Rapport interne LPO/09-12

UMR 6523 Laboratoire de Physique des Océans	DELAYED MODE QUALITY CONTROL OF OVIDE ARGO DATA FLOAT WMO 6900396	
Date : **10 septembre 2009**	Auteurs : **Lagadec Catherine** **Thierry Virginie**	Archivage : **LPO**

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DELAYED MODE QUALITY CONTROL OF OVIDE ARGO DATA FLOAT WMO 6900396

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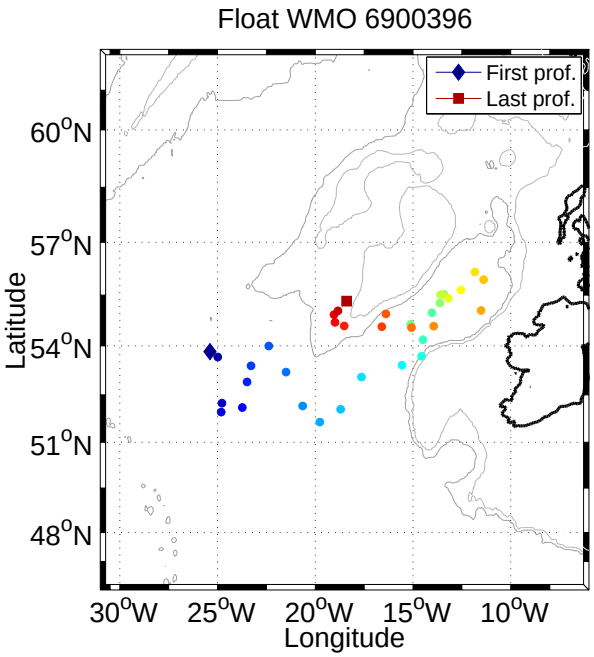
10 septembre 2009



1 Presentation and DMQC summary

Number	Deployment (cycle OD) cycle OD	Last cycle
Provor WMO 6900396	08/06/2006 12h05	33
CTS3 05-S3-27	53.828 N 25.388 W	
Date of control	Float status	Last cycle
juin 2009	dead	07/05/2007
Coriolis transmission		22/07/2009

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
29A	TEMP	all	3	1		July 2007
29A	SAL	all	3	1		July 2007
30A	TEMP	all	3	1		July 2007
33A	TEMP	all	3	1		July 2007
all cycles except 3, 29-33	PRS	all	0	1		09/07/2009
all cycles except 0D	SAL	surface	1	4	untrustable data	01/09/2009
11A	SAL	near 800 m			Data OK	
14A	SAL	near 100 m			anomalies	
19A	SAL	near 800 m			features	
29A	SAL	500 - 700m				

Tab. 2: Float 6900396. 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.

Data between 0 and 5 dbar are suspicious because they are acquired when the pump of the CTD turned off.

1.2 Salinity correction from the OW method

We cannot see any evidence of a drift or bias in the salinity measurements. We thus conclude that it is not necessary to correct the salinity data. Error bars are maximum value

between 0.01 and those determined from the OW method with parameters from the OW configuration 1.

OW CONFIGURATION	1
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	0.5
MAPSCALE_PHI_SMALL	0.1
MAPSCALE_AGE	0.69
MAP_P_EXCLUDE	500
MAP_P_DELTA	250
Reference data base	CTD only
Comments	

Tab. 3: Parameters of the OW method.

2 Data

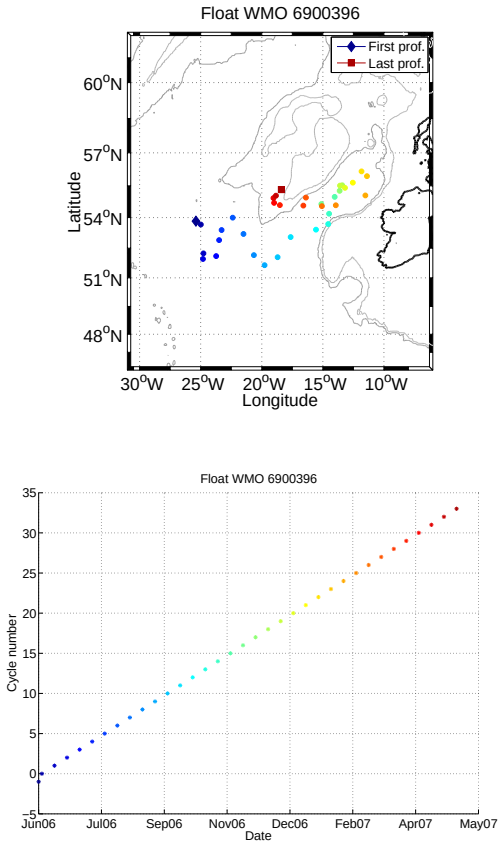


FIG. 1: Profiles position and relationship between cycle number, date and color.

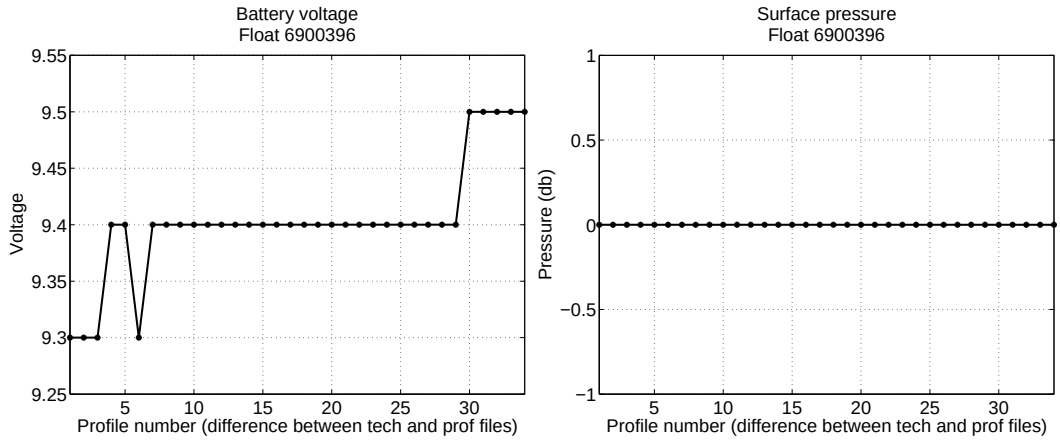


FIG. 2: Surface pressure

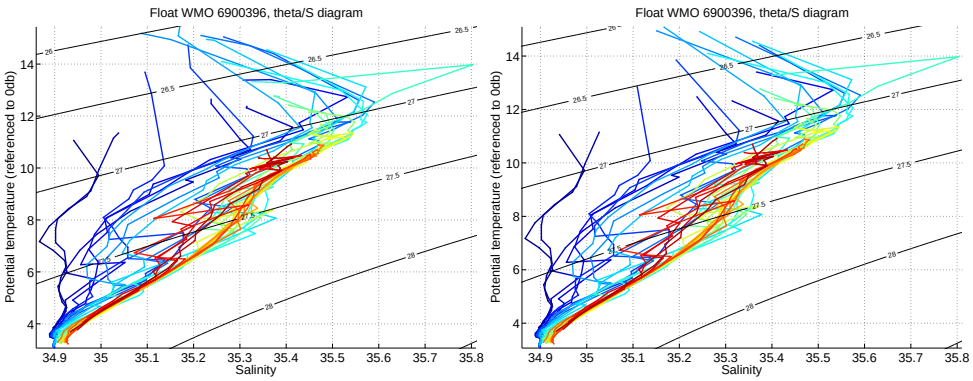


FIG. 3: θ/S diagrams. (Left panel) Flags are not taken into account. (Right panel) Quality flags are taken into account.

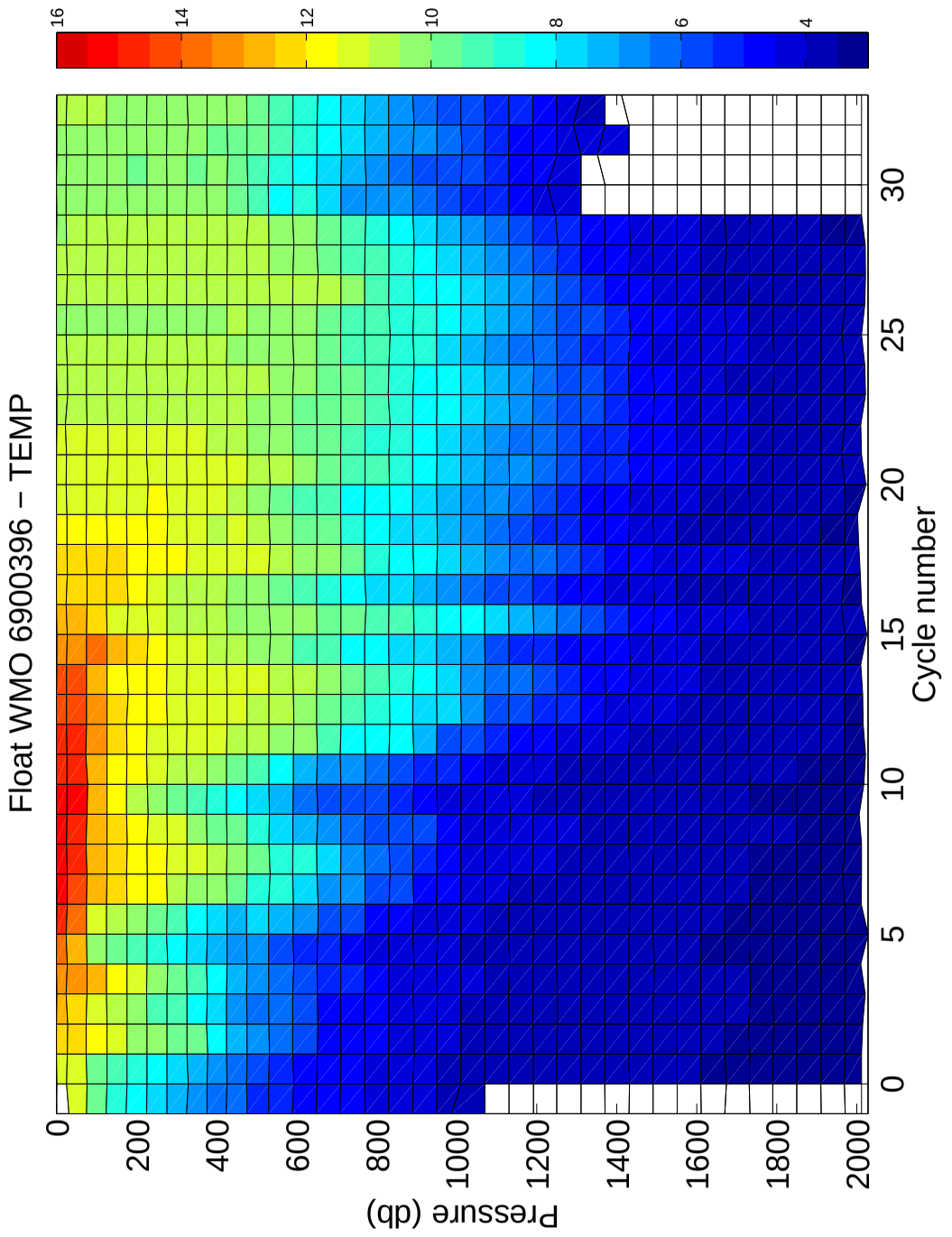


FIG. 4: Temperature section along the float trajectory. Quality flags are not taken into account.

