Delayed mode quality control of MOCCA Argo float 3901887

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Summary

The assessed error of salinity for cycles 1-120 is 0.005; 121-199 is 0.015 and 200- 286 is 0.01. No further corrections is required.

WMO number	DM correction
3901887	No correction

Table 1: Correction applied in delayed mode.

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1 Introduction

Delayed mode analysis was performed for float number 360521i (3901887) where salinity and temperature values were separately compared to nearby historical CTD profiles and nearby Argo profiles as a reference database. The OWC (Cabanes et al., 2016) method was run to estimate a salinity offset and/or a salinity drift. For more information about float 360521i (3901887) click on the following link: http://www.ifremer.fr/argoMonitoring/float/3901887

2 Quality Check of Argo Float Data

2.1 Time Series of Vertical Distribution of Data

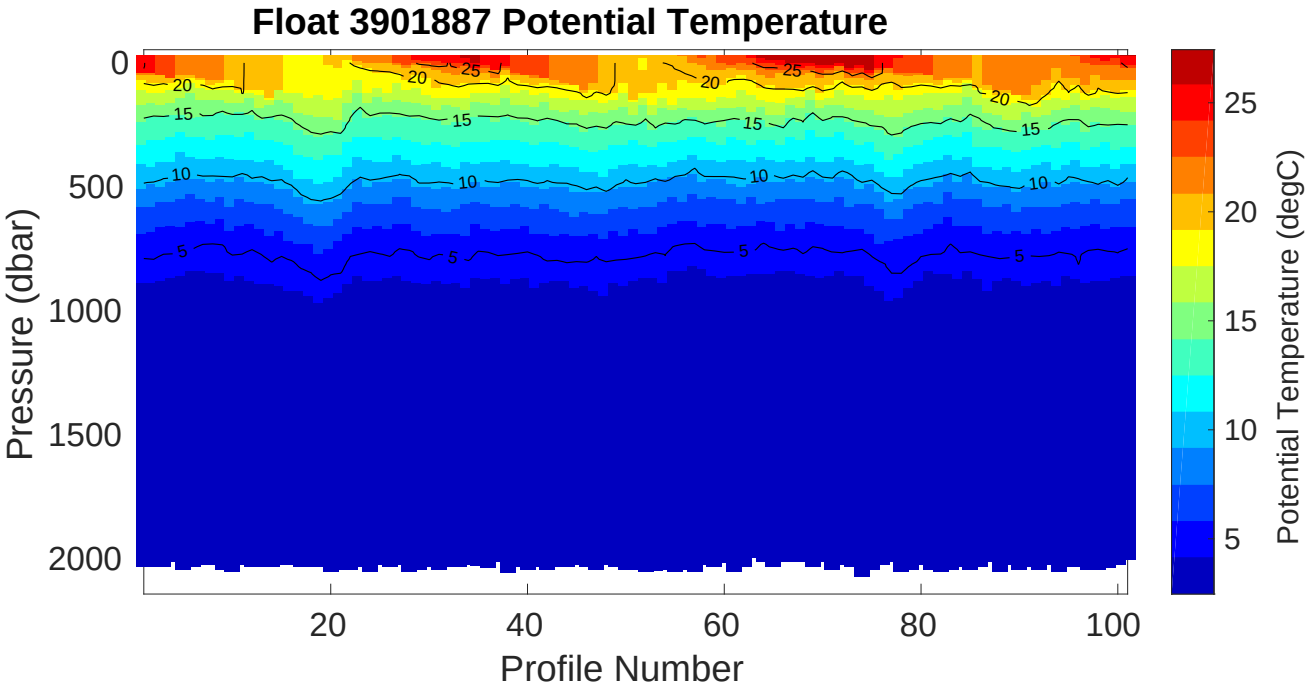

Figure 1: Float 3901887. Time series of the vertical distribution of potential temperature (°C).

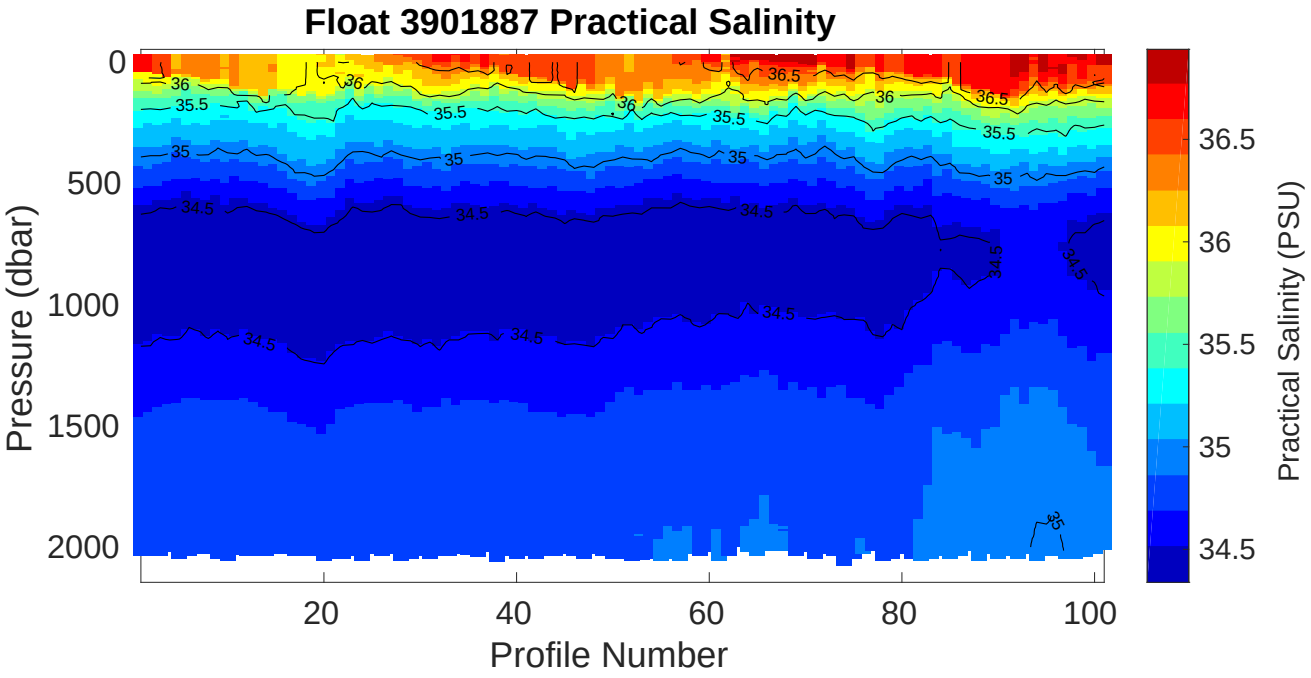

Figure 2: Float 3901887. Time series of the vertical distribution of practical salinity (PSU).

2.2 Comparison between Argo Float and Climatology

The comparison between float 3901887 and data from WMO boxes +/- 10°of latitude and longitude shows that the Argo profiles fit within the expected ranges (Figures 3, 4 and 5). This result confirms that float 3901887 represents relatively stable and consistent with the expected physical conditions in this region.

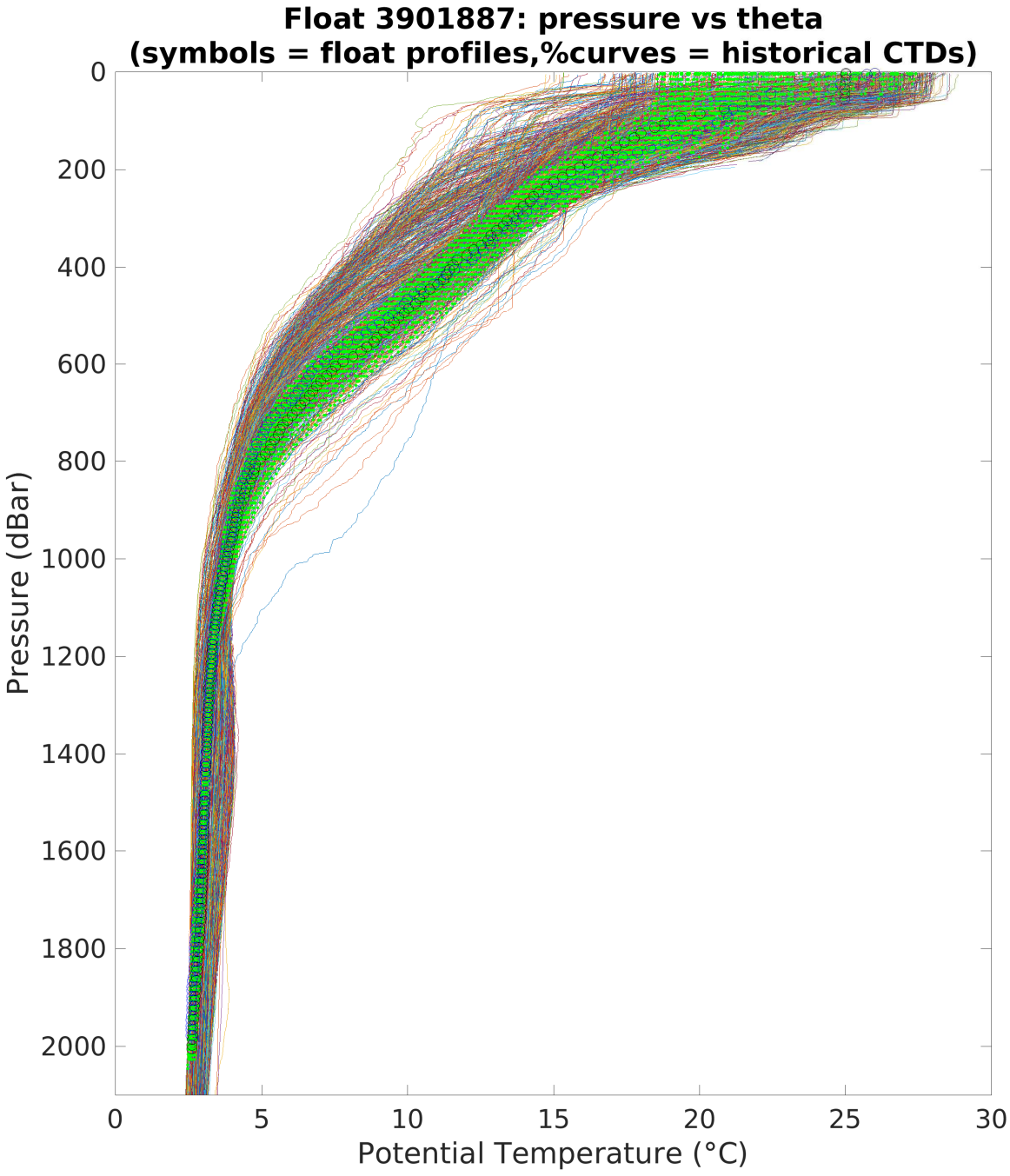

Figure 3: Float 3901887. Float profile of potential temperature (˚C) plotted with climatology from the spatial range of 10 ˚. The black and blue cycles indicates the first and the last Argo profile, respectively. Green symbols represent other Argo profiles.

