


Rapport interne LPO/12-05

UMR 6523 Laboratoire de Physique des Océans 	DELAYED MODE QUALITY CONTROL OF OVIDE ARGO DATA FLOAT WMO 6900400	
Date : 11 avril 2012	Auteurs : Lagadec Catherine Thierry Virginie	Archivage : LPO

Liste de diffusion :

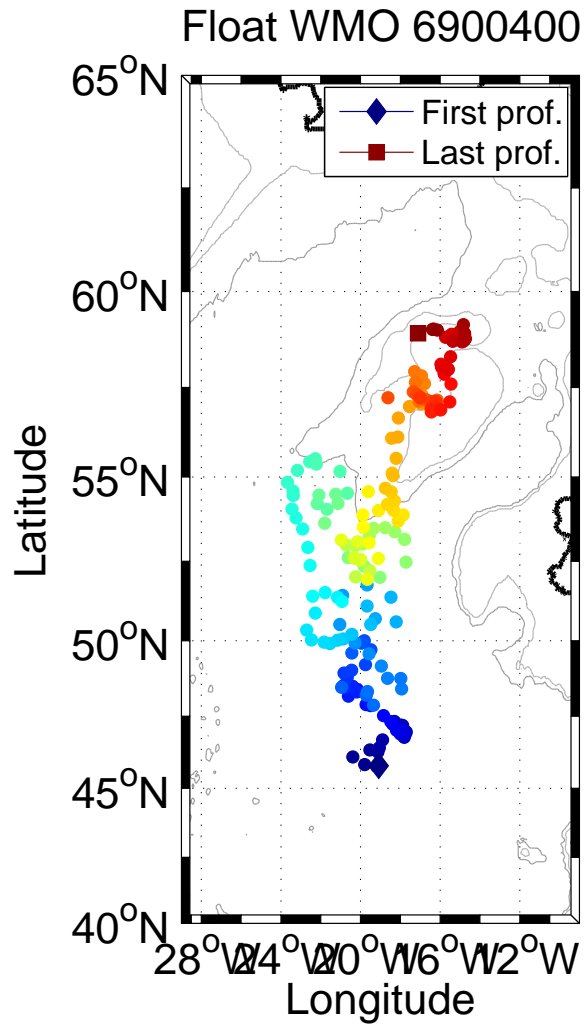
LPO

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**DELAYED MODE QUALITY CONTROL OF OVIDE ARGO DATA
FLOAT WMO 6900400**

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11 avril 2012



1 Presentation and DMQC summary

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

1.1 QC flag checks and interesting profiles

Warning : the resolution is equal to 50 dbar from the surface to 500 dbar, then 60 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 the comparison with the Ovide CTD measurements, we thus conclude that there is an offset in salinity : salinity values are not salty enough (positive correction around 0.01 psu). It is thus necessary to correct the data at all cycles. Corrections are deduced from the configuration 3 of the OW method. Errors bars are maximum values between those provided by the OW method and 0.02.

Number	Deployment (cycle OD) cycle OD	Last cycle 176
Provor WMO 6900400	02/06/2006 19h15	
CTS3 05-S3-31	45.795 N 19.089 W	
Date of control	Float status	Last cycle
March 2012	Dead	31/03/11
Coriolis transmission		11/04/2012

TAB. 1: Status of the float

Cycle	Para- meter	Vertical level	Old flag	New flag	Comments	Coriolis transmission
115	PSAL,TEMP	950m	3	1		29/04/10
117	PSAL,TEMP	500-600m	4	1		29/04/10
128	PSAL,TEMP	800m	4	1		29/04/10
137	PSAL,TEMP	0-600m			mixed layer	29/04/10
all cycles (except 0D,110)	PSAL	surface (PRES inf.5)	1	4	untrustable data	29/04/10

TAB. 2: Float 6900400. Summary of the modifications of the real-time QC flags and of the interesting or suspicious data.

2 Data

OW CONFIGURATION	1	3
CONFIG_MAX_CASTS	250	250
MAP_USE_PV	1	1
MAP_USE_PV_ELLIPSE	1	1
MAP_USE_FACTEUR	1	1
MAPSCALE_LONGITUDE_LARGE	3.2	3.2
MAPSCALE_LONGITUDE_SMALL	0.8	0.8
MAPSCALE_LATITUDE_LARGE	2	2
MAPSCALE_LATITUDE_SMALL	0.5	0.5
MAPSCALE_PHI_LARGE	0.5	0.5
MAPSCALE_PHI_SMALL	0.1	0.1
MAPSCALE_AGE	0.69	0.69
MAP_P_EXCLUDE	500	500
MAP_P_DELTA	250	250
Reference data base	CTD only	CTD only
Comments		no break points

TAB. 3: Parameters of the OW method.

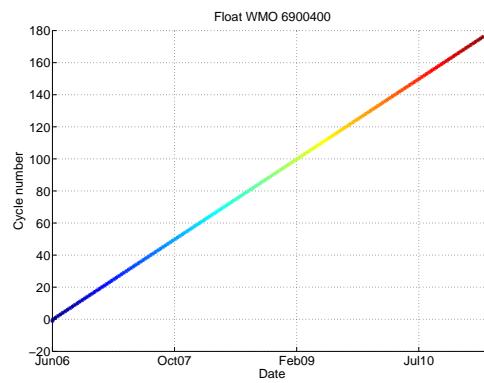
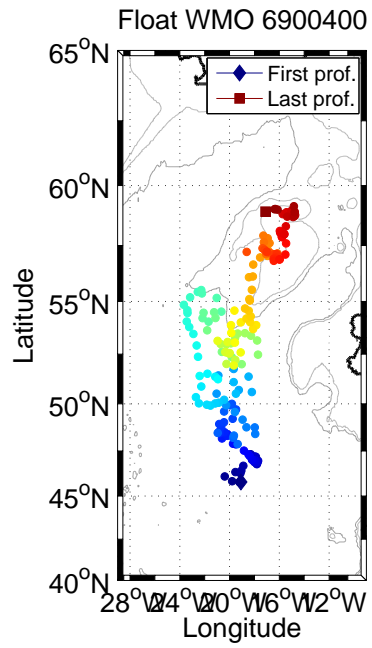


FIG. 1: Profiles position and relationship between cycle number, date and color.

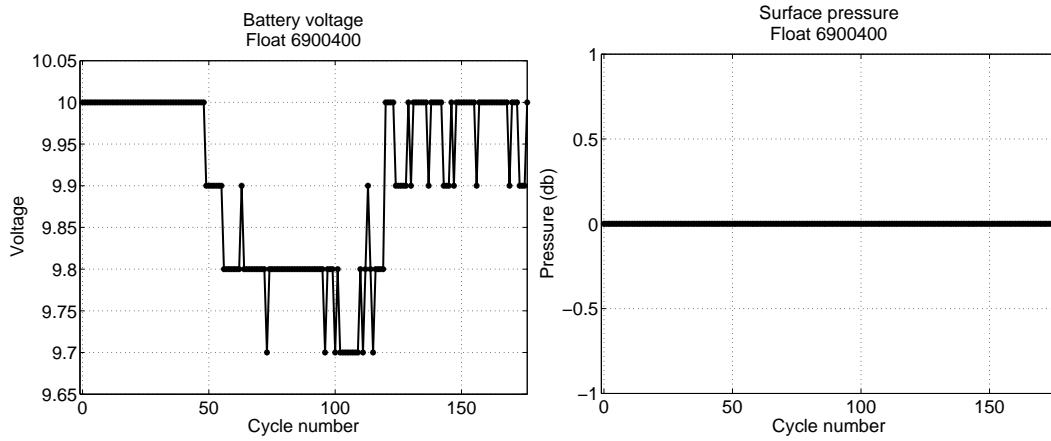


FIG. 2: Surface pressure

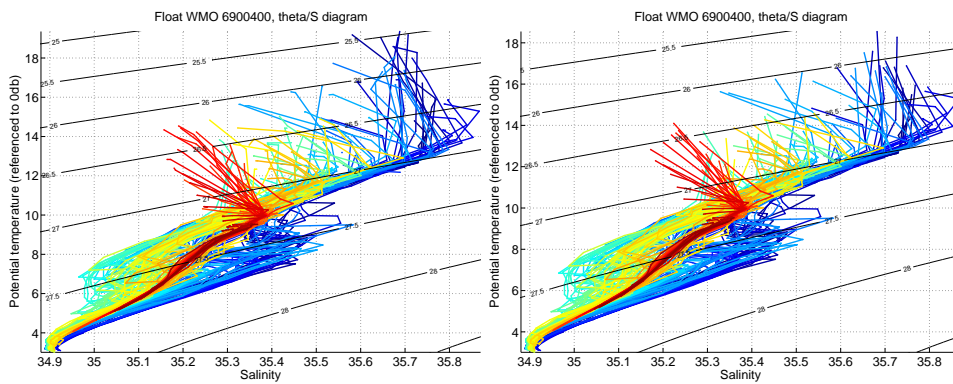


FIG. 3: θ/S diagrams. (Left panel) Flags are not taken into account. (Right panel) Quality flags are taken into account.

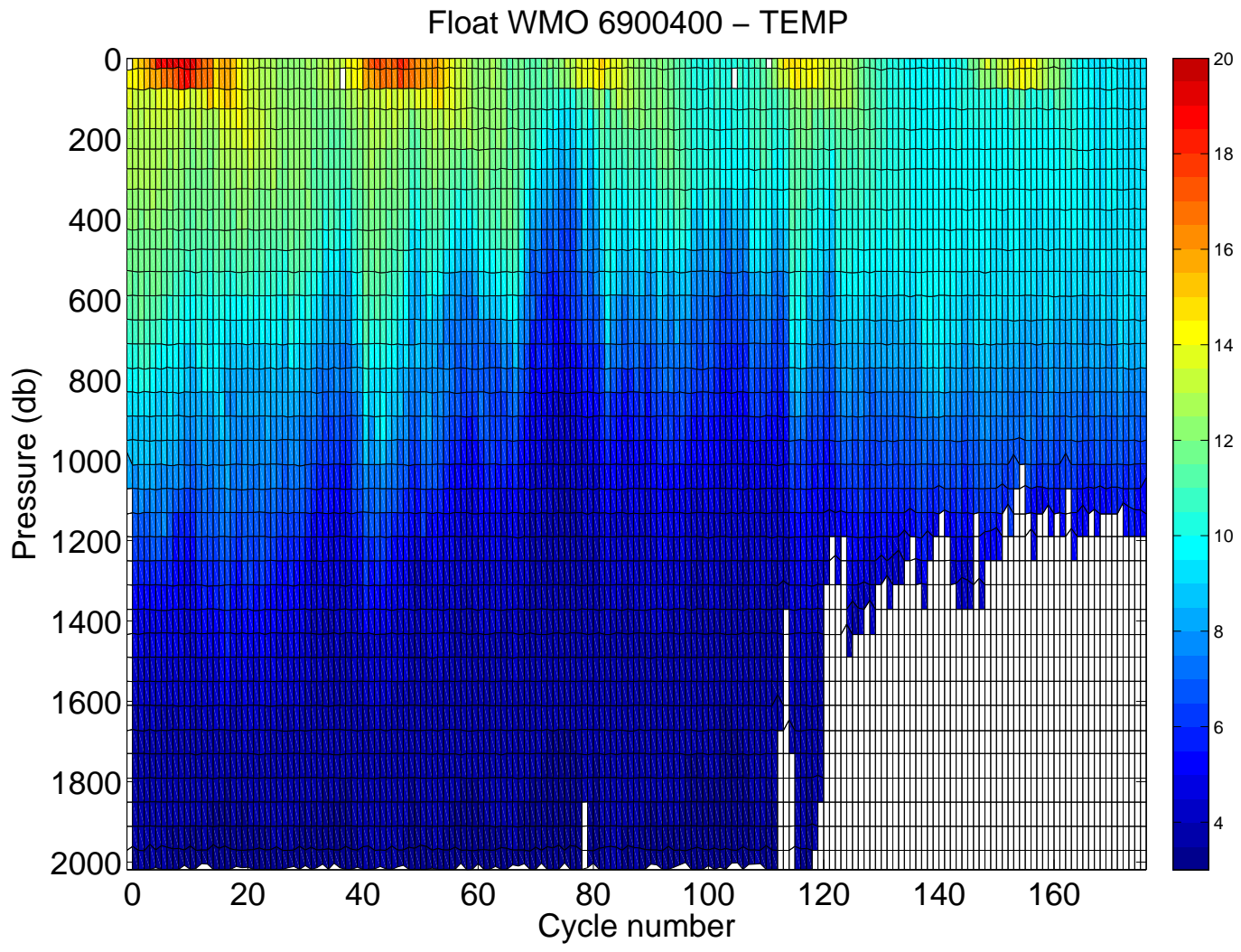


FIG. 4: Temperature section along the float trajectory. Quality flags are not taken into account.

