but not a highest priority for funding as the others I reviewed. At 4900 Euros, I rank this as a low priority for JERICO.

Rev. #3: A difficult proposal to evaluate because of the lack of existing infrastructure and experience of the researcher(s) (due to lack of infrastructure). Work plan is not entirely clear, nor are the expected outcomes of the specific objectives. It is not explained how the simulated OWF noise experiments will be conducted, or how they will be evaluated. There is an expectation that a full suite of biophysical measurements will be made at the platform, but there is no evidence (http://www.ismar.cnr.it/infrastructures/piattaforma-acqua-alta) that this is the case. Length of time for access to the facility is rather undefined.

Travel costs are acceptable, but no accommodation costs included (self-funded?). No risks identified.

If successful, the results will certainly be of interest to industry, but it is not clear how meaningful they may be in relation to a real installation. Should these measurements be carried out at a facility nearby OWFs? (e.g. COSYNA in the German Bight).

Technical Evaluation

by Mauro Bastianini CNR

Technical Feasibility

The proposal is technically feasible with some uncertainties: the tower is already equipped with some of the facilities required (underwater camera, data transmission facilities), for some other equipment a demanding setting work is required, a major issue could be the high power requested for on-site computation during remote operations (last communication indicated 10 A/hour are required),

Technical adjustments

Currently these requirements could not be granted without the use of extra power from the diesel generators that could be done but with extra-expenses.

Availability

The time schedule proposed by the user is in agreement with the availability of the facility.

3.13. Proposal number CALL_1_13

(For the full text see the Annex)

User Group

Principal Investigator (user group leader):
Dr. Ian Allan
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ian.allan@niva.no
Telephone +47 98294122 Fax +47 22185200

Other members of the team :
Dr. Branislav Vrana
RECETOX, Czec Republic
vrana@recetox.muni.cz

Summary of the proposal

The proposal is a pilot test aiming to assess the suitability of using gliders as a mode of exposure of passive sampling devices for the measurement of trace level of nonpolar organic substances such as polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs). The targeted JERICO facility is the Glider facility at National Oceanographic Centre in Liverpool. The main objectives follow:

- Evaluate the feasibility of combining glider technology and passive sampling technique to measure chemical contaminant concentrations at sites that are generally difficult to sample
- Estimate persistent organic pollutant concentrations in waters of the Celtic Sea based sampler-glider exposures
- Assess the representativeness of the data obtained through glider exposure of the passive samplers.

General Comments

The User Group is eligible to benefit from access to the infrastructure having satisfied the conditions a) and b) of point 1 under section III.3 of GA ANNEX III. Phil Knight is listed as a member of the User Group, but he is the Facility Operator.

The User Group has not previously used the facility and similar facilities don't exist in their country.

Technical problems have been enlighten by the Operator and suggestion offered for redesigning the experiment. This will need some further interaction between the Operator and the P.I. of the User Group before final approval

Scientific Evaluation

Scores

Criterion for Selection	Rev. #1	Rev. #2	Rev. #3	Averaged scores
Fundamental, scientific and technical value (max 30)	27.5	30	20	**25.8**
Quality of the work program (max 25)	22.5	25	15	**20.8**
Feasibility (max 20)	17.5	20	15	**17.5**
Potential for seeding links with industry (max 10)	8	10	9	**9.0**
Quality of users groups (max 10)	9	10	9	**9.3**
European representativity (max 5)	4	5	5	**4.7**
SUM	88.5	100	73	**87.1**

Comments

Rev. #1: This is an excellent proposal for a technical trial to test existing passive samplers on a glider.

Some scientific/technical details (e.g. size of the sampler, sampling rate strategy, ...) could have been better documented. However, given the skills of the proposers as well as the already existing dialogue between the proposers and the NOC facility which will provide the glider, it is likely that the feasibility of the proposed work remains high.

In case of a successful mission, it is also recommended that plans are made to investigate how passive samplers compare with optical devices that are now available for PAHs. The proposers should get in touch with the relevant groups active in this field in Europe.

Rev. #3: This project could develop a technological solution to the problem of monitoring contaminants by employing passive samplers attached to gliders. This may have a very nice payoff, but I felt the proposal was less well developed than I would have hoped. Many things are still in the “drawing board” phase and I think this proposal should be further developed and re-submitted.

I think the fundamental science and technical value is sound, but developing a more constrained experiment would be valuable to its success. The PIs appear to be well qualified and very international European representation. I ranked it lower re feasibility because it lacked technical definition and relied too much on ‘to be determined’ sorts of plans. Re links for industry, this was not asked for on the application, but I think these are certainly there. Request is 1500 Euros which is reasonable, but I still felt a bit longer time to develop these plans more definitively would be advisable.

Technical Evaluation

by Phil Knight NERC

Technical Feasibility

Objective: Accommodating Passive Sensors (small plastic sheets) onto a glider and/or towing them behind a glider.
Platform: Any Glider (117, 175 or 194)

We think that we can accommodate these types of passive sampling devices either onto the hull or tail of the glider. Towing the sensors behind the glider may cause problems with the flight control and overall endurance. The proposal suggests adding these passive sensors to an existing deployment. In this case it is unlikely that the Principal Scientist would be happy with the glider towing a sensor if it affected the profiles and endurance.

Availability and adjustments suggestion

The start dates suggested in the proposal are now too early for incorporating within our summer 2012 programme in the Celtic Sea. After the September deployment we will be returning both G1 gliders to Webb and upgrading them to G2 versions.
Therefore my suggestion would be:
* a short dedicated test trial (perhaps Liverpool Bay or Scottish waters) - dates to be confirmed
* adding a small sensor(s) to the hull of Glider 175 on a planned mission in September
* waiting until a repeat Celtic Sea mission in summer 2013.

4. Synopsis of Evaluation

4.1 Rejected proposals

The following proposals are not approved because of the mandatory threshold establishing that the score has to be greater than 60:

SCORE	Reference number	Facility ID	Type	Facility Operator	Proponent	Comments
59.3	CALL_1_12	ACQUA ALTA	FP	CNR ITALY	Salud Deudero – Instituto Espanol de Oceanographia RESMARE SPAIN	Score below the mandatory threshold. Rejected
59.0	CALL_1_3	POSEIDON CAL	CL	HCMR GREECE	Rajesh Nair – OGS ITALY	Score below the mandatory threshold. Rejected

The Proponents will be invited to revise and re-submit them to the next call.

4.2 Approved proposals

The following proposals are approved with minor revision that will be arranged with the Facility Operator.

SCORE	Reference number	Facility ID	Type	Facility Operator	Proponent	Comments
82.1	CALL_1_9	MPLC	FP	CNR ITALY	L.Coppola - Observatoire Oceanographique de Villefranche/Mer FRANCE	
76.5	CALL_1_5	OGS-CTO	CL	OGS ITALY	George Pethiakis – HCMR GREECE	
75.6	CALL_1_11	POSEIDON CAL	CL	HCMR GREECE	Roberto Bozzano –CNR ISSIA ITALY	Minor technical adjustments
72.7	CALL_1_1	POSEIDON BUOYS	FP	HCMR GREECE	Melchor Gonzales-Davila – Universidad de Las Palmas de Gran Canaria SPAIN	Minor technical adjustments
		POSEIDON CAL	CL			
72.0	CALL_1_8	CSIC-Glider	GL	CSIC SPAIN	Alberto Ribotti – CNR IAMC ITALY	Minor technical adjustments
70.1	CALL_1_6	MPL Genoa	FP	CNR ITALY	E. Cano Diaz – CENIM/CSIC SPAIN	

4.3 Decision postponed

The following proposals present technical problems, some of them need a redesign of the experiment:

SCORE	Reference number	Facility ID	Type	Facility Operator	Proponent	Comments
87.1	CALL_1_13	COBS 4 POL GLIDER	GL	NERC UNITED KINGDOM	Ian Allan – NIVA NORWAY	Technical adjustments to be discussed with the facility operator
86.8	CALL_1_10	COBS 4 POL GLIDER	GL	NERC UNITED KINGDOM	Anna Wahlin – Dep. Earth Sciences Univ. Gothenburg SWEDEN	Severe technical problems require evaluation and imply the redesign of the experiment. Unavailability of the facility before May 2013 could imply to resubmit the revised proposal at the second call (January 2013)
76.6	CALL_1_2	ACQUA ALTA	FP	CNR ITALY	Giuseppe Zibordi – Joint Research Centre ITALY	Possibly not eligible. Evidence for a possible exemption from the "mobility requirement" (art. III.3.1.b of the G.A. Annex III) requested.
74.3	CALL_1_4	Colour Fantasy	FB	NIVA NORWAY	Kevin C. Jones – Lancaster University UNITED KINGDOM	Technical adjustments and experimental arrangements to be discussed with the facility operators.
		COSYNA_2 (PILE)	FP	HZG GERMANY		
68.0	CALL_1_7	CETSM	GL	INSU/CNRS FRANCE	Ainhoa Caballero Reyes – AZTI Technalia SPAIN	Technical adjustments to be discussed with the facility operator.

The Proponents and the Facility Operators will be asked to interact and to agree a feasible plan of work which will be sent to the Selection Panel again for the final approval. As regards Proposal CALL_1_2 if the Proponent or the Facility Operator will provide an evidence of a possible exemption from the "mobility requirement" (art. III.3.1.b of the G.A. Annex III), the Selection Panel and the Scientific Committe of JERICO will make the final decision on the eligibility. This decision will be ratified during the next GA in Crete in October 2012.

ANNEX

Assigned reference number:	**CALL_1_1**
Date of proposal receipt by email:	**28/02/2012**
P.I. Name and Surname:	**Merchor Gonzalez-Davila**
Institution and Department:	**Universidad de las Palmas de Gran Canaria** **Facultad del la Ciencias del Mar**
Date of email answer by TNA office:	**29/02/2012**

JERICO

Application for Transnational Access

to Coastal Observatories

National Research Council of Italy
OGS
cnrs
IBW PAN
hcmr
NIVA
Norwegian Institute for Water Research
Ifremer
Helmholtz-Zentrum Geesthacht
Zentrum für Material- und Küstenforschung
CSIC
National Oceanography Centre

Description of the project (to be provided in pdf format)
Please contact the manager of the infrastructure/installation you wish to use before writing the proposal

PART 1: User group details

Indicate if the proposal is submitted by

O an individual
X a user group

Information about the applicants (PI and project partners)

Principal Investigator (user group leader)

Title _Prof. Name and Surname MELCHOR GONZALEZ-DAVILA

Gender x Male O Female

Institution __UNIVERSIDAD DE LAS PALMAS DE GRAN CANARIA_____

Department / Research Group _____QUIMA GROUP_____

Address ___CAMPUS DE TAFIRA_____

___FACULTAD DE CIENCIAS DEL MAR_____

Country ___SPAIN_____

email __MGONZALEZ@DQUI.ULPGC.ES_____

Telephone __+34 928452914_____

Fax ___+34 928452922_____

Project partners
(repeat for each partner of the group)

Partner # 1

Title _Prof. Name and Surname J. MAGDALENA SANTANA CASIANO

Gender O Male X Female

Institution ____UNIVERSIDAD DE LAS PALMAS DE GRAN CANARIA_____

Department / Research Group _____QUIMA GROUP_____

Address _____CAMPUS DE TAFIRA_____

_____FACULTAD DE CIENCIAS DEL MAR_____

Country _____SPAIN_____

email ____JMSANTANA@DQUI.ULPGC.ES

PART 2: Additional information about the applicant(s) expertise

Expertise of the group in the domain of the application

The QUIMA group is responsible for the monthly determination of the carbon dioxide system at the European Station for Time-Series at the Ocean in the Canary Islands, ESTOC, from October 1995.The ULPGC-QUIMA has participated in the EU CANIGO project (1996-1999), collaborated with the EU ANIMATE project (2001-2004), member of the EU CARBOOCEAN project contributing with a new VOS (volunteer observing ships) line between UK and South-Africa to the Atlantic Observing System (2005-2009) and EU EUROSites (2008-2010) project in charge of the carbon system study in the ESTOC site and developing a new pH sensor. A pH sensor is deployed at the ESTOC buoy from 2009. Nowadays, QUIMA is involved in the EU CARCHANGE project (2011-2015) in charge of pH and pCO2 sensors in ESTOC and the QUIMA VOS line. Member of the French Project POMME 2000-2002 (programme Océanmultidisplinaire Mezzo Echelle) studying the carbon dioxide system in the Central Atlantic Ocean and in the GOOD-HOPE project inside the Polar Year 2007 French contribution in the South Atlantic Ocean. A new collaboration with the Shirshov Institute of Oceanology of Moscow has been established studying the carbon system along 59.5ºN after 2009.

Short CV of the PI

Professor in Marine Chemistry from 1984 at the Faculty of Marine Science and Full Senior Professor from 2010. From February 2012, Dean of the Faculty of Marine Science. Dr. in Physical Chemistry in 1987 with 5 stays with a total of 27 months of research at the RSMAS, University of Miami collaborating with Prof. Frank J. Millero in Marine Physical Chemistry and more than 10 collaborative papers. More than 80 ISI paper in international publications and more than 100 oral and poster presentations in international congresses related with Marine Chemistry. Has participated has PI in 10 National and regional competitive projects and in 5 EU projects: CANIGO, ANIMATE; CARBOCHANGE, EUROSITES and CARBOCHANGE and in international research programs POMME, PICASSO, BONUS GOOD-HOPE, CLIVAR 59.5ºN. From 2008, member of the scientific steering Committee of the International Ocean Carbon Coordination Project, IOCCP, leading the Time Series Station group.

A list of 5 recent, relevant publications of the participant(s) in the field of the project

A.J. Watson, U. Schuster, D.C. E. Bakker, N.R. Bates, A.Corbiere, M. Gonzalez-Davila, T.Friedrich, J. Hauck, C. Heinze, T. Johannessen, A. Kortzinger, N. Metzl, J.Olafsson, A.Olsen, A. Oschlies, X. A.Padin, B. Pfeil, J. M. Santana-Casiano, T.Steinhoff, M.Telszewski, A.F. Rios, D.W.R. Wallace, R.Wanninkhof. Tracking the variable North Atlantic sink for atmospheric CO2. Science 326 (5958), 1391-1393 (2009)

M. González-Dávila, J.M. Santana-Casiano, M.J. Rueda, and O. Llinás. Water column distribution of the carbonate system variables in the ESTOC site from 1995 to 2004. Biogeosciences, **7**, 3067-3081, (2010).

J. M. Santana-Casiano, M. González-Dávila. pH decrease and effects on the Chemistry of Seawater. Chapter 5 In: Oceans and the atmospheric carbon content. P. Duarte and J. M.

Santana-Casiano (eds). Springer. 95-114 (2011). DOI 101007/978-90481-9821-4-5.
M. González-Dávila, J. M. Santana-Casiano, R. A. Fine, J. Happell, B. Delille and S. Speich. Carbonate system buffering in the water masses of the Southwest Atlantic sector of the Southern Ocean during February-March 2008. Biogeosciences, 8, 1401-1413, (2011).
T. Friedrich, A. Timmermann, A. Abe-Ouchi, N. R. Bates, M. O. Chikamoto, M. J. Church, J. E. Dore, D. K. Gledhill, M. González-Dávila, M. Heinemann, T. Ilyina, J. H. Jungclaus, E. McLeod, A. Mouchet and J. M. Santana-Casiano. Detecting regional anthropogenic trends in ocean acidification against natural variability. Nature Climate Change. DOI: 10.1038/NCLIMATE1372. (2012).

PART 3: Detailed scientific description of the project

List the main objectives of the proposed research

1. Study the daily, monthly, seasonal and inter-annual pH variability in coastal waters.
2. Determination of the main controlling factors affecting the expected acidification.
3. Correlation with physical, chemical and biogeochemical factors controlling the coastal area.
4. Applicability of the pH sensor in coastal areas and for long deploys.
5. Reinforcement of the relations between institutions working in linked activities.

Give a brief description of the scientific background and rationale of your project

The ocean acidification is a major result of the approximately 80 million tons of carbon dioxide (CO_2) released into the atmosphere every day, as a result of fossil fuel burning and also due to deforestation and production of cement. Carbon dioxide in the atmosphere dissolves in the surface waters of the oceans and it generates important changes in sea water chemistry. CO_2 and water molecules form the weak carbonic acid H_2CO_3. This acid dissociates into hydrogen ions (H^+) and bicarbonate ions (HCO^{3-}). The increase in H^+ ions reduces the *pH* (measure of acidity) and consequently, the oceans acidify. Moreover, part of the CO_2 reacts with carbonate ions (CO_3^{2-}), decreasing its concentration. Numerous marine organisms such as corals, molluscs, crustaceans and sea urchins rely on carbonate ions to form their calcareous shells or skeletons. Today, the carbonate ions are abundant and surface waters are super saturated with respect to aragonite and calcite, the two forms of calcium carbonate in seawater. Acidification plus the decrease in carbonate ion concentration might be catastrophic for calcifying organisms, an important part of the marine food chain and ocean biodiversity.

CO2 uptake by the ocean, and thus ocean acidification, is strongly regional and seasonal variable (Watson et al., 2009). Coastal waters are badly sampled for carbon dioxide and only some CO_2 sensors have being recently deployed along USA coastal waters and North of Europe. One of our pH sensors which have a 0.001 pH unit reproducibility deployed in an important region as it is the east coastal Mediterranean seawater will be a great added value for a) the pH development system, b) the monitoring of ocean acidification in the Mediterranean Sea and c) for the JERICO project.

Present the proposed experimental method and working plan

The pH sensor developed by the QUIMA-ULPGC group can be deployed in any buoy with a power supply of 12-19 V and is able to transmit real time data of pH in total scale at in situ temperature, sea temperature and salinity to the central unit of the buoy. The data can be plotted and be public available as soon they are received and quality controlled (QC) by the QUIMA group

or any person who works in carbon dioxide chemistry. Most of the problems are more related to data transfer errors that to pH system reading. The QC is a process that takes not more than some minutes after data reception.

The proposed experimental method consist in fixing the pH sensor to the body of the buoy or to the mooring in the depth range from surface to 10 m, as we are interested at this moment in the variation of pH for surface waters, provide power and receive data. The resolution for the pH reading can be adjusted as indicated by the buoy provider (3 hours at this moment). The values of pH will be related to other parameters determined by sensors deployed together at the buoy as temperature, fluorescence reading as aN indicator of chlorophyll, pCO2 sensor and nutrient sensor.

Working Plan:

Month 1. Development of cables for power supply and communication. Telemetry adjustments in the buoy device in order to include the new sensor

Month 2. Installation of the sensor in the buoy, test of communications and deployment of the buoy. Calibration of sensors and equipments

Month 2-8. Data reception, QC of data, public release, inclusion in the data dissemination web page of the Institution.

Month 8. Recovery of the buoy and sensor, cleaning and testing.

Indicate the type of access applied for

O remote	*(the measuring system is implemented by the operator of the installation and the presence of the user group is not required)*
X partially remote	*(the presence of the user group is required at some stage e.g. installing and un-installing)*
O in person/hands on	*(the presence of the user group is required/recommended during the whole access period)*

Indicate the proposed time schedule including expected duration of access time The proposed project will start on July 2012 and will run until March 2013 covering the whole scale of the observed water temperature variability. The exact initiation and termination of the experiment will depend on the availability of the hosting buoy and the R/V that will be used for the deployment. Possible delays could also emerge from the preparatory phase (integration of the sensor on the hosting buoy) and the necessary lab testing.
The calibration experiments will take place at the HCMR calibration lab right after the deployment, requiring approximately 1 month.

Month 1. Telephonic, email and video-conference contacts among researcher groups to define and develop the cables for power supply and communication. Preparation of telemetry adjustments in the buoy device in order to include the new sensor.

Month 2. QUIMA group members at the HCMR for helping in installation of the sensor in the buoy, test of communications and deployment of the buoy. Expected time 7-10 days. Calibration experiments in order to check the accuracy and reliability of the sensors

Month 2-8. After a data is received at the HCRM from the buoy, it will be sent to QUIMA-ULPGC for QC. In the meantime, rough data will be public and after QC the final data will be included in the data dissemination web page of the HCRM. ULPGC will receive also the full data set provided

by the buoy. However, the owner of the full data set will be HCRM.

Month 8. QUIMA group members at the HCMR for helping in the recovery of the buoy and sensor, cleaning and testing. Expected time 7-10 days

Host infrastructure

Indicate the type(s) of JERICO host facility(s) you are interested in
(Tick more than one if it is useful for your project)

O ferrybox ● fixed platform O glider ● calibration laboratory

Indicate the specific JERICO host facility(ies) you wish to choose
HCMR Saronicos coastal buoy and HCMR calibration lab in Crete.

Explain briefly why you think your project will be best carried out at the specified host facility(ies)
The Hellenic Centre for Marine Research aims at the systematic and multidisciplinary study, understanding and monitoring of the physical, chemical, biological and geological processes which regulate all aspects of the marine environment and the ecosystems functioning, the ocean-atmosphere and ocean-solid earth interplay and the solid earth dynamics. It has the highest expertices on mooring in the West Mediterranean coastal areas both in mooring design and real time telemetry. The seawater conditions around Creta and Greece coastal areas are one of the most sensible environments with an important sea life very susceptible for ocean acidification and carbonate dissolution problems related to the carbon dioxide increase in seawater. The high seasonal sea temperature cycle together with the primary productive for the area make the West Mediterranean area one of the most sensible for pH records and future climate change. The possibility of this linked activity between HCRM and QUIMA-ULPGC, is of special interes for both institutions: the pH characterization of the area for the HCRM and the applicability of the sensor in different environments, for QUIMA-ULPGC.
The pH sensor developed by the QUIMA-ULPGC group has never been deployed and tested in the oligotrophic environment of the Eastern Mediterranean, while the presence of a pCO2 sensor recently acquired by HCMR will provide a very good opportunity to couple the sensors.
Furthermore, HCMR is carrying out routine in situ measurements of pCO2 and pH in the Aegean Sea that can be used as reference / background information for the proposed experiment.

If possible, list other JERICO facility(ies) where you think your experiment could alternatively be carried out
None

Additional information

Is there a facility similar to the one you wish to utilize in your country?
No at this moment

O Yes O No
If yes, please indicate your reasons for requesting access to the JERICO facility you have chosen
Have you already submitted an Access Proposal to any of the participating facilities under this or previous EU Programs? O Yes x No
If yes, please indicate the name of the institution, submission date and reference number for each such proposal
Is this a resubmission of a previously rejected proposal? *(Select "yes" if this application is a revised version of a proposal submitted to JERICO before that was rejected by the Selection Panel)* O Yes x No
If yes, please give the exact reference number and submission date. Kindly describe briefly the changes made in comparison to the rejected version.
Is this a continuation of an earlier project funded under a previous call for Transnational Access in JERICO at the same facility? O Yes x No
If yes, please give the exact reference number and submission date. Kindly indicate also what has been achieved in the previous experiment and the reasons why the objectives have not been fully met.

PART 4: Technical information

Wherever possible, please specify your requests regarding the use of your chosen facility's equipment/instruments/sensors, including any additional services, data or other requirements.

The QUIMA-ULPGC will need the Saronicos HCMR buoy with the pCO2 sensor installed as well as all the required cabling for a total of 8months.
Additionally the calibration lab will be used for one month after the deployment. For the experiments standard calibration facilities are required ie. Water baths, cables, PC's

List all material/equipment you plan to bring to the JERICO facility (if any):
1 pH sensor with internal temperature sensor included and an external microcats for temperature and salinity record.
1 Alkalinity system for calibration
1 box of empty bottles for sampling and measuring of Total inorganic carbon.

Please provide a detailed and realistic budget for the expenses you expect to incur for travel/boarding and the shipment of equipment, if applicable in your case *(note that a maximum of two travel grants will be assigned to each user group, depending on the length of the requested period of stay)*.
1. Travel to Crete to install the equipment, 2 people, including flight, hotel and subsistence: 2*700+10 days*100+2 people*10*75 = 3900 euros. 10 days to installs and calibrate the equipments
2. Travel de Crete to remove the equipments, 1 people, including flight, hotel and subsistence: 1500. 5 days to remove, recalibrate the equipments and work with data.
3. Shipping cost of 3 boxes with sensor and equipment for calibration plus glass bottle samples : 700 euros

Please tick the appropriate boxes and give detailed information for the kind of risks associated with your proposed activity

☐ Chemical :
☐ Biological :
☐ Radiological :
☐ Other :

Date of compilation February 16, 201[illegible]

Signature of the PI

Signature of the Vice-rector of Research and Innovation of ULPGC (D. Fernando Real Valcárcel)

This section reserved to the JERICO TNA Office

Date of proposal receipt by email

Date of proposal receipt by regular post

Assigned reference number

Signature of receiving officer

Assigned reference number:	**CALL_1_2**
Date of proposal receipt by email:	**09/03/2012**
P.I. Name and Surname:	**Giuseppe Zibordi**
Institution and Department:	**Institute for Environment and Sustainability** **Joint Research Centre Ispra**
Date of email answer by TNA office:	**12/03/2012**

JERICO

Application for Transnational Access

to Coastal Observatories

National Research Council of Italy

Description of the project (to be provided in pdf format)
Please contact the manager of the infrastructure/installation you wish to use before writing the proposal

PART 1: User group details

Indicate if the proposal is submitted by

X an individual
O a user group

Information about the applicants (PI and project partners)

Principal Investigator (user group leader)

Title Dr. Name and Surname Giuseppe Zibordi

Gender X Male O Female

Institution Joint Research Centre

Department / Research Group Institute for Environment and Sustainability

Address Via E. Fermi 1

21027 Ispra (VA)

Country Italy

email Giuseppe.zibordi@jrc.it

Telephone +39 0332 785902

Fax +39 0332 789034

PART 2: Additional information about the applicant(s) expertise

Expertise of the group in the domain of the application

The team submitting the proposal has consolidated experience in the collection, handling and exploitation of in situ data for the development and assessment of satellite ocean color products in European seas. This includes the application of marine bio-optical data in the generation of algorithms applicable to satellite primary radiometric products for the determination of the concentration and optical properties of seawater constituents relevant to climate studies and water quality monitoring (i.e., chlorophyll-*a* -a proxy for phytoplankton-, suspended sediment, colored dissolved organic matter).

Short CV of the PI

Giuseppe Zibordi received the *Laurea* in Physics from the University of Modena, Italy and the *Ph.D.* in Oceanography from the University of Southampton, United Kingdom.

He was a researcher at the Italian National Research Council in Modena from 1984 to 1992, where his work focused on quantitative remote sensing of coastal and polar regions. Since 1993 he is with the Joint Research Centre of the European Commission, Ispra (Italy), working on ocean color development and validation activities. His research interests include: remote sensing techniques for the determination of atmospheric and marine optical properties, protocols for *in situ* measurements, and methods for the absolute calibration of optical instruments. He is author (or co-author) of more than 70 papers in peer-review international journals.

A list of 5 recent, relevant publications of the participant(s) in the field of the project

1. G.Zibordi, J.-F.Berthon, F.Mélin, D. D'Alimonte and S.Kaitala. Validation of satellite ocean color primary products at optically complex coastal sites: northern Adriatic Sea, northern Baltic Proper and Gulf of Finland. *Remote Sensing of Environment*, 113, 2574-2591, 2009.
2. F.Mélin and G.Zibordi. Vicarious Calibration of Satellite Ocean Color Sensors at Coastal Sites. *Applied Optics*, 49, 798-810, 2010.
3. G.Zibordi, B.Holben, D.D'Alimonte, F.Mélin, J.-F. Berthon, I.Slutsker, D.Giles. AERONET-OC: An Overview. *Canadian Journal of Remote Sensing*, 36, 488–497, 2011.
4. G.Zibordi, J.-F. Berthon, F. Mélin and D. D'Alimonte. Cross-site consistent in situ measurements for satellite ocean color applications: the BiOMaP radiometric dataset. *Remote Sensing of Environment*,115, 2104–2115, 2011.
5. F.Mélin, G.Zibordi, J.-F.Berthon, S.Bailey, B.Franz, K.Voss, S.Flora and M.Grant. Assessment of MERIS Reflectance Data as Processed with SeaDAS over the European Seas. *Optics Express*, 19, 25657–25671, 2011.

PART 3: Detailed scientific description of the project

List the main objectives of the proposed research

The proposed activity is intended as the continuation of a measurement program named *Coastal Atmosphere and Time-Series (CoASTS)*, started in 1995 with the objective of creating a time series of comprehensive in situ measurements to support satellite ocean color multi-mission programs. Primary objective of the proposed activity is the comprehensive collection of seawater apparent (i.e., reflectance, diffuse attenuation coefficient, normalized water leaving radiance, Q-factor) and inherent (total sweater absorption, attenuation and scattering coefficients) optical properties, together with the contemporaneous collection of water samples for the determination of pigments concentration through High Performance Liquid Chromatography (i.e., chlorophyll a, chlorophyll b, chlorophyll c_1+c_2 ,chlorophyllide a, fucoxanthin, diadinoxanthin, beta-carotene, zeaxanthin, alloxanthin, 19'-butanoyloxyfucoxanthin, 19'-hexanoyloxyfucoxanthin and diatoxanthin), and additionally absorption coefficients of colored dissolved organic matter and particulate matter through spectro-photometric techniques.

Application frameworks of the collected in the situ time series are: i. the development of bio-optical algorithms applicable to primary satellite ocean color radiometric data for the generation of derived quantities of relevance for climate and environmental studies; and 2. the validation of derived satellite ocean color product (both primary and derived products).

Give a brief description of the scientific background and rationale of your project

The term satellite *ocean color* generically identifies remote sensing of the sea in the visible and near infrared to primarily determine the radiance emerging from the sea, the so called *water leaving radiance*, from the top-of-atmosphere radiometric signal. By exploiting the spectral distribution of of the water leaving radiance (or its derived product so called normalized-water leaving radiance) satellite ocean color allows for the determination of the concentration and optical properties of those seawater constituents absorbing and scattering light.

In situ measurements have a fundamental position in satellite ocean color activities. In fact, they are essential for the development and assessment of the bio-optical algorithms required for determining quantitative information on seawater optically significant constituents from satellite radiometric data. Additionally in situ truth measurements are also needed for the assessment of the accuracy of remote sensing products. It is pointed out that CoASTS already overlaps several satellite ocean color missions starting from SeaWiFS (launched by NASA in 1997 and operated since 2010) MODIS-terra and MODIS-Aqua (launched in 1999 and 2002 respectively) and MERIS (launched in 2002). As a consequence, in agreement with the accuracy requirements for the Global Earth Observation System of Systems (GEOSS), the CoASTS activities strengthen the capability to trace uncertainties in products from different remote sensing systems through time-series of highly consistent *in situ* data at a coastal site exhibiting a variety of water types.

It is finally reported that CoASTS has been funded through a variety of sources: Institutional Programs from the Joint Research Centre (1995-1997, 2011-2012), Shared Cost Actions through Marine Science and Technology (1998-2000), International Grants through the US National and Aeronautics Space Administration (2001-2002) and the European Space Agency (2003-2010).

Present the proposed experimental method and working plan

The measurement program is composed of two complementary parts. The first, CoASTS, comprises manned activities performed every two months for a few days and aims at producing comprehensive and accurate (SI traceable) measurements of seawater apparent and inherent optical properties in addition to concentration of major pigments. The second relies on an autonomous radiometer system performing continuous radiometric measurements for the determination of seawater apparent optical properties (i.e., normalized water leaving radiance) and atmospheric aerosol optical properties (i.e., aerosol optical thickness, single scattering albedo). This second component is considered complementary to the first and aims at producing data bridging information on seawater apparent optical properties between CoASTS campaigns.

The AAOT access through JERICO is presently asked for:

i. 70 days allowing for the continuous deployment of a JRC autonomous above water radiometer;

ii. 8 days (included in the period of 70 days of continuous deployment of the JRC radiometer) allowing for the execution of two successive manned campaigns of 4 days each to collect in situ measurements in agreement with CoASTS requirements (see part 3).

Indicate the type of access applied for

O remote	*(the measuring system is implemented by the operator of the installation and the presence of the user group is not required)*
X partially remote	*(the presence of the user group is required at some stage e.g. installing and un-installing)*
X in person/hands on	*(the presence of the user group is required/recommended during the whole access period)*

Indicate the proposed time schedule including expected duration of access time

The access to the AAOT should be granted during Spring 2013 for 70 days to allow for the deployment of the JRC autonomous radiometer system and carrying out manned measurements by three JRC scientists. The manned measurements will be performed during two periods of 4 days each indicatively at the beginning and end of the deployment period for the autonomous radiometer system.

Host infrastructure

Indicate the type(s) of JERICO host facility(s) you are interested in

(Tick more than one if it is useful for your project)

O ferrybox X fixed platform O glider O calibration laboratory

Indicate the specific JERICO host facility(ies) you wish to choose

Acqua Alta Oceanographic Tower

Explain briefly why you think your project will be best carried out at the specified host facility(ies)

By recalling that the proposed activity aims at assuring continuity to an ongoing collection of bio-optical data at the Acqua Alta Oceanographic Tower, it is highlighted that the site is located in a transition region that can be characterized by different seawater optical types including oligotrophic/mesotrophic conditions typical of the open sea regions, alternated to cases representative of complex coastal waters dominated by sediments and on a lesser extend by colored dissolved organic matter. These conditions are ideal for the generation of data sets applicable for bio-optical modelling in coastal regions and the validation of satellite ocean color products in optically complex waters.

If possible, list other JERICO facility(ies) where you think your experiment could alternatively be carried out

Additional information

Is there a facility similar to the one you wish to utilize in your country?

O Yes X No

If yes, please indicate your reasons for requesting access to the JERICO facility you have chosen

Have you already submitted an Access Proposal to any of the participating facilities under this or previous EU Programs?

X Yes No

If yes, please indicate the name of the institution, submission date and reference number for each such proposal

The Acqua Alta Oceanographic Tower was included in the “Coastal region long-term measurements for colour remote sensing development and validation (COLORS) project (ref. MAS-CT97-0087) funded by Marine Science and Technology, Strategic Marine Research, Coastal Engineering from 1998 to 2000.

Is this a resubmission of a previously rejected proposal? *(Select "yes" if this application is a revised version of a proposal submitted to JERICO before that was rejected by the Selection Panel)*

O Yes X No

If yes, please give the exact reference number and submission date. Kindly describe briefly the changes made in comparison to the rejected version.

Is this a continuation of an earlier project funded under a previous call for Transnational Access in JERICO at the same facility?

O Yes X No

If yes, please give the exact reference number and submission date. Kindly indicate also what has been achieved in the previous experiment and the reasons why the objectives have not been fully met.

PART 4: Technical information

Wherever possible, please specify your requests regarding the use of your chosen facility's equipment/instruments/sensors, including any additional services, data or other requirements.

The proposed activity requires access to the Acqua Alta Oceanographic Tower for the execution of the manned measurements (on average 4 days for two times in the period of 70 days in Spring 2013 during which the JRC autonomous radiometer will be delpoyed). Operations require transport from harbor to platform and back, with suitable boat. Onboard operations require availability of 220 AC volts for powering winches, data loggers and power supplies owned by the measurement team. Accessibility to meteorological data is appreciated.

List all material/equipment you plan to bring to the JERICO facility (if any):

- Multispectral microPRO profilers manufactured by Satlantic Inc. (Halifax, Canada) for the determination of seawater apparent optical properties (i.e., reflectance, diffuse attenuation coefficient, normalized water leaving radiance, Q-factor) in the 400-700 nm spectral region;

-Multispectral absorption/attenuation meter AC-9 manufactured by Wet Labs (Philomath, USA) for determining seawater absorption and attenuation coefficients in the 400-700 nm spectral region;

-Multispectral optical backscattering meter manufactured by HOBI Labs (Bellevue, USA) for determining seawater backscattering coefficient in the 400-700 nm spectral region;

Above-water multispectral CE-318 optical system manufactured by CIMEL (France, Paris) for determining seawater normalized water leaving radiance and aerosol optical thickness;

-Filtration system to condition water samples for successive laboratory analysis of: pigments concentration through High Performance Liquid Chromatography, absorption coefficients of colored dissolved organic matter and particulate matter through spectro-photometry.

Please provide a detailed and realistic budget for the expenses you expect to incur for travel/boarding and the shipment of equipment, if applicable in your case *(note that a maximum of two travel grants will be assigned to each user group, depending on the length of the requested period of stay).*

No funding is requested for travel or shipment.

Please tick the appropriate boxes and give detailed information for the kind of risks associated with your proposed activity

☐ Chemical :
☐ Biological :
☐ Radiological :
☐ Other :

No peculiar risk is envisaged.

