

ITP-137 Metadata

Region: Beaufort Sea / Canada Basin
 Ship and/or program: CCGS *Louis S. St. Laurent*; Beaufort Gyre Observing System (BGOS) JOIS 2022 cruise

Co-deployed instruments: Sunburst Sensors SAMI-CO2 w/ODO & PAR @ 5m

Co-deployed platforms: Tethered Ocean Profiler (TOP-6)
 US Army CRREL Seasonal Ice Mass Balance Buoy 2021 #6

	Date, Time (UTC)	Latitude	Longitude	
Deployment	26 Sept. 2022 18:00	79° 49.1'N	139° 58.1'W	Ice thickness: 1.0 m
Last Profile	27 Aug. 2023, 12:00	78° 18.51'N	122° 17.44'W	Profiler duration: 334 days
Last Location*	25 Nov 2025, 12:18	70° 14.46'N	176° 02.88'E	Surface package duration: 1086+ days

* surface package currently active

Configuration:

ITP profiler s/n: 15403-03
 CTD sensor: Sea-Bird Electronics SBE-41CP s/n: 17167
 AUX sensors: Aanderaa optode s/n: 969

Data files:

Number of profiles: 1337
 Number of records longer than 10 meters: 1337

Quality Control flags: implemented

record flag value	pressure	temperature	conductivity	salinity
1 (good)	1337	1250	1328	1244
2 (questionable)	0	87	9	93

Location-only data file: itp137rawlocs.dat
 Level III 1-db bin-averaged profile data: itp137_level3g.nc
 Level III 1-Hz timeseries profile data: itp137_level3ts.nc

Data Description:

Profile type: one-way
 Profile minimum depth: 7 meters
 Profile maximum depth: 760 meters
 Nominal profile rate: 4 profiles per day
 GPS positions: half-hourly

Data Processing Notes

- Sporadic cases of conductivity cell fouling were observed, and these data were removed from the level 3 product.
- No corrections have been applied to the Aanderaa optode data in Level 3
- SAMI-CO2 data is not included in level-3 netCDF, however there was no data telemetered to the shore after deployment
- profiler continued to return data after 27 Aug 2023, but unit became stuck around 300m and finally dropped to the bottom of the wire in November where it remained until its battery died. No useful profiler data was collected during this time.

- surface buoy remains active (as of Nov. 25, 2025)

Deployment Notes

Adapted from JOIS/BGOS 2022 cruise report (IOS Cruise ID 2022-045):

The LSSL came into concentrated sea ice with few visible leads and extensive ridging. A suitable flat area about 250 m across between the ship and the next ridge was found. There was significant snow cover, with drifts about 40 cm in places. TOP6 (closest to ship), SIMB 2021 #6 in the middle and ITP 137 furthest from the ship were deployed along a 100 m long line. The ice survey revealed the ice to be 1 m to 1.3 m thick.