Float WMO 6900400 – PSAL

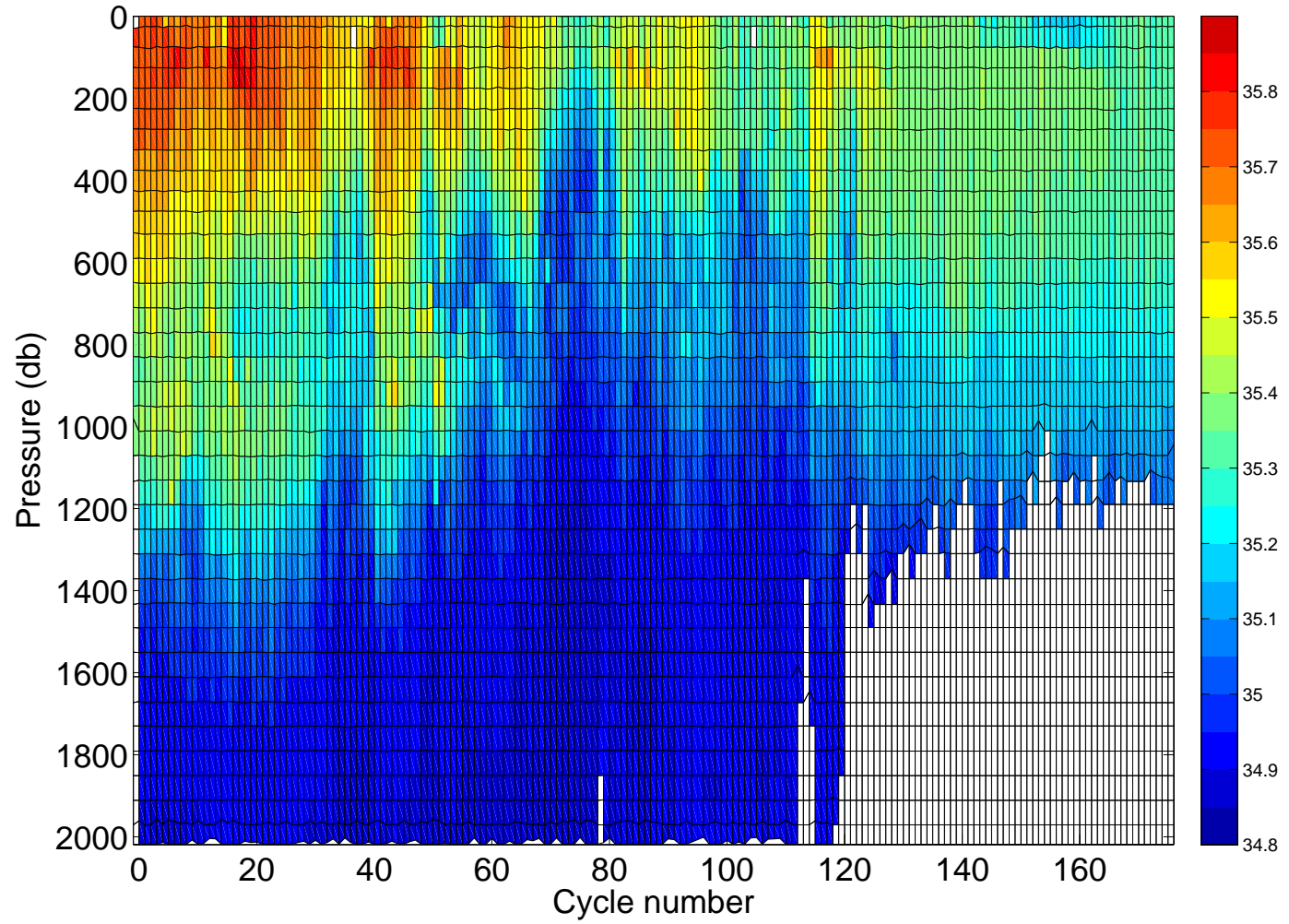


FIG. 5: Salinity section along the float trajectory. Quality flags are not taken into account.

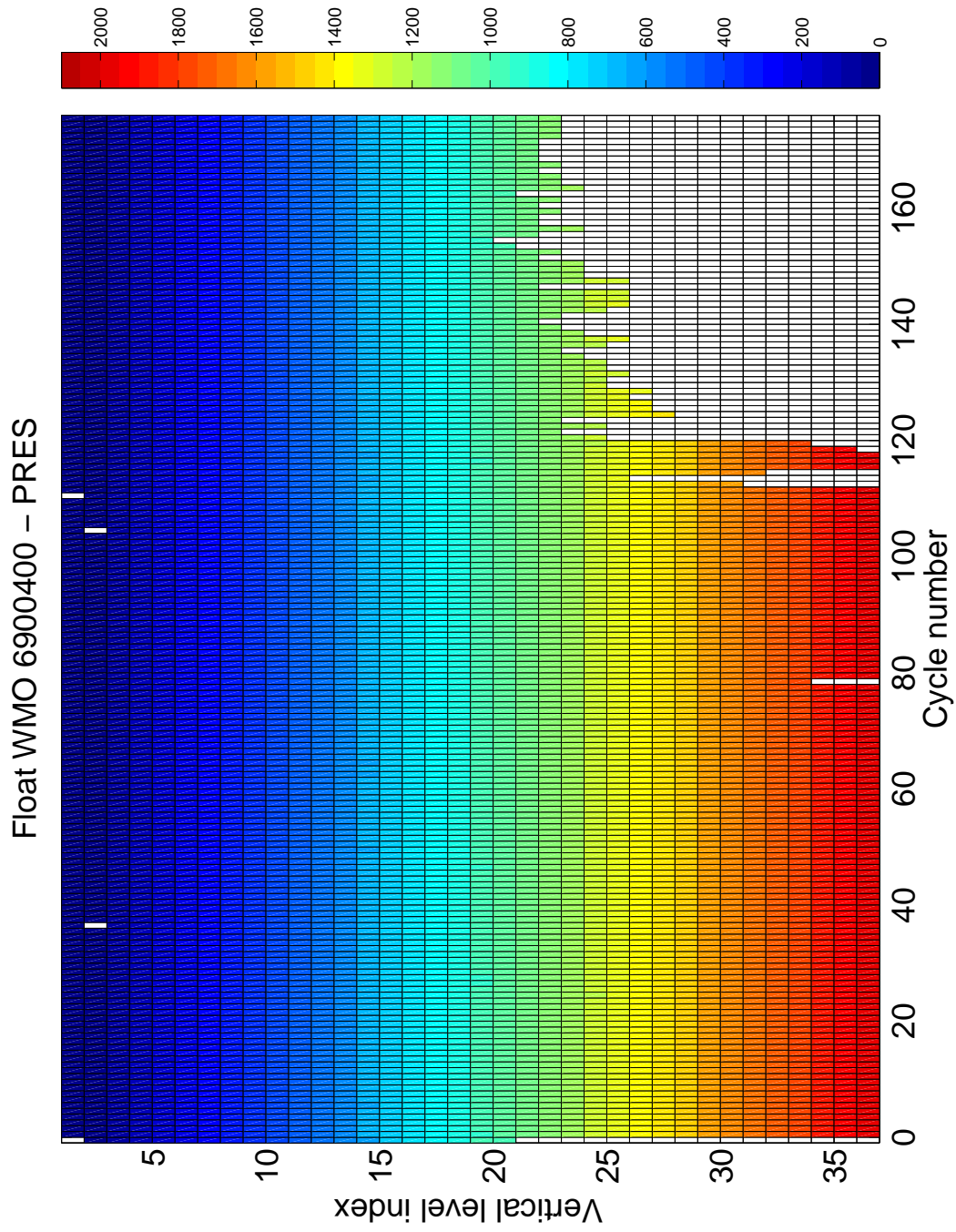


FIG. 6: Pression as function of cycle number and vertical level index along the float trajectory. Quality flags are taken into account.

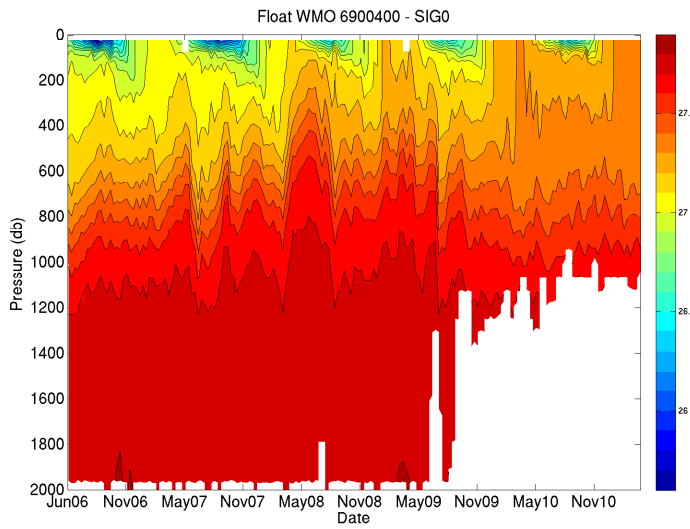
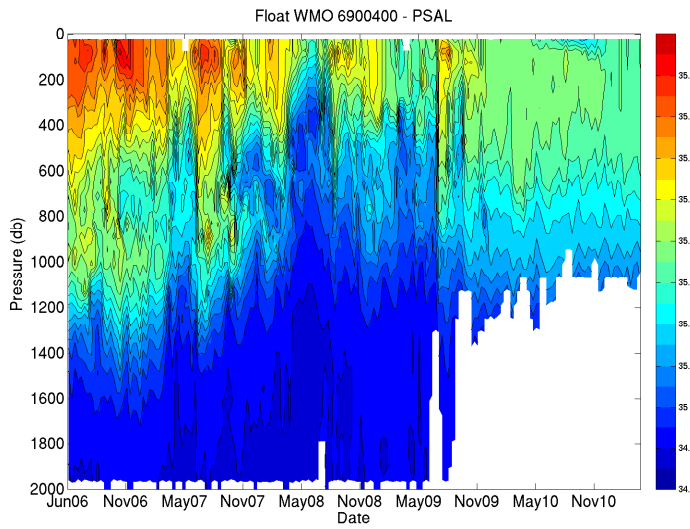
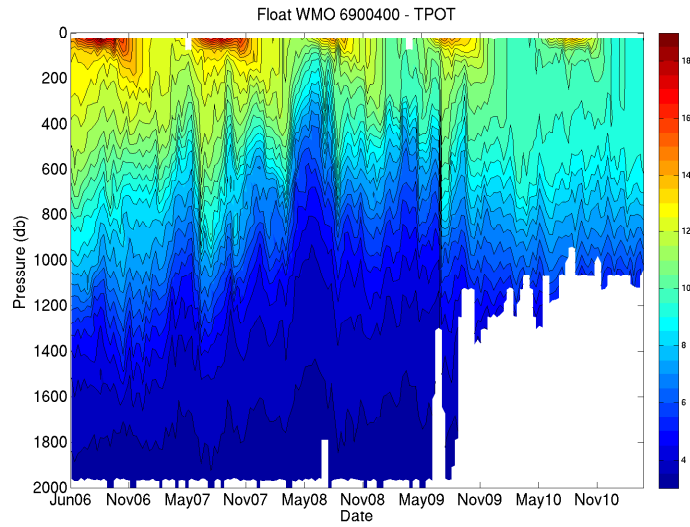


FIG. 7: Potential temperature, salinity and potential density sections along the float trajectory (interpolated on standard levels). Quality flags are taken into account.