Date of compilation 05/03/2012
Signature of the PI

Signature of Institute Director

Guido Schmuck
(Director of Institute for Environment and Sustainability)

This section reserved to the JERICO TNA Office

Date of proposal receipt by email _____

Assigned reference number _____

Signature of receiving officer _____

National Research Council of Italy · OGS · CNR · IOW PAN · hcmr · NIVA · Ifremer · Helmholtz-Zentrum Geesthacht · CSIC · National Oceanography Centre

Assigned reference number:	**CALL_1_3**
Date of proposal receipt by email:	**12/03/2012**
P.I. Name and Surname:	**Rajesh Nair**
Institution and Department:	**Department of Oceanography** **Istituto Nazionale di Oceanografia e di Geofisica Sperimentale**
Date of email answer by TNA office:	**12/03/2012**

JERICO

Application for Transnational Access to Coastal Observatories

National Research Council of Italy

Description of the project (to be provided in pdf format)
Please contact the manager of the infrastructure/installation you wish to use before writing the proposal

PART 1: User group details

Indicate if the proposal is submitted by

- O an individual
- ● a user group

Information about the applicants (PI and project partners)

Principal Investigator (user group leader)

Title Mr. Name and Surname Rajesh NAIR

Gender ● Male O Female

Institution OGS (Istituto Nazionale di Oceanografia e di Geofisica Sperimentale)

Department / ~~Research Group~~ Department of Oceanography

Address Borgo Grotta Gigante 42/C

34010 Sgonico(TS)

Country Italy

email rnair@ogs.trieste.it

Telephone +39 040 2140323

Fax +39 040 2140266

Project partners
(repeat for each partner of the group)

Partner # 1

Title Mr. Name and Surname Nevio MEDEOT

Gender ● Male O Female

Institution OGS (Istituto Nazionale di Oceanografia e di Geofisica Sperimentale)

Department / ~~Research Group~~ Department of Oceanography

Address Borgo Grotta Gigante 42/C

34010 Sgonico(TS)

Country Italy

email nmedeot@ogs.trieste.it

Partner # 2

Title Mr. Name and Surname Stefano KUCHLER

Gender ● Male O Female

Institution OGS (Istituto Nazionale di Oceanografia e di Geofisica Sperimentale)

Department / ~~Research Group~~ Department of Oceanography

Address Borgo Grotta Gigante 42/C

34010 Sgonico(TS)

Country Italy

email skuchler@ogs.trieste.it

Partner # 3

Title Mr. Name and Surname Paolo MANSUTTI

Gender ● Male O Female

Institution OGS (Istituto Nazionale di Oceanografia e di Geofisica Sperimentale)

Department / ~~Research Group~~ Department of Oceanography

Address Borgo Grotta Gigante 42/C

34010 Sgonico(TS)

Country Italy

email pmansutti@ogs.trieste.it

PART 2: Additional information about the applicant(s) expertise

Expertise of the group in the domain of the application

Calibration & control of marine instrumentation/sensors;
Testing & assessment of marine instrumentation/sensors;

Metrological R&D for marine measurements;
Marine data quality assurance (QA).

Short CV of the PI

Mr. Rajesh Nair has over 20 years of experience in oceanography and the marine sciences. He has a Bachelor of Science degree from Bangalore University (India), and is also qualified as an electrical engineering technician under the Italian national schooling system. Mr. Nair has worked in many areas of marine research, ranging from plankton studies and biogeochemical cycling to physical oceanography and environmental monitoring. He is presently on the staff of the Centro di Taratura Oceanografica (CTO), the oceanographic calibration facility of the OGS (Istituto Nazionale di Oceanografia e di Geofisica Sperimentale), which he helped set up in 2002. His current work and interests focus on marine observing technologies, including calibration, control and testing of instrumentation and the application of metrological principles to measurement quality assurance both in the laboratory and in the field. Mr. Nair is actively involved in a number of EU and Italian projects relating to the marine environment.

A list of 5 recent, relevant publications of the participant(s) in the field of the project

Medeot N., R. Nair and R. Gerin (2011). *Laboratory evaluation and control of Slocum Glider C-T sensors*. Journal of Atmospheric and Oceanic Technology, 28, 838-846.

Sparnocchia S., R. Nair, A. Russo and M. Ribera d'Alcalà (2010). *Capitolo 2. Temperatura, Salinità e Densità*. In: *Metodologie di studio del plancton marino*, Manuali e Linee Guide 56/2010, ISPRA - Istituto Superiore per la Protezione e la Ricerca Ambientale, Via Vitaliano Brancati, 48 00144 Roma, Italy, 626 pp.

Nair R., N. Medeot, F. Brunetti, P. Mansutti, A. Bubbi and S. Küchler (2010). *EuroSITES Activity Report. On seawater pCO2 and pH measurements with the PSI CO2-Pro & the Sunburst Sensors SAMI^2-pH*. Technical Report, Istituto Nazionale di Oceanografia e di Geofisica Sperimentale - OGS, REL. 2010/85 OGA 15 CTO, Borgo Grotta Gigante 42/C, 34010 Sgonico (TS), Italy, 30/09/2010.

Nair R. (2008). *CCQM-P111 Pilot Study: Traceable determination of Practical Salinity and mass fraction of major seawater components, Summary Measurement Report Form (Part a)*. CTO Technical Report, Istituto Nazionale di Oceanografia e di Geofisica Sperimentale - OGS, Borgo Grotta Gigante 42/C, 34010 Sgonico (TS), Italy, 04/07/2008.

R. Nair (2006). *A first estimate of the uncertainty associated with the measurement of ITS-90 temperature in the Centro di Taratura Oceanografica - A first estimate of the uncertainty associated with the measurement of seawater conductivity in the Centro di Taratura Oceanografica*. CTO Technical Report, Istituto Nazionale di Oceanografia e di Geofisica Sperimentale - OGS, Borgo Grotta Gigante 42/C, 34010 Sgonico (TS), Italy, 24/03/2006 (last revised in 2011).

PART 3: Detailed scientific description of the project

List the main objectives of the proposed research

(one page maximum)

Development of standard operating procedures (SOPs) for in-house calibrations of field sensors used for measuring chlorophyll a, turbidity and dissolved oxygen.

Give a brief description of the scientific background and rationale of your project

(one page maximum)

Chlorophyll a, turbidity and dissolved oxygen are rapidly becoming staple parameters in marine observing programmes. Their importance as state variables stems from the fact that, taken together, they can provide valuable information on the biological and ecological status in a monitored area, often more than sufficient if a rapid, first-order assessment of environmental quality is required. However, one of the main difficulties in dealing with these parameters is the lack of consensus regarding the validity of measurements owing to the dearth of adequate reference material and reproducible calibration methodologies for sensors. The problem is more acute in the case of chlorophyll a and turbidity where sensor calibrations are usually attempted using cell cultures of plankton species as proxy reference material. The drawback is evident in that such cultures, by their very nature, tend to be highly mutable and hence intrinsically unsuitable to the task in question. Dissolved oxygen is somewhat less troublesome because sensors are usually calibrated by comparing and adjusting their responses to values obtained from analyses of collected water samples using the Winkler method which is well-known and widely accepted. However, issues like the efficiency of the Winkler method with seawater samples, etc. still remain, and are cause for concern. The multiplicity of calibration methodologies in use only adds to the dilemma, and constitutes a further source of discordance. Thus, there is a real need for developing standard operating procedures for the calibration of sensors utilized for chlorophyll a, turbidity and dissolved oxygen. Such procedures can provide transparent terms of reference for effective performance evaluations and offer a working framework for accelerating procedural consolidation and harmonization, an essential step towards ensuring overall data quality for these demanding parameters.

Present the proposed experimental method and working plan

(one page maximum)

The declared objective of developing standard operating procedures (SOPs) for in-house calibrations of field sensors used for measuring chlorophyll a, turbidity and dissolved oxygen will be achieved through three actions:

- familiarization;
- instruction;
- dialectic.

Familiarization

This action will serve to obtain an overview of the technical infrastructure needed for calibrating the mentioned sensors; details of equipment, techniques and methodologies employed at the hosting facility will be gathered and collated for future reference.

Instruction

This action will serve to acquire the practical skills necessary to perform the actual sensor calibrations; it will take the form of "hands-on" exercises covering all the phases involved in a typical calibration operation for each of the different parameters in collaboration with personnel from the hosting facility using relevant sensors at their disposal.

Dialectic

This action will serve to analyse and condense the information and experience gained via the preceding actions; theory, practice and technology will be examined critically and discussed, and a blueprint for drawing up operating procedures for calibrating field chlorophyll a, turbidity and dissolved oxygen sensors will be elaborated.

The above actions will be implemented during a period of stay of one week at the hosting laboratory by two members of the user group.

Indicate the type of access applied for

O remote	*(the measuring system is implemented by the operator of the installation and the presence of the user group is not required)*
O partially remote	*(the presence of the user group is required at some stage e.g. installing and un-installing)*
● in person/hands on	*(the presence of the user group is required/recommended during the whole access period)*

Indicate the proposed time schedule including expected duration of access time
(half a page maximum)

One week, sometime between June 2012 and March 2013.

Host infrastructure

Indicate the type(s) of JERICO host facility(s) you are interested in
(Tick more than one if it is useful for your project)

O ferrybox O fixed platform O glider ● calibration laboratory

Indicate the specific JERICO host facility(ies) you wish to choose

POSEIDON CAL

Explain briefly why you think your project will be best carried out at the specified host facility(ies)

The POSEIDON CAL facility is the structure responsible for all the calibration activity involved in running the highly-successful POSEIDON network, Greece's leading multi-platform marine observing infrastructure that has been operational since 1997. The facility has longstanding experience with the calibration of chlorophyll a, turbidity and dissolved oxygen sensors, trained personnel, and the necessary expertise backed by many years of study and experimentation. This makes it an ideal facility to access for our project of developing standard operating procedures (SOPs) for carrying out in-house calibrations of field sensors for these parameters.

If possible, list other JERICO facility(ies) where you think your experiment could alternatively be carried out

Additional information

Is there a facility similar to the one you wish to utilize in your country?

O Yes ● No

If yes, please indicate your reasons for requesting access to the JERICO facility you have chosen

Have you already submitted an Access Proposal to any of the participating facilities under this or previous EU Programs?

O Yes ● No

If yes, please indicate the name of the institution, submission date and reference number for each such proposal

Is this a resubmission of a previously rejected proposal? *(Select "yes" if this application is a revised version of a proposal submitted to JERICO before that was rejected by the Selection Panel)*

O Yes ● No

If yes, please give the exact reference number and submission date. Kindly describe briefly the changes made in comparison to the rejected version.

Is this a continuation of an earlier project funded under a previous call for Transnational Access in JERICO at the same facility?

O Yes ● No

If yes, please give the exact reference number and submission date. Kindly indicate also what has been achieved in the previous experiment and the reasons why the objectives have not been fully met.

PART 4: Technical information

Wherever possible, please specify your requests regarding the use of your chosen facility's equipment/instruments/sensors, including any additional services, data or other requirements.

The proposed activity envisages the use of the following elements belonging to the hosting facility:

- one chlorophyll a sensor and all the apparatus, consumables and personnel necessary for its calibration;
- one turbidity sensor and all the apparatus, consumables and personnel necessary for its calibration;
- one dissolved oxygen sensor and all the apparatus, consumables and personnel necessary for its calibration;
- the calibration data analysis and reporting infrastructure, including personnel, for processing the data from the access-related calibrations.

List all material/equipment you plan to bring to the JERICO facility (if any):

Please provide a detailed and realistic budget for the expenses you expect to incur for travel/boarding and the shipment of equipment, if applicable in your case *(note that a maximum of two travel grants will be assigned to each user group, depending on the length of the requested period of stay).*

Travel per person: **€ 600**.

Daily subsistence costs per person:
€ 100 (boarding)
€ 80 (meals)
€ 180 (Total)

Subsistence costs per person for one week (5 working days):
€ 600 (boarding)
€ 480 (meals)
€ 1080 (Total)

Total expenses per person for one week: € 1680.

Total expenses for two persons for one week: € 3360.

Please tick the appropriate boxes and give detailed information for the kind of risks associated with your proposed activity

☐ Chemical :
☐ Biological :
☐ Radiological :
☐ Other :

Date of compilation 12/03/2012

Signature of the PI

Signature of an appropriate authorised person
(e.g. Head of Department, Research Office)

(Dr. Alessandro Crise, Director)

This section reserved to the JERICO TNA Office

Date of proposal receipt by email

Assigned reference number

Signature of receiving officer

National Research Council of Italy

Assigned reference number: CALL_1_4
Date of proposal receipt by email: 20/03/2012
P.I. Name and Surname: Kevin Jones
Institution and Department: Lancaster University Chemicals Management
Lancaster EnvironmentCentre
Date of email answer by TNA office: 20/03/2012

JERICO

Application for Transnational Access

to Coastal Observatories

National Research Council of Italy

Description of the project (to be provided in pdf format)
Please contact the manager of the infrastructure/installation you wish to use before writing the proposal

PART 1: User group details

Indicate if the proposal is submitted by

O an individual
× a user group

Information about the applicants (PI and project partners)

Principal Investigator (user group leader)

Title Prof Name and Surname Kevin C Jones

Gender × Male O Female

Institution Lancaster University, UK

Department / Research Group Chemicals Management

Address Lancaster Environment Centre

Lancaster University LA1 4YQ

Country UK

email k.c.jones@lancaster.ac.uk

Telephone +44 1524 510230

Fax +44 1524 593300

Project partners
(repeat for each partner of the group)

Partner # 1

Title Dr Name and Surname Luca Nizzetto

Gender × Male O Female

Institution Norwegian Institute for Water Research

Department / Research Group

Address Gaustadalléen. 21

NO-0349 Oslo
Country Norway
email luca.nizzetto@niva.no

PART 2: Additional information about the applicant(s) expertise

Expertise of the group in the domain of the application

Environmental chemistry
Design, testing and applications of novel passive sampling tools

Short CV of the PI

Lancaster team is Jones (PI), Dr Hao Zhang (inventor of DGT for inorganic applications, Reader in Environmental chemistry – Lancaster) and Chang'er Chen – jointly supervised PhD student – who we envisage as conducting the trials.

Jones short CV

Director and Distinguished Professor, Lancaster Environment Centre
One of the world's most cited researchers in Environment/Ecology
Senior Visiting Scientist Professor, Chinese Academy of Sciences, 2010 - .
Elected member of the Norwegian Academy of Science and Letters, 2007 - .
Nominated for the BBVA Foundation Frontiers of Knowledge Award 2010, 2011.
Associate Editor for *Environmental Pollution*; Editorial Boards of *Journal of Environmental Monitoring* and *Environmental Development*; Previously Editorial Advisory Board of *Environmental Science and Technology*. Advisor to: United Nations Environment Programme; the European Union; the Department of Environment, Food and Rural Affairs; the Royal Commission on Environmental Pollution; Chinese Academy of Sciences. Co-founder - the REACH Centre Ltd.

RESEARCH INTERESTS

Environmental behaviour and effects of organic contaminants, particularly:

- Inter-media transfers and global cycling of persistent organic pollutants (POPs);
- Fate and behaviour of organics, in the atmosphere, terrestrial and marine environments;
- Trends in environmental POPs contamination and the implications for sources;
- Food chain transfers of and human exposure to organic chemicals;
- Development of novel sampling and analytical techniques, chemical fate modelling tools

Improved chemicals management

A list of 5 recent, relevant publications of the participant(s) in the field of the project

1. Nizzetto, L., Lohmann, R., Gioia, R., Dachs, J. and Jones, K. C. (2010). Atlantic Ocean surface waters buffer declining atmospheric concentrations of persistent organic pollutants. Environ. Sci. Technol. 44, 6978-6984.
2. Gioia, R., Dachs, J., Nizzetto, L., Berrojalbiz, N., Galban, C., Del Vento, S., Mejanelle, L. and Jones, K. C. (2011). Sources, Transport and Fate of Organic Pollutants in the Oceanic Environment. Chapter 8 in "Persistent Pollution-Past, Present and Future". School of Environmental Research - Organized by Helmholtz-Zentrum Geesthacht Quante, Markus; Ebinghaus, Ralf; Flöser, Götz (Eds.) 1st Edition, 2011. Springer.
3. Breivik, K., Gioia, R, Chakraborty, P., Zhang, G. and Jones, K. C. (2011). Are reductions in industrial organic contaminants emissions in rich countries achieved partly by export of toxic wastes? Environ. Sci. Technol. 45, 9154-9160.
4. Li, J., Li, Q., Gioia, R., Zhang, Y., Zhang, G., Li, X., Spiro, B., Bhatia, R. S. and Jones, K. C. (2011). PBDEs in the atmosphere over the Asian marginal seas, and the Indian and Atlantic oceans. Atmos. Environ. 45, 6622-6628.
5. Paul, A. G., Scheringer, M., Hungerbuhler, K., Jones, K. C. and Sweetman, A. J. (2012). Estimating the aquatic emissions and fate of PFOS into the River Rhine. J. Environ. Mon. 14: 524-530.

PART 3: Detailed scientific description of the project

List the main objectives of the proposed research (one page maximum)

The main objective of this project is to test and deploy a novel passive water sampler, in conjunction with a novel design of sampler unit to be deployed aboard ferries. NIVA colleague Dr Luca Nizzetto has invented the novel "Chem-Mariner" automatic sampler unit for passive sampling of marine water from ferries. The Chem-mariner unit represents a new prototype component which is under test on one of the ferry already equipped with the NIVA ferry box platform. In particular, information and forecasting system of Chem-mariner is fully integrated with the existing ferry-box unit. The Chem Mariner allows deployment of passive samplers in "flow-through" chambers, in which a controlled flow of seawater is maintained during the sampler exposure. In addition the Chem-mariner allows unassisted activation-suspension of sampling and preservation of the samples.. We have invented a variant of the Diffusive Gel Thin Film (DGT) sampler, for organic contaminants. We have 2 manuscripts – one on lab trials for application to antibiotics, the other on a field deployment when used statically at a waste water treatment plant an in river surface waters. The novel modified DGT sampler, is a novel tool able to solve the problem of passive time integrative sampling for polar organic contaminants. Testing it for new type of application is therefore very timely. In particular this device deployed on coastal monitoring platforms (such as those included in the Jerico project), can represent an ideal tools to fulfil the requirement of the EU marine framework strategy, which basically extend the Environmental Quality Standards specified by the Water framework Strategy

There are exciting applications of the sampler in the new flow-through water sampler. We therefore want to:

1. Validate the sampler for applications in seawater;

2. Test the configuration of the sampler in the flow through sampler;
3. Deploy it in a pilot study aboard NIVA "Color fantasy" ferry.;
4. Evaluate the results and – if appropriate – prepare joint publication:
5. Consider joint bid for further funding and wider applications.

Chen, C., Zhang, H. and Jones, K. C. A novel passive water sampler for *in situ* sampling of antibiotics. J. Environ. Monitoring. In revision.
Chang-Er Chen, Lijun Zhou, You-Sheng Liu, Hao Zhang, Guang-Guo Ying, Kevin C. Jones
Field Testing of a Novel Passive Water Sampler: Application to Antibiotics in a Waste Water Treatment Plant and Surface Waters. (In preparation for submission to Environ. Sci. Technol.)

Give a brief description of the scientific background and rationale of your project

(one page maximum)

The European Union has recently launched the Marine Strategy Framework Directive (MSFD, 2008/56/EC).The directive foresees Environmental Quality Standards (EQS) for a range of chemicals, with particular focus on organic contaminants. Signatory countries are thus required by law, to gain adequate infrastructures and tools to perform monitoring to demonstrate fulfilment of the standards, within the next five years. Measurements of organic micropollutants in marine surface waters are challenging and expensive. They require collection and treatment of large volumes of water under "clean" conditions, by qualified personnel, utilising a dedicated sampling campaign and a considerable amount of ship time. Contaminant concentrations fluctuate and are close to or below limits of detection of current techniques. Passive sampling has received much attention in recent years as a technique that may help meet such challenges.

Passive water sampling has several advantages over active methods; it provides time-integrated data, can save on time and cost compared to active methods, and yield high spatial resolution data through co-deployment of simple, cheap units. However, one problem with many sampler designs in current use is that their uptake rates for trace substances of interest are flow-rate dependent, thereby requiring calibration data and other information to enable water concentrations to be derived from the mass per sampler. However, the 'family' of samplers employing the principle of diffusive gradients in thin films (DGT) provides an *in situ* means of quantitatively measuring labile species in aquatic systems without field calibration. So far, this technique has only been tested and applied in inorganic substances – metals, radionuclides, nutrients etc. Design and applications of DGT to trace organic contaminants ('oDGT') would be of widespread interest.

Present the proposed experimental method and working plan

(one page maximum)

1. Conduct o-DGT tests in seawater for a range of antibiotics using one fixed coastal platform;
2. Conduct pre-trials on sampler configurations and deployment requirements
3. Select appropriate sampler use conditions and ferry deployments
4. Deploy o-DGT in the ferry box for different time intervals, to perform uptake trials, alongside conventional sampling approaches.
5. Obtain antibiotic data (and other analytes agreed in conjunction with NIVA colleagues)

Indicate the type of access applied for

O remote	*(the measuring system is implemented by the operator of the installation and the presence of the user group is not required)*
× partially remote	*(the presence of the user group is required at some stage e.g. installing and un-installing)*
O in person/hands on	*(the presence of the user group is required/recommended during the whole access period)*

Indicate the proposed time schedule including expected duration of access time
(half a page maximum)

1. Arrive to the field to check and prepare material/equipments needed (2-3 days).
2. Install a set of the oDGT, after 7 days, 10 days, 15 days and 20 days (20 days)
3. Retrieve a set of the oDGTs on the 7th, 10th, 15th and 20th days, respectively.
4. extract in the lab (2-3 days)

Host infrastructure

Indicate the type(s) of JERICO host facility(s) you are interested in
(Tick more than one if it is useful for your project)

× ferrybox x fixed platform

Indicate the specific JERICO host facility(ies) you wish to choose

Ferrybox – Color line ferry (Oslo-Kiel)
Fixed platform - COSYNA pile 2

Explain briefly why you think your project will be best carried out at the specified host facility(ies)
Currently the Chem mariner unit integrating the Ferry Box system on board the Colour Fantasy is the only existing system which allows unassisted deployment, sampling and storage of passive samplers in mobile platforms.
Access to the fixed platform COSYNA pile 2 will allow assessing the new DGT sampler for marine waters in stationary conditions

If possible, list other JERICO facility(ies) where you think your experiment could alternatively be carried out
Additional information
Is there a facility similar to the one you wish to utilize in your country?   O Yes × No
If yes, please indicate your reasons for requesting access to the JERICO facility you have chosen
Have you already submitted an Access Proposal to any of the participating facilities under this or previous EU Programs?   O Yes × No
If yes, please indicate the name of the institution, submission date and reference number for each such proposal
Is this a resubmission of a previously rejected proposal? *(Select "yes" if this application is a revised version of a proposal submitted to JERICO before that was rejected by the Selection Panel)*   O Yes × No
If yes, please give the exact reference number and submission date. Kindly describe briefly the changes made in comparison to the rejected version.
Is this a continuation of an earlier project funded under a previous call for Transnational Access in JERICO at the same facility?   O Yes × No
If yes, please give the exact reference number and submission date. Kindly indicate also what has been achieved in the previous experiment and the reasons why the objectives have not been fully met.

PART 4: Technical information

Wherever possible, please specify your requests regarding the use of your chosen facility's equipment/instruments/sensors, including any additional services, data or other requirements.

Data: water temperature, pH, Ionic strength, etc., parameters already monitored by the existing ferry box units and fixed platforms.

List all material/equipment you plan to bring to the JERICO facility (if any):

oDGT devices, tweezers, ..

Please provide a detailed and realistic budget for the expenses you expect to incur for travel/boarding and the shipment of equipment, if applicable in your case *(note that a maximum of two travel grants will be assigned to each user group, depending on the length of the requested period of stay).*

Travelling (flight, train/taxi): 800Euros
Boarding and subsistence during the access period: 2500Euros/30 days

Please tick the appropriate boxes and give detailed information for the kind of risks associated with your proposed activity

☐ Chemical :
☐ Biological :
☐ Radiological :
☐ Other :

Date of compilation 14 MARCH 2012

Signature of the PI K C Jones

Signature of an appropriate authorised person
(e.g. Head of Department, Research Office) Joel Pearl

This section reserved to the JERICO TNA Office

Date of proposal receipt by email

Assigned reference number

Signature of receiving officer

National Research Council of Italy OGS CTS IOW PAN hcmr NIVA

Ifremer Helmholtz-Zentrum Geesthacht CSIC National Oceanography Centre

Assigned reference number:	**CALL_1_5**
Date of proposal receipt by email:	**23/03/2012**
P.I. Name and Surname:	**George Petihakis**
Institution and Department:	**Institute of Oceanography, Crete**
Date of email answer by TNA office:	**23/03/2012**

JERICO

Application for Transnational Access

to Coastal Observatories

National Research Council of Italy
OGS
cnrs
IBW PAN
hcmr
NIVA
Norwegian Institute for Water Research
Ifremer
Helmholtz-Zentrum Geesthacht
Zentrum für Material- und Küstenforschung
CSIC
National Oceanography Centre

Description of the project (to be provided in pdf format)
Please contact the manager of the infrastructure/installation you wish to use before writing the proposal

PART 1: User group details

Indicate if the proposal is submitted by

O an individual
X a user group

Information about the applicants (PI and project partners)

Principal Investigator (user group leader)

Title _Mr__ Name and Surname George Petihakis

Gender **X** Male O Female

Institution _____HCMR_____

Department / Research Group ___Institute of Oceanography_____

Address HCMR, Crete P.O. Box 2214 71003 Iraklion Crete, Greece

Country Greece _____

email gpetihakis@hcmr.gr _____

Telephone +302810337755 _____

Fax +302810337822 _____

Project partners
(repeat for each partner of the group)

Partner # 1

Title _Mr__ Name and Surname Athanasios Chondronasios

Gender **X** Male O Female

Institution _____HCMR_____

Department / Research Group ___Institute of Oceanography_____

Address 46,7 km Athens Sounio ave. P.O. Box 712, P.C. 19013 Anavyssos, Attiki, Greece

Country Greece _____

email chondronasios@ath.hcmr.gr

Partner # 2

Title _Mr__ Name and Surname Manolis Ntoumas

Gender **X** Male O Female

Institution _____HCMR_____

Department / Research Group ___Institute of Oceanography_____

Address HCMR, Crete P.O. Box 2214, 71003 Iraklion Crete, Greece

Country Greece _____

email mntou@hcmr.gr _____

PART 2: Additional information about the applicant(s) expertise

Expertise of the group in the domain of the application

The HCMR team applying for the TNA is actively involved in:

- *Validation and calibration of oceanographic instrumentation.*
- *Field deployment of marine observing systems.*
- *Marine data quality assurance and process.*

Short CV of the PI

George Petihakis, *has a Ph.D in Marine Ecosystem Modelling (2004), an M.Sc in Applied Fish Biology (1990) and a B.Sc in Ecology (1989). He is an elected associate researcher of HCMR/Institute of Oceanography with 16 years of experience in marine science with particular emphasis on marine ecological modelling, operational monitoring, and data analysis. He has contributed to the development of the POSEIDON-M3A marine observing station in East Mediterranean and he is responsible for its operation and maintenance. As ecosystem modeller he has extensively used collected and processed data for the tuning and validation of ecosystem models for Cretan and Aegean Seas, East Mediterranean and Mediterranean Basins. Furthermore he has developed a decision making management tool for aquacultures which provides valuable information on key parameters such as the location and size of the farm through a holistic environmental impact approach. He has been involved as coordinator, principal investigator or researcher, in 31 EU and national programs some of which are RECITE, EUROFORM, MATER-MAST II, THETIS, MFSPP, COST-IMPACT, MFSTEP, MEDEX, MedEcos, INSEA, INTERREG III-A, POSEIDON I&II, EuroSITES, MEECE. He has 28 published papers in peer reviewed journals, 14*

publications in books and scientific series, 64 publications in conference proceedings. During the period 2003 – 2008 he was Associate lecturer at the Technological Educational Institute of Crete (TEI), School of food technology and dietetics, Department of human nutrition and dietetics. He has been evaluator of research projects in National (GRST) and European (FP7) programs, referee in 9 scientific journals in the area of physical chemical and biological oceanography and an active member in 5 scientific organizations.

A list of 5 recent, relevant publications of the participant(s) in the field of the project

*Pollani A., Triantafyllou G., **Petihakis G**., Nittis K, Dounas C. and C. Koutitas, 2001: The POSEIDON operational tool for the prediction of floating pollutant transport. Marine Pollution Bulletin, Vol.43(7-12), pp 270-278.*

*Nittis K., Tziavos C., Thanos I., Drakopoulos P., Cardin, V., Gacic M., **Petihakis G**. and R. Basana, 2003. The Mediterranean Moored Multi-sensor Array (M3A): System Development and Initial Results. Annales Geophysicae, Vol.21, pp 75-87.*

*Triantafyllou G., **Petihakis G**. and J.I Allen, 2003: Assessing the performance of the Cretan Sea ecosystem model with the use of high frequency M3A buoy data set. Annales Geophysicae, Vol.21, pp 365-375.*

***Petihakis G.**, Drakopoulos, P., Nittis, C., Zervakis, V., Christodoulou, C. and C. Tziavos, 2006: M3A system (2000 – 2005) – operation and maintenance. Ocean Science, 3, 117–128.*

*Nittis K., Tziavos C., Bozzano R., Cardin V., Thanos Y., **Petihakis G.**, Schiano M.E., and F. Zanon, 2007: The M3A multi-sensor buoy network of the Mediterranean Sea. Ocean Science, 3, 229-243.*

PART 3: Detailed scientific description of the project

List the main objectives of the proposed research

1. *Study the procedures and technics used for the calibration of temperature oceanographic sensors using PRTs, Triple Point of Water cells and Melting Point of Gallium.*

2. *Get familiar with the use of scientific precision equipment.*

3. *Calibrate the HCMR standard temperature sensor.*

Give a brief description of the scientific background and rationale of your project

The calibration of oceanographic sensors is a very sensitive and important process often associated with heavy costs for the operators (shipping sensors to the manufacturer). In the past several oceanographic centers in EU have invested significant resources towards the development of individual calibration labs with the ability to handle a number of parameters and sensor types. However the different needs and demands have contributed in a quite large diversification and specialisation.

During the last decade, many organizations worldwide have developed services in the field of Operational Oceanography in the framework of national and international projects. Following this trend, HCMR set up the integrated project POSEIDON, a real time monitoring and forecasting system for the marine environmental conditions in the Aegean Sea. The integrated monitoring network of the system consists of 11 Seawatch oceanographic buoys, equipped with several sensors deployed at multi depths, and 9 Smart wave buoys with the ability of on-line transmittance to the operational centre of the HCMR every 3 h through Inmarsat-C satellite or a GSM mobile telephone communication system. Its enhanced forecasting system consists of an atmospheric model, an offshore wave model, a general circulation ocean model, a surface pollutant dispersion model and a shallow water wave model. To cover the demands of the system and assure the quality of the transmitted data HCMR established an in-house calibration laboratory for the evaluation and calibration of the oceanographic sensors and instruments used both in POSEIDON system and field surveys.

For temperature sensors there are two distinct levels in terms of calibration and standardisation. Calibration labs use a standard platinum thermometer to calibrate the sensors used in the field (second level) and every year or on well defined intervals of time or usage this reference sensor is standardised either by the manufacturer or by a certified facility using triple point method (first level).

HCMR calibration lab focuses only on the second level of calibration. Thus it uses a standard platinum thermometer manufactured by Seabird Electronics and a large temperature control bath. Due to the importance of the temperature measurements as a basic environmental parameter, the accuracy of the reference thermometer is a key factor for the overall performance of the calibration procedure not only for temperature but also for the majority of the field-measured parameters. Future plans are to integrate the whole

calibration procedure by setting up also the first level of calibration and become a certified metronomy laboratory.

*Some of JERICO partners operating calibration labs have developed both levels of calibration for temperature with a significant experience on the processes. In particular OGS uses TPW (*Triple Point of Water; 0.01 ℃) *and MPGa* (Melting Point of Gallium; 27.7646 ℃) *with high precision equipment while their acquired knowledge in the uncertainty estimation is pioneering within the network.*

The aim of this proposal is to have access on the first level calibration equipment in OGS and acquire the necessary knowledge, which will help us develop a similar facility in the future at HCMR.

Present the proposed experimental method and working plan

Although temperature sensor calibration is performed in the majority of the research centres in EU the OGS calibration lab is equipped with all the necessary precision equipment for performing the procedures following the international metrological standards and practises. The working plan will follow the steps keeping in mind that apart from the sensor calibration we aim to familiarization with the infrastructures and the equipment used in OGS:

Introduction: The HCMR team will be informed about the procedures, the equipment and the preparation actions needed to perform the temperature calibration experiment. Furthermore there will be a detailed discussion about the approaches and the practices that OGS and HCMR use to calibrate temperature sensors.

Experiment: The actual experiment will be performed with discrete and detailed steps in order to be well documented as a procedure. During the experiment several tests using different settings for the equipment under calibration will be done, aiming to detect the most effective one in terms of instrument configuration.

Data analysis: The data collected from the calibration experiment will be analysed using different techniques and approaches in order to minimize the sensor drift in the whole measurement range.

Conclusions: Both teams will contribute with conclusions and suggestions for improving the procedure. The overall goal is to be able to improve the SOPs used in HCMR for temperature calibration and to get familiar with precision equipment that may be installed in the future.

Indicate the type of access applied for

O remote	*(the measuring system is implemented by the operator of the installation and the presence of the user group is not required)*
O partially remote	*(the presence of the user group is required at some stage e.g. installing and un-installing)*
X in person/hands on	*(the presence of the user group is required/recommended during the whole access period)*

Indicate the proposed time schedule including expected duration of access time

*Five days (*one complete week of TNA access)*, between the June and December 2012.*

Host infrastructure

Indicate the type(s) of JERICO host facility(s) you are interested in
(Tick more than one if it is useful for your project)

O ferrybox O fixed platform O glider **X** calibration laboratory

Indicate the specific JERICO host facility(ies) you wish to choose

Centro di Taratura Oceanografica (CTO) of the Istituto Nazionale di Oceanografia e di Geofisica Sperimentale – OGS located in Trieste.

Explain briefly why you think your project will be best carried out at the specified host facility(ies)

As shown clearly from the JERICOs WP4 questionnaires, concerning the calibration facilities of the network, the OGS personnel and laboratory is one of the most experienced and equipped for temperature sensor calibration following the international standards.

If possible, list other JERICO facility(ies) where you think your experiment could alternatively be carried out

Additional information

Is there a facility similar to the one you wish to utilize in your country?

X Yes O No

If yes, please indicate your reasons for requesting access to the JERICO facility you have chosen

Although the HCMR already performs temperature calibration experiments we use a very different approach in both the procedure and the equipment used. We aim through the experiment not only to calibrate our sensors but to exchange practises and experiences that would contribute in the improvement of our services. Furthermore the HCMR technicians involved would have the opportunity to get familiar with precision scientific equipment that we may purchase in the future.

Have you already submitted an Access Proposal to any of the participating facilities under this or previous EU Programs?

O Yes **X** No

If yes, please indicate the name of the institution, submission date and reference number for each such proposal

Is this a resubmission of a previously rejected proposal? *(Select "yes" if this application is a revised version of a proposal submitted to JERICO before that was rejected by the Selection Panel)*

O Yes **X** No

If yes, please give the exact reference number and submission date. Kindly describe briefly the changes made in comparison to the rejected version.

Is this a continuation of an earlier project funded under a previous call for Transnational Access in JERICO at the same facility?

O Yes **X** No

If yes, please give the exact reference number and submission date. Kindly indicate also what has been achieved in the previous experiment and the reasons why the objectives have not been fully met.

PART 4: Technical information

Wherever possible, please specify your requests regarding the use of your chosen facility's equipment/instruments/sensors, including any additional services, data or other requirements.

The HCMR team will need the calibration facility and all the appropriate equipment in order to perform a validation experiment and a calibration procedure if it is necessary, for the reference temperature sensor of the HCMR.

