Rapport interne LPO/15-25

UMR 6523 **Laboratoire de Physique des Océans**	**DELAYED MODE QUALITY CONTROL OF OVIDE ARGO DATA** **FLOAT WMO 6900491**	
Date : **28 octobre 2015**	Auteurs : **Lagadec Catherine** **Thierry Virginie** **Cabanes Cécile**	Archivage : **LPO**

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DELAYED MODE QUALITY CONTROL OF OVIDE ARGO DATA FLOAT WMO 6900491

Internal Report LPO 15-25

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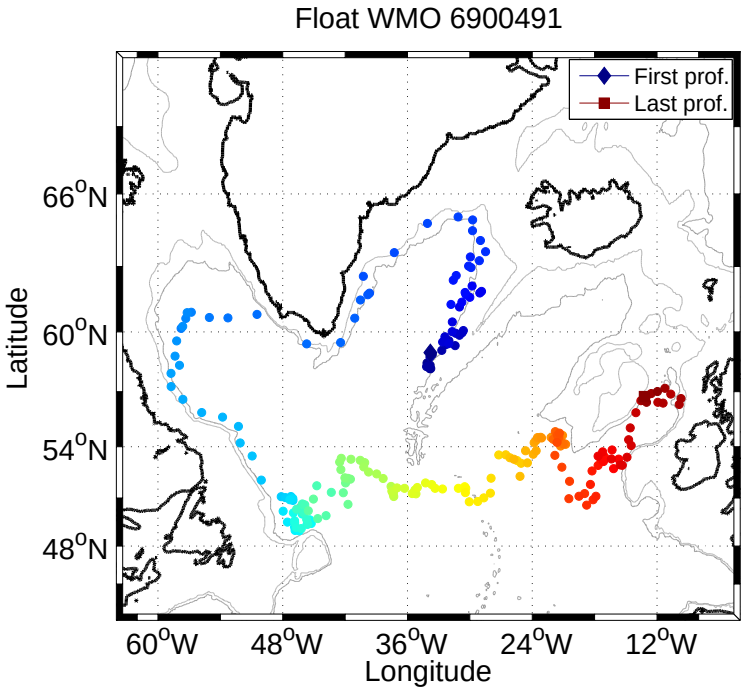
January 25, 2016



1 Presentation and DMQC summary

Number	Deployment (cycle OD) cycle OD	Last cycle 216
Provor WMO 6900491	18/06/08 9h41	
CTS3-07-S3-09	43.775 N 17.034 W	

Date of control	Float status	Last cycle
November 2010	Active	88
Coriolis transmission		9/12/10

Date of last control	Float status	Last cycle
October 2015	DEAD	31/05/14
Coriolis transmission		29/10/15

Table 1: Status of the float

Warning : Note that all the figures are plotted with the latest QC flag values (the modifications mentionned table 2 are taken into account).

1.1 QC flag checks and interesting profiles

Warning : the resolution is equal to 10 dbar from the surface to 800 dbar, then 25 dbar from 500 to 2000 dbar. Salinity data between 0 and 5 dbar are suspicious because they are acquired when the pump of the CTD is turned off.

1.2 Salinity correction from the OW method

According to the results from the OW method and to the comparison between the first profile and shipboard CTD measurements done during the float deployment, the float salinity is obviously biaised. There is a constant negative offset in salinity around of 0.010 PSU. It is thus necessary to correct the data of all cycles. Corrections are deduced from the configuration 129 of the OW method.

2 Data

Cycle	Para-meter	Vertical level	Old flag	New flag	Comments	Coriolis transmiss
Cycle	Para-meter	Vertical level	Old flag	New flag	Comments	Coriolis transmiss
3,9	QC POSITION		4	1	good position	26/11/10
34	PSAL	around 1000 dbar	4	1	good value	26/11/10
40	PSAL,TEMP	10 values (bottom)	4	1	good values	26/11/10
41	PSAL,TEMP	all the profile	3	1	good profile	26/11/10
52	TEMP	136 and 146 dbar	4	1	good values	26/11/10
52	PSAL	146 dbar	4	1	good value	26/11/10
all cycles (except 0D)	PSAL	level 1 (where PRES inf. 7)	1	4	unstrustable data	30/11/10
all cycles (except 0D, 14A)	PSAL	level 2 (where PRES inf. 7)	1	4	unstrustable data	30/11/10
151	PSAL	41 to 84	1	4		21/10/15
151	TEMP	41,42,44-46,48,49,51,	4	1		21/10/15
		52,68,69,77-79,83,84	4	1		
181	TEMP	1-4,7,8,11-14	4	1		21/10/15
181	PSAL	5,6,9,10	1	4		21/10/15

Table 2: Float 6900491. Summary of the modifications of the real-time QC flags and of the interesting or suspicous data.

OW CONFIGURATION	129
CONFIG_MAX_CASTS	250
MAP_USE_PV	1
MAP_USE_PV_ELLIPSE	1
MAP_USE_FACTEUR	1
MAPSCALE_LONGITUDE_LARGE	3.2
MAPSCALE_LONGITUDE_SMALL	0.8
MAPSCALE_LATITUDE_LARGE	2
MAPSCALE_LATITUDE_SMALL	0.5
MAPSCALE_PHI_LARGE	0.1
MAPSCALE_PHI_SMALL	0.02
MAPSCALE_AGE	0.69
MAP_P_EXCLUDE	500
MAP_P_DELTA	250
Reference data base	CTD and ARGO

Table 3: Parameters of the OW method.

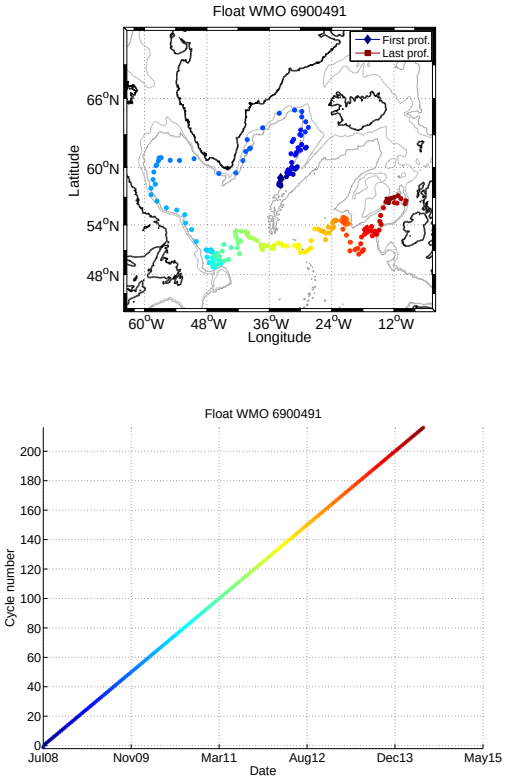


Figure 1: Profiles position and relationship between cycle number, date and color.

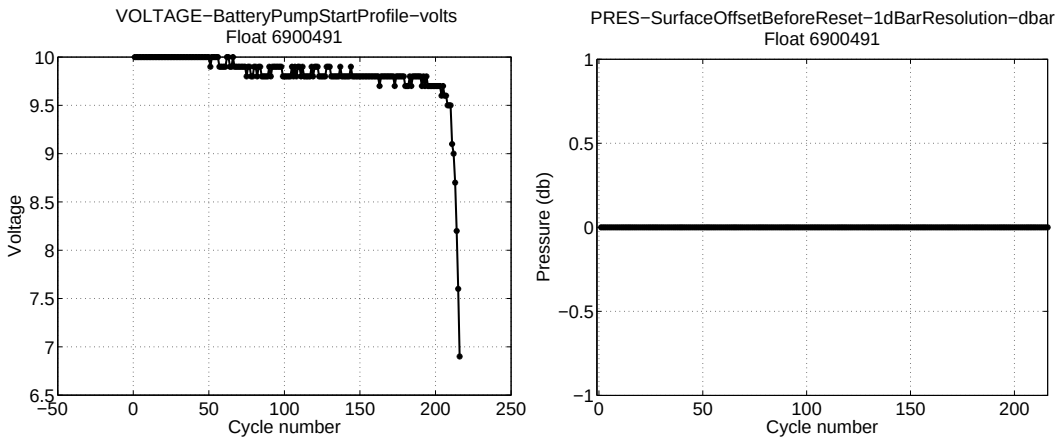


Figure 2: Battery Voltage and Surface Pressure

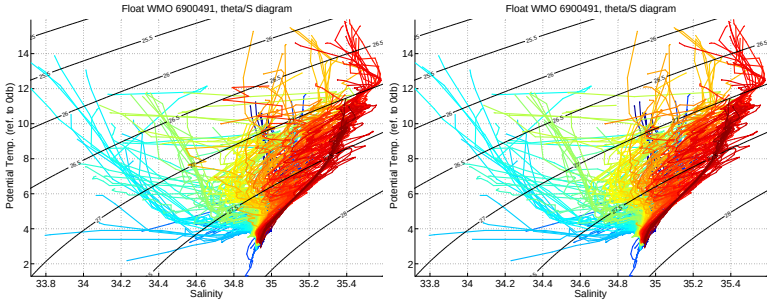


Figure 3: θ/S diagrams. (Left panel) Flags are not taken into account. (Right panel) Quality flags are taken into account.

