Rapport interne LPO/09-11

UMR 6523 **Laboratoire de Physique des Océans**	**DELAYED MODE QUALITY CONTROL OF OVIDE ARGO DATA** **FLOAT WMO 6900398**	
Date : **14 septembre 2009**	Auteurs : **Lagadec Catherine** **Thierry Virginie**	Archivage : **LPO**

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DELAYED MODE QUALITY CONTROL OF OVIDE ARGO DATA FLOAT WMO 6900398

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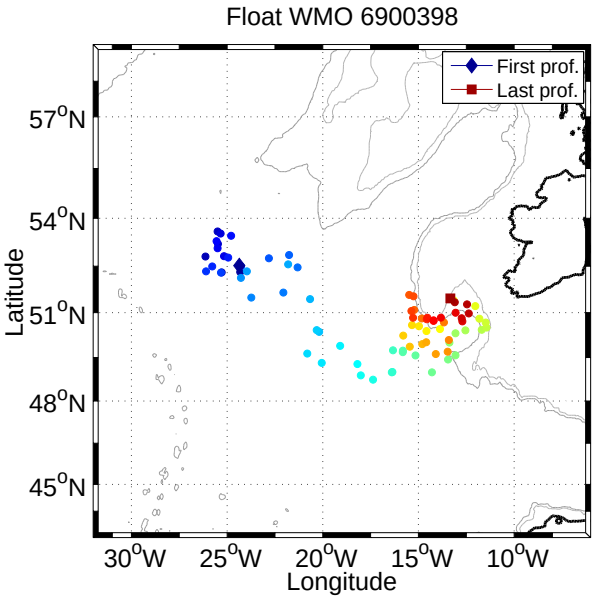
14 septembre 2009



1 Presentation and DMQC summary

Number	Deployment (cycle OD) cycle OD	Last cycle
Provor WMO 6900398	07/06/2006 12 h 04	79
CTS3 05-S3-29	52.519 N 24.3645 W	
Date of control	Float status	Last cycle
july 2009	dead	08/08/2008
Coriolis transmission		14/09/2009

Tab. 1: Status of the float

1.1 QC flag checks and interesting profiles

Cycle	Para-meter	Vertical level	Old flag	New flag	Comments	Coriolis transmission
33A	TEMP	all	3	1		July 2007
all cycles except 0D	SAL	surface (where PRS inf. 5)	1	4	untrustable data	01/09/09
24A 70A	SAL SAL	surface	1	4	drift unstrustable data	

Tab. 2: Float 6900398. Summary of the modifications of the real-time QC flags and of the interesting or suspicous data.

Important : the resolution is equal to 50 dbar from the surface to 500 dbar, then 60 dbar from 500 to 2000 dbar.

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 offset in salinity around of 0.15 PSU. It is thus necessary to correct the data of 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 0.01.

2 Data

OW CONFIGURATION	3 no break points	11	12
CONFIG_MAX_CASTS	250	250	250
MAP_USE_PV	1	1	1
MAP_USE_PV_ELLIPSE	1	1	1
MAP_USE_FACTEUR	1	1	1
MAPSCALE_LONGITUDE_LARGE	3.2	3.2	1.6
MAPSCALE_LONGITUDE_SMALL	0.8	0.8	0.8
MAPSCALE_LATITUDE_LARGE	2	2	1
MAPSCALE_LATITUDE_SMALL	0.5	0.5	0.5
MAPSCALE_PHI_LARGE	0.5	0.5	0.5
MAPSCALE_PHI_SMALL	0.1	0.1	0.1
MAPSCALE_AGE	0.69	0.69	0.69
MAP_P_EXCLUDE	500	500	500
MAP_P_DELTA	250	250	250
Reference data base	CTD only	ARGO	CTD and ARGO
Comments			

TAB. 3: Parameters of the OW method.

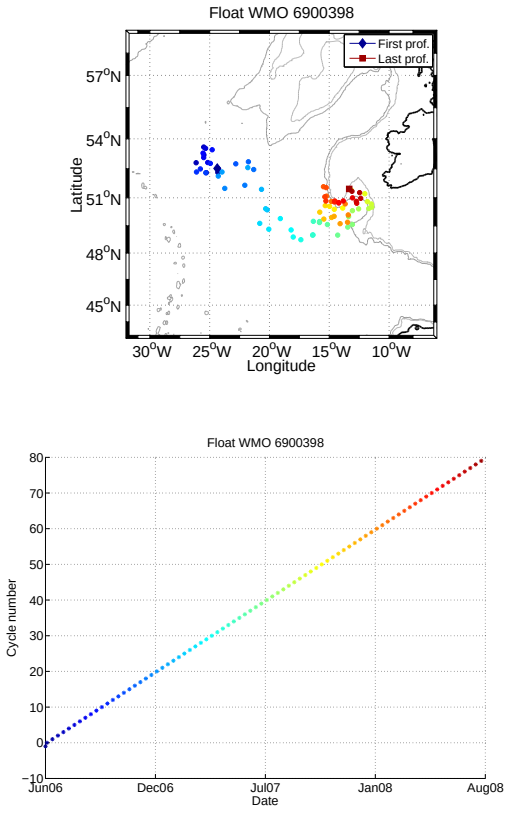


FIG. 1: Profiles position and relationship between cycle number, date and color.

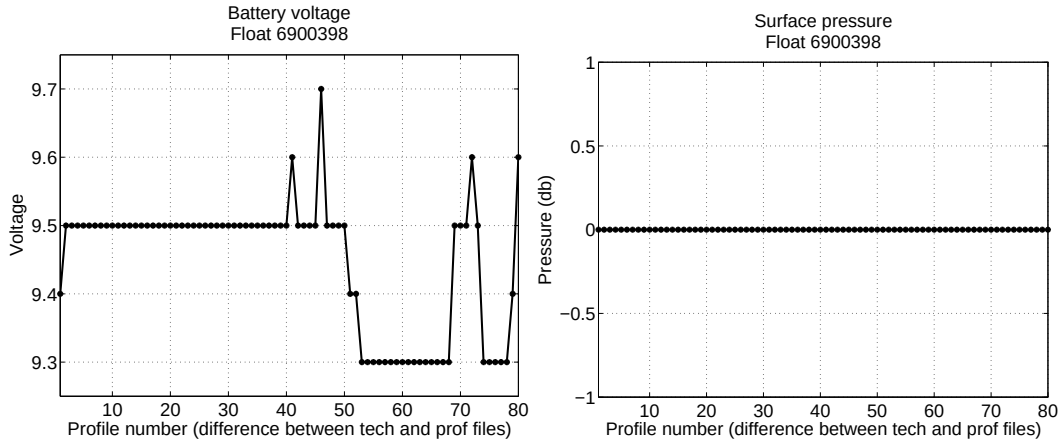


FIG. 2: Surface pressure

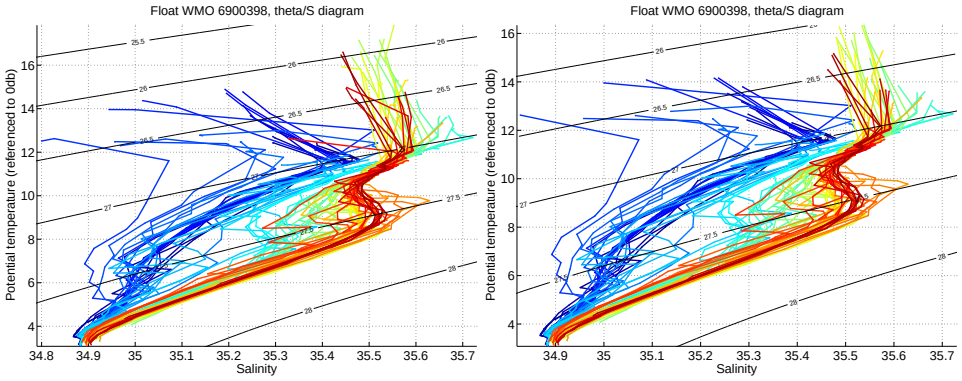


FIG. 3: θ/S diagrams. (Left panel) Flags are not taken into account. (Right panel) Quality flags are taken into account.

