Joint European Research Infrastructure network for Coastal Observatories

First Call for TNA proposals D1.1 - Addendum

Grant Agreement n° 262584
Project Acronym: JERICO

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

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Involved Institution: CNR
Date: 04-05-2013

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1. Document description

REFERENCES

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

Document information	
Document Name	First Call for TNA proposals - Addendum
Document ID	JERICO-WP1-D1.1-040513-Addendum
Revision	1
Revision Date	4 May 2013
Author	Stefania Sparnocchia
Security	

History			
Revision	Date	Modification	Author

Diffusion list				
Consortium beneficiaries	X			
Third parties				
Associated Partners				
other				

2. Executive Summary

This document integrates deliverable D1.1 “First Call for TNA Proposals”, released in the final version on 12 January 2012, including the application form and the description of the facilities available to the First Call.

Annexes

A.1 JERICO application for Transnational Access to Coastal Observatories.
File downloadable from
http://www.jerico-fp7.eu/attachments/article/53/JERICO%20TNA%20Application%20Form.doc.

A.2 Descriptions of facilities available for the First Call
File downloadable from http://www.jerico-fp7.eu/tna/accessible-facilities.

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
O a user group

Information about the applicants (PI and project partners)

Principal Investigator (user group leader)

Title ___ Name and Surname _____

Gender O Male O Female

Institution _____

Department / Research Group _____

Address _____

_____

Country _____

email _____

Telephone _____

Fax _____

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 _____

	_____
Country	_____
email	_____

PART 2: Additional information about the applicant(s) expertise
Expertise of the group in the domain of the application
Short CV of the PI
A list of 5 recent, relevant publications of the participant(s) in the field of the project

PART 3: Detailed scientific description of the project
List the main objectives of the proposed research ***(one page maximum)***
Give a brief description of the scientific background and rationale of your project ***(one page maximum)***

Present the proposed experimental method and working plan

(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)*

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)

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 O calibration laboratory

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

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

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 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 O 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 O 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 O 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):
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 _____

Signature of the PI _____

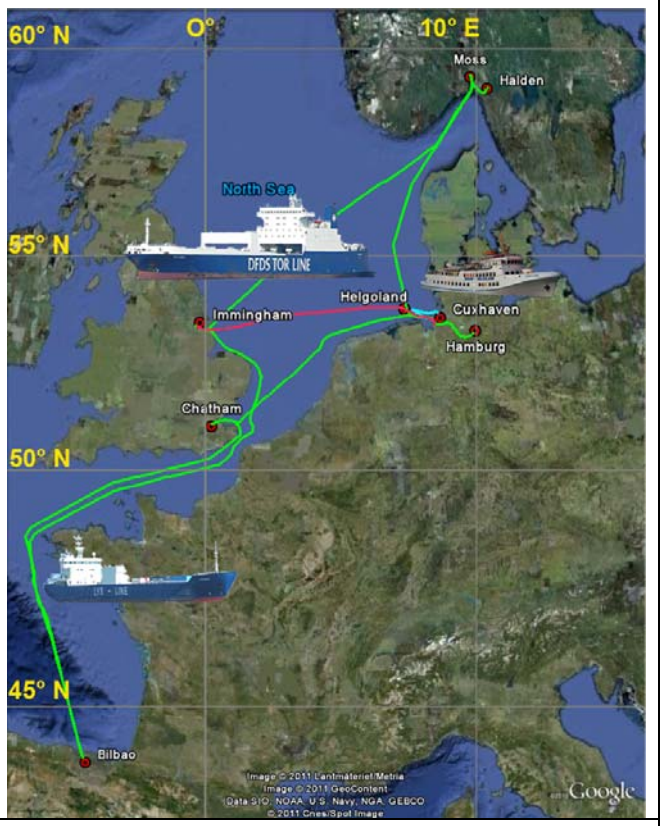
Signature of an appropriate authorised person
(e.g. Head of Department, Research Office) _____

This section reserved to the JERICO TNA Office

Date of proposal receipt by email _____

Assigned reference number _____

Signature of receiving officer _____

Infrastructure (short name)	Coastal Observation System for Northern and Arctic Seas (COSYNA)	
Installation (short name)	FerryBox (COSYNA_1 FB)	
Location	North Sea	
Routes	**TorDania**: Cuxhaven <-> Immingham **LysBris**: Cuxhaven -> Chatham -> Bilbao -> Immingham -> Moss -> Halden -> Cuxhaven **FunnyGirl**: Summer: Buesum <-> Helgoland; Winter: Cuxhaven <-> Helgoland	
Legal name of organization	Helmholtz-Zentrum Geesthacht, Institute of Coastal Research	
Location of organization	Geesthacht, Germany	
Contact	Dr. Wilhelm Petersen, wilhelm.petersen@hzg.de Institute of Coastal Research/Operational Systems Helmholtz-Zentrum Geesthacht Max Planck Str. 1, D-21502 Geesthacht, Germany Phone: +49 (0) 4152 87 2358 Fax: +49 (0) 4152 87 2366	
Web site address	http://www.cosyna.de and http://www.ferrybox.de	

Description
COSYNA (Coastal Observation System for Northern and Arctic Seas) is an operational coastal monitoring, forecasting and information system for the North Sea. It is being developed by institutes of the German Marine Research Consortium (KDM) and collaborating institutions and is operated by the HZG Research Centre. The infrastructure represents an investment of 9 M €. It is build up in two phases over 6 years: COSYNA_1 (FB) is based on 3 FerryBox lines. The FerryBoxes are equipped with hydrographical sensors to measure temperature, salinity, oxygen, chlorophyll-a fluorescence, turbidity, pH and nutrients (partly). The three FerryBoxes are installed on three ships on different routes. The TorDania is an Ro/Ro-Ship and cruises from Cuxhaven (Germany) to Immingham in England towards and back in three days. The cargo ship Lysbris cruises in a circle from Cuxhaven (DE) - Chatham (GB) – Bilbao (ES)- Immingham (GB) – Moss (NL) – Halden (NL) and back to Cuxhaven in about 14 days. The

passenger ferry Funnygirl cruises seasonal on different routes dependent on season. In summer it departs from Buesum (DE) and in winter from Cuxhaven (DE). The destination is always the island Helgoland. The ship drives toward and back on a daily bais..

Service offered

HZG will give access to three ferryboxes. The access will consist in hosting visitors for experiments onboard the ships and also for installation of users' equipment on FerryBoxes.

The support team consists of technicians and scientists who prepare the instrumentation and service the instrumented ferry.

Instruments/Sensors

The following instrumentation is already onboard the ferry and will be available to the JERICO users

TorDania

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Transmission frequency
ETSG 2 - M, Falmouth Scientific	Temperature	**5 m water depth**	**10 sec.**	**2 times in 3 days**
ETSF2-M, Falmouth Scientific	Conductivity	**5 m water depth**	**10 sec.**	**2 times in 3 days**
ETSF2-M, Falmouth Scientific	Salinity	**5 m water depth**	**10 sec.**	**2 times in 3 days**
TurbiMaxW CUS 31, Endress+Hauser	Turbidity	**5 m water depth**	**10 sec.**	**2 times in 3 days**
SCUFA-II, Turner Designs	Turbidity	**5 m water depth**	**10 sec.**	**2 times in 3 days**
SCUFA-II Turner Designs	Chlorophyll-a fluorescence	**5 m water depth**	**10 sec.**	**2 times in 3 days**
Algae-Online-Analyser, bbe moldaenke	Chlorophyll-a fluorescence	**5 m water depth**	**10 sec.**	**2 times in 3 days**
Oxygen optode 4330, Aandera	diss. oxygen	**5 m water depth**	**10 sec.**	**2 times in 3 days**
CPS11, Endress + Hauser	pH	**5 m water depth**	**10 sec.**	**2 times in 3 days**
EGA140 SMEK, Sensortechnik Meinsberg	pH	**5 m water depth**	**10 sec.**	**2 times in 3 days**
µMac 1000, Systea	Ammonium, Nitrate, Phosphate, Silicate	**5 m water depth**	**10 sec.**	**2 times in 3 days**

Lysbris

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Transmission frequency
ETSG 2 - M, Falmouth Scientific	Temperature	**5 m water depth**	**20 sec.**	**Every 2days**
ETSF2-M, Falmouth Scientific	Salinity	**5 m water depth**	**20 sec.**	**Every 2days**
ETSF2-M, Falmouth Scientific	Conductivity	**5 m water depth**	**20 sec.**	**Every 2days**
TurbiMaxW CUS 31, Endress+Hauser	Turbidity	**5 m water depth**	**20 sec.**	**Every 2days**
SCUFA, Turner Designs	Turbidity	**5 m water depth**	**20 sec.**	**Every 2days**
SCUFA, Turner Designs	Chlorophyll-a fluorescence	**5 m water depth**	**20 sec.**	**Every 2days**
Algae-Online-Analyser, bbe moldaenke	Chlorophyll-a fluorescencel	**5 m water depth**	**20 sec.**	**Every 2days**

Algae-Online-Analyser, bbe moldaenke	Yellow substance	**5 m water depth**	**20 sec.**	**Every 2days**
Oxygen optode 4330, Aandera	diss. oxygen	**5 m water depth**	**20 sec.**	**Every 2days**
CPS11, Endress + Hauser	pH	**5 m water depth**	**20 sec.**	**Every 2days**
EGA140 SMEK, Sensortechnik Meinsberg	pH	**5 m water depth**	**20 sec.**	**Every 2days**
µMac 1000, Systea	Ammonium, Nitrate, Phosphate, Silicate	**5 m water depth**	**20 sec.**	**Every 2days**

Funny Girl

Instrument	**Measured Parameter(s)**	**Elevation/Depth**	**Sampling frequency**	**Transmission frequency**
ETSG 2 - M, Falmouth Scientific	Temperature	**5 m water depth**	**60 sec.**	**2 per day**
ETSF2-M, Falmouth Scientific	Conductivity	**5 m water depth**	**60 sec.**	**2 per day**
ETSF2-M, Falmouth Scientific	Salinity	**5 m water depth**	**60 sec.**	**2 per day**
SCUFA, Turner Designs	Turbidity	**5 m water depth**	**60 sec.**	**2 per day**
SCUFA, Turner Designs	Chlorophyll-a fluorescence	**5 m water depth**	**60 sec.**	**2 per day**
Cyclops-7_U, Turner Designs	CDOM	**5 m water depth**	**60 sec.**	**2 per day**
Oxygen optode 4330, Aandera	Oxygen	**5 m water depth**	**60 sec.**	**2 per day**
EGA140 SMEK, Sensortechnik Meinsberg	pH	**5 m water depth**	**60 sec.**	**2 per day**
EGA140 SMEK, Sensortechnik Meinsberg	pH	**5 m water depth**	**60 sec.**	**2 per day**

Additional services/data

Other activities within the observatory COSYNA are linked to the pile and glider activities.