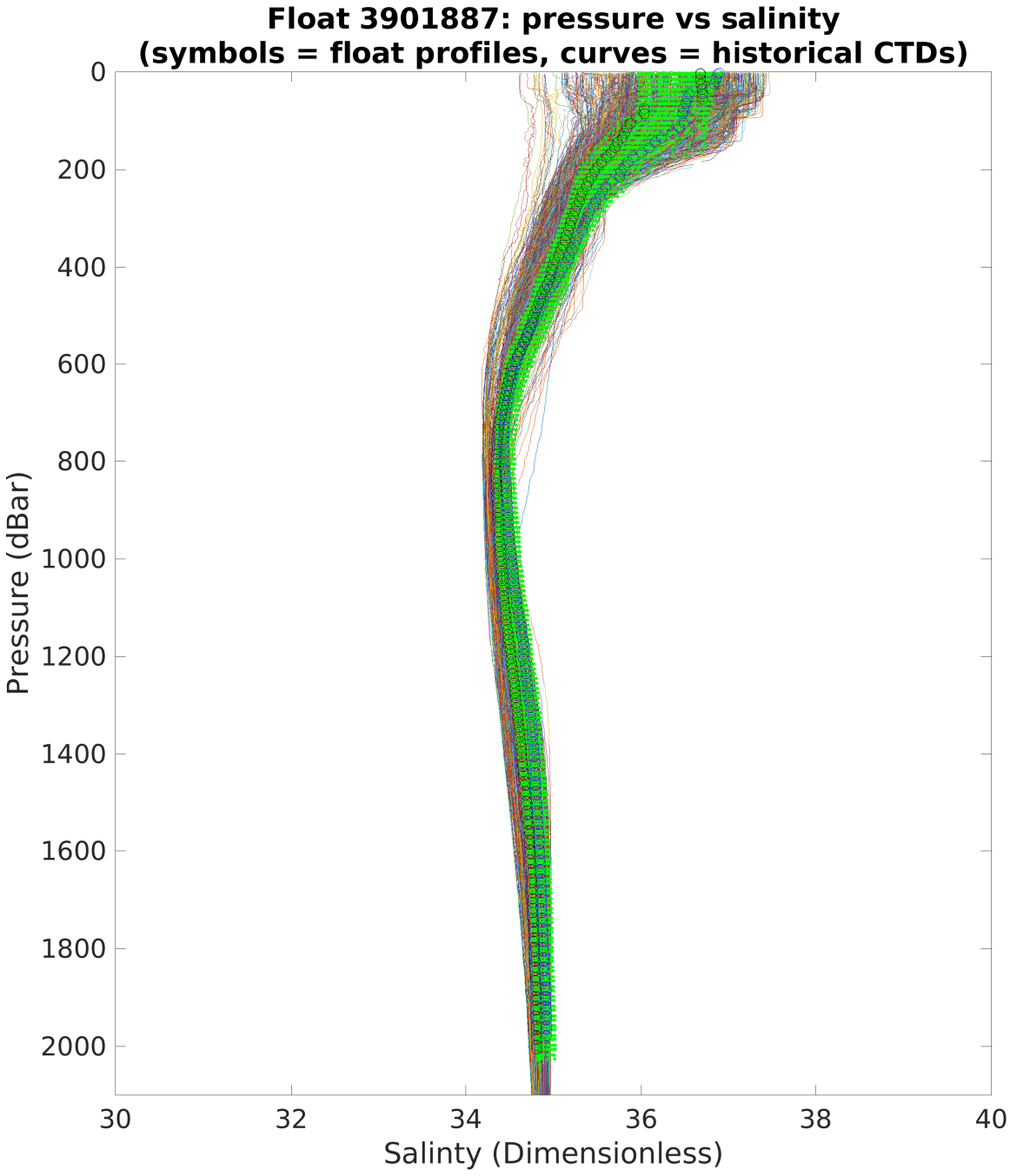

Figure 4: Float 3901887. Float profile of salinity (dimensionless) plotted with climatology from the spatial range of 10 ˚. The black and blue cycles indicates the first and the last Argo profile, respectively. Green symbols represent other Argo profiles.

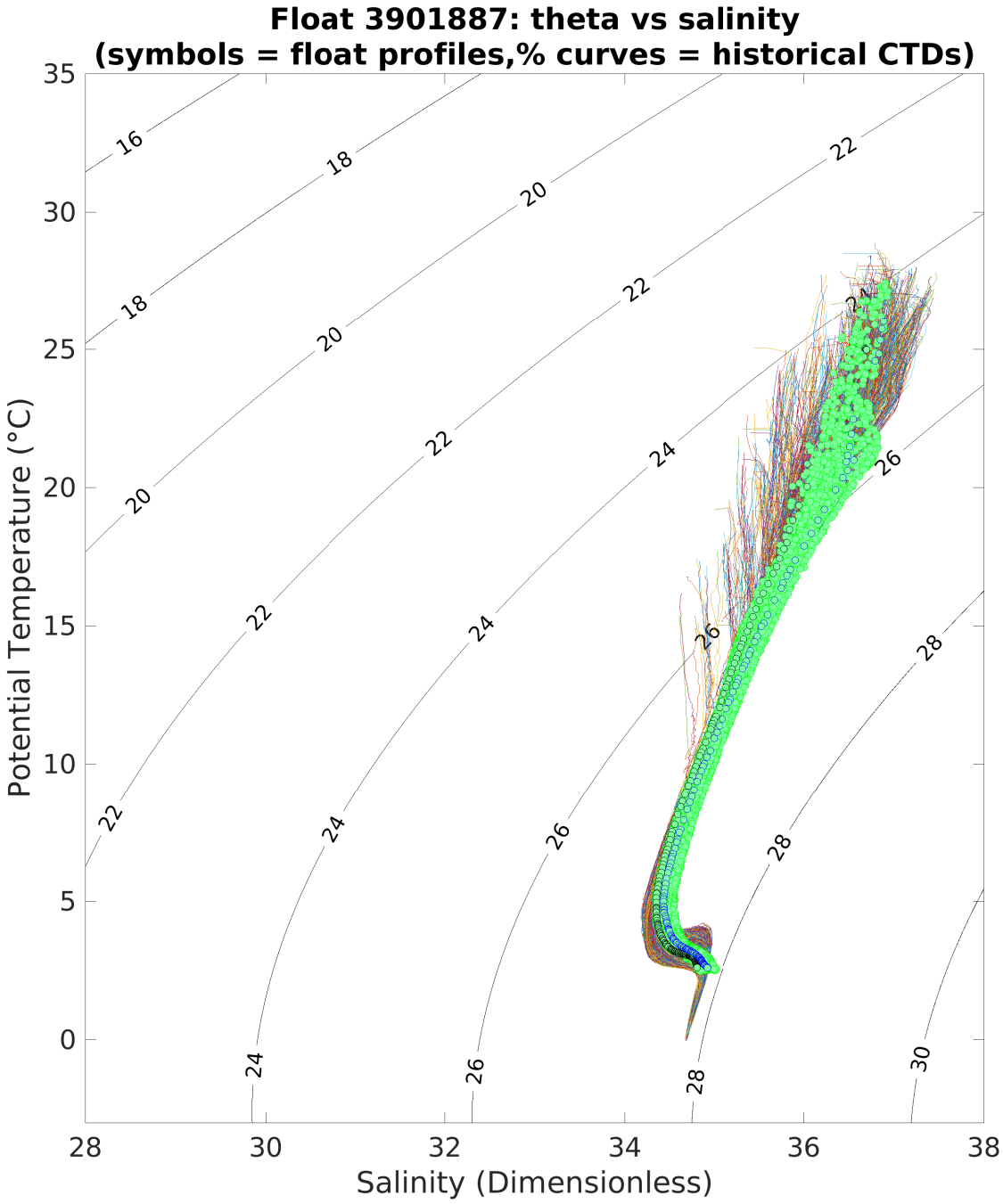

Figure 5: Float 3901887. Theta/S plotted with climatology from the spatial range of 10 °. The black and blue cycles indicates the first and the last Argo profile, respectively. Green symbols represent other Argo profiles.

2.3 Satellite Altimeter comparison

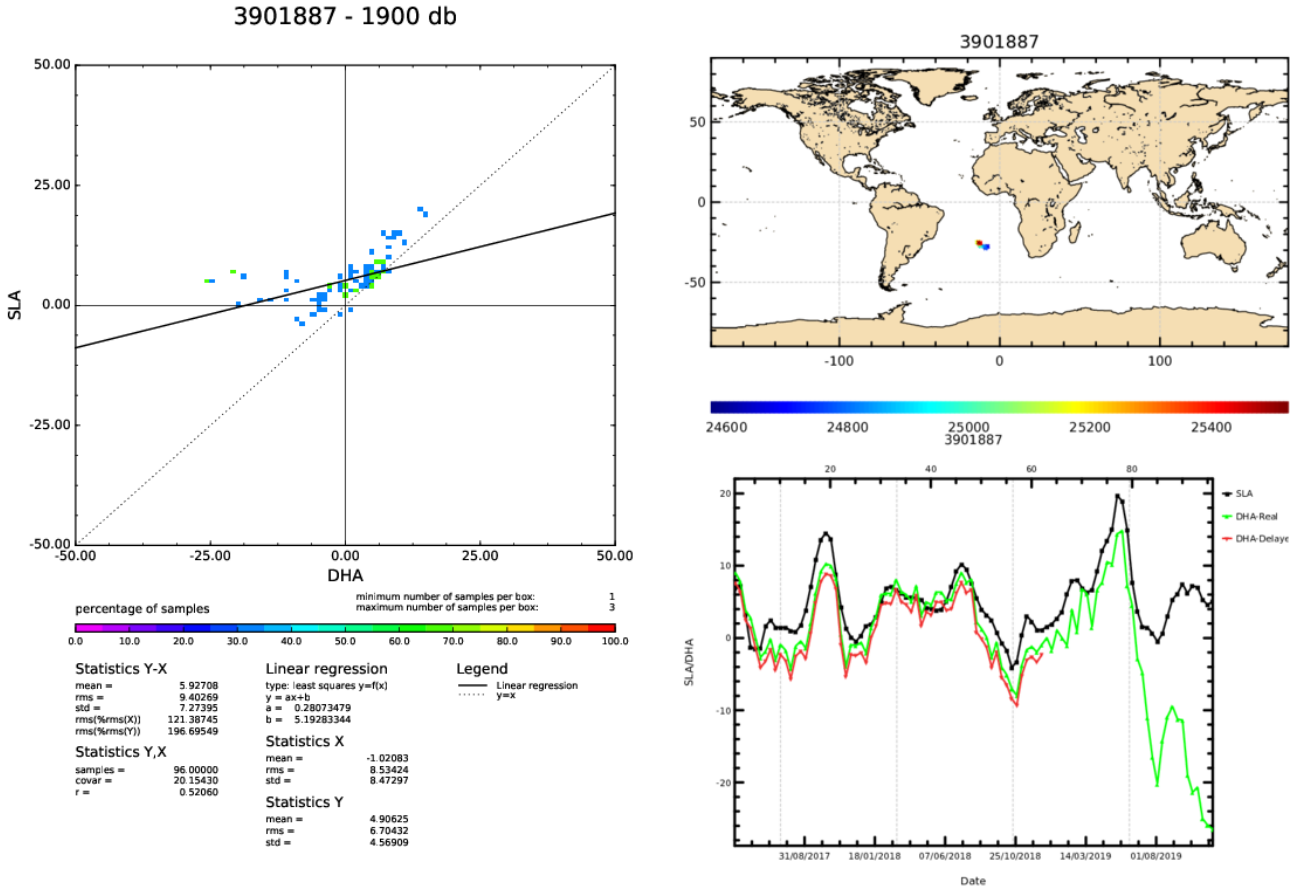

Figure 6: Float 3901887. The comparison betweeen the Sea Surface Height(SSH) from the satellite altimetry and Dynamic Height Anomaly(DHA)extracted from the Argo float temperature and salinity data

