**point Sal Coastal circulatioN Experiment (SCoNE) / SP1724**

# — CRUISE REPORT —

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**R/V Robert Gordon Sproul, September/10–20/2017**

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# 1 Summary

This document gives details on the SCoNE (point Sal Coastal circulatioN Experiment, SP1724) cruise, carried out on the R/V *Robert Gordon Sproul* during September 10-20/2017, in the continental shelf between Oceano Beach (north of Pt. Sal/CA) and part of the Santa Barbara Channel (off Santa Barbara/CA).

The principal science goals were to observe along- and cross-shelf scales of submesoscale currents, fronts, internal tides, high-frequency internal waves and in the inner shelf (here defined as the area inshore of the 50 m isobath), and their associated spatial patterns of turbulence. Most of the SCoNE surveys were coordinated with the other five vessels (R/V's *Sally Ride*, *Oceanus*, *Kalipi*, *Sounder* and *Sally Ann*) involved in the first Intensive Operations Period (IOP1) of the ONR-funded Inner Shelf DRI experiment (hereafter ISDRI).

Three segments of the cruise were independent from the ISDRI, and aimed to observe the along-isobath variability of submesoscale motions and the associated turbulent mixing patterns: Two repeat surveys, one following the 20 m isobath between Oceano Beach and the north end of the bay and the other along a continuous ∼140 km line following the 50 m isobath from Pt. Sal to Santa Barbara. The third one was a repeat box-type of survey similar off Santa Barbara, similar to the box surveys done off OB in coordination with the other ISDRI vessels.

The Rolling Deck-to-Repository (R2R) data for this cruise has DOI 10.7284/907935, and is available at http://www.rvdata.us/catalog/SP1724.

# 2 Personnel

Table 1 gives details on the Science Party. Watch **A** started at **0600** and ended at **1800**. Watch **B** started at **1800** and ended at **0600**. Each of the 4 watch members rotated between four different tasks. Each member would do each task for 1 h, and then rotate to the next task. Figure 1 shows all Science Party members.

The Science Party met daily in the dry lab at around ≈0600 local time most days for debriefing, and to discuss adaptive strategies for the subsequent sampling modules, *e.g.*, the change from a box-shaped (A-b1) to a triangle-shaped (A-b2) repeat track due to the large swell (Figure 5) and the decision to cut module A-d (Figure 7) short and start module C-b (Figure 18, right panel) sooner than originally planned in order to avoid compromising the quality of the data with the increasingly rough sea state (as had happened in module C-a, Figure 19). In addition, important science-related ideas arose during these meetings, including Kate Adams' smart suggestion to execute module A-e (which was not in the original Cruise Plan) and the Calibration Cast with the extra time available, and Jess C-G's idea to attach the 16 Hz RBRDuet to the uCTD package (Figure 37, subsection A.2), which enabled estimates of the thermal variance loss rate $\chi_T$ to assist the interpretation of the other turbulence measurements (preliminary results in Figures 21 and 22). Module A-e turned out to be one of the highest-quality segments of

the dataset (Figure 15), along with module C-b (Figures 20, 21 and 22).

It is also a pleasure to acknowledge the excellent work of the R/V *R. G. Sproul*'s crew: Captain Chris Welton, 1st Mate Paul Dempster, 2nd Mate Katherine Pogue, Chief Engineer Ernie Bayer, Head Chef Wayne Lacy and Resident Technician Jeremiah Brower. Credit goes to Captain Welton for the idea of mounting the electric fishing reel on the upper deck (Figure 38), and using the AirTugger winch to manually recover the bow chain when the recovery line attached to the davit snapped after excessive chafing against the hull on September 15th, at ≈23:00 UTC (see subsection 4.3).

Table 1: Science Party details. Watches start and end at 0600 and 1800, respectively. SIO = Scripps Institution of Oceanography; DISL = Dauphin Island Sea Lab; CICESE = Center of Scientific Research and Higher Education of Ensenada; SIT = Stevens Institute of Technology.

| Name | Position | Watch | Institution |
|---|---|---|---|
| André Palóczy | Chief Scientist | Float | SIO |
| Jeremiah Brower | Resident Technician | Float | SIO |
| Kate Adams | Post-doc | Float | SIO |
| Spencer Kawamoto | Marine Technician | Float | SIO |
| Jessica Carrière-Garwood | Student volunteer | B (Watch Leader) | SIO |
| Alice Ren | Student volunteer | A (Watch Leader) | SIO |
| Jeff Coogan | Student volunteer | B | DISL |
| Julia Dohner | Student volunteer | A | SIO |
| Manuel Gutiérrez-Villanueva | Student volunteer | A | SIO |
| Sahra Webb | Student volunteer | B | SIO |
| María Hernández | Student volunteer | B | CICESE |
| Praneeth Gurumurthy | Student volunteer | A | SIT |

Figure 1: The SCoNE Science Party gathered on the bow of the R/V Sproul. From left to right: Kate Adams (on top photo) Spencer Kawamoto (on bottom photo), Julia Dohner, Praneeth Gurumurthy, Sahra Webb, Jessica Carrière-Garwood, André Palóczy, Jeff Coogan, Alice Ren, Manuel Gutiérrez-Villanueva, María Hernández. Center: Jeremiah Brower. Anacapa Passage is seen in the background, with Santa Cruz and Anacapa Islands on the right and left, respectively. Photo credits: Spencer Kawamoto (top) and Kate Adams (bottom).

# 3 Cruise timeline and dataset overview

## 3.1 General timeline

Below is a general narrative of the events in the SP1724 cruise, in chronological order.

**10th:** Departed from MarFac at 0800. We exited San Diego Bay and began logging underway data from the MET (flow-through and meteorological variables) UHDAS (300 kHz ADCP) and ALFA (multi-spectral flow-through fluorometer) acquisition systems.

**11th, Transit:** Transit to Pt. Sal (09/10 1536 $\longrightarrow$ 09/11 2212, 30.6 h total).

**12th, depth-payout calibration:** Prior to deploying the towed body (RBR Concerto 6 Hz), we performed a depth-versus-payout calibration line off Oceano Beach, amounting to a total of 7 occupations (09/12 0545 $\longrightarrow$ 1605, 10.3 h total, Figure 2).

**12th-13th, Module B:** L-shaped track off Pt. Sal (Figure 16). Once the depth-payout calibration was complete, we left the OB area for Pt. Sal and sampled an "L-shaped" track around Pt. Sal in coordination with the other ISDRI vessels. The zonal section South of Pt. Sal was occupied back and forth 5 times, followed by 6 more realizations of the L-track. Lastly, another larger L-shaped track extending farther offshore and north was occupied.

**13th-14th, Submodules A-a1, A-a2 and A-a3:** In the OB area, we occupied the west, north and east lines of the Oceano box (A-a1), then followed the 20 m isobath northward in coordination with R/V's Kalipi, Sounder, Sally Ann and Sally Ride (A-a2). Finally, we completed 3 full occupations of the OB box (Figure 4). There was a problem with the level wind of the electric fishing reel towing the uCTD (at $\approx$21:00 UTC), which was fixed and did not affect subsequent sampling (see subsection A.2).

**14th-15th, Submodules A-b1 and A-b2:** We completed 5 full occupations of the Southern OB box. Next, we were forced to switch to surveying only the lower-left triangle of the box (Figure 5) due to increased swell. This pattern was completed 4 times before we had to seek shelter in Avila Beach (enclosed embayment north of OB) due to the worsening sea state.

**15th and 16th, Submodules A-c1 and A-c2:** Just before the transit to Avila Beach due to rough sea state, we occupied a long cross-shelf transect (A-c1), from the 20 m isobath to the 80 m isobath, in $\sim$2.6 h. After occupying module C-a's transect in the morning of the 16th, we occupied another cross-shelf transect (A-c2) from the 80 m isobath to the 20 m isobath in $\sim$3.0 h. The line was north of the transect occupied in A-c1 (Figure 6), chosen because the R/V *Oceanus* had occupied it earlier.

**16th, Submodule C-a:** Due to the persistently unfavorable sea state and the apparent sharp changes in depth along submodule C-a's track, the uCTD was not deployed, and the bow chain was deployed only partially, with a length of 8 m (Figure 18, Table 3), to avoid occasional sharp changes in bottom depth while following the ∼20 m isobath. The track was occupied 3 times back and forth. As a result of the high swell, the 300 kHz's ADCP data was of poor quality, and most of it had to be masked out during the quality-controlling steps.

**16th, Submodule A-d:** A "skinny" (longer in the along-shelf direction) box track approximately between the 40 m and 45-50 m isobaths was occupied in coordination with all other five ISDRI vessels (Figure 7), with the objective of mapping the meso/submesoscale flow and density fields in the OB area. We decided to stop sampling submodule A-d's box after completing its first occupation, and to start heading back to MARFAC before conditions got even worse as the weather reports indicated it would. This turned out to be beneficial to submodules' C-b and A-e data quality (particularly the hull-mounted 300 kHz ADCP's velocity profiles).

**17th, stop in Avila Beach to unmount the 1200 kHz ADCP's pole:** Before starting to transit back to San Diego, we made a stop in Avila Beach to unmount and secure the pole where the 1200 kHz ADCP was deployed.

**17th-18th, Submodule C-b:** Instead of following a regular route back to MARFAC at 7-8 kn, we decided to Execute module C-b, following the 50 m isobath at ∼2 kn surveying with the uCTD and hull-mounted ADCP only. (Figure 18). The uCTD was recovered and re-deployed twice in the vicinities of Pt. Conception, resulting in three legs: OB-Pt. Arguello, Pt. Arguello-Pt. Conception and Pt. Conception-Santa Barbara.

**18th-19th, Submodule A-e:** The extra ship time we had available at the end of module C-b was used to sample an additional box track off the city of Santa Barbara between the 30 m and 60 m isobaths (Figure 8). The box was occupied 5 times. The sea state was calm, which is reflected in the quality of the uCTD and hull-mounted ADCP data.

**19th, calibration cast and transit back to MARFAC:** After completing submodule A-e's survey, we started transit back to MARFAC. We stopped for ∼50 min (2212 → 2256, 19th) in a deep (∼1000) location south of Santa Rosa Island to perform a calibration cast (subsection 4.4) using the ship's SBE 911+ CTD and rosette.

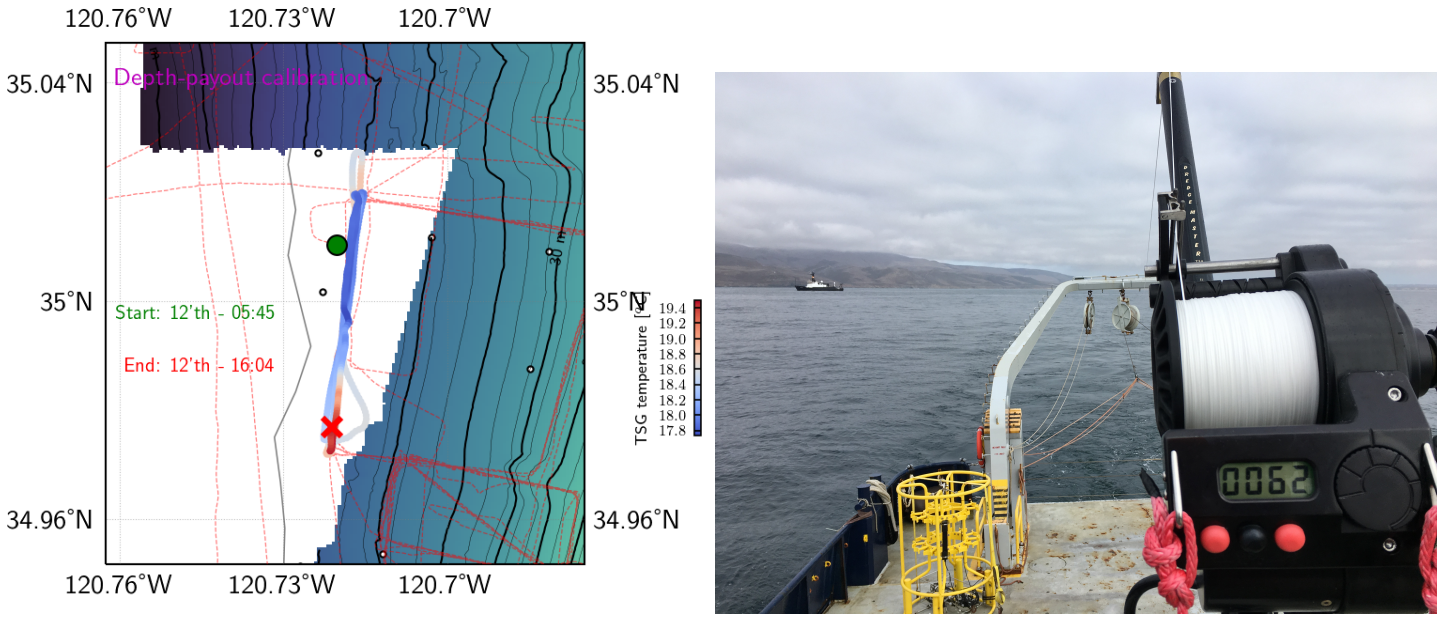



Figure 2: **Depth-payout calibration survey.** The uCTD was tow-yo'ed at 2 kn and 3 kn several times in order to derive an empirical relationship between actual uCTD depth and cable payout displayed by the fishing reel. Left panel: Map of the ship's track during the calibration. Right panel: View from the fishing reel's mount point in the upper deck while the uCTD was being tow-yo'ed (photo by Manuel Gutiérrez-Villanueva).

### 3.2 Cruise description by science modules

Below is a description of each segment of the cruise by scientific objectives. We call each segment a "module". There were three modules:

**Module A:** Multi-vessel surveys in Oceano Beach, aiming to observe circulation in an approximate along-shelf uniform regime from subtidal to infra-gravity scales, and its interaction with incoming high-frequency non-linear internal waves.

**Module B:** Multi-vessel "L-shaped" survey around Pt. Sal, aiming to observe headland tidal eddies, internal tides and higher-frequency internal waves.

**Module C:** Large-scale survey from Oceano Beach to Santa Barbara following the 50 m isobath, aiming to observe mesoscale and submesoscale variability and associated turbulent mixing patterns.

For context, Figure 3 shows time series of some underway variables for the entire duration of the cruise. Table 2 shows the approximate start and end times of each science module.

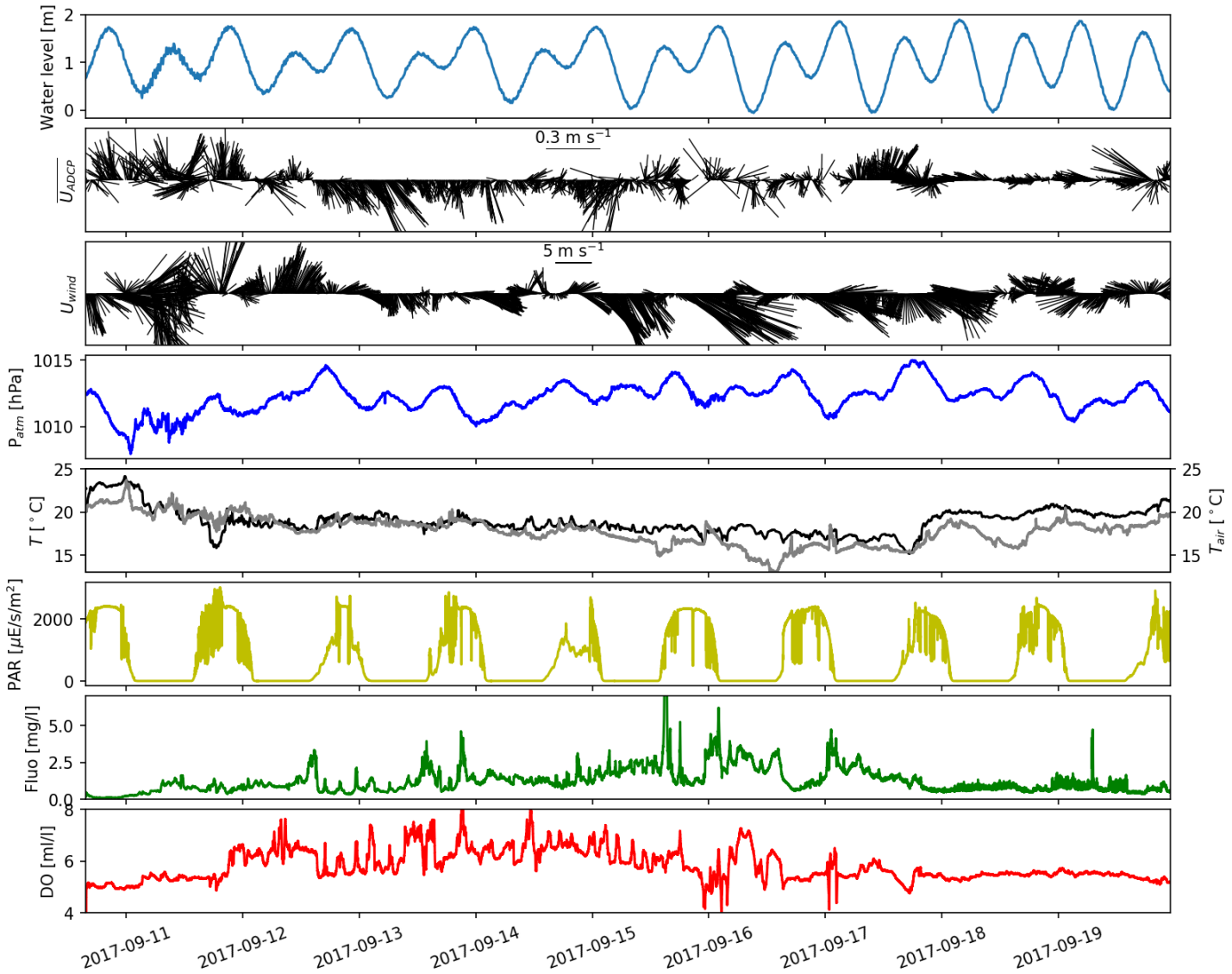



Figure 3: Time series of flow-through and meteorological variables, ADCP currents and tidal elevation for the duration of the SP1724 cruise. The wind and current velocities are 5 min vector averages of the raw data. The sea level was obtained from the Port San Luis NOAA tide gauge (https://tidesandcurrents.noaa.gov/stationhome.html?id=9412110) at 6 min resolution.

Table 2: Approximate start and end times of each science module, in chronological order. The days are days of September/2017, and times are in UTC.

| Module | Start time | End time |
|---|---|---|
| B | $1745/12^{th}$ | $1457/13^{th}$ |
| A-a1 | $1604/13^{th}$ | $2038/13^{th}$ |
| A-a2 | $2121/13^{th}$ | $2302/13^{th}$ |
| A-a3 | $2121/13^{th}$ | $1409/14^{th}$ |
| A-b1 | $1409/14^{th}$ | $0419/15^{th}$ |
| A-b2 | $0419/15^{th}$ | $1340/15^{th}$ |
| A-c1 | $1738/15^{th}$ | $2012/15^{th}$ |
| C-a | $0412/16^{th}$ | $1405/16^{th}$ |
| A-c2 | $1411/16^{th}$ | $1707/16^{th}$ |
| A-d | $1904/16^{th}$ | $2243/16^{th}$ |
| C-b | $0238/17^{th}$ | $1322/18^{th}$ |
| A-e | $1131/18^{th}$ | $1702/19^{th}$ |

### 3.2.1 Module A: Uniform topography survey

Module A was designed to sample mesoscale to submesoscale motions along closed box-like tracks with along-shelf and cross-shelf transects. The surveys were divided in five sub-modules (A-a through A-e). Figures 4, 5, 6, 7, 8 show the ship tracks for the five sub-modules, and Figures 9, 10, 11, 12, 13, 14 and 15 show the corresponding uCTD and ADCP sections.

**A-a1, A-a2, A-a3** Box surveys off Oceano Beach (4 occupations, Figures 4, 9, 10)

**A-b1, A-b2** Box and triangle surveys just south of the box covered in module A-a (5 occupations for A-b1 [rectangle] and 4 occupations for Ab-2 [triangle]. Figures 5, 11 and 12).

**A-c1, A-c2** 2 occupations of a long cross-shelf section north of the OB box. Figures 6, 13.

**A-d** 5 occupations of the "skinny" box off OB, coordinated with the other ISDRI vessels. Figures 7 and 14.

**A-e** 5 occupations of the box survey off Santa Barbara. Figures 8 and 15.

All submodules were comprised of cross- and along-shelf transects which would, ideally, cover at least one full tidal cycle of ≈25 h. While no submodule covered a full tidal cycle, a mode-1 structure extending over the full extent of the transects is seen in A-a3, A-b1 and A-b2 (more clearly in $u$ than in $v$, Figures 10, 11 and 12), possibly associated with the internal tide.

Other noteworthy features are sharp dips in the temperature sections and wavy signals in temperature, velocity and acoustic backscatter that may be associated with high-frequency, nonlinear internal waves (*e.g.*, Figure 14, row 3, with a ballpark wavelength of ≈2 km). The long cross-shelf transect occupied in module A-c1 may also have captured an obliquely-incident internal tide beam (mode-1 structures of similar amplitudes in both $u$ and $v$ offshore of ≈30 m), which may have refracted along its way onshore, thus weakening the mode-1 signature in $v$ inshore of ≈30 m (Figure 13, upper panel).

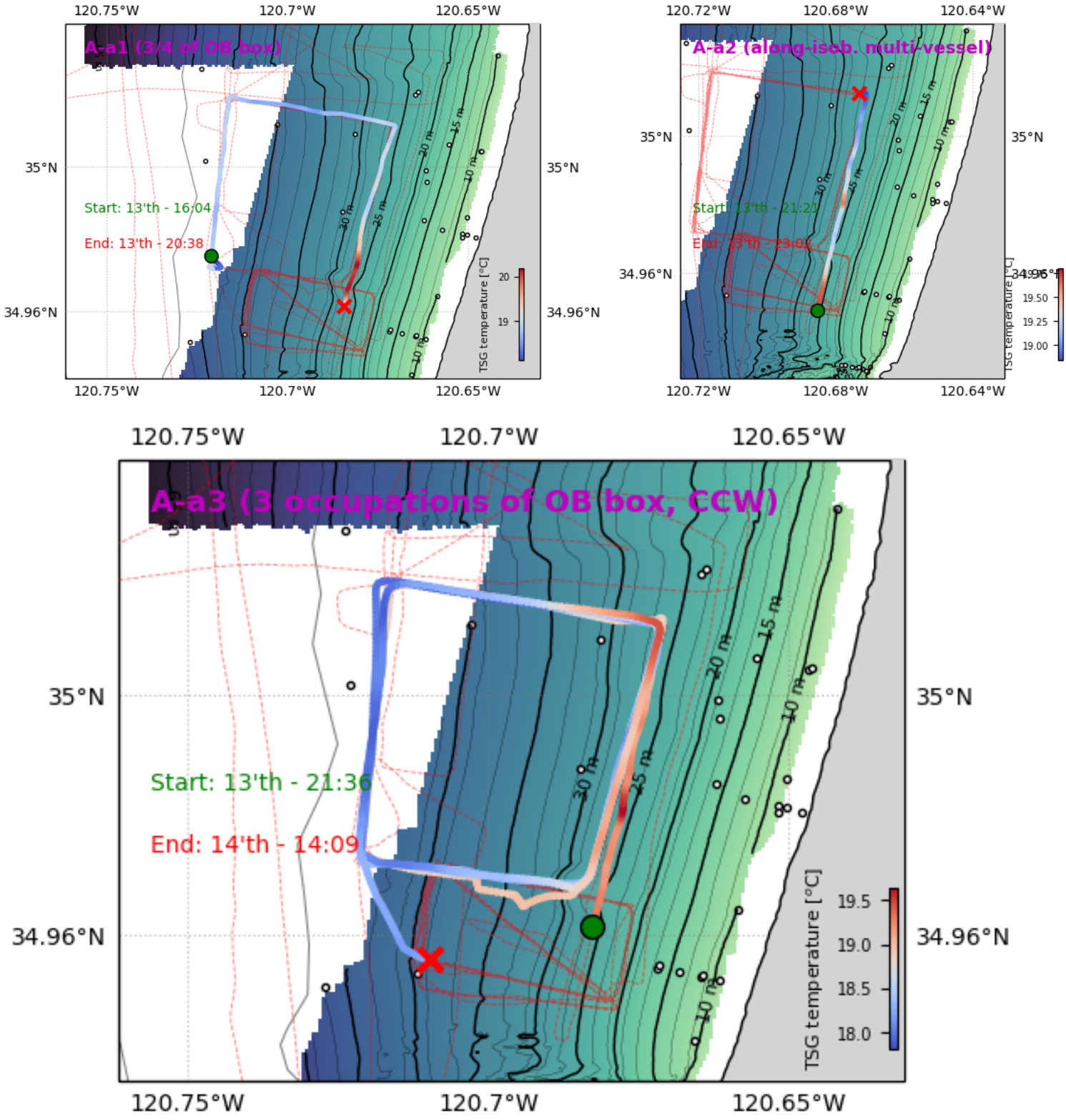



Figure 4: **Submodule A-a survey map.** The colored dots are 1 min averages of the ship's flow-through temperature, the white dots are ISDRI mooring locations. Green circle (red "x") are the start (end) points of the survey.

