

JERICO Transnational Access

Abstracts & Summaries



During its lifetime, JERICO offered Transnational Access to a number of unique European Coastal Observatories and Calibration Facilities for international research and technology development.

The primary objective of the JERICO Transnational Access activity was to enable scientists and engineers to freely access coastal infrastructures not available in their own countries. The JERICO Consortium includes research structures such as **Ferryboxes, Fixed Platforms, Gliders, and associated support facilities, i.e. Calibration Laboratories.**

Access to these facilities contributed to:

- building a long-term collaboration between users and JERICO partners, facilitating staff exchange and scientific cooperation;
- building a 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 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 were granted following the evaluation of proposals submitted by user groups for their utilization in response to three dedicated Calls during the lifetime of the JERICO project. A user group can be a single researcher (user) or a team of two or more researchers (users). The evaluation of submitted TNA proposals was conducted via a selection process assessing them for scientific excellence, innovation and eventual impacts on the state-of- the-art.

The access conceded included **logistical, technical and scientific support** by the access provider (or infrastructure operator), and any special training required by a user group to use an assigned infrastructure.

JERICO contributed to travel and subsistence costs relating to visits by users, whenever necessary. A maximum of two travel grants was assigned to each user group, depending on the length of the requested period of stay.

These projects are listed and summarized in the next pages.

1) Project ABACUS

Title of the project	Algerian BASin Circulation Unmanned Survey
Host Research Infrastructure	CSIC-Glider
Access Starting date - End date	15/09/2014-20/10/2014 18/11/2014-19/12/2014
Name of Principal Investigator Home Laboratory	Prof Giorgio Budillon Università degli Studi di Napoli "Parthenope" Dipartimento di Scienze e Tecnologie Centro Direzionale Isola C4 Napoli, Italy
E-mail address	giorgio.budillon@uniparthenope.it
Additional users	Yuri Cotroneo, Giuseppe Aulicino, Giannetta Fusco – DiST, Univ. "Parthenope" Napoli, Italy Nadira Ait-Ameur, Hemdane Yacine – ENSSMAL, Bois des Cars, Delly Brahim, Algeria

The proposed research aims to combine traditional (ship collected) in situ data, glider observations and a large set of satellite observed variables to get insights into the Algerian basin circulation, dominated by the presence of very energetic mesoscale structures, characterized by meandering of the Algerian Current and isolated cyclonic and anti-cyclonic mesoscale eddies. In particular merging the glider sampling capabilities with satellite information will advance knowledge on mesoscale features overpassing the well-known in situ measurement limits in both space and time.

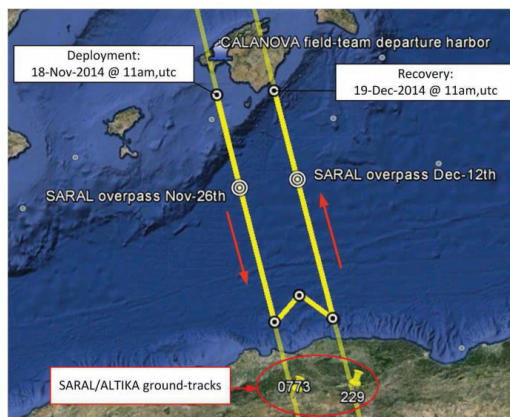


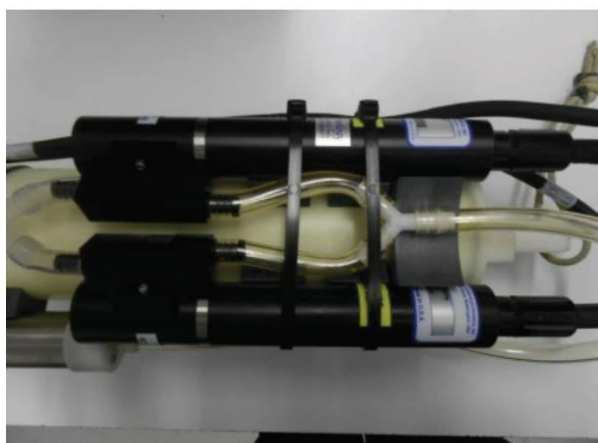
Figure 1: The 32 days "W" shaped track (yellow line) followed by SDEEP01 between Mallorca and the Algerian Basin during the second mission. Glider has been overflown by SARAL-ALTIKA satellite twice, on Nov 26th and Dec 12th, in two neighbor ground tracks (#773 and #329 respectively). Deployment (Nov 18th) and recovery (Dec 19th) dates are also shown.

ABACUS project completed two Slocum deep glider missions along the monitoring line between Mallorca and the Algerian Basin. Along a total of four transects, ocean physical and biological features have been monitored from surface to 975m depth performing one deep CTD, O2 sensor and fluorimeter cast every 4Km. During the return leg of the first mission, a butterfly route has been inserted to sample an eddy evidenced by the AVISO altimetry and ratified by two SOCIB drifters. Water masses trapped into the eddy, mean radius, rotational speed, and track from origin to dissipation have been monitored using AVISO maps and glider data. Technical problems encountered by the glider at sea (pumping, unexpected resets) caused two mission aborts; the excellent SOCIB-IMEDEA technicians readily solved these issues and assured the perfect accomplishment of the project.

2) Project CIEBIO

Title of the project	Calibration and inter-calibration exercise of bio-geochemical sensors
Host Research Infrastructure	HCMR POSEIDON CAL
Access Starting date - End date	26/11/2012-30/11/2012
Name of Principal Investigator Home Laboratory E-mail address	Roberto Bozzano Consiglio Nazionale delle Ricerche roberto.bozzano@cnr.it
Additional users	Sara Pensieri, Consiglio Nazionale delle Ricerche, Via de Marini 6, 16149 Genoa (ITALY)

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 multi-parametric 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 two SBE43 installed on the SBE16 ready for the oxygen calibration and the experimental set-up.

The "Calibration and inter-calibration exercise of bio-geochemical sensors project" in the framework of Jerico TNA allowed to perform a calibration of oxygen, chlorophyll-a and turbidity sensors both in laboratory and at sea. The achieved results showed 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.