Special owner rules

none

Infrastructure (short name)	Norwegian Ferrybox Network (NorFerry)	
Installation (short name)	M/S Color Fantasy Line (Color Fantasy)	
Location	Oslo fjord, Skagerrak, Kattegat, and Kiel bight	
Route	Oslo –Kiel	
Legal name of organization	Norsk Institutt for Vannforskning, NIVA	
Location of organization	Oslo, Norway	
Contact	Kai Sørensen, kas@niva.no NIVA, Gaustadalléen 21, NO-0349 OSLO Direct/Mobile: + 47 90732129 Telephone: + 47 22185100 Fax: + 47 22185200	
Web site address	www.ferrybox.no	

Description

The Norwegian Ferrybox network (NorFerry) consists of three car ferries and one cargo ship operated by the Norwegian Institute for Water Research (NIVA). Together, these vessels cover 80% of the Norwegian coast. M/S Color Fantasy is operated by Color Line and is the world's largest cruise ship with a car deck. The ship cruises between Oslo (Norway) and Kiel (Germany) in the Oslo fjord, Eastern Skagerrak, Kattegat and Baltic Sea entrance regions. One return trip lasts for about 44 hours. More technical information about the ship and sailing schedule can be found at http://www.colorline.com/ships_and_sailings/kiel_-_oslo

The ferrybox core installations include the following sensors: thermosalinograph (SBE-45), inlet temperature (SBE-38), AADI oxygen (optode), Polymetron turbidity sensor and TriOS Chl-a fluorescence. M/S Color Fantasy is equipped in addition with TriOS yellow substance, TriOS cyanobacteria fluorescence , and TRIOS hydrocarbon sensors. NIVA is also involved in the development of a new type of pCO2 sensor with Franatech for integration on the same ferrybox platform during the first part of 2012. Also one photometric pH system will be installed in early 2012. A system for automatic extraction and pre-concentration unit of chemical compounds in water will be installed in January for testing. Finally, TriOS radiance and irradiance sensors are mounted on deck for the measurements of solar irradiance, sky and water-leaving radiance. Wind and Gyro information from the ship will be installed in 2012.

Service offered

Users are invited onboard for one or repeated periods of trips (days to weeks, for installation and testing of new sensors (contaminants, carbon cycle, acidification, algae discrimination), inter-calibration of sensors, as well as testing of new monitoring approaches, taking advantage of the high-frequency 2D sampling of the infrastructure.

We invite in particular (but not only) researchers interested in investigating methods for vertical profiling from ferries (e.g. XBT/XCTD experts) to apply for accessing the infrastructure and take part in gathering a unique dataset of simultaneous ferrybox and underway profiles.

Access to the ferry requires that NIVA personnel, both scientific and technical, are on-board with the guest scientists. Personnel from NIVA will be in charge of the integration of guest's sensors into the NIVA's ferrybox system. Inter-calibration, data acquisition and other experiments will preferably be jointly made by NIVA and guest users.

The access to the ship is simple and can be done both in Oslo and Kiel. One can bring the equipment with own car onboard the ship and there are easy access to the installation. A small laboratory bench with warm and cold water, refrigerator and freezers are available as well as tools for repair of instruments e.g. there are also internet access by the system. The accommodation onboard is excellent with good capacity.

Instruments/Sensors

The following instrumentation is already onboard the ferry and will be available to the JERICO users

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Transmission frequency
SBE45	Temperature	4m depth	1 minute under normal conditions. Can be increased up to 1s for a short period if required.	Once a day. Can be improved to real time transmission for a short period if required.
SBE38	Inlet temperature	4m depth		
SBE45	Salinity	4m depth		
AADI optode	Dissolved oxygen	4m depth		
AADI optode	Inlet dissolved oxygen	4m depth		
Polymetron	Turbidity	4m depth		
TriOS	Chl-A fluorescence	4m depth		
TriOS	Yellow substance fluorescence	4m depth		
TriOS	Cyanobacteria fluorescence	4m depth		
TriOS	Blå-grønn?	4m depth		
TriOS	Hydrocarbon?	4m depth	As above	
TriOS	Irradance	4m depth	1 minute under normal conditions. Can be increased up to 30s for a short period if required.	
TriOS	Sky radiance starboard	30m above sealevel		
TriOS	Sky radiance port	30m above sealevel		
TriOS	Water leaving radiance starboard	30m above sealevel		
TriOS	Water leaving radiance starboard	30m above sealevel		
ISCO	Water samples	4m depth	Not relevant	

The following instrumentation will be installed during 2012 and will also be made available to the JERICO users

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Transmission frequency
Franatech/NIVA	pCO2	4m depth	1 minute under normal conditions. Can be increased up to 1s for a short period if required.	Once a day. Can be improved to real time transmission for a short period if required

NIVA	Photometric pH	4m depth	1 minute (TBC)	Once a day. As above

Additional services/data

Routine discrete samplings for long-term series

The following parameters are obtained from regular automatic sampling onboard and laboratory analysis and will be available to the JERICO users on specific request:

Parameter(s)	**Elevation/Depth**	**Sampling frequency**	**Sampling Technique/Analytical method**
Phytoplankton	4m depth	14days but can be increased up to 1day on request (up to 24 samples/stations per trip)	Phytoplankton counting on some station
Particulate (TSM)	4m depth	14days but can be increased up to 1day on request (up to 24 samples/stations per trip)	On request and are done for satellite calibration
Nutrients	4m depth	14days but can be increased up to 1day on request (up to 24 samples/stations per trip)	Standard water sampling and analysis in NIVA laboratory on request.
Contaminants	4 m depth	TBD	Automatic extraction and pre-concentration unit of chemical compounds
Chlorophyll (Other pigments on request). Pigment and detrital absorption spectra	4m depth	14days but can be increased up to 1day on request (up to 24 samples/stations per trip)	HPLC and/or spectrophotometric Absorption spectra on water samples on request.
Calculated Satellite Secchi Disc and Algal pigment index	Surface	When available	Satellite calculated geophysical quantities from MERIS satellite, Standard and special processing (ICOL, C2R).

Special owner rules

NIVA’s personnel will join the trips as a minimum of the installation and introduction to the ship, crew and system.

Infrastructure (short name)	Coastal Research Station in Lubiatowo (CRS Lubiatowo)
Installation (short name)	Coastal Research Station (CRS)
Location	Lubiatowo, Poland, south Baltic Sea
Coordinates	54° 48.7943' N, 17° 50.3647' E (shoreline tower)
Bottom depth	nearshore zone (0-5 m)
Legal name of organization	Institute of Hydro-Engineering of the Polish Academy of Sciences (IBW PAN)
Location of organization	Gdańsk, Poland
Contact	Rafal Ostrowski, rafal.o@ibwpan.gda.pl Institute of Hydro-Engineering of the Polish Academy of Sciences (IBW PAN) ul. Kościerska 7, 80-328 Gdańsk, Poland Phone: +48 58 522 29 52 Fax: +48 58 552 42 11
Web site address	http://mlb.ibwpan.gda.pl/index.php/en

Description

The IBW PAN Coastal Research Station (CRS) is located at Lubiatowo (Poland), approximately 75 km NW from Gdańsk, at the open sea shore between Łeba and Władysławowo (about 20 km eastwards of Łeba). The laboratory was established in 1970 in an old building of the former coastal rescue station. Situated in a coastal forest, about 100 m from the beach, the building was adapted for the needs of scientific research. At present, it houses office and laboratory rooms, a garage, an electro-mechanic shop and a few residential rooms.

The Station is prepared to activities related to observations of meteorological, hydrological, hydrodynamic and litho-dynamic phenomena occurring in the Baltic coastal zone. It encompasses measuring towers arranged in a row, perpendicular to the shoreline. Their role is to accommodate sensors and measuring devices. Last winter the towers were seriously damaged due to impact of storm waves and ice phenomena. Until their reconstruction, the measurements are carried out by use of smaller structures built in the sea near the towers. These structures ensure installation of measuring equipment at desired locations, as required by specific investigation programmes. The control of devices, power supply and the data registration are provided via the tower located at the shoreline. Besides, autonomous battery-powered sensors with built-in memory are used, as well as gauges with radio data transmission systems.

Within routine measurements, winds parameters at the laboratory are registered continually, as well as some other hydro-meteorological parameters, e.g. air humidity, air and water temperature, etc. State of the sea can be observed by the camera installed on the beach. Recently, wave measurements nearby Lubiatowo were commenced by use of the Directional Waverider Mk. III buoy, moored about 2 km offshore, at the depth of 16 m. Results of all the above measurements, including the sea surface temperature, are available on the CRS Lubiatowo web page.

Long-term variability of dune and beach is monitored regularly every month since 1983. Sea bottom topography in the near-shore zone has been measured in the area 2.6 km along shore and about 1 km offshore.

Service offered

The measuring devices available at CRS Lubiatowo will be offered to be used by users and will be installed on the measuring towers or on smaller additional temporary structures. Selection of the equipment will depend on the user's preferences. The core part of equipment will comprise the IBW PAN instrumentation for measurements of hydro-, litho- and morphodynamic processes. The infrastructure is also offered for installation of the sensors and probes provided by the users. Scientific support will be provided by the IBW PAN research staff while the installation will be done by the IBW PAN technical staff.

Unit of access: 24 hour day

Modality of access: remote, partially remote or in person access. Both measuring systems provided by the host and by the users can be installed.

