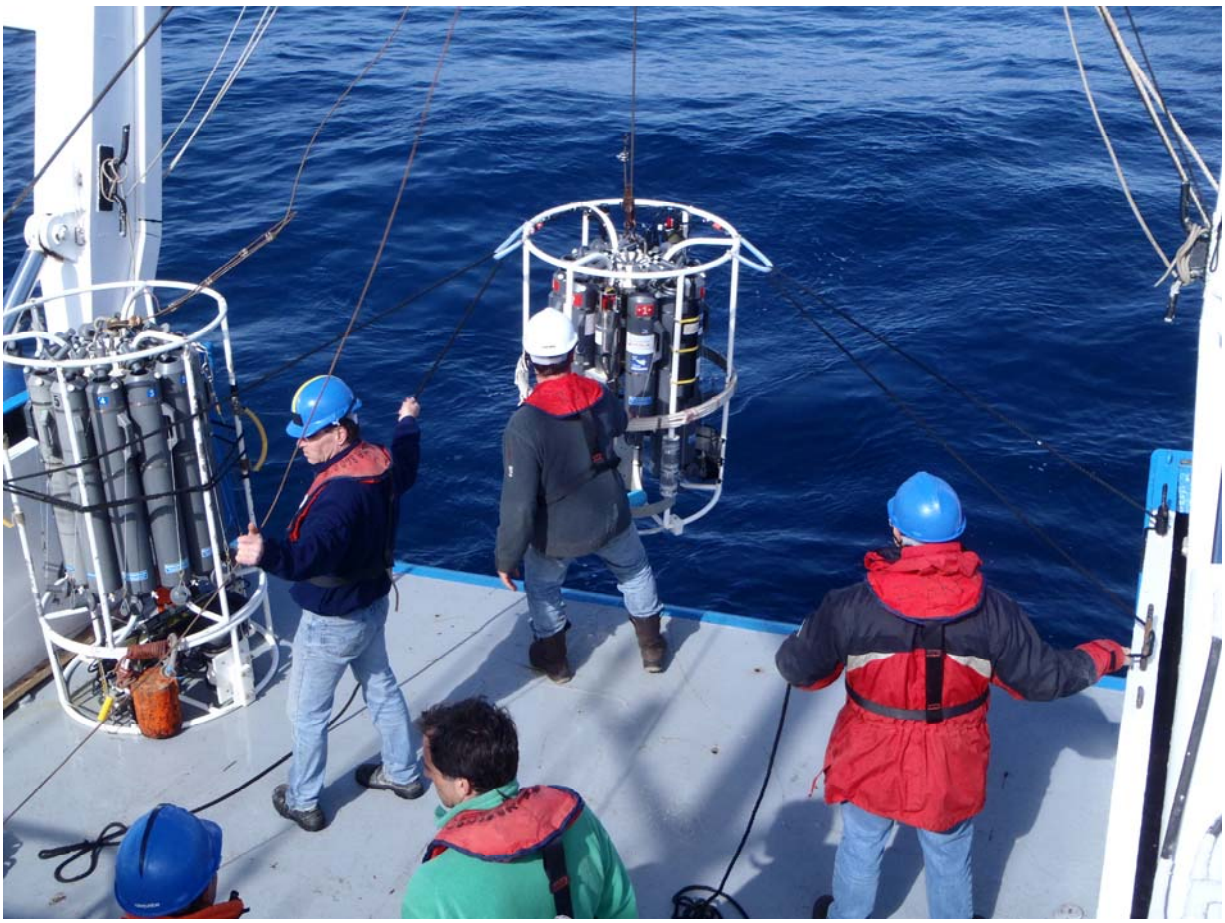
BOUSSOLE Monthly Cruise Report

Cruise 133
March 12 - 16, 2013

Duty Chief: Emilie Diamond (diamond@obs-vlfr.fr)
Vessel: R/V Téthys II
(Captain: Renaud Le Bourhis)

Science Personnel: Emilie Diamond, Melek Golbol, Grigor Obolensky and Marc Picheral.

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



Deployment of a CTD Rosette for test before deployment on Tara expeditions.

