

BOUSSOLE Monthly Cruise Report

Cruise 206

March 17-20, 2019

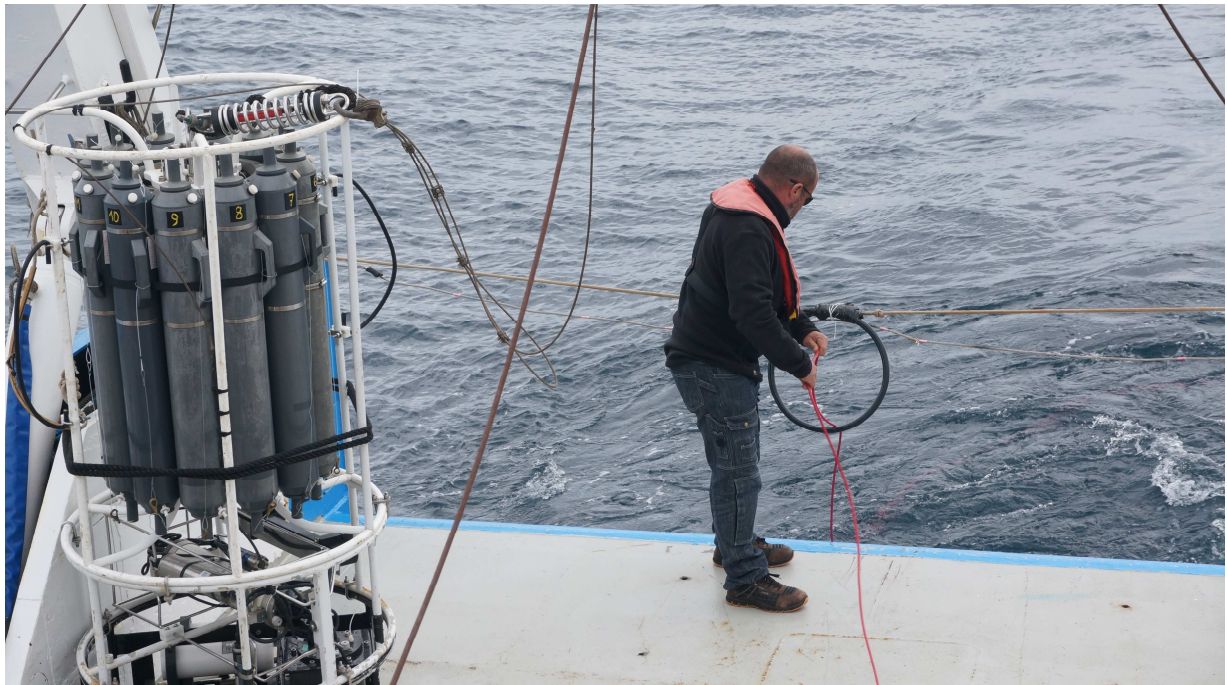
Duty Chief: Melek Golbol (golbol@obs-vlfr.fr)

Vessel: R/V *Téthys II*

(Captain: Dany Deneuve)

Science Personnel: Emilie Diamond, Céline Dimier, Irene Kopelmann, Franck Petit and Eduardo Soto Garcia.

Laboratoire d'Océanographie de Villefranche (LOV), 06230 Villefranche-sur-Mer, France

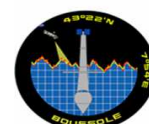


Working from the rear deck of the R/V *Téthys II*: deployment of the Biospherical C-OPS free-fall underwater radiometer, while the CTD Rosette is waiting for subsequent deployment.