3) Project ECCECs

Title of the project	Emerging Chemical Contaminants in European Coasts
Host Research Infrastructure	CNR MPL – MPLS, HZG COSYNA_1 (Lysbris ferrybox)
Access Starting date - End date	<u>CNR MPL MPLS</u> : 02/04/2014-28/06/2014 <u>HZG COSYNA_1 (Ferrybox Lysbris)</u> : 30/09/2014-27/10/2014
Name of Principal Investigator Home Laboratory	Dr. Jana Klanova Research Centre for toxic compounds in the environment – Environmental chemistry division, Kamenice 753/5, 62500 Brno, Czech Republic
E-mail address	klanova@recetox.muni.cz
Additional users	Luca Nizzetto and Miroslav Brumovsky, Research Centre for toxic compounds in the environment – Environmental chemistry division, Kamenice 753/5, 62500 Brno, Czech Republic

The objectives of this project was to provide a first continental scale, consistent assessment of emerging chemical contaminants occurrence and distribution in European coastal waters and to assess the budget of selected chemical contaminants in the marine water column and investigate the mechanisms controlling their vertical distribution.



Deployment of passive sampler cages on the MPLS

A successful 1 month-long campaign was performed by repeatedly collecting water samples from the Lysbris (Ferry box) in the North sea surface water. Originally two short accesses to the Lysbris (spring and autumn) were foreseen, but finally the group opted to run a single autumn campaign only, repeating the sampling during three consecutive weeks. This change allowed them to focus better on their main objective: to provide a continental scale assessment of emerging contaminants in surface marine water.

5 passive sampler cages containing each 3 silicon passive sampler sheets were deployed on mooring C1 in the Sicily channel. Passive samplers were used to pre-concentrate in-situ hydrophobic organic pollutants extracted from the water onto a simple flat stripe of silicon-based polymer. Individual silicone stripes were held in a support called spider inside of a stainless steel cage.

4) Project FITO MicroLFA

Title of the project	Field Test Of MicroLFA nutrients monitoring device for Ferrybox systems
Host Research Infrastructure	HZG COSYNA_1 and COSYNA_2
Starting date - End date	<u>COSYNA_1 (Ferrybox Lysbris): 16/07/2014-25/09/2014</u> <u>COSYNA_2 (Cuxhaven station site):</u> 09/05/2014-04/07/2014; 06/08/2014-22/09/2014
Name of Principal Investigator	Dr. Luca Sanfilippo
Home Laboratory	SYSTE A S.p.a., Via Paduni, 2A 03012 Anagni (FR), Italy
E-mail address	luca.sanfilippo@systea.it
Additional users	Enrico Savino, SYSTE A S.p.a

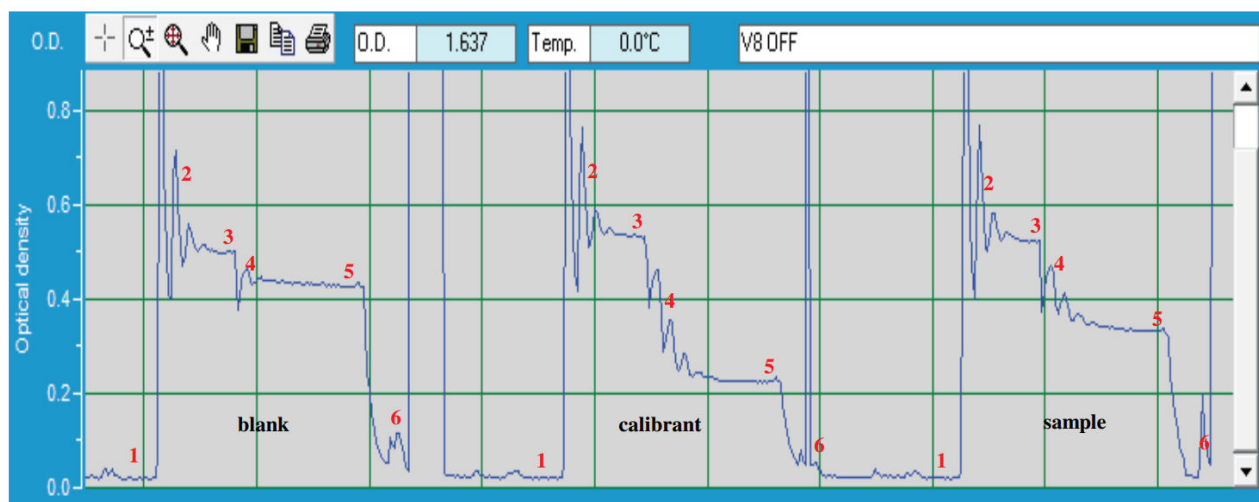
The proposed TNA project aims to test in operative conditions a new line of product specifically developed by SYSTE A S.p.A. to be extensively used in Ferrybox systems for unattended nutrients monitoring in sea and surface water. The field tests were performed in the facilities of Institute of Coastal Research / KOI of Helmholtz Zentrum Geesthacht (HZG), partner of Jerico project.

Two independent analytical modules to measure PO_4 and NH_3 were provided and integrated in the existing system layout and local control unit on both sites; a third unit to measure PO_4 was dispatched, to change the first one for the second experiment on board of Lysbris. The first PO_4 unit module was later installed again in Cuxhaven station.

During several weeks, unattended measurements on both NH_3 and PO_4 parameters were collected in both sites; the data results were elaborated by HZG and technically commented.

The installation and operation inside the Ferrybox Lysbris were difficult to perform, due to the limited space available, but the compactness of the units to be tested allowed the integration and use on the running system.

The following is a description of the peaks of PO_4 as it appears on the graph during the analysis.



5) Project FRIPP

Title of the project	FRontal dynamics Influencing Phytoplankton Production and distribution during DCM period
Host Research Infrastructure	CSIC-Glider
Access Starting date - End date	25/05/2014 - 30/05/2014
Name of Principal Investigator Home Laboratory	Dr. Antonio Olita Institute for Coastal Marine Environment of CNR, Unit in Oristano, Operational Oceanography Group (GOO) Località Sa Mardini, Torregrande, 09170 Oristano
E-mail address	antonio.olita@cnr.it
Additional users	Alberto Ribotti, CNR-IAMC, Oristano

The proposed research was drawn in the Eastern Alboran Sea, in coincidence with the strong density front at the Eastern margin of the Eastern Alboran anticyclonic Gyre (Almería-Orán Front). Through a multi-sensor sea-glider mission supported by modeled and remotely-sensed data, the project aimed to study the impact of frontal dynamics on the Phytoplankton production and distribution as inferred from fluorometric measurements. The mission was accomplished in concomitance to another multi-platform (Ship-based CTD, model, bottles analysis) experiment (already planned by IMEDEA) that contributed to have a wider and more complete data-base to study the processes of interest.

