



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

- ☐ an individual
☒ a user group

Information about the applicants (PI and project partners)

Principal Investigator (user group leader)

Title Mr. Name and Surname Rajesh NAIR

Gender ☒ Male ☐ Female

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

Department / ~~Research Group~~ Department of Oceanography

Address Borgo Grotta Gigante 42/C
34010 Sgonico(TS)

Country Italy

email rnair@ogs.trieste.it

Telephone +39 040 2140323

Fax +39 040 2140266

Project partners

(repeat for each partner of the group)

Partner # 1

Title Mr. Name and Surname Nevio MEDEOT

Gender ☒ Male ☐ Female

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



Department / Research Group Department of Oceanography
 Address Borgo Grotta Gigante 42/C
34010 Sgonico(TS)
 Country Italy
 email nmedeot@ogs.trieste.it

Partner # 2

Title Mr. Name and Surname Stefano KUCHLER

Gender ☒ Male ☐ Female

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

Department / Research Group Department of Oceanography

Address Borgo Grotta Gigante 42/C

34010 Sgonico(TS)

Country Italy

email skuchler@ogs.trieste.it

Partner # 3

Title Mr. Name and Surname Paolo MANSUTTI

Gender ☒ Male ☐ Female

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

Department / Research Group Department of Oceanography

Address Borgo Grotta Gigante 42/C

34010 Sgonico(TS)

Country Italy

email pmansutti@ogs.trieste.it

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

Expertise of the group in the domain of the application

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



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

Short CV of the PI

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

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

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

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

Nair R., N. Medeot, F. Brunetti, P. Mansutti, A. Bubbi and S. Küchler (2010). *EuroSITES Activity Report. On seawater $p\text{CO}_2$ and pH measurements with the PSI CO₂-Pro & the Sunburst Sensors SAMI²-pH*. Technical Report, Istituto Nazionale di Oceanografia e di Geofisica Sperimentale - OGS, REL. 2010/85 OGA 15 CTO, Borgo Grotta Gigante 42/C, 34010 Sgonico (TS), Italy, 30/09/2010.

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

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



PART 3: Detailed scientific description of the project

List the main objectives of the proposed research

(one page maximum)

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

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

(one page maximum)

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

Present the proposed experimental method and working plan

(one page maximum)

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

- familiarization;
- instruction;
- dialectic.



Familiarization

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

Instruction

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

Dialectic

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

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

Indicate the type of access applied for

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

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

One week, sometime between June 2012 and March 2013.

Host infrastructure

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

- ☐ ferrybox
 ☐ fixed platform
 ☐ glider
 ☒ calibration laboratory



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

POSEIDON CAL

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

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

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

Additional information

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

☐ Yes

☒ No

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

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

☐ Yes

☒ No

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

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



☐ Yes ☒ No

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

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

☐ Yes ☒ No

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

PART 4: Technical information

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

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

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

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

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



Travel per person: € 600.

Daily subsistence costs per person:

€ 100 (boarding)

€ 80 (meals)

€ 180 (Total)

Subsistence costs per person for one week (5 working days):

€ 600 (boarding)

€ 480 (meals)

€ 1080 (Total)

Total expenses per person for one week: € 1680.

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

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

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



Date of compilation 12/03/2012

Signature of the PI *Lojze Nain*

Signature of an appropriate authorised person
(e.g. Head of Department, Research Office) *[Signature]*
(Dr. Alessandro Crise, Director)

This section reserved to the JERICO TNA Office

Date of proposal receipt by email _____

Assigned reference number _____

Signature of receiving officer _____