Instruments/Sensors

The following instrumentation is already installed or available for deployment

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Frequency of data recovery
Wind meter	Wind velocity & direction	22 m above land	1 Hz	10 minutes
Meteorological station	Air temperature & humidity	5 m above land	1 Hz	10 minutes
Wave buoy Directional Waverider Mk. III	Wave heights, periods & directions, water temperature	2 km offshore (*h*=16 m)	3 Hz	30 minutes
ADCP Workhorse Monitor 1200 kHz	Current velocity & direction (profile)	available	2 Hz	to be defined
Electromagnetic current meters	Current velocity & direction (point)	available	10 Hz	30 minutes
String (electric) shallow-water wave gauges	Wave height & period	available	10 Hz	30 minutes
LISST-100	Concentration and size of suspended sediments	available	2 Hz	to be defined
GPS-positioned drifters	Current velocity & direction (trace)	available	1 Hz	to be defined
Echo-sounders	Water depth	available	7 Hz	7 Hz

Additional services/data

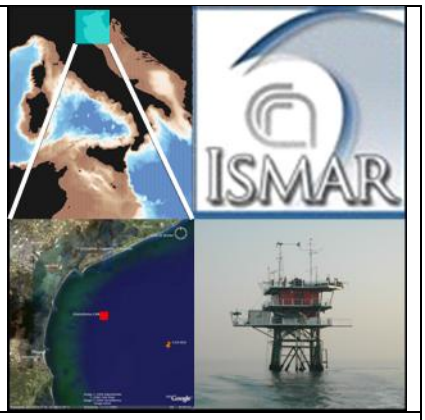
The following parameters are obtained from routine measurements and will be available to the JERICO users on specific request:

- topography of dunes and emerged part of the beach since 1983 (measured a few times per year);
- nearshore bathymetry (to the depth of about 7-8 m) since 1987 (measured at least once per year);
- archival hydrodynamic (wave/current) data.

Special owner rules

The CRS Lubiatowo is partly sponsored by the Polish Academy of Sciences which is a governmental non-profit organisation. The data provided by CRS Lubiatowo may not be used for commercial purposes. The use of data is restricted to studies related to the IBW PAN statutory research programme, as well as domestic and international scientific projects, including ventures carried out within EU, e.g. under auspices of the Framework Programmes.

Infrastructure (short name)	CNR-Marine Platforms and Laboratories (CNR-MPL)
Installation (short name)	Acqua Alta Oceanographic Tower (ACQUA ALTA)
Location	Mediterranean Sea, Northern Adriatic, Gulf of Venice
Coordinates	45°18.83'N – 12°30.53'E
Bottom depth	16 m
Legal name of organization	Consiglio Nazionale delle Ricerche CNR
Location of organization	Rome, Italy
Contact	Mauro Bastianini, mauro.bastianini@ismar.cnr.it Institute of Marine Sciences, National Research Council (ISMAR CNR) Castello 1364/a, 30122 Venezia, Italy Phone: +39 041 2404711 - Fax: +39 041 5204126
Web site address	http://www.ismar.cnr.it/infrastructures/piattaforma-acqua-alta



Description

The "Acqua Alta" research tower was installed on January 1970 15 km off the city of Venice, Italy, in 16 m of water (MLLW). This tower consists of a platform containing an instrument house, supported by a steel pipe structure, similar to that of an oil well derrick. The pipe structure is hammered 22 m into the bottom through each of its four hollow legs. Energy is supplied at 125, 220, 380 VAC (50 Hz – remote activation), along with continuous voltage 12 and 24 VDC.

The tower can host two technicians and three scientists for several days and allows specific dedicated campaigns and long-term measurements.

A broadband wireless communication system between the tower and the operating Institute allows 10 Mb/s data communication rate and real time data availability. The bridge allows the tower to be part of the Institute LAN so all the scientists on board can access internet and potentially all the instruments could be controlled remotely.

Measurements routinely acquired with periodic sampling concern biology, chemistry, physical oceanography. Autonomous instrumentations cover atmospheric and hydrological parameters with a series of meteorological stations (wind, air and water temperature, atmospheric pressure, humidity, rain) and 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). A direct view of the sea condition around the tower is available continuously by the three high resolution webcams installed on the roof. Two underwater webcams are installed at -3 and -12 m to observe biological populations and to monitor potentially critical phenomena such as jellyfish swarms and mucilaginous macro aggregates.

Given the high level of security on board and wide desk space, sophisticated instruments can be hosted on board reducing drastically the risk of loss (when not in service the tower is locked and a video surveillance is active). The good level of logistic support allows the setup of in situ experiments.

The wave measurements provide the longest European directional time series (29 years). The worst storm ever experienced was on December 22, 1979, when heavy damage was found up to

9 metres above the mean sea level.

The tower has been used as calibration point for instruments on board of the ERS-1 and SEAWIFS satellites.

Service offered

The “Acqua Alta” tower is a wet and dry laboratory able to host three scientists supported by one technician and two seamen. The high degree of safety (Video surveillance onboard) allows the setup and deployment of high-cost instruments; furthermore with the availability of wideband connection, instruments can be remotely controlled.

The installation is available for TransNational Access to JERICO users for specific experiments, tests of sensors and in-situ validation.

A support team formed by one technician and two sea-men, coordinated by a head scientist will assist the user group, helping during installing/uninstalling operations.

The user will have access to the infrastructure by boat, this service will be arranged by the operator.

The data will be immediately available to the user accessing the laboratory or also remotely in case of protracted installation of user’s instrumentation.

Instruments/Sensors

The following instrumentation is already onboard the tower and will be available to the JERICO users

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Frequency of data recovery
Meteo station Davis Vantage Pro2	Wind speed and direction Air temperature Humidity	+ 17 m	30 min	30 min
Nortek Awac	Current Profiles	from -1 to -15 m	30 min	30 min
Nortek Awac	Waves (high, dir period)	sea surface	30 min	30 min
SeaCAT	Temperature Oxygen Conductivity/Salinity Turbidity	- 5 m, -13 m	60 min	60 min

Additional services/data

Routine discrete samplings for long-term series

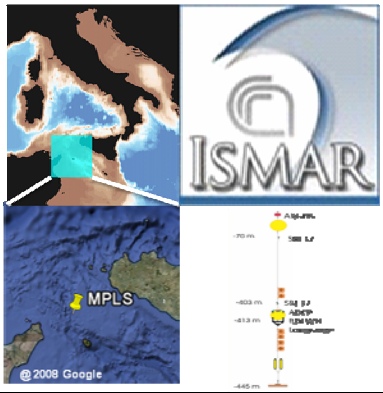
The following parameters are obtained from regular manual sampling and laboratory analysis and will be available to the JERICO users on specific request:

Parameter(s)	Elevation/Depth	Sampling frequency	Sampling Technique /Analytical method
Particulate flux	+ 13 m	30 days	Deposimeter
Phytoplankton	-1 and -15 m	30 days	Utermohl
Particulate	-1 and -15 m	30 days	Gravimetric CHN
Nutrients	-1 and -15 m	30 days	Autoanalyzer
Clorophyll	-1 and -15 m	30 days	Fluorimetric

Special owner rules

Researchers must provide an insurance statement. All lodging, meals and travel (from CNR Institute) to the tower coasts are covered by CNR, no smoking is allowed on board, safety equipment is not provided.

Infrastructure (short name)	CNR-Marine Platforms and Laboratories (CNR-MPL)
Installations (short name)	Sicily Channel mooring (MPLS)
Locations	Mediterranean Sea, Tyrrhenian Sea, Sicily Channel
Coordinates	S: 37°23.00'N - 11°35.50'E
Bottom depth	S: 500 m



Legal name of organization	Consiglio Nazionale delle Ricerche CNR
Location of organization	Rome, Italy
Contact	Mireno Borghini, mireno.borghini@sp.ismar.cnr.it Institute of Marine Sciences, National Research Council (ISMAR CNR) Forte Santa Teresa, 19036 Pozzuolo di Lerici (SP), Italy Phone: +39 0187978313 - Fax: +39 0187970585
Web site address	http://www.ismar.cnr.it/infrastructures/observational-sites/catene-correntometriche/il-canale-di-sicilia

Description

Sicily Channel, MPLS: Underwater installation moored at about 500 m depth between Sicily and Tunisia, out of the wide Sicilian continental shelf and on the western sill of the Sicily Channel. It performs continuous monitoring of the surface and intermediate exchange of water masses between eastern and western basins of the Mediterranean Sea. Equipped with traditional current meters and ADCP, it has been operative since 1993. At great depths it is furnished by high precision CTD probes for continuous measurement of hydrological parameters. The site is part of the CIESM Hydro-Changes Programme.

Maintenance and data recovery are managed twice per year. Developments towards real time data transmission are planned for both installations.

In occasion of the 6-month maintenance, which is done using a fully equipped research vessel, along the transect connecting the edges of the channel, additional measurements are carried out, which will be available to the JERICO users on specific request. Those are physical (CTD stations, vessel mounted ADCP, lowered ADCP profiles) and chemical (dissolved oxygen, dissolved inorganic nutrients) measurements.

Service offered

The underwater installation in the Sicily Channel is available for Trans National Access to JERICO users for specific experiments, tests of sensors and in-situ validation. The access is offered for multiples of a 6 month period, corresponding to the periodic maintenance operations.

A support team formed by one technician, one sea-man and one head scientist will assist the user group, taking also care of installing/uninstalling operations. The user will have access to the infrastructure by boat, this service will be arranged by the operator. The data will be available to the user in delayed mode at the end of the 6 month access period.

Instruments/Sensors

The following instrumentation is installed in the mooring and will be available to the JERICO users

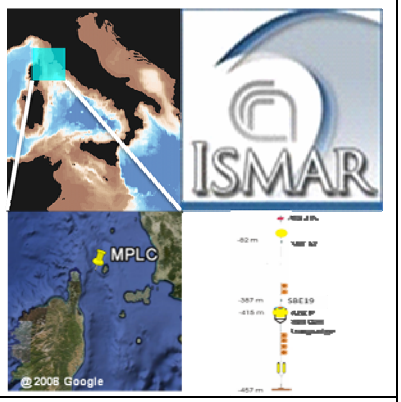
Sicily Channel, MPLS

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Frequency of data recovery
ADCP RDI 75kHz longrange	Current Profiles Temperature	from -415 to -10 m -415 m for T	2 hours	ca. every 6 months
SBE37	Temperature Conductivity Pressure	-400 m	5 min	ca. every 6 months
SBE37	Temperature Conductivity	-80 m	30 min	ca. every 6 months

Special owner rules

Researchers accessing the installation by boats must provide an insurance statement and must bring their own safety equipment.