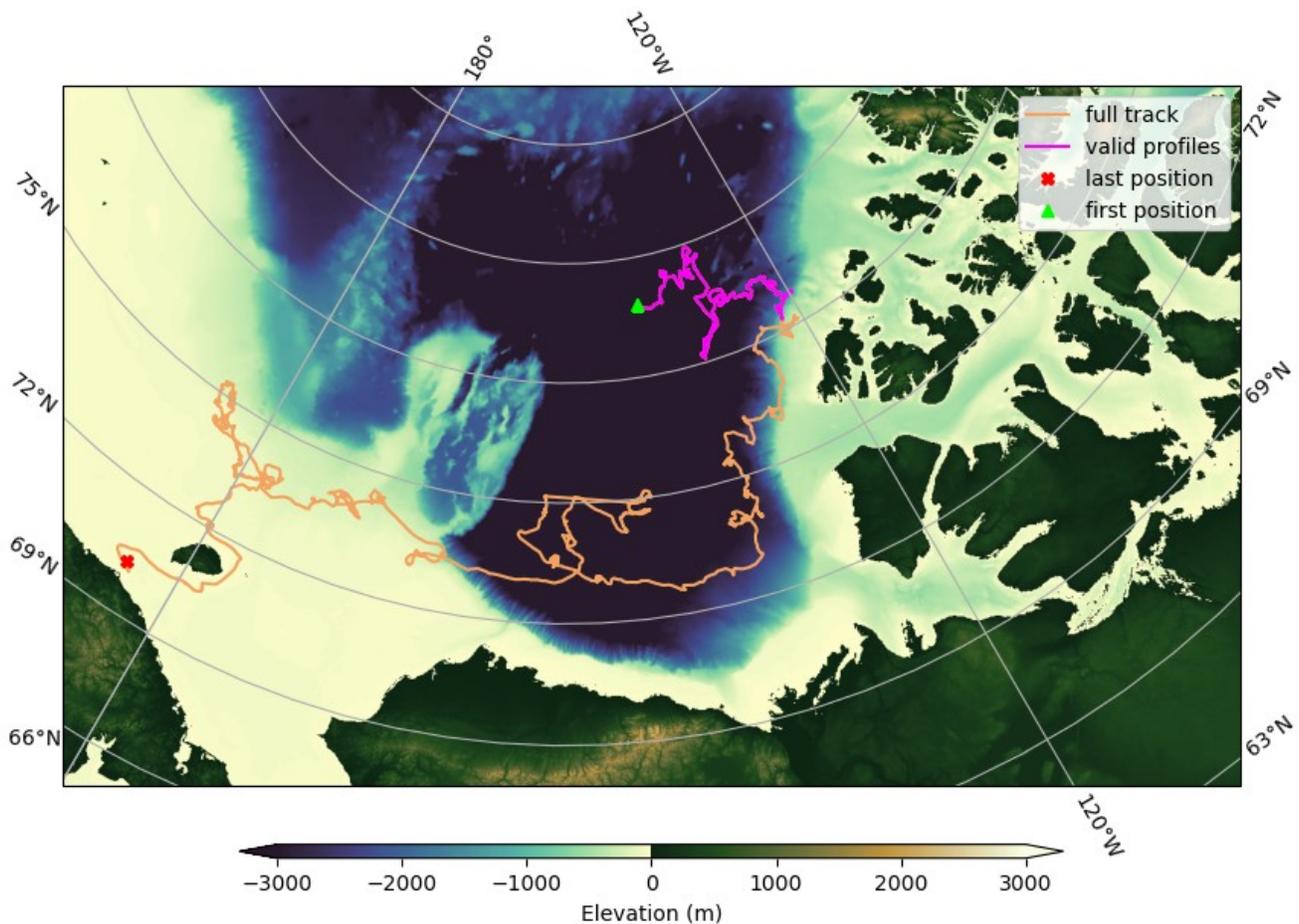


Figure 1: ITP-137 surface package drift track showing record locations (magenta), and locations with surface package data only (orange). The first profile location is marked with a green triangle, and the last processed position with a red 'x'.

