
	<p>Research Executive Agency Marie Curie Actions – International Research Staff Exchange Scheme</p>	
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Project No: 230855

Project Acronym: OAEx

Project Full Name: Ocean Acoustic Exploration

Marie Curie Actions

Mid-term Report

Period covered: from 01/08/2010 to 01/08/2011

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Project coordinator name:

Prof. Sergio Jesus

Project coordinator organisation name:

CINTAL - CENTRO INVESTIGACAO
TECNOLOGICA DO ALGARVE

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Mid-term Report

PROJECT MID-TERM REPORT

Grant Agreement number:	230855
Project acronym:	OAEx
Project title:	Ocean Acoustic Exploration
Funding Scheme:	FP7-MC-IRSES
Mid-term period report:	2nd
Mid-term period covered - start date:	01/08/2010
Mid-term period covered - end date:	01/08/2011
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1. GENERAL PROGRESS OF THE PROJECT

The project has fully achieved its objectives and technical goals for the mid- term period;

Qualitative indicators of progress and success in line with workplan and milestones (description of progress towards milestones and deliverables)

During the period considered in the present report the main objectives were related to WP2, especially to carry out an at sea experiment at Cabo Frio site to obtain acoustic data for environmental inversion and communication testing purposes with supporting of standard hydrographic data. The experiment took place in November 2010, and is one of the main achievements in transfer of knowledge of the OAEx project. Although Brazilian partners have longtime experience gathering hydrographic data, they have little experience in planning and conducting at sea acoustic experiment with the above mentioned objectives. Moreover, due to funding limitations it was not possible to provide the equipment available at CINTAL and ULB to Brazil, thus a minimal acquisition system configuration was setup with the available equipment and a few new parts purchased by IEAPM. The different partners have contributed for the test of the equipment and the planning of the experiment, not only in person during secondments, but also by electronic means (emails and skype conferences). Although, some drawbacks in the signal acquisition chain were identified during the experiment, one can consider that the sea experiment have contributed for the success of the project, since a set of acoustic and oceanographic data were acquired in upwelling conditions. The experimental data were pre-processed in the period after the experiment, in order to write a data report that describes the details of the acquired data to support further processing. The report was terminated by the end of this reporting period and the “OAEx’10 Experiment and Data processing” workshop took place in Faro in June 2011, which main objective was to present and discuss the data acquired and the preliminary results. During this reporting period occurred also secondments from/to C-MARS, where it was possible to interact with researchers at NEPTUNE control center and at Venus Observatory/Ocean Technology test bed and discuss lines followed by European and Canadian group in inversion methods research for acoustical ocean monitoring. During the “OAEx’10 Experiment and Data processing” workshop the Brazilian partners were involved in this discussion. During the period the deliverable D2.1 Cabo Frio simulation report was concluded, and the deliverable D2.2 acoustic equipment testing report at C-MARS was postponed since the communications data were acquired within the Cabo Frio experiment and it will be pre-processed in planned secondments of CINTAL researcher experts in underwater communications to Brazil IEAPM and COPPE. Also the milestones foreseen for the period (M2.1 M2.2) were attained, although the communication experiment took place in Brazil.

2. PROJECT ACHIEVEMENTS

Scientific highlights and research achievements:

The sea trial was conducted with acquisition of acoustic and hydrological data during upwelling.

Preliminary data processing of hydrological data (quality check, objective analysis) and comparison with oceanographic modeling was performed.

Preliminary acoustic data processing (quality check, impulse responses estimation) was performed.

Geoacoustic inversion methods were tested with OAEx'10 field data.

The underwater communication experimental part of the OAEx project was performed simultaneously with the tomography experiment.

The sea trial data report was concluded and the preliminary data results were discussed during the Faro's workshop in June 2011.

During visits at Neptune, local researchers, technicians and managers have discussed different issues of the operation of an ocean cabled laboratory, and informed about possible collaborations.

The European and Canadian partners have presented the current research interests and projects in environmental monitoring that their labs are involved and discussed the different approaches followed.