Whenever possible, the start and end of an access interval will be set to coincide with times scheduled for the ordinary maintenance of the installation in the interests of financial economy (e.g. limiting the costs of boat-time, etc.).

Infrastructure (short name)	CNR-Marine Platforms and Laboratories (CNR-MPL)	
Installations (short name)	Corsica Channel mooring (MPLC)	
Locations	Mediterranean Sea, Ligurian Sea, Tyrrhenian Sea, Corsica Channel	
Coordinates	43° 1.50'N, 9° 41.0'E	
Bottom depth	C: 440 m	
Legal name of organization	Consiglio Nazionale delle Ricerche CNR	
Location of organization	Rome, Italy	
Contact	Mireno Borghini, mireno.borghini@sp.ismar.cnr.it Institute of Marine Sciences, National Research Council (ISMAR CNR) Forte Santa Teresa, 19036 Pozzuolo di Lerici (SP), Italy Phone: +39 0187978313 - Fax: +39 0187970585	
Web site address	http://www.ismar.cnr.it/infrastructures/observational-sites/catene-correntometriche/il-canale-di-corsica	

Description

Corsica Channel, MPLC: Underwater station at about 450 m depth moored between the islands of Capraia and Corsica, at the sill of the Corsica Channel. Operative since July 1985, it continuously measures ocean currents and thermohaline properties of water masses in predetermined depths, for the monitoring of the surface and the intermediate circulation of the Mediterranean Sea, and exchanges between the two adjacent basins (Tyrrhenian Sea and Ligurian Sea). The site is part of the CIESM Hydro-Changes Programme.

Maintenance and data recovery are managed twice per year. Developments towards real time data transmission are planned for both installations.

In occasion of the 6-month maintenance, which is done using a fully equipped research vessel, along the transect connecting the edges of the channel, additional measurements are carried out, which will be available to the JERICO users on specific request. Those are physical (CTD stations, vessel mounted ADCP, lowered ADCP profiles) and chemical (dissolved oxygen, dissolved inorganic nutrients) measurements.

Service offered

The underwater installation in the Corsica Channel is available for Trans National Access to JERICO users for specific experiments, tests of sensors and in-situ validation. The access is offered for multiples of a 6 month period, corresponding to the periodic maintenance operations.

A support team formed by one technician, one sea-man and one head scientist will assist the user group, taking also care of installing/uninstalling operations. The user will have access to the infrastructure by boat, this service will be arranged by the operator. The data will be available to the user in delayed mode at the end of the 6 month access period.

Instruments/Sensors

The following instrumentation is installed in the mooring and will be available to the JERICO users

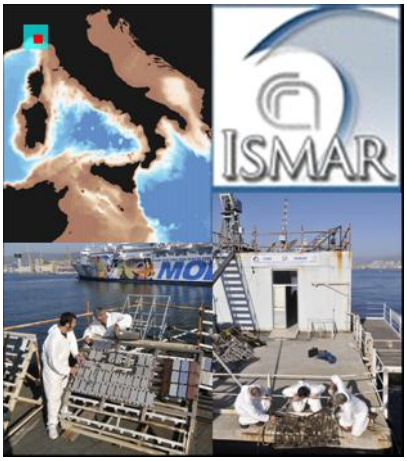
Corsica Channel, MPLC

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Frequency of data recovery
ADCP RDI 75kHz longrange	Current Profiles Temperature	from -415 to -10 m -415 m for T	2 hours	ca. every 6 months
SBE37	Temperature Conductivity	-400 m	5 min	ca. every 6 months
SBE39	Temperature	-80 m	5 min	ca. every 6 months

Special owner rules

Researchers accessing the installation by boats must provide an insurance statement and must bring their own safety equipment.

Whenever possible, the start and end of an access interval will be set to coincide with times scheduled for the ordinary maintenance of the installation in the interests of financial economy (e.g. limiting the costs of boat-time, etc.).

Infrastructure (short name)	CNR-Marine Platforms and Laboratories (CNR-MPL)	
Installation (short name)	Genoa Marine Station (MPL Genoa)	
Location	Mediterranean Sea, Ligurian Sea, Genova harbour	
Coordinates	44°24' N 8°56' E	
Legal name of organization	Consiglio Nazionale delle Ricerche CNR	
Location of organization	Rome, Italy	
Contacts	Pierluigi Traverso, pierluigi.traverso@ge.ismar.cnr.it, Tel. +39 010 6475432 Marco Faimali, marco.faimali@ismar.cnr.it, Tel. +39 010 6475425 Institute of Marine Sciences, National Research Council (ISMAR CNR) Genoa Branch Via De Marini, 6 – IV p – 16149 – Genova – Italia Fax: +39 010 6475400	
Web site address	http://www.ismar.cnr.it/infrastructures/experimental-stations/experimental-marine-station-of-genoa	

Description

This coastal station is placed inside the Genoa harbour, with the possibility of monitoring environmental and biological parameters. The building has an indoor surface of 100 sqm, available for pilot plants and services, a 30 KW electrical system, an internet connection (5 Mb/s), a drinkable water pipe and a natural seawater circuit powered by a pump which draws the water at a depth of 2,5 meters, with a 12 liters for minute flow.

A floating wharf (8,30x2,40 meters), used for the static immersion (Raft-test) of samples, is anchored in the Harbour area in front of the marine station.

A weather station measures air temperature, atmospheric pressure, relative humidity, solar irradiance, rain rate, wind speed and direction, dew point temperature and presence of wet film. Data are stored on a computer system and transmitted daily by wireless communication. These data are used for the ageing tests in marine atmosphere (following ISO 8565) performed by the CNR ISMAR staff, and are available to companies and other interested parties on demand.

These structures allow the Institute and agencies or companies which make request to do several tests for material degradation behaviour and the antifouling technologies performance (efficacy and ecocompatibility) using natural seawater (corrosion resistance measurement, paint antifouling performance, biocide efficacy, biofilm development, microbial influenced corrosion (MIC), sensor performance, ballast water treatment, etc.) and to expose samples in standard conditions for ageing tests in marine atmosphere (coatings protective power evaluation, corrosion processes study, patinas monitoring, etc.).

This experimental station belongs to MARS Network - The European Network of Marine Research Institutes and Stations (http://www.marsnetwork.org/).

Service offered

The shore station in the harbour of Genoa is available 24 hour day for corrosion tests on

infrastructure materials and for the evaluation of the protective and antifouling performances of coatings using suitable devices for exposition in immersed or in atmospheric marine environment.

A support team formed by one young researcher and one head scientist will assist the user group, taking also care of installing/uninstalling operations. The station is on-land, so the user will have direct access. The data will be available to the user as soon as the user's experiment is completed.

Instruments/Sensors

The following instrumentation is installed at the station and data will be available to the JERICO users

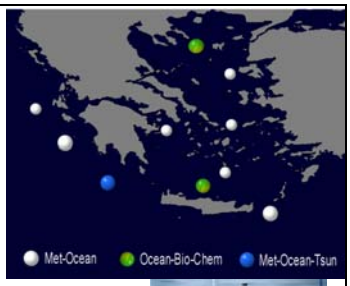
Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Frequency of data recovery
Weather station	air temperature, atmospheric pressure, relative humidity, solar irradiance, rain rate, wind (speed and direction), dew point temperature and presence of wet film	+ 5 m	5 min	5 min

Transmission: via internet connection

Special owner rules

The access to the harbour area is controlled by Genoa Harbour Authority whereas the access to Marine Station is regulated by the safety rules of CNR I.S.MAR.- U.O.S of Genoa.

Infrastructure (short name)	POSEIDON Observatory (POSEIDON)
Installations (short name)	POSEIDON BUOYS NETWORK & SOUTH AEGEAN BUOYS (POSEIDON BUOYS)
Location	Eastern Mediterranean Sea
Legal name of organization	Hellenic Center for Marine Research HCMR
Location of organization	Athens GREECE
Contact	Leonidas Perivoliotis, lperiv@hcmr.gr Hellenic Centre for Marine Research 46.7 km Athens-Sounio Ave. PO Box 712 Anavyssos, Attica GR-190 13, Greece Phone: +30-22910 76400 Fax:+30-22910 76323
Web site address	http://www.poseidon.hcmr.gr



Description

POSEIDON is an operational marine monitoring, forecasting and information system for the Greek Seas. It was developed by the Hellenic Centre for Marine Research (HCMR, www.hcmr.gr) and collaborating institutes in four phases over the past 12 years. The basic monitoring infrastructure of POSEIDON comprises of a fleet of 15 oceanographic buoys (SeaWatch and Wavescan types) as well as maintenance and calibration facilities that support the operation of 10 fixed positions in the Aegean and Ionian Seas. The buoys (POSEIDON BUOYS) are permanently moored in the Aegean and Ionian Seas, 3 of which are moored in the south Aegean Sea (POSEIDON SOUTH AEGEAN BUOYS).

POSEIDON BUOYS NETWORK: 7 SeaWatch and Wavescan buoys, permanently deployed in Aegean and Ionian Seas.

POSEIDON SOUTH AEGEAN BUOYS: 3 SeaWatch and Wavescan buoys, deployed in Saronikos, Santorini and Cretan Sea

Both the components of POSEIDON routinely monitor

- atmospheric conditions at sea level (wind speed and direction, atmospheric pressure, air temperature at all sites as well as relative humidity, precipitation and radiation components at selected sites)
- surface wave conditions (height, period, direction)
- surface currents (speed and direction) and hydrological (temperature, salinity) conditions

The exact number and position of moored buoys may alter depending on operational limitations during the access period.

Service offered

The TNA offered by the POSEIDON system to the project includes access to the coastal moored buoys of the network, i.e. to 8 out of the 10 operating sites. Depending on user needs the access can be offered either for one of the existing stations of the network or for several stations for a

smaller time period each.

The buoys are offered as a test bench for existing and new sensors. Spare buoys stored at HCMR premises can also be used as test bench (e.g. for interface with new sensors).

Access to moored buoys will be made during the regular maintenance visits (2-4 per year) on-board the R/V Aegaeo. Access to stored buoys has no time limitations. All operations will be carried out by the scientific and technical personnel of POSEIDON. In case of integration of new sensors, the user will be responsible for the software and hardware adaptations and the relevant costs, but the POSEIDON personnel will assists when necessary and will have the responsibility for on-buoy operations.