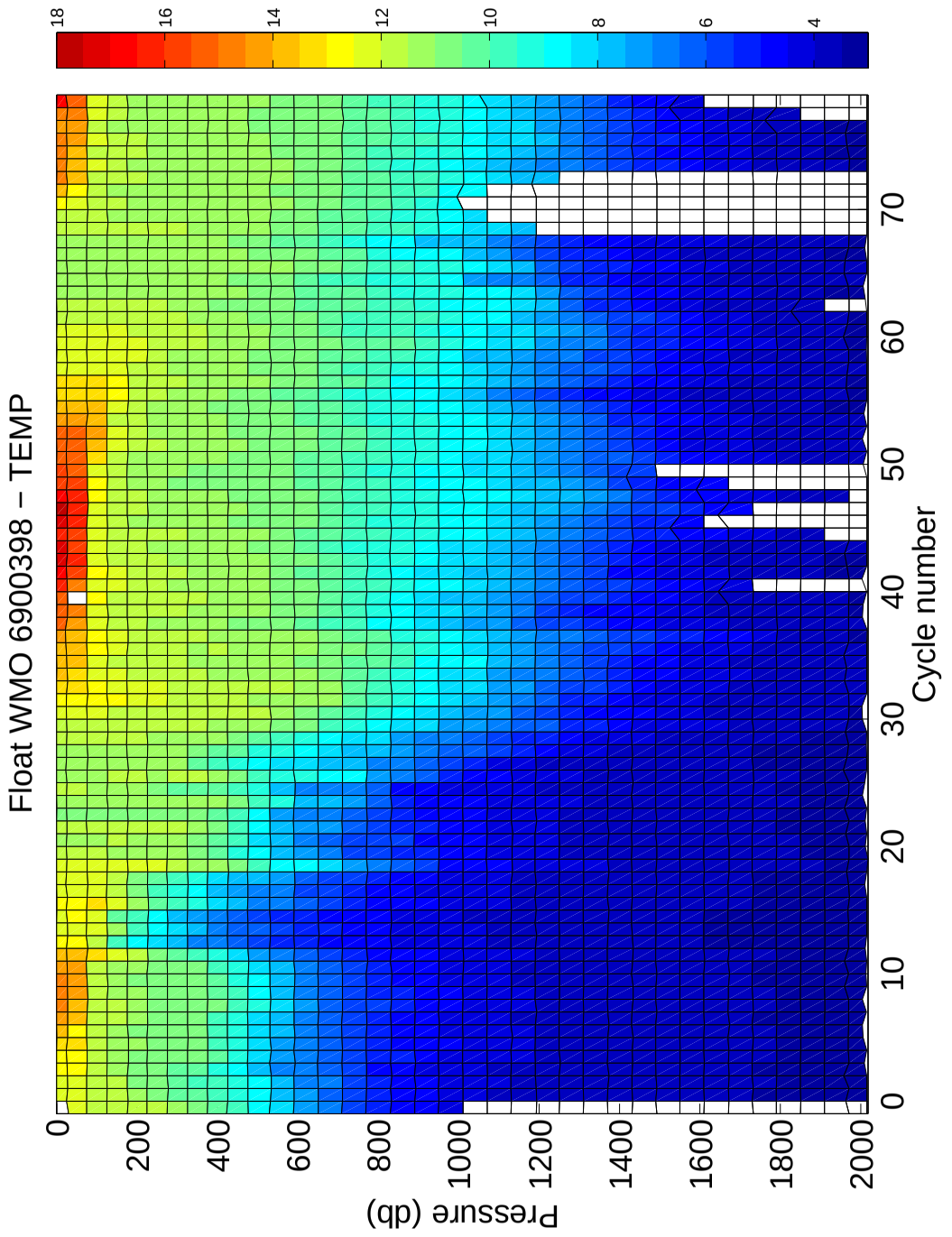


FIG. 4: Temperature section along the float trajectory. Quality flags are not taken into account.

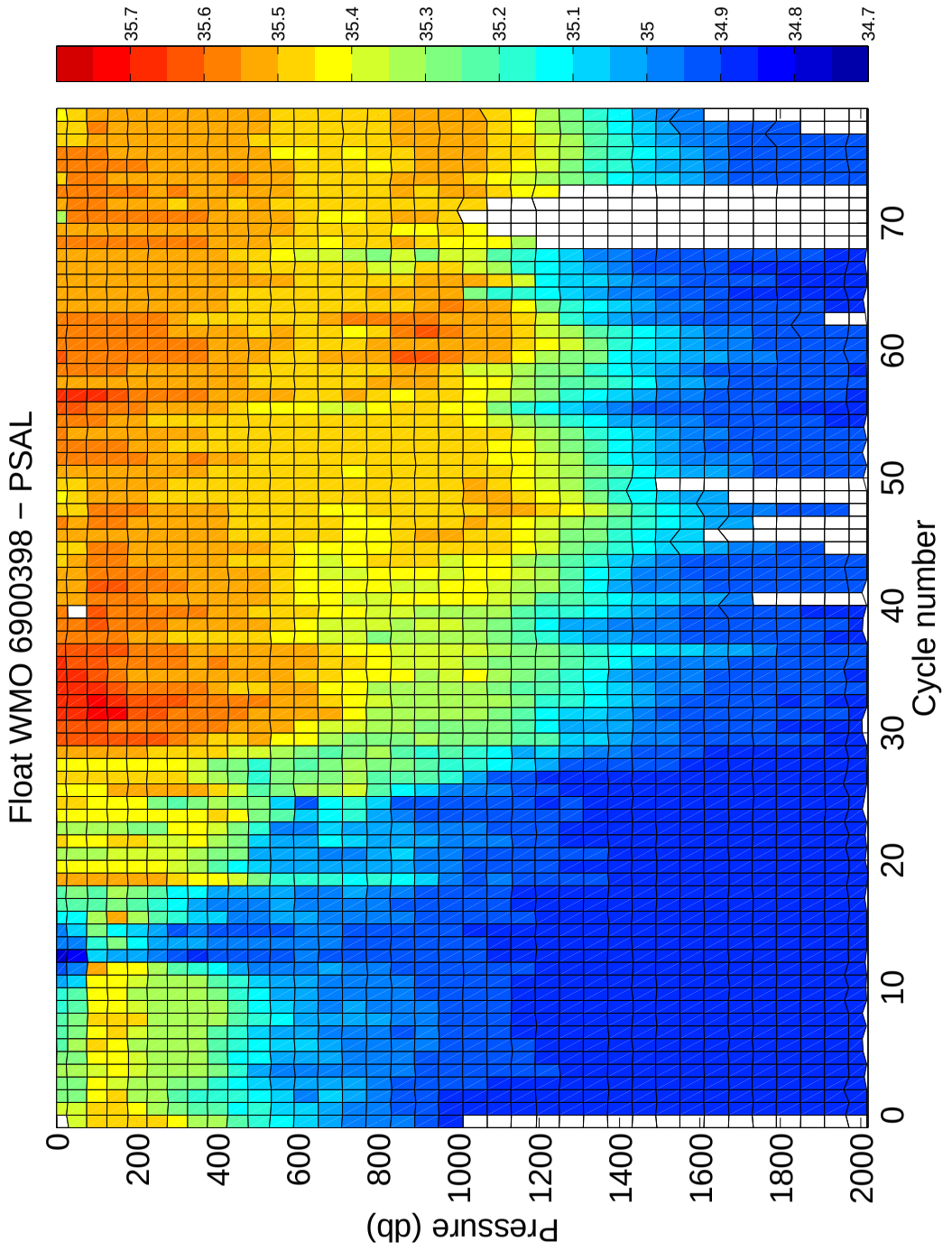


FIG. 5: Salinity section along the float trajectory. Quality flags are not taken into account.

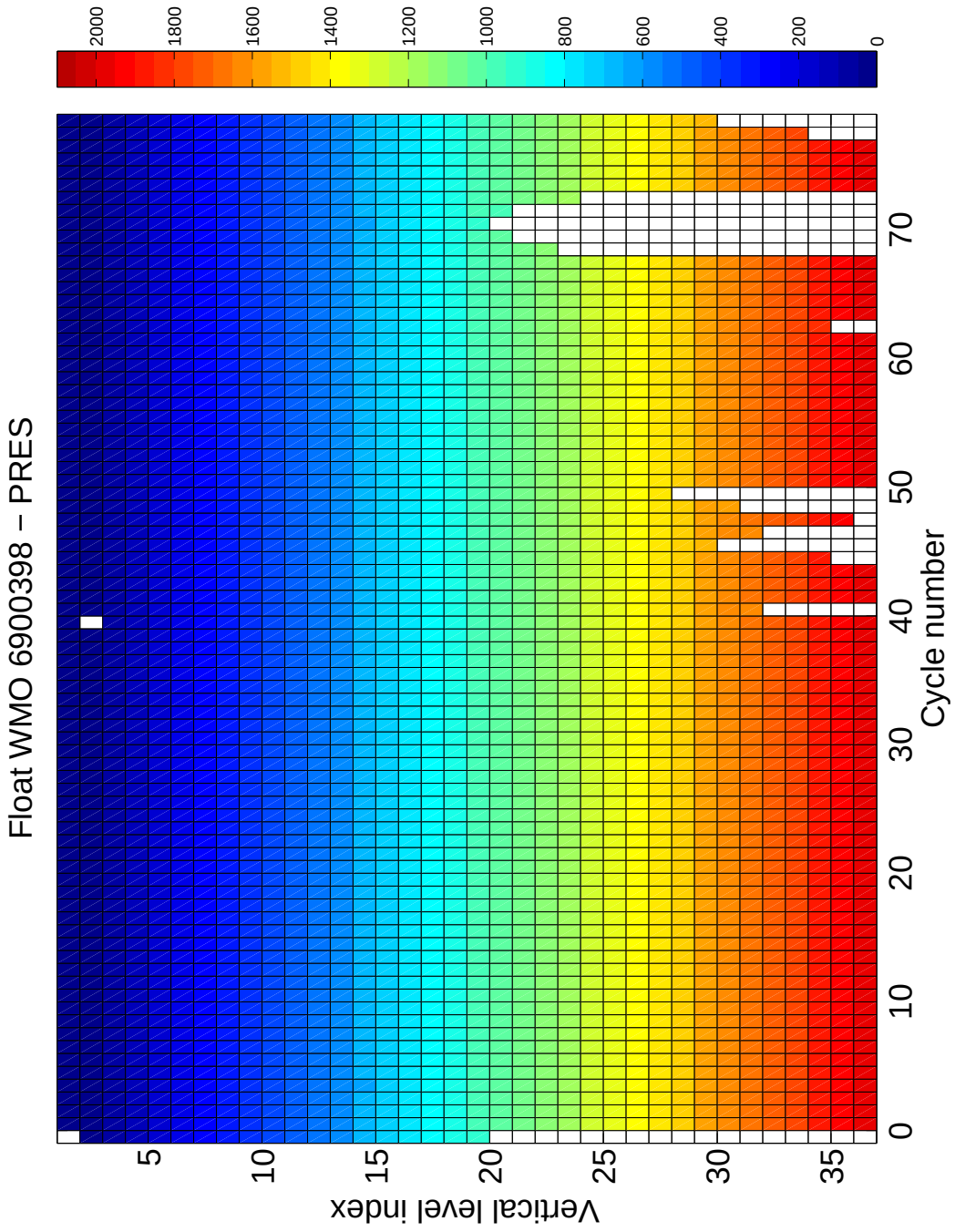


FIG. 6: Pression as fonction of cycle number and vertical level index along the float trajectory. Quality flags are taken into account.