List all material/equipment you plan to bring to the JERICO facility (if any):

2 Deep Ocean Standards Thermometer SBE 35 by Sea-Bird Electronics, Inc.

Please provide a detailed and realistic budget for the expenses you expect to incur for travel/boarding and the shipment of equipment, if applicable in your case *(note that a maximum of two travel grants will be assigned to each user group, depending on the length of the requested period of stay).*

1. Travel to Trieste to perform the experiment, 2 persons, including flight, hotel and subsistence:
*350 (Tickets)+ 5 days*120 (Hotel) +6 days*75 (Subsistence) = 1.400 euros per person (2.800 for 2 person).*

2. Shipping cost of 1 box with sensor and equipment for the experiment: 400 euros

Total: 3.200 *euros*

Please tick the appropriate boxes and give detailed information for the kind of risks associated with your proposed activity

☐ Chemical :
☐ Biological :
☐ Radiological :
☐ Other :

Date of compilation 20/03/2012

Signature of the PI 

Signature of an appropriate authorised person
(e.g. Head of Department, Research Office) 

This section reserved to the JERICO TNA Office

Date of proposal receipt by email _____

Assigned reference number _____

Signature of receiving officer _____

National Research Council of Italy

Ifremer

Helmholtz-Zentrum Geesthacht
Zentrum für Material- und Küstenforschung

CSIC

National Oceanography Centre

Assigned reference number:	**CALL_1_6**
Date of proposal receipt by email:	**28/03/2012**
P.I. Name and Surname:	**Emilio Cano Diaz**
Institution and Department:	**Consejo Superior de Investigaciones Científicas** **Centro Nacional de Investigaciones Metalúrgicas (CENIM-CSIC)**
Date of email answer by TNA office:	**28/03/2012**

JERICO

Application for Transnational Access

to Coastal Observatories

Description of the project (to be provided in pdf format)
Please contact the manager of the infrastructure/installation you wish to use before writing the proposal

PART 1: User group details

Indicate if the proposal is submitted by

O an individual
X a user group

Information about the applicants (PI and project partners)

Principal Investigator (user group leader)

Title Dr. Name and Surname Emilio Cano Diaz

Gender X Male O Female

Institution Consejo Superior de Investigaciones Científicas Centro Nacional de Investigaciones Metalúrgicas (CENIM-CSIC)

Department / Research Group Departamento de Ingeniería de Superficies, Corrosión y Durabilidad

Address Avda. Gregorio del Amo 8
28040 Madrid

Country Spain

email ecano@cenim.csic.es

Telephone +34 91 5538900 ext 309

Fax +34 91 5347425

Project partners
(repeat for each partner of the group)

Partner # 1

Title Dr. Name and Surname Edith Joseph

Gender O Male X Female

Institution Swiss National Museum

Department / Research Group Collections Centre / Laboratory of research in conservation

Address	Lindenmoosstrasse 1
	8910 Affoltern am Albis
Country	Switzerland
email	edith.joseph@snm.admin.ch, edith.joseph@unine.ch

PART 2: Additional information about the applicant(s) expertise

Expertise of the group in the domain of the application

This joint research aims at developing and evaluating innovative protective treatments for metallic artefacts. This application is a great opportunity to start a long-term collaboration among the partners and also with the facility host, CMN-ISMAR. In fact, it is an unique occasion for partners to work together and share their competences in order to form an European team of experts in electrochemistry, spectroscopy and corrosion working for metal conservation-restoration.
The National Center for Metallurgical Research (CENIM) belongs to the Spanish Council for Scientific Research (CSIC) in the Area of Science and Technology of Materials. It has a staff of 131 members, 62 from them are researchers. The research line of the PI if focused on the corrosion and protection of metallic cultural heritage, indoor corrosion, electrochemical techniques applied to conservation science, XPS and corrosion inhibitors. The use of electrochemical techniques has been the main contribution of his group to the 6FP project PROMET ("Innovative conservation approaches for monitoring and protecting ancient and historic metals collections from the Mediterranean basin"). The PI is now starting a national project on the application of electrochemical techniques to the evaluation of coatings for cultural heritage (CREMEL).
The Collections centre of the Swiss National Museum (SNM) is the most important Swiss institution working in the field of research and conservation of museum collections. Its research laboratory relies on almost 50 years of experience in heritage conservation, archaeometry and analyses addressing the specific issues faced by conservators, curators and archaeologists. It is also actively engaged in different European research networks and cooperates in numerous European projects on material science (in total, 5 Projects). In particular, the 7th FP MUSECORR project is developing loggers for continuous measurement of the corrosion rate in atmospheric conditions. Recently, a closed collaboration has been established with the University of Neuchâtel (CH) in order to create biological patinas for archaeological and artistic metal artefacts (BAHAMAS, 7FP). In particular, a biological treatment using fungi resistant to copper is developed to transform unstable corrosion patinas into copper oxalates. The BAHAMAS project is following the EU-ARTECH (6FP) project where a joint research activity on outdoor bronze monuments was carried out.

Short CV of the PI

Emilio Cano is Tenured Scientist at the National Center for Metallurgical Research (CENIM) of the Spanish National Research Council (CSIC) in Madrid. He graduated in Fine Arts Conservation in 1996 from the Complutense University of Madrid, where he also obtained his PhD in 2001 with a thesis that focused on the effect of organic acids on the conservation of copper. After completing an internship at the Canadian Conservation Institute, he continued his research career at the CENIM. He has published more than 80 papers on corrosion and conservation science (60 of them in international scientific journals included in the ISI-SCI) and presented at more than 45 scientific

conferences on corrosion and conservation science. Since 1997, he has participated in 19 national and international research projects, and 21 research contracts with institutions or private companies, including *Patrimonio Nacional* (National Heritage), *Instituto del Patrimonio Cultural de España* (Spanish Cultural Heritage Institute), and Museo Guggenheim Bilbao. He is Member of several conservation-related institutions, including the ICOM (Voting member of the ICOM-CC), the IIC (International Institute of Conservation), the GE-IIC (Spanish Group of the ICC) and the "Grupo Latinoamericano de Restauración de Metales" (Latin american metal conservation group).
He is Assistant Coordinator of the ICOM-CC Metal Working Group and Spanish Co-editor of the BROMEC (Bulletin of Research on Metal Conservation) published by that group. Member of the Executive Board of the Joint Programming Innititative "Cultural Heritage and Global Change: a challenge for Europe" and member of the Experts Group for the elaboration and follow-up of the "Plan Nacional de Investigación en Conservación-PNIC" (National Plan for Research in Conservation) of the Spanish Ministry of Culture.

A list of 5 recent, relevant publications of the participant(s) in the field of the project

1. E. Cano, D. Lafuente, D.M. Bastidas."Use of EIS for the evaluation of the protective properties of coatings for metallic cultural heritage: a review." J. Solid State Electrochem., 14 (2010) 381-391.
2. E. Cano, D.M. Bastidas, V. Argyropoulos, S. Fajardo, A. Siatou, J.M. Bastidas, C. Degrigny "Electrochemical characterization of organic coatings for protection of historic steel artifacts." J. Solid State Electrochem. 14,(2010) 453-463.
3. Paterakis, A., Cano, E., Lafuente, D "The corrosive influence of acetic acid emissions on bronze and the efficacy of two protective coatings" In: Metal 2010, Proceedings of the Interim Meeting of the ICOM-CC Metal Working Group, P. Mardikian et al, Eds. Charleston, South Carolina, USA,11-15 October 2010. ISBN 978098303990. pp.132-137.
4. E. Joseph, A. Simon, S. Prati, M. Wörle, D. Job, R. Mazzeo. Development of an analytical procedure for evaluation of the protective behaviour of innovative fungal patinas on archaeological and artistic metal artefacts. Analytical and Bioanalytical Chemistry 2011, 399 (9), 2899-2907. (Paper in forefront and cover image)
5. E. Joseph, P. Letardi, R. Mazzeo, S. Prati, M. Vandini. Innovative Treatments for the Protection of Outdoor Bronze Monuments. In Metal 07: Interim Meeting of ICOM-CC Metal WG Amsterdam, 17-21 September 2007. C. Degrigny, R. van Langh, I. Joosten and B.Ankersmit (Eds.), Rijksmuseum: Amsterdam, 2007; 71-77.

PART 3: Detailed scientific description of the project

List the main objectives of the proposed research

(one page maximum)

The main objectives of the project are to define advantages and limits of innovative protective treatments and to standardize a specially adapted electrochemical methodology for assessing their effectiveness in comparison with treatments nowadays used. Among the different treatments tested, a human- and eco-friendly biological treatment which creates protective patinas on copper artefacts will be evaluated. This project will contribute to a better conservation-restoration of metallic artefacts by means of the advance in the application of electrochemical techniques and to extend the knowledge on efficacy of biological interventions. Through this, the overall idea is to

enhance research in the field of metal conservation-restoration promoting a dialogue among conservators and scientists, to encourage the use of electrochemical techniques as well as new treatments based on clear scientific and ethical criteria (efficiency, harmless, respect of the aesthetic and historical values) and to enhance conservation activities in their social and economical aspects with the development of ready-to-use treatment kit for conservators-restorers. The following aspects will be investigated:

- Selection and characterization of metal standards to be used,
- Definition of the human- and eco-friendly innovative treatments and identification of the best conditions of application,
- Evaluation upon ageing of the developed method on standards coupons and comparison with the most commonly used treatments.
- Standardization of an electrochemical methodology for in situ assessment.

The analytical results will be integrated within a publication in Corrosion science, including a footnote, such as “This research has been carried out with the support of the European Union, within the VII Framework Program (Contract 262584: JERICO).The authors acknowledge the CNR ISMAR for access time to the experimental marine station”.

Give a brief description of the scientific background and rationale of your project

(one page maximum)

Electrochemical processes, chemical reactions with pollutants and physical phenomenon of deposit accumulation can lead to irreversible changes in the original appearance and structure of a metal artefact. A constant effort from the research community is necessary to overcome this continuous damage suffered by artefacts and to achieve outstanding advances in modern material science. Nowadays, waxes, acrylic resins (Incralac) and corrosion inhibitors (benzotriazole) are commonly used for the protection and corrosion inhibition of metal artefacts. The use of waxes is largely diffuse even if it represents some disadvantages such as surface darkening, frequent maintenance and incomplete reversibility[1,2]. Regarding Incralac, regular maintenance is also needed and other complications have been observed: shiny aspect assumed by the treated surface, brittleness of the film and its difficult removal over time[3]. Finally, benzotriazole is toxic and a well known human carcinogen. While organic coatings are applied in a non-selective way, improved protective systems should be developed so as to modify existing corrosion products, create more stable and less soluble compounds and maintain the surface’s physical appearance. In their design, some criteria should be taken into account in terms of effectiveness, durability, innocuousness for persons and environment. Here it is proposed an alternative treatment where the protection can be provided by naturally occurring microorganisms. In the literature, some species of fungi were reported for their ability to transform metal compounds into metal oxalates[4,5]. Moreover, the progress achieved in corrosion control using microbial films was already presented and their utilization was illustrated as a novel strategy for protecting metal substrates[6]. For example, the presence of copper oxalates on outdoor exposed bronzes has already been identified[7], but is not associated with the phenomenon of cyclical corrosion. Instead compact patinas of an attractive green color are created on the bronze surface. Moreover, with a high degree of insolubility and chemical stability even in acid atmospheres (pH 3), it provides the surface with good protection[8]. Within the EU-ARTECH and BAHAMAS projects, very promising results were obtained with almost 100% of conversion from copper hydroxysulfates and hydroxychlorides into copper oxalates, using a fungal strain isolated from vineyard soils highly contaminated with copper. This biological treatment is now further investigated. In particular, the

metal oxalates formed are in-depth characterized in order to define their properties (formation mechanisms, adhesion...) and optimize the application procedure. Particular attention is devoted to the efficacy, durability and impact on color to overcome the problems associated with the treatments in use nowadays. For the qualitative and quantitative assessment of the effectiveness of protective treatments, the utility of electrochemical impedance spectroscopy (EIS) have been demonstrated by pioneer works[9] However, as opposed to industrial applications, its use is not standardized[10]. Therefore, in parallel to the evaluation of innovative treatments mentioned above, a specific methodology will be assessed for applying electrochemical methods and testing protective treatments in situ, in particular during ageing.

1. Moffett, D. L. (1996) Journal of American Institute of Conservation, 35, 1-8.
2. Johnson, R. (1984) In Adhesives and consolidants (Eds. Brommelle, N. S., et al.). London: International Institute for Conservation of Historical and Artistic Works (IIC), 107-109.
3. Brostoff, L. B. 2003. Coating strategies for the protection of outdoor bronze art and ornamentation. Universiteit Amsterdam.
4. Sayer, J.A., M. Kierans, and G.M. Gadd. (1997) FEMS Microbiology Letters, 154, 29-35.
5. Gharieb, M.M., M.I. Ali, and A.A. El-Shoura. (2004) Biodegradation, 15, 49-57.
6. Zuo, R. (2007) Applied Microbiology and Biotechnology, 76, 1245-1253.
7. Nassau, K., et al. (1987) Corrosion Science, 27, 69–84.2.
8. Marabelli, M., R. Mazzeo. (1993) La metallurgia italiana, 85, 247–254.
9. Letardi, P. (2004) In Metal2004. (Eds. Ashton, J., Hallam, D.). Canberra: National Museum of Australia, 379-387.
10.Cano, E., et al, (2010) Journal of Solid State Electrochemistry, 14, 381-391.

Present the proposed experimental method and working plan

(one page maximum)

To achieve the general and specific objectives of the project, the following scientific and technologic research activities will be planned:

Task 1. Selection, preparation and characterization of samples to be used as standards.

It is known that active corrosion from chlorides (and in little part sulfates) is the main responsible for degradation of metal artefacts. In order to evaluate the efficiency of a novel treatment, copper,bronze and steel standards, which replicate the commonly found patinas in nature, are needed, as demonstrated by others studies in this field. The goal is to obtain at the end of the task, samples properly aged with typical natural patina, which is fully characterized in order to have a start point before treatment and understand the eventual modifications which will occur during the following treatment and ageing. Properly naturally aged metal coupons samples with typical occurring corrosion products, will be prepared. The patina will then be documented and fully characterized in order to assess its color, thickness, morphology, composition and protection efficiency before any treatment applied. A complement of analytical techniques such as scanning electron microscopy with energy dispersive X-ray spectroscopy (SEM-EDX), Raman and Fourier transform Infrared (FTIR) spectroscopies, electron impedance spectroscopy (EIS), colorimetry and thickness measurements will be used.

Task 2. Definition of treatments (formation mechanisms and application protocols) and application.

The main objective is here the creation of relatively thick oxalates' patinas with no remains of fungi strains. The action mechanisms of *Beauveria bassiana* will be investigated in order to better reproduce and increase the formation of metal oxalates. The quantification of the metal oxalates crystals will be done by X-ray diffraction and the production of oxalic acid determined by high performance liquid chromatography. Particular attention will be dedicated to verify that all fungi

have been removed after treatment, using for example SEM. *Beauveria bassiana* will be inoculated on the different copper/bronze and steel standards to create biofilms of copper/iron oxalates, which will be characterized with the same analytical techniques used in task 1 for the original patina. For comparison, protective treatments (wax Cosmolloid H80, fluorosilane F8263, Paraloid B72…) used nowadays in bronze conservation will also be applied on similar copper and bronze coupons and characterized in the same way.

Task 3. Evaluation of their performance, efficiency and durability.

The performances of the treatments will be evaluated on the basis of their resistance, color, surface's morphology and protection behavior through color measurements, microscopy (optical, SEM, Raman, FTIR), as for tasks 1 and 2. These analyses will be carried out before and after exposure either non-destructively on sample's surface on micro-destructively in cross-sections. EIS measurements will be used to monitoring the protective performance during ageing tests. The ageing exposure is a key point to evaluate the protection performance of the treatments upon time, as confirmed elsewhere by numerous conservation research projects.

Indicate the type of access applied for

O remote	*(the measuring system is implemented by the operator of the installation and the presence of the user group is not required)*
X partially remote	*(the presence of the user group is required at some stage e.g. installing and un-installing)*
O in person/hands on	*(the presence of the user group is required/recommended during the whole access period)*

Indicate the proposed time schedule including expected duration of access time

(half a page maximum)

For task 1, we plan to expose in Genoa during one year 16 bare samples (60x60x3mm) made of copper, a modern bronze alloy (Cu85/Sn5/Zn5/Pb5) from a Swiss foundry and a weathering steel (such as CorTen steel) , for a total amount of 48 samples. The samples will be then properly aged with a natural urban-marine patina. In parallel, the facility will also be used during 4 months for evaluate the efficiency of a first selection of protective treatments on coupons already available at the SNM for a total amount of 60 samples. The most promising treatments will thus be individuated, then be applied on the coupons aged in task 1 and compared with traditional coatings used for conservation/restoration treatments. It's worth saying that this access of 130 days will allow us to obtain significant information for the implementation of our following tasks. As mentioned above, one-year exposure is planned and therefore users group will apply for further grants in order to achieve the tasks foreseen. The presence of one person for each partner-institution is requested at the beginning and end of the access as this will be the occasion to meet together with CNR-ISMAR and set the future collaboration together. In fact, SNM (Switzerland) will bring copper/bronze coupons and its expert in spectroscopy and corrosion and CENIM (Spain) will bring steel coupons and its expert in electrochemistry and corrosion.

Access time to JERICO facility	June 2012- t_0				October 2012- $t_{4months}$				June 2013- $t_{12months}$			
weeks	1	2	3	4	1	2	3	4	1	2	3	4
Installation of samples for pre-screening												
EIS measurements in situ – starting point												
EIS measurements in situ – end point												
Uninstallation of treated samples												
Installation of samples for ageing												
EIS measurements in situ – starting point												
EIS measurements in situ – monitoring												
EIS measurements in situ – end point												
Uninstallation of aged samples												

Host infrastructure

Indicate the type(s) of JERICO host facility(s) you are interested in
(Tick more than one if it is useful for your project)

O ferrybox X fixed platform O glider O calibration laboratory

Indicate the specific JERICO host facility(ies) you wish to choose

MPL Genoa

Explain briefly why you think your project will be best carried out at the specified host facility(ies)

The host facility available in Genoa is implemented in the Genoa harbor and represents a unique exposure site in an urban-marine environment. This site is therefore suitable for evaluating the corrosion behavior of treatments on urban and marine aged coupons together. Moreover, the estimated atmospheric corrosiveness is the max class C5 according to ISO 9223. This extremely aggressive atmosphere will allow a better evaluation of the different treatment's behaviors in a shorter exposure time. Moreover, these conditions will ensure the formation of an adequate urban-marine patina on the bare coupons. Finally, a meteorological station is collecting collected ongoing climatic data (temperature, relative humidity, pressure, precipitations, sunlight and Time of Wetness ToW). Our measurements could then be correlated with these meteorological data and a long-term predictive corrosion model for bronze artefacts could be designed. During the use of this facility, a closed collaboration will also be established with the host organization (CNR-ISMAR) for performing EIS measurements with a specially designed contact probe available at this institution. The pre-screening measurements are of the outmost importance to evaluate the corrosion behavior of the different treatments to be selected for this project.

If possible, list other JERICO facility(ies) where you think your experiment could alternatively be carried out

-

Additional information

Is there a facility similar to the one you wish to utilize in your country?

X Yes O No

If yes, please indicate your reasons for requesting access to the JERICO facility you have chosen

CENIM-CSIC has access to some atmospheric corrosion test sites, but none of them with the urban/marine character and the extreme aggressiveness of the JERICO facility. It is necessary to have such an aggressive environment in order to be able to assess the protectiveness of the coatings in a relatively low time.

Have you already submitted an Access Proposal to any of the participating facilities under this or previous EU Programs?

O Yes X No

If yes, please indicate the name of the institution, submission date and reference number for each such proposal

Is this a resubmission of a previously rejected proposal? *(Select "yes" if this application is a revised version of a proposal submitted to JERICO before that was rejected by the Selection Panel)*

O Yes X No

If yes, please give the exact reference number and submission date. Kindly describe briefly the changes made in comparison to the rejected version.

Is this a continuation of an earlier project funded under a previous call for Transnational Access in JERICO at the same facility?

O Yes X No

If yes, please give the exact reference number and submission date. Kindly indicate also what has been achieved in the previous experiment and the reasons why the objectives have not been fully met.

PART 4: Technical information

Wherever possible, please specify your requests regarding the use of your chosen facility's equipment/instruments/sensors, including any additional services, data or other requirements.

During the exposure in MPL Genoa, we need the meteorological data to be collected. Part of the EIS measurements will be performed with a specially designed contact probe (ST15) available at the CNR-ISMAR by Dr. Paola Letardi.

List all material/equipment you plan to bring to the JERICO facility (if any):

Bare samples to be aged:

- 16 copper coupons
- 16 bronze coupons (Cu85/Sn5/Zn5/Pb5 alloy- Swiss foundry)
- 16 steel coupons (CorTen alloy)

Treated samples to be aged:

- 12 urban naturally aged copper coupons (CUN)
- 12 urban artificially aged bronze coupons (UA)
- 12 marine naturally aged bronze coupons (QQ)
- 12 marine artificially aged bronze coupons (MA)
- 12 marine artificially aged copper coupons (CMA)

Nylon screws and nuts, cable ties for fixing the samples on the rack available.

Please provide a detailed and realistic budget for the expenses you expect to incur for travel/boarding and the shipment of equipment, if applicable in your case *(note that a maximum of two travel grants will be assigned to each user group, depending on the length of the requested period of stay)*.

As the beginning and the end of access will be the opportunity for partners to meet together with CNR-ISMAR, both institutions will be present at these periods of time.

Eligible expenses for the activities carried out by the users group - euro			
Partially remote access	*Travel allowance (flight AR Geneva/Madrid-Genoa)*	*Living allowance (15 days)*	*Accommodation allowance (14 nights)*
t_0	400.00	350.00	1000.00
$t_{4months}$	400.00	350.00	1000.00
TOTAL	800.00	700.00	2000.00
		TOTAL	**3500.00**

Please tick the appropriate boxes and give detailed information for the kind of risks associated with your proposed activity

☐ Chemical :-
☐ Biological :-
☐ Radiological :-
☐ Other :-

Date of compilation 23.03.2012

Signature of the PI

Signature of an appropriate authorised person
(e.g. Head of Department, Research Office)

DR. EMILIO CANO
HEAD OF DEPARTMENT

This section reserved to the JERICO TNA Office

Date of proposal receipt by email

Assigned reference number

Signature of receiving officer

Assigned reference number:	**CALL_1_7**
Date of proposal receipt by email:	**30/03/2012**
P.I. Name and Surname:	**Ainhoa Caballero Reyes**
Institution and Department:	**AZTI Tecnalia marine research Division-Spain**
Date of email answer by TNA office:	**02/04/2012**

JERICO

Application for Transnational Access

to Coastal Observatories

National Research Council of Italy

Description of the project (to be provided in pdf format)
Please contact the manager of the infrastructure/installation you wish to use before writing the proposal

PART 1: User group details

Indicate if the proposal is submitted by

O an individual
x a user group

Information about the applicants (PI and project partners)

Principal Investigator (user group leader)

Title **Dr.** Name and Surname **Ainhoa B. Caballero Reyes**

Gender O Male **x Female**

Institution **AZTI-Tecnalia**

Department / Research Group **Marine Research Division**

Address **Herrera Kaia Portualdea, z/g, 20110 Pasaia (Gipuzkoa)**

Country **Spain**

email **acaballero@azti.es**

Telephone **+34 667 174 486**

Fax _____

Project partners
(repeat for each partner of the group)

Partner # 1

Title **Dr.** Name and Surname **Anna Rubio Compañy**

Gender O Male **x Female**

Institution **AZTI-Tecnalia**

Department / Research Group **Marine Research Division**

Address **Herrera Kaia Portualdea, z/g, 20110 Pasaia (Gipuzkoa)**

Country **Spain**

email **arubio@azti.es**

Partner # 2

Title **Dr.** Name and Surname **Luis Ferrer Rodríguez**

Gender **x Male** O Female

Institution **AZTI-Tecnalia**

Department / Research Group **Marine Research Division**

Address **Herrera Kaia Portualdea, z/g, 20110 Pasaia (Gipuzkoa)**

Country **Spain**

email **lferrer@azti.es**

Partner # 3

Title **Eng.** Name and Surname **Julien Mader**

Gender **x Male** O Female

Institution **AZTI-Tecnalia**

Department / Research Group **Marine Research Division**

Address **Herrera Kaia Portualdea, z/g, 20110 Pasaia (Gipuzkoa)**

Country **Spain**

email **jmader@azti.es**

PART 2: Additional information about the applicant(s) expertise

Expertise of the group in the domain of the application

AZTI-Tecnalia is a private non-for-profit research organization. AZTI-Tecnalia belongs to the recently created research corporation called TECNALIA that has become the fifth EU private research organization in size. Its main objective is the social development and the increase of the competitiveness in its working areas by means of the research and technological innovation. Since 1981 its activities have been focused to solve the problems of its clients, with an innovative and equilibrated model between the generation and caption of technologies and its diffusion and transfer. Integrated coastal and ocean resources management requires wide and specialized scientific knowledge. The public administration, for management decision making together with the stakeholders and companies linked to the marine environment, claim innovation and continuous technological development.

The Marine Research Division and, specially the Marine Dynamics and Operational Oceanography area, has a long experience in oceanographic studies related to the Bay of Biscay. During the last 5 years this group has been involved in several regional, national and European projects about

ocean-meteorological networks, operational oceanography (ECOOP, LOREA, IBI-ROOS), marine energy, environmental impacts, fisheries management and aquaculture. The Marine Research Division has published numerous reviewed articles (see the complete list at http://www.azti.es/oceanografia-operacional.html), including a book dedicated to the Oceanography of the Basque Country.

In addition to the IP A. Caballero, who has proven skills in mesoscale oceanic processes and remote sensing (please refer to her short CV detailed below), the proposing scientific team is made up of three more people from AZTI-Tecnalia with demonstrated expertise on the field of physical oceanography. L. Ferrer is a physical oceanographer, expert on numerical modelling. His activities focus on developing operational oceanography simulations in the Bay of Biscay at different scales. His research is devoted to analyse and describe marine circulation over the shelf and in some key coastal areas and their response to freshwaters inputs and to the atmospheric forcing. A. Rubio is a physical oceanographer; her research is focused on mesoscale and shelf/slope processes. She has a solid experience on the analysis of observational data form different platforms, as well as, on the validation and analysis of numerical data from ocean models. Finally, J. Mader is expert on coastal oceanography. He is currently head of Marine Dynamics and Operational Oceanography area in the Marine Research Division. His main qualifications and domains of expertise are in oceanographic instrumentation, data processing and modelling in marine dynamics.

To finish, it is worth noting that over recent years, with the aim of improving the understanding on the ocean processes governing the ocean circulation and that of developing an Operational Oceanography System in the Basque Country, the Meteorology and Climatology Direction of the Basque Government has promoted the installation of different in-situ observing marine platforms in the SE Bay of Biscay. This system, consisting of 6 coastal stations, 2 deep sea buoys and a HF Radar array (200 km range, 6 km horizontal resolution), provides systematic and long-term routine ocean-meteorological measurements. Together with the real-time data, invaluable for operational oceanographic purposes, the long-term time series of atmospheric, hydrographic and current hourly data are invaluable for the study of the hydrodynamics regarding to multiple time and space scale, in an area where in-situ data were particularly scarce. The combination of the available in-situ and remote data with that obtained from the glider mission proposed in this project, is expected to be particularly fruitful and provide valuable results on the study of the 3D characteristics of a recurrent mesoscale anticyclonic eddy observed in this area.

Short CV of the PI

Ainhoa Caballero finalized her Ph.D. thesis from the Polytechnic University of Catalonia (Spain) in March 2008. The title of her international PhD degree was: Ocean surface circulation within the Bay of Biscay, on the basis of remotely-sensed data. During the PhD period made an internship in the Space Division of *La Maison de la Télédétéction*, IRD (France, May-Jun 2004) and in the Space Oceanography Division of the CLS (France, Aug-Oct 2005). She is an expert in climate change (ocean change) and mainly in space oceanography. Within the framework of space oceanography she has been involved in several studies of the physical oceanography of the Bay of Biscay by means of visible, IR and radar (altimeters, scatterometers) sensors. Her experience gathered in the physical oceanography of the study area has been also demonstrated by the participation in international congresses (ISRSE33, EGU, ISOBAY…) and in scientific projects (LOREA; ESTIBB, Plan Nacional I+D+i 2008-2011, ref CTM2009-12339…), together with the

publication or participation of different scientific papers. Besides the publications indicated in the following Section, we list here 4 selected publications on the physical oceanography of the Bay of Biscay:

- Caballero, A., Espino, M., Sagarminaga, Y., Ferrer, L., Uriarte, Ad. González, M., 2008: Simulating the migration of drifters deployed in the Bay of Biscay, during the Prestige crisis. Marine Pollution Bulletin, Vol. 56, 475-482.
- González, M., Ferrer, L., Uriarte, A., Urtizberea, A., Caballero, A. 2008: Operational Oceanography System applied to the Prestige oil-spillage event. Journal of Marine Systems, Vol. 72, 178-188.
- Ferrer, L., González, M., Valencia, V., Mader, J., Fontán, A., Uriarte, Ad. Caballero, A., 2007: Operational coastal systems in the Basque Country region: modelling and observations. Proceedings of the 17th International Offshore (Ocean) and Polar Engineering Conference, ISOPE 2007. Lisboa (Portugal).
- Caballero, A., Sagarminaga, Y., Espino, M., 2005: The relationship between satellite and meteorological model-derived winds with those from ocean buoys within the Bay of Biscay. Journal of Atmospheric and Ocean Science, Vol. 10, No. 4, 463–479.

A list of 5 recent, relevant publications of the participant(s) in the field of the project

Caballero, A. Pascual A., Dibarboure G., Espino M. 2008. Sea level and Eddy Kinetic Energy variability in the Bay of Biscay, inferred from satellite altimeter data. Journal of Marine Systems, 72, 116–134.

Ferrer L., Caballero A. (2011). Eddies in the Bay of Biscay: A numerical approximation. Journal of Marine Systems, 87, 133-144.

Ferrer L, Fontán A, Mader J, Chust G, González M, Valencia V, Uriarte Ad, Collins MB (2009). Low-salinity plumes in the oceanic region of the Basque Country. Cont. Shelf Res., 29 (8): 970-984.

Rubio, A., A. Fontán, P. Lazure, M. González, V. Valencia, L. Ferrer, J. Mader and C. Hernández Seasonal to tidal variability of currents and temperature in waters of the continental slope, SE Bay of Biscay. Journal of Marine Systems DOI: 10.1016/j.jmarsys.2012.01.004 (2012, in press)

Rubio, A., G. Reverdin, A. Fontán, M. González, and J. Mader (2011). Mapping near-inertial variability in the SE Bay of Biscay from HF radar data and two offshore moored buoys, Geophys. Res. Lett., 38, L19607, doi:10.1029/2011GL048783.

PART 3: Detailed scientific description of the project

List the main objectives of the proposed research

(one page maximum)

During winter, an anticyclonic eddy is generated in the SE Bay of Biscay that instead of migrate,

remains between 3°W and 4°W for several months. This mesoscale structure correspond to the stationary SWODDY (Slope Water Oceanic eDDY) previously described by Pingree and Le Cann (1992). A recent analysis of a time series of satellite altimetry maps, Sea Surface Temperature maps and outputs from ROMS simulations, in the framework of the ESTIBB project, suggests that these stationary eddies could be generated in the bathymetric and discontinuities of the Cape Breton canyon system, or further to the east, between this canyon and the Ajo and Mayor Capes. Besides this, there are evidences that indicate that these eddies retain plankton, including differentiated densities of ichthyoplankton (early development stages of different fish species spawning in this area).

The main objective of this project is to study, in detail, the characteristics of this eddy, both in the surface and in the vertical, through an extended series of remote sensing, routine in-situ measuring systems (two slope buoys and a HF radar array), two field campaigns with drifting buoys and a field campaign using an underwater Glider.

In-situ measurements will be use as well to validate ROMS simulations in the area to allow further research based on model results.

Pingree, R.D., Le Cann, B., 1992. Three anticyclonic Slope Water Oceanic eDDIES (SWODDIES) in the southern Bay of Biscay in 1990. Deep-Sea Research 39, 1147– 1175.

Give a brief description of the scientific background and rationale of your project

(one page maximum)

Several authors have described some aspects of the eddy activity in the SE Bay of Biscay, between Cap Ferret and Cap Breton submarine canyons (Pingree and Le Cann, 1992; Garcia-Soto et al., 2002; Serpette et al., 2006; Caballero et al., 2008). For instance, Pingree and Le Cann (1992) describe an stationary anticyclonic eddy during summer in 1997, around 44.5ºN and 4ºW. In the same area (around 4ºW), other SWODDY like eddies have been described by Garcia-Soto et al. (2002), also during summer periods and using different data bases. However, the observations to the east of 3.5ºW are much more scarce and there are few evidences or descriptions of eddies in this area.

Recently, an Spanish research project (ESTIBB: CTM2009-12339) founded by the Ministry of Science and Innovation of the Spanish Government currently being developed by the group of Marine Dynamics and Operational Oceanography of AZTI (participants: A. Caballero, L. Ferrer and A. Rubio) permits to study the spatio-temporal variability of the eddy activity in the Bay of Biscay (see Ferrer and Caballero). The recurrent identification of an anticyclone in this area, from different independent data sources, has motivated this proposal, with the aim of investigate the 3D characteristics of this structure.

To that end, we propose to undertake a glider mission in this area and to combine the obtained data with the systematic and long-term routine ocean-meteorological in-situ and remote measurements available in the study area.

Garcia-Soto, C., Pingree, R.D., Valdés, L., 2002. Navidad development in the southern Bay of

Biscay: climate change and swoddy structure from remote sensing and in situ measurements. Journal of Geophysical Research 107, 3118. doi:10.1029/2001JC001012.

Serpette, A., Le Cann, B., Colas, F. 2006. Lagrangian circulation of the North Atlantic Central Water over the abyssal plain and continental slopes of the Bay of Biscay: description of selected mesoscale features. Scientia Marina, Vol 70, No S1.

Present the proposed experimental method and working plan

(one page maximum)

The experimental campaign that we propose herein has the objective of study the **characteristics** of the anticyclone eddy described above.

Figure 1 shows the different radial that will be made by the Glider. The radials are classified in two groups. The red radials will cover the area to the east of the eddy, to get information on the slope currents. The blue radials will cover the area where the eddy remains trapped.

The westernmost radial covered by the Glider will be a rectilinear transect perpendicular to the coast around 4.7ºW until 44º40'N 4º40'W, after that it will make a diagonal radial from the last position to the coast in front of Mayor and Ajo Capes, from which it will be directed perpendicular to the coast until 44º40'N 4ºW (Fig. 1, red lines). The dataset resulting from this sampling will serve to analyse in surface and depth the characteristics of the slope current.

From the last position, the Glider will describe a diagonal radial, until Cape Breton canyon (Fig. 1, blue lines), then it will continue to the North until 44º40'N 3ºW, and finally from this position it will make another diagonal radial until 43º40'N 4ºW (Fig. 1, blue lines). The dataset resulting from this sampling will serve to analyse the horizontal and vertical characteristics of the eddy; therefore, the Glider will be submerged to the greatest technically possible depth (~1000m).

The glider will repeat this sampling trajectory during, at least, two to four weeks to be able to follow the evolution of the observed structure and to allow a better coverage of the structure from satellite products.

The deployment/recovery of the Glider could be done eventually using our facilities in Pasaia. The research center of AZTI- Tecnalia in Pasaia is located within the Pasaia Harbour (http://www.azti.es/en/inv.-marina/).

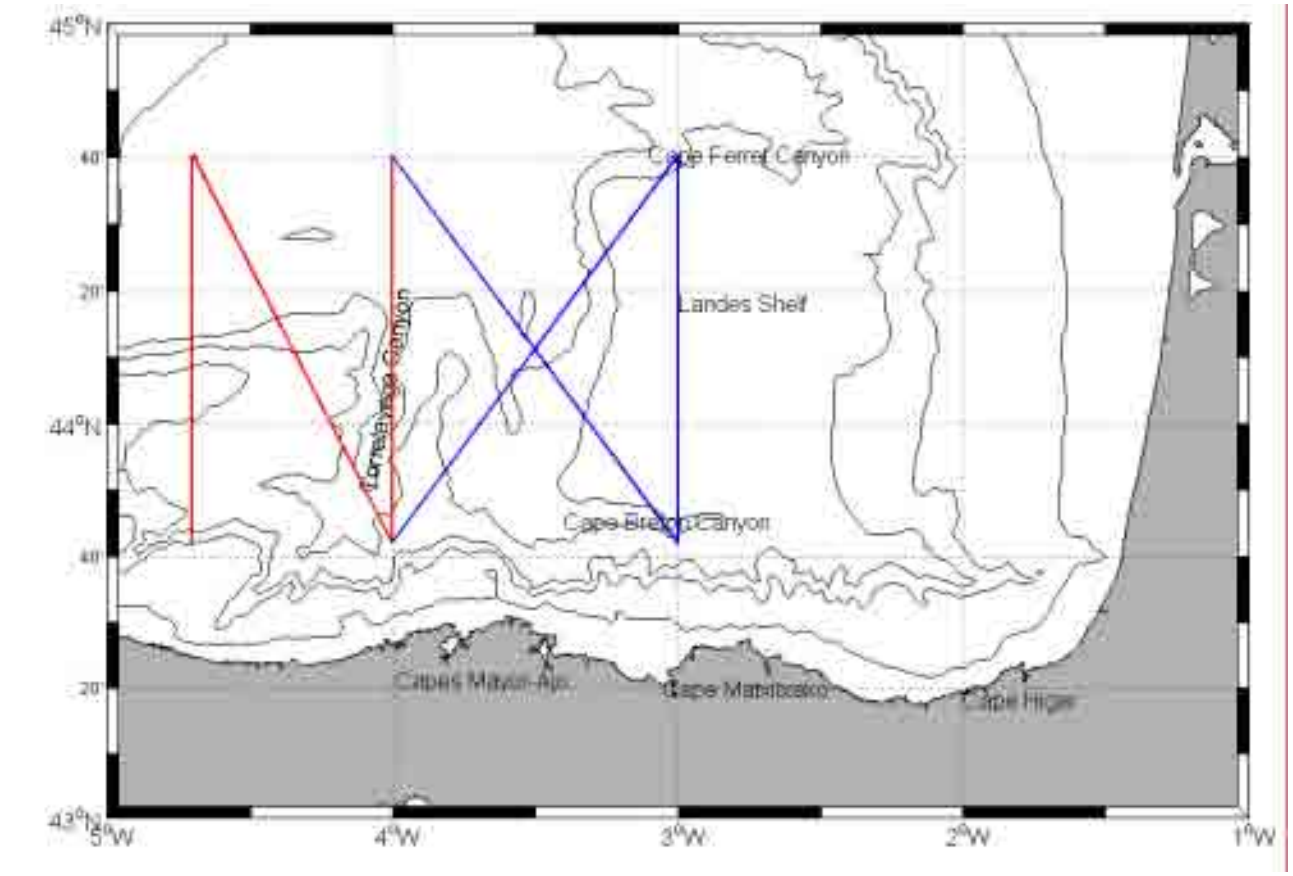


Figure 1. Area of Study. The red and blue lines indicate the radials the Glider will sample.