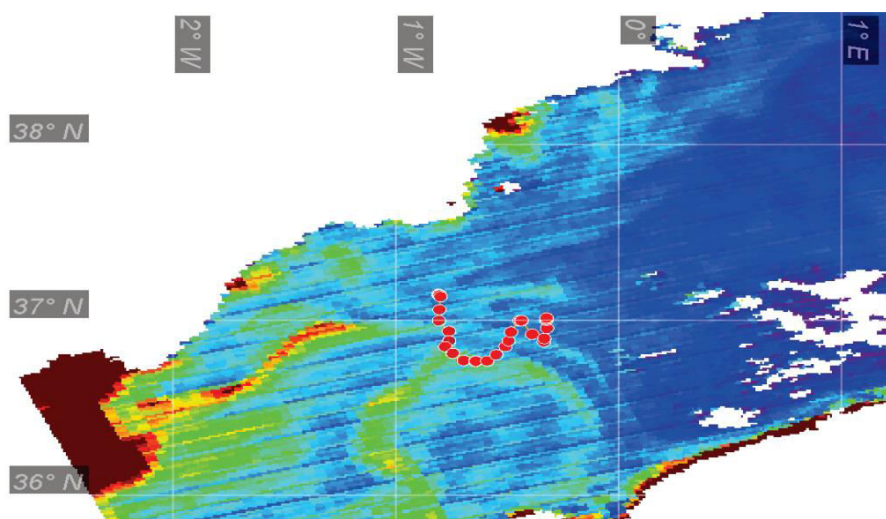


Fig.2 – Red dots represent the path of the glider (west to east). Chl-a image is relative to May 29, 2014. The presence of a large coastal meander is evidenced near the African coast, while a second filament seems to detach from the Spanish coast.

The proposed samplings were successfully performed. Adverse circumstances (not concerning the project itself) obliged PI to access the facility and the data only remotely. This did not compromise in any way the success of the sampling and the achievement of the results. Main objective (study the frontal role on distribution of phytoplankton during DCM period) was successfully achieved. The data have been processed together with other data sources.

6) Project GABS

Title of the project	Deep Glider Acquisitions between Balears and Sardinia
Host Research Infrastructure	CSIC-Glider
Access Starting date - End date	23/10/2012-30/10/2012 (mission aborted) 31/01/2013-16/03/2013 (1 st leg) 18/03/2013-22/03/2013 (user group at land facility) 15/10/2013-29/11/2013 (2 nd leg)
Name of Principal Investigator Home Laboratory E-mail address	Alberto Ribotti Institute for Coastal Marine Environment of CNR alberto.ribotti@cnr.it
Additional users	Antonio Olita Institute for Coastal Marine Environment of CNR

The proposed research aimed to identify the physical properties of the surface and intermediate water masses between the Balearic Islands and Sardinia by:

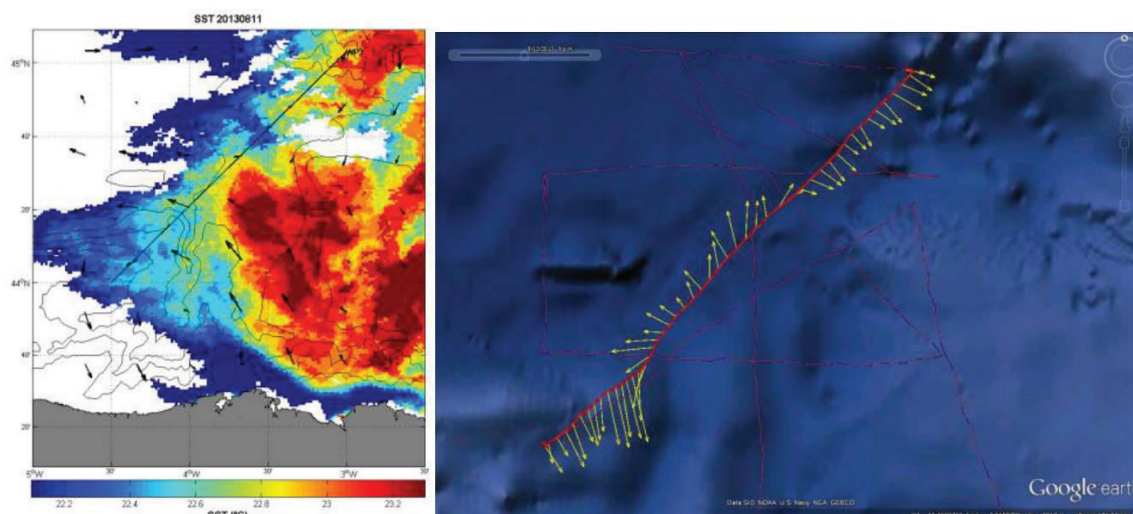
- Studying the seasonal variability of the physical properties of surface and intermediate water masses between the Algerian and the Provencal sub-basins;
- Assessing the transport of water, salt and heat through the section;
- Validating the operational hydrodynamic numerical model of the western Mediterranean implemented at IAMC CNR UOS Oristano (<http://www.seaforecast.cnr.it/en/fl/wmed.php>) through the use of in-situ and satellite data;
- Investigating mechanisms of spring bloom triggering over a frontal area.

The main scientific achievement was to understand the phytoplankton spring bloom onset by a density front. Additionally, a second achievement was the possibility to work with and, consequently, meet the colleagues at IMEDEA. This will probably bring to future stricter collaborations between two laboratories located in two opposite sites of the Western Mediterranean. Then achievements regarded the possibility of acquiring oceanographic data during particularly strong Mistral/Sirocco wind events and compare them with different sea/wind conditions. Secondly, it was impressive to have data on the area several times a year avoiding expensive cruises.

7) Project GESEBB

Title of the project	Glider campaign to estimate the 3D structure of an Eddy in the Southeastern Bay of Biscay.
Host Research Infrastructure	CNRS / INSU CETSM (glider)
Starting date - End date	23/07/2013-24/09/2013
Name of Principal Investigator Home Laboratory E-mail address	Ainhoa B. Caballero Reyes Marine Research Division, Azti-Tecnalia acaballero@azti.es
Additional users	Anna Rubio Compañy, Julien Mader, Carlos Hernández and Luis Ferrer Rodríguez, Azti-Tecnalia.

The experiment may allow knowing in detail the vertical structure of a stationary anticyclonic eddy in the SouthEastern Bay of Biscay and its evolution during the two months of the campaign. If the stationary eddy is not sampled, both because it has not been developed or because we are not able to see it in remote sensing maps, the campaign may allow to sample in detail the vertical structures of the water column (stratification, thermocline...) over the shelf-slope area in a period which is especially interesting regarding the biological cycle of some of the key species for the fishery activity.