BOUSSOLE project

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

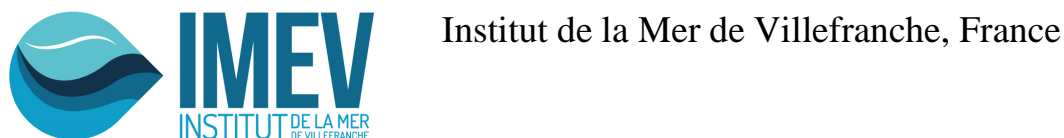
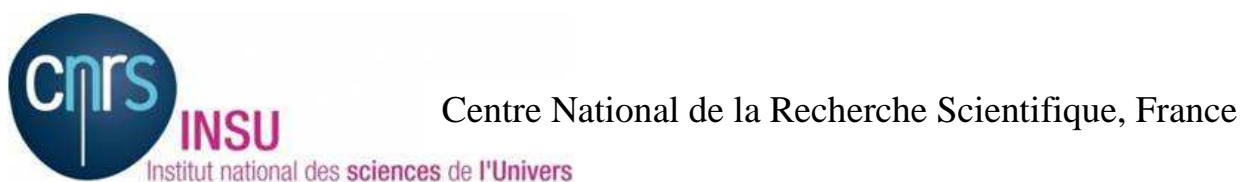
March 25, 2019



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). A CTD cast including a 0.2 μm filter installed on the inlet tube of the a-Sphere is to be performed once per cruise at the BOUSSOLE site for the dissolved matter absorption measurements. This cast will be stopped at ten depths during 2 or 7 min depending on the depths in order to ensure that the integrating cavity of the a-Sphere be completely filled at each of these depths during the ascent of the CTD.

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 and the two optodes installed on the buoy at 3 m and 10 m.

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

Irene Kopelmann was onboard in the frame of a collaboration with the Institut de la Mer de Villefranche (IMEV) and with the “*Musée d'Art moderne et d'Art contemporain*” (MAMAC) of Nice. She is an artist based in Amsterdam whose work explores the relationship between science and art.

Cruise Summary

The BOUSSOLE cruise (March 18th to 20th) was cancelled because of the bad weather. Fortunately, it was decided to perform some BOUSSOLE operations during the MOOSE DYFAMED cruise which took place the day before, in order to anticipate the cancelling of the cruise according to the weather forecasts.

Sunday 17 March 2019

The sea state was smooth in the morning and slight in the afternoon with a gentle breeze. The sky was overcast and the visibility was good. Firstly, 3 C-OPS profiles were performed at the BOUSSOLE site but the last one was eliminated because clouds appeared during the acquisition and sky conditions became not optimal (unstable irradiance). Then, a Secchi disk and 2 CTD casts with water sampling were performed at the BOUSSOLE site. For the second cast, a cap was put on the Hydrosat-6 for dark measurements. Then, operations for MOOSE program were completed at the DYFAMED station before returning to the Nice harbour.

Monday 18 March 2019

Bad weather prevented departure from the Nice harbour.

Tuesday 19 March 2019

Bad weather prevented departure from the Nice harbour.

Wednesday 20 March 2019

Bad weather prevented departure from the Nice harbour.

Pictures taken during this cruise can be found at:

<https://photos.app.goo.gl/3CnEDDk36PhizLLn7>

Data from the BOUSSOLE cruises and buoy are available at:

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

Cruise Report

Sunday 17 March 2019 (UTC)

People on board: Emilie Diamond, Céline Dimier, Irene Kopelmann (artist), Frank Petit and Eduardo Soto Garcia.

0645 Departure from the Nice harbour.
1000 Arrival at the BOUSSOLE site.
1005 C-OPS 01, 02, 03.
1100 CTD 01, 400 m with water sampling at 400, 200, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m for HPLC and a_p .
1110 Secchi disk 01, 11 m.
1210 CTD 02, 50 m with water sampling at 10 and 5 m for TSM, TA/TC and O_2 (with cap on HS-6).
1220 Departure to DYFAMED site.
1245 Arrival to DYFAMED site.
1250 Zooplankton nets x 2, 100 and 200 m.
1335 CTD MOOSE 129, 2350 m with water sampling.
1525 Departure to the Nice harbour.
1815 Arrival to the Nice harbour.

Monday 18 March 2019

Bad weather prevented departure from the Nice harbour.

Tuesday 19 March 2019

Bad weather prevented departure from the Nice harbour.

