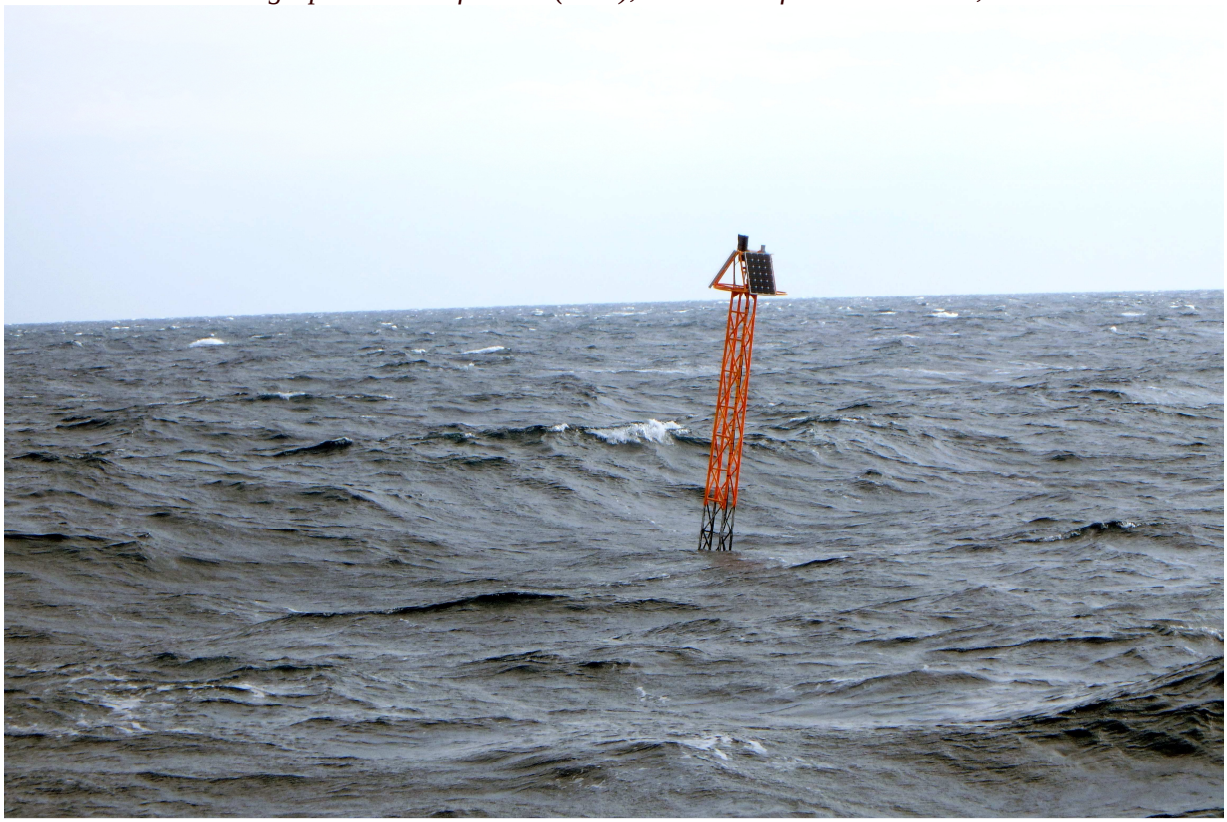
BOUSSOLE Monthly Cruise Report

Cruise 192
February 17-21, 2018

Duty Chief: Melek Golbol (golbol@obs-vlfr.fr)
Vessel: R/V Téthys II
(Captain: Vncent Le Duvéhat)

Science Personnel: Guillaume De Liège, Emilie Diamond, Beat Gasser, Melek Golbol, Roberta Hansman, David Luquet, Didier Robin and Eduardo Soto Garcia.

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



A view of the upper superstructure of the BOUSSOLE buoy in a rough sea.

BOUSSOLE project

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

February 28, 2018

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

European Space Agency

Centre National d'Etudes Spatiales, France

Centre National de la Recherche Scientifique, France

Sorbonne Université, France

Observatoire Océanologique de Villefranche/mer, France

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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 0.2µm 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 pCO_2 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

No additional operations.