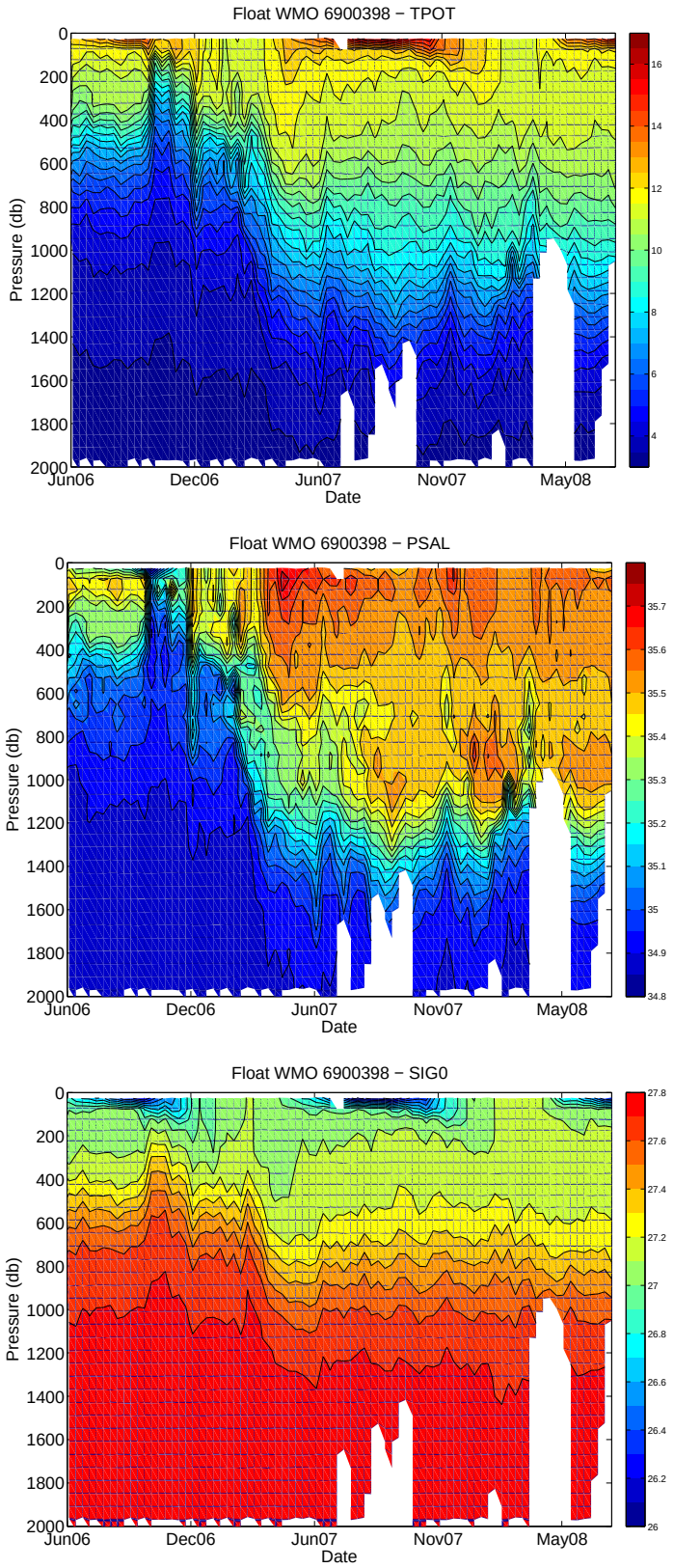


FIG. 7: Potential temperature, salinity and potential density sections along the float trajectory (interpolated on standard levels). Quality flags are taken into account.

3 Comparison to the OVIDE 2006 nearest CTD profile

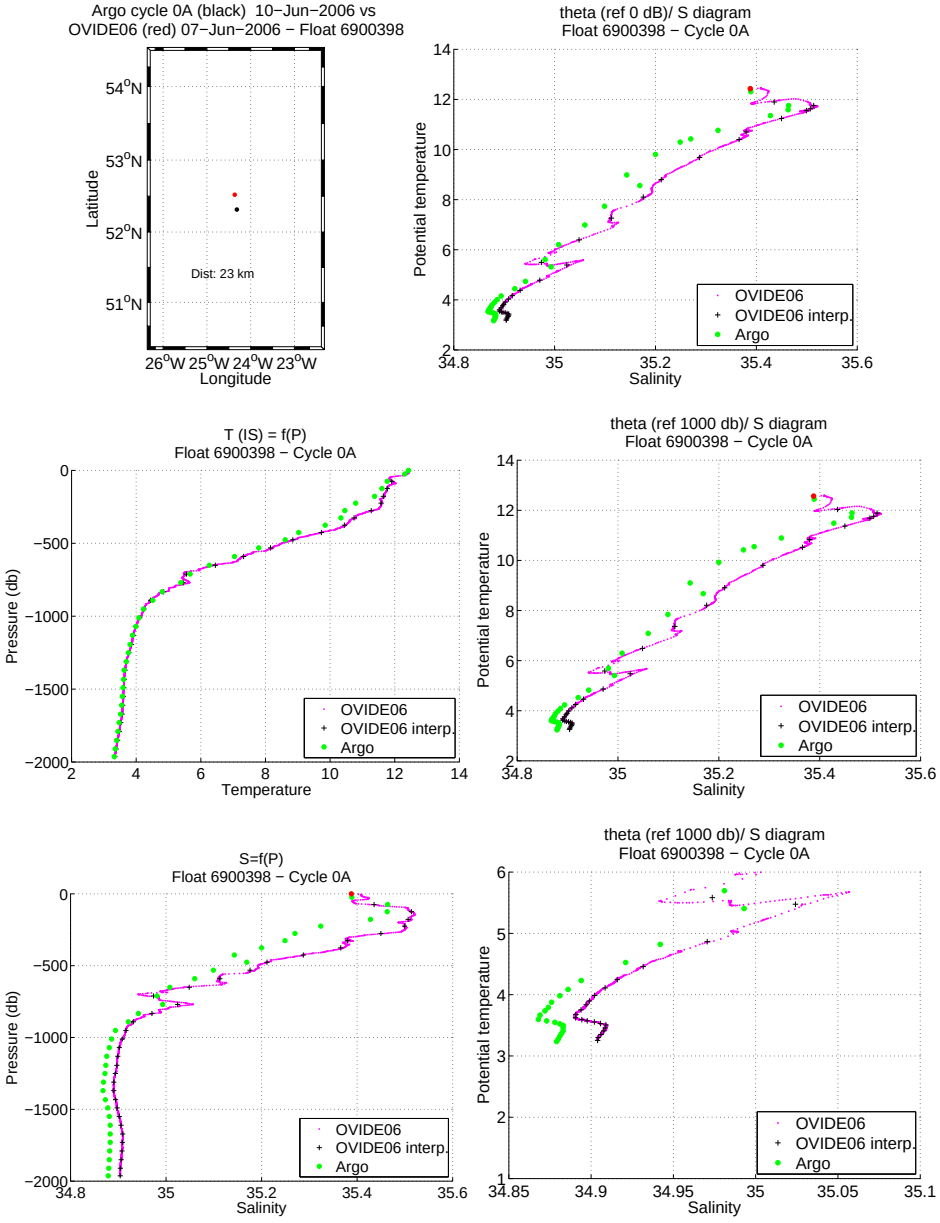


FIG. 8: Comparison of the cycle 0A with the nearest CTD profile done after the float deployment.

4 Cycle 24 - Comparaison to the nearest historical CTD profiles

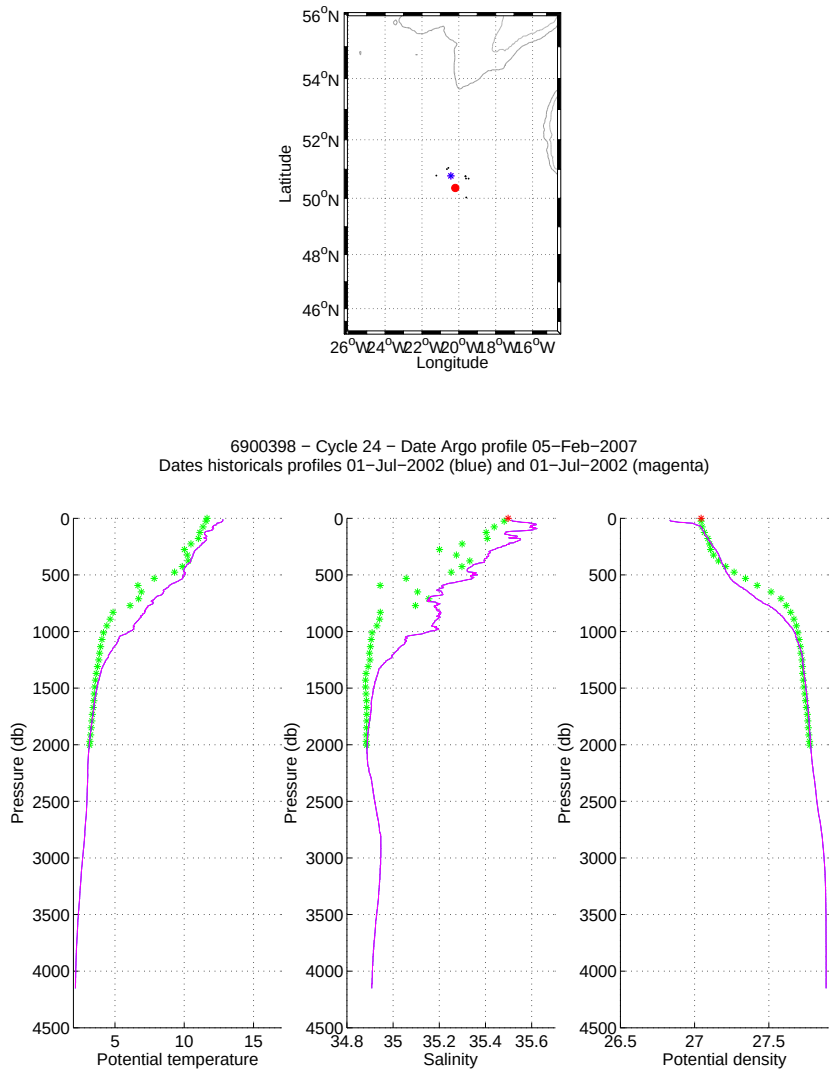


FIG. 9: Flotteur 6900398, cycle 24. Upper panel : Position of the Argo profile (red) and of the nearest CTD profiles (black). The nearest CTD profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels : Temperature, salinity and potential density as function of pressure 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).