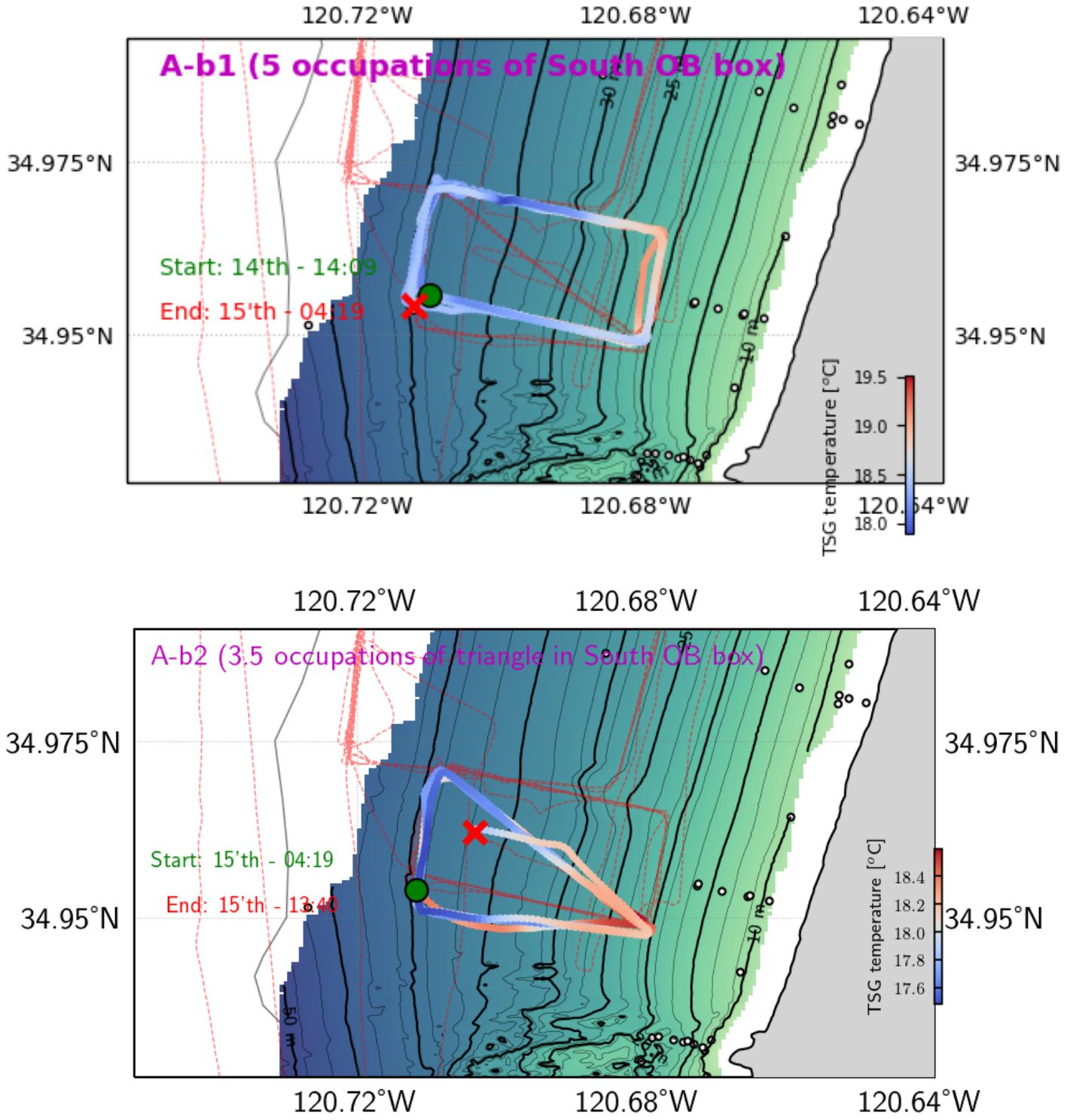



Figure 5: **Submodule A-b survey maps.** The colored dots are 1 min averages of the ship's flow-through temperature, the white dots are ISDRI mooring locations. Green circle (red "x") are the start (end) points of the survey.

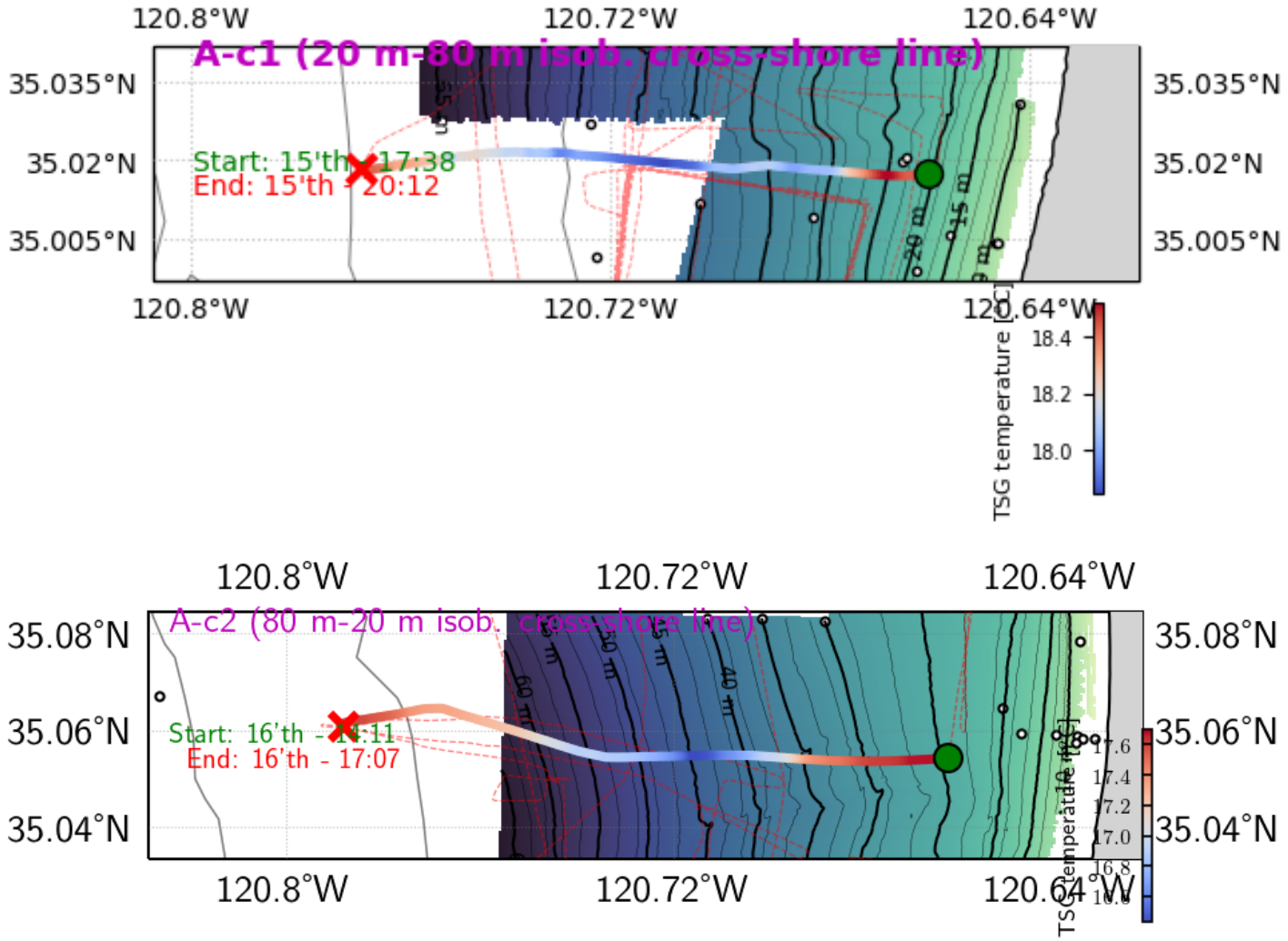



Figure 6: **Submodule A-c survey maps.** The colored dots are 1 min averages of the ship's flow-through temperature, the white dots are ISDRI mooring locations. Green circle (red "x") are the start (end) points of the survey.

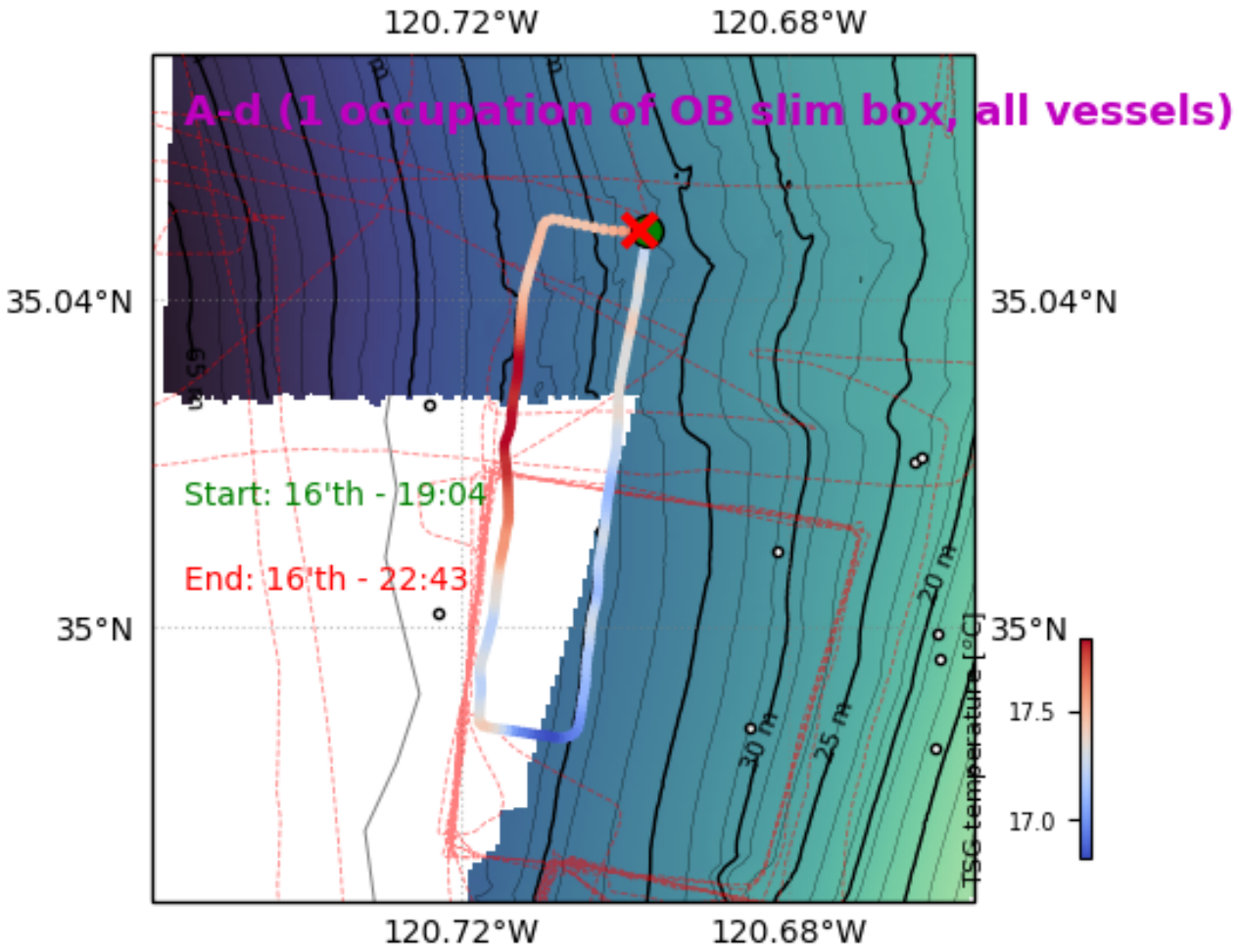



Figure 7: **Submodule A-d survey map.** The colored dots are 1 min averages of the ship's flow-through temperature, the white dots are ISDRI mooring locations. Green circle (red "x") are the start (end) points of the survey.

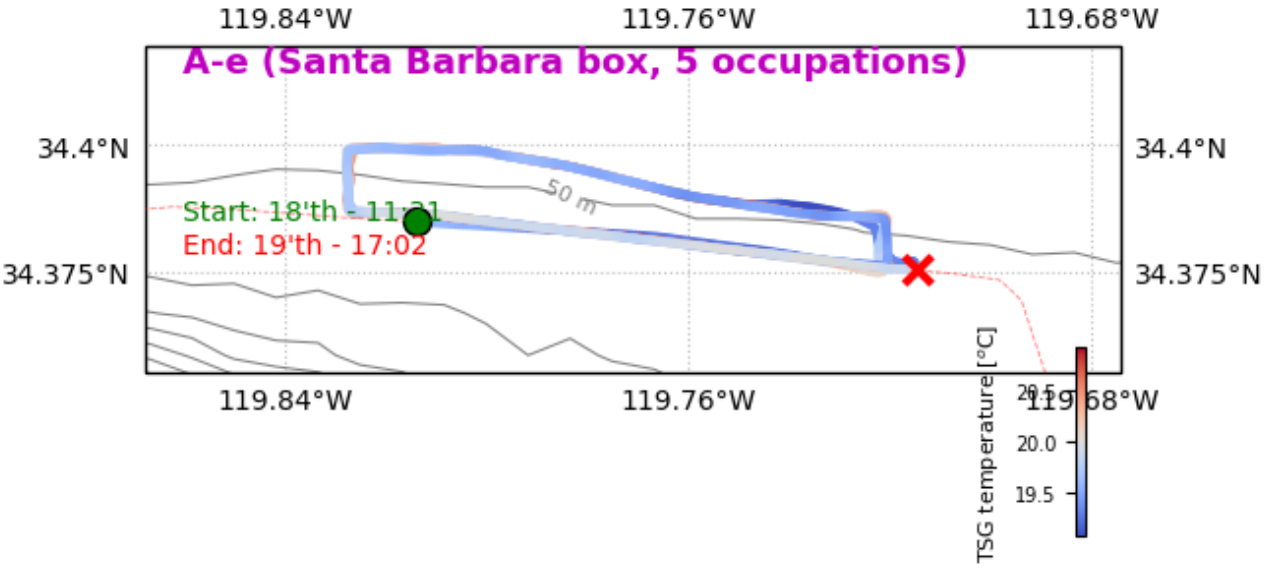



Figure 8: **Submodule A-e survey map.** The colored dots are 1 min averages of the ship's flow-through temperature, the white dots are ISDRI mooring locations. Green circle (red "x") are the start (end) points of the survey.

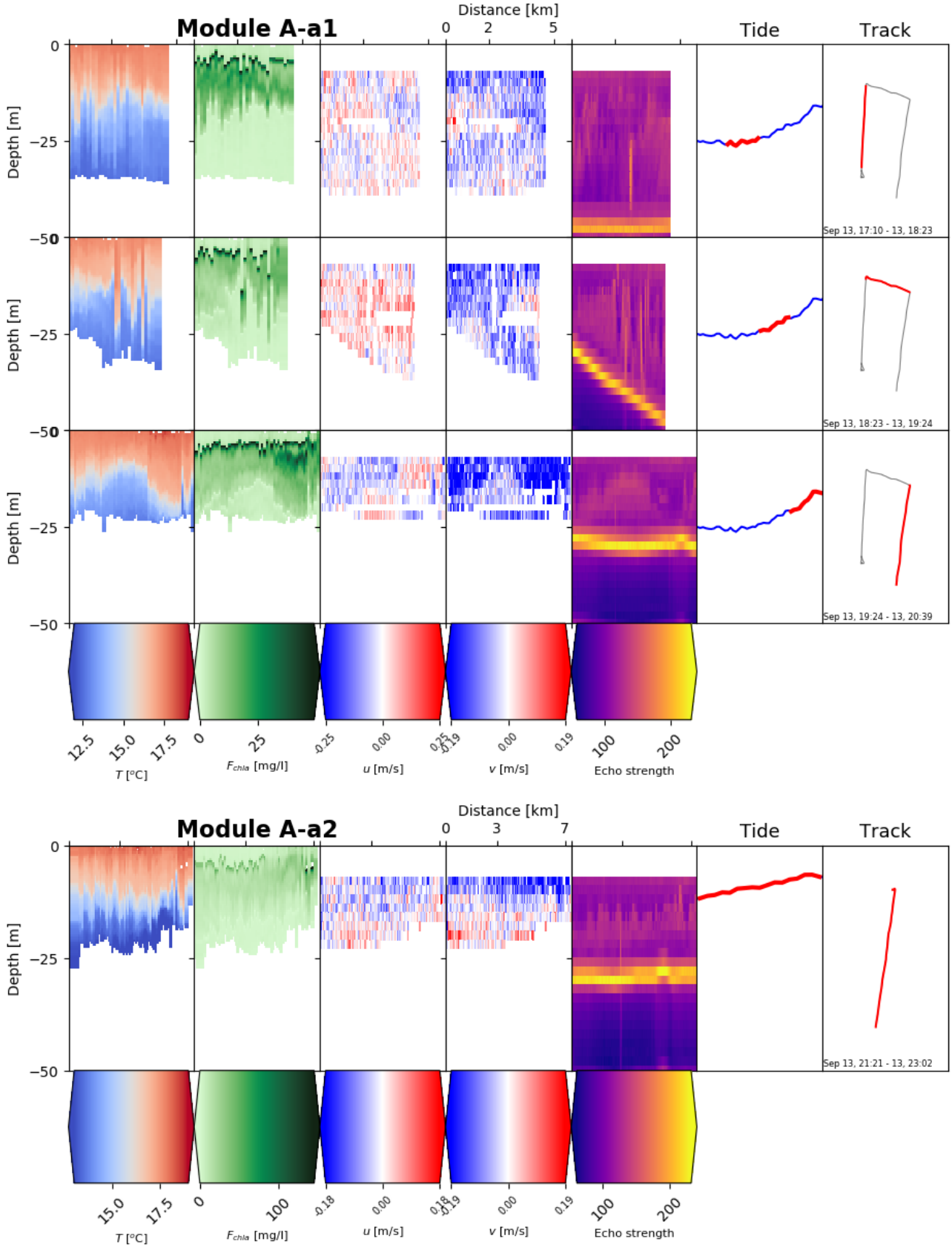



Figure 9: **Submodules A-a1 and A-a2** sections (off OB).

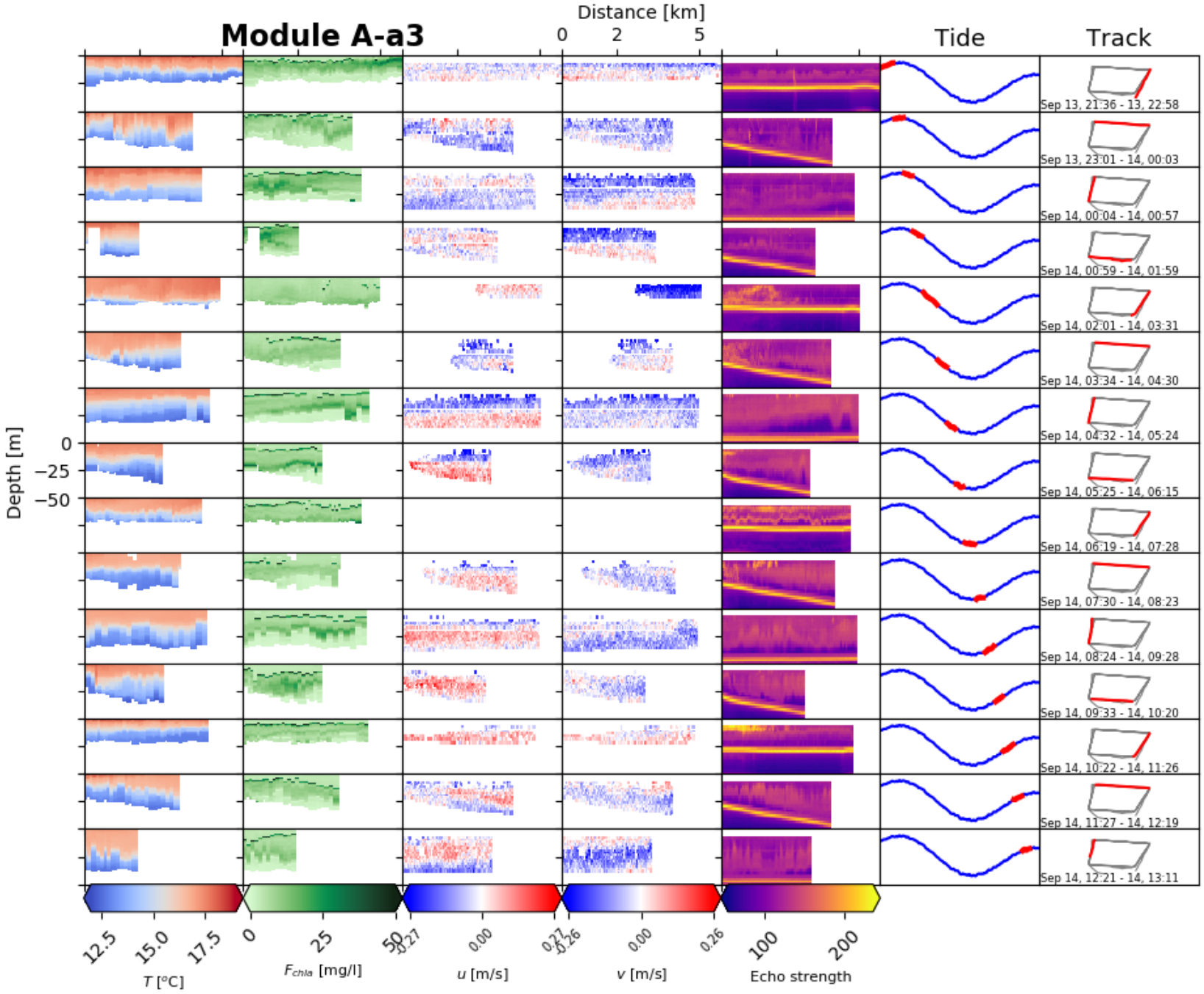



Figure 10: **Submodule A-a3** sections (repeat box track off OB).

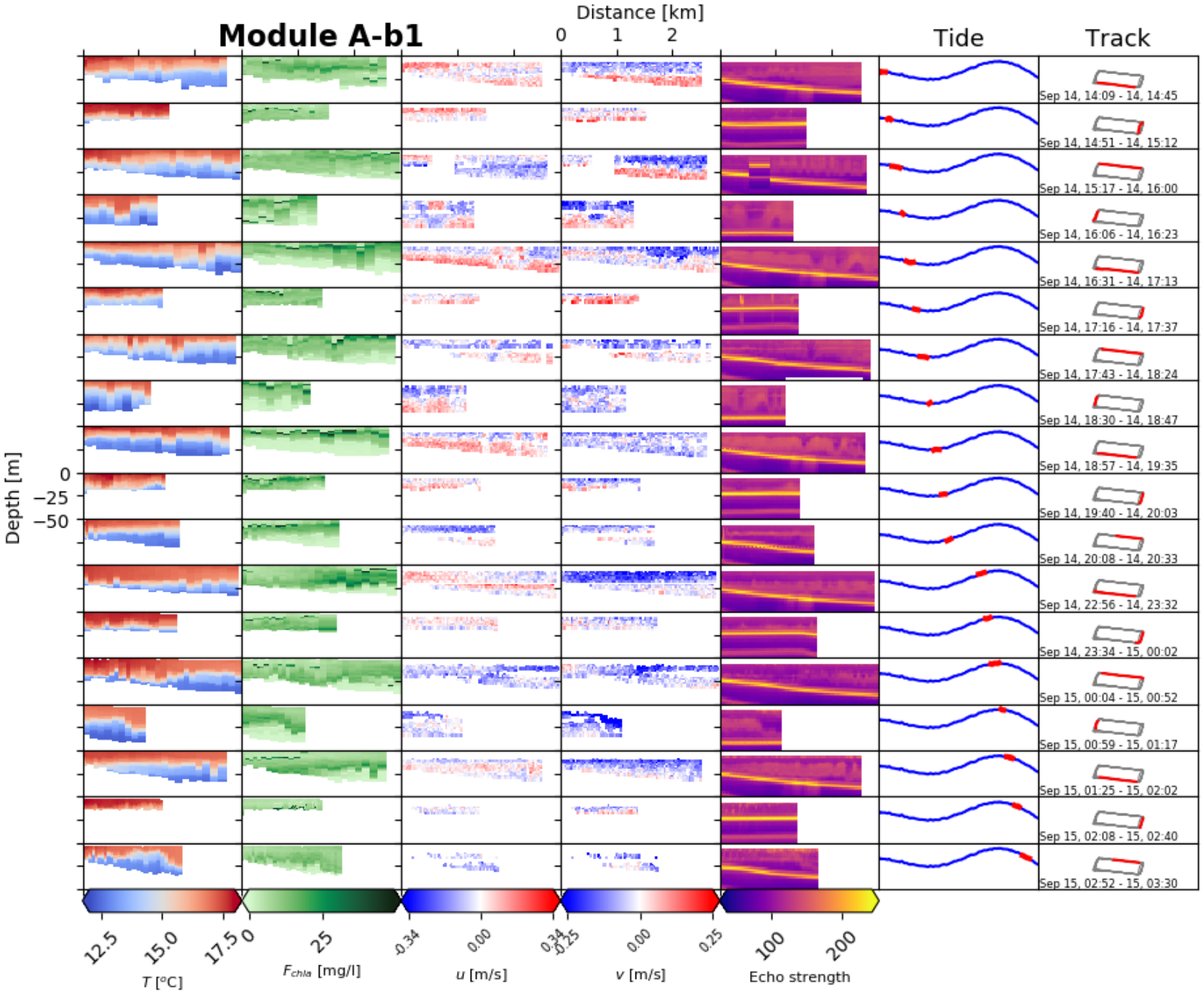



Figure 11: **Submodule A-b1** sections (repeated box track off south OB).

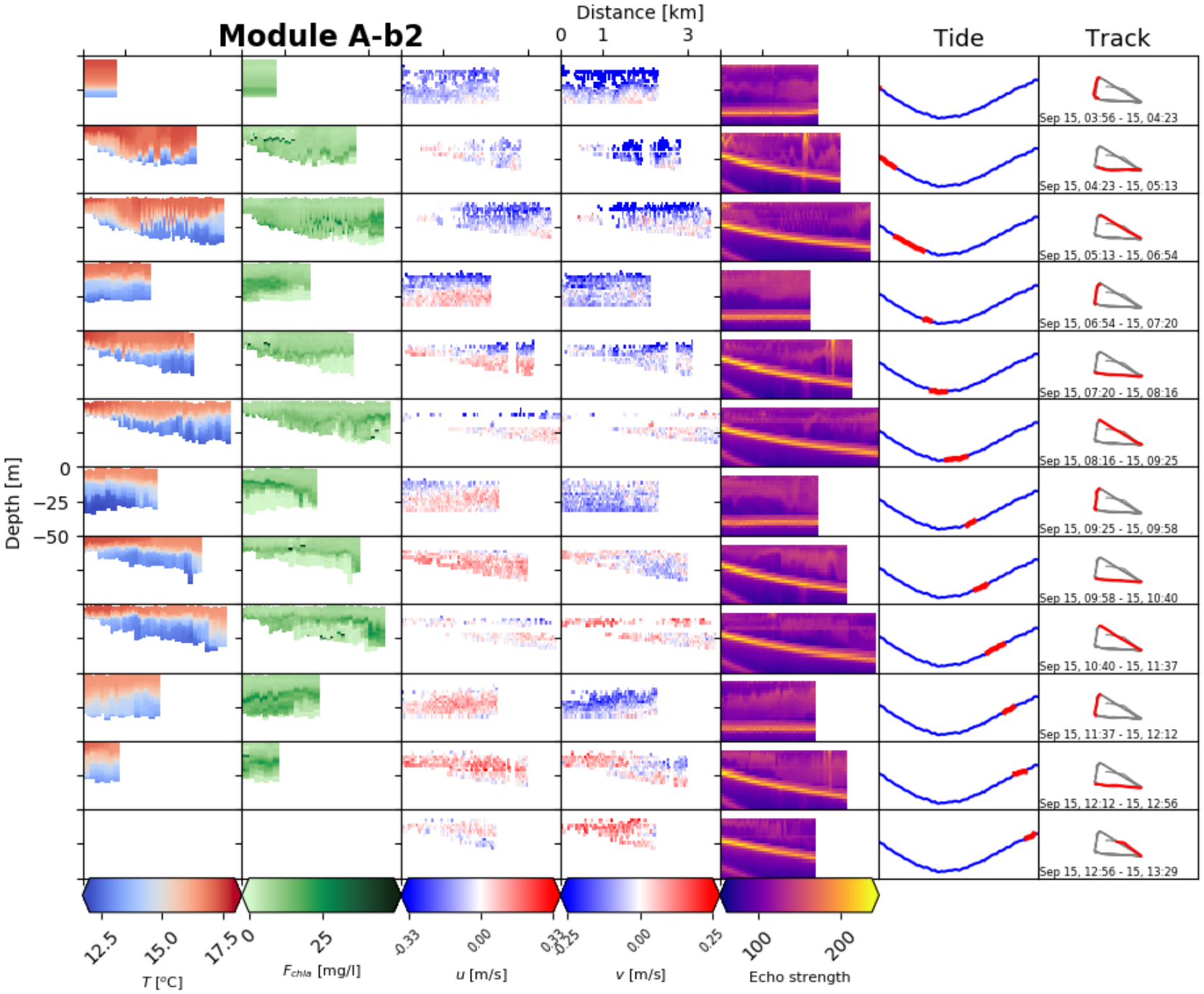



Figure 12: **Submodule A-b2** sections (triangle off OB).