BOUSSOLE project

ESA/ESRIN contract N° 13226/10/I-NB

October 28, 2013

Foreword

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

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European Space Agency

Centre National d'Etudes Spatiales, France

National Aeronautics and Space Administration, USA

Centre National de la Recherche Scientifique, France

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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 Wetlabs CDOM fluorometer and a Chl fluorometer, an absorption-attenuation meter (Wetlabs AC9; from July 2002), and a backscattering meter (Wetlabs Eco-BB3, from June 2003). Additional instrumentation for measurement of inherent optical properties has been added from December 2011. The new package includes a hyperspectral absorption meter (Hobilabs a-sphere), a multispectral backscattering meter (Hobilabs Hydroscat-6) and a multispectral beam transmissometer (Hobilabs Gamma-4). The CDOM fluorometer, AC9 and Eco-BB3 have been withdrawn from the CTD package from March 2013.
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.

Operations that have to be performed in each cruise include:
- Collection and filtration of seawater samples for colored dissolved organic matter (from June 2005) and particulate organic carbon (from October 2011) analyses in the lab. Small quantities of seawater are to be fixed with glutaraldehyde for cytometric analysis (from December 2011).

- One CTD transect is performed between the BOUSSOLE site and the Port of Nice. This transect consists of six fixed stations on-route from BOUSSOLE (see map in appendix). Whenever feasible, this transect should be performed at a similar time for each cruise, in order to minimise the influence of possible diurnal variability.

- 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).

From 2013, the BOUSSOLE cruises are coupled with one day of operations by the DYFAMED program. This coupling aims at optimizing usage of shiptime and human resources. So for one day of each cruise, there will be one deep CTD cast with water sampling for oxygen, alkalinity and nutrients analysis at the DYFAMED site and also two vertical plankton nets (0-100 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

The optical measurements with AC9, CDOM fluorometer (from July 2002) and Eco-BB3 (from June 2003) were stopped from this cruise after one year of comparison with the "inherent optical properties" instruments package.

During the DYFAMED day, CTD cast using the CTD of Tara expeditions "Tara Ocean Polar Circle", which start in may 2013, were performed in order to test its functioning before the beginning of the expedition.

Cruise Summary

The first day was the DYFAMED cruise day. A deep CTD cast with water sampling was performed at the DYFAMED site, CTD and C-OPS tests were also performed.
The last four days, the BOUSSOLE cruise was cancelled because of damages on the Téthys II engine. The Téthys II had to return to “La Seyne-sur-mer” for repairs.

Tuesday 12 March 2013

The first day, the sea state was slight with a gentle breeze. The visibility was excellent.
When arriving at the BOUSSOLE site, it was observed that one of the buoy solar panel was damaged. Tara CTD tests were performed.
Then, 1 deep CTD cast with water sampling for the MOOSE cruise and 1 Secchi disk were performed. During the transit to Nice, Tara CTD tests were performed again and C-OPS tests were also performed.

Wednesday 13 March 2013

Cancelled because of damages on the Téthys II

Thursday 14 March 2013

Cancelled because of damages on the Téthys II

Friday 15 March 2013

Cancelled because of damages on the Téthys II

Saturday 16 March 2013

Cancelled because of damages on the Téthys II

Cruise Report

Tuesday 12 March 2013 (UTC)

People on board: Emilie Diamond, Melek Golbol, Grigor Obolensky and Marc Picheral.

0655	Departure from the Nice harbour.
1025	Arrival at the BOUSSOLE site.
1030	Tara CTD test: unsuccessful.
1040	One of the solar panel of the buoy was broken.
1045	Tara CTD test, 200 m.
1145	CTD MOOSE 62 (CTD 01), 2400 m with water sampling.
1325	Tara CTD test, 1000 m.
1400	Secchi disk 01 (15 m).
1410	Departure to the Nice harbour.
1545	Tara CTD test.
	C-OPS tests.
1630	Departure to the Nice harbour.
1810	Arrival at the Nice harbour.