Indicate the type of access applied for

x remote	*(the measuring system is implemented by the operator of the installation and the presence of the user group is not required)*
O partially remote	*(the presence of the user group is required at some stage e.g. installing and un-installing)*
O in person/hands on	*(the presence of the user group is required/recommended during the whole access period)*

Indicate the proposed time schedule including expected duration of access time

(half a page maximum)

The historical observations indicate that this structure remains in this area during several months between the beginning of the spring and the end of summer. Therefore, in order to ensure the presence of the stationary anticyclonic eddy, the experimental sampling will take place within the period February to May 2013. We expect the glider would repeat the sampling trajectory described above during, at least, four weeks to be able to follow the evolution of the observed structure and to allow a better coverage of the structure from satellite products. The duration of access time to

the facility could be reduced to two weeks depending on the availability provided by the host.

Host infrastructure

Indicate the type(s) of JERICO host facility(s) you are interested in
(Tick more than one if it is useful for your project)

O ferrybox O fixed platform **x glider** O calibration laboratory

Indicate the specific JERICO host facility(ies) you wish to choose

National Glider facility (CETSM)
Institut National des Sciences de l'Univers/ Centre National de la Recherche Scientifique INSU/CNRS (La Seyne sur mer, France)

Explain briefly why you think your project will be best carried out at the specified host facility(ies)

The CETSM (INSU/CNRS) institute has a wide and demonstrated experience in the use of gliders, with at least one Glider campaign in the SE Bay of Biscay (Aspex_02, source: http://www.ego-network.org/dokuwiki/doku.php?id=public:glidersdeployments). The CETSM (INSU/CNRS) is the facility which offers the highest availability of Gliders, with up to three deep gliders (0-1000 m) which ensures the feasibility of the proposed mission.

If possible, list other JERICO facility(ies) where you think your experiment could alternatively be carried out

Additional information

Is there a facility similar to the one you wish to utilize in your country?

x Yes O No

If yes, please indicate your reasons for requesting access to the JERICO facility you have chosen

The main reason is the need of optimizing the use of European and National facilities. In Spain, SOCIB-IMEDEA in Balearic islands and PLOCAN in Canary Islands are managing gliders. Nevertheless, for performing the field campaign proposed here, in the bay of Biscay where scientific

and operational collaborations exist between France and Spain, the use of the French fleet in a European context appears to be the best option, in the following framework:

A new research project has been submitted by AZTI-Tecnalia in 2012 to National R+D+I plan of the Ministry of Science and Innovation of the Spanish Government to study, in detail, the characteristics of the stationary eddy in the SE Bay of Biscay, both in the surface and in the vertical. This project will support the analysis of an extended series of remote sensing, routine in-situ measuring systems (two slope buoys and a HF radar array) together with field campaigns with drifting buoys in the study area. The proposal is supported by Dyneco-Ifremer Brest and the data will be exploited jointly in the framework of the French project EPIGRAM (ANR/LEFE-IDAO).

There are no currently National glider facilities in the Iberian Atlantic coast. Nevertheless AZTI-Tecnalia has been in touch with the Spanish facility involved in JERICO: SOCIB-IMEDEA (Balearic islands). At the moment, SOCIB has not the fleet capacities to perform services at a national level, in particular in the Bay of Biscay. For this reason, the present call in the framework of JERICO is a great opportunity to complement the foreseen sampling through the use of underwater gliders in the area. In addition, the CETSM (INSU/CNRS) institute has a wide and demonstrated experience in the use of gliders, with at least one Glider campaign in the SE Bay of Biscay, which guarantees the feasibility of the proposed mission.

Have you already submitted an Access Proposal to any of the participating facilities under this or previous EU Programs?

O Yes **x No**

If yes, please indicate the name of the institution, submission date and reference number for each such proposal

Is this a resubmission of a previously rejected proposal? *(Select "yes" if this application is a revised version of a proposal submitted to JERICO before that was rejected by the Selection Panel)*

O Yes **x No**

If yes, please give the exact reference number and submission date. Kindly describe briefly the changes made in comparison to the rejected version.

Is this a continuation of an earlier project funded under a previous call for Transnational Access in JERICO at the same facility?

O Yes **x No**

If yes, please give the exact reference number and submission date. Kindly indicate also what has been achieved in the previous experiment and the reasons why the objectives have not been fully met.

PART 4: Technical information

Wherever possible, please specify your requests regarding the use of your chosen facility's equipment/instruments/sensors, including any additional services, data or other requirements.

One deep glider (0- 1000m) equipped with CTD and fluorimeter for one field campaign of 2 to 4 weeks within the period February to May 2013.

List all material/equipment you plan to bring to the JERICO facility (if any):

Please provide a detailed and realistic budget for the expenses you expect to incur for travel/boarding and the shipment of equipment, if applicable in your case *(note that a maximum of two travel grants will be assigned to each user group, depending on the length of the requested period of stay)*.

Please tick the appropriate boxes and give detailed information for the kind of risks associated with your proposed activity

☐ Chemical :
☐ Biological :
☐ Radiological :
☐ Other :

Date of compilation 02/04/2012

Signature of the PI Ainhoa Caballero

Signature of an appropriate authorised person
(e.g. Head of Department, Research Office) LORENZO MOTOS

This section reserved to the JERICO TNA Office

Date of proposal receipt by email _____

Assigned reference number _____

Signature of receiving officer _____

Assigned reference number:	**CALL_1_8**
Date of proposal receipt by email:	**02/04/2012**
P.I. Name and Surname:	**Alberto Ribotti**
Institution and Department:	**IAMC CNR Oristano**
Date of email answer by TNA office:	**02/04/2012**

JERICO

Application for Transnational Access

to Coastal Observatories

National Research Council of Italy

Ifremer

Helmholtz-Zentrum Geesthacht

CSIC

National Oceanography Centre

Description of the project (to be provided in pdf format)
Please contact the manager of the infrastructure/installation you wish to use before writing the proposal

PART 1: User group details

Indicate if the proposal is submitted by

- ● an individual
- O a user group

Information about the applicants (PI and project partners)

Principal Investigator (user group leader)

Title _Mr__ Name and Surname __Alberto Ribotti_____

Gender ● Male O Female

Institution __Institute for Coastal Marine Environment of CNR, Unit in Oristano___

Department / Research Group _ Operational Oceanography Group (GOO)_____

Address _Località Sa Mardini, Torregrande, 09072 Oristano_____

_____

Country _Italy_____

email _ alberto.ribotti@cnr.it _____

Telephone _ +39.0783.229015 (switchboard) / 229137 (direct) _____

Fax __ +39.0783.229135 _____

Project partners
(repeat for each partner of the group)

Partner # 1

Title ___ Name and Surname _____

Gender O Male O Female

Institution _____

Department / Research Group _____

National Research Council of Italy

Address _____

_____

Country _____

email _____

PART 2: Additional information about the applicant(s) expertise

Expertise of the group in the domain of the application

The GOO's, of CNR Institute for Marine and Coastal Environment (IAMC) Unit in Oristano, main oceanographic activities are related to the monitoring, forecasting and assessment of the impact of human activities on marine and coastal ecosystems (http://www.seaforecast.cnr.it). The Group has a robust and recognized experience in the field of Ocean Forecast Modeling for both open ocean and coastal areas. The activity is particularly focused on the implementation and use of nested ocean forecasting models based on different numerical methods (finite differences or elements), which are applied at sub-regional (Sicily Strait, western Mediterranean) and coastal scales in order to provide an innovative approach to the management of the marine systems, and its resources. The research and scientific activities include the water current and wave field forecasting, the investigation of wind wave-water current interactions and the transport of pollutants and other objects for the management of emergencies at sea (oil spill and Safe And Rescue - SAR). Ocean data (CTD, current, sea level), from cruises or drifting buoys or deployed instruments, are used to study the characteristics of the general circulation, from seasonal to climatic time scale, and to validate numerical models.
Over 22 scientific papers have been published from 2006 to nowadays and the Group participates to national and European projects as main contractor or partner mainly devoted in the framework of operational oceanography activities. The Group is part of national and European associations for operational oceanography like the Gruppo Nazionale di Oceanografia Operativa (GNOO) and the Mediterranean Operational Oceanography Network (MOON) representing CNR in EuroGOOS.

Short CV of the PI

Alberto Ribotti, IAMC CNR research scientist in physical oceanography, key expert in physical oceanography and ocean monitoring, with the organization and/or participation at over 24 Mediterranean oceanographic cruises since 1995, particularly addressed to numerical ocean model validation and climatological studies. He works on projects mainly addressed to operational oceanography, ocean forecasting and capacity building activities in oceanography. Responsible of the oceanographic instrumentation at IAMC CNR in Oristano.

A list of 5 recent, relevant publications of the participant(s) in the field of the project

Sorgente R., A. Olita, P. Oddo, L. Fazioli, A. Ribotti, Numerical simulation and decomposition of kinetic energies in the Central Mediterranean: insight on mesoscale circulation and energy conversion, (2011), Ocean Science, Special Issue: ECOOP (European Coastal-shelf sea

Operational Observing and forecasting system Project), 7, 4, 503-519

Ribotti A., Sorgente R., Fazioli L., Olita A., Hendiarti N., Frederik M.C.G., Sadly M., Syamsudin F., Djajadihardja Y.S., Hanggono A., Adi T.R., Farhan A.R., Subki B.A., Manzella G.M.R., Rupolo V., Ruti P., Fusco L., An operational approach to the ocean management in the Indonesian Archipelago, (2010), Journal of Operational Oceanography, 3, 1, 27-35

Ribotti A, Borghini M., Sorgente R., ADCP Measurements in Protected Areas on Vessels of Opportunity. Sea Technology, (2010), 51, 3, 45-46

Schroeder K., Gasparini G.P., Borghini M., Ribotti A., Experimental evidences of the recent abrupt changes in the deep Western Mediterranean Sea, (2009), In: CIESM, 2009. Dynamics of Mediterranean deep waters. N° 38, Workshop Monographs [F. Briand, Ed.], 132 pages, Monaco , 51-56

Ribotti A., Puillat I., Sorgente R., Natale S., Mesoscale circulation in the surface layer off the southern and western Sardinia island in 2000-2002, (2004), Chemistry and Ecology, 20, 5, 345-363

PART 3: Detailed scientific description of the project

List the main objectives of the proposed research

(one page maximum)

The proposed research is drawn in the central part of the Algero-Provencal sub-basin that constitutes the central area of the Western Mediterranean Sea.
This part can be seen as a buffer area between the northern Provencal sub-basin and southern Algerian one and is mainly characterized by the presence and action of the Balearic Front.
So it has a great importance to understand exchanges through the two sub-basins and the complex interactions through eddies. The area of work covers a transect between Balearic islands and Oristano (Sardinia) that the Group in Oristano, in collaboration with the Institute of Marine Sciences of CNR in La Spezia, is annually repeated with CTD and current-meter casts for the last ten years during oceanographic cruises to study the inter-annual variability of physical and biochemical properties of water masses and understand the circulation, the exchanges through the sub-basins and the transport of salt and heat in the western Mediterranean.
Objectives**:** the proposed research wants to identify the physical properties of the surface and intermediate water masses between Baleares and Sardinia with the aim of:
i) study the variability of the physical properties of surface and intermediate water masses between the Algerian and the Provencal sub-basins;
ii) evaluate the transport of water, salt and heat through the area and verify if the interannual variability of the surface and intermediate water masses is due to climatic changes;
iii) validate the operational hydrodynamic numerical model of the western Mediterranean (http://www.seaforecast.cnr.it/en/fl/wmed.php) through the use of in-situ and satellite data.

Give a brief description of the scientific background and rationale of your project

(one page maximum)

The southern part of the Algero-Provencal sub-basin, namely the Algerian sub-Basin (AB), is characterized at the surface by the Atlantic Water (AW) flowing into the Mediterranean Sea through the Gibraltar Strait (Millot et al., J. Mar. Syst., 1999). Along the Algerian coast, the AW is transported mainly by the Algerian current (AC Millot, J. Geoph. Res., 1985) from which the anticyclonic Algerian eddies (AEs, Puillat et al., J. Mar. Syst., 2002; Taupier-Letage et al., J. Geoph. Res., 2003), often involving surface and intermediate waters, are generated by baroclinic instabilities of the AC itself. The AEs generally remain more or less included in the main AC flow. Reached the Sardinia Channel (SaC) they can collapse or, strongly modified, can remain almost blocked in the SaC area for several months before collapsing (Puillat et al., J. Mar. Syst., 2002). In some cases (a few per year), the AEs can detach from the AC moving eastward and northward.
In these cases the eddies can follow the Sardinian slope northward becoming open-sea eddies. These big "old" and highly energetic AEs can accomplish one or more cyclonic cycle in the AB not exceeding 40°N (Puillat et al., J. Mar. Syst., 2002). Studies focusing on the biological response of AEs (e.g. Taupier-Letage et al., J. Geoph. Res., 2003), depicted complicated relationships depending on the life history, path and size of such eddies, indicating that further investigations are needed.
The northern part of the sub-basin (Provençal sub-Basin) is also a highly dynamic region with strong mesoscale activity, especially studied because site of deep-water formation and for the seasonal bloom occurring in the so-called MEDOC area (MEDOC group, Nature, 1969; the area of Deep Water Formation in northwestern Mediterranean just offshore the Gulf of Lion) in spring are strictly related as in Jacques et al. (Mar. Biol., 1973). The deep water formation process involves substantially three phases (MEDOC group, Nature, 1969; Levy et al. 1998): preconditioning, violent mixing and sinking of the chimneys with the rapid re-stratification of the surface waters.
Northern and southern parts of the basin are divided by a strict area constituted by a north-south gradient between saltier and colder waters at north (LaViolette et al., J. Geoph. Res., 1990; López Garciá et al., J. Geoph. Res., 1994) and fresher Atlantic Water (AW) at south. This third and central part (around 39.5-41°N) can be seen as a buffer area between the northern and southern ones, mainly characterized by the presence and action of the Balearic Front.
Nevertheless, this part is also characterized by the strongest coupling between chlorophyll *a* (Chl α; a good and prompt proxy for phytoplanktonic biomass) and the displacement of isopycnae. In other words, effects on the phytoplanktonic abundance of nutrient injection in euphotic layer, generated by isopycnae displacements, is much more evident here than in northern and southern areas (Olita et al., Ocean Dyn., 2011). So, this area is for sure of great interest for the understanding of the coupling between mesoscale circulation and biological response, a field needing further investigation.

Present the proposed experimental method and working plan

(one page maximum)

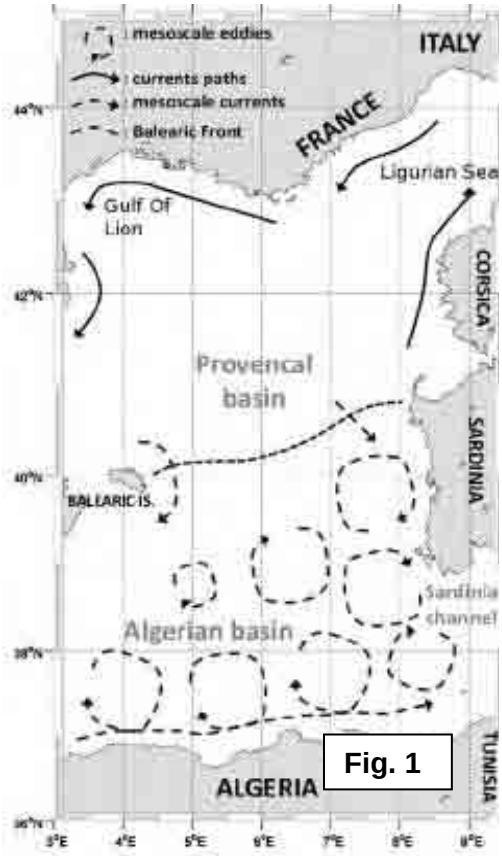


Fig. 1

In order to study the physical characteristics of surface and intermediate water masses in the area between 39.5° and 41°N of latitude in the western Mediterranean, a deep water sea glider (to 1000m depth) is proposed in two missions between Balearic islands and Sardinia (figure 1).

During the two missions the sea glider will leave from Balearic islands to Sardinia and back in order to verify the characteristic of an area still interested by mesoscale activity (AEs) and to compare the acquired data with CTD data from cruises in the area (2006, 2007, 2011, 2012).

This first mission will be planned in 2012 while the second in 2013 depending by sea glider availability and CNR cruises planning for 2012 and 2013.

Data will be used also to validate the numerical circulation model for the western Mediterranean that, if in agreement, after will be used to have a synoptic vision covering the whole area during the whole two missions.

<u>Working plan (in figure 2 the area & the CTD transect):</u>

R1) For a period of a week at the beginning of each mission (in 2012 and in 2013), one researcher/technician from IAMC CNR in Oristano will train at CSIC-IMEDEA in Esporles to manage gliders and acquire data.

R2) At the end of the each mission the same IAMC representative will join a second week in Esporles on glider recovery and data processing/analysis. So four weeks of training are planned during the whole project.

M1) The first mission will be in 2012, during the training week, from Balearic islands to Sardinia. The transect, between 39.5° and 41°N of latitude, is about 180-200 nm long with a depth reaching 2900 m for the most of it. The time the sea glider needs to cover it (go and back) is of about 70-80 days. IAMC CNR Oristano will acquire data supervised by CSIC-IMEDEA; The period will be decided due to sea glider and stage time availability by both institutes.

M2) The second mission will be in 2013 due to the same reasons as at point (R2). IAMC CNR Oristano will acquire data supervised by CSIC-IMEDEA;

Indicate the type of access applied for

- ● remote *(the measuring system is implemented by the operator of the installation and the presence of the user group is not required)*
- O partially remote *(the presence of the user group is required at some stage e.g. installing and un-installing)*
- O in person/hands on *(the presence of the user group is required/recommended during the whole access period)*

Indicate the proposed time schedule including expected duration of access time

(half a page maximum)

1) 2 weeks in 2012 with launch and recovery of the sea glider due to sea glider and stage time availability by both institutes.

1.1) During the first week 1 researcher/technician from IAMC CNR in Oristano will train at CSIC-IMEDEA in Esporles to manage sea gliders (first half of the stage) and acquire data (second half of the stage). At half of the period of stage in 2012, the first mission will start with the launch of the sea glider from off Balearic islands to Sardinia. The transect will be about 180-200 nm long for one way with a depth reaching 2900 m for the most of it. The time the sea glider needs to cover the whole trip (go and back) is of about 70-80 days. Data will be acquired at CSIC-IMEDEA and delivered to IAMC CNR in Oristano. IAMC CNR Oristano will acquire data supervised by CSIC-IMEDEA;

1.2) During the second week 1 researcher/technician from IAMC CNR in Oristano will train at CSIC-IMEDEA in Esporles to recover sea glider in the Balearic islands and for sea glider data processing/analysis.

2) The same as above for the second mission planned in 2013. The precise time will be decided due to sea glider and stage time availability by both institutes.

Host infrastructure

Indicate the type(s) of JERICO host facility(s) you are interested in
(Tick more than one if it is useful for your project)

O ferrybox O fixed platform ● sea glider O calibration laboratory

Indicate the specific JERICO host facility(ies) you wish to choose

Facility ID: CSIC-Glider in particular a sea glider for deep sea water

Explain briefly why you think your project will be best carried out at the specified host facility(ies)

The main advantage is given by the position of the CSIC-IMEDEA at Balearic islands, really close to the starting/ending points of the missions, so reducing their costs of implementation.
Furthermore such a project could be the start for stronger future collaborations between the CSIC-IMEDEA in Esporles and IAMC CNR in Oristano, looking at their strategic positions in the western Mediterranean and their similar reciprocal areas and fields of interest (operational oceanography, ocean forecasting).

If possible, list other JERICO facility(ies) where you think your experiment could alternatively be carried out

Our main objective is the validation of numerical forecasting models implemented at IAMC CNR in Oristano. This in mind, other Jerico facilities of interest for us could be the gliders at CETMS in France or the mooring MPLS at ISMAR-CNR in La Spezia.

Additional information

Is there a facility similar to the one you wish to utilize in your country?

O Yes ● No

If yes, please indicate your reasons for requesting access to the JERICO facility you have chosen

Have you already submitted an Access Proposal to any of the participating facilities under this or previous EU Programs?

O Yes ● No

If yes, please indicate the name of the institution, submission date and reference number for each such proposal

Is this a resubmission of a previously rejected proposal? *(Select "yes" if this application is a revised version of a proposal submitted to JERICO before that was rejected by the Selection Panel)*

O Yes ● No

If yes, please give the exact reference number and submission date. Kindly describe briefly the changes made in comparison to the rejected version.

Is this a continuation of an earlier project funded under a previous call for Transnational Access in JERICO at the same facility?

O Yes ● No

If yes, please give the exact reference number and submission date. Kindly indicate also what has been achieved in the previous experiment and the reasons why the objectives have not been fully met.

PART 4: Technical information

Wherever possible, please specify your requests regarding the use of your chosen facility's equipment/instruments/sensors, including any additional services, data or other requirements.
None

List all material/equipment you plan to bring to the JERICO facility (if any):
None

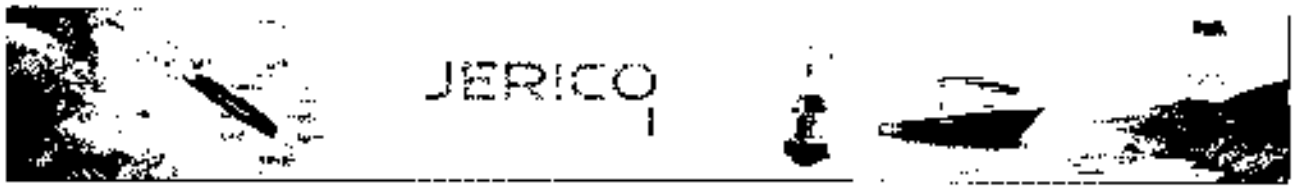
Please provide a detailed and realistic budget for the expenses you expect to incur for travel/boarding and the shipment of equipment, if applicable in your case *(note that a maximum of two travel grants will be assigned to each user group, depending on the length of the requested period of stay)*.

Costs regards two travels and two weeks lodging for 1 CNR researcher/technician in Mallorca during the training for instrument preparation (starting experiment) and two travels and two weeks lodging during the training for sea glider recovery and data processing/analysis (ending experiment).

Travel (4): 2400 euro
Hotel 28 nights (2*(7+7)): 2600 euro
Meals: 2000 euro
TOTAL 7000 euro

Please tick the appropriate boxes and give detailed information for the kind of risks associated with your proposed activity

☐ Chemical :
☐ Biological :
☐ Radiological :
■ Other: sea and weather conditions



Date of compilation 30/03/2012

Signature of the PI

Signature of an appropriate authorised person
(e.g. Head of Department, Research Office)

Ist. Ambiente Marino Costiero - C.N.R.
Il Direttore
Dott. Salvatore Mazzola

This section reserved to the JERICO TNA Office

Date of proposal receipt by email

Assigned reference number

Signature of receiving officer

Assigned reference number:	**CALL_1_9**
Date of proposal receipt by email:	**02/04/2012**
P.I. Name and Surname:	**Laurent Coppola**
Institution and Department:	**Observatoire Oceanographique de Villefranche Mer Group UMS829 -FR**
Date of email answer by TNA office:	**02/04/2012**

JERICO

Application for Transnational Access

to Coastal Observatories

National Research Council of Italy

Helmholtz-Zentrum Geesthacht

CSIC

Description of the project (to be provided in pdf format)
Please contact the manager of the infrastructure/installation you wish to use before writing the proposal

PART 1: User group details

Indicate if the proposal is submitted by

O an individual
x a user group

Information about the applicants (PI and project partners)

Principal Investigator (user group leader)

Title Dr Name and Surname Laurent Coppola
Gender x Male O Female
Institution Observatoire Oceanographique de Villefranche/Mer
Department / Research Group UMS829
Address Chemin du Lazaret Batiment Jean Maetz 06238 Villefranche-sur-Mer
Country France
email coppola@obs-vlfr.fr
Telephone +33493763988
Fax +33493763992

Project partners

(repeat for each partner of the group)

Partner # 1

Title Dr Name and Surname Dominique Lefevre
Gender x Male O Female
Institution Mediterranean Institute of Oceanography
Department / Research Group UMR 7294
Address Campus de Luminy 13288 Marseille Cedex 09
Country France
email Dominique.lefevre@univmed.fr

PART 2: Additional information about the applicant(s) expertise

Expertise of the group in the domain of the application

The group is expert on oceanic time series and biogeochemical water processes in the Mediterranean Sea. The group is focusing, in particular, on dissolved oxygen concentration and its variability in the water column.

Short CV of the PI

Laurent Coppola, Ph.D, is researcher in marine science, with 10 years of experience in marine biogeochemistry and a particular interest for marine particles fluxes, water mass circulation and biogeochemical properties. He is the chief scientist of the Dyfamed site and involved in the MOOSE (Mediterranean Ocean Observing System) French network. Laurent Coppola is also partner in the EMSO network. He has experience of EU funded projects (EUROSITES, JERICO, PERSEUS) including in particular his role of WP leader in the FP7 Collaborative Project EUROSITES. Laurent Coppola is also scientific steering committee member of the international eulerian network OCEANSITES.

A list of 5 recent, relevant publications of the participant(s) in the field of the project

P. Zunino, K. Schroeder, M. Vargas-Yáñez, G.P. Gasparini, L. Coppola, M.C. García-Martínez, F. Moya-Ruiz. 2012. Effects of the Western Mediterranean Transition on the resident water masses: Pure warming, pure freshening and pure heaving. Journal of Marine System in press

Heimbürger L-E, Lavigne H., Migon C., Coppola L., D'Ortenzio F., Miquel J-C. and Estournel C. Interannual variability of the mass flux at the DYFAMED time-series station (Ligurian Sea). DSRII. In revision

K. Schroeder et al. Long-term monitoring of the hydrological variability in the Mediterranean Sea: the HYDROCHANGES network. In preparation.

PART 3: Detailed scientific description of the project

List the main objectives of the proposed research

(one page maximum)

Integration of the dissolved oxygen concentration in the long term time series data in the Ligurian basin to track the water mass variability, the impact of the water mass change on the oxygen content and to estimate the time lag between the eastern (Corsica Channel) and the western (Dyfamed) part of the Ligurian Sea.

Give a brief description of the scientific background and rationale of your project

(one page maximum)

Long-term monitoring of hydrological parameters (temperature and salinity), collected as time series with adequate temporal resolution in key-places of the Mediterranean Sea constitute a priority in the context of global warming. In the North-Western Mediterranean Sea, long term time series of potential temperature and salinity have shown a real increase in the Western Mediterranean Deep Water (WMDW) and in the Levantine Intermediate Water (LIW) comparable to the EMT for the deep waters especially since 2005 where deep convection in NW basin has been intensified (Béthoux et al. 1998, Millot et al. 2006, Schroeder et al., 2008). This change induced an uplifted of the old water mass by several hundreds of meters in almost the whole western basin, inducing an abrupt increase in the deep heat and salt contents, and a change in the deep stratification creating a new deep water mass spreading the whole western basin. This new deep water induces also higher dissolved oxygen concentrations (Schroeder et al. 2010) that could influence the deep marine ecosystem. However, oxygen concentrations remain poorly observed and represent a gap for our understanding on the water mass change and its consequences on biogeochemical processes.

The Ligurian Sea is one of the two important sub-basins of the WMED. It represents the connection between the Tyrrhenian Sea and the Gulf of Lion. It is characterized by a basin-scale cyclonic circulation with strong currents around its edge, the Northern Current flowing close to the Italian and French coasts and the western Corsica Current (Astraldi and Gasparini, 1992), flowing west of Corsica (figure 1). This cyclonic gyre has been attributed to geostrophic adjustment to winter deep-water formation (Crépon et al., 1989) and the influence of cyclonic wind stress curl (Herbaut et al., 1997). In this region two deep moorings monitor the water mass variability: the Dyfamed site (43°25N, 7°52E) and the Corsica Channel (43°02N, 9°41E). Both moorings showed in 400m depth (LIW level) a rapid increase in potential temperature following by a rapid decrease, suggesting dramatic changes occurring over recent years (figure 2). Herrmann et al. (2010) suggested that the absence of DWF events during the milder ‘90s have favoured the progressive accumulation of heat and salt in the intermediate layer, which then have been transferred to the new deep waters formed in early 2005 (Schroeder et al., 2010; Zunino et al., 2012).

Our objectives here is to add oxygen measurements at the Dyfamed (DYF) and the Corsica Channel (CC) sites by implementing an oxygen sensor (optode) in order to be able to trace the water mass variability and to estimate the time lag between both sites.

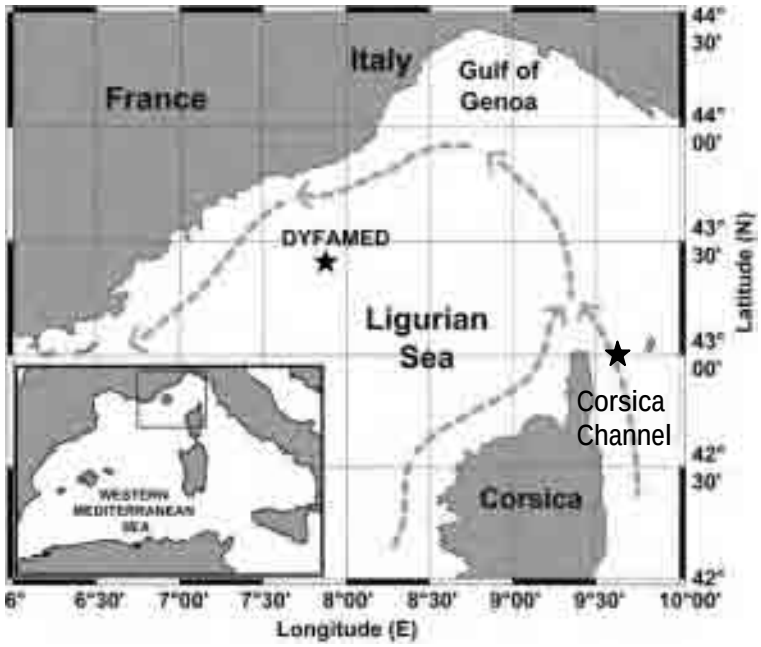


Figure 1. Location of DYFAMED and CORSICA Channel sites with the main LIW circulation (from Millot and Taupier-Letage 2005)

Figure 2. Potential temperature evolution at 400m depth in the Sicily Channel (above), the Corsica Channel (middle) and DYFAMED (below).

Astraldi M., and Gasparini G.P., 1992. The seasonal characteristics of the circulation in the North Mediterranean Basin and their relationship with the atmospheric-climatic conditions, J. Geophys. Res., 97, 9531-9540.

Béthoux, J.P., Gentili, B. and Tailliez, D., 1998. Warming and freshwater budget change in the Mediterranean since the 1940s, their possible relation to the greenhouse effect. Geophys. Res. Lett., 25(7), 1023-1026.

Crépon M., M. Boukthir, B. Barnier, F. Aikman III, 1989. Horizontal ocean circulation forced by deep water formation. Part I: an analytical study. Journal of Physical Oceanography, 19, 1781–1792.

Herbaut C., L. Mortier, M. Crépon, 1997. A sensitivity study of the general circulation of the western Mediterranean. Part II: the response to atmospheric forcing. Journal of Physical Oceanography, 27, 2126–2145

Herrmann, M., Sevault, F., Beuvier, J. and Somot, S., 2010. What induced the exceptional 2005 convection event in the Northwestern Mediterranean basin? Answers from a modeling study. J. Geophys. Res., 115(C12051), doi:10.1029/2010jc006162.

Millot, C. and Taupier-Letage, I., 2005. Circulation in the Mediterranean Sea. The Handbook of Environmental Chemistry, K, 29 - 66, doi:10.1007/b107143

Millot, C., Candela, J., Fuda, J.-L. and Tber, Y., 2006. Large warming and salinification of the Mediterranean outflow due to changes in its composition. Deep-Sea Res., 53(4), 656-666, doi:10.1016/j.dsr.2005.12.017.

Schroeder K., Ribotti A., Borghini M., Sorgente R., Perilli A. and Gasparini G.P., 2008. An extensive western Mediterranean deep water renewal between 2004 and 2006. Geophys. Res. Lett., 35 (L18605): doi: 10.1029/2008GL035146.

Schroeder, K., Josey, S.A., Herrmann, M., Grignon, L., Gasparini, G.P. and Bryden, H.L., 2010. Abrupt warming and salting of the Western Mediterranean Deep Water after 2005: atmospheric forcings and lateral advection. J. Geophys. Res., doi:10.1029/2009jc005749.

Zunino P., Schroeder K., Vargas-Yáñez M., Gasparini G.P., Coppola L., García-Martínez M.C and Moya-Ruiz F., 2012. Effects of the Western Mediterranean Transition 1 on the resident water masses: pure warming, pure freshening and pure heaving. Journal of Marine Systems, doi: j.jmarsys.2012.01.011.

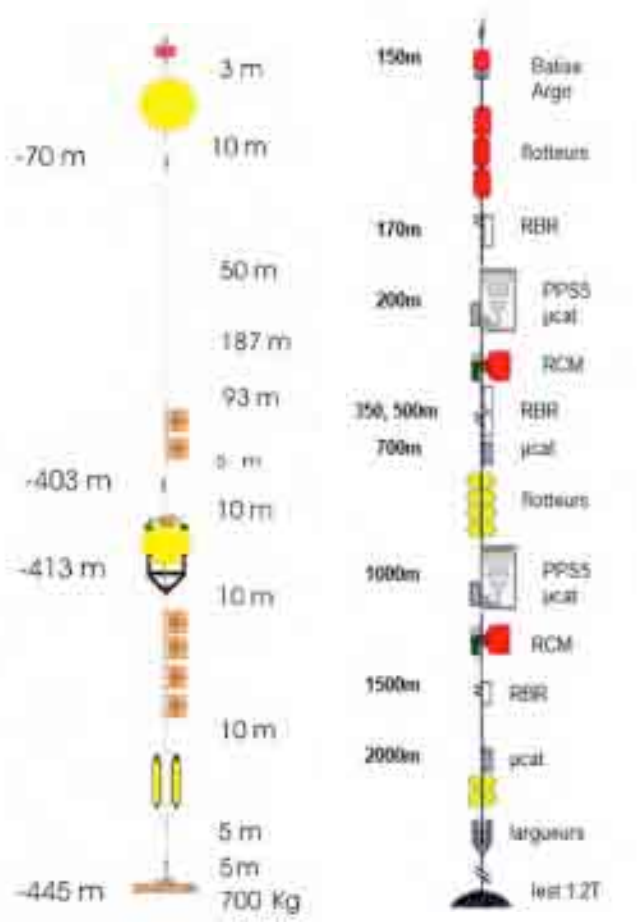
Present the proposed experimental method and working plan

(one page maximum)

The DYFAMED site (2350m depth) and the CORSICA Channel (445m depth) are permanently monitored since 1988 and 1985 respectively to observe the water masses evolution and more specifically the shift of the LIW property due to the climate change. These observations are done through fixed moorings regularly maintained to record temperature, salinity and currents data. Since 2005 and 2009, the CC and DYF moorings are respectively equipped with precise sensors Seabird SBE37 (0.001°C). Both moorings are maintained every year through annual/semi-annual scientific cruises in order to collect T-S data, to clean and to calibrate the sensors and to repair the mooring line (figure 3).

Here, the objective is to install on oxygen optical sensor (optode 4330 Aanderaa) on the Corsica Channel mooring at 400m depth as it will be done from 18 to 27 July 2012 (cruise MOOSE GE) at the Dyfamed mooring (400m and 2000m). The implementation of the DO sensor can be done during the Urania cruise which is planned by CNR from 16-25 November 2012 to maintain moorings in the Tyrrhenian Sea, the Sicily strait and the Corsica Channel.

Figure 3. Design of the CC (left) and DYF (right) moorings



The optode sensor fits to the long term monitoring, as the data drift is very low and the data accuracy higher than other chemical sensor. The optode will record the dissolved oxygen concentration every 6min through a data logger equipped with lithium battery. This sensor will be preliminary calibrated in laboratory with Winkler titration and during the cruise before and after the mooring deployment (in situ calibration). The DO sensor in CC will be deployed for 2 periods of 6 months to be consistent with the DYF site (where data are collected every 12 months). Data will be recovered, validated with Winkler titration, and analysed together other parameters measured in the site after each period.

The user team and the CNR team in La Spezia will meet twice, after the first six months for data treatment/interpretation and after one-year for common analysis of data from the CC and DIF sites.