3 Comparison to the OVIDE 2006 nearest CTD profile

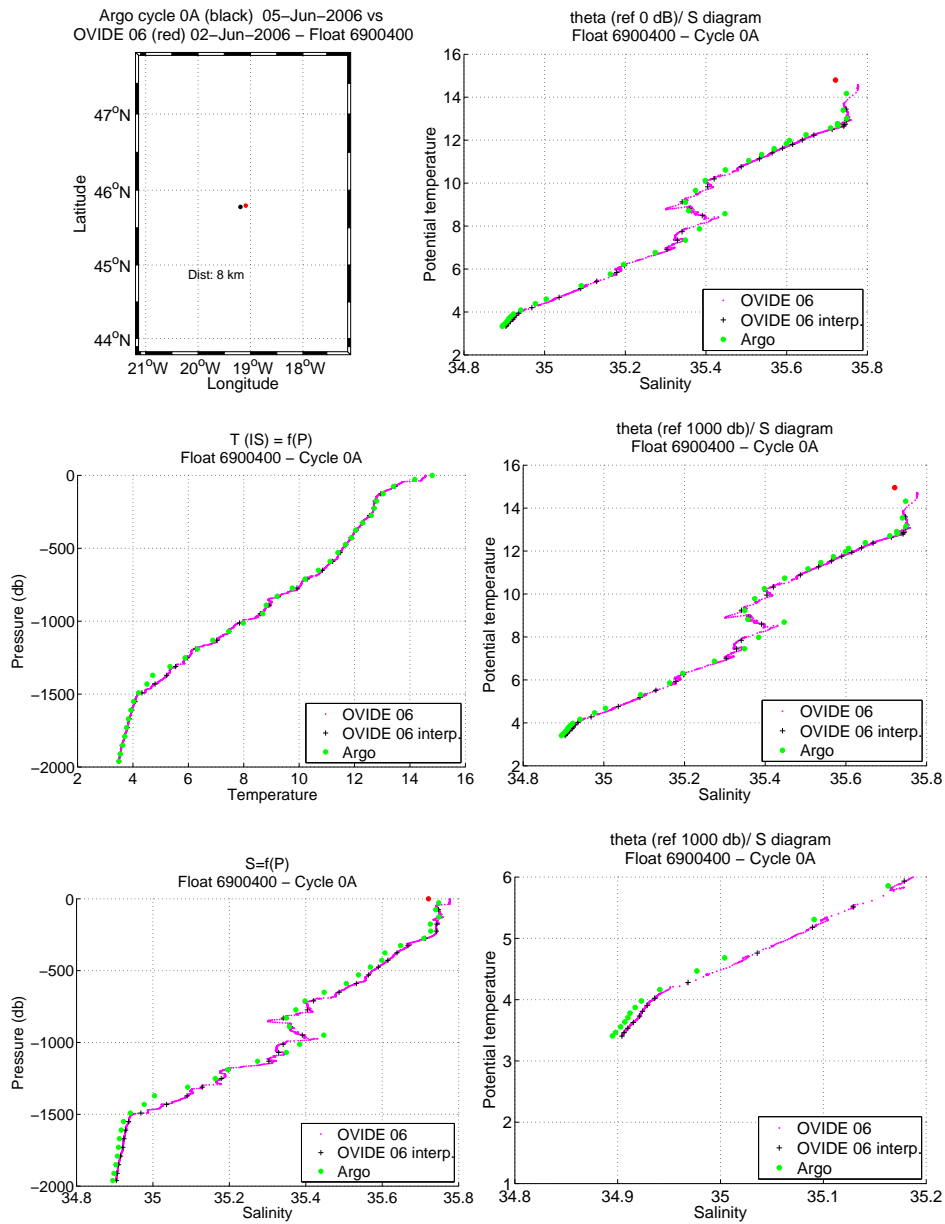


FIG. 8: Comparison of the cycle 0A with the nearest CTD profile done after the float deployment.

4 Cycle 115 - Comparison to the nearest historical CTD profiles

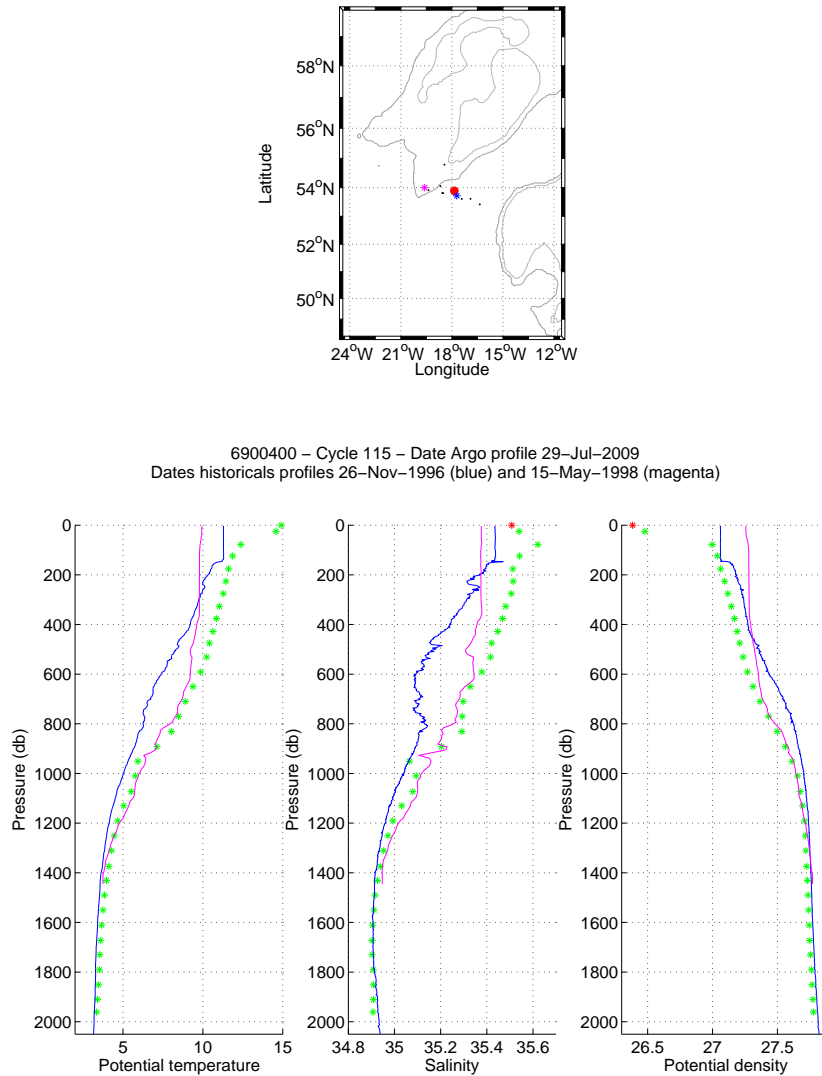
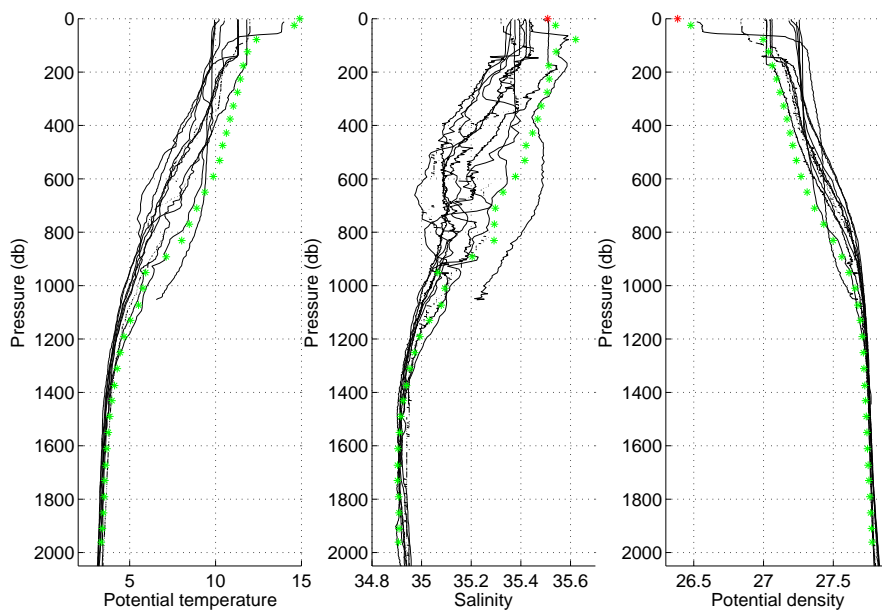


FIG. 9: Flotteur 6900400, cycle 115. Upper panel : Position of the Argo profile (red) and of the nearest CTD profiles (black). The nearest CTD profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels : Temperature, salinity and potential density as function of pressure for the Argo 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 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).

6900400 – Cycle 115



6900400 – Cycle 115 – Date Argo profile 29-Jul-2009
 Dates historicals profiles 26-Nov-1996 (blue) and 15-May-1998 (magenta)

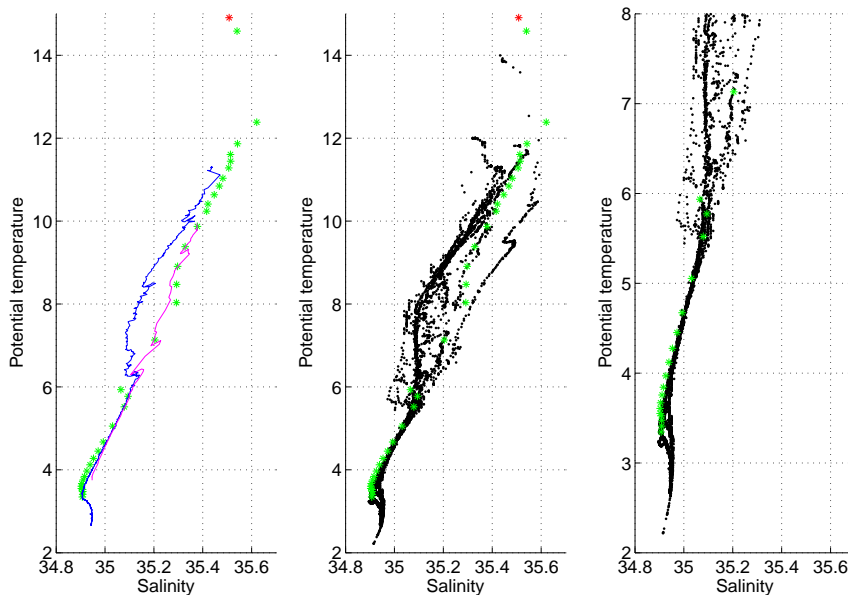


FIG. 10: Float 6900400, cycle 115. The Argo profile (stars) is compared to the nearest CTD profiles (black line) and to two specific profiles : the nearest profile in time (magenta) and the nearest profile in space (blue). The color of the Argo profile represents the QC flag (green for a QC=1; blue for 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.