Cruise Summary

Bad weather prevented the work at the BOUSSOLE site during all of the days allocated to the BOUSSOLE cruise. However, the PROFREMI cruise was organized by IAEA Environment Laboratories (International Atomic Energy Agency – Monaco) two days before at the DYFAMED site. During this cruise four CTD casts were performed with our CTD. So we took advantage of this cruise to have hydrological data close to the BOUSSOLE site for this month.

Saturday 17 February 2018

This day was programmed for the PROFREMI cruise. 3 CTD casts were performed at the DYFAMED site (43°25 N, 7°52 E).

Sunday 18 February 2018

This day was programmed for the PROFREMI cruise. 1 CTD cast was performed at the DYFAMED site.

Monday 19 February 2018

The first day of the BOUSSOLE cruise, bad weather prevented departure from the Nice harbour.

Tuesday 20 February 2018

The second day of the BOUSSOLE cruise, we went to the BOUSSOLE site but the bad weather did not allowed us to work. It was not predicted by the weather forecasts. So, when arrived at BOUSSOLE, only the external state of the buoy could be checked and pictures were taken from the boat before returning to the Nice harbour.

Wednesday 21 February 2018

The last day, bad weather prevented departure from the Nice harbour.

Pictures taken during this cruise can be found at:
https://photos.app.goo.gl/THPPIAcxIWY0ZrAr2

Data from the BOUSSOLE cruises and buoy are available at:
http://www.obs-vlfr.fr/Boussole/html/boussole_data/login_form.php

Cruise Report

Saturday 17 February 2018 (UTC)

People on board: Beat Gasser (IAEA), Roberta Hansman (IAEA)

0925 CTD 01, 1000 m, DYFAMED site.
1720 CTD 02, 160 m, DYFAMED site.
1925 CTD 03, 300 m, DYFAMED site.

Sunday 18 February 2018 (UTC)

People on board: Beat Gasser (IAEA), Roberta Hansman (IAEA)

0316 CTD 04, 2390 m, DYFAMED site.

Monday 19 February 2018

Bad weather prevented departure from the Nice harbour.

Tuesday 20 February 2018

People on board: Guillaume De Liège, Emilie Diamond, Melek Golbol, David Luquet, Didier Robin and Eduardo Soto Garcia.

0625 Departure from the Nice harbour.
0945 Arrival at the BOUSSOLE site: no work possible.
Check of the upper superstructure of the buoy and pictures.
0955 Departure to the Nice harbour.
1430 Arrival at the Nice harbour.

Wednesday 21 February 2018

Bad weather prevented departure from the Nice harbour.