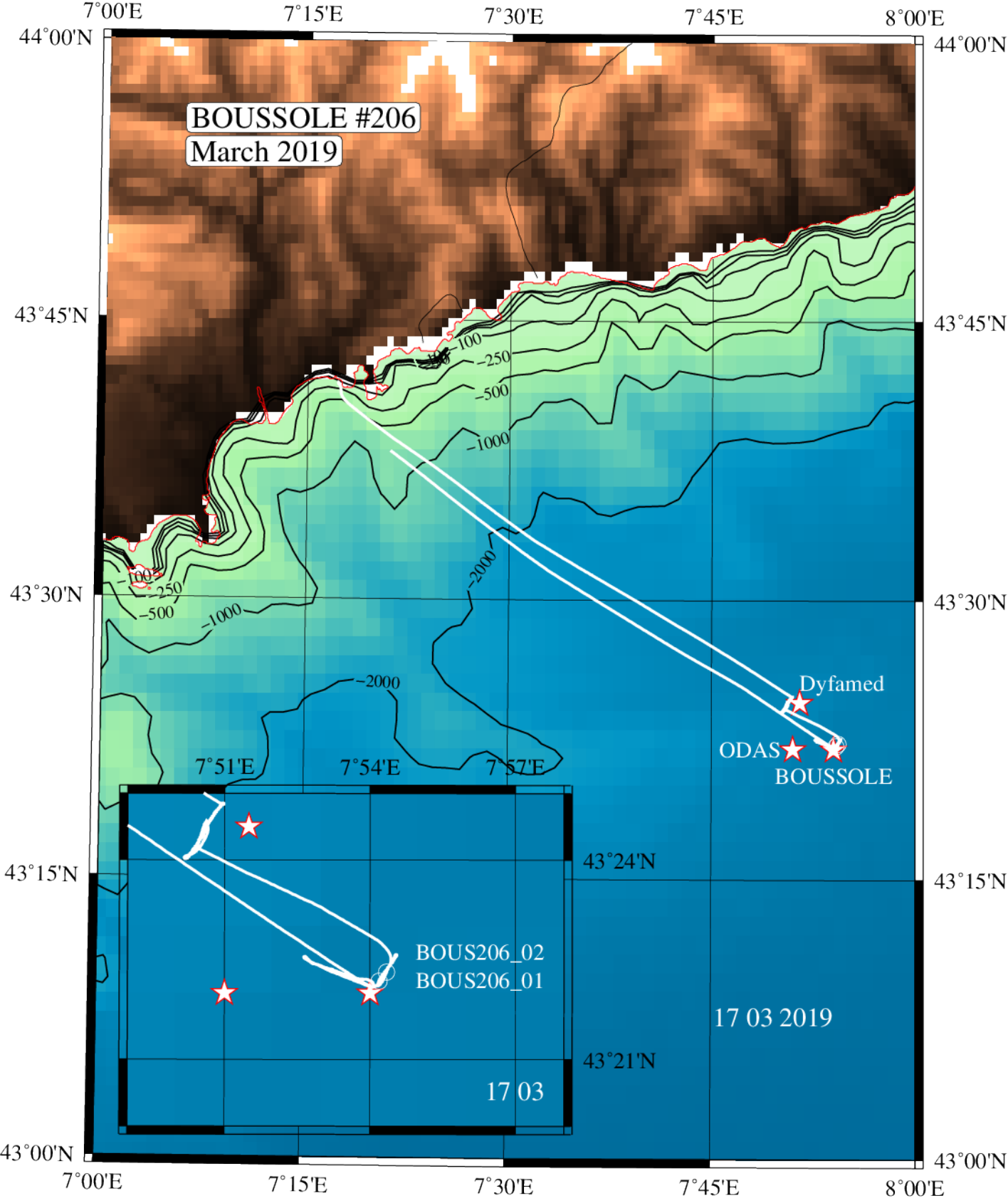
Wednesday 20 March 2019

Bad weather prevented departure from the Nice harbour.