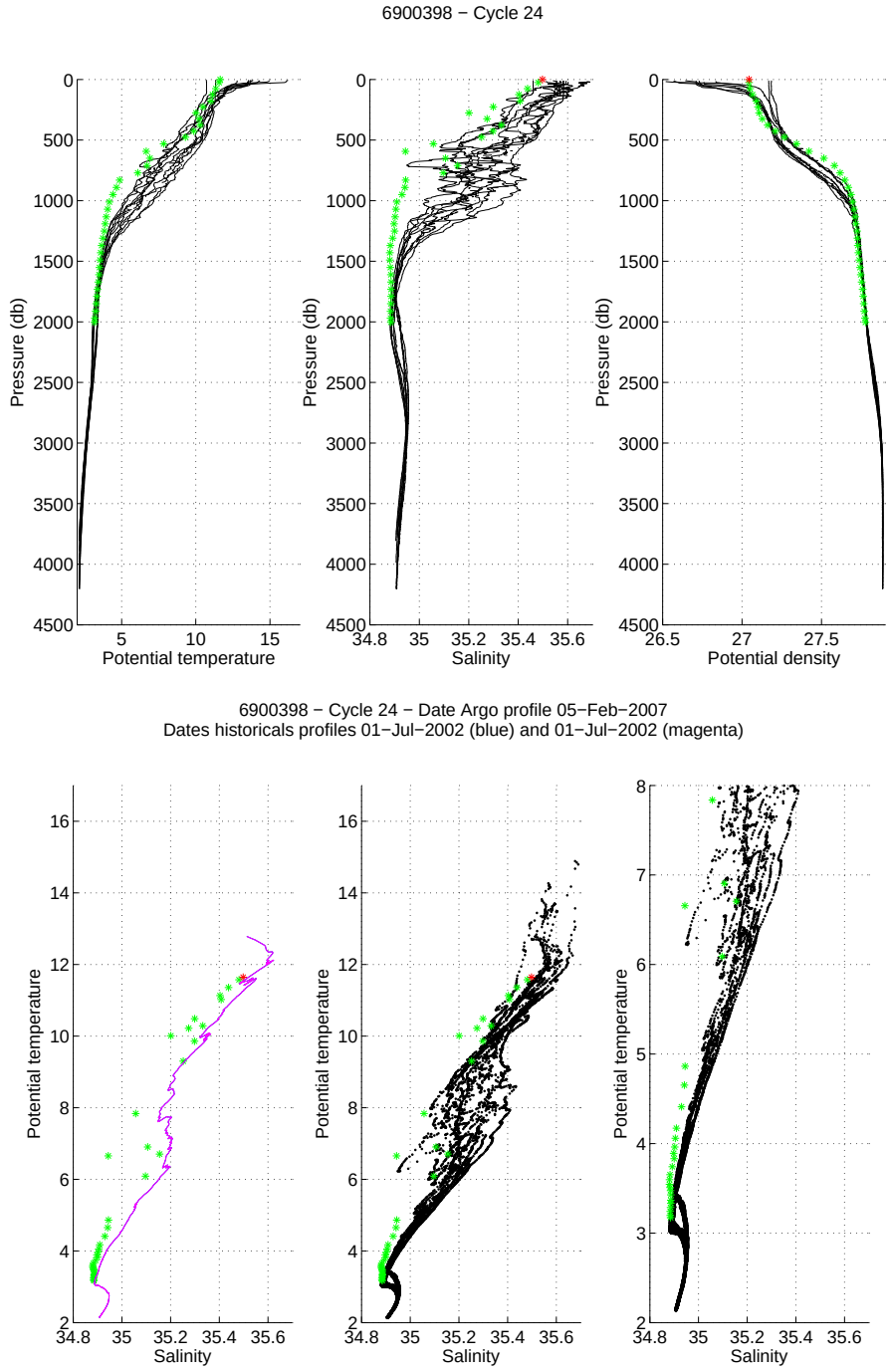


FIG. 10: Float 6900398, cycle 24. The Argo profile (stars) is compared to the nearest CTD profiles (black line) and to two specific profiles : the nearest profile in time (magenta) and the nearest profile in space (blue). The color of the Argo profile represents the QC flag (green for a QC=1 ; blue for 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 24 - Comparaison to the nearest ARGO profiles

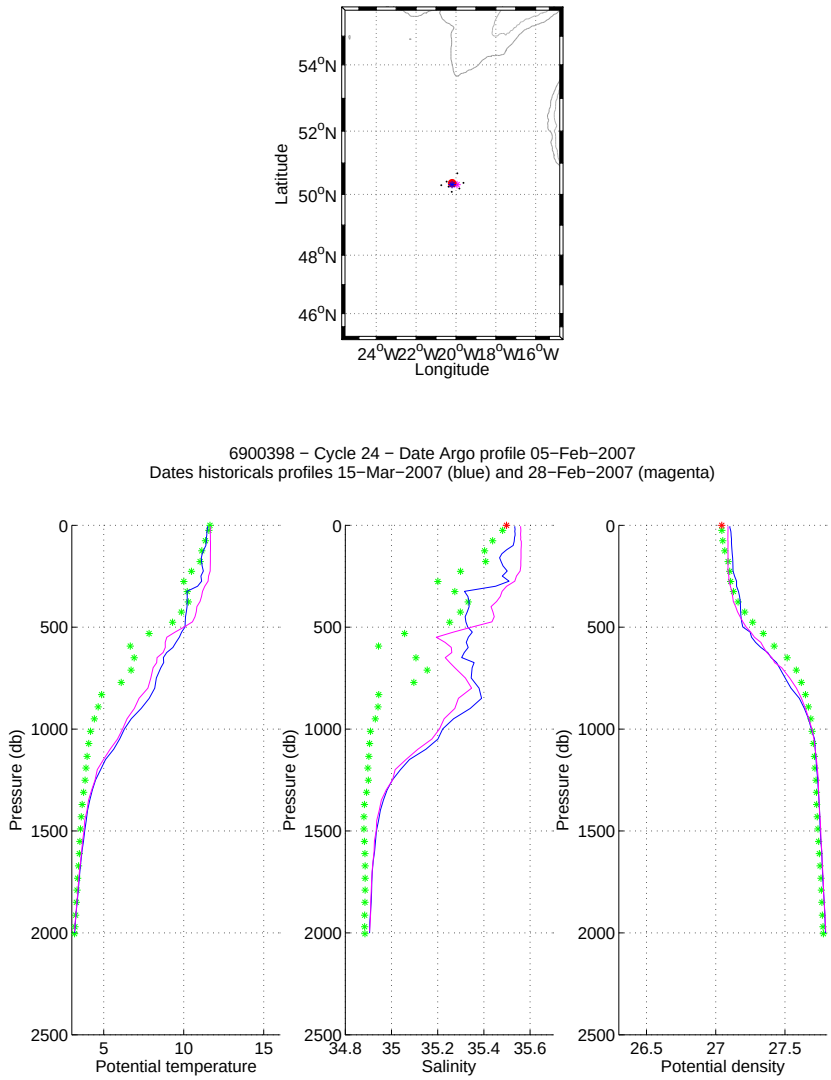


FIG. 11: Flotteur 6900398, cycle 24. Upper panel : Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels : Temperature, salinity and potential density as function 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).

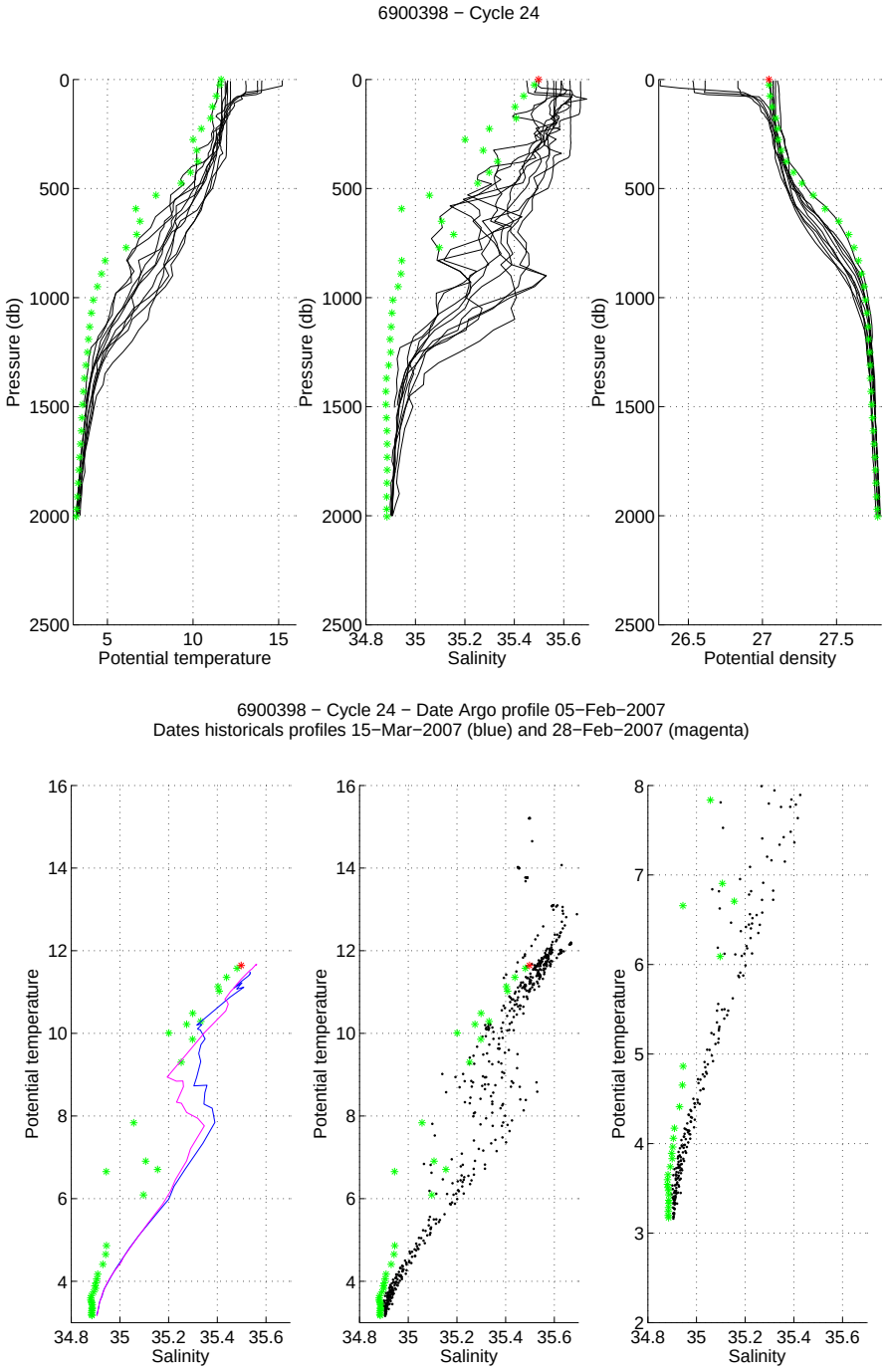


FIG. 12: Float 6900398, cycle 24. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles : the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC flag (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 70 - Comparaison to the nearest historical CTD profiles