SST image with transect 3 of the mission overlapped and the integrated velocity vectors along transect 3.

The main achievement of this mission was that the glider collected measurements with all the sensors and to the desired depth during the whole mission duration. A good communication with the pilots allowed to adjust the sampling design every Waypoint; this permitted to make decisions once gather all the last information from the glider itself and from the satellite measurements (IR, visible and altimetry). Campe glider crossed not only an anticyclonic structure but also at least other two cyclones. We are not sure yet if the measured anticyclone is the stationary eddy (the target structure of this mission) but if not this will surely not due to the sampling design, but to an absence of this type of structure during this year.

The main difficulty of this mission was that the first attempt was aborted. This inconvenient together with the delay of the start date, due to an unavailability of a free glider-pilot in the desired time period, did not allow to sample the structure when its surface signal was more evident (April to July).

8) Project GLISS

Title of the project	Passive sampling and glider technologies for depth-integrated contaminant concentrations in the ocean
Host Research Infrastructure	NERC COBS 4 POL GLIDER
Access Starting date - End date	02/09/2013-04/09/2013 (visit of the user group PI to land facility in UK) 12/09/2013-21/10/2013 (glider deployment)
Name of Principal Investigator Home Laboratory	Ian Allan Environmental chemistry, Section 312 Norwegian Institute for Water Research (NIVA) Gaustadalleen 21, NO-0349 OSLO
E-mail address	ian.allan@niva.no
Additional users	Branislav Vrana (RECETOX, Research Centre for Toxic Compounds in the Environment, Brno, Czech Republic.

The objective of the GLISS project was to evaluate the possibility to deploy passive sampling devices fastened onto glider from the National Oceanographic Centre (NOC, Southampton, UK).

A successful deployment of silicone sheet passive sampling devices was undertaken in September-October 2013 near the Isles of Scilly. Samplers were recovered and brought back safely.

The original plan was to use a static sampling site to expose samplers for calibration of the data obtained from the mobile samplers. No static sampling sites could be found in the vicinity of the study site.

9) Project MAPOM

Title of the project	Marine Aerosols Properties Over the Mediterranean
Host Research Infrastructure	CNR MPL – ACQUA ALTA
Access Starting date - End date	<u>In situ campaigns</u> : 05/05/2014-12/052014; 13/06/2014-20/06/2014; 22/09/2014-26/09/2014 <u>Remote access</u> : 13/05/2014-07/07/2014
Name of Principal Investigator Home Laboratory	Dr. Jacques Piazzola University of Toulon, Mediterranean Institute of Oceanography (MIO), BP 56, 83162 La Valette du var cedex, France
E-mail address	piazzola@univ-tln.fr
Additional users	Gilles Tedeschi, Tathy Missamou - MIO, University of Toulon, France

The aim of the present project was to advance the knowledge of the general cycle of aerosols in the atmosphere as a contribution to the meteorological scenarios in a climate change perspective. The specific activity was proposed as part of a 3 years French project dedicated to the development of a multi-scale approach using grid-nesting models for the atmospheric fate of the marine aerosol over the Mediterranean including its interaction with anthropogenic pollutant, impacting the radiative properties and effects on the meteorological processes. Aerosol data acquired in the targeted site and data from other locations in France will contribute to validate coupled (physics of weather and chemistry) models and to implement an accurate primary and secondary sea-spray source formulation using aerosol concentrations in the 0.01-50 μm size range.

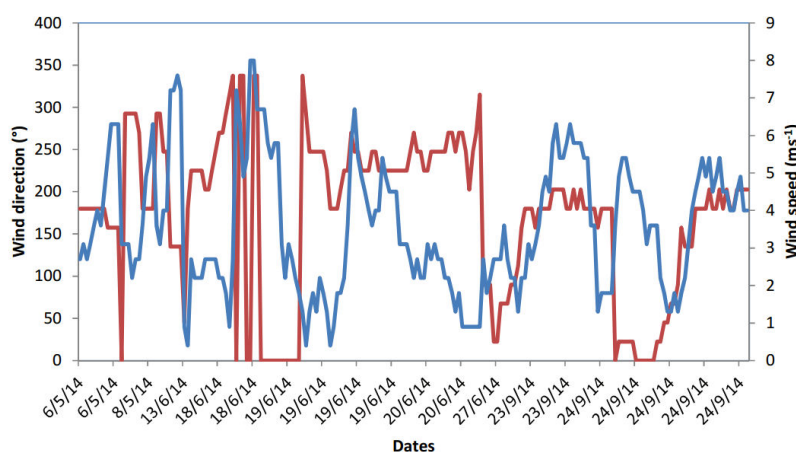


Fig. 1: The wind speed (blue line) and direction (the red one) recorded during the measurements period.

Three experimental campaigns of seven days were made from May to September 2014. In addition supplementary data were acquired using remote acquisition of aerosol probes installed by the user group on board the CNR Acqua Alta Tower in the period from April to the first days of June. The experiments allowed acquisition of about 500 aerosol size distributions and also chemical samplings using a Dekati collector. No particular difficulty was encountered except some problems of an aerosol probe which failed during July. This problem limited the remote acquisition during summer.

10) Project MEDACID

Title of the project	Mediterranean Sea ocean acidification time series experiment
Host Research Infrastructure	HCMR Saronikos coastal buoy and HCMR calibration laboratory (POSEIDON BUOYS and POSEIDON CAL)
Access Starting date - End date	<u>POSEIDON BUOYS</u> (ULP sensor in place): 10/09/2013-8/12/2013; 18/02/2014-06/10/2014 <u>POSEIDON CAL</u> (sensor testing and cleaning): 04/03/2013-08/03/2013; 14/02/2014-19/02/2014; 13/10/2014-15/10/2014
Name of Principal Investigator Home Laboratory E-mail address	Melchor Gonzales-Davila Universidad de Las Palmas de Gran Canaria mgonzalez@dqui.ulpgc.es
Additional users	J. Magdalena Santana Casiano Universidad de Las Palmas de Gran Canaria

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 deployed 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 were 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 photometric pH sensor deployed at the Saronikos site developed by the University of Las Palmas de Gran Canaria and commercialized by the company Sensorlab was transported, communication tested and proved at the HCMR facility in Crete, Greece during March 4-8th 2013 by the QUIMA professors in close collaboration with the HCMR group members. On September 10th, after deployment at the Saronikos buoy the sensor started to provide data in real time that were received by the HCMR and weekly

sent to QUIMA. The installation, communication, deployment and data transmission processes were perfectly done and excellent results were provided. At the beginning of December 2013, no data were provided by the pH sensor and the buoy was recovered, the sensor was picked up by one of the QUIMA members in Athens (18-19 Jan 2014), and transported to Gran Canaria, an electrovalve was changed and on February 14th the sensor was re-deployed using the Aegean Research Vessel with the participation of the two QUIMA researchers. CT-AT bottles for calibration purposes were sampled at the site. The sensor was recovered on October 6th 2014 and received at Crete by the two QUIMA researchers.