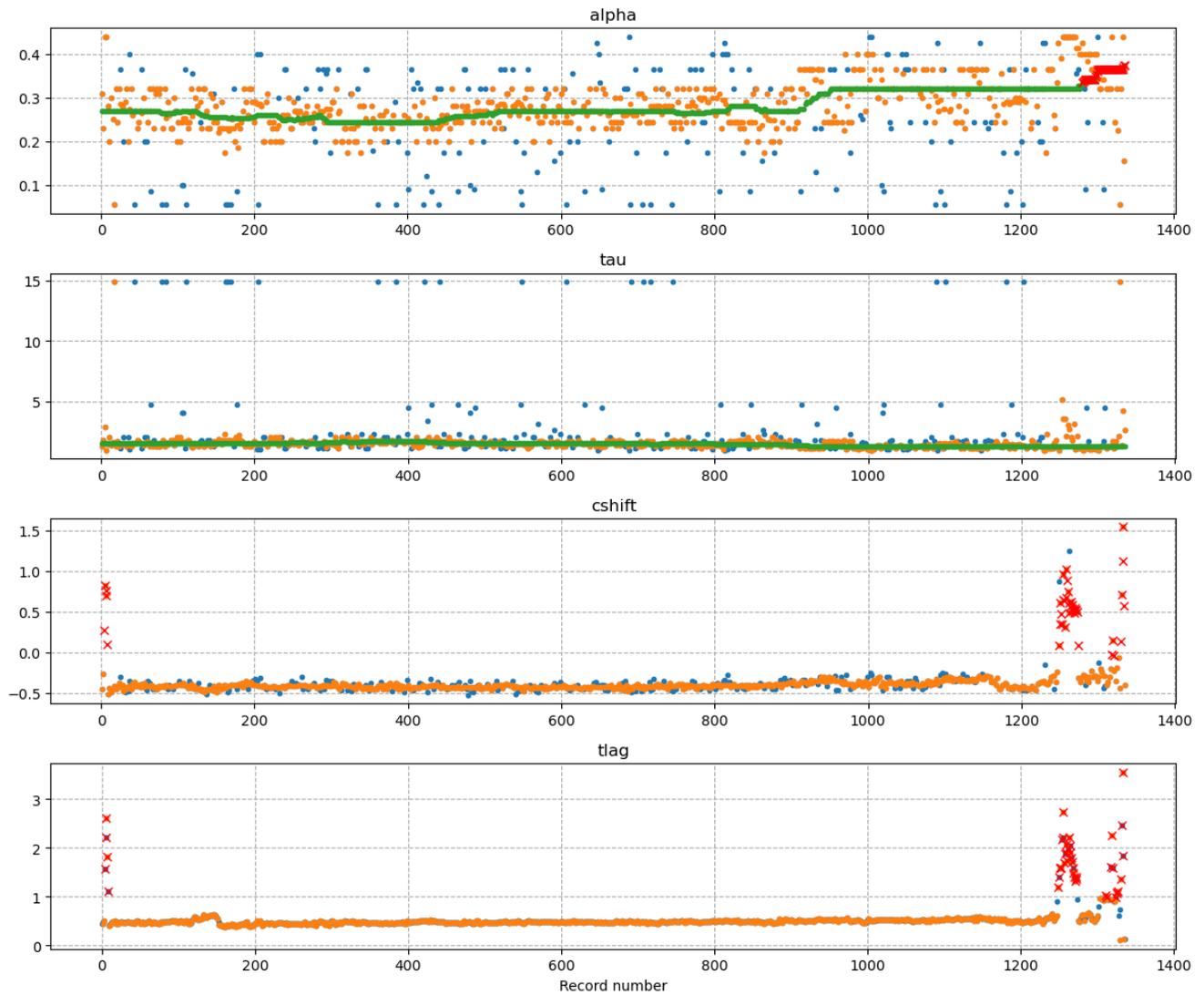


Figure 2: Time-series of per-profile corrections to raw data. Cell thermal-mass corrections (α and τ), conductivity/temperature physical separation ($cshift$) and thermal-lag correction ($tlag$). Raw values are shown in blue, filtered values in orange, and for α and τ , a 100-point rolling median value in green, which is used for the thermal-mass correction. Points greater than or less than two standard deviations of the entire dataset median value (red 'x') have their corresponding records flagged as questionable.