3 Correction of Salinity Data

3.1 Comparison between Argo floats and CTD Climatlogy

3.1.1 Configuration

3.1.2 Results

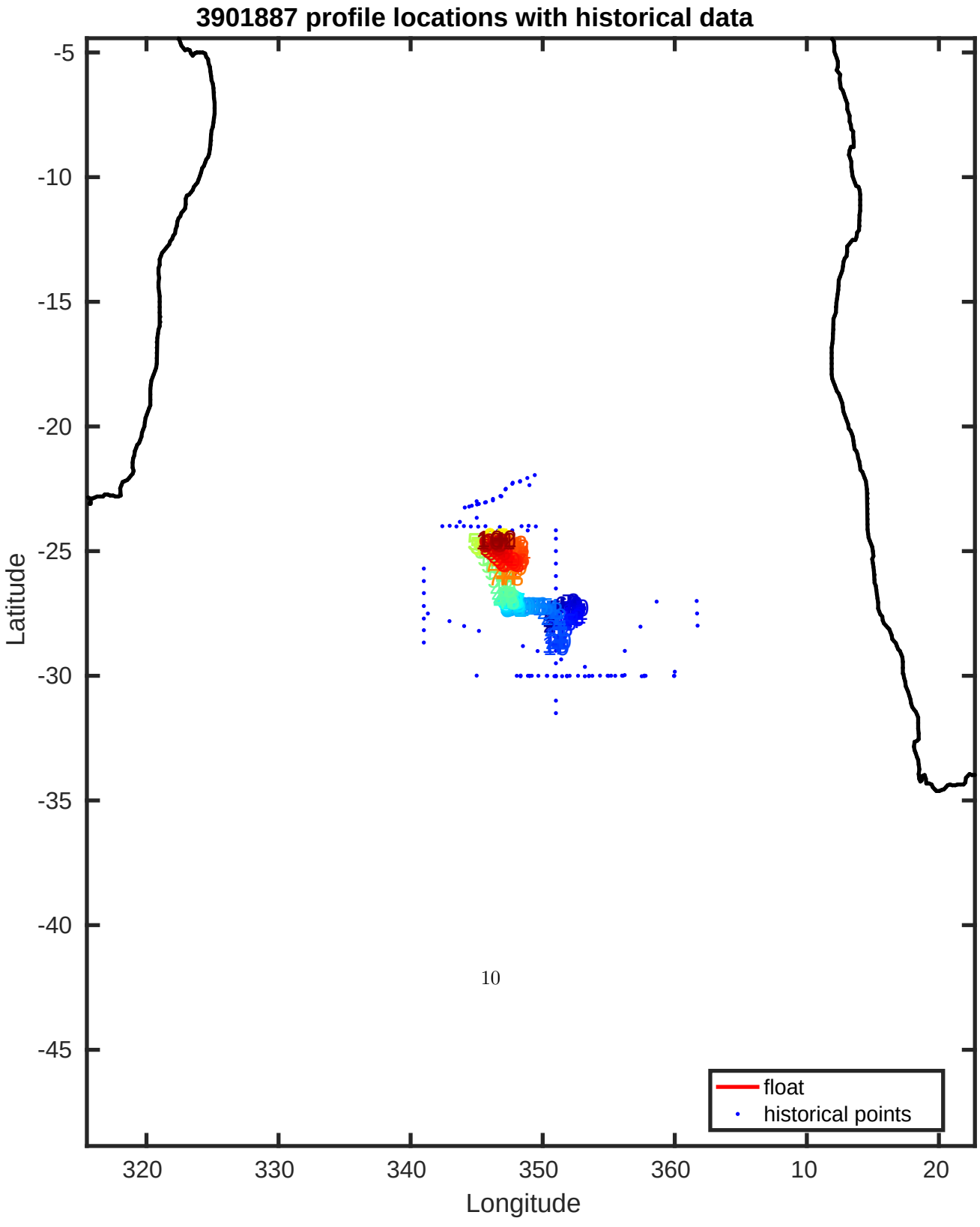

Figure 7: Float 3901887. Trajectory of the float with historical CTD data. The black contours indicate the

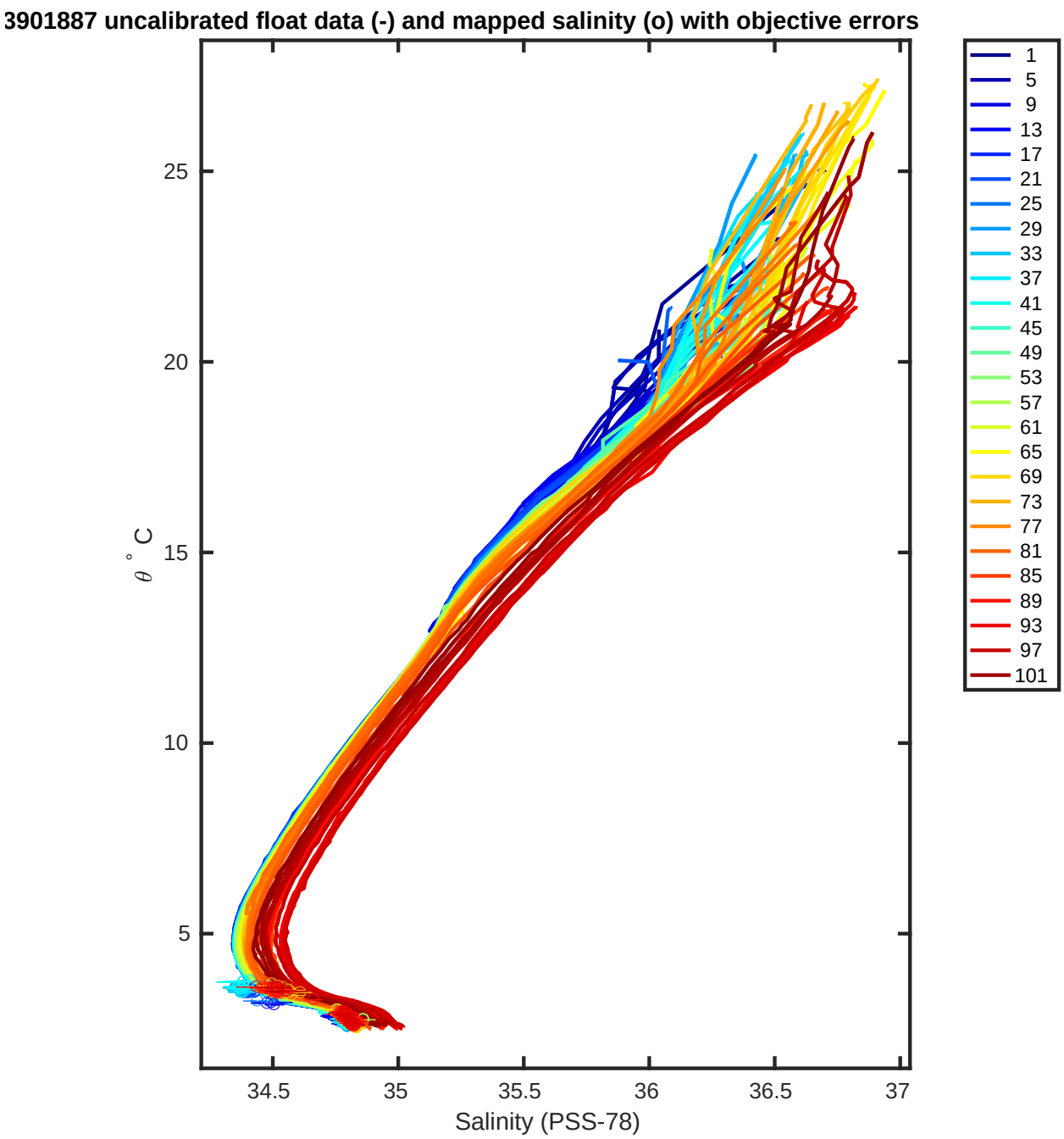

Figure 8: Float 3901887. Uncalibrated float data and mapped salinity.

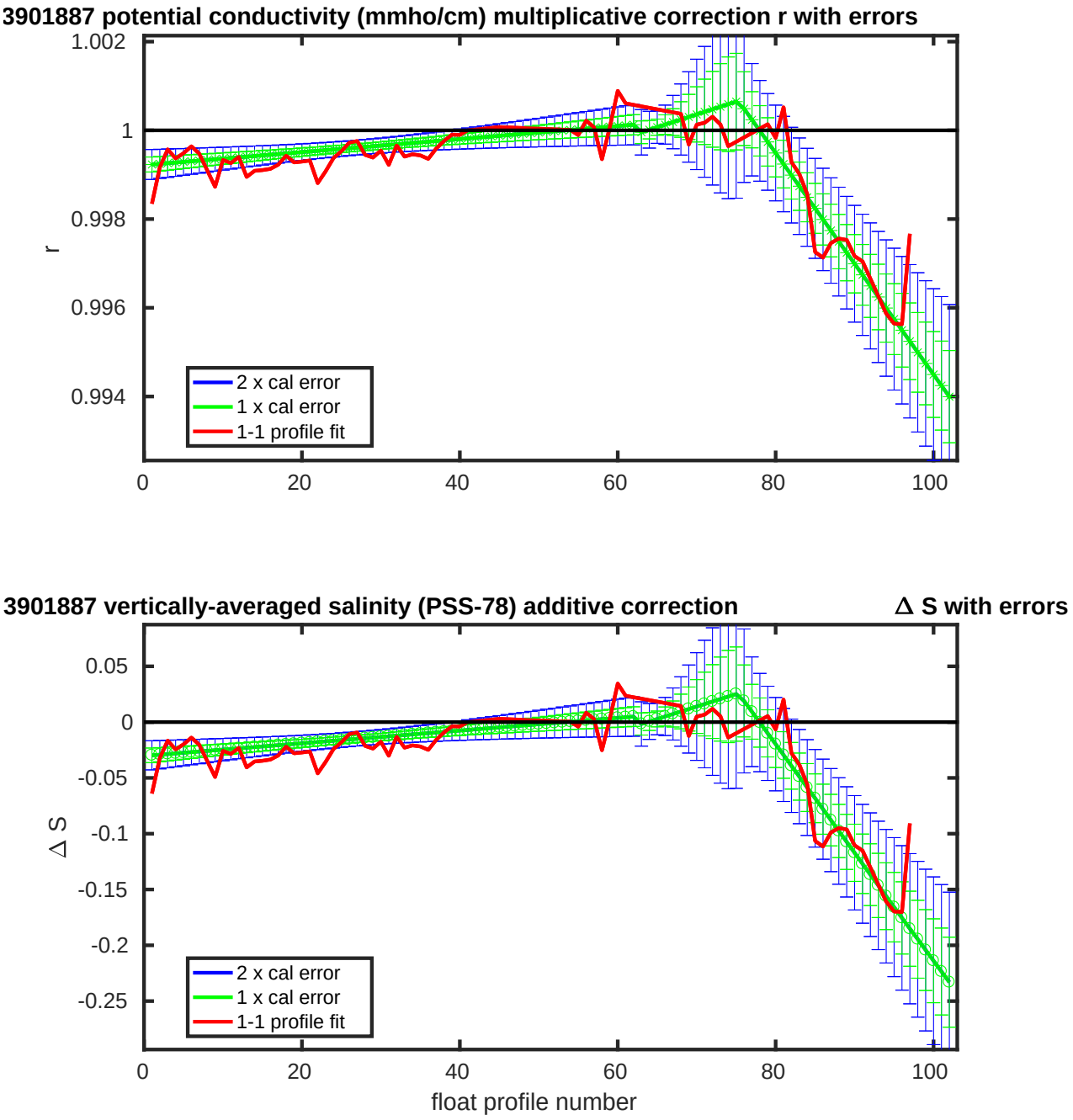

Figure 9: Float 3901887. Potential conductivity (top) and vertically averaged salinity (bottom) with errors.

