

# Physical, Chemical and Biological Data Collected in Douglas Channel and Approaches to Kitimat, October 2015-July 2016

C.A.Wright, S. Vagle, C. Hannah, S.J. Johannessen, D. Spear, and D. Wan

Ocean Sciences Division  
Fisheries and Oceans Canada  
Institute of Ocean Sciences  
9860 West Saanich Road  
Sidney, B.C.  
V8L 4B2

2017

## Canadian Data Report of Hydrography and Ocean Sciences 202



Fisheries and Oceans  
Canada

Pêches et Océans  
Canada

Canada

## **Canadian Data Report of Hydrography and Ocean Sciences**

Data reports provide a medium for the documentation and dissemination of data in a form directly useable by the scientific and engineering communities. Generally, the reports will contain raw and/or analyzed data but will not contain interpretations of the data. Such compilations will commonly have been prepared in support of work related to the programs and interests of the Oceans and Science sectors of Fisheries and Oceans Canada.

The correct citation for data reports appears above the abstract of each report. Each report is abstracted in the data base *Aquatic Sciences and Fisheries Abstracts*.

Data reports are produced regionally but are numbered nationally. Requests for individual reports will be filled by the issuing establishment listed on the front cover and title page.

Regional and headquarters establishments of the former Ocean Science and Surveys sector ceased publication of their various report series in December 1981. A complete listing of these publications and the last number issued under each title are published in the *Canadian Journal of Fisheries and Aquatic Sciences*, Volume 38: Index to Publications 1981. The current series began with Report Number 1 in January 1982.

## **Rapport statistique canadien sur l'hydrographie et les sciences océaniques**

Les rapports statistiques servent de véhicule pour la compilation et la diffusion des données sous une forme directement utilisable par les scientifiques et les ingénieurs. En général, les rapports contiennent des données brutes ou analysées mais ne fournissent pas d'interprétations des données. Ces compilations sont préparées le plus souvent à l'appui de travaux reliés aux programmes et intérêts des secteurs des Océans et des Sciences de Pêches et Océans Canada.

Le titre exact des rapports statistiques figure au-dessus du résumé de chaque rapport. Les rapports statistiques sont résumés dans la base de données *Résumés des sciences aquatiques et halieutiques*.

Les rapports statistiques sont produits à l'échelon régional, mais numérotés à l'échelon national. Les demandes de rapports seront satisfaites par l'établissement auteur dont le nom figure sur la couverture et la page de titre.

Les établissements de l'ancien secteur des Sciences et Levés océaniques dans les régions et à l'administration centrale ont cessé de publier leurs diverses séries de rapports en décembre 1981. Vous trouverez dans l'index des publications du volume 38 du *Journal canadien des sciences halieutiques et aquatiques*, la liste de ces publications ainsi que le dernier numéro paru dans chaque catégorie. La nouvelle série a commencé avec la publication du rapport numéro 1 en janvier 1982.

Canadian Data Report of  
Hydrography and Ocean Sciences 202

2017

PHYSICAL, CHEMICAL AND BIOLOGICAL OCEANOGRAPHIC DATA COLLECTED IN  
DOUGLAS CHANNEL AND THE APPROACHES TO KITIMAT, OCTOBER 2015-JULY  
2016

C.A.Wright, S. Vagle, C. Hannah, S.C. Johannessen, D. Spear, and D. Wan

Ocean Sciences Division  
Fisheries and Oceans Canada  
Institute of Ocean Sciences  
9860 West Saanich Road,  
Sidney, B.C.,  
V8L 4B2

© Her Majesty the Queen in Right of Canada, 2017

Cat. No. Fs 97-16/202E ISBN 978-0-660-24145-6 ISSN 0711-6721 (print version)  
Cat. No. Fs 97-16/202E-PDF ISBN 978-0-660-24144-9 ISSN 1488-5433 (electronic version)

Correct citation for this publication:

Wright, C.A., Vagle, S., Hannah, C., Johannessen S.C., Spear, D. and Wan, D. 2017. Physical, chemical and biological oceanographic data collected in Douglas Channel and the approaches to Kitimat, October 2015-July 2016. Can. Data. Report. Hydrog. Ocean.Sci. 202: x+139pp.



## TABLE OF CONTENTS

Abstract/Résumé .....	ix
1.0 Introduction .....	1
2.0 Methods and Results .....	2
3.0 References .....	8
4.0 Acknowledgments .....	9

## LIST OF FIGURES

Figure 1. Map showing the location of moorings and areas of interest in the 2015-2016 final year of the World Class programme. Blue dots denotes location of moored sediment traps.....	11
Figure 2. Mooring schematics for Year 3 (2015-2016) (mab=metres off bottom). Sampling intervals not shown.....	12
Figure 3. Time series for instrumentation moored at HEC1, Deployment C from July 2015-July 2016.....	15
Figure 4. Time series for instrumentation moored at FOC1, Deployment C from July 2015-July 2016.....	18
Figure 5. Time series for instrumentation moored at KSK1 Deployment C from July 2015-July 2016.....	22
Figure 6. Time series for instrumentation moored at DEV1 Deployment C from July 2015-July 2016.....	24

Figure 7. Time series for instrumentation moored at CMP1, Deployment A from July 2015-July 2016. First dotted line shows the time the mooring was hit, dragged, and the top cut. Second dotted line is when the mooring was retrieved.....	26
Figure 8 continued. Time series for instrumentation moored at CAM1, Deployment A from July 2015- July- 2016.....	28
Figure 9. Time series for instrumentation moored at CAM2, Deployment A from July 2015-July 2016.....	30
Figure 10. Stations and CTD profiles collected during Cruise 2015-54. Plot shows only the upper Douglas Channel area stations.....	32
Figure 11. Bottle data from Cruise 2015-54. Samples are from upper Douglas Channel, see Figure 10 for location.....	39
Figure 12. Thermosalinograph data (SBE21) collected during Cruise 2015-54.....	47
Figure 13. Stations for water property sampling during cruise 2015-61.....	48
Figure 14. Processed CTD data collected during 2015-61. Colour scheme/locations are shown in Figure 13.....	49
Figure 15. Bottle data from Cruise 2015-61. Colour scheme and locations match Figure 13.....	51
Figure 16. Stations for water property sampling during cruise 2016-02.....	52
Figure 17. Processed CTD data collected during 2016-02. Colour scheme and locations are shown in Figure 16.....	53
Figure 18. Bottle data from Cruise 2016-02. Colour scheme and locations match Figure 16.....	54

Figure 19. Stations for water property sampling during cruise 2016-41.....	55
Figure 20. Processed CTD data collected during 2016-02. Colour scheme/locations are shown in Figure 19.....	56
Figure 21. Bottle data from Cruise 2016-41. Colour scheme and locations match Figure 19.....	57
Figure 22. River sampling locations for Cruise 2016-41.....	58
Figure 23. Biogeochemical results from river sampling during cruise 2016-41, see Figure 22 for river names.....	59
Figure 24. Stations for water property sampling during cruise 2016-12.....	60
Figure 25. Processed CTD data collected during 2016-12 in the Hecate/Douglas Channel study area. Colour scheme/locations are shown in Figure 24.....	61
Figure 26. Bottle data from Cruise 2016-12. Colour scheme and locations match Figure 24.....	63
Figure 27. Location of MVP surveys (A-K) taken during the cruise 2015-54, from October 28th – November 7th, 2017.....	65
Figure 28. Properties along the Survey A transect taken using the MVP on October 28, 2017 at 1615 UTC.....	66
Figure 29. Properties along the Survey B transect taken using the MVP on October 29, 2017 at 1510 UTC.....	67
Figure 30. Properties along the Survey C transect taken using the MVP on October 30, 2017 at 1519 UTC.....	68

Figure 31. Properties along the Survey D transect taken using the MVP on October 31, 2017 at 1530 UTC.....	69
Figure 32. Properties along the Survey E transect taken using the MVP on November 1, 2017 at 1506 UTC.....	70
Figure 33. Properties along the Survey F transect taken using the MVP on November 2, 2017 at 1520 UTC.....	71
Figure 34. Properties along the Survey G transect taken using the MVP on November 3, 2017 at 1516 UTC.....	72
Figure 35. Properties along the Survey H transect taken using the MVP on November 4, 2017 at 1506 UTC.....	73
Figure 36. Properties along the Survey I transect taken using the MVP on November 5, 2017 at 1520 UTC.....	74
Figure 37. Properties along the Survey J transect taken using the MVP on November 6, 2017 at 1526 UTC.....	75
Figure 38. Properties along the Survey K transect taken using the MVP on November 7, 2017 at 0052 UTC.....	76
Figure 39. UCTD transections and sill studies completed during 2015-54. S denotes the start of the transect and E the end.....	77
Figure 40. UCTD profiles from transects and sill studies (see Figure 39 for start, end and locations). Data presented in chronological order.....	78
Figure 41. Survey locations for the pole-mounted ADCP transects during cruise 2015-54.....	82

Figure 42. These plots represent two transects taken with the 150kHz pole-mounted ADCP across the sill at Whale Channel, approximately 2 hours part on October 20th, 2015.....	83
Figure 43. Suspended particulate concentrations (mg/L) from surface and bottom waters.....	84

## LIST OF TABLES

Table 1. Sediment trap schedule (11.5 day intervals), mass, carbon and nitrogen species analysis, and chlorinity data taken from Deployment C (July 2015-July 2016).....	86
Table 2. Phytoplankton species assemblages from the World Class Programme 2015-2016.....	88
Table 3. Zooplankton abundances (individuals m <sup>-3</sup> ) from samples collected during the World Class Programme, 2015-July 2016.....	113
Table 4. Sediment Core Information and Descriptions. All cores take in cruise 2016-41.....	126
Table 5. Results of the <sup>210</sup> Pb analysis and <sup>226</sup> Ra analysis.....	132

## LIST OF APPENDICES

Appendix A. Zooplankton taxonomic nomenclature coding used at the Institute of Ocean Sciences .....	134
--	-----

This page left intentionally blank

## ABSTRACT

Wright, C.A., Vagle, S., Hannah, C., Johannessen, S.J. and Spear, D. and D. Wan. 2017. Physical, chemical and biological oceanographic data collected in Douglas Channel and the approaches to Kitimat, October 2015-July 2016. Can. Data. Report. Hydrog. Ocean.Sci. 202: x+139pp.

Water, biological, and sediment core samples were collected in the Douglas Channel fjord system near Kitimat, British Columbia, during five cruise missions between October 2015 and July 2016, as part of the ongoing baseline study under the World Class Tanker Safety Program. Instrumented moorings were deployed for a year at sites in Hecate Strait and in the Douglas Channel fjord system. Baker-style, sequential sediment traps deployed at two of the mooring sites collected a record of sinking particles at 50 m depth at 11.5 day intervals from July 2015 to July 2016. These moorings also included sensors to measure current, salinity, temperature, chlorophyll fluorescence, dissolved oxygen, pH, and in-situ noise.

Vertical profiles of temperature, salinity, oxygen, transmissivity and fluorescence were measured using a CTD, and water samples were collected by rosette. The water samples were analyzed for dissolved oxygen, nutrients, salinity, dissolved organic carbon, coloured dissolved organic matter and oxygen stable isotopes. Dissolved inorganic carbon and alkalinity were measured at a single depth at the two mooring sites to calibrate the pH meters. A Moving Vessel Profiler, a UCTD and a ship-based moving ADCP were deployed in October/November 2015 along several channel transects and for an in-depth investigation across a sill.

Phytoplankton and zooplankton were collected during most cruises. Sediment cores were collected in May 2016. Three of the cores were radiodated using  $^{210}\text{Pb}$  and  $^{226}\text{Ra}$ .

## RÉSUMÉ

Wright, C.A., Vagle, S., Hannah, C., Johannessen, S.J. et Spear, D. and D. Wan. 2017. Physical, chemical and biological oceanographic data collected in Douglas Channel and the approaches to Kitimat, October 2015-July 2016. Rapp. stat. can. sur l'hydrogr. et les sci. océan. 202:x+139pp.

Des carottes d'échantillonnage biologiques, d'eau et de sédiment ont été prélevées dans le fjord du chenal Douglas près de Kitimat, en Colombie-Britannique, durant les cinq missions de navigation menées entre octobre 2015 et juillet 2016 dans le cadre de l'étude de base en cours du Programme de sécurité de classe mondiale pour les navires-citernes. Des amarrages équipés ont été installés pour une année dans le détroit d'Hécate et dans le fjord du chenal Douglas. Des pièges séquentiels à sédiments Baker installés dans deux des sites d'amarrages ont recueilli un nombre record de particules qui sombrent à une profondeur de 50 m, à 11,5 jours d'intervalle de

juillet 2015 à juin 2016. Ces amarrages comprenaient également des capteurs pour mesurer le courant, la salinité, la température, la fluorescence de la chlorophylle, l'oxygène dissous, le pH et le bruit sur place.

Les profils verticaux de température, de salinité, d'oxygène, de transmissivité et de fluorescence ont été mesurés à l'aide d'une sonde CTP, et des échantillons d'eau ont été prélevés avec une rosette. Ces échantillons d'eau ont été analysés afin de déterminer la concentration d'oxygène dissous, de nutriments, de carbone organique dissous, de matières organiques colorées dissoutes et d'isotopes stables d'oxygène, et déterminer la salinité. Le carbone inorganique dissous et l'alcalinité ont été mesurés à une seule profondeur aux deux sites d'amarrage afin de calibrer les pH-mètres. Un enregistreur de profil à partir de l'embarcation mobile, une sonde en mer de la conductivité, de la température et de la profondeur et un profileur de courant à effet Doppler mobile à bord d'un navire ont été déployés en octobre et novembre 2015 le long de plusieurs transects de chenal et pour mener une enquête approfondie dans le seuil.

Du phytoplancton et du zooplancton ont été recueillis durant la plupart des croisières. Des carottes de sédiment ont aussi été prélevées en mai 2016. Trois de ces carottes ont été radiodatées à l'aide de  $^{210}\text{Pb}$  et  $^{226}\text{Ra}$ .



## 1.0 Introduction

The Douglas Channel fjord system provides a shipping route that connects the west coast of Canada to the Pacific Ocean (Figure 1). The town of Kitimat at the head of the fjord system includes an aluminum smelter and an international shipping port.

There have been numerous proposals to increase shipping of petroleum products through the fjord system, beginning in the late 1970s, when there was a proposal to ship Alaska oil to Alberta via a pipeline with a terminus at Kitimat. More recently, proposals have included the construction of liquified natural gas (LNG) plants along the shores of the fjord system, and a pipeline with a terminus at Kitimat that would carry diluted bitumen — a heavy tar mixed with light oils — from Alberta to the west coast for shipping across the Pacific Ocean to Asia. Although none of these proposals has been approved at this time, there is clearly the potential for shipping through Douglas Channel to increase in the future.

In light of the potential increase in shipping, the Government of Canada launched in 2013 a five-year programme to collect baseline physical, geochemical and biological data in the Douglas Channel fjord system and Hecate Strait under the World Class Prevention, Preparedness and Response for Oil Spills from Ships Initiative. The goals of the observation program were 1) to provide data to develop and validate ocean circulation and oil spill models; and 2) to provide advice on emergency response planning and habitat mapping. The programme also provided the opportunity to study the effects of climate variability on inshore waters strongly affected by both the surrounding land and the open ocean. The programme included researchers from Fisheries and Oceans Canada, Natural Resources Canada, Environment Canada and the National Research Council.

This document reports physical, biological and geochemical data collected by Fisheries and Oceans Canada in the Kitimat fjord system and Hecate Strait during the third (and final) year of the programme (October 2015-July 2016). Sampling cruises took place in October/November 2014, March 2015, May 2015 and July 2015. In addition, moorings were deployed in Hecate Strait, Douglas Channel, Caamaño Sound and Campania Sound. All the moorings included sensors to measure temperature, salinity, depth, current, and, in most cases, dissolved oxygen. In addition the moorings in Hecate Strait (HEC1) and Douglas Channel (FOC1) included a set of Baker-style sequential sediment traps at 50 m depth that collected sinking particles, and electronic sensors to measure chlorophyll fluorescence, turbidity, pH, and ambient acoustic signals.

Depth profiles of temperature, salinity, transmissivity, fluorescence, and dissolved oxygen were collected by CTD. Water samples collected by rosette were analyzed for dissolved oxygen, salinity, nutrients, and, in some locations, dissolved inorganic carbon, alkalinity, dissolved organic carbon, coloured dissolved organic matter and oxygen stable isotopes. Water samples were also collected and filtered to determine the concentration of suspended particles. Additional sampling included sediment box cores that were analyzed for  $^{210}\text{Pb}$  and  $^{226}\text{Ra}$ . Phytoplankton and zooplankton samples were collected at selected stations.

The data are tabulated and / or plotted in this report and are available electronically on request from the IOS data archive ([http://www-sci.pac.dfo-mpo.gc.ca/osap/data/default\\_e.htm](http://www-sci.pac.dfo-mpo.gc.ca/osap/data/default_e.htm)) or from the authors.

## 2.0 Methods and Results

### 2.1 Mooring Design and Sampling

Figure 1 shows the mooring locations and study area. The moorings included current meters, CTDs, ADCPs and ambient noise recorders (Figure 2). Sampling intervals varied among the instruments to balance sampling rate against battery life. Moored sensor data are shown in Figures 3-9. Three moorings, CMP1, DEV1 and KSK1, were recovered in May 2017, while the others were recovered the following July. CMP1 was hit, dragged and severed in January 2017. Some data were recoverable.

Moorings HEC1 and FOC1 also included Seabird SeaFET pH sensors and three Baker-style sediment traps (Baker and Milburn (1983) and O'Brien *et al* (2000)). The traps were accompanied by a current meter and CTD (SBE19p) with a Wetlabs ECO-FLNTU (HEC1) and ECO-FL (FOC1). Each sediment trap contained 10 sampling cups, for a total of 30 cups throughout the year, with a sampling interval of 11.5 days. Traps were configured such that when one trap (cup 10) was completed, the next sequential trap would begin to collect. Each cup was filled with a brine solution and poisoned with mercuric chloride before deployment. To each 1 L of 0.2  $\mu\text{m}$ -filtered seawater (initial salinity ~30-31, reported on the Practical Salinity Scale) 11 g of ultrapure NaCl was added to provide a brine stock for traps (final salinity 38-40). To each cup, 2.36 ml of saturated mercuric chloride solution was added and the solution topped up with the brine for a total volume of ~175 ml (approximate final concentration 1 mg/ml). This provided an environment that inhibited bacterial growth and subsequent chemical alterations to the captured particles.

Handling and analytical analysis for sediment trap samples for total mass, total carbon, organic carbon, nitrogen and carbonate, silicate and isotopes ( $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$ ) were as described by O'Brien *et al.* (2000) and Wright *et al.* (2007). Results are shown in Table 1.

### 2.2 Water Property Sampling

For each cruise the main Douglas Channel transect (Doug4 to HEC1, established in 2013) was performed (weather dependent for HEC1). Additional stations in other Channels and approaches to Douglas Channel were occupied but varied between cruises. The exception to this was cruise 2015-61 which was primarily used to characterize Queen Charlotte Sound and southern Hecate Strait.

A SeaBird SBE911 CTD was deployed at each station to measure water column profiles of temperature, conductivity, dissolved oxygen (SBE43), chlorophyll fluorescence (Seapoint and Wetlabs), and transmissivity (Wetlabs C-Star). Profile data were collected during both the downcast and upcast, but only downcast data were used for sensor characterization of the water column. The upcast was used to characterize conditions during niskin bottle tripping. Profile data are shown in Figures 10, 14, 17, 20 and 25. All data were plotted using Ocean Data View (Schlitzer, R., 2008).

The CTD was allowed to equilibrate/pump at the surface (~0.5-1 m) for a minimum of 30 seconds, before descending at  $1\text{ m s}^{-1}$ . CTD profiles were also used for quality control/assurance of the moored sensors to assess possible drift/offset.

During cruise 2015-54 (October/November 2015), sea surface temperature and salinity were measured by thermosalinograph (SBE21), with an intake at 2 m depth... The seawater was pumped approximately 13 m through a 5 cm stainless steel pipe to the lab. Between the intake and the pump are a strainer and a debubbler which is connected to an Applix IMU38 sensor chamber (fitted with SMART SVPT sensor). The system pressure is regulated by an Eamor BE 100 HD self-priming centrifugal pump. In the lab, the seawater flows directly through the Seabird model 21 SeaCAT Thermosalinograph. Surface temperature and salinity data are shown in Figure 12.

Water samples were collected by 24-bottle rosette. The 10 L niskin bottles were fired at standard depths on the upcast. Bottles were allowed to equilibrate at each depth for a minimum of 30 seconds prior to firing. At four stations (HEC1, SC61, FOC1 and Doug4) 2 bottles were fired at each depth in order to allow extensive sampling for expanded chemical analysis. At all other stations, the additional analyses were only performed on the surface samples. Samples were collected for: dissolved oxygen (Winkler); nutrients (nitrate + nitrite, silicate, soluble orthophosphate), dissolved inorganic carbon/alkalinity (used to monitor drift in the pH sensors on the moorings), salinity, coloured dissolved organic matter (CDOM), dissolved organic carbon (DOC), total organic carbon (TOC), oxygen isotopes ( $\delta^{18}\text{O}$ ), extracted chlorophyll (surface, 10 m and 20 m only), and phytoplankton (selected stations). A salinity sample was also taken from each bottle (data not shown) for conductivity cell calibration on the SBE9 and for certain bottle-derived analyses where the corresponding sample salinity is required for the determination of the variable (e.g. DIC/Alk). Analytical data are shown in Figures 11, 15, 18, 21 and 26.

CTD data were post-processed at the Institute of Ocean Sciences (IOS) using standard routines to correct for thermal mass, hysteresis, and descent rate. Data were de-spiked and filtered, and bad data removed or flagged. Data were corrected using calibrations, knowledge of sensor history and also against long-term climatology for errors that had likely resulted from sensor drift. Dissolved oxygen measured electronically was checked against Winkler titrations and corrected as appropriate. Finally, data were binned to 1 m averages. All CTD data (raw, partially processed and final product) are archived at IOS.

### 2.3 Chemical Analysis

Oxygen samples were analyzed at sea using an automated Winkler titration system (Metrohm Dosimat model 876 and a UV light source and detector with a 365 nm filter controlled by LVO2\_876 software designed and constructed by Scripps Institution of Oceanography) with modifications based on Carpenter (1965) and adhering to WOCE protocols (Culbertson 1991).

Nutrient samples were collected in plastic tubes and quick-frozen in aluminum blocks stored at -20 °C. All samples were returned to IOS for analysis. They were analyzed using an Astoria analyzer following methods described by Barwell-Clarke and Whitney (1996).

Chlorophyll samples were filtered onto 25 mm GF/F filters and stored in glass scintillation vials at -20°C prior to analysis. Samples were extracted in 90% acetone at -20°C for 24 hours in the lab and analyzed on a Turner 10AU fluorometer calibrated with commercially pure chlorophyll *a* (Sigma). Fluorescence readings taken before and after acidification were used to calculate chlorophyll (Holm-Hansen *et al.* 1965). The average of two samples is reported.

Salinity samples were collected in 200 mL type II glass bottles with disposable plastic inserts and screw caps supplied by Ocean Scientific International Limited. They were analyzed in a temperature-controlled lab on a Guildline 8400B Salinometer standardized with IAPSO standard seawater.

Samples collected for DIC/Alkalinity were treated with 200 µl of saturated mercuric chloride to inhibit bacterial growth/activity. Samples were stored cold prior to analysis back on return to IOS. Analysis follows the Standard Operating Procedures as described in Dickson *et al.* (2007), SOP 2 and 3B.

Dissolved organic carbon (DOC) and total dissolved organic carbon (TOC) samples were collected in pre-cleaned 40 mL scintillation vials (40 ml) with 0.125 cm Teflon low-bleed septa. The vials were cleaned in Extran 300 and rinsed several times with Type I Ultrapure water. Vials were then soaked in 10% HCl for a minimum of four hours and rinsed several times with Type I Ultrapure water. They were then allowed to dry and were baked at 450 °C for a minimum of 5 hours. Septa were briefly washed in 10% HCl, rinsed with Type I Ultrapure water and allowed to air dry. TOC was collected directly from the spigot of the niskin bottle, while the DOC samples were filtered through a Millipore Opticap XL Durapore 0.22 µm inline filter cartridge (Product No. KVGLA04HH3) attached to the spigot. Samples were frozen at -20°C. TOC and DOC will be analyzed on a Schmiadzu TOC-L following SOP 7 of Dickson *et al.* (2007) with some expected modifications due to the use of different acids and sparging times.

Coloured dissolved organic matter (CDOM) samples were collected using the same filter as for the DOC samples and refrigerated 125 ml in amber bottles for analysis on return to IOS. Spectral absorbance (280-700 nm at 1nm resolution) was measured with a HP Agilent 4853 spectrophotometer. Data were corrected for instrument offset, and the

linearized spectral absorption slope coefficient was determined using a curvilinear best of fit for 280-550nm curve (See Johannessen *et al.*, 2007 and Stedmon *et al.*, 2000). The instrument offset accounts for temperature, scattering and refractive index differences between the sample and the blank (Type I water).

Oxygen isotope samples were collected directly from the niskin spigot into 30ml plastic (PETG or PP) bottles, the cap secured with parafilm, and refrigerated. The samples were analyzed at the G. G. Hatch Stable Isotope Laboratory at the University of Ottawa, using an Isotope Ratio Mass Spectrometer (IRMS) Delta Plus XP (Thermo, Germany) interfaced with a GasBench II. 0.6 mL was pipetted into an Exetainer. Samples and internal standards are flushed with a gas mixture of 2% CO<sub>2</sub> in helium off-line. Exetainers are left to equilibrate at either 25 °C or simply room temperature for >5 days.

The data is reported in Delta notation  $\delta$ , the units are per mil (‰) and defined as  $\delta = ((R_x - R_{std}) / R_{std}) * 1000$  where R is the ratio of the abundance of the heavy to the light isotope. reported as ‰ vs. VSMOW and normalized to internal standards calibrated to International standards VSMOW (0,0), GISP(-24,8, -189,5) and SLAP (-55,5, -428.0).

Precision is evaluated by including in every sequence a reference water standard, known as W-20. The values of this water are used for long term monitoring and statistical purposes. W-20 is reported as the average of the measured values, n and the standard deviation of the sequence. Generally, a sequence run holds 65 samples, and includes 4 sets of internal standards (known as W-7,9,10) and 4 blind standards (W-20) and the standard deviation of W-20 is less than 0.15 for oxygen. Random duplicates of a sample are also run.

## 2.4 Suspended Particle Sampling

At several stations during the cruises, an additional surface niskin was taken for the determination of suspended particle concentration. For these samples, the full niskin (10L) was collected into a Nalgene jerry can and after gentle swirling of the can, subsamples were poured into three 1.24L PET bottles. Water was filtered under low vacuum onto a pre-combusted (at 450°C for 5 hours) and preweighed 25mm GFF filter (Whatman brand). If filter clogging prevented the full subsample from being filtered, the actual filtered volume was recorded. Filters were then frozen at -20 °C. On return to IOS, the filters were dried at 50°C in a drying oven to a constant weight and weighed on a Toledo Mettler balance to  $\pm 0.0001$  g. The particle weight was divided by the volume filtered to determine the suspended particle concentration (SPC) in mg L<sup>-1</sup>. Stable isotopic composition ( $\delta^{13}\text{C}$ ,  $\delta^{15}\text{N}$ ) were determined on replicate filters. For particulate isotopes, whole filters were combusted. Data are presented in Figure 41.

## 2.5 River Sampling

During cruise 2016-41, several rivers in the fjord system were sampled (Figure 22). Rivers were approached by boat and, if necessary, on foot until fresh water was reached. In a few cases, it was difficult to get past the intertidal zone into the river directly. In cases such as these, effort was taken to ensure the water being sampled was

the freshwater lens. At each river a 6L jerry can was positioned facing upstream of the current, rinsed three times and filled. This was transported back to the ship where subsamples were taken for suspended particulate concentration, particulate  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$ ,  $\delta^{18}\text{O}$ , and CDOM using the methods already cited. For isotopic analysis, whole filters were combusted. Results are shown in Figure 23.

## 2.6 Moving Vessel Profiler (MVP) data

A Rolls-Royce Moving Vessel Profiler (Type-200 MVP) was deployed to obtain high resolution temperature and salinity profiles while the ship was under way, during cruise 2015-54. The MVP system consists of temperature, conductivity and pressure sensors housed in a small, streamlined free-fall fish, a conductor cable with strength member, a computer-controlled high speed hydraulic winch and a complete cable metering, overboarding and docking system. The MVP allows the free fall fish to fall near-vertically. Deployment is executed under computer control and can be restrained by one of three parameters: desired depth of cast, preset height above the bottom or maximum cable out. Once the programmed downcast depth was reached, the fish was towed near the surface where it was recovered and re-deployed.

The MVP was deployed during October 28- November 7 along the main transect of Douglas Channel and along many of the adjoining passages and channels (Figure 27). Results of the surveys (A through K) for temperature, salinity, spice and dissolved oxygen are shown in Figures 28-38. Spice refers to temperature and salinity variations where density changes are cancelled out by each other. Warmer, saltier water is more spicier (Veronis, 1972, Munk, 1981).

## 2.7 Underway CTD (UCTD) data

The Underway CTD (UCTD) profiling system was developed to obtain high quality conductivity and temperature data as functions of depth without the use of complex and expensive profilers (Vagle *et al.* 2013). The system was introduced in 2008 and developed by The Oceanscience Group (San Diego, USA), and using a special CTD probe developed by SeaBird Electronics Ltd. (Bellevue, USA). The system was used in a continuous operating mode and was equipped with a foam collar to reduce the drop speed to approximately 2 m/s.

During October 18-24, UCTD casts were completed in Douglas Channel, Cridge Passage/Wright Sound, Gardiner Canal and across the sills at Doug31, Dev26 and UC31 (Figure 39). The composite transects of temperature and salinity are shown in Figure 40.

## 2.8 Moving Acoustic Doppler Current Profiler data

A Teledyne RD Instruments Workhorse Sentinel Acoustic Doppler Current Profiler (ADCP) was mounted on a steel pole deployed over the side of the ship to measure acoustic backscatter from bubbles and zooplankton and to estimate horizontal and vertical currents along the cruise tracks. The instrument was deployed for short periods during October 21- November 5, 2017 and operated at 153.6 kHz, with 60, 4 or 8

m bins, beginning 11.3 m below the instrument, or approximately 13.5 m below the sea surface. The system was set to use 3 pings per ensemble, with an ensemble interval of approximately 6 seconds. Transect locations are shown in Figure 41, and an example of the processed data is presented in Figure 42.

## 2.9 Biological Sampling

Phytoplankton samples (~200 ml) were collected from the surface niskin bottle of the main rosette system, into amber glass jars that contained a saturated Lugol's Acid Iodine solution (Thronsen, 1978). Samples were swirled to mix and then a 25 ml subsample was settled using a sliding chamber system from Hydro-Bios. A minimum of 100 dominant and 300 total cells were counted, or a maximum of 3 transects using a Zeiss inverted phase contrast microscope. Results of the analysis, including scan type and magnification factors, are shown in Table 2.

Zooplankton samples were collected by vertical haul using a SCOR plankton net (236  $\mu\text{m}$ ) with a TSK flowmeter. The net was lowered to a selected depth at  $0.5\text{ m s}^{-1}$  and retrieved at  $1.0\text{ m s}^{-1}$ . Samples were then fixed in 10% formalin/seawater and returned to IOS for identification and counting. Taxonomic classification, counts and other metrics are reported as per Mackas (1992). Results of the analysis are shown in Table 3. Appendix I provides the nomenclature key used at IOS.

## 2.10 Sediment Core Sampling and Dating

During cruise 2016-41, 6 cores were collected in the study area, using a Pouliot box corer. Sediment cores were sectioned in the shipboard laboratory within a few hours of collection into 1 cm intervals for the uppermost 10 cm, 2 cm intervals for the next 10 cm and 5 cm intervals for the remainder of the core. Core descriptions are provided in Table 4. Sediment consisted primarily of silty mud with some sand.. Core sections were homogenized and then subsampled for analysis of  $^{210}\text{Pb}$  and  $^{226}\text{Ra}$ ; carbon, nitrogen and biogenic silica; and  $\delta^{15}\text{N}$  and  $\delta^{13}\text{C}$ . Data from the radiochronology completed to date are presented in this report (Table 5).

Subsamples for each core depth were sent to Flett Research Ltd. in Winnipeg, Canada for analysis of  $^{210}\text{Pb}$  and  $^{226}\text{Ra}$ .  $^{210}\text{Pb}$  was measured in all sections of the core following the procedure of Eakins and Morrison (1978), while that of  $^{226}\text{Ra}$  was determined at three depths (top, middle, bottom) in each core, from the in-growth of  $^{222}\text{Rn}$  over at least 4 days as per Mathieu *et al.* (1988) with modifications by Flett Research Ltd.

### 3.0 References

- Baker, E.T. and Milburn, H.B. 1983. An instrument for the investigation of particle flux. *Cont. Shelf Res.* 1:425-435.
- Barwell-Clarke, J. and Whitney, F. 1996. Institute of Ocean Sciences Nutrient Methods and Analysis. *Can. Tech. Rep. Fish. Aquat. Sci.* 182: 43pp.
- Carpenter, J.H. 1965. The Chesapeake Bay Institute Technique for the Winkler Dissolved Oxygen Method. *Limnol. & Oceanogr.* 10: 141-143.
- Culberson, C.H. 1991. Dissolved Oxygen. WOCE Hydrographic Programme Operations and Methods (July 1991). 15pp.
- Dickson, A.G., Sabine, C.L., and Christian, J.R. (eds). 1997. Chapter 4. Recommended standard operating procedures: SOP 2, 3B, and 7. *In: Guide to the Best Practices for Ocean CO<sub>2</sub> Measurements. PICES Special Publication 3: IOCCP Report 8.*
- Eakins, J.D. and Morrison, R.T. 1978. A new procedure for the determination of lead-210 in lake and marine sediments. *Int. J. of Appl. Radiat. Is.* 29:531-536.
- Holm-Hansen, O. Lorenzen, C.J., Holme, R.W., and Strickland, J.D.H. 1965. Fluorometric determination of chlorophyll. *J. Cons. Perm. Int. Explor. Mer.* 30:3-15.
- Johannessen, S.C., Peña, M.A., and Quenneville, M.L. 2007. Photochemical production of carbon dioxide during a coastal phytoplankton bloom. *Est. Coast. Shelf Sci.* 73:236-242.
- Mackas, D.L. 1992. Seasonal cycle of zooplankton off southwestern British Columbia. *Can. J. Fish. Aquat. Sci.* 49:903-921.
- Mathieu, G.G., Biscaye, P.E., Lupton, R.A. and Hammond, D.E. 1988. System for measurement of <sup>222</sup>Rn at low levels in natural waters. *Health Physics*, 55: 989-992.
- Munk, W.H. 1981. Internal waves and small-scale processes. *In: Evolution of Physical Oceanography. B.A. Warren and C. Wunsch, Editors. pp. 264-291. MIT Press.*
- O'Brien, M.C., Soon, M., Nielsen, B., Elliot, C., Juhasz, T., Macdonald, R.W., Denman, K.L., Thomson, R.E. and Calvert, S.E. 2000. Sediment trap data from the Strait of Georgia, May, 1995 to January, 1999. *Can. Data. Rep. Hydrog. Ocean Sci.* 155: 92pp.
- Schlitzer, R. 2008. Ocean Data View, <http://odv.awi.de>



- Stedmon, C.A., Markager, S., Kaas, H. 2000. Optical properties and signatures of chromophoric dissolved organic matter (CDOM) in Danish coastal waters. *Est. Coast. Shelf Sci.* 51:567-578.
- Thronsen, J. 1978. Preservation and Storage. *In* *Phytoplankton Manual*. Edited by A. Sournia. UNESCO Monographs on Oceanographic Methodology. Paris, France. pp. 69-74.
- Vagle, S., McDonald, A. and Klinke, J. 2013. Annual CTD Profiling On Transit to Canadian Arctic; Underway CTD Profiles on Moving Vessels. *Sea Technology Magazine*, June 2013.
- Veronis, G. 1972. On the properties of seawater defined by temperature, salinity and pressure. *J. Mar. Res.* 30:227-225,
- Wright, C.A., Johannessen, S.C., Macdonald, R.W., Burd, B.J., Hill, P. Van Roodselaar, A., Bertold, S. 2007. The Strait of Georgia ambient monitoring program: phase I, 2002-2007: sediment and benthos. *Can. Data Rep. Fish. Aquat. Sci.* 1208: 112 p.

#### **4.0 Acknowledgements**

The authors would like to thank Lucius Perreault , Ron Lindsay and Roger Savoie for their work on behalf of the mooring efforts. We thank every Institute of Ocean Sciences oceanographic technician who came to sea, milked a rosette, fixed a sample, ran analyses and processed data. Your professionalism and skill are greatly appreciated. We also thank the officers and the crews of the *CCGS John P. Tully* and the *CCGS Vector* for their energy, skill and patience.

This page left intentionally blank

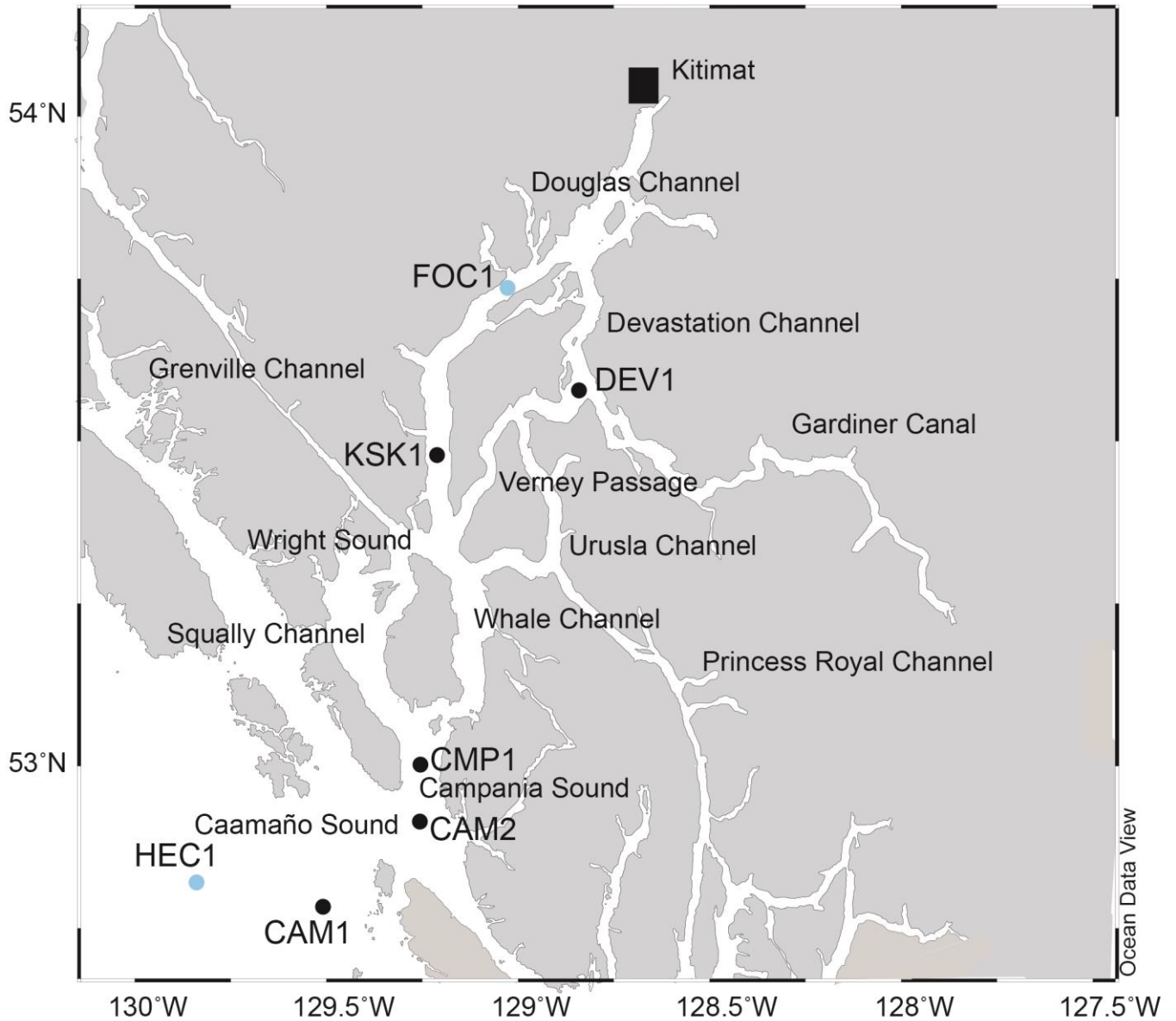


Figure 1. Map showing the location of moorings and areas of interest in the 2015-2016 final year of the World Class programme. Blue dots denotes location of moored sediment traps.

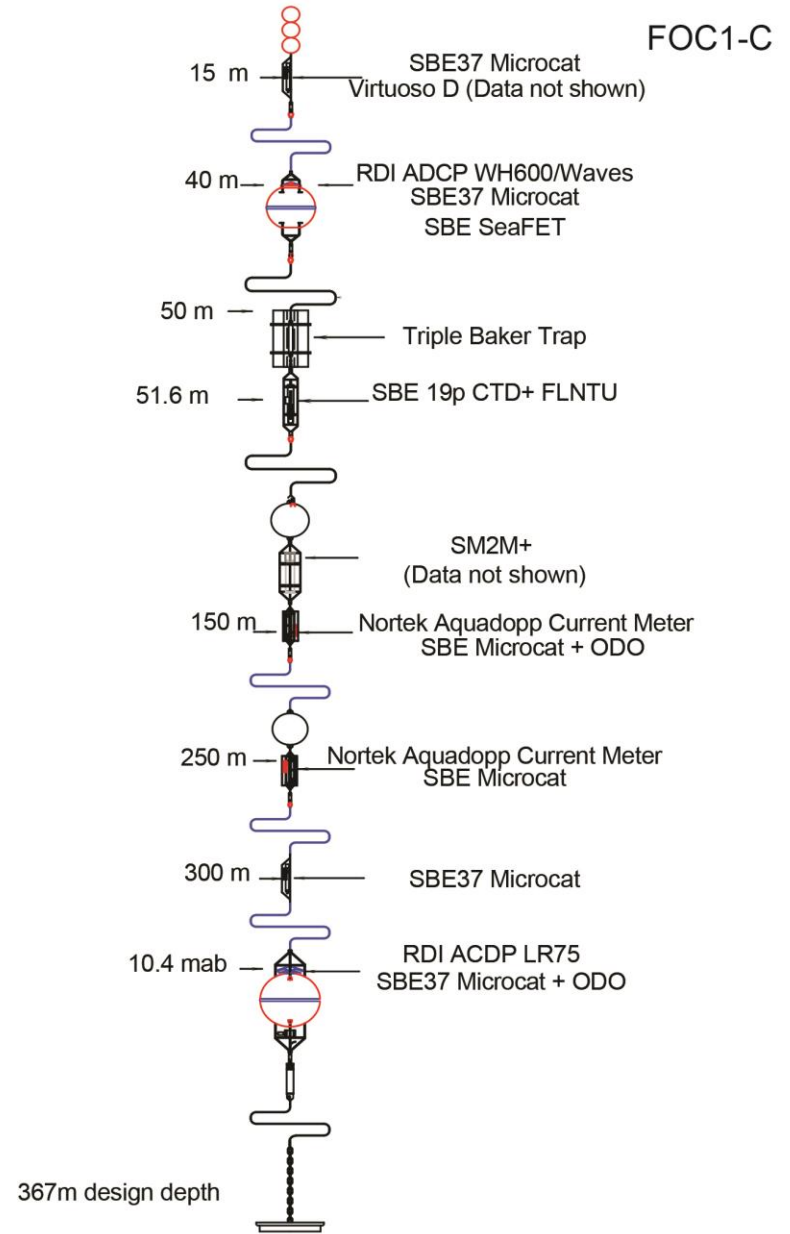
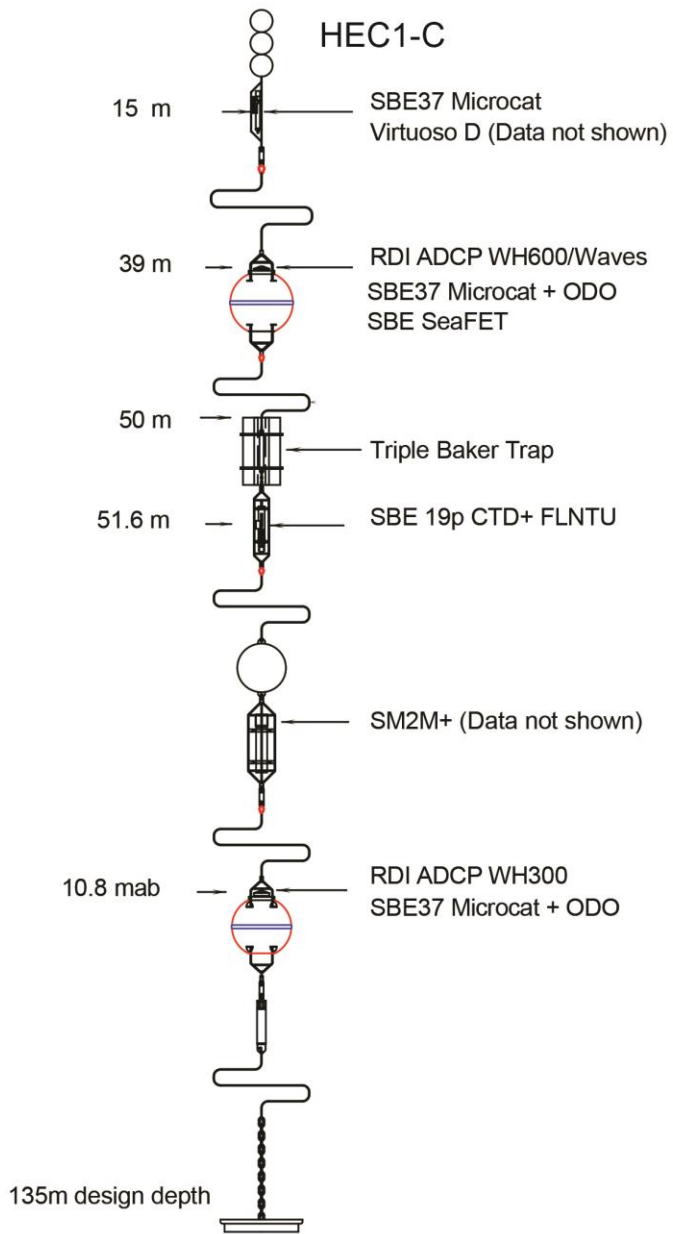


Figure 2. Mooring schematics for Year 3 (2015-2016) (mab=metres off bottom). Sampling intervals not shown.

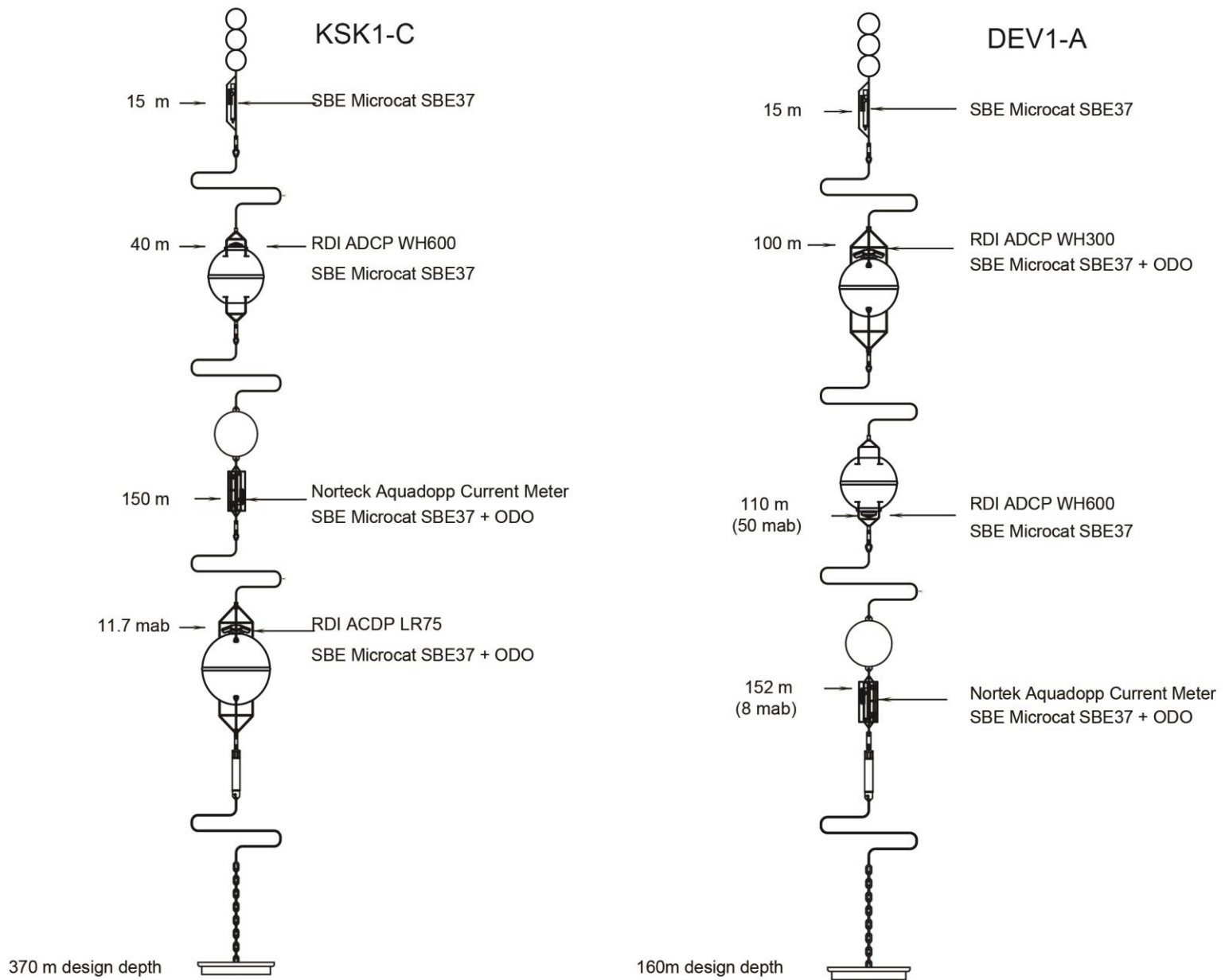


Figure 2 continued. Mooring schematics for Year 3 (2015-2016) (mab=metres off bottom). Sampling intervals not shown.

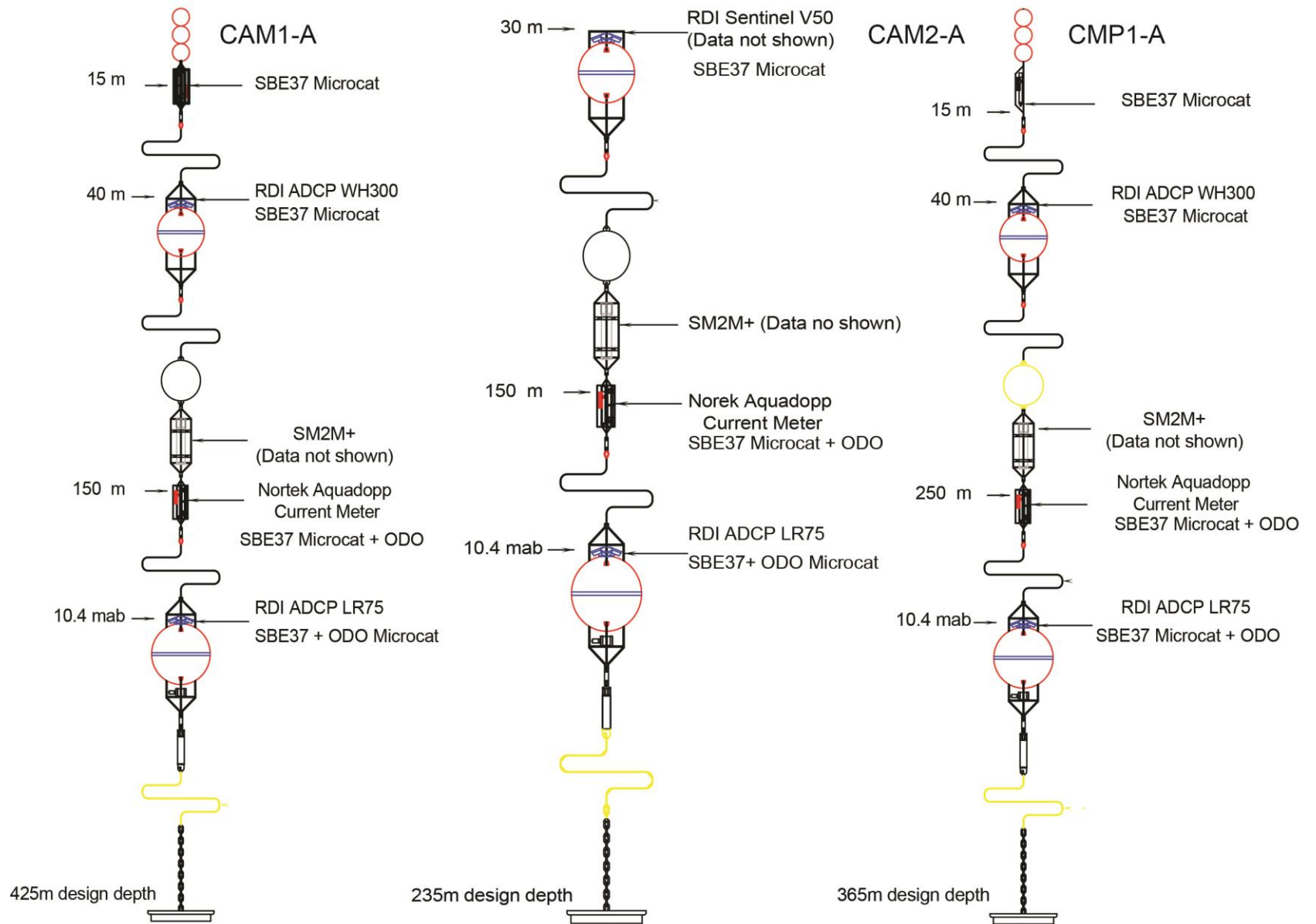


Figure 2 continued. Mooring schematics for Year 3 (2015-2016) (mab=metres off bottom). Sampling intervals not shown.

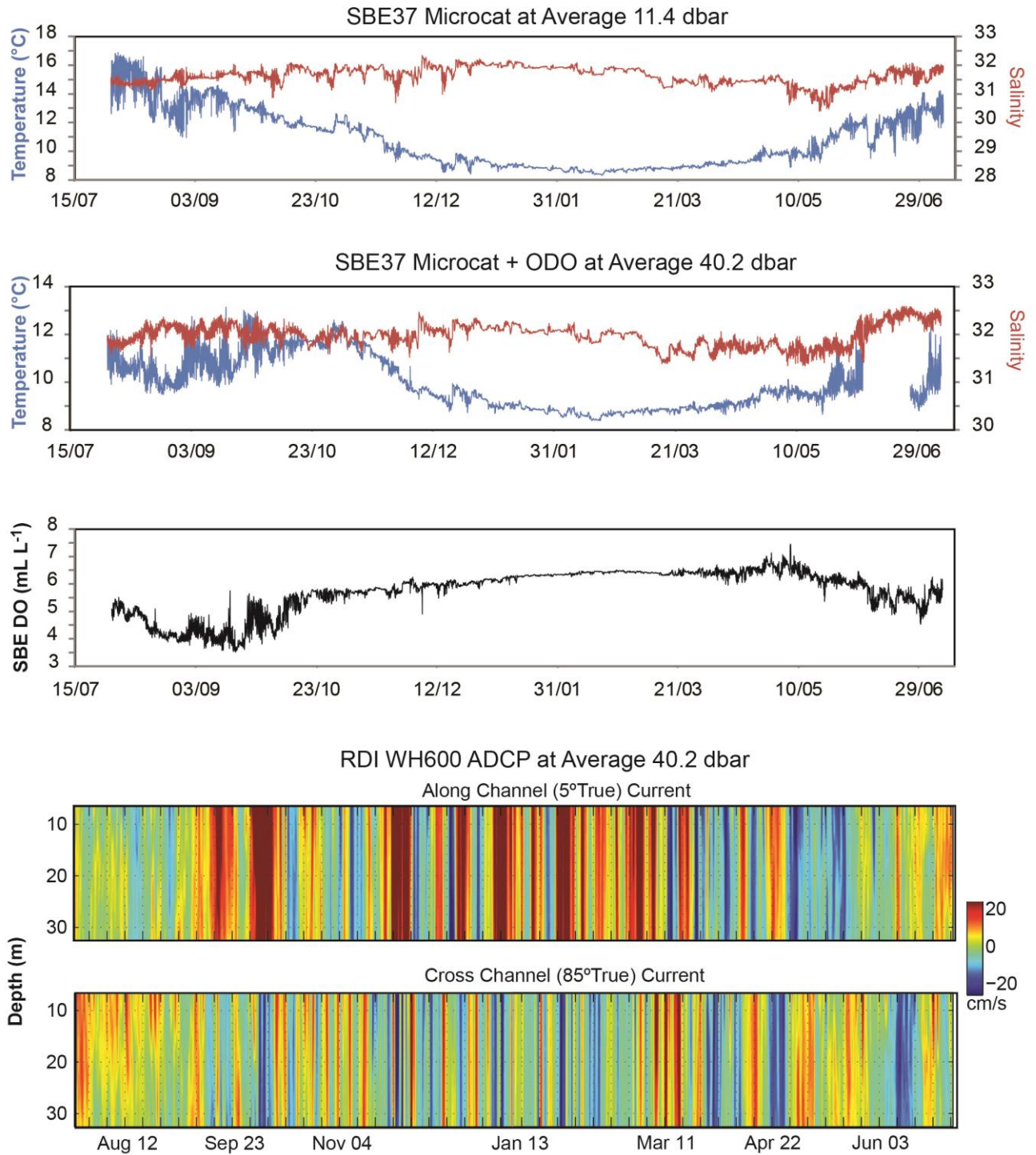


Figure 3. Time series for instrumentation moored at HEC1, Deployment C from July 2015–July 2016.