5 Cycle 115 - Comparison to the nearest ARGO profiles

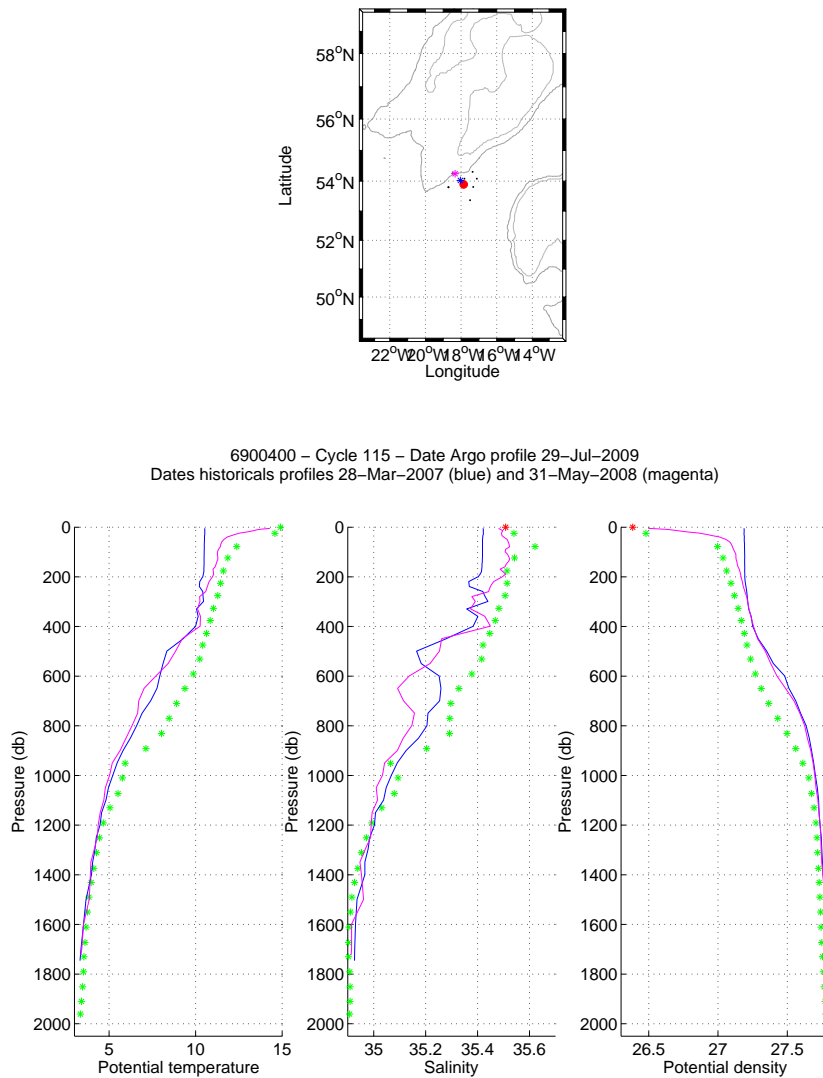
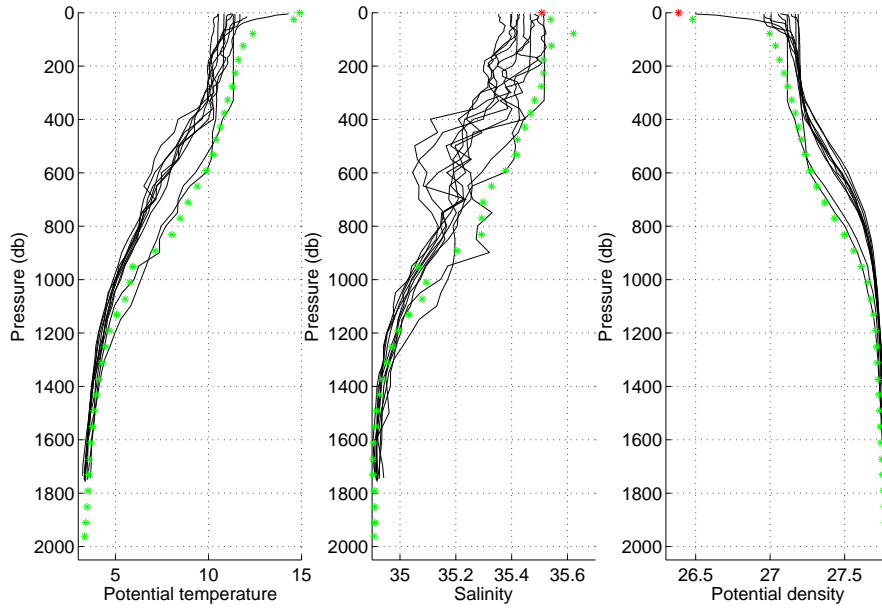


FIG. 11: Flotteur 6900400, cycle 115. Upper panel : Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest ARGO profile in space is in blue. Lower panels : Temperature, salinity and potential density as function 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).

6900400 – Cycle 115



6900400 – Cycle 115 – Date Argo profile 29-Jul-2009
 Dates historicals profiles 28-Mar-2007 (blue) and 31-May-2008 (magenta)

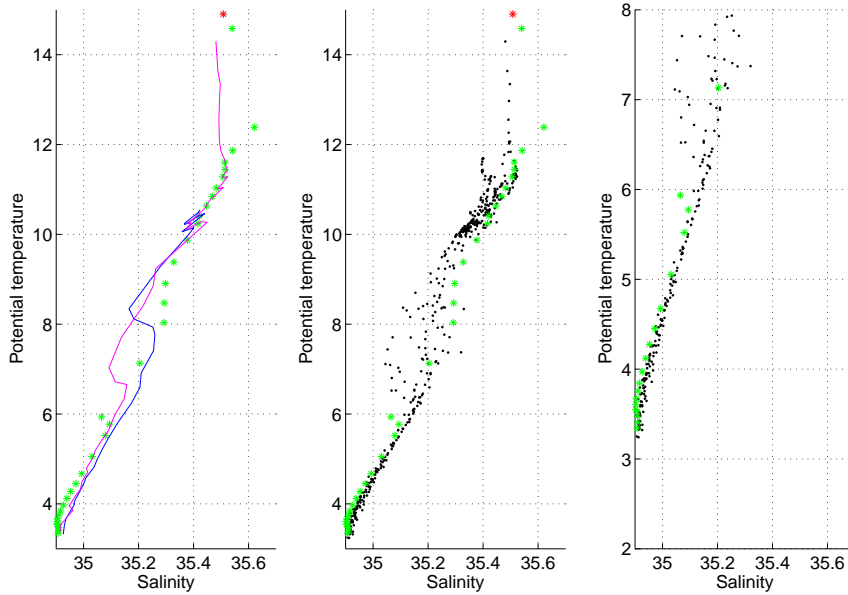


FIG. 12: Float 6900400, cycle 115. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles : the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC flag (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 117 - Comparaison to the nearest historical CTD profiles

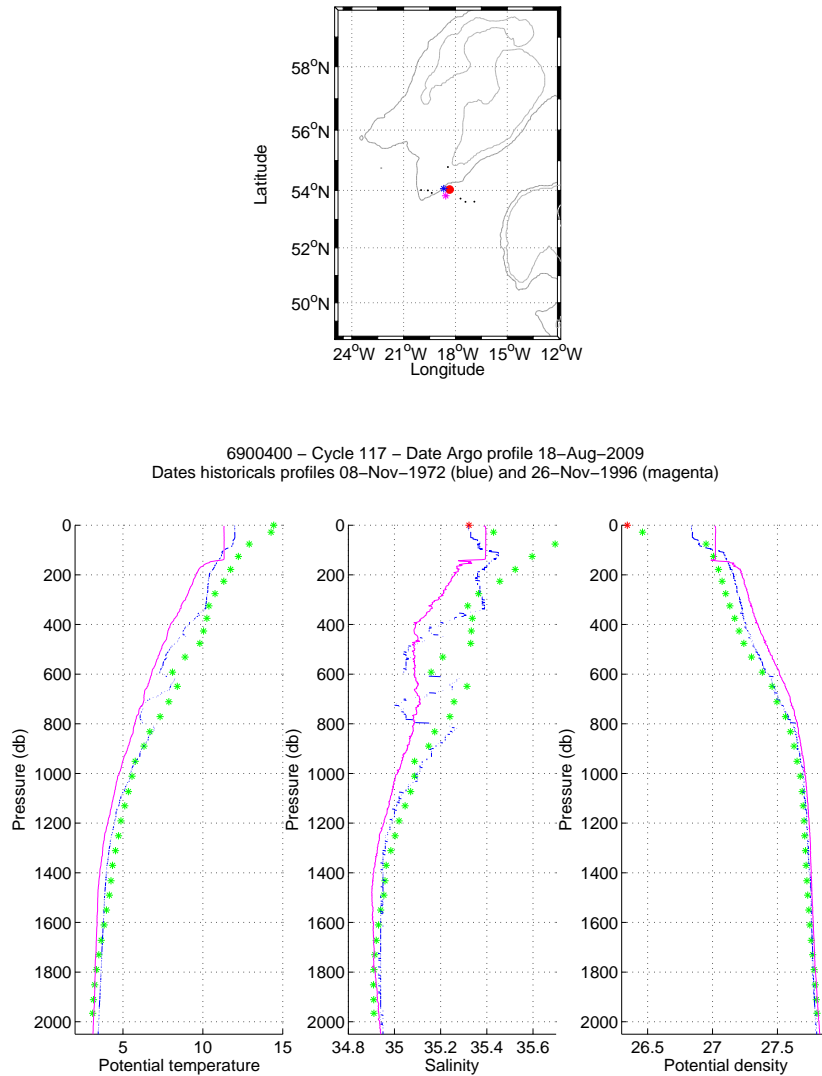
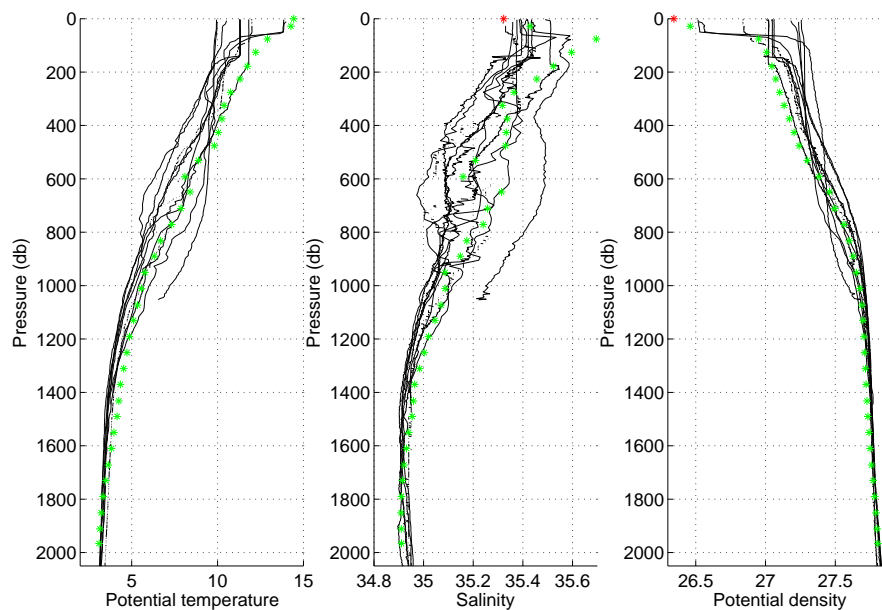


FIG. 13: Flotteur 6900400, cycle 117. Upper panel : Position of the Argo profile (red) and of the nearest CTD profiles (black). The nearest CTD profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels : Temperature, salinity and potential density as function of pressure for the Argo 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 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).

6900400 – Cycle 117



6900400 – Cycle 117 – Date Argo profile 18-Aug-2009
 Dates historicals profiles 08-Nov-1972 (blue) and 26-Nov-1996 (magenta)

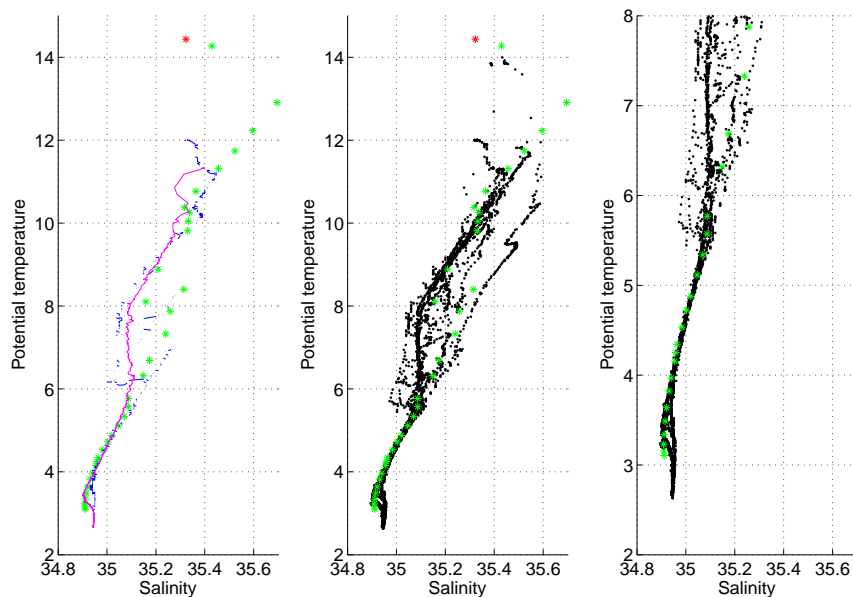


FIG. 14: Float 6900400, cycle 117. The Argo profile (stars) is compared to the nearest CTD profiles (black line) and to two specific profiles : the nearest profile in time (magenta) and the nearest profile in space (blue). The color of the Argo profile represents the QC flag (green for a QC=1; blue for 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.

