

BOUSSOLE Monthly Cruise Report

Cruise 183

May 05-06, 2017

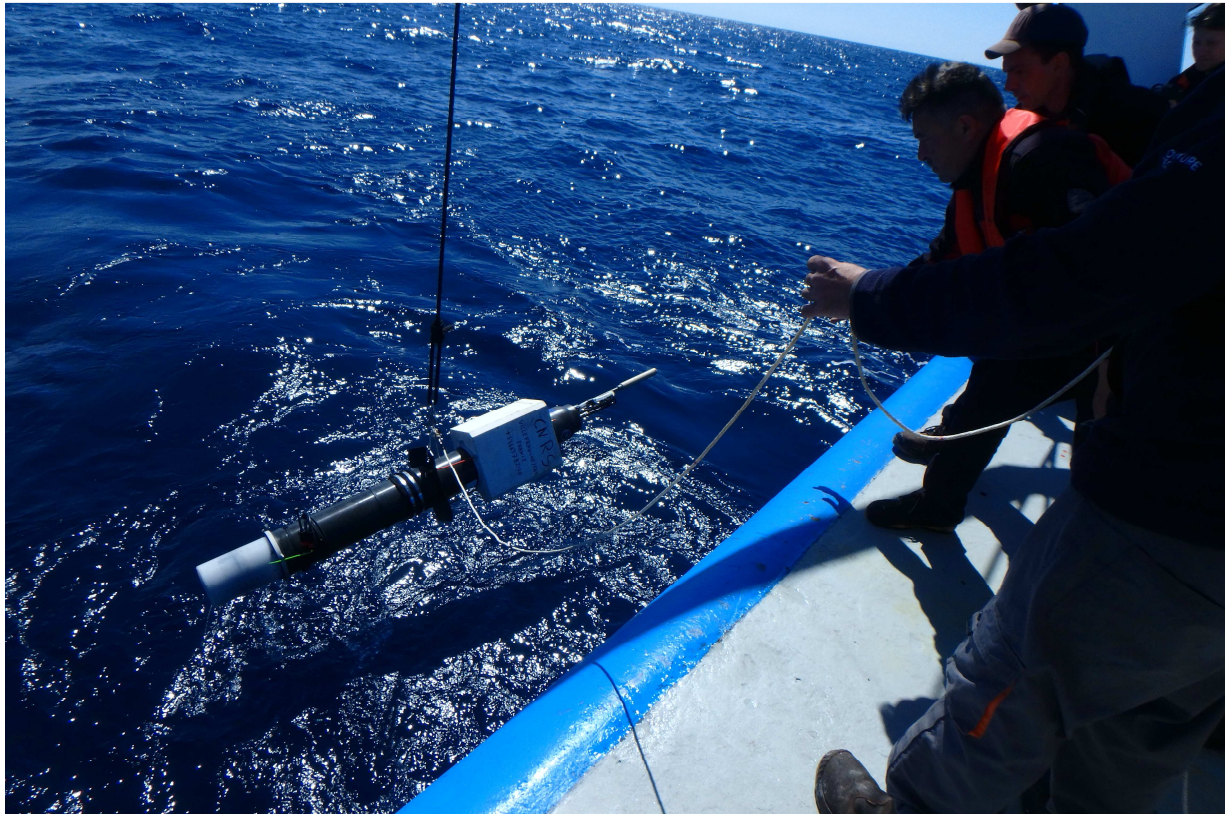
Duty Chief: Melek Golbol (golbol@obs-vlfr.fr)

Vessel: R/V Téthys II

(Captain: Joël Perrot)

Science Personnel: Emilie Diamond, Bastien Gaucher (diver), Melek Golbol, David Luquet, Michel Pochi (student), Judicaël Rivier (diver) and Eduardo Soto Garcia.

Laboratoire d'Océanographie de Villefranche (LOV), 06238 Villefranche sur mer cedex, France



Deployment of a PROVOR profiling float at the BOUSSOLE site. The float is equipped with an acoustic sensor for indirect estimation of wind speed.