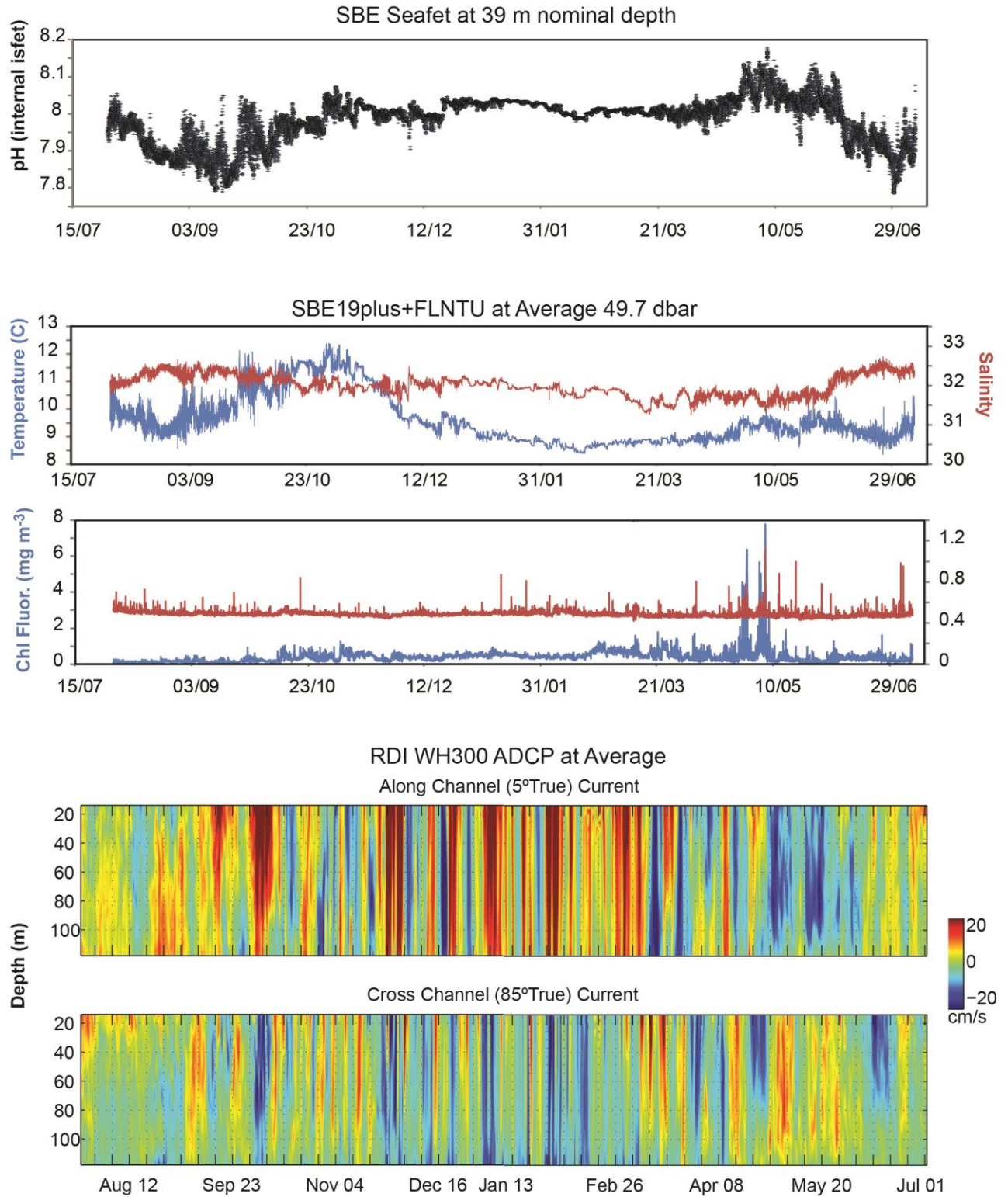


Figure 3 continued. Time series for instrumentation moored at HEC1, Deployment C from July 2015-July 2016.



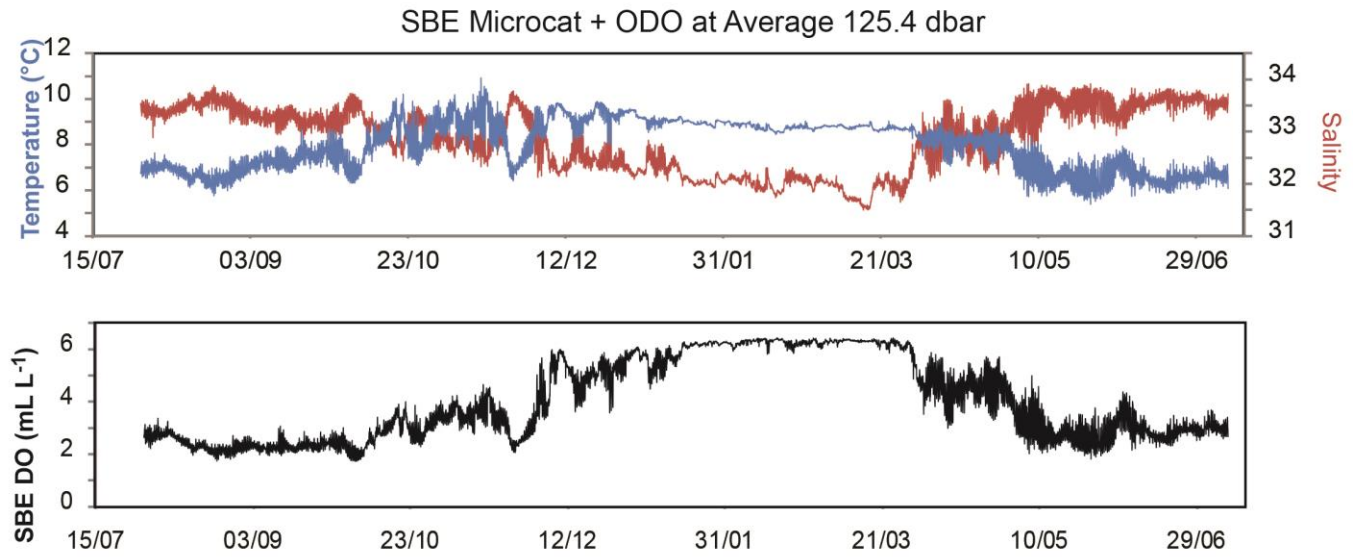


Figure 3 continued. Time series for instrumentation moored at HEC1, Deployment C from July 2015-July 2016.

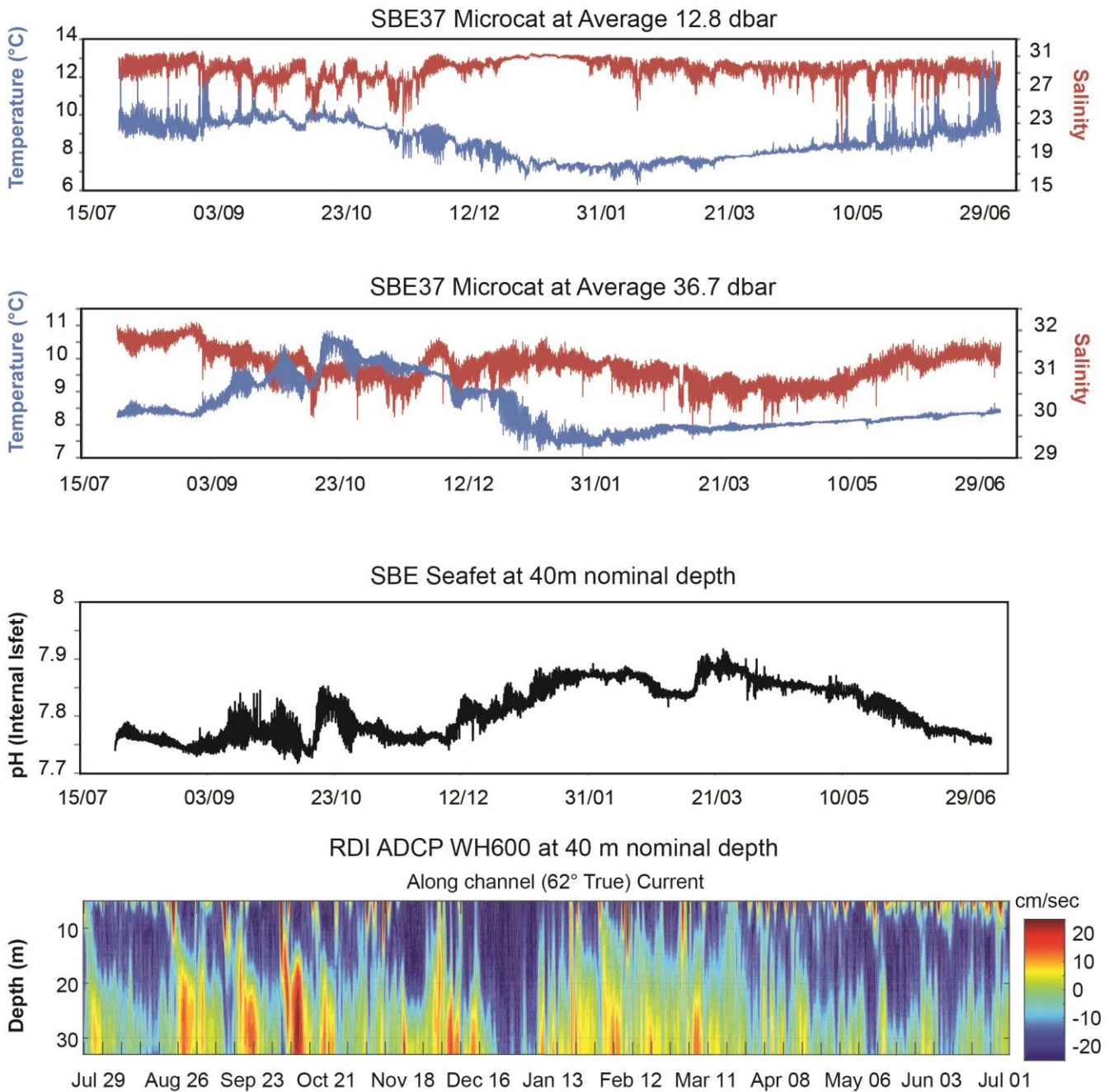


Figure 4. Time series for instrumentation moored at FOC1, Deployment C from July 2015-July 2016.

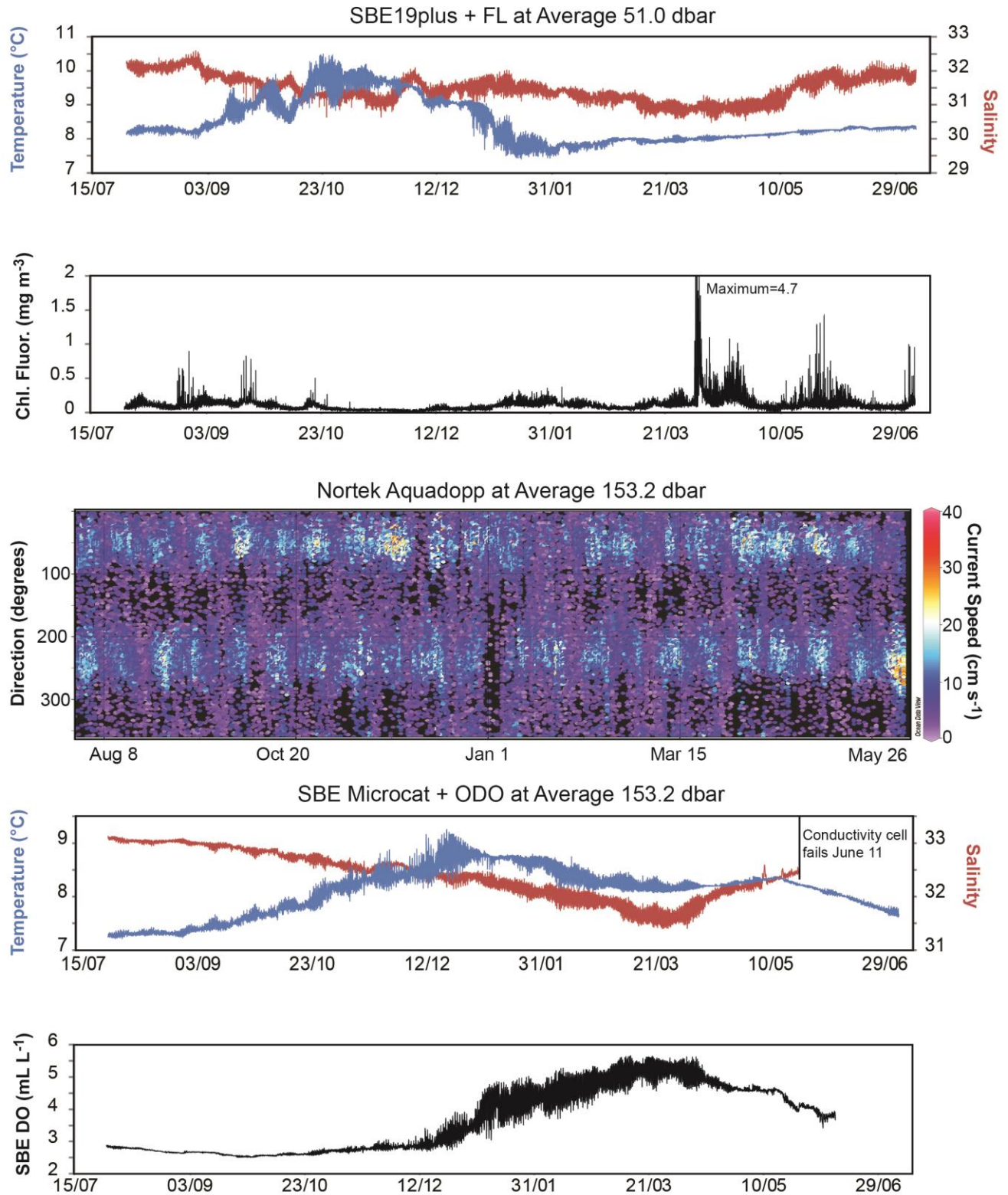


Figure 4 continued. Time series for instrumentation moored at FOC1, Deployment C from July 2015–July 2016.



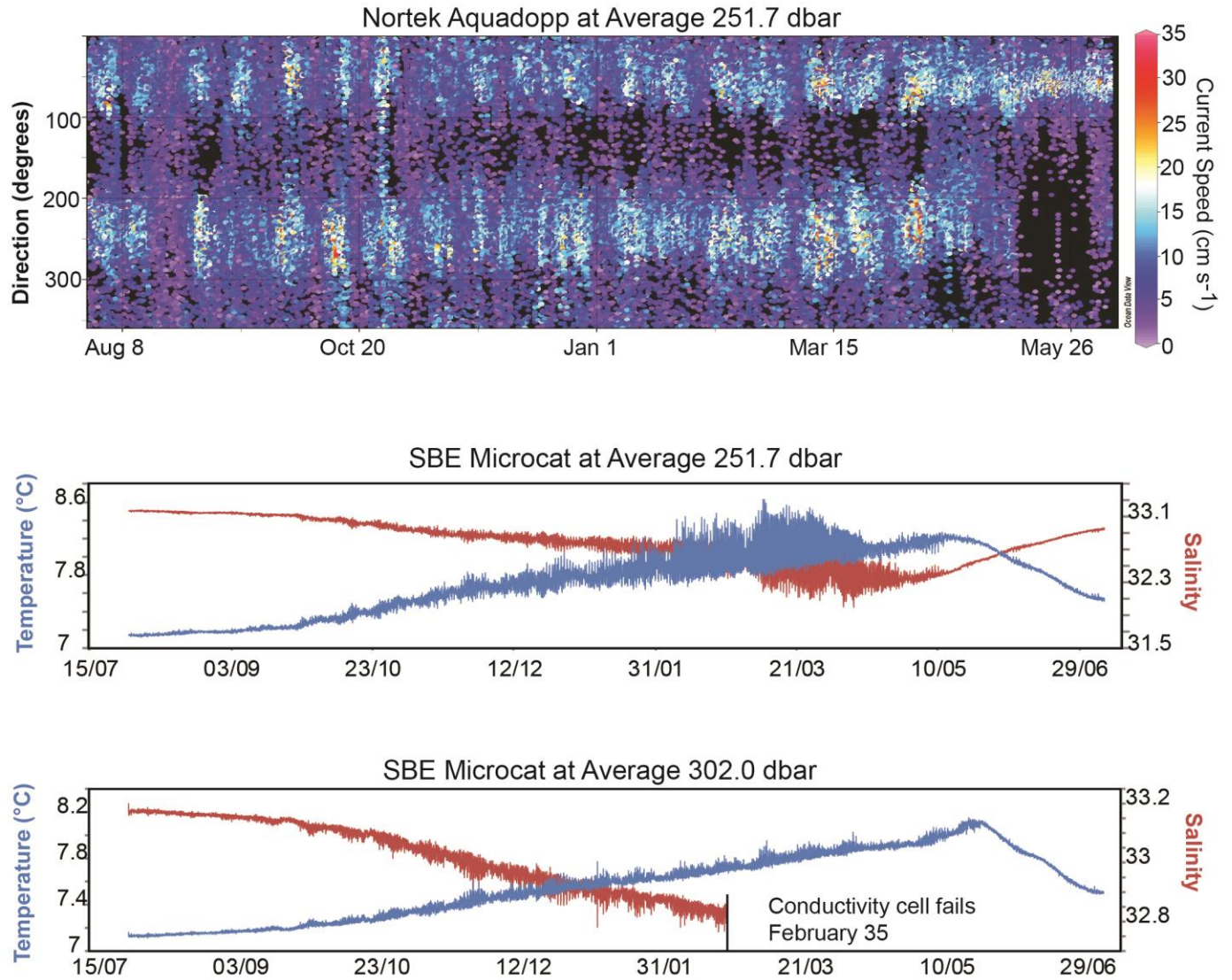


Figure 4 continued. Time series for instrumentation moored at FOC1, Deployment C from July 2015- July 2016.

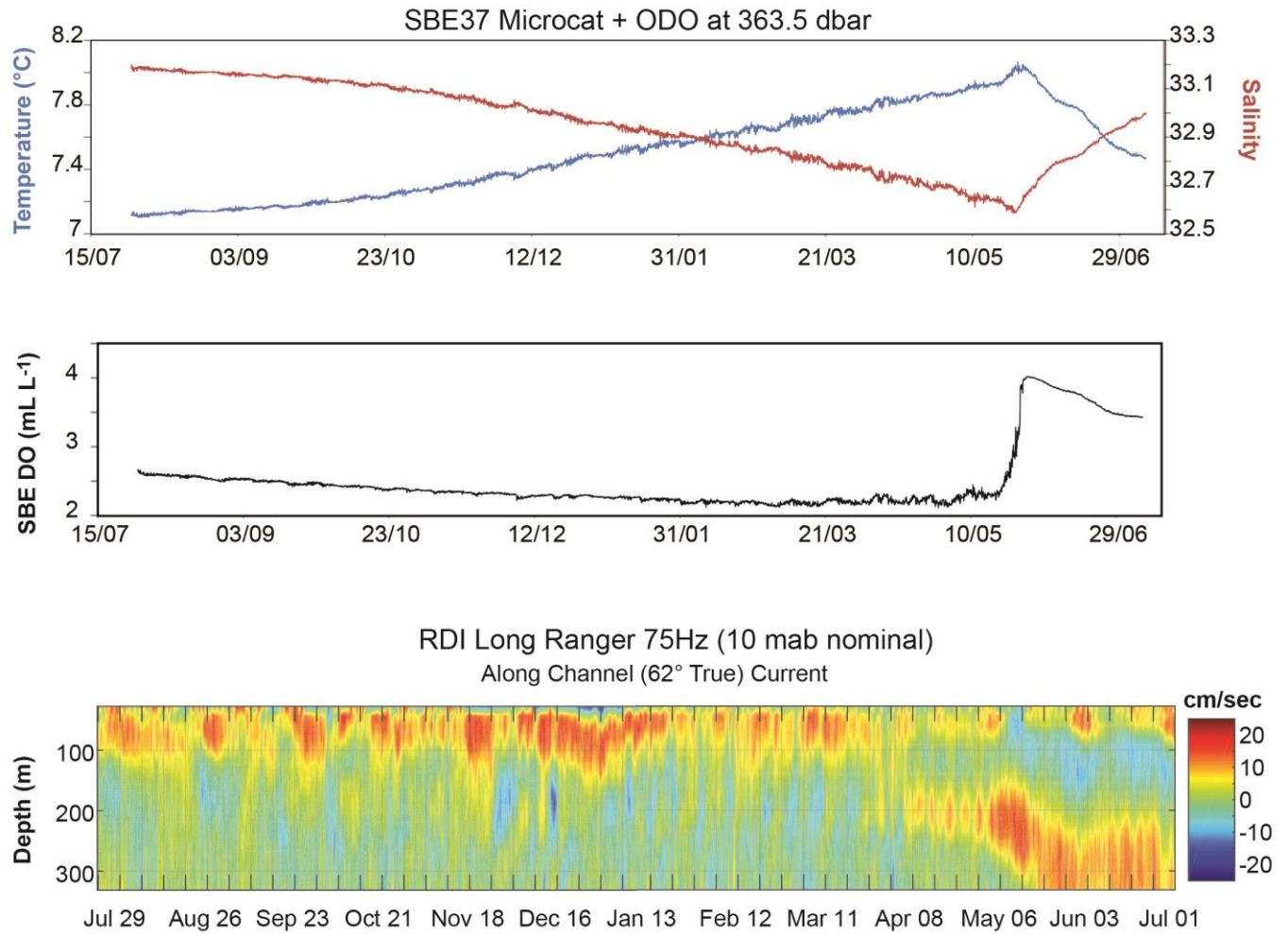


Figure 4 continued. Time series for instrumentation moored at FOC1, Deployment C from July 2015-July 2016.

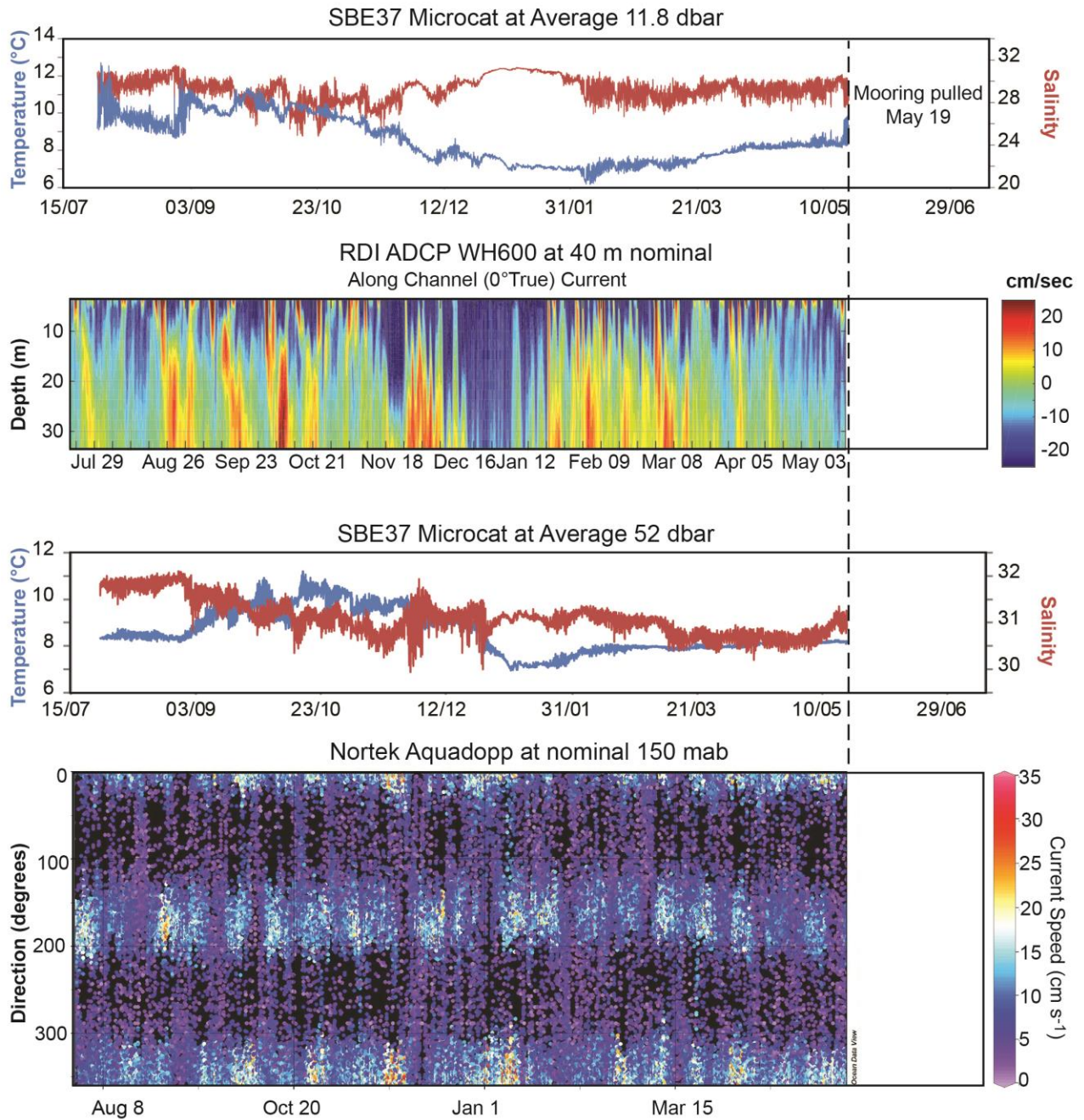


Figure 5. Time series for instrumentation moored at KSK1 Deployment C from July 2015–July 2016.



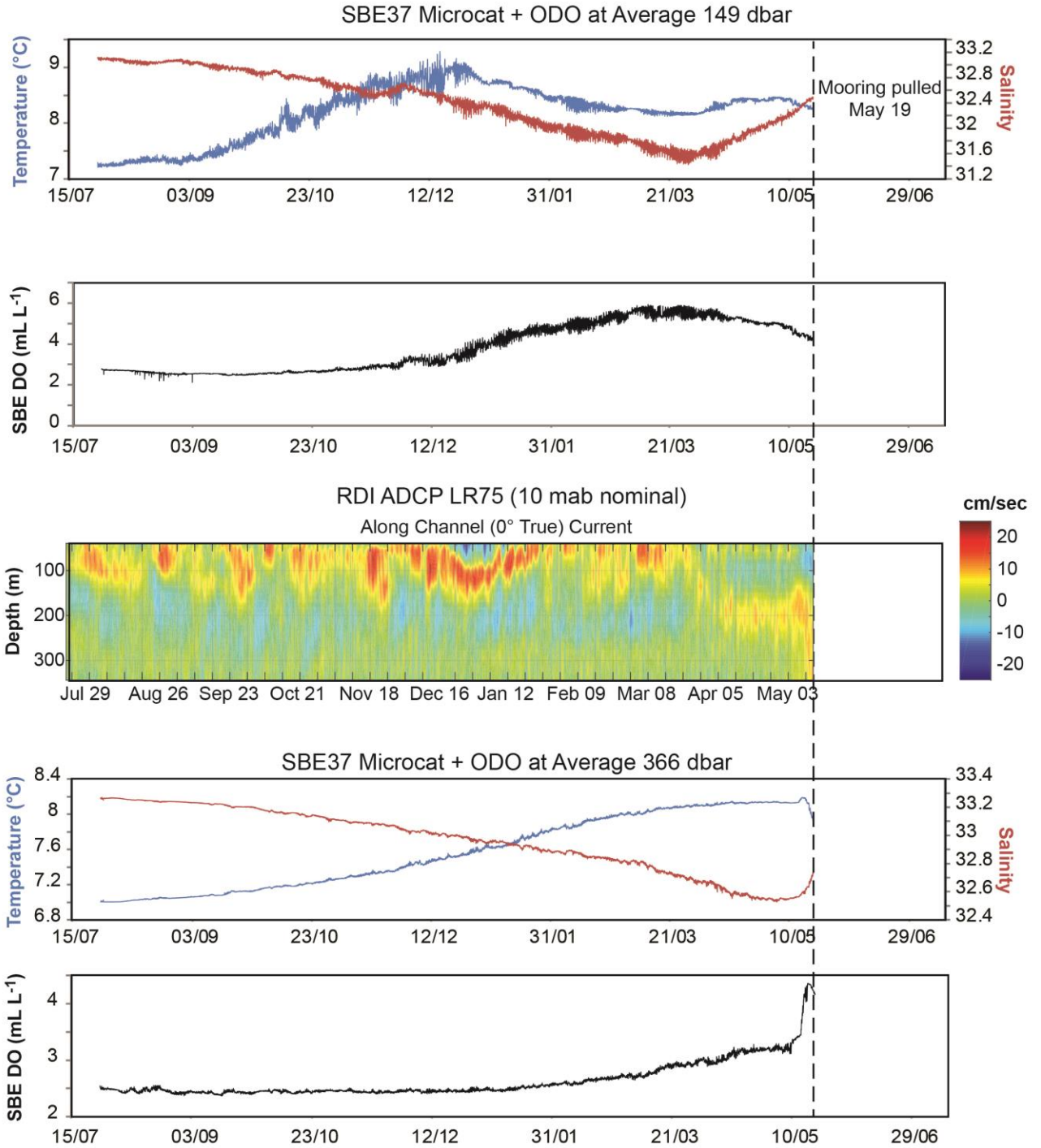


Figure 5 continued. Time series for instrumentation moored at KSK1 Deployment C from July 2015-July 2016.

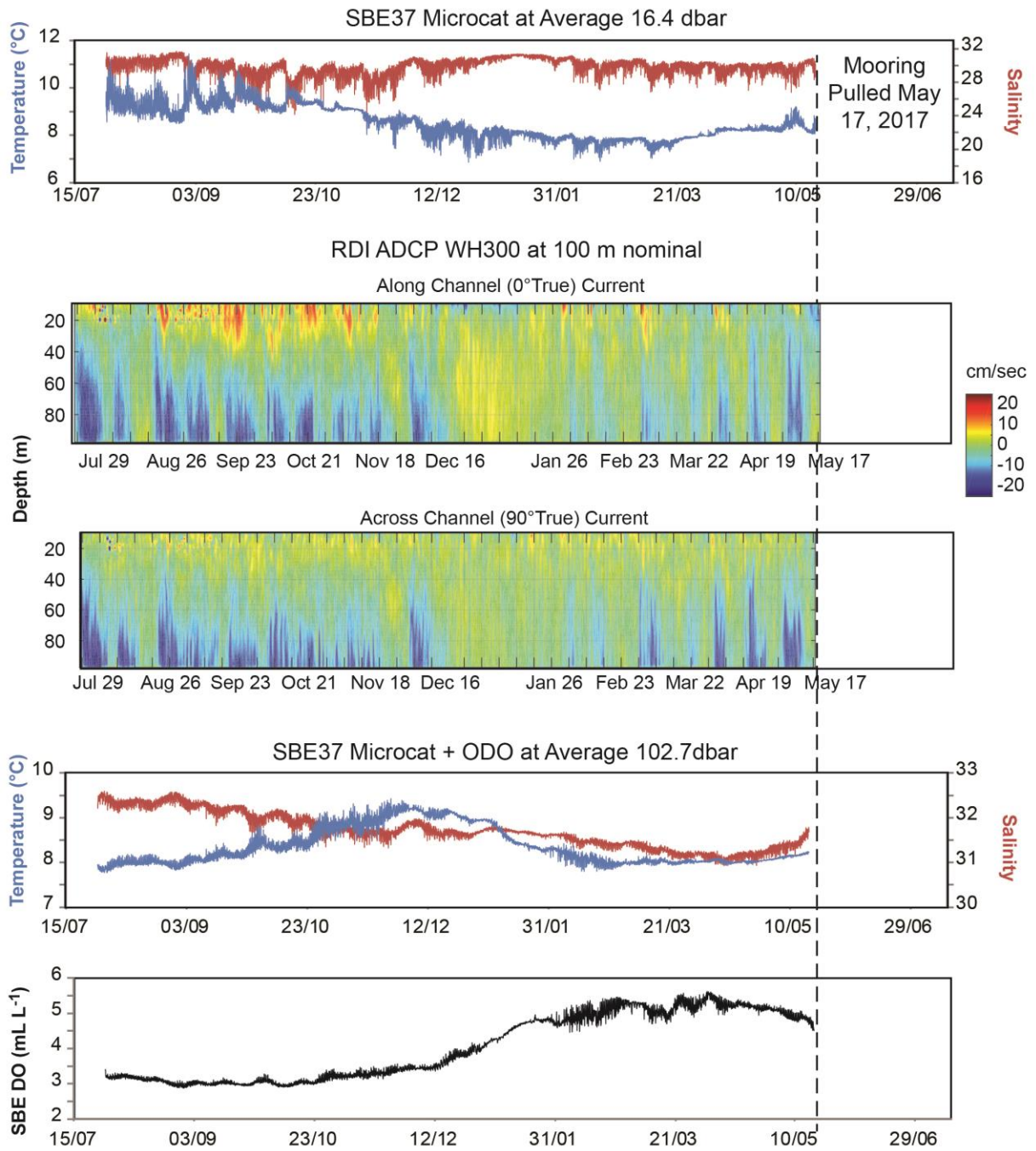


Figure 6. Time series for instrumentation moored at DEV1 Deployment C from July 2015-July 2016.



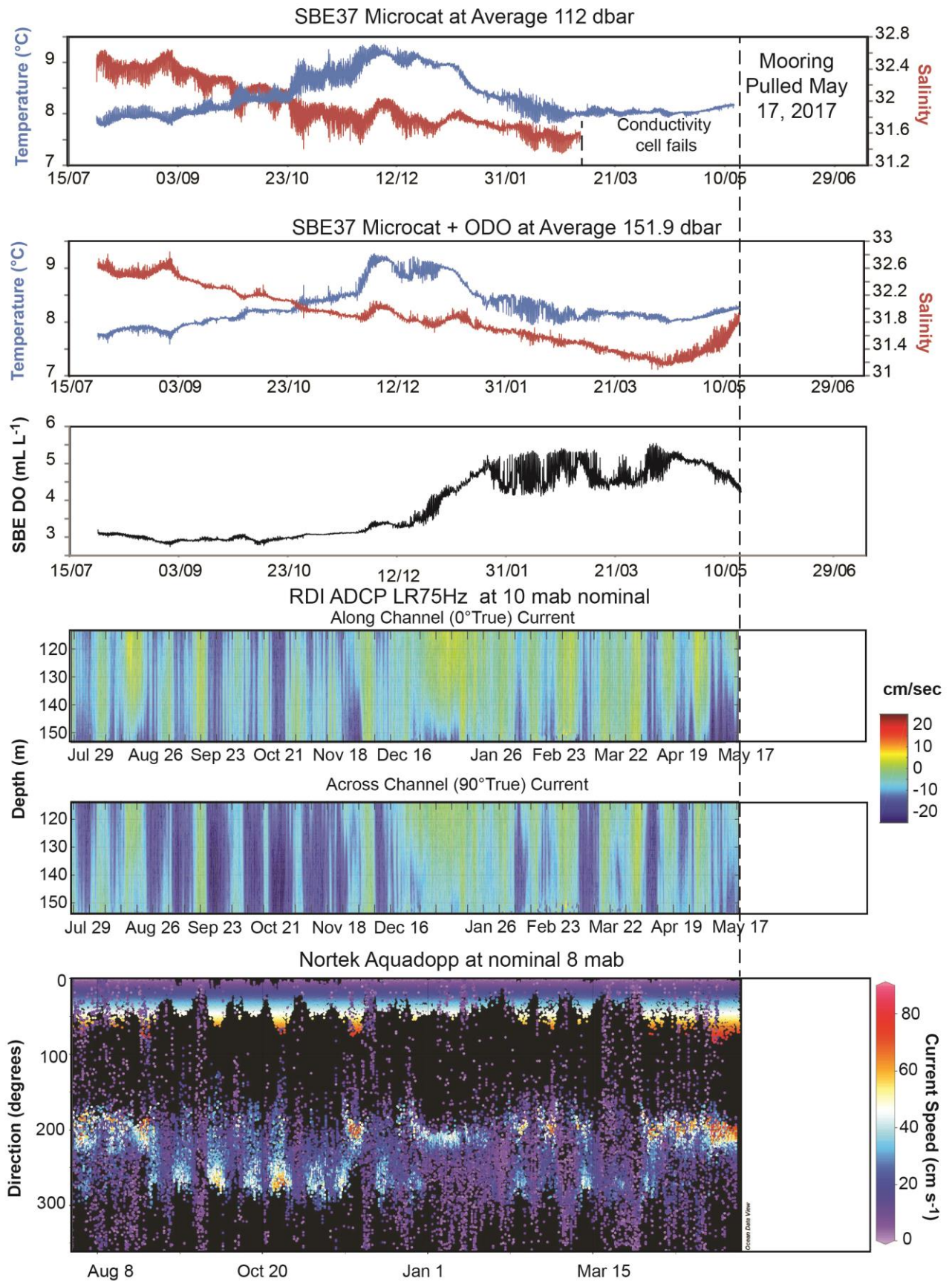


Figure 6 continued. Time series for instrumentation moored at DEV1 Deployment C from July 2015- July 2016.

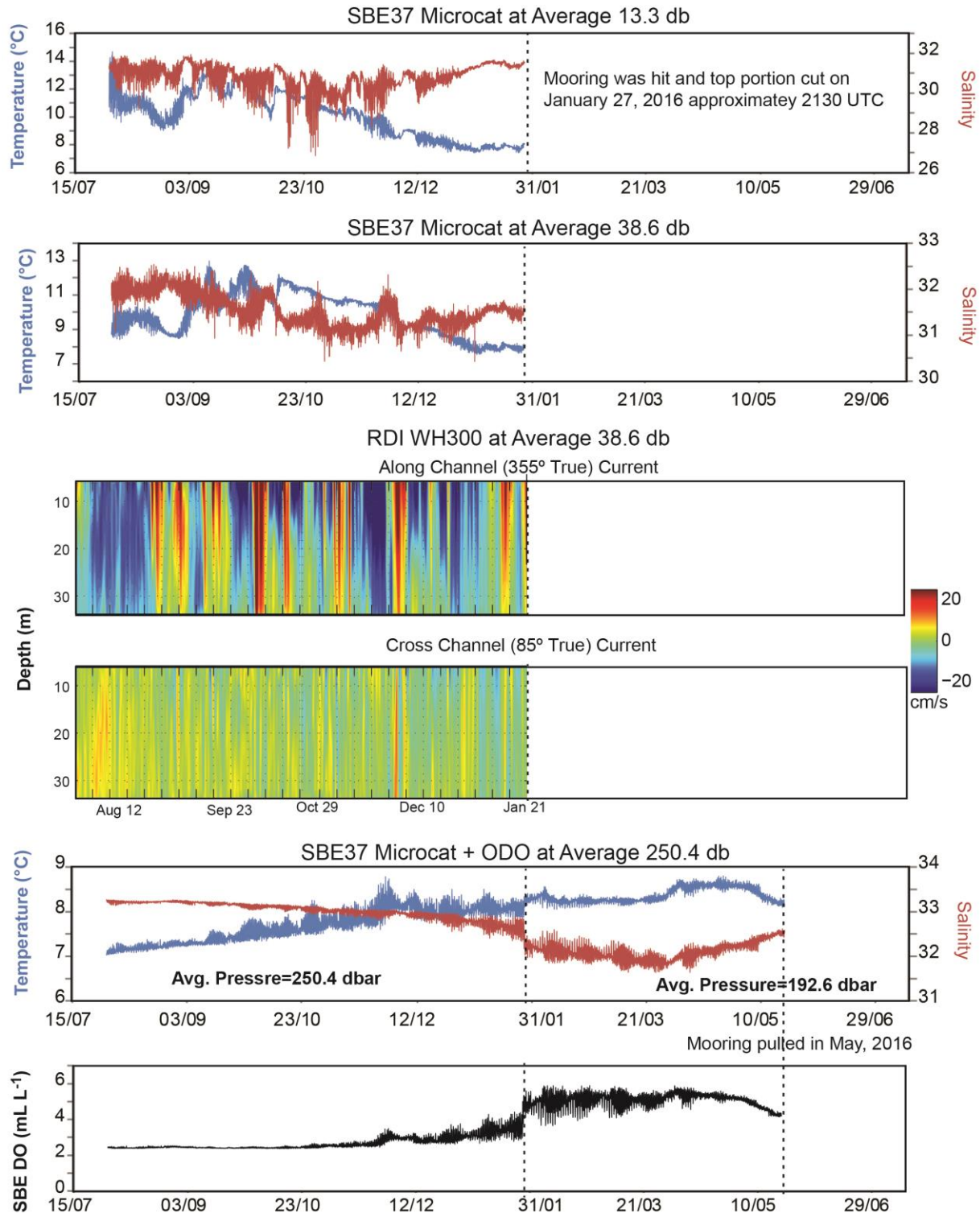


Figure 7. Time series for instrumentation moored at CMP1, Deployment A from July 2015–July 2016. First dotted line shows the time the mooring was hit, dragged, and the top cut. Second dotted line is when the mooring was retrieved.



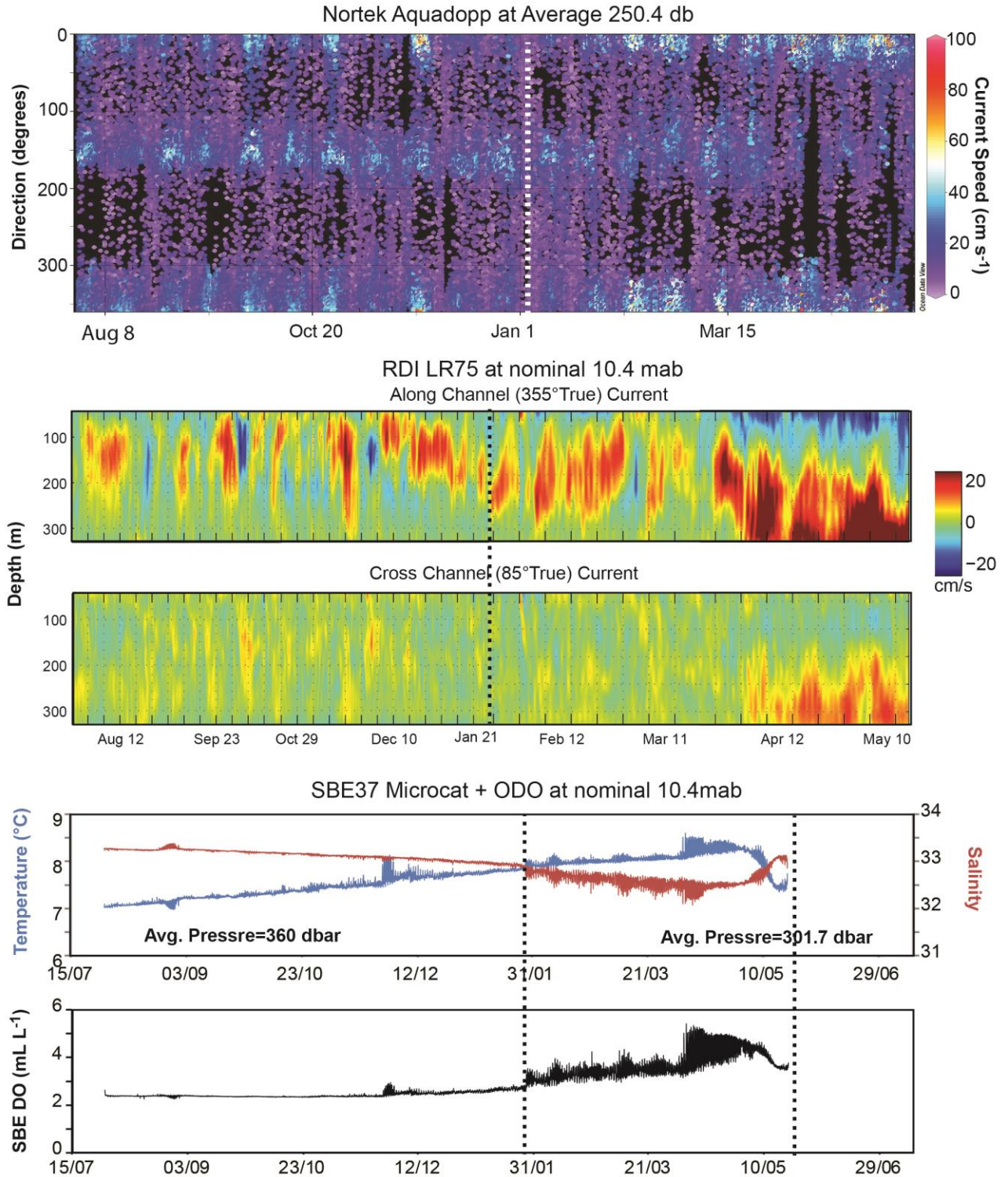


Figure 7 continued. Time series for instrumentation moored at CMP1, Deployment A from July 2015–July 2016. First dotted line shows the time the mooring was hit, dragged, and the top cut. Second dotted line is when the mooring was retrieved.

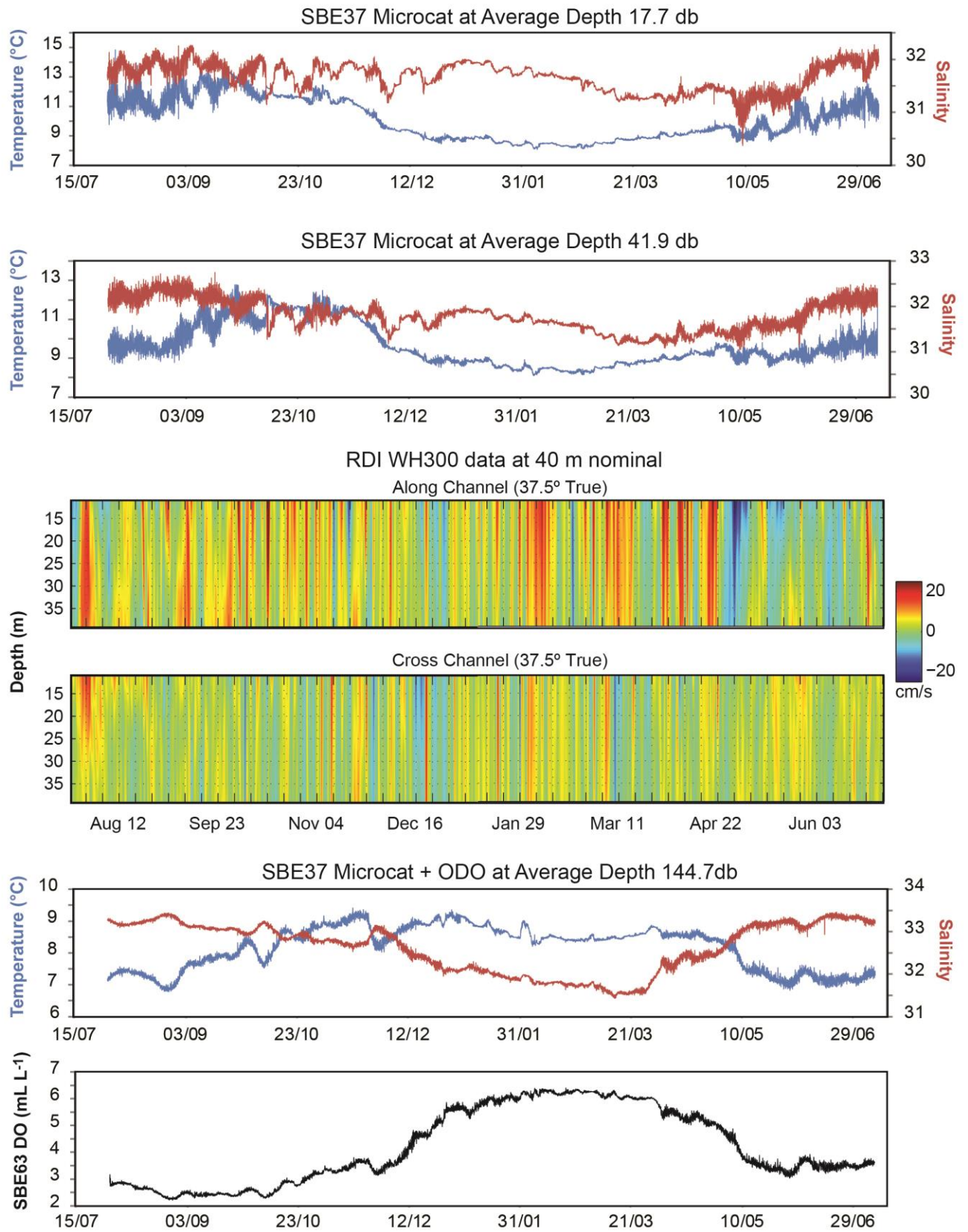


Figure 8. Time series for instrumentation moored at CAM1, Deployment A from July 2015-July 2016.



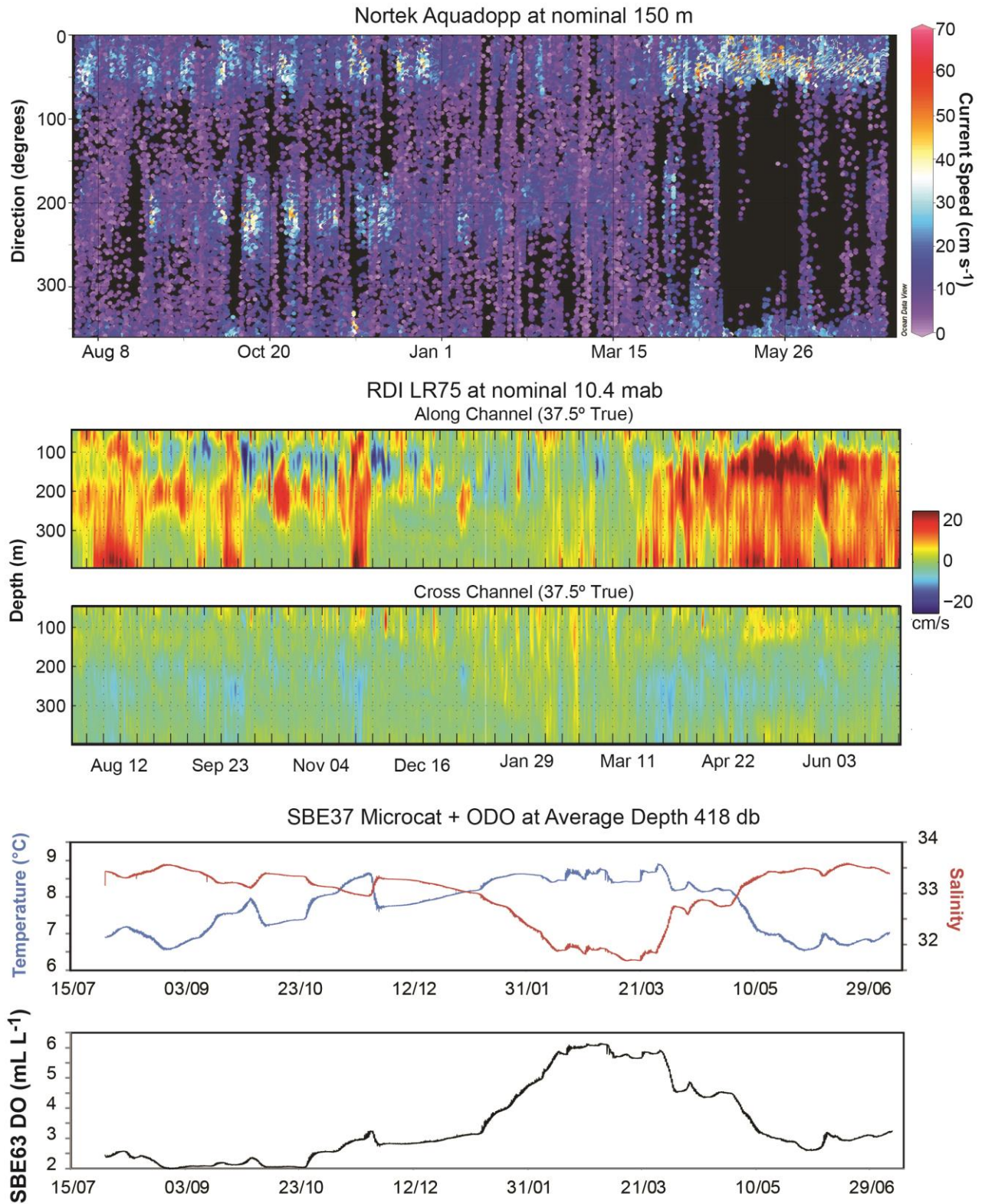


Figure 8 continued. Time series for instrumentation moored at CAM1, Deployment A from July 2015- July 2016.

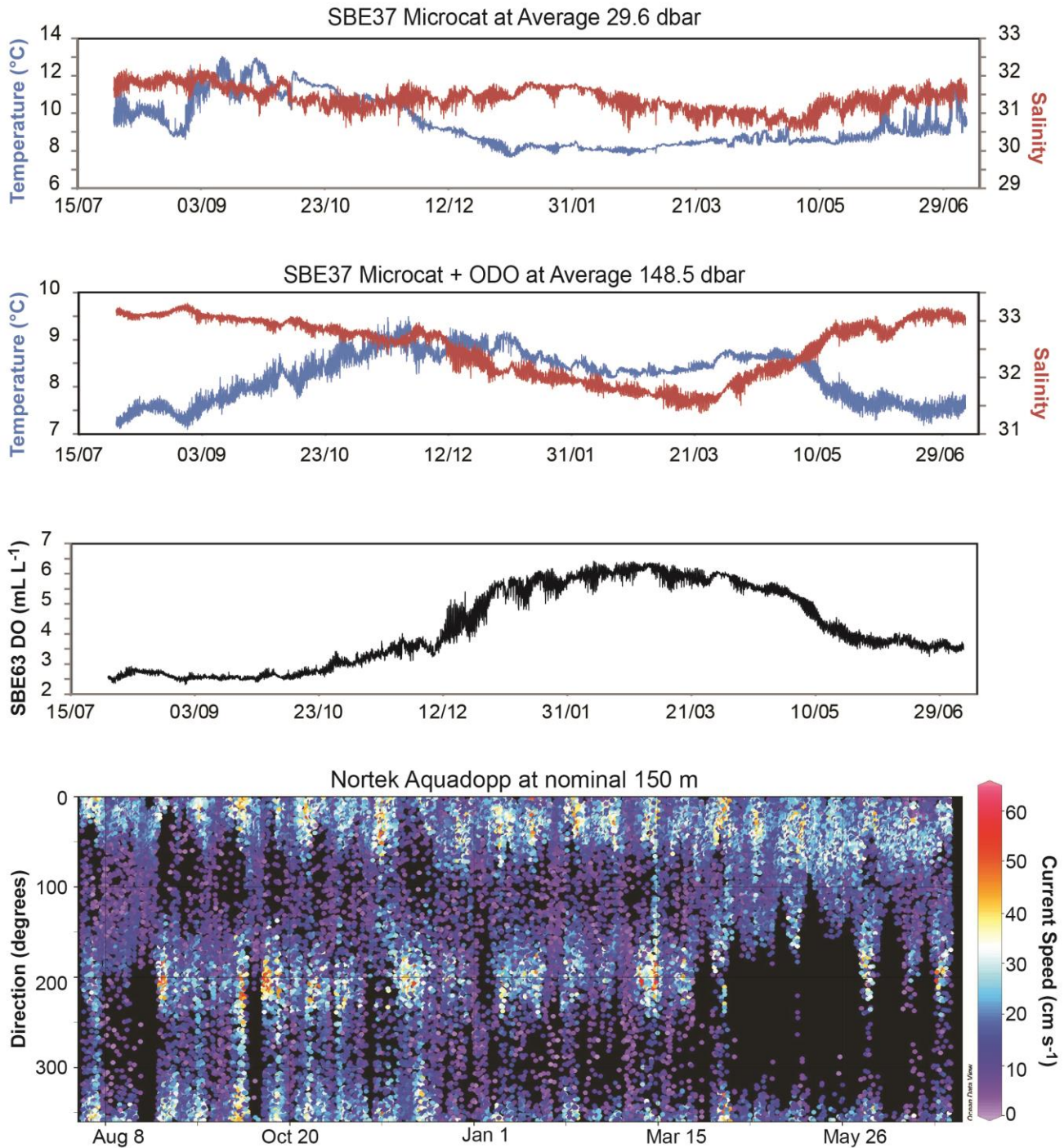


Figure 9. Time series for instrumentation moored at CAM2, Deployment A from July 2015-July 2016.



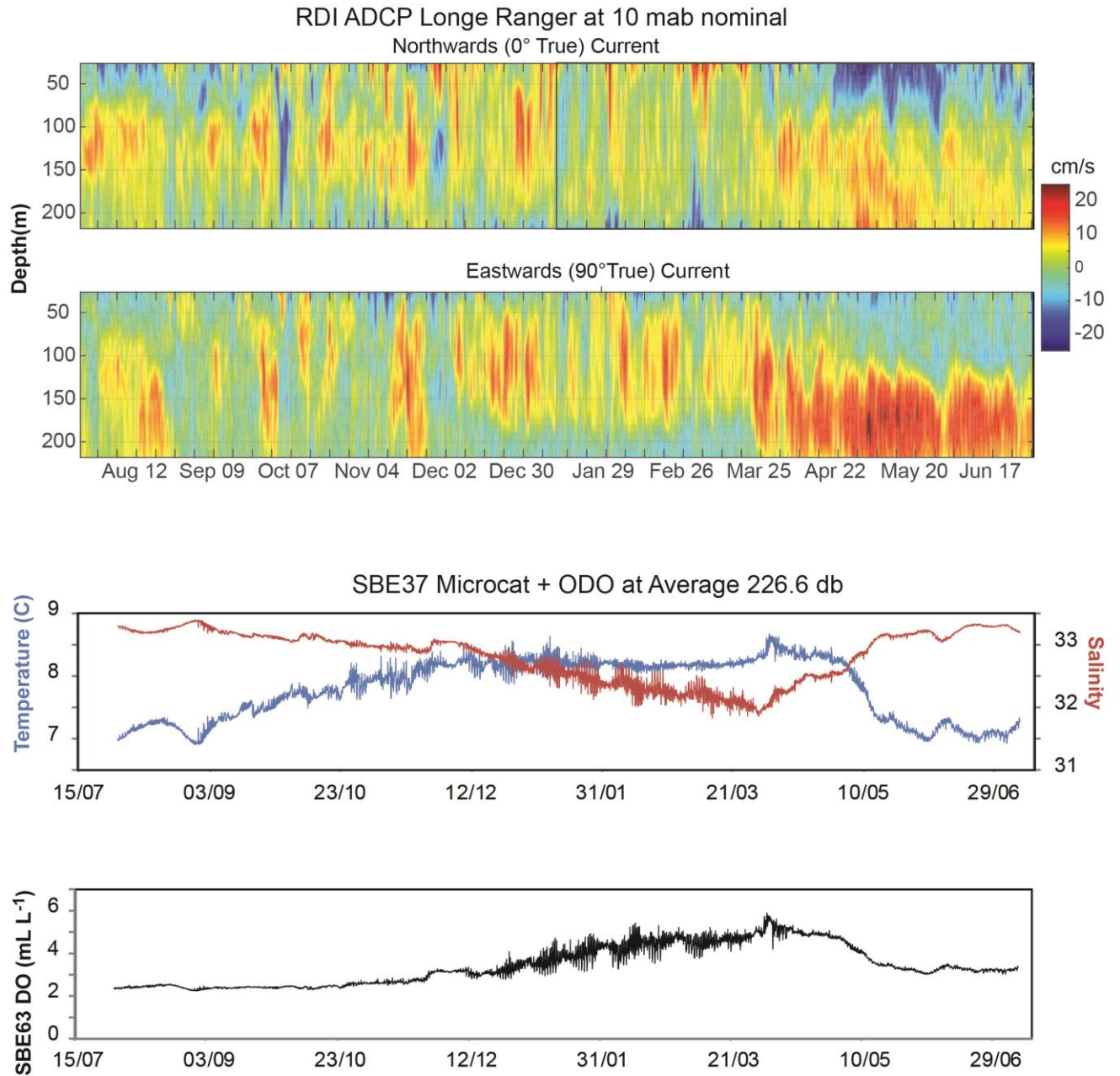


Figure 9 continued. Time series for instrumentation moored at CAM2, Deployment A from July 2015- July 2016.