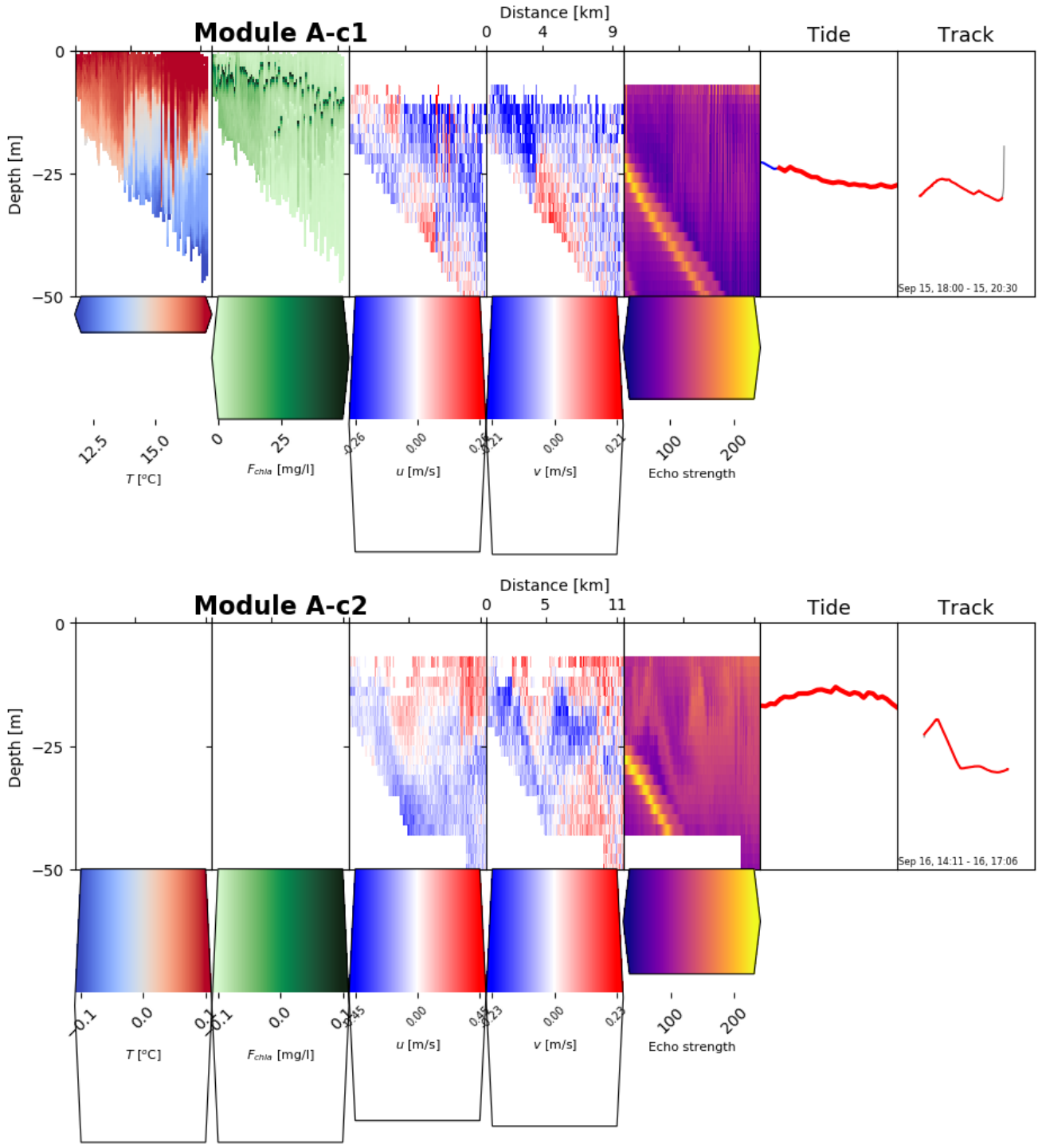



Figure 13: **Submodule A-c** sections (long cross-shelf sections off OB).

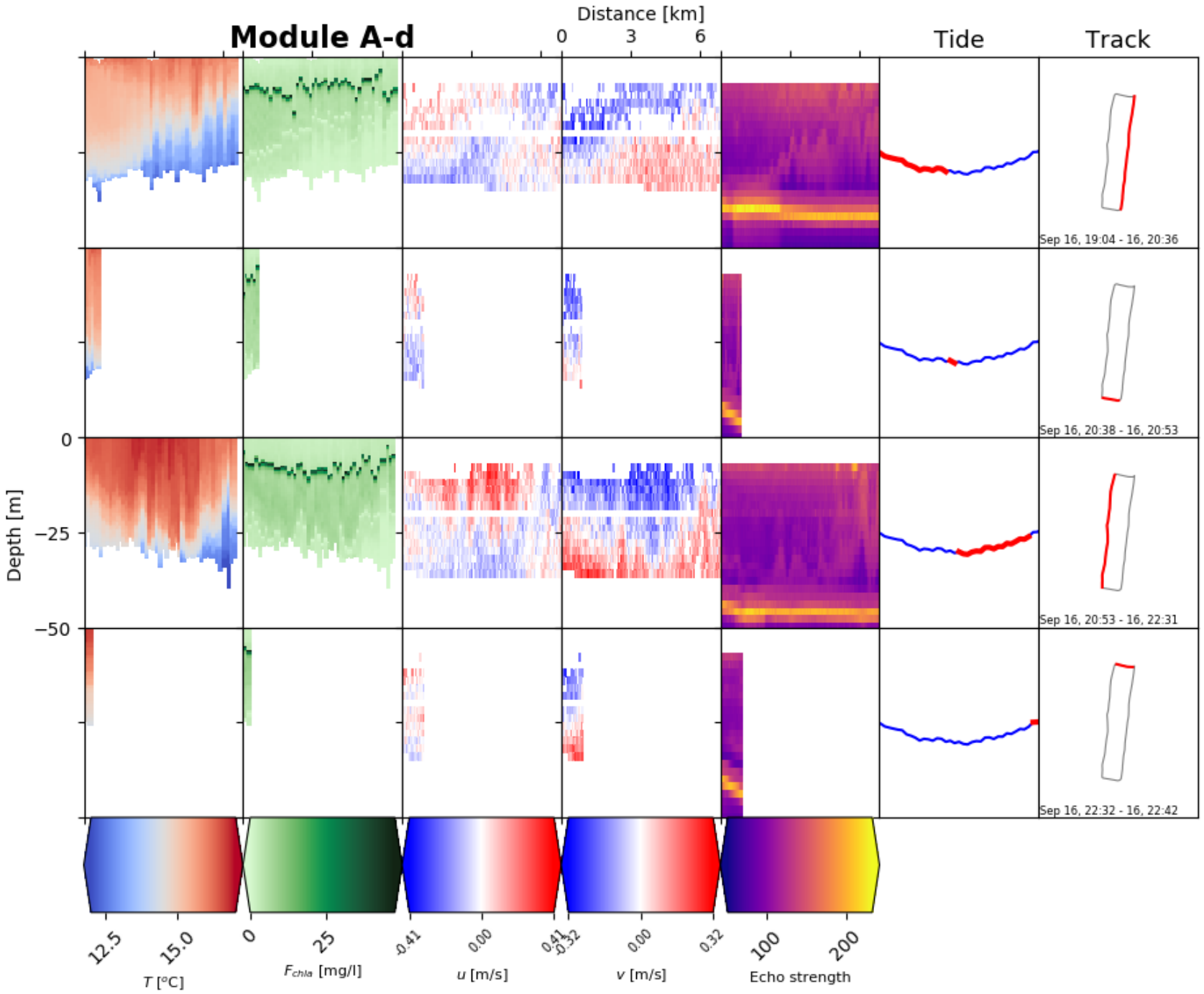



Figure 14: **Submodule A-d** sections (off OB, coordinated with the other ISDRI vessels).

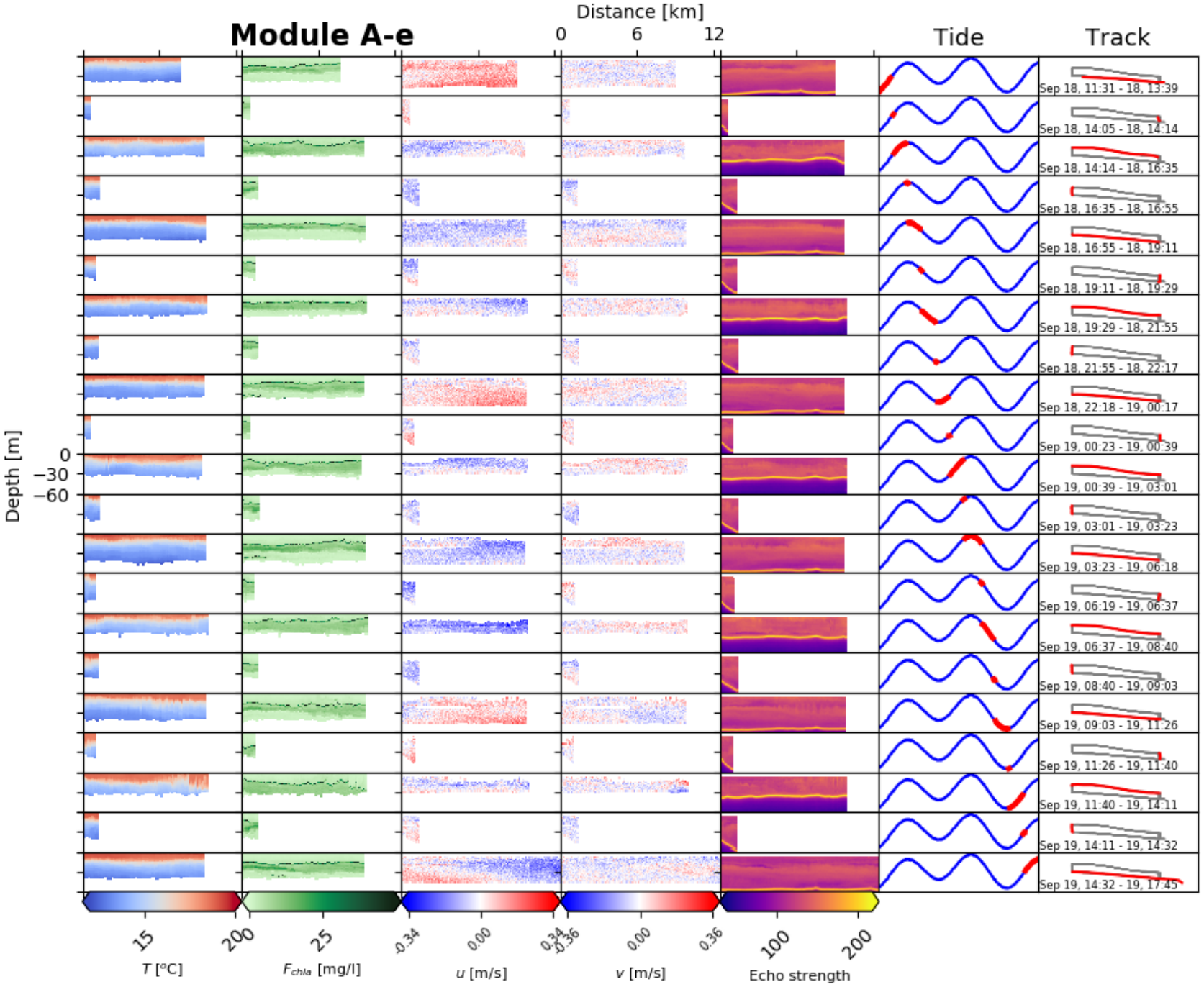



Figure 15: **Submodule A-e** sections (off Santa Barbara).

### 3.2.2 Module B: Topographic wake survey

Module B was designed to observe the topographically-influenced tidal circulation around a headland with complicated topography (Pt. Sal), and its interactions with the super-tidal motions (*e.g.*, submesoscale fronts and nonlinear internal waves/bores). Figure 16 shows the ship track for module B, and Figure 17 shows the uCTD and ADCP sections.

The meridional ($v$) component of the velocity is, generally, persistently negative throughout the survey, suggesting a ∼10-25 cm s$^{-1}$ mean flow, even though the survey covered nearly a complete tidal cycle. Features resembling high-frequency internal wave trains were crossed in the first four occupations of the east-west lines, and can be partially seen in the velocity sections (mostly in the zonal component, $u$). Isolated downward dips resembling solitary waves of depression are also found in some transects (rows 5, 6 and 16).

Another interesting feature is the very sharp temperature front encountered on the fifth and sixth occupations of the east-west transects (rows 6 and 7). A change of 1-2°C was observed between two adjacent uCTD profiles (≈50 m apart). The $F_{\text{chl-a}}$ maximum drops to the bottom of the profiles on the warm side of the front, folowing the acoustic backscatter (rows 6 and 7).

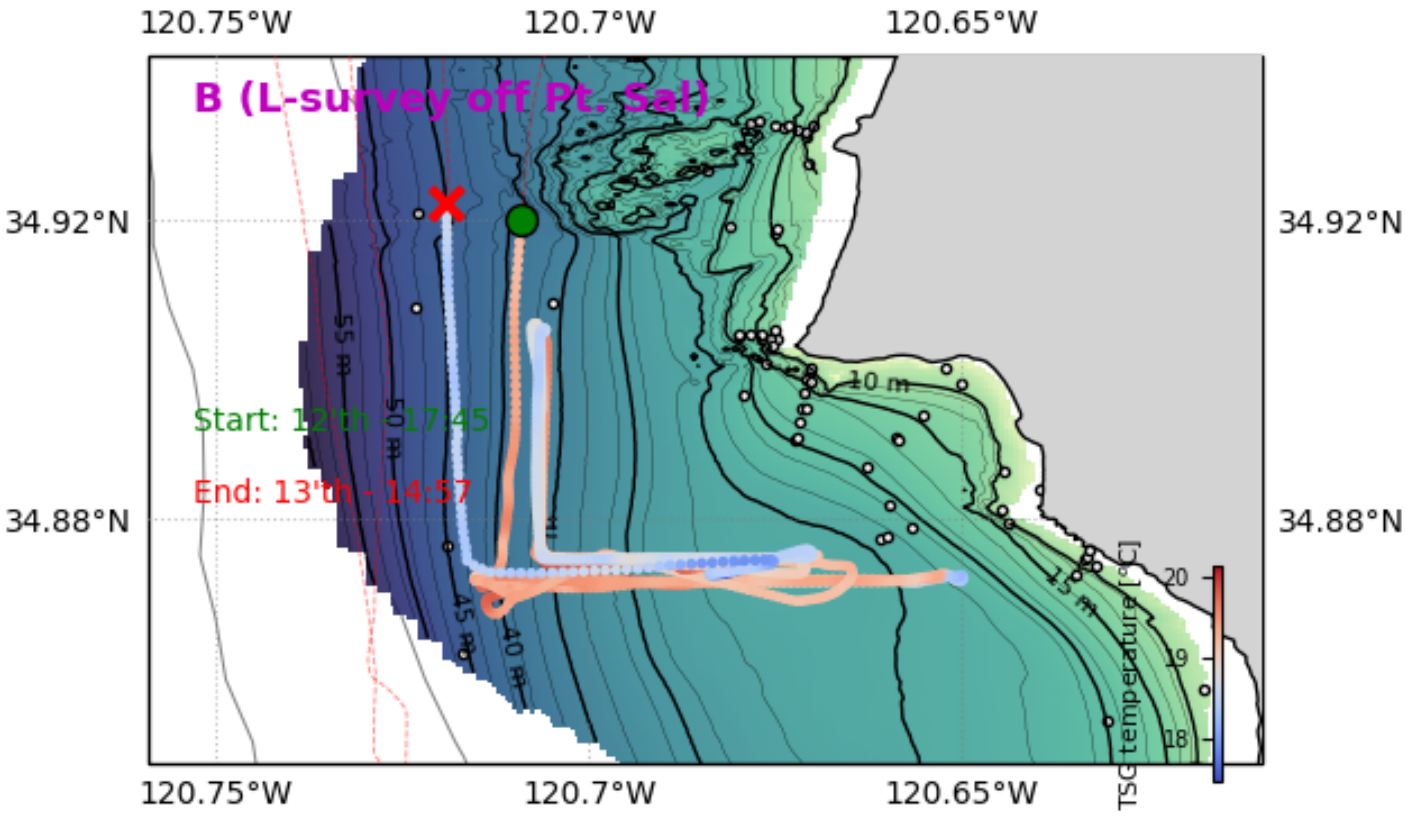



Figure 16: **Module B ("L-shaped" topographic wake survey)** survey map. The colored dots are 1 min averages of the ship's flow-through temperature, the white dots are ISDRI mooring locations. Green circle (red "x") are the start (end) points of the survey.

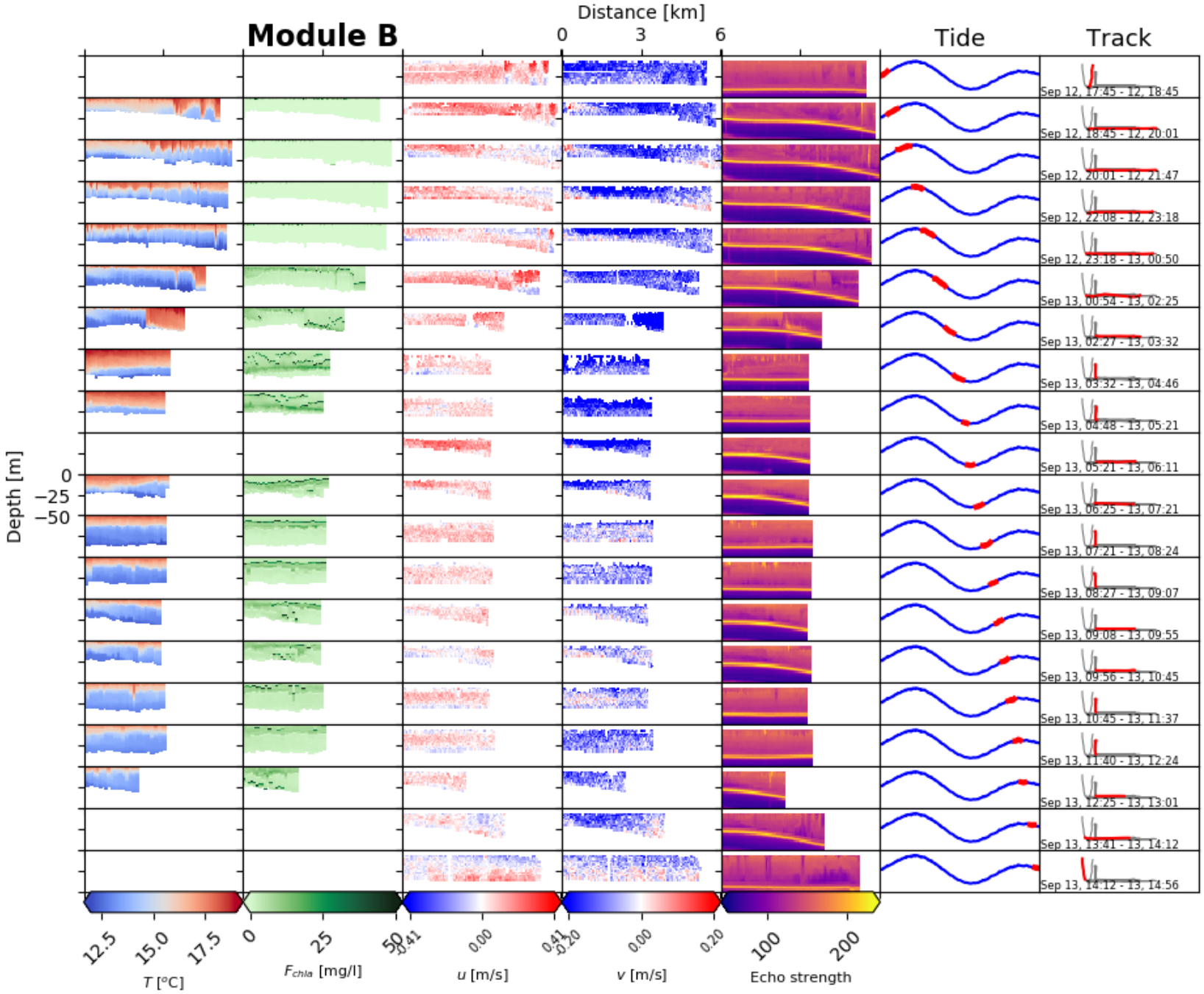



Figure 17: **Module B** sections (around Pt. Sal).

### 3.2.3 Module C: Large-scale along-shelf surveys

Module C was designed to sample the along-isobath variability of meso/submesoscale structures and associated turbulence patterns. Figure 18 shows the ship track for submodules C-a and C-b, and Figures 19 and 20 show the uCTD and ADCP sections. Figures 21 and 22 plot sections of derived variables for module C-b: The rate of loss of temperature variance ($\chi_T$), the magnitude of the vertical shear of horizontal velocity squared ($Sh^2$), the buoyancy frequency squared ($N^2$) and the Richardson number ($Ri \equiv Sh^2/N^2$).

The rough sea state during module C-a rendered most of the ADCP velocity data useless (it was masked during processing with CODAS), and no uCTD towing was done for safety. Module C-b's velocity data along the 50 m isobath has much higher quality (as module A-e's data, Figure 15), due to the good weather during the survey. Preliminary analyses reveal interesting spatial patterns of mixing in the $\chi_T$ and $Ri$ sections (Figures 21 and 22).

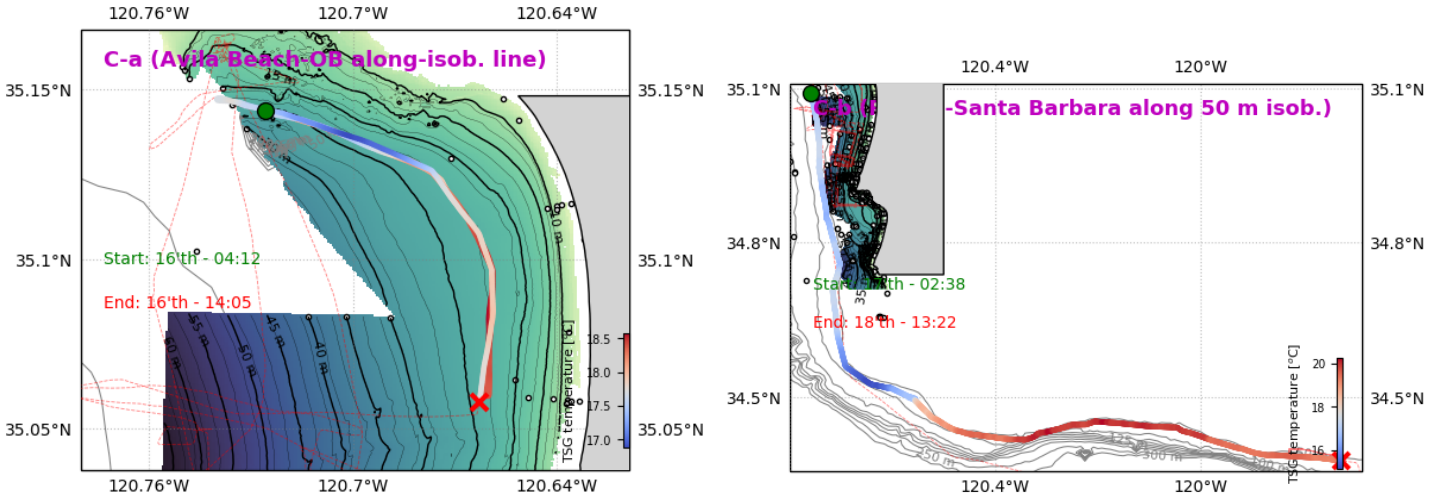



Figure 18: **Module C-a and C-b (Large-scale survey along the 50 m isobath)** survey maps. The colored dots are 1 min averages of the ship's flow-through temperature, the white dots are ISDRI mooring locations. Green circle (red "x") are the start (end) points of the survey.