7 Cycle 117 - Comparison to the nearest ARGO profiles

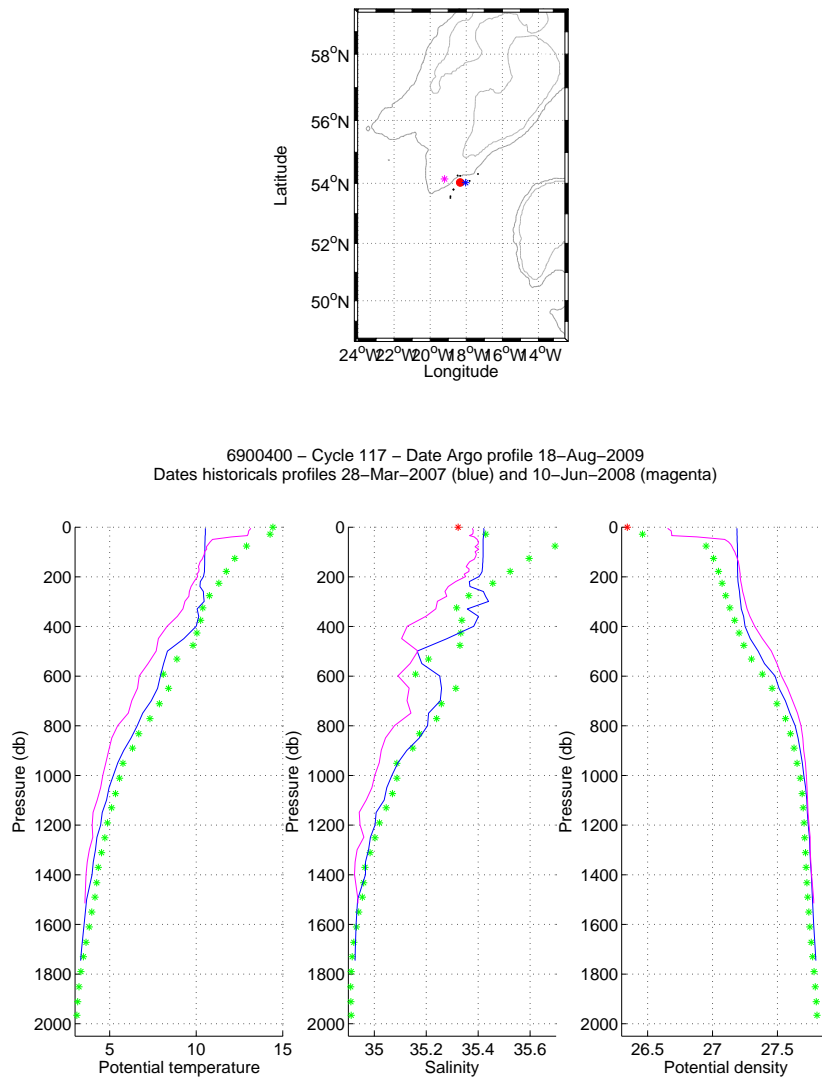
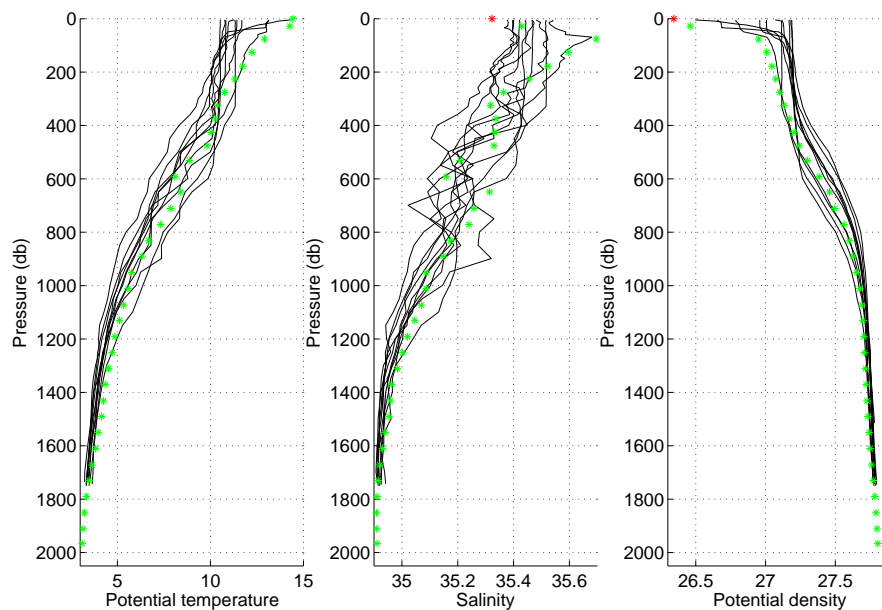


FIG. 15: Flotteur 6900400, cycle 117. Upper panel : Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest ARGO profile in space is in blue. Lower panels : Temperature, salinity and potential density as function 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).

6900400 – Cycle 117



6900400 – Cycle 117 – Date Argo profile 18–Aug–2009
 Dates historicals profiles 28–Mar–2007 (blue) and 10–Jun–2008 (magenta)

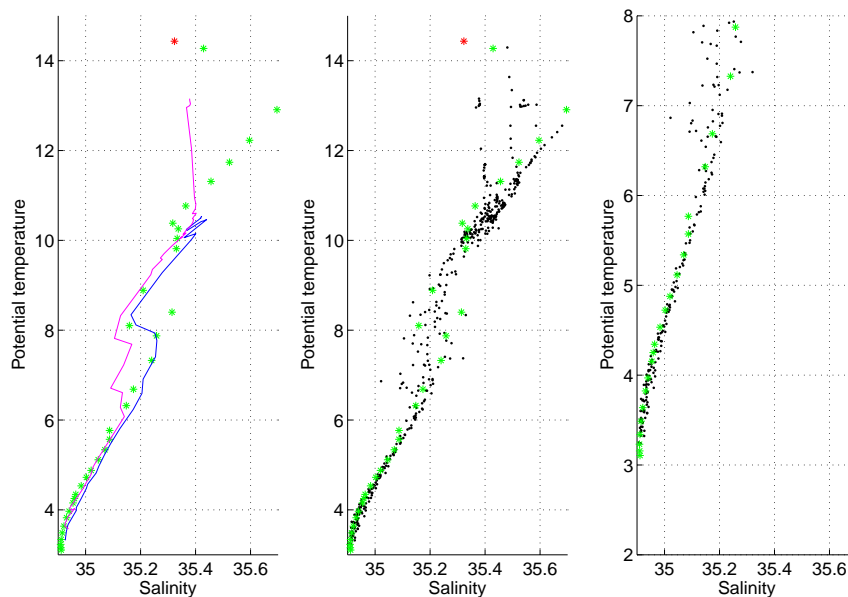


FIG. 16: Float 6900400, cycle 117. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles : the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC flag (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 128 - Comparaison to the nearest historical CTD profiles

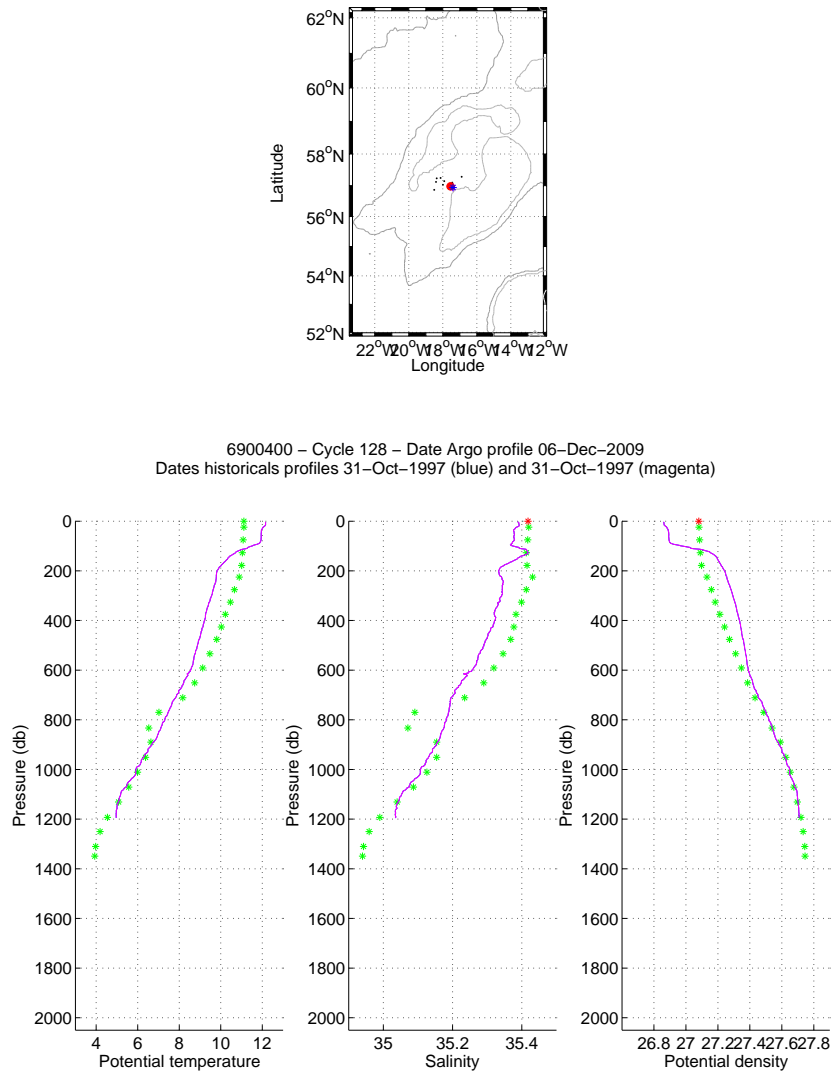
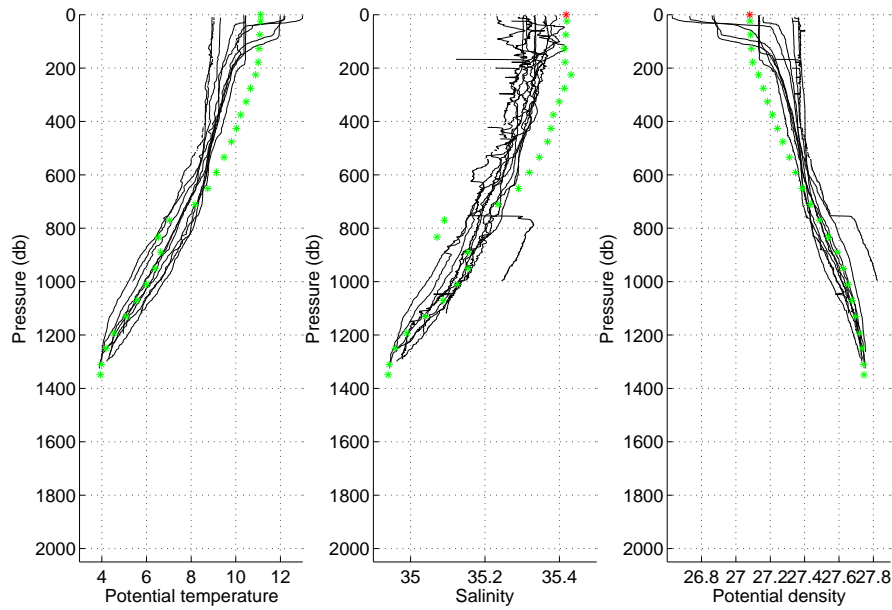


FIG. 17: Flotteur 6900400, cycle 128. Upper panel : Position of the Argo profile (red) and of the nearest CTD profiles (black). The nearest CTD profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels : Temperature, salinity and potential density as function of pressure for the Argo 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 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).

6900400 – Cycle 128



6900400 – Cycle 128 – Date Argo profile 06-Dec-2009
 Dates historicals profiles 31-Oct-1997 (blue) and 31-Oct-1997 (magenta)

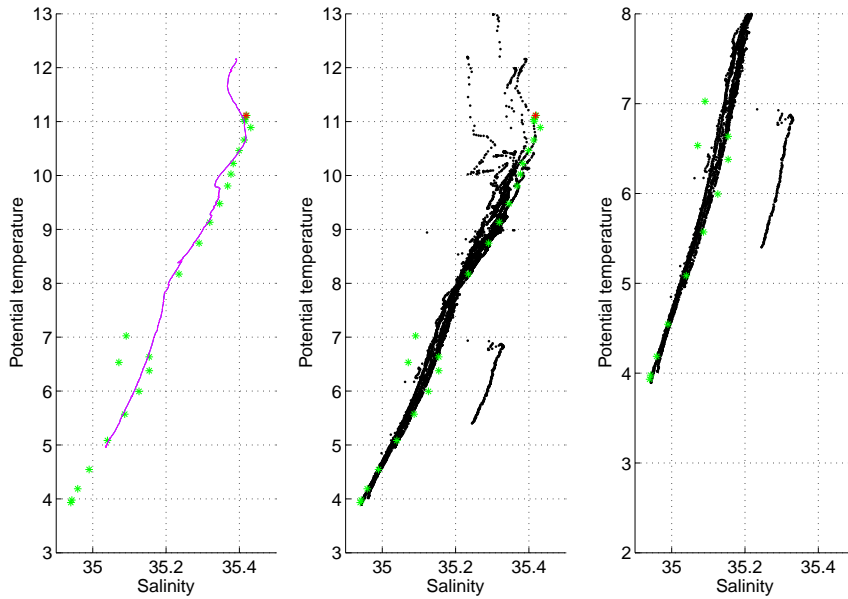


FIG. 18: Float 6900400, cycle 128. The Argo profile (stars) is compared to the nearest CTD profiles (black line) and to two specific profiles : the nearest profile in time (magenta) and the nearest profile in space (blue). The color of the Argo profile represents the QC flag (green for a QC=1; blue for 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.