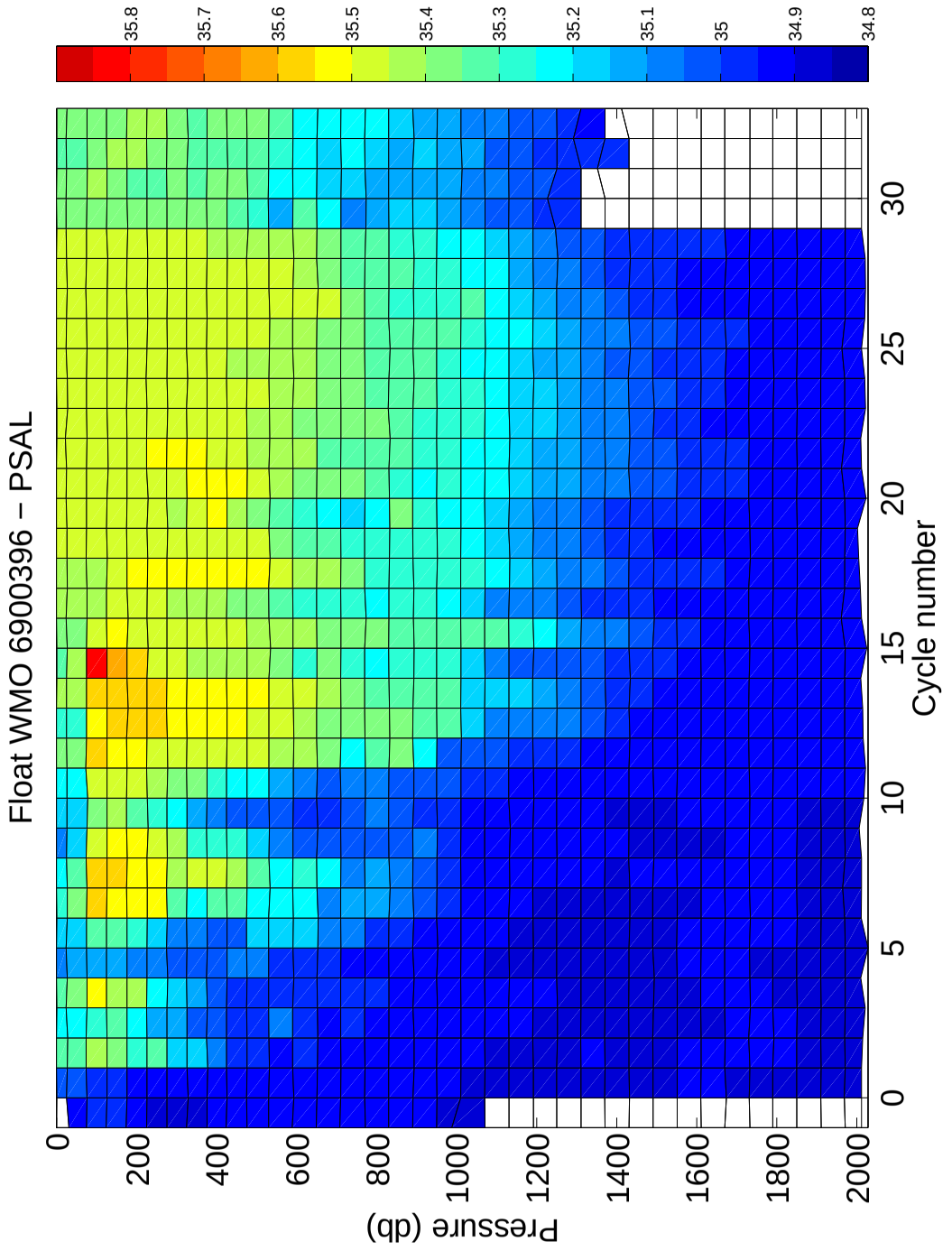


FIG. 5: Salinity section along the float trajectory. Quality flags are not taken into account.

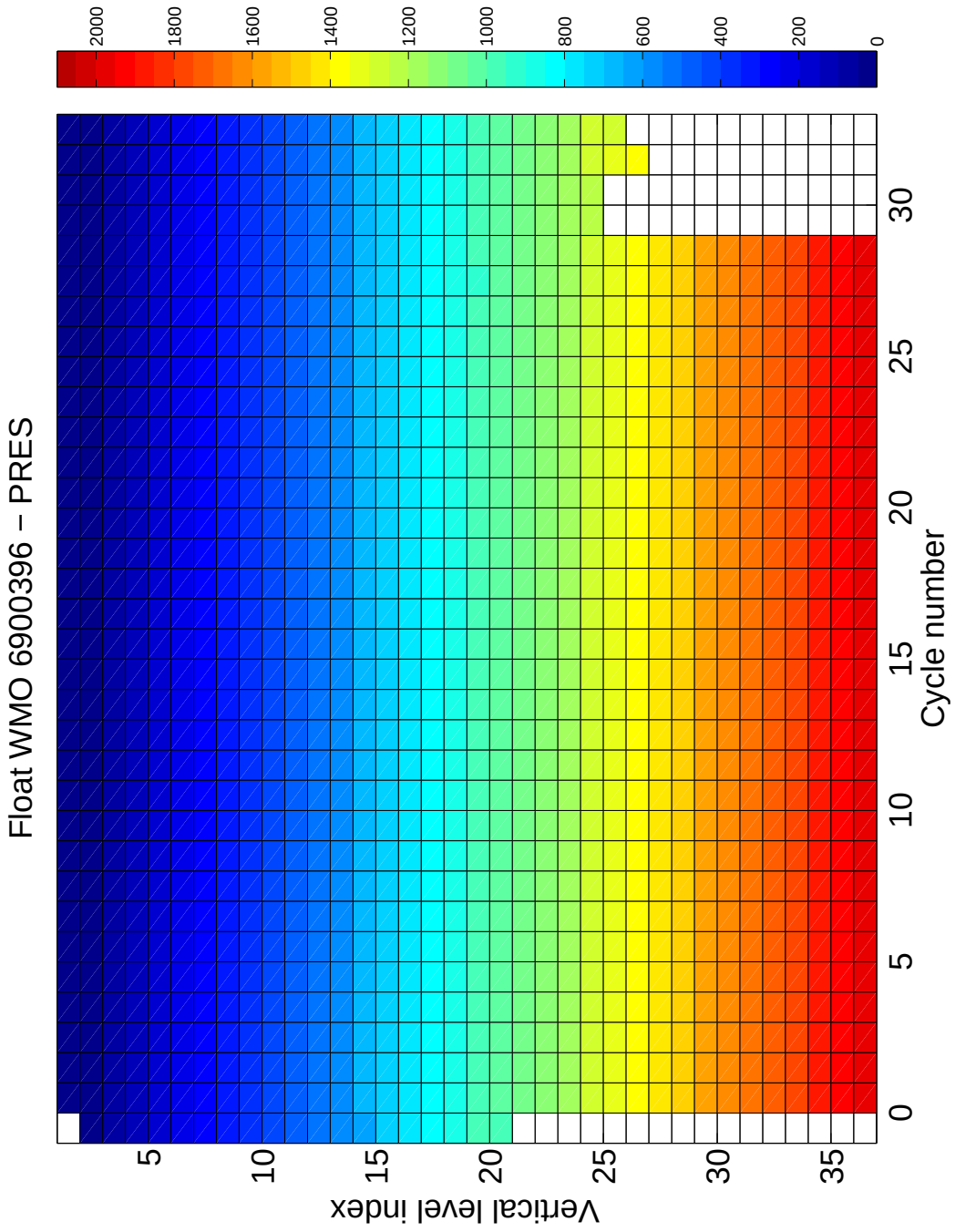


FIG. 6: Pression as fonction of cycle number and vertical level index along the float trajectory. Quality flags are taken into account.

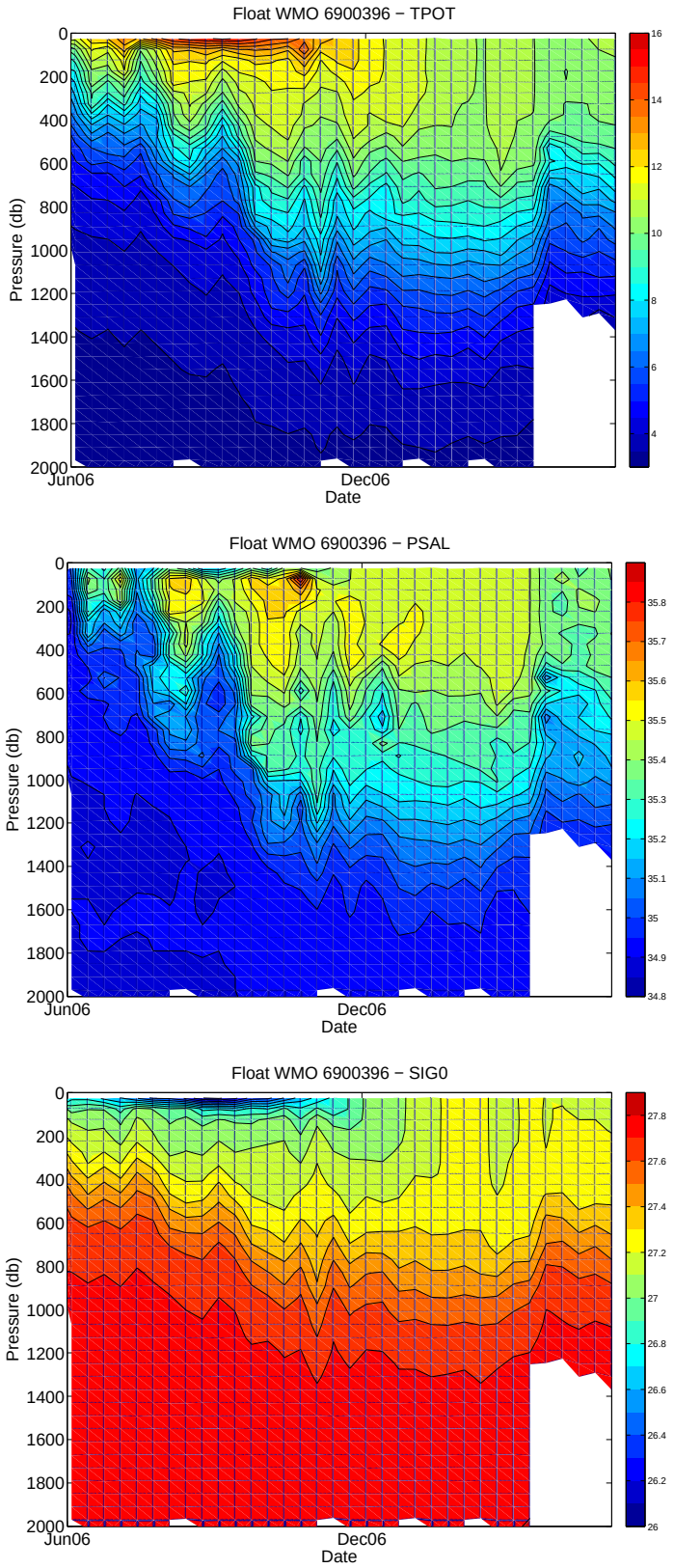


FIG. 7: Potential temperature, salinity and potential density sections along the float trajectory (interpolated on standard levels). Quality flags are taken into account.