11) Project METRO

Title of the project	MEDiterranean sediment TRap Observatory
Host Research Infrastructure	CNR MPL - MPLS
Access Starting date - End date	18/10/2013-08/11/2014
Name of Principal Investigator Home Laboratory	Dr. Anna Sanchez Vidal Universitat de Barcelona, GRC Geociències Marines, Facultat de Geologia c/Martí Franquès s/n, Barcelona Spain anna.sanchez@ub.edu
E-mail address	
Additional users	Antoni Calafat-Frau, Miquel Canals-Artigas, Aitor Rumin Caparrós, Anna Aymà Padrós. Universitat de Barcelona, GRC Geociències Marines, Facultat de Geologia c/Martí Franquès s/n, Barcelona Spain

The main objective of the METRO (MEDiterranean sediment TRap Observatory) project is to characterize the physical factors that drive the particulate carbon pump (which includes photosynthesis, particle settling and advection, and organic matter remineralization) at three key locations in the Western Mediterranean which are the Gulf of Lion, the Algero-Balearic basin and the Sicily Channel.

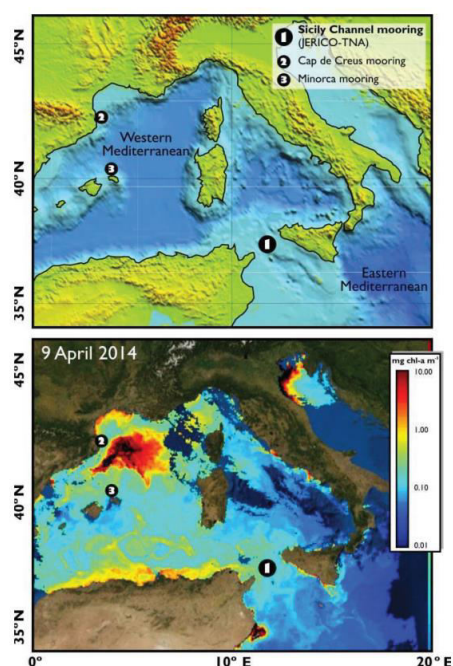


Figure 1. Top: Map of the Western Mediterranean Sea with the location of the 2 moorings maintained by University of Barcelona (Cap de Creus and Minorca moorings) and the Sicily Channel mooring purpose of this JERICO TNA project. Above: satellite-derived chlorophyll-a concentration (mg chl-a m^{-3}) in surface waters of the Western Mediterranean in early April 2014 that show the typical spring phytoplankton bloom in the convection zone when surface layer stabilizes. Visualization has been produced using MyOcean products.

The carbon pump causes sequestration of carbon dioxide in the deep sea due to the sinking of particles, thus an accurate quantification of the export flux of particulate organic carbon, and knowledge on physical processes affecting it during its descent to the seafloor, is fundamental for understanding its magnitude and efficiency. The University of Barcelona team has been monitoring carbon fluxes since 2009 in the Cap de Creus submarine canyon at 1000 m of water depth, and since 2012 in the Algero-Balearic basin at 2000 m of water depth. Data obtained by these two fixed platforms (near-bottom current speeds, temperature and salinity, particle fluxes) has allowed investigating the biological and physical processes (dense shelf water cascading, convection, storms) that drive the flux of carbon to the deep sea floor. The third platform has been achieved through the integration of a sediment trap to the Sicily Channel mooring C01 maintained by CNR and offered by JERICO through the second Transnational Access call.

The University of Barcelona, together with the help and expertise of the CNR-ISMAR, successfully recovered the sediment trap integrated in the Sicily Channel mooring line. The recovery percentage of sediment trap samples was satisfactory, with 23 samples recovered out of a maximum of 24 (i.e. 96% recovery rate). Treatment of samples (splitting of sediment trap samples in different fractions to perform analyses) is ongoing.

12) Project MOSC

Title of the project	Monitoring Oxygen in the Sicily Channel
Host Research Infrastructure	CNR MPL - MPLS
Access Starting date - End date	02/04/2014 – 08/11/2014
Name of Principal Investigator Home Laboratory	Dr. Dominique Lefevre Mediterranean Institute of Oceanography, UMR 7294 Campus de Luminy 13288 Marseille Cedex 09, France
E-mail address	dominique.lefevre@univ-amu.fr
Additional users	Sana Ben Ismail, National Institute of Marine Sciences and Technologies, Tunis Laurent Coppola, Observatoire Oceanographique de Villefranche/Mer Deny Malengros, Mediterranean Institute of Oceanography, UMR 7294, Campus de Luminy

The main objective of the project Monitoring Oxygen in the Sicily Channel – MOSC is to integrate the dissolved oxygen concentration in the long term time series data in the Sicily Channel 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 (Sicily Channel) and the western (Corsica Chanel) basins of the Mediterranean Sea.