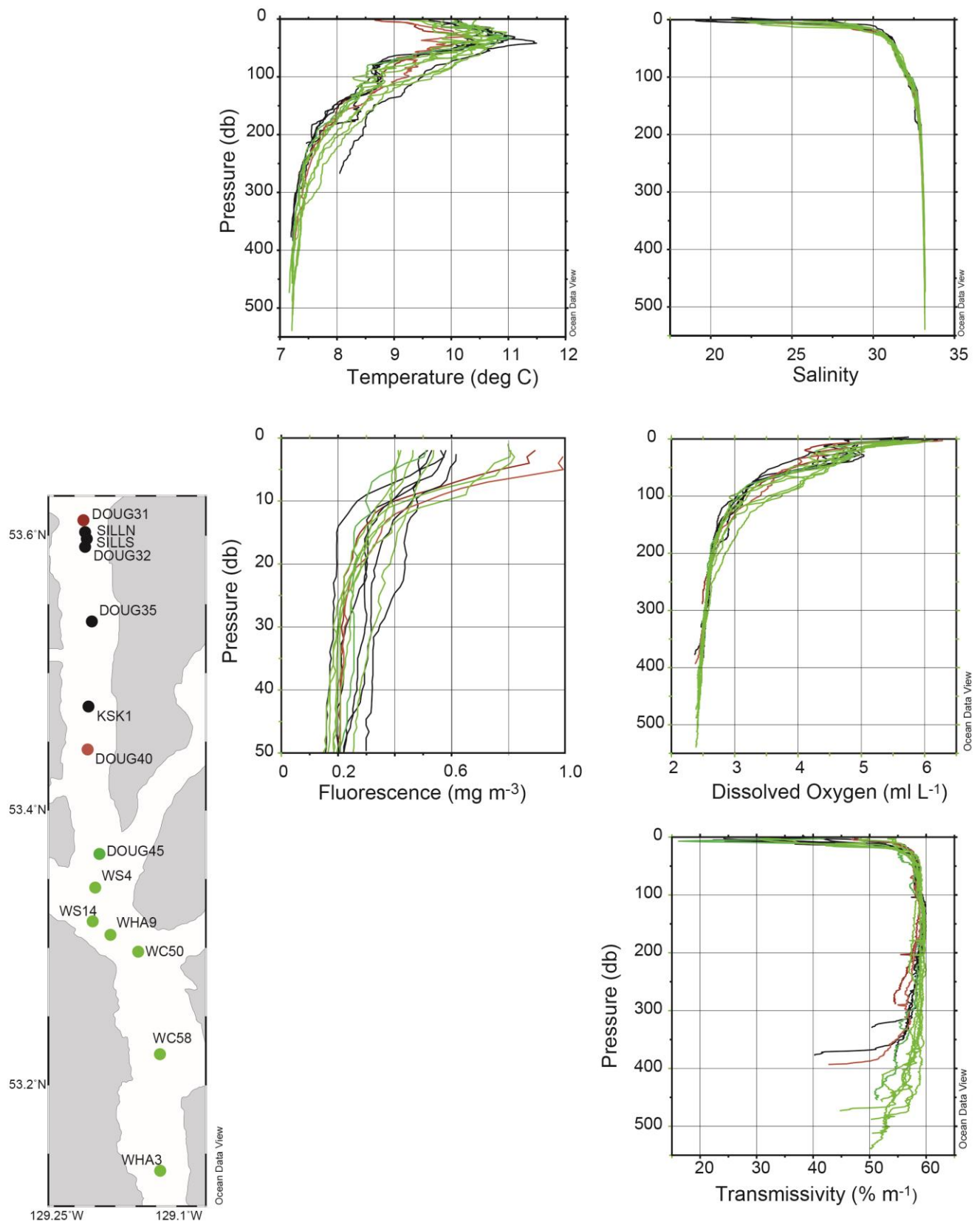


Figure 10. Stations and CTD profiles collected during Cruise 2015-54. Plot shows only the lower Douglas Channel and Whale Channel stations.



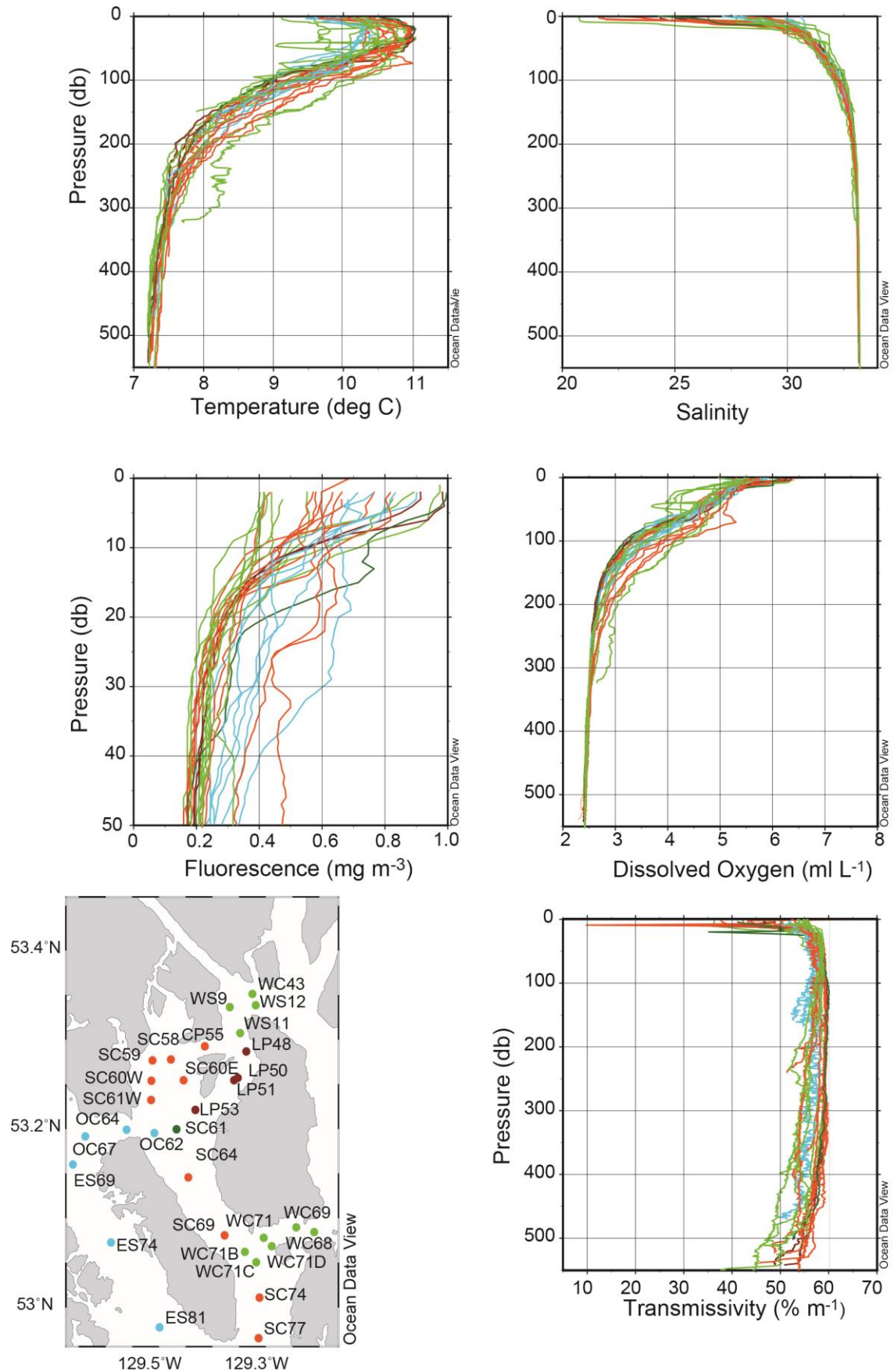


Figure 10 continued. Stations and CTD profiles collected during Cruise 2015-54. Plot show Wright Sound, Squally Channel, Whale Channel, Estevan Sound and Otter Channel stations.

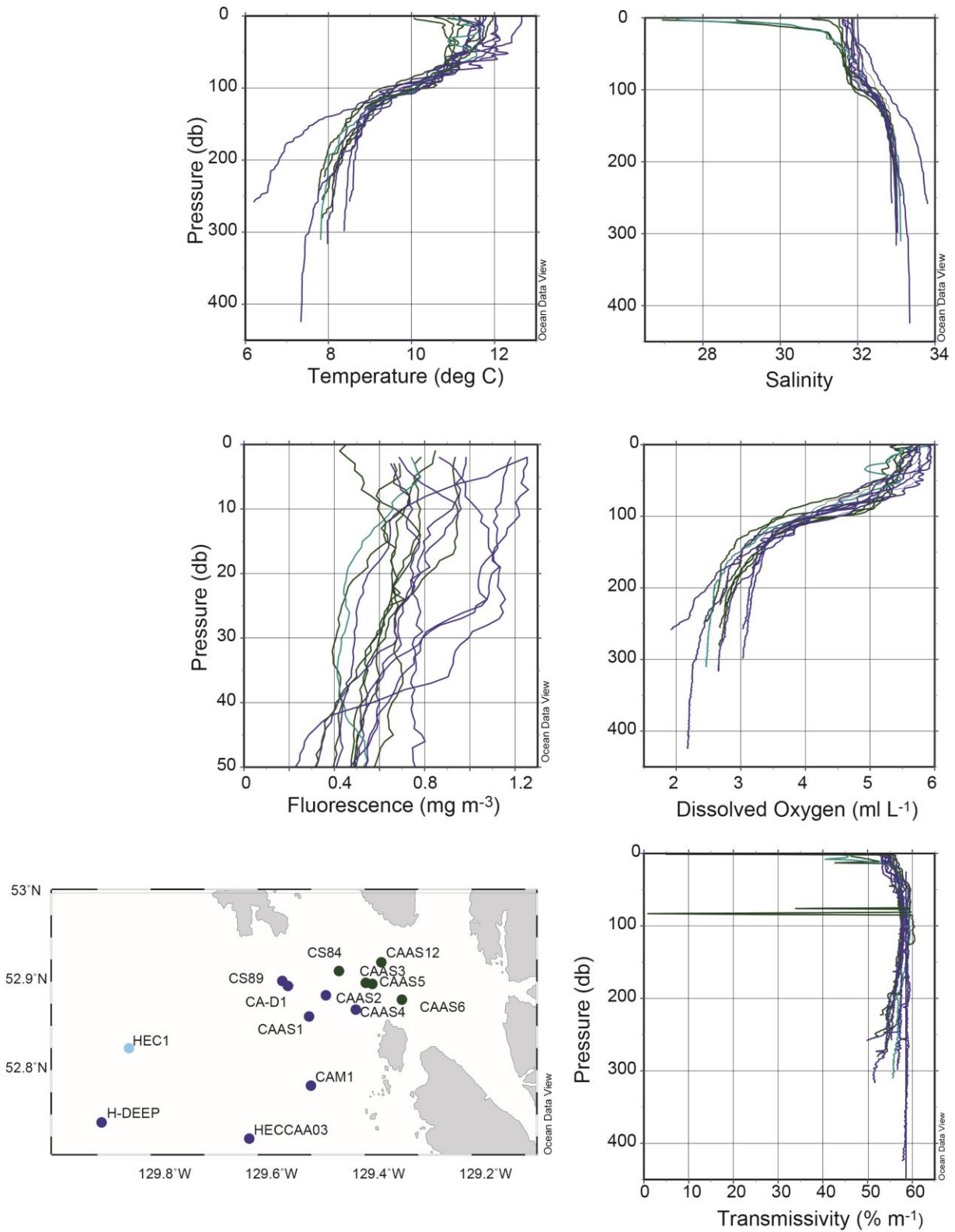


Figure 10 continued. Stations and CTD profiles collected during Cruise 2015-54. Plots show Caamaño Sound and Hecate Strait stations.

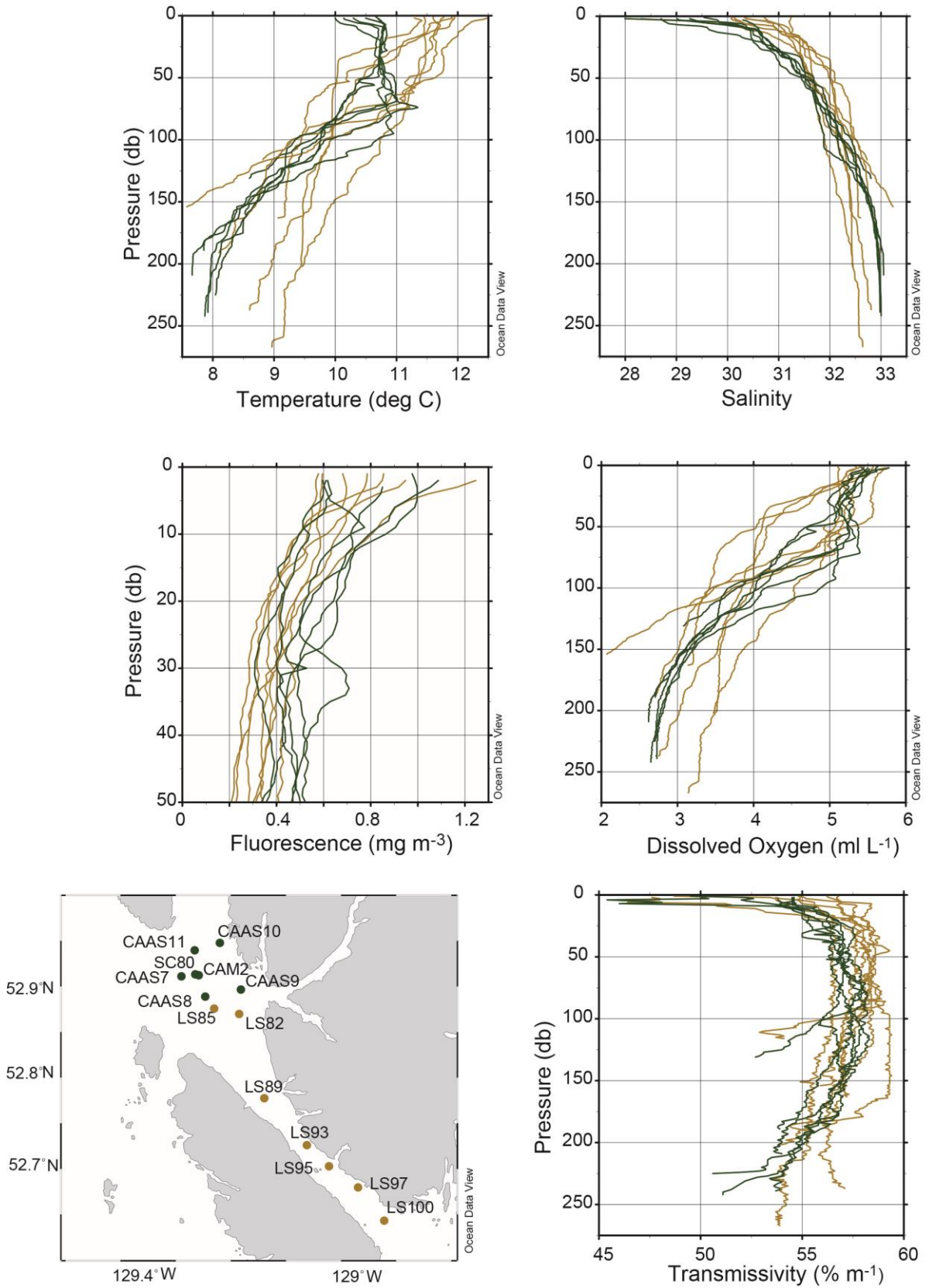


Figure 10 continued. Stations and CTD profiles collected during Cruise 2015-54. Plot shows stations Laredo Sound and parts of Caamaño Sound.

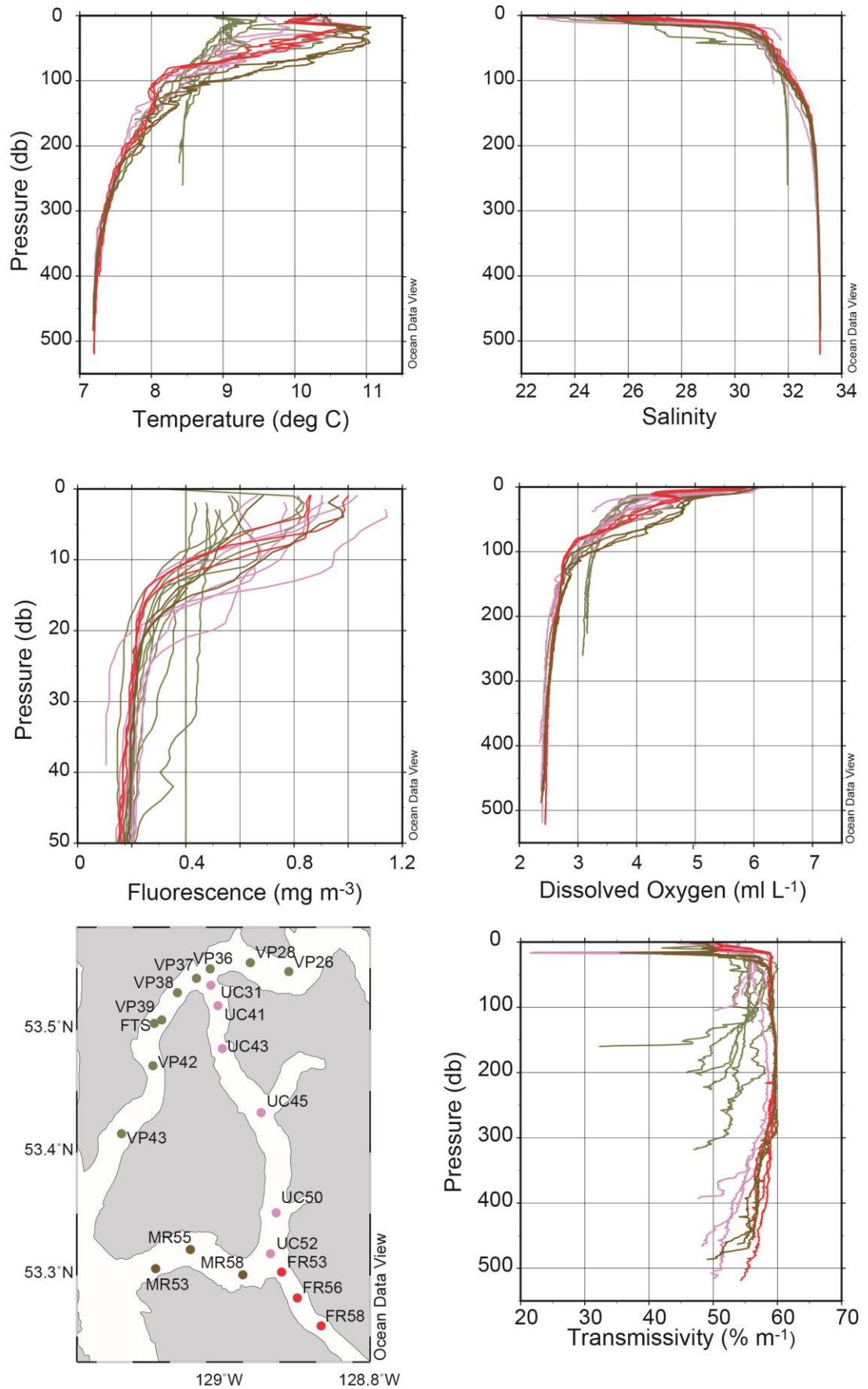


Figure 10 continued. Stations and CTD profiles collected during Cruise 2015-54. Plot shows stations in Verney Passage and Ursula Channel area.



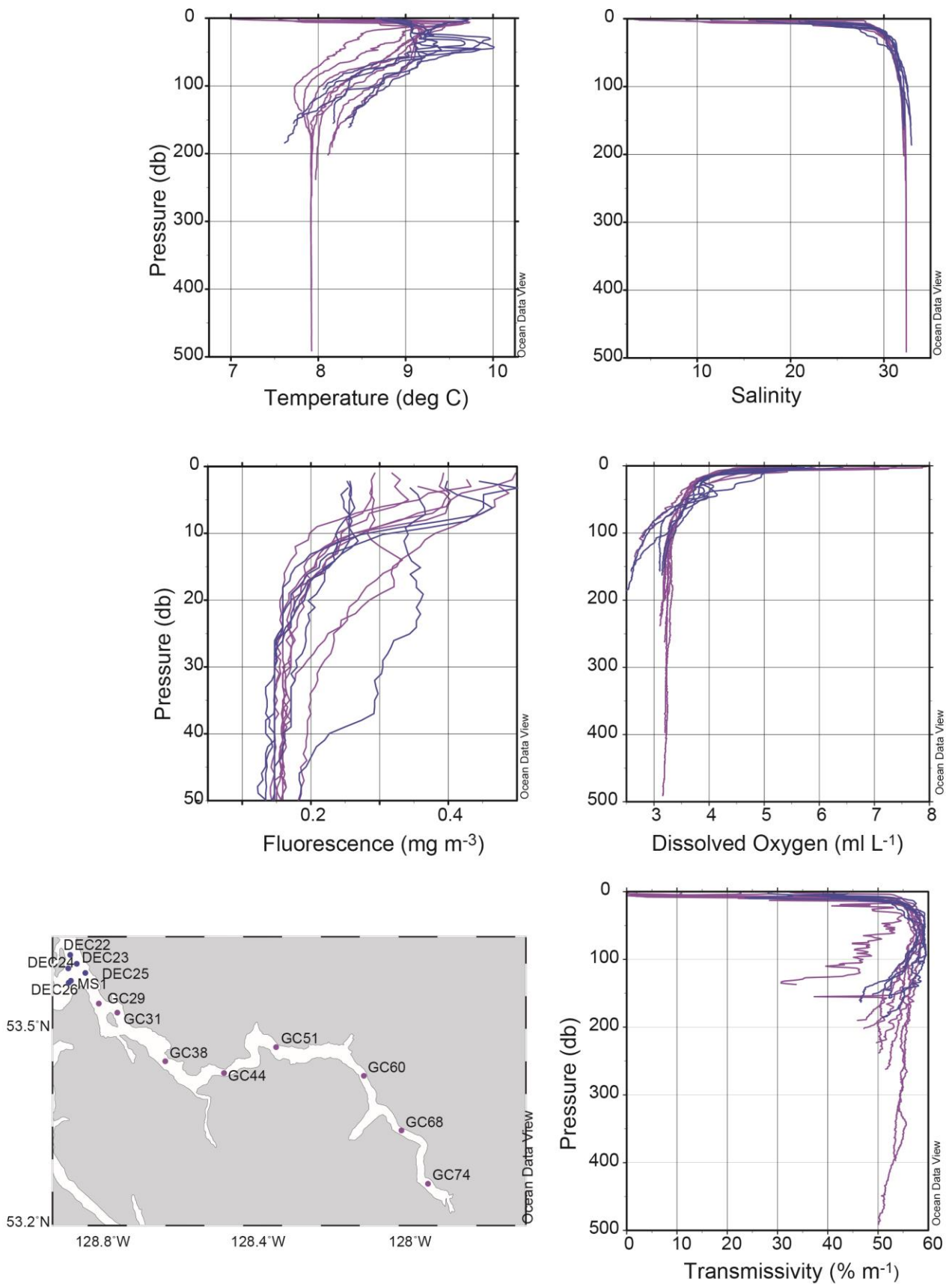


Figure 10 continued. Stations and CTD profiles collected during Cruise 2015-54. Plot shows stations in Devastation Channel and Gardiner Canal.

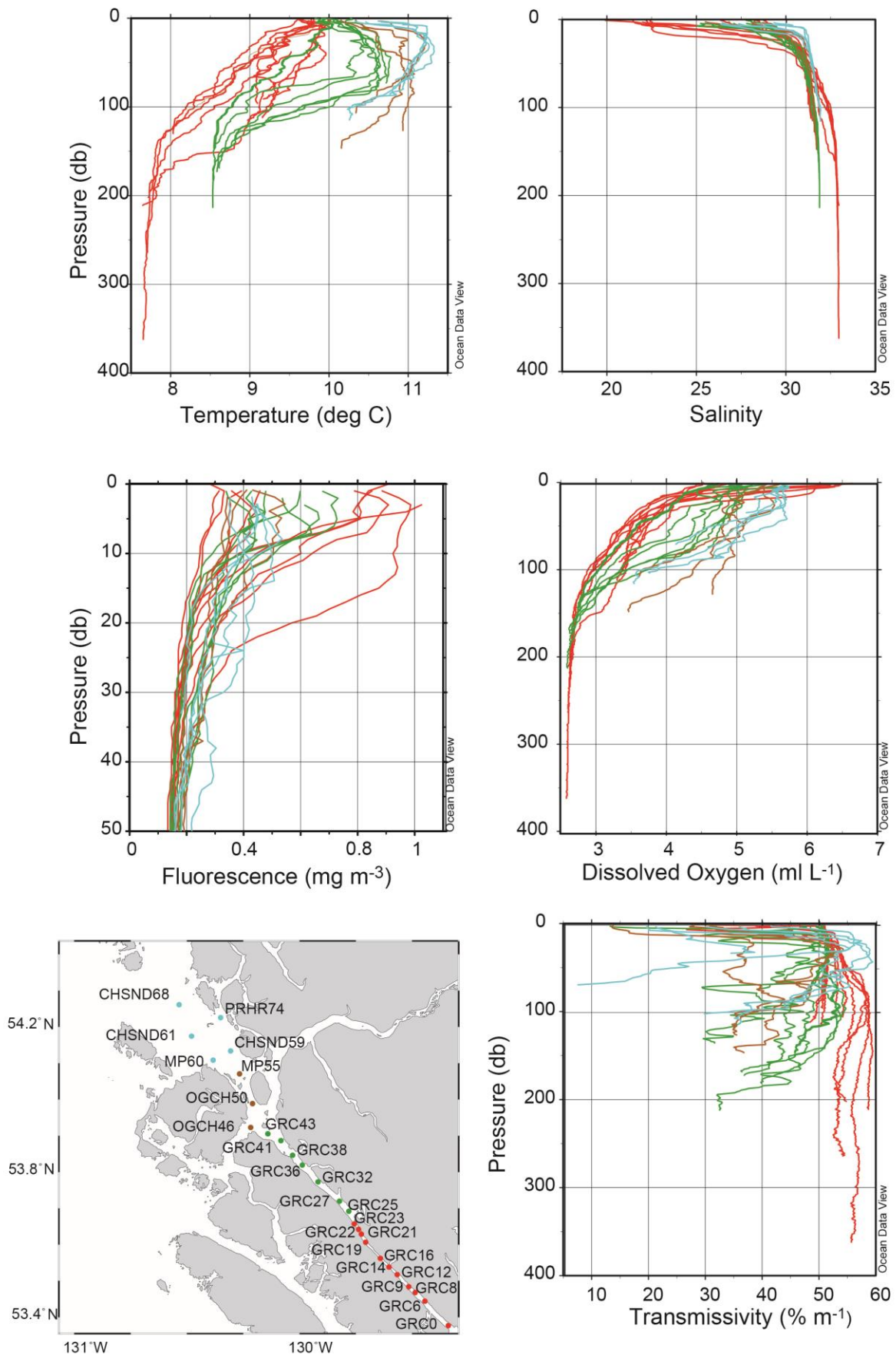


Figure 10 continued. Stations and CTD profiles collected during Cruise 2015-54. This plot shows Grenville Channel and Chatham Sound stations.

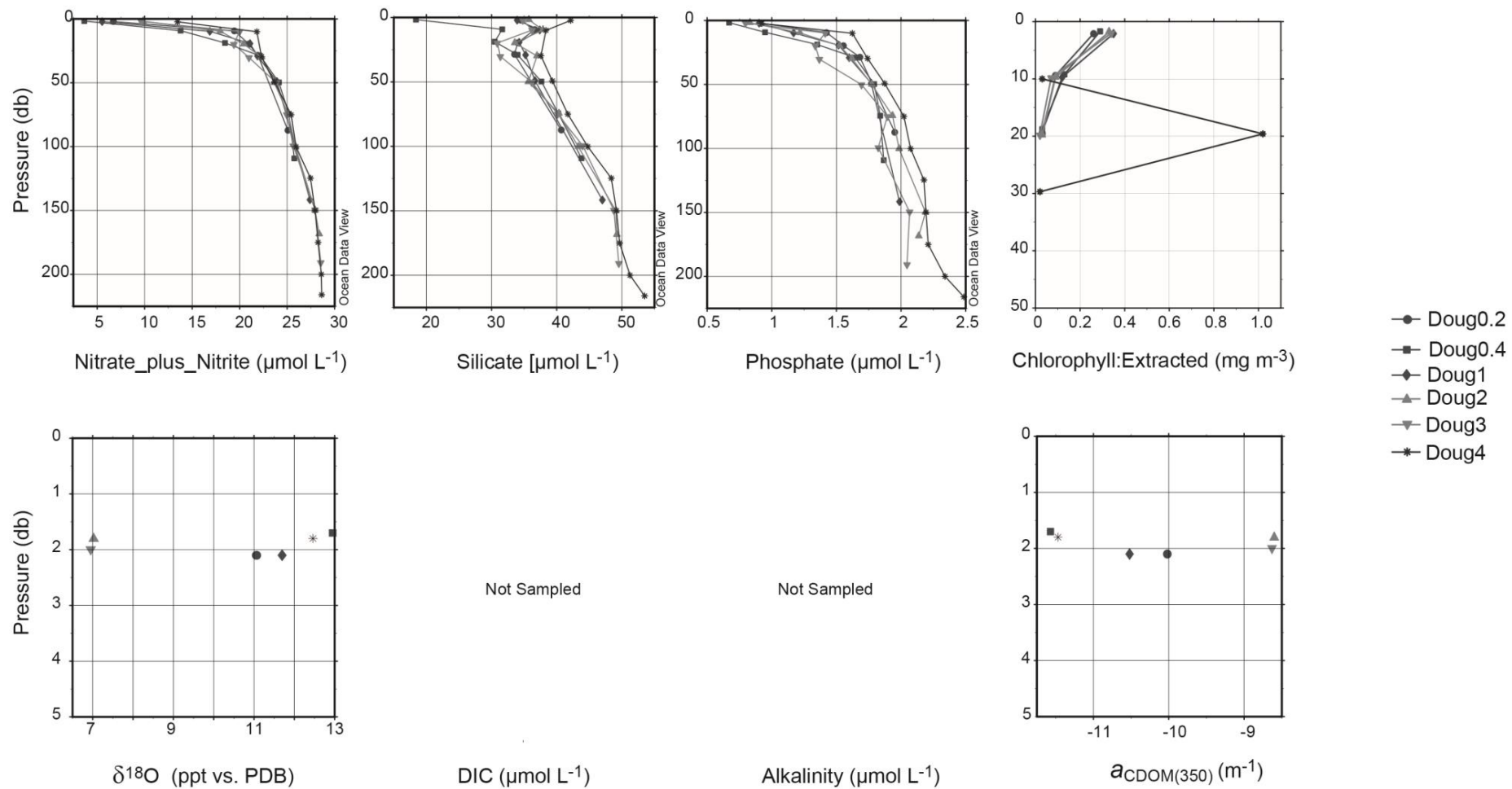


Figure 11. Bottle data from Cruise 2015-54. Samples are from upper Douglas Channel, see Figure 10 for location.

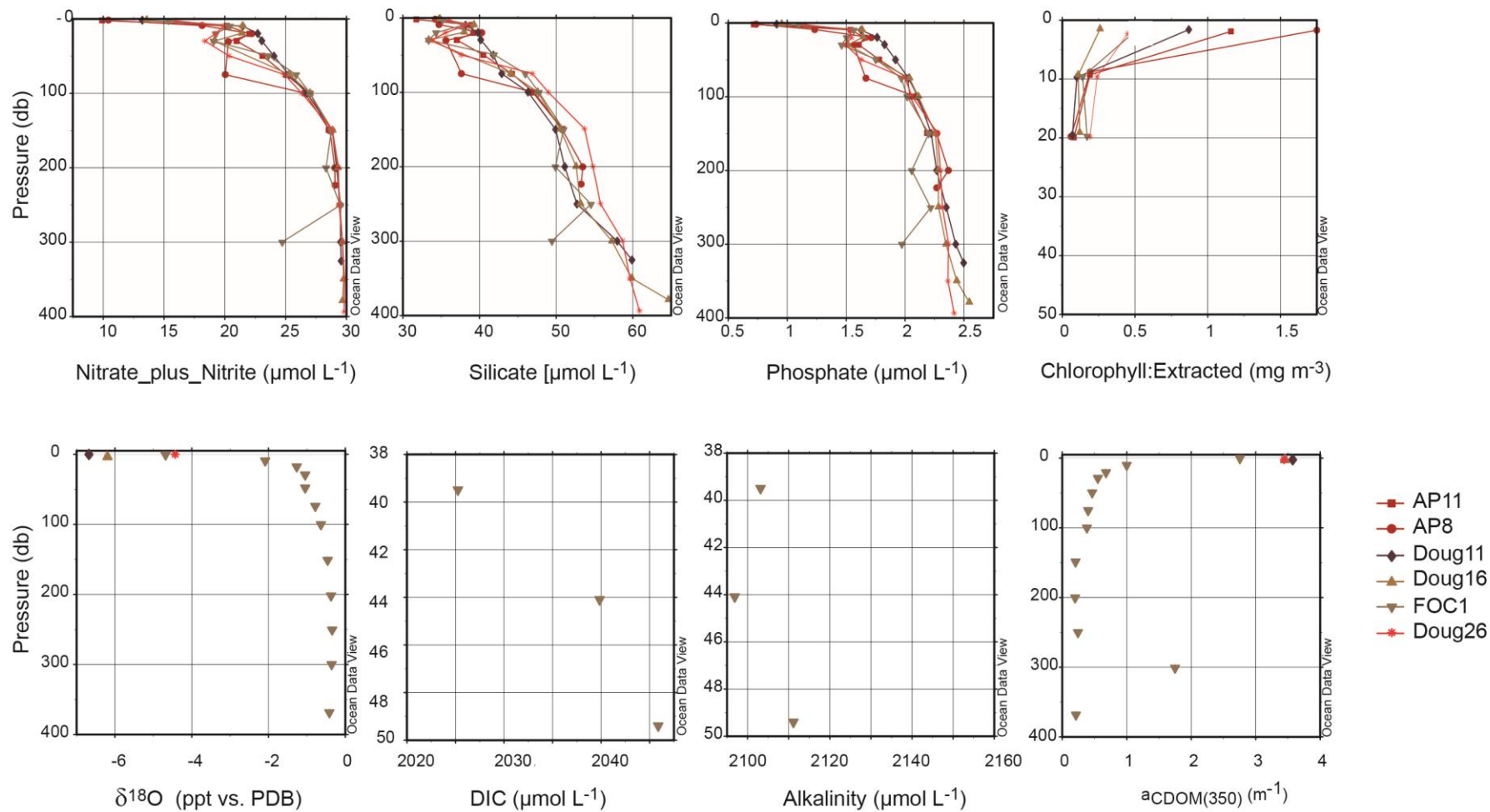


Figure 11 continued. Bottle data from Cruise 2015-54. Samples are from Kildala Arm, Upper and Doulgas Channel. See Figure 10 for station locations.



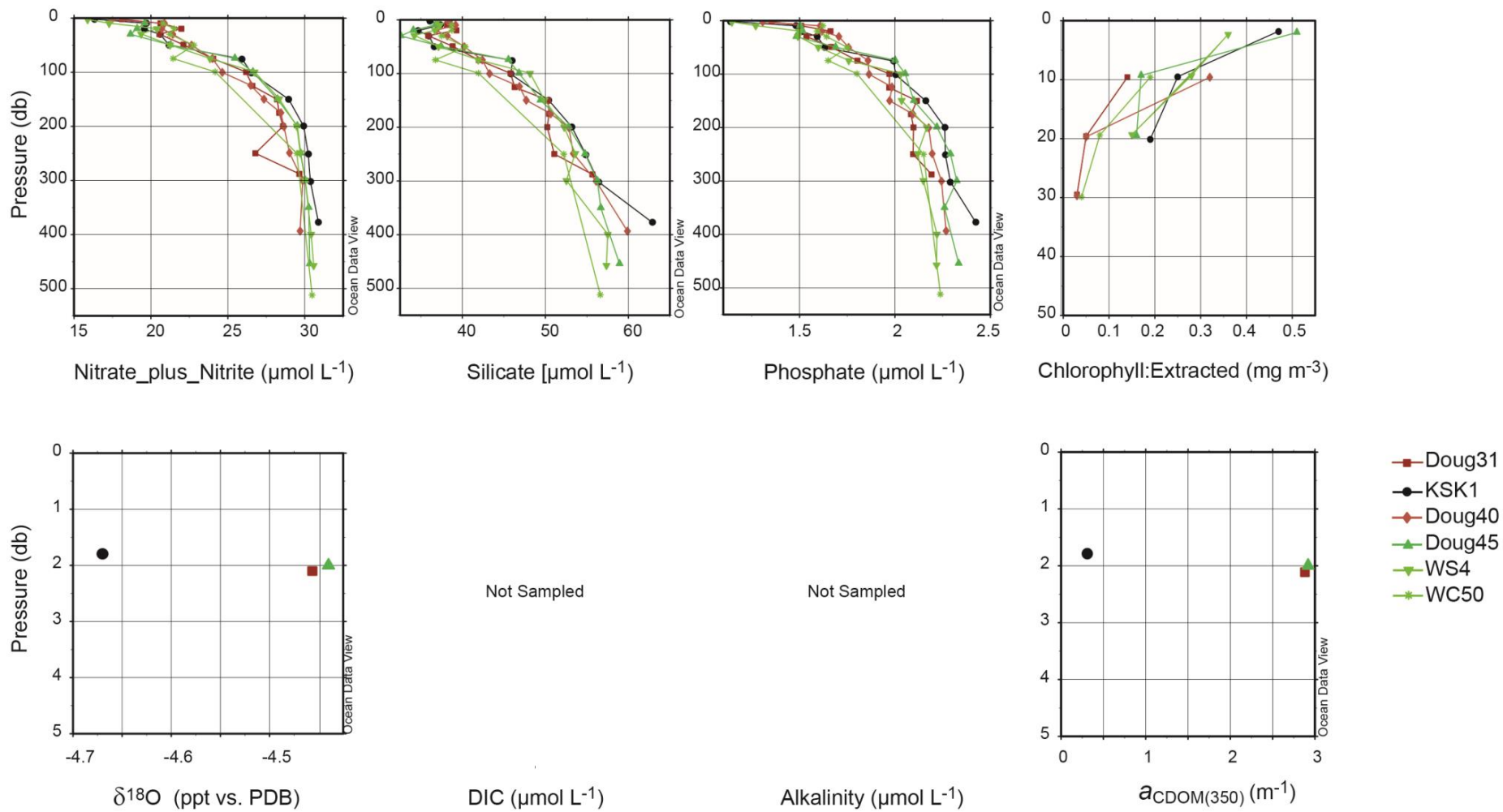


Figure 11 continued. Bottle data from Cruise 2015-54. Samples are from Douglas Channel, Wright Sound and Whale Channel. See Figure 10 for station locations.

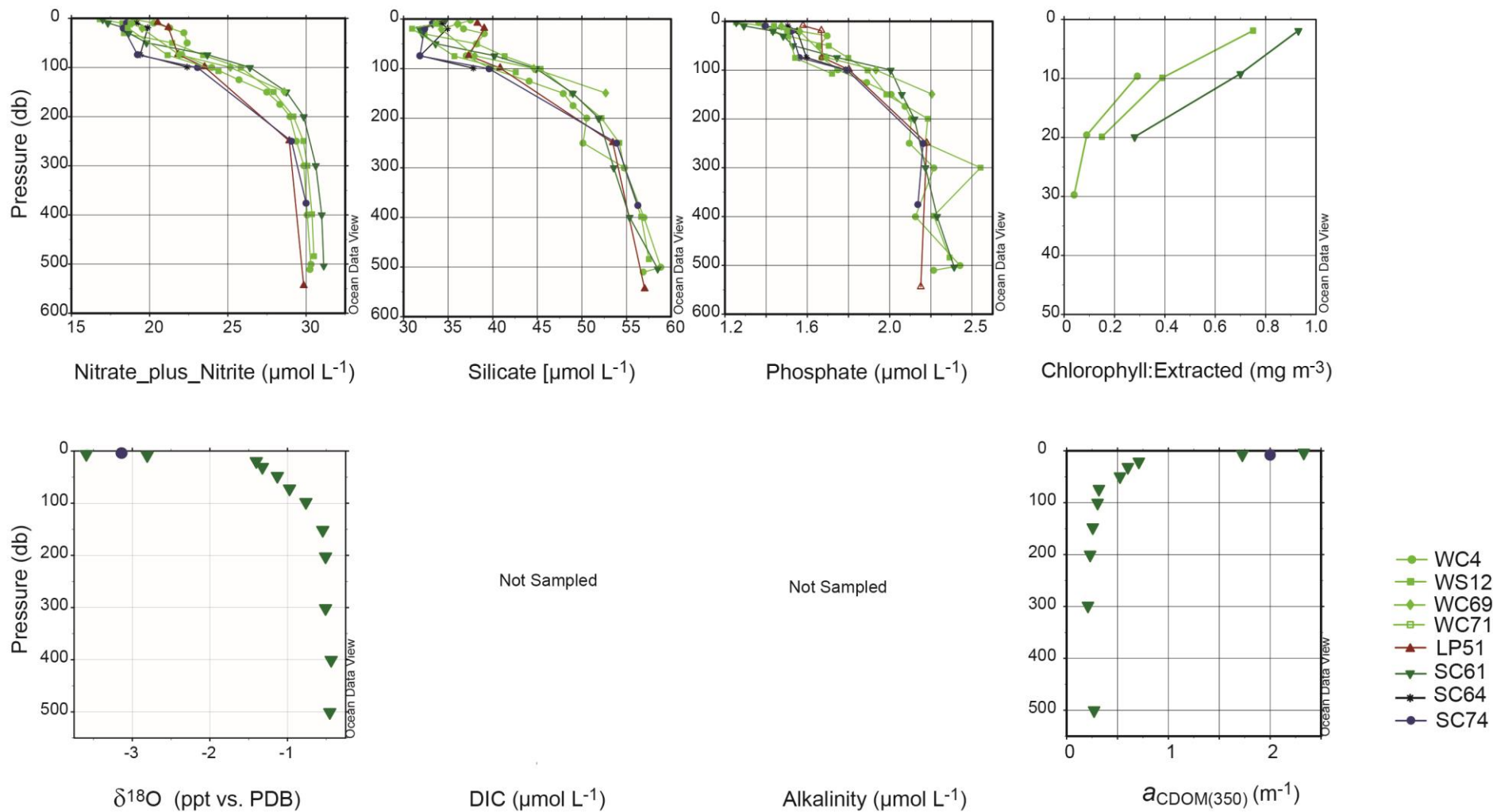


Figure 11 continued. Bottle data from Cruise 2015-54. Samples are from Whale Channel, Wright Sound, Squally Channel and Lewis Pass. See Figure 10 for station locations.

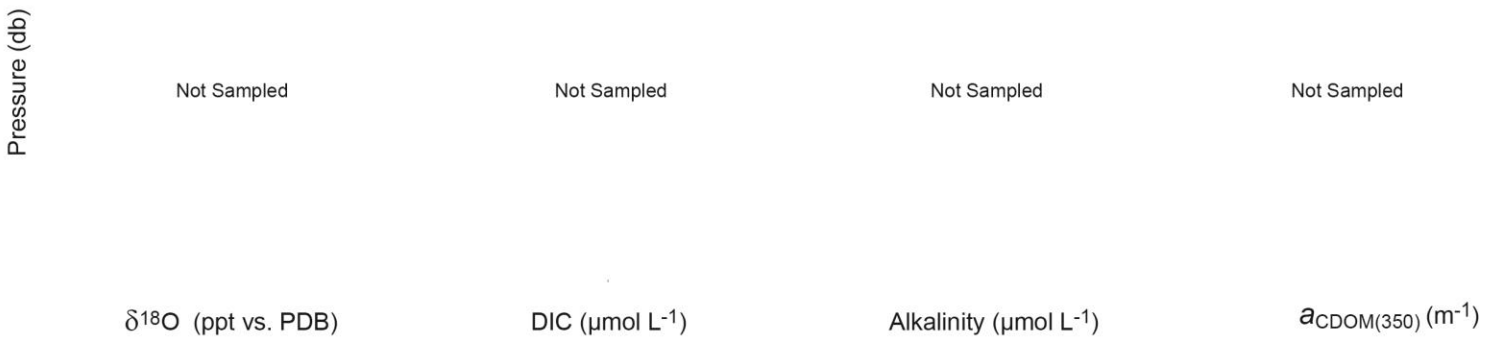
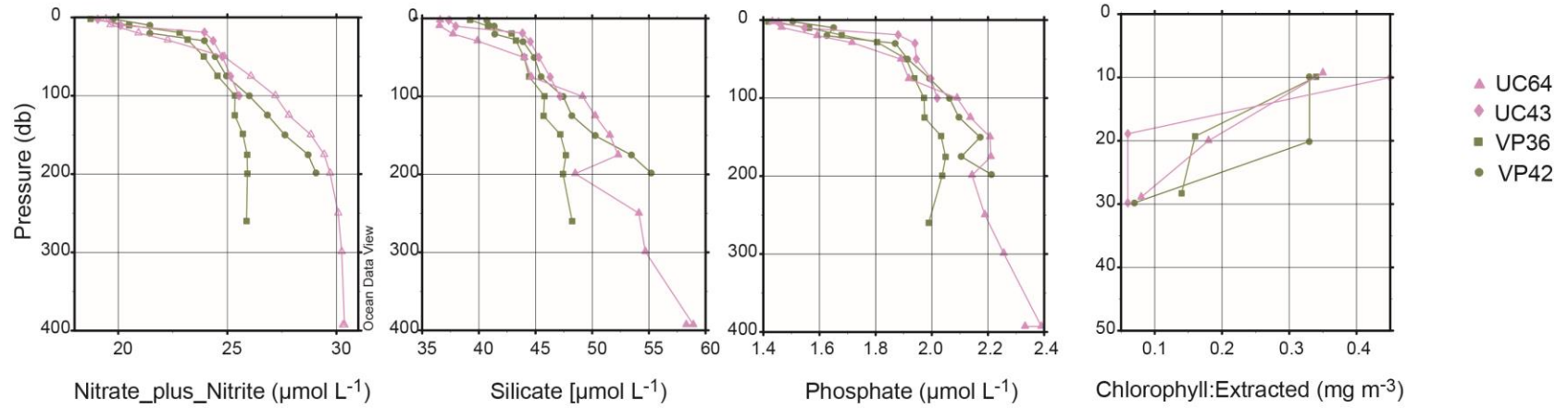


Figure 11 continued. Bottle data from Cruise 2015-54. Samples are from Verney and Ursula Passage5. See Figure 10 for station locations.

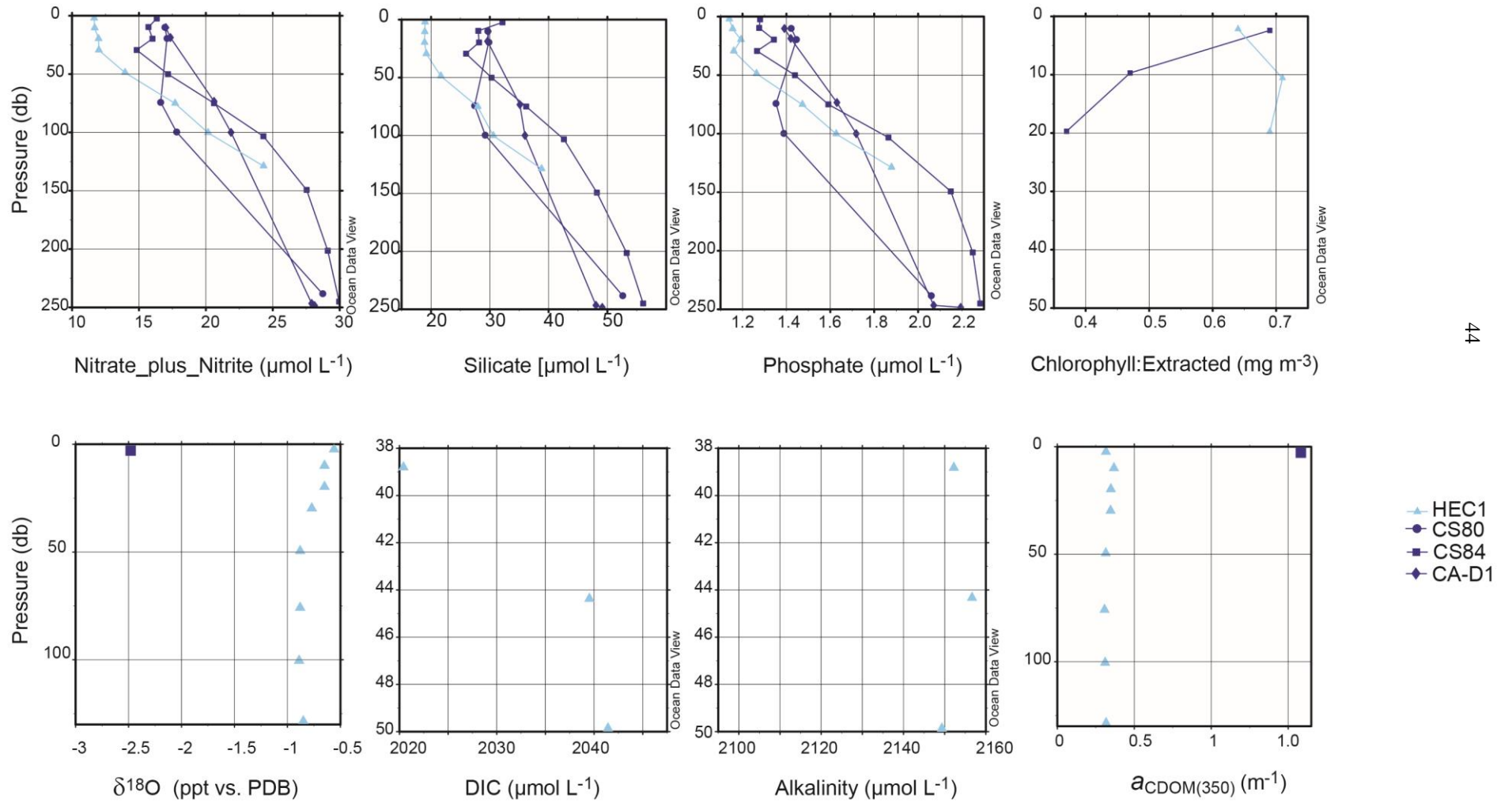


Figure 11 continued. Bottle data from Cruise 2015-54. Samples are from Caamaño Sound and Hecate Strait. See Figure 10 for station locations.

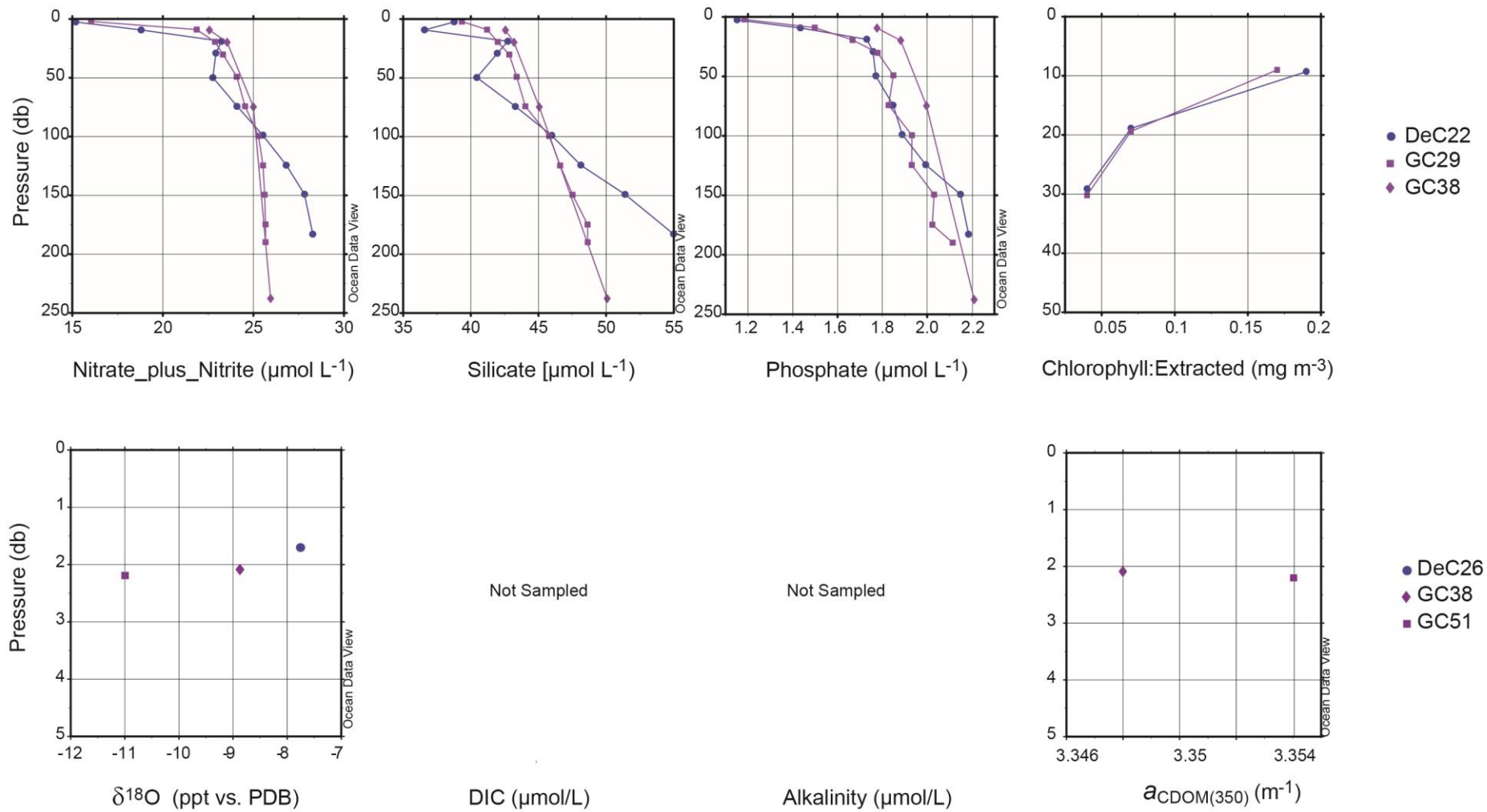


Figure 11 continued. Bottle data from Cruise 2015-54. Samples are from Devasation Channel and Gardiner Canal. See Figure 10 for station locations. Upper panel and lower panel have specific station legends.

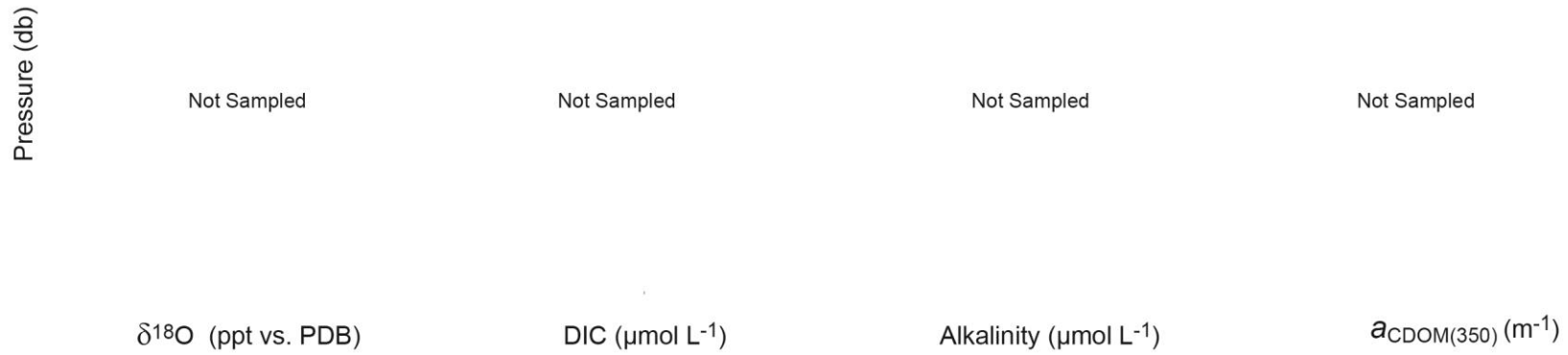
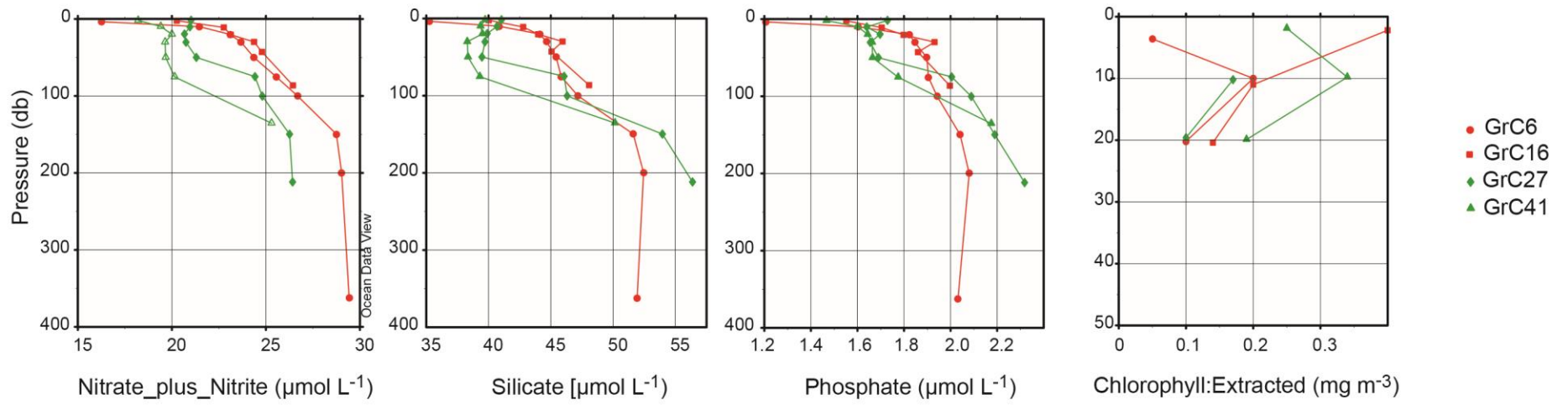


Figure 11 continued. Bottle data from Cruise 2015-54. Samples are from Grenville Channel. See Figure 10 for station locations.