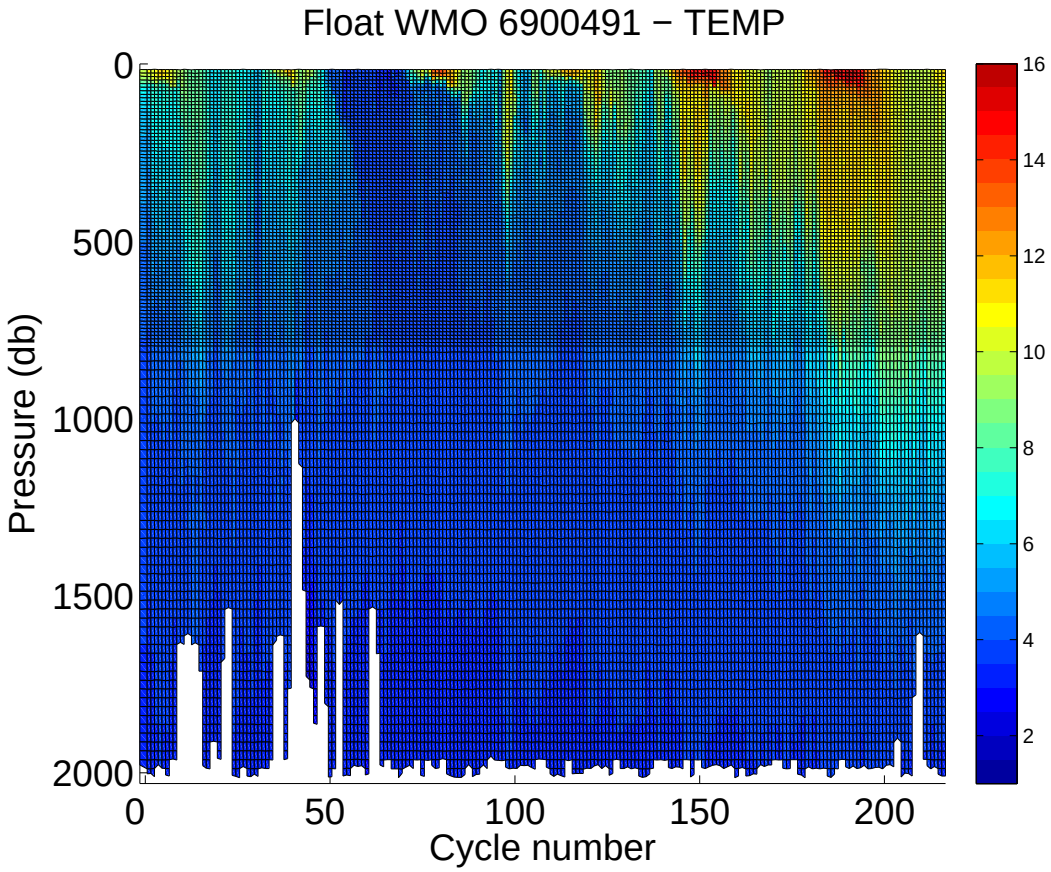


Figure 4: Temperature section along the float trajectory. Quality flags are not taken into account.

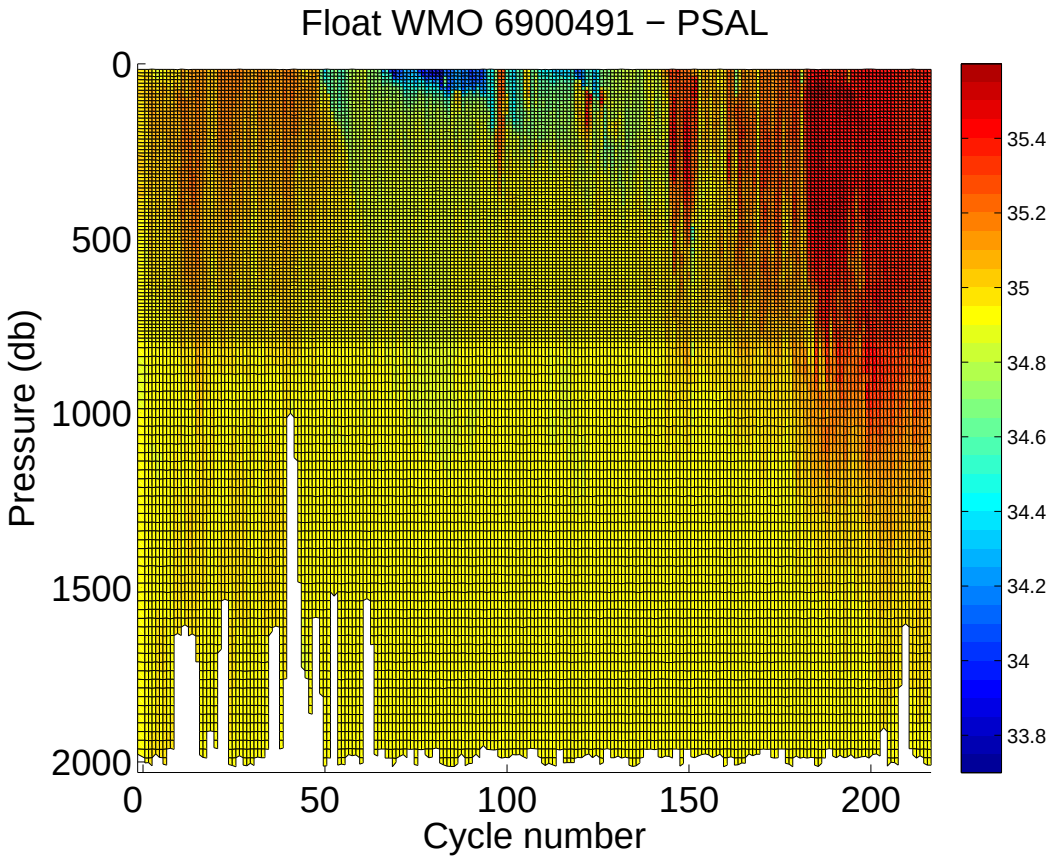


Figure 5: Salinity section along the float trajectory. Quality flags are not taken into account.

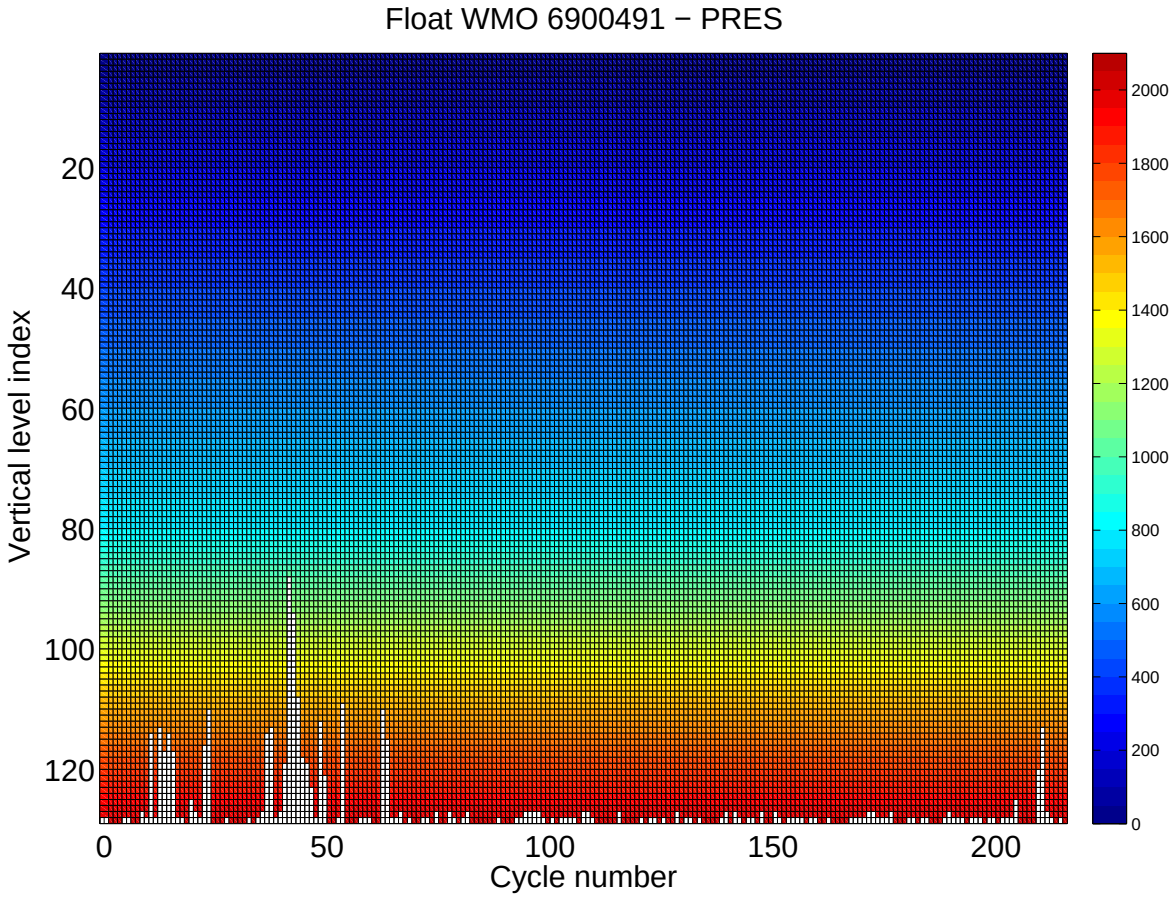


Figure 6: Pression as fonction of cycle number and vertical level index along the float trajectory. Quality flags are taken into account.