3 Comparison to the OVIDE 2006 nearest CTD profile

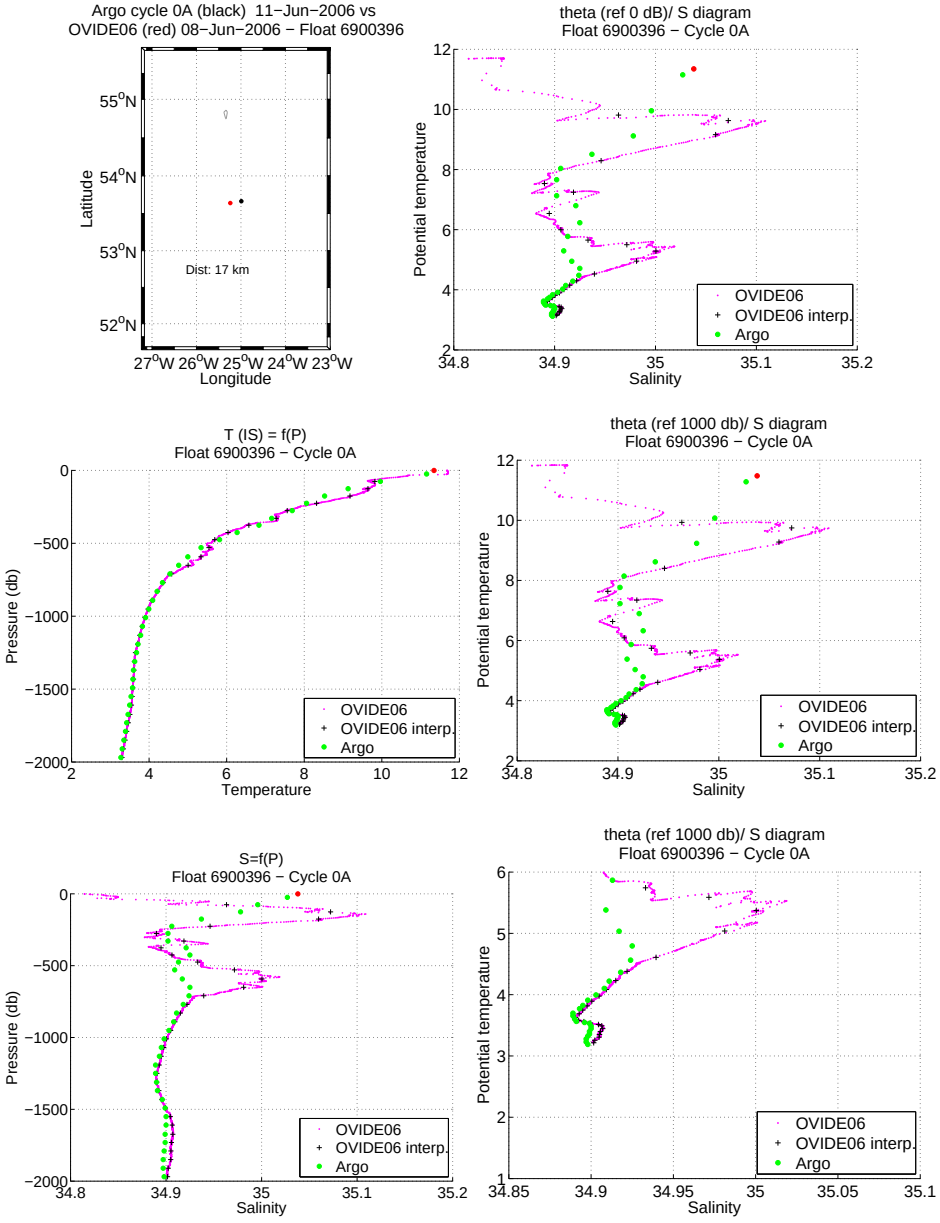


FIG. 8: Comparison of the cycle 0A with the nearest CTD profile done after the float deployment.

4 Cycle 11 - Comparaison to the nearest historical CTD profiles

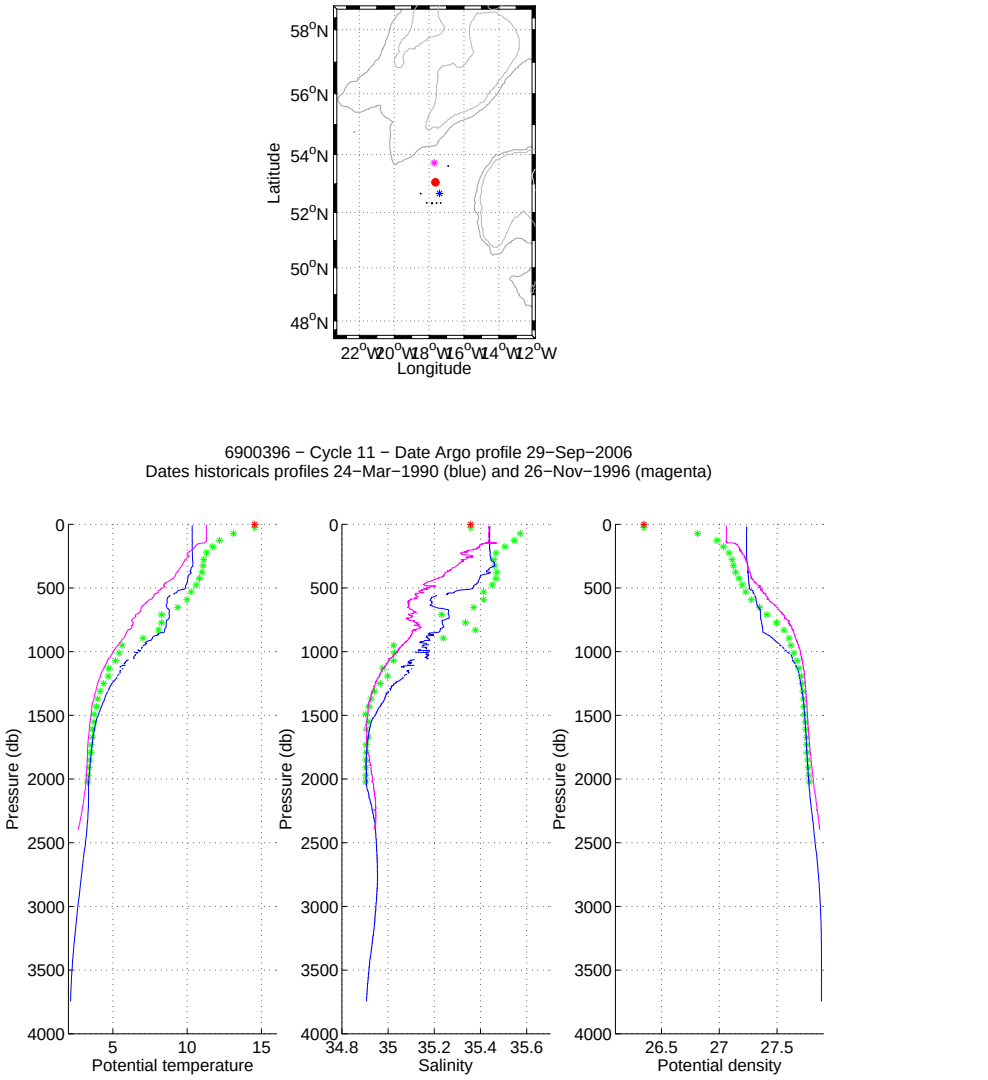


FIG. 9: Flotteur 6900396, cycle 11. Upper panel : Position of the Argo profile (red) and of the nearest CTD profiles (black). The nearest CTD profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels : Temperature, salinity and potential density as function of pressure 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).

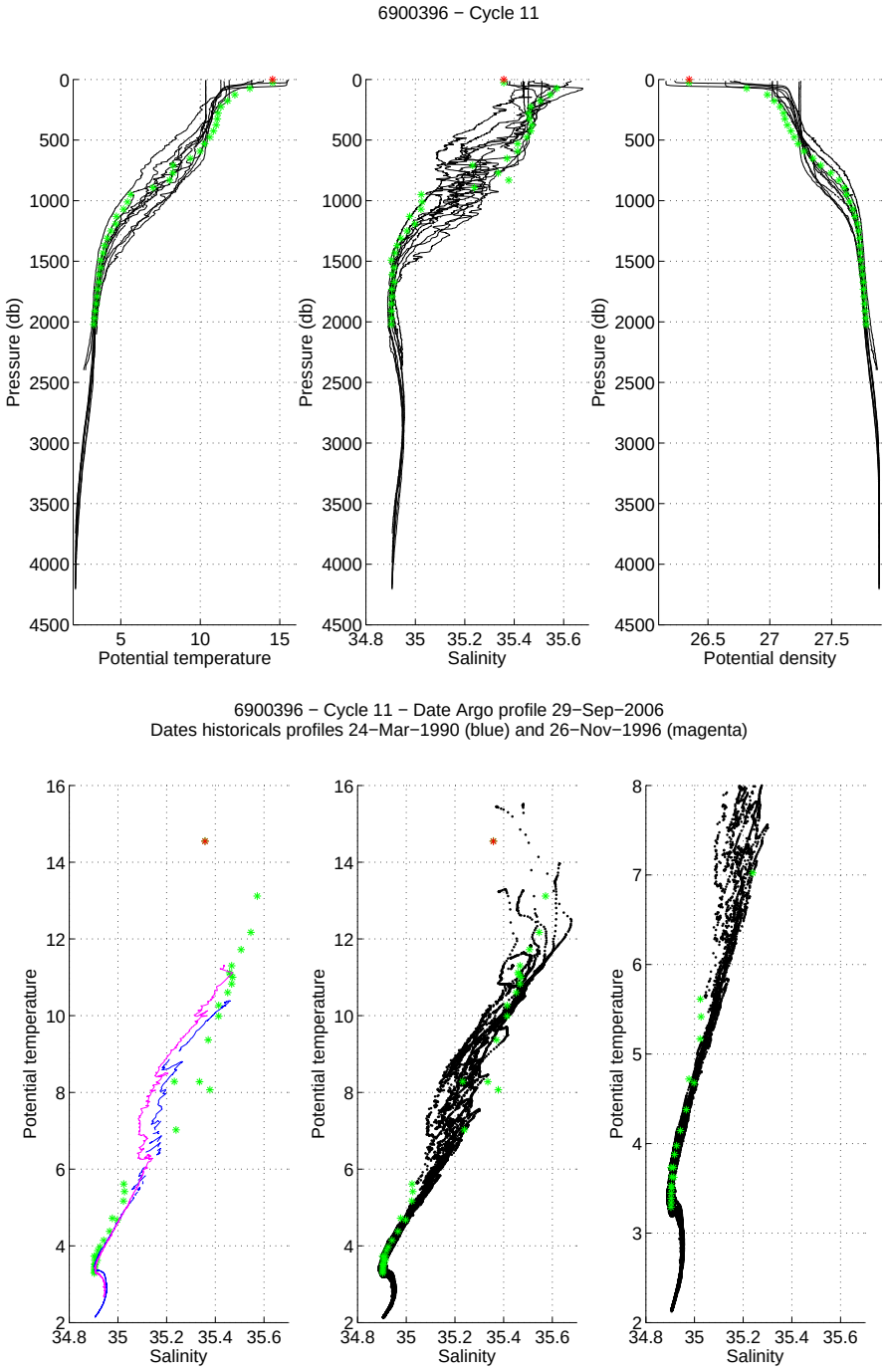


FIG. 10: Float 6900396, cycle 11. The Argo profile (stars) is compared to the nearest CTD profiles (black line) and to two specific profiles : the nearest profile in time (magenta) and the nearest profile in space (blue). The color of the Argo profile represents the QC flag (green for a QC=1 ; blue for 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 11 - Comparaison to the nearest ARGO profiles