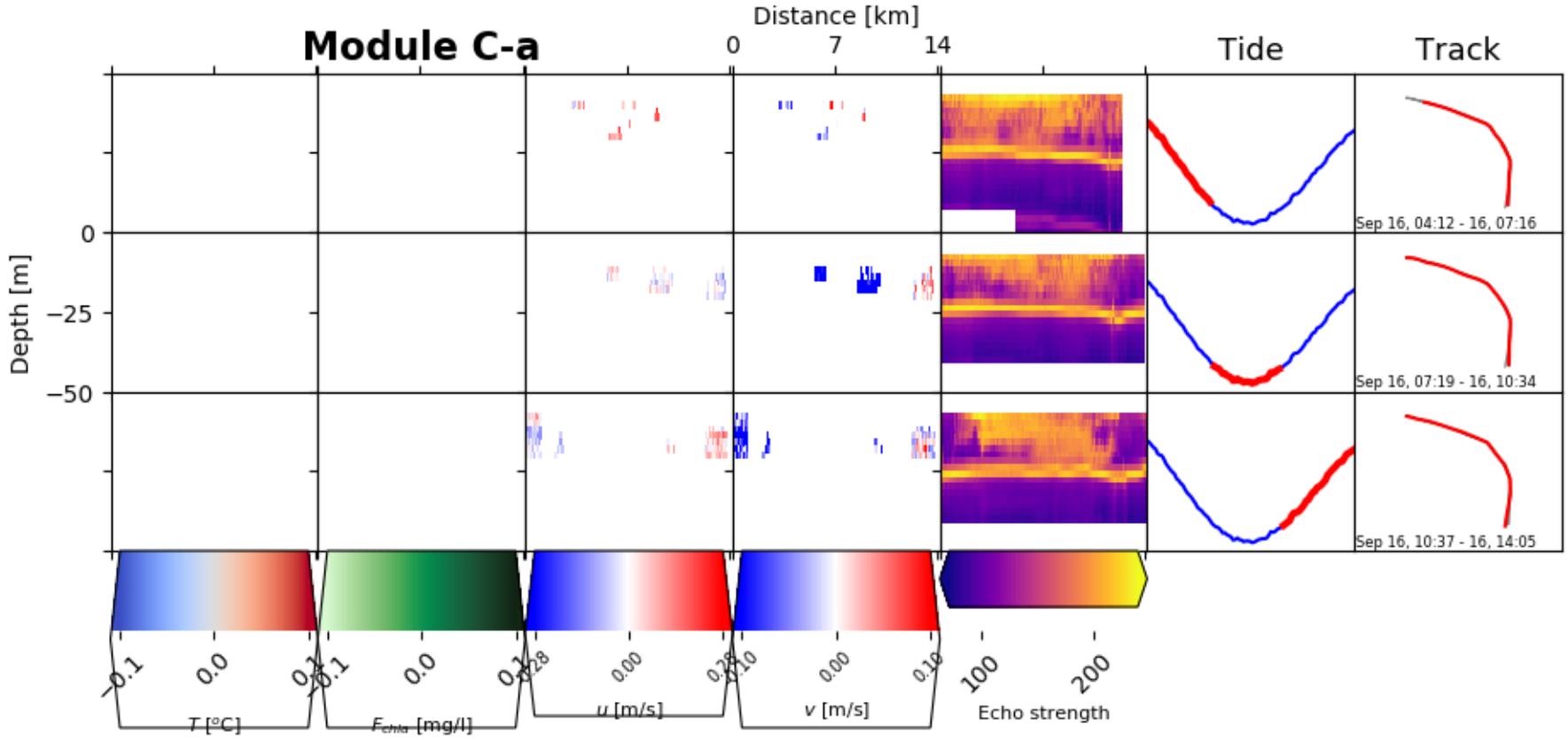



Figure 19: **Submodule C-a** sections (following 20-25 m isobath, between OB and Avila Beach).

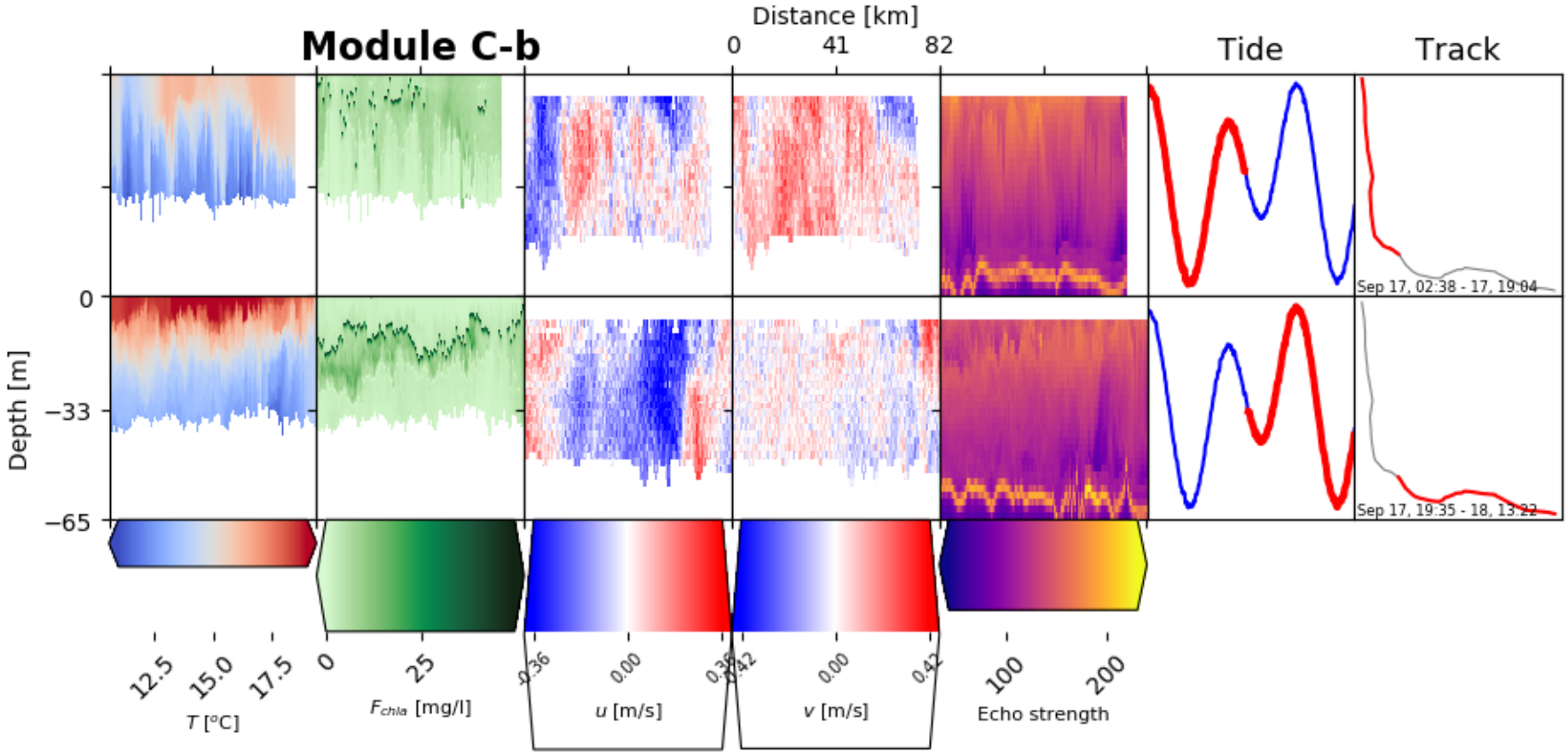



Figure 20: **Submodule C-b** sections (folowing 50 m isobath, from OB to Pt. Conception and into the Santa Barbara Channel).

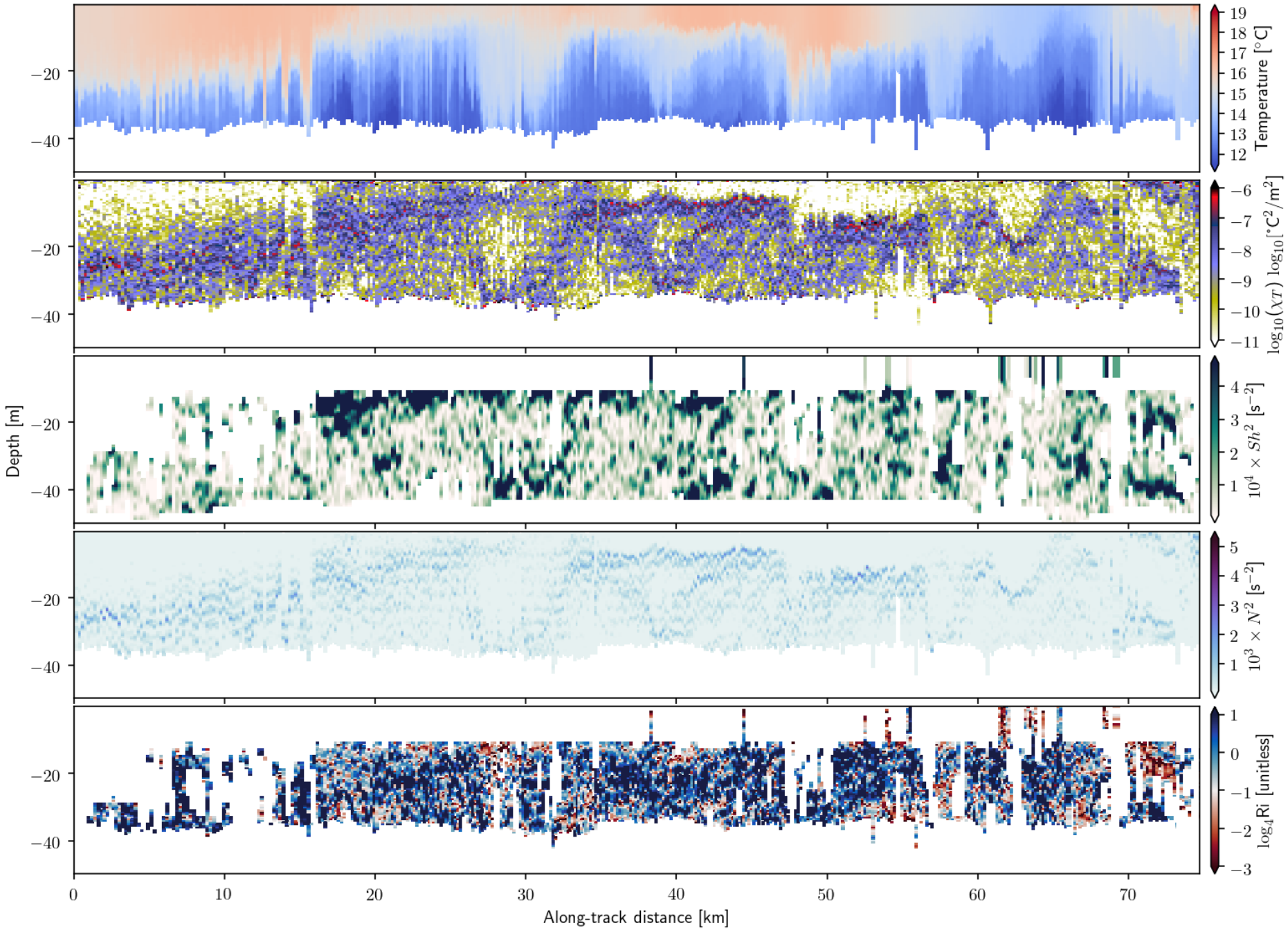



Figure 21: **Submodule C-b** sections of turbulence variables, from OB to Pt. Conception (leg #1, Figure 18).

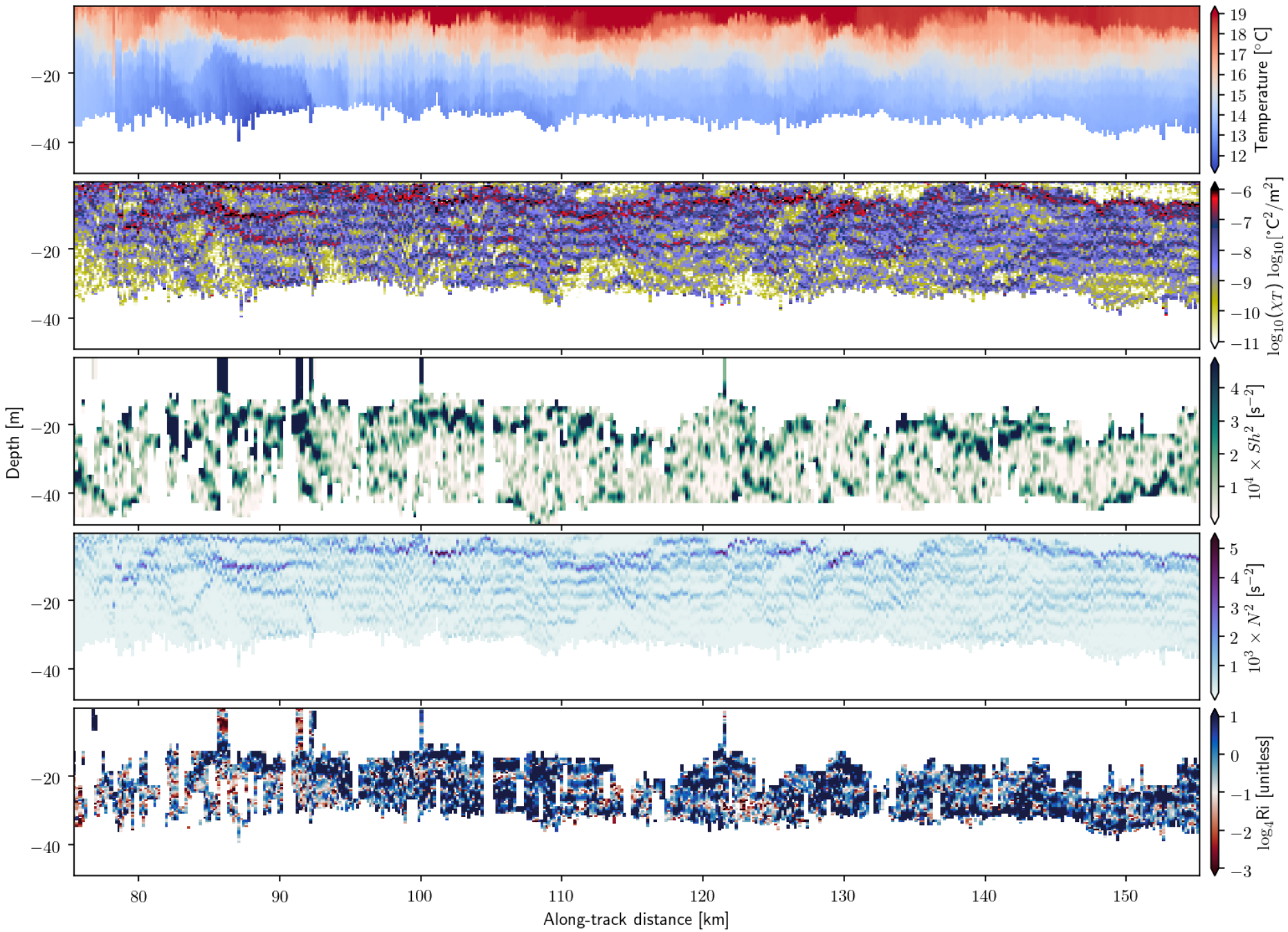



Figure 22: **Submodule C-b** sections of turbulence variables, from Pt. Conception to Santa Barbara (leg #2, Figure 18).

# 4 Instrumentation and data processing

This section gives more detail on the shipboard instrumentation of the SP1724 cruise and some of its processing.

## 4.1 MET acquisition system

Underway data from the atmospheric and flow-through sensors was acquired by the standard MET acquisition system used in UNOLS vessels. All MET data was logged at 1 Hz.

The measured meteorological and flow-through variables included wind speed and direction, barometric pressure, air temperature, photosynthetically active atmospheric radiation (PAR), relative humidity, chlorophyll-a fluorescence and dissolved oxygen concentration (see Figure 3).

## 4.2 Advanced Laser Fluorescence Analyzer (ALFA)

Underway fluorescence data at multiple wavelengths was measured by an Advanced Laser Fluorescence Analyzer (ALFA, Figure 23) system, kindly provided by Prof. Ralf Goericke's group at SIO. ALFA data was logged and time-stamped independently from MET data, including a separate Garmin GPS antenna on the upper deck, facing the starboard door of the lab van.

The primary ALFA data products will be underway ∼30 s averages of fluorescence of phytoplankton pigments (chlorophyll-a and phycoerythrin), and Chromophoric Dissolved Organic Matter (CDOM). Data processing is underway.

## 4.3 Bow chain (Adams)

To measure and capture finescale horizontal gradients of water mass properties near the surface, we deployed a 20-meter chain of temperature, conductivity and pressure sensors from the port-side of the Sproul bow. A 200-lb weight was hung on a separate line, deployed from a davit on the 01 port deck. Deployment and recovery were conducted by hoisting the weight up or down with the davit; the bow chain itself could be easily clipped in or out of the setup. The system performed well at speeds of up to 3 knots; at higher speeds the first sensor at 1-m along the bowchain line was above the surface.

The bowchain was routinely recovered during SP1724 to download data or to allow for higher transit speeds between experiment sites. Approximate deployment and recovery times for the six deployments of the bowchain are listed in Table 3. An example of the bowchain's physical setup and a time series of temperature for the 19-m chain are shown in Figure 24. No instruments were lost, however RBR SoloT 100156 did not record data during

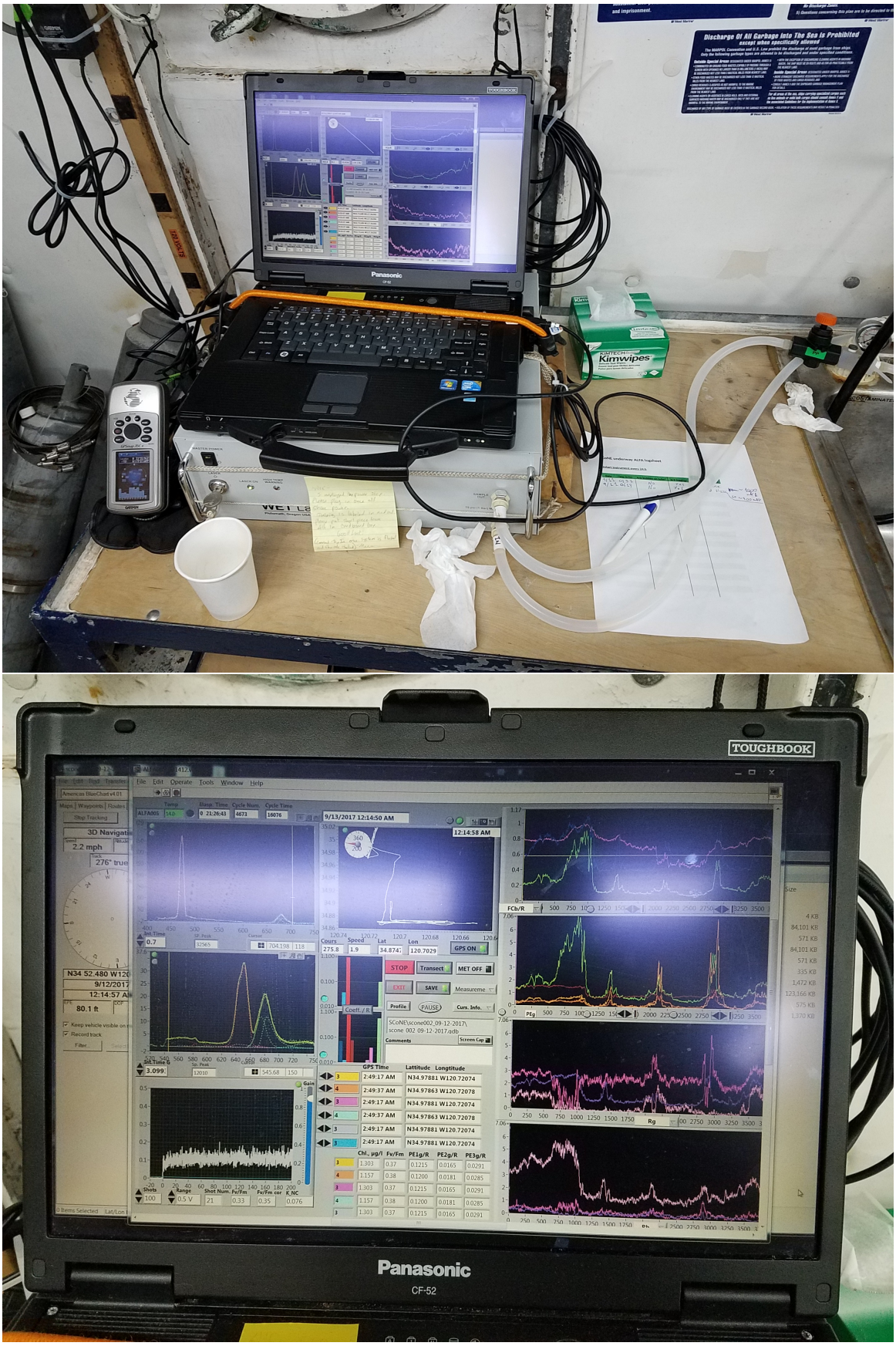



Figure 23: Upper panel: Advanced Laser Fluorescence Analyzer (ALFA) setup in the R/V Sproul's dry lab. Lower panel: View of ALFA's data acquisition console. Photo credit: André Palóczy.

Deployment 1. Three RBR SoloT data files were not recovered successfully due to an error made during download of Deployment 5 data (101159, 100157, 100160).

The bowchain was temporarily pulled out of the water at least twice during the cruise. The first time was to check on instruments after hitting fishing gear during Deployment 2. When recovered, RBR SoloT instruments 101160 (16 m) and 101161 (17 m) were found to only be held on by the zip tie - the tape holding these sensors to the line was sliced presumably from the fishing gear encounter. Data from these two sensors during Deployment 2 may not correspond exactly with the 16 and 17 m line locations, respectively. The other time the bowchain was pulled out of the water was to remove seaweed accumulation on the sensor chain and the weight line during Deployment 6, see Figure 25.

The weight deployment/recovery line failed around 5:00am local time on 15 September, during Deployment 3. This required a manual recovery of the bowchain, assisted by the AirTugger winch system. Captain Welton successfully recovered the broken end of the weight line attached to the weight with a grappling hook. This permitted the use of the davit for the recovery of the weight. A replacement weight line, 1/4" in diameter, was used as the weight line for subsequent deployments. The failure of the first weight line was due to prolonged contact with the hull. All instruments were recovered safely over the port railing during the manual recovery of Deployment 3, however RBR Concerto sn 60381 may have sustained damage from impact with the weight, see Figure 26. The red conductivity cell component of the instrument was found to move freely after recovery; this instrument should be inspected and repaired, if necessary, before future use.

### 4.4 Calibration cast

During the transit back to MarFac, we stopped at a deep (∼1000 m) location south of Santa Rosa and Santa Cruz Islands to do a calibration cast using the ship's CTD (an SBE 911+).

We attached the bow chain and the towed instruments (RBR Concerto and RBR Duet) to the rosette (Figure 27), and profiled the water column starting from 5 m down to 75 m (approximately our deepest survey profiles on all SP1724 science modules), stopping at each depth for ≈5 min.

The data retrieved from the instruments attached to the CTD rosette was downloaded and used to determine systematic errors between each RBR SoloT, DuetTD or Concerto CTD and the ship's SBE 911+ CTD. The ship's CTD was taken as reference, due to its superior precision and accuracy and the fact that it was calibrated a few weeks prior to the SP1724 cruise (according to the *.XMLCON files).

Table 3: Bowchain start and end times (UTC) for the six deployments during SP1724. Instrument configuration along the chain is detailed by serial number (sn): 6xx = WetLabs Fluorometer, 1xxxxx = RBR SoloT, 6xxxx = RBR Concerto, and 8xxxx = RBR Duet.

| | Dep01 | Dep02 | Dep03 | Dep04 | Dep05 | Dep06 |
|---|---|---|---|---|---|---|
| Start | 9/12 0525 | 9/13 1700 | 9/14 0224 | 9/16 0306 | 9/16 1743 | 9/18 1400 |
| End | 9/13 1300 | 9/14 2030 | 9/15 1500 | 9/16 1604 | 9/16 2300 | 9/19 1700 |
| Depth(m) | sn | sn | sn | sn | sn | sn |
| 1 | 100153 | 100153 | 100153 | 100153 | 100162 | 100162 |
| 2 | 100154 | 100154 | 100154 | 100154 | 100696 | 100696 |
| 2.5 | 652 | – | 653 | – | – | – |
| 3 | 60381 | 60381 | 82507 | 60166 | 82507 | 82507 |
| 4 | 100156* | 101164 | 101164 | 101164 | 100886 | 100886 |
| 5 | 100157 | 100157 | 100157 | 100157 | 101158 | 101158 |
| 5.5 | 656 | – | – | – | – | – |
| 6 | 100158 | 100158 | 100158 | 100158 | 101159* | 101159 |
| 6.5 | 82507 | 82507 | 655 | – | – | – |
| 7 | 100159 | 100159 | 100159 | 100159 | 101160 | 101160 |
| 8 | 100160 | 100160 | 100160 | 82507 | 101161 | 101161 |
| 9 | 100161 | 100161 | 100161 | – | 101162 | 101162 |
| 9.5 | 653 | 654 | 652 | – | – | – |
| 10 | 60166 | 60166 | 60166 | – | 60166 | 60166 |
| 11 | 100162 | 100162 | 100162 | – | 100161 | 100161 |
| 12 | 100696 | 100696 | 100696 | – | 100153 | 100153 |
| 13 | 100886 | 100886 | 100886 | – | 100154 | 100154 |
| 14 | 101158 | 101158 | 101158 | – | 100160* | 100160 |
| 14.5 | 82490 | 82490 | – | – | – | – |
| 15 | 101159 | 101159 | 101159 | – | 101164 | 101164 |
| 16 | 101160 | 101160 | 101160 | – | 100157* | 100157 |
| 17 | 101161 | 101161 | 101161 | – | 100158 | 100158 |
| 18 | 101162 | 101162 | 101162 | – | 100159 | 100159 |
| 19 | 60183 | 60183 | 60381 | – | 60183 | 60183 |

*No data

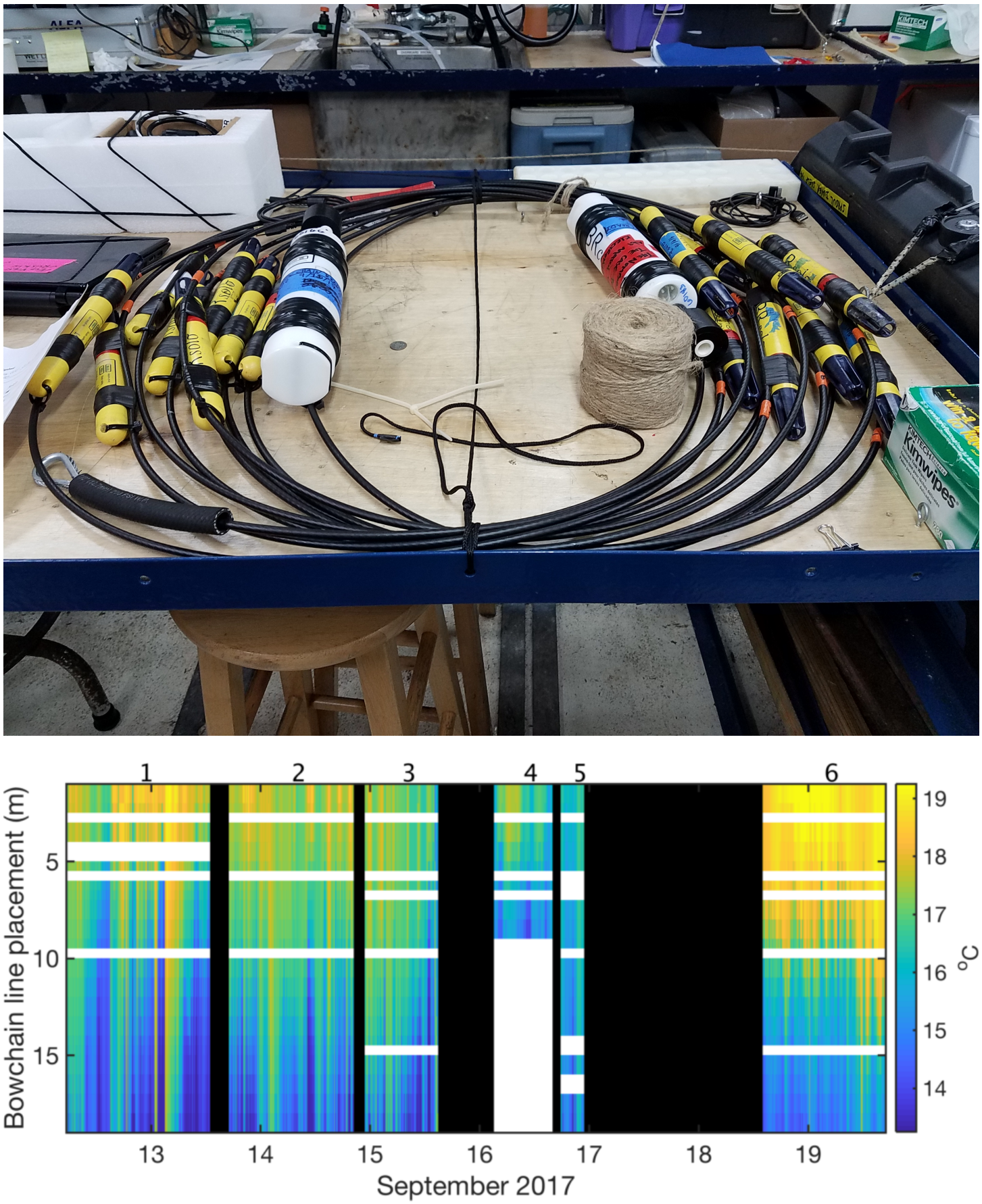



Figure 24: Upper panel: An example of the bowchain setup in the dry lab prior to deployment (Photo credit: André Palóczy). Lower panel: Bowchain temperature ($^o$C) time series collected from the six deployments (Figure credit: Kate Adams).