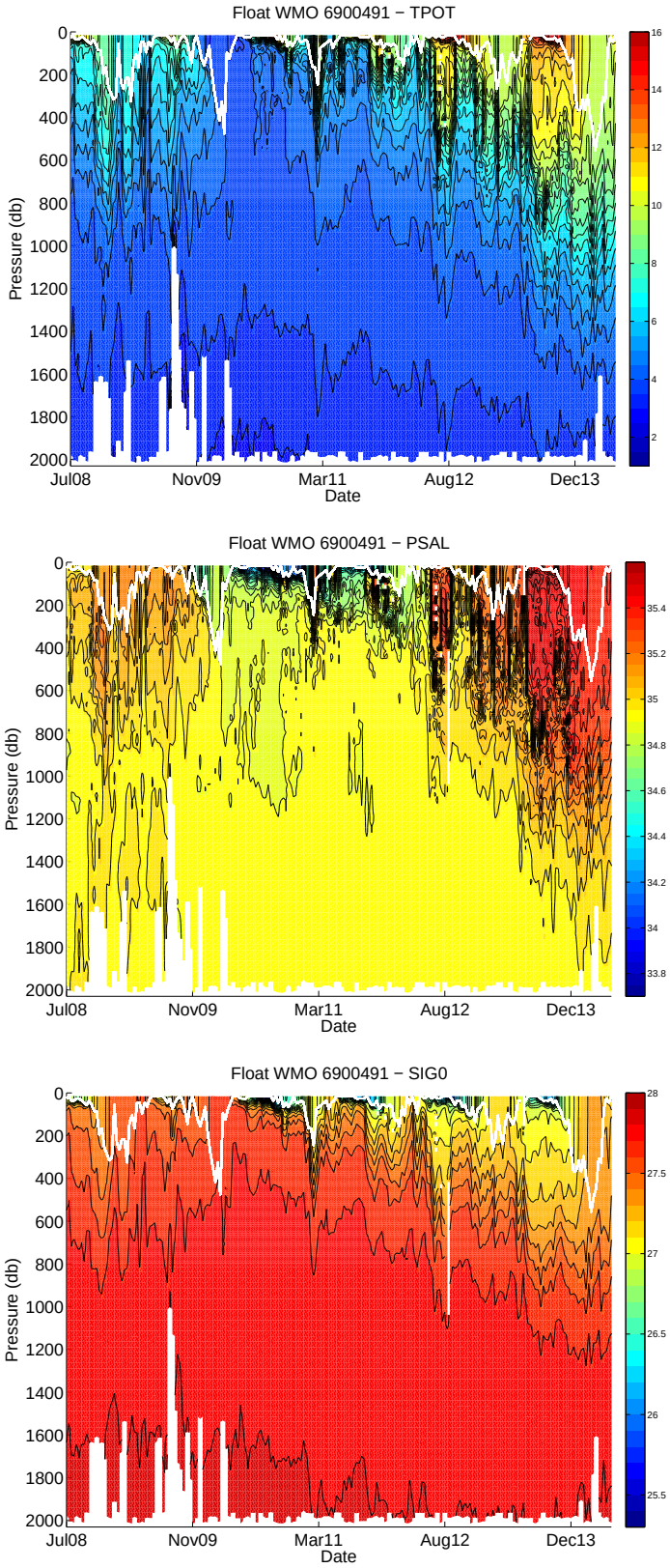


Figure 7: Potential temperature, salinity and potential density sections along the float trajectory (interpolated on standard levels). Quality flags are taken into account.

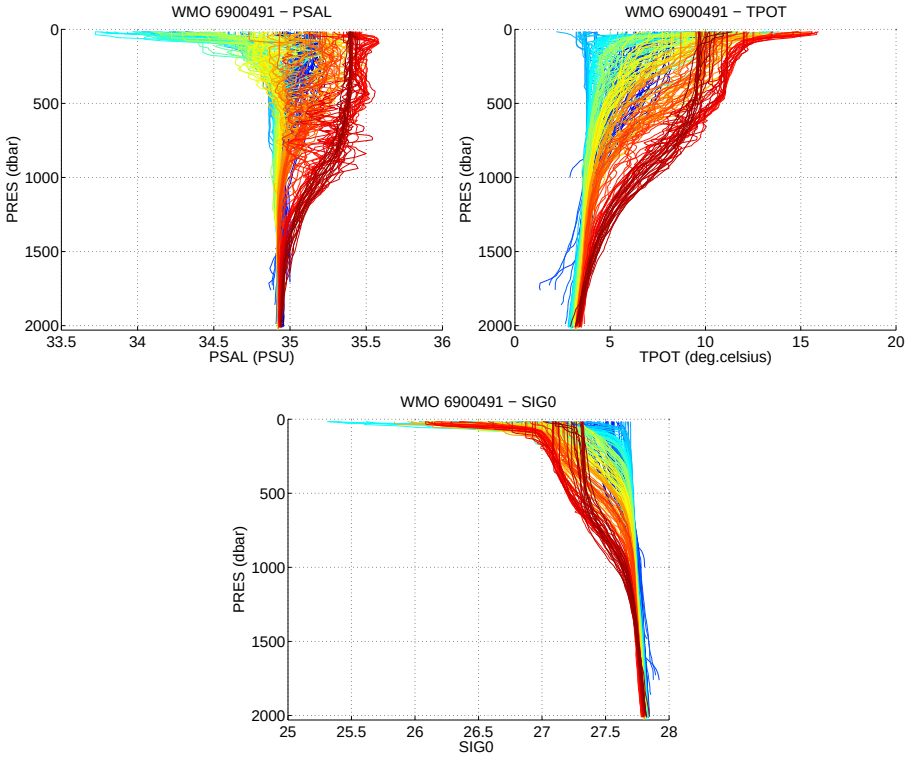


Figure 8: Salinity, Potential Temperature and Potential Density profiles. Quality flags are taken into account.

3 Comparison to the OVIDE 2008 nearest CTD profile

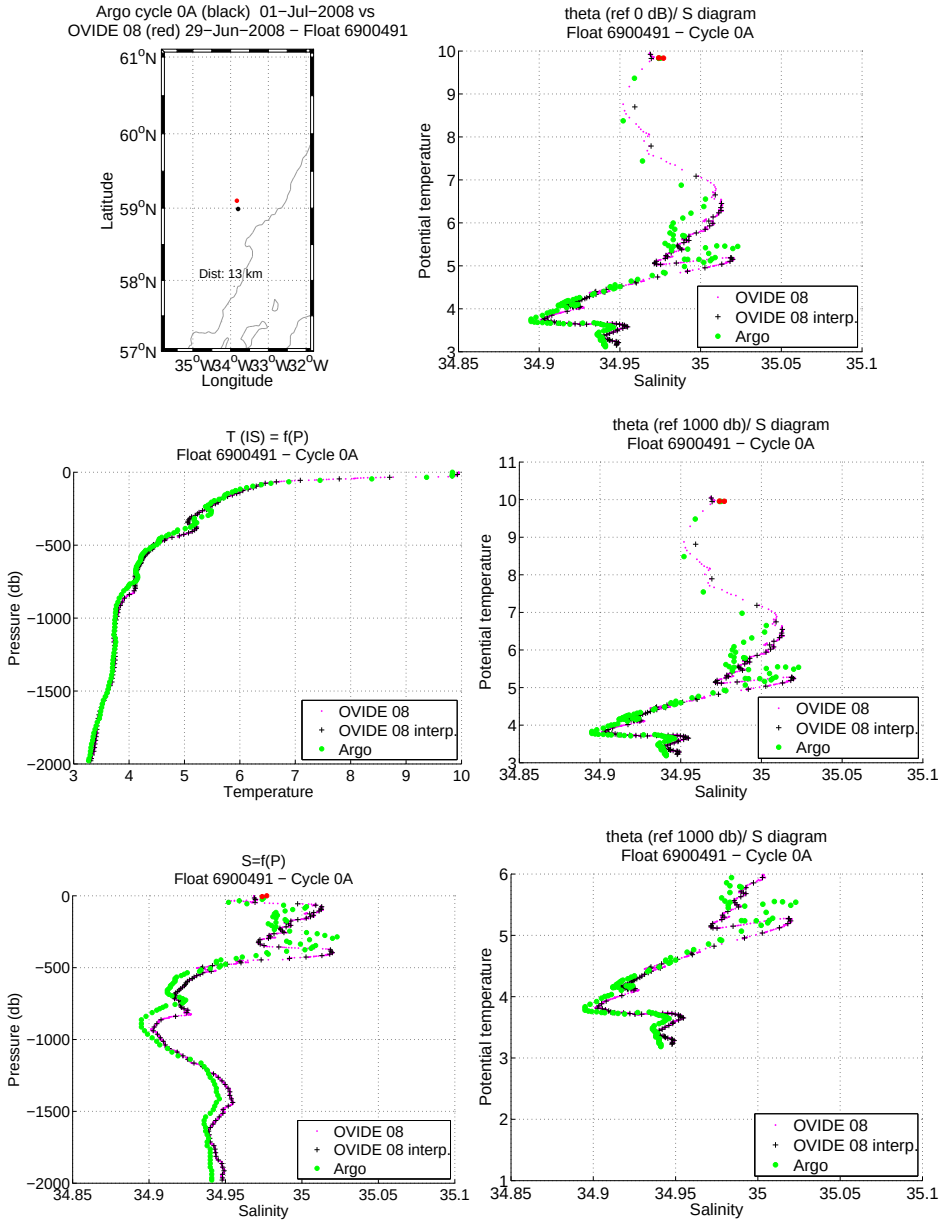


Figure 9: Comparison of the cycle 0A with the nearest CTD profile done after the float deployment.