Wednesday 13 March 2013

Cancelled because of damages on the Téthys II

Thursday 14 March 2013

Cancelled because of damages on the Téthys II

Friday 15 March 2013

Cancelled because of damages on the Téthys II

Saturday 16 March 2013

Cancelled because of damages on the Téthys II

Problems identified during the cruise

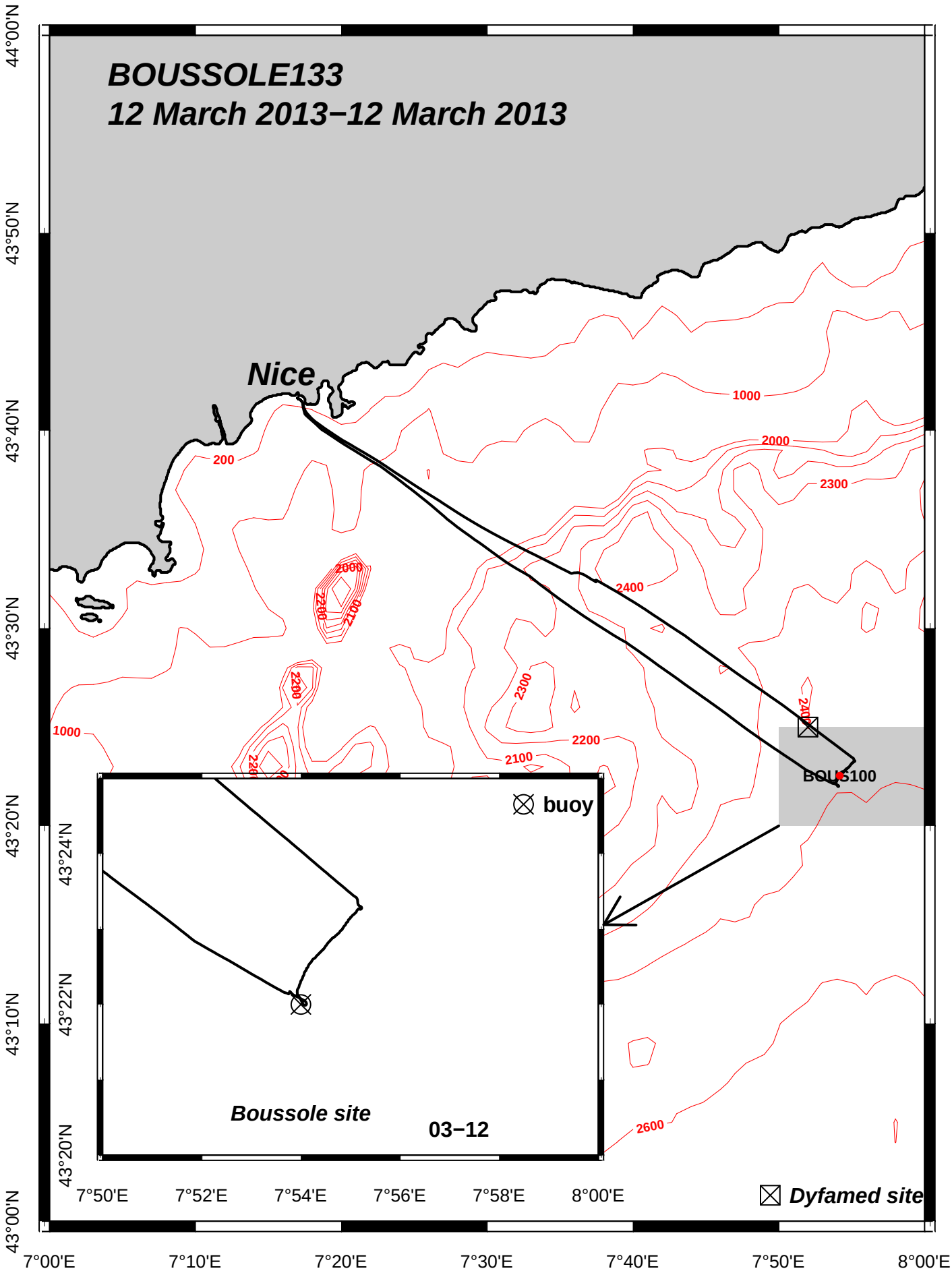
- The four days of the BOUSSOLE cruise were cancelled because of a mechanical failure of the Téthys II engine. The boat had to return to “La Seyne-sur-mer” in order to being repaired.

- One of the solar panel of the buoy was broken.