Indicate the type of access applied for

x remote	*(the measuring system is implemented by the operator of the installation and the presence of the user group is not required)*
O partially remote	*(the presence of the user group is required at some stage e.g. installing and un-installing)*
O in person/hands on	*(the presence of the user group is required/recommended during the whole access period)*

Indicate the proposed time schedule including expected duration of access time

(half a page maximum)

(18 to 27 July 2012: deployment of the DO sensors on the DYF site)

16-25 November 2012: deployment of the DO sensor in the CC site

May/June 2013: collect of the DO sensor and data acquisition, DO sensor in situ calibration (Winkler titration) and re-deployment of the DO sensor for the next 6 months

July 2013: collect of the DO data from the DYF site and comparison between both sites (in term of T, S, currents and DO data)

Host infrastructure

Indicate the type(s) of JERICO host facility(s) you are interested in
(Tick more than one if it is useful for your project)

O ferrybox x fixed platform O glider O calibration laboratory

Indicate the specific JERICO host facility(ies) you wish to choose

Corsica Channel mooring (CNR-ISMAR)

Explain briefly why you think your project will be best carried out at the specified host facility(ies)

The Corsica Channel is a strategic site where a branch of the LIW is passing through before reaching the DYFAMED site (cyclonic circulation). From previous time series data, a time lag has been observed in term of T-S change in the LIW level. To solve this issue, regular and long term oxygen measurements might give us a good opportunity to understand and to estimate accurately this time lag. This also gives us the possibility to quantify the variability of the LIW property due to the climate change already observed in the Mediterranean Sea.

If possible, list other JERICO facility(ies) where you think your experiment could alternatively be carried out

None. This proposal should be done in the Corsica Channel fixed platform

Additional information

Is there a facility similar to the one you wish to utilize in your country?

O Yes x No

If yes, please indicate your reasons for requesting access to the JERICO facility you have chosen

Have you already submitted an Access Proposal to any of the participating facilities under this or previous EU Programs?

O Yes x No

If yes, please indicate the name of the institution, submission date and reference number for each such proposal

Is this a resubmission of a previously rejected proposal? *(Select "yes" if this application is a revised version of a proposal submitted to JERICO before that was rejected by the Selection Panel)*

O Yes x No

If yes, please give the exact reference number and submission date. Kindly describe briefly the changes made in comparison to the rejected version.
Is this a continuation of an earlier project funded under a previous call for Transnational Access in JERICO at the same facility? O Yes x No
If yes, please give the exact reference number and submission date. Kindly indicate also what has been achieved in the previous experiment and the reasons why the objectives have not been fully met.

PART 4: Technical information

Wherever possible, please specify your requests regarding the use of your chosen facility's equipment/instruments/sensors, including any additional services, data or other requirements.

The operator of the installation is requested to do water sampling and Winkler titration before and after the DO sensor deployment in order to calibrate in situ the oxygen data from the optode.

List all material/equipment you plan to bring to the JERICO facility (if any):

One optode sensor Aanderaa
One data logger with Li battery (Squidd)

Please provide a detailed and realistic budget for the expenses you expect to incur for travel/boarding and the shipment of equipment, if applicable in your case *(note that a maximum of two travel grants will be assigned to each user group, depending on the length of the requested period of stay)*.

Shipment of equipment (two ways) = 300 euros x 2 (to CNR and than back home)

Travel/visit to CNR for **2 scientists x 5 days** for data treatment/interpretation after 6 and 12 months = **3000 euros**

Please tick the appropriate boxes and give detailed information for the kind of risks associated with your proposed activity

x Chemical : no chemical risk or contamination (optical sensor)
☐ Biological :
☐ Radiological :
☐ Other :

Date of compilation 2nd April 2012

Signature of the PI

Signature of an appropriate authorised person
(e.g. Head of Department, Research Office)

P/O le Directeur

Grégory Maggion
Secrétaire Général OOV

UNIVERSITE P. et M. CURIE-CNRS-INSU
OBSERVATOIRE O[illegible]LOGIQUE
B.P.
06238 Villefranche-sur-Mer cedex

This section reserved to the JERICO TNA Office

Date of proposal receipt by email

Assigned reference number

Signature of receiving officer

Assigned reference number:	**CALL_1_10**
Date of proposal receipt by email:	**03/04/2012**
P.I. Name and Surname:	**Anna Wahlin**
Institution and Department:	**Department of Earth Sciences, University of Gothenburg**
Date of email answer by TNA office:	**03/04/2012**

JERICO

Application for Transnational Access

to Coastal Observatories

University of Gothenburg

2 April 2012

National Research Council of Italy

Description of the project (to be provided in pdf format)
Please contact the manager of the infrastructure/installation you wish to use before writing the proposal

PART 1: User group details

Indicate if the proposal is submitted by

O an individual
X a user group

Information about the applicants (PI and project partners)

Principal Investigator (user group leader)

Title Assoc. Prof Name and Surname Anna Wåhlin_____

Gender O Male X Female

Institution Department of Earth Sciences, University of Gothenburg_____

Department / Research Group Oceanography_____

Address _Box 460, 405 30 Gothenburg_____

_____

Country __Sweden_____

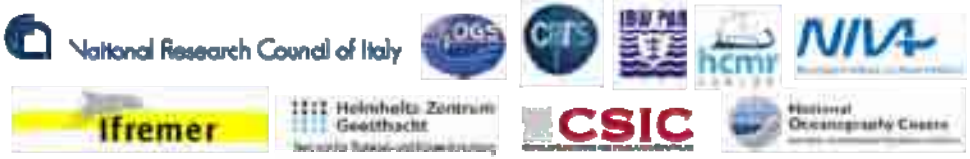
email ___anna.wahlin@gu.se_____

Telephone ___+46708394462_____

Fax ____+46317861986_____

Project partners
(repeat for each partner of the group)

Partner # 1



Title Prof._ Name and Surname Karin Borenäs_____

Gender O Male X Female

Institution _SMHI_____

Department / Research Group ___Oceanographic Research_____

Address SMHI Gothenburg, Sven Källfelts gata 15, SE-426 71 Västra Frölunda_____

Country __Sweden_____

email __karin.borenas@smhi.se_____

Partner # 2

Title Dr._ Name and Surname Bengt Karlson_____

Gender X Male O Female

Institution _SMHI_____

Department / Research Group ___Oceanographic Research_____

Address SMHI Gothenburg, Sven Källfelts gata 15, SE-426 71 Västra Frölunda_____

Country __Sweden_____

email __bengt.karlson@smhi.se_____

Partner # 3

Title Prof._ Name and Surname Göran Björk_____

Gender X Male O Female

Institution _Department of Earth Sciences, University of Gothenburg_____

Department / Research Group _Oceanography_____

Address __Box 460, 405 30 Gothenburg_____

Country __Sweden_____

email __gobj@gvc.gu.se_____

Partner # 4

Title Prof._ Name and Surname Lars Arneborg_____

Gender X Male O Female

Institution _Department of Earth Sciences, University of Gothenburg_____
Department / Research Group _Oceanography_____
Address __Box 460, 405 30 Gothenburg_____
Country __Sweden_____
email __laar@gvc.gu.se_____

Partner # 5
Title Dr._ Name and Surname Lene Friis Möller_____
Gender O Male X Female
Institution _Department of Biological and Environmental Sciences, University of Gothenburg_____
Department / Research Group _Plankton ecology_____
Address __ Kristineberg 566, 451 78 Fiskebäckskil_____
Country __Sweden_____
email __lene.friis.moller@bioenv.gu.se_____

PART 2: Additional information about the applicant(s) expertise

Expertise of the group in the domain of the application

The group has many years of experience in experimental oceanography, physical oceanography, biological oceanography (i.e. phyto- and zooplankton ecology). The group has together published over 100 papers in international peer-reviewed journals in closely related subjects. The whole group has not been engaged in a joint project previously, but all members of the group have worked extensively with the other members. Collaborations have taken place during joint projects both nationally and internationally (e.g. CANIGO). The group has together performed over 25 oceanographic expeditions in Scandinavian and polar waters.

Short CV of the PI

Curriculum Vitae

Dr. A. K. Wåhlin
Senior Researcher in Polar Oceanographjy, Göteborg University

1. Ph. D.
Ph. D. in Physical Oceanography, University of Gothenburg, 2001.

2. Post-doc visits

2008 USA, guest researcher at Woods Hole Oceanographic Institution (4 months)
2003 USA, Florida State University (4 months), visiting Prof. D. Nof.
2002 - 2006 Norway, Oslo University (4 years), Department of Geophysics.

3. Associate Professor (Docent)
Associate Professor in Physical Oceanography, University of Gothenburg, 2007

4. Current position
From Jan 2011, Senior research position (Rådsforskartjänst) in Polar Oceanography (Vetenskapsrådet). Department of Earth Sciences, University of Gothenburg.

5. Previous assignments:
2003 - 1 april 2006. Post-doc Oslo Universitet.
1 april 2006 - 1 april 2007 Research scientist (Vetenskapsrådet), Meteorologiska institutionen, Stockholms Universitet
1 april 2007 - 2010. Research scientist (Vetenskapsrådet), Institutionen för Geovetenskaper, Göteborgs Universitet.

6. Maternity leave
In total 18 months maternity leave for two children during the years 2000 - 2003

7. Supervision of Ph. D. students
Dr. E. Darelius, Ph. D. 2007 (Geofysiskt institutt, University of Bergen). Thesis title: On the influence of Small-Scale Topography on Dense Plumes, with a Special Focus on the Filchner Overflow Plume.
Ongoing: O. Kalen

8. Cruise experience
2010/2011: Oden Southern Ocean. Polar expedition with **Icebreaker Oden** to the Amundsen and Ross Seas, Antarctica. PI on board.
2008/2009: Oden Southern Ocean. Polar expedition with **Icebreaker Oden** to the Amundsen and Ross Seas, Antarctica. PI on board.
2008-2009: Responsible for field course in Marine Environmental Monitoring, University of Gothenburg (2 years), **RV Skagerrak**
2007: Polar expedition with **Icebreaker KV Svalbard** to Storfjorden, Svalbard. PI.

9. Invited oral presentations at international conferences (since 2007):
2011 **Invited speaker** at the Faculty of Science Research Days, University of Gothenburg
2010 **Invited keynote speaker** at the **Scientific Committee for Antarctic Research** Open Science conference, Buenos Aires.
2010 **Invited speaker** to the Crafoord Symposium held jointly with the Crafoord Prize Ceremony **(Royal Swedish Academy of Science)**
2008 **Invited speaker** to the Sandström Symposium, **Stockholm University**.
2008 **Invited speaker** to the Spring colloquium series, **Yale University, USA**.
2007 **Invited speaker** to the **HYDRALAB III General Assembly**, 'Experimental observations of increased entrainment in the presence of submarine canyons and ridges'. **Budapest, Hungary.**
2007 **EGU General Assembly**, 'Topographic steering of dense overflow plumes by canyons and ridges'. Vienna, Austria **(solicited presentation).**

10. Awards and stipends

2010 Crafoord Research Stipend, Swedish Royal Academy of Science
2008 Fulbright Research Fellowship, Fulbright Foundation
2003 Kristine Bonnevie stipend, Faculty of Mathematics and Natural Sciences, Oslo University

11. External examiner for Ph. D. students (in Swedish: 'Opponent')

2011 C. Wang, Ph. D. University of Helsinki. Thesis title: Antarctic Ice Shelf Melting and its impact on the Global Sea Ice-Ocean System.
2011 S. Teigen, Ph. D. University Center of Svalbard/University of Bergen. Thesis title: Water mass exchange in the sea West of Svalbard.
2011 B. Lynge, Ph. D. University of Oslo. Thesis title: High Resolution Tidal Models for the Norwegian Coast
2006 J. Albretsen, Ph. D. Oslo University. Thesis title: The Skagerrak circulation sensitivity to external forcing.

12. Other types of professional recognition

2011 Summer school lecturer: Invited lecturer for the course 'Ocean Biogeochemical Dynamics' arranged by the Tellus platform, University of Gothenburg
2010 Summer school lecturer: Invited lecturer for the Alpine Summer School on Fundamental Processes in Geophysical Fluid Dynamics and the Climate System (topic for 2010 'Buoyancy Driven Flows'), *http://www.to.isac.cnr.it/aosta/*
2009 Convener of *'Mixing in the ocean: Causes and consequences'*, session of IAPSO general meeting, Montreal, Canada.
2008 Co-convener of *'The Nordic Seas and the North Atlantic's Subpolar Gyre:...'*, of Ocean Sciences Meeting in Orlando, Florida, March 2-7, 2008
2007 Convener of *"Turbulence in Buoyant and Dense Plumes"* of the 39th International Liège Colloquium on Ocean Dynamics.

13. Funding record after the post-doc period:

PI or CI of in total 9 grants, amounting to a total sum of 13.400 kSEK from the Swedish Research council, Vinnova, EU, Fulbright and the Royal Swedish Academy of Science

14. Publications.

17 publications in international peer-reviewed journals. H-index: 10
The five most highly cited publications are listed below (in chronological order). Citation data are from Scopus.

Darelius, E. and **A. Wåhlin**, 2007. Downward flow of dense water leaning against a topographic ridge. *Deep-Sea Research part I*, 54 (7), 1173-1188. **Number of citations: 18**
Wåhlin, A., 2004: Downward channeling of dense water in topographic corrugations, *Deep-Sea Research part I,* 51 (4), 577 - 599. **Number of citations: 21**
Borenäs, K. M., **A. Wåhlin**, I. Ambar and N. Serra, 2002: The Mediterranean outflow splitting - a comparison between theoretical models and CANIGO data. *Deep Sea Research II*, 49, 4195-4205. **Number of citations: 24**
Wåhlin, A., 2002: Topographic steering of dense bottom currents with application to submarine

canyons, *Deep-Sea Research part I*, 49 (2), 305 - 320. **Number of citations: 37**
Wåhlin, A. and G. Walin, 2001: Downward migration of dense bottom currents. *Environmental Fluid Mechanics* 1 (2), 257 - 279. **Number of citations: 20**

Examples of relevant publications of the participants in the field of the project

1. Björk, G. and K. Nordberg, Upwelling along the Swedish west coast during the 20th century, Continental Shelf Research, 23, 1143-1159, 2003.
2. Møller, LF., Riisgård, H.U. (2007). Population dynamics, growth and predation impact of the common jellyfish Aurelia aurita and two hydromedusae, Sarsia tubulosa, and Aequorea vitrina in Limfjorden (Denmark). Mar. Ecol. Prog. Ser., Vol. 346: 153–165, 2007
3. Arneborg, L. (2004). Turnover times for the water above sill level in Gullmar Fjord Cont. Shelf Res., Vol. 24, 443–460.
4. Holliday, N.P., Hughes, S.L., Borenäs, K., Feistel, R., Gaillard, F., Lavìn,, A., Loeng, H., Mork, K., Quante, M., and R. Somavilla. Long-term physical variability in the North Atlantic Ocean. In Reid, P.C., and Valdés, L., 2011. ICES status report on climate change in the North Atlantic. ICES Cooperative Research Report No. 310, 21-46.
5. Karlson, B., Sahlsten, E., Edler, L., Kuylenstierna, M. & Granéli, W. (1996). Subsurface chlorophyll maxima in the Skagerrak - processes and community structure. J. Sea Res., Vol. 35: 139-158.
6. Wåhlin, A., Muench, R, Arneborg, L., Björk, G., Ha, H. K., Lee, S. H. and Alsén, H., 2012. Some implications of Ekman layer dynamics for cross-shelf exchange in the Amundsen Sea. Journal of Physical Oceanography, in press
7. Jaspers C, Møller LF, Kiørboe T (2011) Salinity Gradient of the Baltic Sea Limits the Reproduction and Population Expansion of the Newly Invaded Comb Jelly *Mnemiopsis leidyi*. PloS One 6(8): e24065. doi:10.1371/journal.pone.0024065

PART 3: Detailed scientific description of the project

List the main objectives of the proposed research

(one page maximum)

- To detect the position of the Kattegat-Skagerrak front using in situ observations from autonomous gliders and research vessel, as well as satellite images
- To correlate the position and variability of the front with possible driving mechanisms and apply a conceptual model for the transport along the front
- Determine the three-dimensional properties of the front and correlate the hydrography to the biology
- To investigate the distribution of phytoplankton using chlorophyll fluorescence as a proxy for phytoplankton biomass. Coccolithophorids has a special focus and turbidity will be used as a proxy.
- To investigate the distribution of zooplankton including jellyfish

Give a brief description of the scientific background and rationale of your project

(one page maximum)

The conditions in Kattegat are crucial for the water exchange with the Baltic Sea. In the northern part the relatively fresh Kattegat water masses are separated from the more saline Skagerrak water by a front. The dynamics of this front is of special interest since it may have an impact on the Baltic Sea inflow. The front also plays an important role for many biological processes, for example, the

spreading of larvae by the frontal current. More recent observation techniques have increased the amount of data considerably, so that it is now possible to evaluate existing process models for the position and motion of the front. In the present project the vertical extent of the front and water masses will be examined and the data compared to time series of remote- and underway measurements. The effect the front has on algae bloom, larvae transport and zooplankton (including jellyfish) distribution will be examined. Preliminary results point to enhanced mixing in the vicinity of the front, and the effects of this will be further examined during the project.

The baroclinic Rossby radius (the length scale at which the effects of the Earth's rotation become important) based on the two water masses is around 10 kilometers, i.e. small compared to the width of Kattegat. Hence the dynamics are expected to be rotationally dominated for baroclinic flows (Nielsen, 1998). The halocline is only present in the deeper eastern parts of Kattegat, and the water column in the shallow plateau in the western parts is more or less homogeneous (Pedersen, 1993). The northern surface front is found in the neighborhood of the border between Kattegat and Skagerrak. The front moves considerably in the north-south direction and it is debated where its mean position is located and the range of the variability (Jakobsen, 1997). In Fig.1 a recent example of the front is given.

Nielsen (2005) suggests that the surface front in the northern part plays an important role for the circulation in the entire Kattegat (Nielsen, 2005). The density gradient across the front may cause a large-scale anticyclonic circulation in the upper layer, and a corresponding cyclonic circulation in the lower layer. This hypothesis was supported by a new data set and also by a previous investigation by Andersson and Rydberg (1993). According to Nielsen (2005) the lower layer circulation supplies oceanic water to the Baltic and it is put forward that the strength and location of the Kattegat-Skagerrak front may have an impact on the Baltic Sea inflow. The question of what controls the position of the front remains more or less open though (Nielsen, 2005).

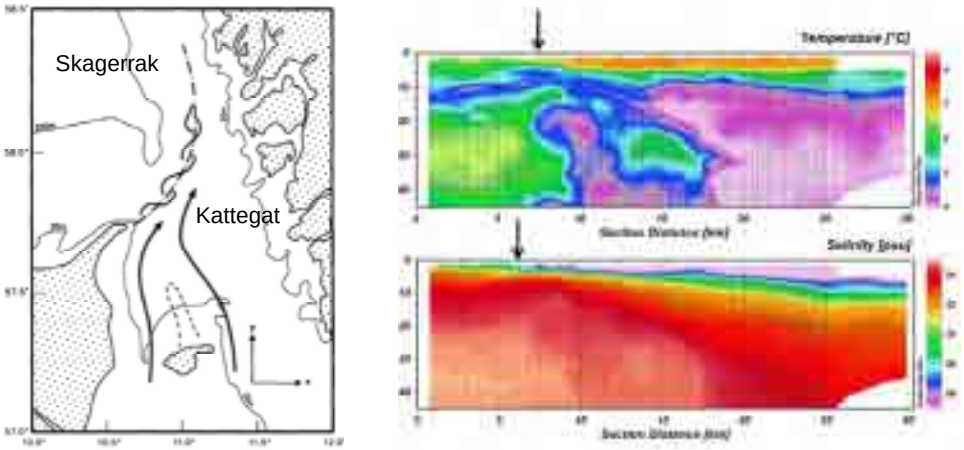


Figure 1. Map showing the approximate position of the Kattegat-Skagerrak front. (From Jacobsen, 1997). Right panel: Transects across the surface front showing temperature and salinity on April 12, 2010 (Sweden to the right). These data were obtained with dense MSS microstructure profiling. The temperature- and salinity fronts are indicated by black arrows.

Nielsen (2005) discussed the possibility of fish eggs and larvae to be transported by the baroclinic flow if the front zone is in the vicinity of the spawning area. This mechanism can hence be of major importance for the size of the recruitment. Carstensen et al. (2004) suggests that phytoplankton blooms could get started in hydrodynamically active regions, such as the front zone, and then be transported to other parts of the Kattegat. The invasive ctheonophore *Mnemiopsis leidyi* is reintroduced every year to the Skagerrak/Kattegat area where it potentially has a major impact on the pelagic food web (Møller&Tiselius, unpublished). The pathway of re-introduction is still unknown and this study will give new information on what controls if and when the ctenophores arrive.

All studies of the Kattegat-Skagerrak front suffer from a shortage of data, and in particular data with good spatial coverage. It is anticipated that the combination of the new type of data, obtained from remote sensing, underway measurements, and autonomous glider data in combination with transects will provide better statistics for the surface front and contribute to a better understanding of the mechanisms that determine the position of the Kattegat front and the general dynamics in this area.

Present the proposed experimental method and working plan

The Skagerrak-Kattegat front will be examined using a combination of autonomous glider data, ship-based transects and remotely sensed data together with underway measurements from the Color Fantasy Ferry box system on the route Oslo-Kiel operated by JERICO partner NIVA.

The experiment will take place in late spring 2013. The gliders will be used to cover a half-circle of short transects where we expect the front to be located (the track will be adjusted during the course of the experiment in order to capture the front region). The transects are located so that the main current will move the glider along the front, while the glider moves across the main front and current making several short transects (Figure 2)

Figure 2. Satellite image showing ocean color (TERRA MODIS, processed by Martin Hansson, SMHI) together with the proposed glider sections (red), the main current (black) and the return track for the glider (out of the main current).

The gliders will measure salinity, temperature, oxygen content, chlorophyll fluorescence, turbidity, dissipation rates of turbulent kinetic energy, and all other available hydrographic sensors that can be used to characterize the front and the mixing within the front. During deployment and recovery we will also make use of the research vessel Skagerak for 5 days on each occasion. The same transects will then be occupied with the research vessel, from which most of the biological sampling will take place with water sampling for phytoplankton and net tows for zooplankton and jellyfish (Hydrobios MultiNet). From the research vessel we will also measure hydrography with a Seabird CTD (fitted with sensors for chlorophyll fluorescence, turbidity etc.), currents with a ship-born ADCP, and mixing using an MSS turbulence profiler. These measurements will be used for intercalibration of the gliders as well as to complete the dataset.
Data produced will be available to JERICO partners and will be submitted to the Swedish Oceanographic Data Centre at SMHI.

Indicate the type of access applied for

O remote	*(the measuring system is implemented by the operator of the installation and the presence of the user group is not required)*
O partially remote	*(the presence of the user group is required at some stage e.g. installing and un-installing)*
X in person/hands on	*(the presence of the user group is required/recommended during the whole access period)*

Indicate the proposed time schedule including expected duration of access time
(half a page maximum)

May 20 to June 14, 2013 (28 days)
The research vessel departs on a Monday from Kristineberg, on the Swedish West coast, for the deployment and recovery cruises. It is preferable if the equipment can arrive on the Friday before the deployment, and if the technician can arrive on the Sunday so that we can get all people and the equipment to Kristineberg on Sunday evening (it is a 2 hour drive from Gothenburg).

Host infrastructure

Indicate the type(s) of JERICO host facility(s) you are interested in
(Tick more than one if it is useful for your project)

O ferrybox	O fixed platform	X glider	O calibration laboratory

Indicate the specific JERICO host facility(ies) you wish to choose
COBS 4 POL GLIDER

Explain briefly why you think your project will be best carried out at the specified host facility(ies)

The facility is positive towards transporting the equipment and performing experiments in Swedish waters.

If possible, list other JERICO facility(ies) where you think your experiment could alternatively be carried out

Provided they are positive towards performing experiments in Swedish waters, the following facilities could be used:
COSYNA_3 (GLIDER); CSIC-Glider and CETSM

Additional information

Is there a facility similar to the one you wish to utilize in your country?

O Yes X No

If yes, please indicate your reasons for requesting access to the JERICO facility you have chosen

Have you already submitted an Access Proposal to any of the participating facilities under this or previous EU Programs?

O Yes X No

If yes, please indicate the name of the institution, submission date and reference number for each such proposal

Is this a resubmission of a previously rejected proposal? *(Select "yes" if this application is a revised version of a proposal submitted to JERICO before that was rejected by the Selection Panel)*

O Yes X No

If yes, please give the exact reference number and submission date. Kindly describe briefly the changes made in comparison to the rejected version.

Is this a continuation of an earlier project funded under a previous call for Transnational Access in JERICO at the same facility?

O Yes X No

If yes, please give the exact reference number and submission date. Kindly indicate also what has been achieved in the previous experiment and the reasons why the objectives have not been fully met.

PART 4: Technical information

Wherever possible, please specify your requests regarding the use of your chosen facility's equipment/instruments/sensors, including any additional services, data or other requirements.

If possible we would like to use two gliders. Glider G2, equipped with pumped Seabird CTD, Aanderaa oxygen optode, Wetlabs triplet sensor for CDOM, Chl-a fluorescence and turbidity, and glider G1, equipped with non-pumped Seabird CTD and a Rockland Scientific MicroRider turbulence probe (microconductivity, shear and temperature at up to 512Hz).
We need the technician to travel to Sweden and operate the glider during the deployment and recovery cruises.
Satellite communication
Processing of data
Lithium batteries for the main experiment

List all material/equipment you plan to bring to the JERICO facility (if any):

Please provide a detailed and realistic budget for the expenses you expect to incur for travel/boarding and the shipment of equipment, if applicable in your case *(note that a maximum of two travel grants will be assigned to each user group, depending on the length of the requested period of stay)*.

Costs for freight plus travel for one person, two trips to Sweden**:

Transport of gliders, air freight, 1000 EUR each way each glider
4000 EUR

Flight ticket, Liverpool-Gothenburg, 1 person, 1000 EUR each trip
2000 EUR

Rental of minivan in Sweden for transportation of equipment and personnel, 2x7 days
600 EUR

Hotel in Gothenburg, one person, four nights, 100 EUR per night
400 EUR

Food and berth on R/V Skagerak, one person, ten nights, 50 EUR per person and day
500 EUR

Daily allowance, 1 person, 14 days, 50 EUR per day
700 EUR

Sum for 2013
8200 EUR

Indirect costs (45 %): 3690 EUR

Total sum: 11890 EUR

***** The equipment is insured by the University of Gothenburg. Should the equipment be damaged or lost there will be a deductible fee of approximately 5000 EUR. This fee will not be covered by the University of Gothenburg***

Please tick the appropriate boxes and give detailed information for the kind of risks associated with your proposed activity

☐ Chemical :
☐ Biological :
☐ Radiological :

Date of compilation 120403

Signature of the PI

Signature of an appropriate authorised person
(e.g. Head of Department, Research Office) Gian Selldeni

This section reserved to the JERICO TNA Office

Date of proposal receipt by email

Assigned reference number

Signature of receiving officer

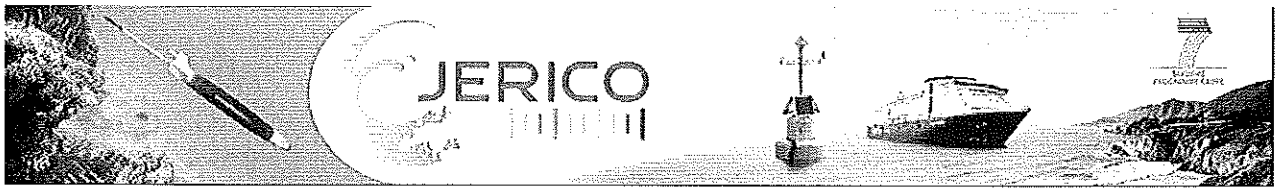
Assigned reference number: CALL_1_11
Date of proposal receipt by email: 03/04/2012
P.I. Name and Surname: Roberto Bozzano
Institution and Department: CNR ISSIA Genova
Date of email answer by TNA office: 03/04/2012

JERICO

Application for Transnational Access

to Coastal Observatories

National Research Council of Italy



Description of the project

PART 1: User group details

Indicate if the proposal is submitted by

O an individual
X a user group

Information about the applicants (PI and project partners)

Principal Investigator (user group leader)

Title _ **Mr.** __ Name and Surname _____ **Roberto BOZZANO** _____

Gender **X** Male O Female

Institution _____ **NATIONAL RESEARCH COUNCIL** _____

Department / Research Group _____ **ISSIA** _____

Address _____ **Via de Marini 6, 16149 Genoa** _____

Country _____ **ITALY** _____

email _____ **roberto.bozzano@cnr.it** _____

Telephone _____ **+39.010.6475656** _____

Fax _____ **+39.010.6475600** _____

Project partners
(repeat for each partner of the group)

Partner # 1

Title _ **Mrs.** __ Name and Surname ___ **Sara PENSIERI** _____

Gender O Male **X** Female

Institution _____ **NATIONAL RESEARCH COUNCIL** _____

Department / Research Group _____ **ISSIA** _____

Address _____ **Via de Marini 6, 16149 Genoa** _____

Country _____ **ITALY** _____

email _____ **sara.pensieri@ge.issia.cnr.it** _____

PART 2: Additional information about the applicant(s) expertise

Expertise of the group in the domain of the application

The proposing Institute for Studying Intelligent Automation Systems (ISSIA), part of the National Research Council (CNR) of Italy, is active in the instrument and methodology sector focused on the study of the marine environment. It has a significant experience in **innovative technologies for the marine environment**, the development of suitable **monitoring methods**, and the integration of measuring equipment and processing systems.

CNR-ISSIA develops, manages and operates buoys and platforms (manned and unmanned) for the monitoring of the marine environment, accesses instrumented research vessels for dedicated oceanographic cruises and also develops technologies and instrumentation for marine research.

In particular, since 1991, it manages the large spar buoy "**ODAS Italia 1**" (**W1-M3A**) moored at the centre of the Ligurian sea, 80 Km southwards from Genoa on a 1200 m deep sea bottom: it is conceived as a measuring platform in the open sea fully equipped for measuring both meteorological and marine chemical-physical parameters in the surface layer. The buoy was involved in several CNR projects in the past and, after a partial refit during 2001, it is actually used for developing and testing meteorological and marine equipment. The buoy is currently configured as an off-shore observing system with a surface buoy and a subsurface mooring line. On the surface buoy, an acquisition and control system has been developed for processing acquired measurements onboard and transferring data in near real time ashore.

In recent years, CNR-ISSIA has confirmed its leading role in many national and international research projects for the development of activities within the marine-maritime sector.

Some of these projects are cited below:

- **MyOCEAN** (2009-2012) aimed at designing and developing a monitoring and forecasting service of the ocean at a regional and global scale in order to safely and effectively managing the marine resources.
- **EUROSITES** (2008-2011) was the European component of the global ocean observing system called OceanSITES. It aimed at integrating and enhancing the existing European open-ocean observational capacity to encompass the ocean interior, seafloor and sub-seafloor.
- Marine Environment and Security for the European Area (**MERSEA**, 2004-2008) aimed at developing an operational monitoring and forecasting capability of the ocean physics, biophysics and evolution at an European and global scale.
- Mediterranean Forecasting System: Toward Environmental Predictions (**MFSTEP**, 2003-2006) contributed to the development and the enhancement of a forecasting system at the Mediterranean scale.
- MEteo-tide Newtonian FORecasting (**MENFOR**, 2006) developed an innovative system based on gravitational metrology for the forecasting of the meteorological tides.

CNR-ISSIA is actually involved into the European project **PERSEUS** (2012-2015) and **MyOCEAN2** (2012-2016). The PERSUES project aims at identifying the interacting patterns of natural and human-derived pressures on the Mediterranean and Black Seas, assessing their impact of marine ecosystems and designing an effective and innovative research governance based on the achieved scientific knowledge.

MyOCEAN2 is the prosecution of the MyOCEAN aiming at defining and setting up a concerted and integrated pan European capacity for ocean monitoring and forecasting as a GMES Marine Core Service.

CNR-ISSIA is also a member of the Mediterranean Operational Oceanography Network (MOON) and the Italian National Operational Oceanographic Group (GNOO).

Short CV of the PI

R. Bozzano is a researcher with more than 15 years of experience in the field of marine technology.

Since 2000, he is in charge of the development and the management of the large monitoring facilities based on the spar buoy ODAS Italia 1, constituting the so-called W1-M3A off-shore observing system.

His expertise originally focused on signal and image processing turned also to underwater acoustics, marine technology, and oceanography.

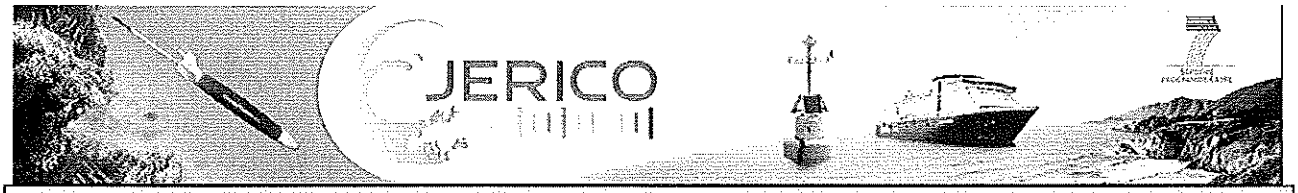
He was involved in several EU-funded research projects (i.e., MFSTEP, MERSEA, MyOCEAN, EuroSITES) and he is currently the CNR-ISSIA scientific responsible in the PERSEUS and MyOCEAN2 European projects.

In the mentioned projects, he was involved in several tasks related to the upgrade and increasing of the monitoring capability of the W1-M3A observatory especially in terms of innovative bio-geochemical sensors and to the further development of monitoring systems useful for the operational oceanography purposes.

He is the national point of contact in charge of the Data Buoy Cooperation Panel of the World Meteorological Organization and he is a member of the Steering Scientific Committee of the National Group for Operational Oceanography.

A list of 5 recent, relevant publications of the participant(s) in the field of the project

- S. Pensieri, R. Bozzano, M.E. Schiano, S. Sparnocchia, "Studies on the Interaction of the Ocean Upper Layer with the Atmosphere in the Mediterranean Sea Using the CNR-ODAS Italia1 Buoy and the R-V Urania", National Research Council of Italy - Department of Earth and Environment, Marine Research at CNR, E. Brugnoli, G. Cavarretta, S. Mazzola, F. Trincardi, M. Ravaioli, R. Santoleri Eds., Volume DTA/06-2011, Novembre 2011, ISSN: 2239-5172, pp. 1551-1560.
- S. Pensieri, R. Bozzano, M.E. Schiano, E. Canepa, S. Sparnocchia, P. Picco, "An Integrated Marine Observing System in the Ligurian Sea", National Research Council of Italy - Department of Earth and Environment, Marine Research at CNR, E. Brugnoli, G. Cavarretta, S. Mazzola, F. Trincardi, M. Ravaioli, R. Santoleri Eds., Volume DTA/06-2011, Novembre 2011, ISSN: 2239-5172, pp. 2287-2999.
- P. Picco, A. Cappelletti, S. Sparnocchia, M.E. Schiano, S. Pensieri, and R. Bozzano, "Upper layer current variability in the Central Ligurian Sea," Ocean Sci., 6, 825-836, doi:10.5194/os-6-825-2010, 2010.
- M. Tonani, N. Pinardi, C. Fratianni, J. Pistoia, S. Dobricic, S. Pensieri, M. de Alfonso, and K. Nittis, "Mediterranean Forecasting System: forecast and analysis assessment through skill scores, Ocean Science, 5, 649–660, 2009.
- K. Nittis, C. Tziavos, R. Bozzano, V. Cardin, Y. Thanos, G. Petihakis, M.E. Schiano, F. Zanon, "The M3A multi-sensor buoy network of the Mediterranean Sea," Ocean Science, Vol. 3, 229-243, 2007.



PART 3: Detailed scientific description of the project

List the main objectives of the proposed research

The proposed project addresses the main scope of performing a calibration and inter-calibration exercise of bio-geochemical sensors to be operationally and routinely deployed on off-shore marine observatories making part on a continuous basis of the marine monitoring network of the Mediterranean Sea.

In particular, the first objective consists in enhancing the accuracy of the in-situ observations on a long term basis of dissolved oxygen, chlorophyll-a and turbidity in the Ligurian basin collected by a multiparametric probes installed on the W1-M3A offshore observing system. This observatory is constituted by the only spar buoy in the Mediterranean Sea called ODAS Italia 1 and by a close subsurface mooring and it has the capability to monitor meteorological condition, as well as physical and biogeochemical properties of the ocean also with rough sea and bad weather for long-term analysis.

The opportunity to install on this platform carefully calibrated probes not only for acquiring temperature ad conductivity data, nowadays quite common, but also for collecting ocean colour, on one hand could improve the knowledge about the biogeochemical processes in the upper thermocline and on the other hand could support with real-time quality controlled observations the developing biogeochemical forecast models for both the phases of assimilation and calibration/validation.

The need for a precise and geographically-consistent calibration is especially true for what concern the chlorophyll-a measurements, since the original calibration factors are usually representative of a specific phytoplankton culture (such as the *Thalassiosira weissflogii* for the Wet-Lab instruments) that often is not typical of the basin in which the instruments have to be deployed or is present in very low concentration.

Furthermore, the W1-M3A observatory, together with the E1-M3A buoy moored in the south Aegean Sea and the E2-M3A buoy positioned in the South Adriatic, is part of the M3A network, developed within the framework of the MFSTEP project in order to answer to the needs of the Mediterranean Forecasting System of real-time physical and biogeochemical observations of the upper thermocline. After the end of the MFSTEP, the network took an important role also in MERSEA project and more recently in the EuroSITES initiative aiming at create a fully integrated system of deep ocean observatories. In this perspective, it is extremely important by the scientific point of view to give continuity to the work done and to pursue in the sensors intercalibration between the M3A sites, that represents the second objective of this proposal.