4 Cycle 40 - Comparison to the nearest historical CTD profiles

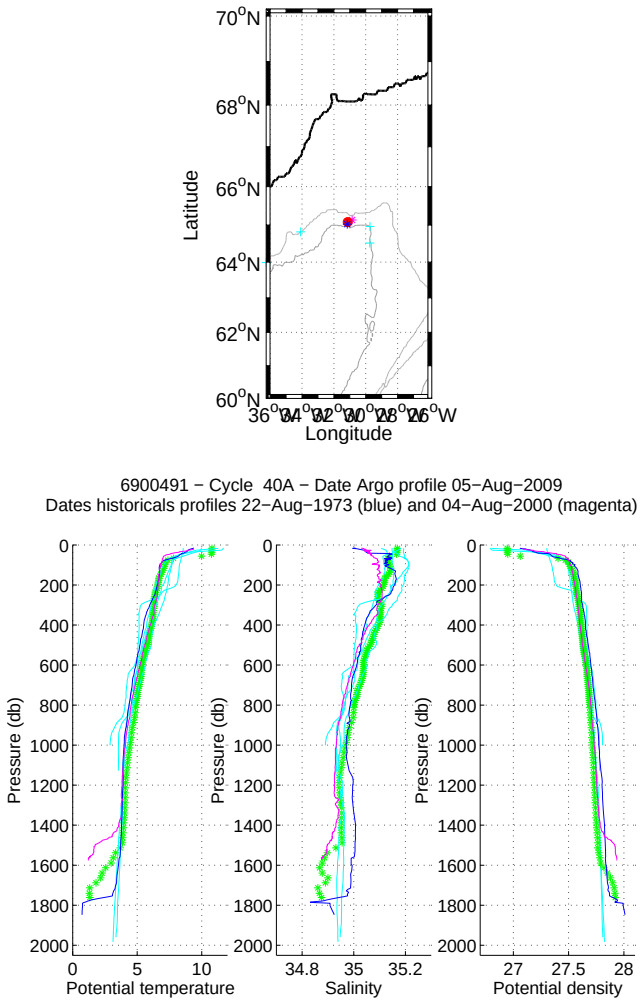


Figure 10: Flotteur 6900491, cycle 40. Upper panel: Position of the analysed CTD profile (red) and of the nearest CTD profiles (black). The nearest CTD profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels: Temperature, salinity and potential density as function of pressure for the analysed CTD profile (stars) and for the nearest CTD profile in time (magenta line) and for the nearest CTD profile in space (blue line). The color of the analysed CTD profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4).

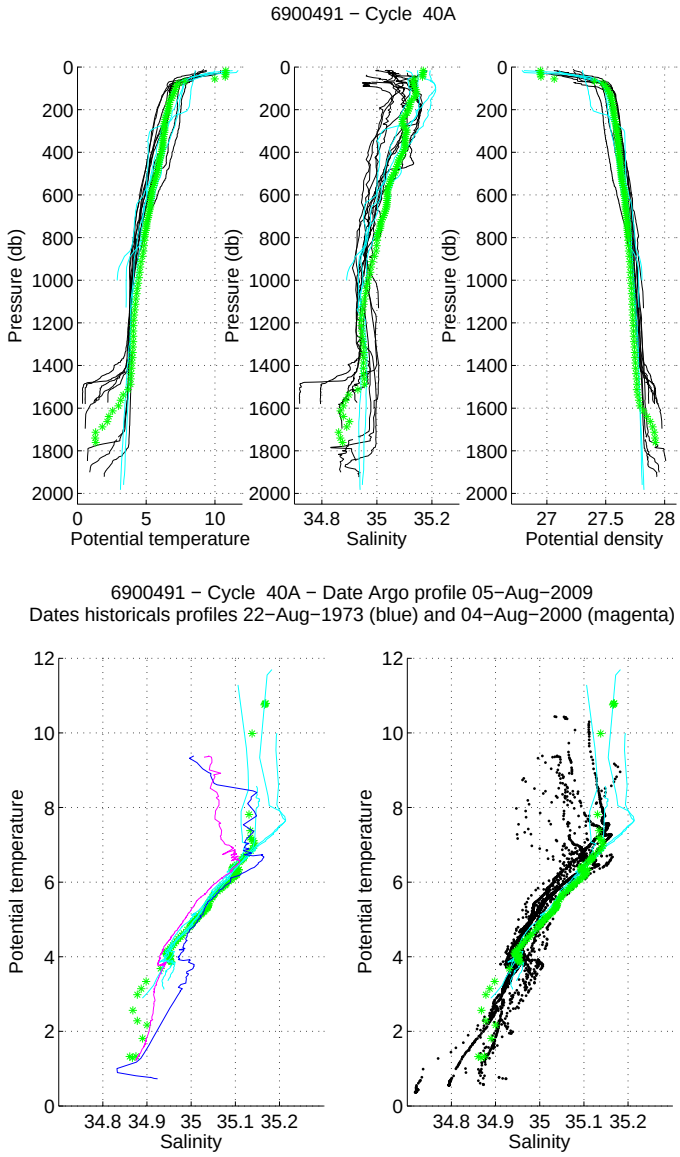


Figure 11: Float 6900491, cycle 40. The analysed CTD profile (stars) is compared to the nearest CTD profiles (black line) and to two specific profiles: the nearest CTD profile in time (magenta) and the nearest CTD profile in space (blue). The color of the analysed CTD profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4). (Upper panels) Temperature (left panel), salinity (middle panel) and potential density (right panel) as function of pressure. (Lower panels) θ/S diagrams.

5 Cycle 40A - Comparison to the nearest ARGO profiles

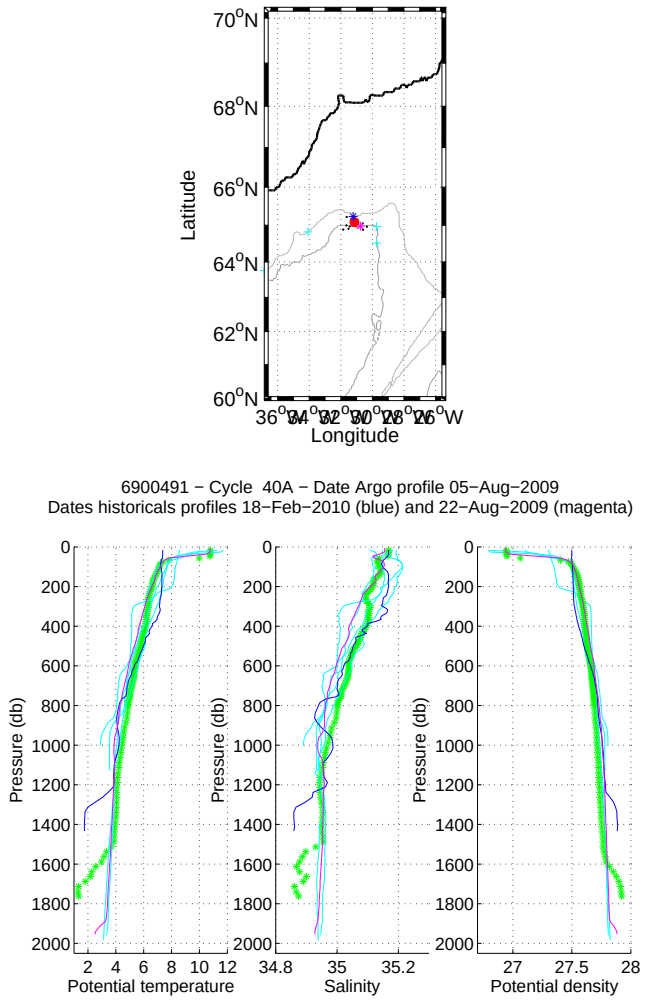


Figure 12: Flotteur 6900491, cycle 40A. Upper panel: Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels: Temperature, salinity and potential density as function of pressure for the analysed Argo profile (stars) and for the nearest Argo profile in time (magenta line) and for the nearest Argo profile in space (blue line). The color of the analysed Argo profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4).

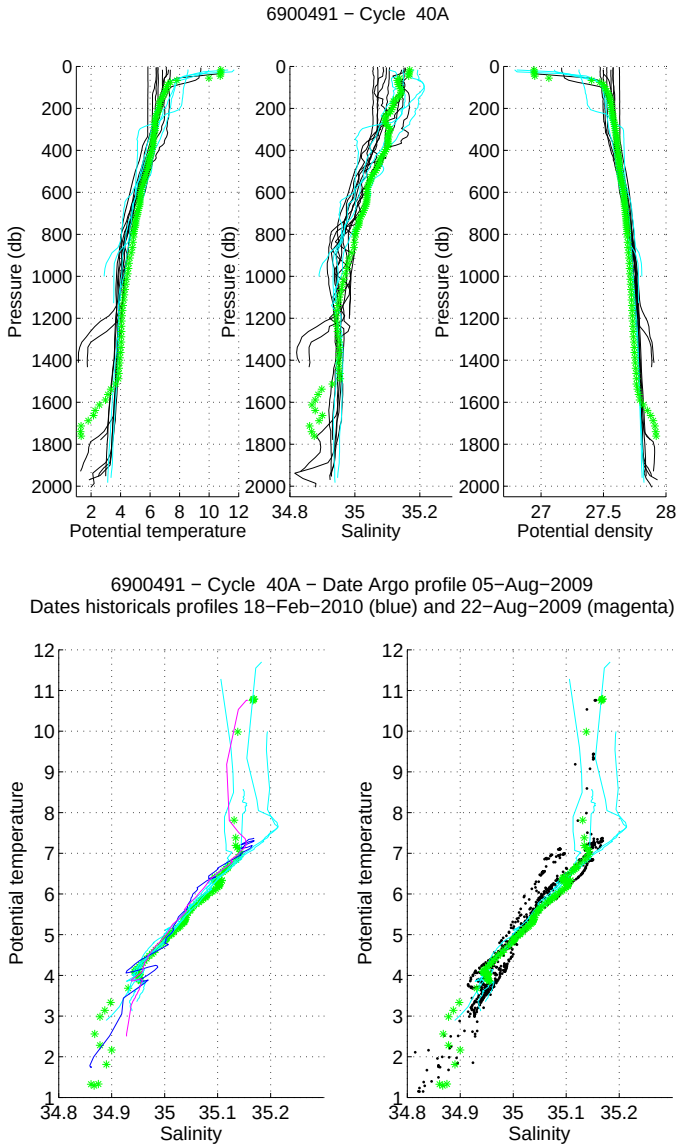


Figure 13: Float 6900491, cycle 40A. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles: the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4). (Upper panels) Temperature (left panel), salinity (middle panel) and potential density (right panel) as function of pressure. (Lower panels) θ/S diagrams.