Instruments/Sensors

Athos Station, 39° 58' 4.8"N, 24° 43' 44.4"E

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Frequency of data recovery
Young 04106	Wind speed/dir.,	+3	3h	3h
Vaisala PTB 220A	Air Pressure,	3	3h	3h
Omega	Air temperature,	3	3h	3h
Seatex MRU	Wave Height, direction, period	0	3h	3h
Aanderaa 3919A	SST, SSS surface,	-1	3h	3h
Nortek Aquadopp 400 kHz	Currents	-1	3h	3h
Seabird 16plus-IMP C-T Seabird 37-IM C-T Aanderaa 3919A (surface)	Temperature	-1, -20, -50, -75, -100	3h	3h
Seabird 16plus-IMP C-T Seabird 37-IM C-T Aanderaa 3919A (surface)	Salinity	-1, -20, -50, -75, -100	3h	3h

Lesvos Station, 39° 09' 28.79"N, 25° 48' 46.79"E

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Frequency of data recovery
Young 04106	Wind speed/dir.,	+3	3h	3h
Vaisala PTB 220A	Air Pressure,	3	3h	3h
Omega	Air temperature,	3	3h	3h
Seatex MRU	Wave Height, direction, period	0	3h	3h
Aanderaa 3919A	Temperature, Salinity	-1	3h	3h
Nortek Aquadopp 400 kHz	Currents	-1	3h	3h

Skyros Station, 39° 06' 58.3194''N, 24° 27' 46.44''E

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Frequency of data recovery
Young 04106	Wind speed/dir.,	+3	3h	3h
Vaisala PTB 220A	Air Pressure,	3	3h	3h
Omega	Air temperature,	3	3h	3h
Seatex MRU	Wave Height, direction, period	0	3h	3h
Aanderaa 3919A	Temperature, Salinity	-1	3h	3h
Nortek Aquadopp 400 kHz	Currents	-1	3h	3h

Mykonos Station, 37° 31' 1.2''N, 25° 27' 50.4''E

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Frequency of data recovery
Young 04106	Wind speed/dir.,	+3	3h	3h
Vaisala PTB 220A	Air Pressure,	3	3h	3h
Omega	Air temperature,	3	3h	3h
Seatex MRU	Wave Height, direction, period	0	3h	3h
Aanderaa 3919A	Temperature, Salinity	-1	3h	3h
Nortek Aquadopp 400 kHz	Currents	-1	3h	3h

Saronikos Station, 37° 36' 29.16''N, 23° 33' 52.56''E

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Frequency of data recovery
Young 04106	Wind speed/dir.,	+3	3h	3h
Vaisala PTB 220A	Air Pressure,	3	3h	3h
Omega	Air temperature,	3	3h	3h
Seatex MRU	Wave Height, direction, period	0	3h	3h
Aanderaa 3919A	Temperature, Salinity	-1	3h	3h
Nortek Aquadopp 400 kHz	Currents	-1	3h	3h

Santorini Station, 36° 15' 25.2''N, 25° 30' 10.79''E

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Frequency of data recovery
Young 04106	Wind speed/dir.,	+3	3h	3h
Vaisala PTB 220A	Air Pressure,	3	3h	3h
Omega	Air temperature,	3	3h	3h
Seatex MRU	Wave Height, direction, period	0	3h	3h
Aanderaa 3919A	Temperature, Salinity	-1	3h	3h
Nortek Aquadopp 400 kHz	Currents	-1	3h	3h

Zakynthos Station, 37° 57' 32.4"N, 25 20° 36' 10.8"E

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Frequency of data recovery
Young 04106	Wind speed/dir.,	+3	3h	3h
Vaisala PTB 220A	Air Pressure,	3	3h	3h
Omega	Air temperature,	3	3h	3h
Seatex MRU	Wave Height, direction, period	0	3h	3h
Aanderaa 3919A	Temperature, Salinity	-1	3h	3h
Nortek Aquadopp 400 kHz	Currents	-1	3h	3h

Kalamata Station, 36° 58' 21.72" N, 22° 6' 24.8394"E

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Frequency of data recovery
Young 04106	Wind speed/dir.,	+3	3h	3h
Vaisala PTB 220A	Air Pressure,	3	3h	3h
Omega	Air temperature,	3	3h	3h
Seatex MRU	Wave Height, direction, period	0	3h	3h
Aanderaa 3919A	Temperature, Salinity	-1	3h	3h
Nortek Aquadopp 400 kHz	Currents	-1	3h	3h

The adobe described configuration of buoys is subject to modifications due to operational constrains.

Additional services/data

In situ measurements such as CTD casts as well as lab analysis can be arranged.

Special owner rules

The time schedule for the access will be defined by the owner based on the R/V availability.

Infrastructure (short name)	NOC Coastal Observatory (COBS)	
Installation (short name)	NOC Coastal Observatory - Fixed platform (COBS_1 NOC BUOY)	
Location	Irish Sea	
Legal name of organization	Natural Environment Research Council NERC	
Location of organization	Liverpool, UK	
Contact	Matthew Palmer, rolm@noc.ac.uk National Oceanography Centre, Joseph Proudman Building 6 Brownlow Street, University of Liverpool Liverpool, L3 5DA, United Kingdom Phone: +44 (0)151 795 4967	
Web site address	http://cobs.pol.ac.uk/	

Description

The NOC Coastal Observatory has three components – measurements; coupled hydrodynamic ecological numerical models; a data management and web-based data delivery system. It has been running since August 2002, primarily focused on Liverpool Bay but encompassing other measurements made within and around the Irish Sea.

The programme includes 3 measurement strands, each on different complementary space / time scales, and for each of which the goal is at least some (near) real time operation: fixed point time series (both in situ and shore-based), regular research vessel surveys and ocean gliders.

The primary component of the fixed point time series is an instrumented mooring and bed mounted lander located close to the mouth of the Mersey and Dee Estuaries. Measurements include current velocity, temperature, salinity, turbidity and oxygen concentration. The NOC moorings are further complemented by a co-located SmartBuoy run by project partners CEFAS which monitors additional biogeochemical parameters. Land based measurements include river flows, tidal height and coastal meteorology.

Regular surveys are conducted using our Liverpool based research vessel RV Marisa every 6 to 8 weeks. A CTD survey is conducted between the river Mersey and the mooring station with additional profiles collected around the site. Water samples are collected for analysis onboard and back at our labs for NOC and other partners.

NOC has a fleet of ocean gliders. Liverpool hosts the shelf sea component of this fleet and complements the coastal observatory with gliders, operating as shallow as 15m depth and close to the coast.

NOC provides model output for the whole Irish Sea region using its in-house 3-D hydrodynamic model POLCOMS. Parameters provided in hindcast and forecast (2 day) mode include temperature, salinity and current velocity and chlorophyll, oxygen and nutrient concentrations are provided via coupling POLCOMS with the European Regional Seas Ecosystem Model ERSEM.

Service offered

The fixed stations of the NOC Coastal Observatory are available for Trans National Access to JERICO users for specific experiments, tests of instruments and in-situ validation. The support

team consists of the NOC technicians and scientists who regularly prepare the instrumentation; go to sea on RV Marisa and process and analyse the data.

The observatory offers Jerico users full access to its moorings and installations for inclusion of further instruments and can provide engineering and scientific assistance. The RV Marisa has sufficient space to accommodate up to 3 additional scientists to participate in its 8 cruises per year. NOC can also offer laboratory space and office space for visiting scientists.

Instruments/Sensors

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Frequency of data recovery
Bedframe:		23.5 mean, 10m tides.		6-8 weeks
ADCP	Current velocity, surface waves (height and direction).		10 minutes	
SBE16+	Conductivity, temperature and pressure		10 minutes	
Anderra oxygen optode	Oxygen concentration and saturation		10 minutes	
Seapoint turbidity sensor	Turbidity		10 minutes	
Mooring:				6-8 weeks
SBE Microcat	Temperature, conductivity and pressure	5m, 10m and 15m depth	10 minutes	
Wetlabs AC-S (Spectrophotometer)	Light attenuation and absorption.	5m depth	10 minutes	
Survey:				6-8 weeks
SBE 911 CTD	Conductivity, temperature and pressure	Profiling	24Hz	
Satlantic SUNA	Nitrate concentration	Profiling	24Hz	
SBE oxygen optode	Oxygen concentration and saturation	Profiling	24Hz	
Niskin Water bottles	Nutrients (N,P,Si), SPM and Oxygen	Near surface and near bed	6-8 weeks	
Meteorological station (with web camera)	Wind speed and direction, PAR, temperature, pressure, humidity, rainfall, images.	10m elevation	10 minutes	Continuous via web

Additional services/data

Our ocean gliders provide additional survey potential to the observatory. Gliders provide CTD, fluorescence, OBS and oxygen measurements as standard. Scientists can request deployments of our gliders via the observatory which will be considered on a case-by-case basis.

Special owner rules

None

Infrastructure (short name)	Coastal Observation System for Northern and Arctic Seas (COSYNA)
Installation (short name)	Fixed Stations - Piles (COSYNA_2 PILE)
Location	North Sea
Coordinates	53° 30.994' N 8° 11.293' E, 54° 47.65' N 8° 27.083' E
Bottom depth	5 m

Legal name of organization	HZG Research Centre
Location of organization	Geesthacht, Germany
Contact	Götz Flöser, goetz.floeser@hzg.de Institute of Coastal Research/Operational Systems Helmholtz-Zentrum Geesthacht Max Planck Str. 1, D-21502 Geesthacht, Germany Phone: +49 (0) 4152 87 2345 Fax: +49 (0) 4152 87 1525
Web site address	http://www.cosyna.de and http://www.coastlab.org/

Description

COSYNA (Coastal Observation System for Northern and Arctic Seas) is an operational coastal monitoring, forecasting and information system for the North Sea. It is being developed by institutes of the German Marine Research Consortium (KDM) and collaborating institutions and is operated by the HZG Research Centre. The infrastructure represents an investment of 9 M €. It is built up in two phases over 6 years:

COSYNA PILE is based on two shallow-water Wadden Sea piles. The piles are equipped with hydrographical and meteorological sensors and deliver the datasets every 10 minutes via mobile phone connection to the HZG database. The maintenance interval varies with the season: in autumn / winter, maintenance can be done once in three weeks, in spring / summer it is required to be done every five days. The piles can not resist sea ice, thus they must be removed during winter months December – February.