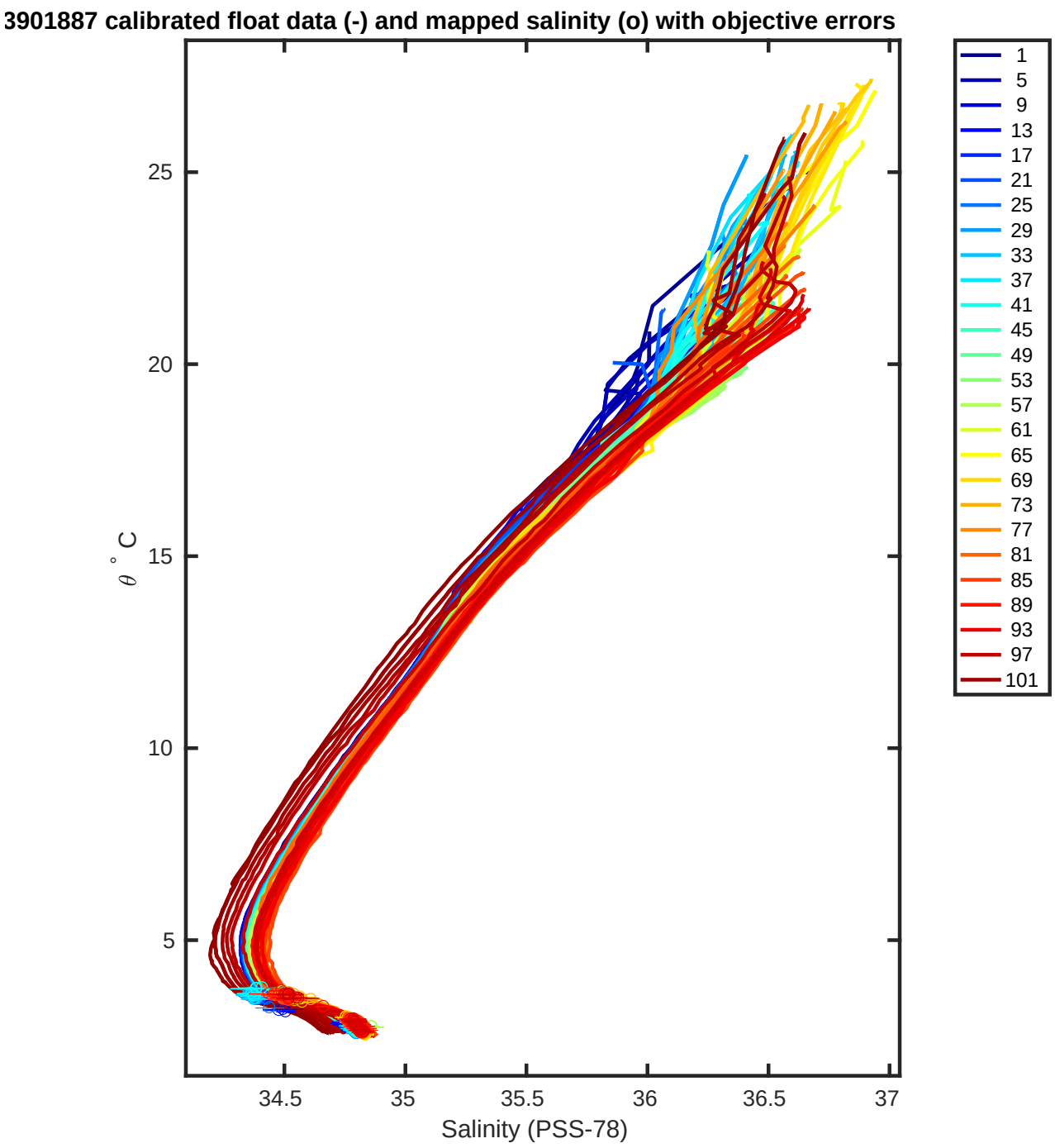

Figure 10: Float 3901887. Calibrated float data and mapped salinity.

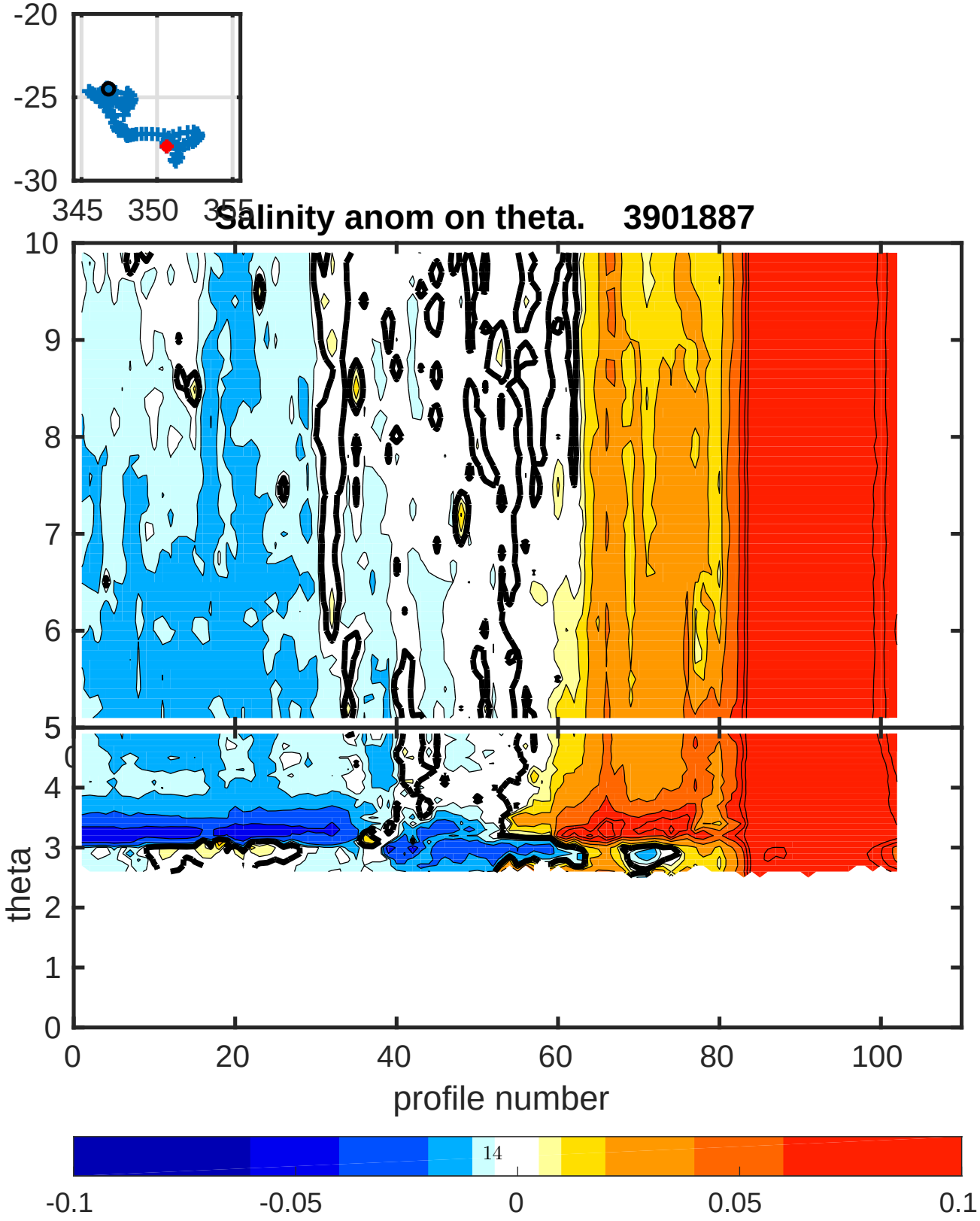

Figure 11: Float 3901887. Salinity anomaly on θ levels.

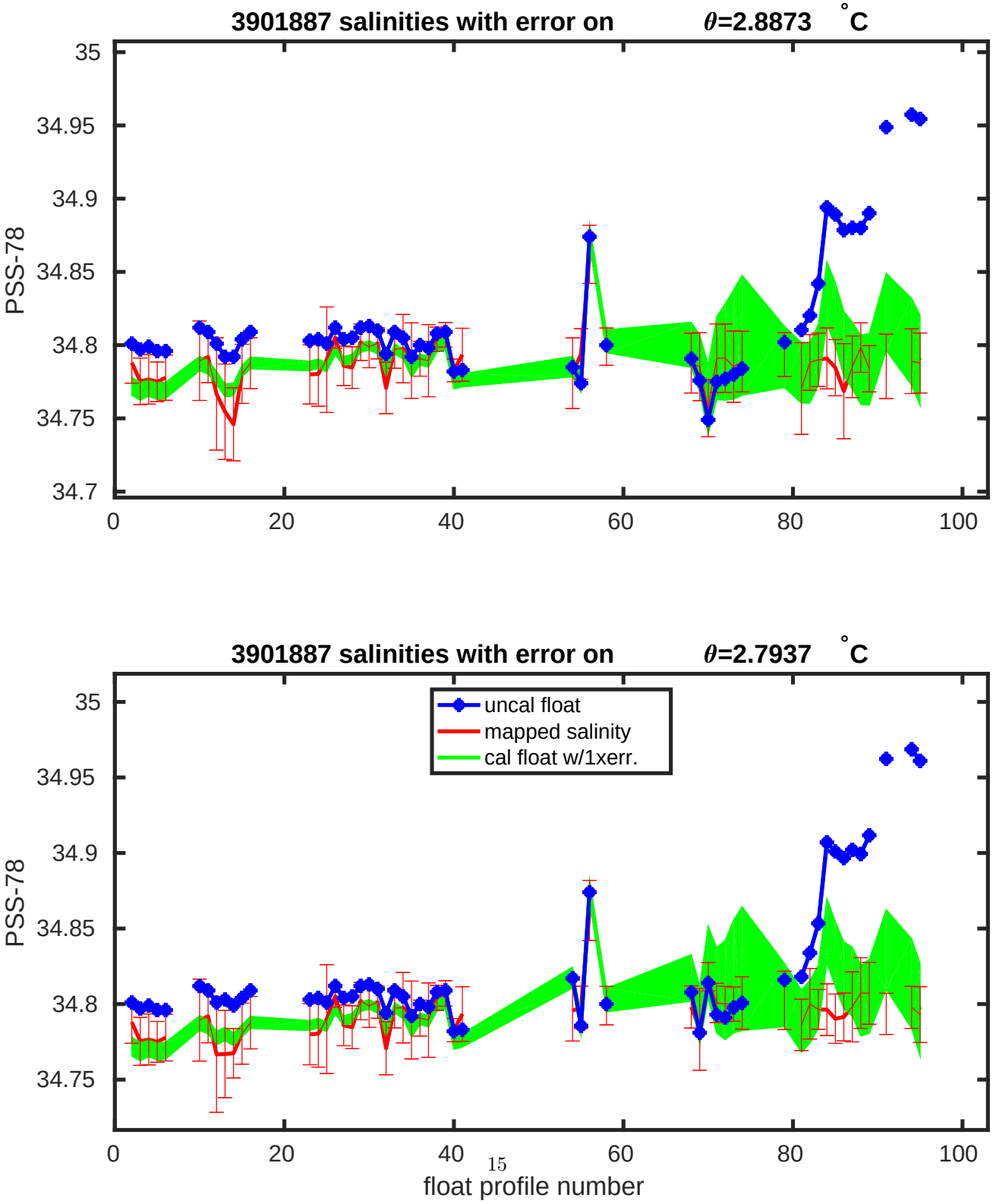

Figure 12: Float 3901887. Salinities with errors on θ levels.

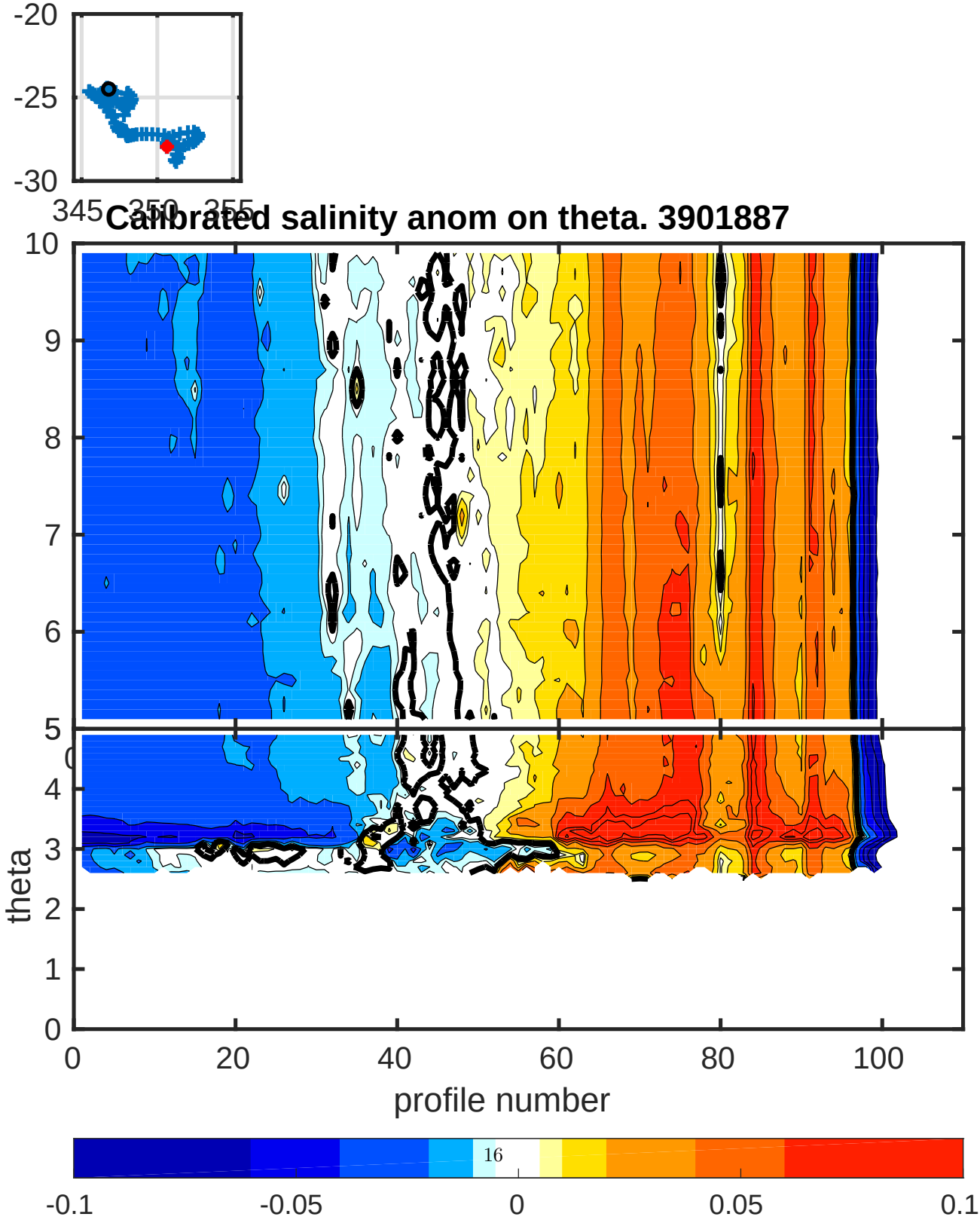

Figure 13: Float 3901887. Calibrated salinity anomaly on θ levels.