Indeed, the possibility to use sensors calibrated with the same procedures installed on the different sites belonging to the M3A network makes feasible a comparison between the involved sites thanks to an homogenous database in order to verify at a quantitative level the observed differences and to enhance the quality of the in-situ observations.

A further aim consists in the exchange of expertise for the configuration of instruments to be deployed in oceanic observatories with respect to the most valuable and efficient anti-fouling techniques.

Moreover, the proposed research will contribute to the improvement of overall quality of the Mediterranean Sea observations by sharing the collected calibrated in-situ data from the W1-M3A observing system through several data centers, such as Coriolis (IFREMER, France) and the In-Situ Thematic Assembly Center of the MyOCEAN GMES Core Marine Service managed by the Hellenic Centre for Marine Research.

Give a brief description of the scientific background and rationale of your project

Long term in-situ monitoring of bio-geo-chemical properties of the ocean is challenging, not only due to marine environmental condition that often are consistent with remote sites, corrosion issues and biologically active basins, but also due to the instruments accuracy and precision needed to obtain useful data for processes analysis as well as for assimilation into models (Claustre et al., 2009). Indeed, the complexity of the ocean seawater comprehensive of several chemical compounds makes difficult to use measurements techniques very common in laboratory (Mowlem et al., 2008).

Nonetheless, the growing interest in the knowledge of ocean interior (Cronin et al., 2012) together with the increasing sophistication of autonomous analyzers promote the investigation of processes such as oxygen consumption, primary productivity and ocean acidity that have not been possible to be autonomously measured in the past.

Apart from their undoubted scientific relevance (for process analysis as well as for modeling requirements) some biogeochemical variables can be nowadays measured through non-intrusive and automatic, partially miniaturized, low-power, in-situ sensors (Nittis et al., 2007). The variability of these processes due to geographical position, seasonal behaviour and concentrations, that sometimes are very low, requires a close attention to the maintenance procedures of the used instrumentations, especially in terms of calibration.

This proposal focus its attention on three of the most significant parameters related to the ocean status of health: dissolved oxygen, fluorescence and turbidity. In particular, the proposed work aims at validating and cross-validating several sensors to be operationally used in off-shore and deep ocean observatories.

The amount of dissolved oxygen is a measure of the biological activity of the water masses (Joss et al., 2003). Phytoplankton and macroalgae present in the water mass produce oxygen by way of photosynthesis. Bacteria and eukaryotic organisms (zooplankton, algae, fish) consume this oxygen through cellular respiration. The result of these two processes determines the concentration of dissolved oxygen, which in turn indicates the production of biomass.

The use of fluorometers for long term deployments is widespread by providing useful information on growth rates of phytoplankton communities. Subsurface chlorophyll measurements can give additional information to satellites, especially in detecting deep chlorophyll maxima. Nonetheless, the practice of such sensors to estimate chlorophyll concentration for long term deployments is extremely inaccurate unless precise calibrations are made using chlorophyll extraction to account for site-specific species and the changes in environment, or phytoplankton community taxonomy, or physiology.

Turbidity can be quantified by the measurement of the backscattering coefficient (backscattering-meter) and jointly with transparency estimation made with transmissometer can lead to an estimation of the concentration of Particulate Organic Carbon (POC).

From this brief description, it is evident how the mentioned three parameters have a strong scientific relevance and being measurable with relatively innovative technology are the most important "bio" variables on which the implementation of ocean observation systems must rely on.

Claustre, H., Antoine, D., Boehme, L., Boss, E., D'Ortenzio, F., Fanton, D'Andon, O., Guinet, C., Gruber, N., Handegard, N.O., Hood, M., Johnson, K., Körtzinger, A., Lampitt, R., LeTraon, P.Y., Lequéré, C., Lewis, M., Perry, M.J., Platt, T., Roemmich, D., Sathyendranath, S., Send, U., Testor, P., Yoder, J., 2009. Guidelines towards an integrated ocean observation system for ecosystems and biogeochemical cycles. Proc. Of OceanObs'09: sustained ocean observations and information for society, J. Hall, D.E. Harrison, and D. Stammer (Eds.).

Cronin, M.F., Weller, R.A., Lampitt, R.S., Send, U., 2012. Ocean reference stations. In Earth Observation, R.B. Rustamov and S.E. Salahova (eds.), InTech, ISBN: 978-953-307-973-8.

Joos, F., Plattner, G.K., Stocker,T.F., Körtzinger, A., Wallace D.W.R., 2003. Trends in Marine Dissolved Oxygen: Implications for Ocean Circulation Changes and the Carbon Budget. EOS, Transactions, American Geophysical Union, 84(21), 197-201.

Nittis,K., Tziavos, C., Bozzano, R., Cardin, V., Thanos, Y., Petihakis, G., Schiano, M.E., Zanon, F., 2007. The M3A multi-sensor buoy network of the Mediterranean Sea. Ocean Science, 3, 229-243.

Mowlem, M., Hartman, S., Harrison, S., Larkin, K., 2008. Intercomparison of biogeochemical sensors at ocean observatories. Research & Consultancy Report No. 44, EurOceans 2008.

National Research Council of Italy · OGS · CNRS · IBW PAN · hcmr · NIVA

Ifremer · Helmholtz-Zentrum Geesthacht · CSIC · National Oceanography Centre

Present the proposed experimental method and working plan

The proposed experimental method is based on analytical laboratory techniques to assess known concentrations of the parameters to be measured by the tested sensors.

For the calibration of the dissolved oxygen sensors samples are collected during the experiment and analyzed later using the Winkler methodology. Regarding the fluorometer and turbidity sensor, they are calibrated against known concentrations and particles dimensions of reference solutions.

Two separate experimental sessions will be carried out, one for dissolved oxygen sensors and the other for turbidity and fluorescence sensors.

Dissolved oxygen

Dissolved oxygen calibration will be performed for one SBE43 sensor cross-checked with an electronic calibrated probed and with Winkler titrated water samples.

The SBE43 sensor is a polarographic membrane oxygen sensor, an upgraded Clark cell, redesigned and optimized to reduce drift and hysteresis. SBE43 is an in-line sensor usually plumbed in to the CTD pump and Y-valve flow-thru system and lies down stream of the CT-cell. The sensor provides dissolved oxygen (DO) concentrations in milliliters per liter and % saturation.

This sensor has an analogue output voltage signal proportional to the temperature-compensated current flow occurring when oxygen is reacted inside the membrane. The detected voltage is converted into the oxygen concentration by using a modified version of the algorithm by Owens and Millard (1985).

The method for calibrating the sensor consists in increasing and reducing the oxygen concentration in a volume of water. The tank water must be bubbled with air (usually at a depth <10 cm to prevent super-saturation) and mixed thoroughly for several hours prior to calibration. For low concentrations, the bubbler has to be turned off thus some of the dissolved oxygen content of the tank water is lost to the atmosphere and the DO % saturation of the tank drops after some hours. A fast drop of the dissolved oxygen saturation can be achieved by bubbling the tank with nitrogen gas.

Water samples has to be collected to perform Winkler titration.

Fluorescence

Fluorescence calibration will be performed for one WetLabs ECO-FLNTUS sensor, two other optical units developed by an Italian SME and cross-checked with an electronic calibrated probed and with measured concentrations extracted from water samples.

The WetLabs ECO FLNTU fluorometer and turbidity sensor detects inferred chlorophyll-a (theoretical range of 0.04-50 µgL-1) from fluorescence at a wavelength of 470 nm provided as an output voltage. The voltage is then converted to a fluorescence value (as µg L-1 chlorophyll-a) using a factory determined scale factor determined from a Dark Count and a Chlorophyll Equivalent Concentration (CEC). The CEC may be obtained from an equivalent unit voltage when the sensor was exposed to a 25µg L-1 culture of *Thalassiosira weisflogii*. However, this procedure originally used by the manufacturer should be replaced by in-vivo cultures of site-specific species and with concentration much lower with respect to the original ones.

For chlorophyll-a concentration determination, the working plan consists in progressive dilution of a known concentration that has to be consistent with the most common species present in the Mediterranean Sea.

Turbidity

For turbidity, the sensor detects back-scatter across an inferred range of 0-25 NTU at a wavelength of 700 nm. Calibration constants are used to convert the voltage to an equivalent Nephelometric Turbidity Unit (NTU) using a scale factor calculated from a Dark Count AND a known FORMAZIN concentration standard. However, FORMAZIN is a hazardous substance and its handling should be treated with caution (MSDS health-hazard rating of 2). Thus, it is proposed to employ other calibration standards available on the market, such as AMCO Clear.

Indicate the type of access applied for

O remote	*(the measuring system is implemented by the operator of the installation and the presence of the user group is not required)*
O partially remote	*(the presence of the user group is required at some stage e.g. installing and un-installing)*
X in person/hands on	*(the presence of the user group is required/recommended during the whole access period)*

Indicate the proposed time schedule including expected duration of access time

The requested access time is 5 days. This duration is thought to be sufficient to set-up the laboratory and to prepare the instruments for the measurements.

In particular, the following schedule is proposed:

- Day 1:laboratory and equipment preparation.
- Day 2: laboratory work for dissolved oxygen.
- Day 3: laboratory work for turbidity and fluorescence.
- Day 4: sample analysis for all the parameters.
- Day 5: result evaluation, discussion, draft report preparation to be submitted to host institution.

Two different periods for accessing the facility should be preferable.

The first period (September 17th - October 6th, 2012) might allow us to use/deploy calibrated sensors at the observatory during the cruise scheduled from October 15th-23rd, 2012 thus providing an immediate and practical outcome to the proposed project.

Other periods by the end of the year should allow the requesting team to use and deploy the calibrated instruments before the spring bloom in 2013.

Host infrastructure

Indicate the type(s) of JERICO host facility(s) you are interested in
(Tick more than one if it is useful for your project)

O ferrybox O fixed platform O glider **X** calibration laboratory

Indicate the specific JERICO host facility(ies) you wish to choose

The "POSEIDON CAL" host facility is selected.

Explain briefly why you think your project will be best carried out at the specified host facility(ies)

The "POSEIDON CAL" facility holds a unique experience in testing, evaluating, and calibrating oceanographic sensors for temperature, conductivity, oxygen, chlorophyll-a and turbidity to be used in oceanic observing systems.

These skills have been also achieved during the participation of European projects such as MFSTEP, MERSEA, EuroSITES as well as in national funded initiative such as POSEIDON.

The proposed project is based on past links established during the mentioned projects and this opportunity will allow CNR and HCMR to sustain their scientific cooperation and to further contribute to develop, upgrade and integrate their ocean monitoring systems in a more coherent way in the framework of the M3A network.

If possible, list other JERICO facility(ies) where you think your experiment could alternatively be carried out

Apart from the temperature and conductivity calibration facilities "OGS-CTO" and "MPL CAL6" no other facilities are available in JERICO with oxygen, chlorophyll-a and turbidity calibration capabilities.

Additional information

Is there a facility similar to the one you wish to utilize in your country?

O Yes X No

If yes, please indicate your reasons for requesting access to the JERICO facility you have chosen

Have you already submitted an Access Proposal to any of the participating facilities under this or previous EU Programs?

O Yes X No

If yes, please indicate the name of the institution, submission date and reference number for each such proposal

Is this a resubmission of a previously rejected proposal? *(Select "yes" if this application is a revised version of a proposal submitted to JERICO before that was rejected by the Selection Panel)*

O Yes X No

If yes, please give the exact reference number and submission date. Kindly describe briefly the changes made in comparison to the rejected version.

Is this a continuation of an earlier project funded under a previous call for Transnational Access in JERICO at the same facility?

O Yes X No

If yes, please give the exact reference number and submission date. Kindly indicate also what has been achieved in the previous experiment and the reasons why the objectives have not been fully met.

PART 4: Technical information

Wherever possible, please specify your requests regarding the use of your chosen facility's equipment/instruments/sensors, including any additional services, data or other requirements.

The "POSEIDON CAL" facility is a fully-equipped laboratory for performing the proposed project.

Calibration standards (i.e., water samples with known concentrations of oxygen, chlorophyll-a and turbidity) should be prepared during the project. The preparation of initial chlorophyll-a culture should be likely initiated some days before the start of the project.

The proposers can supply turbidity standards, if necessary.

Some power supplies devices might be used to power up the instruments.

List all material/equipment you plan to bring to the JERICO facility (if any):

The following equipment will be shipped to the selected facilities:

- 1 dissolved oxygen sensor (SBE43) from Sea-Bird Electronics, Inc. (USA) and related spare parts.
- 1 turbidity/fluorescence sensor (ECO-FLNTUS) from WETLabs (USA) and related spare parts.
- 2 fibre-optics fluorescence sensors from Idromar Srl. (Italy) and related spare parts.
- 1 portable multiparameter water quality meter (HI9828) from Hanna Instruments (USA) and related spare parts.

All the mentioned material will be shipped in a proper case for scientific instrument handling.

Please provide a detailed and realistic budget for the expenses you expect to incur for travel/boarding and the shipment of equipment, if applicable in your case *(note that a maximum of two travel grants will be assigned to each user group, depending on the length of the requested period of stay).*

It is requested that two researchers can access the calibration facility. However, one of them can be self-funded by CNR-ISSIA.

For each researcher, the following costs should be taken into account:

- Travel: € 150,00
- Lodging: €120,00/day x 7 days (5 working days + 2 days for travel) = € 840,00

The total expenses, for two researchers, will amount to (150,00+840,00) x 2 = € 1.980,00.

Shipment of the equipment (two ways) should be valued to € 900,00

As a consequence, a total budget of € 2.880,00 should be sufficient to perform the described project.

Please tick the appropriate boxes and give detailed information for the kind of risks associated with your proposed activity

☐ Chemical :
☐ Biological :
☐ Radiological :
☐ Other :

It is expected not to have any particular risk to face during the performing of the proposed project.

A generic care should be used working in a bio-chemical laboratory. Host safety regulation will be followed during the hosting.

Since FORMAZIN will not be used as standards for the turbidity calibration, no dangerous material will be treated by the involved personnel.

Date of compilation April 2nd, 2012

Signature of the PI

[Roberto Bozzano]

Signature of an appropriate authorised person
(e.g. Head of Department, Research Office)

CNR-ISSIA - Sezione di Genova
Via De Marini, 6 - 16149 Genova
C.F. 80054330586 P.IVA 02118311006

[on behalf of Dr. A. Distante, director of CNR-ISSIA]

This section reserved to the JERICO TNA Office

Date of proposal receipt by email _____

Assigned reference number _____

Signature of receiving officer _____

National Research Council of Italy

Ifremer

Helmholtz-Zentrum Geesthacht

CSIC

National Oceanography Centre

Assigned reference number:	**CALL_1_12**
Date of proposal receipt by email:	**03/04/2012**
P.I. Name and Surname:	**Salud Deudero**
Institution and Department:	**Instituto Espanol de Oceanografia-** **Centro oceanografico de Baleares -Grupo RESMARE**
Date of email answer by TNA office:	**03/04/2012**

JERICO

Application for Transnational Access

to Coastal Observatories

National Research Council of Italy

Description of the project (to be provided in pdf format)
Please contact the manager of the infrastructure/installation you wish to use before writing the proposal

PART 1: User group details

Indicate if the proposal is submitted by

O an individual
x a user group

Information about the applicants (PI and project partners)

Principal Investigator (user group leader)

Title _Dr__ Name and Surname Salud Deudero

Gender O Male x Female

Institution Instituto Español de Oceanografía

Department / Research Group Centro Oceanográfico de Baleares/ Grupo RESMARE

Address Moll de Ponent s/n 07015 Balearic Islands

Country Spain

email salud.deudero@ba.ieo.es

Telephone +34-971133720

Fax +34-971404945

Project partners
(repeat for each partner of the group)

Partner # 1

Title ___ Name and Surname _____

Gender O Male O Female

Institution _____

Department / Research Group _____

Address _____

_____

National Research Council of Italy OGS CNRS IBW PAN hcmr NIVA

Ifremer Helmholtz-Zentrum Geesthacht CSIC National Oceanography Centre

Country _____

email _____

PART 2: Additional information about the applicant(s) expertise

Expertise of the group in the domain of the application

The group has expertise in the field of aggregation patterns of marine species, littoral ecology, and anthropogenic impacts on coastal ecosystems. The application is focused in detecting changes in marine species and fish aggregations patterns under noise generated from recordings of offshore wind farms (OWF). Since the field of OWF in the Mediterranean is rather new, the group does not have direct expertise in OWF, although some previous experiments and actions have been carried out regarding the design and construction of a remote observation platform. Nevertheless, the PI Dr Deudero is in charge of the task on 'impacts of OWF on marine biota and on the role of OWF considered as new substrate as artificial reefs and fish aggregation devices' within the CENIT project AZIMUT. With this regard, Dr Deudero developed her PhD thesis on fish aggregation devices and has also been involved in several projects of artificial reefs assessing effectiveness. Moreover, the team is engaged in some WP of the 7FP Project COCONET, especially those tasks regarding impacts of OWF.

Short CV of the PI

Dr Salud Deudero Company. Senior Researcher at the Balearic Oceanography Centre COB-IEO, Spanish Oceanographic Institute. University Professor of Marine Biology Laboratory (Universitat Illes Balears, 2001-2008). PhD in Biology (UIB, 1998). Master in Marine Ecology (Univ.Brussels, 1993). Degree in Biology (Univ. of Barcelona, 1991) is member of the Group Marine Reserves RESMARE Balearic Oceanography Centre COB-IEO. Graduate Fellow at Free University of Brussels, Ghent University 1991-93. Crew of MV Moby Dick and Fisheries Biologist for Greenpeace 1994. PhD Student, IMEDEA, CSIC / UIB, 1995-98. Marine Biology Laboratory postdoctoral fellow UIB,1999. Postdoctoral Researcher, Univ Newcastle, United Kingdom 1999-2001. She has published 51 original papers in journals of impact SCI (23 as first author) and 21 non-ISI journals. She has participated in 28 research projects, being principal investigator of 16 projects. Regular reviewer and evaluating scientific articles, projects and scholarships. She has attended 23 national and international conferences. She has made several visits to foreign research centers (Bermuda, Belgium, England, Brazil, Italy), and 2 national research centers. Master's tutor UIB Marine Ecology, professor in charge of for the subject 'Marine Reserves' at Master Planning Analysis and Coastal Areas UIB, and Master in Global Change at UIMP 'Impacts of global change on marine habitats. She has directed two doctoral theses, 9 bachelors thesis and 9 masters thesis. Dr Deudero performed her PhD thesis on fish aggregations devices (FADS). She is principal investigator of the subcontracting Project on 'Impacts of offshore wind farms OWF on marine biota', and on several tasks of the 7FM project COCONET with regard to OWF and marine reserves. From 2009 to 2011 she has published 20 peer-review ISI scientific papers. On the last 3 years, Dr Deudero has been principal investigator of 4 research projects with external funding at national and international level with a total income of 385000€.

A list of 5 recent, relevant publications of the participant(s) in the field of the project

The participants have not published scientific papers on OWF since no OWF are already existing at the Mediterranean, here we list recent publications related with artificial reefs, fish aggregation devices and anthropogenic impacts developed by the group members:

Deudero, S., Tor, A., Alomar, C., Valencia, J.M., Sarriera, P., Blanco, A., 2012. Integrated multitrophic aquaculture: filter feeders bivalves as efficient reduces of wastes derived from coastal aquaculture assessed with stable isotope analyses. Aquaculture and the environmental. A shared destiny. Intech. pp. 103-121. Rijeka, Croacia. ISBN 978-953-307-749-9.

Deudero, S., Box, A., Alós, J., Arroyo, N.L., Marbà, N., 2011. Functional changes due to invasive species: Food web shifts at shallow Posidonia oceanica seagrass beds colonized by the alien macroalga Caulerpa racemosa. Estuarine Coastal and Shelf Science. 93, 106-116.

Deudero, S., Box, A., Sureda, A. Tintoré, J. Tejada, S., 2011. Combining stable isotopes and biochemical markers to assess organic contamination in transplanted. Mussels Mytilus galloprovincialis. Mussels: Anatomy, habitat and environmental impact. Nova Science Publishers, Inc. 11, 263-284. New York, USA. ISBN: 978-1-61761-763-8.

Coll, J., Abad, R., Alvarez, E., Deudero, S., Mas, R., Riera, F., Moreno, I., 2009. State of fish populations and influence on the trammel net fishery at three Balearic
Island (Western Mediterranean) artificial reefs a decade after their deployment. Bulletin of Marine Science 85, 77-100.

Deudero S., 2001. Interspecific trophic relationships among pelagic fish species underneath FADS. Journal of Fish Biology. 58, 53-67.

The participants have already published 2 posters at different congress dealing with impacts of offshore wind parks on marine biota and the link with substrate addiction and their role as artificial reefs and fish aggregation devices:

Alomar, C., Deudero, S., Batle J.M, 2011. Assessing substrate addition of offshore wind farms by fractal dimensions. World Conference on Marine Biodiversity Aberdeen, Scotland

Camba, C., Deudero, S., Alomar, C., Miquel, J., 2011. Offshore wind farms acting as artificial reefs and fish aggregation devices for species of commercial interest and conservation. EWEA offshore 2011 Amsterdam, Netherlands

Other documents related with OWF studies carried out by the group members:

Alomar C, 2011. Development of a remote observation platform as an assessment tool for marine species quantification at Mediterranean Offshore Wind Parks. Master thesis, Marine Ecology program UIB

Gonzalez C & Deudero S, 2012. Sintesis del conocimiento sobre los efectos de los parques eólicos

offshore en el medio marino europeo. Informe de proyecto AZIMUT-CENIT, 67 pp. Spain

PART 3: Detailed scientific description of the project

List the main objectives of the proposed research

The main aim of this research is to asses offshore wind farms (OWF) effects on marine biota.

Specific objectives involve:

- Combination of visual and acoustic methodologies for fish quantification associated to artificial substrates simulating OWF
- Testing fish communities naturally associated to an existing Mediterranean offshore platform in function of oceanographic parameters

Developing a set of experiments to quantify fish responses to noise disturbance associated to a Mediterranean offshore platform in function of oceanographic parameters.

(one page maximum)

Give a brief description of the scientific background and rationale of your project

Marine wind energy can become one of the most worthwhile energies in a near future as energy efficiency increases with technological development as a clean energy not contributing to global warming. The first offshore wind park was installed in 2000 with a capacity of 2 MW. Nowadays Europe has 1.371 operative turbines throughout 53 offshore wind parks in 10 countries. United Kingdom and Denmark are the leading countries with 636 installed turbines providing 2.094 MW, and 401 turbines generating 857 MW, respectively (Wilkes et al., 2011). France has installed the biggest and more powerful offshore wind farm in the world (6MW, 150 metres of diameter and 73,5 meters fins).
Construction and operation of offshore wind farms generate several impacts such as noise, electromagnetism and incorporation of new hard substrate into the marine ecosystems. These impacts can affect marine environment and biota (Wilhelmsson et al., 2010). It is essential to study these effects and adopt measures for proper functioning of offshore wind farms.

One of the main effects produced by offshore wind farms is the aggregating effect on marine nearby species, the so-called "Fish Aggregating Device (FAD)" effect. This effect is due to the submerged part of the turbine, which acts as an artificial reef where species can find habitat and protection, and the shadow that the operating wind fins project on the sea surface, which provides a darker area where species can hid from their predators. This FAD effect has been studied in

offshore windmill parks of the *Egmond aan Zee* (Ybema et al., 2009; Lindeboom et al., 2011), *Horns Rev* and *Nysted* (ENERGI E2, 2005) and North Hoyle (May, 2005).

Development of offshore wind farms at the Mediterranean is expected to start in the near future at several Med countries. Therefore, assessment of wind farms effects on the marine species and ecosystems is a key issue for the development of the OWF. In order to minimise impacts and to address the best implementation of wind farms several hypothesis need to be tested and confirmed for Mediterranean species. Many studies have already mentioned biota effects of OWF, although most are centred on Baltic and North Sea species (Gonzalez & Deudero, 2012). As species and ecosystems differ among European seas, and especially at the Mediterranean (Deudero 1999), whatever investigation is carried out in this concern is of great interest. The **rationale** of this project is to perform a series of experiments at the ACQUA ALTA platform to quantify biota responses to OWF and shifts in faunal communities naturally associated to the platform under noise disturbance linked with oceanographic conditions.

The group members have already started experimental work concerning FAD effect at Mediterranean species through the development of a Remotely Operated Platform (ROP). In this sense, acoustic measurements combined with video data are in progress. However, the ROP needs to be incorporated or assembled into a wind turbine in order address natural species aggregations. Up to date, and due to absence of OWF at the Mediterranean the group members need to rely on several alternatives such as artificial reefs, aquaculture cages. The ACQUA ALTA platform is a suitable test field for assessment of OWF effects on marine biota. This is a highly innovative approach and can have high revenue to the scientific community as the first experiments carried out on Mediterranean biota. Several research groups within the 7FP Project COCONET (linked with OWF and networks of marine reserves) might benefit from the results obtained.

Potential seeding links with industry are foreseen and guaranteed since the group members are already in a national project (CENIT-AZIMUT) with the enterprise ACCIONA marine renewables section. This enterprise will be a potential end-user of the results obtained from the experiments carried out at the ACQUA ALTA platform with high expectations in providing advice for OWF best placement and avoiding interferences with natural communities through mitigation measures. Many other industries related with marine renewables, especially OWF development will be profiting of the experiences provided from this project proposal.

(one page maximum)

Present the proposed experimental method and working plan

In order to assess offshore wind farms (OWF) effects on Mediterranean marine biota several simulations of offshore wind farms conditions should be done at the ACQUA ALTA platform. Studies on FAD effect and noise disturbance in function of oceanographic parameters in the Mediterranean can be developed through artificial structures such as this platform having similar characteristics to offshore wind turbines structures that provide new artificial substrate.

Method

The experimental method relies on the improvement of the remote observation platform (ROP) already developed by the research group. The platform is integrated by an acoustic and visual detection system remotely controlled. The acoustic detection system is composed by an echosounder, a General Purpose Transceiver (GPT) that communicates a signal with information to a given position, a transducer that converts acoustic energy (sound vibrations) to electric energy and a computer with the software programs ES60 and Sonar Data Echoview. A waterproof camera integrates the visual detection system. This systems will be placed on the "AQUA ALTA" platform in order to accomplish the following objectives:

- *Combination of visual and acoustic methodologies for fish quantification associated to artificial substrates simulating OWF.*

The acoustic detection system is used to evaluate fish abundance using an echo integrated electronic system that provides echograms and works in association with the submerged waterproof camera which identifies fish species showing up in the echogram. Both systems are integrated in a PC remotely controlled from a computer via internet allowing real time data transfer.

- *Testing fish communities naturally associated to an existing Mediterranean offshore platform in function of oceanographic parameters*

Artificial substrates such as platforms and OWF can be considered as having a FAD (Fish Aggregation Device) effect, towards nearby species by increasing heterogeneity and providing habitat for species to feeding, reproduction, refuge from predators. Species communities are found associated to these platforms and their abundance and behaviour will be studied with integrated visual and acoustic methods. Data from the tower, obtained with a series of oceanographic instruments (waves, currents along the column with ADCP, temperature at surface and bottom, salinity, turbidity, oxygen, chlorophyll a and sea level) will be correlated to fish species behaviour and abundance around the offshore platform. Patterns in fish abundance will be studied in function of wave height, currents, temperature and turbidity.

- *Developing a set of experiments to quantify fish responses to noise disturbance associated to a Mediterranean offshore platform in function of oceanographic parameters*

Noise effects are not produced by the "ACQUA ALTA" structure but we propose to reproduce operating wind farms noise on the platform and evaluate species abundance and behaviour with acoustic methods under a gradient of noise and oceanographic parameters. Several studies show that some species can get used to noise (Mueller-Blenkle et al., 2010), therefore studies will be conducted to verify the habituation effect.

(one page maximum)

Indicate the type of access applied for

O remote	*(the measuring system is implemented by the operator of the installation and the presence of the user group is not required)*
x partially remote	*(the presence of the user group is required at some stage e.g. installing and un-installing)*
O in person/hands on	*(the presence of the user group is required/recommended during the whole access period)*

Indicate the proposed time schedule including expected duration of access time

The hypothesis to be tested require of several stages:

-The first phase is installation of ROP components (echosounder, desktop computer, wireless, video, hydrophones), and testing of equipment, connections, data integration... with an estimation of 1 week time of 2-3 researchers.

-The second phase is performing quantifications of natural fish communities around the platform under different oceanographic conditions, with an estimated duration of 2 weeks.

-The third phase consists of a battery of sounds simulating OWF noise in order to tests fish responses linked with oceanographic conditions by means of combining echograms and video footages, estimated to be 2 weeks time with external researchers involved. There is also a second part of experimental tasks involving calibration of sound according to observed fish community. This phase should be longer in order to check if fishes get use to noise (habituation) or there is complete evasion from the platform (avoidance) and therefore up to 2 months time might be desirable. This part does not requires external researchers to be at the platforms, instead regular operators can run the echosounder and video surveys while the research group get the data remotely in their home laboratories.

(half a page maximum)

Host infrastructure

Indicate the type(s) of JERICO host facility(s) you are interested in
(Tick more than one if it is useful for your project)

O ferrybox	x fixed platform	O glider	O calibration laboratory

Indicate the specific JERICO host facility(ies) you wish to choose
Acqua Alta Oceanographic Tower (ACQUA ALTA)

Explain briefly why you think your project will be best carried out at the specified host facility(ies)

Development of offshore wind farms at the Mediterranean is expected to start in the near future at several Med countries. Therefore, assessment of wind farms effects on the marine species and ecosystems is a key issue for the development of the OWF.

In order to assess offshore wind farms (OWF) effects on Mediterranean marine biota several simulations of offshore wind farms conditions should be done at the ACQUA ALTA platform, as there are no existing offshore wind farms at the Mediterranean. Studies on FAD effect and noise disturbance in function of oceanographic parameters in the Mediterranean can be developed through artificial structures such as this platform having similar characteristics to offshore wind turbines structures that provide new artificial substrate.

The main objective of our project is to assess effects of OWF on marine biota by studying species abundance and behaviour around artificial offshore structures. Accomplishing this objectives the platform is ideal since it provides:

- A support structure for deployment of ROP (Remote Observation Platform) equipment
- Continuous power supply for running the ROP
- It provides with a full range of oceanographic sensors
- Has internet connection for remote data transfer
- Is provided with 2 underwater webcams
- Noise disturbance equipment can be attached to the platform
- The platform is under surveillance by expertise

If possible, list other JERICO facility(ies) where you think your experiment could alternatively be carried out

Additional information

Is there a facility similar to the one you wish to utilize in your country?

O Yes x No

If yes, please indicate your reasons for requesting access to the JERICO facility you have chosen

Have you already submitted an Access Proposal to any of the participating facilities under this or previous EU Programs?

O Yes x No

If yes, please indicate the name of the institution, submission date and reference number for each such proposal

Is this a resubmission of a previously rejected proposal? *(Select "yes" if this application is a revised version of a proposal submitted to JERICO before that was rejected by the Selection Panel)*

O Yes x No

If yes, please give the exact reference number and submission date. Kindly describe briefly the changes made in comparison to the rejected version.

Is this a continuation of an earlier project funded under a previous call for Transnational Access in JERICO at the same facility?

O Yes x No

If yes, please give the exact reference number and submission date. Kindly indicate also what has been achieved in the previous experiment and the reasons why the objectives have not been fully met.

PART 4: Technical information

Wherever possible, please specify your requests regarding the use of your chosen facility's equipment/instruments/sensors, including any additional services, data or other requirements.

List all material/equipment you plan to bring to the JERICO facility (if any):

Acoustic equipment:
-General Purpose Transceiver (GPT) 50kHz
-Transducer, Simrad 50-18POR 50kHz

-Computers

Visual equipment:
-Waterproof camera

Internet and data connection:
-HUB concentrator DGS-1008D.

Hydrophones components

Three scuba diving equipment (jacket, scuba diving gear, regulator)

Sampling material

Please provide a detailed and realistic budget for the expenses you expect to incur for travel/boarding and the shipment of equipment, if applicable in your case *(note that a maximum of two travel grants will be assigned to each user group, depending on the length of the requested period of stay).*

Expected expenses are a total of 4900€ for travelling and shipping:

Flight tickets for 3 external researchers @ 2400€ (from Spain to Italy)
Travel expenses (trains…) for 3 external researchers @ 500€
Shipping of ROP equipment from Spain to Italy: SEUR transport 2000€

Please tick the appropriate boxes and give detailed information for the kind of risks associated with your proposed activity

☐ Chemical :
☐ Biological :
☐ Radiological :
☐ Other :

Date of compilation 2nd April 2012

Signature of the PI

Salud Deudero
Permanent Researcher
COB
Spanish Institute of Oceanography

Signature of an appropriate authorised person
(e.g. Head of Department, Research Office)

Enric Massuti Sureda,
Director Centro Oceanografico Baleares
Spanish Institute of Oceanography

This section reserved to the JERICO TNA Office

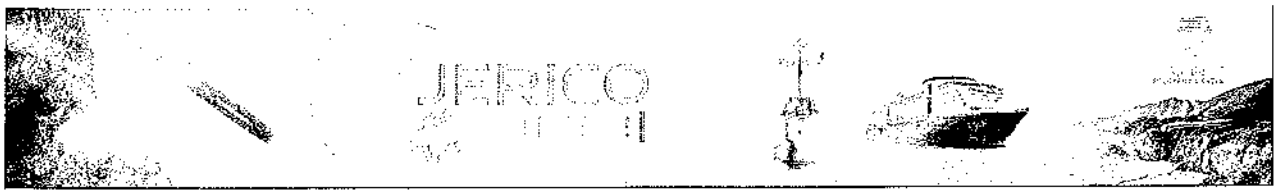
Date of proposal receipt by email _____

Assigned reference number _____

Signature of receiving officer _____

National Research Council of Italy OGS cnrs IBW PAN hcmr NIVA

Ifremer Helmholtz-Zentrum Geesthacht CSIC National Oceanography Centre



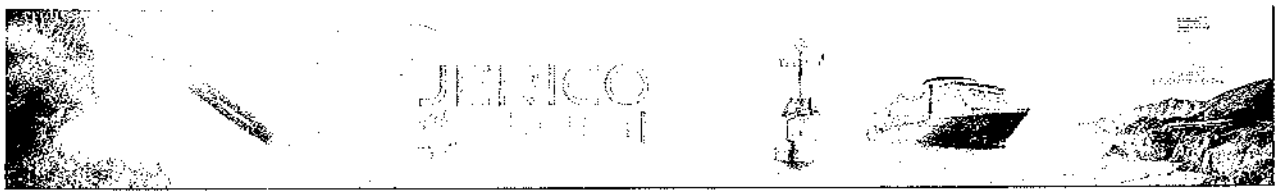
Assigned reference number: CALL_1_13
Date of proposal receipt by email: 03/04/2012
P.I. Name and Surname: Ian Allan
Institution and Department: NIVA in Oslo Norvway
Date of email answer by TNA office: 04/04/2012

JERICO

Application for Transnational Access

to Coastal Observatories

National Research Council of Italy
Ifremer
Helmholtz Zentrum Geesthacht
National Oceanography Centre



Description of the project (to be provided in pdf format)
Please contact the manager of the infrastructure/installation you wish to use before writing the proposal

PART 1: User group details

Indicate if the proposal is submitted by

- O an individual
- ● a user group

Information about the applicants (PI and project partners)

Principal Investigator (user group leader)

Title _**Dr**_ Name and Surname ___**Ian Allan**_____

Gender ● Male O Female

Institution ____**NIVA**_____

Department / Research Group _____

Address _**Gaustalleen 21, 0349 Oslo** _____

_____

Country __**Norway**_____

email jan.allan@niva.no _____

Telephone ____**+47 98294122**_____

Fax ___**+47 22185200**_____

Project partners
(repeat for each partner of the group)

Partner # 1

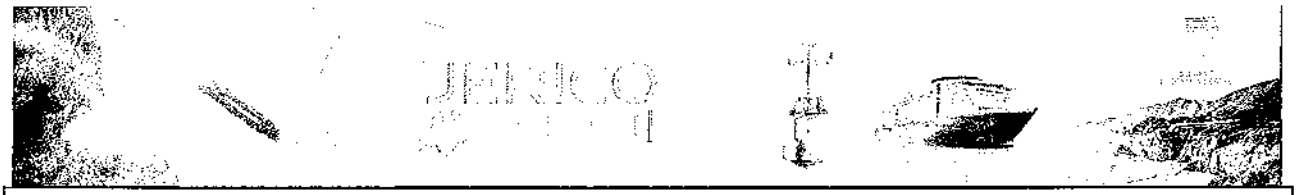
Title __**Mr**_ Name and Surname _____**Philipp Knight**_____

Gender ● Male O Female

Institution ___ **National Oceanography Centre**_____

Department / Research Group _____

Address ___ **Joseph Proudman Building, 6, Brownlow Street, University of**



Liverpool Campus, Liverpool, L3 5DA

Country **United Kingdom**

email pjk@noc.ac.uk

Partner # 2

Title **Dr** Name and Surname **Branislav Vrana**

Gender ● Male O Female

Institution **RECETOX**

Department / Research Group

Address **Kamenice 126/3, 625 00 Brno**

Country **Czech Republic**

email vrana@recetox.muni.cz

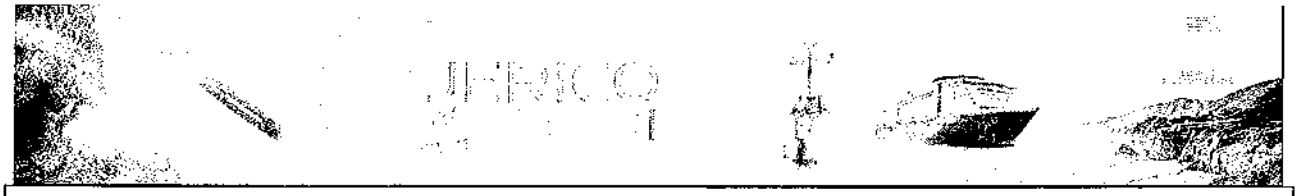
PART 2: Additional information about the applicant(s) expertise

Expertise of the group in the domain of the application

This group includes Ian Allan and Branislav Vrana who together have close to 20 years of experience in the development and use of passive sampling devices for the monitoring of trace organic pollutants in in the environment.