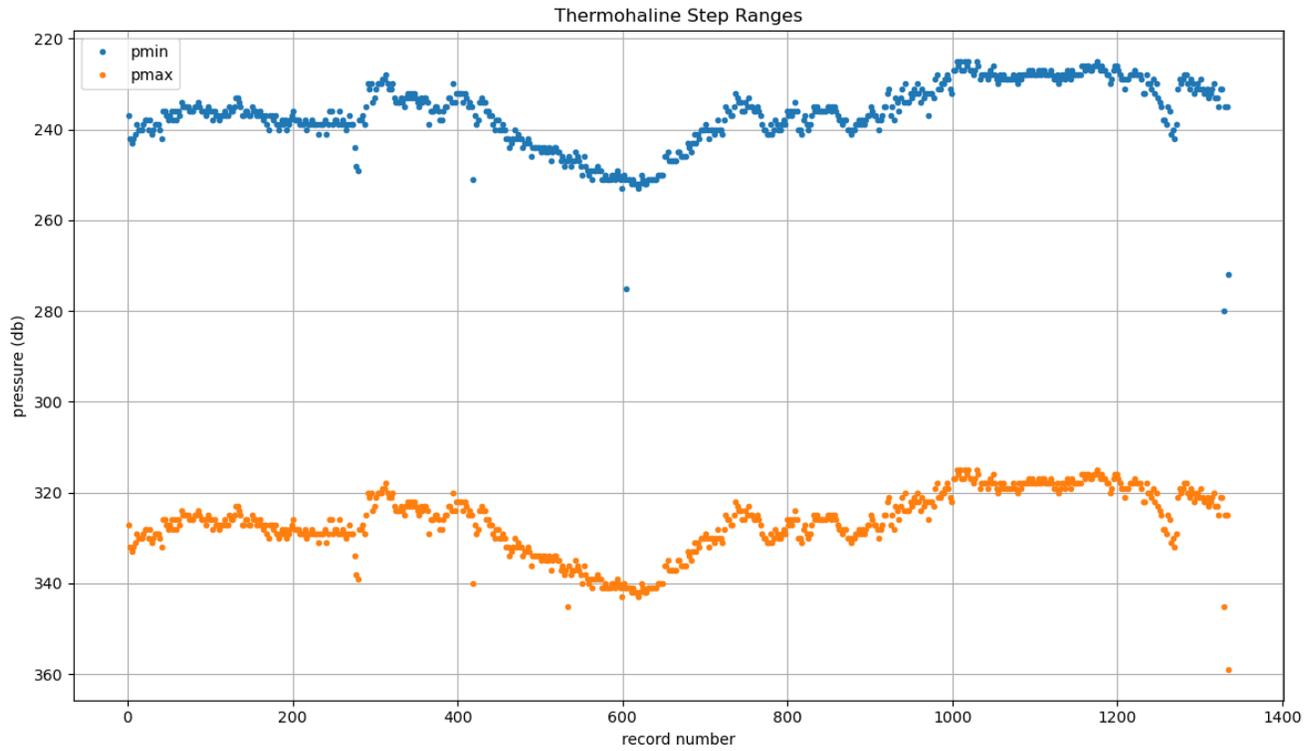


Figure 3: Upper and lower pressure bounds for thermohaline step-detection.

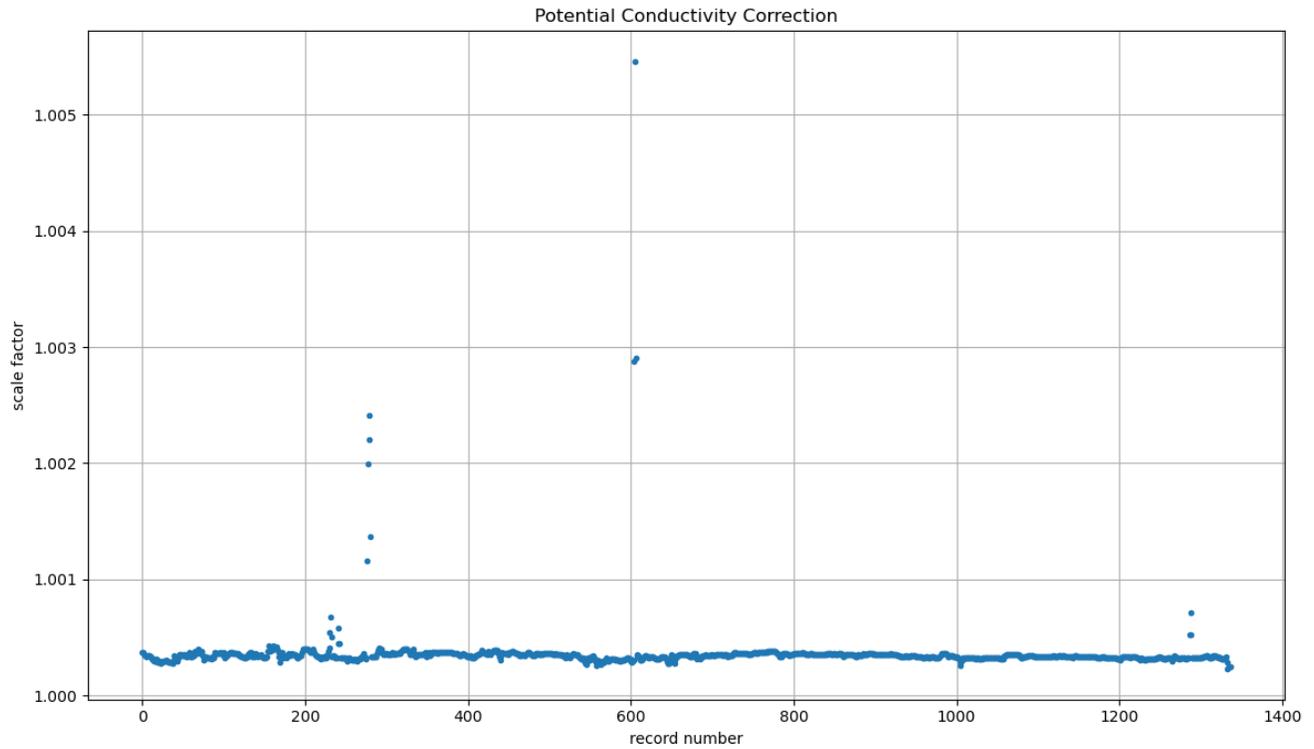


Figure 4: Potential conductivity correction factor based on historic values.