Service offered

HZG will give access to three wadden sea piles. The access will consist in hosting visitors for experiments and for installation of users' equipment on piles.

The support team consists of technicians and scientists who prepare the instrumentation and take care of its installation and un-installation on the piles.

Instruments/Sensors

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Frequency of data recovery
Hydrographical sensors:				
ADCP	Current velocity, direction and backscatter intensity	1 m water depth	10 minutes	10 minutes
Optical backscatter sensor	Backscatter intensity, proxy for suspended matter concentration	1 m water depth	10 minutes	10 minutes
Temperature sensor	Water temperature	1 m water depth	10 minutes	10 minutes
Acoustic Doppler velocimeter	Current velocity, direction and backscatter intensity	1 m water depth	10 minutes	10 minutes
Optode	Oxygen saturation	1 m water depth	10 minutes	10 minutes
Conductometer	Electrical conductivity	1 m water depth	10 minutes	10 minutes
Fluorometer	Chlorophyll fluorescence	1 m water depth	10 minutes	10 minutes
PAR sensor	Photosynthetically active radiation	1 m water depth	10 minutes	10 minutes
Pressure sensor	Water pressure, proxy for water depth	1 m water depth	10 minutes	10 minutes
Meteorological sensors:				
Temperature sensor	Air temperature	5 m height	10 minutes	10 minutes
Anemometer	Wind speed and direction	5 m height	10 minutes	10 minutes
Pressure sensor	Air pressure	5 m height	10 minutes	10 minutes
Pyranometer	Solar radiation power	5 m height	10 minutes	10 minutes
Precipitation sensor	Precipitation	5 m height	10 minutes	10 minutes
Hygrometer	Relative humidity	5 m height	10 minutes	10 minutes

Additional services/data

Other activities within the observatory COSYNA are linked to the FerryBox and glider activities.

Special owner rules

None

Infrastructure (short name)	NOC Coastal Observatory (COBS)	
Installation (short name)	NOC Costal Observatory – 3 gliders (NOC_SHALLOW_ GLIDERS)	
Location	Irish Sea	
Legal name of organization	Natural Environment Research Council NERC	
Location of organization	Liverpool, UK	
Contact	Phil Knight, pjk@noc.ac.uk National Oceanography Centre Joseph Proudman Building 6 Brownlow Street Liverpool L3 5DA, UK Tel: +44 (0)151 795 4800 - Fax: +44 (0)151 795 4801	
Web site address	http://cobs.pol.ac.uk/	

Description
The NOC Coastal Observatory has three components – measurements; coupled hydrodynamic ecological numerical models; a data management and web-based data delivery system. It has been running since August 2002, initially based in Liverpool Bay, Irish Sea. There are three measurement strands, each on different complementary space / time scales, and for each of which the goal is at least some (near) real time operation: fixed point time series (both in situ and shore-based), an instrumented ferry and underwater gliders. These measurements are supplemented by weekly composite (because of cloud cover) satellite images of sea surface temperature, suspended sediment and chlorophyll. [data made available to users by the NERC/NOC] The Teledyne Webb Research Slocum electric gliders are set up for shallow water (0-200m) and are being used within the NOC Coastal Observatory for specific scientific process studies as well as to supplement the Coastal Observatory background data sets. One of the gliders is fitted with a Rockland Scientific MicroRider turbulence measuring package.
Service offered
The gliders are available for Trans National Access to JERICO users for specific experiments, tests of instruments and in-situ validation. They are also available for missions outside the UK. In addition NOC has the capability to add new sensors (both switch-on/switch-off and fully integrated) to Teledyne Webb Research Slocum electric gliders. The support team consists of the NOC engineers and scientists who regularly prepare the instrumentation and install/uninstall or deploy the gliders (four people) and process the data.

Instruments/Sensors

Instrument	Measured Parameter(s)	Depth range	Sampling frequency	Frequency of data recovery
Teledyne Webb Research Slocum electric glider (G1)	Non-pumped Seabird CTD, Aanderaa oxygen optode, Wetlabs triplet sensor for CDOM, Chl-a and turbidity.	0-200m	various	Selected integrated sensor data at specified intervals whilst at the surface via Iridium
Teledyne Webb Research Slocum electric glider (G1)	Non-pumped Seabird CTD and a Rockland Scientific MicroRider turbulence probe (micro-conductivity ,shear and temperature at up to 512Hz)	0-200m	Various	Selected integrated sensor data at specified intervals whilst at the surface via Iridium Turbulence sensor is not integrated and data can only be transferred once recovered
Teledyne Webb Research Slocum electric glider (G2)	Pumped Seabird CTD, Aanderaa oxygen optode, Wetlabs triplet sensor for CDOM, Chl-a and turbidity.	0-200m	Various	Selected integrated sensor data at specified intervals whilst at the surface via Iridium

Special owner rules

None.

Infrastructure (short name)	Coastal Observation System for Northern and Arctic Seas (COSYNA)	
Installation (short name)	Mobile Platforms - gliders (COSYNA_3 GLIDER)	
Location	North Sea	
Legal name of organization	Helmholtz-Zentrum Geesthacht, Institute of Coastal Research	
Location of organization	Geesthacht, Germany	
Contact	Lucas Merckelbach, lucas.merckelbach@hzg.de Institute of Coastal Research/Operational Systems Helmholtz-Zentrum Geesthacht Max Planck Str. 1, D-21502 Geesthacht, Germany Phone: +49 (0) 4152 87 1515 Fax: +49 (0) 4152 87 1525	
Web site address	http://www.hzg.de/institute/coastal_research/cosyna/011312/index_0011312.html	

Description

COSYNA (Coastal Observation System for Northern and Arctic Seas) is an operational coastal monitoring, forecasting and information system for the North Sea. It is being developed by institutes of the German Marine Research Consortium (KDM) and collaborating institutions and is operated by the HZG Research Centre. The infrastructure represents an investment of 9 M €. It is build up in two phases over 6 years:

COSYNA GLIDER is based on 2 Slocum gliders rated at 100 m water depth. The first glider was ready for deployment by the start of 2011, where as the second glider was delivered by March 2011. Since conditions in the German Bight, as opposed to normal oceanic conditions, pose additional challenges such as strong tidal currents, high shipping intensity and large density differences, three one-month deployments were aimed at assessing the practical feasibility of flying gliders and its constraints. At the time of writing the third mission is underway, however, the preliminary conclusion is that using gliders is feasible, provided that the region of operation excludes coastal waters of 10m and less, and (the crossing of) main shipping lanes. Following the completion the third glider mission, the experience gained will be evaluated and a schedule for 2012 will be formulated.

Service offered

HZG will give access to two gliders. The access will consist in planning and performing assisted glider missions on user demand.

The support team consists of technicians and scientists who prepare the instrumentation, deploy the gliders and pre-process the data.

It is noted that deployments of gliders in the German Bight require written permission from the responsible shipping authorities (WSA Tönning). Whether permission is granted or not is beyond the control of HZG, however, HZG can assist with or take care of the application process.

The table below lists the instruments available per glider. Glider Sebastian is labelled (1), and glider Amadeus is labelled (2). The depth rating of the gliders is 100m. For North Sea conditions however, it means the whole water column can be sampled. Sample frequencies given are typical, but are user configurable (1Hz is maximum).

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Frequency of data recovery
CTD (1&2)	**Conductivity, temperature, pressure**	**Full-depth range**	**0.5 Hz**	
Optical backscatter (1)	**Backscatter at 470, 532 and 660 nm**	**Full-depth range**	**Typical 0.125 Hz**	
BBFLCD (1)	**Optical backscatter (532 nm), Fluorescence and Coloured dissolved organic matter**	**Full-depth range**	**Typical 0.125 Hz**	
FLNTU (2)	**Fluorescence and turbidity**	**Full-depth range**	**Typical 0.125 Hz**	

Special owner rules

HZG requires a proposal to be submitted for each requested glider operation. The proposal will be evaluated internally. The main criteria are availability of resources for requested period, feasibility and risk assessment.

Infrastructure (short name)	CSIC-IMEDEA Glider facility	
Installation (short name)	CSIC-IMEDEA Glider (CSIC Glider)	
Location	Western Mediterranean	
Legal name of organization	Consejo Superior de Investigaciones Cientificas CSIC-IMEDEA	
Location of organization	Esporles, Spain	
Contact	Simon Ruiz, simon.ruiz@uib.es TMOOS, IMEDEA (CSIC-UIB) c/ Miquel Marques, 21, 07190 Esporles, Spain http://www.imedea.uib-csic.es Tel.: +34 971 611231 Fax.: +34 971 611761	
Web site address	http://imedea.uib-csic.es/tmoos/gliders/	

Description

CSIC-IMEDEA has been operating SLOCUM Webb Research gliders since 2005 and at present, 2 Deep (1.000 m) gliders and 1 Coastal glider (200m) exist (http://www.imedea.uib-csic.es/tmoos/gliders). New facilities have been also established (electronics, ballasting and AUV's/Gliders laboratories, and 1000 depth pressure chamber).

Gliders are underwater autonomous vehicles designed to observe vast areas of the interior ocean (Stommel, 1989). They make use of their hydrodynamic shape and small fins to induce horizontal motions, while controlling their buoyancy. Buoyancy control also allows vertical motions in the water column. The nominal horizontal speed is about 1 km/h. Coastal versions of gliders are limited to operate between 10 and 200 m depth. The long autonomy period at sea is the main advantage of this platform.

Gliders allow autonomous and sustained collection of CTD data and biogeochemical measurements (fluorescence, oxygen, etc) at high spatial resolutions (1km) and at low costs compared to conventional methods. Novel studies carried out in the Mediterranean Sea have confirmed the feasibility of using coastal and deeps gliders to monitor the variability of the coastal ocean (Alvarez et al., 2007; Ruiz et al., 2009a; Ruiz et al., 2009b). Gliders have proved to be highly robust platforms to monitor the ocean even under adverse meteorological conditions and/or in really challenging oceanic areas such as the Alborán Sea (Ruiz et al., 2009c).

CSIC-IMEDEA glider team has carried out about 22 gliders missions in the western Mediterranean Sea obtaining, so far, about 17,000 CTD casts plus oxygen, chlorophyll and turbidity.