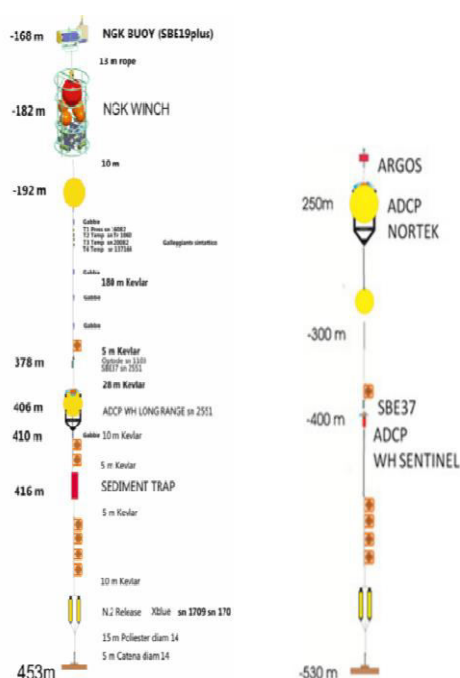


Fig. 1: The C01 (left) and C02 (right) moorings in the Sicily channels

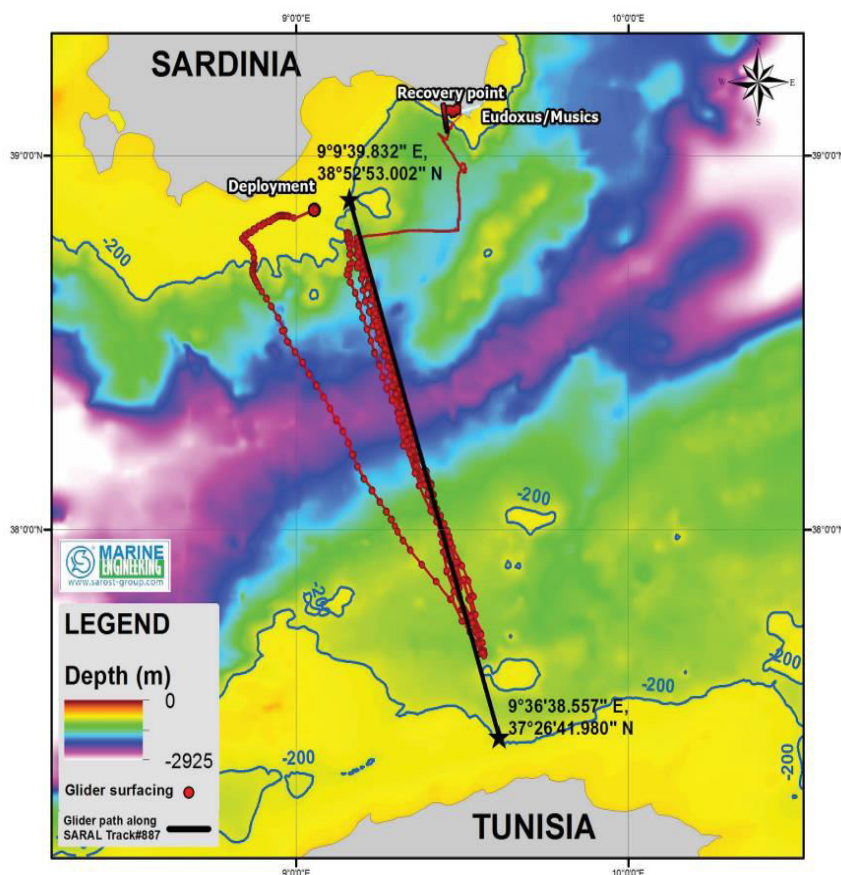
For this purpose, two oxygen sensors have been installed at the bottom of the two sills in the Sicily Channel accessing the 2-mooring installations MLPS operated by CNR.

Two optodes were mounted on two homemade data logger (SQUID). Both optodes were calibrated over 8 temperatures and 11 O₂ concentrations using laboratory facilities and applying the Uchida algorithm. This is part of the metadata accompanying the sensor, but the embedded calibration coefficients have not been altered. Data correction was plan to be done post deployment to check for drift and quality control.

Unfortunately, the 2 SQUID data logger deployed on the moorings did not work. One leaked and shortcut the power supply, causing breaking of the data logger. The other was recovered in good condition, but it was not possible to communicate with the data cartridge to download the data. Due to these problems, no data were recovered from the experiment.

13) Project MUSICS

Title of the project	Multi Sensor Investigation in the Channel of Sardinia
Host Research Infrastructure	CNRS / INSU CETSM (glider EUDOXUS)
Access Starting date - End date	15/08/2014: The glider left the facility and was shipped to the mooring point by R/V Thetys. 16/08/2014-19/09/2014 (glider deployment, 3 trips from Sardinia to Northern Tunisian coasts and return) 23/09/2014: The glider is back to CETSM facility after recovery
Name of Principal Investigator Home Laboratory	Dr Daniele Iudicone Stazione Zoologica A. Dohrn, Laboratory of Ecology and Evolution of Plankton - Villa Comunale, 80121, Napoli, Italy iudicone@szn.it
E-mail address	
Additional users	Slim Gana – SAROST SA, Tunisia Maurizio Ribera d'Alcalà – SZN, Italy Antonio Olita – CNR IAMC, Oristano - Italy Bruno Buongiorno Nardelli – CNR IAMC, Napoli - Italy



The proposed research aims studying mesoscale dynamics and water exchanges in the Channel of Sardinia, a key region for the comprehension of the exchanges between the Eastern and Western Mediterranean basins. A combined approach will be adopted using glider observations, sea surface height observation by satellite altimetry and numerical modeling.

Fortunately, no difficulties were encountered during the execution of the project thanks to a suitable coordination between all the partners and the facility staff.

A collection of an important oceanographic database was carried out, in a key region of the Mediterranean sea, i.e. the Sardinia Channel.

14) Project o-DGTSPOCME

Title of the project	Organic - Diffusive Gradient in Thin-film for sampling polar organic chemicals in marine environment
Host Research Infrastructure	NIVA Color Fantasy and HZG COSYNA_2 (Cuxhaven station site)
Access Starting date - End date	<u>Color Fantasy</u> : 16/09/2013-03/11/2013 <u>Cuxhaven station</u> : 19/09/2013-29/10/2013
Name of Principal Investigator Home Laboratory E-mail address	Kevin C. Jones Lancaster Environment Centre, Lancaster University k.c.jones@lancaster.ac.uk
Additional users	Hao Zhang, Prof. in Environmental Chemistry, LEC, Lancaster University, UK, h.zhang@lancaster.ac.uk, Chang'er Chen, PhD student, LEC, Lancaster University, UK, c.chen3@lancaster.ac.uk

The objectives of the o-DGTSPOCME project were the following:

- To test the o-DGT samplers for applications in seawater to measure polar organic chemicals like antibiotics;
- To deploy the DGT samplers in pilot studies aboard the ferries (collaborated with NIVA) and at the fixed station (collaborated with HZG);
- To estimate the water flow rate on the measurement of o-DGT in the flow through sampler and in the estuary;
- To compare o-DGT sampler with another passive sampler-ceramic dosimeter (CD);
- To investigate the spatial distribution of polar pollutants in the sea between Oslo and Kiel;
- To prepare publications and consider a joint bid for further funding embracing wider applications.

Regarding the achievements, the team found a better deployment solution for ferrybox under the colleagues from NIVA, which is using plastic net to hold the samplers which can separate the samplers but can also deploy batch of samplers together (which is easy for retrieving later).