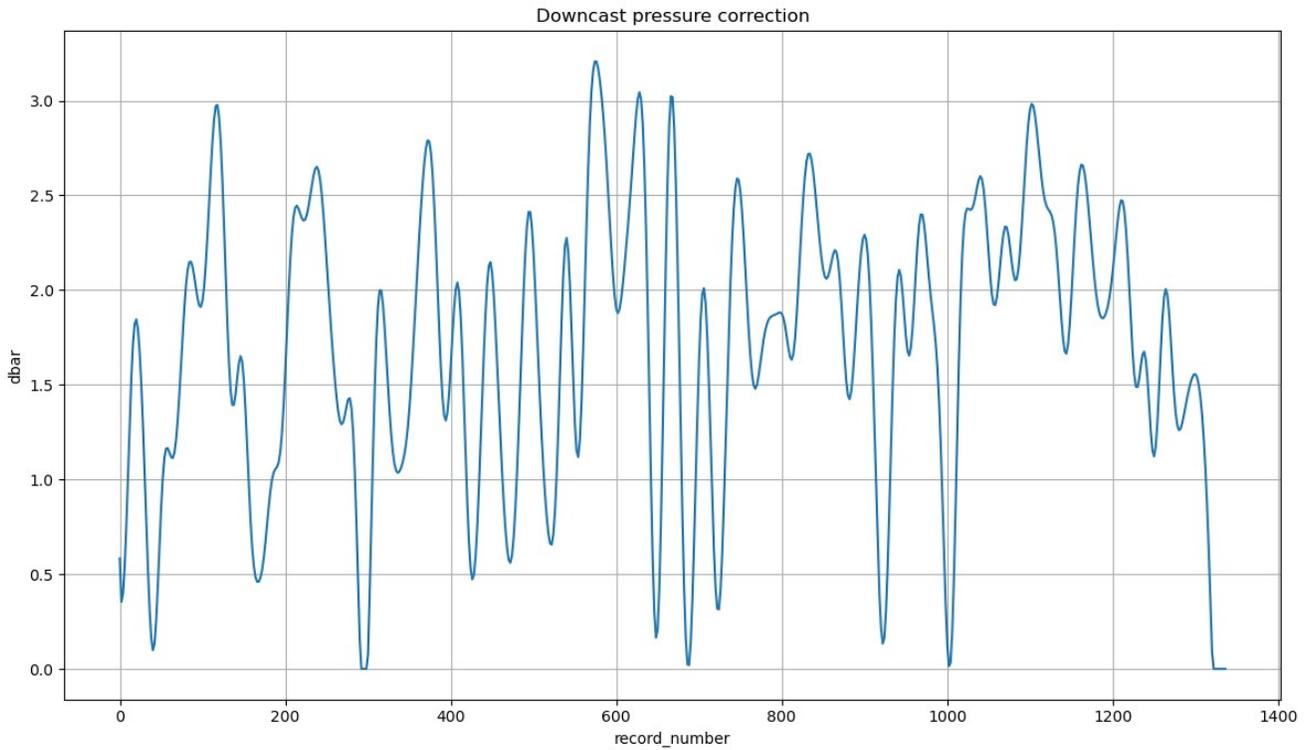


Figure 5: Drift-dependent correction to downward profile pressure values.