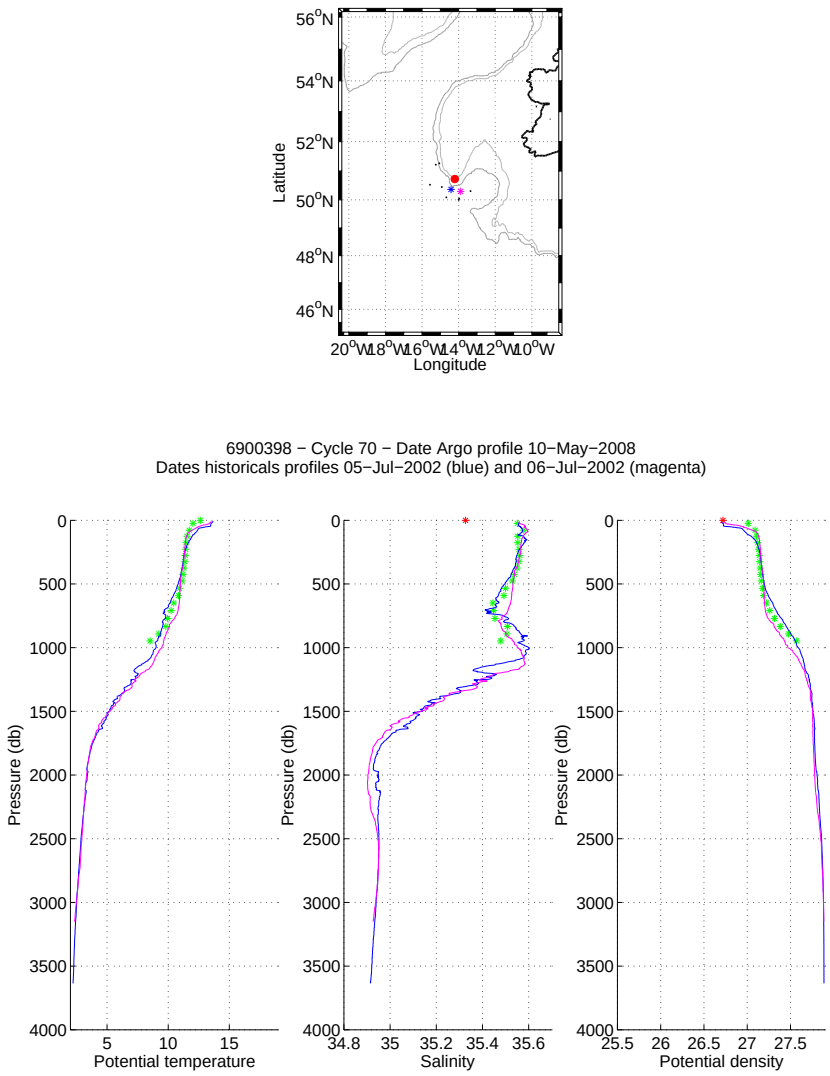


FIG. 13: Flotteur 6900398, cycle 70. Upper panel : Position of the Argo profile (red) and of the nearest CTD profiles (black). The nearest CTD profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels : Temperature, salinity and potential density as function of pressure 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).

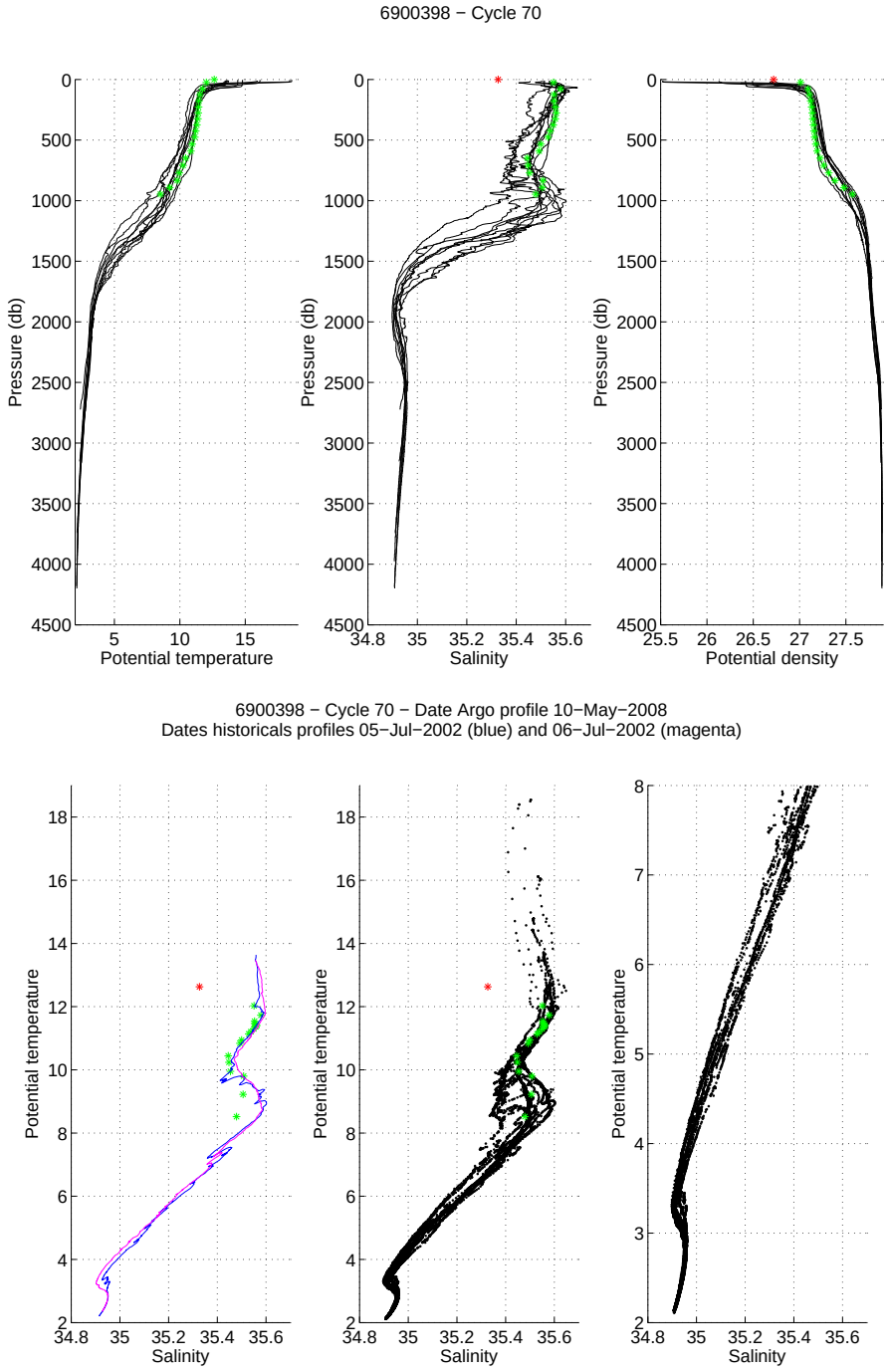


FIG. 14: Float 6900398, cycle 70. The Argo profile (stars) is compared to the nearest CTD profiles (black line) and to two specific profiles : the nearest profile in time (magenta) and the nearest profile in space (blue). The color of the Argo profile represents the QC flag (green for a QC=1 ; blue for 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 70 - Comparaison to the nearest ARGO profiles

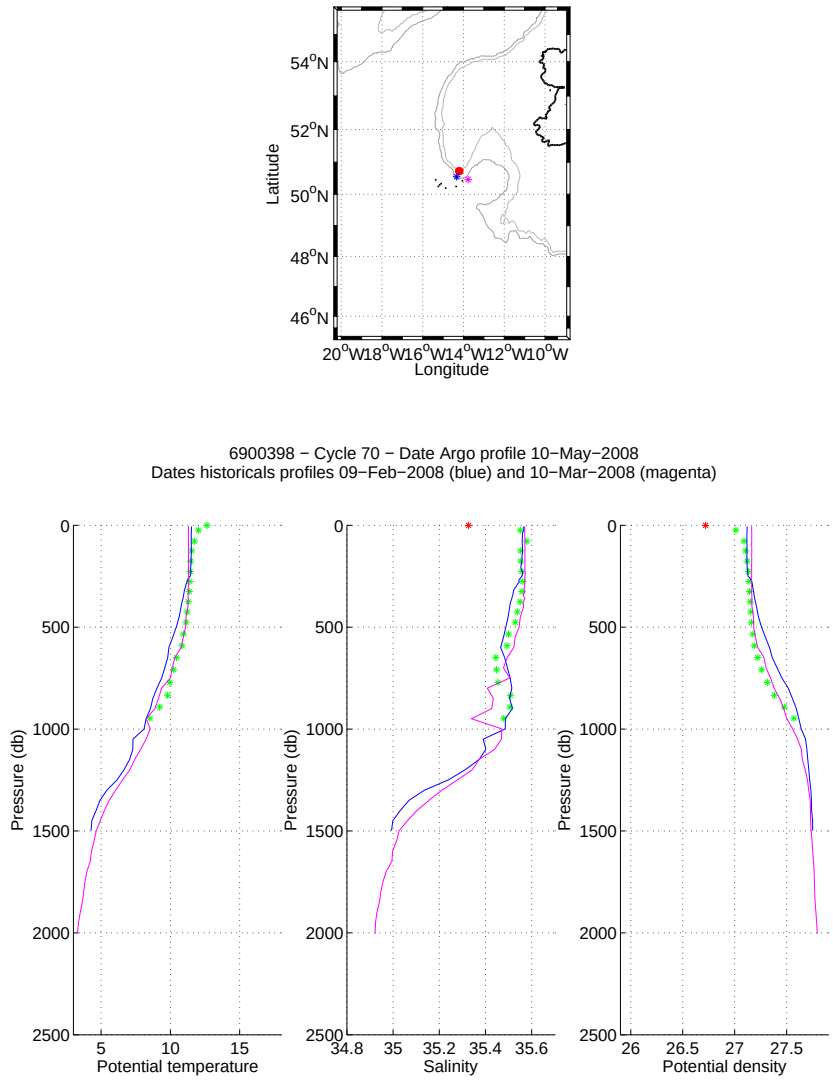


FIG. 15: Flotteur 6900398, cycle 70. Upper panel : Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels : Temperature, salinity and potential density as function 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).