References

Alvarez, A., B. Garau, A. Caiti, 2007. Combining networks of drifting profiling floats and gliders for adaptive sampling of the Ocean, IEEE International Conference on Robotics and Automation Roma, Italy, 10-14.

Ruiz, S., A. Pascual, B. Garau, I. Pujol, J. Tintoré, 2009a. Vertical motion in the upper ocean from glider and altimetry data. Geophysical Research Letters, L14607, doi:10.1029/2009GL03856.

Ruiz, S., A. Pascual, B. Garau, Y. Faugere, A. Alvarez, J. Tintoré, 2009b. Mesoscale dynamics of the Balearic front integrating glider, ship and satellite data. Journal of Marine Systems, 78, S3-

S16, doi: 10.1016/j.jmarsys.2009.01.007.

Ruiz, S., B. Garau, M. Martinez-Ledesma, 2009c. Monitoring the Eastern Alboran sea using high resolution glider data, Sea Technology, March issue, 29-32.

Stommel, H., 1989. The SLOCUM mission. Oceanography 22–24 April.

Service offered

CSIC-IMEDEA can provide access to the IMEDEA gliders facilities, including the use of one glider unit operating in the range 0-200 m or 0-1000 m, depending on the user's needs and after a carefully peer-review of proposed missions (feasibility, mission definition, benefits, etc…).

Additionally real-time data from all IMEDEA glider missions carried out under the project will be available in real-time.

The proposed mission can consist of:

- Preparation of 1 glider and its sensors for a specific task and for the area to operate.

- Logistics from the operator facility to the operation site and return

- Launch and recovery of the gliders

- Remote control and programming of the gliders by the operational team

- Data recovery and delivery to the user.

There is a dedicated team composed of technician who prepare and operate the gliders, program and supervise the cruise, format and distribute the data at the end of the cruise.

Instruments/Sensors

Instrument	Measured Parameter(s)	Depth range	Sampling frequency	Frequency of data recovery
1 Slocum Glider	**conductivity, temperature, pressure, oxygen, fluorescence, turbidity**	**0-200 m or 0-1000 m**	**0.5 Hz**	**Every 6 hours**

Special owner rules

Carefully peer-review of proposed missions – study area, feasibility, mission definition, benefits.

Infrastructure (short name)	National Glider facility	
Installation (short name)	National Glider facility (CETSM)	
Location	Western Mediterranean	
Legal name of organization	Institut National des Sciences de l'Univers/ Centre National de la Recherche Scientifique INSU/CNRS	
Location of organization	La Seyne sur mer, France	
Contact	Pierre Testor, testor@locean-ipsl.upmc.fr Laboratoire d'Océanographie et de Climatologie : Expérimentation et Approches Numériques (LOCEAN, ex LODYC) Institut Pierre Simon Laplace, Université Pierre et Marie Curie, aile 45-55, 4ème étage, case 100 4 Place Jussieu, 75252 Paris cedex 05, France Phone: +33 1 44 27 72 75 Fax: +33 1 44 27 38 05	
Web site address	http://www.ego-network.org	

Description
The French National Glider facility is held by DT-INSU in La Seyne sur mer. It is part of and supports a larger group so-called EGO (Everyone's Glider Observatories). This glider facility started in September 2008, and is now composed of 5 engineers and technicians operating, by the end of 2011, 14 operational gliders, 4 of them being shallow gliders rated to 200m depth maximum but ideal for operations on the shelf. The facility is fully equipped to prepare, operate and maintain gliders: - A glider ballasting tank in order to prepare the glider, - An electronic lab for battery change and maintenance - Servers and modems for communications with the gliders - The ego-network.org web server which allows the real-time display of the collected data a and containstools for piloting gliders (monitoring and mission changes) through the web, in a collaborative way The glider staff is fully trained (preparation and piloting) and is working on shift for continuous service. Among the gliders one can find the following available sensors: - CTD - Oxygen Optode - Fluorimeters (ChlA, CDOM, Phycoerythrine,) - Back scattering (from 470 to 880 nm), turbidity
Service offered
INSU can provide access to users to the DT-INSU gliders facilities, including the use of one or

more glider units (after a carefully peer-review of proposed missions – feasibility, mission definition, benefits, etc…)

The proposed services can consist of:

- Preparation of a fleet of gliders (1 to 3 gliders) and its sensors for a specific task and for the area to operate, including new sensors to integrate and test

- Logistics from the operator facilities to the operation site and return as well as launch/recovery operations of the gliders, if the operation site is in the vicinity of DT-INSU gliders facilities (NW Mediterranean, otherwise only assistance will be provided).

- Remote control and programming of the gliders

- Data recovery and delivery to the user.

As long as the iridium link between the gliders and land make it possible, eal-time data will be available in real-time. There is a dedicated team composed of technicians who prepare and operate the gliders, program and supervise the cruise, format and distribute the data at the end of the cruise.

Instruments/Sensors

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Frequency of data recovery
glider1	**T, S, O2+other biogeochemical sensors**	**0-200m or 0-1000m (min of ~50m waterdepth)**	**4-8s**	**~5h**
glider2	**T, S, O2+other biogeochemical sensors**	**0-200m or 0-1000m (min of ~50m waterdepth)**	**4-8s**	**~5h**
glider3	**T, S, O2+other biogeochemical sensors**	**0-200m or 0-1000m (min of ~50m waterdepth)**	**4-8s**	**~5h**

Special owner rules

Carefully peer-review of proposed missions – study area, feasibility, mission definition, benefits.

Infrastructure (short name)	OGS-North Adriatic Coastal Observatory (OGS-NACObs).
Installation (short name)	OGS-Oceanographic Calibration Centre (OGS-CTO).
Location	Mediterranean Sea, Adriatic Sea, Trieste.
Legal name of organization	Istituto Nazionale di Oceanografia e di Geofisica Sperimentale - OGS.
Location of organization	Trieste, Italy.
Contact	Rajesh Nair, rnair@ogs.trieste.it Department of Oceanography Istituto Nazionale di Oceanografia e di Geofisica Sperimentale - OGS Borgo Grotta Gigante 42/C, 34010 Sgonico (TS), Italy Tel. +39 040 2140323 - Fax. +39 040 2140266
Web site address	http://nettuno.ogs.trieste.it/jungo/cto/index_eng.html

Description
The OGS-Oceanographic Calibration Centre (OGS-CTO) is the oceanographic testing and calibration facility of the Department of Oceanography of the Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (OGS). It provides the Department with the scientific and technical infrastructure necessary for making and guaranteeing high-quality observations of the marine environment in a way that continuously meets recognized international standards of excellence. A critical element of the services offered is the ability to calibrate and maintain sea-going instrumentation efficiently. The facility is run applying relevant international guidelines and protocols as much as practically possible in order to assure conformity or, at least, compatibility, with the regulatory standards governing this kind of activity worldwide. The OGS-CTO is supervised and manned by a small team of experienced technicians, the Department of Oceanography's Calibrations & Testing Operations Group (CTO Group) headed by Mr. Nevio Medeot, which also oversees the facility's scientific and technological development. Currently, the OGS-CTO can provide high-calibre temperature and conductivity calibrations able to meet the demanding oceanographic measurement specifications for these parameters. It is also capable of performing functional tests, evaluations and validations of instrumentation used for measuring other commonly monitored parameters like turbidity, pH, etc.
Service/s offered
Marine temperature and conductivity sensor calibrations (with the support of OGS-CTO personnel). *Kindly note that the calibration of one pair of temperature and conductivity sensors normally takes about five working days*.

Instruments/Sensors

Current capabilities for temperature and conductivity calibrations:

Table 1. The laboratory instrumentation and reference material constituting the calibration set-up for **conductivity**.

Test instrumentation	Specifications
Hart 7052 Seawater Calibration Bath	Range: -10.00 - 110.00°C Stability: >±0.001°C
Guildline 5010 Seawater Calibration Bath	Range: -9.90 - 65.00°C Stability: ±0.002°C over 24 hours
Hart 1590 Precision Digital Thermometerwith Metal-sheath SPRT (Rosemount 162CE / Hart 5699)	Range: 0.00 – 30.00°C Accuracy: > ±0.0015°C
SBE41 CP-OGS Conductivity & Temperature Monitor	Range: 0.00 – 60.00 mS/cm Accuracy: > ±0.003 mS/cm
Laboratory Salinometer (Guildline Autosal 8400B)	Range: 0.005 - 42 psu salinity Accuracy: > ±0.002 PSU over 24 hours
Portable Salinometer (Guildline model 8410)	Range: 0.004 - 76 mS/cm Accuracy: ±0.003 PSU

Reference Material
IAPSO Standard Seawater

Table 2. The laboratory instrumentation and reference material constituting the calibration set-up for **temperature**.

Test instrumentation	Specifications
Hart 1590 Precision Digital Thermometer with Metal-sheath SPRT (Rosemount 162CE / Hart 5699)	Range: 0.00 – 30.00°C Accuracy: > ±0.0015°C
SBE41 CP-OGS Conductivity & Temperature Monitor	Range: 0.00 – 30.00°C Accuracy: > ±0.003°C
Hart 7312TPW Maintenance Bath	Range: -5 – 110°C Stability: ±0.001°C at 0°C
Hart 9230 Ga Cell Maintenance Bath	Range: 15 – 35°C Stability: ±0.02 °C

Reference Material
Two Jarrett B13 and one Hart 5901, TPW Cells Hart 5943,Melting Point of Gallium Cell Standard resistors(L&N 4030B / Guildline 9330 series)

Uncertainty:

Temperature:
Expanded Measurement Uncertainty (95% level of confidence; k = 2) for reference temperature: 0.0030 °C (ITS-90).

Conductivity:
Expanded Measurement Uncertainty (95% level of confidence; k = 2) for reference conductivity: 0.00034 Siemens/m (0.0034 mS/cm).

Special owner rules

- The responsibility of the OGS-CTO shall be limited to the correct and scrupulous execution of the requested service/s, including the supervision of consigned sensors/instrumentation when they are on its premises. The OGS-CTO shall not be held liable for any other kind of responsibility relating to defects, faults or malfunctions of the delivered sensors/instrumentation, including those that may arise from packing/unpacking, handling by unauthorized persons and shipping operations.