BOUSSOLE project

ESA/ESRIN contract N° 4000119096/17/I-BG

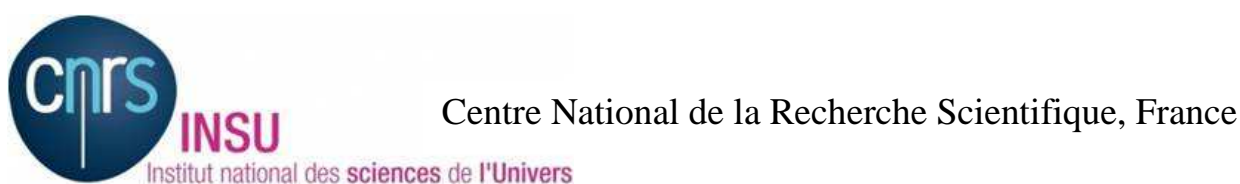
May 19, 2017



Foreword

This report is part of the technical report series that is being established by the BOUSSOLE project.

BOUSSOLE is funded and supported by the following Agencies and Institutions



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Cruise Objectives

Routine operations

Multiple Biospherical's C-OPS (Compact Optical Profiling System) radiometric profiles are performed at the BOUSSOLE site around solar noon, under optimal conditions: clear blue skies and flat, calm sea surface. If the sky is clear and sea conditions are reasonably calm (no whitecaps or large swell), hand held CIMEL sun photometer measurements are to be performed consecutively where possible with C-OPS profiles. If sea conditions are poor but sky is good, hand held CIMEL sun photometer measurements can be made at intervals throughout the day to measure atmospheric optical thickness. CTD deployments are required at the start and the end of the C-OPS profiling day and around noon in the longer summer days or when there is a high possibility of a satellite matchup. The CTD package also includes a Chl fluorometer. Additional instrumentation for measurement of inherent optical properties has been added from December 2011. The package includes a hyperspectral absorption meter (Hobilabs a-sphere), a multispectral backscattering meter (Hobilabs Hydroscat-6) and a multispectral beam transmissometer (Hobilabs Gamma-4). Two CTD casts are to be performed at each data acquisition at the BOUSSOLE site: one cast with, and one cast without, a 0.2 μ m filter added on the a-sphere for the dissolved matter absorption measurements.

Seawater samples are to be collected, filtered and stored into liquid nitrogen for subsequent HPLC pigment and particle absorption spectrophotometric filter analysis in the lab. Three replicates samples are to be collected at surface for total suspended matter weighting in the lab.

Divers check the underwater state of the buoy structure and instrumentation, take pictures for archiving, clean the sensor optical surfaces, and then take again some pictures after cleaning. Divers also put a neoprene cap on the backscattering meter and on the transmissometers for acquiring dark measurements (started in April 2009).

In addition, water samples are to be collected at two depths (5 m and 10 m) for dissolved oxygen (DO), total alkalinity (TA) and total inorganic carbon (TC) analysis (from March 2014). This operation is part of the BIOCAREX ANR project, in collaboration with the LOCEAN in Paris (J. Boutin and collaborators). The TA/TC samples will be processed by the National service for such analyses (SNAPOCO – LOCEAN in Paris). The results will allow checking the data collected by the two pCO₂ CARIOCA sensors installed on the buoy at 3m and 10m.

Further details about these operations and the data collection and processing protocols are to be found in: Antoine, D. M. Chami, H. Claustre, F. D'Ortenzio, A. Morel, G. Bécu, B. Gentili, F. Louis, J. Ras, E. Roussier, A.J. Scott, D. Tailliez, S. B. Hooker, P. Guevel, J.-F. Desté, C. Dempsey and D. Adams. 2006, BOUSSOLE: a joint CNRS-INSU, ESA, CNES and NASA Ocean Color Calibration And Validation Activity. NASA Technical memorandum N° 2006 - 214147, 61 pp.

http://www.obs-vlfr.fr/Boussole/html/publications/pubs/BOUSSOLE_TM_214147.pdf

Additional operations

Two water samples for cytometry analysis were collected at 10 m depth in the frame of a collaboration with Collin Roesler (Bowdoin College, Maine, USA), about the installation of an ECO 3X1M multi-channel fluorimeter on the BOUSSOLE buoy at 9 m depth.