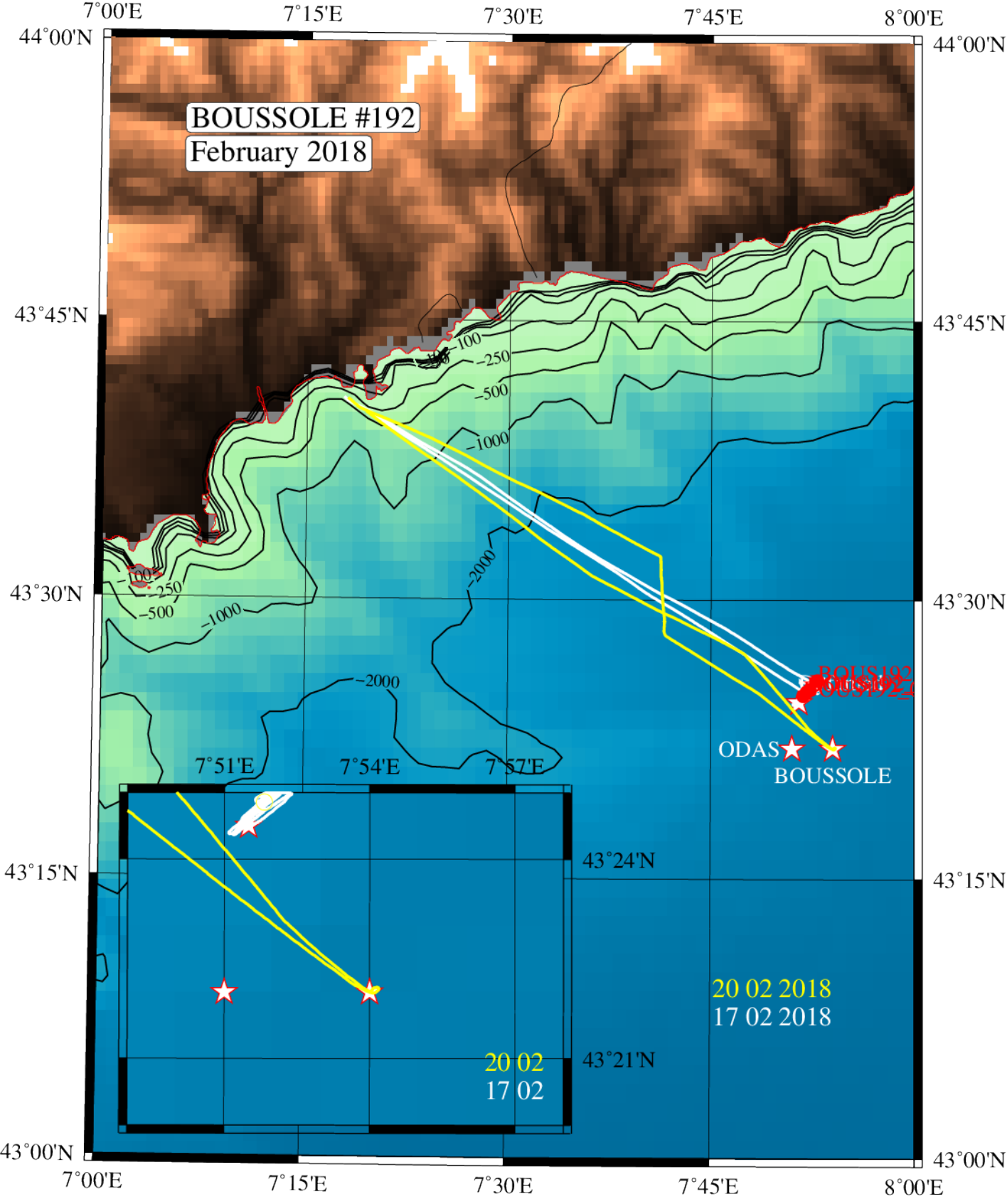
Problems identified during the cruise

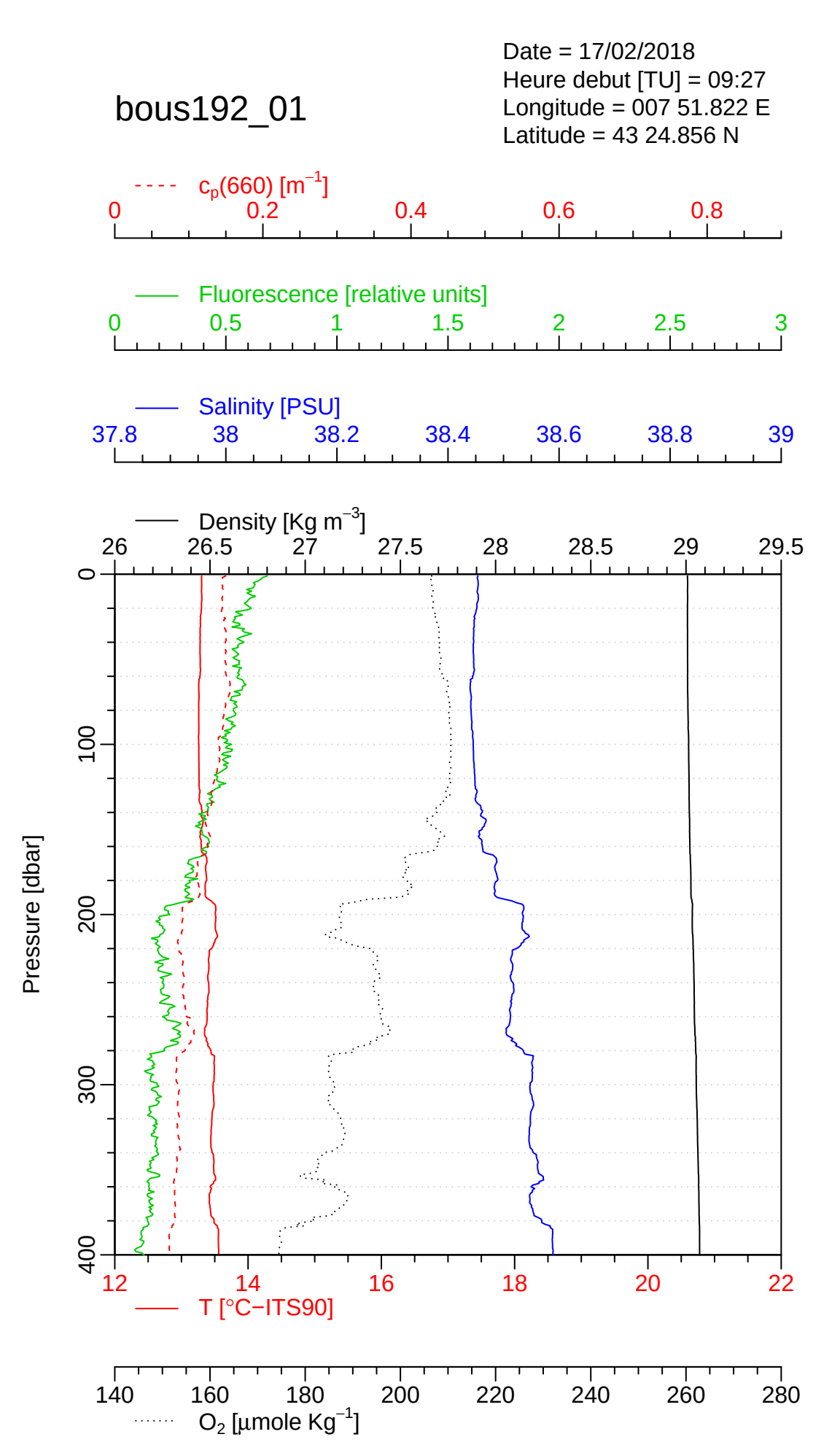
The bad weather did not allow us to work at the BOUSSOLE site. But CTD casts which were performed during another cruise at the DYFAMED site two days before, are available. There are no data for the other parameters.