Leg 1 (October 17-23)

Leg 2 (October 23-31)

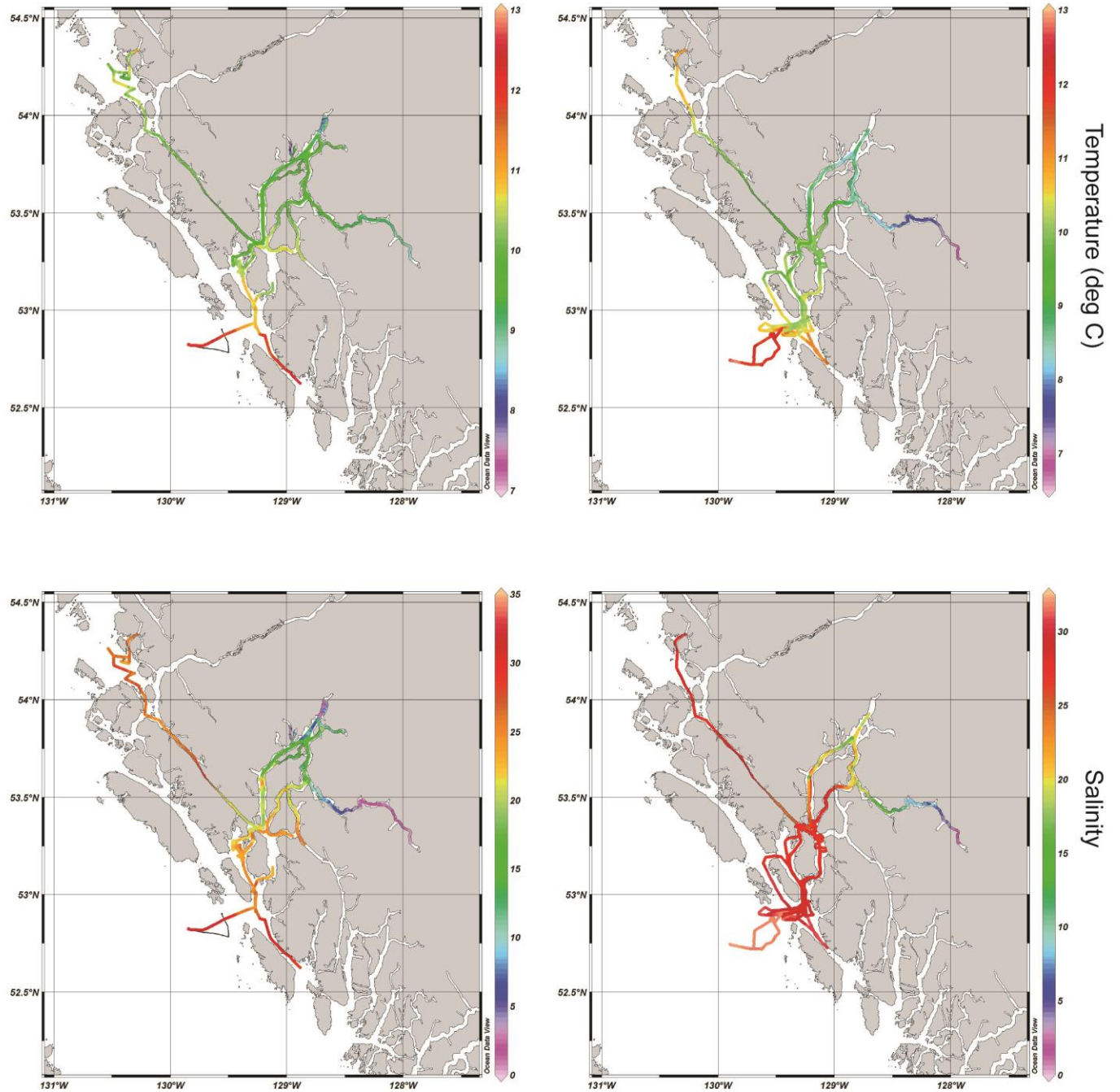


Figure 12. Thermosalinograph data (SBE21) collected during Cruise 2015-54.

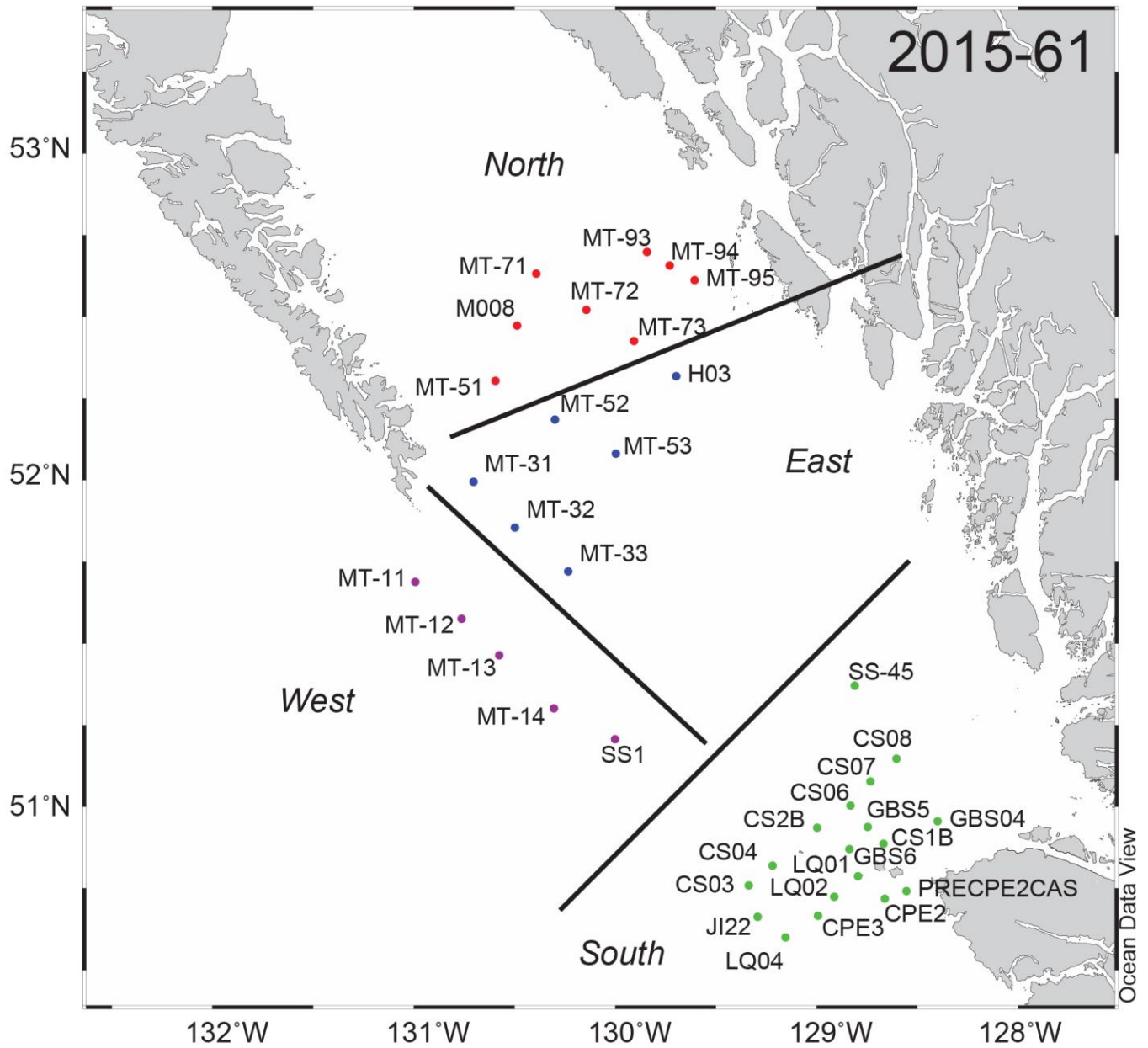


Figure 13. Stations for water property sampling during cruise 2015-61.



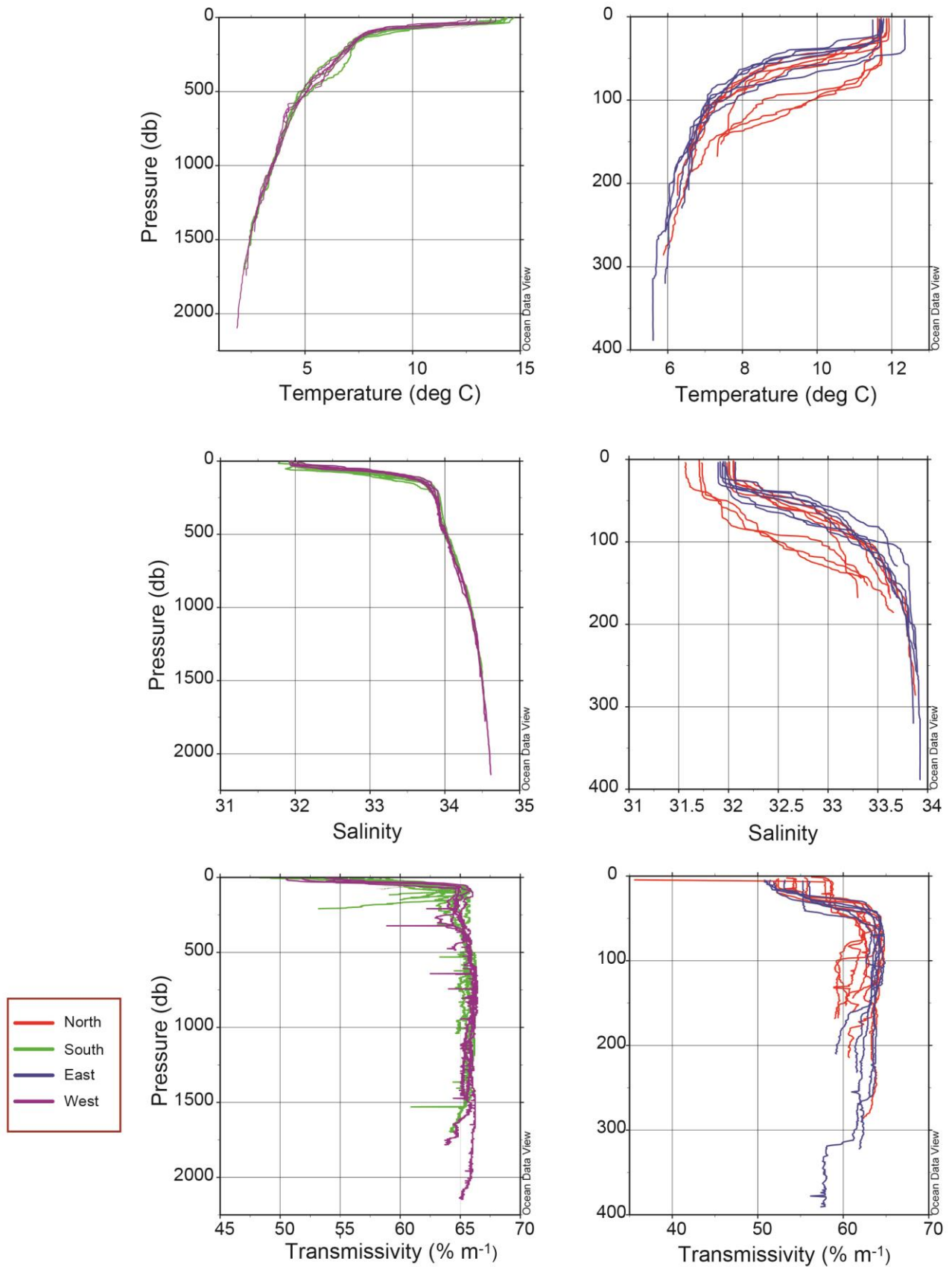


Figure 14. Processed CTD data collected during 2015-61. Colour scheme/locations are shown in Figure 13.

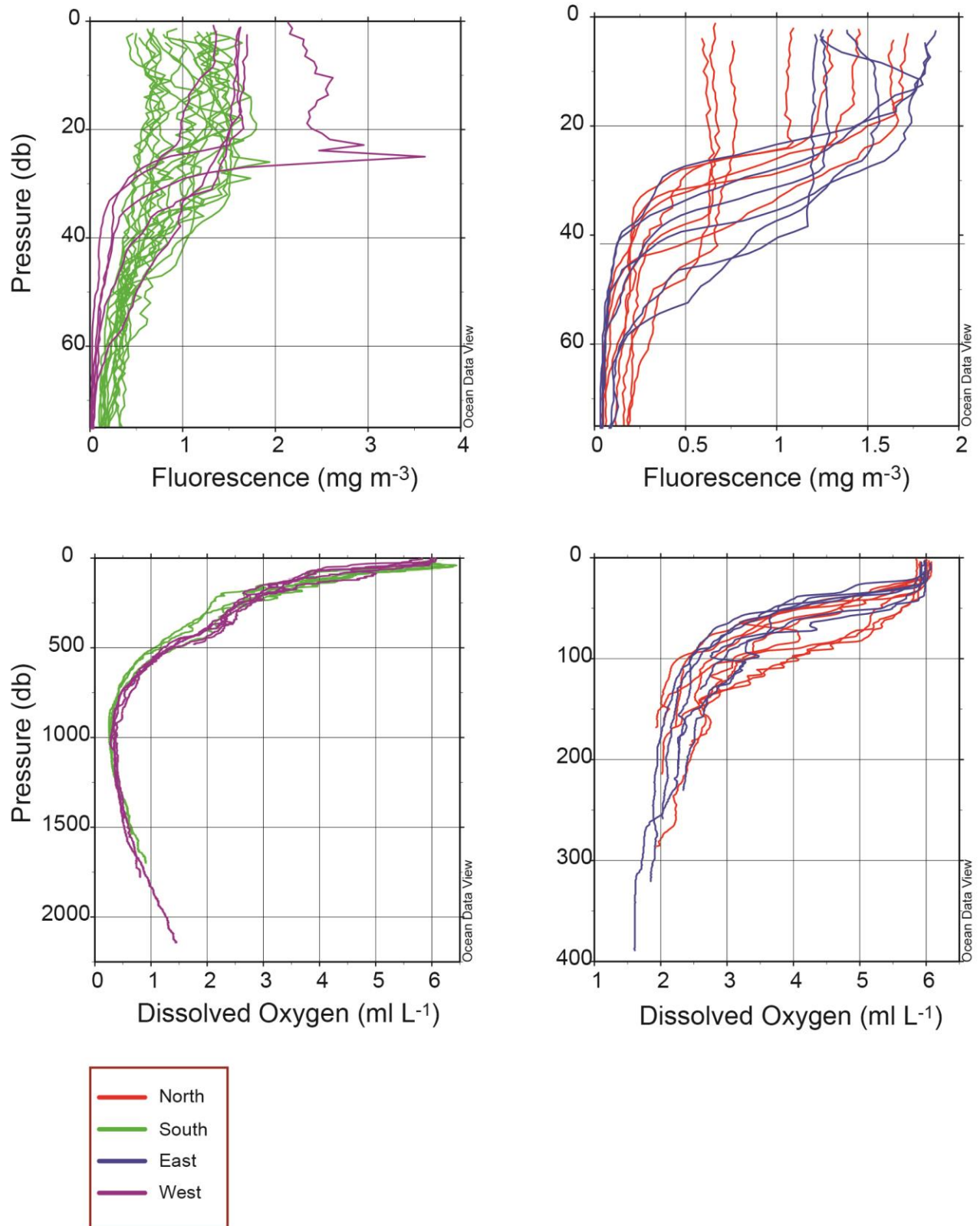


Figure 14 continued. Processed CTD data collected during 2015-61. Colour scheme/locations are shown in Figure 13.

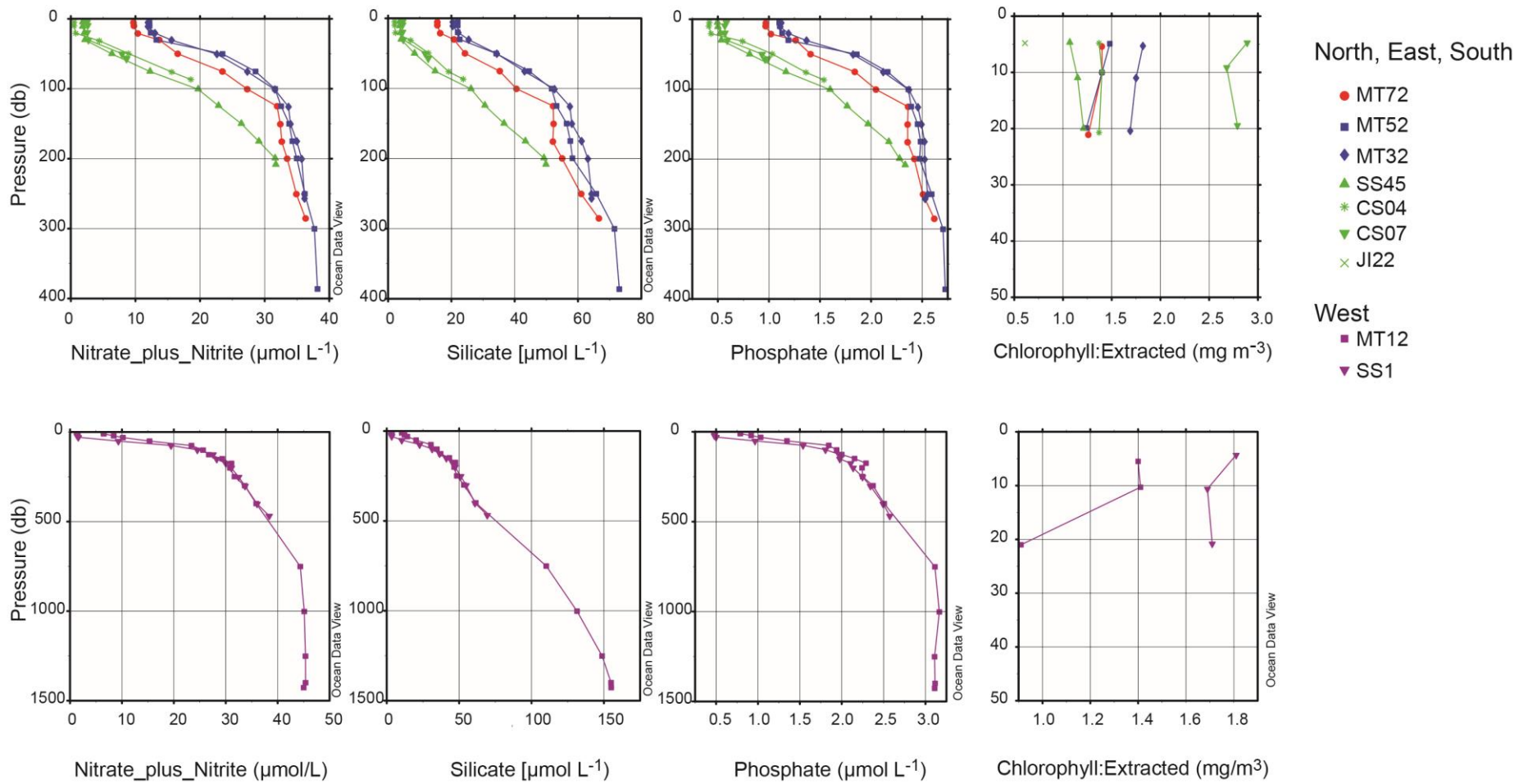


Figure 15. Bottle data from Cruise 2015-61. Colour scheme and locations match Figure 13.

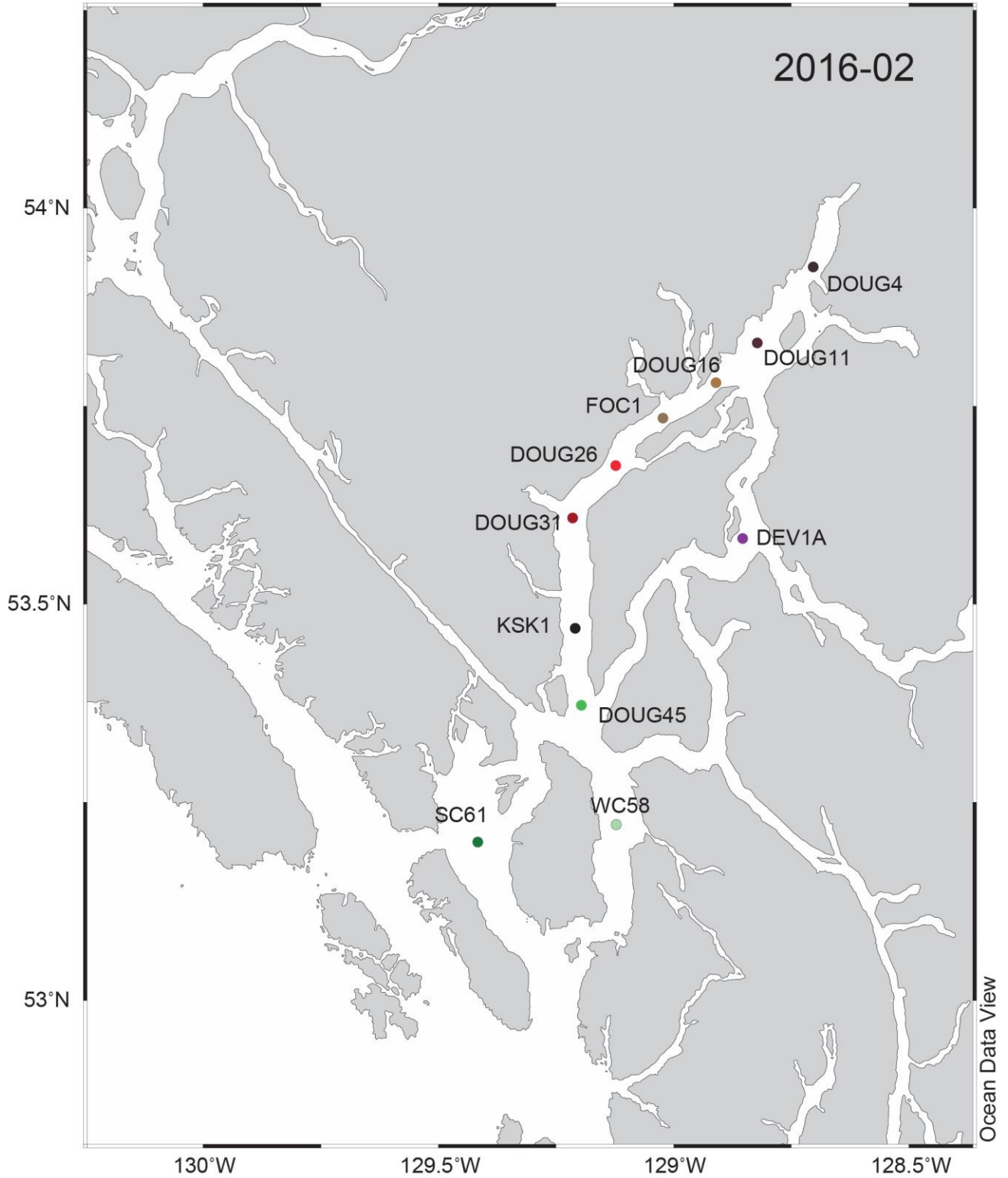


Figure 16. Stations for water property sampling during cruise 2016-02.

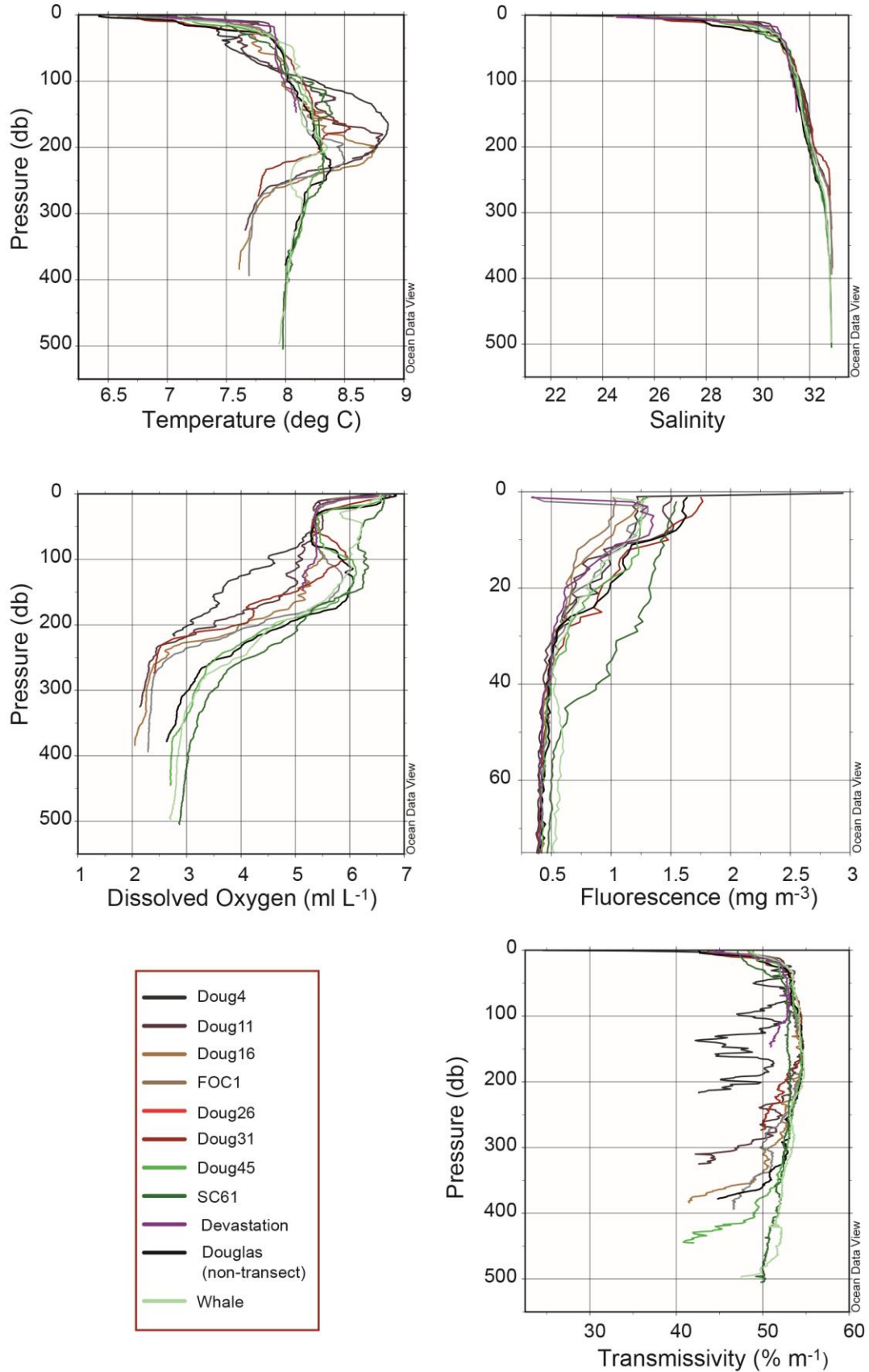


Figure 17. Processed CTD data collected during 2016-02. Colour scheme and locations are shown in Figure 16.

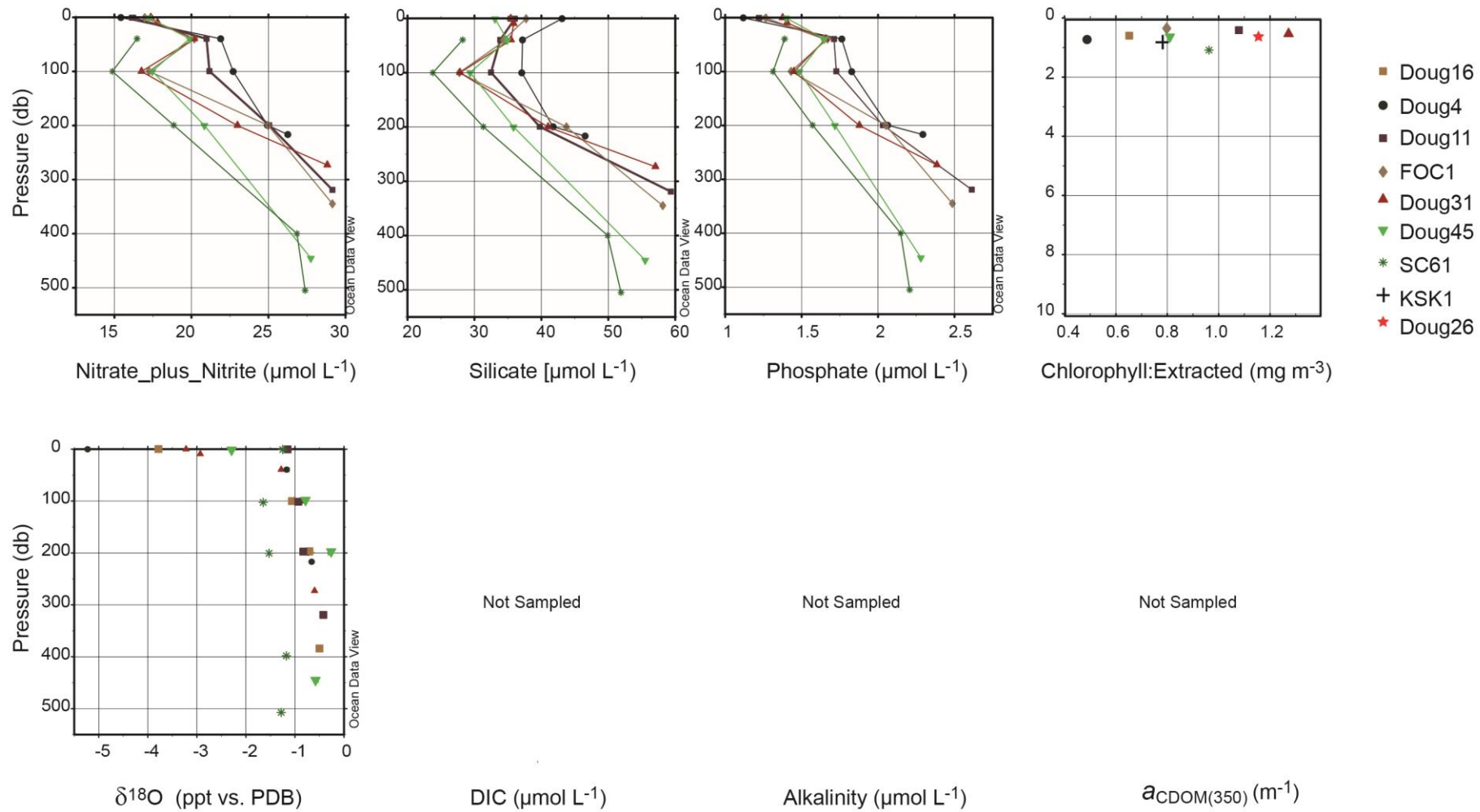


Figure 18. Bottle data from Cruise 2016-02. Colour scheme and locations match Figure 16.



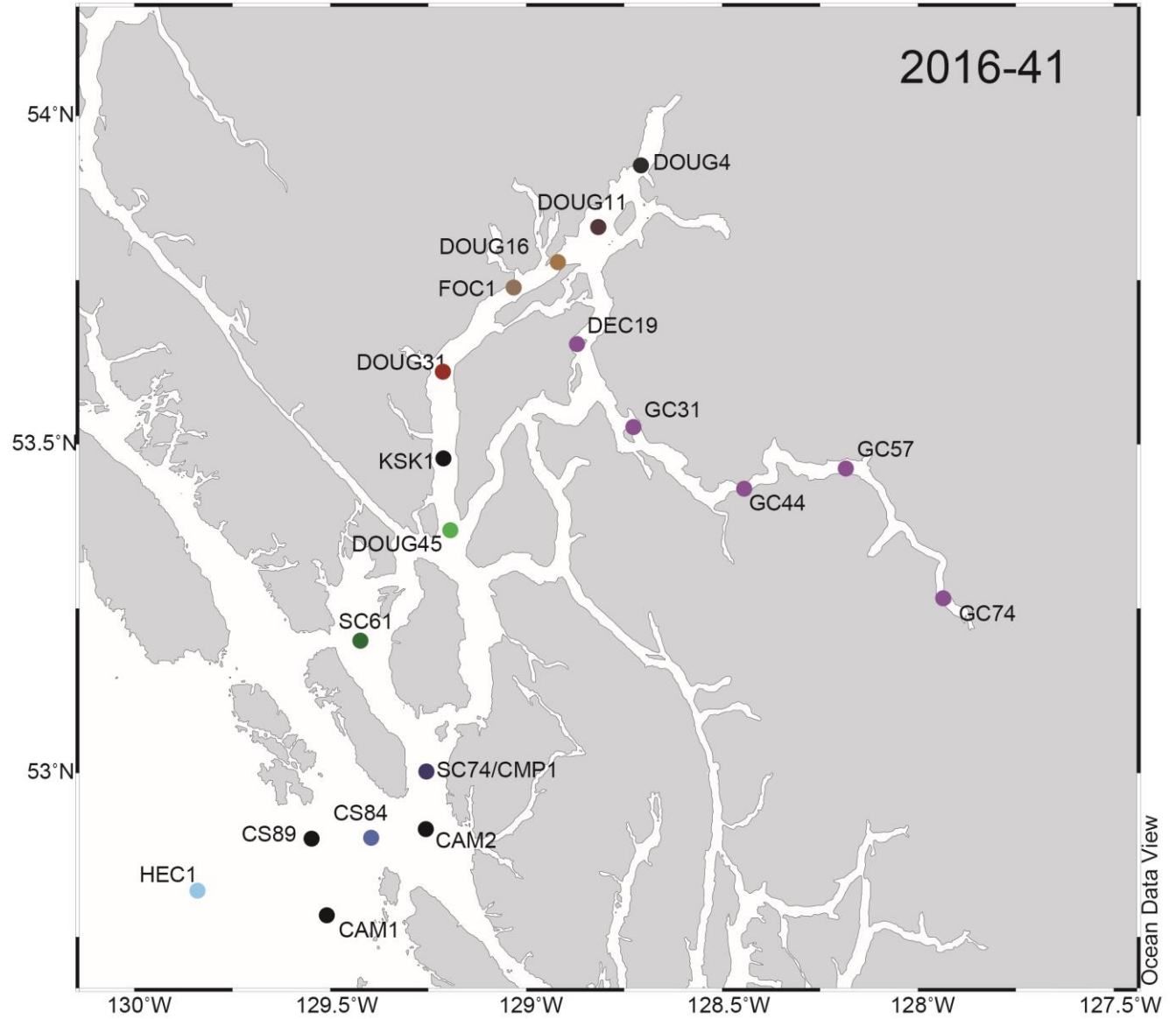


Figure 19. Stations for water property sampling during cruise 2016-41

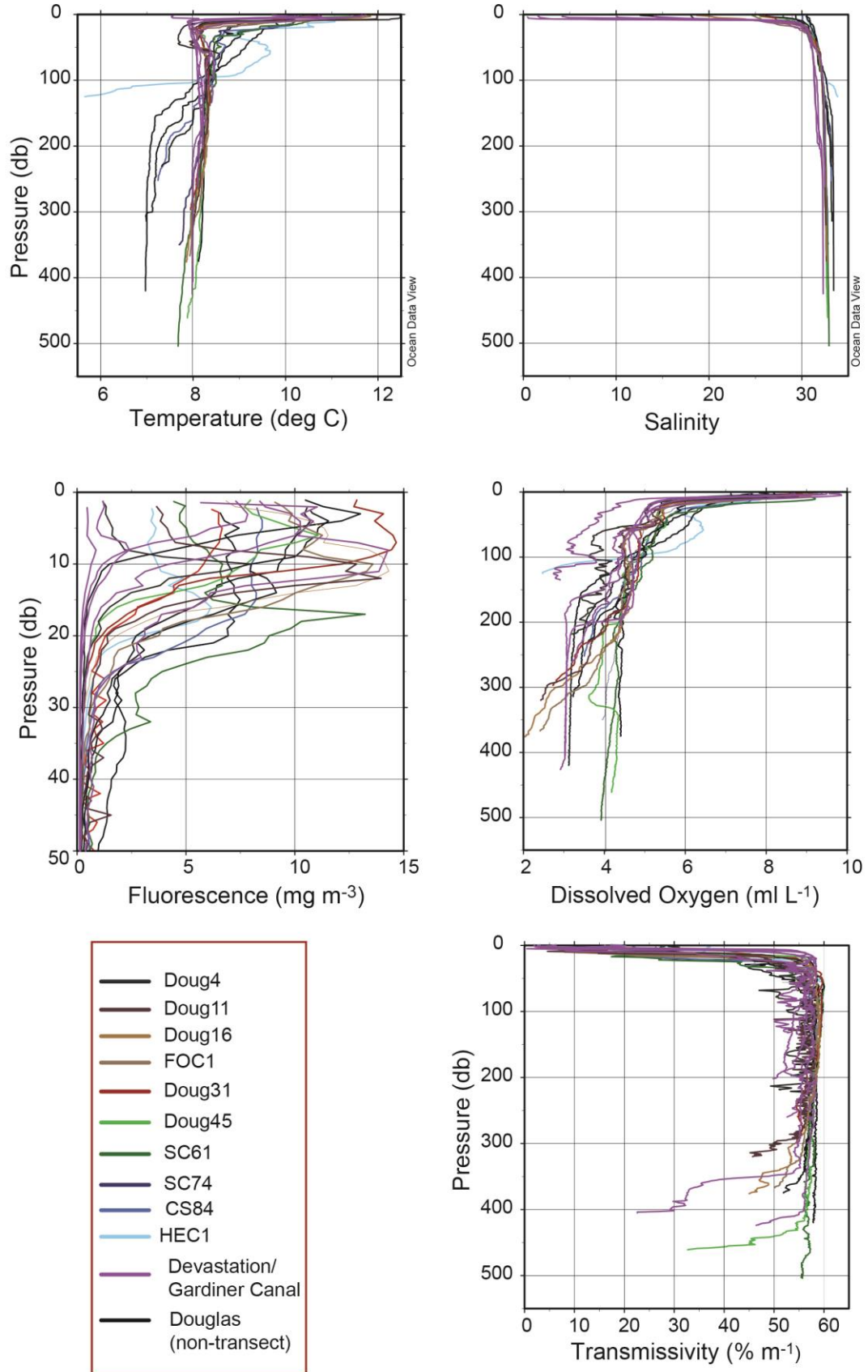


Figure 20. Processed CTD data collected during 2016-02. Colour scheme/locations are shown in Figure 19.



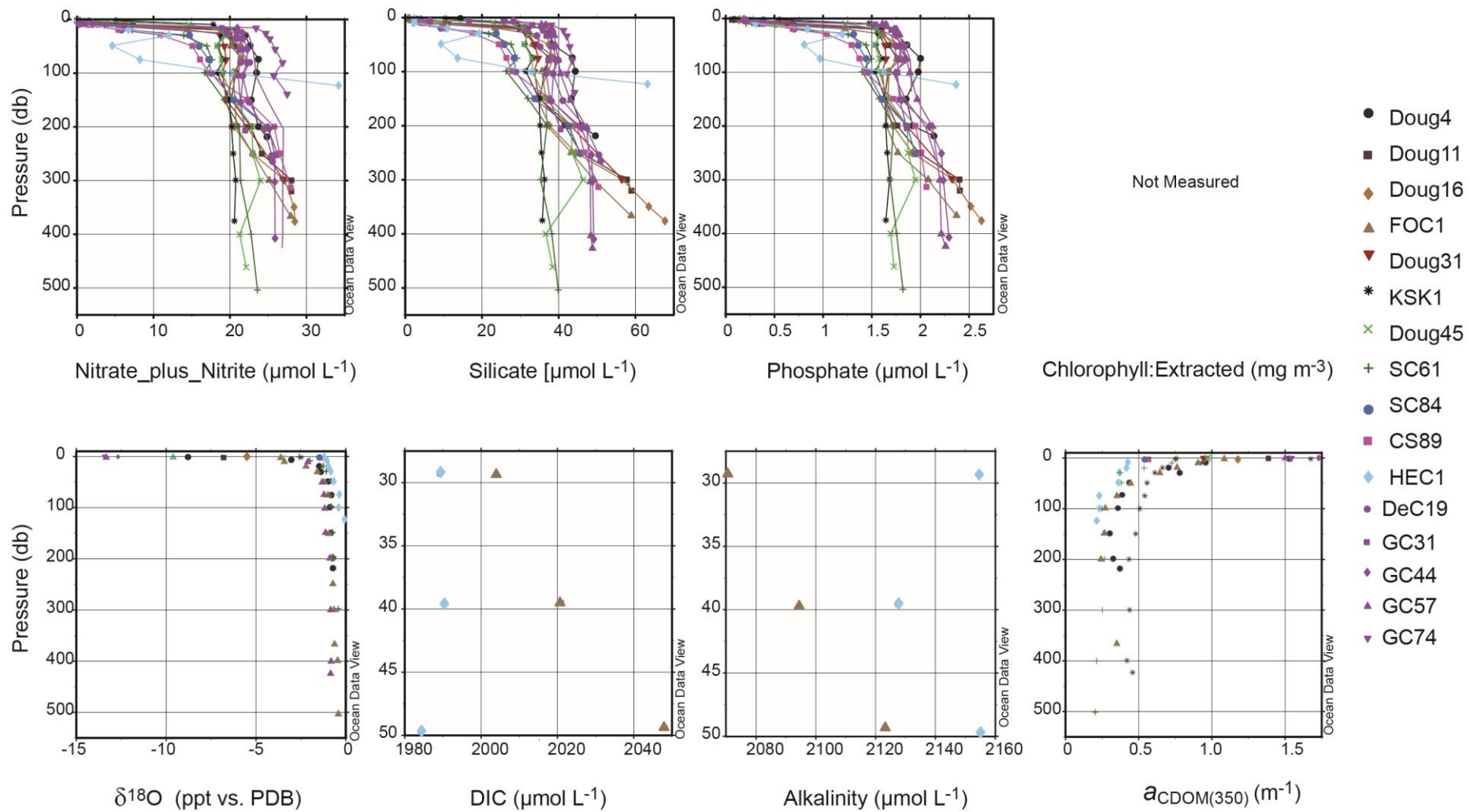


Figure 21. Bottle data from Cruise 2016-41. Colour scheme and locations match Figure 19.

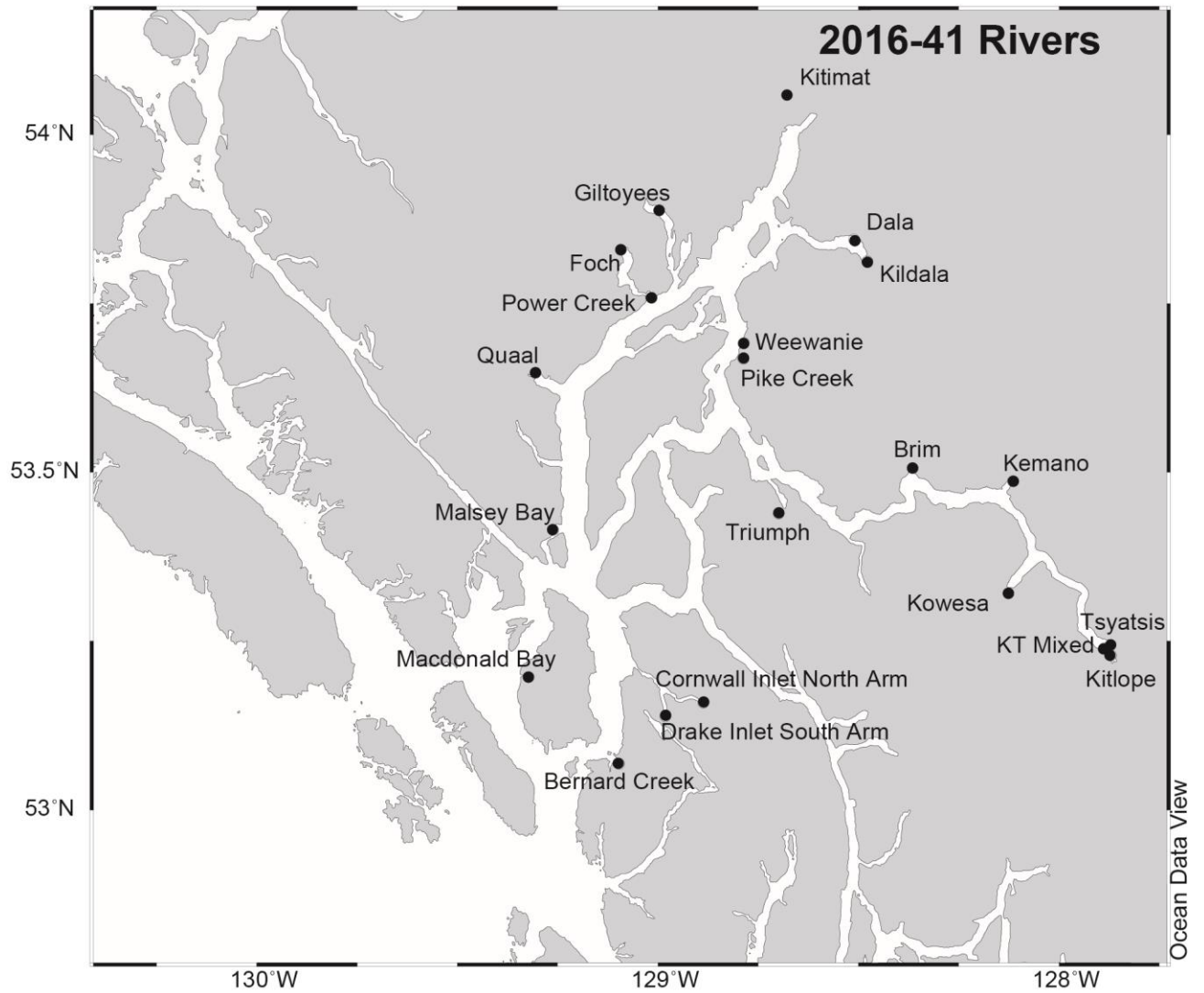


Figure 22. River sampling locations for Cruise 2016-41.

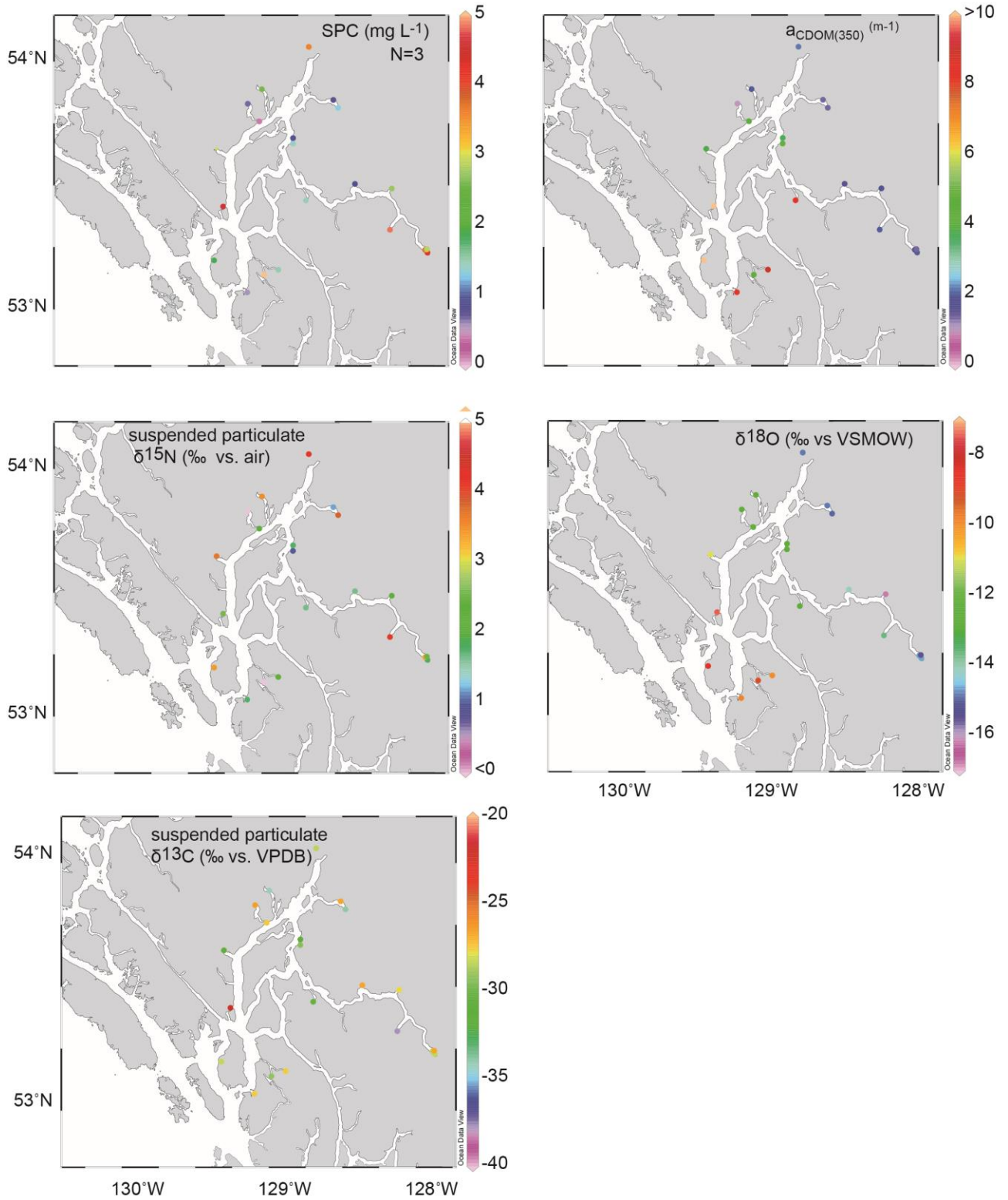


Figure 23. Biogeochemical results from river sampling during cruise 2016-41, see Figure 22 for river names.

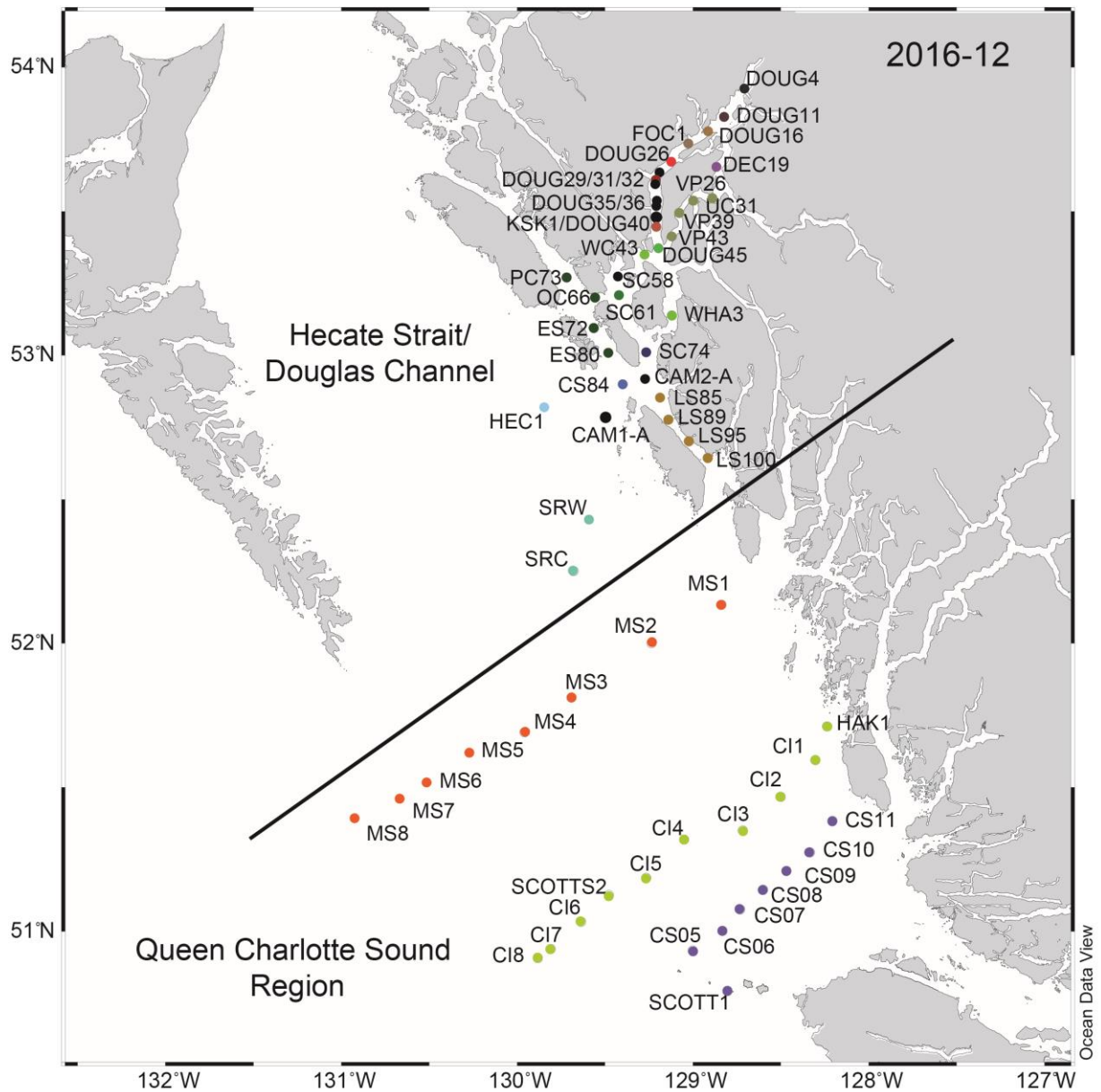


Figure 24. Stations for water property sampling during cruise 2016-12.

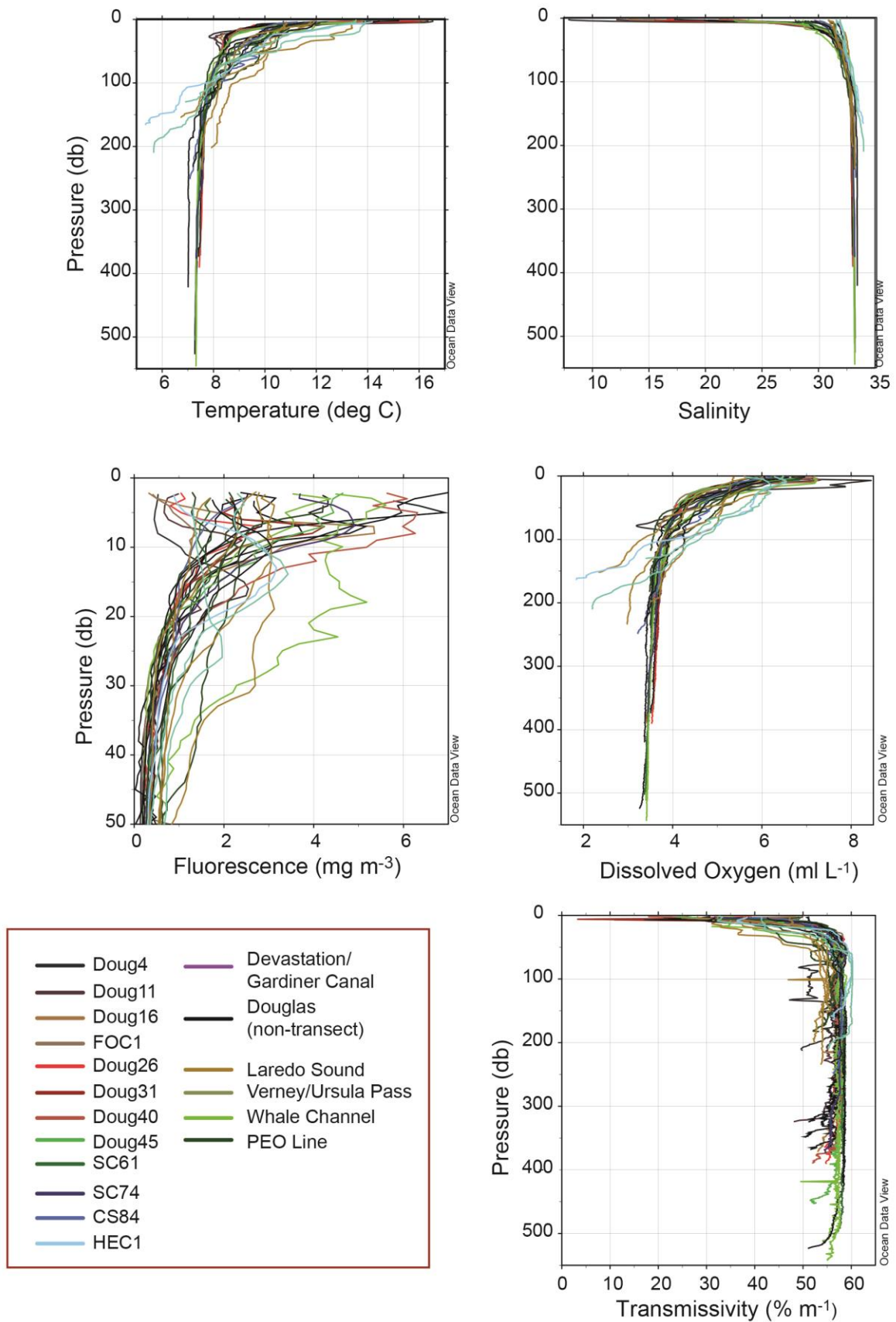


Figure 25. Processed CTD data collected during 2016-12 in the Hecate/Douglas Channel study area. Colour scheme/locations are shown in Figure 24.