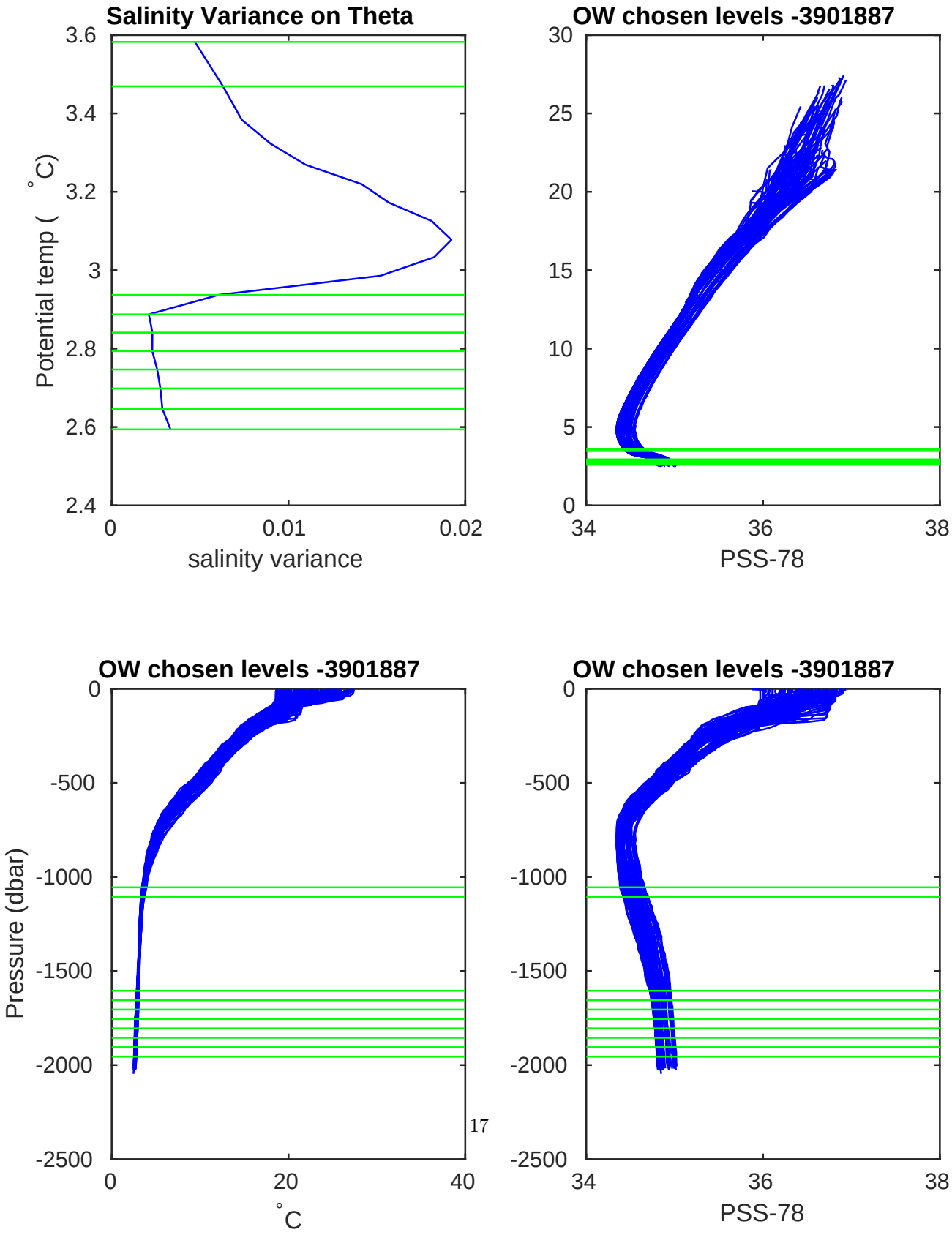

Figure 14: Float 3901887. Salinity, salinity variance on theta and OW chosen levels.

3.2 Comparison between Argo floats and Argo Climatlogy

3.2.1 Configuration

3.2.2 Results

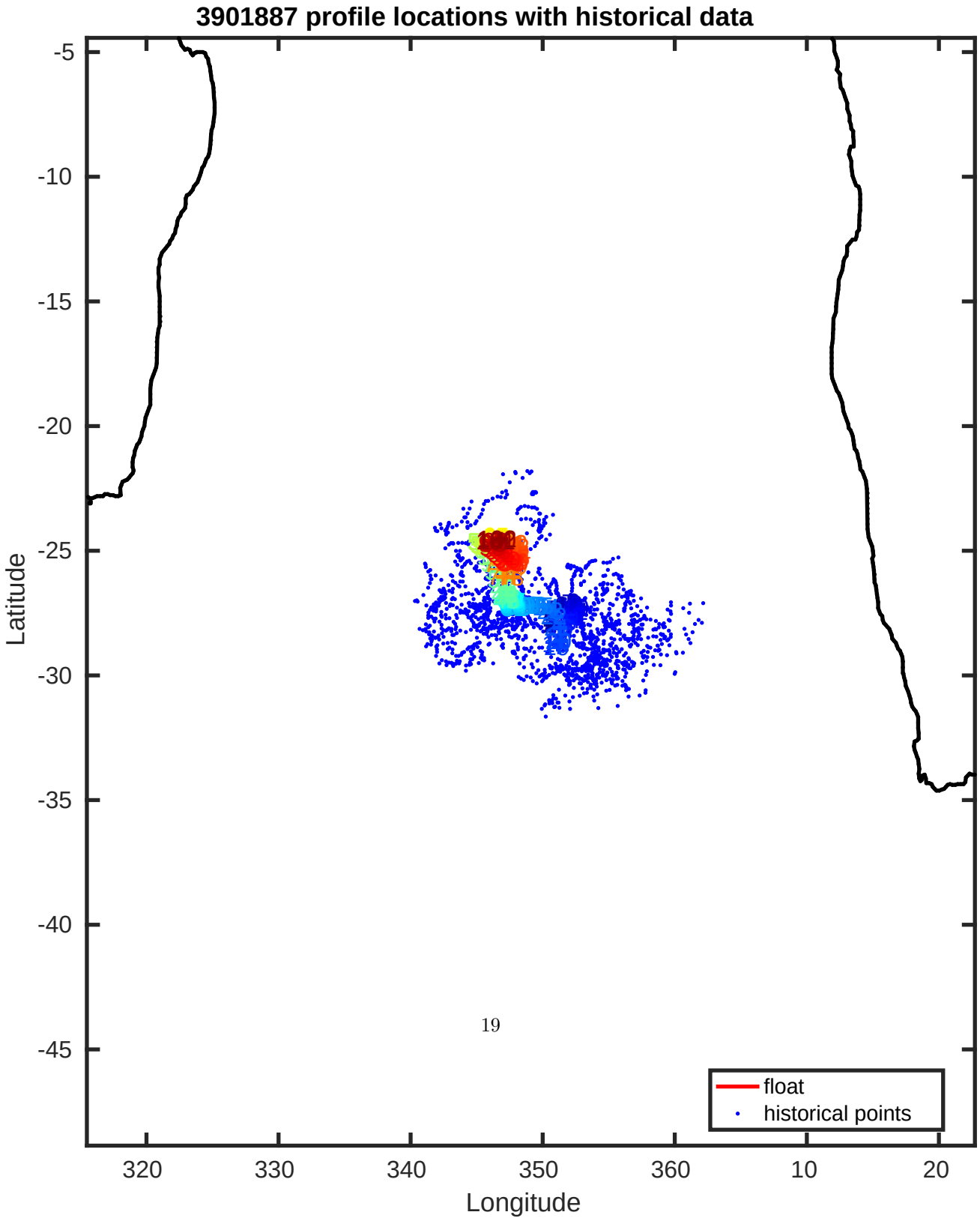

Figure 15: Float 3901887. Trajectory of the float with historical CTD data. The black contours indicate the bathymetry at 0, 200, 1000 and 2000 m.

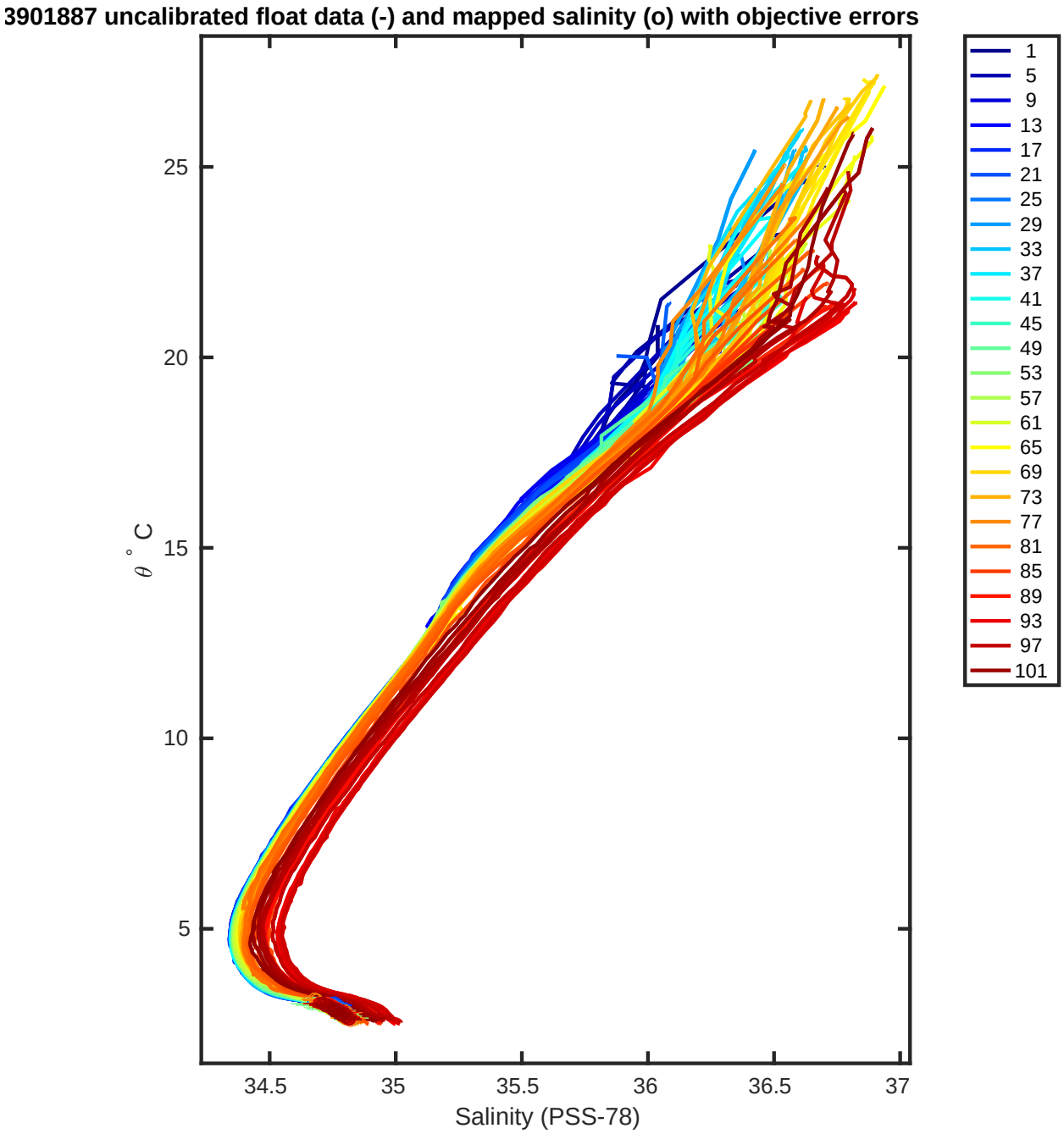

Figure 16: Float 3901887. Uncalibrated float data and mapped salinity.