Transfer of knowledge and Training activities (workshops):

The transfer of knowledge activities with Brazilian partners were focused on the at sea experiment planning, execution and data reporting, whereas interaction with C-Mars partners were focused on new methods for acoustic environmental monitoring. Also Canadian partners shared their world's leading experience with operation of long term underwater ocean observatories, especially with the Neptune observatory. It was possible to discuss the challenges faced by researchers at Neptune during daily operation, involving issues related to research, engineering and management. These activities were reviewed and discussed during the "OAEx'10 Experiment and Data processing" held in June 2011 in Faro were also presented the preliminary results of acoustic and hydrographic data acquired during the sea trial.

Dissemination of results (conferences, publications...):

Lussac P.Maia, Carlos E. Parente, Jean-Pierre Hermand, Acoustic inversion with broadband MFP for seabed characterization in OAEx'10 experiment, 4th Underwater acoustic Technologies & results conference, Kos (Greece), June 2011.

N. MARTINS and S. M. JESUS, "From oceanographic to acoustic forecasting: acoustic model calibration using in situ acoustic measures", IX Encontro de Tecnologia Acustica Submarina - IX ETAS, Arraial do Cabo (Brasil), November, 2010.

S. I. SIDDIQUI, A.J. SILVA and S. M. JESUS, "Doppler domain decomposition of the underwater acoustic channel arriving paths for the CALCOM'10 experiment", IX Encontro de Tecnologia Acustica Submarina - IX ETAS, Arraial do Cabo (Brasil), November, 2010.

P. SANTOS, P. FELISBERTO, S.M. JESUS, J. JOÃO, "Experimental Results of Geometric and Geoacoustic Parameter Estimation Using a Vector Sensor Array", IX Encontro de Tecnologia Acustica Submarina - IX ETAS, Arraial do Cabo (Brasil), November, 2010.

P. FELISBERTO, N. MARTINS and S.M. JESUS, "Field Calibration a Tool for Acoustic Noise Prediction: the CALCOM'10 data set", IX Encontro de Tecnologia Acustica Submarina - IX ETAS, Arraial do Cabo (Brasil), November, 2010.

3. PROJECT MANAGEMENT

Overview of the activities carried out by the partnership; Identification of problems encountered and corrective action taken:

During this reporting period the main activities carried out by the partnership were:

- at sea experiment preparation,
- sea trial execution
- post experiment data processing and reporting.

The plan of those activities, specially the sea trial preparation and execution was detailed during the period of the 1st OAEx workshop, where the project coordinators at different institutions agreed on the objectives of sea trial, period of sea trial, role of the different teams and preparation issues. Since we were facing some problems to perform the communication experiments in Canada, and the Brazilian partners were interested in developing expertise in this field, the partners agreed that the underwater communications experiments considered in the workplan will be held during the Cabo Frio experiment. An initial sea trial plan was produced. The IEAPM partner, who was in charge for the experiment, updated the initial plan with contributions of the different partners. Various Skype meetings with the attendance of project coordinators and researchers closely involved in sea trial preparation and execution were used to follow up the sea trial plan. The secondments after the sea trial were devoted to produce the Sea trial data report (deliverable D2.1) , which was presented and discussed during the “OAEx’10 Experiment and Data processing”. The deliverable “Acoustic equipment testing report” (D2.2) was postponed, after secondments of CINTAL researchers in underwater communications to Brazil planned for fall 2011, in order to made possible to perform some additional experiments and to allow to a wider participation of Brazilian researchers. In attach is a pdf file with the overview of secondments occurred during this reporting period

4. ADDITIONAL INFORMATION

Additional information, which may be considered useful to assess the work done during the reporting period:

Attachments

OAEExpDataRep.pdf, OAE10
Report_Version_1_1.pdf, Test Plan for OAE10
CRUISER_Final.pdf,
ganttdiagMidTermSecond.pdf

Date:

Person in charge of the project for the beneficiary(ies):