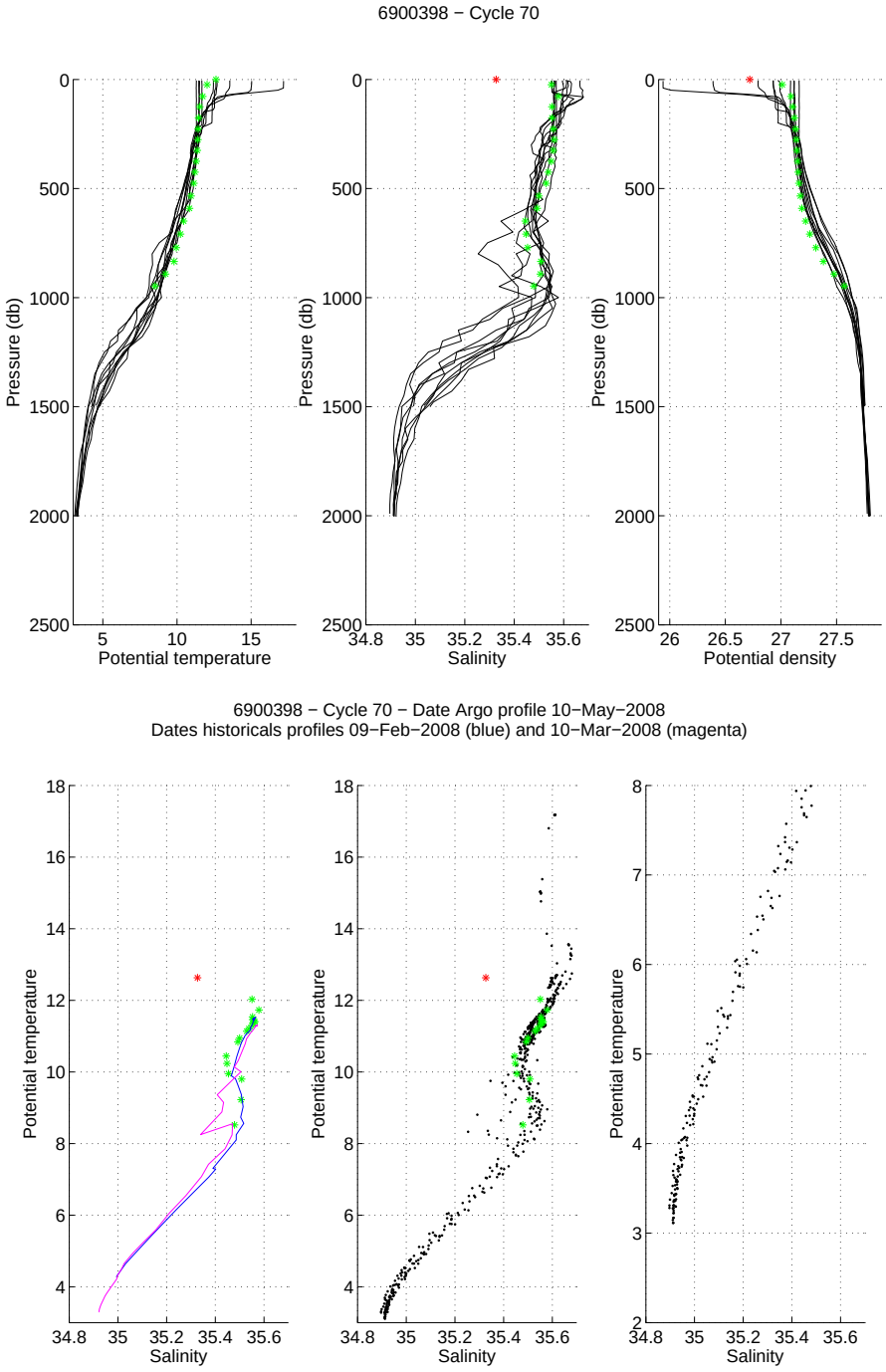


FIG. 16: Float 6900398, cycle 70. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles : the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC flag (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 OW method, CONFIGURATION # 3

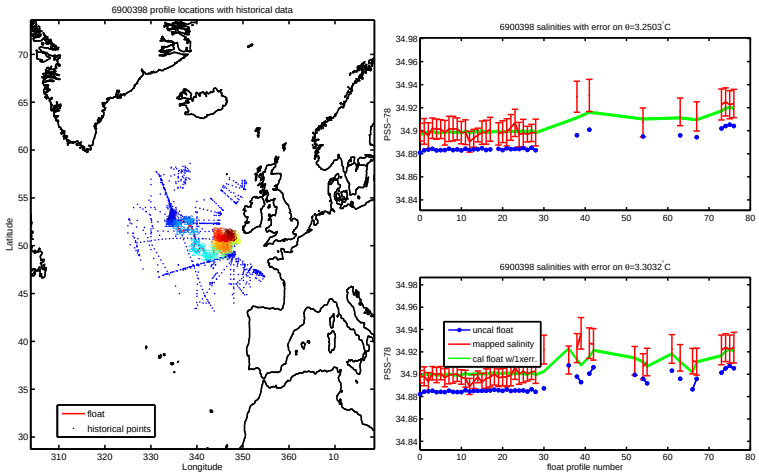


FIG. 17: Figures from the OW method. (Left) Position of the historical and float data. (Droite) Comparison, on various θ levels, between the float data and the historical data interpolated at the float position.

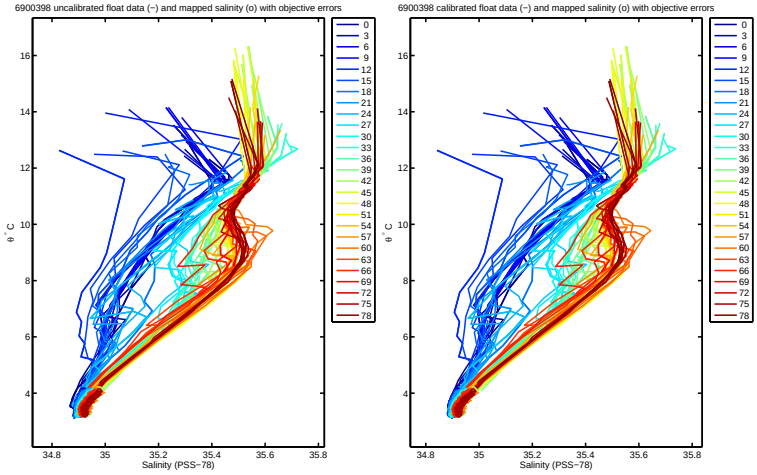


FIG. 18: Figures from the OW method. Compararison of the θ/S diagram of the float with the historial database. (left) raw data ; (right) corrected data using the OW correction.

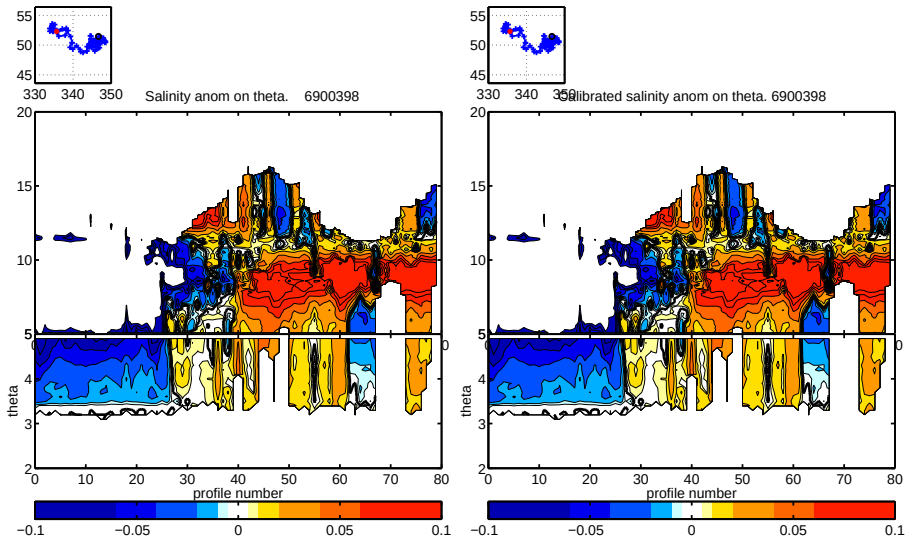


FIG. 19: Figures from the OW method. Salinity anomaly :(left) raw data ; (right) corrected data using the OW correction.