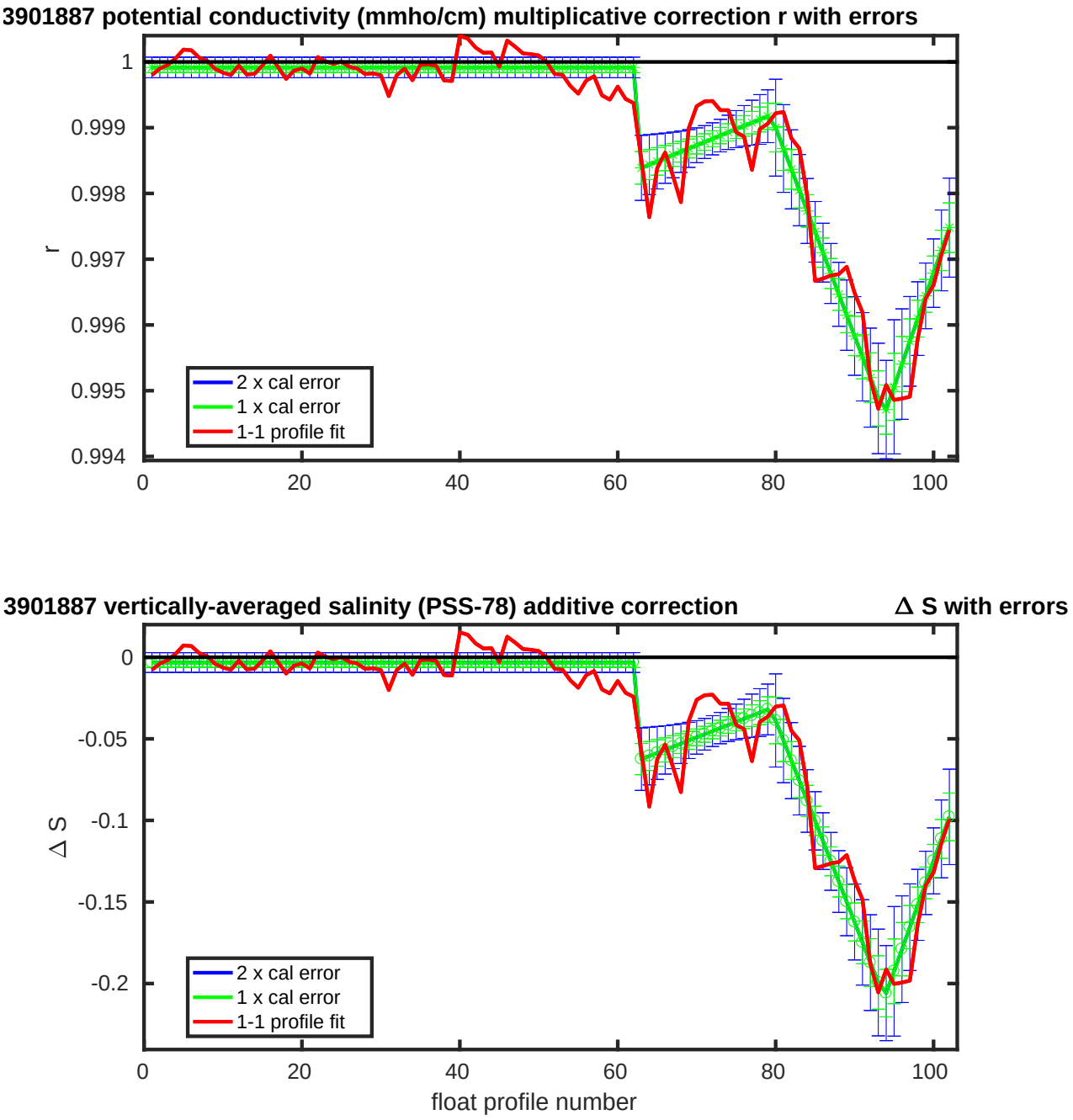

Figure 17: Float 3901887. Potential conductivity (top) and vertically averaged salinity (bottom) with errors.

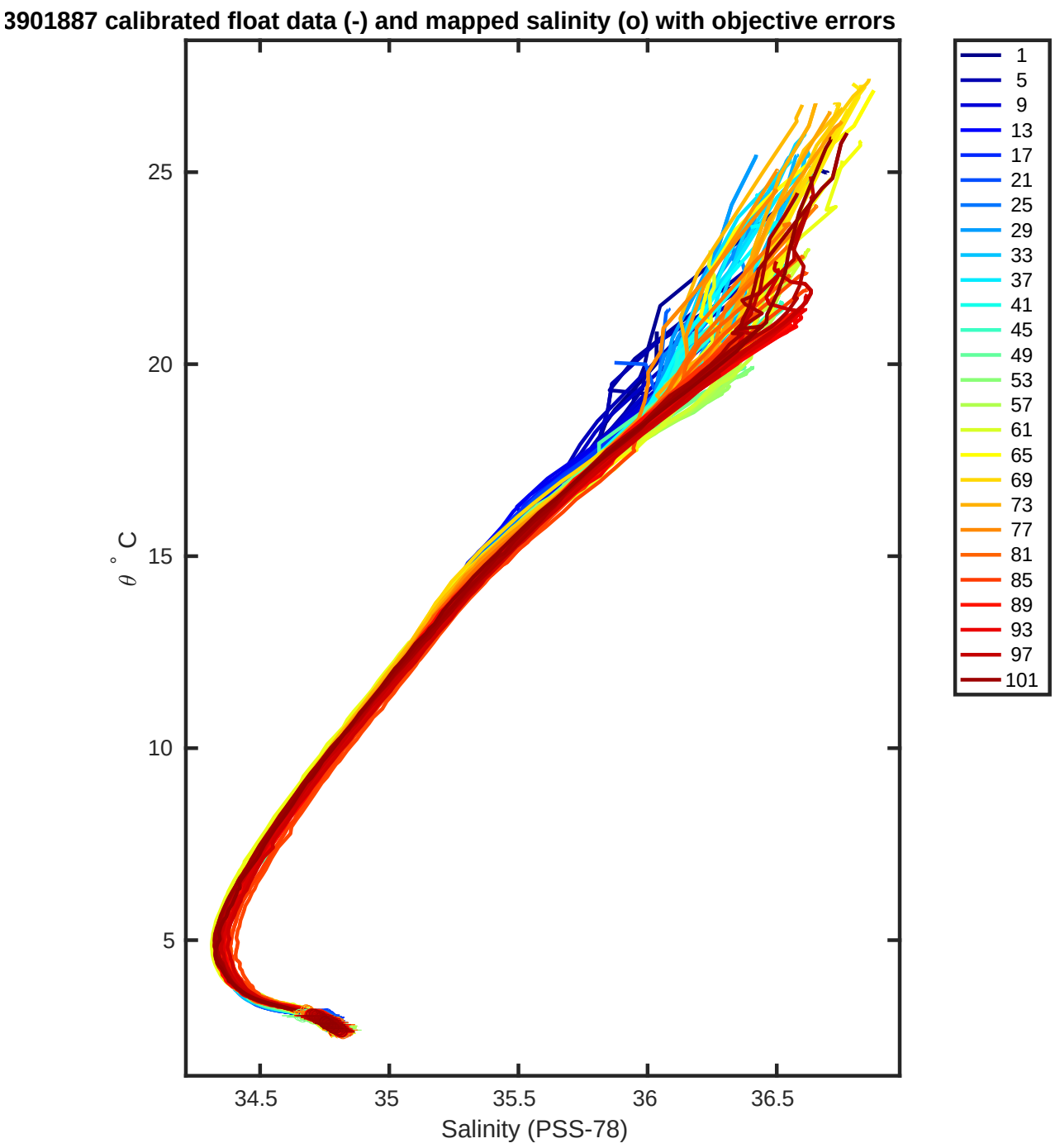

Figure 18: Float 3901887. Calibrated float data and mapped salinity.