A profiling float (PROVOR CTS-5) was deployed at the BOUSSOLE site during this cruise. The float was developed by the marine optics and remote sensing group of the Laboratoire d'Océanographie de Villefranche and is equipped with a passive acoustic sensor for wind speed measurements.

The MOOSE DYFAMED operations were performed during the BOUSSOLE cruise because bad weather was announced for the next days.

Cruise Summary

Only the first day was used for the BOUSSOLE and DYFAMED operations. The second day, bad weather prevented the departure from the Nice harbour. The first day was used for diving operations, for downloading buoy

data, for CTD casts with water sampling, for optical profiles and for a Secchi disk at the BOUSSOLE site. The profiling float was deployed after finishing the work at the BOUSSOLE site and before MOOSE operations, which included a deep CTD cast and zooplankton nets at the DYFAMED site.

Friday 05 May 2017

The sea state was slight with a moderate breeze. The sky was cloudy in the morning and blue in the afternoon. The visibility was excellent. When arrived at the BOUSSOLE site, divers went at sea to clean the sensors, to perform dark measurements of the transmissometers and backscattering meter and to take pictures. In the meantime, surface sensors of the buoy, solar panels and the ARGOS connector were cleaned. Buoy data were retrieved using the cable available on the top of the buoy and with the AK connector. After the diving operations, 2 CTD casts with water sampling, 1 Secchi disk and 3 C-OPS profiles were performed at the BOUSSOLE site. The PROVOR profiling float was deployed after finishing the work at BOUSSOLE. Then, we went at the DYFAMED site to perform 1 deep CTD cast with water sampling and 3 zooplankton nets before returning to the Nice harbour.

Saturday 06 May 2017

Bad weather prevented departure from the Nice harbour.

Pictures taken during this cruise can be found at:

<https://get.google.com/albumarchive/114686870380724925974/album/AF1QipPdOr8LQtMweENBXhomsOhykZiJvWH4cnNfrGF1>

Data from the BOUSSOLE cruises and buoy are available at:

http://www.obs-vlfr.fr/Boussole/html/boussole_data/login_form.php

Cruise Report

Friday 05 May 2017 (UTC)

People on board: Emilie Diamond, Bastien Gaucher, Melek Golbol, David Luquet, Michel Pochi, Judicaël Rivier and Eduardo Soto Garcia.

0545 Departure from the Nice harbour.
0910 Arrival at the BOUSSOLE site.
0920 Diving operations: cleaning, dark measurements, pictures.
0925 CTD 01, 20 m with water sampling at 10 and 5 m for TA/TC, O₂ and TSM.
0935 Connection with the buoy with AK connector and data retrieval.
0940 Secchi 01, 17 m.
0950 Cleaning of surface sensors, solar panels and ARGOS connector.
1100 Lunch.
1155 CTD 02, 400 m with water sampling at 400, 200, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m for HPLC, a_p and cytometry.
1235 C-OPS 01, 02, 03.
1325 Profiling float deployment.
1330 Departure to the DYFAMED site.
1340 Arrival at the DYFAMED site.
1345 Deep CTD cast, MOOSE 108, 2370m with water sampling for MOOSE DYFAMED program.
1510 Zooplankton nets x 3 for MOOSE DYFAMED program.
1530 Departure to the Nice harbour.
1830 Arrival at the Nice harbour.