6 Cycle 41 - Comparison to the nearest historical CTD profiles

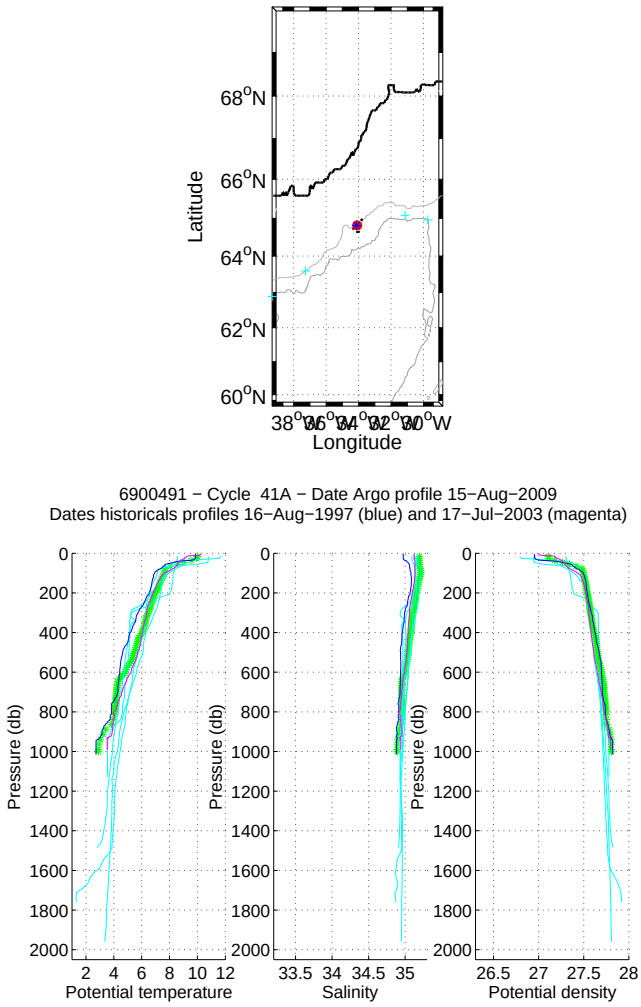


Figure 14: Flotteur 6900491, cycle 41. Upper panel: Position of the analysed CTD profile (red) and of the nearest CTD profiles (black). The nearest CTD profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels: Temperature, salinity and potential density as function of pressure for the analysed CTD profile (stars) and for the nearest CTD profile in time (magenta line) and for the nearest CTD profile in space (blue line). The color of the analysed CTD profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4).

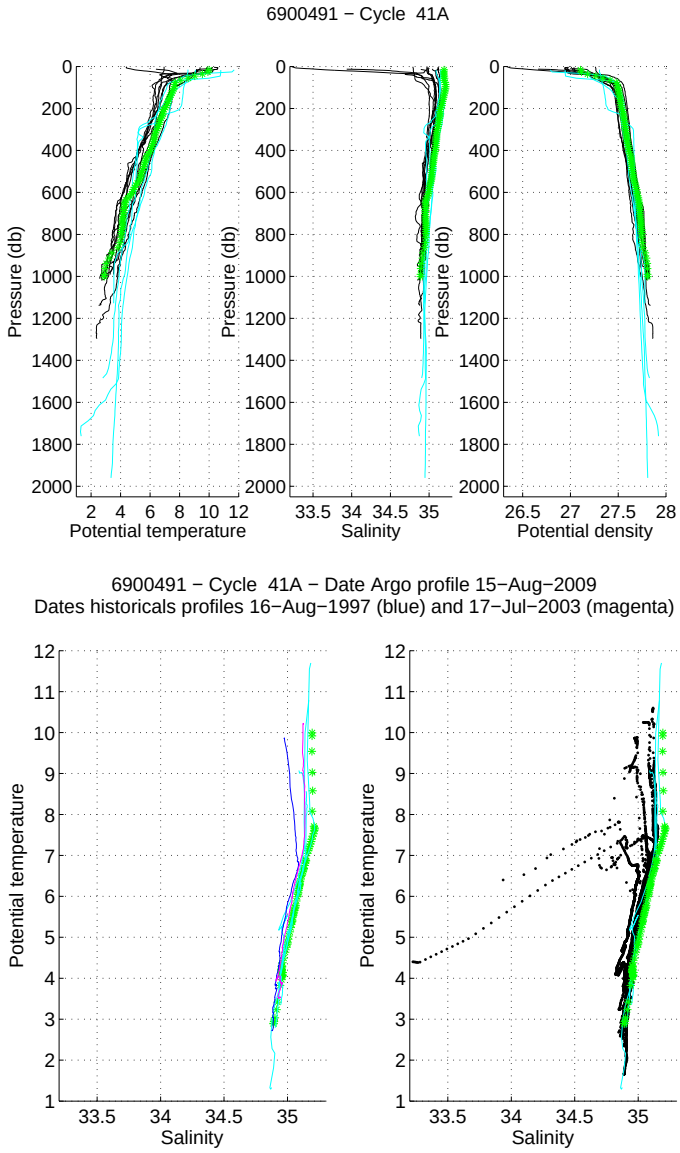


Figure 15: Float 6900491, cycle 41. The analysed CTD profile (stars) is compared to the nearest CTD profiles (black line) and to two specific profiles: the nearest CTD profile in time (magenta) and the nearest CTD profile in space (blue). The color of the analysed CTD profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4). (Upper panels) Temperature (left panel), salinity (middle panel) and potential density (right panel) as function of pressure. (Lower panels) θ/S diagrams.

7 Cycle 41A - Comparison to the nearest ARGO profiles

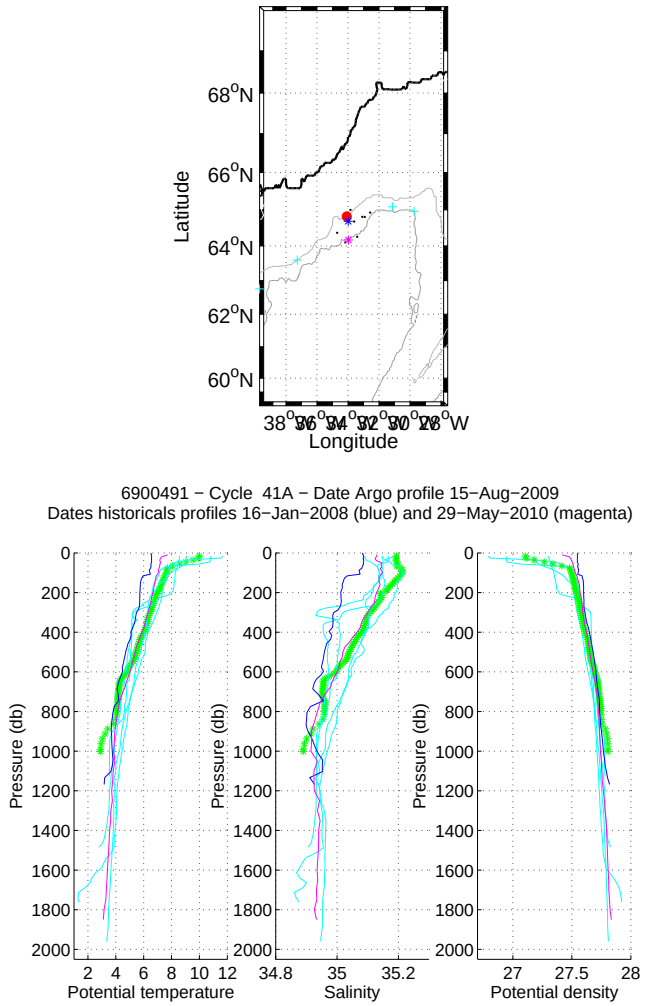


Figure 16: Flotteur 6900491, cycle 41A. Upper panel: Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels: Temperature, salinity and potential density as function of pressure for the analysed Argo profile (stars) and for the nearest Argo profile in time (magenta line) and for the nearest Argo profile in space (blue line). The color of the analysed Argo profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4).

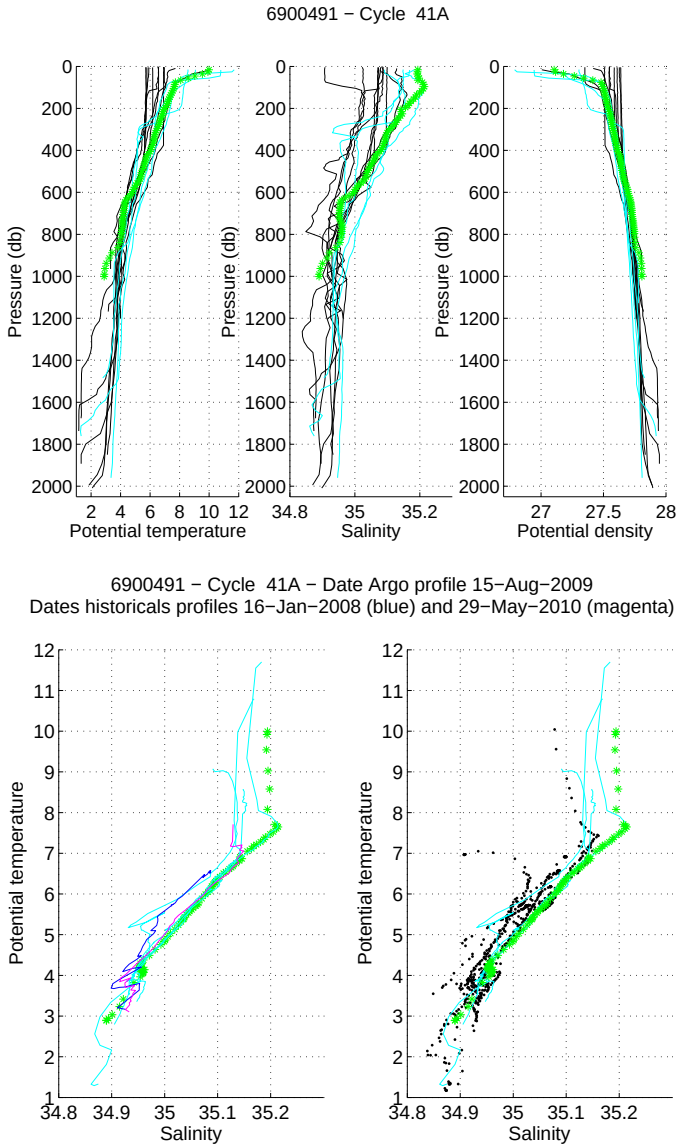


Figure 17: Float 6900491, cycle 41A. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles: the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4). (Upper panels) Temperature (left panel), salinity (middle panel) and potential density (right panel) as function of pressure. (Lower panels) θ/S diagrams.