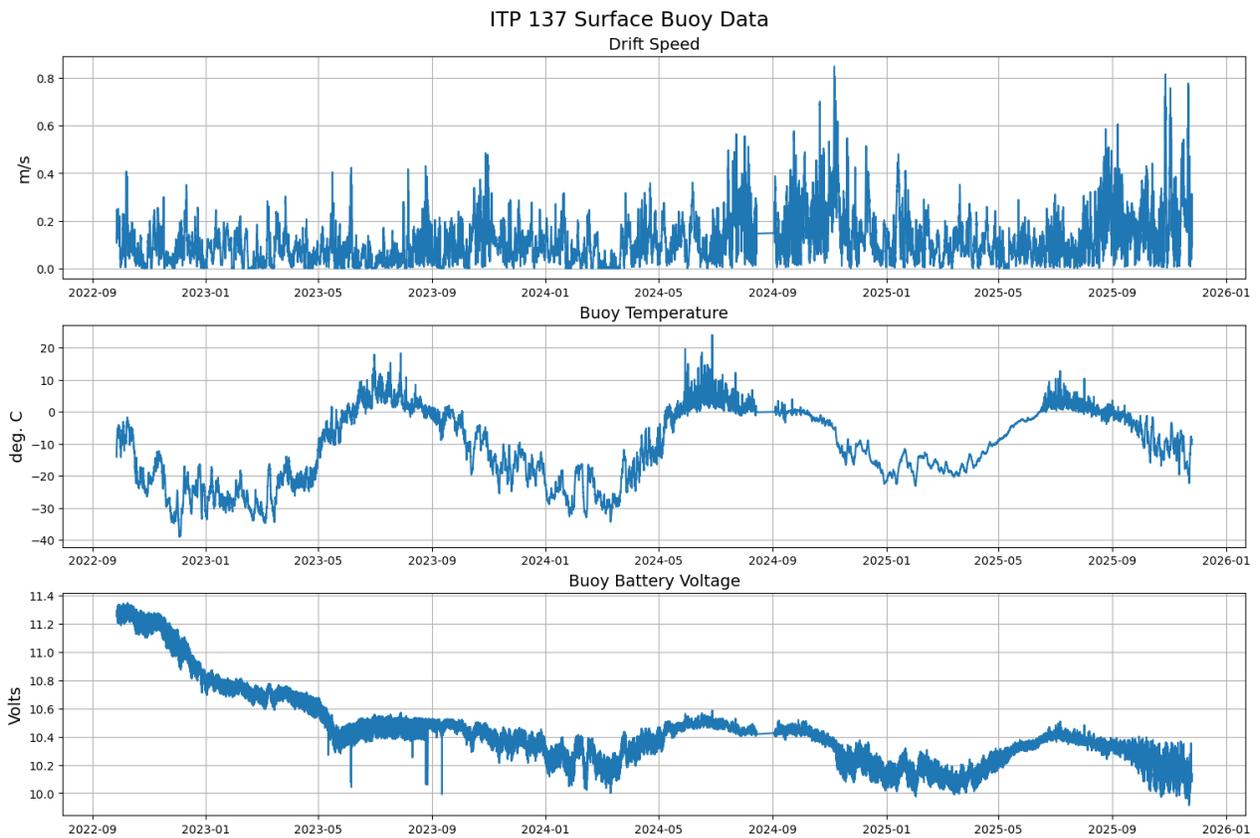


Figure 6: Surface buoy data showing drift speed derived from GPS position, along with controller's internal temperature and nominal battery voltage.