Six antibiotics were detected in the ferry o-DGT samples but only 4 antibiotics in the CD samples. The results show that o-DGT cannot continuously accumulate antibiotics after 27 days; spatial distribution along this color line cruise was observed for some antibiotics, seems higher levels near the ferry stations (Oslo and Kiel). Nine antibiotics were detected in the o-DGT samples, with 3 in the CD samples. Most antibiotics can be continuously accumulated until about 27 days. A DBL of 320 μm was obtained in this river mouth.

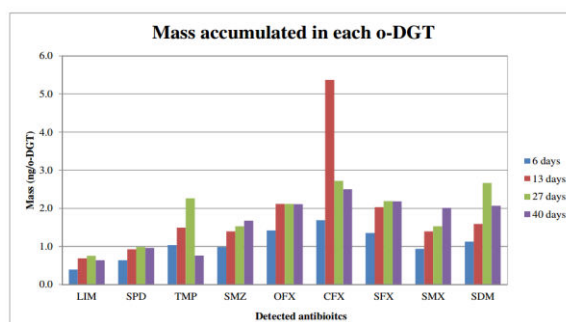
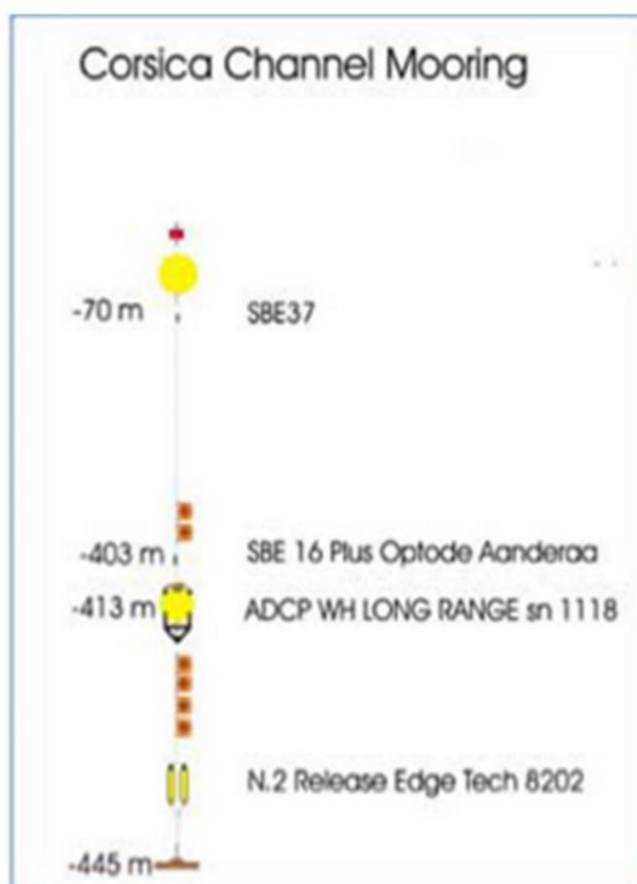


Fig1. Antibiotics detected in the o-DGT samplers deployed for different times in Cuxhaven (fixed station).

15) Project 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 MPL - MPLC
Access Starting date - End date	20/11/2012-25/11/2014
Name of Principal Investigator	Laurent Coppola
Home Laboratory	Océanographique de Villefranche/Mer
E-mail address	coppola@obs-vmfr.fr
Additional users	Dominique Lefevre Mediterranean Institute of Oceanography

The Levantine Intermediate Water (LIW) is the warmest and saltiest water resulting from the dense water formation processes that occur in several zones of the Mediterranean Sea. 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 provide a good opportunity to understand and to estimate accurately this time lag. This also gives us the possibility to quantify the variability versus anomalies of the LIW property due to the climate change already observed in the Mediterranean Sea.



A sketch of the mooring in the Corsica Channel.

The objective of the access was to complete the oxygen observation in the Ligurian Sea by implementing a DO sensor on the CC mooring (located at the east of the DYFAMED mooring) at the core of the LIW water mass (400 m depth). The collected data will provide information 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.

An optical dissolved oxygen sensor (OPTODE 3975 Aanderaa) was installed on November 20, 2012 in the underwater station at 400 m depth during a maintenance cruise (EUROFLEETS12) on board the research vessel URANIA of CNR. The sensor remained in the location until October 22, 2013, when it was replaced with a second sensor (OPTODE 4330 Aanderaa). The latter remained on the mooring until November 25, 2014, when it was finally recovered. Both the sensors used were connected to a SBE16plus probe which logged the data.

16) Project RAD

Title of the project	Radiometry Assessment of optical Data for ocean color applications
Host Research Infrastructure	CNR MPL – ACQUA ALTA
Access Starting date - End date	Remote access 12/03/2014-27/06/2014 In situ visits 12/03/2014-14/03/2014 21/06/2014-27/06/2017
Name of Principal Investigator Home Laboratory	Dr. Kai Sørensen Norsk Institutt for Vannforskning – NIVA, Department of Oceanography and Remote sensing, Gaustadalleen 21, NO-0329 Oslo, Norway
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Additional users	Pierre.Jaccard, Emanuele Reggiani (NIVA) Giuseppe Zibordi (JRC)

The proposed activity is intended to support the assessment of optical radiometric in situ measurement commonly applied to support satellite ocean color multi-mission programs. Primary objective of the proposed activity is the inter-comparison of manned (micrPRO), semiautomatic (TriOS-RAMSES) and autonomous (CIMEL) radiometric instrumentation measurements to generate methods and protocols for the generation of high quality in situ radiometric data products. This will improve the measurement protocols for optical above water radiometric measurements on ships of opportunity to be used in satellite data product validation, and development of bio-optical algorithms for preparation for the new Sentinel satellite validation programs.

The project was carried out according to the plan without any major problem except for a few-day data handling issue at the beginning of operations. Calibration of TriOS sensors was performed at JRC before and after the period of measurements. The experiment was ended during an extended field inter-comparison of optical radiometers with additional international teams from different research institutions (i.e., Institute of Oceanology of the Polish Academy of Science, University of Massachusetts Boston and Royal Belgian Institute of Natural Sciences). This is expected to further extend the project visibility and scientific return.