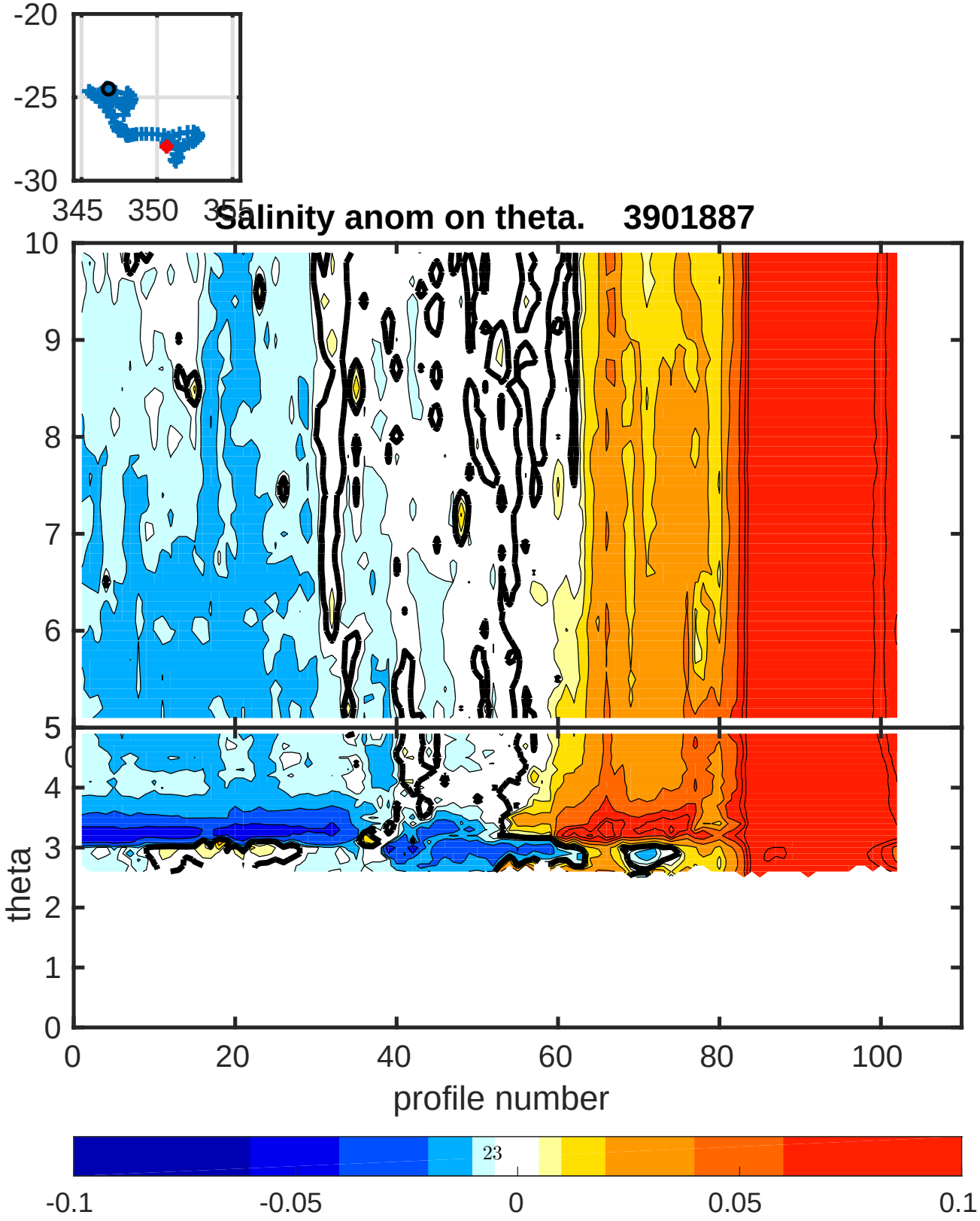

Figure 19: Float 3901887. Salinity anomaly on Theta

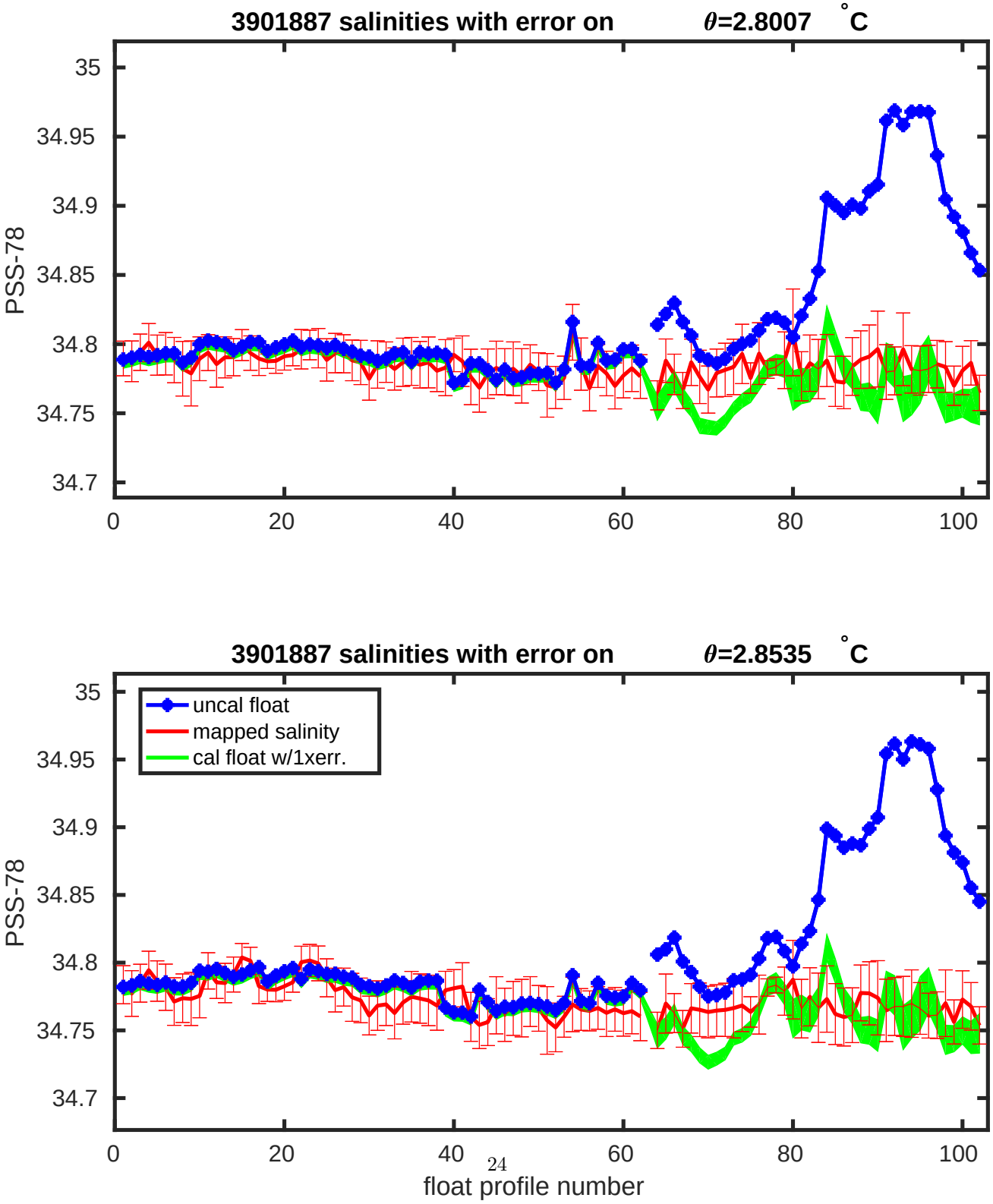

Figure 20: Float 3901887. Salinities with errors on θ.

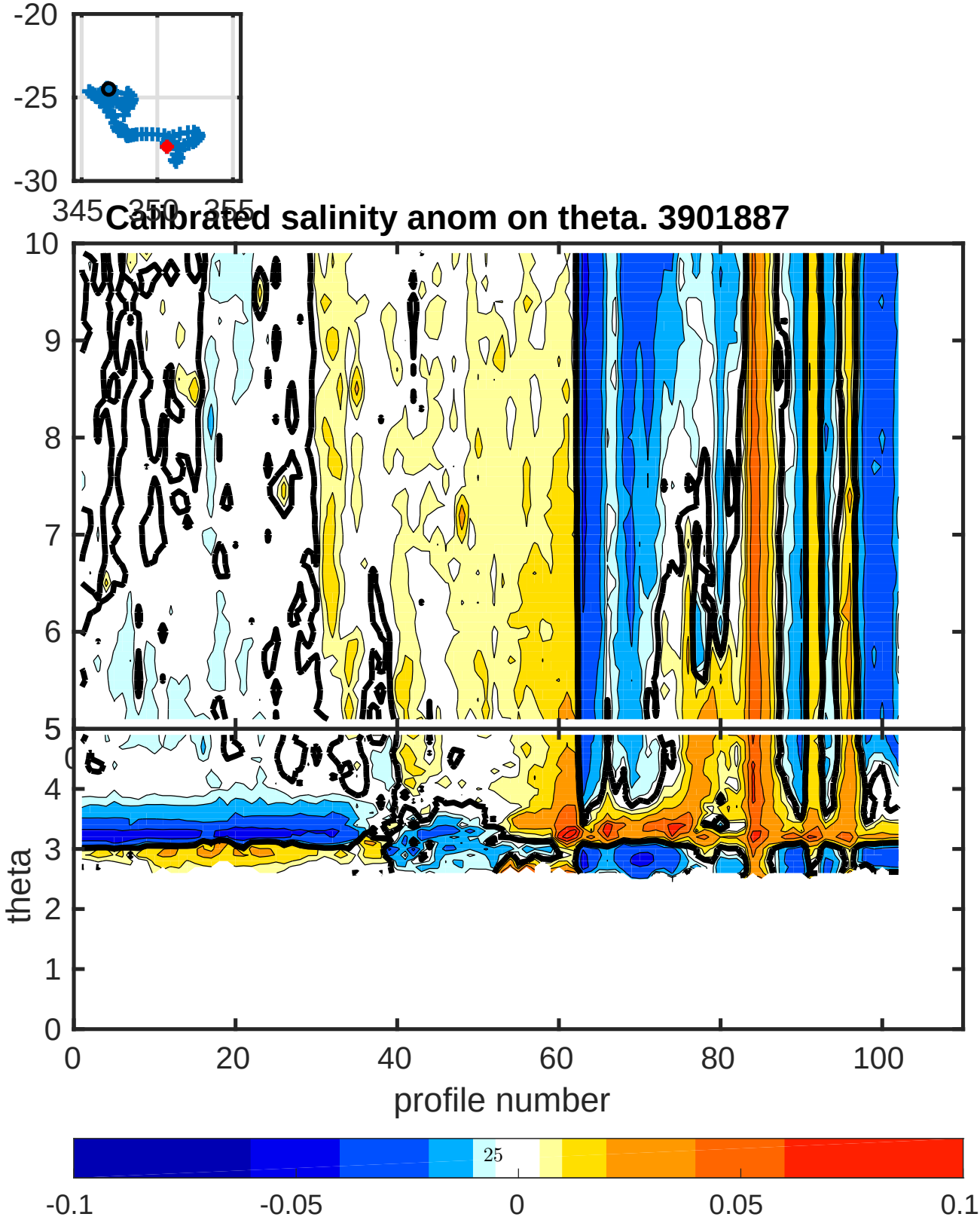

Figure 21: Float 3901887. Calibrated salinity anomaly on θ.

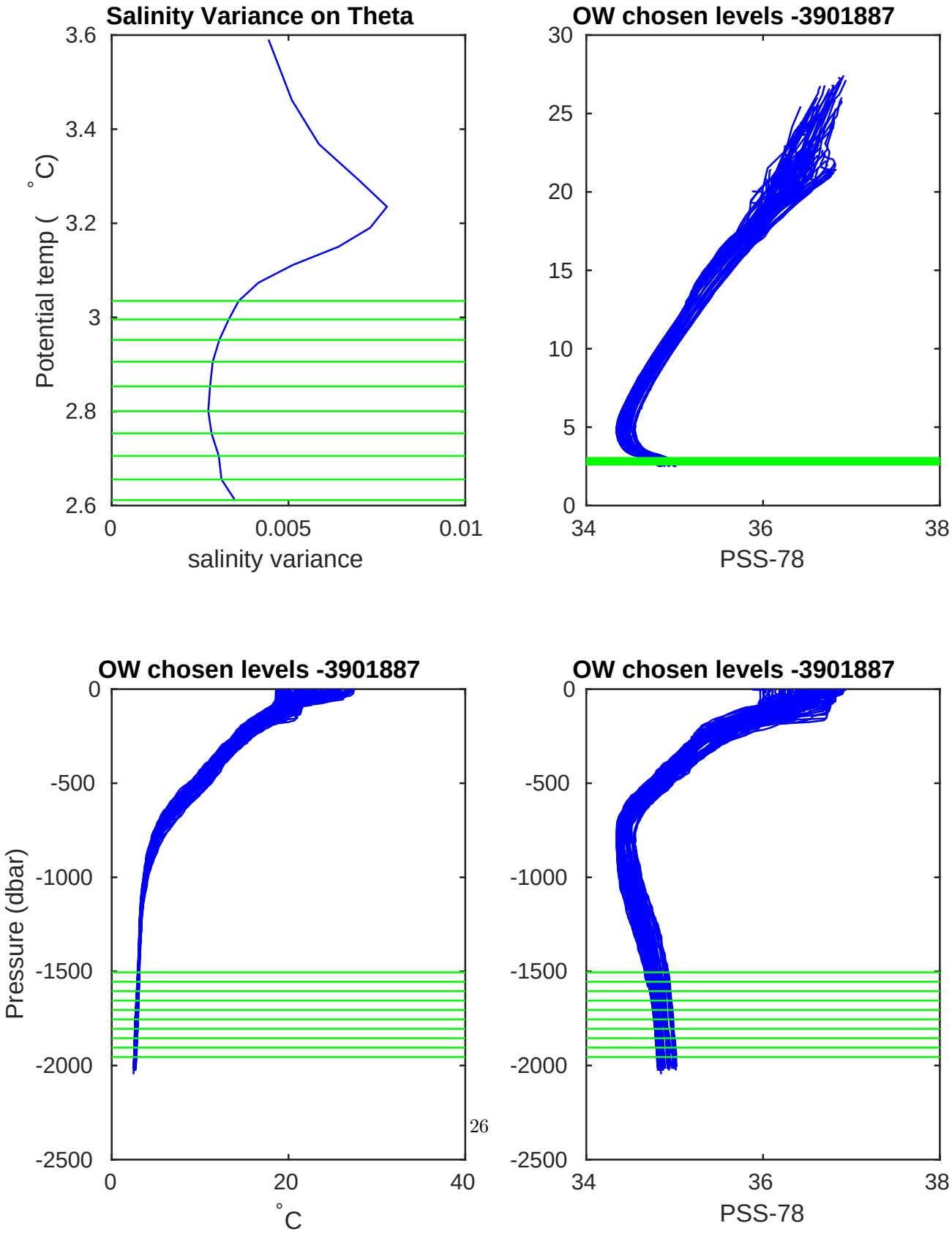

Figure 22: Float 3901887. Salinity, salinity variance on theta and OW chosen levels.