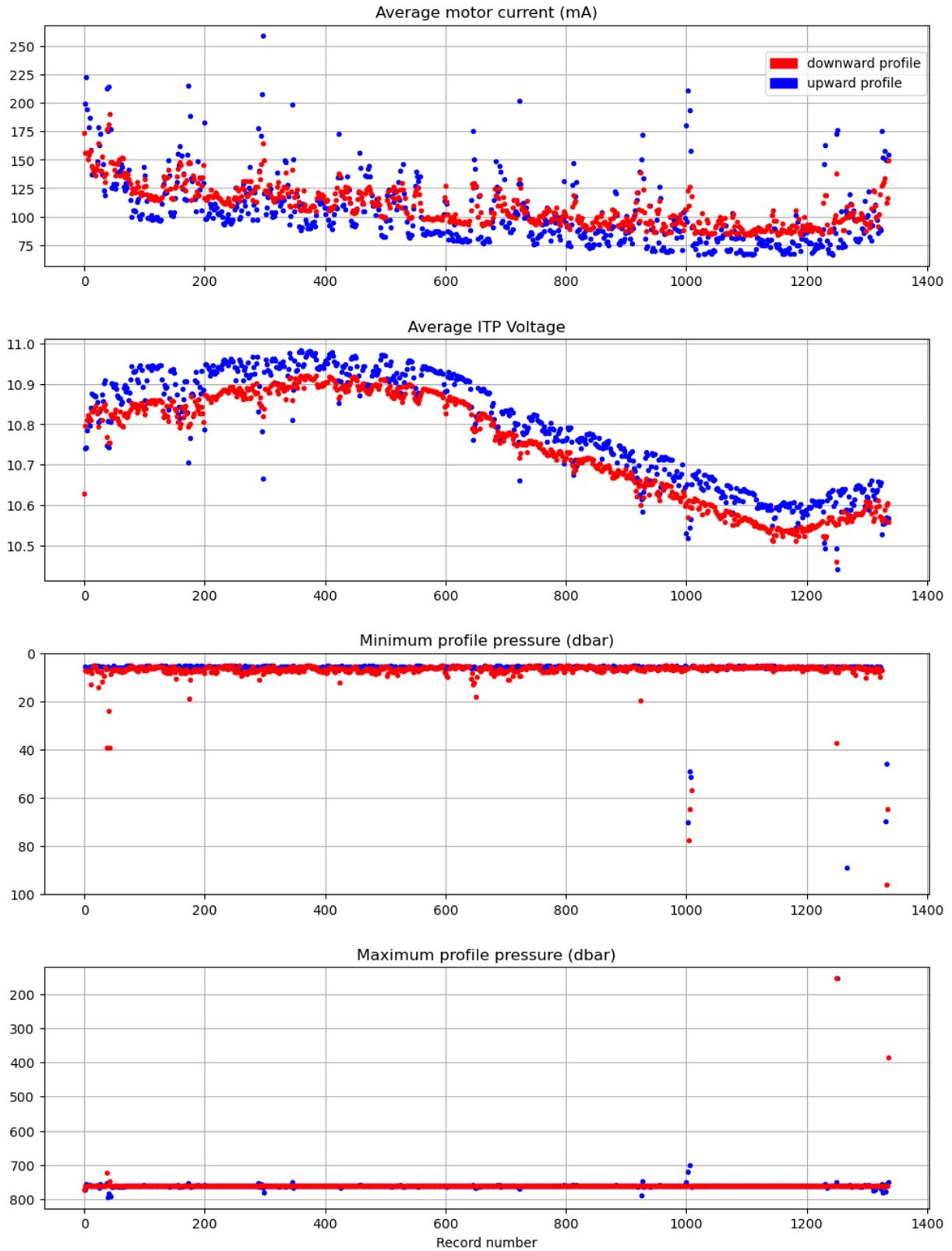


Figure 7: Profiler mean motor current and voltage for each profile, along with minimum and maximum recorded pressure values.

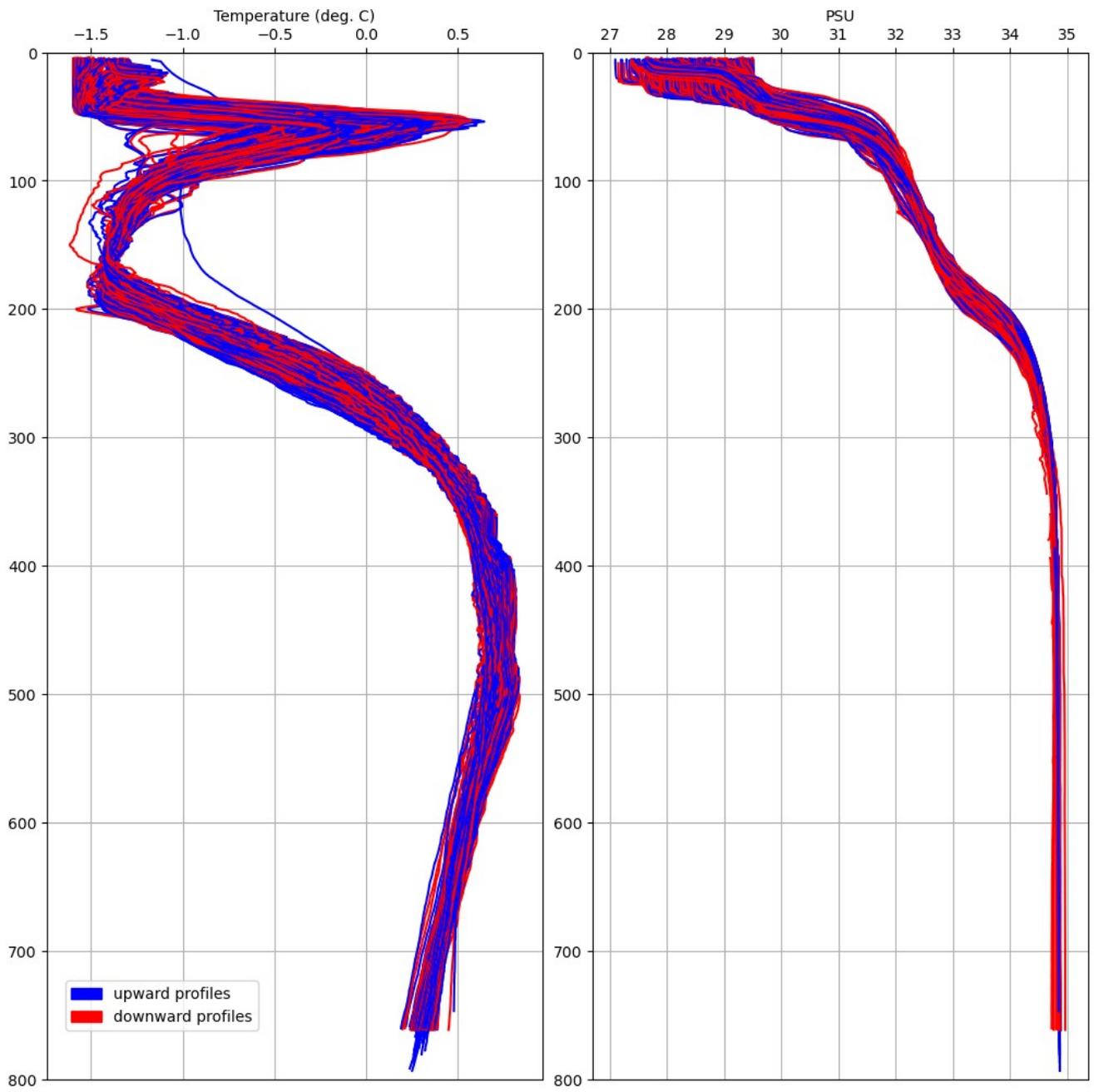


Figure 8: Level 3 edited and calibrated temperature and salinity profile history showing both upcasts (blue) and downcasts (red). Profiles flagged as questionable are included.