9 Cycle 128 - Comparison to the nearest ARGO profiles

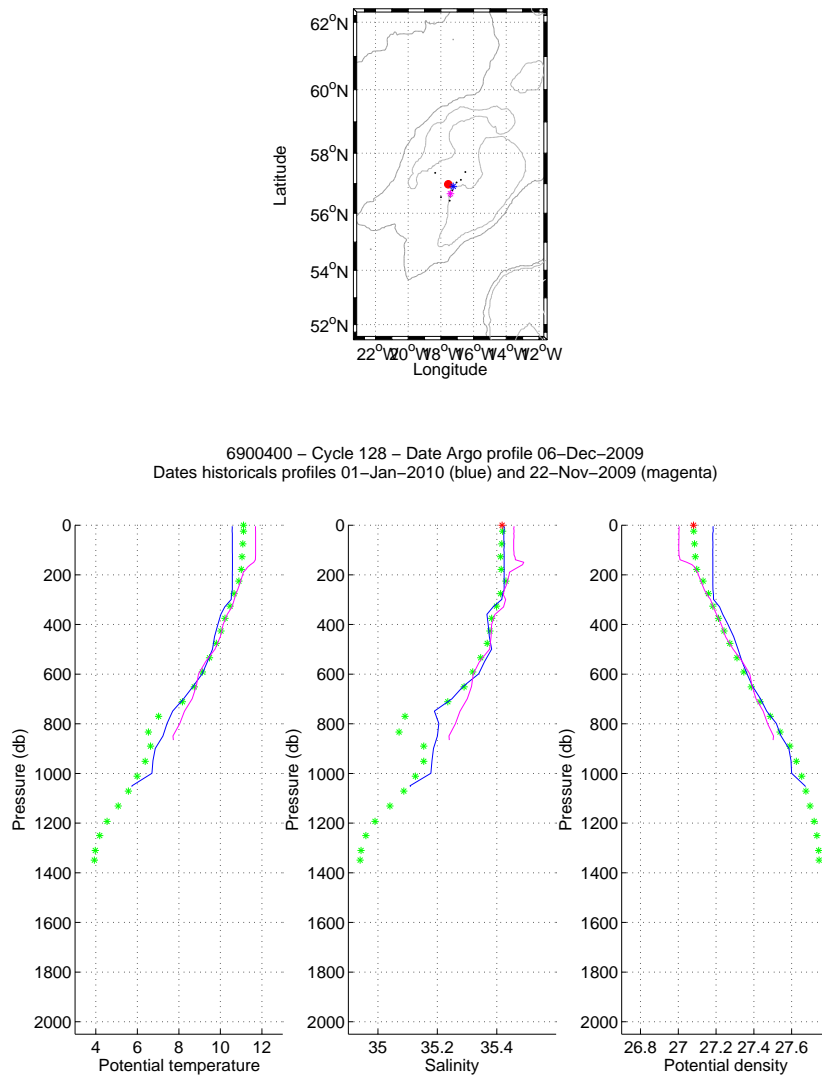
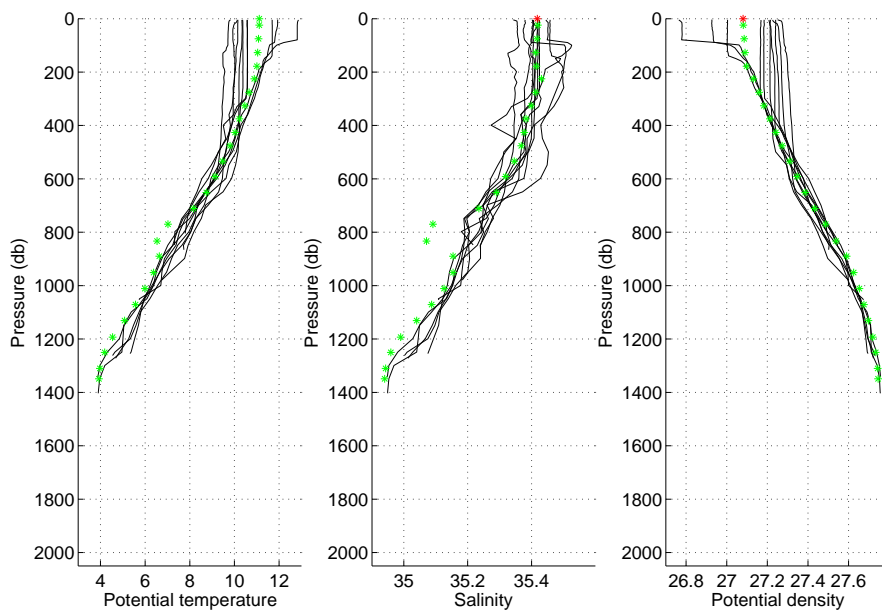


FIG. 19: Flotteur 6900400, cycle 128. Upper panel : Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest ARGO profile in space is in blue. Lower panels : Temperature, salinity and potential density as function 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).

6900400 – Cycle 128



6900400 – Cycle 128 – Date Argo profile 06-Dec-2009
 Dates historicals profiles 01-Jan-2010 (blue) and 22-Nov-2009 (magenta)

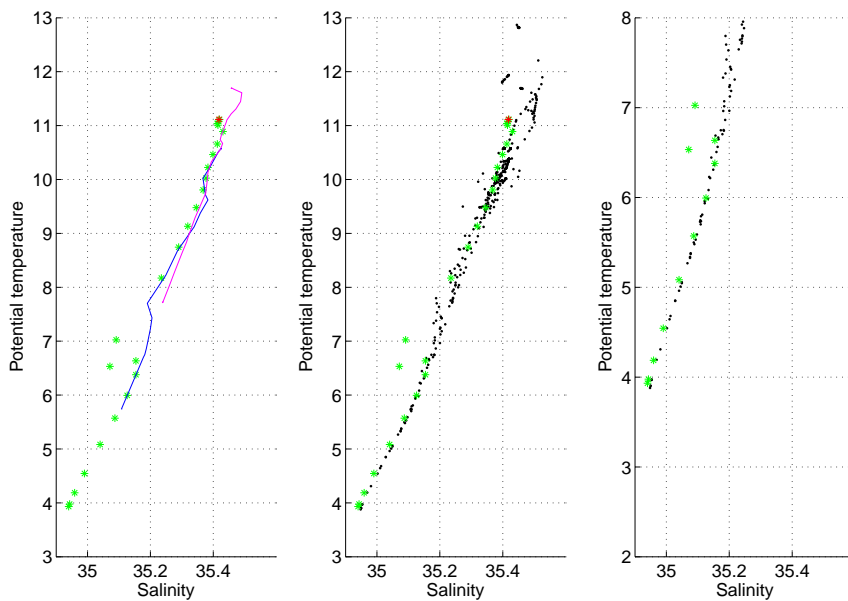


FIG. 20: Float 6900400, cycle 128. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles : the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC flag (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 137 - Comparison to the nearest historical CTD profiles

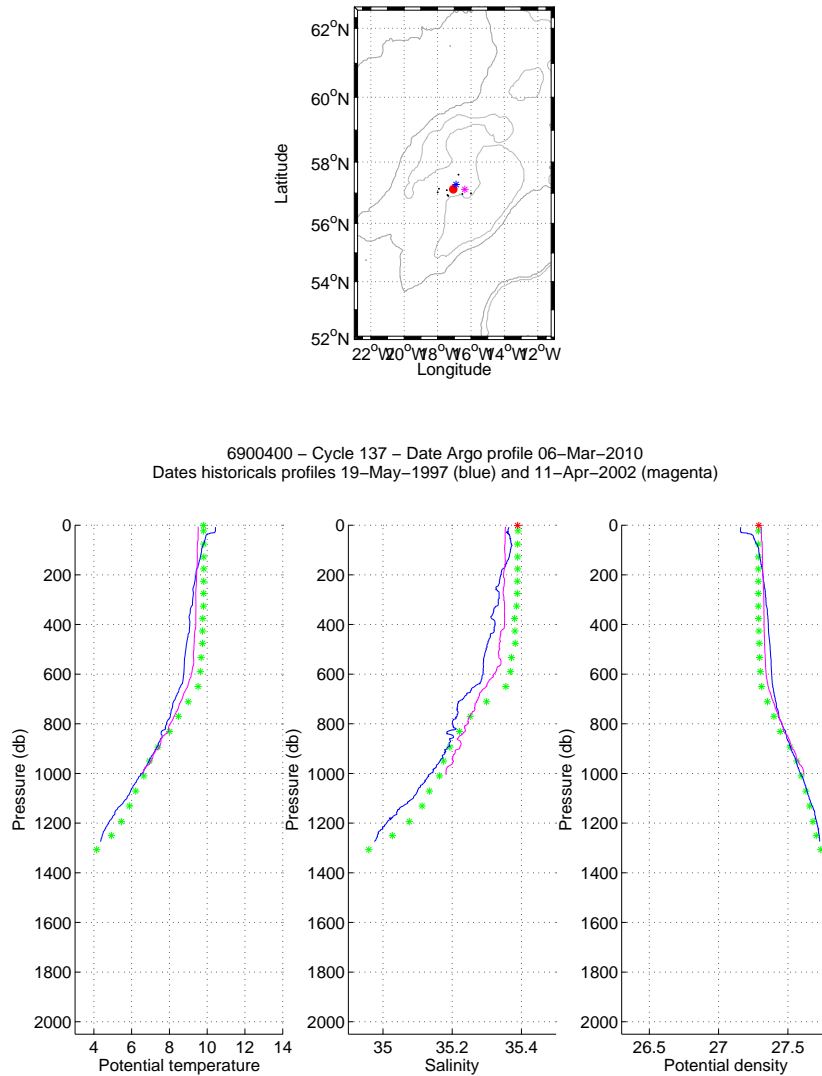
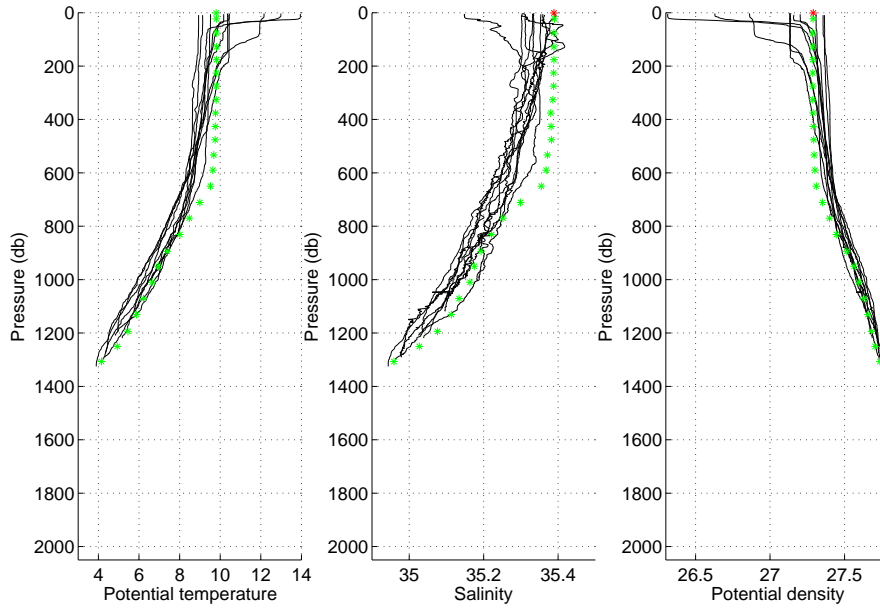


FIG. 21: Flotteur 6900400, cycle 137. Upper panel : Position of the Argo profile (red) and of the nearest CTD profiles (black). The nearest CTD profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels : Temperature, salinity and potential density as function of pressure for the Argo 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 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).