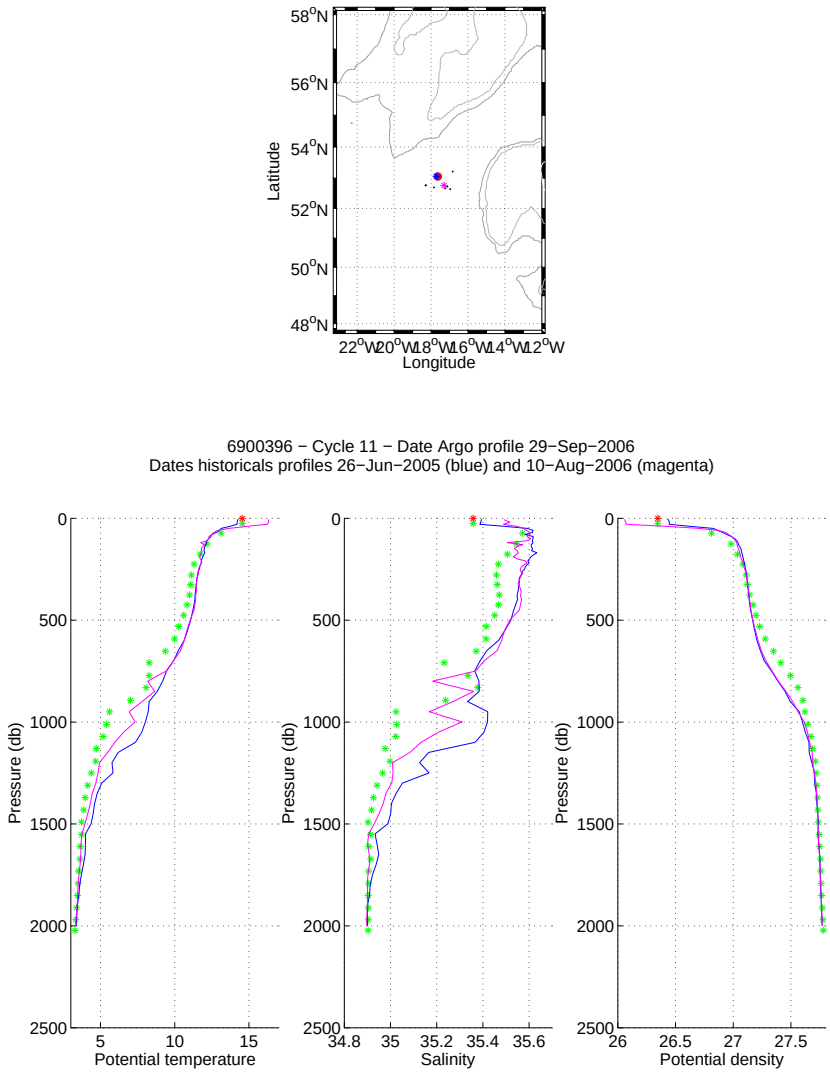


FIG. 11: Flotteur 6900396, cycle 11. Upper panel : Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels : Temperature, salinity and potential density as function 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).

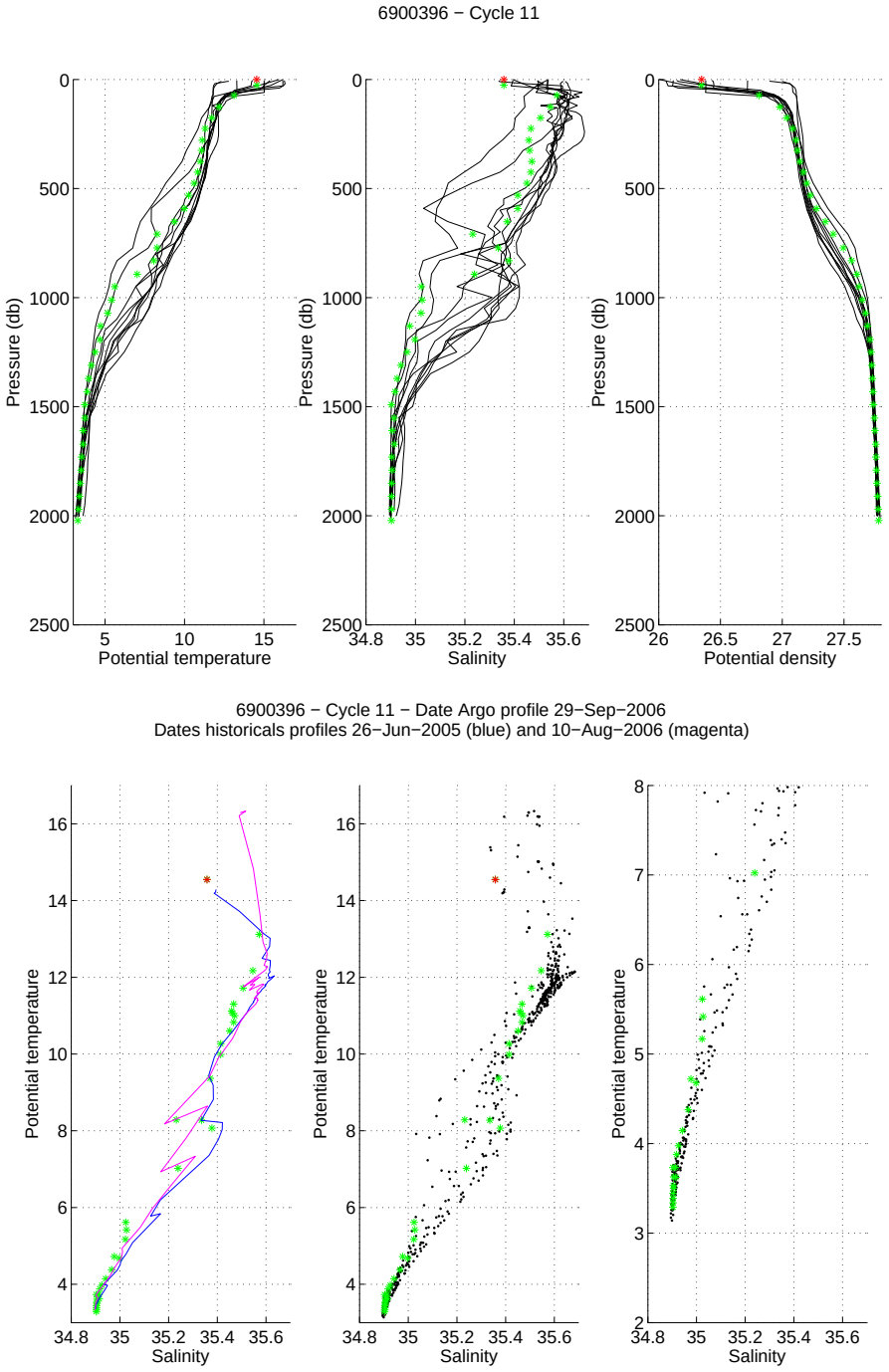


FIG. 12: Float 6900396, cycle 11. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles : the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC flag (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 14 - Comparaison to the nearest historical CTD profiles

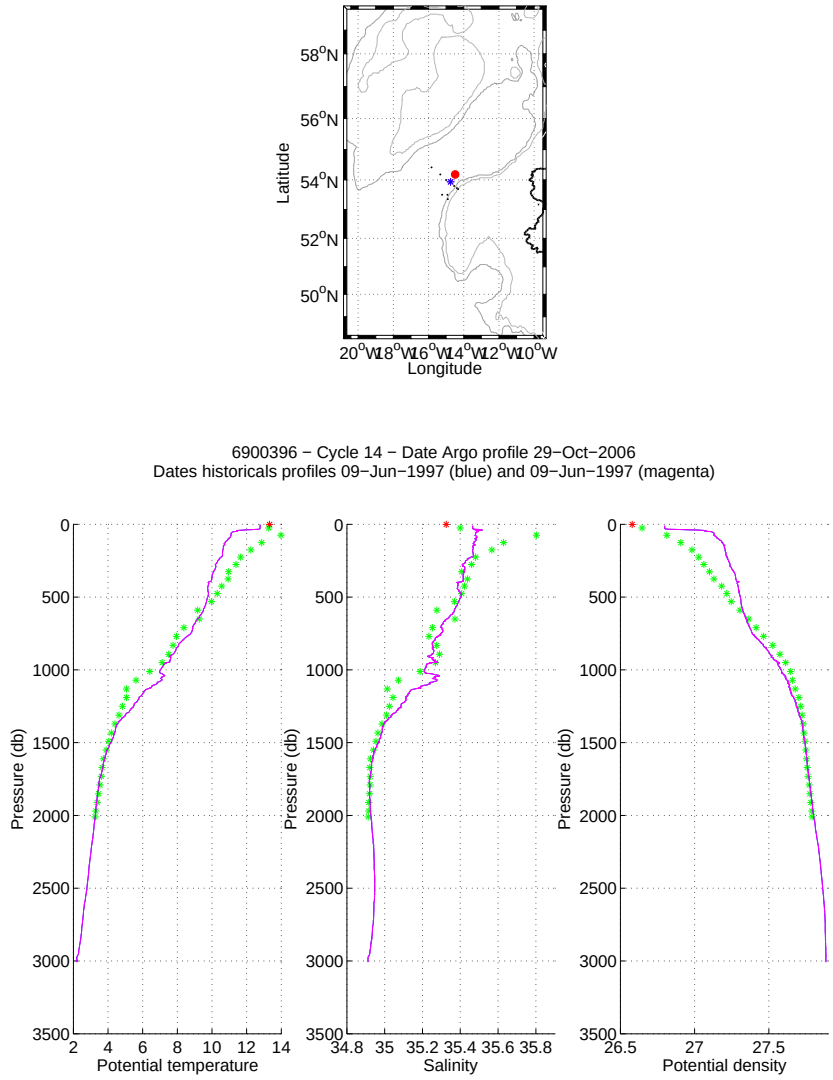


FIG. 13: Flotteur 6900396, cycle 14. Upper panel : Position of the Argo profile (red) and of the nearest CTD profiles (black). The nearest CTD profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels : Temperature, salinity and potential density as function of pressure 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).