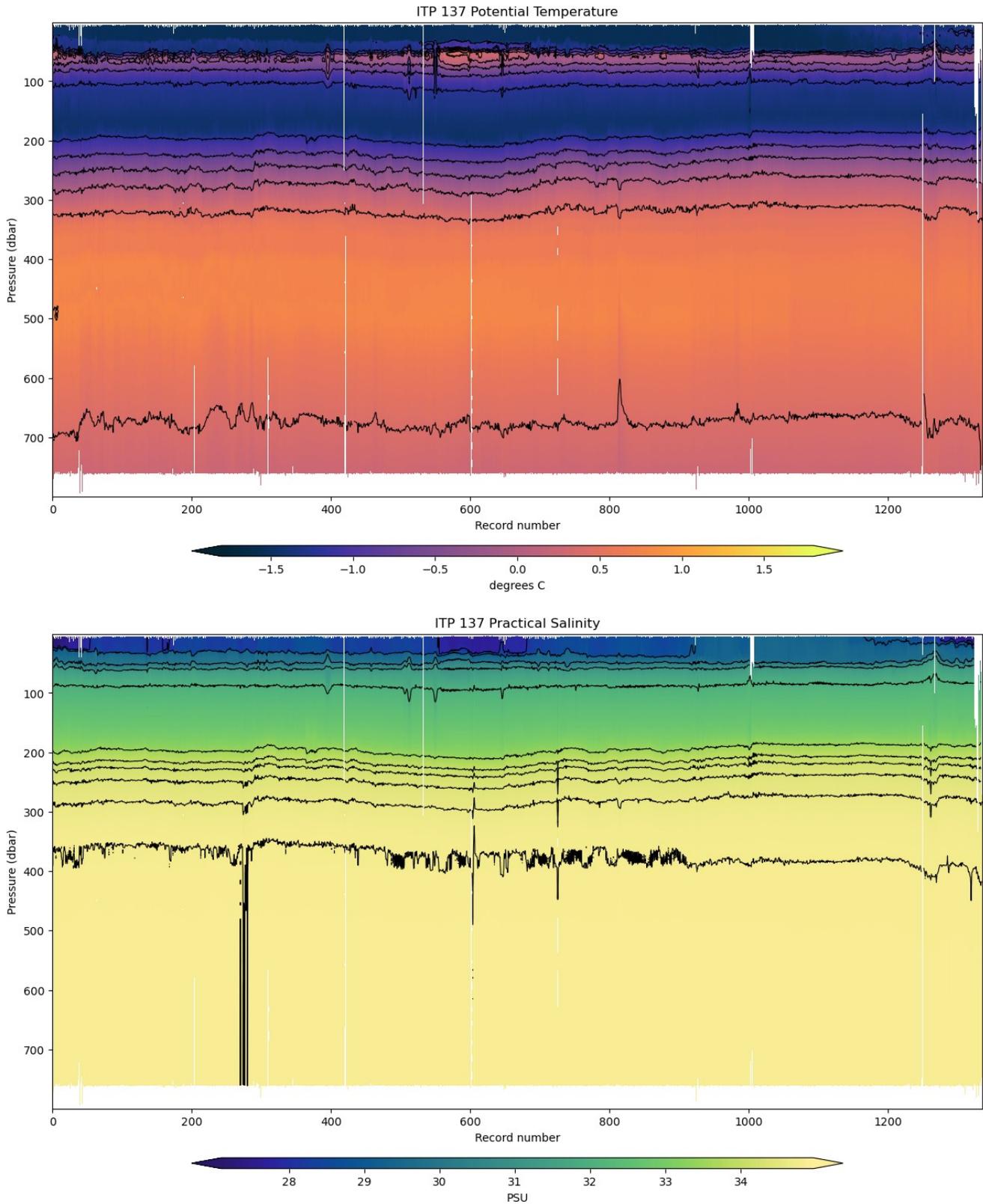


Figure 9: Level 3 corrected and edited potential temperature and practical salinity contour plots using 1 decibar bin-averaged values. Profiles flagged as questionable are included.