JERICO

TNA PROJECT REPORT
2ⁿᵈ Call of Proposals
14 January – 27 March, 2013

A) General Information

Proposal reference number	CALL_2_1
Project Acronym (ID)	MOSC
Title of the project	Monitoring Oxygen in the Sicily Channel
Host Research Infrastructure	CNR MPL - MPLS
Starting date - End date	02/04/2014 – 08/11/2014
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B) Project objectives (max. 250 words)

Recent studies evidenced that climatic changes does not only occur at centenary and millenary scales, but may also occur at much shorter time scales.

The Sicily Channel is an intermediate basin between the eastern and the western Mediterranean, which plays a central role in the thermohaline circulation of the Mediterranean.

The main objective of the project Monitoring Oxygen in the Sicily Channel – MOSC is to integrate the dissolved oxygen concentration in the long term time series data in the Sicily Channel to track the water mass variability, the impact of the water mass change on the oxygen content and to estimate the time lag between the eastern (Sicily Channel) and the western (Corsica Chanel) basins of the Mediterranean Sea. For this purpose, two oxygen sensors have been installed at the bottom of the two sills in the Sicily Channel accessing the 2-mooring installations MLPS operated by CNR.

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

Prior deployment two optodes were mounted on two homemade data logger (SQUID). Both optodes were calibrated over 8 temperatures and 11 O2 concentrations using laboratory facilities and applying the Uchida algorithm (Uchida et al. 2008). This is part of the metadata accompanying the sensor, but the embedded calibration coefficients have not been altered. Data correction was plan to be done post deployment to check for drift and quality

control.

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

D) Dissemination of the results

Given the problems above, at present there are no data.

E) Use of the Infrastructure/Installation

	In situ	By remote
Nr. of Users involved	2	4
Access units (days/months/etc)	day	6-months
In situ stay day / Remote Access duration	16	1.21

F) User project scientific field

Main field	Earth Sciences & Environment
Scientific description	Marine Science/Oceanography

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

The objective of the MOSC (Monitoring Oxygen in the Sicily Channel) project was to deploy O2 data loggers on the moorings C01 and C02 in the Sicily channels for at least a period of 6 months (Fig.1).
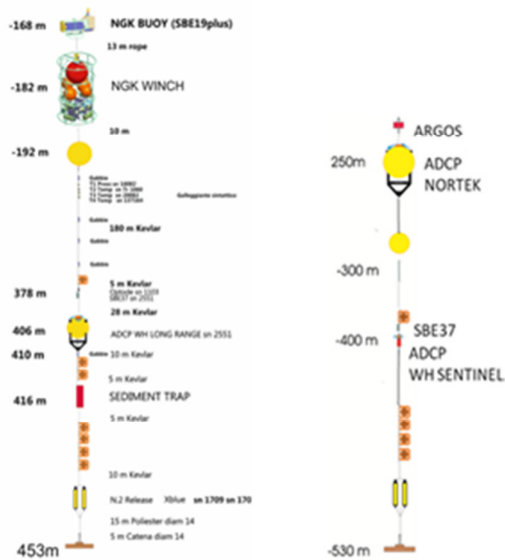

Fig. 1: The C01 (left) and C02 (right) moorings in the Sicily channel

Prior deployment two optodes were mounted on two homemade data logger (SQUID, Fig.2). Both optodes were calibrated over 8 temperatures and 11 O2 concentrations using laboratory facilities and

applying the Uchida algorithm (Uchida et al. 2008). This is part of the metadata accompanying the sensor, but the embedded calibration coefficients have not been altered. Data correction will be done post deployment to check for drift and quality control.

Fig. 2: Photo of the two SQUID and optode. The Squid is made of 2 parts, one with the battery and one with the data logger on which the oxygen optode is connected.

The data sensor were placed in running surface seawater for 24 hours and O2 Winkler samples to validate the sensor data logging and control data validity after shipping as it has been noticed before that transportation may alter the sensor behaviour (Fig. 3).
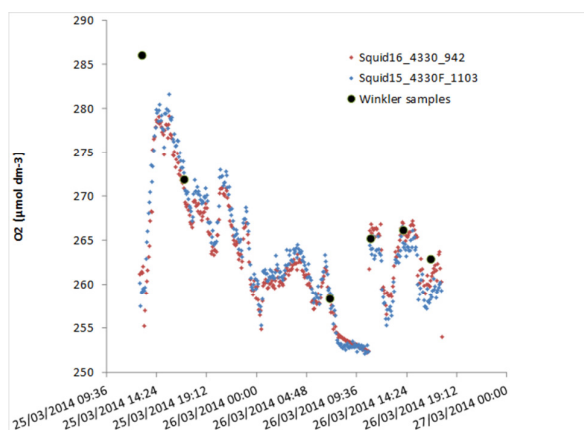

Fig. 3: The two Squid data logger was deployed in a running seawater tank for 24 hours. Winkler samples were taken during the time series to validate the absolute value Thanks to Giulia and Gemma. for their the Winkler analysis help.

Sensors were then mounted and deployed on the CTD profiler for a cast at 500 m, and a 30 minutes time lag was made at 391m to allow comparison in situ between the 2 sensors and CTD O2 sensors which are calibrated against Winkler sample.

Then the two Squid have been deployed on the C01 and C02 moorings. Unfortunately, problems were found at recovery. One Squid leaked and shortcut the power supply, causing breaking of the data logger. The other was recovered in good condition, but it was not possible to communicate with the data cartridge to download the data. It appears that the O2 sensors screws securing the connexion were not in titanium. Subsequent corrosion induced a breakdown of the O2Aanderaa sensor. Due to these problems, no data were recovered from the experiment and it was not possible to plan a new 6-month experiment before the deadline of the JERICO project.