17) Project RTC

Title of the project	Reference Temperature Calibration
Host Research Infrastructure	OGS-CTO
Access Starting date - End date	25/02/2013-01/03/2013
Name of Principal Investigator Home Laboratory E-mail address	George Petihakis HCMR Calibration Laboratory gpetihakis@hcmr.gr
Additional users	Manolis Ntoumas, Fotis Pantazoglou HCMR

The purpose of the experiment is 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.

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.

18) Project SESAM

Title of the project	Standardised Electrochemical in Situ Assessment of Metal Coatings
Host Research Infrastructure	CNR MPL Genoa
Access Starting date - End date	Exposure of bare samples: 05/11/2013-14/04/2014; 29/04/2014-21/11/2014 User group at the facility (experiment set-up and test): 01/07/2013-05/07/2013; 08/07/2013-09/07/2013; 02/09/2013-04/09/2013; 07/01/2014-10/01/2014; 14/04/2014-17/04/2014; 28/07/2014-01/08/2014; 23/09/2014-24/09/2014; 03/11/2014-10/11/2014; 10/12/2014-12/12/2014
Name of Principal Investigator Home Laboratory	Edith Joseph Université de Neuchâtel, Laboratoire de Microbiologie, Rue Emile-Argand 11, CH-2000 Neuchâtel, Switzerland
E-mail address	edith.joseph@unine.ch
Additional users	Emilio Cano, Ministerio de Economía y Competitividad-Centro Nacional de Investigaciones Metalúrgicas, Madrid, Spain Monica Albini, Université de Neuchâtel, Laboratoire de Microbiologie, Neuchâtel, Switzerland

The main objectives of the project are to perform electrochemical impedance measurements for assessing the effectiveness of innovative protective treatments in comparison with nowadays used ones and to develop a standardized electrochemical methodology for in situ measurements.

To this end, the interaction with outdoor environment of several metals used in monuments and ornamentation is enlightened by taking advantage of a standard exposure site in a highly corrosive environment due to urban-marine atmosphere. Through this, the overall idea is, at long-term, to enhance research in the field of metal conservation-restoration by 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 conservation-restoration products.

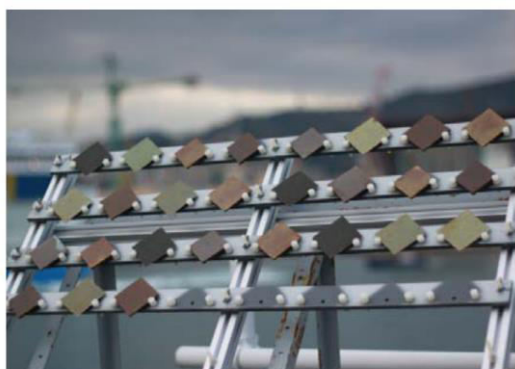


Figure1 Sets of aged coupons used for evaluating the different treatments.

During the access allocated, the user group activities were accomplished according to the defined working plan that was overall respected. Meetings were organized at the beginning and end of the access time at the CNR MPL Genoa facility: Kick-off meeting on 1st July 2013 and Concluding meeting on 10th December 2014.

As outcomes, the project led to a better understanding of outdoor corrosion processes, a validation of an innovative biological treatment for conservation-restoration and a definition of a protocol for in situ electrochemical measurements.

19) Project TOFU

Title of the project	new Tools for Oxygen, Fluorescence and tUrbidity sensors testing and intercomparison
Host Research Infrastructure	HCMR POSEIDON CAL
Access Starting date - End date	19/07/2014-02/08/2014
Name of Principal Investigator	Roberto Bozzano
Home Laboratory	Consiglio Nazionale delle Ricerche
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Additional users	Sara Pensieri, Consiglio Nazionale delle Ricerche Via de Marini 6,16149 Genoa (ITALY)

The project aims at testing innovative software and hardware tools to inter-compare sensors for oxygen, fluorescence and turbidity measurements.

The second objective of the proposed project aims at testing a package for the inter-calibration of multiple fluorescence and turbidity sensors in the same chamber acquiring real time data simultaneously by all sensors and with the same known chlorophyll/turbidity concentration.

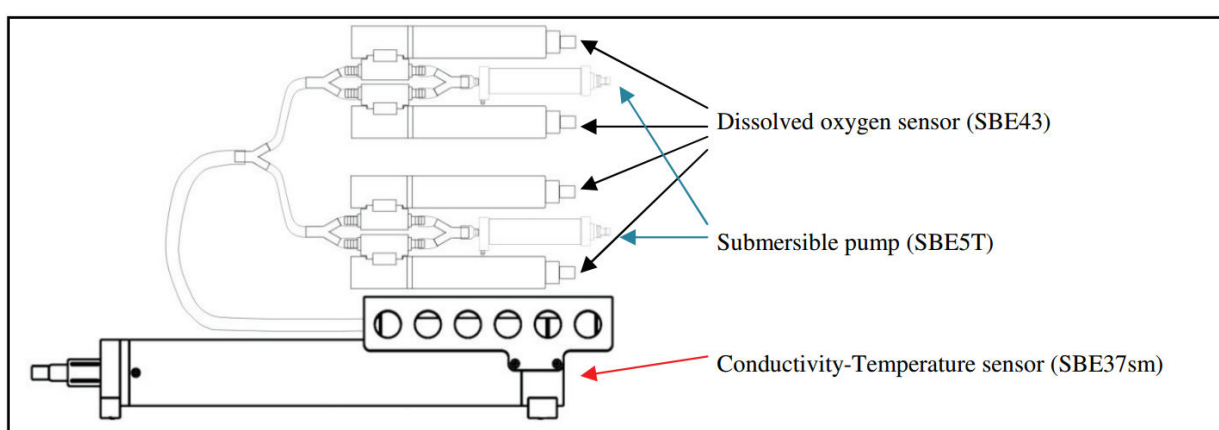


Figure 1. Sketch of the first and second used configuration with the two pairs of SBE43s and submersible pumps connected to the SBE37 outtake.

The experiment allowed testing two new different software and hardware tools for laboratory calibration/inter-comparison of oxygen and fluorescence/turbidity sensors.

The oxygen probes test was carried out in the HCMR calibration tank equipped with an immersion circulator and two aerators. The developed tools allowed the simultaneous comparison of four SBE43 oxygen sensors using only one CT(D) measurement as reference instead of using one CT(D) sensor for each oxygen probe without being able to check dissolved oxygen values in real time. Using such configuration, several calibration points, also with different sensors set-up, were performed, thus optimizing the time needed for reaching a steady temperature inside the tank.

No particularly difficulties were encountered and the working program was done as planned except for the sea trial that was not performed due to bad weather conditions at sea.