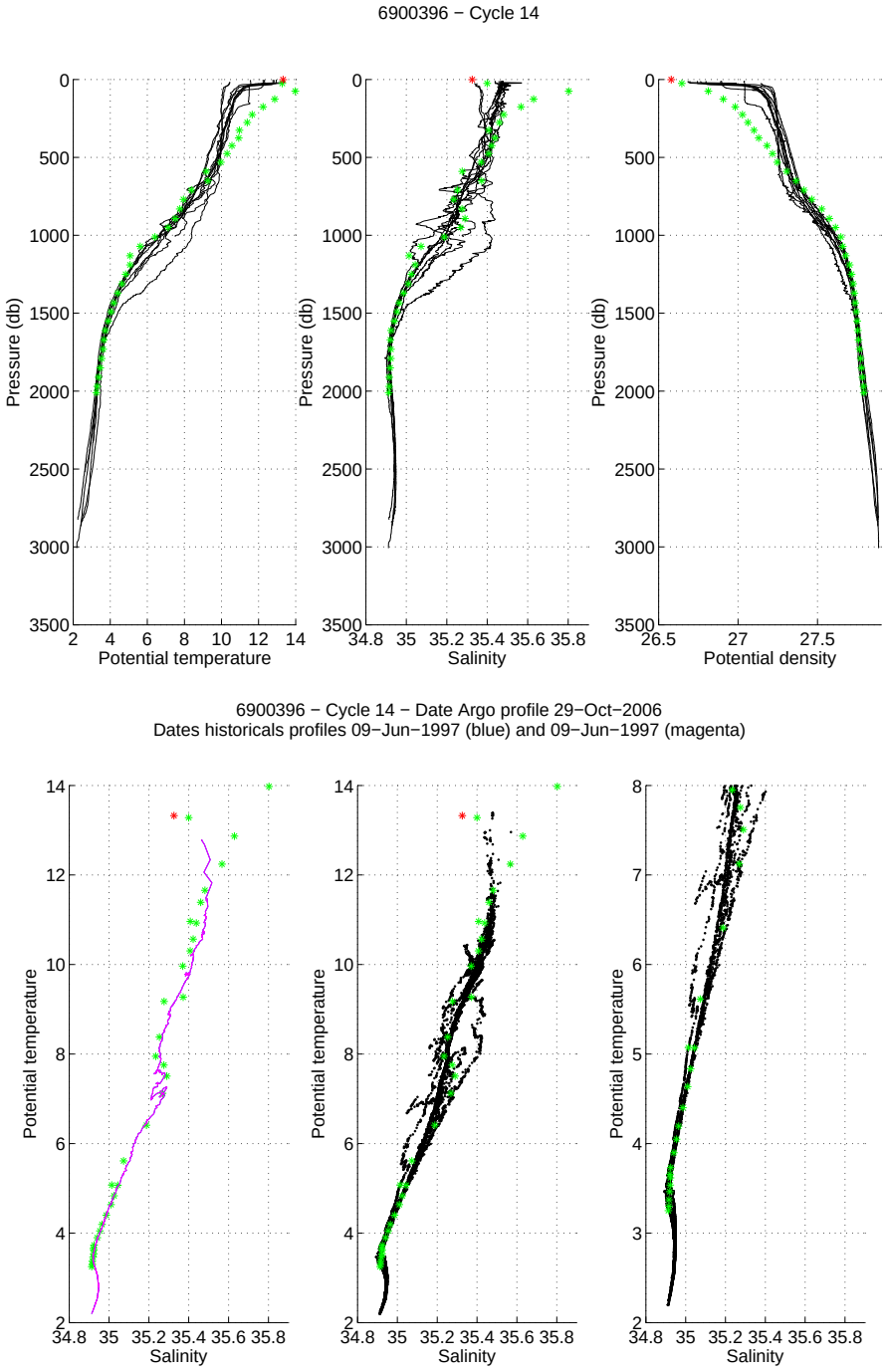


FIG. 14: Float 6900396, cycle 14. The Argo profile (stars) is compared to the nearest CTD profiles (black line) and to two specific profiles : the nearest profile in time (magenta) and the nearest profile in space (blue). The color of the Argo profile represents the QC flag (green for a QC=1 ; blue for 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 14 - Comparaison to the nearest ARGO profiles

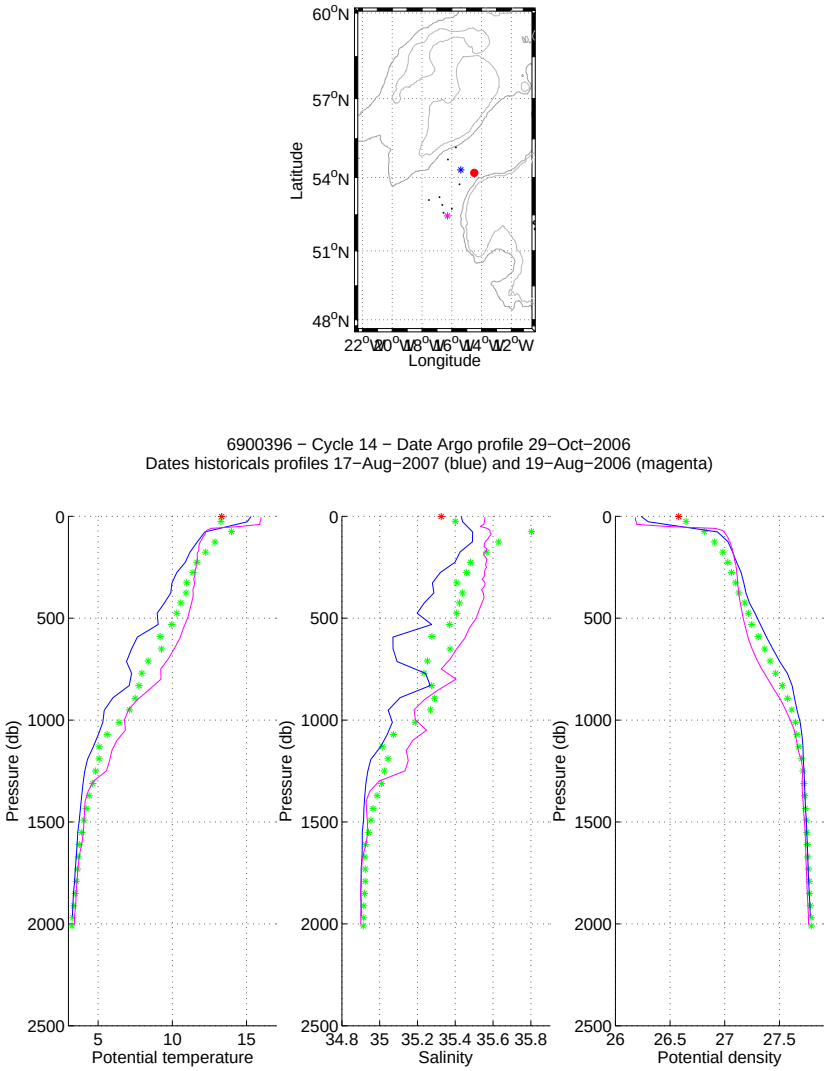


FIG. 15: Flotteur 6900396, cycle 14. Upper panel : Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels : Temperature, salinity and potential density as function 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).

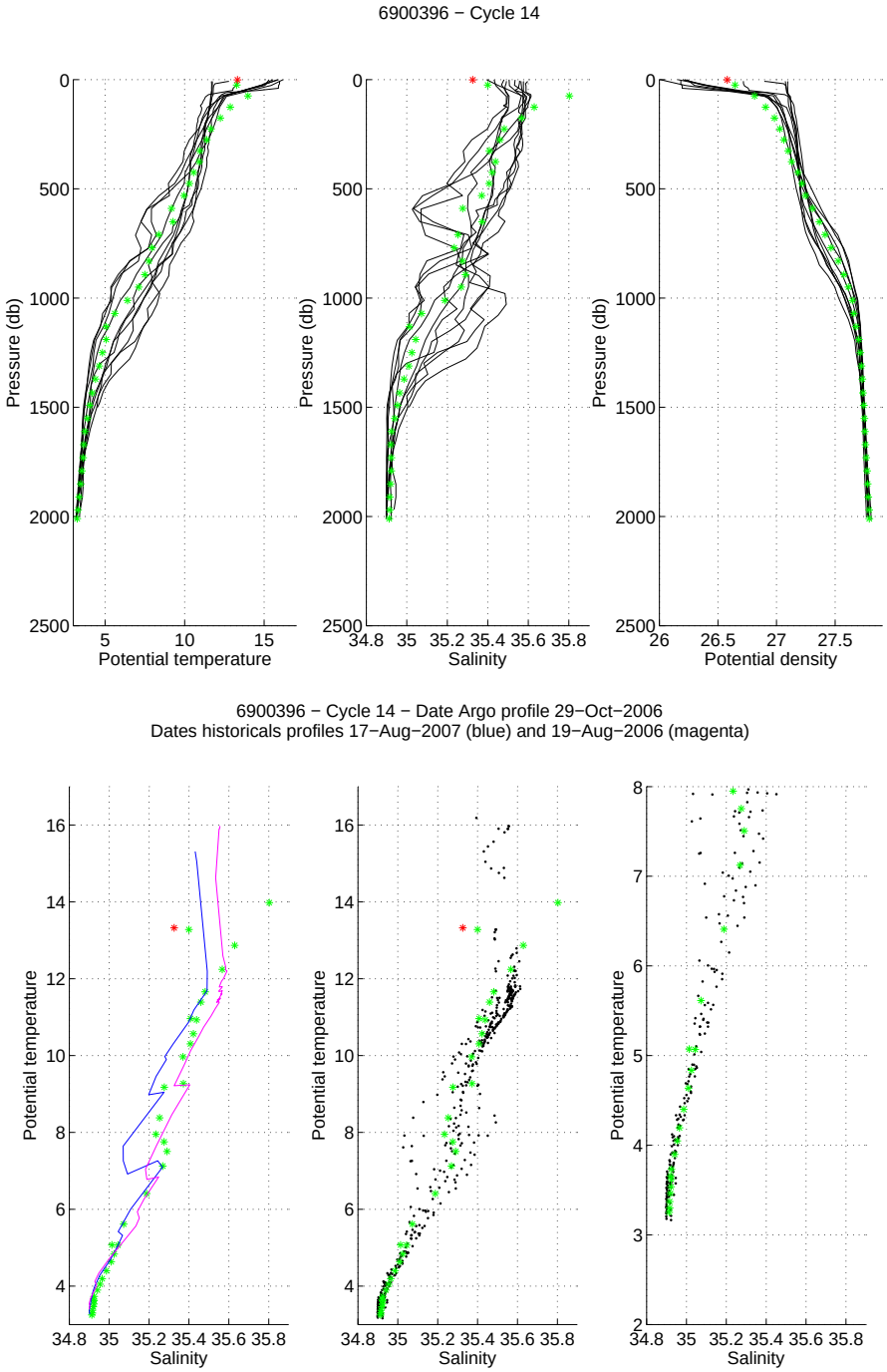


FIG. 16: Float 6900396, cycle 14. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles : the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC flag (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 19 - Comparaison to the nearest historical CTD profiles

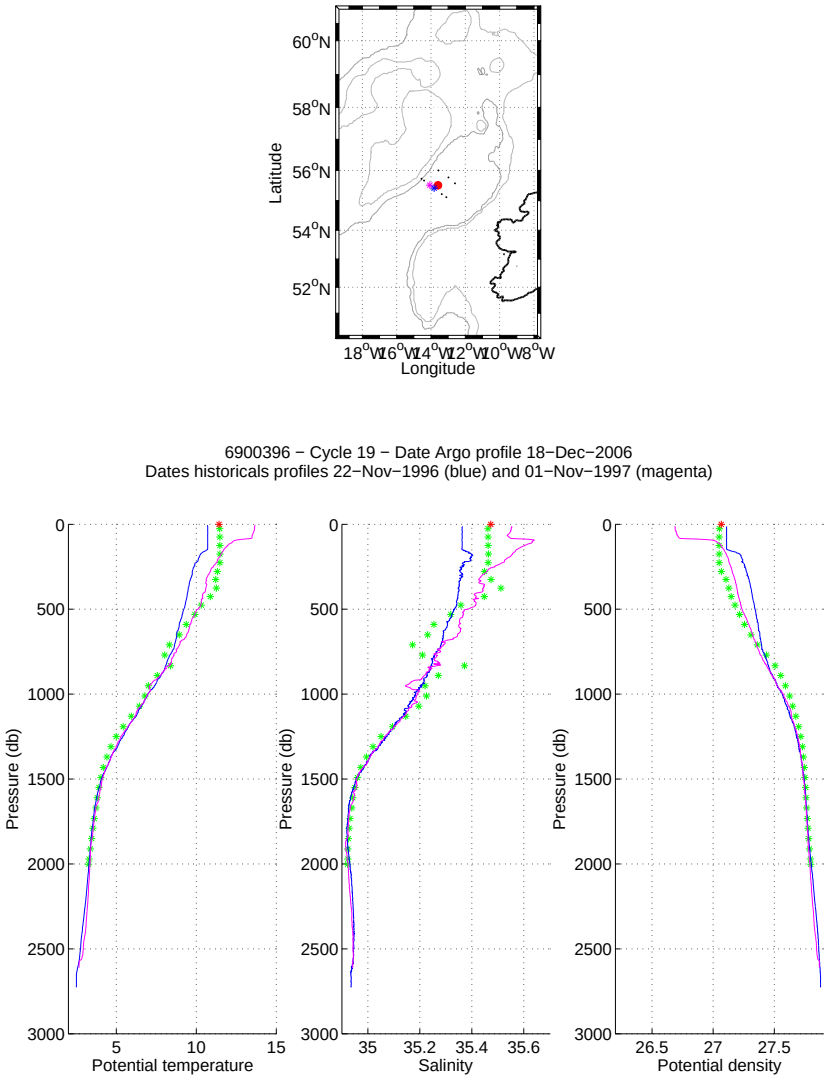


FIG. 17: Flotteur 6900396, cycle 19. Upper panel : Position of the Argo profile (red) and of the nearest CTD profiles (black). The nearest CTD profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels : Temperature, salinity and potential density as function of pressure 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).