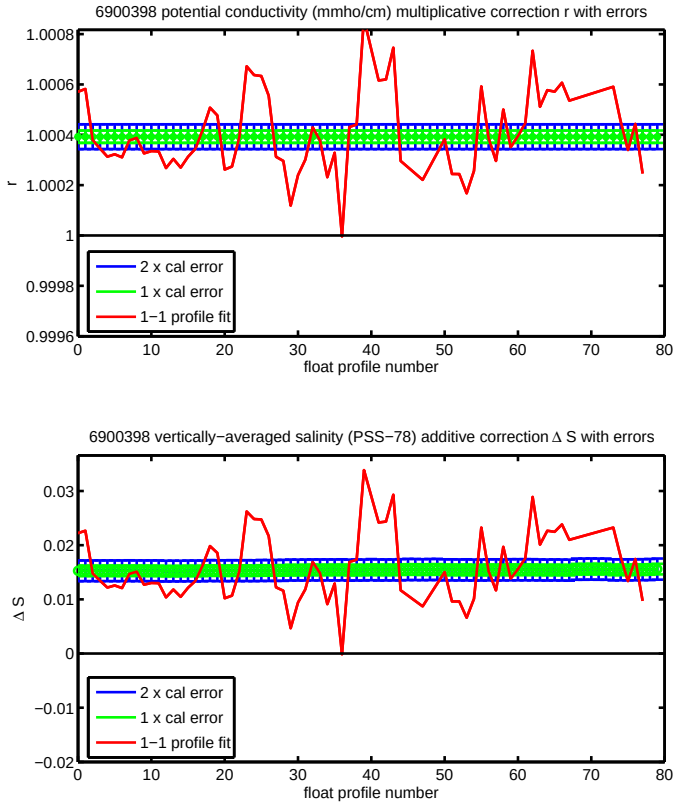


FIG. 20: Correction proposed by the OW method.

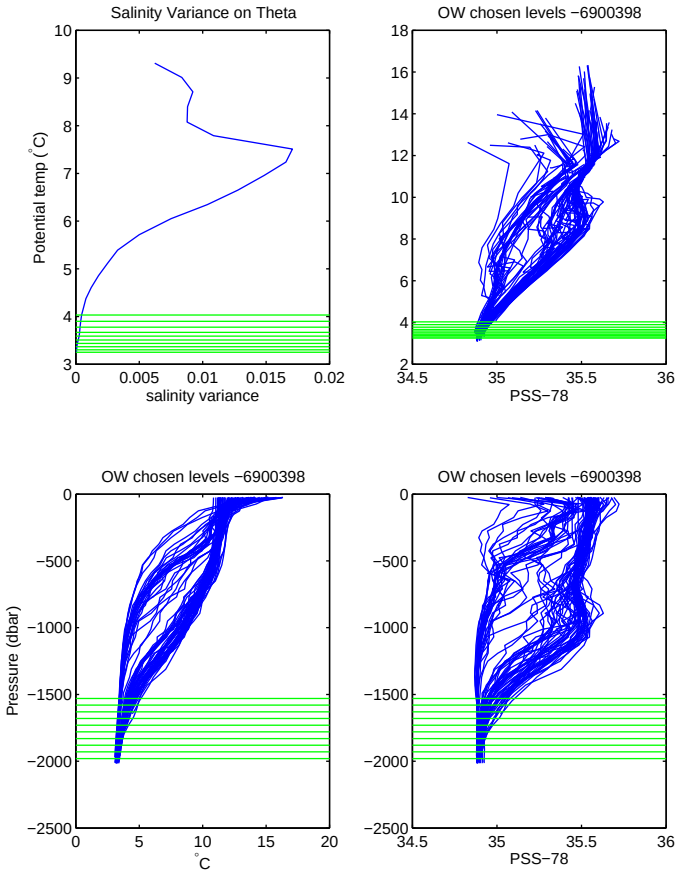


FIG. 21: Chosed levels by the OW method.

9 OW method, CONFIGURATION # 11

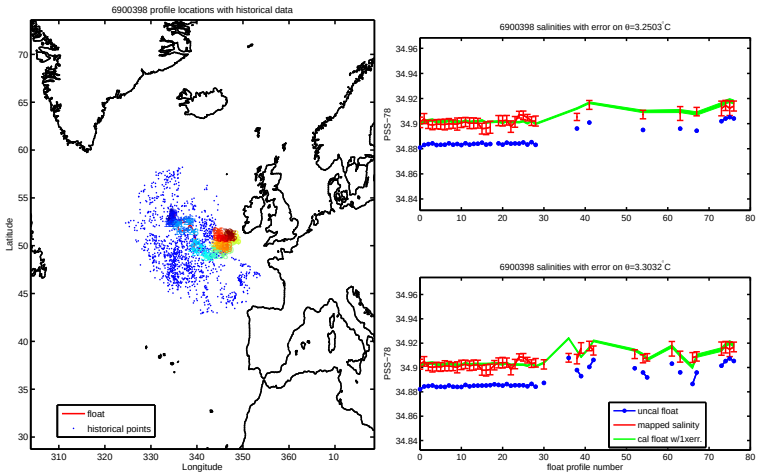


FIG. 22: Figures from the OW method. (Left) Position of the historical and float data. (Droite) Comparison, on various θ levels, between the float data and the historical data interpolated at the float position.

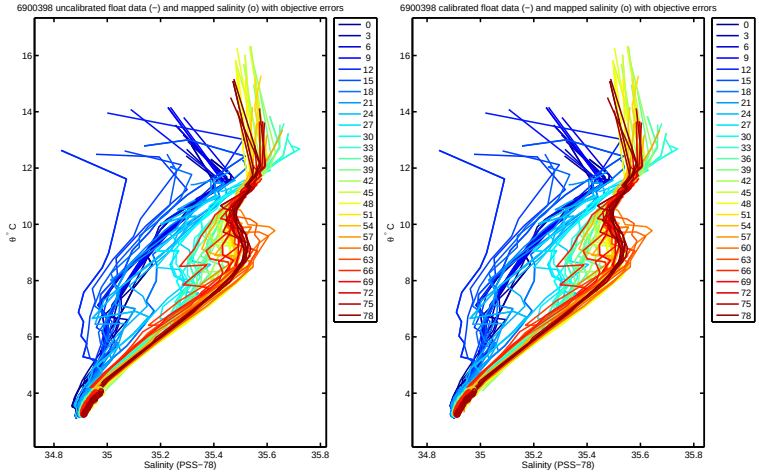


FIG. 23: Figures from the OW method. Compararison of the θ/S diagram of the float with the historial database. (left) raw data ; (right) corrected data using the OW correction.

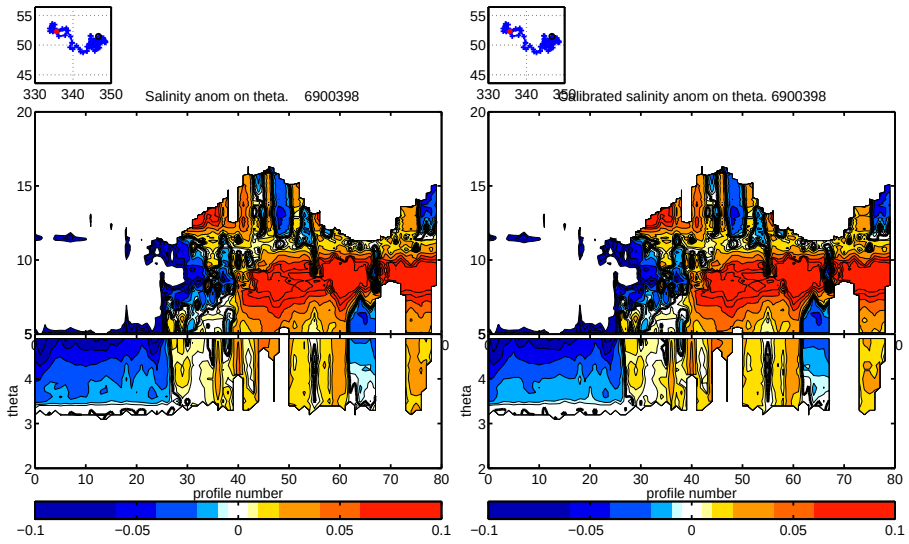


FIG. 24: Figures from the OW method. Salinity anomaly :(left) raw data ; (right) corrected data using the OW correction.

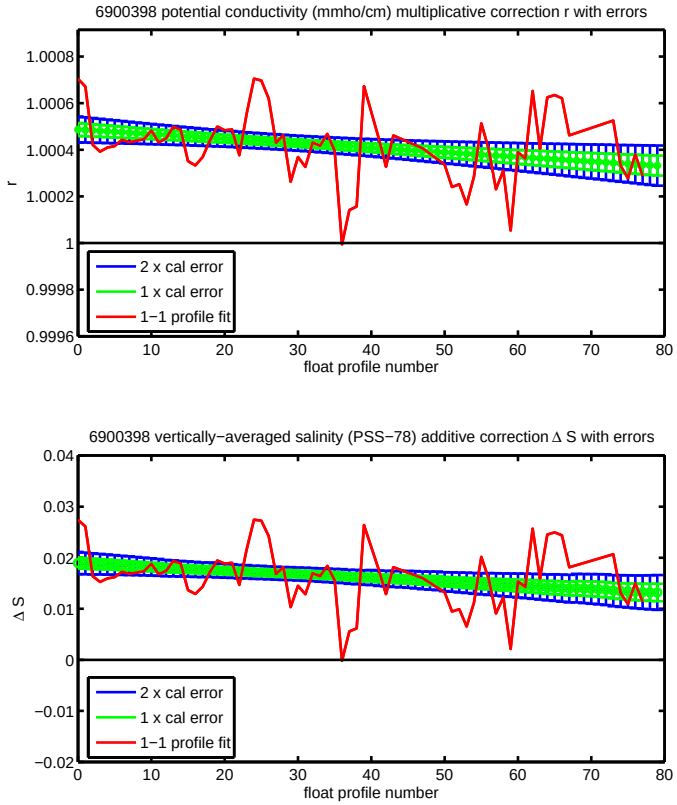


FIG. 25: Correction proposed by the OW method.