Appendices

Cruise Summary Table for Boussole 192

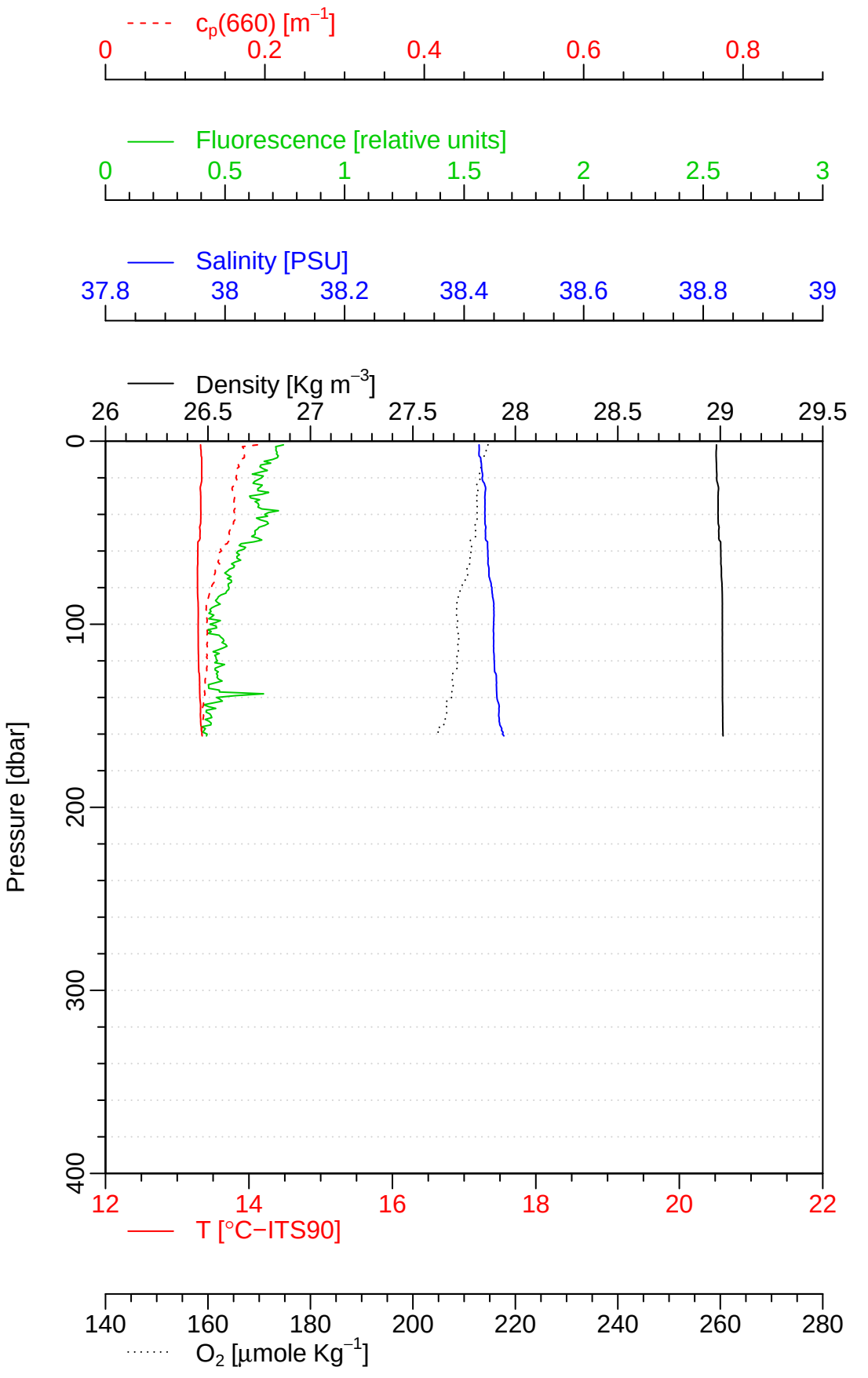
Date	Black names	Profile names	CTD notées	Other sensors	Start Time	Duration	Depth max	Latitude (N)		longitude					Weather							Sea		
	(file ext: ".raw")	(file extension: ".raw")			GMT (hour.min)	(min.sec)	(meter)	(Degree)	(Minute)	(Degree)	(Minute)	Sky	Clouds	Quantity (#/8)	Wind sp. (kn)	Wind dir.	Atm. Pressure (hPa)	Humidity (%)	Visibility	T air	T water	Sea	Swell H (m)	Swell dir.	Whitecaps
17/02/18			BOUS192_01		09:27	54:00	1000	43	24.856	7	51.822	overcast		8	17	200	1021.0	91		10.7	13.80	moderate			
			BOUS192_02		17:22	17:00	160	43	25.075	7	52.096	overcast		8	10	188	1017.0	92		12.3	13.80	slight			
			BOUS192_03		19:25	23:00	300	43	25.193	7	52.303	night		8	14	228	1016.3	91		13.0	13.90	smooth			
18/02/18			BOUS192_04		03:16	02:02:00	2390	43	25.669	7	52.888	night		8	19	79	1013.6	76		11.4	13.80	moderate			
19/02/18	Bad weather																							
20/02/18	Bad weather																							
21/02/18	Bad weather																							


BOUSSOLE #192
February 2018
7°00'E
7°15'E
7°30'E
7°45'E
8°00'E
44°00'N
43°45'N
43°30'N
43°15'N
43°00'N
100
250
500
1000
2000
ODAS
BOUSSOLE
7°51'E
7°54'E
7°57'E
43°24'N
43°21'N
20 02 2018
17 02 2018
20 02
17 02


bous192_01
Date = 17/02/2018
Heure debut [TU] = 09:27
Longitude = 007 51.822 E
Latitude = 43 24.856 N
cp(660) [m−1]
0
0.2
0.4
0.6
0.8
Fluorescence [relative units]
0
0.5
1
1.5
2
2.5
3
Salinity [PSU]
37.8
38
38.2
38.4
38.6
38.8
39
Density [Kg m−3]
26
26.5
27
27.5
28
28.5
29
29.5
Pressure [dbar]
0
100
200
300
400
12
14
16
18
20
22
T [°C−ITS90]
140
160
180
200
220
240
260
280
O2 [µmole Kg−1]