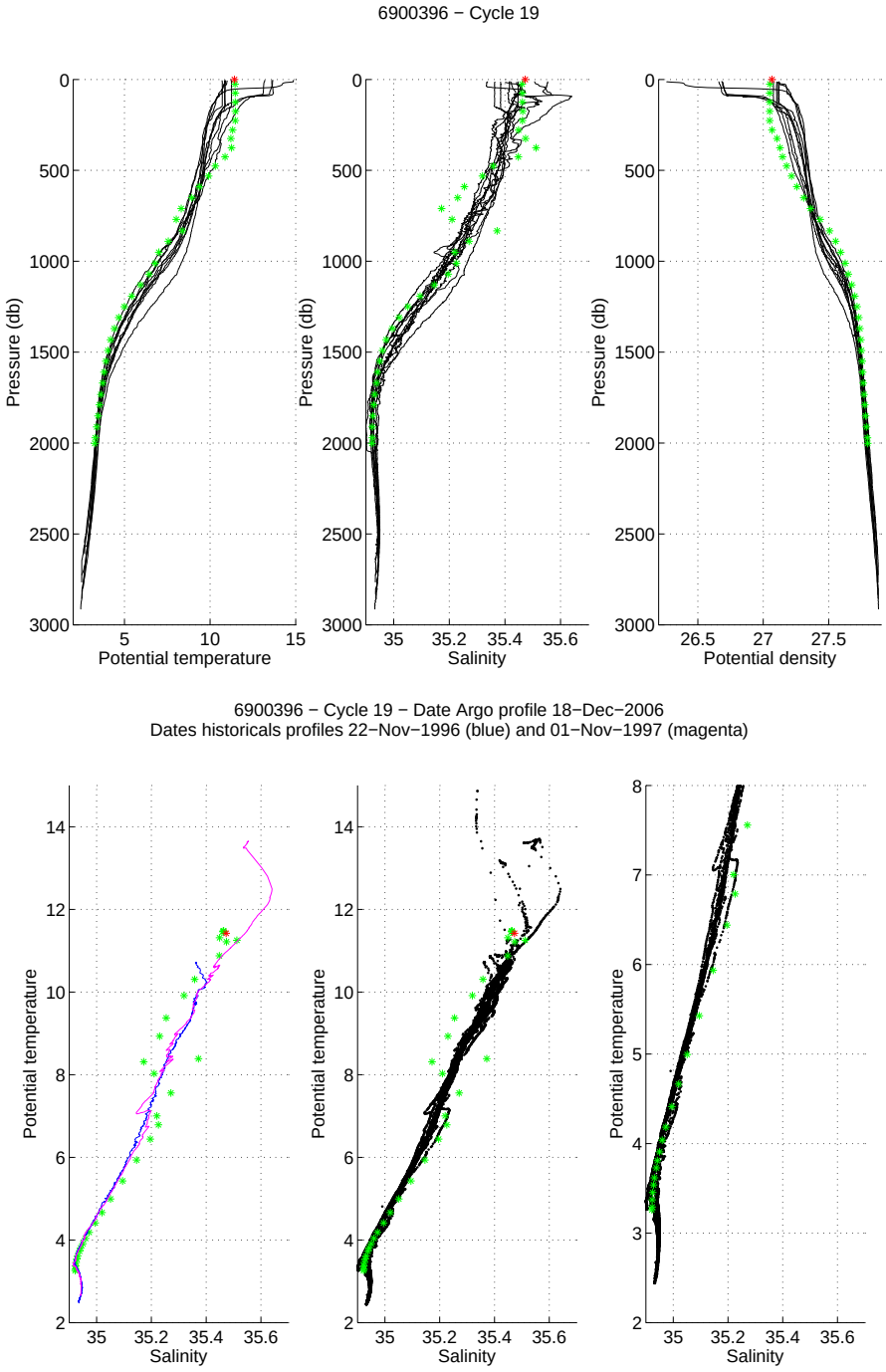


FIG. 18: Float 6900396, cycle 19. The Argo profile (stars) is compared to the nearest CTD profiles (black line) and to two specific profiles : the nearest profile in time (magenta) and the nearest profile in space (blue). The color of the Argo profile represents the QC flag (green for a QC=1 ; blue for 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 19 - Comparaison to the nearest ARGO profiles

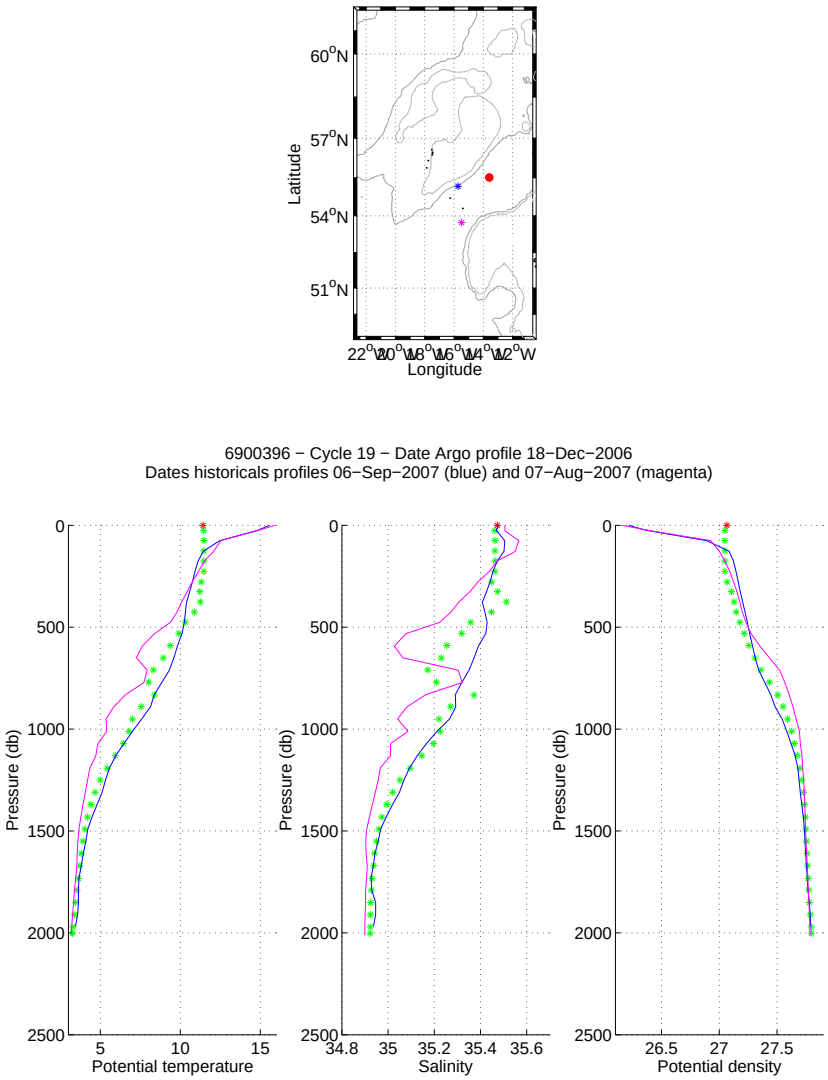


FIG. 19: Flotteur 6900396, cycle 19. Upper panel : Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels : Temperature, salinity and potential density as function 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).

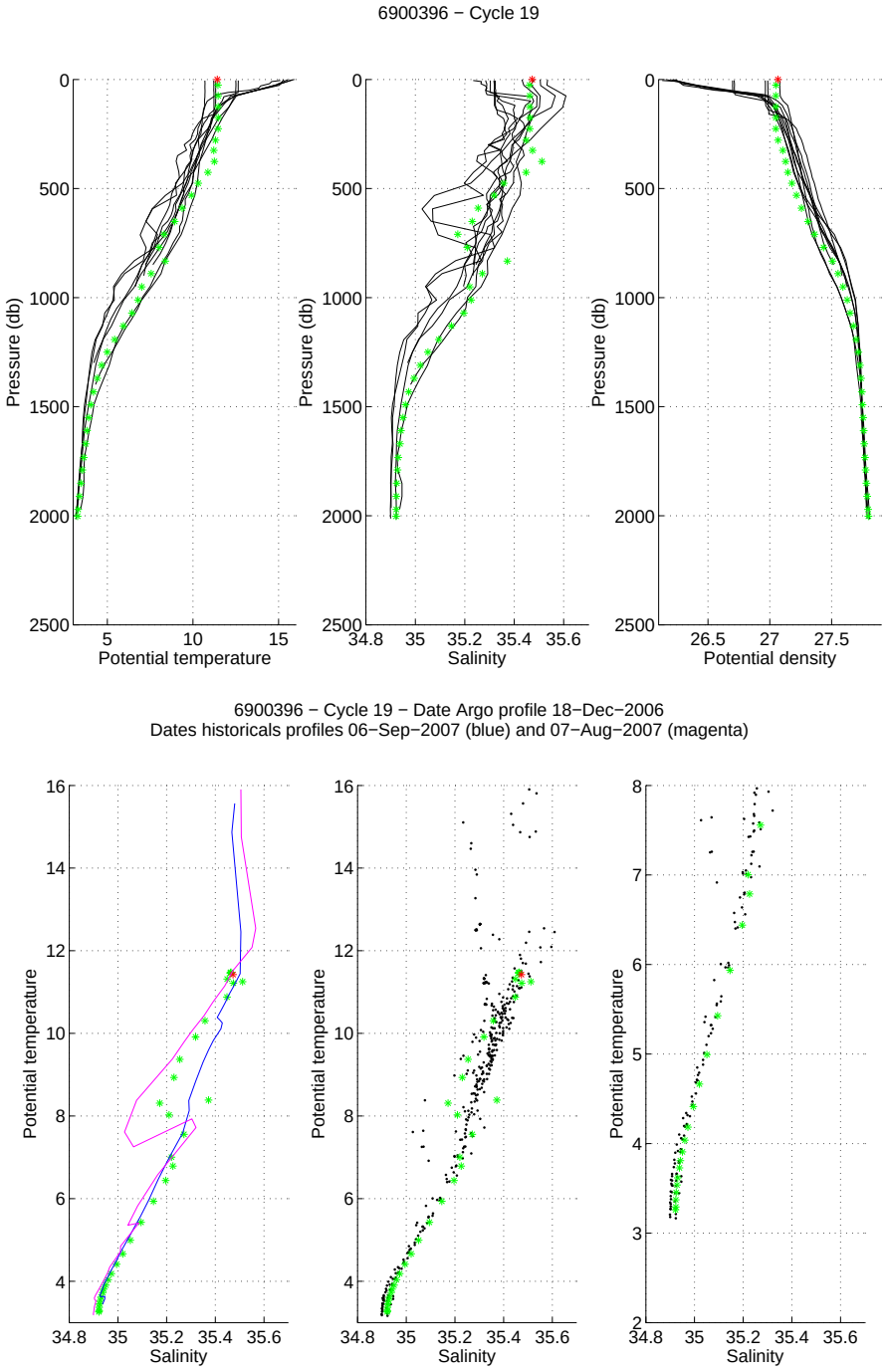


FIG. 20: Float 6900396, cycle 19. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles : the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC flag (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 29 - Comparaison to the nearest historical CTD profiles