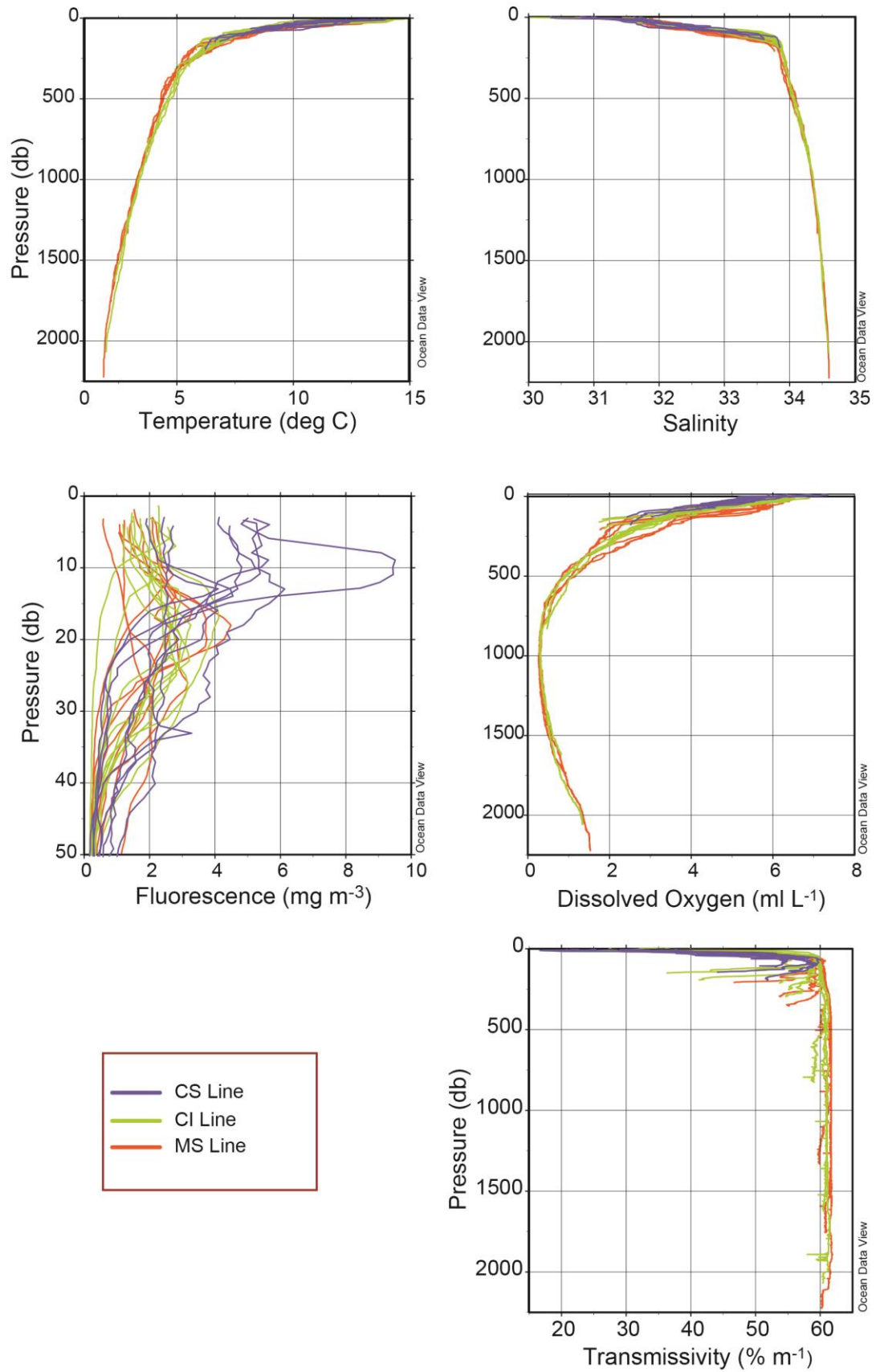


Figure 25. Processed CTD data collected during 2016-12 in the Queen Charlotte Sound study area. Colour scheme/locations are shown in Figure 24.

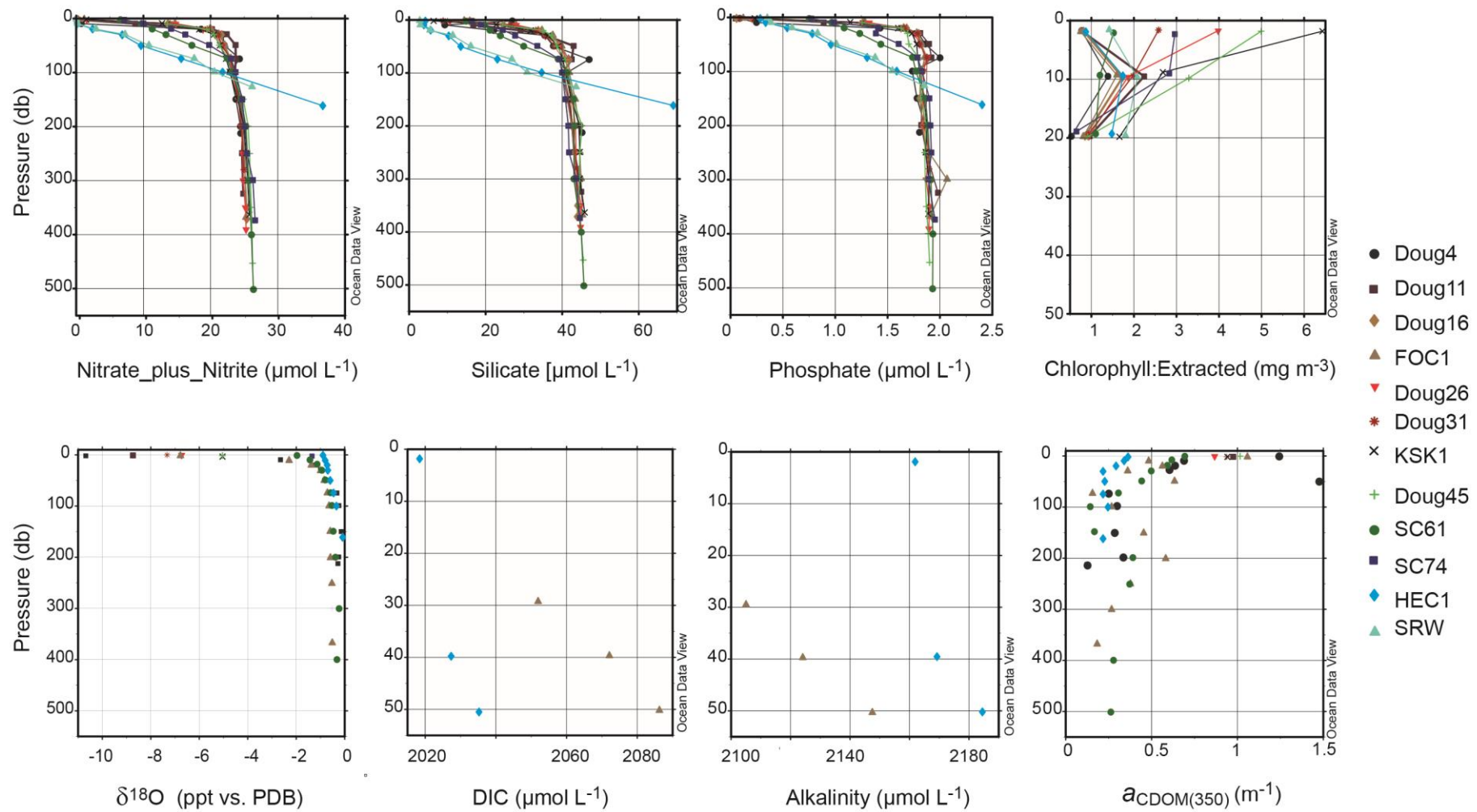


Figure 26. Bottle data from Cruise 2016-12. Colour scheme and locations match Figure 24.



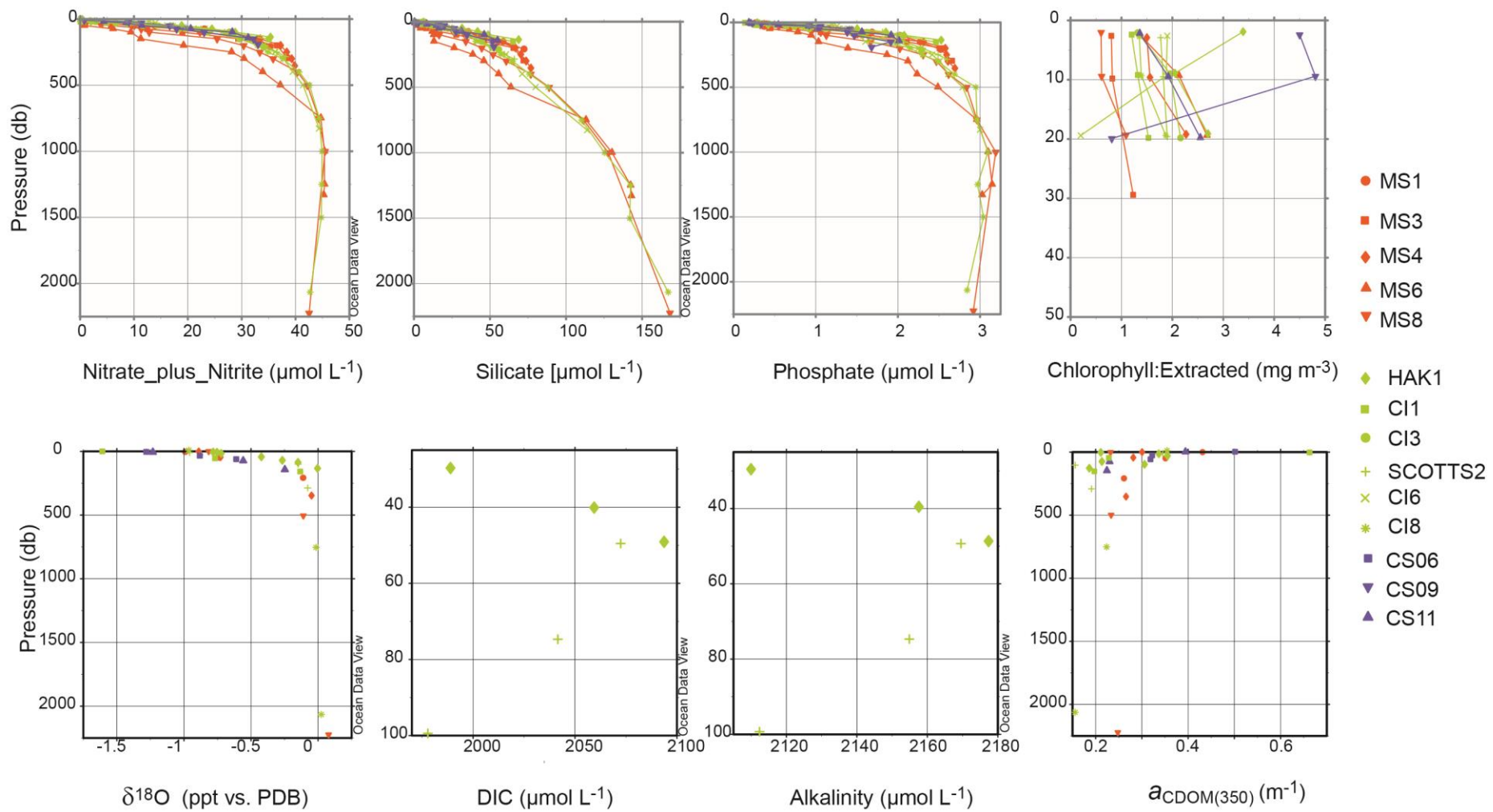


Figure 26 continued. Bottle data from Cruise 2016-12. Colour scheme and locations match Figure 24.

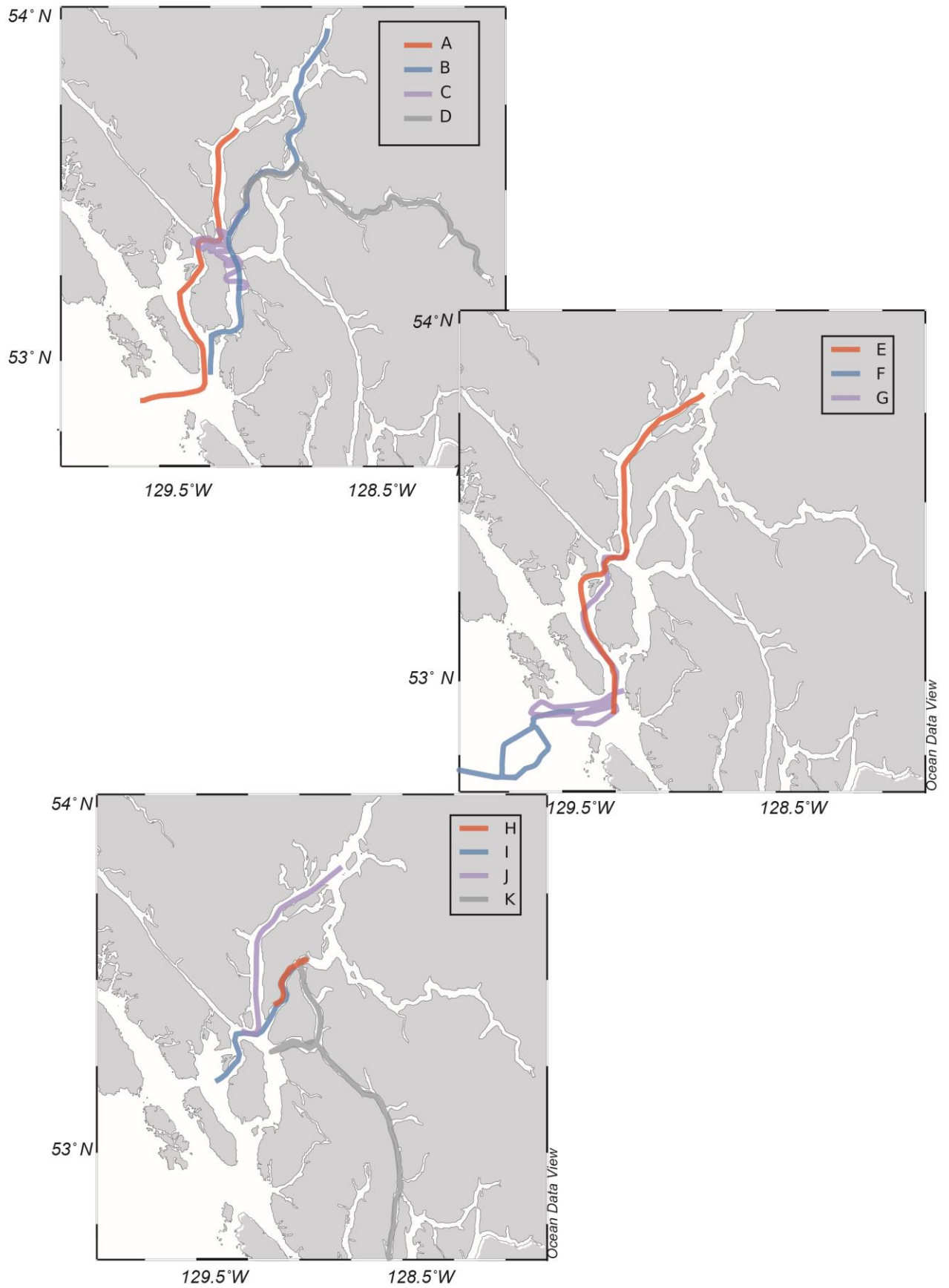


Figure 27. Location of MVP surveys (A-K) taken during the cruise 2015-54, from October 28th – November 7<sup>th</sup>, 2017.

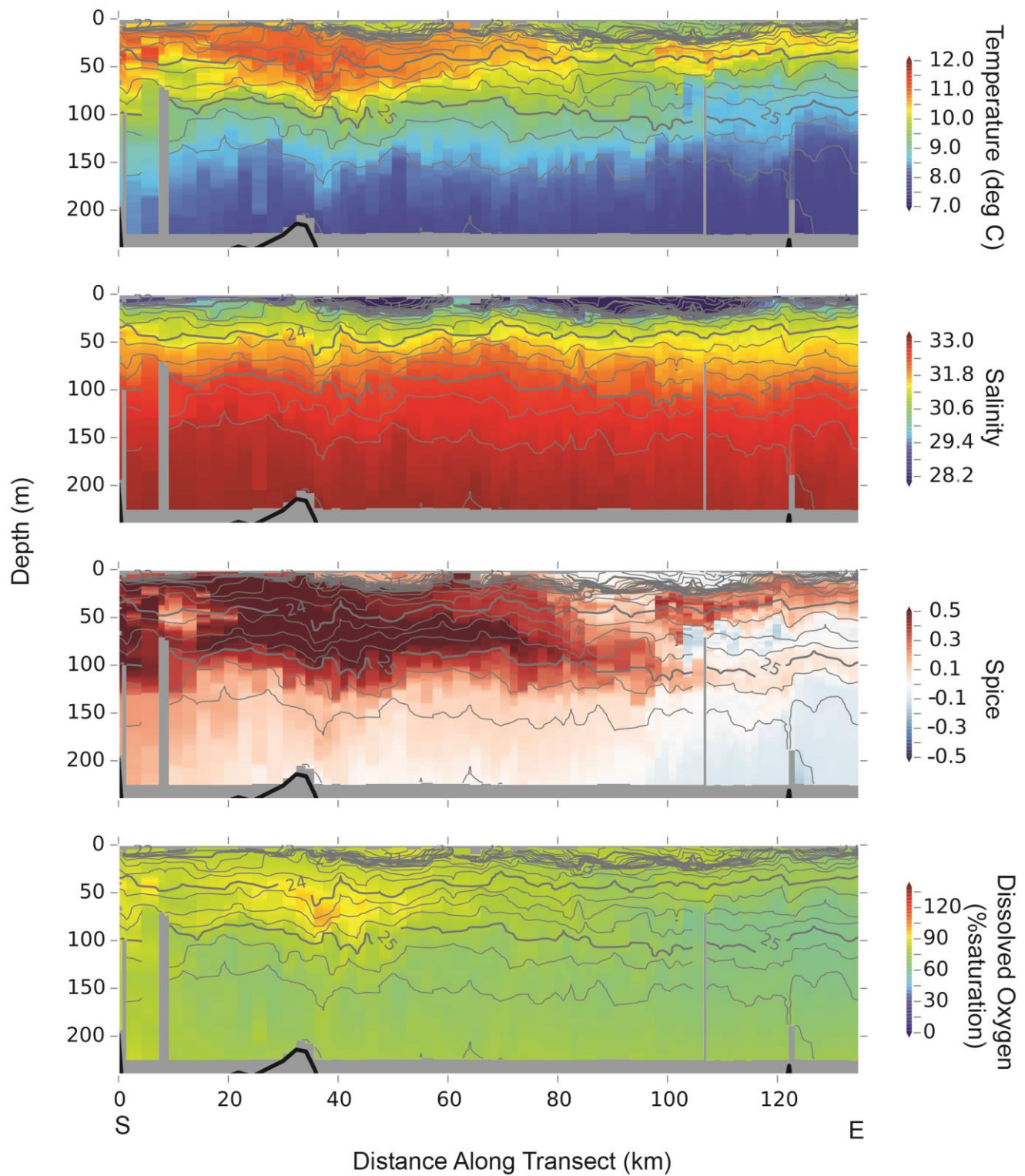


Figure 28. Properties along the Survey A transect taken using the MVP on October 28, 2017 at 1615 UTC.



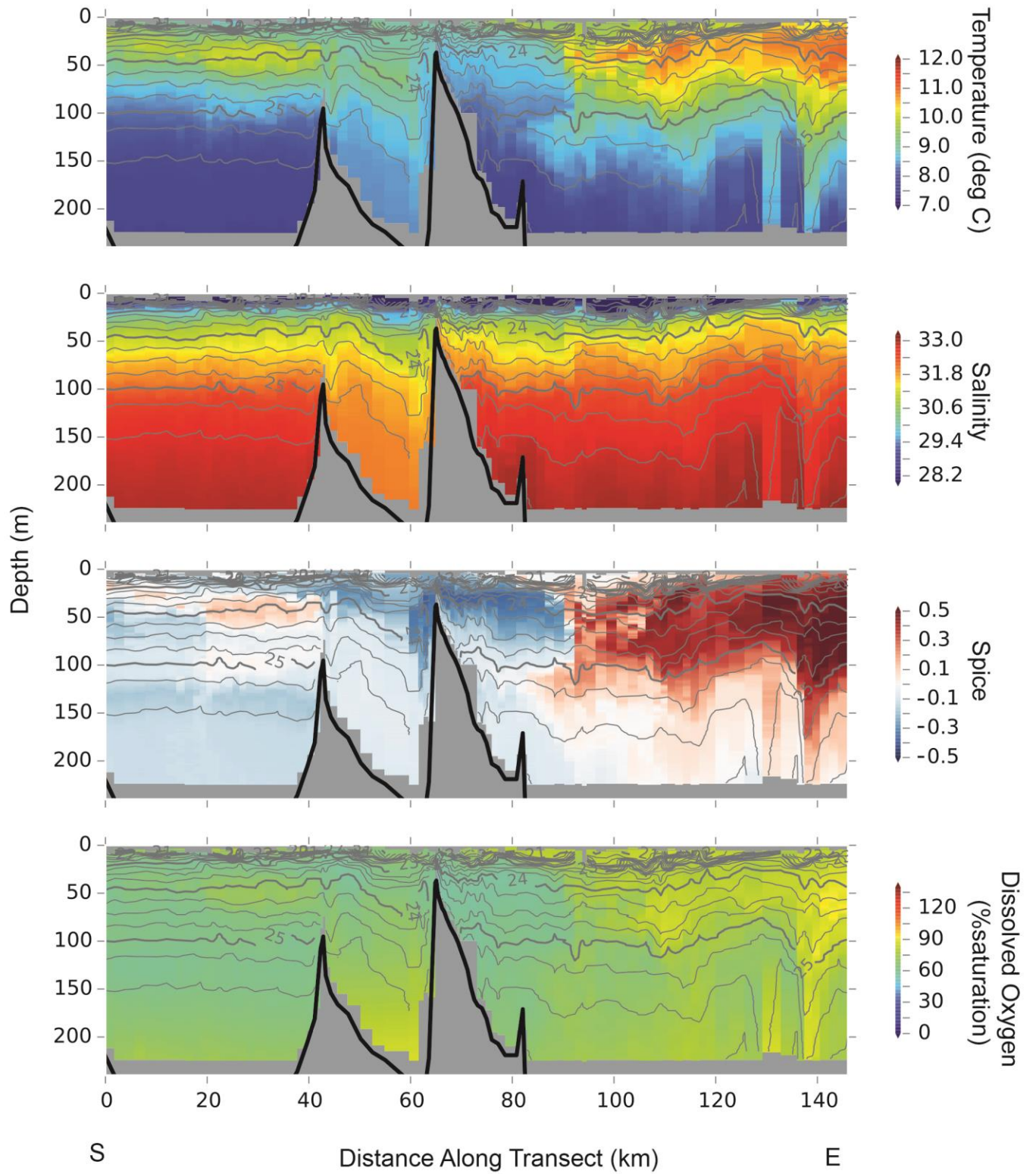


Figure 29. Properties along the Survey B transect taken using the MVP on October 29, 2017 at 1510 UTC.

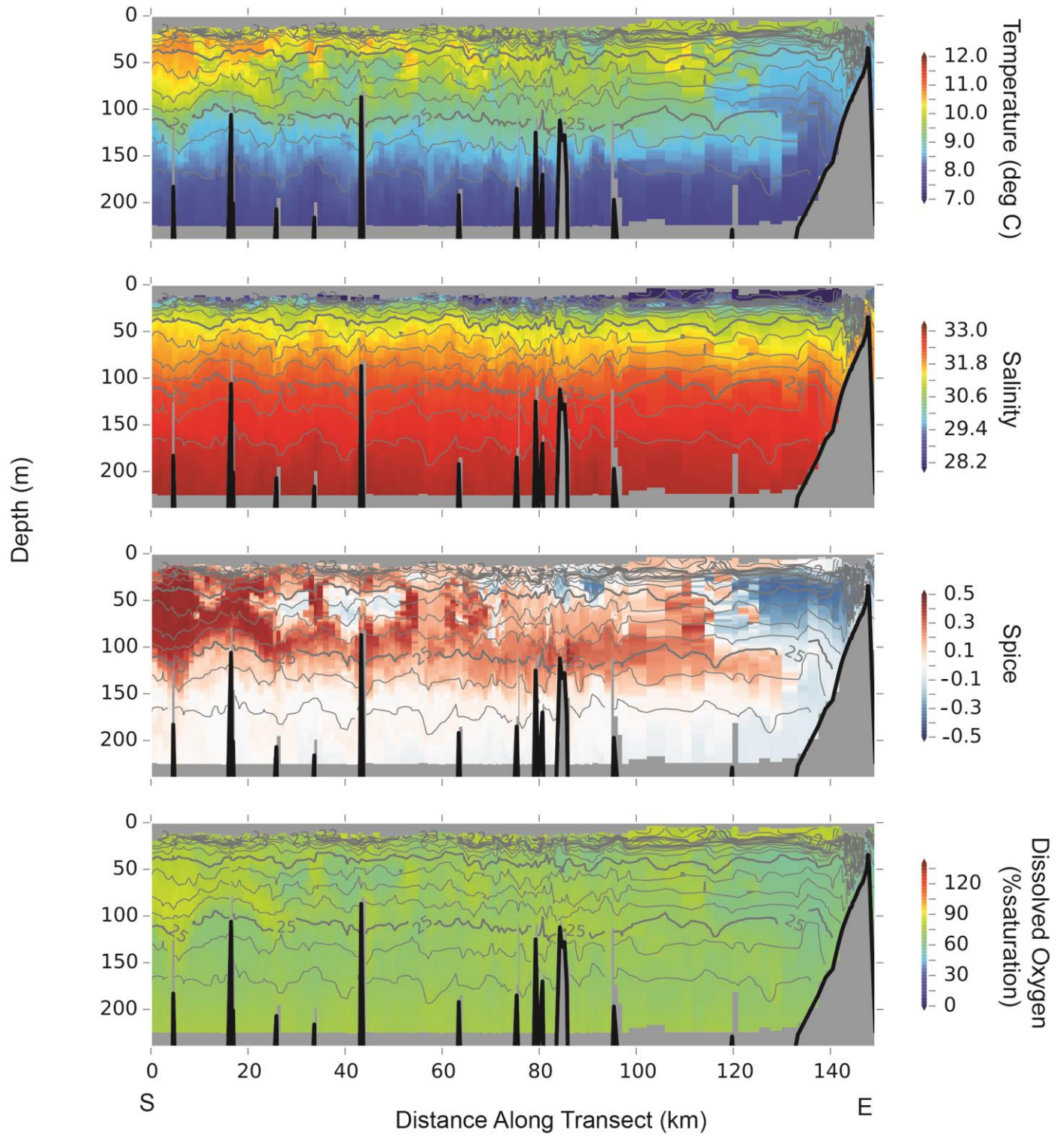


Figure 30. Properties along the Survey C transect taken using the MVP on October 30, 2017 at 1519 UTC.



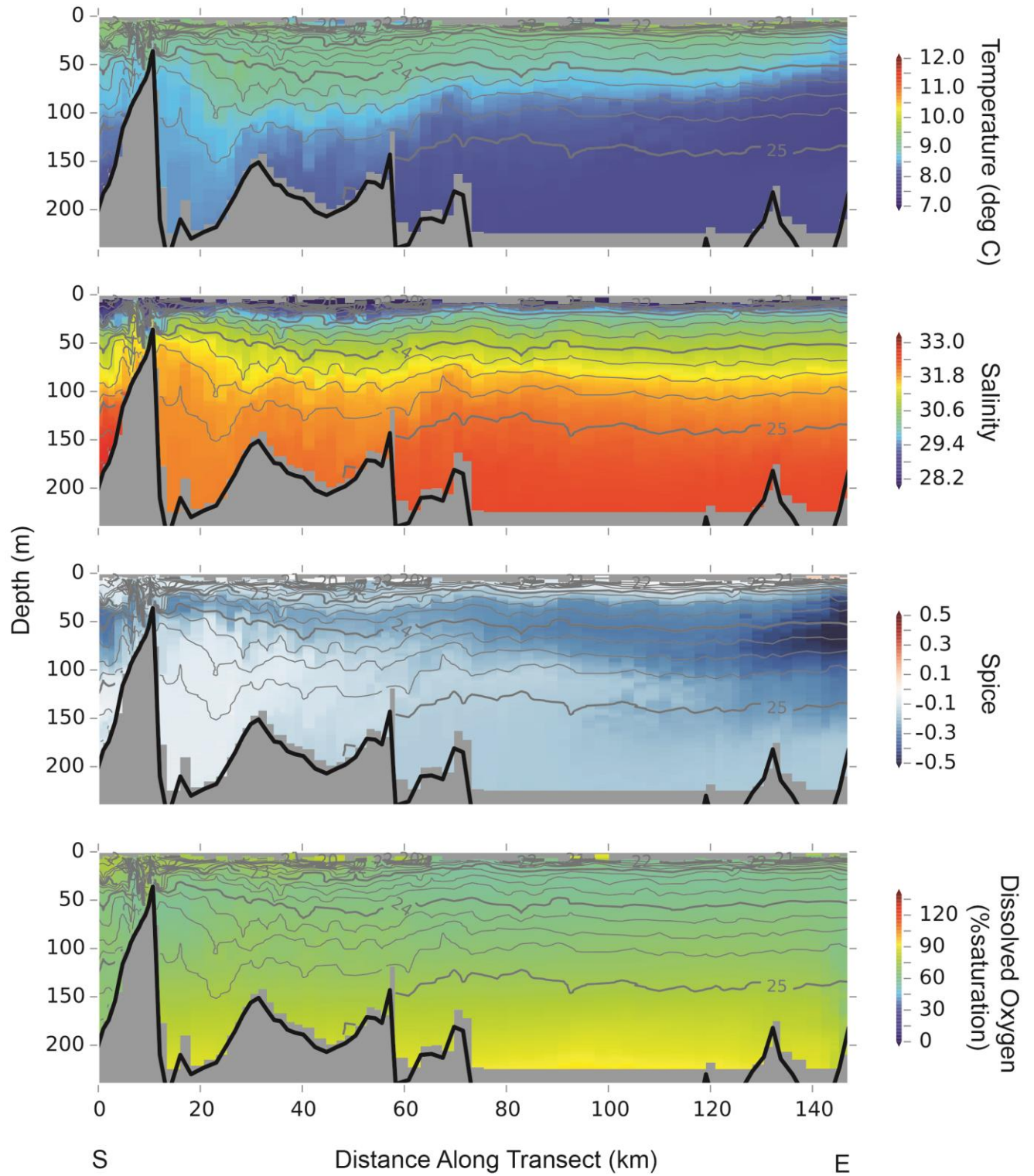


Figure 31. Properties along the Survey D transect taken using the MVP on October 31, 2017 at 1530 UTC.



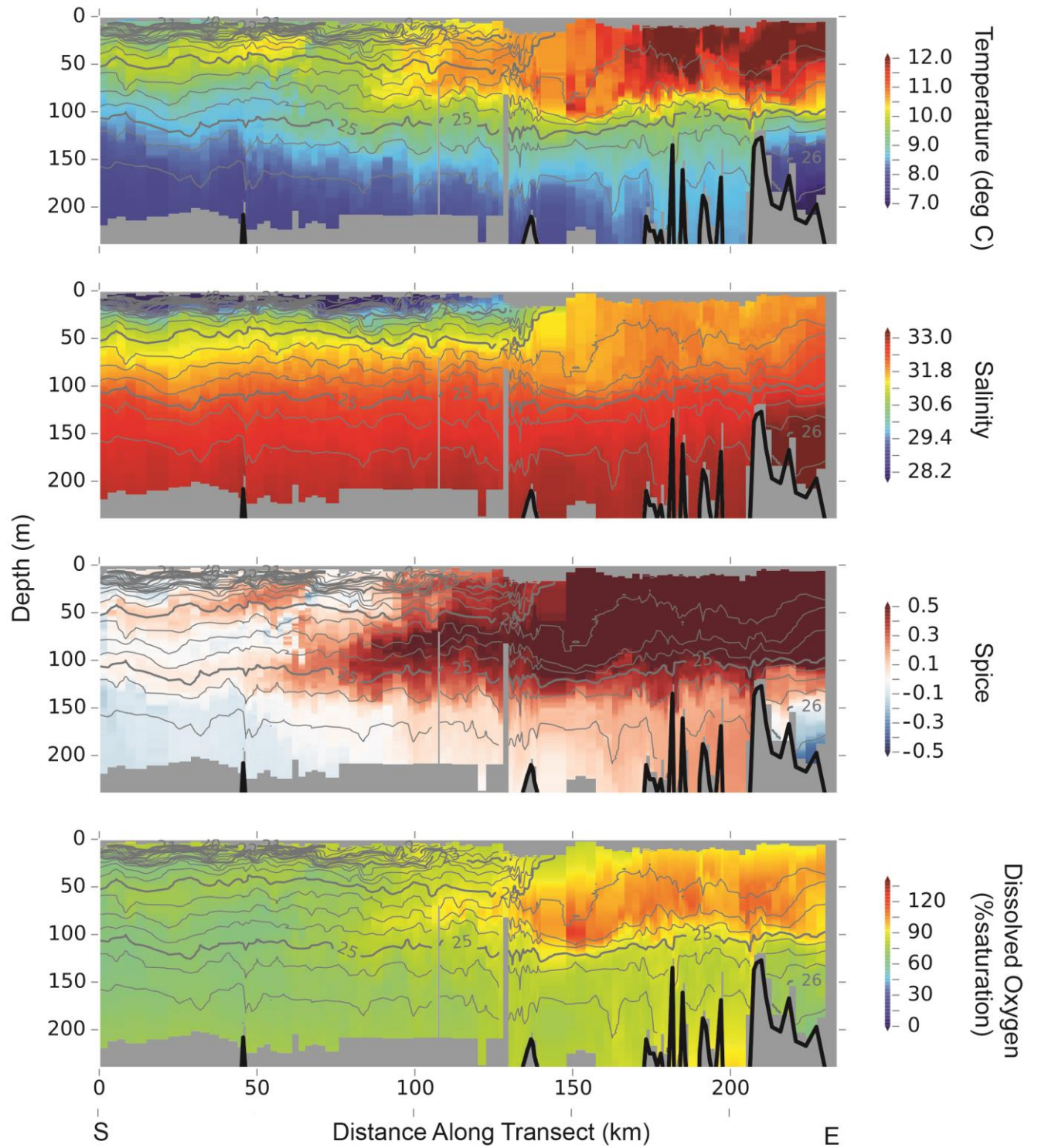


Figure 32. Properties along the Survey E transect taken using the MVP on November 1, 2017 at 1506 UTC.

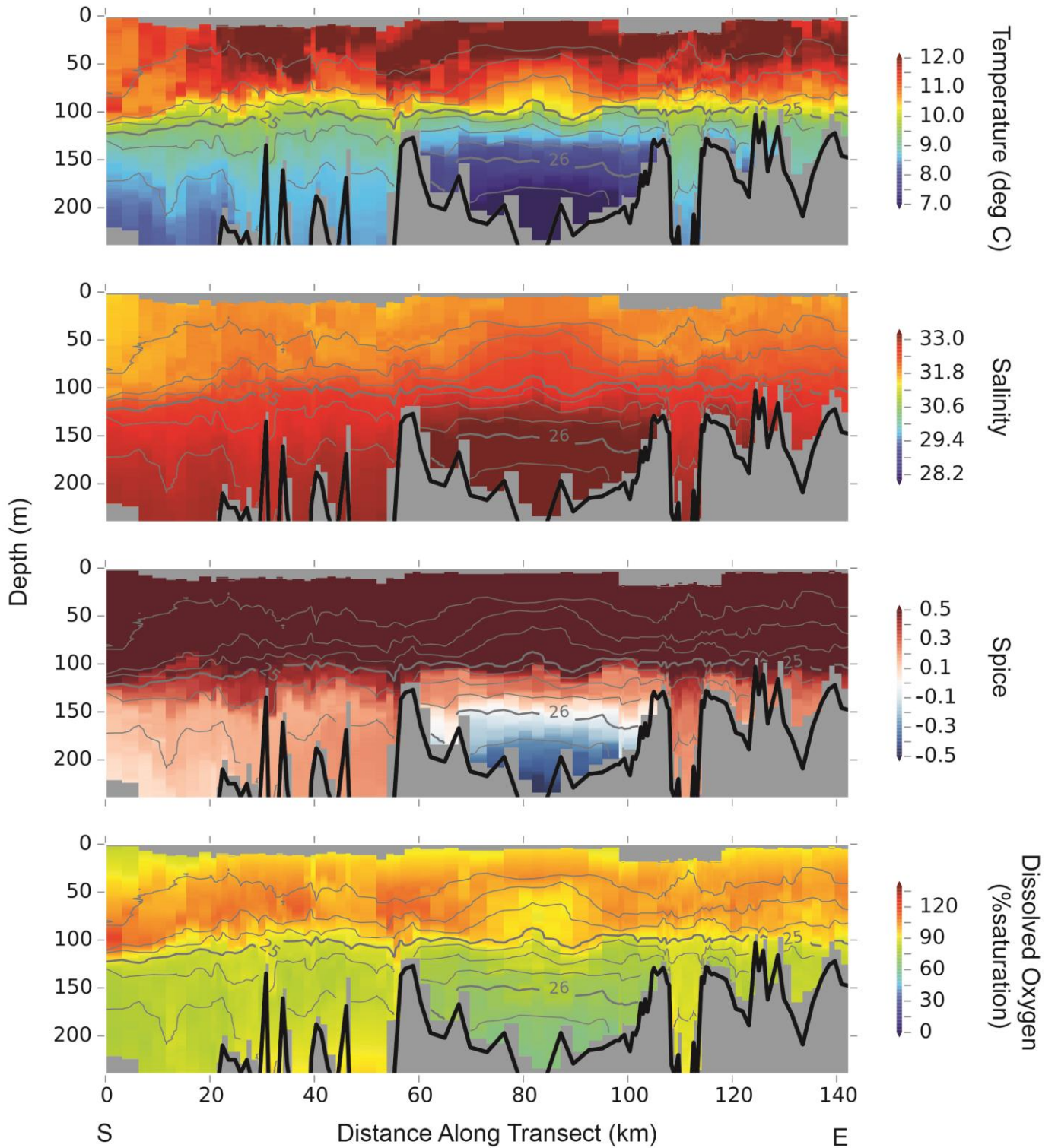


Figure 33. Properties along the Survey F transect taken using the MVP on November 2, 2017 at 1520 UTC.



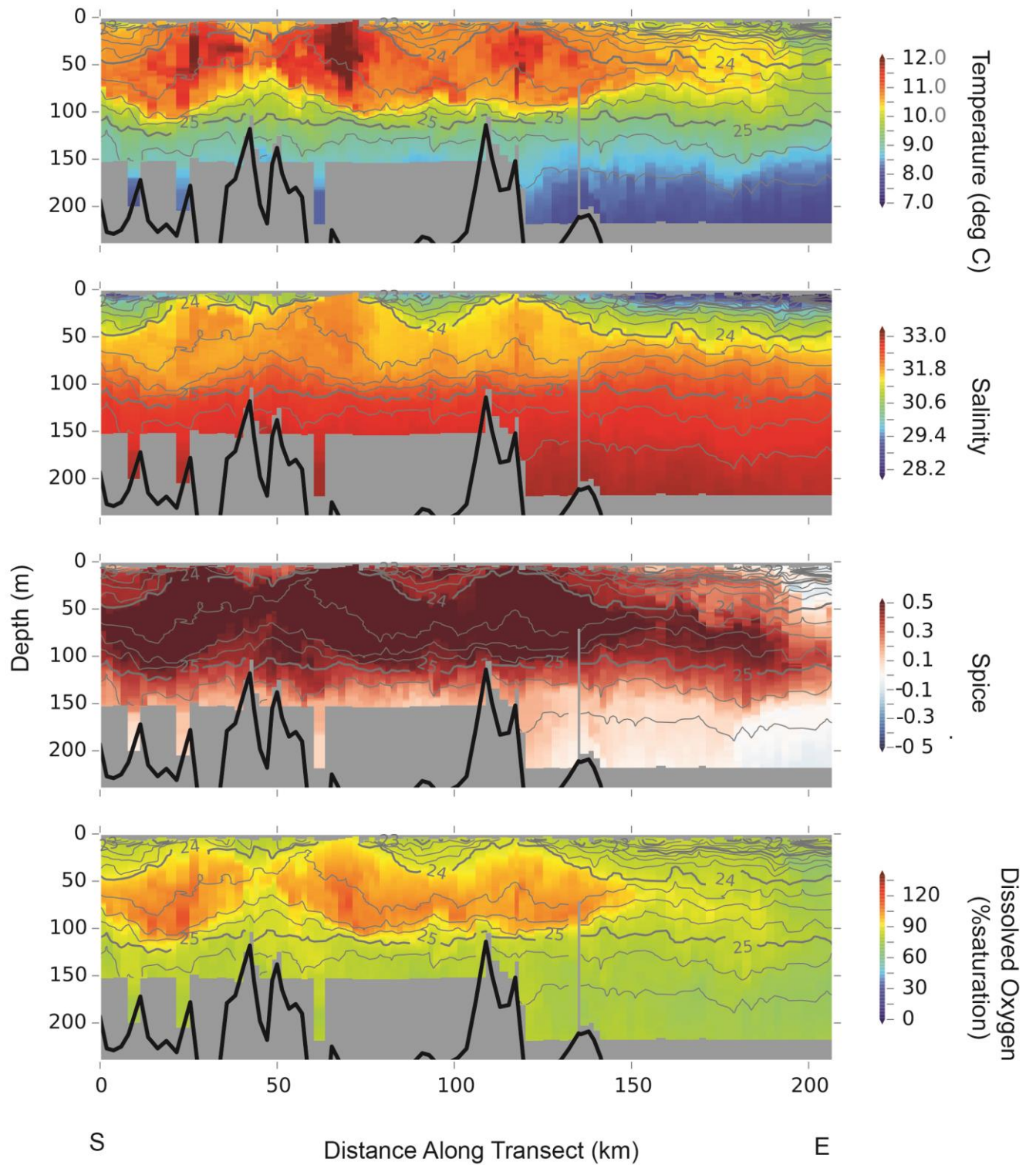


Figure 34. Properties along the Survey G transect taken using the MVP on November 3, 2017 at 1516 UTC.

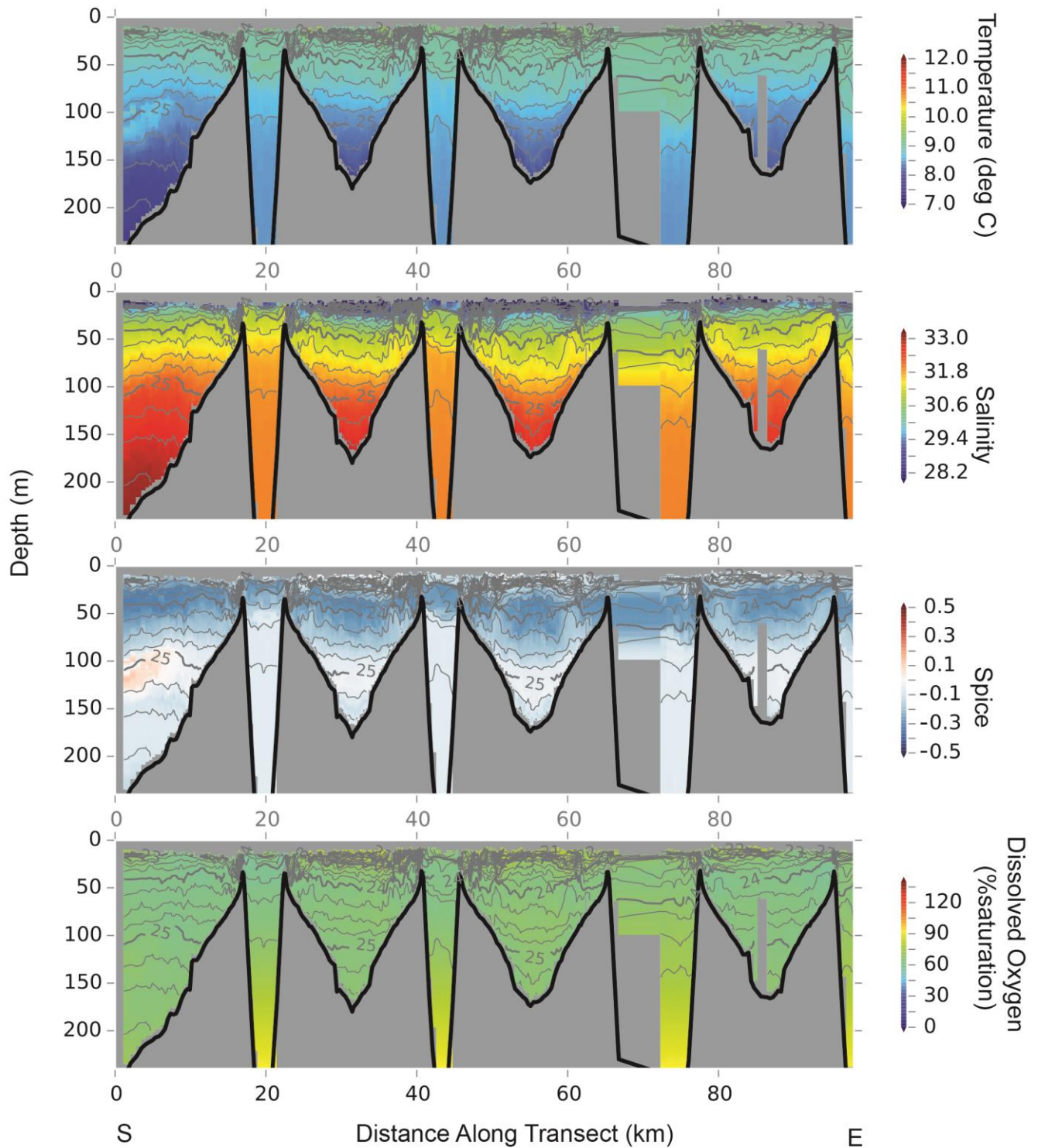


Figure 35. Properties along the Survey H transect taken using the MVP on November 4, 2017 at 1506 UTC.



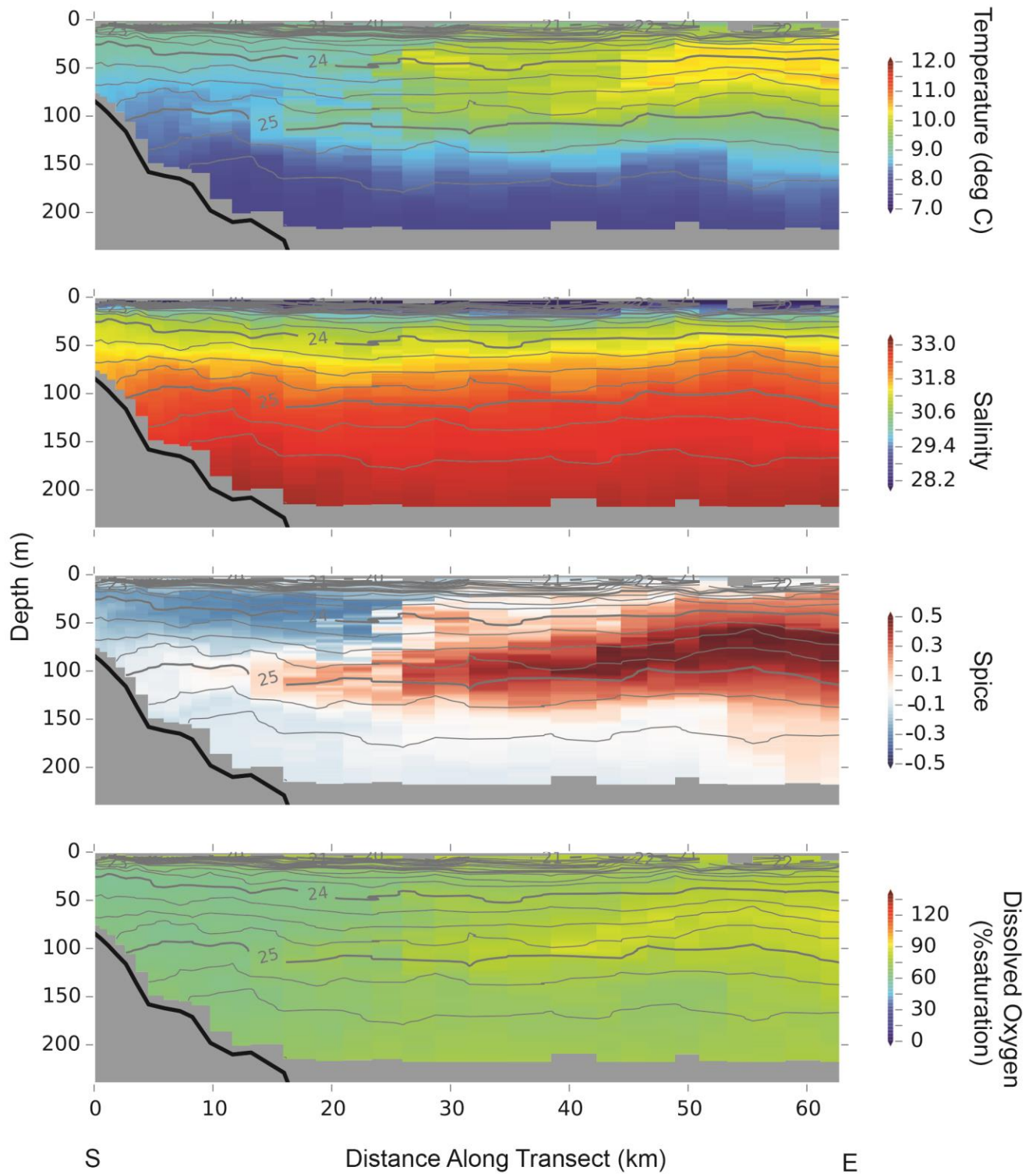


Figure 36. Properties along the Survey I transect taken using the MVP on November 5, 2017 at 1520 UTC.

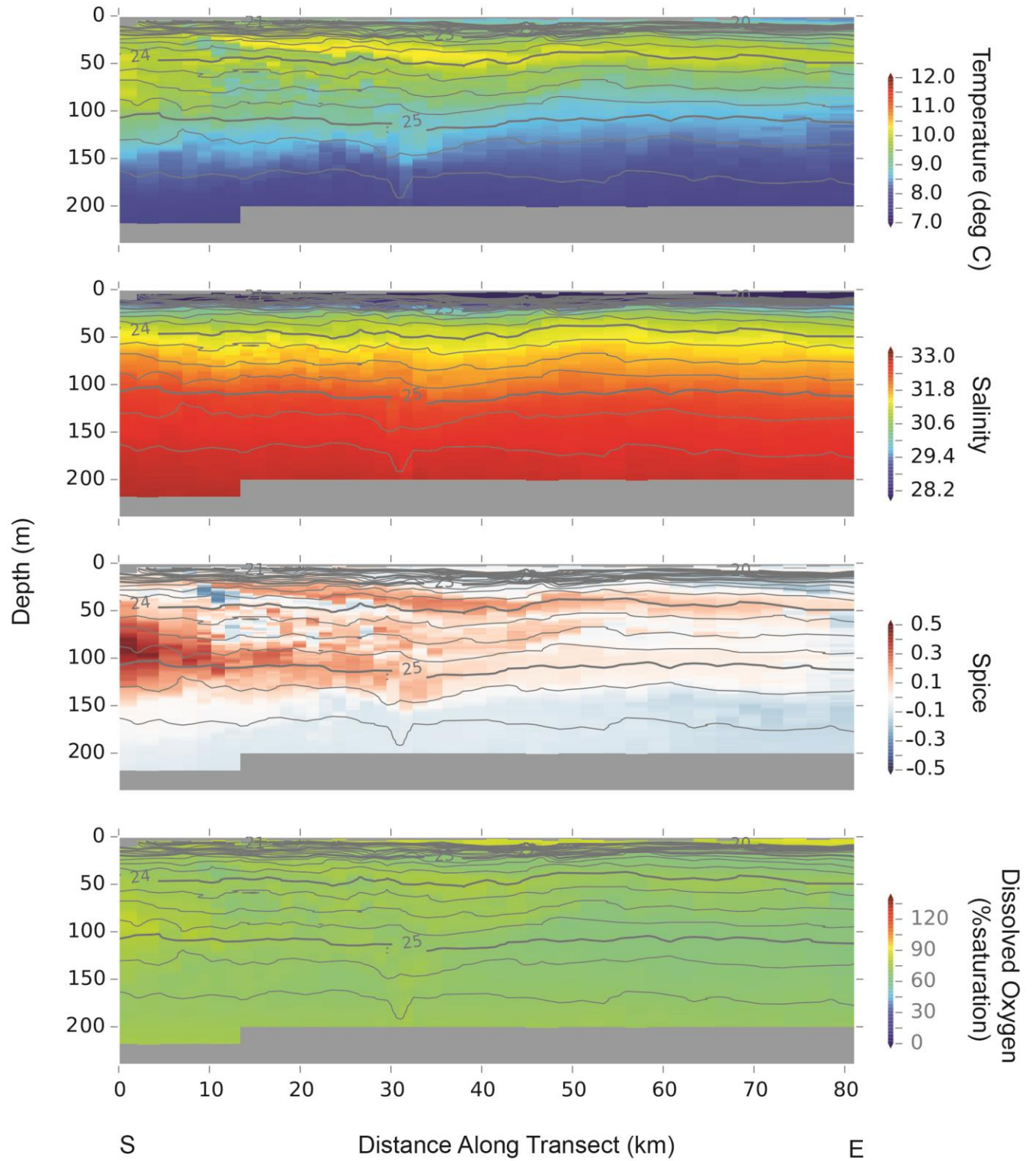


Figure 37. Properties along the Survey J transect taken using the MVP on November 6, 2017 at 1526 UTC.



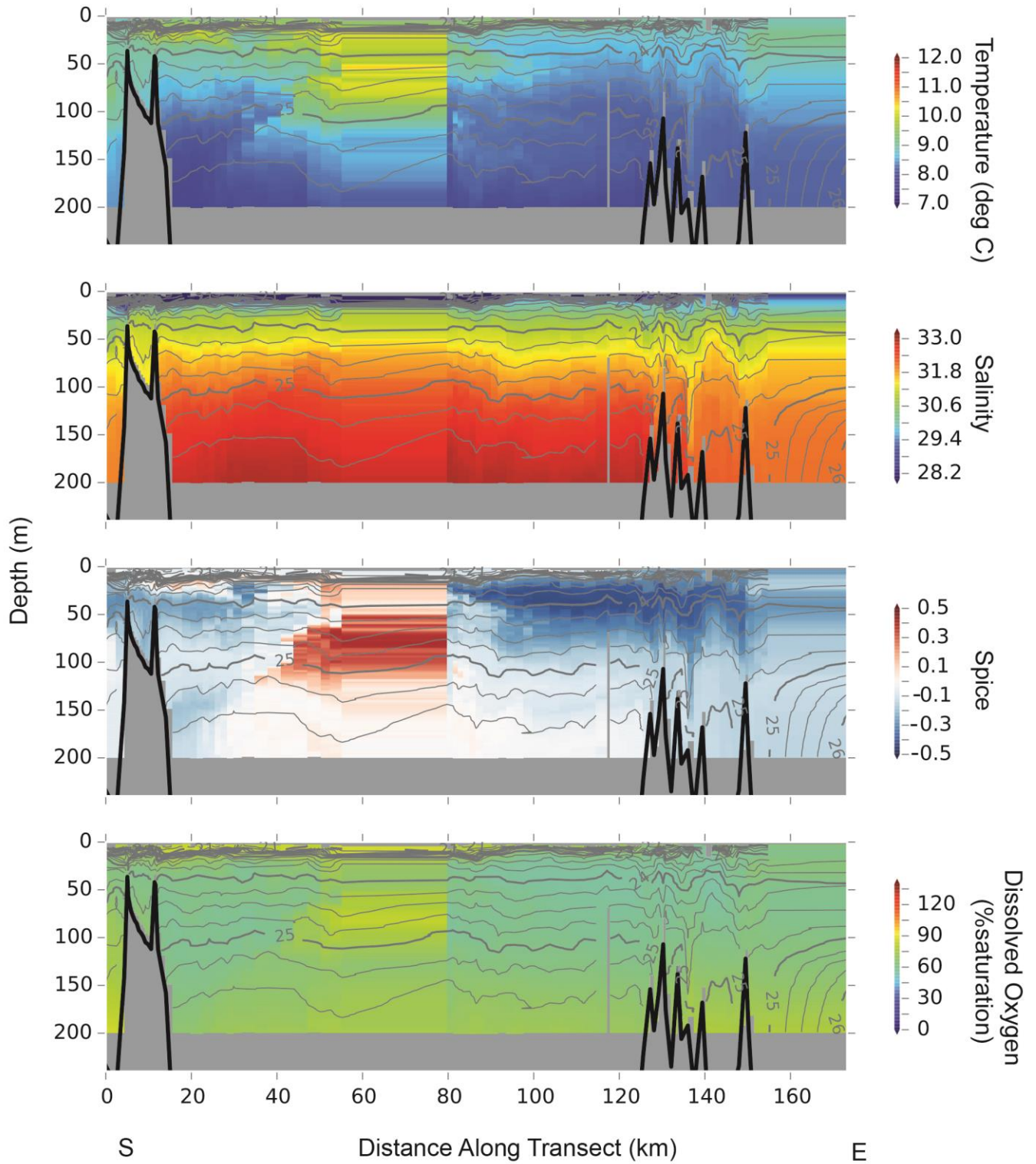


Figure 38. Properties along the Survey K transect taken using the MVP on November 7, 2017 at 0052 UTC.