6900400 – Cycle 137



6900400 – Cycle 137 – Date Argo profile 06–Mar–2010
 Dates historicals profiles 19–May–1997 (blue) and 11–Apr–2002 (magenta)

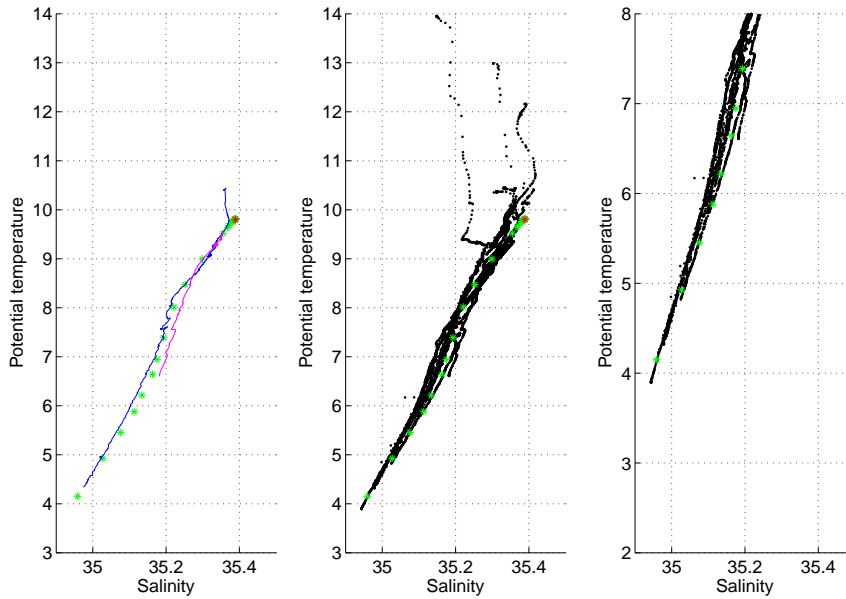


FIG. 22: Float 6900400, cycle 137. The Argo profile (stars) is compared to the nearest CTD profiles (black line) and to two specific profiles : the nearest profile in time (magenta) and the nearest profile in space (blue). The color of the Argo profile represents the QC flag (green for a QC=1; blue for 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.

11 Cycle 137 - Comparison to the nearest ARGO profiles

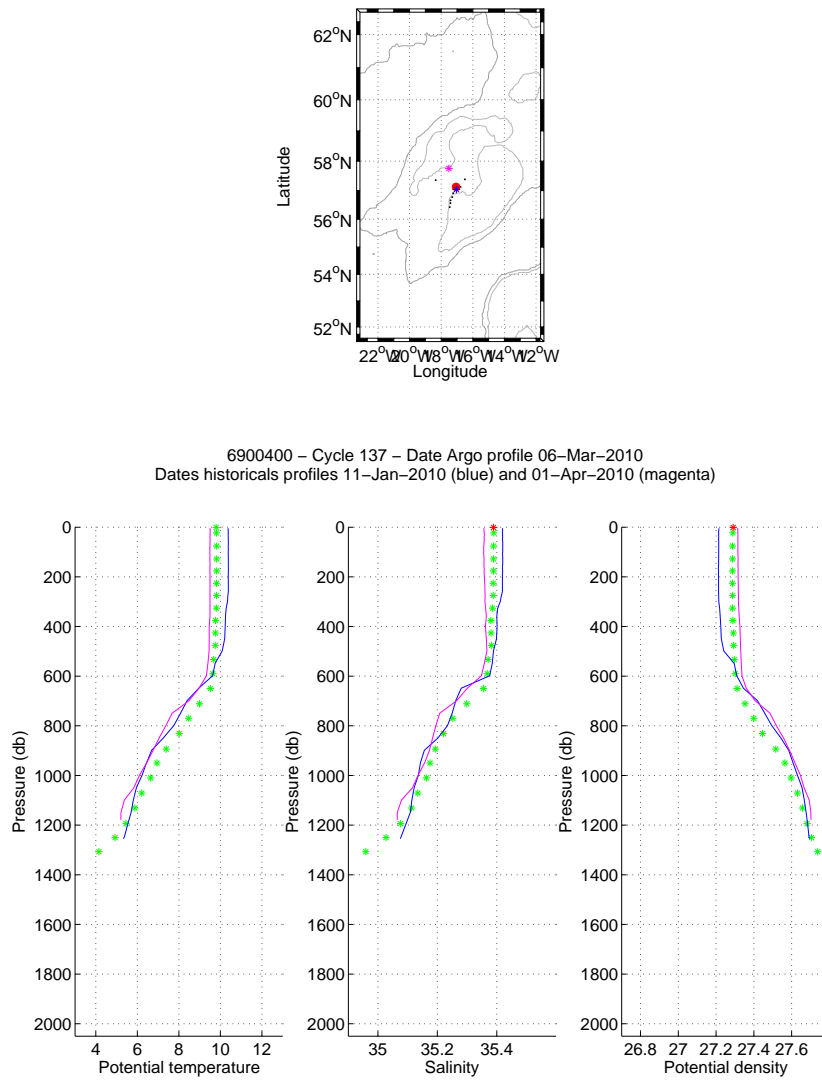
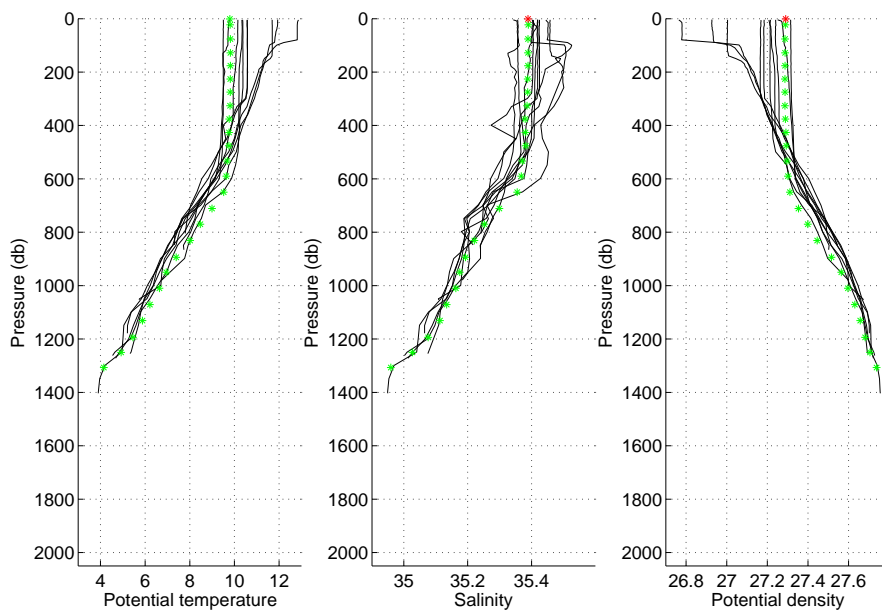


FIG. 23: Flotteur 6900400, cycle 137. Upper panel : Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest ARGO profile in space is in blue. Lower panels : Temperature, salinity and potential density as function 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).

6900400 – Cycle 137



6900400 – Cycle 137 – Date Argo profile 06–Mar–2010
 Dates historicals profiles 11–Jan–2010 (blue) and 01–Apr–2010 (magenta)

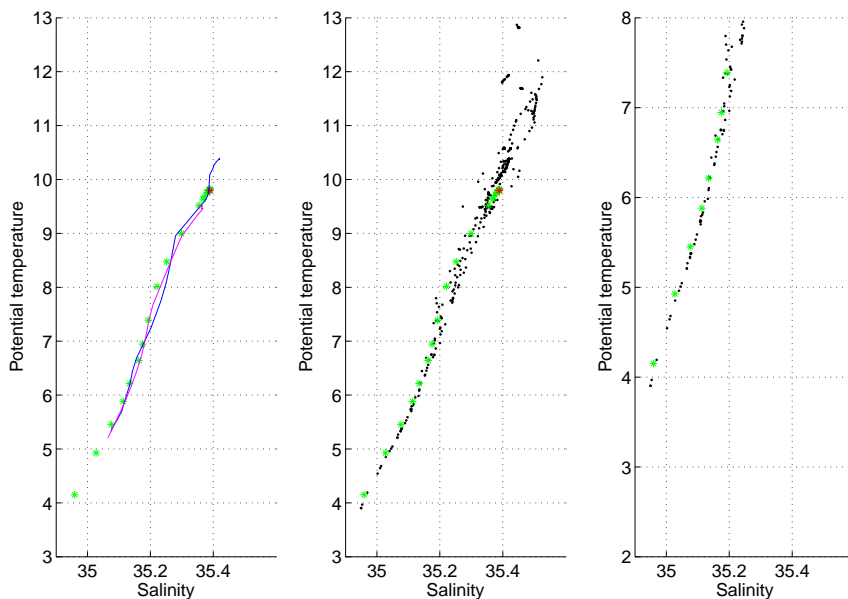


FIG. 24: Float 6900400, cycle 137. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles : the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC flag (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 # 1

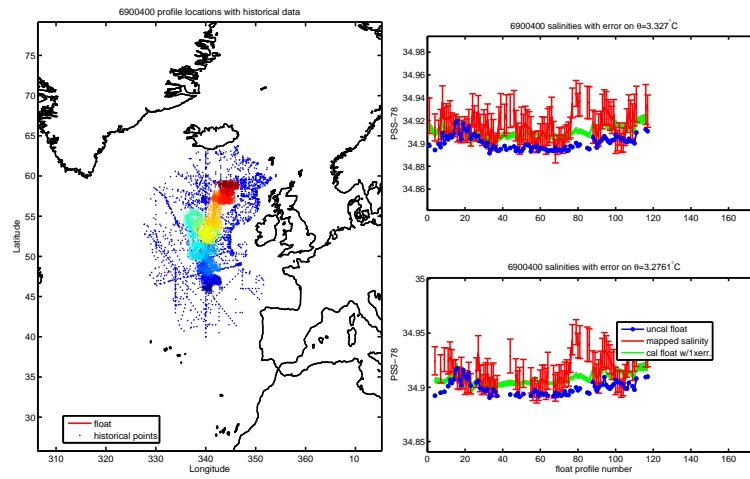


FIG. 25: Figures from the OW method. (Left) Position of the historical and float data. (Right) Comparison, on various θ levels, between the float data and the historical data interpolated at the float position.

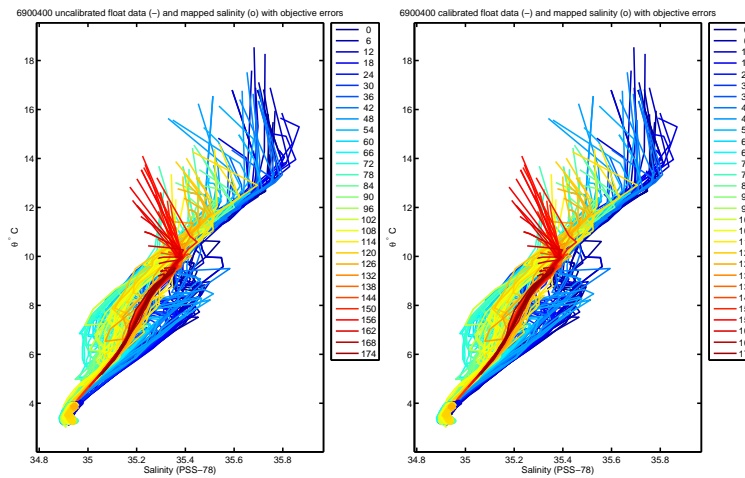


FIG. 26: Figures from the OW method. Comparison of the θ/S diagram of the float with the historical database. (left) raw data; (right) corrected data using the OW correction.