Figure 25: An accumulation of seaweed was removed during Deployment 6. Kelp was found around sensors as well as the weight line. Photo credit: Kate Adams.

Figure 26: RBR Concerto 60381 upon recovery of Deployment 3 with the blue weight line wrapped between the instrument and the cable. The red conductivity sensor was found loose and easily rotating. Photo credit: Kate Adams.

Figures 28, 29, 30 show time series for temperature, conductivity/salinity and chlorophyll-a fluorescence for the calibration cast. These plots compare all available sensors for each variable: The ship's SBE 911+, the RBR Solos, RBR Duets and RBR Concertos deployed in the bow chain and the RBR Concerto towed as a uCTD. The second set of temperature and conductivity sensors on the SBE 911+ are clearly offset from both the first set of sensors and all other instruments.

The SBE 911+'s second sensor had a cold bias of ∼0.8°C (the green line labeled "CTD-ship-T2" in Figure 28), as well as a saline bias of ∼0.6 psu (the purple line labeled "CTD-ship-SP2" in Figure 29) relative to the SBE 911+'s first set of sensors. More importantly, however, **the uCTD had a clear saline bias of ∼0.2 psu relative to the ship's CTD**, which is unsurprising considering its metal crash guard (Figure 37). The chlorophyll-a fluorescence comparison is more difficult to assess because of the unavailability of independent laboratory analyses with water samples and the different nature of the SBE 911+'s and the towed RBRConcerto's fluorescence sensors.

The main conclusions from this analysis are that the **temperature** data from the uCTD and the bowchain instruments are in acceptable agreement with the reference measurements (ship's SBE 911+), while the quality of the **salinity, chlorophyll-a fluorescence and turbidity** data suggests more thorough analyses and corrections should be performed on these variables before they are science-ready.

The density sections calculated using the uCTD's salinity data were not significantly different from density sections calculated using a constant salinity typical of the area. The offset in the uCTD's salinity data should therefore not be a major problem for the purposes of deriving density using the equation of state, because the temperature variance dominates most of the density variance.

### 4.5 Hydrographic data quality control

The Quality Control (QC) procedure for data measured by all RBR instruments (Solos, Duets and Concertos, both towed with the fishing reel and mounted on the bow chain) is described below.

1. All Absolute Pressure (atmosphere + ocean) records were converted to Oceanographic Pressure (hereafter simply pressure, $p$) by subtracting the atmospheric pressure measured by the SIO MiniMet buoy (Terrill Group). The largest differences in the pressure corrections (relative to assuming a constant atmospheric pressure) were typically 1-5 cm in water depth equivalent (Figure 31).

2. Parts of the record associated with surface soaks ($p \leq 0.4$ dbar) of the instruments were trimmed.

3. The $T$, $C$, $F_{\text{chl-a}}$ and Turb records were scanned for spikes following the algorithm in the `RSKdespike` function from the MATLAB `RSKtools` toolbox (v. 2.2.0) available from RBR. The algorithm consists of the following steps:

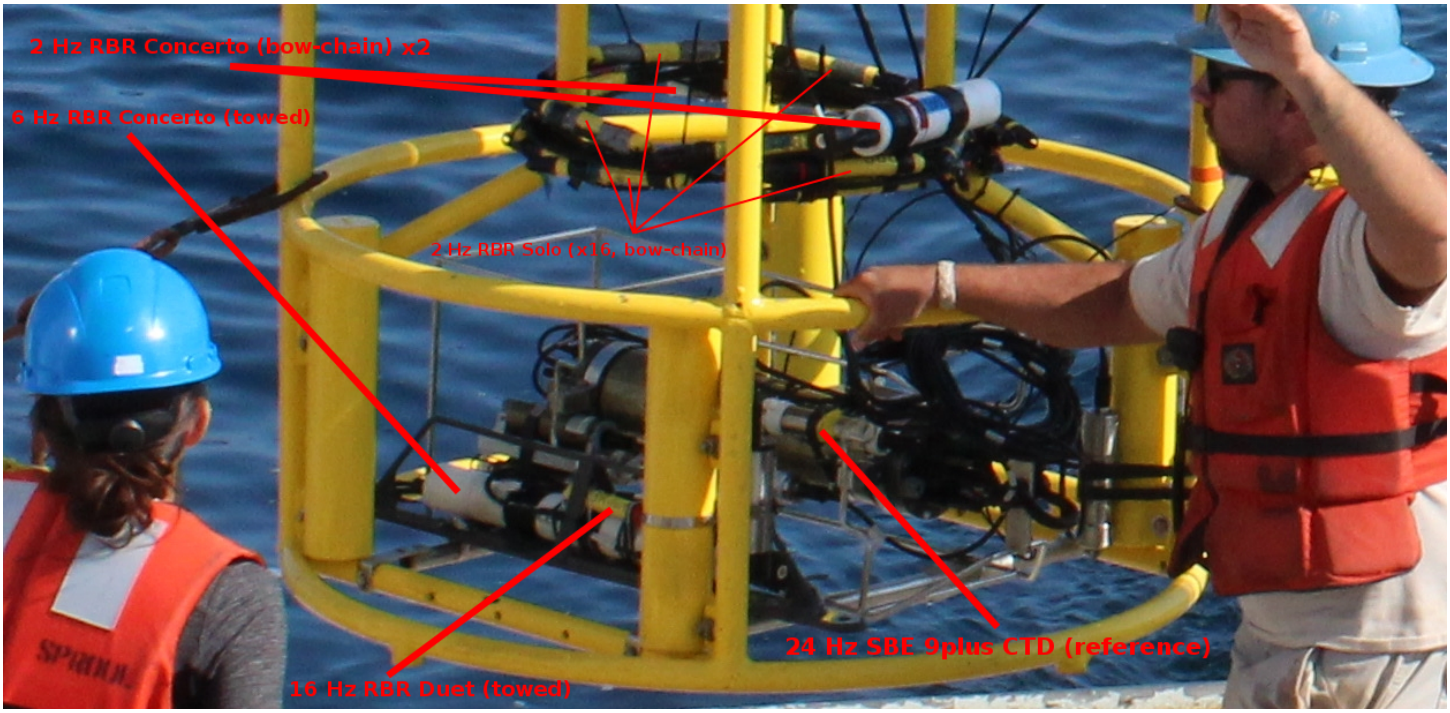



Figure 27: Instrument arrangement on the rosette for the calibration cast. Photo credit: Kate Adams (edited by André Palóczy).

(a) Calculate a reference record $x_{\text{ref}}$ by applying a running median filter with $n_{\text{window}}$ points to the original record $x$;

(b) Calculate a residual record $x_{\text{res}} = x - x_{\text{ref}}$ and its standard deviation std($x_{\text{res}}$)

(c) Flag as spikes all data points lying outside $N_{\text{stds}}$ of the mean as spikes and remove them.

(d) For each instrument, the size of the median filter $n_{\text{window}}$ and the threshold number of standard deviations $N_{\text{stds}}$ for each variable were chosen based on their Probability Density Functions (PDF) of the variable (Figure 32).

4. Data was indexed by time, latitude and longitude linearly interpolated from the 1 Hz GPS data from the ship's MET acquisition system. Data processed up to this step is science-ready and referred to as Level 1 (**L1**) data.

5. Downcasts and upcasts (a total of 3971 of each) in the towed instruments (Concerto 6 Hz and Duet 16 Hz) were identified with the `RSKgetprofiles` function. Figure 33 shows the distribution of cast durations.

6. Profiles (downcasts and upcasts) were averaged in 10 cm bins and gridded onto a latitude/longitude (and time) versus depth grid. Data processed up to this step is science-ready and referred to as Level 2 (**L2**) data.

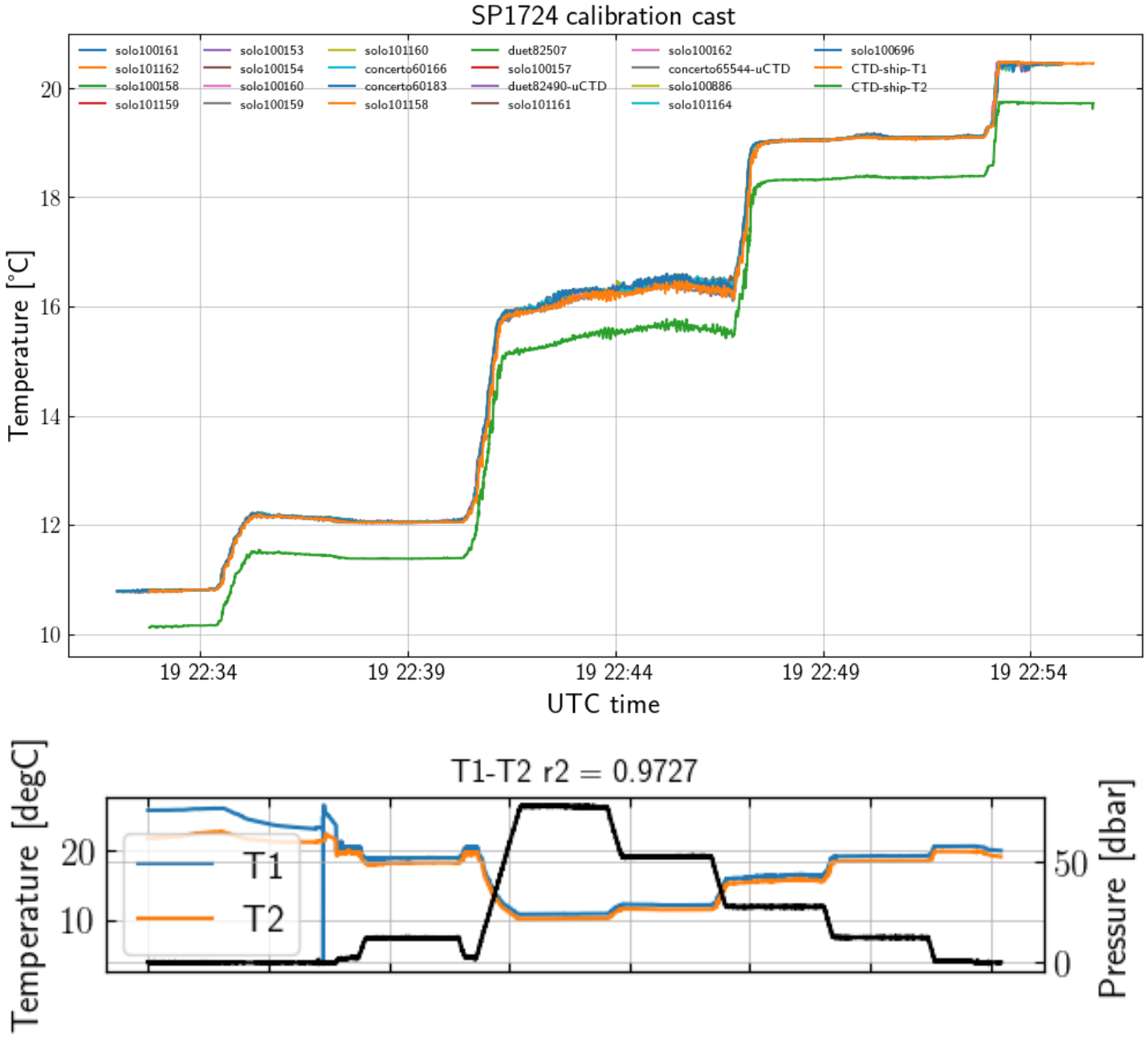



Figure 28: Temperature time series for the calibration cast, from all instruments deployed on the bowchain and the uCTD. Lower panel: Time series of the SBE 911+'s two independent temperature sensors. The zero-lag correlation coefficient squared between the two sensors is 0.97.

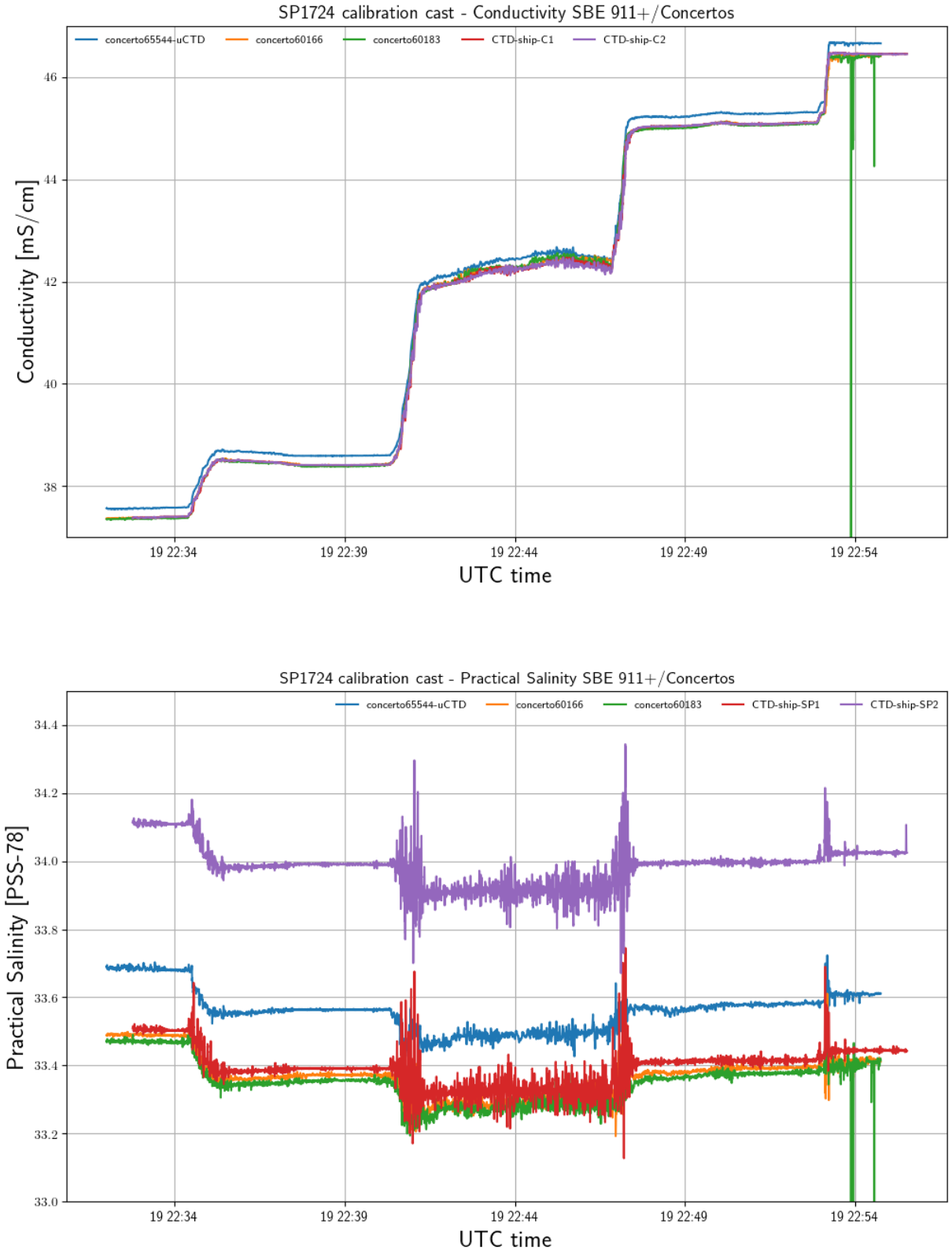



Figure 29: Conductivity and salinity time series for the calibration cast, from the uCTD and all instruments with conductivity cells deployed on the bowchain.

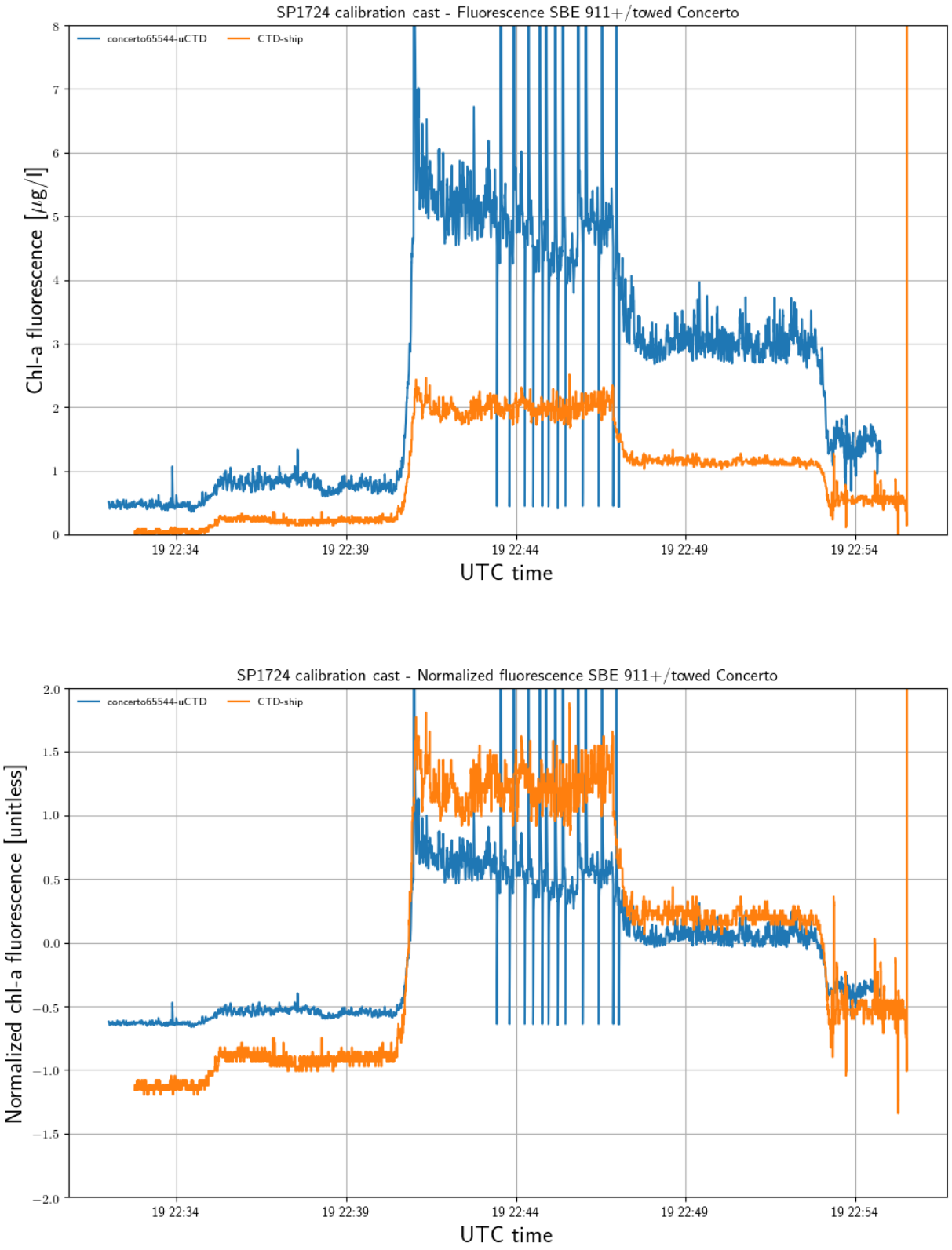



Figure 30: Chlorophyll-a fluorescence time series for the calibration cast, from the SBE 911+ and from the uCTD. The lower panel plots the normalized versions of the curves on the upper panel by subtracting their means and dividing by their standard deviations.

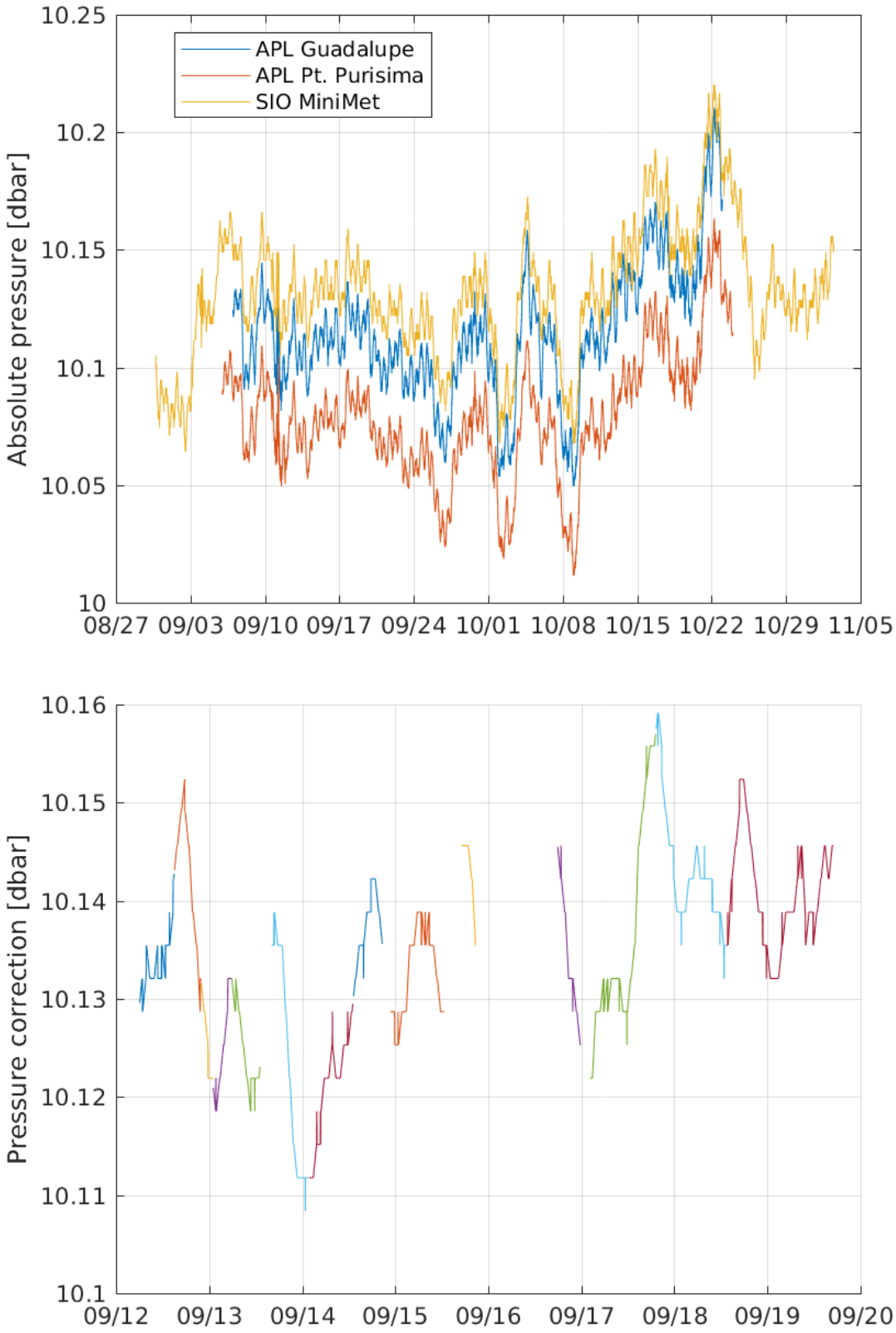



Figure 31: Atmospheric pressure corrections performed on uCTD data. **Top:** Time series of atmospheric pressure measured by the three meteorological stations deployed by APL and SIO. **Bottom:** Time-dependent correction applied to absolute pressure data (from the 6 Hz RBRConcerto as an example) to convert absolute pressure into oceanographic pressure (*i.e.*, due to the water column only). Colors indicate individual uCTD deployments. There were 13 deployments in total, counting those when both the RBRConcerto and the RBRDuet were deployed and those when only the RBRConcerto was deployed.