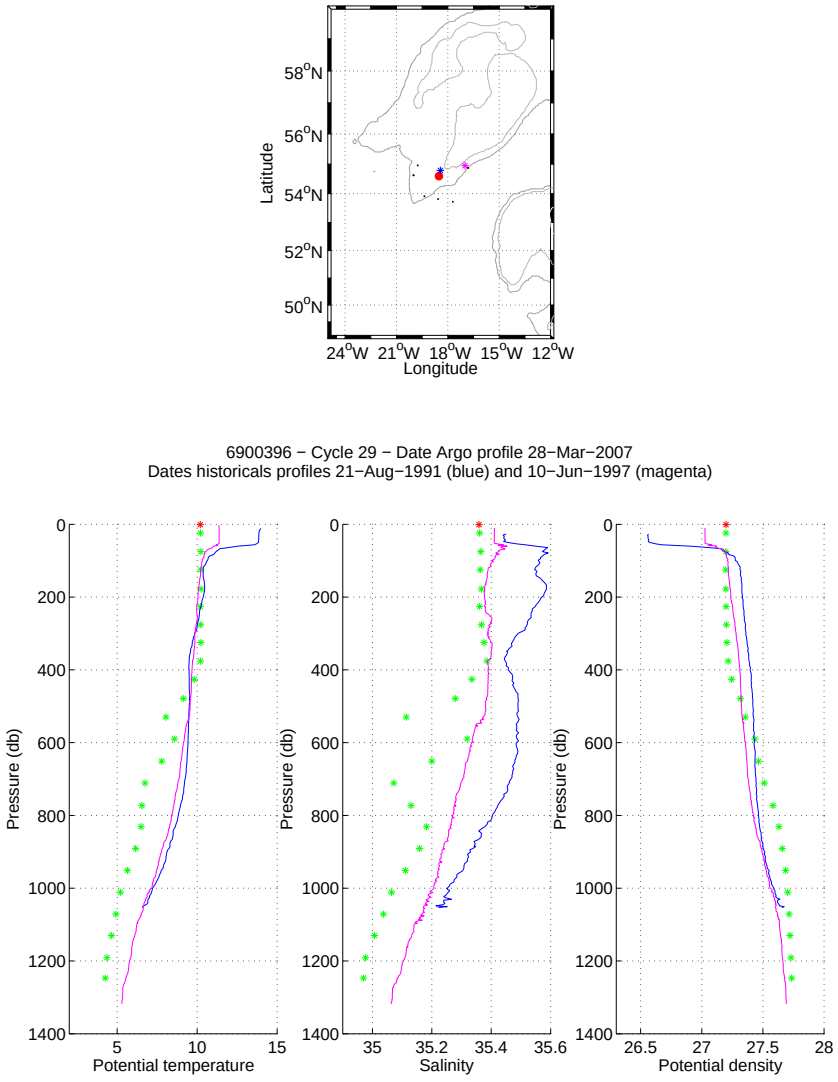


FIG. 21: Flotteur 6900396, cycle 29. Upper panel : Position of the Argo profile (red) and of the nearest CTD profiles (black). The nearest CTD profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels : Temperature, salinity and potential density as function of pressure 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).

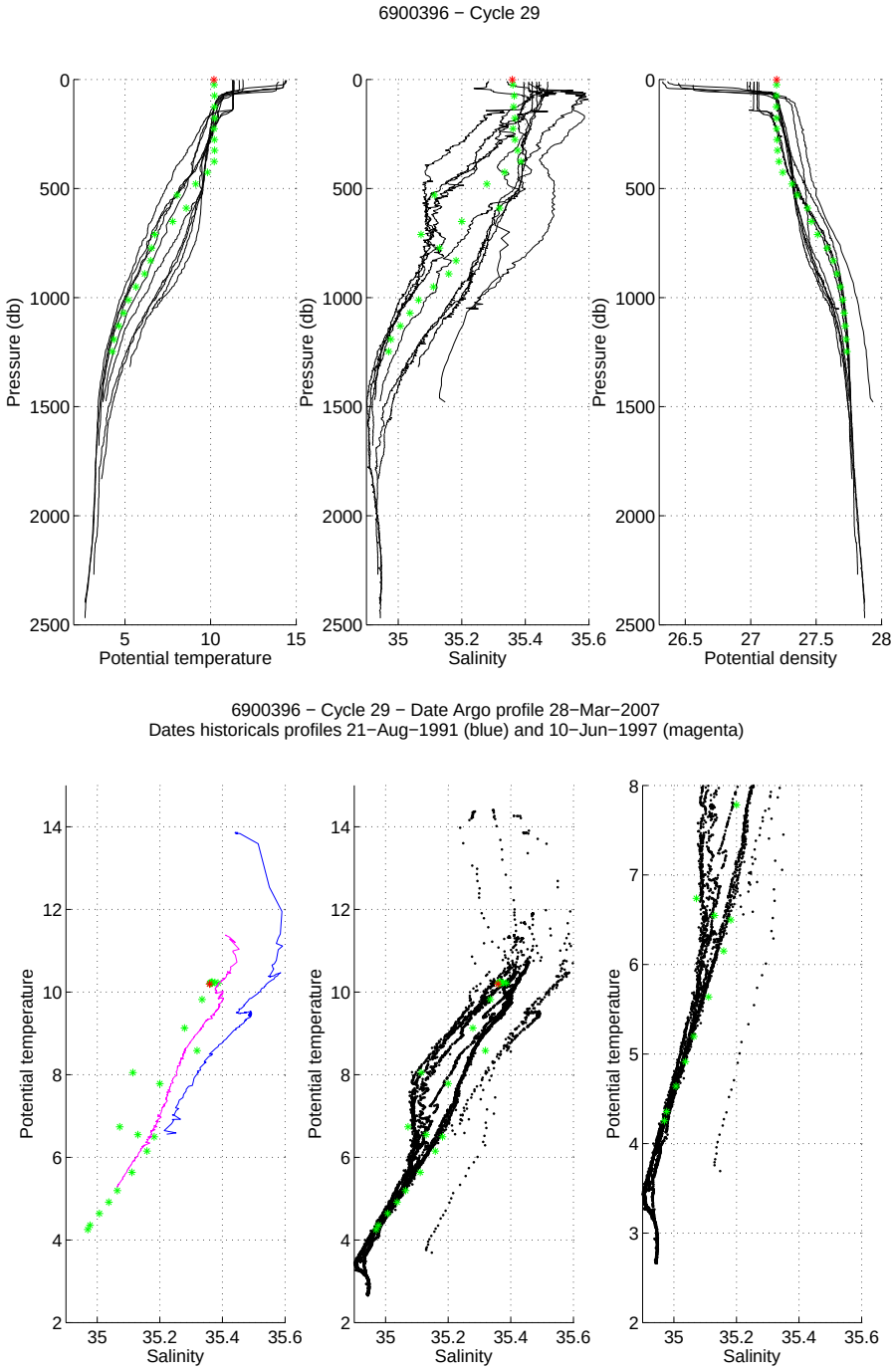


FIG. 22: Float 6900396, cycle 29. The Argo profile (stars) is compared to the nearest CTD profiles (black line) and to two specific profiles : the nearest profile in time (magenta) and the nearest profile in space (blue). The color of the Argo profile represents the QC flag (green for a QC=1 ; blue for 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 29 - Comparaison to the nearest ARGO profiles

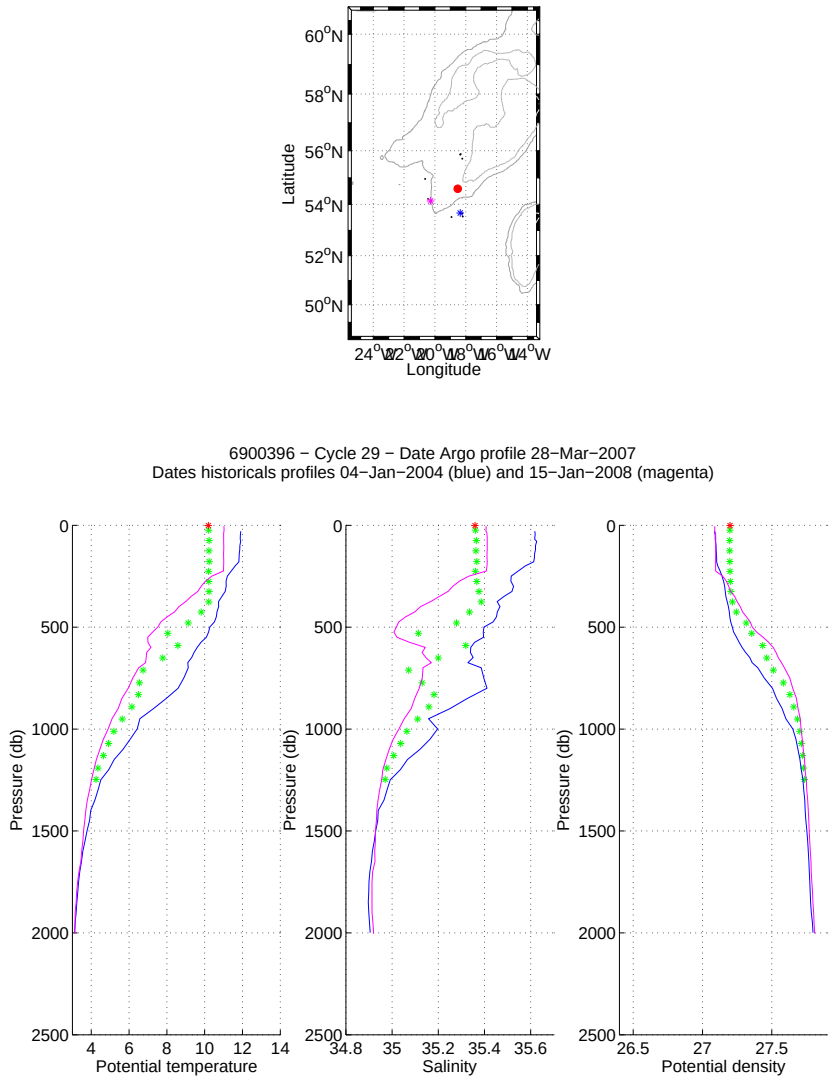


FIG. 23: Flotteur 6900396, cycle 29. Upper panel : Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels : Temperature, salinity and potential density as function 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).