Short CV of the PI

Ian Allan has been a research scientist at NIVA since 2008. After completing his PhD at the University of Reading in 2003, he was a postdoctoral fellow at the University of East Anglia (1 year) and the University of Portsmouth (3.5 years) where his work focussed on understanding and measuring the bioavailability of contaminants in environmental matrices such soils, sediments and water. A NIVA his work combines consultancy work and applied research with a strong passive sampling theme. He has authored over 20 NIVA reports for a range of industrial customers and national and regional regulatory authorities. He has also (co)-authored over 30 refereed scientific publications and 9 book chapters.



A list of 5 recent, relevant publications of the participant(s) in the field of the project

IJ Allan, HC Nilsson, I Tjersvoll, C Bradshaw & K Næs (2011) Mobile Passive Sampler: Concept for a novel exposure procedure, *Environmental Pollution*, Vol. 159 pp 2393-2397

IJ Allan & C Harman (2011) Global Aquatic Passive Sampling: Maximizing Available Resources using a novel exposure procedure, Viewpoint, *Environmental Science and Technology*, Vol. 45 (15) pp 6233-6234

B Vrana, GA Mills, **IJ Allan**, E Dominiak, K Svensson, J Knutsson, G Morrison, & R Greenwood (2005) Passive sampling techniques for monitoring of pollutants in water, *TrAC-Trends in Analytical Chemistry*, Vol. 24 (10) pp 845-868

IJ Allan, K Booij, A Paschke, **B Vrana**, GA Mills & R Greenwood (2009) Field performance of seven passive sampling devices for monitoring of hydrophobic substances. *Environmental Science and Technology*. Vol. 43 (14) pp 5383-5390

Passive sampling techniques in environmental monitoring. Comprehensive Analytical Chemistry, Vol. 48, eds. R. Greenwood, GA Mills and **B Vrana**, Wilson and Wilson's. 2007

PART 3: Detailed scientific description of the project

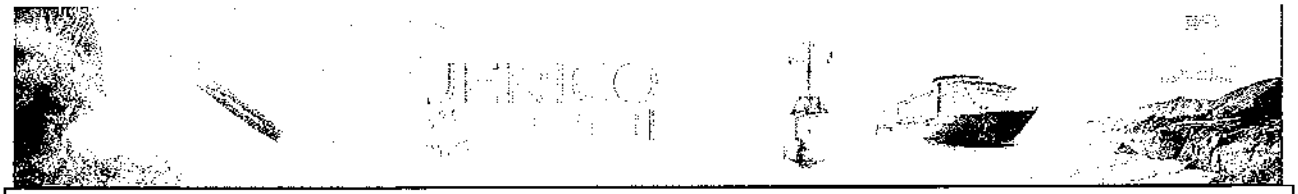
Main objectives of the proposed research

- *Evaluate the feasibility of combining glider technology and passive sampling technique to measure chemical contaminant concentrations at sites that are generally difficult to sample*
- *Estimate persistent organic pollutant concentrations in waters of the Celtic Sea based sampler-glider exposures*
- *Assess the representativeness of the data obtained through glider exposure of the passive samplers*

Background and rationale for the project

The measurement in the environment of trace levels of persistent organic pollutants such as those listed on the Stockholm Convention relies increasingly on the use of passive samplers. These are simple polymeric membranes that are capable of absorbing contaminants dissolved in water during exposure. With adequate calibration, it is possible to estimate dissolved contaminant concentrations for the period of exposure from the mass of contaminants absorbed in the sampler. Reasonable limits of detection are generally achieved by deploying samplers for periods of weeks to months on static rigs or moorings.

We have recently showed that mobile passive samplers towed through water (e.g. behind a boat or a trawl net) enabled significant increases in sampling rates (equivalent volume of water extracted by the sampler per unit of time) thereby allowing us to reduce exposure times drastically. Towing samplers through water also allows us to obtain spatially-resolved data rather than time-integrated concentrations.



Combining gliders and passive samplers would allow in the future the possibility to measure contaminant contaminants in environments that have never been monitored before, i.e. in terms of sampling depth and inaccessible locations.

The representativeness of data obtained from passive sampler exposures when attached to gliders can be done by using samplers with differing conformations (thickness) but made of the same polymer and/or by calibrating these mobile samplers by comparing them with static ones deployed in situ.

Passive sampling measurements do not need any electrical or mechanical power to function. Since the samplers may be deployed outside of the hull of the glider, the passive samplers would not interfere with other measurements to be undertaken during the glider flight.

Experimental method and work plan

This pilot or proof-of -concept test aims to assess the suitability of using gliders as a mode of exposure of passive sampling devices for the measurement of trace levels of nonpolar organic substances such as polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs). Depending on average speed and duration of the glider cruise, For these compounds, the concentration in the samplers is expected to reach a high degree of thermodynamic equilibrium with the concentration in the water. We will use samplers spiked with a range of performance reference compounds (PRCs) that will provide us with a means to estimate the sampling rate during exposure with the glider.

Based on discussions with NOC, one or more possibilities for the assessment of the representativeness of the data obtained with the mobile passive samplers will be selected. This can be done by (i) using samplers with different thicknesses (but same surface area), (ii) calibrating mobile samplers with similar samplers deployed on a mooring in the area of the glider test, and finally (iii) by repeating the experiment in the same location and comparing data.

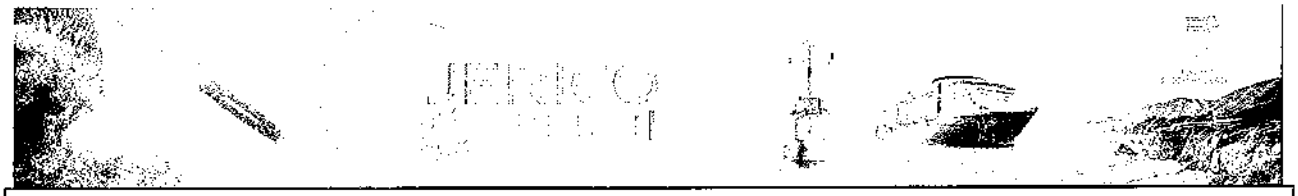
The location of the test is relatively unimportant at this stage. A glider operating depth of 0-200m below surface is totally adequate. During a glider cruise of several days passive samplers are able to accumulate sufficient amount of target substances for their quantification even at locations with extremely low concentrations in seawater (low pg/L).

Programme of activities:

Phase 1. Sampler preparation (May 2012). This will be done in collaboration between NIVA and RECETOX with communication with NOC over the design of the samplers and the mode of attachment to the glider

Phase 2. Sampler/glider deployment (June 2012). Deployment of the glider with passive samplers attached (NIVA/NOC) in the Celtic sea. Train NOC in the use and deployment/retrieval of passive sampling devices.

Phase 3. Rig/mooring deployment (June 2012). For calibration purposes a set of passive samplers could be deployed at an adequate and easy to reach location in the vicinity of the glider test site for calibration of data obtained with the mobile samplers.



Phase 4. Sampler retrieval (June 2012). Samplers will be retrieved by NOC at the same time as the glider is recovered. Samplers can be sent by post to NIVA/RECETOX for analyses.

Phase 5. Repeat test (September 2012). If the June 2012 test proves successful, a second exposure in the Celtic Sea could be undertaken.

Indicate the type of access applied for

O remote	*(the measuring system is implemented by the operator of the installation and the presence of the user group is not required)*
● partially remote	*(the presence of the user group is required at some stage e.g. installing and un-installing)*
O in person/hands on	*(the presence of the user group is required/recommended during the whole access period)*

Indicate the proposed time schedule including expected duration of access time

Passive sampling devices will be installed on the gliders during some of the NOC glider deployments planned for June-September in the Celtic sea. Two glider deployments are planned for June 2012 and one later in September.

Host infrastructure

Indicate the type(s) of JERICO host facility(s) you are interested in
(Tick more than one if it is useful for your project)

O ferrybox O fixed platform ● glider O calibration laboratory

Indicate the specific JERICO host facility(ies) you wish to choose

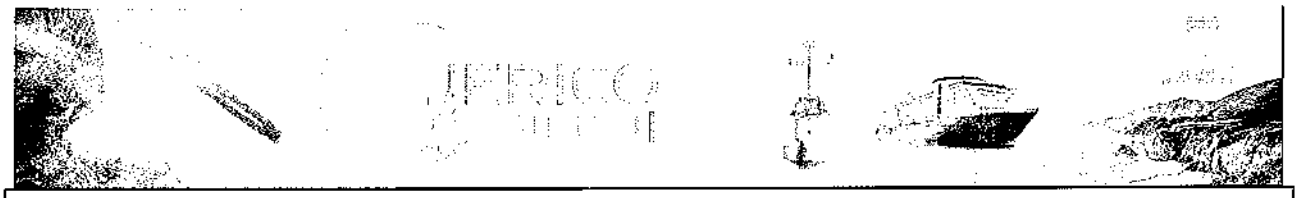
Glider facility at National Oceanography Centre (Liverpool, UK)

Explain briefly why you think your project will be best carried out at the specified host facility(ies)

The principal investigator (Ian) and the glider operator (Phil) at the NOC have been in touch discussing the possibility of combining glider and passive sampling technology.

If possible, list other JERICO facility(ies) where you think your experiment could alternatively be carried out

This pilot test could also be conducted using the other JERICO glider facilities



Additional information

Is there a facility similar to the one you wish to utilize in your country?

O Yes ● No

If yes, please indicate your reasons for requesting access to the JERICO facility you have chosen

Have you already submitted an Access Proposal to any of the participating facilities under this or previous EU Programs?

O Yes ● No

If yes, please indicate the name of the institution, submission date and reference number for each such proposal

Is this a resubmission of a previously rejected proposal? *(Select "yes" if this application is a revised version of a proposal submitted to JERICO before that was rejected by the Selection Panel)*

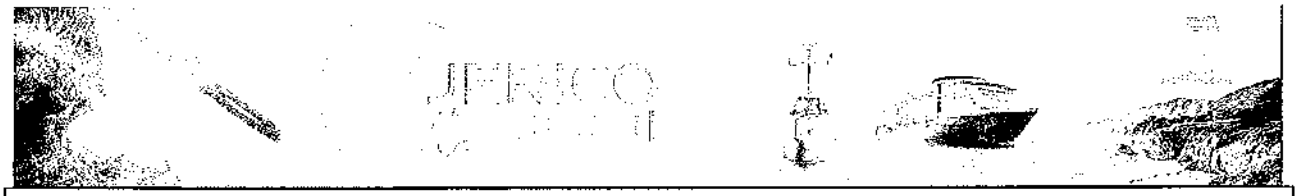
O Yes ● No

If yes, please give the exact reference number and submission date. Kindly describe briefly the changes made in comparison to the rejected version.

Is this a continuation of an earlier project funded under a previous call for Transnational Access in JERICO at the same facility?

O Yes ● No

If yes, please give the exact reference number and submission date. Kindly indicate also what has been achieved in the previous experiment and the reasons why the objectives have not been fully met.



PART 4: Technical information

Wherever possible, please specify your requests regarding the use of your chosen facility's equipment/instruments/sensors, including any additional services, data or other requirements.

System for fastening the passive sampling devices (polymer strips) to the glider. This can be simple and designed to minimise the impact of the samplers on the glider operation and will require discussion between NIVA/RECETOX and the glider operator (NOC).

List all material/equipment you plan to bring to the JERICO facility (if any):

Passive sampling devices. Fastening equipment.
If possible, a separate deployment on a mooring or rig in the area of the glider operation will require us to bring a second set of passive sampling devices and a deployment cage.

Please provide a detailed and realistic budget for the expenses you expect to incur for travel/boarding and the shipment of equipment, if applicable in your case *(note that a maximum of two travel grants will be assigned to each user group, depending on the length of the requested period of stay).*

Return trip Oslo-United Kingdom (+equipment)	*5000 NOK*
Hotel stay in UK for 2 nights	*2500 NOK*
Transportation in the UK	*1000 NOK*
Subsistence	*1000 NOK*
Total:	*9500 NOK (Eu 1500)*

Please tick the appropriate boxes and give detailed information for the kind of risks associated with your proposed activity

☐ Chemical :
☐ Biological :
☐ Radiological :
☐ Other :

Date of compilation 03/04/2012

Signature of the PI Ian J. Allan

Signature of an appropriate authorised person
(e.g. Head of Department, Research Office) James D. Berg

This section reserved to the JERICO TNA Office

Date of proposal receipt by email

Assigned reference number

Signature of receiving officer

JOINT EUROPEAN RESEARCH INFRASTRUCTURE
NETWORK FOR COASTAL OBSERVATORIES

FIRST TNA CALL
ADDENDUM TO THE EVALUATION REPORT

Grant Agreement n° 262584
Project Acronym: JERICO

Project Title: Towards a Joint European Research Infrastructure network for Coastal Observatories

Coordination: P. Farcy, IFREMER,

jerico@ifremer.fr, www.jerico-fp7.eu

Author: Stefania Sparnocchia
Involved Institution: CNR
Date: 2012-10-27

Table of Contents

1. Document description

REFERENCES

Annex 1 to the Contract: Description of Work (DoW) version 2011-02-22

Document information	
Document Name	First TNA call – Addendum to the Evaluation Report
Document ID	***JERICO-WP1-First TNA CALL evaluation addendum -V1***
Revision	2
Revision Date	2012-10-27
Author	Sparnocchia
Security	

History			
Revision	**Date**	**Modification**	**Author**
1	2012-10-19	Version presented to the Selection Panel	Sparnocchia
2	2012-10-27	Version approved by the Selection Panel, typo editing and formatting	Sparnocchia

Diffusion list				
Consortium beneficiaries	X			
Third parties	TNA Selection Panel			
Associated Partners				

2. Executive Summary

This document is an addendum of the "First TNA call Evaluation Report" released in the final version approved by the Selection Panel on 25 October 2012. It aims to report the final assessment of the Selection Panel regarding the proposals received after the First TNA Call.

We received 13 proposals, of which two were rejected not fulfilling the requisite of a score greater than 60 and six proposals were immediately approved. As regards the approved group of proposals the operators of the targeted facilities are presently interacting with the User Groups to define the detailed workplans and to schedule the experiments.

The approval of the remaining five proposals was postponed because of specific drawbacks summarized in the following:

SCORE	Reference number	Facility ID	Type	Facility Operator	Proponent	Comments
76.6	CALL_1_2	ACQUA ALTA	FP	CNR ITALY	Giuseppe Zibordi – Joint Research Centre ITALY	Possibly not eligible. Evidence for a possible exemption from the "mobility requirement" (art. III.3.1.b of the G.A. Annex III) requested.
74.3	CALL_1_4	Colour Fantasy	FB	NIVA NORWAY	Kevin C. Jones – Lancaster University UNITED KINGDOM	Technical adjustments and experimental arrangements to be discussed with the facility operators.
		COSYNA_2 (PILE)	FP	HZG GERMANY		
68.0	CALL_1_7	CETSM	GL	INSU/CNRS FRANCE	Ainhoa Caballero Reyes – AZTI Technalia SPAIN	Technical adjustments to be discussed with the facility operator.
86.8	CALL_1_10	COBS 4 POL GLIDER	GL	NERC UNITED KINGDOM	Anna Wahlin – Dep. Earth Sciences Univ. Gothenburg SWEDEN	Severe technical problems require evaluation and imply the redesign of the experiment. Unavailability of the facility before May 2013 could imply to resubmit the revised proposal at the second call (January 2013)
87.1	CALL_1_13	COBS 4 POL GLIDER	GL	NERC UNITED KINGDOM	Ian Allan – NIVA NORWAY	Technical adjustments to be discussed with the facility operator

FB = FerryBoxes; FP = Fixed Positions; GL = Gliders; CL = Calibration Laboratories

3. Revision of critical proposals

The Proponents and the Facility Operators have been asked to interact with each other and agree to a feasible plan of work for the final approval of the Selection Panel. As regards Proposal CALL_1_2 they were asked to provide evidence of a possible exemption from the “mobility requirement” (art. III.3.1.b of the G.A. Annex III) to allow the Selection Panel and the Scientific Committe of JERICO to make the final decision on the eligibility.

In the following we summarize the updates we received for each critical proposal.

3.1. Proposal number CALL_1_2

User Group

Principal Investigator (user group leader):
Dr. Giuseppe Zibordi
Joint Research Centre, Institute for Environment and Sustainability, Ispra, Italy
giuseppe.zibordi@jrc.it
Telephone +39 0332 785902 Fax +39 0332 789034

Other members of the team :
None

Targeted facility and proposed activity

The User Group applied for access to the Acqua Alta Oceanographic Tower managed by CNR (Italy) for collection of water samples and automatic measurements to obtain comprehensive in situ measurements to support satellite ocean color multi-missions.

Criticalities and solutions

The eligibility of the User Group was called into question because of a breach of the Specific Provisions for Transnational Access Activities in Annex III of the the FP 7 Grant Agreement, particularly article III.3, owing to the following:
1/ the user group leader and the majority of users work in Italy (JRC - Ispra),
2/ the legal entity operating the infrastructure is established in Italy,
3/ the access provider is neither an International Organisation nor the JRC (for whom an exception is envisaged in Annex III),
4/ this is not remote access to a distributed set of infrastructures offering the same services (for which an exception is envisaged in Annex III).

However, since Integrating Activity aims in optimising “the use and development of existing research infrastructures, in all fields of science and technology, including ICT-based e-infrastructures, and to facilitate the access of research teams from all over the EU to these infrastructures" (Work Programme 2010), the applicant and the access provider were asked to provide evidence of possible clear and significant access restrictions for users working in JRC which could overcome the "mobility" requirement for the TNA applicant (art. III.3.1.b).

Neither the User Group leader nor the Facility Operator were able to provide such evidence, so the only possible decision is the rejection of the proposal since the User Group is not eligible.

3.2. Proposal number CALL_1_4

(For the full text see the Annex)

User Group

Principal Investigator (user group leader):
Prof. Kevin C. Jones
Lancaster University, Lancaster Environment Center, United Kingdom
k.c.jones@lancaster.ac.uk
Telephone +44 1524 512030 Fax +44 1524 593300

Other members of the team :
1) Prof. Hao Zhang
Lancaster Environment Center, United Kingdom
Sustainable water management
2) Mr. Chang'er Chen
Lancaster Environment Center, United Kingdom
Chemicals management

Targeted facility and proposed activity

The User Group applied for accessing the FerryBox system installed onboard the "Color Fantasy" ferry and managed by NIVA (Norway) and the stationary FerryBox operated by HZG in the fixed platform placed in Cuxhaven (Germany) for testing and deploying a novel passive water sampler.

Criticalities and solutions

Two of the referees and also the Facility Operators gave suggestions for technical adjustments and new experimental arrangements. After interaction with the Facility Operators the technical problems have been overcome and we have received a positive response by both of them regarding the feasibility of the proposed experiments. The person in charge for the fixed platform in Cuxhaven specified that the equipment useful for the experiment is a stationary FerryBox installed in this facility.

The Proponent also better specified the collaboration with the fixed platform and the associated costs that were not clearly explained in the previous submission, as also identified properly the members of the User Group involved in the activities in PART 1 of the Application.

The proposal is finally approved.

3.3. Proposal number CALL_1_7

(For the full text see the Annex)

User Group

Principal Investigator (user group leader):
Prof. Kevin C. Jones
Lancaster University, Lancaster Environment Center, United Kingdom
k.c.jones@lancaster.ac.uk
Telephone +44 1524 512030 Fax +44 1524 593300

Other members of the team :
1) Dr. Anna Rubio Compañy
AZTI-Tecnalia, Marine Research Division, Spain
arubio@azti.es
2) Dr. Luis Ferrer Rodríguez
AZTI-Tecnalia, Marine Research Division, Spain
lferrer@azti.es
3) Eng. Julien Mader
AZTI-Tecnalia, Marine Research Division, Spain
jmader@azti.es

Targeted facility and proposed activity

The User Group applied for accessing the Glider facility of CNRS/ICSU (CETSM, France) for a study of a mesoscale feature in the Bay of Biscay using a multi platforms approach. Besides the glider provided by CNRS/INSU used in a field campaign, the User Group will take advantage for this study of an extended series of remote sensing, routine in-situ measuring systems (two slope buoys and a HF radar array), and two field campaigns with drifting buoys of the User Group. In-situ measurements will be used as well to validate ROMS simulations in the area to allow further research based on model results.

Criticalities and solutions

Both the scientific and technical reviews evidenced some criticalities in the planning of the experiment, including unavailability of gliders in the requested period. These were mostly solved by interaction with the glider provider except scheduling the experiment, which will be done while preparing the agreement between the User and the Facility Provider. In particular, following the request of the Facility Operator, the User Group detailed the deployment/recovery operations, identifying its own personnel and logistics for the experiment, and the contingency plan in case of emergency. Moreover, the User proposed to support extra costs for the transport of Gliders and technicians from the host institution to the deployment site.

The Proponent also provided the budget expected for travels of two of its technicians and shipping of its own equipment.

The proposal is finally approved.

3.4. Proposal number CALL_1_10

User Group

Principal Investigator (user group leader):
Prof. Anna Wåhlin
Department of Earth Sciences, University of Gothenburg, Oceanography, Sweden
anna.wahlin@gu.se
Telephone +46708394462 Fax +46317861986

Other members of the team :
1) Prof. Karin Borenäs
SMHI, Oceanographic Research, Sweden
karin.borenas@smhi.se
2) Dr. Bengt Karlson
SMHI, Oceanographic Research, Sweden
bengt.karlson@smhi.se
3) Prof. Göran Björk
Department of Earth Sciences, University of Gothenburg, Oceanography, Sweden
gobj@gvc.gu.se
4) Prof. Lars Arneborg
Department of Earth Sciences, University of Gothenburg, Oceanography, Sweden
laar@gvc.gu.se
5) Dr. Lene Friis Möller
Department of Earth Sciences, University of Gothenburg, Plankton Ecology, Sweden
lene.friis.moller@bioenv.gu.se

Targeted facility and proposed activity

The User Group applied for accessing the Gliders Facilities of NERC (United Kingdom) for use, combined with research vessel surveys and satellite images, in order to detect the position and determine the three-dimensional properties of a front separating saline Skagerrak waters from fresh Kattegat water masses, to evaluate the transport along it, to correlate the hydrography to the biology and to investigate the distribution of phytoplankton and zooplankton including jellyfish.

Criticalities and solutions

The scientific evaluation was excellent, but severe technical problems were pointed out by the Operator, regarding the possibility of equipping the available glider with the complete set of sensors requested by the User, including upgrading the displacement pump to make it operable within the large density range of the

study area. A further handicap was the costs needed to move the glider and the team from UK to Sweden. It was not possible to find a solution in a short time, so the Proponent decided to withdraw the proposal.

3.5. Proposal number CALL_1_13

(For the full text see the Annex)

User Group

Principal Investigator (user group leader):
Dr. Ian Allan
NIVA, Norway
ian.allan@niva.no
Telephone +47 98294122 Fax +47 22185200

Other members of the team :
Dr. Branislav Vrana
RECETOX, Czec Republic
vrana@recetox.muni.cz

Targeted facility and proposed activity

The User Group applied for accessing the Gliders Facilities of NERC (United Kingdom) to perform a pilot test aiming to assess the suitability of using gliders as a mode of exposure of passive sampling devices for the measurement of trace level of nonpolar organic substances such as polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs).

Criticalities and solutions

Technical problems have been enlightened by the Operator and suggestions offered for redesigning and rescheduling the experiment. After interaction between the Operator and the P.I. of the User Group these were overcome and the Operator agreed with the revised proposal.

The proposal is finally approved.

4. CONCLUSIONS

After the revision of the critical proposals, we have finally 9 out of 13 proposals approved as listed below::

SCORE	Reference number	Facility ID	Type	Facility Operator	Proponent
87.1	CALL_1_13	COBS 4 POL GLIDER	GL	NERC UNITED KINGDOM	Ian Allan – NIVA NORWAY
82.1	CALL_1_9	MPLC	FP	CNR ITALY	L.Coppola - Observatoire Oceanographique de Villefranche/Mer FRANCE
76.5	CALL_1_5	OGS-CTO	CL	OGS ITALY	George Pethiakis – HCMR GREECE
75.6	CALL_1_11	POSEIDON CAL	CL	HCMR GREECE	Roberto Bozzano –CNR ISSIA ITALY
74.3	CALL_1_4	Colour Fantasy	FB	NIVA NORWAY	Kevin C. Jones – Lancaster University UNITED KINGDOM
		COSYNA_2 (PILE)	FP	HZG GERMANY	
72.7	CALL_1_1	POSEIDON BUOYS	FP	HCMR GREECE	Melchor Gonzales-Davila – Universidad de Las Palmas de Gran Canaria SPAIN
		POSEIDON CAL	CL		
72.0	CALL_1_8	CSIC-Glider	GL	CSIC SPAIN	Alberto Ribotti – CNR IAMC ITALY
70.1	CALL_1_6	MPL Genoa	FP	CNR ITALY	E. Cano Diaz – CENIM/CSIC SPAIN
68.0	CALL_1_7	CETSM	GL	INSU/CNRS FRANCE	Ainhoa Caballero Reyes – AZTI Technalia SPAIN

ANNEX

Assigned reference number:	CALL_1_4
Date of proposal receipt by email:	20/03/2012
P.I. Name and Surname:	Kevin Jones
Institution and Department:	Lancaster University Chemicals Management Lancaster Environment Center
Date of email answer by TNA office:	20/03/2012
Date of revision receipt by email:	30/09/2012

JERICO

Application for Transnational Access

to Coastal Observatories

National Research Council of Italy
OGS
cnrs
IBW PAN
hcmr
NIVA
Norwegian Institute for Water Research
Ifremer
Helmholtz-Zentrum Geesthacht
Zentrum für Material- und Küstenforschung
CSIC
National Oceanography Centre
NATURAL ENVIRONMENT RESEARCH COUNCIL

Description of the project (to be provided in pdf format)
Please contact the manager of the infrastructure/installation you wish to use before writing the proposal

PART 1: User group details

Indicate if the proposal is submitted by

O an individual
× a user group

Information about the applicants (PI and project partners)

Principal Investigator (user group leader)

Title Prof Name and Surname Kevin C Jones

Gender × Male O Female

Institution Lancaster University, UK

Department / Research Group Chemicals Management

Address Lancaster Environnement Centre

Lancaster University LA1 4YQ

Country UK

email k.c.jones@lancaster.ac.uk

Telephone +44 1524 510230

Fax +44 1524 593300

Project partners
(repeat for each partner of the group)

Partner # 1

Title Prof. Name and Surname Hao Zhang

Gender O Male × Female

Institution Lancaster Environment Centre

Department / Research Group Sustainable water management

Address Lancaster Environment Centre, Lancaster University, LA1 4YQ

Country U.K.

Email: h.zhang@lancaster.ac.uk

And

Title Mr. Name and Surname Chang'er Chen

Gender × Male O Female

Institution Lancaster Environment Centre

Department / Research Group Chemicals Management

Address Lancaster Environment Centre, Lancaster University, LA1 4YQ

Country U.K.

Email: c.chen3@lancaster.ac.uk

PART 2: Additional information about the applicant(s) expertise

Expertise of the group in the domain of the application

Environmental chemistry

Design, testing and applications of novel passive sampling tools

Short CV of the PI

Lancaster team is Jones (PI), Dr. Hao Zhang (inventor of DGT for inorganic applications, Professor in Environmental chemistry – Lancaster) and Chang'er Chen – jointly supervised PhD student – who we envisage will conduct the trials.

Jones short CV

Director and Distinguished Professor, Lancaster Environment Centre

One of the world's most cited researchers in Environment/Ecology

Senior Visiting Scientist Professor, Chinese Academy of Sciences, 2010 - .

Elected member of the Norwegian Academy of Science and Letters, 2007 - .

Nominated for the BBVA Foundation Frontiers of Knowledge Award 2010, 2011.

Associate Editor for *Environmental Pollution*; Editorial Boards of *Journal of Environmental Monitoring* and *Environmental Development*; Previously Editorial Advisory Board of *Environmental Science and Technology*. Advisor to: United Nations Environment Programme; the European Union; the Department of Environment, Food and Rural Affairs; the Royal Commission on Environmental Pollution; Chinese Academy of Sciences. Co-founder - the REACH Centre Ltd.

RESEARCH INTERESTS

Environmental behaviour and effects of organic contaminants, particularly:

- Inter-media transfers and global cycling of persistent organic pollutants (POPs);
- Fate and behaviour of organics, in the atmosphere, terrestrial and marine environments;
- Trends in environmental POPs contamination and the implications for sources;
- Food chain transfers of and human exposure to organic chemicals;
- Development of novel sampling and analytical techniques, chemical fate modelling tools

Improved chemicals management

A list of 5 recent, relevant publications of the participant(s) in the field of the project

1. Nizzetto, L., Lohmann, R., Gioia, R., Dachs, J. and Jones, K. C. (2010). Atlantic Ocean surface waters buffer declining atmospheric concentrations of persistent organic pollutants. Environ. Sci. Technol. 44, 6978-6984.
2. Gioia, R., Dachs, J., Nizzetto, L., Berrojalbiz, N., Galban, C., Del Vento, S., Mejanelle, L. and Jones, K. C. (2011). Sources, Transport and Fate of Organic Pollutants in the Oceanic Environment. Chapter 8 in "Persistent Pollution-Past, Present and Future". School of Environmental Research - Organized by Helmholtz-Zentrum Geesthacht Quante, Markus; Ebinghaus, Ralf; Flöser, Götz (Eds.) 1st Edition, 2011. Springer.
3. Breivik, K., Gioia, R, Chakraborty, P., Zhang, G. and Jones, K. C. (2011). Are reductions in industrial organic contaminants emissions in rich countries achieved partly by export of toxic wastes? Environ. Sci. Technol. 45, 9154-9160.
4. Li, J., Li, Q., Gioia, R., Zhang, Y., Zhang, G., Li, X., Spiro, B., Bhatia, R. S. and Jones, K. C. (2011). PBDEs in the atmosphere over the Asian marginal seas, and the Indian and Atlantic oceans. Atmos. Environ. 45, 6622-6628.
5. Chen, C., Zhang, Hao and Jones, K. C. (2012). A novel passive water sampler for in situ sampling of antibiotics. J. Environ. Mon. 14: 1523-1530.

PART 3: Detailed scientific description of the project

List the main objectives of the proposed research (one page maximum)

Test and deploy a novel passive water sampler, in conjunction with a novel design of an automatic sampler unit to be deployed aboard ferries. NIVA colleague Dr Luca Nizzetto has invented the novel "Chem-Mariner" automatic sampler unit for passive sampling of marine water from ferries. The Chem-Mariner unit constitutes a new prototype component which is under test on one of the ferries already equipped with the NIVA Ferrybox platform. The information and forecasting system of Chem-mariner is fully integrated with the existing Ferrybox unit. The Chem Mariner allows deployment of passive samplers in "flow-through" chambers, in which a controlled flow of sea water is maintained during the sampler exposure. In addition the Chem-Mariner allows unassisted activation-suspension of sampling and preservation of the samples. Lancaster has invented a variant of the Diffusive Gradients in Thin-films (DGT) sampler, for organic contaminants. A paper reporting laboratory trials for application to antibiotics was published on JEM, and two further manuscripts, reporting data from field deployments at a waste water treatment plant and in rivers, and on sampling estrogenic chemicals by o-DGT is in preparation. Initial discussions between Nizzetto and Jones indicate the feasibility of performing these measurements using DGT deployed in the new flow-through water sampler. We therefore want to:

1. Validate the DGT samplers for applications in seawater;

2. Optimise the configuration of the DGTs in the flow through sampler;
3. Deploy the DGT samplers in pilot studies aboard the ferries and at the fixed station in studies being led by NIVA;
4. Evaluate the effectiveness and benefits of the new measurements compared to existing measurements;
5. Prepare publications and consider a joint bid for further funding embracing wider applications.

References:

1. Chen, C., Zhang, H. and Jones, K. C. A novel passive water sampler for *in situ* sampling of antibiotics. J. Environ. Mon. 14: 1523-1530.
2. Chang-Er Chen, Lijun Zhou, You-Sheng Liu, Hao Zhang, Guang-Guo Ying, Kevin C. Jones Field Testing of a Novel Passive Water Sampler: Application to Antibiotics in a Waste Water Treatment Plant and Surface Waters. (In preparation)
3. Chang-Er Chen, Suhong Pan, Hao Zhang, Kevin C. Jones and Wei Chen. In situ measurement of estrogenic chemicals by o-DGT. (in preparation)

Give a brief description of the scientific background and rationale of your project

(one page maximum)

Passive water sampling has several advantages over active methods; it provides time-integrated data, can save on time and cost compared to active methods, and yield high spatial resolution data through co-deployment of simple, cheap units. However, one problem with many sampler designs in current use is that their uptake rates for trace substances of interest are flow-rate dependent, thereby requiring calibration data and other information to enable water concentrations to be derived from the measured accumulated mass per sampler. However, the 'family' of samplers employing the principle of diffusive gradients in thin films (DGT) provides an *in situ* means of quantitatively measuring labile species in aquatic systems without field calibration. So far, this technique has only been tested and applied in seawaters for inorganic substances – metals, radionuclides, nutrients etc. The extension of DGT to enable measurement of trace organic contaminants ('o-DGT') in marine system is very desirable and would be of interest to researchers, regulators and monitoring agencies.

Present the proposed experimental method and working plan

(one page maximum)

1. Conduct o-DGT performance tests in seawater or high ionic strength solutions for a range of antibiotics and estrogens;
2. Conduct pre-trials on sampler configurations and deployment requirements
3. Select appropriate sampling conditions for Ferrybox and fixed station (Cuxhaven) deployments.
4. Deploy o-DGT in the ferry box with Chem-Mariner at appropriate spatial resolution.
5. Deploy o-DGT in the fixed station for different time intervals (up to 4 weeks), to perform uptake trials, alongside biota sampling (mussels, to assess the bioavailability of the organics).
6. Retrieve o-DGT samplers and mussels after every week, store in freezer.

7. Collect and post all the samplers to Lancaster.
8. Undertake instrumental analysis of the target chemical components in Lancaster.

Indicate the type of access applied for

O remote *(the measuring system is implemented by the operator of the installation and the presence of the user group is not required)*
×partially remote *(the presence of the user group is required at some stage e.g. installing and un-installing)*
O in person/hands on *(the presence of the user group is required/recommended during the whole access period)*

Indicate the proposed time schedule including expected duration of access time
(half a page maximum)

1. Travel to NIVA and prepare equipments and materials needed with colleagues in NIVA (day 1).
2. Travel with the ferry and install the o-DGT devices at day 2 in the Ferrybox (1-2 days)
3. Arrive in Kiel and travel to the fixed station (day 3) – Cuxhaven (Germany) and install o-DGT units together with active samplers (mussels in Cuxhaven) (1-2 days);
4. Travel back with the ship (next trip) to NIVA (day 5).
5. After discuss with NIVA colleagues, travel back to Lancaster (day 8).
6. Then each week (on days 8, 14, 21 and 28), retrieve some o-DGT devices from the Ferrybox and o-DGT and mussel samplers from the fixed station, under the help of NIVA colleagues and Daneil et.al colleagues in Cuxhaven, respectively.(Need to travel with the ferry and to the fixed station –Cuxhaven, 2 trips– return)
7. After retrieving o-DGT devices and other samples, store in freezer, after collecting all the samplers, post to Lancaster.
8. Perform instrumental analysis.

Host infrastructure

Indicate the type(s) of JERICO host facility(s) you are interested in
(Tick more than one if it is useful for your project)

×Ferrybox X Fixed Station

Indicate the specific JERICO host facility(ies) you wish to choose
Ferrybox – Colour line ferry (Oslo, Norway –Kiel, Germany)
Fixed Station - Cuxhaven

Explain briefly why you think your project will be best carried out at the specified host facility(ies)

Definitely enough water movement for the devices. Also different watertypes and contaminants. Currently the Chem Mariner is the only existing system which allows unassisted deployment, sampling and storage of passive samplers in mobile platforms, while all the necessary parameters such as pH (no need continually measured, manually measured is OK), temperature, salinity can be obtained.

If possible, list other JERICO facility(ies) where you think your experiment could alternatively be carried out

Additional information

Is there a facility similar to the one you wish to utilize in your country?

O Yes ×No

If yes, please indicate your reasons for requesting access to the JERICO facility you have chosen

Have you already submitted an Access Proposal to any of the participating facilities under this or previous EU Programs?