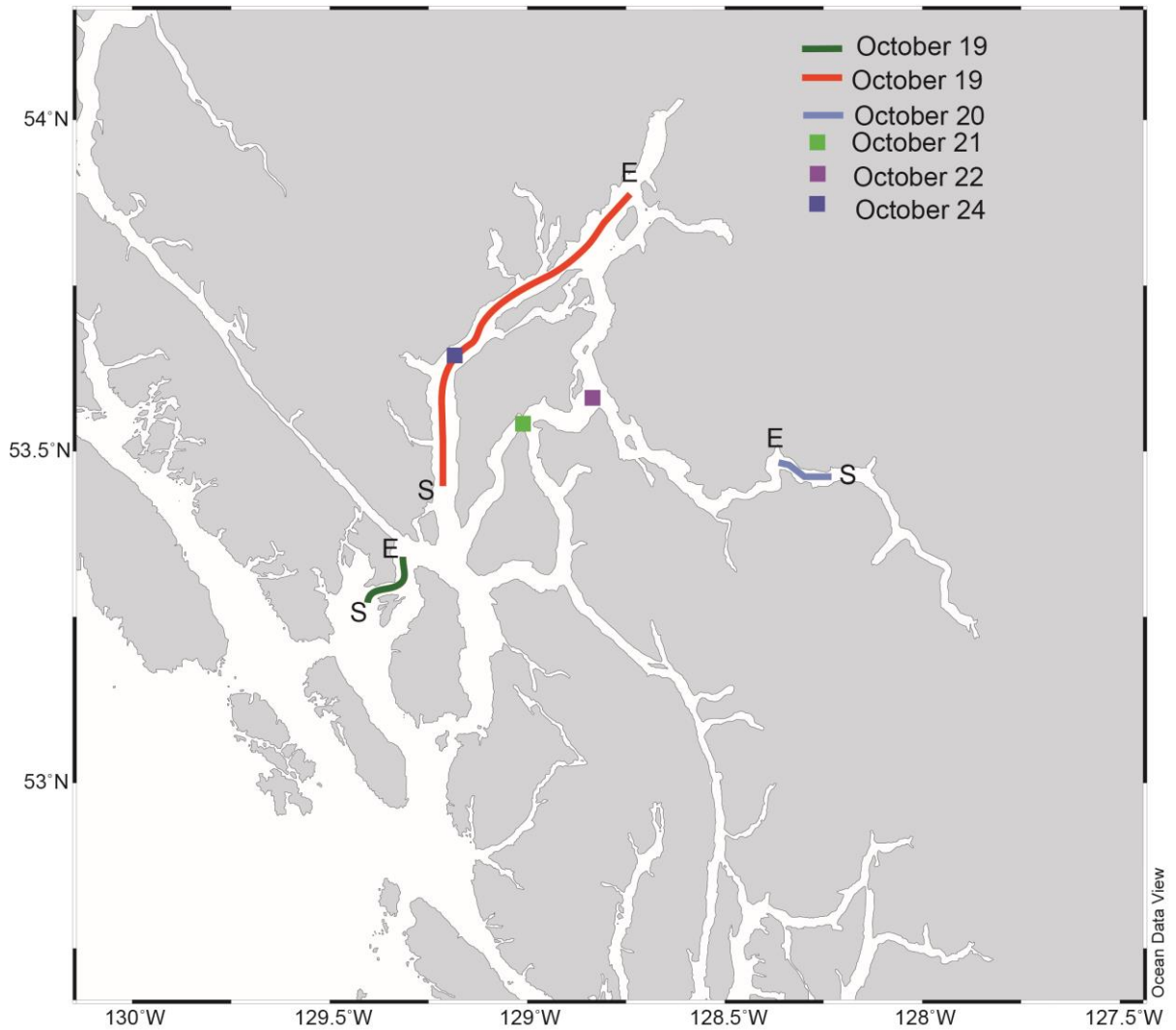


Figure 39. UCTD transections and sill studies completed during 2015-54. S denotes the start of the transect and E the end.

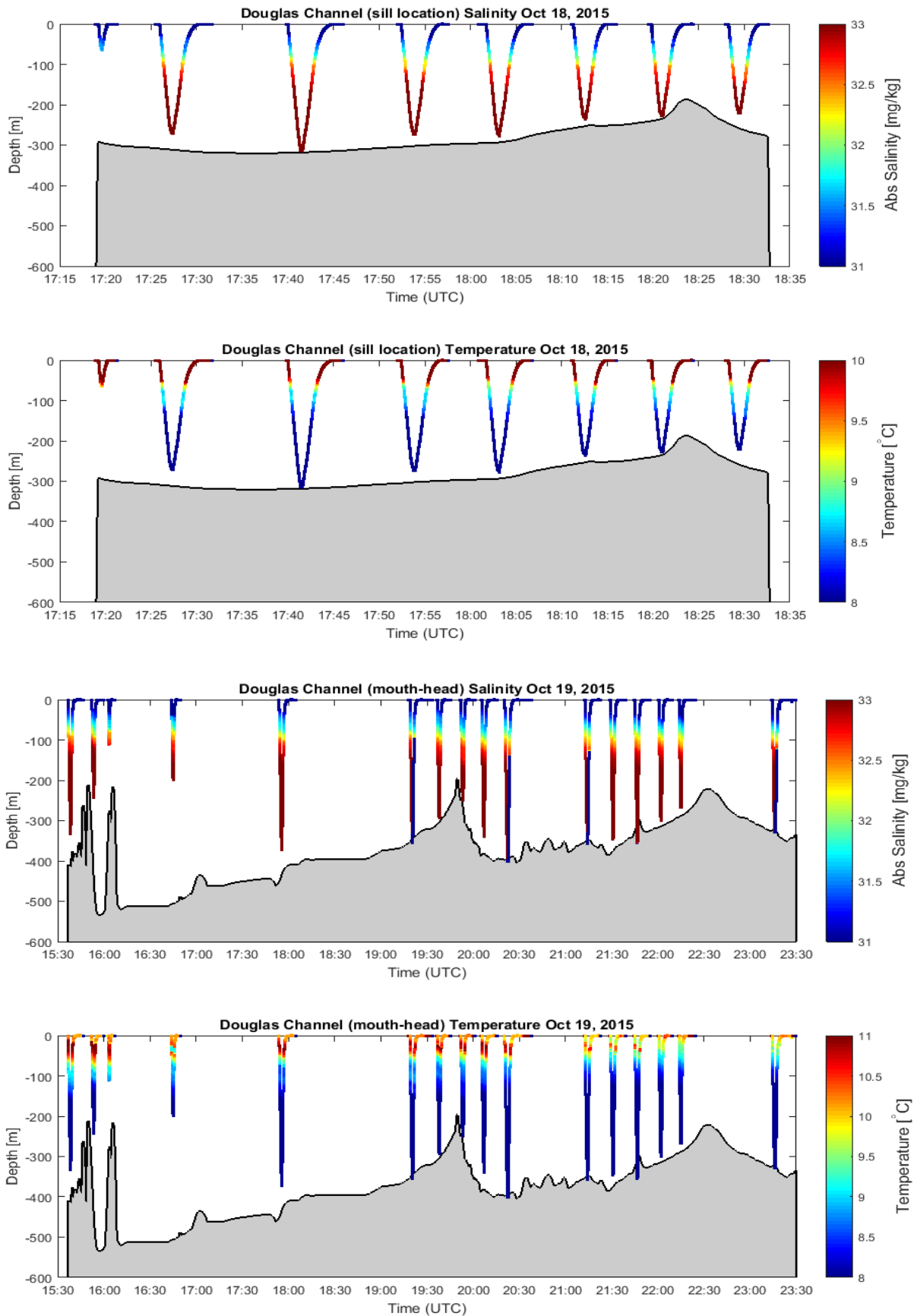


Figure 40. UCTD profiles from transects and sill studies (see Figure 39 for start, end and locations). Data presented in chronological order.

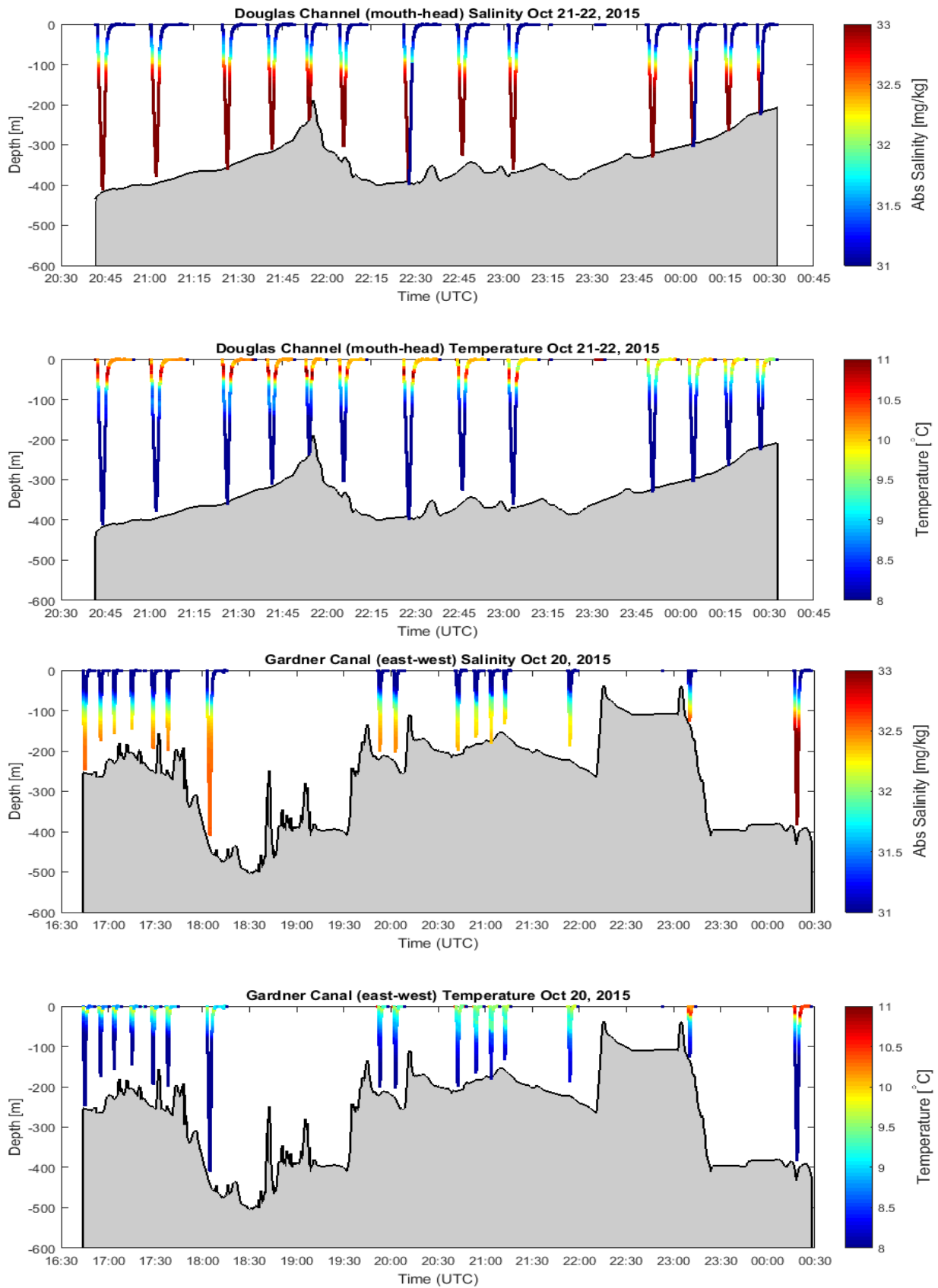


Figure 40 continued. UCTD profiles from transects and sill studies (see Figure 39 for start, end and locations). Data presented in chronological order.

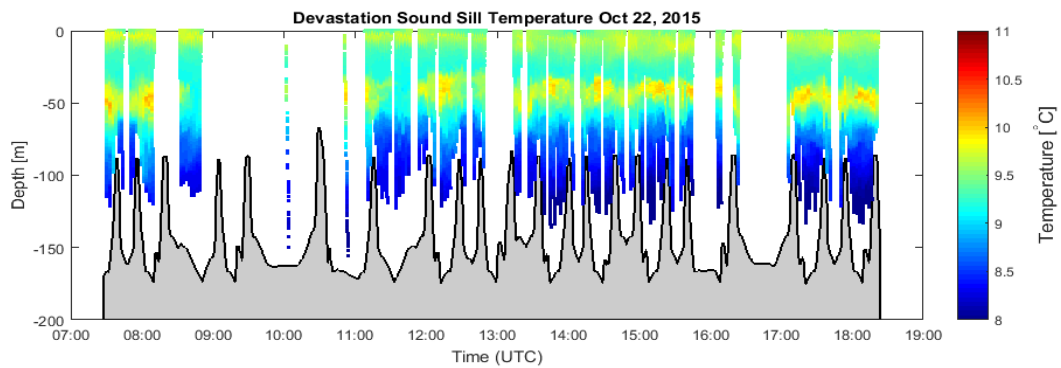
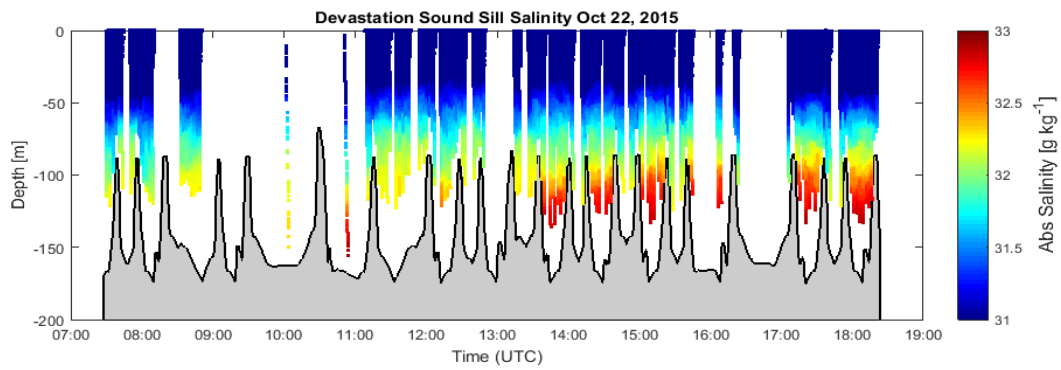
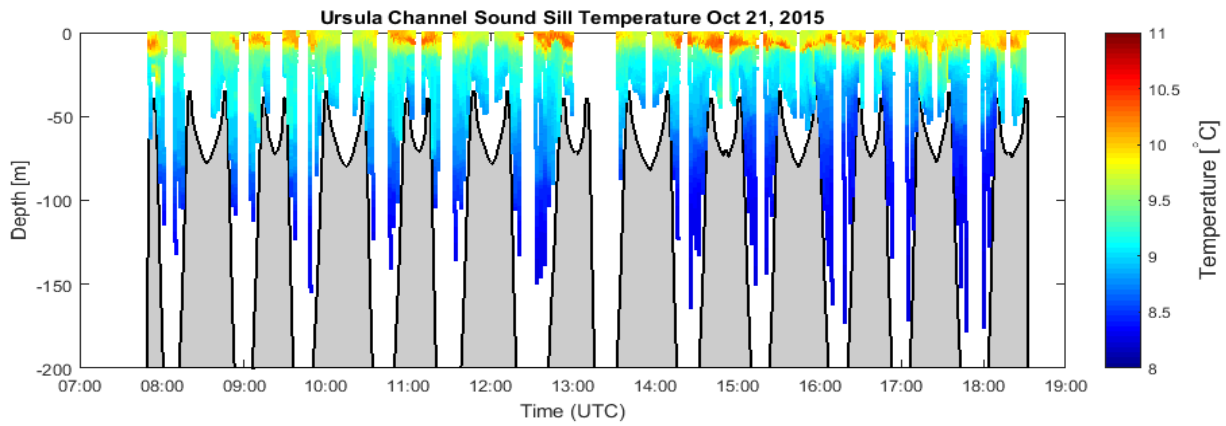
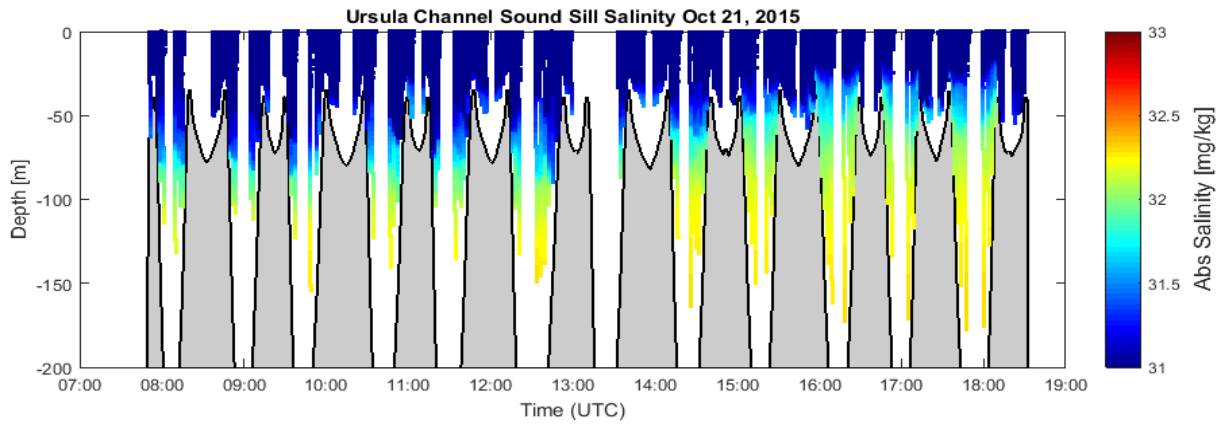


Figure 40 continued. UCTD profiles from transects and sill studies (see Figure 39 for start, end and locations). Data presented in chronological order.

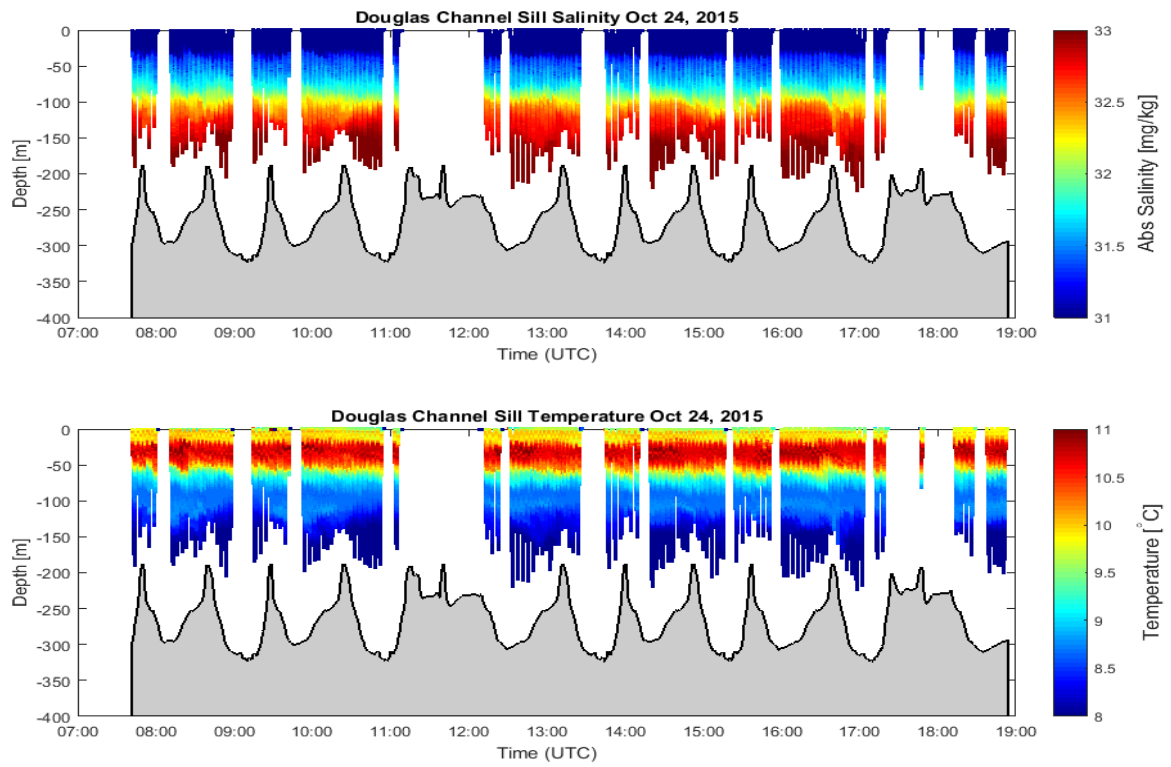


Figure 40 continued. UCTD profiles from transects and sill studies (see Figure 39 for start, end and locations). Data presented in chronological order.



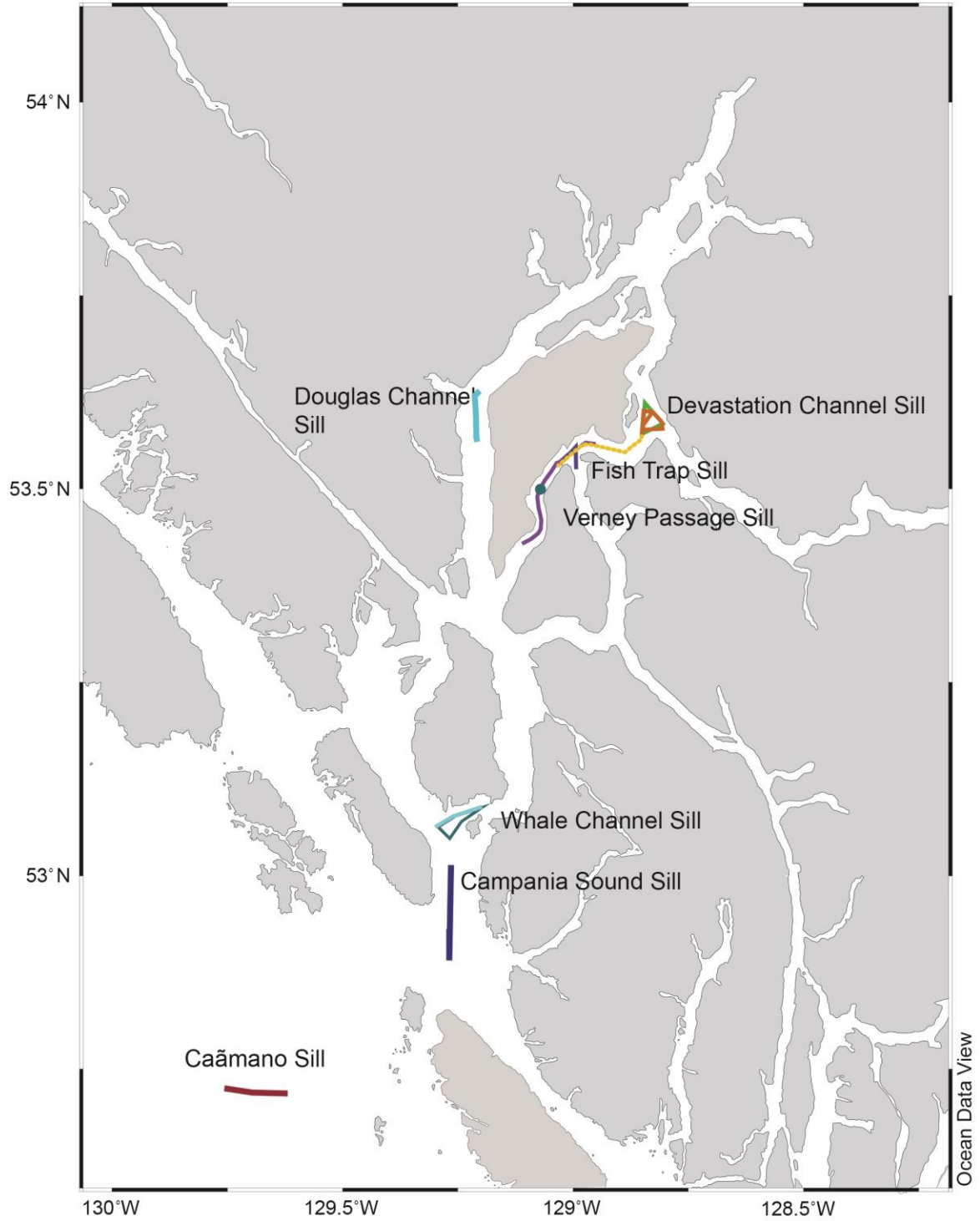


Figure 41. Survey locations for the pole-mounted ADCP transects during cruise 2015-54.

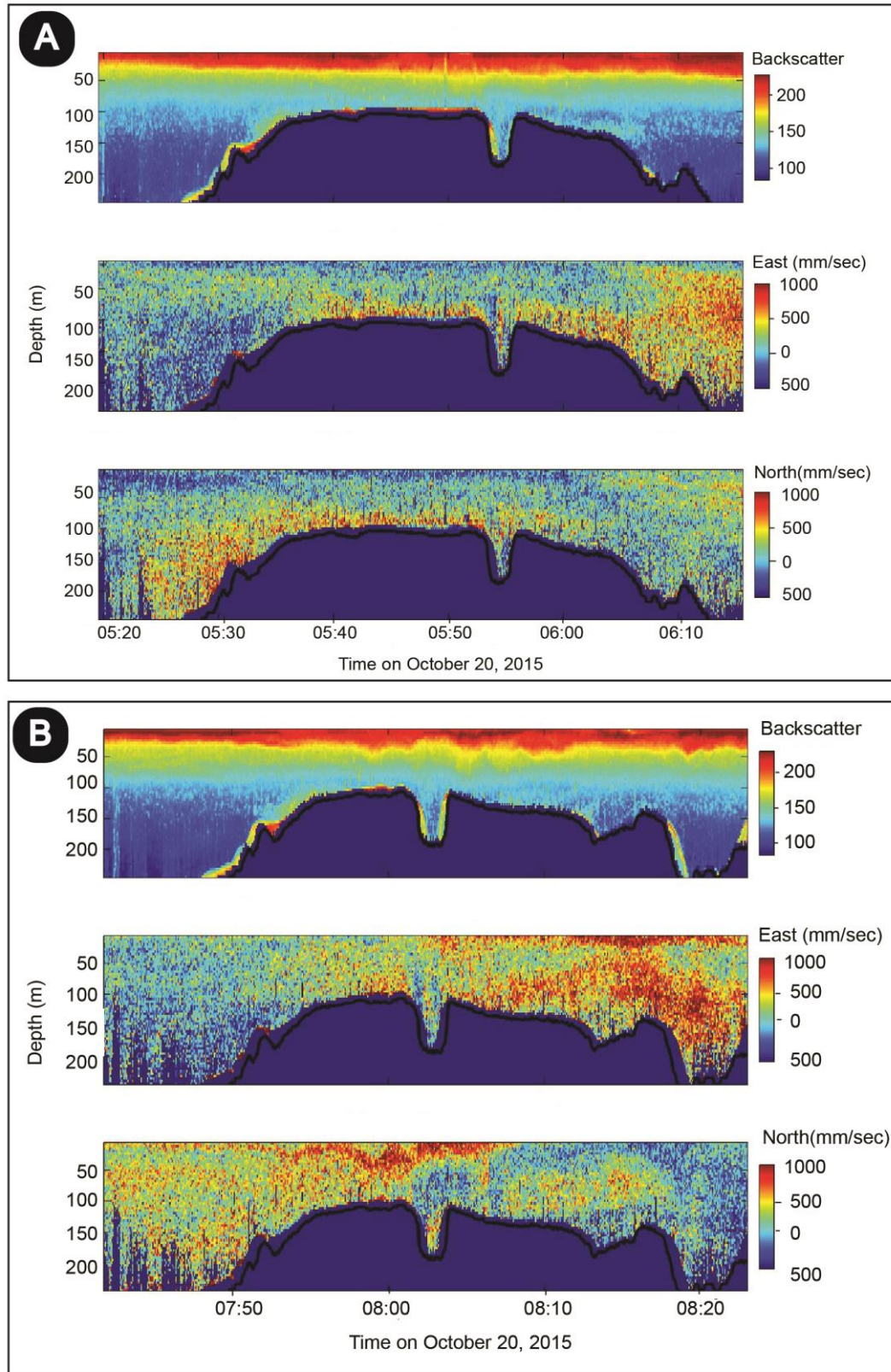


Figure 42. These plots represent two transects taken with the 150kHz pole-mounted ADCP across the sill at Whale Channel, approximately 2 hours part on October 20<sup>th</sup>, 2015.

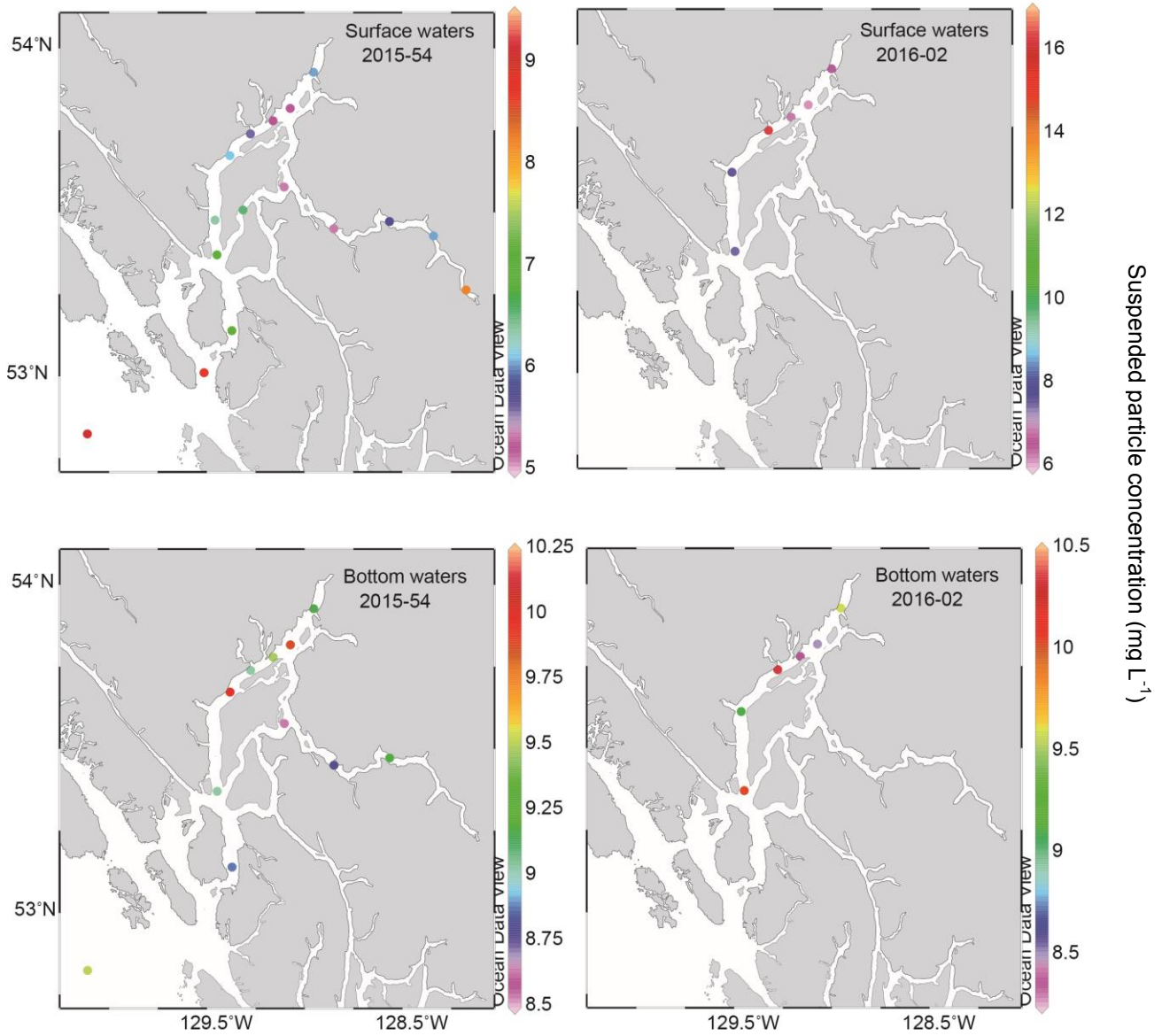


Figure 43. Suspended particulate concentrations (mg/L) from surface and bottom waters.

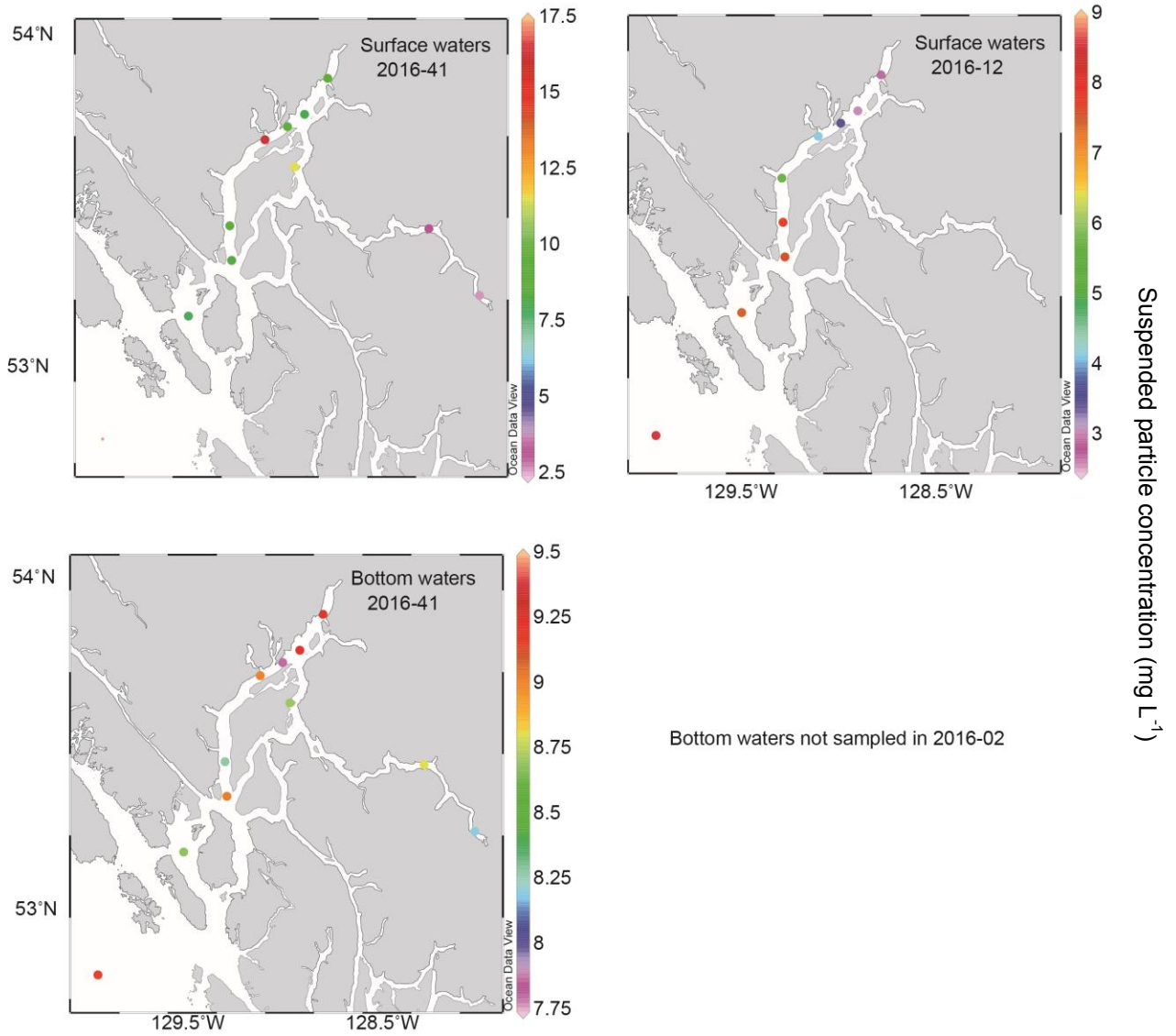


Figure 43 continued. Suspended particulate concentrations (mg/L) from surface and bottom waters.

Table 1. Sediment trap schedule (11.5 day intervals), mass, carbon and nitrogen species analysis, and chlorinity data taken from Deployment C (July 2015-July 2016).

HEC1-C

Trap No.-Cup No.	Time start UTC (dd/mm/yyyy hh:mm)	Time end UTC (dd/mm/yyyy hh:mm)	Total Dry Wt of Sample (mg) SC	%total N	%total C	%C <sub>carb</sub>	%C <sub>org</sub>	%chlorinity*	%Si(opal)
1-1	01-08-2015 12:00	13-08-2015 00:00	59.451	2.472	17.752	2.539	15.213	0.782	22.022
1-2	13-08-2015 00:00	24-08-2015 12:00	129.327	1.200	9.390	1.310	8.081	0.782	49.048
1-3	24-08-2015 12:00	05-09-2015 00:00	149.224	1.294	11.474	2.755	8.719	0.782	41.314
1-4	05-09-2015 00:00	16-09-2015 12:00	238.083	1.137	13.183	4.042	9.141	0.782	36.887
1-5	16-09-2015 12:00	28-09-2015 00:00	246.748	1.159	11.304	2.977	8.328	0.782	47.964
1-6	28-09-2015 00:00	09-10-2015 12:00	210.263	2.067	15.364	0.814	14.550	0.782	49.316
1-7	09-10-2015 12:00	21-10-2015 00:00	101.282	2.588	19.408	1.383	18.025	0.782	37.917
1-8	21-10-2015 00:00	01-11-2015 12:00	42.822	2.887	19.881	1.812	18.069	0.782	31.255
1-9	01-11-2015 12:00	13-11-2015 00:00	59.584	3.593	22.007	1.374	20.634	0.782	33.351
1-10	13-11-2015 00:00	24-11-2015 12:00	126.999	1.928	15.641	3.239	12.401	0.782	34.346
2-1	24-11-2015 12:00	06-12-2015 00:00	34.779	2.767	24.087	5.717	18.371	0.782	4.912
2-2	06-12-2015 00:00	17-12-2015 12:00	53.750	4.065	28.481	0.867	27.614	0.782	14.041
2-3	17-12-2015 12:00	29-12-2015 00:00	35.494	3.059	23.894	1.222	22.672	0.782	16.962
2-4	29-12-2015 00:00	09-01-2016 12:00	9.893					0.782	
2-5	09-01-2016 12:00	21-01-2016 00:00	30.189	2.668	18.608	2.071	16.537	0.782	17.421
2-6	21-01-2016 00:00	01-02-2016 12:00	5.867					0.782	
2-7	01-02-2016 12:00	13-02-2016 00:00	9.453					0.782	
2-8	13-02-2016 00:00	24-02-2016 12:00	6.147					0.782	
2-9	24-02-2016 12:00	07-03-2016 00:00	8.228	3.591	22.632	2.146	20.486	0.782	11.027
2-10	07-03-2016 00:00	18-03-2016 12:00	15.773					0.782	
3-1	18-03-2016 12:00	30-03-2016 00:00	14.920					0.782	
3-2	30-03-2016 00:00	10-04-2016 12:00	17.053					0.782	
3-3	10-04-2016 12:00	22-04-2016 00:00	17.555	2.803	18.072	2.902	15.169	0.782	12.013
3-4	22-04-2016 00:00	03-05-2016 12:00	15.440					0.782	
3-5	03-05-2016 12:00	15-05-2016 00:00	16.973					0.782	
3-6	15-05-2016 00:00	26-05-2016 12:00	23.427					0.782	
3-7	26-05-2016 12:00	07-06-2016 00:00	77.099	0.998	8.932	2.414	6.518	0.782	18.968
3-8	07-06-2016 00:00	18-06-2016 12:00	37.888	1.661	12.845	2.727	10.118	0.782	18.731
3-9	18-06-2016 12:00	30-06-2016 00:00	36.680					0.782	
3-10	30-06-2016 00:00	11-07-2016 12:00	55.641	2.673	16.993	2.362	14.631	0.782	20.840

\*Average Chlorinity used for all salt corrections



Table 1 continued. Sediment trap schedule (11.5 day intervals), mass, carbon and nitrogen species analysis, and chlorinity data taken from Deployment C (July 2015-July 2016).

FOC1-C

Trap No.-Cup No.	Time start UTC (dd/mm/yyyy hh:mm)	Time end UTC (dd/mm/yyyy hh:mm)	Total Dry Wt of Sample (mg) SC	%total N	%total C	%C <sub>carb</sub>	%C <sub>org</sub>	%chlorinity
1-1	01-08-2015 12:00	13-08-2015 00:00	Cup Not Analyzed					
1-2	13-08-2015 00:00	24-08-2015 12:00	344.924	0.920	8.764	0.569	8.195	0.450
1-3	24-08-2015 12:00	05-09-2015 00:00	210.021	0.806	7.992	0.271	7.721	0.513
1-4	05-09-2015 00:00	16-09-2015 12:00	299.195	0.849	8.259	0.135	8.123	0.468
1-5	16-09-2015 12:00	28-09-2015 00:00	Cup Not Analyzed					
1-6	28-09-2015 00:00	09-10-2015 12:00	262.915	0.936	9.047	0.522	8.526	0.610
1-7	09-10-2015 12:00	21-10-2015 00:00	Cup Not Analyzed					
1-8	21-10-2015 00:00	01-11-2015 12:00	Cup Not Analyzed					
1-9	01-11-2015 12:00	13-11-2015 00:00	Cup Not Analyzed					
1-10	13-11-2015 00:00	24-11-2015 12:00	284.105	0.717	7.208	0.693	6.515	0.547
2-1	24-11-2015 12:00	06-12-2015 00:00	84.042	0.687	6.572	0.431	6.141	0.589**
2-2	06-12-2015 00:00	17-12-2015 12:00	100.428	0.560	6.454	0.495	5.960	0.589**
2-3	17-12-2015 12:00	29-12-2015 00:00	91.661	0.519	6.300	0.541	5.759	0.589**
2-4	29-12-2015 00:00	09-01-2016 12:00	75.988	0.651	9.239	0.576	8.662	0.589**
2-5	09-01-2016 12:00	21-01-2016 00:00	44.748	0.627	8.480	0.837	7.642	0.589**
2-6	21-01-2016 00:00	01-02-2016 12:00	85.640	0.681	7.713	0.774	6.939	0.589**
2-7	01-02-2016 12:00	13-02-2016 00:00	187.890	0.571	7.114	0.647	6.467	0.589**
2-8	13-02-2016 00:00	24-02-2016 12:00	216.346	0.533	6.702	0.668	6.034	0.453
2-9	24-02-2016 12:00	07-03-2016 00:00	245.890	0.583	6.808	0.845	5.962	0.539
2-10	07-03-2016 00:00	18-03-2016 12:00	241.926	0.670	7.554	0.839	6.715	0.443
3-1	18-03-2016 12:00	30-03-2016 00:00	69.426	1.543	15.525	0.638	14.886	0.589**
3-2	30-03-2016 00:00	10-04-2016 12:00	119.732	0.967	9.180	0.387	8.792	0.589**
3-3	10-04-2016 12:00	22-04-2016 00:00	159.732	0.841	7.567	0.408	7.159	0.617
3-4	22-04-2016 00:00	03-05-2016 12:00	216.587	0.667	6.754	0.442	6.313	0.481
3-5	03-05-2016 12:00	15-05-2016 00:00	220.215	0.673	7.191	0.464	6.728	0.560
3-6	15-05-2016 00:00	26-05-2016 12:00	120.102	0.747	7.266	0.299	6.966	0.589**
3-7	26-05-2016 12:00	07-06-2016 00:00	157.350	0.719	7.169	0.497	6.673	0.860
3-8	07-06-2016 00:00	18-06-2016 12:00	66.217	0.995	8.563	0.464	8.099	0.589**
3-9	18-06-2016 12:00	30-06-2016 00:00	177.018	0.877	8.533	0.359	8.174	0.761
3-10	30-06-2016 00:00	11-07-2016 12:00	108.403	1.303	10.251	0.357	9.894	0.589**

\*\*%Si (opal) not analyzed

\*\*Average chlorinity used when sample volume was insufficient for chlorinity analysis

Table 2. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2015-54																		
Station:	DOUG4		VP36		DOUG26		DOUG31		FOC1		DOUG4		VP26		SC61		DOUG0.4	
Depth:	surf		surf		surf		surf		surf		surf		surf		surf		surf	
Volume settled:	25		25		25		25		25		25		25		25		25	
Counting method:	transect		transect		transect		transect		transect		transect		transect		transect		transect	
Fields Counted:	3		3		3		3		1		3		3		2		3	
Magnification:	40		40		40		40		40		40		40		40		40	
Factor:	37.96		37.96		37.96		37.96		37.96		37.96		37.96		37.96		37.96	
	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL
<b>Diatoms: Centrics</b>																		
<i>Attheya cf. decora</i>																		
<i>Attheya septentrionalis</i>																		
<i>Attheya sp.</i>									0	<1.5								
<i>Asteromphalus cf. parvulus</i>																		
<i>Asteromphalus sarcophagus</i>																		
<i>Ceratulina pelagica</i>																		
<i>Chaetoceros concavicornis/convolutus</i>																		
<i>Chaetoceros debilis</i>									0	<1.5								
<i>Chaetoceros didymus</i>																		
<i>Chaetoceros didymus spore</i>																		
<i>Chaetoceros cf. lorenzianus</i>																		
<i>Chaetoceros radicans</i>																		
<i>Chaetoceros cf. tenuissimus</i>																		
<i>Chaetoceros spp. (hyalochaete)</i>			1	0.5	1	0.5												
<i>Chaetoceros sp. (phaeoceros)</i>																		
<i>Coscinodiscus sp.</i>																		
<i>Dactyliosolen sp.</i>																		
<i>Detonula pumila</i>																		
<i>Ditylum brightwellii</i>																		
<i>Eucampia zodiacus</i>																		
<i>Leptocylindrus minimus</i>																		
<i>Leptocylindrus danicus</i>																		
<i>Melosira cf. moniliformis</i>																		
<i>Rhizosolenia setigera</i>																		
<i>Skeletonema costatum</i>			12	6.1					5	7.6			5	2.5	2	1.5		
<i>Skeletonema costatum spore</i>																		
<i>Thalassionema nitzschoides</i>																		
<i>Thalassiosira anguste-lineata</i>																		
<i>Thalassiosira nordenskiöldii</i>																		
<i>Thalassiosira cf. pacifica</i>																		
<i>Thalassiosira rotula</i>																		
<i>Thalassiosira sp.</i>								2	1.0									
<b>Diatoms: Pennates</b>																		
<i>Achnanthes sp.</i>																		
<i>Cylindrotheca closterium</i>																		
<i>Haslea wawrikae</i>																		
<i>Navicula spp. (possibly freshwater sp.)</i>																		
<i>Pleurosigma normanii</i>																		
<i>Pseudo-nitzschia americana</i>									1	1.5								
<i>Pseudo-nitzschia cf. fraudulenta</i>																		
<i>Pseudo-nitzschia cf. pseudodelicatissima</i>																		
<i>Pseudo-nitzschia sp.</i>																		

Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2015-54																		
Station:	DOUG4		VP36		DOUG26		DOUG31		FOC1		DOUG4		VP26		SC61		DOUG0.4	
Depth:	surf		surf		surf		surf		surf		surf		surf		surf		surf	
Volume settled:	25		25		25		25		25		25		25		25		25	
Counting method:	transect		transect		transect		transect		transect		transect		transect		transect		transect	
Fields Counted:	3		3		3		3		1		3		3		2		3	
Magnification:	40		40		40		40		40		40		40		40		40	
Factor:	37.96		37.96		37.96		37.96		37.96		37.96		37.96		37.96		37.96	
	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL
UID pennate diatom (possibly freshwater sp.)			1	0.5													1	0.5
<b>Dinoflagellates</b>																		
<i>Alexandrium sp.</i>																		
<i>Amphidinium sp.</i>					1	0.5												
<i>Ceratium furca</i>																		
<i>Ceratium sp.</i>																		
<i>Cochlodinium cf. polykrikoides</i>																		
<i>Dinophysis accuminata</i>																		
<i>Dinophysis fortii</i>																		
<i>Dinophysis sp.</i>																		
<i>Gonyaulax sp.</i>																		
<i>Gymnodinium sp.</i>			6	3.0	1	0.5	17	8.6	4	6.1	2	1.0	9	4.6	10	7.6		
<i>Gyrodinium sp.</i>																		
<i>Gyrodinium lachryma</i>																		
<i>Gyrodinium spirale</i>												1	0.5					
<i>Heterocapsa rotundata</i>			7	3.5	10	5.1	5	2.5	15	22.8	1	0.5	13	6.6	67	50.9		
<i>Heterocapsa sp.?</i>																		
<i>Katodinium glaucum</i>															2	1.5		
<i>Noctiluca scintillans ?</i>																		
<i>Oxytoxum sp. ?</i>																		
<i>Prorocentrum minimum</i>																		
<i>Protoperdinium depressum</i>																		
<i>Protoperdinium cf. steinii</i>																		
<i>Protoperdinium sp.</i>																		
unidentified dinoflagellate			20	10.1	12	6.1	23	11.6	7	10.6	30	15.2	16	8.1	20	15.2	14	7.1
unidentified dinoflagellate cyst																		
<b>Misc. flagellates</b>																		
<i>Apedinella spinifera</i>					2	1.0						8	4.0	1	0.8			
UID Chlorophyte																		
<i>Coccolithophore spp.?</i>																		
UID Prymnesiophyte												1	0.5					
<i>Dictyocha speculum</i>			1	0.5														
<i>Dinobryon sp.</i>																		
<i>Ochromonas cosmopolitanus</i>			2	1.0								13	6.6	18	13.7			
<i>Pseudopedinella sp.</i>												2	1.0					
UID Chrysophyte					1	0.5												
<i>Euglena sp.</i>																		
<i>Eutreptiella hirudoidea</i>																		
<i>Eutreptiella cf. lanowii</i>																		
<i>Eutreptiella sp.</i>			1	0.5					1	1.5								
UID Euglenophyte			2	1.0								2	1.0	2	1.5	1	0.5	
<i>Chrysocromulina sp.</i>												1	0.5					
<i>Phaeocystis sp.</i>																		

Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2015-54																				
Station:	DOUG4		VP36		DOUG26		DOUG31		FOC1		DOUG4		VP26		SC61		DOUG0.4			
Depth:	surf		surf		surf		surf		surf		surf		surf		surf		surf			
Volume settled:	25		25		25		25		25		25		25		25		25			
Counting method:	transect		transect		transect		transect		transect		transect		transect		transect		transect			
Fields Counted:	3		3		3		3		1		3		3		2		3			
Magnification:	40		40		40		40		40		40		40		40		40			
Factor:	37.96		37.96		37.96		37.96		37.96		37.96		37.96		37.96		37.96			
	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL		
<i>Pyramimonas</i> spp.			12	6.1	6	3.0			12	18.2			25	12.7			20	15.2	5	2.5
UID Prasinophyte									6	9.1		2	1.0							
<i>Pterosperma</i> sp.																				
<i>Hillea</i> sp.?			26	13.2	28	14.2	1	0.5	50	75.9		16	8.1		47	35.7		1	0.5	
<i>Teleaulax acuta</i>			14	7.1	24	12.1			22	33.4	3	1.5	14	7.1	37	28.1	13	6.6		
<i>Teleaulax amphioxia</i>			4	2.0	3	1.5						3	1.5	2	1.5					
<i>Telaularax</i> spp.			66	33.4	68	34.4	19	9.6	88	133.6	10	5.1	149	75.4	170	129.1	106	53.6		
<i>Tetraselmis</i> sp. ?															38	28.8				
UID Cryptophyte			2	1.0					1	1.5			1	0.5						
UID flagellates	3	1.5	37	18.7	44	22.3	18	9.1	50	75.9	10	5.1	33	16.7	87	66.0	28	14.2		
<b>Other</b>																				
<i>Calliacthanta natans</i> ?																				
<i>Desmirella</i> sp. ?																				
UID Choanoflagellates	3	1.5	66	33.4	65	32.9	46	23.3	99	150.3	68	34.4	56	28.3	169	128.3	13	6.6		
Larvacean																				
Telonema					1	0.5														
<i>Ebria tripartita</i>																				
<i>Mesodinium</i> cf. <i>rubrum</i>							8	4.0					19	9.6						
<i>Mesodinium</i> spp.									1	1.5	1	0.5			2	1.5				
<i>Strombidium</i> spp.	1	0.5	2	1.0			1	0.5	4	6.1					5	3.8				
UID Tintinnid																				
UID Ciliate			1	0.5	4	2.0	2	1.0			1	0.5	12	6.1	2	1.5	1	0.5		
<b>Freshwater Taxon</b>																				
<i>Actinastrum</i> sp.	3	1.5																		
<i>Ankistrodesmus</i> sp.																				
<i>Scendesmus</i> sp.																				
UID Chlorophyte	3	1.5																		
<i>Melosira</i> sp.																				
<i>Cryptomonas</i> sp. ( <i>ovata/erosa</i> )																				
UID Cryptophyte	3	1.5																		
<i>Mallomonas</i> sp.																				
<i>Merismopedia</i> sp.																				
<i>Ocellularia</i> sp. ( <i>filament</i> )																				
Cyanophyte filament																				
<i>Asterionella formosa</i>																				
<i>Cymbella</i> sp.																				
<i>Navicula</i> sp.																				
<i>Tabellaria flocculosa</i>																				
<i>Oocystis</i> sp?																				
<b>Total</b>	7	3.5	283	143.2	271	137.1	142	71.9	366	555.7	128	64.8	399	201.9	701	532.1	183	92.6		

Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2015-54																		
Station:	DOUG1		DOUG11		DOUG2		DOUG0.2		DOUG4		DOUG40		GC38		DOUG3		HEC1	
Depth:	surf		surf		surf		surf		surf		surf		surf		surf		surf	
Volume settled:	25		25		25		25		25		25		25		25		25	
Counting method:	transect		transect		transect		transect		transect		transect		transect		transect		transect	
Fields Counted:	3		1		3		3		2		1		3		3		2	
Magnification:	40		40		40		40		40		40		40		40		40	
Factor:	37.96		37.96		37.96		37.96		37.96		37.96		37.96		37.96		37.96	
	Count	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL
<b>Diatoms: Centrics</b>																		
<i>Attheya cf. decora</i>																		
<i>Attheya septentrionalis</i>																		
<i>Attheya sp.</i>																		
<i>Asteromphalus cf. parvulus</i>																		
<i>Asteromphalus sarcophagus</i>																		
<i>Ceratulina pelagica</i>																		
<i>Chaetoceros concavicornis/convolutus</i>																		
<i>Chaetoceros debilis</i>																		
<i>Chaetoceros didymus</i>																		
<i>Chaetoceros didymus spore</i>																		
<i>Chaetoceros cf. lorenzianus</i>																		
<i>Chaetoceros radicans</i>																		
<i>Chaetoceros cf. tenuissimus</i>																		
<i>Chaetoceros spp. (hyalochaete)</i>					1	0.5					1	1.5				3	2.3	
<i>Chaetoceros sp. (phaeoceros)</i>																		
<i>Coscinodiscus sp.</i>																		
<i>Dactyliosolen sp.</i>																		
<i>Detonula pumila</i>																		
<i>Ditylum brightwellii</i>											1	1.5						
<i>Eucampia zodiacus</i>																		
<i>Leptocylindrus minimus</i>																		
<i>Leptocylindrus danicus</i>																		
<i>Melosira cf. moniliformis</i>																		
<i>Rhizosolenia setigera</i>																		
<i>Skeletonema costatum</i>			2	3.0					2	1.5	29	44.0				17	12.9	
<i>Skeletonema costatum spore</i>																		
<i>Thalassionema nitzschoides</i>																		
<i>Thalassiosira anguste-lineata</i>																		
<i>Thalassiosira nordenskiöldii</i>																		
<i>Thalassiosira cf. pacifica</i>																		
<i>Thalassiosira rotula</i>																		
<i>Thalassiosira sp.</i>					1	0.5					2	3.0				4	3.0	
<b>Diatoms: Pennates</b>																		
<i>Achnanthes sp.</i>									1	0.8								
<i>Cylindrotheca closterium</i>																3	2.3	
<i>Haslea wawrikae</i>																		
<i>Navicula spp. (possibly freshwater sp.)</i>																		
<i>Pleurosigma normanii</i>																		
<i>Pseudo-nitzschia americana</i>																2	1.5	
<i>Pseudo-nitzschia cf. fraudulenta</i>																2	1.5	
<i>Pseudo-nitzschia cf. pseudodelicatissima</i>																2	1.5	
<i>Pseudo-nitzschia sp.</i>																		



Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2015-54																		
Station:	DOUG1		DOUG11		DOUG2		DOUG0.2		DOUG4		DOUG40		GC38		DOUG3		HEC1	
Depth:	surf		surf		surf		surf		surf		surf		surf		surf		surf	
Volume settled:	25		25		25		25		25		25		25		25		25	
Counting method:	transect		transect		transect		transect		transect		transect		transect		transect		transect	
Fields Counted:	3		1		3		3		2		1		3		3		2	
Magnification:	40		40		40		40		40		40		40		40		40	
Factor:	37.96		37.96		37.96		37.96		37.96		37.96		37.96		37.96		37.96	
	Count	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL
UID pennate diatom (possibly freshwater sp.)					1	0.5											1	0.8
<b>Dinoflagellates</b>																		
<i>Alexandrium sp.</i>																	2	1.5
<i>Amphidinium sp.</i>																		
<i>Ceratium furca</i>																		
<i>Ceratium sp.</i>																		
<i>Cochlodinium cf. polykrikoides</i>					4	2.0												
<i>Dinophysis accuminata</i>																		
<i>Dinophysis fortii</i>																		
<i>Dinophysis sp.</i>																		
<i>Gonyaulax sp.</i>																		
<i>Gymnodinium sp.</i>								2	1.5									
<i>Gyrodinium sp.</i>														1	0.5		3	2.3
<i>Gyrodinium lachryma</i>																		
<i>Gyrodinium spirale</i>																	1	0.8
<i>Heterocapsa rotundata</i>	12	6.1	18	27.3	14	7.1					10	15.2			3	1.5	3	2.3
<i>Heterocapsa sp.?</i>																		
<i>Katodinium glaucum</i>																	1	0.8
<i>Noctiluca scintillans ?</i>																		
<i>Oxytoxum sp. ?</i>																		
<i>Prorocentrum minimum</i>																		
<i>Protoperidinium depressum</i>																		
<i>Protoperidinium cf. steinii</i>																		
<i>Protoperidinium sp.</i>																		
unidentified dinoflagellate	5	2.5	9	13.7	2	1.0	2	1.0	1	0.8	2	3.0			4	2.0	81	61.5
unidentified dinoflagellate cyst																		
<b>Misc. flagellates</b>																		
<i>Apedinella spinifera</i>			6	9.1	3	1.5												
UID Chlorophyte																		
<i>Coccolithophore spp.?</i>																		
UID Prymnesiophyte																		
<i>Dictyocha speculum</i>																		
<i>Dinobryon sp.</i>																		
<i>Ochromonas cosmopoliticus</i>			2	3.0	1	0.5	2	1.0										
<i>Pseudopedinella sp.</i>																		
UID Chrysophyte									5	3.8								
<i>Euglena sp.</i>														12	6.1			
<i>Eutreptiella hirudoidea</i>																		
<i>Eutreptiella cf. lanowii</i>																		
<i>Eutreptiella sp.</i>									3	2.3								
UID Euglenophyte	1	0.5	0	<1.5			1	0.5									1	0.8
<i>Chrysocromulina sp.</i>																	1	0.8
<i>Phaeocystis sp.</i>																		

†Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2015-54																		
Station:	DOUG1		DOUG11		DOUG2		DOUG0.2		DOUG4		DOUG40		GC38		DOUG3		HEC1	
Depth:	surf		surf		surf		surf		surf		surf		surf		surf		surf	
Volume settled:	25		25		25		25		25		25		25		25		25	
Counting method:	transect		transect		transect		transect		transect		transect		transect		transect		transect	
Fields Counted:	3		1		3		3		2		1		3		3		2	
Magnification:	40		40		40		40		40		40		40		40		40	
Factor:	37.96		37.96		37.96		37.96		37.96		37.96		37.96		37.96		37.96	
	Count	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL
<i>Pyramimonas</i> spp.	3	1.5	24	36.4	6	3.0	4	2.0	13	9.9					12	6.1	7	5.3
UID Prasinophyte																		
<i>Pterosperma</i> sp.																		
<i>Hillea</i> sp.?			26	39.5	4	2.0			39	29.6	17	25.8						
<i>Teleaulax acuta</i>	22	11.1	37	56.2	16	8.1	3	1.5	36	27.3	25	38.0	1	0.5	15	7.6	31	23.5
<i>Teleaulax amphioxia</i>	1	0.5	4	6.1	5	2.5			6	4.6			2	1.0	4	2.0	1	0.8
<i>Telaulax</i> spp.	119	60.2	136	206.5	55	27.8	67	33.9	146	110.8	86	130.6	10	5.1	57	28.8	111	84.3
<i>Tetraselmis</i> sp. ?																		
UID Cryptophyte																	7	5.3
UID flagellates	17	8.6	19	28.8	29	14.7	19	9.6	42	31.9	144	218.6	4	2.0	31	15.7	94	71.4
<b>Other</b>																		
<i>Calliakantha natans</i> ?											3	4.6						
<i>Desmirella</i> sp. ?																		
UID Choanoflagellates	16	8.1	24	36.4	37	18.7	6	3.0	63	47.8	74	112.4	13	6.6	49	24.8	78	59.2
Larvacean																		
<i>Telonema</i>									2	1.5	2	3.0	1	0.5	1	0.5		
<i>Ebria tripartita</i>																		
<i>Mesodinium cf. rubrum</i>			0	<1.5					1	0.8							13	9.9
<i>Mesodinium</i> spp.																		
<i>Strombidium</i> spp.	1	0.5			3	1.5			1	0.8	1	1.5			4	2.0	2	1.5
UID Tintinnid																		
UID Ciliate	6	3.0	2	3.0	4	2.0	2	1.0					1	0.5	2	1.0	1	0.8
<b>Freshwater Taxon</b>																		
<i>Actinastrum</i> sp.																		
<i>Ankistrodesmus</i> sp.	1	0.5																
<i>Scendesmus</i> sp.	16	8.1																
UID Chlorophyte							4	2.0										
<i>Melosira</i> sp.																		
<i>Cryptomonas</i> sp. ( <i>ovata/erosa</i> )																		
UID Cryptophyte																		
<i>Mallomonas</i> sp.																	2	1.5
<i>Merismopedia</i> sp.											56	85.0						
<i>Ocellularia</i> sp. ( <i>filament</i> )	1	0.5											1	0.5	1	0.5		
Cyanophyte filament																		
<i>Asterionella formosa</i>							8	4.0										
<i>Cymbella</i> sp.																		
<i>Navicula</i> sp.							1	0.5										
<i>Tabellaria flocculosa</i>					2	1.0												
<i>Oocystis</i> sp?																		
<b>Total</b>	<b>203</b>	<b>102.7</b>	<b>309</b>	<b>469.1</b>	<b>186</b>	<b>94.1</b>	<b>106</b>	<b>53.6</b>	<b>363</b>	<b>275.6</b>	<b>397</b>	<b>602.7</b>	<b>32</b>	<b>16.2</b>	<b>195</b>	<b>98.7</b>	<b>472</b>	<b>358.3</b>

Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2015-54		
Station:	DEC26	
Depth:		surf
Volume settled:		25
Counting method:		transect
Fields Counted:		3
Magnification:		40
Factor:		37.96
	Counts	Cells/mL
<b>Diatoms: Centrics</b>		
<i>Attheya cf. decora</i>		
<i>Attheya septentrionalis</i>		
<i>Attheya sp.</i>		
<i>Asteromphalus cf. parvulus</i>		
<i>Asteromphalus sarcophagus</i>		
<i>Ceratulina pelagica</i>		
<i>Chaetoceros concavicornis/convolutus</i>		
<i>Chaetoceros debilis</i>		
<i>Chaetoceros didymus</i>		
<i>Chaetoceros didymus spore</i>		
<i>Chaetoceros cf. lorenzianus</i>		
<i>Chaetoceros radicans</i>		
<i>Chaetoceros cf. tenuissimus</i>		
<i>Chaetoceros spp. (hyalochaete)</i>		
<i>Chaetoceros sp. (phaeoceros)</i>		
<i>Coscinodiscus sp.</i>		
<i>Dactyliosolen sp.</i>		
<i>Detonula pumila</i>		
<i>Ditylum brightwellii</i>		
<i>Eucampia zodiacus</i>		
<i>Leptocylindrus minimus</i>		
<i>Leptocylindrus danicus</i>		
<i>Melosira cf. moniliformis</i>		
<i>Rhizosolenia setigera</i>		
<i>Skeletonema costatum</i>		
<i>Skeletonema costatum spore</i>		
<i>Thalassionema nitzschoides</i>		
<i>Thalassiosira anguste-lineata</i>		
<i>Thalassiosira nordenskiöldii</i>		
<i>Thalassiosira cf. pacifica</i>		
<i>Thalassiosira rotula</i>		
<i>Thalassiosira sp.</i>		
<b>Diatoms: Pennates</b>		
<i>Achnanthes sp.</i>		
<i>Cylindrotheca closterium</i>		
<i>Haslea wawrikan</i>		
<i>Navicula spp. (possibly freshwater sp.)</i>		
<i>Pleurosigma normanii</i>		
<i>Pseudo-nitzschia americana</i>		
<i>Pseudo-nitzschia cf. fraudulenta</i>		
<i>Pseudo-nitzschia cf. pseudodelicatissima</i>		
<i>Pseudo-nitzschia sp.</i>		

Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2015-54		
Station:	Dec26	
Depth:		surf
Volume settled:		25
Counting method:		transect
Fields Counted:		3
Magnification:		40
Factor:		37.96
	Counts	Cells/mL
UID pennate diatom (possibly freshwater sp.)	1	0.5
<b>Dinoflagellates</b>		
<i>Alexandrium</i> sp.		
<i>Amphidinium</i> sp.		
<i>Ceratium furca</i>		
<i>Ceratium</i> sp.		
<i>Cochlodinium</i> cf. <i>polykrikoides</i>		
<i>Dinophysis accuminata</i>		
<i>Dinophysis fortii</i>		
<i>Dinophysis</i> sp.		
<i>Gonyaulax</i> sp.		
<i>Gymnodinium</i> sp.		
<i>Gyrodinium</i> sp.		
<i>Gyrodinium lachryma</i>		
<i>Gyrodinium spirale</i>		
<i>Heterocapsa rotundata</i>	1	0.5
<i>Heterocapsa</i> sp.?		
<i>Katodinium glaucum</i>		
<i>Noctiluca scintillans</i> ?		
<i>Oxytoxum</i> sp. ?		
<i>Prorocentrum minimum</i>		
<i>Protoperidinium depressum</i>		
<i>Protoperidinium</i> cf. <i>steinii</i>		
<i>Protoperidinium</i> sp.		
unidentified dinoflagellate	4	2.0
unidentified dinoflagellate cyst		
<b>Misc. flagellates</b>		
<i>Apedinella spinifera</i>		
UID Chlorophyte		
<i>Coccolithophore</i> spp.?		
UID Prymnesiophyte		
<i>Dictyocha speculum</i>		
<i>Dinobryon</i> sp.		
<i>Ochromonas cosmopoliticus</i>		
<i>Pseudopedinella</i> sp.		
UID Chrysophyte		
<i>Euglena</i> sp.		
<i>Eutreptiella hirudoidea</i>		
<i>Eutreptiella</i> cf. <i>lanowii</i>		
<i>Eutreptiella</i> sp.		
UID Euglenophyte		
<i>Chrysocromulina</i> sp.		
<i>Phaeocystis</i> sp.		

Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2015-54		
Station:	DEC26	
Depth:		surf
Volume settled:		25
Counting method:		transect
Fields Counted:		3
Magnification:		40
Factor:		37.96
	Counts	Cells/mL
<i>Pyramimonas</i> spp.		
UID Prasinophyte		
<i>Pterosperma</i> sp.		
<i>Hillea</i> sp.?		
<i>Teleaulax acuta</i>	11	5.6
<i>Teleaulax amphioxia</i>		
<i>Telaulax</i> spp.	28	14.2
<i>Tetraselmis</i> sp. ?		
UID Cryptophyte		
UID flagellates	35	17.7
<b>Other</b>		
<i>Calliacantha natans</i> ?		
<i>Desmirella</i> sp. ?		
UID Choanoflagellates	12	6.1
Larvacean		
<i>Telonema</i>	1	0.5
<i>Ebria tripartita</i>		
<i>Mesodinium</i> cf. <i>rubrum</i>		
<i>Mesodinium</i> spp.		
<i>Strombidium</i> spp.	1	0.5
UID Tintinnid		
UID Ciliate		
<b>Freshwater Taxon</b>		
<i>Actinastrum</i> sp.		
<i>Ankistrodesmus</i> sp.		
<i>Scendesmus</i> sp.		
UID Chlorophyte		
<i>Melosira</i> sp.		
<i>Cryptomonas</i> sp. ( <i>ovata/erosa</i> )		
UID Cryptophyte		
<i>Mallomonas</i> sp.		
<i>Merismopedia</i> sp.		
<i>Ocellularia</i> sp. (filament)		
Cyanophyte filament		
<i>Asterionella formosa</i>		
<i>Cymbella</i> sp.		
<i>Navicula</i> sp.		
<i>Tabellaria flocculosa</i>		
<i>Oocystis</i> sp?		
<b>Total</b>	94	47.6



Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2016-02														
Station:	SC61		DOUG45		FOC1		DOUG16		DOUG4		DOUG11		DOUG31	
Depth:	surf		surf		surf		surf		surf		surf		surf	
Volume settled:	25		25		25		25		25		25		25	
Counting method:	transect		transect		transect		transect		transect		transect		transect	
Fields Counted:	3		2		2		2		3		2		2	
Magnification:	40		40		40		40		40		40		40	
Factor:	37.96		37.96		37.96		37.96		37.96		37.96		37.96	
	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL
<b>Diatoms: Centrics</b>														
<i>Actinoptychus</i> sp.					3	0.0								
<i>Attheya</i> cf. <i>decora</i>														
<i>Attheya septentrionalis</i>														
<i>Attheya</i> sp.														
<i>Asteromphalus</i> cf. <i>parvulus</i>														
<i>Asteromphalus sarcophagus</i>														
<i>Bacteriastrium</i> cf. <i>delicatulum</i>														
<i>Ceratulina pelagica</i>														
<i>Ceratulina</i> sp.														
<i>Chaetoceros concavicornis/convolutus</i>														
<i>Chaetoceros debilis</i>														
<i>Chaetoceros didymus</i>														
<i>Chaetoceros didymus</i> spore														
<i>Chaetoceros</i> cf. <i>lorenzianus</i>														
<i>Chaetoceros radicans</i>														
<i>Chaetoceros similis</i>														
<i>Chaetoceros simplex</i>														
<i>Chaetoceros socialis</i>														
<i>Chaetoceros subtilis</i>														
<i>Chaetoceros tenuissimus</i>			2	0.0									2	0.0
<i>Chaetoceros</i> spp. (hyalochaete)	8	0.0	3	0.0	1	0.0	1	0.0			3	0.0	2	0.0
<i>Chaetoceros</i> sp. (phaeoceros)														
<i>Coscinodiscus</i> sp.														
<i>Dactyliosolen fragilissimus</i>														
<i>Dactyliosolen</i> sp.														
<i>Detonula pumila</i>														
<i>Ditylum brightwellii</i>			0	<0.08			1	0.0						
<i>Eucampia zodiacus</i>														
<i>Guinardia delicatula</i>														
<i>Guinardia striata</i>														
<i>Leptocylindrus minimus</i>														
<i>Leptocylindrus danicus</i>														
<i>Melosira</i> cf. <i>moniliformis</i>														
<i>Proboscia alata</i>														
<i>Rhizosolenia setigera</i>														
<i>Skeletonema costatum</i>	26	0.0	16	0.0	30	0.0	50	0.0	17	0.0	24	0.0	14	0.0
<i>Skeletonema costatum</i> spore														
<i>Thalassionema nitzschoides</i>														
<i>Thalassiosira anguste-lineata</i>														
<i>Thalassiosira nordenskioldii</i>														
<i>Thalassiosira</i> cf. <i>pacifica</i>														
<i>Thalassiosira rotula</i>														
<i>Thalassiosira</i> sp.	2	0.0	5	0.0							6	0.0	1	0.0
UID centric diatom														

Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2016-02														
Station:	SC61		DOUG45		FOC1		DOUG16		DOUG4		DOUG11		DOUG31	
Depth:	surf		surf		surf		surf		surf		surf		surf	
Volume settled:	25		25		25		25		25		25		25	
Counting method:	transect		transect		transect		transect		transect		transect		transect	
Fields Counted:	3		2		2		2		3		2		2	
Magnification:	40		40		40		40		40		40		40	
Factor:	37.96		37.96		37.96		37.96		37.96		37.96		37.96	
	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL
<b>Diatoms: Pennates</b>														
<i>Achnanthes</i> sp.														
<i>Cylindrotheca closterium</i>														
<i>Haslea wawriake</i>	1	0.0	1	0.0										
<i>Navicula</i> spp. (possibly freshwater sp.)														
<i>Pleurosigma normanii</i>														
<i>Pseudo-nitzschia americana</i>														
<i>Pseudo-nitzschia cf. fraudulenta</i>														
<i>Pseudo-nitzschia cf. pseudodelicatissima</i>														
<i>Pseudo-nitzschia</i> sp.														
<i>Thalassionema nitzschoides</i>														
UID pennate diatom					1	0.0			4	0.0				
<b>Dinoflagellates</b>														
<i>Alexandrium</i> sp.														
<i>Amphidinium</i> sp.														
<i>Ceratium furca</i>														
<i>Ceratium lineatum</i>														
<i>Ceratium</i> sp.														
<i>Cochlodinium cf. polykrikoides</i>														
<i>Dinophysis accuminata</i>														
<i>Dinophysis fortii</i>														
<i>Dinophysis</i> sp.														
<i>Gonyaulax</i> sp.														
<i>Gymnodinium breve</i>														
<i>Gymnodinium</i> sp.			2	0.0			1	0.0			5	0.0	1	0.0
<i>Gyrodinium</i> sp.														
<i>Gyrodinium lachryma</i>														
<i>Gyrodinium spirale</i>			0	<0.08										
<i>Heterocapsa rotundata</i>	7	0.0	12	0.0	3	0.0	4	0.0	8	0.0	24	0.0	32	0.0
<i>Heterocapsa</i> sp.?														
<i>Katodinium glaucum</i>														
<i>Noctiluca scintillans</i>														
<i>Oxytoxum</i> sp. ?														
<i>Procentrum minimum</i>			1	0.0										
<i>Protoperdinium depressum</i>														
<i>Protoperdinium cf. steinii</i>														
<i>Protoperdinium</i> sp.														
Autotroph dinoflagellate									1	0.0	2	0.0	2	0.0
unidentified dinoflagellate	15	0.0	5	0.0	2	0.0	1	0.0	2	0.0	2	0.0		
unidentified dinoflagellate cyst														
<b>Misc. flagellates</b>														
<i>Apedinella spinifera</i>			1	0.0							2	0.0	4	0.0
<i>Tetraselmis</i> sp. ?														
UID Chlorophyte	9	0.0	7	0.0	3	0.0	4	0.0	4	0.0			16	0.0

Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2016-02														
Station:	SC61		DOUG45		FOC1		DOUG16		DOUG4		DOUG11		DOUG31	
Depth:	surf		surf		surf		surf		surf		surf		surf	
Volume settled:	25		25		25		25		25		25		25	
Counting method:	transect		transect		transect		transect		transect		transect		transect	
Fields Counted:	3		2		2		2		3		2		2	
Magnification:	40		40		40		40		40		40		40	
Factor:	37.96		37.96		37.96		37.96		37.96		37.96		37.96	
	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL
<b>Misc. flagellates</b>														
<i>Coccolithophore spp.?</i>														
UID Prymnesiophyte											3	0.0		
<i>Dictyocha speculum</i>	2	0.0												
<i>Dinobryon sp.</i>														
<i>Meringosphaera mediterranea</i>														
<i>Ochromonas cosmopoliticus</i>	5	0.0	11	0.0	5	0.0			1	0.0	5	0.0	1	0.0
<i>Pseudopedinella pyriforme</i>	2	0.0	3	0.0	18	0.0			7	0.0	8	0.0		
<i>Pseudopedinella sp.</i>														
UID Chrysophyte														
<i>Euglena sp.</i>														
<i>Eutreptiella hirudoidea</i>														
<i>Eutreptiella cf. lanowii</i>														
<i>Eutreptiella sp.</i>											1	0.0		
UID Euglenophyte							1	0.0						
<i>Chrysochromulina hirta</i>														
<i>Chrysochromulina sp.</i>	1	0.0	6	0.0	5	0.0	19	0.0	4	0.0	4	0.0	16	0.0
<i>Nephroselmis sp.</i>														
<i>Phaeocystis globulosa</i>														
<i>Phaeocystis sp.</i>														
<i>Pyramimonas spp.</i>	10	0.0	11	0.0			9	0.0	1	0.0	24	0.0	22	0.0
UID Prasinophyte														
<i>Pterosperma sp.</i>														
<i>Hemiselmis sp.</i>	22	0.0	26	0.0	16	0.0			8	0.0	22	0.0	28	0.0
<i>Hillea sp.?</i>														
<i>Teleaulax acuta</i>	39	0.0	46	0.0	7	0.0	57	0.0	18	0.0	49	0.0	64	0.0
<i>Teleaulax amphioxia</i>	4	0.0	11	0.0	7	0.0	22	0.0	18	0.0	30	0.0	45	0.0
<i>Teleaulax spp.</i>	90	0.0	55	0.0	44	0.0	108	0.0	49	0.0	99	0.0	146	0.0
UID Cryptophyte	1	0.0												
UID autotroph	25	0.0	46	0.0	47	0.0	19	0.0	17	0.0	46	0.0	47	0.0
UID flagellates	54	0.0	52	0.0	107	0.0	47	0.0	23	0.0	39	0.0	30	0.0
<b>Other</b>														
<i>Calliacantha natans ?</i>														
<i>Desmirella sp. ?</i>														
UID Choanoflagellates	63	0.0	53	0.0	22	0.0	27	0.0	16	0.0	35	0.0	30	0.0
Larvacean														
<i>Oikopleura dioica</i>														
<i>Telonema</i>	2	0.0	2	0.0	4	0.0	2	0.0					3	0.0
<i>Ebria tripartita</i>														
Copepod egg?									2	0.0				
<i>Mesodinium cf. rubrum</i>							1	0.0	3	0.0	51	0.0	2	0.0
<i>Mesodinium spp.</i>					1	0.0					3	0.0		
<i>Strombidium spp.</i>														
UID Tintinnid														
UID Ciliate	5	0.0	4	0.0			1	0.0	3	0.0	14	0.0	10	0.0

Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2016-02														
Station:	SC61		DOUG45		FOC1		DOUG16		DOUG4		DOUG11		DOUG31	
Depth:	surf		surf		surf		surf		surf		surf		surf	
Volume settled:	25		25		25		25		25		25		25	
Counting method:	transect		transect		transect		transect		transect		transect		transect	
Fields Counted:	3		2		2		2		3		2		2	
Magnification:	40		40		40		40		40		40		40	
Factor:	37.96		37.96		37.96		37.96		37.96		37.96		37.96	
	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL
<b>Freshwater Taxon</b>														
<i>Actinastrum sp.</i>														
<i>Ankistrodesmus sp.</i>														
<i>Scendesmus sp.</i>								4	0.0					
UID Chlorophyte														
<i>Aulacosiera sp.</i>														
<i>Melosira sp.</i>														
<i>Cryptomonas sp. (ovata/erosa)</i>														
UID Cryptophyte														
<i>Mallomonas sp.?</i>														
<i>Merismopedia sp.</i>														
<i>Ocellularia sp. (filament)</i>														
Cyanophyte filament														
<i>Achnanthes sp.</i>														
<i>Asterionella formosa</i>								1	0.0					
<i>Cymbella sp.</i>														
<i>Navicula sp.</i>														
<i>Synedra sp.</i>														
<i>Tabellaria flocculosa</i>														
Oocystis sp?														
<b>Total</b>	393	211.9	381	209.9	326	209.9	375	209.9	206	211.9	501	209.9	518	209.9

Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2016-41																	
Station:	GC31		HAK1		GC57		DOUG11		GC47		DEC19		DOUG4		SC61		
Depth:	surf		surf		surf		surf		surf		surf		surf		surf		
Volume settled:	25		25		25		25		25		25		25		25		
Counting method:	fields		fields		fields		fields		transect		fields		fields		fields		
Fields Counted:	20		20		20		20		3		20		20		20		
Magnification:	40		40		40		40		40		40		40		40		
Factor:	2424.816		2424.816		2424.816		2424.816		37.95613		2424.816		2424.816		2424.816		
	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	
<b>Diatoms: Centrics</b>																	
<i>Actinopterychus</i> sp.																	
<i>Attheya</i> cf. <i>decora</i>																	
<i>Attheya septentrionalis</i>																	
<i>Attheya</i> sp.			5	24.2		1	4.8		3	14.5		4	19.4		3	14.5	
<i>Asteromphalus</i> cf. <i>parvulus</i>																	
<i>Asteromphalus sarcophagus</i>																	
<i>Bacteriastrium</i> cf. <i>delicatulum</i>																	
<i>Ceratulina pelagica</i>			10	48.5				24	116.4			7	33.9	17	82.4	8	38.8
<i>Ceratulina</i> sp.																	
<i>Chaetoceros concavicornis/convolutus</i>																	
<i>Chaetoceros debilis</i>								24	116.4			5	24.2	9	43.6	28	135.8
<i>Chaetoceros didymus</i>																0	<4.8
<i>Chaetoceros didymus</i> spore																0	<4.8
<i>Chaetoceros</i> cf. <i>lorenzianus</i>																	
<i>Chaetoceros radicans</i>								10	48.5			47	227.9	8	38.8	0	<4.8
<i>Chaetoceros similis</i>			6	29.1					0	<4.8							
<i>Chaetoceros simplex</i>									0	<4.8				0	<4.8		
<i>Chaetoceros socialis</i>														29	140.6	44	213.4
<i>Chaetoceros subtilis</i>																	
<i>Chaetoceros tenuissimus</i>		5	24.2	17	82.4	1	4.8	2	9.7		3	14.5	1	4.8			
<i>Chaetoceros</i> spp. (hyalochaete)		6	29.1	61	295.8			59	286.1		28	135.8	45	218.2	44	213.4	
<i>Chaetoceros</i> sp. (phaeoceros)				1	4.8											0	<4.8
<i>Coscinodiscus</i> sp.																	
<i>Dactyliosolen fragilissimus</i>																3	14.5
<i>Dactyliosolen</i> sp.																	
<i>Detonula pumila</i>																	
<i>Ditylum brightwellii</i>																	
<i>Guinardia delicatula</i>			2	9.7													
<i>Guinardia striata</i>																	
<i>Leptocylindrus minimus</i>			11	53.3												0	<4.8
<i>Leptocylindrus danicus</i>																1	4.8
<i>Melosira</i> cf. <i>moniliformis</i>																	
<i>Proboscia alata</i>																	
<i>Rhizosolenia setigera</i>																	
<i>Skeletonema costatum</i>	2940	14257.9	401	1944.7	551	2672.1	1512	7332.6			3019	14641.0	308	1493.7	86	417.1	
<i>Skeletonema costatum</i> spore																	
<i>Thalassionema nitzschoides</i>																	
<i>Thalassiosira anguste-lineata</i>																	
<i>Thalassiosira nordenskiöldii</i>								11	53.3		4	19.4	0	<4.8	4	19.4	
<i>Thalassiosira</i> cf. <i>pacifica</i>																	
<i>Thalassiosira rotula</i>			5	24.2				0	<4.8								



Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2016-41																
Station:	GC31		HAKI		GC57		DOUG11		GC47		DEC19		DOUG4		SC61	
Depth:	surf		surf		surf		surf		surf		surf		surf		surf	
Volume settled:	25		25		25		25		25		25		25		25	
Counting method:	fields		fields		fields		fields		transect		fields		fields		fields	
Fields Counted:	20		20		20		20		3		20		20		20	
Magnification:	40		40		40		40		40		40		40		40	
Factor:	2424.816		2424.816		2424.816		2424.816		37.95613		2424.816		2424.816		2424.816	
	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL
<i>Thalassiosira</i> sp.			27	130.9					1	0.5						
UID centric diatom																
<b>Diatoms: Pennates</b>																
<i>Achnanthes</i> sp.																
<i>Cylindrotheca closterium</i>			8	38.8			0	<4.8			0	<4.8			0	<4.8
<i>Haslea wawriake</i>																
<i>Navicula</i> spp. (possibly freshwater sp.)																
<i>Pleurosigma normanii</i>															0	<4.8
<i>Pseudo-nitzschia americana</i>																
<i>Pseudo-nitzschia cf. fraudulenta</i>			594	2880.7												
<i>Pseudo-nitzschia cf. pseudodelicatissima</i>																
<i>Pseudo-nitzschia</i> sp.															6	29.1
<i>Thalassionema nitzschoides</i>			4	19.4												
UID pennate diatom (possibly freshwater sp.)					1	4.8			2	1.0			1	4.8		
<b>Dinoflagellates</b>																
<i>Amphidinium</i> sp.																
<i>Ceratium lineatum</i>																
<i>Cochlodinium cf. polykrikoides</i>																
<i>Dinophysis accuminata</i>	0	<4.8														
<i>Dinophysis fortii</i>																
<i>Dinophysis</i> sp.																
<i>Gonyaulax</i> sp.	0	<4.8									0	<4.8	0	<4.8	1	4.8
<i>Gymnodinium breve</i>																
<i>Gymnodinium</i> sp.	1	4.8	2	9.7			2	9.7			0	<4.8	4	19.4		
<i>Gyrodinium</i> sp.																
<i>Gyrodinium lachryma</i>																
<i>Gyrodinium spirale</i>	1	4.8	0	<4.8			0	<4.8			0	<4.8	1	4.8	1	4.8
<i>Heterocapsa rotundata</i>	0	<4.8									0	<4.8	2	9.7		
<i>Heterocapsa</i> sp.?																
<i>Katodinium glaucum</i>	1	4.8	2	9.7			0	<4.8			1	4.8	3	14.5	1	4.8
<i>Noctiluca scintillans</i>											3	0.12				
<i>Oxytoxum</i> sp. ?																
<i>Prorocentrum minimum</i>																
<i>Protoperdinium depressum</i>																
<i>Protoperdinium cf. steinii</i>																
<i>Protoperdinium</i> sp.															0	<4.8
Autotroph dinoflagellate																
unidentified dinoflagellate	1	4.8	5	24.2			3	14.5	8	4.0	4	19.4	6	29.1	4	19.4
unidentified dinoflagellate cyst																

Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2016-41																
Station:	GC31		HAKI		GC57		DOUG11		GC47		DEC19		DOUG4		SC61	
Depth:	surf		surf		surf		surf		surf		surf		surf		surf	
Volume settled:	25		25		25		25		25		25		25		25	
Counting method:	fields		fields		fields		fields		transect		fields		fields		fields	
Fields Counted:	20		20		20		20		3		20		20		20	
Magnification:	40		40		40		40		40		40		40		40	
Factor:	2424.816		2424.816		2424.816		2424.816		37.95613		2424.816		2424.816		2424.816	
	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL
<b>Misc. flagellates</b>																
<i>Apedinella spinifera</i>	2	9.7	2	9.7									2	9.7	3	14.5
<i>Tetraselmis</i> sp. ?																
UID Chlorophyte	7	33.9			4	19.4	4	19.4	7	3.5	5	24.2	1	4.8	3	14.5
<i>Coccolithophore</i> spp.?																
UID Prymnesiophyte																
<i>Dityocha speculum</i>																
<i>Dinobryon</i> sp.	1	4.8	109	528.6					5	2.5						
<i>Meringosphaera mediterranea</i>							1	4.8								
<i>Ochromonas cosmopoliticus</i>	2	9.7					1	4.8							2	9.7
<i>Pseudopedinella pyriforme</i>	45	218.2			16	77.6					5	24.2	1	4.8		
<i>Pseudopedinella</i> sp.																
UID Chrysophyte	2	9.7	4	19.4											1	4.8
<i>Euglena</i> sp.																
<i>Eutreptiella hirudoidea</i>																
<i>Eutreptiella</i> cf. <i>lanowii</i>																
<i>Eutreptiella</i> sp.	5	24.2					0	<4.8								
UID Euglenophyte	1	4.8											2	9.7		
<i>Chrysochromulina hirta</i>																
<i>Chrysochromulina</i> sp.	1	4.8	5	24.2	1	4.8	5	24.2			1	4.8	2	9.7	7	33.9
<i>Nephroselmis</i> sp.																
<i>Phaeocystis globulosa</i>			76	368.6												
<i>Phaeocystis</i> sp.																
<i>Pyramimonas</i> spp.	3	14.5													1	4.8
UID Prasinophyte			1	4.8							1	4.8	2	9.7	3	14.5
<i>Pterosperma</i> sp.																
<i>Hemiselmis</i> sp.																
<i>Hillea</i> sp.?					2	9.7							1	4.8		
<i>Teleaulax acuta</i>	3	14.5			4	19.4	1	4.8					6	29.1		
<i>Teleaulax amphioxia</i>													0	<4.8		
<i>Teleaulax</i> spp.	12	58.2	4	19.4	6	29.1			2	1.0	1	4.8	34	164.9	8	38.8
UID Cryptophyte			2	9.7												
UID autotroph	34	164.9			45	218.2	13	63.0	111	56.2	35	169.7	13	63.0	9	43.6
UID flagellates	12	58.2	21	101.8	7	33.9	5	24.2	9	4.6	13	63.0	4	19.4	38	184.3
<b>Other</b>																
<i>Calliactantha natans</i> ?																
<i>Desmirella</i> sp. ?																
UID Choanoflagellates	12	58.2	12	58.2	4	19.4	6	29.1	1	0.5	22	106.7	17	82.4	23	111.5
Larvacean																
<i>Oikopleura dioica</i>							1	4.8								
<i>Telonema</i>	3	14.5									1	4.8			1	4.8
<i>Ebria tripartita</i>																
Copepod egg?																
<i>Mesodinium</i> cf. <i>rubrum</i>											0	<4.8	0	<4.8		
<i>Mesodinium</i> spp.	0	<4.8			1	4.8										
<i>Strombidium</i> spp.																
UID Tintinnid							0	<4.8					1	4.8	1	4.8
UID Ciliate	3	14.5					2	9.7	2	1.0	1	4.8	0	<4.8	2	9.7

Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2016-41																
Station:	GC31		HAKI		GC57		DOUG11		GC47		DEC19		DOUG4		SC61	
Depth:	surf		surf		surf		surf		surf		surf		surf		surf	
Volume settled:	25		25		25		25		25		25		25		25	
Counting method:	fields		fields		fields		fields		transect		fields		fields		fields	
Fields Counted:	20		20		20		20		3		20		20		20	
Magnification:	40		40		40		40		40		40		40		40	
Factor:	2424.816		2424.816		2424.816		2424.816		37.95613		2424.816		2424.816		2424.816	
	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL
<b>Freshwater</b>																
<i>Actinastrum sp.</i>																
<i>Ankistrodesmus sp.</i>																
<i>Scendesmus sp.</i>																
UID Chlorophyte																
<i>Aulacosiera sp.</i>			16	77.6												
<i>Melosira sp.</i>																
<i>Cryptomonas sp. (ovata/erosa)</i>									2	1.0				1	4.8	
UID Cryptophyte									4	2.0						
<i>Mallomonas sp.?</i>																
<i>Merismopedia sp.</i>																
<i>Ocellularia sp. (filament)</i>																
Cyanophyte filament																
<i>Achnanthes sp.</i>									2	1.0						
<i>Asterionella formosa</i>																
<i>Cymbella sp.</i>									1	0.5						
<i>Navicula sp.</i>																
<i>Synedra sp.</i>									3	1.5						
<i>Tabellaria flocculosa</i>									7	3.5						
<i>Oocystis sp?</i>																
<b>Total</b>	3103	15048.4	1404	6808.9	644	3123.2	1690	8195.9	148	74.9	3210	15552.9	523	2536.4	336	1629.5

Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2016-12																
Station:	SC61		WS1		FOC1		MS8		C18		DOUG31		HEC1		HEC1	
Depth:	surf		surf		surf		surf		surf		surf		surf		surf	
Volume settled:	25		25		25		25		25		25		25		25	
Counting method:	fields		transect		transect		fields		fields		fields		fields		fields	
Fields Counted:	40		1		1		30		25		25		25		25	
Magnification:	40		40		40		40		40		40		40		40	
Factor:	2424.82		37.96		37.96		2424.82		2424.82		2424.82		2424.82		2424.82	
	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL
<b>Diatoms: Centrics</b>																
<i>Actinocyclus sp.</i>																
<i>Attheya cf. decora</i>																
<i>Attheya septentrionalis</i>																
<i>Attheya sp.</i>					5	7.6					4	15.5				
<i>Asteromphalus cf. parvulus</i>																
<i>Asteromphalus sarcophagus</i>									0	<3.9						
<i>Bacteriastrum cf. delicatulum</i>							4	12.9								
<i>Ceratulina pelagica</i>																
<i>Ceratulina sp.</i>					2	3.0										
<i>Chaetoceros concavicornis/convolutus</i>											5	19.4				
<i>Chaetoceros debilis</i>	3	7.3									32	124.2				
<i>Chaetoceros didymus</i>																
<i>Chaetoceros didymus spore</i>																
<i>Chaetoceros cf. lorenzianus</i>																
<i>Chaetoceros radicans</i>																
<i>Chaetoceros similis</i>																
<i>Chaetoceros simplex</i>																
<i>Chaetoceros socialis</i>																
<i>Chaetoceros subtilis</i>					1	1.5					0	<3.9				
<i>Chaetoceros tenuissimus</i>	12	29.1			14	21.3					3	11.6				
<i>Chaetoceros spp. (hyalochaete)</i>	6	14.5			37	56.2			1	3.9	101	391.9	1	3.9		
<i>Chaetoceros sp. (phaeoceros)</i>																
<i>Coscinodiscus sp.</i>							1	3.2	1	3.9						
<i>Dactyliosolen fragilissimus</i>	3	7.3									6	23.3				
<i>Dactyliosolen sp.</i>																
<i>Detonula pumila</i>																
<i>Ditylum brightwellii</i>											1	3.9				
<i>Eucampia zodiacus</i>																
<i>Guinardia delicatula</i>					2	3.0					0	<3.9				
<i>Guinardia striata</i>									0	<3.2						
<i>Leptocylindrus minimus</i>																
<i>Leptocylindrus danicus</i>																
<i>Melosira cf. moniliformis</i>																
<i>Proboscia alata</i>									0	<3.2						
<i>Rhizosolenia setigera</i>	0	<2.4							0	<3.2	0	<3.9				
<i>Skeletonema costatum</i>					5	7.6										
<i>Skeletonema costatum spore</i>																
<i>Thalassionema nitzschoides</i>																
<i>Thalassiosira anguste-lineata</i>																
<i>Thalassiosira nordenskiöldii</i>																
<i>Thalassiosira cf. pacifica</i>																
<i>Thalassiosira rotula</i>											2	7.8				

Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2016-12																
Station:	SC61		WS1		FOC1		MS8		C18		DOUG31		HEC1		HEC1	
Depth:	surf		surf		surf		surf		surf		surf		surf		surf	
Volume settled:	25		25		25		25		25		25		25		25	
Counting method:	fields		transect		transect		fields		fields		fields		fields		fields	
Fields Counted:	40		1		1		30		25		25		25		25	
Magnification:	40		40		40		40		40		40		40		40	
Factor:	2424.82		37.96		37.96		2424.82		2424.82		2424.82		2424.82		2424.82	
	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL
<i>Thalassiosira</i> sp.	8	19.4							1	3.9	4	15.5				
UID centric diatom			7	10.6	3	4.6	3	9.7	2	7.8				3	11.6	
<b>Diatoms: Pennates</b>																
<i>Achnanthes</i> sp.																
<i>Cylindrotheca closterium</i>	0	<2.4			3	4.6			1	3.9	1	3.9	1	3.9		
<i>Haslea wawriake</i>								0	<3.2							
<i>Navicula</i> spp. (possibly freshwater sp.)								3	9.7							
<i>Pleurosigma normanii</i>																
<i>Pseudo-nitzschia americana</i>			2	3.0					4	15.5	2	7.8				
<i>Pseudo-nitzschia</i> cf. <i>fraudulenta</i>																
<i>Pseudo-nitzschia</i> cf. <i>pseudodelicatissima</i>	0	<2.4	2	3.0			4	12.9	14	54.3			2	7.8	1	3.9
<i>Pseudo-nitzschia</i> sp.	1	2.4			29	44.0			0	<3.9	33	128.0				
<i>Thalassionema nitzschoides</i>					8	12.1										
UID pennate diatom (possibly freshwater sp.)									15	58.2			3	11.6	10	38.8
<b>Dinoflagellates</b>																
<i>Alexandrium</i> sp.									1	3.9	2	7.8	3	11.6		
<i>Amphidinium</i> sp.											1	3.9				
<i>Ceratium furca</i>																
<i>Ceratium lineatum</i>								1	3.2							
<i>Ceratium</i> sp.																
<i>Cochlodinium</i> cf. <i>polykrikoides</i>																
<i>Dinophysis acuminata</i>	1	2.4														
<i>Dinophysis fortii</i>																
<i>Dinophysis</i> sp.																
<i>Gonyaulax</i> sp.																
<i>Gymnodinium breve</i>							3	9.7								
<i>Gymnodinium</i> sp.			2	3.0	3	4.6	6	19.4	3	11.6	3	11.6			7	27.2
<i>Gyrodinium</i> sp.																
<i>Gyrodinium lachryma</i>																
<i>Gyrodinium spirale</i>	1	2.4						0	<3.2							
<i>Heterocapsa rotundata</i>	3	7.3	2	3.0					1	3.9	1	3.9	5	19.4	1	3.9
<i>Heterocapsa</i> sp.?																
<i>Katodinium glaucum</i>					1	1.5					0	<3.9				
<i>Noctiluca scintillans</i>																
<i>Oxytoxum</i> sp. ?																
<i>Prorocentrum minimum</i>																
<i>Protoperidinium depressum</i>																
<i>Protoperidinium</i> cf. <i>steinii</i>																
<i>Protoperidinium</i> sp.																
Autotroph dinoflagellate																
unidentified dinoflagellate	5	12.1	20	30.4	15	22.8	47	152.0	44	170.7	17	66.0	37	143.5	34	131.9

Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2016-12																
Station:	SC61		WS1		FOC1		MS8		C18		DOUG31		HEC1		HEC1	
Depth:	surf		surf		surf		surf		surf		surf		surf		surf	
Volume settled:	25		25		25		25		25		25		25		25	
Counting method:	fields		transect		transect		fields		fields		fields		fields		fields	
Fields Counted:	40		1		1		30		25		25		25		25	
Magnification:	40		40		40		40		40		40		40		40	
Factor:	2424.82		37.96		37.96		2424.82		2424.82		2424.82		2424.82		2424.82	
	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL
<b>Misc. flagellates</b>																
<i>Apedinella spinifera</i>																
<i>Tetraselmis sp. ?</i>			1	1.5	2	3.0							5	19.4	3	11.6
UID Chlorophyte	5	12.1	16	24.3	6	9.1	10	32.3	10	38.8	14	54.3	15	58.2	19	73.7
<i>Coccolithophore spp.?</i>																
UID Prymnesiophyte					4	6.1					1	3.9				
<i>Dictyocha speculum</i>																
<i>Dinobryon sp.</i>	2	4.8	2	3.0	4	6.1	2	6.5	1	3.9	12	46.6	4	15.5	5	19.4
<i>Meringosphaera mediterranea</i>																
<i>Ochromonas cosmopoliticus</i>	4	9.7	0	<2.4			1	3.2							1	3.9
<i>Pseudopedinella pyriforme</i>																
<i>Pseudopedinella sp.</i>																
UID Chrysophyte	2	4.8													7	27.2
<i>Euglena sp.</i>																
<i>Eutreptiella hirudoidea</i>																
<i>Eutreptiella cf. lanowii</i>																
<i>Eutreptiella sp.</i>	1	2.4														
UID Euglenophyte					9	13.7					2	7.8				
<i>Chrysochromulina hirta</i>			0	<2.4			1	3.2								
<i>Chrysochromulina sp.</i>	5	12.1	19	28.8	15	22.8	29	93.8	4	15.5	10	38.8	5	19.4	2	7.8
<i>Nephroselmis sp.</i>													2	7.8		
<i>Phaeocystis globulosa</i>																
<i>Phaeocystis sp.</i>																
<i>Pyramimonas spp.</i>	3	7.3			5	7.6					1	3.9	5	19.4	10	38.8
UID Prasinophyte	1	2.4							1	3.9						
<i>Pterosperma sp.</i>	1	2.4			2	3.0	1	3.2							3	11.6
<i>Hemiselmis sp.</i>			15	22.8	5	7.6							8	31.0	3	11.6
<i>Hillea sp.?</i>	22	53.3														
<i>Teleaulax acuta</i>	22	53.3	10	15.2	10	15.2	3	9.7	3	11.6	3	11.6	4	15.5	6	23.3
<i>Teleaulax amphioxia</i>	3	7.3											1	3.9	1	3.9
<i>Teleaulax spp.</i>	88	213.4	57	86.5	13	19.7	46	148.7	46	178.5	9	34.9	57	221.1	48	186.2
UID Cryptophyte	2	4.8	6	9.1	5	7.6	8	25.9	5	19.4	4	15.5				
UID autotroph	36	87.3	79	119.9	57	86.5	99	320.1	96	372.5	36	139.7	84	325.9	67	259.9
UID flagellates	34	82.4	61	92.6	39	59.2	69	223.1	45	174.6	30	116.4	66	256.1	67	259.9
<b>Other</b>																
<i>Calliacantha natans ?</i>																
<i>Desmirella sp. ?</i>																
UID Choanoflagellates	54	130.9	48	72.9	18	27.3	23	74.4	11	42.7	16	62.1	32	124.2	43	166.8
Larvacean																
<i>Oikopleura dioica</i>																
<i>Telonema</i>	2	4.8					4	12.9	2	7.8			3	11.6	2	7.8
<i>Ebria tripartita</i>																



Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2016-12																
Station:	SC61		WS1		FOC1		MS8		C18		DOUG31		HEC1		HEC1	
Depth:	surf		surf		surf		surf		surf		surf		surf		surf	
Volume settled:	25		25		25		25		25		25		25		25	
Counting method:	fields		transect		transect		fields		fields		fields		fields		fields	
Fields Counted:	40		1		1		30		25		25		25		25	
Magnification:	40		40		40		40		40		40		40		40	
Factor:	2424.82		37.96		37.96		2424.82		2424.82		2424.82		2424.82		2424.82	
	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL	Counts	Cells/mL
Copepod egg?																
<i>Mesodinium cf. rubrum</i>																
<i>Mesodinium</i> spp.																
<i>Strombidium</i> spp.																
UID Tintinnid	0	<2.4														
UID Ciliate	6	14.5	2	3.0	1	1.5	2	6.5	1	3.9	2	7.8	1	3.9	2	7.8
<b>Freshwater</b>																
<i>Actinastrum</i> sp.																
<i>Ankistrodesmus</i> sp.																
<i>Scendesmus</i> sp.																
UID Chlorophyte																
<i>Aulacosiera</i> sp.	13	31.5														
<i>Melosira</i> sp.																
<i>Cryptomonas</i> sp. ( <i>ovata/erosa</i> )																
UID Cryptophyte																
<i>Mallomonas</i> sp.?																
<i>Merismopedia</i> sp.																
<i>Ocellularia</i> sp. (filament)																
Cyanophyte filament																
<i>Achnanthes</i> sp.																
<i>Asterionella formosa</i>																
<i>Cymbella</i> sp.																
<i>Navicula</i> sp.	1	2.4														
<i>Synedra</i> sp.																
<i>Tabellaria flocculosa</i>																
Oocystis sp?																
<b>Total</b>	<b>336</b>	<b>814.7</b>	<b>351</b>	<b>532.9</b>	<b>323</b>	<b>490.4</b>	<b>370</b>	<b>1196.2</b>	<b>313</b>	<b>1214.3</b>	<b>358</b>	<b>1388.9</b>	<b>344</b>	<b>1334.6</b>	<b>345</b>	<b>1338.5</b>

Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2016-12					
Station:	DOUG4		HAKI		
Depth:	surf		surf		
Volume settled:	25		25		
Counting method:	fields		fields		
Fields Counted:	25		20		
Magnification:	40		40		
Factor:	2424.82		2424.816		
	Counts	Cells/mL	Counts	Cells/mL	
<b>Diatoms: Centrics</b>					
<i>Actinopterychus</i> sp.					
<i>Attheya</i> cf. <i>decora</i>					
<i>Attheya</i> <i>septentrionalis</i>					
<i>Attheya</i> sp.					
<i>Asteromphalus</i> cf. <i>parvulus</i>					
<i>Asteromphalus</i> <i>sarcophagus</i>					
<i>Bacteriastrum</i> cf. <i>delicatulum</i>					
<i>Ceratulina</i> <i>pelagica</i>					
<i>Ceratulina</i> sp.					
<i>Chaetoceros</i> <i>conconvicorne/convolutus</i>					
<i>Chaetoceros</i> <i>debilis</i>			22	106.6919	
<i>Chaetoceros</i> <i>didymus</i>					
<i>Chaetoceros</i> <i>didymus</i> spore					
<i>Chaetoceros</i> cf. <i>lorenzianus</i>	4	15.5			
<i>Chaetoceros</i> <i>radicans</i>					
<i>Chaetoceros</i> <i>similis</i>					
<i>Chaetoceros</i> <i>simplex</i>					
<i>Chaetoceros</i> <i>socialis</i>					
<i>Chaetoceros</i> <i>subtilis</i>					
<i>Chaetoceros</i> <i>tenuissimus</i>			2	9.699265	
<i>Chaetoceros</i> spp. ( <i>hyalochaete</i> )	32	124.2	20	97.0	
<i>Chaetoceros</i> sp. ( <i>phaeoceros</i> )					
<i>Coscinodiscus</i> sp.					
<i>Dactyliosolen</i> <i>fragilissimus</i>			5	24.24816	
<i>Dactyliosolen</i> sp.					
<i>Detonula</i> <i>pumila</i>					
<i>Ditylum</i> <i>brightwellii</i>			2	9.699265	
<i>Eucampia</i> <i>zodiacus</i>					
<i>Guinardia</i> <i>delicatula</i>					
<i>Guinardia</i> <i>striata</i>					
<i>Leptocylindrus</i> <i>minimus</i>					
<i>Leptocylindrus</i> <i>danicus</i>					
<i>Melosira</i> cf. <i>moniliformis</i>					
<i>Proboscia</i> <i>alata</i>					
<i>Rhizosolenia</i> <i>setigera</i>			9	43.64669	
<i>Skeletonema</i> <i>costatum</i>			11	53.3	
<i>Skeletonema</i> <i>costatum</i> spore					
<i>Thalassionema</i> <i>nitzschoides</i>					
<i>Thalassiosira</i> <i>anguste-lineata</i>					
<i>Thalassiosira</i> <i>nordenskioldii</i>					
<i>Thalassiosira</i> cf. <i>pacifica</i>					
<i>Thalassiosira</i> <i>rotula</i>					

Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2016-12					
Station:	DOUG4		HAKI		
Depth:	surf		surf		
Volume settled:	25		25		
Counting method:	fields		fields		
Fields Counted:	25		20		
Magnification:	40		40		
Factor:	2424.82		2424.816		
	Counts	Cells/mL	Counts	Cells/mL	
<i>Thalassiosira</i> sp.			10	48.49633	
UID centric diatom	6	23.3			
<b>Diatoms: Pennates</b>					
<i>Achnanthes</i> sp.					
<i>Cylindrotheca closterium</i>			6	29.0978	
<i>Haslea wawriake</i>					
<i>Navicula</i> sp. (possibly freshwater sp.)					
<i>Pleurosigma normanii</i>					
<i>Pseudo-nitzschia americana</i>			1	4.849633	
<i>Pseudo-nitzschia</i> cf. <i>fraudulenta</i>					
<i>Pseudo-nitzschia</i> cf. <i>pseudodelicatissima</i>			10	48.49633	
<i>Pseudo-nitzschia</i> sp.	5	19.4	1	4.8	
<i>Thalassionema nitzschoides</i>					
UID pennate diatom (possibly freshwater sp.)					
<b>Dinoflagellates</b>					
<i>Alexandrium</i> sp.					
<i>Amphidinium</i> sp.	1	3.9			
<i>Ceratium furca</i>					
<i>Ceratium lineatum</i>			1	4.849633	
<i>Ceratium</i> sp.					
<i>Cochlodinium</i> cf. <i>polykrikoides</i>					
<i>Dinophysis accuminata</i>					
<i>Dinophysis fortii</i>					
<i>Dinophysis</i> sp.					
<i>Gonyaulax</i> sp.					
<i>Gymnodinium breve</i>					
<i>Gymnodinium</i> sp.	1	3.9			
<i>Gyrodinium</i> sp.					
<i>Gyrodinium lachryma</i>					
<i>Gyrodinium spirale</i>					
<i>Heterocapsa rotundata</i>	6	23.3	4	19.39853	
<i>Heterocapsa</i> sp.?					
<i>Katodinium glaucum</i>					
<i>Noctiluca scintillans</i>					
<i>Oxytoxum</i> sp. ?					
<i>Prorocentrum minimum</i>					
<i>Protoperdinium depressum</i>					
<i>Protoperdinium</i> cf. <i>steinii</i>					
<i>Protoperdinium</i> sp.					
Autotroph dinoflagellate					
unidentified dinoflagellate	10	38.8	35	169.7371	

Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2016-12				
Station:	DOUG4		HAKI	
Depth:	surf		surf	
Volume settled:	25		25	
Counting method:	fields		fields	
Fields Counted:	25		20	
Magnification:	40		40	
Factor:	2424.82		2424.816	
	Counts	Cells/mL	Counts	Cells/mL
<b>Misc. flagellates</b>				
<i>Apedinella spinifera</i>				
<i>Tetraselmis sp. ?</i>	2	7.8		
UID Chlorophyte	3	11.6	12	58.19559
<i>Coccolithophore spp.?</i>				
UID Prymnesiophyte				
<i>Dictyocha speculum</i>				
<i>Dinobryon sp.</i>	5	19.4	4	19.39853
<i>Meringosphaera mediterranea</i>				
<i>Ochromonas cosmopolitanus</i>			1	4.8
<i>Pseudopedinella pyriforme</i>				
<i>Pseudopedinella sp.</i>				
UID Chrysophyte			9	43.64669
<i>Euglena sp.</i>				
<i>Eutreptiella hirudoidea</i>				
<i>Eutreptiella cf. lanowii</i>				
<i>Eutreptiella sp.</i>	0	<3.9		
UID Euglenophyte				
<i>Chrysochromulina hirta</i>			5	24.24816
<i>Chrysocromulina sp.</i>	7	27.2	3	14.5
<i>Nephroselmis sp.</i>	2	7.8		
<i>Phaeocystis globulosa</i>				
<i>Phaeocystis sp.</i>				
<i>Pyramimonas spp.</i>			3	14.5489
UID Prasinophyte				
<i>Pterosperma sp.</i>			2	9.699265
<i>Hemiselmis sp.</i>	3	11.6	2	9.7
<i>Hillea sp.?</i>				
<i>Teleaulax acuta</i>	3	11.6	3	14.5489
<i>Teleaulax amphioxia</i>				
<i>Teleaulax spp.</i>	26	100.9	31	150.3
UID Cryptophyte			5	24.2
UID autotroph	103	399.6	36	174.6
UID flagellates	35	135.8	20	97.0
<b>Other</b>				
<i>Calliacantha natans ?</i>				
<i>Desmirella sp. ?</i>				
UID Choanoflagellates	26	100.9	44	213.3838
Larvacean				
<i>Oikopleura dioica</i>				
<i>Telonema</i>				
<i>Ebria tripartita</i>				

Table 2 continued. Phytoplankton species assemblages from the World Class Programme 2015-2016.

Cruise ID: 2016-12					
Station:	DOUG4		HAKI		
Depth:	surf		surf		
Volume settled:	25		25		
Counting method:	fields		fields		
Fields Counted:	25		20		
Magnification:	40		40		
Factor:	2424.82		2424.816		
	Counts	Cells/mL	Counts	Cells/mL	
Copepod egg?					
<i>Mesodinium cf. rubrum</i>					
<i>Mesodinium spp.</i>					
<i>Strombidium spp.</i>					
UID Tintinnid					
UID Ciliate	8	31.0	1	4.849633	
Freshwater					
<i>Actinastrum sp.</i>					
<i>Ankistrodesmus sp.</i>					
<i>Scendesmus sp.</i>					
UID Chlorophyte					
<i>Aulacosiera sp.</i>					
<i>Melosira sp.</i>					
<i>Cryptomonas sp. (ovata/erosa)</i>					
UID Cryptophyte					
<i>Mallomonas sp.?</i>					
<i>Merismopedia sp.</i>					
<i>Ocellularia sp. (filament)</i>					
Cyanophyte filament					
<i>Achnanthes sp.</i>					
<i>Asterionella formosa</i>					
<i>Cymbella sp.</i>					
<i>Navicula sp.</i>					
<i>Synedra sp.</i>					
<i>Tabellaria flocculosa</i>					
Oocystis sp?					
Total	288	1117.4	320	1551.882	

Table 3. Zooplankton abundances (individuals m<sup>-3</sup>) from samples collected during the World Class Programme, 2015-2016.

2015-54														
Order	Taxon	HEC1	FOC1 <sup>1</sup>	Doug4 <sup>2</sup>	SC61	WC50	VP42	UC42	UC45	UC43	VP36	VP26	GC29	
Anim:Anne:Poly::	<i>Polychaeta *sp. trochophores s1</i>			1.59			0.73	0.81	1.61					
Anim:Anne:Poly:Acic:Alciopidae	<i>Rhynchonereella angelina s3</i>		0.04									0.03		
Anim:Anne:Poly:Acic:Lopadorhynchidae	<i>Pelagobia longicirrata s1</i>													
Anim:Anne:Poly:Acic:Phylloporidae	<i>Phalacroporus pictus s1</i>							0.81			0.63			
Anim:Anne:Poly:Acic:Tomopteridae	<i>Tomopteris septentrionalis s2</i>		0.04			0.19	0.16		0.60	0.10			0.03	
Anim:Anne:Poly:Acic:Tomopteridae	<i>Tomopteris septentrionalis s3</i>					0.04	0.02	0.03						
Anim:Anne:Poly:Cana:Chaetoptera	<i>Chaetopterus *sp. larvae s1</i>	0.98												
Anim:Anne:Poly:Cana:Spionidae	Spionidae *sp. larvae s1			3.97										
Anim:Arth:Mala:Amph:Cyphocarididae	<i>Cyphocaris challengeri s1</i>						0.73				0.63	0.84		
Anim:Arth:Mala:Amph:Cyphocarididae	<i>Cyphocaris challengeri s2</i>		0.40		0.73	0.27	0.07	0.10	0.40		0.08	0.37	0.19	
Anim:Arth:Mala:Amph:Cyphocarididae	<i>Cyphocaris challengeri s3</i>		0.19	0.02	0.29	0.15		0.03				0.11		
Anim:Arth:Mala:Amph:Gammaridea	Phoxocephalidae *sp. s1											0.03		
Anim:Arth:Mala:Amph:Gammaridea	Phoxocephalidae *sp. s2							0.13		0.05				
Anim:Arth:Mala:Amph:Hyperiididae	<i>Hyperia medusarum F</i>			0.05		0.02		0.03	0.01		0.02			
Anim:Arth:Mala:Amph:Hyperiididae	<i>Themisto pacifica F</i>		0.29	0.27	0.07	0.04	0.07	0.03	1.41	0.05		1.58	0.71	
Anim:Arth:Mala:Amph:Hyperiididae	<i>Themisto pacifica M</i>									0.05				
Anim:Arth:Mala:Amph:Lysianassidae	<i>Orchomenella *sp. s2</i>		0.10	0.02	0.22	0.09	0.02		0.20		0.04			
Anim:Arth:Mala:Amph:Lysianassidae	<i>Orchomenella *sp. s3</i>		0.02			0.01			0.20					
Anim:Arth:Mala:Amph:Oedicerotidae	Oedicerotidae *sp. s2			0.02										
Anim:Arth:Mala:Amph:Phrosinidae	<i>Primno abyssalis F</i>		0.08			0.04	0.02				0.02			
Anim:Arth:Mala:Amph:Phrosinidae	<i>Primno abyssalis M</i>													
Anim:Arth:Mala:Amph:Phrosinidae	<i>Primno abyssalis s1</i>							0.05		0.05				
Anim:Arth:Mala:Amph:Phrosinidae	<i>Primno abyssalis s2</i>		0.04		0.07	0.08			0.20		0.02	0.05		
Anim:Arth:Mala:Amph:Scinidae	<i>Scina borealis F</i>		0.02			0.04		0.03						
Anim:Arth:Mala:Amph:Scinidae	<i>Scina borealis M</i>		0.02									0.11	0.03	
Anim:Arth:Mala:Amph:Scinidae	<i>Scina borealis s2</i>		0.04											
Anim:Arth:Mala:Amph:Stilipedidae	<i>Stilipes distinctus s3</i>													
Anim:Arth:Mala:Cuma:	Cumacea *sp. s1							0.03						
Anim:Arth:Mala:Cuma:	Cumacea *sp. s2													
Anim:Arth:Mala:Deca:Axiidae	Axiidae *sp. zoea s2								0.01					
Anim:Arth:Mala:Deca:Galatheididae	<i>Munida quadrispina megalops s2</i>							0.03					0.03	
Anim:Arth:Mala:Deca:Pasiphaeidae	<i>Pasiphaea pacifica F</i>				0.02									
Anim:Arth:Mala:Deca:Pasiphaeidae	<i>Pasiphaea pacifica M</i>				0.02									
Anim:Arth:Mala:Deca:Pasiphaeidae	<i>Pasiphaea pacifica s2</i>				0.02	0.02								
Anim:Arth:Mala:Deca:Pasiphaeidae	<i>Pasiphaea pacifica s3</i>		0.02											
Anim:Arth:Mala:Euph:Euphausiidae	<i>Euphausia pacifica F</i>			0.30	0.36				3.41	0.20			0.03	
Anim:Arth:Mala:Euph:Euphausiidae	<i>Euphausia pacifica M</i>				0.22				0.80	0.05				
Anim:Arth:Mala:Euph:Euphausiidae	<i>Euphausia pacifica s2</i>	0.03			0.29				0.20	0.10	0.04		0.03	
Anim:Arth:Mala:Euph:Euphausiidae	<i>Thysanoessa longipes F</i>			0.02		0.02								
Anim:Arth:Mala:Euph:Euphausiidae	<i>Thysanoessa longipes M</i>										0.02			
Anim:Arth:Mala:Euph:Euphausiidae	<i>Thysanoessa longipes s2</i>					0.02	0.02	0.03	0.20					
Anim:Arth:Mala:Euph:Euphausiidae	<i>Thysanoessa spinifera F</i>			0.02	0.07	0.03			0.20			0.03		
Anim:Arth:Mala:Euph:Euphausiidae	<i>Thysanoessa spinifera s2</i>				0.29	0.01								
Anim:Arth:Mala:Isop:	Epicarid *sp. larvae s1			0.79					1.61					
Anim:Arth:Maxi:Cala:Acartiidae	<i>Acartia hudsonica 6F</i>				0.58									
Anim:Arth:Maxi:Cala:Acartiidae	<i>Acartia hudsonica 6M</i>				1.17									
Anim:Arth:Maxi:Cala:Acartiidae	<i>Acartia longiremis 5</i>	2.93	2.45	1.59	4.67		7.34	1.62	3.21	6.52		1.69	0.44	
Anim:Arth:Maxi:Cala:Acartiidae	<i>Acartia longiremis 6F</i>	17.57	24.46	20.65	32.69	4.58	92.49	51.83	51.42	223.27	79.79	46.34	30.06	



Table 3 continued. Zooplankton abundances (individuals m-3) from samples collected during the World Class Programme, 2015-2016.