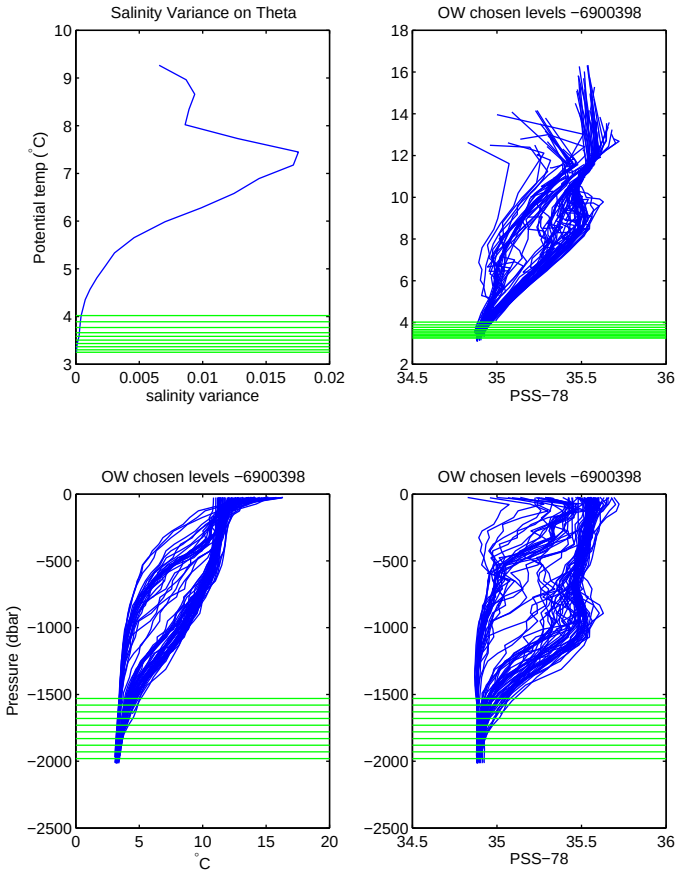


FIG. 26: Chosed levels by the OW method.

10 OW method, CONFIGURATION # 12

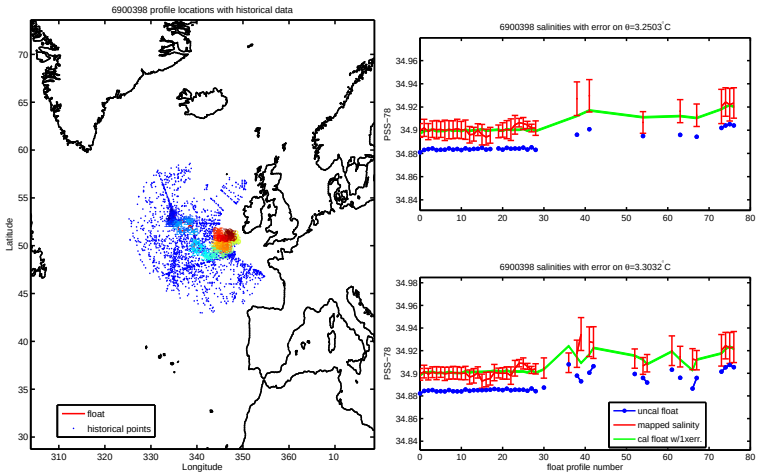


FIG. 27: Figures from the OW method. (Left) Position of the historical and float data. (Droite) Comparison, on various θ levels, between the float data and the historical data interpolated at the float position.

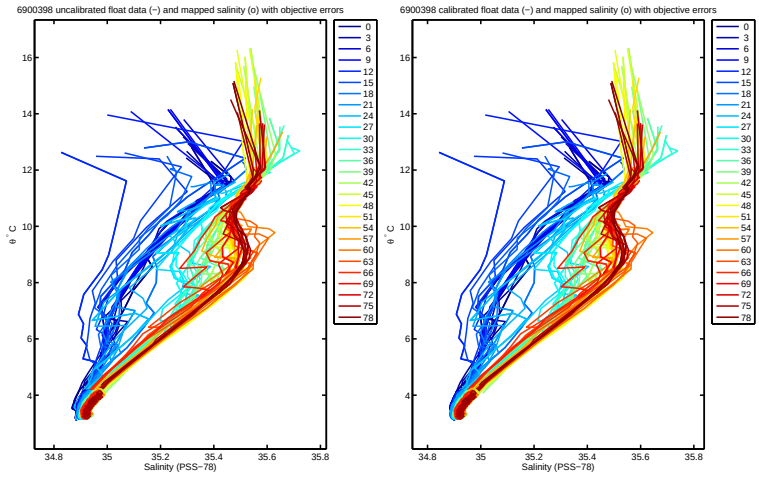


FIG. 28: Figures from the OW method. Compararison of the θ/S diagram of the float with the historial database. (left) raw data ; (right) corrected data using the OW correction.

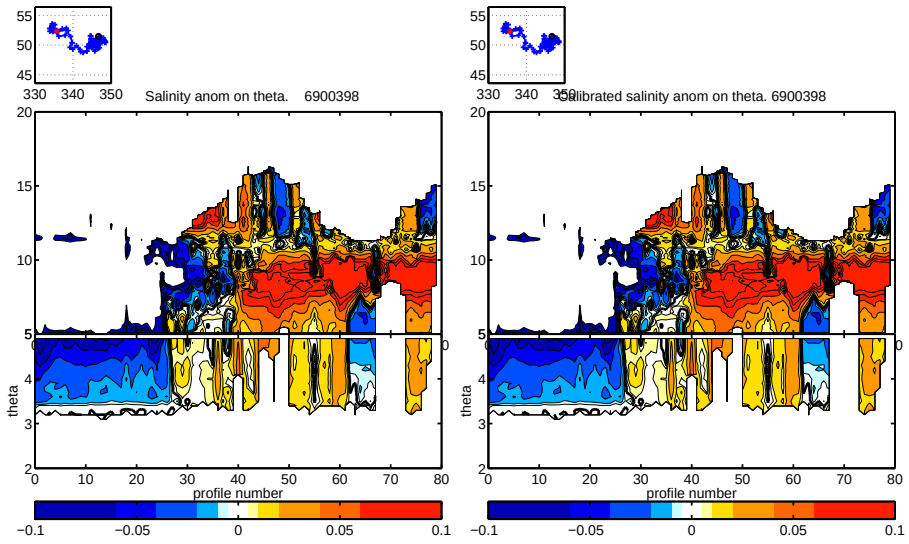


FIG. 29: Figures from the OW method. Salinity anomaly :(left) raw data ; (right) corrected data using the OW correction.

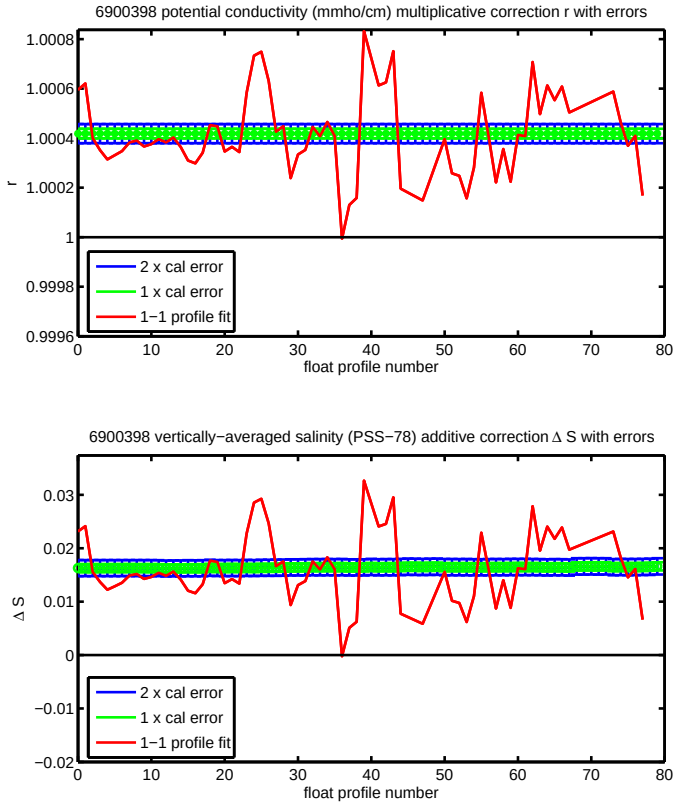


FIG. 30: Correction proposed by the OW method.

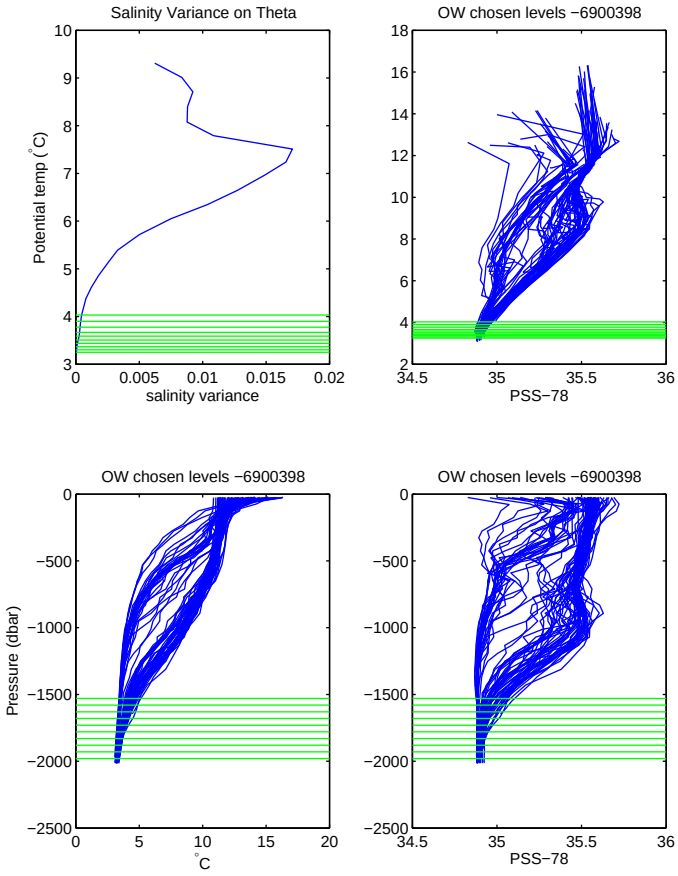


FIG. 31: Chosed levels by the OW method.