O Yes ×No

If yes, please indicate the name of the institution, submission date and reference number for each such proposal

Is this a resubmission of a previously rejected proposal?*(Select "yes" if this application is a revised version of a proposal submitted to JERICO before that was rejected by the Selection Panel)*

xYes No

If yes, please give the exact reference number and submission date. Kindly describe briefly the changes made in comparison to the rejected version.

Clearer objectives. More detailed work plan and appropriate costing.
Reference number: Call 1_4;
Submission data: April 1, 2012.

Is this a continuation of an earlier project funded under a previous call for Transnational Access in JERICO at the same facility?

O Yes×No

If yes, please give the exact reference number and submission date. Kindly indicate also what has been achieved in the previous experiment and the reasons why the objectives have not been fully met.

PART 4: Technical information

Wherever possible, please specify your requests regarding the use of your chosen facility's equipment/instruments/sensors, including any additional services, dataor other requirements.

Data: water temperature, pH, salinity and other parameters already monitored by the existing Ferry box unit.

List all material/equipment you plan to bring to the JERICOfacility (if any):

o-DGT devices, tweezers, fishing line for installing o-DGT.

Please provide a detailed and realistic budget for the expenses you expect to incur for travel/boarding and the shipment of equipment, if applicable in your case*(note that a maximum of two travel grants will be assigned to each user group, depending on the length of the requested period of stay).*

According to the work plan outlined, the total trip time would be 8 days.
The expenses incurred would be:

1. Travelling (flight, train/taxi): 1500 Euros;
2. Accommodation and subsistence in Oslo/Cuxhaven: 1500 Euros;
3. Boarding: 3600 Euros (900 Euros ferry ticket and cabin per trip per person, 2 trips, 2 persons);
4. Shipment of equipment: 600 Euros;

In total: 7,200 Euros.

Please tick the appropriate boxes and give detailed information for the kind of risks associated with your proposed activity

☐ Chemical :
☐ Biological :
☐ Radiological :
× Other: mussel samplers for polar organics.

Date of compilation _____31 August 2012_____

Signature of the PI _____Kevin C Jones_____

Signature of an appropriate authorised person
(e.g. Head of Department, Research Office)____Nigel Paul Research Director LEC_____

This section reserved to the JERICO TNA Office

Date of proposal receipt by email _____

Assigned reference number _____

Signature of receiving officer _____

Assigned reference number:	CALL_1_7
Date of proposal receipt by email:	30/03/2012
P.I. Name and Surname:	Ainhoa Caballero Reyes
Institution and Department:	AZTI Tecnalia Marine Research Division - Spain
Date of email answer by TNA office:	02/04/2012
Date of revision receipt by email:	28/09/2012

JERICO

Application for Transnational Access

to Coastal Observatories

National Research Council of Italy
OGS
cnrs
IBW PAN
hcmr
NIVA
Norwegian Institute for Water Research
Ifremer
Helmholtz-Zentrum Geesthacht
Zentrum für Material- und Küstenforschung
CSIC
National Oceanography Centre

Description of the project (to be provided in pdf format)
Please contact the manager of the infrastructure/installation you wish to use before writing the proposal

PART 1: User group details

Indicate if the proposal is submitted by

O an individual
x a user group

Information about the applicants (PI and project partners)

Principal Investigator (user group leader)

Title **Dr.** Name and Surname **Ainhoa B. Caballero Reyes**

Gender O Male **x Female**

Institution **AZTI-Tecnalia**

Department / Research Group **Marine Research Division**

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Country **Spain**

email **acaballero@azti.es**

Telephone **+34 667 174 486**

Fax _____

Project partners
(repeat for each partner of the group)

Partner # 1

Title **Dr.** Name and Surname **Anna Rubio Compañy**

Gender O Male **x Female**

Institution **AZTI-Tecnalia**

Department / Research Group **Marine Research Division**

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Country **Spain**

email **arubio@azti.es**

Partner # 2

Title **Dr.** Name and Surname **Luis Ferrer Rodríguez**

Gender **x Male** O Female

Institution **AZTI-Tecnalia**

Department / Research Group **Marine Research Division**

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Country **Spain**

email **lferrer@azti.es**

Partner # 3

Title **Eng.** Name and Surname **Julien Mader**

Gender **x Male** O Female

Institution **AZTI-Tecnalia**

Department / Research Group **Marine Research Division**

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Country **Spain**

email **jmader@azti.es**

PART 2: Additional information about the applicant(s) expertise

Expertise of the group in the domain of the application

AZTI-Tecnalia is a private non-for-profit research organization. It belongs to the recently created research corporation called TECNALIA that has become the fifth EU private research organization in size. Its main objective is the social development and the increase of the competitiveness in its working areas by means of the research and technological innovation. Since 1981 its activities have been focused to solve the problems of its clients, with an innovative and equilibrated model between the generation and caption of technologies and its diffusion and transfer. Integrated coastal and ocean resources management requires wide and specialized scientific knowledge. The public administration, for management decision making together with the stakeholders and companies linked to the marine environment, claim innovation and continuous technological development.

The Marine Research Division, especially the Marine Dynamics and Operational Oceanography area, has a long experience in oceanographic studies related to the Bay of Biscay. During the last

5 years this group has been involved in several regional, national and European projects about ocean-meteorological networks, operational oceanography (ECOOP, LOREA, IBI-ROOS), marine energy, environmental impacts, fisheries management and aquaculture. The Marine Research Division has published numerous reviewed articles (see the complete list at http://www.azti.es/oceanografia-operacional.html), including a book dedicated to the Oceanography of the Basque Country.

In addition to the IP A. Caballero, who has proven skills in mesoscale oceanic processes and remote sensing (please refer to her short CV detailed below), the proposing scientific team is made up of three more people from AZTI-Tecnalia with demonstrated expertise on the field of physical oceanography. L. Ferrer is a physical oceanographer, expert on numerical modelling. His activities focus on developing operational oceanography simulations in the Bay of Biscay at different scales. His research is devoted to analyze and describe marine circulation over the shelf and in some key coastal areas and their response to freshwaters inputs and to the atmospheric forcing. A. Rubio is a physical oceanographer; her research is focused on mesoscale and shelf/slope processes. She has a solid experience on the analysis of observational data form different platforms, as well as, on the validation and analysis of numerical data from ocean models. Finally, J. Mader is expert on coastal oceanography. He is currently head of Marine Dynamics and Operational Oceanography area in the Marine Research Division. His main qualifications and domains of expertise are in oceanographic instrumentation, data processing and modelling in marine dynamics.

To finish, it is worth noting that over recent years, with the aim of improving the understanding on the ocean processes governing the ocean circulation and that of developing an Operational Oceanography System in the Basque Country, the Meteorology and Climatology Direction of the Basque Government has promoted the installation of different in-situ observing marine platforms in the SE Bay of Biscay. This system, consisting of 6 coastal stations, 2 deep sea buoys and a HF Radar array (200 km range, 6 km horizontal resolution), provides systematic and long-term routine ocean-meteorological measurements. Together with the real-time data, invaluable for operational oceanographic purposes, the long-term time series of atmospheric, hydrographic and current hourly data are invaluable for the study of the hydrodynamics regarding to multiple time and space scale, in an area where in-situ data were particularly scarce. The combination of the available in-situ and remote data with that obtained from the Glider mission proposed in this project, is expected to be particularly fruitful and provide valuable results on the study of the 3D characteristics of a recurrent mesoscale anticyclonic eddy observed in this area.

Short CV of the PI

Ainhoa Caballero finalized her Ph.D. thesis from the Polytechnic University of Catalonia (Spain) in March 2008. The title of her international PhD degree was: Ocean surface circulation within the Bay of Biscay, on the basis of remotely-sensed data. During the PhD period made an internship in the Space Division of *La Maison de la Télédétéction*, IRD (France, May-Jun 2004) and in the Space Oceanography Division of the CLS (France, Aug-Oct 2005). She is an expert in climate change (ocean change) and mainly in space oceanography. Within the framework of space oceanography she has been involved in several studies of the physical oceanography of the Bay of Biscay by means of visible, IR and radar (altimeters, scatterometers) sensors. Her experience gathered in the physical oceanography of the study area has been also demonstrated by the participation in international congresses (ISRSE33, EGU, ISOBAY…) and in scientific projects

(LOREA; ESTIBB, Plan Nacional I+D+i 2008-2011, ref CTM2009-12339…), together with the publication or participation of different scientific papers. Besides the publications indicated in the following Section, we list here 5 selected publications on the physical oceanography of the Bay of Biscay:

- Caballero, A., Sagarminaga, Y., Espino, M., 2005: The relationship between satellite and meteorological model-derived winds with those from ocean buoys within the Bay of Biscay. Journal of Atmospheric and Ocean Science, Vol. 10, No. 4, 463–479.
- Caballero, A., Espino, M., Sagarminaga, Y., Ferrer, L., Uriarte, Ad. González, M., 2008: Simulating the migration of drifters deployed in the Bay of Biscay, during the Prestige crisis. Marine Pollution Bulletin, Vol. 56, 475-482.
- Ferrer, L., González, M., Valencia, V., Mader, J., Fontán, A., Uriarte, Ad. Caballero, A., 2007: Operational coastal systems in the Basque Country region: modelling and observations. Proceedings of the 17th International Offshore (Ocean) and Polar Engineering Conference, ISOPE 2007. Lisboa (Portugal).
- Ferrer L, Fontán A, Mader J, Chust G, González M, Valencia V, Uriarte Ad, Collins MB (2009). Low-salinity plumes in the oceanic region of the Basque Country. Cont. Shelf Res., 29 (8): 970-984.
- González, M., Ferrer, L., Uriarte, A., Urtizberea, A., Caballero, A. 2008: Operational Oceanography System applied to the Prestige oil-spillage event. Journal of Marine Systems, Vol. 72, 178-188.

A list of 5 recent, relevant publications of the participant(s) in the field of the project

Caballero, A. Pascual A., Dibarboure G., Espino M. 2008. Sea level and Eddy Kinetic Energy variability in the Bay of Biscay, inferred from satellite altimeter data. Journal of Marine Systems, 72, 116–134.

Caballero, A., Ferrer, L., Rubio, A., Taylor, B.H., Charria, G., Grima, N., submitted. Monitoring of a quasi-stationary eddy by means of satellite, in situ and model data. Deep Sea Research.

Ferrer L., Caballero A. (2011). Eddies in the Bay of Biscay: A numerical approximation. Journal of Marine Systems, 87, 133-144.

Rubio, A., A. Fontán, P. Lazure, M. González, V. Valencia, L. Ferrer, J. Mader and C. Hernández Seasonal to tidal variability of currents and temperature in waters of the continental slope, SE Bay of Biscay. Journal of Marine Systems DOI: 10.1016/j.jmarsys.2012.01.004 (2012, in press)

Rubio, A., G. Reverdin, A. Fontán, M. González, and J. Mader (2011). Mapping near-inertial variability in the SE Bay of Biscay from HF radar data and two offshore moored buoys, Geophys. Res. Lett., 38, L19607, doi:10.1029/2011GL048783.

PART 3: Detailed scientific description of the project

List the main objectives of the proposed research

(one page maximum)

During winter, an anticyclonic eddy is generated in the SE Bay of Biscay that instead of migrate, remains between 3°W and 4°W for several months. This mesoscale structure correspond to the stationary SWODDY (Slope Water Oceanic eDDY) previously described by Pingree and Le Cann (1992). A recent analysis of a time series of satellite altimetry maps, Sea Surface Temperature and chlorophyll maps, a drifter and outputs from ROMS simulations, in the framework of the ESTIBB project, suggests that these stationary eddies could be generated in the bathymetric and discontinuities of the CapBreton canyon system, or further to the east, between this canyon and the Ajo and Mayor Capes. Besides this, there are evidences that indicate that these eddies retain plankton, including differentiated densities of ichthyoplankton (early development stages of different fish species spawning in this area).

The main objective of this project is to study, in detail, the characteristics of this eddy, both in the surface and in the vertical, through an extended series of remote sensing, routine in-situ measuring systems (two slope buoys and a HF radar array), two field campaigns with drifting buoys and a field campaign using an underwater Glider.

In-situ measurements will be use as well to validate ROMS simulations in the area to allow further research based on model results.

Pingree, R.D., Le Cann, B., 1992. Three anticyclonic Slope Water Oceanic eDDIES (SWODDIES) in the southern Bay of Biscay in 1990. Deep-Sea Research 39, 1147– 1175.

Give a brief description of the scientific background and rationale of your project

(one page maximum)

Several authors have described some aspects of the eddy activity in the SE Bay of Biscay, between Cap Ferret and CapBreton submarine canyons (Pingree and Le Cann, 1992; Garcia-Soto et al., 2002; Serpette et al., 2006; Caballero et al., 2008). For instance, Pingree and Le Cann (1992) describe an stationary anticyclonic eddy during summer in 1997, around 44.5ºN and 4ºW. In the same area (around 4ºW), other SWODDY like eddies have been described by Garcia-Soto et al. (2002), also during summer periods and using different data bases. However, the observations to the east of 3.5ºW are much more scarce and there are few evidences or descriptions of eddies in this area.

Recently, an Spanish research project (ESTIBB: CTM2009-12339) founded by the Ministry of Science and Innovation of the Spanish Government currently being developed by the group of Marine Dynamics and Operational Oceanography of AZTI (participants: A. Caballero, L. Ferrer and A. Rubio) permits to study the spatio-temporal variability of the eddy activity in the Bay of Biscay (see Ferrer and Caballero, 2011). The recurrent identification of an anticyclone in this area (see Fig.1), from different independent data sources, has motivated this proposal, with the aim of investigate the 3D characteristics of this structure.

To that end, we propose to undertake a Glider mission in this area and to combine the obtained data with the systematic and long-term routine ocean-meteorological in-situ and remote measurements available in the study area.

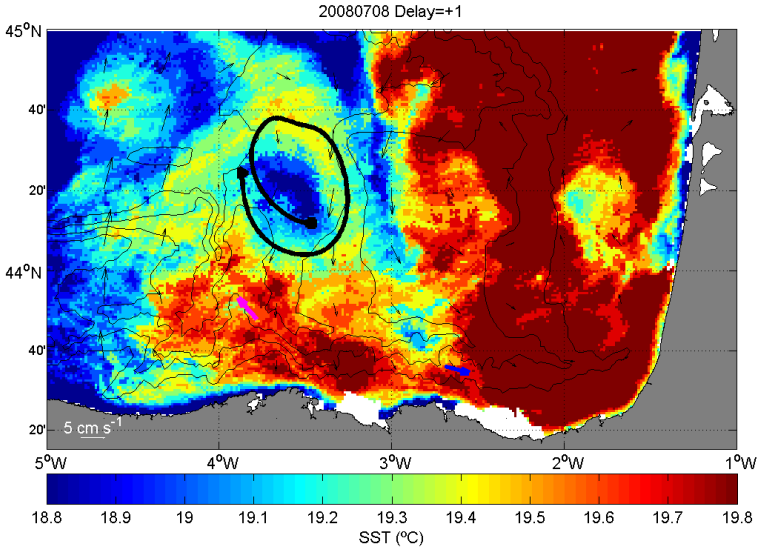

Figure 1. AVHRR derived SST (ºC) image corresponding to 8 July 2008 with altimetry derived weekly GCA vectors superimposed (the date and the delay between the image and the GCA vectors is indicated in the title), as well as the current vectors (integrated from 0 to 90 m depth) measured by the AGL buoy (pink) and Matxitxako buoy (dark blue), corresponding to the hour of the SST image. The trajectory a drifter corresponding to 10 days before and 10 days after the date of the images is also superimposed (black thick arrow). The drifter, deployed during CAROLS 2007 campaign had a surface float linked to a holey sock drogue (~10 m long×~1 m wide) centered at 15 m depth. The position was transferred by an ARGOS localization system. Isobaths (m): 200, 1000, 2000, 3000 and 4000. Figure extracted from Caballero et al. (submitted).

Garcia-Soto, C., Pingree, R.D., Valdés, L., 2002. Navidad development in the southern Bay of Biscay: climate change and swoddy structure from remote sensing and in situ measurements. Journal of Geophysical Research 107, 3118. doi:10.1029/2001JC001012.

Serpette, A., Le Cann, B., Colas, F. 2006. Lagrangian circulation of the North Atlantic Central Water over the abyssal plain and continental slopes of the Bay of Biscay: description of selected mesoscale features. Scientia Marina, Vol 70, No S1.

Present the proposed experimental method and working plan

(one page maximum)

The experimental campaign that we propose herein has the objective of study the **characteristics and evolution** of the anticyclone eddy described above.

Spatial sampling:

Figure 2 shows the different radial that will be made by the Glider. From the deployment point Glider will navigate until CapBreton canyon (Fig. 2, blue lines), then it will continue to the North until 44º40'N 3ºW, it will make another diagonal radial until 43º40'N 4ºW (Fig. 2, blue lines) and again to the North until 44º40'N 4ºW. Finally, another diagonal transect to go back to CapBreton canyon (the initial point). The dataset resulting from this sampling will serve to analyze the horizontal and vertical characteristics of the eddy; therefore, the Glider will be submerged to the greatest technically possible depth (~1000m).

Deployment:

The deployment/recovery of the Glider will be done using our facilities in Pasaia. The research center of AZTI- Tecnalia in Pasaia is located within the Pasaia Harbour (http://www.azti.es/en/inv.-marina/). Several field campaigns are undertaken every year and AZTI-Tecnalia at Pasaia, by a permanent 6 technicians staff, with wide expertise operations at sea. At least, two technicians will be available during the period of the campaign to ensure its feasibility. For the deployment/recovery of the Glider, two of AZTI-Tecnalia ships will be available:

- A rubber boat of 8 m long (navigation offshore up to 12 miles, capacity of 6 people, non-availability of electric power onboard).
- A small ship, the AZTIMARBAT –modèle Starficher 840 (navigation offshore up to 24 miles, capacity of 6 people, and electric power 220 V available onboard).

The deployment will be done at the most offshore possible position (shelf break), off Pasaia Harbour or further west from Bermeo Harbour (43º 25' 0" N, 02º 43' 0" W, at ~1 hour from Pasaia) after evaluation of the most suitable scenario.

Contingency plan:

In case the Glider needs an emergency recovery the two ships described will be available within a few hours delay to recover the Glider if located at a distance less than 24 miles from coast. For an emergency recovery further offshore (>24 miles) there are several other possibilities:

- Local fishery boats, within a delay of few days
- Local Coast Guard facilities, within a delay to be determined

Logistics, extra costs:

AZTI Tecnalia will give financial support for extra cost due to the transport of Gliders and technicians form the host institution to Pasaia. Pasaia is located near Donostia-San Sebastian and offers plenty options for accommodation and public transport facilities.

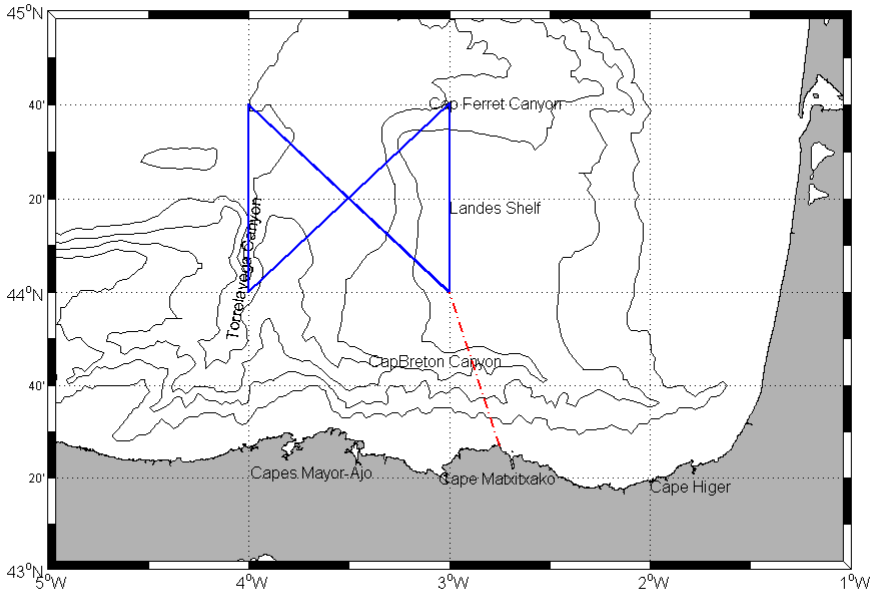

Figure 2. Area of Study. The blue lines indicate the radials the Glider will sample; the red dotted line shows the distance to be covered by the ship for the Glider deployment and partially by the Glider in its way to the study area (in case the deployment takes place from the Bermeo Harbour).

Indicate the type of access applied for

x remote	*(the measuring system is implemented by the operator of the installation and the presence of the user group is not required)*
O partially remote	*(the presence of the user group is required at some stage e.g. installing and un-installing)*
O in person/hands on	*(the presence of the user group is required/recommended during the whole access period)*

Indicate the proposed time schedule including expected duration of access time

(half a page maximum)

The historical observations indicate that this structure remains in this area during several months between the beginning of the spring and the end of summer. Therefore, in order to ensure the presence of the stationary anticyclonic eddy, the experimental sampling will take place within the beginning of June to the end of July 2013. We expect the Glider would repeat the sampling trajectory described above during, at least, eight weeks to be able to follow the evolution of the observed structure and to allow a better coverage of the structure from satellite products. The time for covering 120 km for a Glider reaching 1000 m depth is ~6 days, so we expect the Glider to cover the transects indicated on Figure 2 at least two times.

Host infrastructure

Indicate the type(s) of JERICO host facility(s) you are interested in
(Tick more than one if it is useful for your project)

O ferrybox O fixed platform **x glider** O calibration laboratory

Indicate the specific JERICO host facility(ies) you wish to choose

National Glider facility (CETSM)
Institut National des Sciences de l'Univers/ Centre National de la Recherche Scientifique INSU/CNRS (La Seyne sur mer, France)

Explain briefly why you think your project will be best carried out at the specified host facility(ies)

The CETSM (INSU/CNRS) institute has a wide and demonstrated experience in the use of Gliders, with at least one Glider campaign in the SE Bay of Biscay (Aspex_02, source: http://www.ego-network.org/dokuwiki/doku.php?id=public:glidersdeployments). The CETSM (INSU/CNRS) is the facility which offers the highest availability of Gliders, with up to three deep Gliders (0-1000 m) and has a wide and demonstrated experience in the use of Gliders which guarantees the feasibility of the proposed mission.

If possible, list other JERICO facility(ies) where you think your experiment could alternatively be carried out

Additional information

Is there a facility similar to the one you wish to utilize in your country?

x Yes O No

If yes, please indicate your reasons for requesting access to the JERICO facility you have chosen

The main reason is the need of optimizing the use of European and National facilities. In Spain, SOCIB-IMEDEA in Balearic islands and PLOCAN in Canary Islands are managing Gliders. Nevertheless, for performing the field campaign proposed here, in the bay of Biscay where scientific and operational collaborations exist between France and Spain, the use of the French fleet in a European context appears to be the best option. The proposal is supported by Dyneco-Ifremer Brest and the data will be exploited jointly in the framework of the French project EPIGRAM

(ANR/LEFE-IDAO).

There are no currently National Glider facilities in the Iberian Atlantic coast. Nevertheless AZTI-Tecnalia has been in touch with the geographically closest Spanish facility involved in JERICO: SOCIB-IMEDEA (Balearic islands). At the moment, SOCIB has not the fleet capacities to perform services at a national level, in particular in the Bay of Biscay. For this reason, the present call in the framework of JERICO is a great opportunity to complement the foreseen sampling through the use of underwater Gliders in the area. In addition, the CETSM (INSU/CNRS) institute has a wide and demonstrated experience in the use of Gliders which guarantees the feasibility of the proposed mission.

Have you already submitted an Access Proposal to any of the participating facilities under this or previous EU Programs?

O Yes **x No**

If yes, please indicate the name of the institution, submission date and reference number for each such proposal

Is this a resubmission of a previously rejected proposal? *(Select "yes" if this application is a revised version of a proposal submitted to JERICO before that was rejected by the Selection Panel)*

O Yes **x No**

If yes, please give the exact reference number and submission date. Kindly describe briefly the changes made in comparison to the rejected version.

Is this a continuation of an earlier project funded under a previous call for Transnational Access in JERICO at the same facility?

O Yes **x No**

If yes, please give the exact reference number and submission date. Kindly indicate also what has been achieved in the previous experiment and the reasons why the objectives have not been fully met.

PART 4: Technical information

Wherever possible, please specify your requests regarding the use of your chosen facility's equipment/instruments/sensors, including any additional services, data or other requirements.

One deep Glider (0-1000m) equipped with CTD, oxygen sensor, fluorimeter and tubidity / suspended solids sensor for one field campaign of 8 weeks within beginning of June to the end of July 2013.

List all material/equipment you plan to bring to the JERICO facility (if any):

Please provide a detailed and realistic budget for the expenses you expect to incur for travel/boarding and the shipment of equipment, if applicable in your case *(note that a maximum of two travel grants will be assigned to each user group, depending on the length of the requested period of stay)*.

Shipment of equipment= 1500 €
Travelling of two Technicians from the host institution= 3000 €

Please tick the appropriate boxes and give detailed information for the kind of risks associated with your proposed activity

☐ Chemical :
☐ Biological :
☐ Radiological :
☐ Other :

Date of Compilation _____28/09/2012_____

Signature of the PI _____Ainhoa Caballero_____

Signature of an appropriate authorised person
(e.g. Head of Department, Research Office) _____ LORENZO MOTOS

This section reserved to the JERICO TNA Office

Date of proposal receipt by email _____

Assigned reference number _____

Signature of receiving officer _____

National Research Council of Italy

Assigned reference number:	CALL_1_13
Date of proposal receipt by email:	03/04/2012
P.I. Name and Surname:	Ian Allan
Institution and Department:	Niva in Oslo Norway
Date of email answer by TNA office:	04/04/2012
Date of revision receipt by email:	22/08/2012

JERICO

Application for Transnational Access

to Coastal Observatories

National Research Council of Italy
OGS
cnrs
IBW PAN
hcmr
NIVA
Norwegian Institute for Water Research
Ifremer
Helmholtz-Zentrum Geesthacht
Zentrum für Material- und Küstenforschung
CSIC
National Oceanography Centre

Description of the project (to be provided in pdf format)
Please contact the manager of the infrastructure/installation you wish to use before writing the proposal

PART 1: User group details

Indicate if the proposal is submitted by

O an individual
● a user group

Information about the applicants (PI and project partners)

Principal Investigator (user group leader)

Title _**Dr**_ Name and Surname ___**Ian Allan**_____

Gender ● Male O Female

Institution ____**NIVA**_____

Department / Research Group _____

Address _**Gaustalleen 21, 0349 Oslo** _____

_____

Country __**Norway**_____

email ian.allan@niva.no _____

Telephone ____**+47 98294122**_____

Fax ___**+47 22185200**_____

Project partners
(repeat for each partner of the group)

Partner # 1

Title __**Mr**_ Name and Surname _____**David White**_____

Gender ● Male O Female

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Department / Research Group _____

Address ___**National Marine Facilities –Sea Systems, National Oceanography**

Centre, Southampton, Empress Docks, Southampton, SO14 3ZH _____

Country ___**United Kingdom**_____

email __dwh@noc.ac.uk _____

Partner # 2

Title _**Dr**__ Name and Surname _____**Branislav Vrana**_____

Gender ● Male O Female

Institution ____**RECETOX**_____

Department / Research Group _____

Address __ **Kamenice 126/3, 625 00 Brno**_____

_____

Country __**Czech Republic**_____

email ___vrana@recetox.muni.cz _____

PART 2: Additional information about the applicant(s) expertise

Expertise of the group in the domain of the application

This group includes Ian Allan and Branislav Vrana who together have close to 20 years of experience in the development and use of passive sampling devices for the monitoring of trace organic pollutants in in the environment.

Short CV of the PI

Ian Allan has been a research scientist at NIVA since 2008. After completing his PhD at the University of Reading in 2003, he was a postdoctoral fellow at the University of East Anglia (1 year) and the University of Portsmouth (3.5 years) where his work focussed on understanding and measuring the bioavailability of contaminants in environmental matrices such soils, sediments and water. A NIVA his work combines consultancy work and applied research with a strong passive sampling theme. He has authored over 20 NIVA reports for a range of industrial customers and national and regional regulatory authorities. He has also (co)-authored over 30 refereed scientific publications and 9 book chapters.

A list of 5 recent, relevant publications of the participant(s) in the field of the project

IJ Allan, HC Nilsson, I Tjersvoll, C Bradshaw & K Næs (2011) Mobile Passive Sampler: Concept for a novel exposure procedure, *Environmental Pollution*, Vol. 159 pp 2393-2397

IJ Allan & C Harman (2011) Global Aquatic Passive Sampling: Maximizing Available Resources using a novel exposure procedure, Viewpoint, *Environmental Science and Technology*, Vol. 45 (15) pp 6233-6234

B Vrana, GA Mills, **IJ Allan**, E Dominiak, K Svensson, J Knutsson, G Morrison, & R Greenwood (2005) Passive sampling techniques for monitoring of pollutants in water, *TrAC-Trends in Analytical Chemistry*, Vol. 24 (10) pp 845-868

IJ Allan, K Booij, A Paschke, **B Vrana**, GA Mills & R Greenwood (2009) Field performance of seven passive sampling devices for monitoring of hydrophobic substances. *Environmental Science and Technology*. Vol. 43 (14) pp 5383-5390

Passive sampling techniques in environmental monitoring. Comprehensive Analytical Chemistry, Vol. 48, eds. R. Greenwood, GA Mills and **B Vrana**, Wilson and Wilson's. 2007

PART 3: Detailed scientific description of the project

Main objectives of the proposed research

- *Evaluate the feasibility of combining glider technology and passive sampling technique to measure chemical contaminant concentrations at sites that are generally difficult to sample*
- *Estimate persistent organic pollutant concentrations in waters of the Celtic Sea based sampler-glider exposures*
- *Assess the representativeness of the data obtained through glider exposure of the passive samplers*

Background and rationale for the project

The measurement in the environment of trace levels of persistent organic pollutants such as those listed on the Stockholm Convention relies increasingly on the use of passive samplers. These are simple polymeric membranes that are capable of absorbing contaminants dissolved in water during exposure. With adequate calibration, it is possible to estimate dissolved contaminant concentrations for the period of exposure from the mass of contaminants absorbed in the sampler. Reasonable limits of detection are generally achieved by deploying samplers for periods of weeks to months on static rigs or moorings.

We have recently showed that mobile passive samplers towed through water (e.g. behind a boat or a trawl net) enabled significant increases in sampling rates (equivalent volume of water extracted by the sampler per unit of time) thereby allowing us to reduce exposure times drastically. Towing samplers through water also allows us to obtain spatially-resolved data rather than time-integrated concentrations.

Combining gliders and passive samplers would allow in the future the possibility to measure contaminant contaminants in environments that have never been monitored before, i.e. in terms of

sampling depth and inaccessible locations.

The representativeness of data obtained from passive sampler exposures when attached to gliders can be done by using samplers with differing conformations (thickness) but made of the same polymer and/or by calibrating these mobile samplers by comparing them with static ones deployed in situ.

Passive sampling measurements do not need any electrical or mechanical power to function. Since the samplers may be deployed outside of the hull of the glider, the passive samplers would not interfere with other measurements to be undertaken during the glider flight.

Experimental method and work plan

This pilot or proof-of -concept test aims to assess the suitability of using gliders as a mode of exposure of passive sampling devices for the measurement of trace levels of nonpolar organic substances such as polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs). Depending on average speed and duration of the glider cruise, For these compounds, the concentration in the samplers is expected to reach a high degree of thermodynamic equilibrium with the concentration in the water. We will use samplers spiked with a range of performance reference compounds (PRCs) that will provide us with a means to estimate the sampling rate during exposure with the glider.

Based on discussions with David White at NOC, one or more possibilities for the assessment of the representativeness of the data obtained with the mobile passive samplers will be selected. This can be done by (i) using samplers with different thicknesses (but same surface area), (ii) calibrating mobile samplers with similar samplers deployed on a mooring in the area of the glider test, and finally (iii) by repeating the experiment in the same location and comparing data.

The location of the test is relatively unimportant at this stage. A glider operating depth of 0-200m below surface is totally adequate. During a glider cruise of several days passive samplers are able to accumulate sufficient amount of target substances for their quantification even at locations with extremely low concentrations in seawater (low pg/L).

Programme of activities:

Phase 1. Samplers for this testing are ready for deployment. This is a collaboration between NIVA and RECETOX with communication with NOC over the design of the samplers and the mode of attachment to the glider. A discussion between David White (NOC) and Ian Allan (NIVA) has taken place and a trial of deployment on the hull of the glider is underway. This is the optimum way to minimise disturbances and possibilities for the passive samplers to disrupt to functioning of the gliders.

Phase 2. Sampler/glider deployment (2012). Possibilities of deployments of gliders with passive samplers attached (NIVA/NOC possibly using gliders from the OSMOSIS project). Train NOC in the use and deployment/retrieval of passive sampling devices. The standard operation procedure for sampler deployment/retrieval produced in August 2012 will be optimised.

Phase 3. [In the case a rig/mooring is available in the area of the test exposure of passive samplers onboard a glider] For calibration purposes a set of passive samplers could be deployed

at an adequate and easy to reach location in the vicinity of the glider test site for calibration of data obtained with the mobile samplers.

Phase 4. Sampler retrieval. Samplers will be retrieved by NOC at the same time as the glider is recovered. Samplers can be sent by post to NIVA/RECETOX for analyses.

Indicate the type of access applied for

O remote	*(the measuring system is implemented by the operator of the installation and the presence of the user group is not required)*
● partially remote	*(the presence of the user group is required at some stage e.g. installing and un-installing)*
O in person/hands on	*(the presence of the user group is required/recommended during the whole access period)*

Indicate the proposed time schedule including expected duration of access time

Passive sampling devices will be installed on the gliders during some of the NOC glider deployments planned for Early September as part of the OSMOSIS project on the coastal shelf of the UK. If successful, further deployments can be organised.

Host infrastructure

Indicate the type(s) of JERICO host facility(s) you are interested in
(Tick more than one if it is useful for your project)

O ferrybox	O fixed platform	● glider	O calibration laboratory

Indicate the specific JERICO host facility(ies) you wish to choose

Glider facility at National Oceanography Centre (Liverpool, UK)

Explain briefly why you think your project will be best carried out at the specified host facility(ies)

The principal investigator (Ian) and the glider operator (Phil) at the NOC have been in touch discussing the possibility of combining glider and passive sampling technology.

If possible, list other JERICO facility(ies) where you think your experiment could alternatively be carried out

This pilot test could also be conducted using the other JERICO glider facilities

Additional information

Is there a facility similar to the one you wish to utilize in your country?

O Yes ● No

If yes, please indicate your reasons for requesting access to the JERICO facility you have chosen

Have you already submitted an Access Proposal to any of the participating facilities under this or previous EU Programs?

O Yes ● No

If yes, please indicate the name of the institution, submission date and reference number for each such proposal

Is this a resubmission of a previously rejected proposal? *(Select "yes" if this application is a revised version of a proposal submitted to JERICO before that was rejected by the Selection Panel)*

O Yes ● No

If yes, please give the exact reference number and submission date. Kindly describe briefly the changes made in comparison to the rejected version.

Is this a continuation of an earlier project funded under a previous call for Transnational Access in JERICO at the same facility?

O Yes ● No

If yes, please give the exact reference number and submission date. Kindly indicate also what has been achieved in the previous experiment and the reasons why the objectives have not been fully met.

PART 4: Technical information

Wherever possible, please specify your requests regarding the use of your chosen facility's equipment/instruments/sensors, including any additional services, data or other requirements.

System for fastening the passive sampling devices (polymer strips) to the glider. This can be simple and designed to minimise the impact of the samplers on the glider operation and will require discussion between NIVA/RECETOX and the glider operator (NOC).

List all material/equipment you plan to bring to the JERICO facility (if any):

Passive sampling devices. Fastening equipment.
If possible, a separate deployment on a mooring or rig in the area of the glider operation will require us to bring a second set of passive sampling devices and a deployment cage.

Please provide a detailed and realistic budget for the expenses you expect to incur for travel/boarding and the shipment of equipment, if applicable in your case *(note that a maximum of two travel grants will be assigned to each user group, depending on the length of the requested period of stay).*

Return trip Oslo-United Kingdom (+equipment)	*5000 NOK*
Hotel stay in UK for 2 nights	*2500 NOK*
Transportation in the UK	*1000 NOK*
Subsistence	*1000 NOK*
Total:	*9500 NOK (Eu 1500)*

Please tick the appropriate boxes and give detailed information for the kind of risks associated with your proposed activity

☐ Chemical :
☐ Biological :
☐ Radiological :
☐ Other :

Date of compilation ____**03/04/2012**_____

Signature of the PI _____Ian J. Allan_____ _____

Signature of an appropriate authorised person
(e.g. Head of Department, Research Office) ___James D. Berg_____

This section reserved to the JERICO TNA Office

Date of proposal receipt by email _____

Assigned reference number _____

Signature of receiving officer _____

National Research Council of Italy
OGS
cnrs
IBW PAN
hcmr
NIVA
Norwegian Institute for Water Research
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Helmholtz-Zentrum Geesthacht
Zentrum für Material- und Küstenforschung
CSIC
National Oceanography Centre