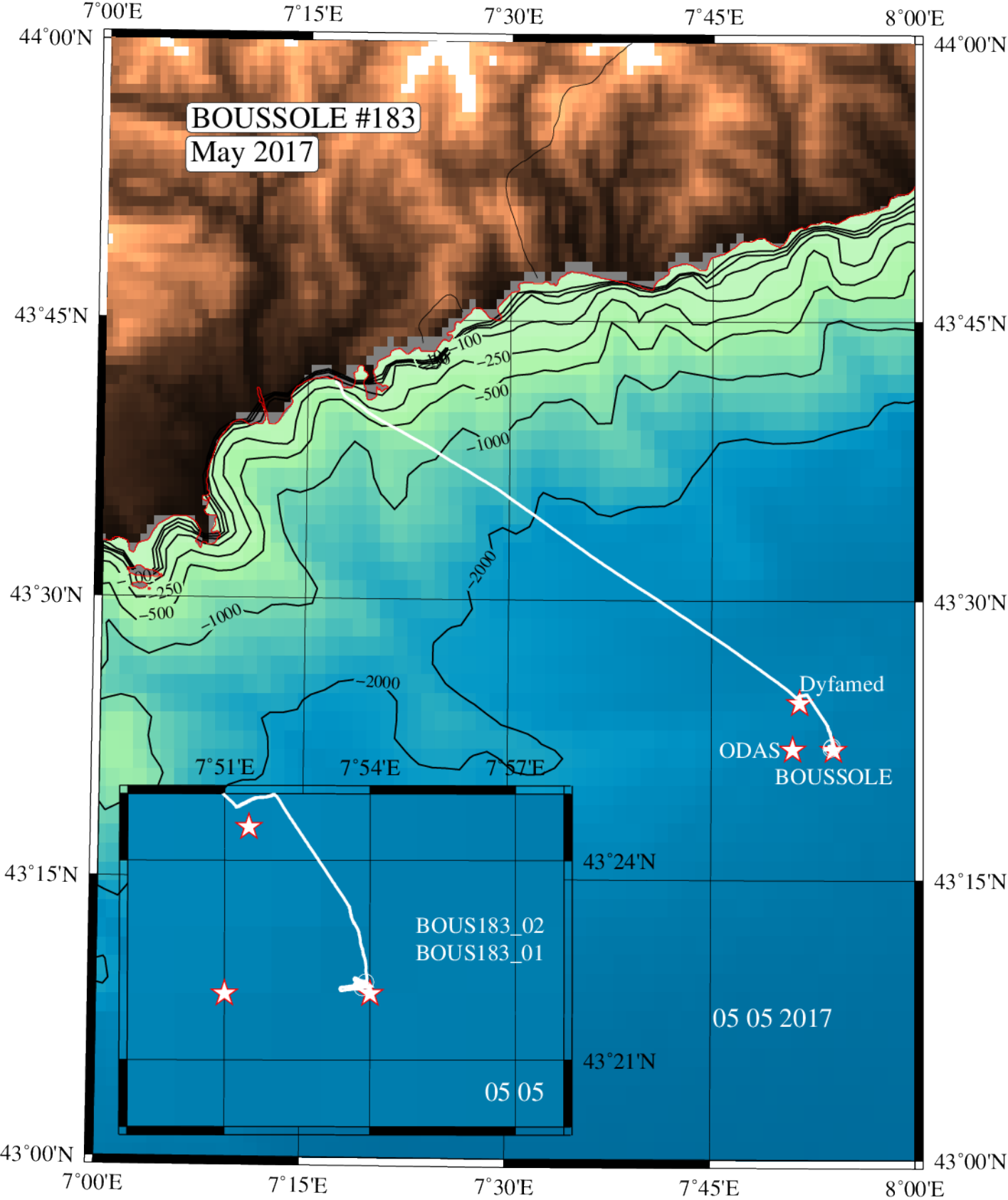
Saturday 06 May 2017

Bad weather prevented departure from the Nice harbour.