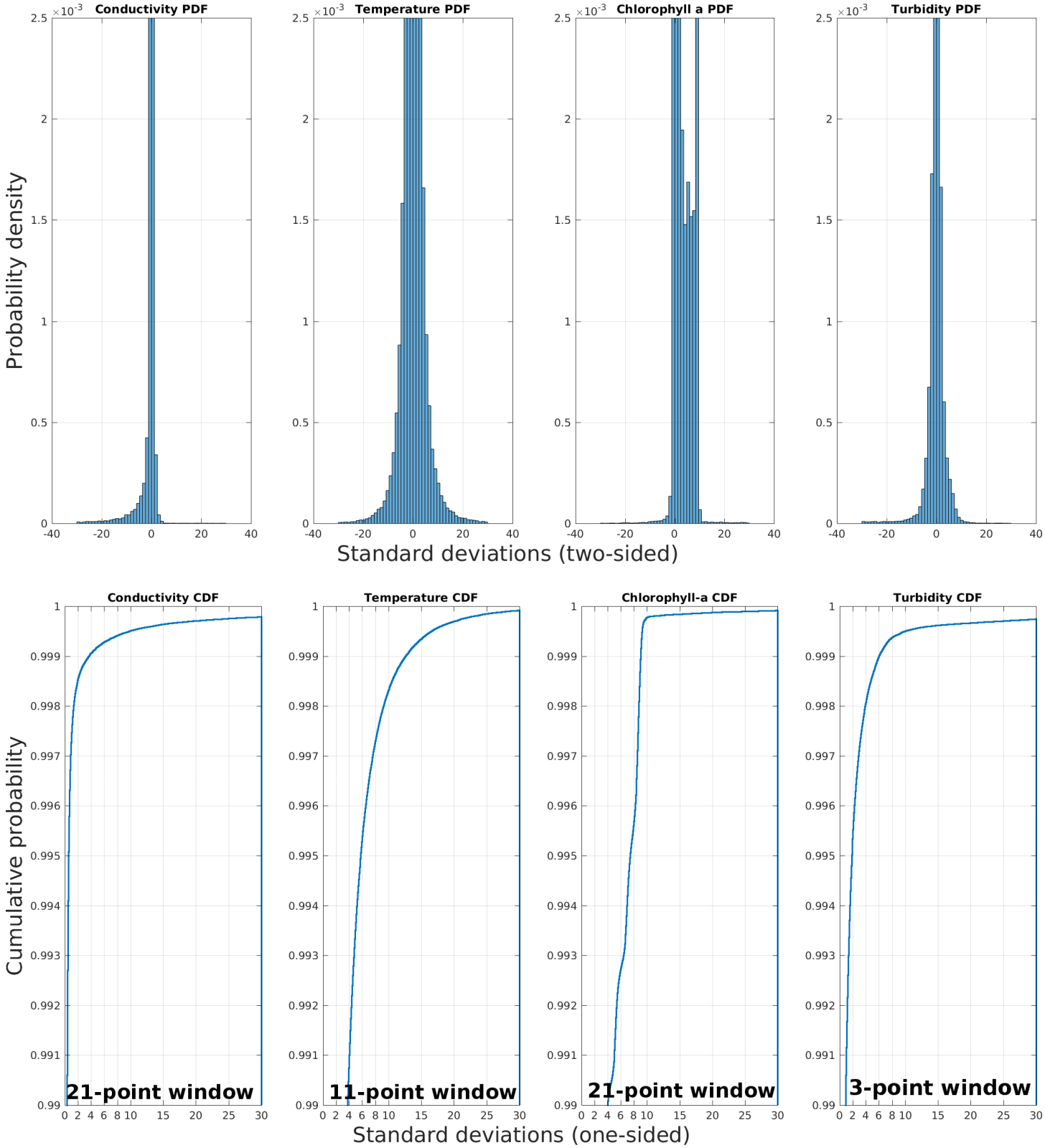



Figure 32: **Top:** Probability Density Functions for the "residual" time series ($x - x_{\text{ref}}$, see subsection 4.5, step 3) of conductivity, temperature, chlorophyll-a fluorescence and turbidity measured by the 6 Hz towed RBRConcerto. **Bottom:** Associated Cumulative Density Functions (CDFs). The number of points of the median window used for each variable is indicated.

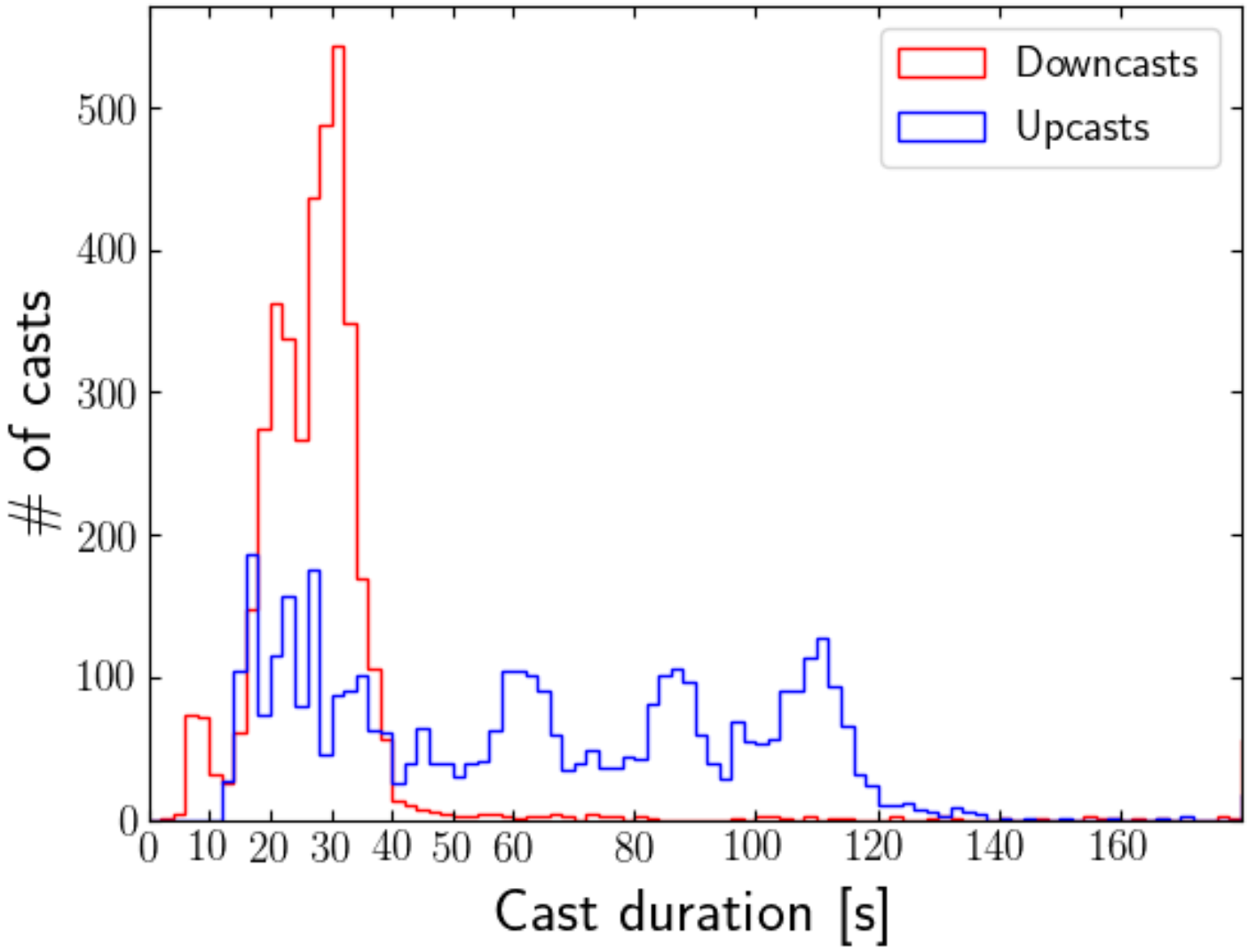



Figure 33: Histogram of cast durations (upcasts and downcasts). The median duration for the downcasts (upcasts) was **28 s** (**63 s**). The **total number of profiles was 3971**.

### 4.6 Hull-mounted 300 kHz ADCP (sADCP)

Underway data from the R. V. Sproul's 300 kHz hull-mounted ADCP was acquired by the University of Hawai'i Data Acquisition System (UHDAS[1]). UHDAS allows for changes in the acquisition setup to be implemented in real-time. The relevant parameters are the bin size and number of bins. Since the attitude sensors were accurate and reliable, no bottom tracking was used, in order to sample as many pings as possible. Figure 34 shows a view of UHDAS' console while the ship was underway.

Single-ping data processing was performed after the cruise using the Common Ocean Data Access System (CODAS), following standard steps and procedures for deriving quality-controlled velocity sections[2].

### 4.7 Pole-mounted 1200 kHz ADCP (pADCP)

An 1200 kHz TRDI Sentinel ADCP was deployed at the end of a metal pole, installed just aft of the starboard staircase. Appendix A below gives details on the setup of the pADCP, its pole and the acquisition system used (VMDAS, the DAS provided by TRDI). Data processing is underway.

## Appendix A Gear remarks specific to the R/V *R. G. Sproul* (Kawamoto)

### A.1 ADCP pole

1. The ADCP was placed 2 m below the waterline on starboard aft section of the Sproul, just aft of starboard staircase. The ADCP was mounted on a gimble to allow the ADCP to be tilted away (starboard) from the ship at 15° from the vertical (Figure 35). To avoid aliasing the data with the ship's motion, the transducers were oriented in a manner where 2 were outboard and 2 were inboard (*i.e.*, 2 faced forward and 2 faced aft, Figure 36).

2. Since real-time data was required, a data cable was run from the ADCP to the Lab Van[3].

3. Guy wires with turn-buckles were required to install the pole, Technical Application Group at Scripps supplied the lines, turn-buckles and installation equipment[4].

4. The ADCP and cable were mounted to the pole prior to the crane lifting and positioning it in place.

[1] https://currents.soest.hawaii.edu/docs/adcp_doc/UHDAS_atsea/index.html

[2] See the GO-SHIP project's primer *Firing & Hummon (2010): Shipboard ADCP measurements*, available at https://www.go-ship.org/Manual/Firing_SADCP.pdf for an excellent summary.

[3] The ADCP was placed 2 m below waterline so the comm cable was not long enough to be fed down the middle of the pole, it must be secured to the outside of the pole to reach the Lab Van. Run on forward side of the pole.

[4] Make sure turn buckles have a long throw. A ratchet strap was used on the forward guy wire and worked well.

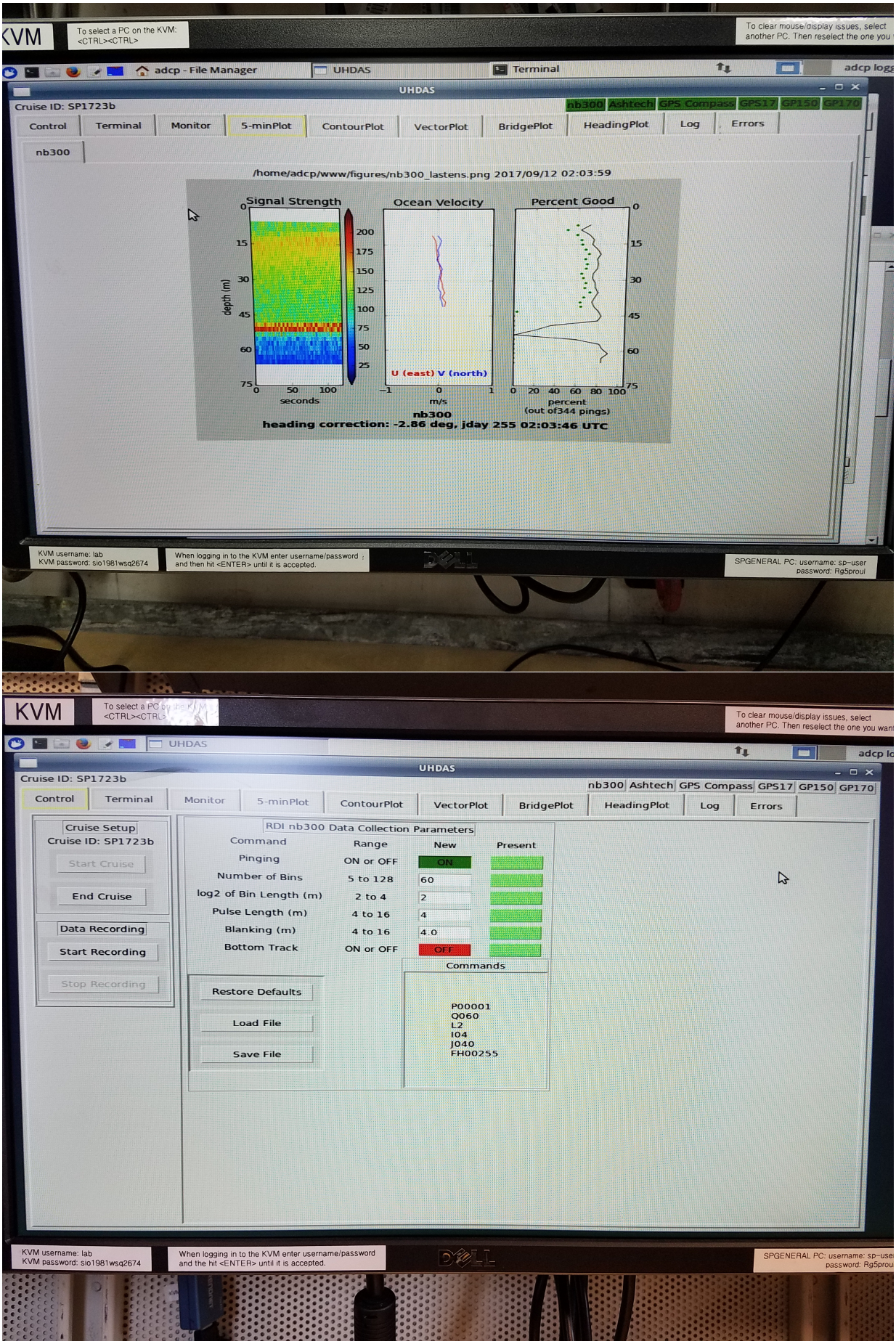



Figure 34: Hull-mounted ADCP's acquisition system (UHDAS). Top panel: View of the underway real-time velocity data. Lower panel: View of the "control" tab showing the tunable data acquisition parameters. Photo credit: André Palóczy.

5. For transit, the pole was rotated horizontal, pushed all the way inboard and strapped against the rail. We were advised not to steam with the ADCP in the water over 4 knots.

6. The crane was used to set the pole vertical then was repositioned to take the weight off the attachment point. This allowed the pole to be pushed out and rotated past the cup, and then set into the cup. The guy wires were then tightened.

7. For transit home, the pole was removed from the mount and secured to the deck. The ADCP, comm cable and guy wires were removed. The guy wires are going to stay with the pole.

8. Data from the Pole-mounted ADCP is good in calm conditions, but not in higher sea state.

### A.2 Tow-yo/underway CTD

1. The uCTD package (Figure 37) weighted around 20-30 lb and consisted of a galvanized steel frame[5], an RBR Concerto with 2 channels, a Turner fluorescence sensor, and Turner turbidity sensor. Originally the Turner sensors were deployed looking upwards, but were turned to look downwards after about a day. Later on a 16 Hz RBR duet (temperature and pressure sensors) was added to the package.

2. The underway CTD winch (electric fishing reel) was set on the 01 deck between the flammables locker and the ship's CTD winch[6]. 4 ratchet straps were used to secure it to the deck. Its line was lead through a small 6" diameter block that was hung on the middle block on the A-frame. The block was raised up around 8 ft off the deck and tagged off in 4 directions so it was relatively stable. The power was plugged into an outlet in the Lab Van (Figure 38).

3. Sampling took place on the high speed (Level 6-8) retrieval setting of the reel until the level wind broke[7]. The lead-screw of the level wind had worn out after around a day of use. Since we were not sampling too deep, it was determined that with some caution, the level-wind was not necessary. We retrieved on slow (Level 2) setting. At a slow retrieval speed, the rocking of the ship naturally leveled out the wind. At times, loose wraps occurred but with some care letting out the line, the spool did not get fouled. Payout was between 40 and 250 ft. Sampling took place between 20 m and 60 m of water.

### A.3 Bow chain

1. The Bow chain consisted of a 20 m length of 3/16" 7x7 jacked wire rope. RBR Solos, Duets, Concertos, and

[5]Some research should be done to see if the close proximity to the ferrous steel cage affects the inductive conductivity sensor.
[6]This location was suggested by Captain Chris Welton and worked out well as it was off the wet main deck.
[7]For future deployments, a stainless steel lead-screw should be fabricated. Alternately, multiple spare plastic lead-screws/level-wind parts should be purchased.

Wet Lab Fluorometers were attached at 1 m intervals (and occasionally at 0.5 m intervals) to this wire. At the end of the wire was a swivel, then a 200 lb weight. The wire had a swivel at the top and then was suspended by a 5/8" spectra line. The 5/8" line was secured to a cleat around 15'-20' from the port bow. A second 1/8" spectra line was attached directly to the weight then was run through a davit to a winch that was around 50' aft of the cleat. The wire rope and 5/8" spectra would bear the load of the depressor weight in deployment mode and the 1/8" spectra would be slack. During the deployment/recovery process the 1/8" spectra would be used to shift the load of the weight to/from the wire and 5/8" spectra[8]. The instruments could then be deployed/retrieved by hand. A chafe guard was placed on a couple points on the 5/8" line, and 1/8" line.

2. The davit on the R/V Sproul (Figure 39) does not extend sufficiently to keep the 1/8" spectra from chafing under the hull. A longer davit and/or a long outrigger would be useful for this system. On the third deployment, the 1/8" spectra parted, and the wire needed to be retrieved by alternate means. Captain Chris Welton and Resident Technician Jeremiah Brower devised a safe and effective way to recover the wire and instruments: The main bow chain wire was ran through a large block, and slowly pulled manually with an air tugger placed on the main deck taking the slack after each pull. Whenever an instrument approached the block on the rail, we would pause to remove it from the wire.

   (a) A snatch block was hung at the cleat on the bow and the 5/8" line was run through it. The load was taken from the 5/8" line by a second line tied to it with a stopper knot.

   (b) The 5/8" line was then connected to the air tugger and the line was hauled in.

   (c) As the line was retrieved, each instrument needed to be cut off of the line to allow it to pass through the block.

   (d) When the weight came to the surface, the end of the 1/8" line was retrieved and tied off to the davit and winch, and the weight was brought onboard.

[8]The winch on the davit is temperamental. It does not have a brake and will continue winding in the direction for some time after the button has been released. When the weight is on, and it is being lowered, the only way to halt the descent (if going too fast) is to hit the "up" button. It works fine in the up direction unless there is no load, in which case it takes a couple of seconds to stop winding. The relay on the down button sometimes gets "stuck" and the up button needs to be pressed to "unstick" the down relay.

Figure 35: Metal pole mounted on the starboard beam for the 1200 kHz ADCP.

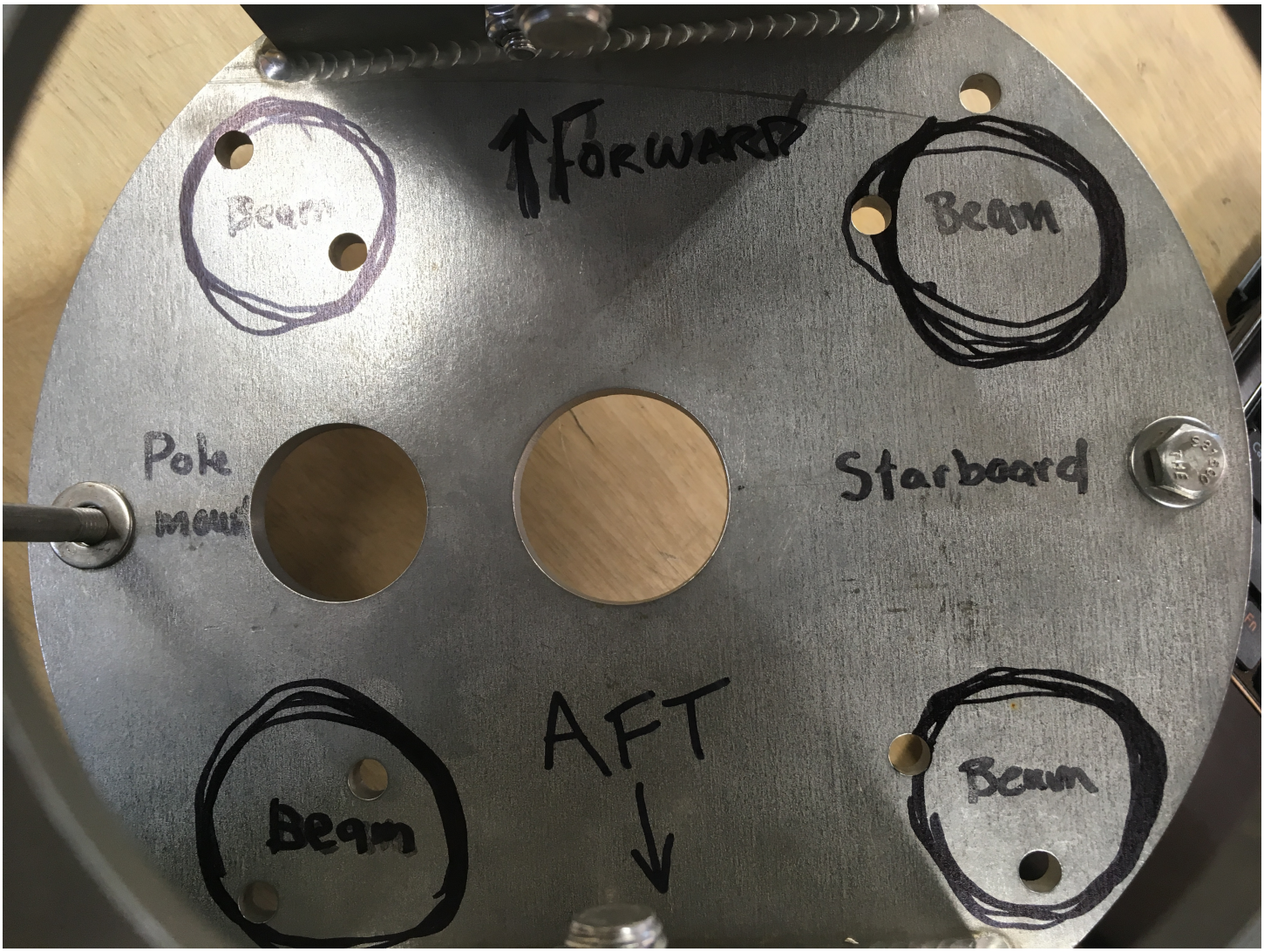



Figure 36: Flange connecting the 1200 kHz ADCP to the metal pole, indicating the orientation of the four beams.

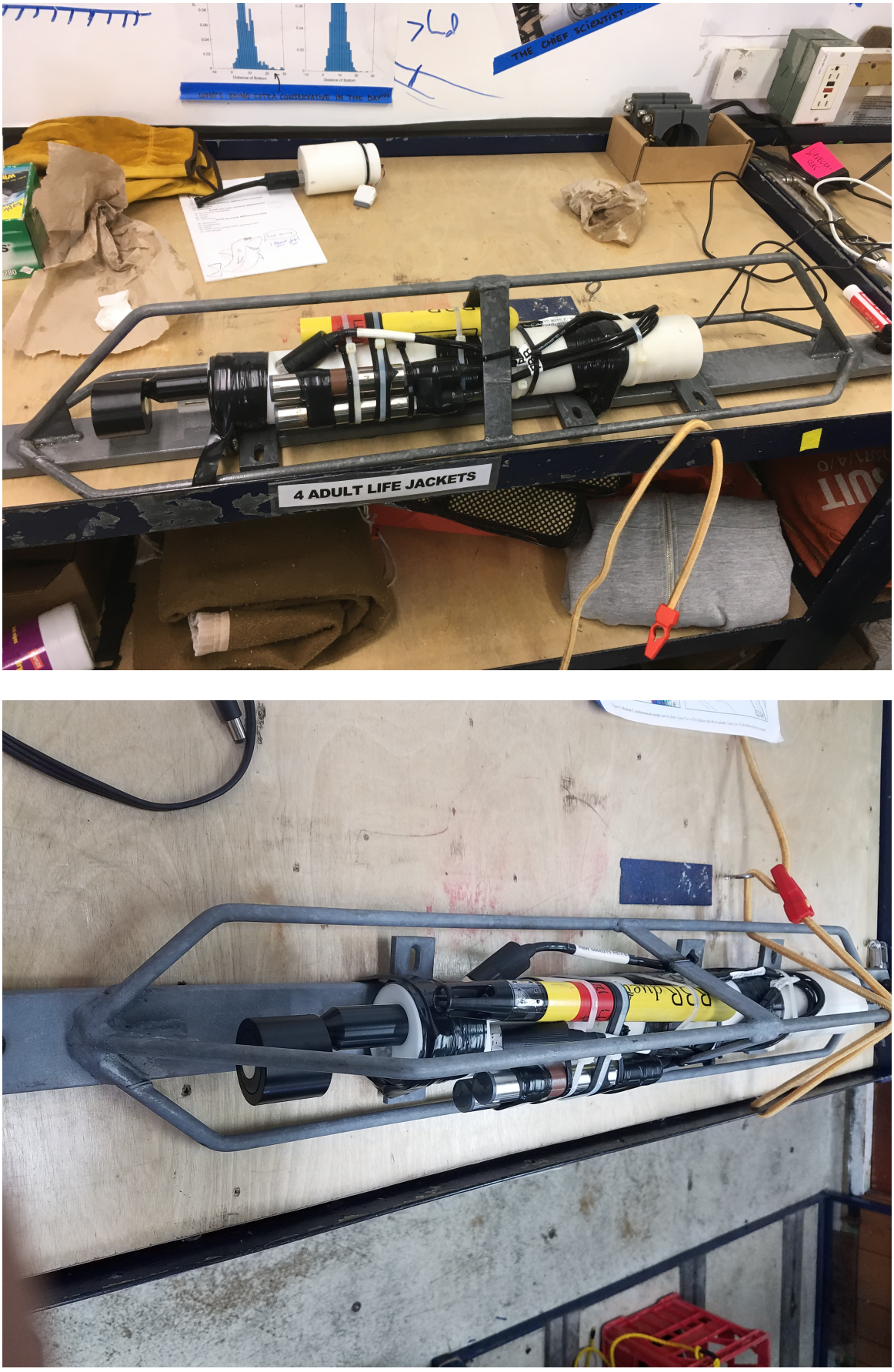



Figure 37: The uCTD package, comprised of a RBR Concerto with fluorometry sensors sampling at 6 Hz and an RBR Duet (temperature and pressure sensors) sampling at 16 Hz, both encased in a steel crash guard and attached to the fishing reel line through a small swivel.


Figure 38: Deck configuration of the fishing reel used for towing the uCTD package.