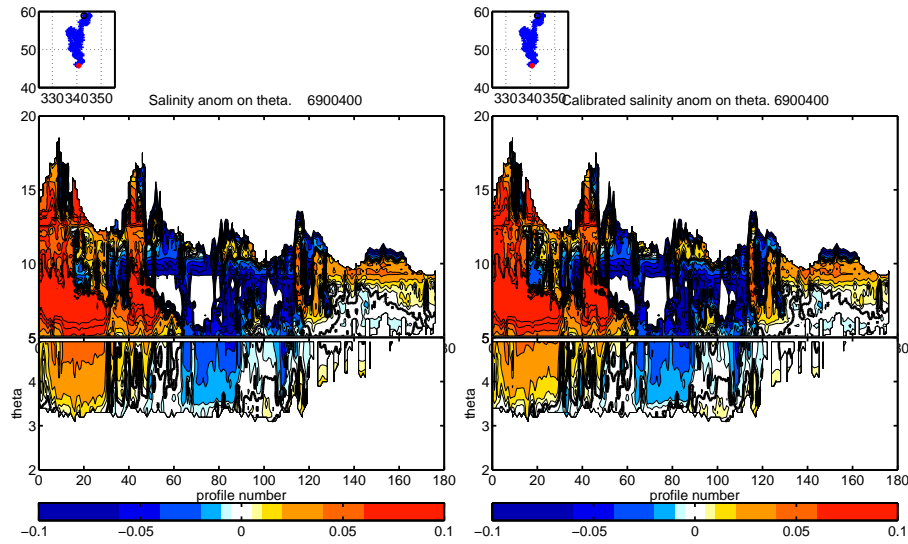


FIG. 27: Figures from the OW method. Salinity anomaly : (left) raw data ; (right) corrected data using the OW correction.

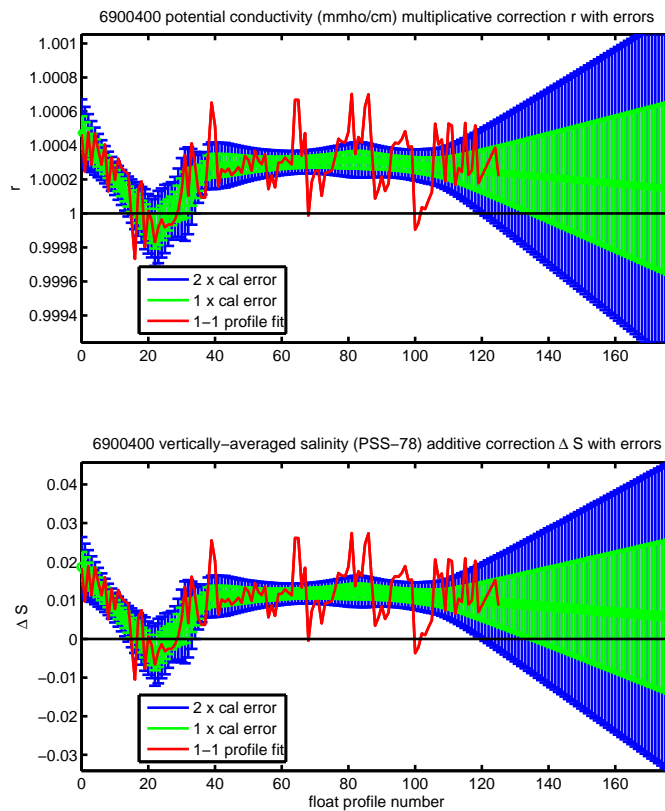


FIG. 28: Correction proposed by the OW method.

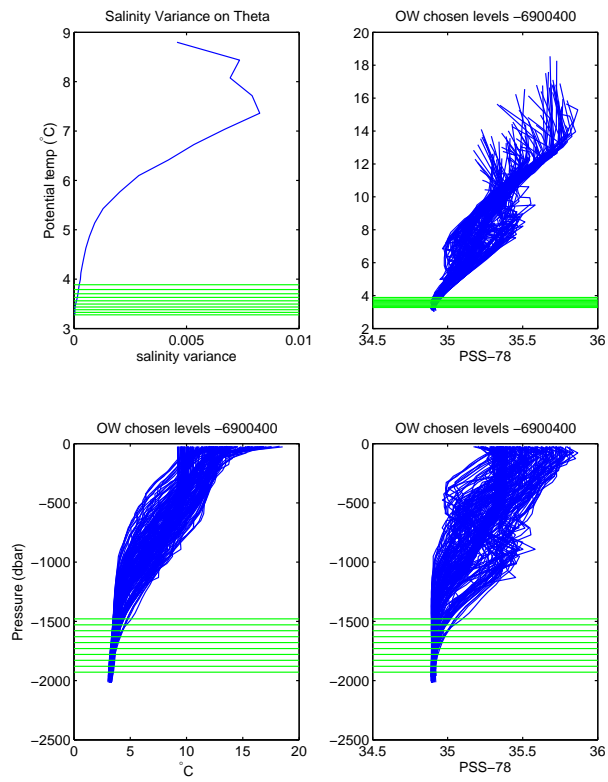


FIG. 29: Chosed levels by the OW method.

13 OW method, CONFIGURATION # 3

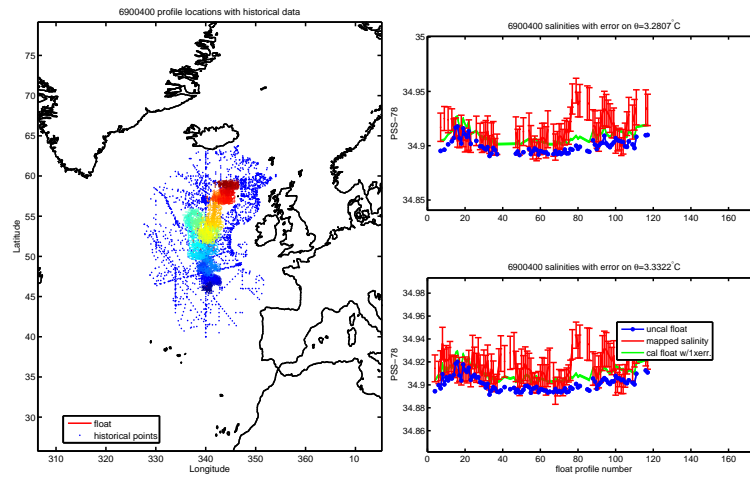


FIG. 30: Figures from the OW method. (Left) Position of the historical and float data. (Right) Comparison, on various θ levels, between the float data and the historical data interpolated at the float position.

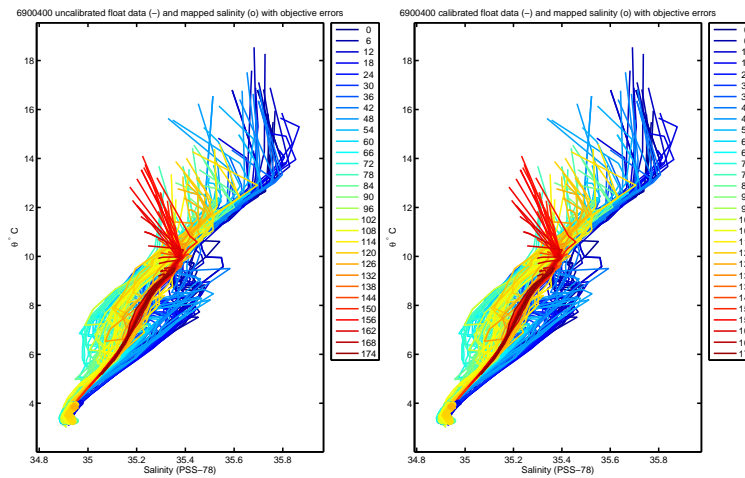


FIG. 31: Figures from the OW method. Comparison of the θ/S diagram of the float with the historical database. (left) raw data; (right) corrected data using the OW correction.

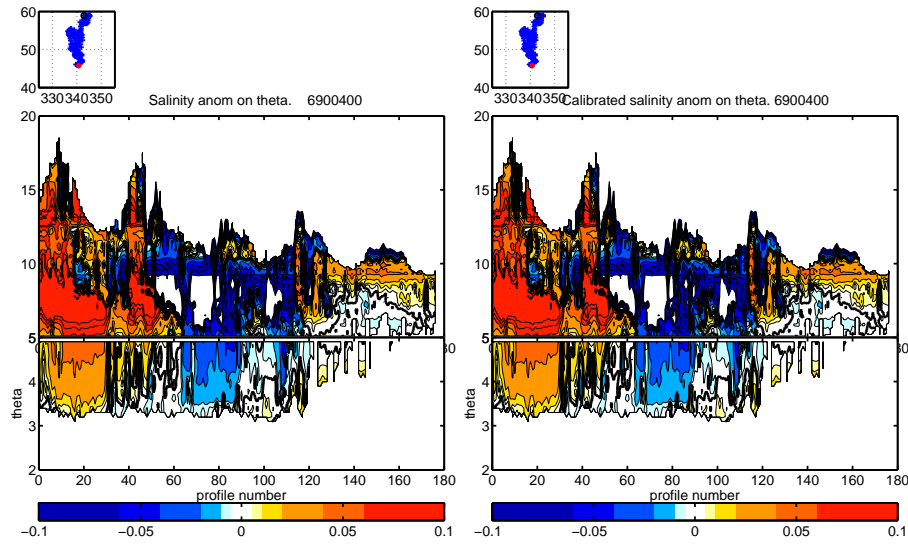


FIG. 32: Figures from the OW method. Salinity anomaly : (left) raw data ; (right) corrected data using the OW correction.

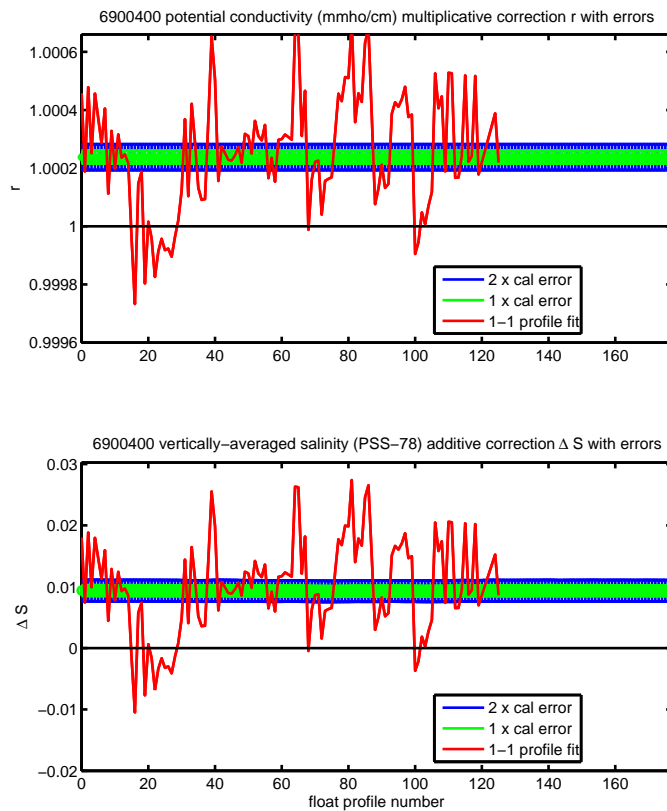


FIG. 33: Correction proposed by the OW method.

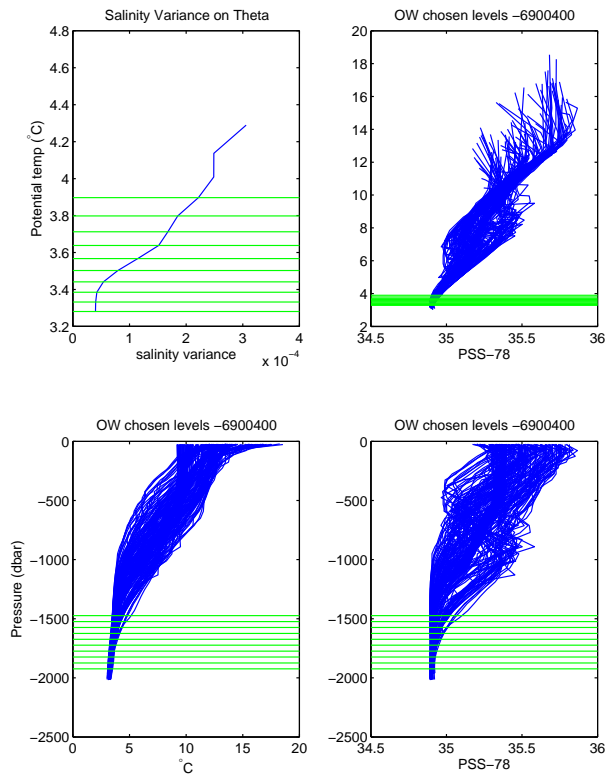


FIG. 34: Chosed levels by the OW method.