Problems identified during the cruise

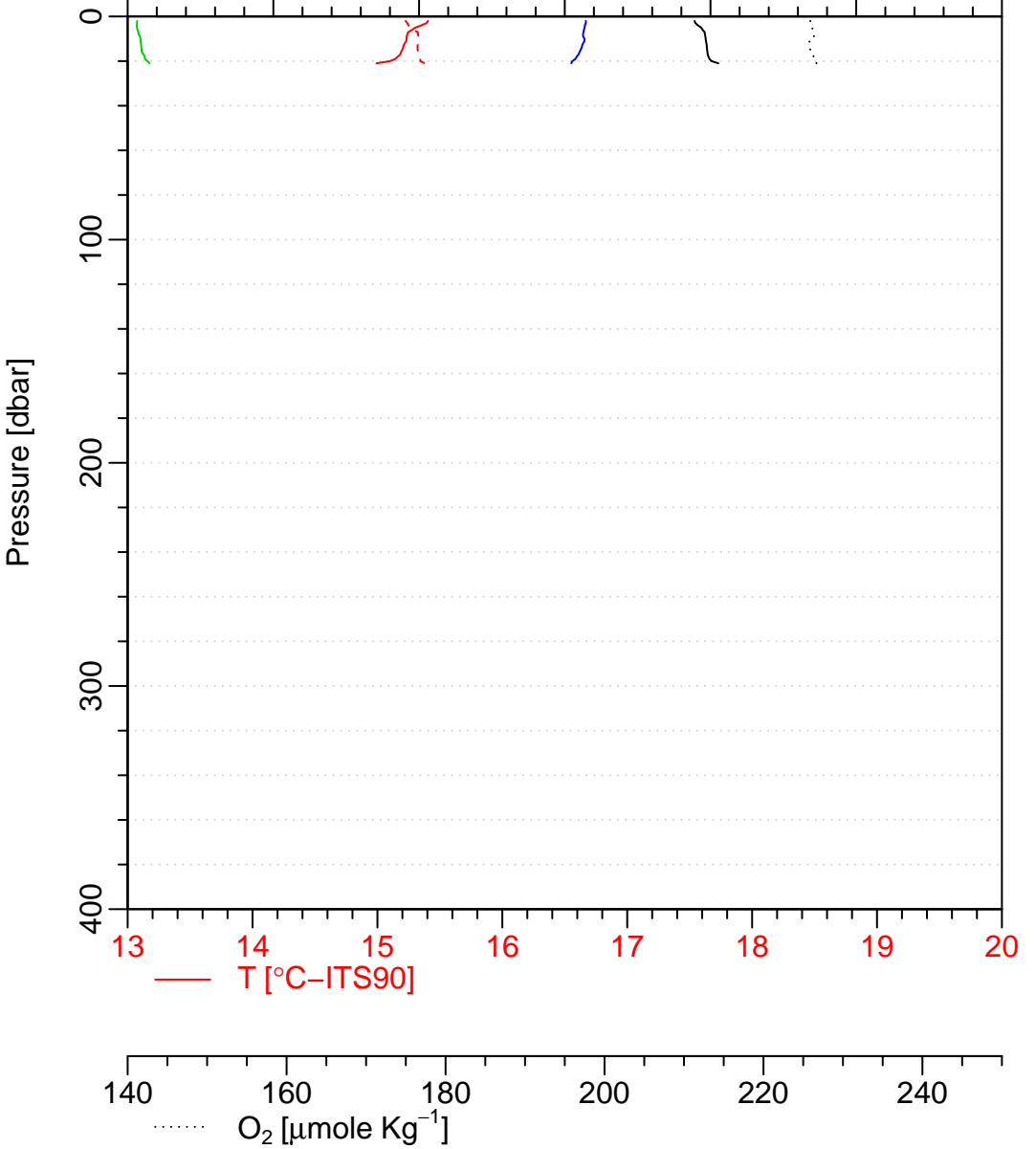
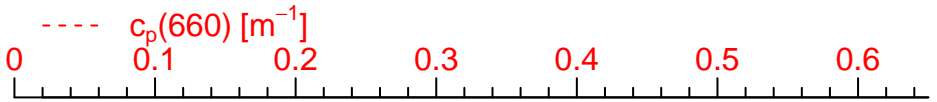
- It was not possible to perform IOP casts because the instrumentation did not work: the cable that connects the batteries to the hydroDAS (data logger of the IOP package), which was broken during previous operations, had been replaced before the cruise. However, the female connector on the data logger side, which was corroded and broken, could not be replaced. A new connector was ordered from the manufacturer but unfortunately it was not received in time for this cruise.

Appendices



bous183_01

Date = 05/05/2017
Heure debut [TU] = 09:27
Longitude = 007 53.839 E
Latitude = 43 22.087 N



bous183_02

Date = 05/05/2017

Heure debut [TU] = 11:57

Longitude = 007 53.910 E

Latitude = 43 22.172 N