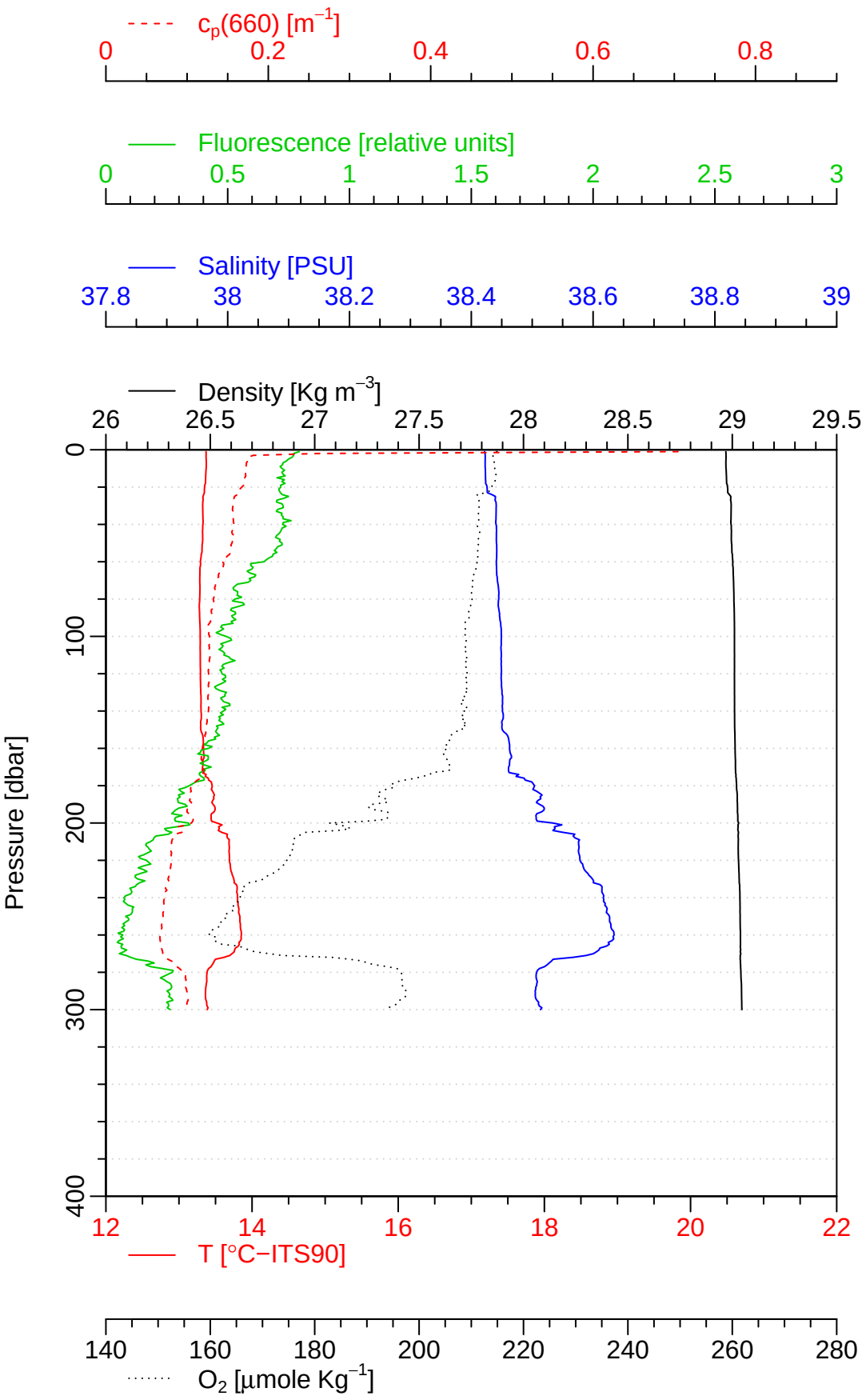
bous192_02

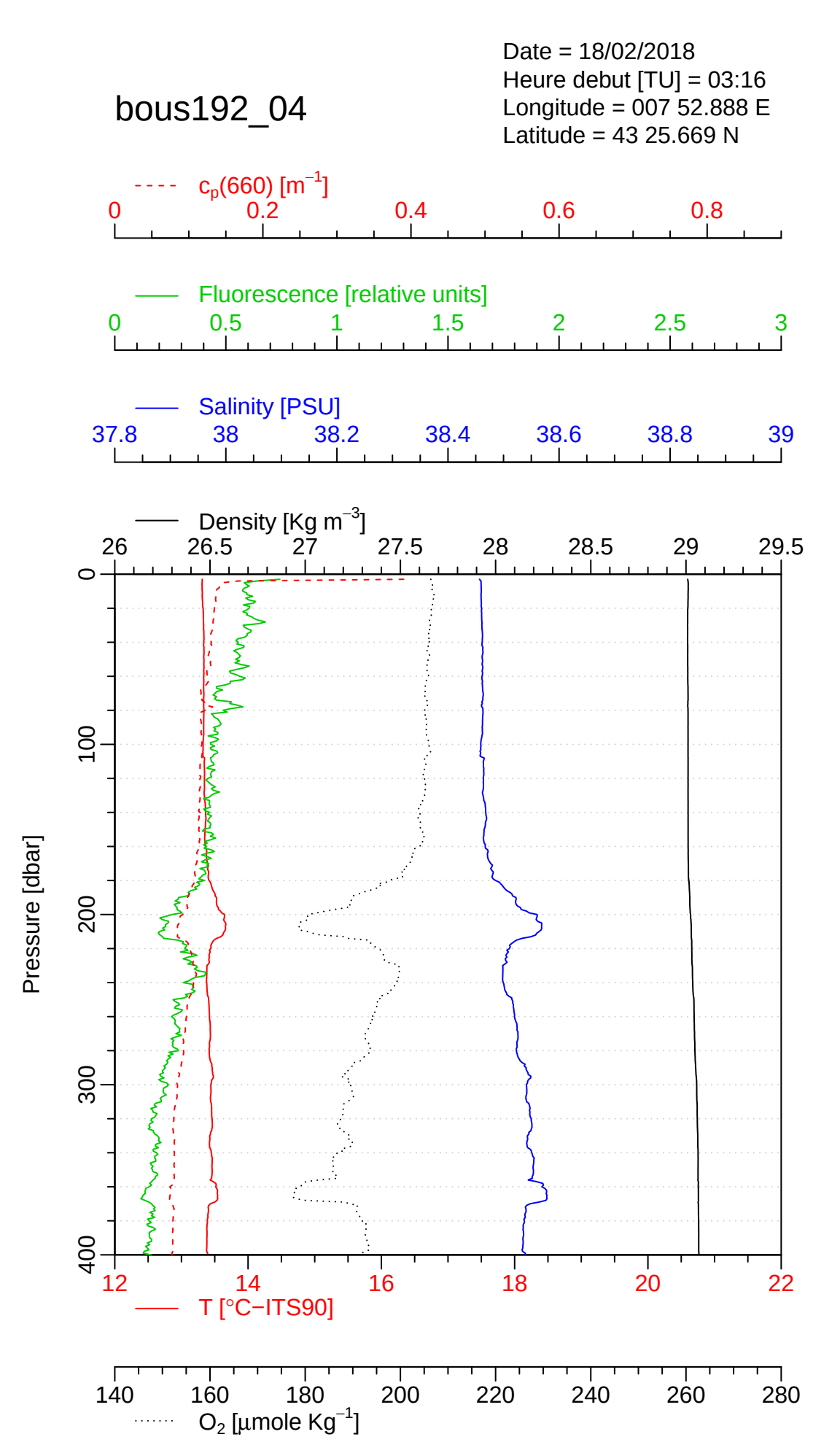
Date = 17/02/2018
Heure debut [TU] = 17:22
Longitude = 007 52.096 E
Latitude = 43 25.075 N



bous192_03

Date = 17/02/2018
Heure debut [TU] = 19:25
Longitude = 007 52.303 E
Latitude = 43 25.193 N




bous192_04
Date = 18/02/2018
Heure debut [TU] = 03:16
Longitude = 007 52.888 E
Latitude = 43 25.669 N
cp(660) [m−1]
0
0.2
0.4
0.6
0.8
Fluorescence [relative units]
0
0.5
1
1.5
2
2.5
3
Salinity [PSU]
37.8
38
38.2
38.4
38.6
38.8
39
Density [Kg m−3]
26
26.5
27
27.5
28
28.5
29
29.5
Pressure [dbar]
0
100
200
300
400
12
14
16
18
20
22
T [°C−ITS90]
140
160
180
200
220
240
260
280
O2 [µmole Kg−1]