Appendices

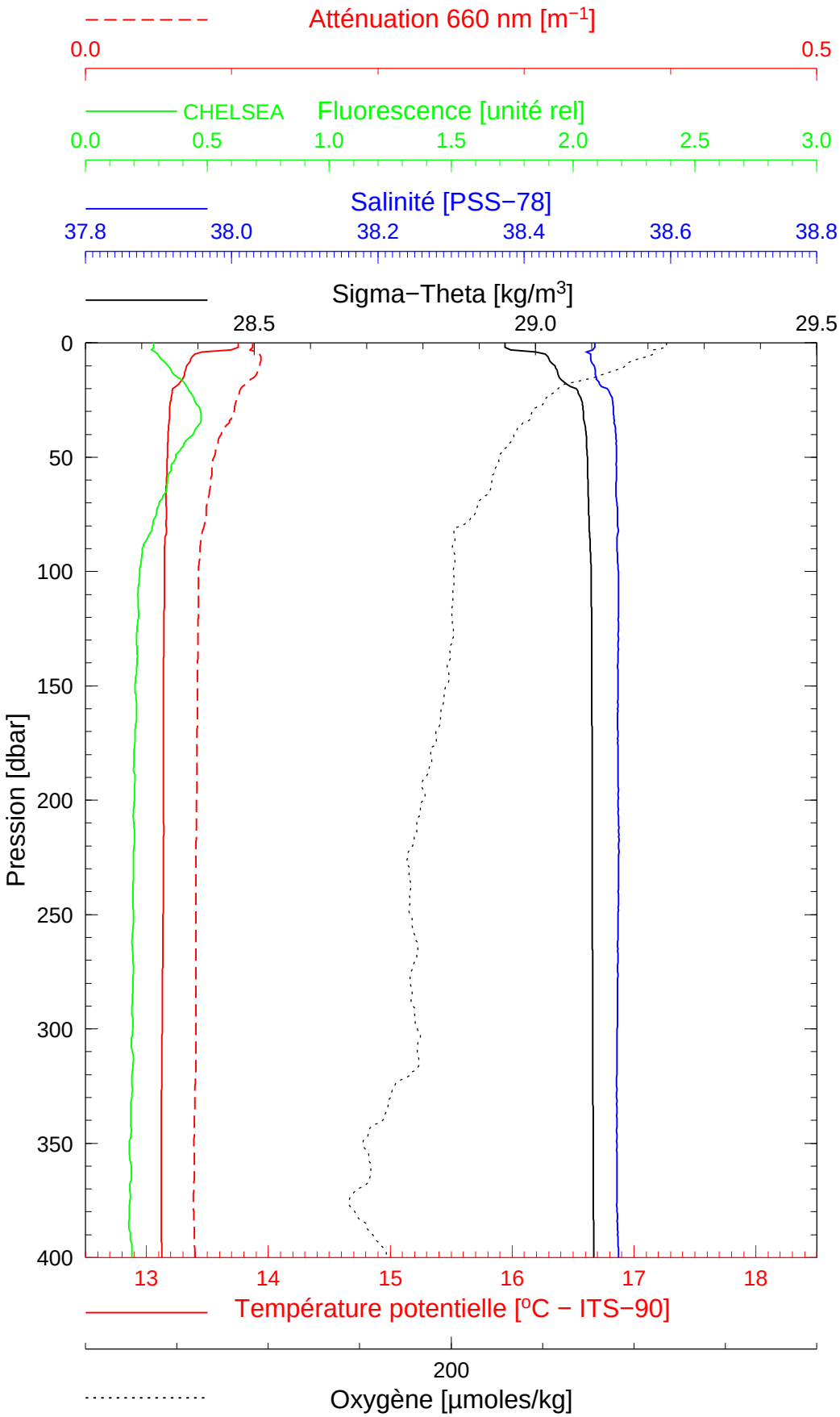
Cruise Summary Table for Boussole 133

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")	satellite overpass		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
12/03/13			CTDBOUS100		11:47	89:00	2400	43	22.540	7	54.181				9	110	997.5	78	excellent	13.3	13.8	moved			
				Secchi01	14:00	4:00	15	43	22	7	54								excellent						
13/03/13	cancelled because damages on the Téthys II																								
14/03/13	cancelled because damages on the Téthys II																								
15/03/13	cancelled because damages on the Téthys II																								
16/03/13	cancelled because damages on the Téthys II																								


BOUSSOLE133
12 March 2013−12 March 2013
Nice
200
1000
2000
2300
2400
2100
2200
BOUS100
buoy
Boussole site
03−12
Dyfamed site
44°00'N
43°50'N
43°40'N
43°30'N
43°20'N
43°10'N
43°00'N
43°24'N
43°22'N
43°20'N
7°00'E
7°10'E
7°20'E
7°30'E
7°40'E
7°50'E
8°00'E
7°50'E
7°52'E
7°54'E
7°56'E
7°58'E
8°00'E

BOUSSOLE 133 **12/03/2013** **BOUS130312_01**

BOUS100



Date *12/03/2013* *Latitude* *43°22.540 N*

Heure déb *11h 47min [TU]* *Longitude* *07°54.181 E*