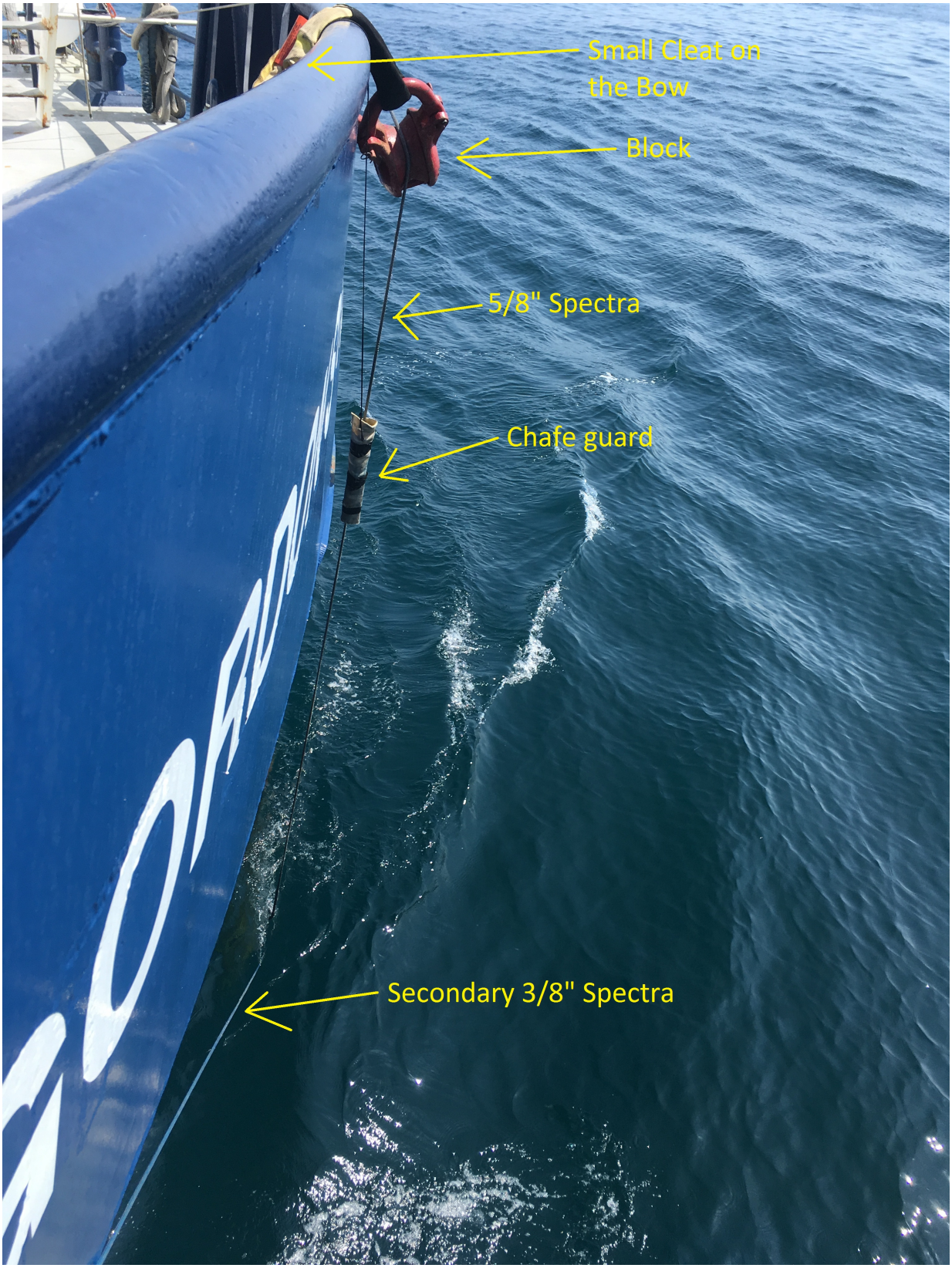



Figure 39: Bow chain installation over the rail on the port bow.

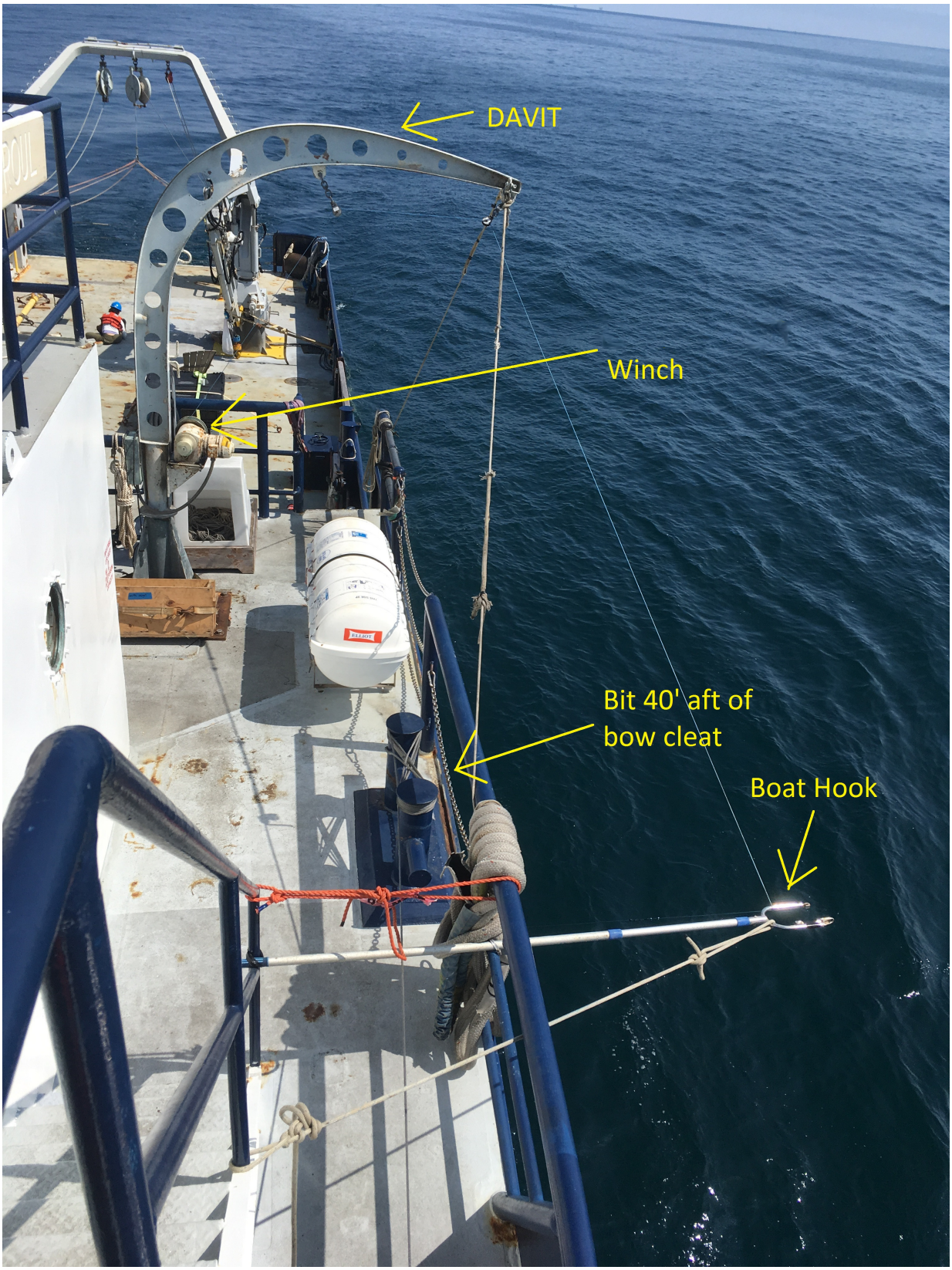



Figure 40: Deck configuration of the davit used for recovering and deploying the bow chain, showing the recovery line (1/8″ spectra) spooled on the davit's electric winch and the boat hook used to prevent the recovery line from chafing against the hull.

| | |
|---|---|
| **Echosounder** | Does signal appear in range on screen - can you see black on the screen?<br>If not, reset range. |
| **300 kHz ADCP** | On the 5-min plot:<br>1. Are all the boxes green?<br>2. Is the timestamp correct?<br>3. Are any plots blank? |
| **Pole ADCP** | Is the pole vibrating?<br>Is there kelp attached?<br>Does anything look loose? |
| **Bow chain, cleat** | Perform a visual inspection. Is any kelp (or other matter) attached at the surface? |

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jeff Coogan | 9/12 08:05 | 35 01.249 | 120 42.955 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

Calm, Nothing interesting

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jess Garwood | 9/12 09:02 | 35 00.256 | 120 43.074 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

calm, depth constant, uCTD lowered to 200 ft of line, ~2 knots

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| María Y. Torres | 9/12 09:52 | 34 58.559 | 120.43264 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| | |
|---|---|
| **Echosounder** | Does signal appear in range on screen - can you see black on the screen?<br>If not, reset range. |
| **300 kHz ADCP** | On the 5-min plot:<br>1. Are all the boxes green?<br>2. Is the timestamp correct?<br>3. Are any plots blank? |
| **Pole ADCP** | Is the pole vibrating?<br>Is there kelp attached?<br>Does anything look loose? |
| **Bow chain, cleat** | Perform a visual inspection. Is any kelp (or other matter) attached at the surface? |

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| SAHRA | 9/12 11:02 | 35 00.570 N | 123 43.019 W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

Nothing interesting or unusual to report.

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jaff | 11:55 9/12 | 34 59.917 | 120 43.087 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| ~~Alice~~ Julia | 12:58 9/12 | 34 59.190 N | 120 43.21 W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

I felt like I could see some bioluminescence around the bow chain torpedo... but may be not

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Alice | 13:58 9/12 | 35.00.858 | 120 43.002 W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| | |
|---|---|
| **Echosounder** | Does signal appear in range on screen - can you see black on the screen?<br>If not, reset range. |
| **300 kHz ADCP** | On the 5-min plot:<br>1. Are all the boxes green?<br>2. Is the timestamp correct?<br>3. Are any plots blank? |
| **Pole ADCP** | Is the pole vibrating? Correct timestamp? If no, then it's stalled/no longer collecting data. To restart, click blue triangle in top corner. If error, find Kate/Andre.<br>Is there kelp attached?<br>Does anything look loose? |
| **Bow chain, cleat** | Perform a visual inspection. Is any kelp (or other matter) attached at the surface? |

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Alice | 14:59 9/12 | 34.59.869N | 120 43.113W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Praneeth | 15:58 9/12 | 34.58.418N | 120.43.277W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Manuel / Julia | 16:56 9/12 | 34° 58.570N | 120° 42.036W | ✓ | ✓ | ✓ | |

Notes (current activities, weather, interesting observations, surface fronts)

can't see where enters water → under ship?

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| ~~Julia~~ Alice | 18:10 9/12 | 34 53.470N | 120 42.591W | ✓ | ✓ | ✓ | ) |

Notes (current activities, weather, interesting observations, surface fronts)

Not good: at 4 knots, first sensor on bow chain out of water, slowed down to 3 knots, all sensors in water; the waited recovery line also popped off of brace at 4 knots.

| | |
|---|---|
| Echosounder | Does signal appear in range on screen - can you see black on the screen?<br>If not, reset range. |
| 300 kHz ADCP | On the 5-min plot:<br>1. Are all the boxes green?<br>2. Is the timestamp correct?<br>3. Are any plots blank? |
| Pole ADCP | Is the pole vibrating?<br>Is there kelp attached?<br>Does anything look loose? |
| Bow chain, cleat | Perform a visual inspection. Is any kelp (or other matter) attached at the surface? |

Pole ADCP screen ☐
Walk to Fluorometer ☐

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Praneeth | 18:68 9/12 | 34.52.262N | 120.42.698W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Julia | 19:02 9/12 | 34 52.242N | 120 41.879W | ✓ | 2 mins slow | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Alice Ren | 19:58 9/12 | 3452.292N | 120 39.008W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)
Bow chain instruments good w/ cruising at 2 knots approx.

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Manuel | 20:59 9/12 | 34° 52.295N | 120° 41.032W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| | |
|---|---|
| **Echosounder** | Does signal appear in range on screen - can you see black on the screen?<br>If not, reset range. |
| **300 kHz ADCP** | On the 5-min plot:<br>1. Are all the boxes green?<br>2. Is the timestamp correct?<br>3. Are any plots blank? |
| **Pole ADCP** | Is the pole vibrating?<br>Is there kelp attached?<br>Does anything look loose? |
| **Bow chain, cleat** | Perform a visual inspection. Is any kelp (or other matter) attached at the surface? |

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Praneeth | 21:48:45 | 34.52.264N | 120.42.805W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)
Making turn, recovering uCTD, download data, redeploy.

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Julia | 22:59 | 3452.307 N | 120 40.173 W | ✓ | 2 mins slow ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Alice | 23:52 9/12 | 34 524 N | 120 40443 W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Praneeth | 00:45: 9/12 | 3452.360N | 120.42.752W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)
uCTD recovered,

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jess Garwood | 09/13 | - | - | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

all good

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Maria Y. Torres | 09/13 01:56 | 34 52.718 | 120 40.988 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| SAHRA WEBB | 9/13 2:51:25 | 34 52.475N | 120 40.867W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jeff Coogan | 3:57 9/13 | 34 53.038 | 120 42.340 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jess Garwood | 05:01 9/13 | 34 53.505 | 120 42.353 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

calm

| | |
|---|---|
| **Echosounder** | Does signal appear in range on screen - can you see black on the screen?<br>If not, reset range. |
| **300 kHz ADCP** | On the 5-min plot:<br>1. Are all the boxes green?<br>2. Is the timestamp correct?<br>3. Are any plots blank? |
| **Pole ADCP** | Is the pole vibrating?<br>Is there kelp attached?<br>Does anything look loose? |
| **Bow chain, cleat** | Perform a visual inspection. Is any kelp (or other matter) attached at the surface? |

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Maria J. Torres | 09/13 05:52 | 34 52.421 | 120 40.979 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| SAHRA WEBB | 9/13 7:00 | 34 52.450N | 120 41.513W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jeff Coogan | 07:59 9/13 | 34 53.990 | 120 42.392 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jess Garwood | 09/13 08:54 | 34 53.10 | 120. 42.39 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

huge scattering blob extending to 20 m in shipboard ADCP data

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Maria Y. Torres | 09/13 09:53 | 34 52.480N | 120.40.300W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| SAHRA WEBB | 11.00 | 34 53.063N | 120 42.382W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

Everything is good. Calm Weather

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jeff Coogan | 11:59 9/13 | 34 53.565 | 120 42.448 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Julia Dohner | 12:57 9/13 | 34 52.471 | 120 40.913 | ~~1 min slow~~ ✓ | 1 min slow | 2 mins slow JLD | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Praneeth | 15:18:36 9/13 | 34:56:761N | 120 43.162W | ✓ | 30s ahead | ✓ | No Bow chain |

Notes (current activities, weather, interesting observations, surface fronts)

Bow chain recovered @ before breakfast.

| | |
|---|---|
| **Echosounder** | Does signal appear in range on screen - can you see black on the screen?<br>If not, reset range. |
| **300 kHz ADCP** | On the 5-min plot:<br>1. Are all the boxes green?<br>2. Is the timestamp correct?<br>3. Are any plots blank? |
| **Pole ADCP** | Is the pole vibrating?<br>Is there kelp attached?<br>Does anything look loose? |
| **Bow chain, cleat** | Perform a visual inspection. Is any kelp (or other matter) attached at the surface? |

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Manuel | 16:14 9/13 | 34° 58.963N | 120°43.204W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

Starting the butterfly like transect ← All data downloaded and ready to deploy.

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Julia | 16:58, 9/13 | 34 58.298N | 120 43.269W | ✓ | 1 min slow | ✓ | deploying |

Notes (current activities, weather, interesting observations, surface fronts)

~~16:02~~ 17:02 bowchain deployed (deployment #2)

JLD

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Alice | 17:55 9/13 | 35 00.120N | 120 43.084W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

Very calm water still.

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Praneeth | 18:40 9/13 | 35 01.048N | 120 42.259W | ✓ | 15s ahead | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Alice | 19:56 9/13 | 34 59.431 N | 120 40.625 W | ✓ | ✓ | ✓ | ✓ |

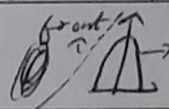
Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Manuel | 20:55 9/13 | 34° 56.872 N | 120° 41.287 W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)
Ship moving at 3 knots, moving "parallel" to smaller boats. Green water close to shore (~30.0m). Ship stopped and CTD was brought to the surface.

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Praneeth | 21:48 9/13 | 34.58.232 N | 120.40.825 W | ✓ | 30s ahead | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)
22:24:00 (UTC) crossing front / internal wave




Problem with winch

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Julia | 22:56:08 ~~Sep~~ 9/13 | 3900.683 N | 120 40.260 W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)
maybe seaweed attached?

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

Notes (current activities, weather, interesting observations, surface fronts)

| | |
|---|---|
| **Echosounder** | Does signal appear in range on screen - can you see black on the screen?<br>If not, reset range. |
| **300 kHz ADCP** | On the 5-min plot:<br>1. Are all the boxes green?<br>2. Is the timestamp correct?<br>3. Are any plots blank? |
| **Pole ADCP** | Is the pole vibrating?<br>Is there kelp attached?<br>Does anything look loose? |
| **Bow chain, cleat** | Perform a visual inspection. Is any kelp (or other matter) attached at the surface? |

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Manuel | 0:35 9/14 | 34°59.501'N | 120°43.158'W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Praneeth | 00:43: 9/14 | 34°59.121N | 120°43.197W | ✓ | N30s ahead | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| María Y. Torres | 9/14 02:02 | 34 58.036N | 120 41.115W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)
check bow chain and CTD. Weather ok.!

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| SAHRA WEBB | 02:54 | 34 59.459N | 120 40.616W | ✓ | kind of | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)
Calm Weather, nothing interesting

time - 2:50:30
boxes green ✓

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jeff Coogan | 9/14 4:03 | 35 00.913 | 120 41.598 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

ALF had stoped running

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jess Garwood | 9/14 4:58 | 34 59.66 | 120 43.14 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

ALF back up & running (André restarted the program)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Maria Y. Jones | 09/14 05:54 | 34 58.199 N | 120 42.059 W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| SARA WEBB | 6:57 | 3459.514 | 12040.620 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jeff Coogan | 9/14 08:00 | 35, 00.943 | 120, 41.891 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| | |
|---|---|
| **Echosounder** | Does signal appear in range on screen - can you see black on the screen?<br>If not, reset range. |
| **300 kHz ADCP** | On the 5-min plot:<br>1. Are all the boxes green?<br>2. Is the timestamp correct?<br>3. Are any plots blank? |
| **Pole ADCP** | Is the pole vibrating?<br>Is there kelp attached?<br>Does anything look loose? |
| **Bow chain, cleat** | Perform a visual inspection. Is any kelp (or other matter) attached at the surface? |

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jessica Garwood | 9/14 08:56 | 34 59.668 | 120 43.153 | ✓ | ✓ | ✓ | fuzz by cleat |

Notes (current activities, weather, interesting observations, surface fronts)

↳ scatterers @ 32 m?

reel needs to go slow on short side of box (current strong alongshore?)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| María Y. Torres | 9/14 09:56 | 34 58.200 N | 120 42.140W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| SAMRA WEBB | 10:53 9/14 | 3459.348 | 120 40.641 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

Anything else? Great, it's cold but the water is calm.

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jeff Coogan | 9/14 12:02 | 35 00.984 | 120 42.062 | ✓ | | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

UHDAS screen froze, says ADCP is still logging

| Name | Date & Time (UTC) 9/14 | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Julia | 13:32:33 | 3458.502N | 120 43.284W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)
meeting > 12:55 – CTD recovered 13:28 turning
13:25 – CTD redeployed 13:33 finished turning, CTD back in water

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Alice | | 34 57.602N | 120 42.91 W | ✓ | ✓ | ✓ | |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Manuel | 14:47 9/14 | 34° 56.927 N | 120° 40.799W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)
Starting turn for leg 2, CTD back in water 14:51

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Manuel | 16:00 9/14 | 34°58.227N | 120° 42.477W | ✓ | ✓ | | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)
Starting turn, box 1 leg 4 - CTD redeployed (16:04)
Problem with pressure sensor → Not reporting data internally but still recording

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Julia | 17:01 9/14 | 34 57052 N | 12041.259 W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| | |
|---|---|
| **Echosounder** | Does signal appear in range on screen - can you see black on the screen?<br>If not, reset range. |
| **300 kHz ADCP** | On the 5-min plot:<br>1. Are all the boxes green?<br>2. Is the timestamp correct?<br>3. Are any plots blank? |
| **Pole ADCP** | Is the pole vibrating?<br>Is there kelp attached?<br>Does anything look loose? |
| **Bow chain, cleat** | Perform a visual inspection. Is any kelp (or other matter) attached at the surface? |

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Alice | 17:55 9/14 | 34 57.996N | 120.41.178W | ✓ | ✓ | ✓ | Under the ship... |

Notes (current activities, weather, interesting observations, surface fronts)

18:13 - checked again, hose guard in better position. Also, the hose guarding the line on the bow is off, line is against ship. couldn't see instruments off bow.

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Alice | 19:58 9/14 | 34 57.601N | 120 40.594W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

Still can't see instruments ; talked to Spencer, OK.

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Julia | 22:56:32 9/14 | 34 57.394 N | 120 42.687 W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

Installed bowchain at 22:30, redeploying CTD (22:57)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jessica Garwood | 01:14 9/15 | 34, 57.63 | 120 42.65 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

Are we cutting corners in our box? / wind picking up (15 knot winds, ship going 3 knots in South direction) using only one engine

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Maria Y. Torres | 09/15 01:59 | 34 57.949 N | 120 41.086W | ✓ | ✓ | ✓ | |

Notes (current activities, weather, interesting observations, surface fronts)
We start leg 2 of box 5.

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| SARA WEBB | 2:51 | 3457.910 | 120 40.737 | Not Working, Mostly White | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jeff Coogan | 04:23 9/16 | 34 57.088 | 120 42.524 | Noise | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jess Garwood | 04:59 9/15 | 34 56.95 | 120 41.21 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)
pattern now a triangle b/c of strong current/swell

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Maria Y. Torres | 9/15 05:43 | 34 57355N | 120 41.335W | ✓ | ✓ | | |

Notes (current activities, weather, interesting observations, surface fronts)

| | |
|---|---|
| Echosounder | Does signal appear in range on screen - can you see black on the screen?<br>If not, reset range. |
| 300 kHz ADCP | On the 5-min plot:<br>1. Are all the boxes green?<br>2. Is the timestamp correct?<br>3. Are any plots blank? |
| Pole ADCP | Is the pole vibrating?<br>Is there kelp attached?<br>Does anything look loose? |
| Bow chain, cleat | Perform a visual inspection. Is any kelp (or other matter) attached at the surface? |

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jeff Coogan | 6:06 9/15 | 34 57.583 | 120 41.622 | ~~✓~~ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jess Garwood | 7:03 9/15 | 34 57.78 | 120 42.63 | ✓ | ✓ | ~ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)
ADCP metal wire bent & looks like it stripped part of ship's bumper sleeve on bow chain could be lower.

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| SARA WEBBS | 9/15 8:04 | 3456.910 | 12041.181 | ~~[illegible]~~ ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)
Cold af. ;; sorry!

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jess Garwood | 9/15 9:06 | 3458.08 | 120 42.27 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jeff Coogan | 10:05 9/15 | 34 57.002 | 120 42.350 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

Recovery line on bow chain came free of stand off block

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jess Garwood | 11:04 9/15 | 34 57.51 | 120 41.56 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

Guessing 6-ft swell, can't wait to recover instrument...

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| SAARA WEBB | 12:00 9/15 | 34 57.433 | 120 42.659 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

Everything is peachy.

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Alice | 17:40 9/15 | 35 01.584N | 120 39.416W | ✓ | No Screen Showing | Weird output | Out of Water, N/A |

Notes (current activities, weather, interesting observations, surface fronts)

17:48, working, limited data plotting. Mentioned to André

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Alice | 23:50 9/15 | 35 09.578 N | 120 44.189W | ✓ | Data plot missing | ✓ logging | Out of Water N/A |

Notes (current activities, weather, interesting observations, surface fronts)

We are sheltering in Bay near Avila Beach.

Forward Line is under mud bumper.

| | |
|---|---|
| **Echosounder** | Does signal appear in range on screen - can you see black on the screen?<br>If not, reset range. |
| **300 kHz ADCP** | On the 5-min plot:<br>1. Are all the boxes green?<br>2. Is the timestamp correct?<br>3. Are any plots blank? |
| **Pole ADCP** | Is the pole vibrating?<br>Is there kelp attached?<br>Does anything look loose? |
| **Bow chain, cleat** | Perform a visual inspection. Is any kelp (or other matter) attached at the surface? |

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jess Garwood | 09/16 04:43 | 35 08.18 | 120 42.15 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

Kelp on bowchain & recovery line

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jeff Coogan | 9/16 5:23 | 35 07.470 | 120 40.528 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

Kelp on bowchain & recovery line still & Kelp on ADCP was removed

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jeff Coogan | 9/16 6:28 | 35 05.417 | 120 39.545 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jess Garwood | 9/16 7:38 | 35 04.25 | 120. 39.59 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

Kelp on bowchain.

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jeff Coogan | 8/34 9/16 | 35 06.340 | 120 39.758 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jess Garwood | 9:39 9/16 | 35 08.09 | 120 41.98 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Maria Y. Torres | 9/16 10:44 | 35 08.774N | 120 44.094W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jeff Coogan | 9/16 12:32 | 35 06.733 | 120 39.493 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Julia | 9/16 13:49 | 3504.028 N | 12039.696 W | Smoff depth sndr | ✓ | ✓ | Kelp @ top |

Notes (current activities, weather, interesting observations, surface fronts)
Will monitor Kelp on bowchain

| | |
|---|---|
| Echosounder | Does signal appear in range on screen - can you see black on the screen?<br>If not, reset range. |
| 300 kHz ADCP | On the 5-min plot:<br>1. Are all the boxes green?<br>2. Is the timestamp correct?<br>3. Are any plots blank? |
| Pole ADCP | Is the pole vibrating?<br>Is there kelp attached?<br>Does anything look loose? |
| Bow chain, cleat | Perform a visual inspection. Is any kelp (or other matter) attached at the surface? |

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Julia + Praneeth | 15:00 9/16 | 3503.275N | 120 42.077W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

ALF ✓ Bow chain vibrating a bit

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Alize | 18:00 9/16 | 35 03672N | 120 44723W | ✓ | ✓ | ✓ logging | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

↓ Just redeployed

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Manuel | | | | | | | |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Julia | 18:58 9/16 | 3503.060 | 12041.992 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Alice | 9/16 19:58 | 35 00 836N | 120 42.133W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

Started long skinny box, focused on alongshore: ∥ ⫽ cast

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Manuel | 9/16 21:03 | 34° 59.639 | 120° 43.058 | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

RV Oceanus on port side of Sperovl.

4 Both sounder giving same depth.

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Praneeth | 9/16 21:59 | 35 01.722N | 120 42.801W | ✓ | ✓ | ✓ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

1st Thermistor occassionally out of water due to waves.