8 Cycle 151 - Comparison to the nearest historical CTD profiles

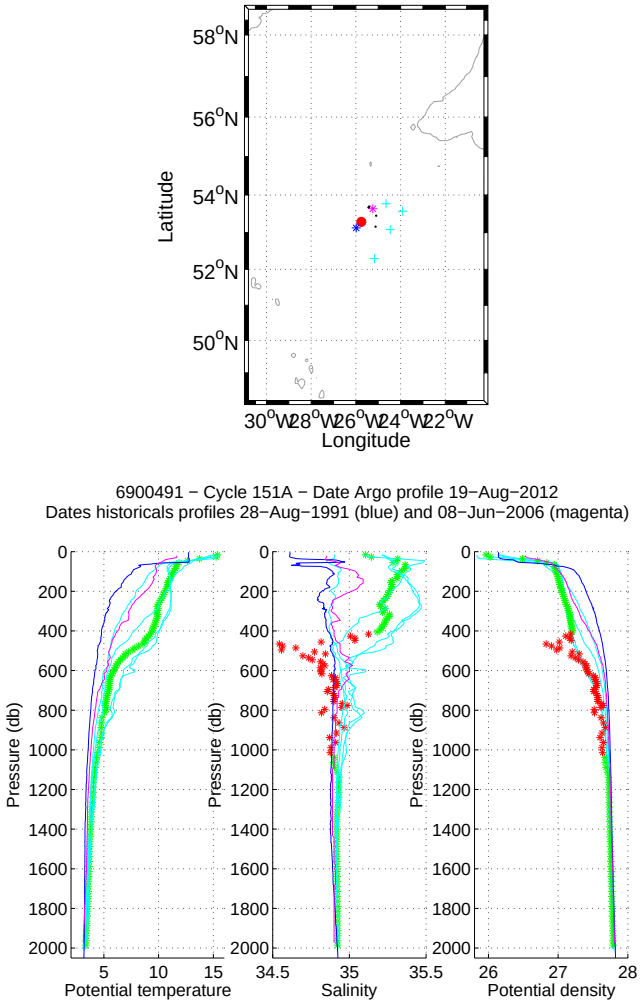


Figure 18: Flotteur 6900491, cycle 151. Upper panel: Position of the analysed CTD profile (red) and of the nearest CTD profiles (black). The nearest CTD profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels: Temperature, salinity and potential density as function of pressure for the analysed CTD profile (stars) and for the nearest CTD profile in time (magenta line) and for the nearest CTD profile in space (blue line). The color of the analysed CTD profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4).

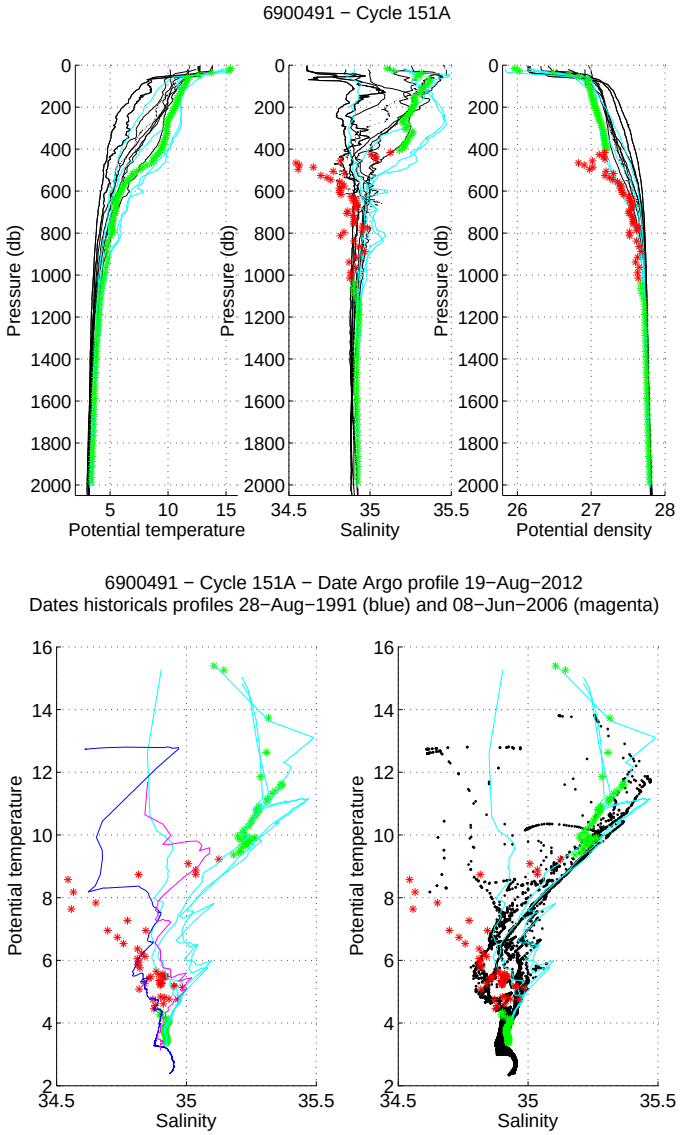


Figure 19: Float 6900491, cycle 151. The analysed CTD profile (stars) is compared to the nearest CTD profiles (black line) and to two specific profiles: the nearest CTD profile in time (magenta) and the nearest CTD profile in space (blue). The color of the analysed CTD profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4). (Upper panels) Temperature (left panel), salinity (middle panel) and potential density (right panel) as function of pressure. (Lower panels) θ/S diagrams.

9 Cycle 151A - Comparison to the nearest ARGO profiles

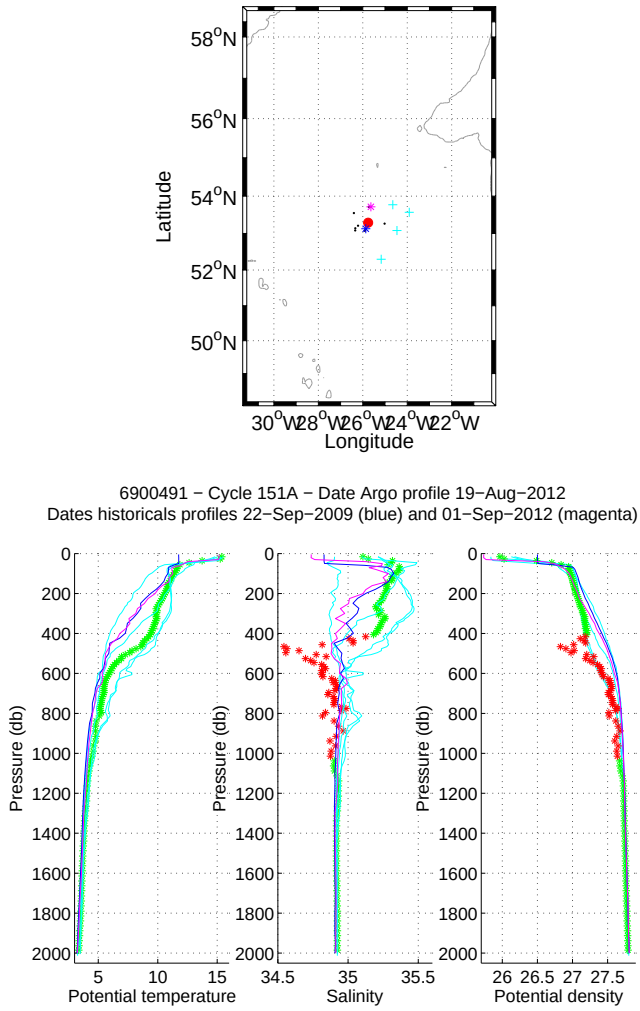


Figure 20: Flotteur 6900491, cycle 151A. Upper panel: Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels: Temperature, salinity and potential density as function of pressure for the analysed Argo profile (stars) and for the nearest Argo profile in time (magenta line) and for the nearest Argo profile in space (blue line). The color of the analysed Argo profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4).

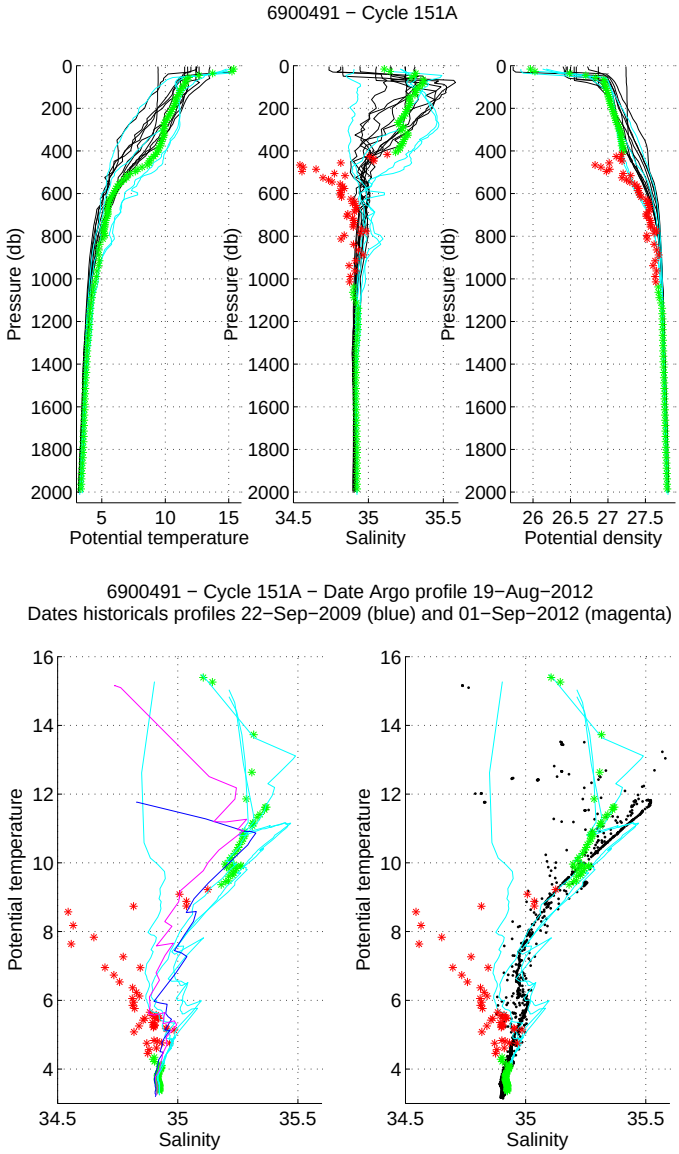


Figure 21: Float 6900491, cycle 151A. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles: the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4). (Upper panels) Temperature (left panel), salinity (middle panel) and potential density (right panel) as function of pressure. (Lower panels) θ/S diagrams.