Problems identified during the cruise

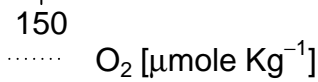
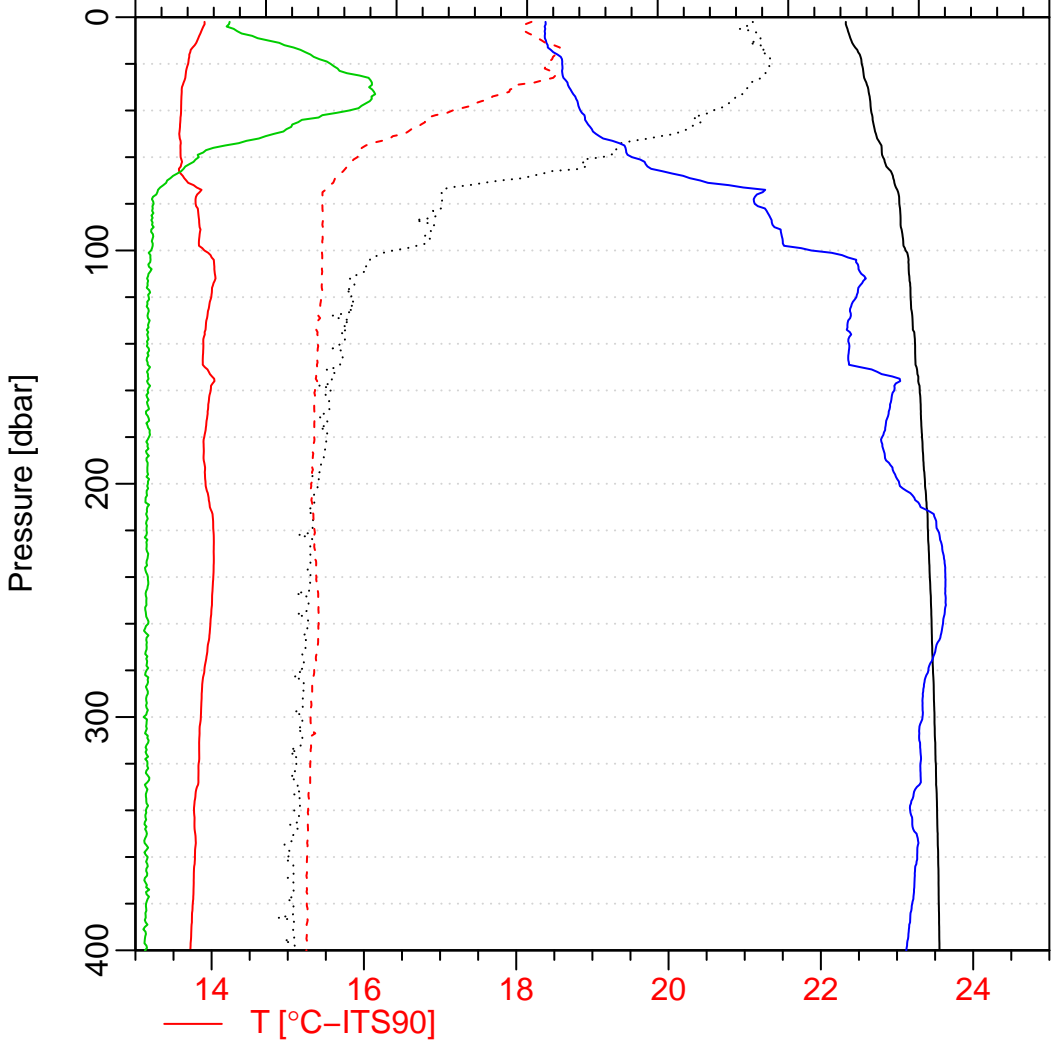
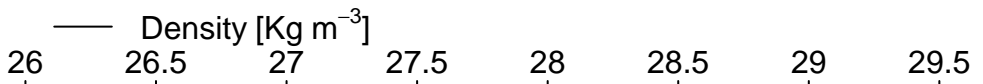
- During the CTD 02 cast, the IOP package was unfortunately not turned on. It was the cast with a cap on the HS-6. So there will not be dark measurements of the backscattering meter acquired during this cruise.
- Diving and maintenance operations of the buoy were not carried out because of the bad weather.
- C-OPS measurements were not optimal for this cruise because of the bad sky conditions during the acquisition: the sky was overcast with unstable irradiance. Some C-OPS profiles had to be stopped during the acquisition and the third profile was eliminated because of the instability of irradiance.

Appendices



bous206_01

Date = 17/03/2019
Heure debut [TU] = 11:07
Longitude = 007 54.188 E
Latitude = 43 22.175 N



bous206_02

Date = 17/03/2019
Heure debut [TU] = 12:10
Longitude = 007 54.342 E
Latitude = 43 22.316 N