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jess Garwood | 9/17 02:18 | 35 07.89 | 120 44.85 | ✓ | ✓ | out | out |

Notes (current activities, weather, interesting observations, surface fronts)

ADCP & bowchain are out for good., steaming to ~~C5W~~ C3W

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| SAHRA WEBB | 3:24 9/16 | 3503.105 | 12045.007 | ✓ | ✓ | N/A | N/A |

Notes (current activities, weather, interesting observations, surface fronts)

| | |
|---|---|
| Echosounder | Does signal appear in range on screen - can you see black on the screen?<br>If not, reset range. |
| 300 kHz ADCP | On the 5-min plot:<br>1. Are all the boxes green?<br>2. Is the timestamp correct?<br>3. Are any plots blank? |
| Pole ADCP | Is the pole vibrating?<br>Is there kelp attached?<br>Does anything look loose? |
| Bow chain, cleat | Perform a visual inspection. Is any kelp (or other matter) attached at the surface? |

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| María Y. Torres | 9/17 04:02 | 35 01.603N | 120 44.745W | ✓ | ✓ | out | out. |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| María Y. Torres | 9/17 06:15 | 34 55.597N | 120 44.357W | ✓ | ✓ | N/A | N/A. |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| María Y. Torres | 9/17 07:19 | 3453.132N | 120 43.955W | ✓ | ✓ | — | — |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jessica Garwood | 9/17 07:59 | 34 51.69 | 120 43.73 | ✓ | ✓ | N/A | N/A |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jessica Garwood | 9/17 09:03 | 34 49.45 | 120 43.20 | ✓ | ✓ | N/A | N/A |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Maria Y. Torres | 9/17 10:35 | 34 46.191 N | 120 42.297W | ✓ | ✓ | — | — |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Maria Y. Torres | 9/17 11:38 | 34 43.814 N | 120 42.570 W | ✓ | ✓ | — | — |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jessica Garwood | 9/17 12:49 | 34 41.40 | 120 42.86 | ✓ | ✓ | Ø | Ø |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Alice | 9/17 13:49 | 34 39.154N | 120 42.611W | ✓ | ✓ | Ø | Ø |

Notes (current activities, weather, interesting observations, surface fronts)

| | |
|---|---|
| Echosounder | Does signal appear in range on screen - can you see black on the screen?<br>If not, reset range. |
| 300 kHz ADCP | On the 5-min plot:<br>1. Are all the boxes green?<br>2. Is the timestamp correct?<br>3. Are any plots blank? |
| Pole ADCP | Is the pole vibrating?<br>Is there kelp attached?<br>Does anything look loose? |
| Bow chain, cleat | Perform a visual inspection. Is any kelp (or other matter) attached at the surface? |

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Alice | 14:49 9/17 | 34 36.598 N | 120 42.246 W | ✓ | ✓ | — | — |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Alice | 17:11 9/17 | 34 31.750 N | 120 38.860 W | ✓ | ✓ | N/A | N/A |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Julia | 19:42 9/17 | 34 29.76 N | 120 33.489 W | ✓ | ✓ | — | — |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Manuel | 21:01 9/17 | 34° 22.291 N | 120° 30.622 W | ✓ | ✓ | — | — |

Notes (current activities, weather, interesting observations, surface fronts)
UCTD was had seaweed & CTD recovered and redeployed after removing the seaweed.

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Praneeth | 22:00 9/17 | 34.26.026N | 120.28.111W | ✓ | ✓ | — | — |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Julia | 23:06 9/17 | 3425.408 N | 12024.653 W | ✓ | ✓ | — | — |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Alice | 24:02 9/17 | 34 25.092 N | 120 27.761W | ✓ | ✓ | — | — |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Maria Y. Torres | 9/18 01:00 | 34 25.829N | 120 18.756W | ✓ | ✓ | — | — |

Notes (current activities, weather, interesting observations, surface fronts)
[redacted] night shift. begins.

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| María Y. Torres | 9/18 03:02 | 34 26.841 N | 120 13.310 W | ✓ | ✓ | — | — |

Notes (current activities, weather, interesting observations, surface fronts)

| | |
|---|---|
| **Echosounder** | Does signal appear in range on screen - can you see black on the screen?<br>If not, reset range. |
| **300 kHz ADCP** | On the 5-min plot:<br>1. Are all the boxes green?<br>2. Is the timestamp correct?<br>3. Are any plots blank? |
| **Pole ADCP** | Is the pole vibrating?<br>Is there kelp attached?<br>Does anything look loose? |
| **Bow chain, cleat** | Perform a visual inspection. Is any kelp (or other matter) attached at the surface? |

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| SAHRA WEBB | 4:05 9/17 | 3427.037 | 120 10.350 | ✓ | ✓ | — | — |

Notes (current activities, weather, interesting observations, surface fronts)

Calm Weather

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Maria Y. Torres | 9/18 5:42 | 34 26.592N | 120 05.648W | ✓ | ✓ | — | — |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jeff Coogan | 9/18 6:02 | 34 26.556 | 120 04.748 | ✓ | ✓ | — | — |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jess Garwood | 9/18 7:08 | 34 25.99 | 120 01.79 | ✓ | ✓ | ∅ | ∅ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jeff Coogan | 9/18 08:00 | 34 25.244 | 119 59.426 | ✓ | ✓ | — | — |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Maria Y. Torres | 9/18 08:58 | 34 24.413N | 119. 56.711W | ✓ | ✓ | — | — |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jess Garwood | 9/18 10:30 | 34 23.25 | 119 52.23 | ✓ | ✓ | ø | ø |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jeff Coogan | 9/18 11:09 | 34 23.16 | 119 49.959 | ✓ | ✓ | — | — |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Maria Y Torres | 9/18 12:01 | 34 23.001N | 119 47.335W | ✓ | ✓ | — | — |

Notes (current activities, weather, interesting observations, surface fronts)

| | |
|---|---|
| Echosounder | Does signal appear in range on screen - can you see black on the screen?<br>If not, reset range. |
| 300 kHz ADCP | On the 5-min plot:<br>1. Are all the boxes green?<br>2. Is the timestamp correct?<br>3. Are any plots blank? |
| Pole ADCP | Is the pole vibrating?<br>Is there kelp attached?<br>Does anything look loose? |
| Bow chain, cleat | Perform a visual inspection. Is any kelp (or other matter) attached at the surface? |

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Braeeth | 9/18 15:31 | 34·23·660N | 119·46·671W | ✓ | ✓ | — | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

Kelp on Bow chain - Jeremiah working on it

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Julia | 9/18 17:11 | 34 23.183N | 119 48.84W | ✓ | ✓ | — | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

Still kelp visible on bowchain, Spotted weird Kelp/oil, took sample.

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| André | 9/18 18:52 | 34°22.93' | 119°42.88 | ✓ | ✓ | — | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

kelp on bow chain X

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Alice Ren | 20:02 9/18 | 34 23.274N | 119 44.820W | ✓ | ✓ | /////// | still has kelp |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Manuel | 21:03 9/18 | 34° 23.890 N | 119° 47.503 W | ✓ | ✓ | — | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Praneeth | 21:56 9/18 | 34·23·930N | 119·69.589W | ✓ | ✓ | — | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

Kelp on Bow chain., Back on weird Kelp/oil line at 21:59.

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Julia | 23:02 9/18 | 34 22.993 N | 119 47.158W | ✓ | ✓ | — | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

Still kelp!

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| María Y. Torres | 9/19 01:38 | 34 23.427N | 119 45.745N | ✓ | ✓ | — | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jeff Corgan | 9/19 03:04 | 34 23.866 | 119 49.650 | ✓ | ✓ | — | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| | |
|---|---|
| Echosounder | Does signal appear in range on screen - can you see black on the screen?<br>If not, reset range. |
| 300 kHz ADCP | On the 5-min plot:<br>1. Are all the boxes green?<br>2. Is the timestamp correct?<br>3. Are any plots blank? |
| Pole ADCP | Is the pole vibrating?<br>Is there kelp attached?<br>Does anything look loose? |
| Bow chain, cleat | Perform a visual inspection. Is any kelp (or other matter) attached at the surface? |

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Maria | 9/19 03:51 | 34 23.153 N | 119 48.510 W | ✓ | ✓ | — | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| SAHRA WEBB | 4:33 9/19 | 3422.970 | 11946.987 | ✓ | ✓ | — | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jess Garwood | 9/19 05:32 | 34 22.74 | 119 44.92 | ✓ | ✓ | ∅ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| SAHRA WEBB | 6:32 9/19 | 3422.980 | 11943.275 | ✓ | ✓ | — | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jeff Coogan | 7:00 9/19 | 34 23.249 | 119.44.785 | ✓ | ✓ | — | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

bioluminescence at bowchain

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| ~~Jess~~ Maria | 9/19 08:04 | 34 23.891N | 119 47.850W | ✓ | ✓ | — | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Jess Garwood | 09/19 09:21 | 34 23.18 | 119 48.79 | ✓ | ✓ | ⌀ | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| SARA WEBB | 9/19 10:32 | 3422.828 | 11945.666 | ✓ | ✓ | — | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

Notes (current activities, weather, interesting observations, surface fronts)

| | |
|---|---|
| **Echosounder** | Does signal appear in range on screen - can you see black on the screen?<br>If not, reset range. |
| **300 kHz ADCP** | On the 5-min plot:<br>1. Are all the boxes green?<br>2. Is the timestamp correct?<br>3. Are any plots blank? |
| **Pole ADCP** | Is the pole vibrating?<br>Is there kelp attached?<br>Does anything look loose? |
| **Bow chain, cleat** | Perform a visual inspection. Is any kelp (or other matter) attached at the surface? |

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Manuel | 9/19 11:11 | 34° 22.625N | 119° 43.823W | ✓ | ✓ | – | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Praneeth | 9/19 13:54 | 34 23.955N | 119.68.986W | ✓ | ✓ | – | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Manuel | 9/19 15:09 | 34° 23.070 N | 119° 47.792W | ✓ | ✓ | – | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)
14:30 → starting box 5 leg 4

| Name | Date & Time (UTC) | LAT | LON | X-Sounder | 300 kHz ADCP | Pole ADCP | Bow chain, cleat |
|---|---|---|---|---|---|---|---|
| Manuel | 9/19 16:02 | 34° 22.785 N | 119° 45.323 | ✓ | ✓ | – | ✓ |

Notes (current activities, weather, interesting observations, surface fronts)

UTC

22

→ 15:12 Stop[redacted] ship. for calibration cast
→ 15:18 Introwzut in water.
→ 15:20 at 10 m.
↓ 15:25. surface
↓ 15:29 at 75 m (76.8 m Depth ust.) (+5 min)
→ 15:35 at 50 m (52.28 m. " ") (+5 min)
→ 15:41 at 25 m (27.58 m " " (+5 min)
→ 15:47 at 10 m (12.79 m " ") (+5 min)
→ 15:53 at surface.
→ 15:57 CTD on deck.

Shallow - free fall calibration

Sept. 12, 2017 ~12:45 (UTC)

Ship speed: ~2.5 knots (going North) → couldn't slow down to 2.0 knots

| Predicted depth (m) | | Payout (ft) | |
|---|---|---|---|
| (15) | 10.9 | (45) | 47 |
| (20) | 14.9 | (90) | 91 |
| (25) | 20.97 | (135) | 136 |
| (30) | 31.37 | (180) | 180 |

Ship speed: 2.0 knots

| | |
|---|---|
| ? | (45) |
| ? | (90) |
| ? | (135) |
| ? | (180) |

- 100/200 payouts → where

**SCoNE bow chain logsheet (1)**

Bow chain build time (UTC): 04:31 - Sept. 11, 2017 Jess CG

Deployment Date Time (UTC): ~~13~~ 13:30 - Sept 13, 2017 Julia Dohner

Recovery Date Time (UTC): _____

| Line length (m) | | | Instrument | | Serial # | | |
|---|---|---|---|---|---|---|---|
| Depth check | Top - 0 | | | | ~~100~~ | | |
| - ✓ ~~20~~ | 1 | | RBR Solo | | 100153 | | |
| - ✓ ~~19~~ | 2 | | RBR Solo | | 100154 | | JLD 9/13 |
| - ~~18~~ ✓ | 3 | 2.5 | Fluo RBR Concerto | | 652 | 060381 ~~60388~~ | ✓ |
| - ✓ ~~17~~ | 4 | | RBR Solo | | 100156 / 101164 | | no data, removing replacement |
| - ✓ ~~16~~ ✓ | 5 | 5.5 | RBR Solo | Fluo | 100157 | 656 | |
| - ✓ ~~15~~ ✓ | 6 | 6.5 | RBR Solo | DUET | 100158 | 82507 | |
| - ✓ ~~14~~ | 7 | | RBR Solo | | 100159 | | + ~~12~~ sec drift |
| - ✓ ~~13~~ | 8 | | RBR Solo | | 100160 | | |
| - ✓ ~~12~~ | 9 | | RBR Solo | | 100161 | | → removed blue tape (?) on sensor (small •) |
| - ~~11~~ ✓ | 10 | 9.5 | Concerto | Fluo | 60166 | 653 | |
| - ✓ ~~10~~ | 11 | | RBR Solo | | 100162 | | |
| - ✓ ~~9~~ | 12 | | RBR Solo | | 100696 | | |
| - ✓ ~~8~~ | 13 | | RBR Solo | | 100886 | | ~~11~~ sec drift |
| - ✓ ~~7~~ ✓ | 14 | 14.5 | RBR Solo | DUET | 101158 ✓ | 82490 | (? or 82990) |
| - ✓ ~~6~~ | 15 | | RBR Solo | | 101159 | | |
| - ✓ ~~5~~ | 16 | | RBR Solo | | 101160 | | -9 sec drift |
| - ✓ ~~4~~ | 17 | | RBR Solo | | 101161 | | |
| - ✓ ~~3~~ | 18 | | RBR Solo | | 101162 | | |
| - ~~2~~ | 19 | | Concerto | | (60528) / 60183 | (cap) | last tape |
| ~~1~~ | ~~20~~ | | ~~Concerto~~ | | ~~60528~~ | | |
| ~~0~~ | bottom | | | | | | |

check board → ~~60528~~ 60183

**SCoNe bow chain logsheet** (2)

**Deployment Date Time (UTC)** 09/14/17 : 9/13 17:00 UTC
**Recovery Date Time (UTC)** 9/14 21:00 UTC

Datafiles?

| Line length (m) | Instrument | Serial # | Initial/Serial # check |
|---|---|---|---|
| top | - | | |
| 1 | RBR Solo | 100153 | ✓ |
| 2 | RBR Solo | 100154 | ✓ |
| 2.5 | ~~Fluorometer~~ | ~~652~~ | 653 replaced w Duet 82507 moved to 19m |
| 3 | Concerto | 060381 | |
| 4 | RBR Solo | 101164 | ✓ |
| 5 | RBR Solo | 100157 | ✓ |
| 5.5 | ~~Fluorometer~~ | ~~656~~ | |
| 6 | RBR Solo | 100158 | ✓ |
| 6.5 | Duet | 82507 | ✓ moved to 3m |
| 7 | RBR Solo | 100159 | ✓ Replaced by Fluorometer 655 |
| 8 | RBR Solo | 100160 | ✓ |
| 9 | RBR Solo | 100161 | ✓ |
| 9.5 | Fluorometer | 654 | ✓ changed ~~to~~ 652 |
| 10 | Concerto | 060166 | ✓ |
| 11 | RBR Solo | 100162 | ✓ |
| 12 | RBR Solo | 100696 | ✓ |
| 13 | RBR Solo | 100886 | ✓ |
| 14 | RBR Solo | 101158 | ✓ |
| 14.5 | Duet | 82490 | ✓ * offline no replacement |
| 15 | RBR Solo | 101159 | ✓ |
| 16 | RBR Solo | 101160 | ✓ Came off |
| 17 | RBR Solo | 101161 | ✓ came off |
| 18 | RBR Solo | 101162 | ✓ CO |
| 19 | Concerto | 060183 | ✓ → weird, data is strange |
| **20** | - | | |
| **bottom** | - | | |

removed 060381 Concerto
replaced w/ ~~Duet 82507~~

**SCoNe bow chain logsheet #3**

| | |
|---|---|
| **Deployment Date Time (UTC)** | 09/14 21:00 UTC |
| **Recovery Date Time (UTC)** | 09/15 14:00 UTC |

| **Line length (m)** | **Instrument** | **Serial #** |
|---|---|---|
| top | - | |
| 1 | RBR Solo | 100153 ✓ |
| 2 | RBR Solo | 100154 ✓ |
| 2.5 | Fluorometer | 653 |
| 3 | Duet | 82507 ✓ |
| 4 | RBR Solo | 101164 ✓ |
| 5 | RBR Solo | 100157 ✓ |
| 5.5 | | |
| 6 | RBR Solo | 100158 ✓ |
| 6.5 | Fluorometer | 655 |
| 7 | RBR Solo | 100159 ✓ |
| 8 | RBR Solo | 100160 ✓ |
| 9 | RBR Solo | 100161 ✓ |
| 9.5 | Fluorometer | 654 |
| 10 | Concerto | 60166 ✓ |
| 11 | RBR Solo | 100162 ✓ |
| 12 | RBR Solo | 100696 ✓ |
| 13 | RBR Solo | 100886 ✓ |
| 14 | RBR Solo | 101158 ✓ |
| 14.5 | | |
| 15 | RBR Solo | 101159 ✓ |
| 16 | RBR Solo | 101160 ✓ ✓ |
| 17 | RBR Solo | 101161 ✓ |
| 18 | RBR Solo | 101162 ✓ |
| 19 | Concerto | 60183 ✓ |
| **20** | - | |
| **bottom** | - | |

**SCoNe bow chain logsheet** 8m bow Chain

**Deployment Date Time (UTC)** 03:00 9/16

**Recovery Date Time (UTC)** 9:10 local (16:10 UTC) 9/16

| | Line length (m) | Instrument | Serial # | Recover Check. |
|---|---|---|---|---|
| | top | - | | |
| 12 | 1 | RBR Solo | 100153 | • |
| 13 | 2 | RBR Solo | 100154 ✓ | • |
| | 2.5 | | | |
| 14 | 3 | ~~Concerto~~ Concerto ~~Duet~~ | ~~060381~~ 60166 ✓ ~~82507~~ | • |
| 15 | 4 | RBR Solo | 101164 ✓ | • |
| 16 | 5 | RBR Solo | 100157 ✓ | • |
| | 5.5 | | | |
| 17 | 6 ✓ | RBR Solo | 100158 ✓ | • |
| | 6.5 | ~~Duet~~ | ~~82507~~ | |
| 18 | 7 ✓ | RBR Solo | 100159 ✓ | • |
| 19 | 8 ✓ | ~~RBR Solo~~ Duet | ~~100160~~ 82507 ✓ | • |
| | 9 | RBR Solo | 100161 | |
| | 9.5 | | | |
| | 10 | Concerto | 60166 | |
| | 11 | RBR Solo | 100162 | |
| | 12 | RBR Solo | 100696 | |
| | 13 | RBR Solo | 100886 | |
| | 14 | RBR Solo | 101158 | |
| | 14.5 | | | |
| | 15 | RBR Solo | 101159 | |
| | 16 | RBR Solo | 101160 | |
| | 17 | RBR Solo | 101161 | |
| | 18 | RBR Solo | 101162 | |
| | 19 | Concerto | 60183 | |
| | **20** | - | | |
| | **bottom** | - | | |

Kate downloaded no changes

**SCoNE bow chain logsheet 05** (same as 06)

| | |
|---|---|
| **Deployment Date Time (UTC):** | 9/18 7:00 local, 14:00 UTC |
| **Recovery Date Time (UTC):** | 9/19 10:00 local, 17:00 UTC |

| Line length (m) | Instrument | Serial Number | Notes |
|---|---|---|---|
| 0 | | | |
| 1 | RBR Solo | 100162 | Done ✓ |
| 2 | RBR Solo | 100696 | Done ✓ |
| 3 | Duet | 82507 | Done ✓ |
| 4 | RBR Solo | 100886 | Done ✓ |
| 5 | RBR Solo | 101158 | Done ✓ |
| 6 | RBR Solo | 101159 | Done ✓ |
| 7 | RBR Solo | 101160 | Done ✓ |
| 8 | RBR Solo | 101161 | Done ✓ |
| 9 | RBR Solo | 101162 | Done ✓ |
| 10 | Concerto | 60166 | |
| 11 | RBR Solo | 100161 | Done ✓ |
| 12 | RBR Solo | 100153 | Done ✓ – double saved, good data w/ Alice, Serap screenshot of Atanas |
| 13 | RBR Solo | 100154 | Done ✓ |
| 14 | RBR Solo | 100160 | Done ✓ |
| 15 | RBR Solo | 101164 | Done ✓ |
| 16 | RBR Solo | 100157 | Done ✓ |
| 17 | RBR Solo | 100158 | Done ✓ |
| 18 | RBR Solo | 100159 | Done ✓ |
| 19 | Concerto | 60183 | |
| bottom | | | |

Final before in water check

## SCoNE underway ALFA logsheet

**Restart instrument every 24 h**

| Date | Time (UTC) | Any bubbles on tube? | Is it logging? | Action taken/notes |
|---|---|---|---|---|
| 9/11 | 0133 | No | Yes | ~~Looks~~ fine |
| 9/11 | 0614 | No | Yes | Lowered flow ~~from~~ ~1000 ml/l to ~400 ml/l |
| 9/11 | 0201 | YES | Yes | increase flow to ~1000 ml/l decrease flow to 750 ml/l |
| 9/11 | 1927 | No | Yes | — |
| 9/12 | 00:57 | No | Yes | — |
| 9/12 | ~~0001~~ | No | Daily Restart | Daily restart. (shut down at 0907) |
| 0901 | | | | |
| 9/12 | | No | Restart. | Resumed pumping at 0948, increase flow |
| 9/12 | | Yes | yes | |
| 9/12 | 1910 | ~~Yes~~ No | Yes | |
| 9/12 | 1925 | No | Yes | backed up |
| 9/12 | 19 ~~[illegible]~~ :55 | No | Yes | NONE |
| 9/12 | 20:57 | No | Yes | None |
| 9/12 | 23:42 | NO | Yes | None |
| 9/13 | 01:16 | NO | Yes | None |
| 9/13 | 01:55 | NO | Yes | None |
| 9/13 | 02:59 | NO | yes | None |
| 9/13 | 03:52 | NO | Yes | None |
| 9/13 | 04:59 | No | Yes | — |
| 9/13 | 05:56 | No | Yes | — |
| 9/13 | 06:52 | NO | yes | None |
| 9/13 | 07:57 | No | Yes | — |

UTC Time ←

flow speed about 400 ml/l slightly.

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## SCoNE Underway ALFA Logsheet

* Restart instrument every 24 h

Also, is the ~HIGH TEMP WARNING light on?

| Date | Time (UTC) | Any bubbles in tube? | Is it logging? | Action taken/notes |
|---|---|---|---|---|
| 09/13 | 08:53 | No | Yes | — |
| 09/13 | 11:55 | No | Yes | — |
| 09/13 | 0539 | No | Yes | — |
| 09/13 | 17:51 | No | Yes | — ASR |
| 9/13 | 19:58 | No | Yes | — ASR |
| 9/13 | 23:48 | No | Yes | — ASR |
| 9/13 | ~~0400~~ | No | ~~No~~ | |
| 9/14 | 0520 | No | NO | restarted everything |
| 9/14 | 07:58 | No | Yes | — |
| 9/14 | 08:56 | No | Yes | — |
| 9/14 | 11:55 | No | Yes | — |
| 9/14 | 0415 | No | yes | Backed up to central HD #1 |
| 9/14 | 19:59 | No | YES | — ASR |
| 9/14 | 2323 | NO | Yes | |
| 09/15 | 01:53 | No | Yes | — |
| 9/15 | 03:48 | No | Yes | — |
| 9/15 | 06:03 | No | Yes | — |
| 9/15 | 07:18 | No | Yes | — |
| 9/15 | 09:06 | No | Yes | — |
| 9/15 | 10:00 | No | Yes | — |
| 9/15 | 11:12 | No | Yes | |
| 9/15 | 16:58 | No | Yes | — |
| 9/15 | 17:35 | No | yes | — |
| 9/15 | 17:54 | No | Yes | |
| 9/16 | 04:33 | No | Yes | — |
| 9/16 | 05:26 | No | Yes | — |
| 9/16 | 06:23 | No | Yes | — |
| 9/16 | 07:27 | No | yes | — |
| 9/16 | 08:30 | No | yes | — |
| 9/16 | 09:40 | No | Yes | — |
| 9/16 | 10:29 | No | yes | — |
| 9/16 | 11:31 | No | yes | — |
| 9/16 | 12:39 | No | Yes | |
| 9/16 | 13:45 | only @ junctions (JLD) | yes | — |
| 9/16 | 15:35 | No | Yes | — |
| 9/16 | 18:00 | No | Yes | — |
| 9/16 | 18:27 | No | Yes | — |
| 9/16 | 19:00 | No | yes | Backed to central HD #1 |
| 9/16 | 19:20 | No | Yes | Done restarting and Yes logged |
| | | | | |

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→ SCoNE003*

→ NO Garmin proprietary data file for folder #003:

## SCoNE Underway ALFA Logsheet

* Restart instrument every 24 h

to central bkp #1.

| Date | Time (UTC) | Any bubbles in tube? | Is it logging? | Action taken/notes |
|---|---|---|---|---|
| 09/16/2017 | 21:09 | No | Yes | — |
| 09/16/2017 | 21:43 | Yes | Yes | Bubbles on "in" tube |
| 09/16/2017 | 21:57 | no | Yes | — |
| 09/17/2017 | 03:12 | NO | Yes | — |
| 09/17/2017 | 03:47 | Yes | Yes | increased flow to get rid of bubbles |
| 09/17/2017 | 05:18 | NO | Yes | Backed up |
| 09/17/2017 | 06:15 | No | Yes | — |
| 09/17/2017 | 08:01 | No | Yes | |
| 09/17/2017 | 09:13 | No | Yes | |
| 9/17/2017 | 20:00 | NO | yes | — |
| 9/17/2017 | 21:53 | Yes | Yes | — |
| 9/18/2017 | 01:16 | NO | Yes | — |
| 9/18/2017 | 03:20 | No | Yes | |
| 9/18/2017 | 08:30 | No | Yes | — |
| 9/18/2017 | 09:29 | NO | Yes | — |
| 9/18/2017 | 09:30 | NO | Yes | — |
| | | NO | Yes | Backed up to central bkp #1. |
| 9/18/17 | 11:02 | NO | Yes | — |
| 9/18/17 | 14:02 | Yes | Yes | — |
| 9/18/17 | 16:56 | NO | yes | — |
| 9/18/17 | 19:44 | Yes | NO (restart) | Power switch on entire ship |
| 9/18/17 | 20:06 | NO | Yes | completed |
| 9/18/17 | 20:52 | NO | Yes | — restarting |
| 9/18/17 | 22:59 | NO | yes | — |
| 9/18/17 | 03:38 | NO | Yes | Backed up to central bkp #1 |
| 9/19/17 | 04:36 | NO | Yes | — |
| 9/19/2017 | 05:15 | No | Yes | — |
| 9/19 | 7:08 | No | Yes | — |
| 9/19 | 9:01 | No | Yes | |
| 9/19 | 11:49 | No | Yes | — |
| 9/19 | 15:02 | Yes | Yes | — |
| 9/19 | 16:09 | No | Yes | — |
| 9/19 | 19:09 | No | Yes | — |
| 9/20 | 04:10 | NO | Yes | — |
| 9/20 | 06:27 | NO | Yes | — |

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