10 Cycle 181 - Comparison to the nearest historical CTD profiles

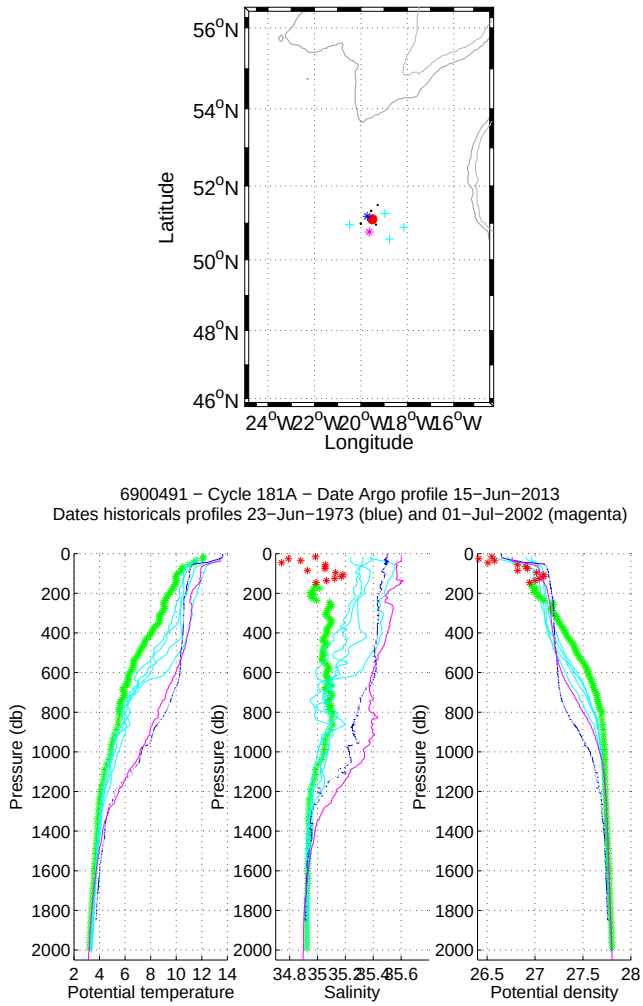


Figure 22: Flotteur 6900491, cycle 181. Upper panel: Position of the analysed CTD profile (red) and of the nearest CTD profiles (black). The nearest CTD profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels: Temperature, salinity and potential density as function of pressure for the analysed CTD profile (stars) and for the nearest CTD profile in time (magenta line) and for the nearest CTD profile in space (blue line). The color of the analysed CTD profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4).

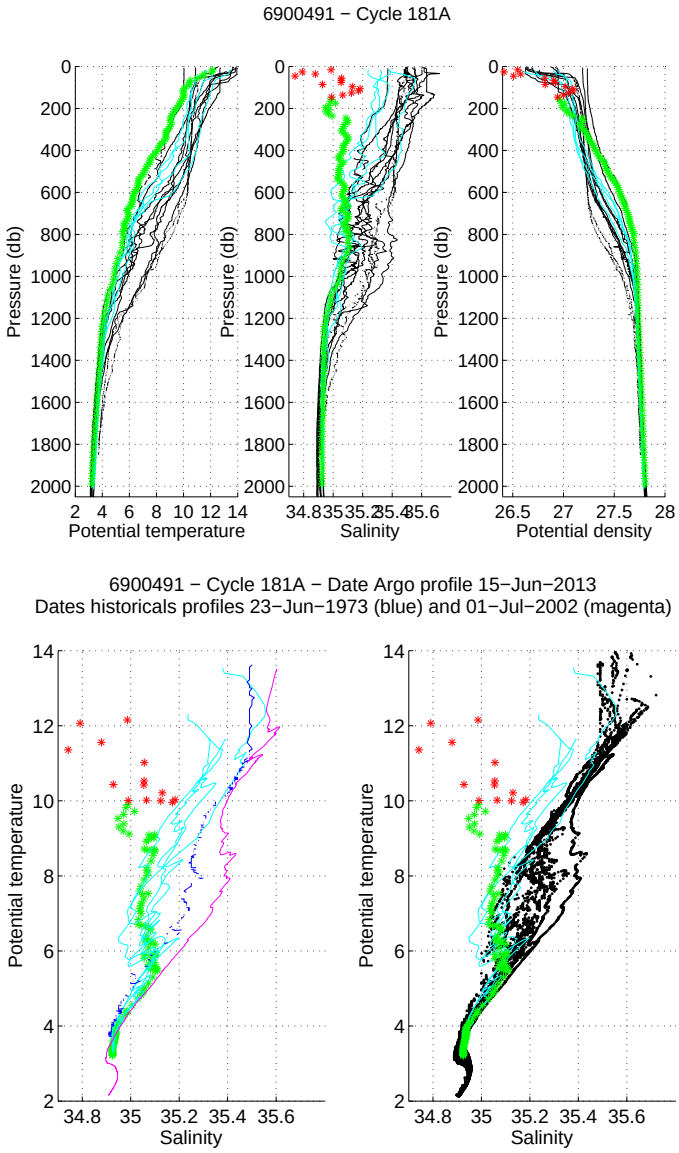


Figure 23: Float 6900491, cycle 181. The analysed CTD profile (stars) is compared to the nearest CTD profiles (black line) and to two specific profiles: the nearest CTD profile in time (magenta) and the nearest CTD profile in space (blue). The color of the analysed CTD profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4). (Upper panels) Temperature (left panel), salinity (middle panel) and potential density (right panel) as function of pressure. (Lower panels) θ/S diagrams.

11 Cycle 181A - Comparison to the nearest ARGO profiles

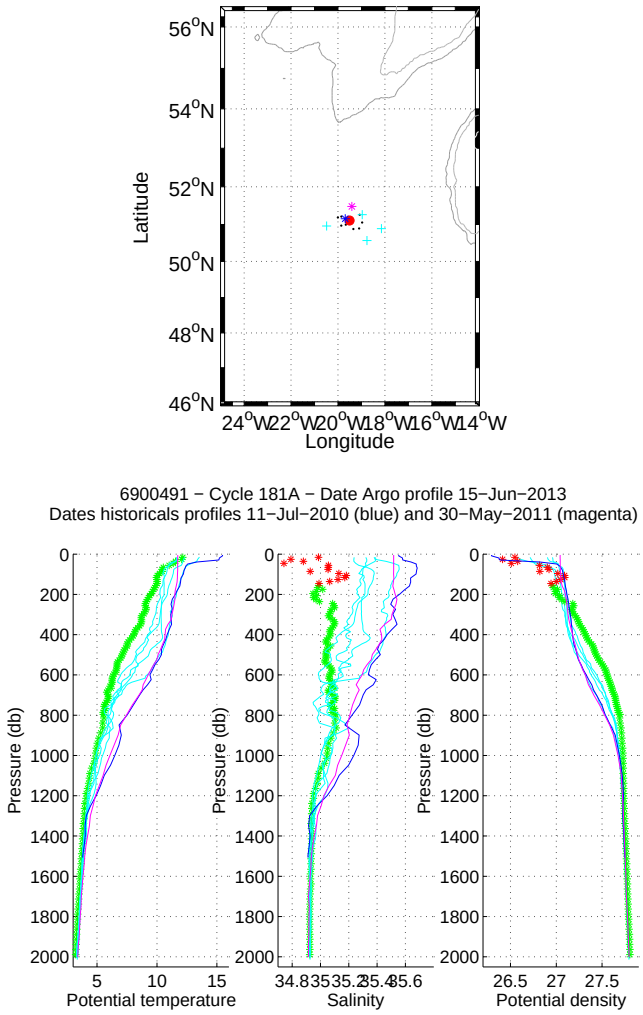


Figure 24: Flotteur 6900491, cycle 181A. Upper panel: Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels: Temperature, salinity and potential density as function of pressure for the analysed Argo profile (stars) and for the nearest Argo profile in time (magenta line) and for the nearest Argo profile in space (blue line). The color of the analysed Argo profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4).