3.3 Summary and Conclusions

The Apex float was adjusted using the sea surface pressure data. The pressure sensor is not truncated, QC=1, error=2.4 dbar. The theta levels were set below 1000 m.The time series separated onto three time steps due to very long time series (almost 8 years) and different water masses. The assessed error of salinity for cycles 1-120 is 0.005; 121-199 is 0.015 and 200-286 is 0.01. No further corrections is required.

4 Final Checks

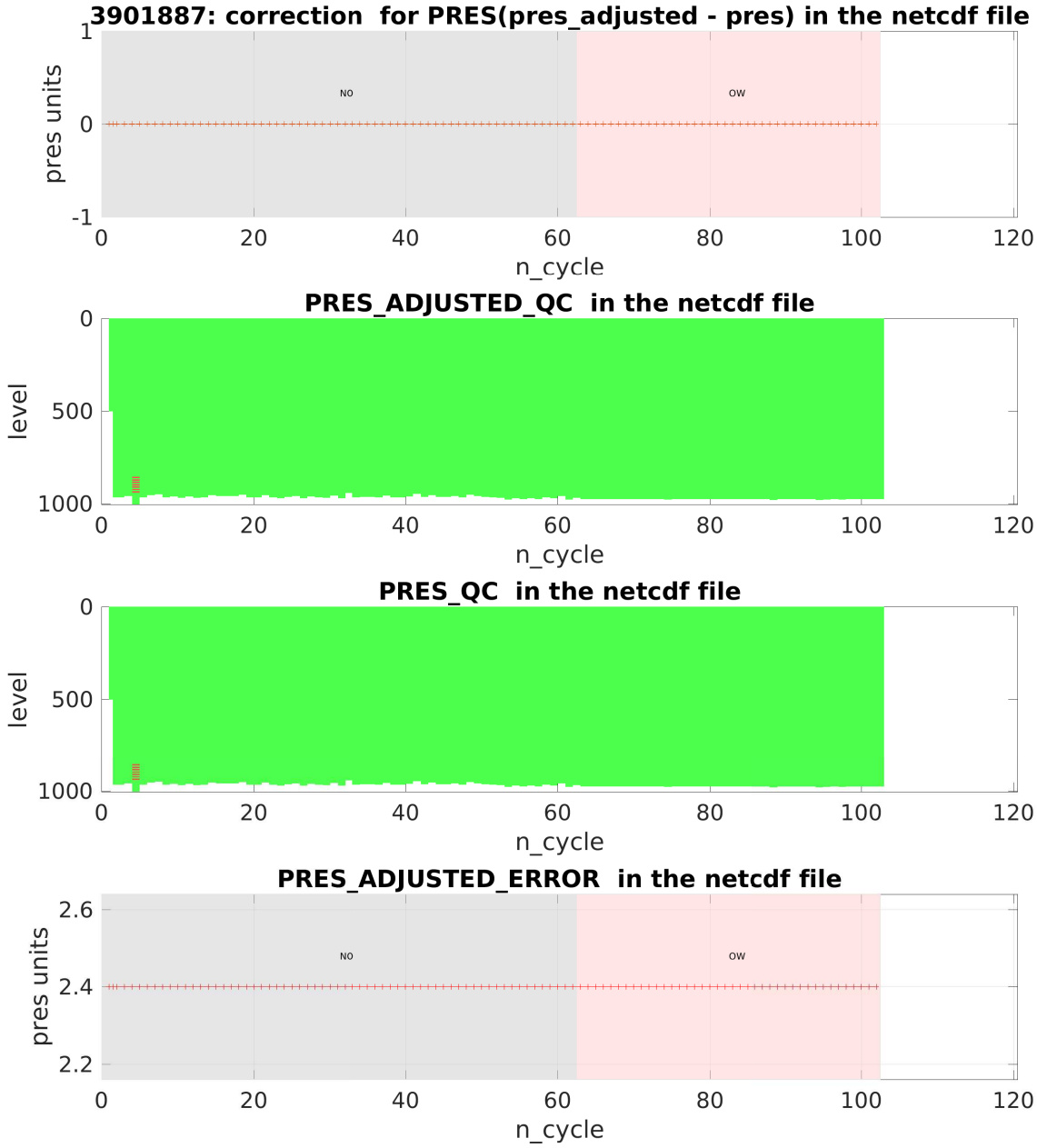

Figure 23: Float 3901887. Time series of applied pressure corrections.

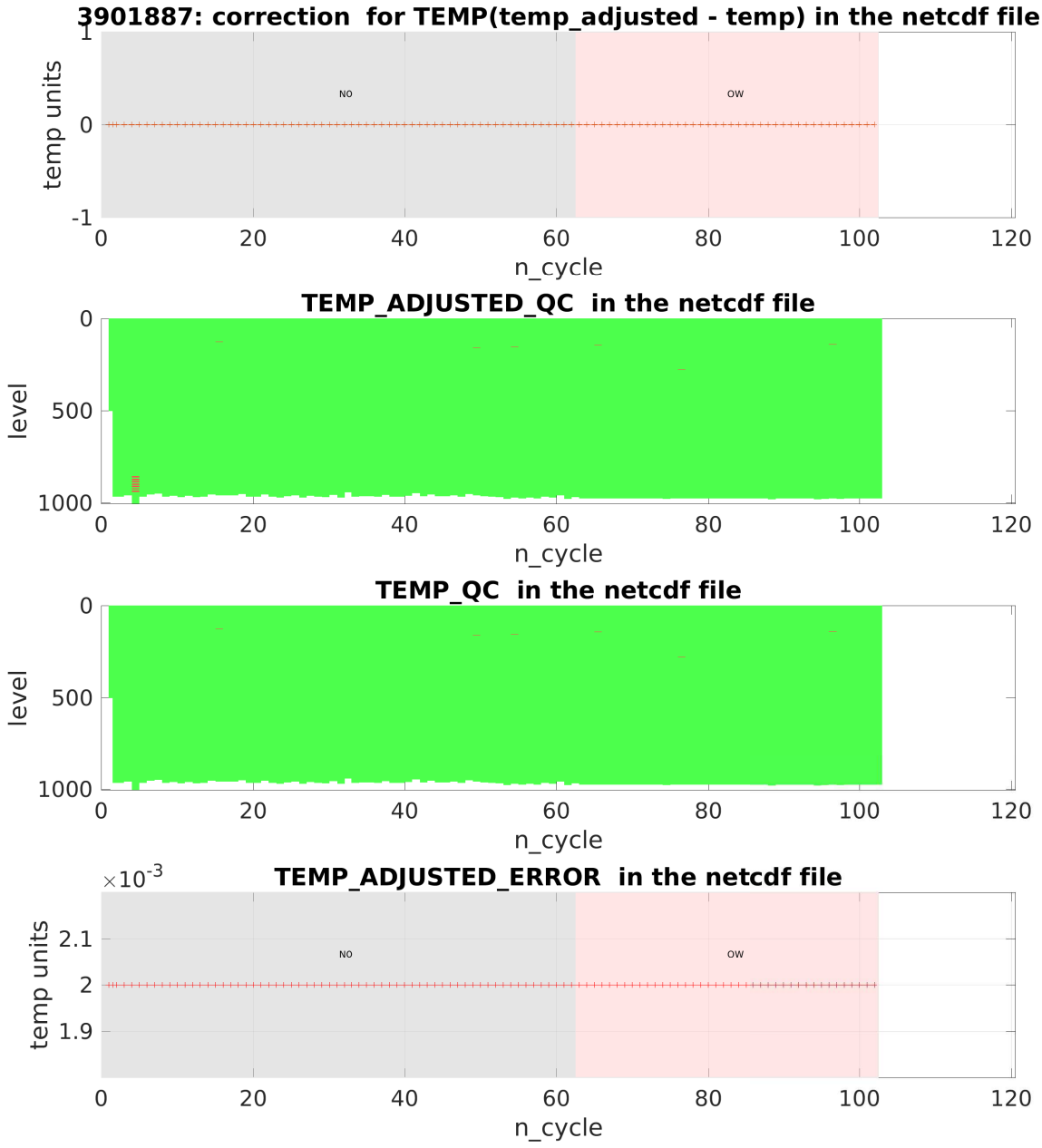

Figure 24: Float 3901887. Time series of applied temperature corrections.

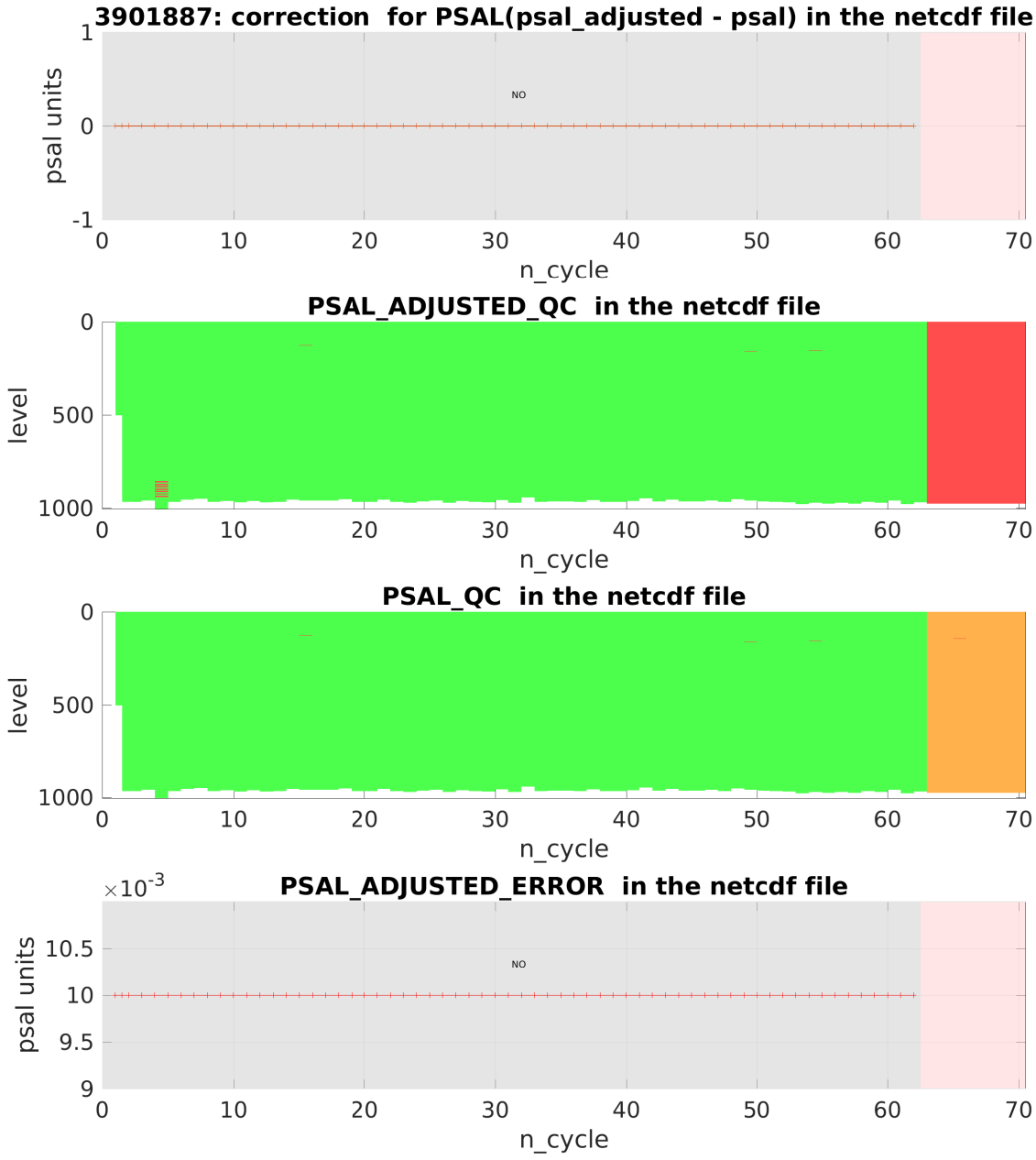

Figure 25: Float 3901887. Time series of applied salinity corrections.