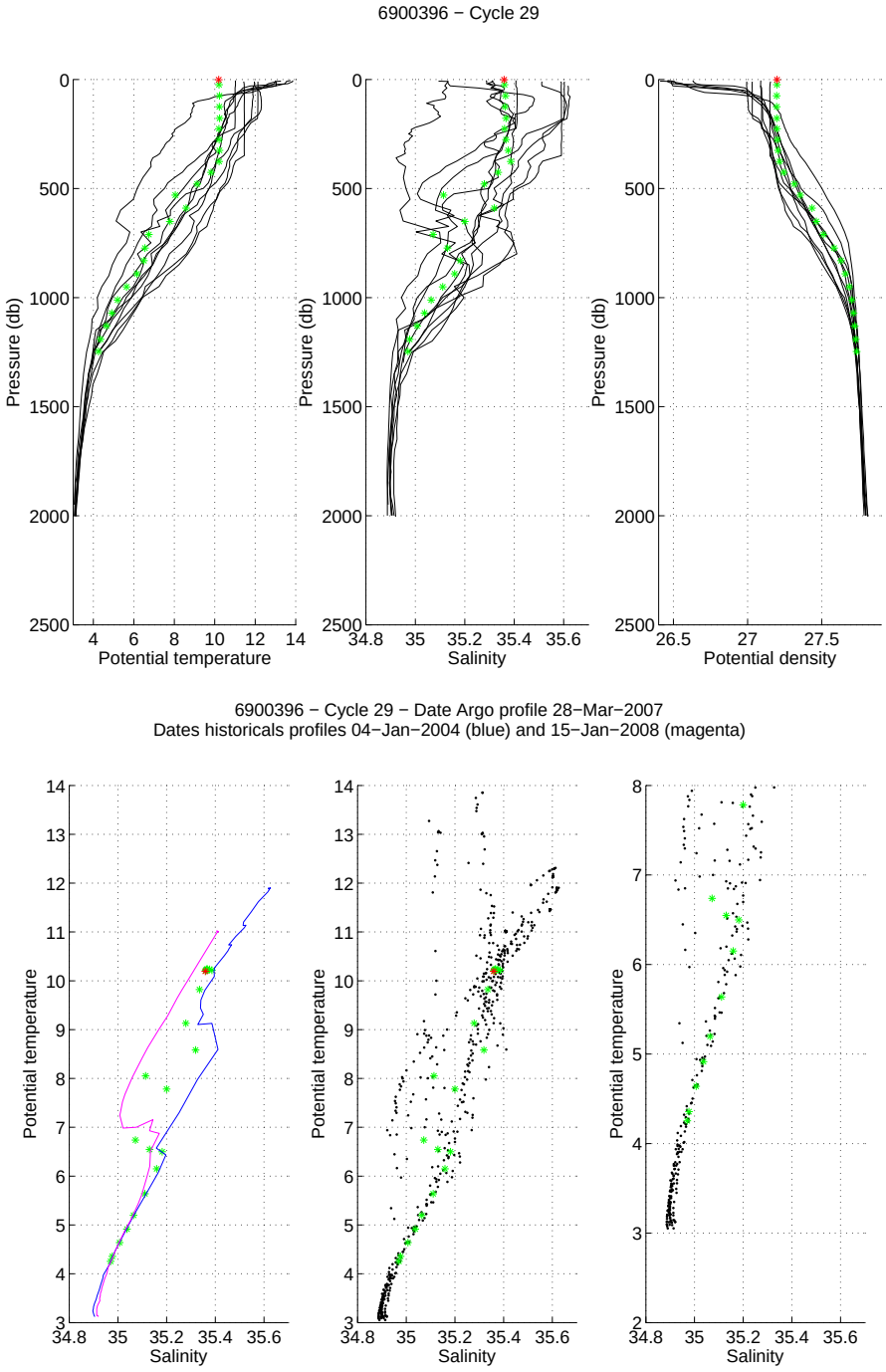


FIG. 24: Float 6900396, cycle 29. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles : the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC flag (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

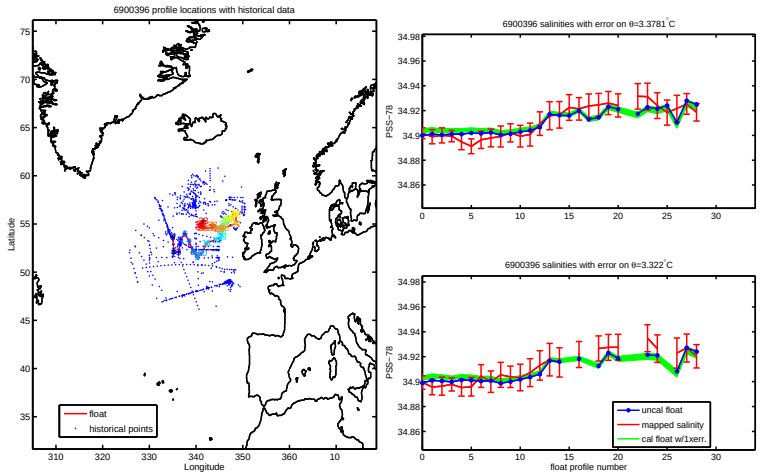


FIG. 25: Figures from the OW method. (Left) Position of the historical and float data. (Droite) Comparison, on various θ levels, between the float data and the historical data interpolated at the float position.

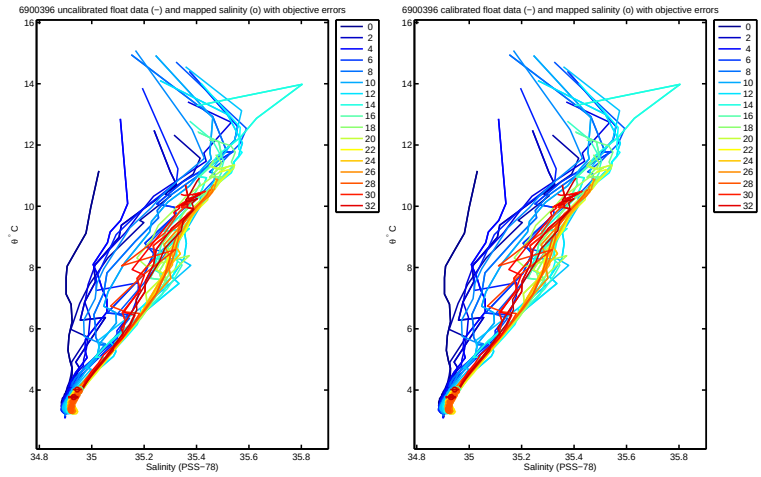


FIG. 26: Figures from the OW method. Compararison of the θ/S diagram of the float with the historial database. (left) raw data ; (right) corrected data using the OW correction.

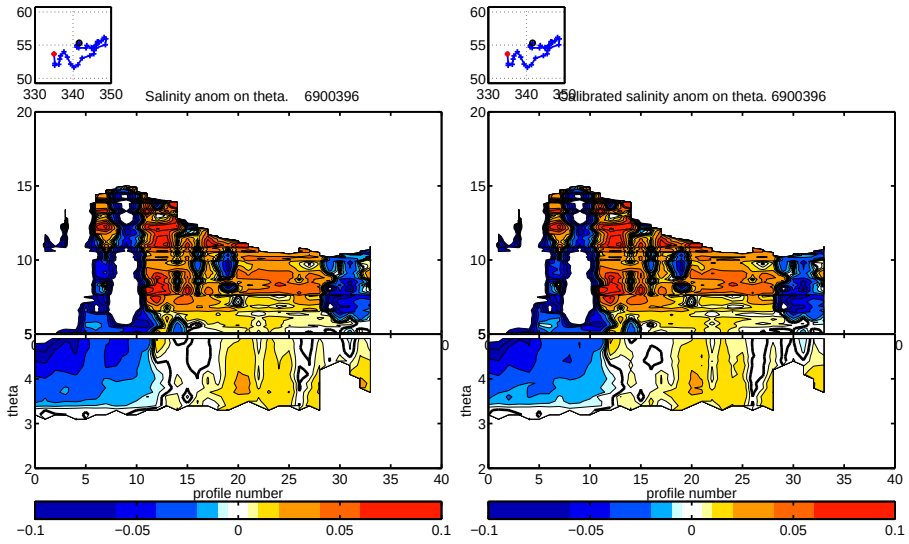


FIG. 27: Figures from the OW method. Salinity anomaly :(left) raw data ; (right) corrected data using the OW correction.

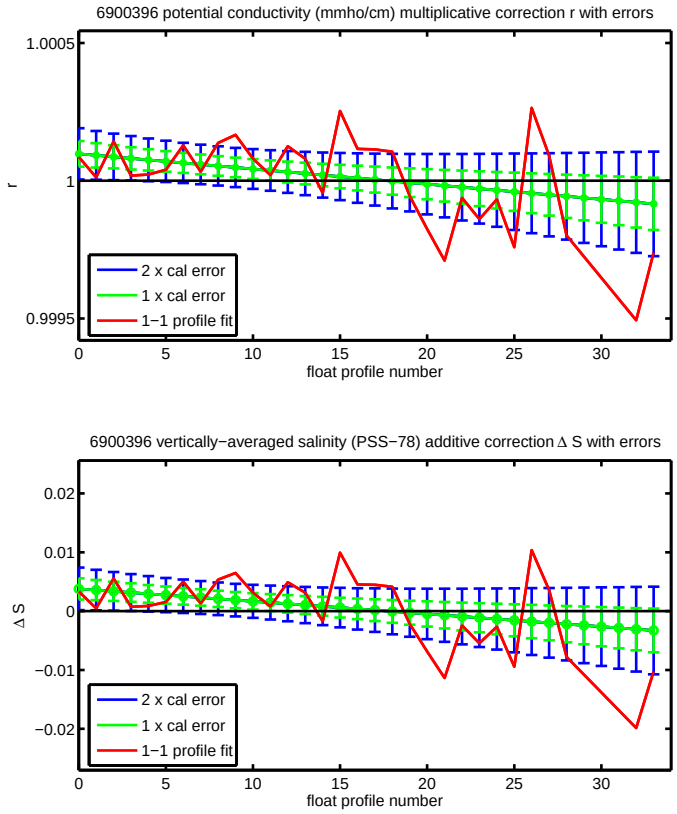


FIG. 28: Correction proposed by the OW method.

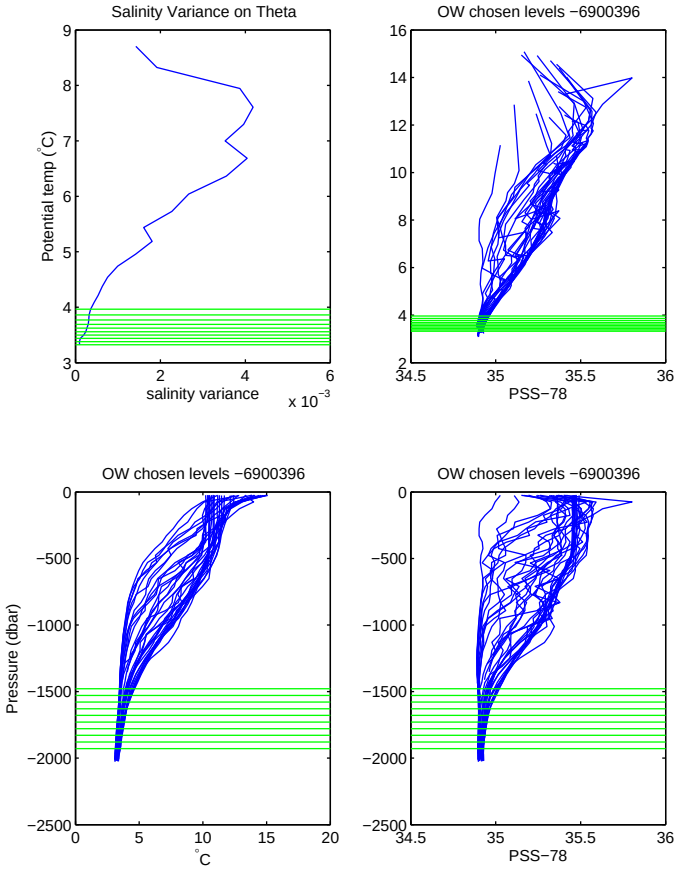


FIG. 29: Chosed levels by the OW method.