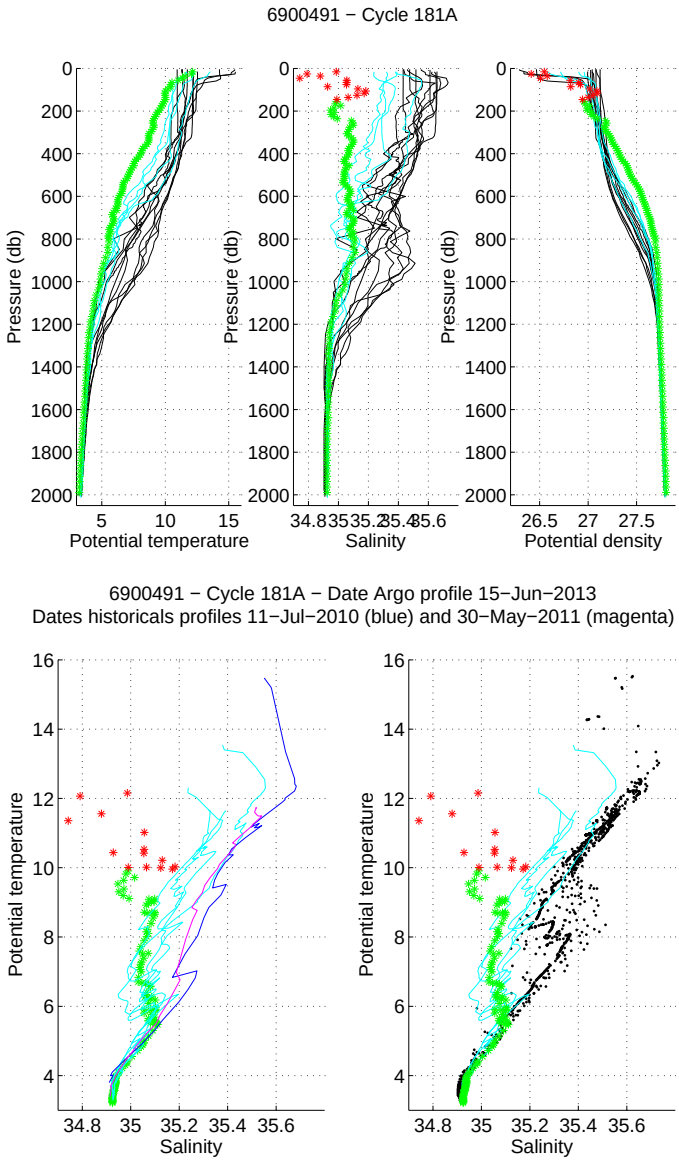


Figure 25: Float 6900491, cycle 181A. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles: the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4). (Upper panels) Temperature (left panel), salinity (middle panel) and potential density (right panel) as function of pressure. (Lower panels) θ/S diagrams.

12 OW method, CONFIGURATION # 129

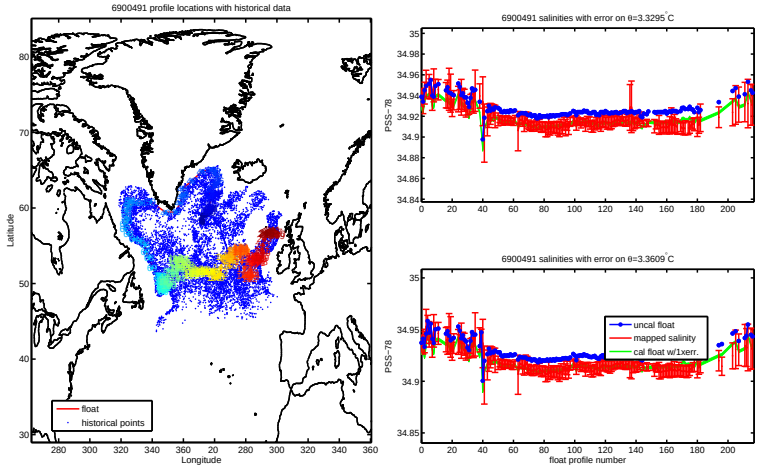


Figure 26: Figures from the OW method. (Left) Position of the historical and float data. (Right) Comparison, on various θ levels, between the float data and the historical data interpolated at the float position.

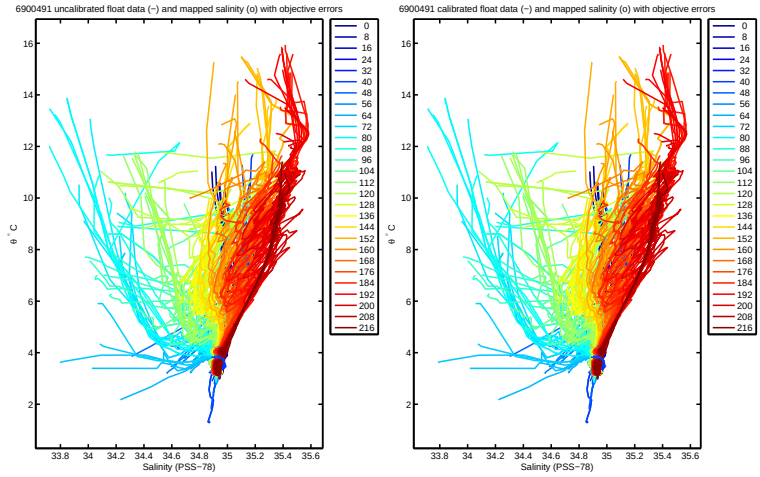


Figure 27: Figures from the OW method. Compararison of the θ/S diagram of the float with the historial database. (left) raw data; (right) corrected data using the OW correction.

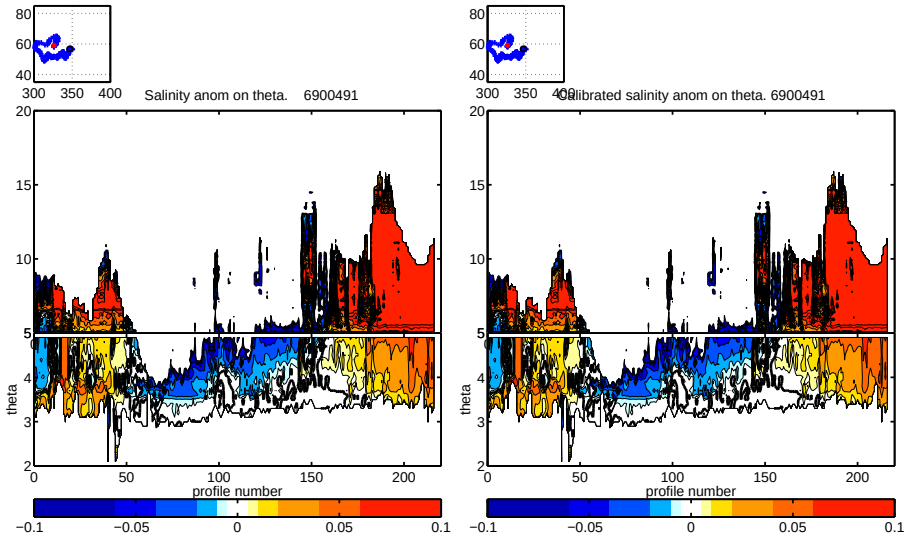


Figure 28: Figures from the OW method. Salinity anomaly:(left) raw data; (right) corrected data using the OW correction.

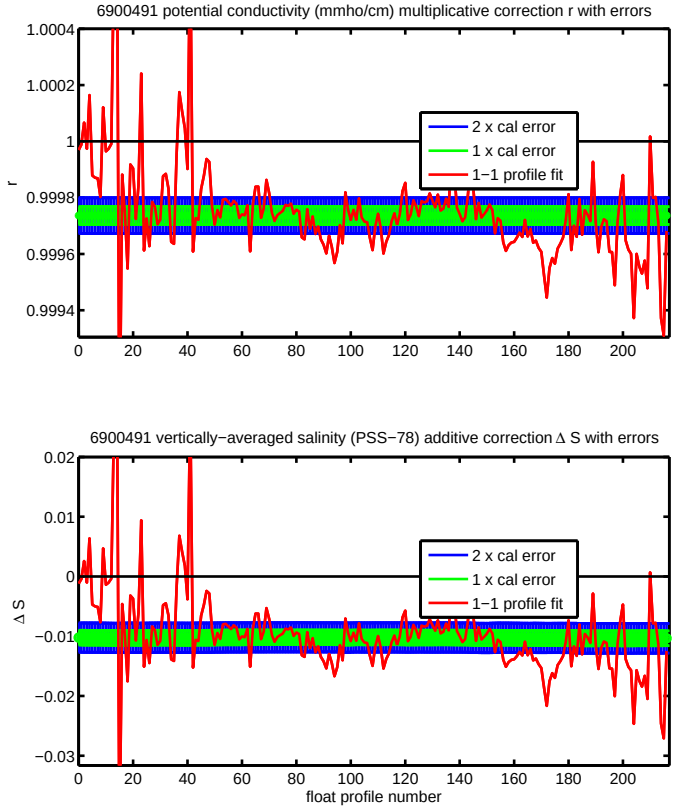


Figure 29: Correction proposed by the OW method.

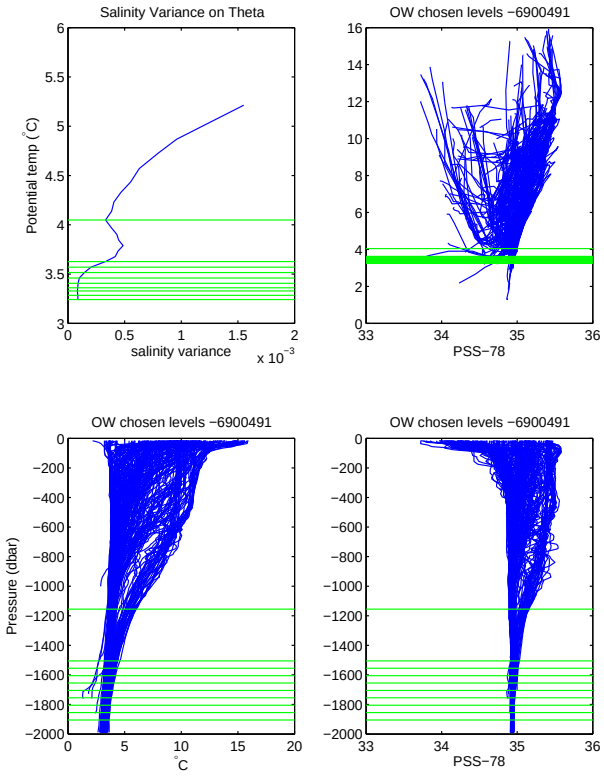


Figure 30: Chosed levels by the OW method.