- The OGS-CTO shall not be held liable for any damage that may occur to consigned sensors/instrumentation during the execution of the requested service/s resulting from pre-existing defects, faults or malfunctions of the same (for example, corroded connectors, defective o-rings, improper maintenance, etc.). Any extraordinary repair or maintenance requirement arising in the performance of the specified service/s shall be communicated immediately to the TNA Beneficiary; all such requirements will be itemized and costed separately, and action will be undertaken only upon receiving express permission to proceed from the Beneficiary.

- In case of unexpected or unpredictable events that could render temporarily impossible the completion of the services requested in the assigned time-frame, the resulting delay will be communicated to the TNA Beneficiary, without this being the reason or motive for claims for damages or any other similar initiatives on the part of said Beneficiary.

Infrastructure (short name)	CNR-Marine Platforms and Laboratories (CNR-MPL)
Installation (short name)	CNR Calibration facility Trieste (MPLCAL6)
Locations	Mediterranean Sea, Trieste (Northern Adriatic)
Legal name of organization	Consiglio Nazionale delle Ricerche CNR
Location of organization	Rome, Italy

Contact	Stefano Cozzi, stefano.cozzi@ts.ismar.cnr.it Institute of Marine Sciences, National Research Council (ISMAR CNR) Trieste Branch Viale Romolo Gessi 2, 34123 Trieste, Italy Phone: +39 040 305312 - Fax: +39 040 308941
Web site address	

Description

The Laboratory for chemical analysis of CNR-ISMAR in Trieste (MPLCAL6) has been involved for at least three decades in the study of the biogeochemical cycles of the major elements (carbon, nitrogen, phosphorus and silicon) in the marine environment. This research activity has been carried out in the Mediterranean Sea and in Polar regions in the framework of several national and international research projects. An important part of this research is based on the determination of dissolved oxygen (DO), dissolved inorganic nutrients (NO3, NO2, NH4, SiO2 and PO4), total/dissolved organic carbon (TOC/DOC) and inorganic carbon chemistry parameters (pH_T, total alkalinity, A_T).

Laboratory methods currently available for all the parameters are listed as follows. All the methods are set up for high precision – low blank analyses in order to be suitable for oceanographic purposes. Total alkalinity and pH measures reach the high standard internationally required to calculate and study all the inorganic carbon chemistry parameters (TCO_2, pCO_2, Ω_{Ar}, Ω_{Ca},..). These measurements have been already applied either in eutrophic coastal zones and oligotrophic offshore waters. Ultrapure laboratory water is available for these analyses.

DO: automated potentiometric Winkler titration;
NO3, NO2, NH4, SiO2, PO4: spectrophotometric manual or flow-segmented autoanalyzer methods;
TOC/DOC: automated high temperature catalytic oxidation method with NDIR detection;
pH: m-cresol purple spectrophotometric method; high precision potentiometric method
A_T: open cell potentiometric titration.

Service offered

The laboratory of chemical oceanography in Trieste (MPLCAL6) is accessible for Jerico users for the above mentioned laboratory analyses. The research activity will be carried out by the assistance team of the institute, or by external users under the assistance of this team. Experimental results of the laboratory activity may be also remotely accessed on user demand.

Laboratory work can be addressed to validation and assessment of the performances and long term reliability of chemical sensors, by their comparison with analytical laboratory methods applied

to discrete seawater samples. The comparison between sensor performance and reference chemical methods can be done during in situ experiments, using the facilities of our institute available in the Gulf of Trieste, as well as during microcosm incubations in controlled ambient conditions.

Instruments/Sensors

Parameter	Method	Instruments
DO	Winkler titration	Metrohm 798 Titrino
Nutrients	Spectrophotometry	manual analysis, Technicon autoanalyzer, OI-Analytical autoanalyzer
TOC/DOC	HTCO method	Shimadzu TOC V CSH analyzer
pH	Potentiometry Spectrophotometry	Metrohm 809 Titrando Varian Cary-50 Spectrophotometer
A_T	Potentiometric titration	Metrohm 809 Titrando

Special owner rules

During access to the laboratory for experimental activities, the ground rules of CNR for external visitors will be applied.

Infrastructure (short name)	CNR-Marine Platforms and Laboratories (CNR-MPL)	
Installation (short name)	CNR Calibration facility Capo Granitola (MPLCAL7)	
Locations	Mediterranean Sea, Sicily (Strait of Sicily)	
Legal name of organization	Consiglio Nazionale delle Ricerche (CNR)	
Location of organization	Rome, Italy	
Contact	Mario Sprovieri, mario.sprovieri@iamc.cnr.it Institute for Coastal Marine Environment, National Research Council (IAMC-CNR) Via del Mare, 3 Torretta Granitola 91021 Fraz. Campobello di Mazara, TP, Italy Phone: +39 0924 40670 - Fax: +39 0924 40445	
Web site address	http://www.iamc.cnr.it	

Description

The laboratory for geochemical analyses of the CNR-IAMC of Capo Granitola (Sicily) is directly and intensively involved in the study of biogeochemical cycles related to major (nitrogen, phosphorus and silicon) and trace (Cd, Pb, Co, Ni, Cu, Ag, Mo, Al, Mn, Fe) elements in the marine environment. The research activity makes part of a number of national and international research projects (JERICO, VECTOR, SESAME, PERSEUS, COST Action, ITN programs, etc.). A significant part of the analytical and research activities is focused on the determination of dissolved and particulate inorganic and organic nutrients (NO_3, NO_2, NH_4, SiO_2 and PO_4), particulate organic carbon (TOC), trace elements (dissolved and particulate phases), carbon (dissolved an particulate) and oxygen isotopes in seawater. Calibration of fluorescence probes for chlorophyll estimation is also possible at the CNR-IAMC of Capo Granitola labs, by Liquid chromatography equipped with spettrofluorimetric detectors

Laboratory methods currently available for these parameters are listed as follows. Lab facilities for handling samples and preparation according to international reference procedures are available. All analytical methods are set for high precision – low blank analyses to be suitable for oceanographic purposes. These measurements have already been applied both in eutrophic coastal zones and oligotrophic offshore waters. Ultrapure laboratory water is available to be used for these analyses.

NO_3, NO_2, NH_4, SiO_2, PO_4: flow-segmented autoanalyzer method with Brän–Luebbe autoanalyzer (QUAATTRO).
TOC: Element analyser (ThermoElectron)
Trace elements: HR-ICP-MS (ThermoElectron)
$\delta^{13}C$, $\delta^{18}O$: GasBenchII and Delta Plus XP (ThermoElectron)
High performance liquid chromatography (HPLC) equipped with spectrofluorimetric detector and UV/VIS detector.

Service offered

The laboratory of geochemistry in Sicily (MPLCAL6) is available for validation and assessment of long term performances of chemical sensors by application analytical methods to discrete

seawater samples. The comparison between sensor performance and reference chemical methods can be done during experiments in situ, as well as during microcosm incubation in controlled ambient conditions.

The service described above can be provided by a dedicated team or directly accessed by the JERICO user with the assistance of this team. The assistance team is formed by one technician and one head scientist for each laboratory. The results will be directly accessible to the user in case of direct access, or remotely accessible in case the operations are conducted by the operator on user demand.

Instruments/Sensors

Parameter	Method	Instruments
Chlorophyll	Liquid-chromatography	HPLC- with (UV-VIS, and Spectrofluorimetric detectors
Nutrients	Spectrophotometry	Brän–Luebbe autoanalyzer (QUAATTRO)
TOC	Gas-chromatography	EA-ThermoElectron
Trace elements	Mass spectrometry	HR-ICP-MS
$\delta^{13}C$,$\delta^{18}O$	Mass spectrometry	GasBenchII, Delta Plus XP

Special owner rules

During access to the laboratory for experimental activities, the ground rules of CNR for external visitors will be applied.

Infrastructure (short name)	POSEIDON Observatory (POSEIDON)	
Installation (short name)	POSEIDON CALIBRATION LABORATORY (POSEIDON CAL)	
Location	Eastern Mediterranean Sea-Crete	
Legal name of organization	Hellenic Center for Marine Research HCMR	
Location of organization	Athens GREECE	
Contact	George Petihakis, gpetihakis@hcmr.gr Institute of Oceanography HCMR Thalassocosmos, Former US base at Gournes P.O. Box 2214 HERAKLION CRETE, GR 71 003 GREECE Phone: +30 2810 337755 - Fax: +30 2810 337822	
Web site address	http://www.poseidon.hcmr.gr	

Description

The calibration facilities at the HCMR Thalassocosmos complex in Crete include a fully equipped laboratory with a special designed large calibration tank, two smaller glass tanks and a number of reference sensors and equipment for temperature, salinity, chlorophyll-a, turbidity and dissolved oxygen sensors calibration.

Service offered

The TNA offered by the POSEIDON system to the project includes:

Calibration laboratory: It can be used for calibration of sensors (temperature, salinity, chl-a, turbidity, dissolved oxygen).The support team consists of the HCMR technicians and scientists who regularly prepare the instrumentation, perform field experiments, service and maintain the instruments and assist the users during the experiments in the calibration facility.

Field experiments: Calibrated sensors can be tested in the field.

Instruments/Sensors

Reference Sensors and Instruments

Instrument	Measured Parameter	Range	Accuracy	Resolution
Deep Ocean Standards Thermometer *SBE 35*	Temperature (ITS-90)	-5 to +35 °C	0.001 °C	0.000025 °C
AutoSal 8400A	Conductivity Ratio (Salinity)	0.005 to 42 ppt	0.003 ppt	0.0002 ppt

Furthermore a variety of sensors (Seabird 37 SIP, Aanderaa 3919B, Aanderaa 3975) are used in order to monitor the measurement parameters inside the calibration tanks during the experiments. For the calibration of the DO sensors samples are collected during the experiment and analyzed later using the Winkler methodology. Regarding fluorometer and turbidity sensor the sensors are calibrated against known concentrations and particles dimensions of reference solutions.

Additional service/data

Discrete samplings for long-term series

Parallel to the calibration laboratory HCMR operates a fixed observatory (M3A) where a large number of parameters are monitored (3h – real time). In addition, during monthly visits, in situ samplings are also performed.

Special owner rules

Requests for calibration services must be made at least 1 month in advance.
The user should provide the measured parameters range of the area where the sensors will be deployed.
The calibration lab of HCMR DOES NOT use formazin for turbidity sensors calibration.