2015-54														
Order	Taxon	HEC1	FOC1 <sup>1</sup>	Doug4 <sup>2</sup>	SC61	WC50	VP42	UC42	UC45	UC43	VP36	VP26	GC29	
Anim:Arth:Maxi:Cala:Acartiidae	<i>Acartia longiremis</i> 6M	7.81	1.22	0.79	11.67	0.61	4.40	0.81	1.61	4.89	6.33	4.21	0.87	
Anim:Arth:Maxi:Cala:Acartiidae	<i>Acartia tonsa</i> 6F				0.58									
Anim:Arth:Maxi:Cala:Aetideidae	Aetideidae *sp. 2										0.63			
Anim:Arth:Maxi:Cala:Aetideidae	<i>Aetideus divergens</i> 4		1.22								0.63		0.44	
Anim:Arth:Maxi:Cala:Aetideidae	<i>Aetideus divergens</i> 5		2.45	0.79	1.17	0.31	0.73		3.21		1.90		1.31	
Anim:Arth:Maxi:Cala:Aetideidae	<i>Aetideus divergens</i> 6F		1.22	2.38			0.73	0.81	1.61		1.90	0.84	2.61	
Anim:Arth:Maxi:Cala:Aetideidae	<i>Aetideus divergens</i> 6M							0.81					0.44	
Anim:Arth:Maxi:Cala:Aetideidae	<i>Bradyidius</i> *sp. 4							0.81						
Anim:Arth:Maxi:Cala:Aetideidae	<i>Chiridius gracilis</i> 4											0.84		
Anim:Arth:Maxi:Cala:Aetideidae	<i>Chiridius gracilis</i> 5				0.58								0.44	
Anim:Arth:Maxi:Cala:Aetideidae	<i>Chiridius gracilis</i> 6F					0.31							0.44	
Anim:Arth:Maxi:Cala:Aetideidae	<i>Gaetanus</i> *sp. 3					0.31								
Anim:Arth:Maxi:Cala:Aetideidae	<i>Gaetanus</i> *sp. 4													
Anim:Arth:Maxi:Cala:Aetideidae	<i>Gaetanus minutus</i> 5								1.61			1.69		
Anim:Arth:Maxi:Cala:Aetideidae	<i>Gaetanus minutus</i> 6F		1.22			0.61	1.47							
Anim:Arth:Maxi:Cala:Aetideidae	<i>Gaetanus simplex</i> 4							1.62	1.61					
Anim:Arth:Maxi:Cala:Aetideidae	<i>Gaetanus simplex</i> 5						0.73	2.43	1.61		0.63	0.84		
Anim:Arth:Maxi:Cala:Aetideidae	<i>Gaetanus simplex</i> 6F													
Anim:Arth:Maxi:Cala:Calanidae	<i>Calanus</i> *sp. 1	2.93			1.75									
Anim:Arth:Maxi:Cala:Calanidae	<i>Calanus</i> *sp. 2	0.98			0.58									
Anim:Arth:Maxi:Cala:Calanidae	<i>Calanus</i> *sp. nauplii s1	1.95			0.58									
Anim:Arth:Maxi:Cala:Calanidae	<i>Calanus marshallae</i> 5		45.24	2.38	1.17	3.36	1.47	0.81	25.71		1.27	0.84	2.18	
Anim:Arth:Maxi:Cala:Calanidae	<i>Calanus marshallae</i> 6F								1.61					
Anim:Arth:Maxi:Cala:Calanidae	<i>Calanus pacificus</i> 5	3.90	1.22	0.79		1.22	0.73				0.63			
Anim:Arth:Maxi:Cala:Calanidae	<i>Calanus pacificus</i> 6F	1.95								1.63			0.44	
Anim:Arth:Maxi:Cala:Calanidae	<i>Calanus pacificus</i> 6M	1.95												
Anim:Arth:Maxi:Cala:Calanidae	<i>Mesocalanus tenuicornis</i> 6F	0.98												
Anim:Arth:Maxi:Cala:Calanidae	<i>Neocalanus cristatus</i> 5					0.04								
Anim:Arth:Maxi:Cala:Calanidae	<i>Neocalanus flemingeri</i> 6F					0.31								
Anim:Arth:Maxi:Cala:Calanidae	<i>Neocalanus plumchrus</i> 5												0.03	
Anim:Arth:Maxi:Cala:Candaciidae	<i>Candacia</i> *sp. 2													
Anim:Arth:Maxi:Cala:Candaciidae	<i>Candacia</i> *sp. 3						0.73							
Anim:Arth:Maxi:Cala:Candaciidae	<i>Candacia columbiae</i> 5										0.63			
Anim:Arth:Maxi:Cala:Candaciidae	<i>Candacia columbiae</i> 6F				0.22							0.05	0.03	
Anim:Arth:Maxi:Cala:Candaciidae	<i>Candacia columbiae</i> 6M				0.07		0.02					0.05	0.05	
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Clausocalanus parapergens</i> 5	2.93												
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Clausocalanus parapergens</i> 6F	3.90												
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Clausocalanus parapergens</i> 6M	0.98												
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Ctenocalanus vanus</i> 4	2.93												
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Ctenocalanus vanus</i> 5	6.83			0.58									
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Ctenocalanus vanus</i> 6F	14.64			1.17									
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Ctenocalanus vanus</i> 6M	3.90												
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Microcalanus pusillus</i> 5			2.38	4.09	0.61	2.20	2.43		3.26	5.70	1.69	1.74	
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Microcalanus pusillus</i> 6F		20.79	9.53	1.75	2.14	2.20	4.05	14.46	1.63	8.87	4.21	5.66	
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Microcalanus pusillus</i> 6M			2.38	0.58		0.73	1.62	3.21		0.63		0.44	
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Microcalanus pygmaeus</i> 5		7.34	3.18	0.58	2.44	2.20	4.86	6.43	3.26	17.73	3.37	0.87	
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Microcalanus pygmaeus</i> 6F		9.78	4.77	1.75	0.31	0.73	3.24	1.61	1.63	13.93	4.21	2.61	
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Microcalanus pygmaeus</i> 6M					0.61		1.62			3.80			

Table 3 continued. Zooplankton abundances (individuals m<sup>-3</sup>) from samples collected during the World Class Programme, 2015-2016.

2015-54													
Order	Taxon	HEC1	FOC1 <sup>1</sup>	Doug4 <sup>2</sup>	SC61	WC50	VP42	UC42	UC45	UC43	VP36	VP26	GC29
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus</i> *sp. 2		4.89		7.00	2.44		5.67		26.08		1.69	
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus</i> *sp. 3		11.01	13.50	22.76	3.66	38.90	31.58	51.42	57.04	12.03	4.21	4.36
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus</i> *sp. 4		15.90	41.31	49.03	12.21	107.17	117.42	88.38	132.01	29.13	7.58	12.63
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus mimus</i> 4				5.25								
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus mimus</i> 5F				6.42								
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus mimus</i> 5M				2.33	0.31							
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus mimus</i> 6F	4.88			2.92					1.63	3.80		
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus mimus</i> 6M	1.95			1.17								
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus minutus</i> 4				12.84	0.92	4.40		19.28	34.22	6.33	1.69	3.05
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus minutus</i> 5F		55.03	9.53	11.09	22.27	24.96		69.10	58.67	7.60	16.85	17.43
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus minutus</i> 5M		31.79	4.77	8.17	13.12	14.68		94.81	70.08	6.33	17.69	9.15
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus minutus</i> 6F												0.44
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus minutus</i> 6M				0.58								
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus moultoni</i> 4						13.95		22.50	30.96			
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus moultoni</i> 5F					0.61	5.87	4.05	1.61	3.26		0.84	
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus moultoni</i> 5M					1.83	13.21	6.48	12.86				
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus moultoni</i> 6F									1.63			
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus newmani</i> 4				4.67					21.19	1.27	1.69	8.71
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus newmani</i> 5F		1.22		4.09	0.31		0.81		6.52	0.63	2.53	1.74
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus newmani</i> 5M				2.92	0.92				8.15	1.27	4.21	3.05
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus newmani</i> 6F	3.90	2.45	1.59	4.09	0.92		1.62	1.61	4.89	4.43	1.69	3.05
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus newmani</i> 6M				0.58								
Anim:Arth:Maxi:Cala:Eucalanidae	<i>Eucalanus bungii</i> 5F	0.06	0.02	0.12	0.07	0.08	0.05						
Anim:Arth:Maxi:Cala:Eucalanidae	<i>Eucalanus bungii</i> 5M		0.04		0.15	0.04					0.04		0.03
Anim:Arth:Maxi:Cala:Eucalanidae	<i>Eucalanus bungii</i> 6F			0.02			0.02	0.03					
Anim:Arth:Maxi:Cala:Eucalanidae	<i>Eucalanus hyalinus</i> 4	0.03											
Anim:Arth:Maxi:Cala:Euchaetidae	Euchaetidae *sp. 1					0.31							
Anim:Arth:Maxi:Cala:Euchaetidae	Euchaetidae *sp. 2			0.79							0.63	0.84	
Anim:Arth:Maxi:Cala:Euchaetidae	Euchaetidae *sp. nauplii s1					0.31	0.73		1.61				
Anim:Arth:Maxi:Cala:Euchaetidae	<i>Paraeuchaeta elongata</i> 5F		0.21	0.15	0.15	0.11	0.21	0.10	0.80	0.05	0.36	0.53	0.16
Anim:Arth:Maxi:Cala:Euchaetidae	<i>Paraeuchaeta elongata</i> 5M		0.21	0.07	0.22	0.23	0.37	0.13	2.41		0.24	0.26	0.03
Anim:Arth:Maxi:Cala:Euchaetidae	<i>Paraeuchaeta elongata</i> 6F		0.11	0.02	0.07	0.38	0.14	0.10	0.60		0.12	0.16	0.11
Anim:Arth:Maxi:Cala:Euchaetidae	<i>Paraeuchaeta elongata</i> 6M				0.04	0.02	0.05	0.20			0.08		0.05
Anim:Arth:Maxi:Cala:Heterorhabdidae	<i>Heterorhabdus tanneri</i> 6F			3.18				0.81	1.61		0.63	0.84	0.44
Anim:Arth:Maxi:Cala:Heterorhabdidae	<i>Heterorhabdus tanneri</i> 6M		2.45	3.97		0.61			4.82		0.63		
Anim:Arth:Maxi:Cala:Lucicutiidae	<i>Lucicutia flavicornis</i> 6M	0.98											
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia</i> *sp. 2											0.84	
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia</i> *sp. 3											0.84	
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia</i> *sp. 4	0.98											
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia okhotensis</i> 5		4.89	0.79		2.75		0.81	4.82			0.84	
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia okhotensis</i> 6F		3.67	1.59	0.58	0.61		0.81	4.82				0.44
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia pacifica</i> 4		3.67	7.15	0.58		5.14	0.81	3.21	8.15	0.63	0.84	3.92
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia pacifica</i> 5F		4.89	3.18	2.92	6.41	16.88	8.91	24.10	8.15	2.53	4.21	8.28
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia pacifica</i> 5M		7.34	9.53	2.33	7.63	21.29	6.48	27.32	9.78	4.43	6.74	7.84
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia pacifica</i> 6F		37.91	1.59	3.50	14.65	17.62	9.72	117.30	3.26	5.07	5.90	25.27
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia pacifica</i> 6M				1.17	1.53	8.81	3.24	8.03		4.43	0.84	1.31
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia pseudopacifica</i> 6F												
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Calocalanus pavorinus</i> 6F	0.98											

Table 3 continued. Zooplankton abundances (individuals m<sup>-3</sup>) from samples collected during the World Class Programme, 2015-2016.

2015-54		HEC1	FOC1 <sup>1</sup>	Doug4 <sup>2</sup>	SC61	WC50	VP42	UC42	UC45	UC43	VP36	VP26	GC29
Order	Taxon												
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Paracalanus</i> *sp. 5									3.26			
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Paracalanus</i> *sp. 6M		1.22										
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Paracalanus indicus</i> 4				3.50								
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Paracalanus indicus</i> 5	7.81			4.09								
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Paracalanus indicus</i> 6F	12.69			4.67								
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Paracalanus indicus</i> 6M	0.98			0.58								
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Paracalanus parvus</i> 6F	1.95		1.59									
Anim:Arth:Maxi:Cala:Scolecitrichidae	<i>Racovitzanus antarcticus</i> 5			0.79									
Anim:Arth:Maxi:Cala:Scolecitrichidae	<i>Scaphocalanus</i> *sp. 4						0.73						
Anim:Arth:Maxi:Cala:Scolecitrichidae	<i>Scaphocalanus</i> *sp. 5				0.58			0.81					
Anim:Arth:Maxi:Cala:Scolecitrichidae	<i>Scaphocalanus brevicornis</i> 5										0.63		
Anim:Arth:Maxi:Cala:Scolecitrichidae	<i>Scaphocalanus brevicornis</i> 6F										0.63		
Anim:Arth:Maxi:Cala:Scolecitrichidae	<i>Scolecithricella minor</i> 4										0.63		
Anim:Arth:Maxi:Cala:Scolecitrichidae	<i>Scolecithricella minor</i> 5			0.79	1.75		0.73				0.63		
Anim:Arth:Maxi:Cala:Scolecitrichidae	<i>Scolecithricella minor</i> 6F		1.22				0.73						0.44
Anim:Arth:Maxi:Cala:Scolecitrichidae	<i>Scolecithricella minor</i> 6M					0.31		1.62				0.84	
Anim:Arth:Maxi:Cycl:Oithonidae	<i>Oithona atlantica</i> 4	0.98	1.22	1.59					1.61		0.63		3.05
Anim:Arth:Maxi:Cycl:Oithonidae	<i>Oithona atlantica</i> 5	2.93		11.92		0.61		2.43	8.03	1.63	3.17	1.69	6.10
Anim:Arth:Maxi:Cycl:Oithonidae	<i>Oithona atlantica</i> 6F	5.86	12.23	21.45	1.17	1.83	1.47	6.48	14.46	14.67	12.66	7.58	8.28
Anim:Arth:Maxi:Cycl:Oithonidae	<i>Oithona atlantica</i> 6M	2.93	1.22	0.79									
Anim:Arth:Maxi:Cycl:Oithonidae	<i>Oithona similis</i> 5	49.78	14.67	22.24	14.01	1.53	13.95	8.10	8.03	1.63	19.00	13.48	9.58
Anim:Arth:Maxi:Cycl:Oithonidae	<i>Oithona similis</i> 6F	222.55	14.67	23.04	29.77	2.75	22.02	12.15	24.10	9.78	21.53	25.28	14.38
Anim:Arth:Maxi:Cycl:Oithonidae	<i>Oithona similis</i> 6M	17.57					3.67			1.63	1.27		
Anim:Arth:Maxi:Harp:Ectinosomatidae	<i>Microsetella rosea</i> 6F			1.59									
Anim:Arth:Maxi:Poec:Corycaeidae	<i>Corycaeus anglicus</i> 6F	7.81											
Anim:Arth:Maxi:Poec:Corycaeidae	<i>Corycaeus anglicus</i> 6M	24.40											
Anim:Arth:Maxi:Poec:Oncaeidae	<i>Oncaea prolata</i> 6F		1.22		0.58								
Anim:Arth:Maxi:Poec:Oncaeidae	<i>Triconia borealis</i> 6F		8.56	11.12	2.92	0.61	1.47		6.43	1.63	2.53	6.74	2.18
Anim:Arth:Maxi:Poec:Oncaeidae	<i>Triconia borealis</i> 6M												
Anim:Arth:Maxi:Siph:Caligidae	<i>Caligus clemensi</i> 6M												
Anim:Arth:Ostr:Halo:Halocyprididae	<i>Alacia</i> *sp. s1		1.22	0.79			0.73	0.81	3.21				
Anim:Arth:Ostr:Halo:Halocyprididae	<i>Alacia minor</i> s1					0.61			1.61		0.63	0.84	0.05
Anim:Arth:Ostr:Halo:Halocyprididae	<i>Conchoecinae</i> *sp. s1					1.83	0.73		4.82	1.63	8.23	0.84	1.31
Anim:Arth:Ostr:Halo:Halocyprididae	<i>Discoconchoecia elegans</i> s1		11.01	7.15	2.33	0.92	11.74	8.10	12.86	4.89	12.03	26.96	3.49
Anim:Arth:Thec:	<i>Cirripedia</i> *sp. cyprids s1												0.44
Anim:Chae:Sagi:.	<i>Chaetognatha</i> *sp. juveniles s1	1.95											
Anim:Chae:Sagi:Aphr:Sagittidae	<i>Mesosagitta decipiens</i> s3				0.07								
Anim:Chae:Sagi:Aphr:Sagittidae	<i>Mesosagitta minima</i> s2	0.24											
Anim:Chae:Sagi:Aphr:Sagittidae	<i>Parasagitta elegans</i> s2	7.93	0.02	0.12	0.29		0.02	0.03	0.40	0.10		0.11	0.03
Anim:Chae:Sagi:Aphr:Sagittidae	<i>Parasagitta elegans</i> s3	1.95	0.86	0.15	0.80	0.38	0.30	0.35	1.21	0.51	0.12	0.26	0.33
Anim:Chae:Sagi:Aphr:Sagittidae	<i>Parasagitta euneritica</i> s2				1.39		0.05				0.12	0.11	
Anim:Chae:Sagi:Aphr:Sagittidae	<i>Parasagitta euneritica</i> s3				0.44	0.08	0.02	0.03					
Anim:Chae:Sagi:Phra:Eukrohniidae	<i>Eukrohnia hamata</i> s2		0.13	0.02	0.36	0.23	0.25	0.18	0.40	0.25	0.04		0.08
Anim:Chae:Sagi:Phra:Eukrohniidae	<i>Eukrohnia hamata</i> s3		0.19	0.02	0.44	0.27	0.39	0.20	0.60	0.10	0.36		
Anim:Chor:Acti:.	Fish *sp. eggs s1				0.02						0.06		
Anim:Chor:Acti:Gadi:Merlucciidae	<i>Merluccius productus</i> eggs s1		0.08			0.02	0.14	0.08		0.10	0.04	0.08	0.03
Anim:Chor:Acti:Gadi:Merlucciidae	<i>Merluccius productus</i> larvae s1						0.05	0.05			0.02	0.03	0.03
Anim:Chor:Acti:Osme:Bathylagidae	<i>Leuroglossus schmidti</i> eggs s1					0.01							

Table 3 continued. Zooplankton abundances (individuals m<sup>-3</sup>) from samples collected during the World Class Programme, 2015-2016.

2015-54														
Order	Taxon	HEC1	FOC1 <sup>1</sup>	Doug4 <sup>2</sup>	SC61	WC50	VP42	UC42	UC45	UC43	VP36	VP26	GC29	
Anim:Chor:Acti:Osme:Bathylagidae	<i>Leuroglossus schmidti juvenile s3</i>				0.02									
Anim:Chor:Acti:Scor:Cottidae	<i>Radulinus *sp. larvae s1</i>						0.73							
Anim:Cnid:Hydr:Hydr:Mitrocomidae	<i>Mitrocoma cellularia s3</i>	0.09			0.04									
Anim:Cnid:Hydr:Siph:	<i>Siphonophora *sp. gas floats s2</i>					0.01	0.02				0.04	0.05		
Anim:Cnid:Hydr:Siph:	<i>Siphonophora *sp. gas floats s3</i>		0.02		0.07	0.01					0.04	0.05		
Anim:Cnid:Hydr:Siph:	<i>Siphonophora *sp. larvae s1</i>	0.98												
Anim:Cnid:Hydr:Siph:Agalmidae	<i>Nanomia bijuga nectophores s1</i>								1.61			0.84		
Anim:Cnid:Hydr:Siph:Agalmidae	<i>Nanomia bijuga nectophores s2</i>				0.36	0.11								
Anim:Cnid:Hydr:Siph:Diphyidae	<i>Dimophyes arctica eudoxids s1</i>										0.63			
Anim:Cnid:Hydr:Siph:Diphyidae	<i>Dimophyes arctica eudoxids s2</i>			0.02										
Anim:Cnid:Hydr:Siph:Diphyidae	<i>Dimophyes arctica nectophores s2</i>		0.13	0.30	0.07	0.04	0.21	0.40	0.40	0.31	0.20	0.16	0.08	
Anim:Cnid:Hydr:Siph:Diphyidae	<i>Lensia achilles nectophores s2</i>													
Anim:Cnid:Hydr:Siph:Diphyidae	<i>Muggiaea atlantica nectophores s2</i>	0.09												
Anim:Cnid:Hydr:Trac:Aeginidae	<i>Aegina citrea s2</i>						0.02							
Anim:Cnid:Hydr:Trac:Rhopalonematidae	<i>Aglantha digitalis s2</i>		0.10	0.20		0.04					0.04			
Anim:Cnid:Hydr:Trac:Rhopalonematidae	<i>Aglantha digitalis s3</i>		0.04						0.20			0.05		
Anim:Cten:Tent:Cydi:Pleurobrachiidae	<i>Pleurobrachia bachei s2</i>													
Anim:Echi:Ophi:Ophi:	<i>Ophiroid *sp. pluteus s1</i>	9.76												
Anim:Ecto:Gymn::	Bryozoa *sp. cyphonautes s1		24.46	51.64	24.51	3.66	29.36	8.10	30.53	19.56	124.11	57.29	15.68	
Anim:Moll:Biva:Phol:	Bivalvia *sp. veligers s1		2.45								1.27			
Anim:Moll:Gast::	Gastropoda *sp. veligers s1			0.79	1.17	0.31				1.63			0.44	
Anim:Moll:Gast:Gymn:Clionidae	<i>Clione limacina s2</i>		0.04	0.05		0.04			0.20			0.05	0.03	
Anim:Moll:Gast:Gymn:Clionidae	<i>Clione limacina s3</i>		0.04						0.03			0.05	0.03	
Anim:Moll:Gast:Thec:Limacinidae	<i>Limacina helicina s0</i>	0.98	8.56	0.79		0.31	5.14			1.63	0.63		1.31	
Anim:Uroc:Appe:Copl:Fritillariidae	<i>Fritillaria borealis s1</i>					0.92	1.47	6.48		4.89	8.23	10.11	0.44	
Anim:Uroc:Appe:Copl:Oikopleuridae	<i>Oikopleura *sp. s1</i>												1.74	
Anim:Uroc:Appe:Copl:Oikopleuridae	<i>Oikopleura dioica s1</i>	4.88		2.38		0.61	4.40	1.62	8.03	3.26	5.07	3.37	0.87	
Anim:Uroc:Appe:Copl:Oikopleuridae	<i>Oikopleura labradoriensis s2</i>		0.17	0.47	0.22		1.49	1.70	0.80	0.41	5.74	2.05	0.79	
Anim:Uroc:Appe:Copl:Oikopleuridae	<i>Oikopleura longicauda s1</i>	2.93												
Anim:Uroc:Thal:Doli:Doliolidae	Doliolid *sp. (old nurse) s2	0.06												

Order	Taxon	Dec22	Doug4 <sup>3</sup>	FOC1 <sup>4</sup>	Doug31	Doug40	WC43
Anim:Anne:Poly::	Polychaeta *sp. trochophores s1		1.88		1.12		
Anim:Anne:Poly:Acic:Alciopidae	<i>Rhynchonereella angelina s3</i>						
Anim:Anne:Poly:Acic:Lopadorhynchidae	<i>Pelagobia longicirrata s1</i>					0.86	
Anim:Anne:Poly:Acic:Phyllodocidae	<i>Phalacrophorus pictus s1</i>						
Anim:Anne:Poly:Acic:Tomopteridae	<i>Tomopteris septentrionalis s2</i>	0.12		0.33	0.56	0.81	0.57
Anim:Anne:Poly:Acic:Tomopteridae	<i>Tomopteris septentrionalis s3</i>	0.03		0.11		0.16	0.16
Anim:Anne:Poly:Cana:Chaetopteridae	<i>Chaetopterus *sp. larvae s1</i>						
Anim:Anne:Poly:Cana:Spionidae	<i>Spionidae *sp. larvae s1</i>						
Anim:Arth:Mala:Amph:Cyphocarididae	<i>Cyphocaris challengeri s1</i>	0.47	0.38				
Anim:Arth:Mala:Amph:Cyphocarididae	<i>Cyphocaris challengeri s2</i>	0.35	0.07	1.09	0.59	0.21	0.08
Anim:Arth:Mala:Amph:Cyphocarididae	<i>Cyphocaris challengeri s3</i>	0.12	0.02	0.87	0.14	0.11	0.24
Anim:Arth:Mala:Amph:Gammaridea	<i>Phoxocephalidae *sp. s1</i>						
Anim:Arth:Mala:Amph:Gammaridea	<i>Phoxocephalidae *sp. s2</i>				0.02		
Anim:Arth:Mala:Amph:Hyperidae	<i>Hyperia medusarum F</i>			0.01			

Table 3 continued. Zooplankton abundances (individuals m<sup>-3</sup>) from samples collected during the World Class Programme, 2015-2016.

2015-54							
Order	Taxon	Dec22	Doug4 <sup>3</sup>	FOC1 <sup>4</sup>	Doug31	Doug40	WC43
Anim:Arth:Mala:Amph:Hyperiididae	<i>Themisto pacifica</i> F	0.44	0.61	0.44	0.28		
Anim:Arth:Mala:Amph:Hyperiididae	<i>Themisto pacifica</i> M				0.03		
Anim:Arth:Mala:Amph:Lysianassidae	<i>Orchomenella</i> *sp. s2		0.02	0.44	0.03	0.43	1.05
Anim:Arth:Mala:Amph:Lysianassidae	<i>Orchomenella</i> *sp. s3					0.11	0.32
Anim:Arth:Mala:Amph:Oedicerotidae	<i>Oedicerotidae</i> *sp. s2		0.02				
Anim:Arth:Mala:Amph:Phrosinidae	<i>Primno abyssalis</i> F	0.18	0.02	0.01			
Anim:Arth:Mala:Amph:Phrosinidae	<i>Primno abyssalis</i> M						0.02
Anim:Arth:Mala:Amph:Phrosinidae	<i>Primno abyssalis</i> s1						1.30
Anim:Arth:Mala:Amph:Phrosinidae	<i>Primno abyssalis</i> s2	0.09		0.01		0.05	0.05
Anim:Arth:Mala:Amph:Scinidae	<i>Scina borealis</i> F	0.03		0.04			0.02
Anim:Arth:Mala:Amph:Scinidae	<i>Scina borealis</i> M	0.06		0.03	0.03		0.04
Anim:Arth:Mala:Amph:Scinidae	<i>Scina borealis</i> s2			0.01			
Anim:Arth:Mala:Amph:Stilipedidae	<i>Stilipes distinctus</i> s3				0.02		
Anim:Arth:Mala:Cuma:	<i>Cumacea</i> *sp. s1						
Anim:Arth:Mala:Cuma:	<i>Cumacea</i> *sp. s2						0.01
Anim:Arth:Mala:Deca:Axiidae	<i>Axiidae</i> *sp. zoea s2						
Anim:Arth:Mala:Deca:Galatheididae	<i>Munida quadrispina megalops</i> s2						
Anim:Arth:Mala:Deca:Pasiphaeidae	<i>Pasiphaea pacifica</i> F	0.03				0.01	
Anim:Arth:Mala:Deca:Pasiphaeidae	<i>Pasiphaea pacifica</i> M		0.02				
Anim:Arth:Mala:Deca:Pasiphaeidae	<i>Pasiphaea pacifica</i> s2					0.01	0.04
Anim:Arth:Mala:Deca:Pasiphaeidae	<i>Pasiphaea pacifica</i> s3			0.01			
Anim:Arth:Mala:Euph:Euphausiidae	<i>Euphausia pacifica</i> F		0.07	0.65	0.10	0.05	
Anim:Arth:Mala:Euph:Euphausiidae	<i>Euphausia pacifica</i> M				0.03		0.01
Anim:Arth:Mala:Euph:Euphausiidae	<i>Euphausia pacifica</i> s2						
Anim:Arth:Mala:Euph:Euphausiidae	<i>Thysanoessa longipes</i> F	0.03		0.01			
Anim:Arth:Mala:Euph:Euphausiidae	<i>Thysanoessa longipes</i> M						
Anim:Arth:Mala:Euph:Euphausiidae	<i>Thysanoessa longipes</i> s2		0.05				
Anim:Arth:Mala:Euph:Euphausiidae	<i>Thysanoessa spinifera</i> F			0.11	0.07	0.16	0.01
Anim:Arth:Mala:Euph:Euphausiidae	<i>Thysanoessa spinifera</i> s2						
Anim:Arth:Mala:Isop:	Epicarid *sp. larvae s1		0.38				1.30
Anim:Arth:Maxi:Cala:Acartiidae	<i>Acartia hudsonica</i> 6F						
Anim:Arth:Maxi:Cala:Acartiidae	<i>Acartia hudsonica</i> 6M				1.12		
Anim:Arth:Maxi:Cala:Acartiidae	<i>Acartia longiremis</i> 5	1.87	1.50	5.23			
Anim:Arth:Maxi:Cala:Acartiidae	<i>Acartia longiremis</i> 6F	34.10	18.01	45.35	12.28	12.02	22.07
Anim:Arth:Maxi:Cala:Acartiidae	<i>Acartia longiremis</i> 6M	2.80					1.30
Anim:Arth:Maxi:Cala:Acartiidae	<i>Acartia tonsa</i> 6F						
Anim:Arth:Maxi:Cala:Aetideidae	<i>Aetideidae</i> *sp. 2						
Anim:Arth:Maxi:Cala:Aetideidae	<i>Aetideus divergens</i> 4	0.47			2.23	1.72	
Anim:Arth:Maxi:Cala:Aetideidae	<i>Aetideus divergens</i> 5	0.47			2.23	1.72	1.30
Anim:Arth:Maxi:Cala:Aetideidae	<i>Aetideus divergens</i> 6F	0.47	0.38		1.12	0.86	2.60
Anim:Arth:Maxi:Cala:Aetideidae	<i>Aetideus divergens</i> 6M						
Anim:Arth:Maxi:Cala:Aetideidae	<i>Bradyidius</i> *sp. 4						
Anim:Arth:Maxi:Cala:Aetideidae	<i>Chiridius gracilis</i> 4				1.12		
Anim:Arth:Maxi:Cala:Aetideidae	<i>Chiridius gracilis</i> 5				2.23		
Anim:Arth:Maxi:Cala:Aetideidae	<i>Chiridius gracilis</i> 6F						1.30
Anim:Arth:Maxi:Cala:Aetideidae	<i>Gaetanus</i> *sp. 3						
Anim:Arth:Maxi:Cala:Aetideidae	<i>Gaetanus</i> *sp. 4	0.93			1.12		
Anim:Arth:Maxi:Cala:Aetideidae	<i>Gaetanus minutus</i> 5	0.93			1.12		1.30

Table 3 continued. Zooplankton abundances (individuals m<sup>-3</sup>) from samples collected during the World Class Programme, 2015-2016.

2015-54							
Order	Taxon	Dec22	Doug4 <sup>3</sup>	FOC1 <sup>4</sup>	Doug31	Doug40	WC43
Anim:Arth:Maxi:Cala:Aetideidae	<i>Gaetanus minutus</i> 6F	0.47			8.93	2.58	6.49
Anim:Arth:Maxi:Cala:Aetideidae	<i>Gaetanus simplex</i> 4						
Anim:Arth:Maxi:Cala:Aetideidae	<i>Gaetanus simplex</i> 5	0.93		1.74			
Anim:Arth:Maxi:Cala:Aetideidae	<i>Gaetanus simplex</i> 6F			1.74			
Anim:Arth:Maxi:Cala:Calanidae	<i>Calanus</i> *sp. 1						
Anim:Arth:Maxi:Cala:Calanidae	<i>Calanus</i> *sp. 2						
Anim:Arth:Maxi:Cala:Calanidae	<i>Calanus</i> *sp. nauplii s1						
Anim:Arth:Maxi:Cala:Calanidae	<i>Calanus marshallae</i> 5	5.14	1.13	90.71	31.25	8.59	10.39
Anim:Arth:Maxi:Cala:Calanidae	<i>Calanus marshallae</i> 6F						
Anim:Arth:Maxi:Cala:Calanidae	<i>Calanus pacificus</i> 5					1.72	2.60
Anim:Arth:Maxi:Cala:Calanidae	<i>Calanus pacificus</i> 6F					0.86	1.30
Anim:Arth:Maxi:Cala:Calanidae	<i>Calanus pacificus</i> 6M						
Anim:Arth:Maxi:Cala:Calanidae	<i>Mesocalanus tenuicornis</i> 6F						
Anim:Arth:Maxi:Cala:Calanidae	<i>Neocalanus cristatus</i> 5			0.11			0.08
Anim:Arth:Maxi:Cala:Calanidae	<i>Neocalanus flemingeri</i> 6F						
Anim:Arth:Maxi:Cala:Calanidae	<i>Neocalanus plumchrus</i> 5			1.74	1.12		
Anim:Arth:Maxi:Cala:Candaciidae	<i>Candacia</i> *sp. 2			1.74			
Anim:Arth:Maxi:Cala:Candaciidae	<i>Candacia</i> *sp. 3						
Anim:Arth:Maxi:Cala:Candaciidae	<i>Candacia columbiae</i> 5						
Anim:Arth:Maxi:Cala:Candaciidae	<i>Candacia columbiae</i> 6F	0.03					
Anim:Arth:Maxi:Cala:Candaciidae	<i>Candacia columbiae</i> 6M						
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Clausocalanus parapergens</i> 5						
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Clausocalanus parapergens</i> 6F						
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Clausocalanus parapergens</i> 6M						
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Ctenocalanus vanus</i> 4						
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Ctenocalanus vanus</i> 5						
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Ctenocalanus vanus</i> 6F						
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Ctenocalanus vanus</i> 6M						
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Microcalanus pusillus</i> 5	4.20	3.00		4.46	1.72	
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Microcalanus pusillus</i> 6F	3.74	6.38	19.19	5.58	18.03	2.60
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Microcalanus pusillus</i> 6M						
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Microcalanus pygmaeus</i> 5	0.93	0.75	1.74	4.46	14.60	5.19
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Microcalanus pygmaeus</i> 6F		1.88	6.98	1.12	6.87	5.19
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Microcalanus pygmaeus</i> 6M				1.12		
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus</i> *sp. 2	1.87		1.74	4.46		
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus</i> *sp. 3	11.21	1.88	20.93	10.05		15.58
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus</i> *sp. 4	12.61	6.38	97.68	21.21		49.33
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus mimus</i> 4						
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus mimus</i> 5F						
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus mimus</i> 5M						
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus mimus</i> 6F						
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus mimus</i> 6M						
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus minutus</i> 4	5.61	3.75	40.12	15.63		38.95
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus minutus</i> 5F	19.15	3.75	99.43	53.58	56.67	54.53
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus minutus</i> 5M	20.09	4.50	167.46	49.11	27.48	67.51
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus minutus</i> 6F	0.47					
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus minutus</i> 6M						



Table 3 continued. Zooplankton abundances (individuals m<sup>-3</sup>) from samples collected during the World Class Programme, 2015-2016.

2015-54							
Order	Taxon	Dec22	Doug4 <sup>3</sup>	FOC1 <sup>4</sup>	Doug31	Doug40	WC43
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus moultoni</i> 4						3.89
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus moultoni</i> 5F				1.12		
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus moultoni</i> 5M				1.12		
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus moultoni</i> 6F						
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus newmani</i> 4		3.75		7.81	14.60	
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus newmani</i> 5F	0.93	9.38		4.46	11.16	
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus newmani</i> 5M	1.87	5.25		1.12	12.02	
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus newmani</i> 6F	1.40	2.63		1.12	0.86	2.60
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus newmani</i> 6M		0.38				
Anim:Arth:Maxi:Cala:Eucalanidae	<i>Eucalanus bungii</i> 5F	0.03		0.22	0.10	0.11	0.16
Anim:Arth:Maxi:Cala:Eucalanidae	<i>Eucalanus bungii</i> 5M	0.03		0.22	0.07		0.08
Anim:Arth:Maxi:Cala:Eucalanidae	<i>Eucalanus bungii</i> 6F	0.03					
Anim:Arth:Maxi:Cala:Eucalanidae	<i>Eucalanus hyalinus</i> 4						
Anim:Arth:Maxi:Cala:Euchaetidae	Euchaetidae *sp. 1					0.86	
Anim:Arth:Maxi:Cala:Euchaetidae	Euchaetidae *sp. 2			1.74	1.12		
Anim:Arth:Maxi:Cala:Euchaetidae	Euchaetidae *sp. nauplii s1				1.12	1.72	1.30
Anim:Arth:Maxi:Cala:Euchaetidae	<i>Paraeuchaeta elongata</i> 5F	0.26	0.14	0.33	0.28	0.21	0.49
Anim:Arth:Maxi:Cala:Euchaetidae	<i>Paraeuchaeta elongata</i> 5M	0.26	0.07	0.33	0.17	0.16	0.08
Anim:Arth:Maxi:Cala:Euchaetidae	<i>Paraeuchaeta elongata</i> 6F	0.06		0.65	0.21	0.32	0.41
Anim:Arth:Maxi:Cala:Euchaetidae	<i>Paraeuchaeta elongata</i> 6M	0.03			0.07		
Anim:Arth:Maxi:Cala:Heterorhabdidae	<i>Heterorhabdus tanneri</i> 6F		0.38	1.74	2.23	1.72	3.89
Anim:Arth:Maxi:Cala:Heterorhabdidae	<i>Heterorhabdus tanneri</i> 6M		0.38			0.86	2.60
Anim:Arth:Maxi:Cala:Lucicutiidae	<i>Lucicutia flavicornis</i> 6M						
Anim:Arth:Maxi:Cala:Metridiidae	<i>Metridia</i> *sp. 2						
Anim:Arth:Maxi:Cala:Metridiidae	<i>Metridia</i> *sp. 3						
Anim:Arth:Maxi:Cala:Metridiidae	<i>Metridia</i> *sp. 4						
Anim:Arth:Maxi:Cala:Metridiidae	<i>Metridia okhotensis</i> 5	0.93	0.75	15.70	23.44	15.46	3.89
Anim:Arth:Maxi:Cala:Metridiidae	<i>Metridia okhotensis</i> 6F	0.47		17.44	4.46	3.43	1.30
Anim:Arth:Maxi:Cala:Metridiidae	<i>Metridia pacifica</i> 4		1.50	20.93			6.49
Anim:Arth:Maxi:Cala:Metridiidae	<i>Metridia pacifica</i> 5F	0.47	4.50	26.17	5.58	14.60	24.67
Anim:Arth:Maxi:Cala:Metridiidae	<i>Metridia pacifica</i> 5M	2.34	6.38	33.14	8.93	15.46	28.56
Anim:Arth:Maxi:Cala:Metridiidae	<i>Metridia pacifica</i> 6F	20.09	2.25	97.68	20.09	30.05	68.81
Anim:Arth:Maxi:Cala:Metridiidae	<i>Metridia pacifica</i> 6M		0.38	12.21		4.29	6.49
Anim:Arth:Maxi:Cala:Metridiidae	<i>Metridia pseudopacifica</i> 6F	0.47					
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Calocalanus pavoninus</i> 6F						
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Paracalanus</i> *sp. 5						
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Paracalanus</i> *sp. 6M						
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Paracalanus indicus</i> 4						
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Paracalanus indicus</i> 5						
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Paracalanus indicus</i> 6F		0.38				
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Paracalanus indicus</i> 6M						
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Paracalanus parvus</i> 6F						
Anim:Arth:Maxi:Cala:Scolecitrichidae	<i>Racovitzanus antarcticus</i> 5						
Anim:Arth:Maxi:Cala:Scolecitrichidae	<i>Scaphocalanus</i> *sp. 4						
Anim:Arth:Maxi:Cala:Scolecitrichidae	<i>Scaphocalanus</i> *sp. 5						
Anim:Arth:Maxi:Cala:Scolecitrichidae	<i>Scaphocalanus brevicornis</i> 5						
Anim:Arth:Maxi:Cala:Scolecitrichidae	<i>Scaphocalanus brevicornis</i> 6F						
Anim:Arth:Maxi:Cala:Scolecitrichidae	<i>Scolecithricella minor</i> 4				1.12		

Table 3 continued. Zooplankton abundances (individuals m<sup>-3</sup>) from samples collected during the World Class Programme, 2015-2016.

2015-54							
Order	Taxon	Dec22	Doug4 <sup>3</sup>	FOC1 <sup>4</sup>	Doug31	Doug40	WC43
Anim:Arth:Maxi:Cala:Scolecitrichidae	<i>Scolecitrichella minor</i> 5				1.12		
Anim:Arth:Maxi:Cala:Scolecitrichidae	<i>Scolecitrichella minor</i> 6F						
Anim:Arth:Maxi:Cala:Scolecitrichidae	<i>Scolecitrichella minor</i> 6M						
Anim:Arth:Maxi:Cycl:Oithonidae	<i>Oithona atlantica</i> 4	3.74	2.25		6.70	1.72	
Anim:Arth:Maxi:Cycl:Oithonidae	<i>Oithona atlantica</i> 5	13.55	5.63	3.49	3.35	2.58	2.60
Anim:Arth:Maxi:Cycl:Oithonidae	<i>Oithona atlantica</i> 6F	16.82	10.88	13.95	10.05	6.01	6.49
Anim:Arth:Maxi:Cycl:Oithonidae	<i>Oithona atlantica</i> 6M						
Anim:Arth:Maxi:Cycl:Oithonidae	<i>Oithona similis</i> 5	18.69	8.25	13.95	10.05	6.87	16.88
Anim:Arth:Maxi:Cycl:Oithonidae	<i>Oithona similis</i> 6F	19.62	12.38	24.42	13.39	22.33	23.37
Anim:Arth:Maxi:Cycl:Oithonidae	<i>Oithona similis</i> 6M	0.93					
Anim:Arth:Maxi:Harp:Ectinosomatidae	<i>Microsetella rosea</i> 6F						
Anim:Arth:Maxi:Poec:Corycaeidae	<i>Corycaeus anglicus</i> 6F						1.30
Anim:Arth:Maxi:Poec:Corycaeidae	<i>Corycaeus anglicus</i> 6M						1.30
Anim:Arth:Maxi:Poec:Oncaeidae	<i>Oncaea prolata</i> 6F					0.86	
Anim:Arth:Maxi:Poec:Oncaeidae	<i>Triconia borealis</i> 6F	3.27	6.38	1.74	10.05	6.01	3.89
Anim:Arth:Maxi:Poec:Oncaeidae	<i>Triconia borealis</i> 6M				1.12		
Anim:Arth:Maxi:Siph:Caligidae	<i>Caligus clemensi</i> 6M	0.03					
Anim:Arth:Ostr:Halo:Halocyprididae	<i>Alacia</i> *sp. s1					0.86	
Anim:Arth:Ostr:Halo:Halocyprididae	<i>Alacia minor</i> s1		0.02	0.33	3.35		
Anim:Arth:Ostr:Halo:Halocyprididae	Conchoecinae *sp. s1		0.38	3.49	3.35	10.30	2.60
Anim:Arth:Ostr:Halo:Halocyprididae	<i>Discoconchoecia elegans</i> s1	7.94	5.25	17.44	15.63	6.01	18.18
Anim:Arth:Thec:	<i>Cirripedia</i> *sp. cyprids s1						
Anim:Chae:Sagi:	<i>Chaetognatha</i> *sp. juveniles s1						
Anim:Chae:Sagi:Aphr:Sagittidae	<i>Mesosagitta decipiens</i> s3						
Anim:Chae:Sagi:Aphr:Sagittidae	<i>Mesosagitta minima</i> s2						
Anim:Chae:Sagi:Aphr:Sagittidae	<i>Parasagitta elegans</i> s2	0.06	0.02		0.07	0.05	
Anim:Chae:Sagi:Aphr:Sagittidae	<i>Parasagitta elegans</i> s3	1.64	0.16	2.40	0.45	0.27	1.05
Anim:Chae:Sagi:Aphr:Sagittidae	<i>Parasagitta euneritica</i> s2	0.03		0.11			
Anim:Chae:Sagi:Aphr:Sagittidae	<i>Parasagitta euneritica</i> s3		0.02				
Anim:Chae:Sagi:Phra:Eukrohniidae	<i>Eukrohnia hamata</i> s2	0.06	0.07	0.55	0.31	0.05	0.32
Anim:Chae:Sagi:Phra:Eukrohniidae	<i>Eukrohnia hamata</i> s3	0.06	0.07	0.98	0.31	0.16	0.65
Anim:Chor:Acti:	Fish *sp. eggs s1		0.02		0.03		
Anim:Chor:Acti:Gadi:Merlucciidae	<i>Merluccius productus</i> eggs s1	0.15		0.04	0.26	0.05	0.11
Anim:Chor:Acti:Gadi:Merlucciidae	<i>Merluccius productus</i> larvae s1	0.06		0.01		0.03	0.01
Anim:Chor:Acti:Osme:Bathylagidae	<i>Leuroglossus schmidti</i> eggs s1					0.01	
Anim:Chor:Acti:Osme:Bathylagidae	<i>Leuroglossus schmidti</i> juvenile s3		0.02				
Anim:Chor:Acti:Scor:Cottidae	<i>Radulinus</i> *sp. larvae s1						
Anim:Cnid:Hydr:Hydr:Mitrocomidae	<i>Mitrocoma cellularia</i> s3						
Anim:Cnid:Hydr:Siph:	<i>Siphonophora</i> *sp. gas floats s2	0.03			0.07		0.01
Anim:Cnid:Hydr:Siph:	<i>Siphonophora</i> *sp. gas floats s3	0.03	0.02				0.01
Anim:Cnid:Hydr:Siph:	<i>Siphonophora</i> *sp. larvae s1						
Anim:Cnid:Hydr:Siph:Agalmidae	<i>Nanomia bijuga nectophores</i> s1	0.47	0.38		1.12		
Anim:Cnid:Hydr:Siph:Agalmidae	<i>Nanomia bijuga nectophores</i> s2			0.11		0.05	0.08
Anim:Cnid:Hydr:Siph:Diphyidae	<i>Dimophyes arctica eudoxids</i> s1			1.74			
Anim:Cnid:Hydr:Siph:Diphyidae	<i>Dimophyes arctica eudoxids</i> s2						
Anim:Cnid:Hydr:Siph:Diphyidae	<i>Dimophyes arctica nectophores</i> s2	0.09	0.38	0.22	0.07	0.05	0.08
Anim:Cnid:Hydr:Siph:Diphyidae	<i>Lensia achilles nectophores</i> s2						0.01
Anim:Cnid:Hydr:Siph:Diphyidae	<i>Muggiaea atlantica nectophores</i> s2						

Table 3 continued. Zooplankton abundances (individuals m<sup>-3</sup>) from samples collected during the World Class Programme, 2015-2016.

2015-54							
Order	Taxon	Dec22	Doug4 <sup>3</sup>	FOC1 <sup>4</sup>	Doug31	Doug40	WC43
Anim:Cnid:Hydr:Trac:Aeginidae	<i>Aegina citrea</i> s2	0.03					
Anim:Cnid:Hydr:Trac:Rhopalonematidae	<i>Aglantha digitalis</i> s2	0.15	0.21		0.03		
Anim:Cnid:Hydr:Trac:Rhopalonematidae	<i>Aglantha digitalis</i> s3			0.11			
Anim:Cten:Tent:Cydi:Pleurobrachiidae	<i>Pleurobrachia bachei</i> s2		0.02				
Anim:Echi:Ophi:Ophi:	Ophiuroid *sp. pluteus s1						
Anim:Ecto:Gymn::	Bryozoa *sp. cyphonautes s1	96.71	31.13	29.65	5.58	42.94	16.88
Anim:Moll:Biva:Phol:	Bivalvia *sp. veligers s1		6.75	1.74			
Anim:Moll:Gast::	Gastropoda *sp. veligers s1		0.75				
Anim:Moll:Gast:Gymn:Clionidae	<i>Clione limacina</i> s2	0.12		0.22	0.03	0.05	0.01
Anim:Moll:Gast:Gymn:Clionidae	<i>Clione limacina</i> s3	0.15		0.11			
Anim:Moll:Gast:Thec:Limacinidae	<i>Limacina helicina</i> s0		7.50	8.72		2.58	1.30
Anim:Uroc:Appe:Copl:Fritillariidae	<i>Fritillaria borealis</i> s1	4.20				5.15	3.89
Anim:Uroc:Appe:Copl:Oikopleuridae	<i>Oikopleura</i> *sp. s1	1.40	0.75	3.49	4.46		2.60
Anim:Uroc:Appe:Copl:Oikopleuridae	<i>Oikopleura dioica</i> s1	3.27				7.73	
Anim:Uroc:Appe:Copl:Oikopleuridae	<i>Oikopleura labradoriensis</i> s2	0.41	0.54	1.42	0.98	0.70	1.87
Anim:Uroc:Appe:Copl:Oikopleuridae	<i>Oikopleura longicauda</i> s1						
Anim:Uroc:Thal:Doli:Doliolidae	Doliolid *sp. (old nurse) s2						

<sup>1</sup>: FOC1 taken on October 18; <sup>2</sup>: Doug 4 taken on October 19; <sup>3</sup>: Doug 4 taken on November 6; <sup>4</sup>: FOC1 taken on November 6.

2016-02				
Order	Taxon	SC61	FOC1	Doug4
Anim:Anne:Poly:Acic:Alciopidae	<i>Platohelms tenuis</i> s3	0.02		
Anim:Anne:Poly:Acic:Tomopteridae	<i>Tomopteris septentrionalis</i> s2	0.02	0.09	
Anim:Arth:Mala:Amph:Cyphocarididae	<i>Cyphocaris challengerii</i> s1			0.56
Anim:Arth:Mala:Amph:Cyphocarididae	<i>Cyphocaris challengerii</i> s2	0.09	0.48	0.42
Anim:Arth:Mala:Amph:Cyphocarididae	<i>Cyphocaris challengerii</i> s3	0.05	0.09	
Anim:Arth:Mala:Amph:Hyperidae	<i>Themisto pacifica</i> F			0.14
Anim:Arth:Mala:Amph:Hyperidae	<i>Themisto pacifica</i> M	0.02	0.04	0.03
Anim:Arth:Mala:Amph:Lysianassidae	<i>Orchomenella</i> *sp. s2	0.05		
Anim:Arth:Mala:Amph:Phrosinidae	<i>Primno abyssalis</i> M	0.02		
Anim:Arth:Mala:Amph:Phrosinidae	<i>Primno abyssalis</i> s2		0.04	
Anim:Arth:Mala:Deca:Pasiphaeidae	<i>Pasiphaea pacifica</i> M	0.02		
Anim:Arth:Mala:Deca:Pasiphaeidae	<i>Pasiphaea pacifica</i> s2	0.14		
Anim:Arth:Mala:Deca:Pasiphaeidae	<i>Pasiphaea pacifica</i> s3	0.07		
Anim:Arth:Mala:Euph:Euphausiidae	<i>Euphausia pacifica</i> F		0.44	0.28
Anim:Arth:Mala:Euph:Euphausiidae	<i>Euphausia pacifica</i> M		0.09	0.31
Anim:Arth:Mala:Euph:Euphausiidae	<i>Euphausia pacifica</i> s2	0.05		
Anim:Arth:Mala:Isop:	Epicarid *sp. larvae s1	0.73		
Anim:Arth:Maxi:Cala:Acartiidae	<i>Acartia danae</i> 5	0.73		
Anim:Arth:Maxi:Cala:Acartiidae	<i>Acartia danae</i> 6F	0.73		
Anim:Arth:Maxi:Cala:Acartiidae	<i>Acartia danae</i> 6M	0.73		
Anim:Arth:Maxi:Cala:Aetideidae	<i>Aetideus</i> *sp. 2	0.37		0.56
Anim:Arth:Maxi:Cala:Aetideidae	<i>Aetideus divergens</i> 4	0.37	1.04	
Anim:Arth:Maxi:Cala:Aetideidae	<i>Aetideus divergens</i> 5		1.39	0.56
Anim:Arth:Maxi:Cala:Aetideidae	<i>Chiridius gracilis</i> 4	0.37	1.04	
Anim:Arth:Maxi:Cala:Aetideidae	<i>Chiridius gracilis</i> 5	0.73	1.39	0.56

Table 3 continued. Zooplankton abundances (individuals m<sup>-3</sup>) from samples collected during the World Class Programme, 2015-2016.

2016-02				
Order	Taxon	SC61	FOC1	Doug4
Anim:Arth:Maxi:Cala:Aetideidae	<i>Chiridius gracilis</i> 6F			0.28
Anim:Arth:Maxi:Cala:Aetideidae	<i>Gaetanus minutus</i> 6F		0.35	
Anim:Arth:Maxi:Cala:Calanidae	<i>Calanus marshallae</i> 5	2.56		0.28
Anim:Arth:Maxi:Cala:Calanidae	<i>Calanus marshallae</i> 6F	2.93	2.44	0.56
Anim:Arth:Maxi:Cala:Calanidae	<i>Calanus marshallae</i> 6M	0.37		
Anim:Arth:Maxi:Cala:Calanidae	<i>Calanus pacificus</i> 5		0.70	0.28
Anim:Arth:Maxi:Cala:Candaciidae	<i>Candacia</i> *sp. 2	0.37		0.28
Anim:Arth:Maxi:Cala:Candaciidae	<i>Candacia columbiae</i> 5	0.37	0.35	
Anim:Arth:Maxi:Cala:Candaciidae	<i>Candacia columbiae</i> 6F	0.73	0.04	
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Clausocalanus arcuicornis</i> 5	4.76		
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Clausocalanus arcuicornis</i> 6F	0.73		
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Clausocalanus arcuicornis</i> 6M	1.10		
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Clausocalanus parapergens</i> 6F	0.37		
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Clausocalanus parapergens</i> 6M	0.37		
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Clausocalanus pergens</i> 5	1.10		
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Clausocalanus pergens</i> 6F	8.05		
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Ctenocalanus vanus</i> 4	3.29		
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Ctenocalanus vanus</i> 5	12.44		
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Ctenocalanus vanus</i> 6F	34.76		
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Ctenocalanus vanus</i> 6M	3.29	0.70	
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Microcalanus pusillus</i> 6F		0.35	1.12
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Microcalanus pusillus</i> 6M		0.70	0.28
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Microcalanus pygmaeus</i> 5		0.70	0.28
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Microcalanus pygmaeus</i> 6F			0.28
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus mimus</i> 5F	5.49		
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus mimus</i> 5M	2.20		
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus mimus</i> 6F	9.15		
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus mimus</i> 6M	3.29		
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus minutus</i> 4			0.28
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus minutus</i> 5F	1.10	5.22	2.51
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus minutus</i> 5M	2.56	1.74	1.12
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus minutus</i> 6F	11.71	27.50	32.65
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus minutus</i> 6M	4.76	5.57	2.23
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus moultoni</i> 5F	1.10	1.04	0.28
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus moultoni</i> 5M	1.10	1.04	0.84
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus moultoni</i> 6F	0.73		
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus newmani</i> 5F	2.56	6.61	8.65
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus newmani</i> 5M	1.10	2.44	5.30
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus newmani</i> 6F	6.59	5.92	6.98
Anim:Arth:Maxi:Cala:Clausocalanidae	<i>Pseudocalanus newmani</i> 6M	0.73	2.44	1.95
Anim:Arth:Maxi:Cala:Eucalanidae	<i>Eucalanus bungii</i> 5F	0.02		
Anim:Arth:Maxi:Cala:Euchaetidae	<i>Euchaetidae</i> *sp. 1		1.39	
Anim:Arth:Maxi:Cala:Euchaetidae	<i>Euchaetidae</i> *sp. 2	0.37	0.35	0.28
Anim:Arth:Maxi:Cala:Euchaetidae	<i>Paraeuchaeta elongata</i> 5F	0.05		
Anim:Arth:Maxi:Cala:Euchaetidae	<i>Paraeuchaeta elongata</i> 5M	0.02		
Anim:Arth:Maxi:Cala:Euchaetidae	<i>Paraeuchaeta elongata</i> 6F		0.09	0.03
Anim:Arth:Maxi:Cala:Euchaetidae	<i>Paraeuchaeta elongata</i> 6M	0.05	0.09	
Anim:Arth:Maxi:Cala:Heterorhabdidae	<i>Heterorhabdus</i> *sp. 12	0.73		

Table 3 continued. Zooplankton abundances (individuals m<sup>-3</sup>) from samples collected during the World Class Programme, 2015-2016.

2016-02				
Order	Taxon	SC61	FOC1	Doug4
Anim:Arth:Maxi:Cala:Lucicutiidae	<i>Lucicutia flavicornis</i> 5			0.84
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia</i> *sp. 1	2.93		0.28
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia</i> *sp. 2	6.95	0.35	3.35
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia</i> *sp. 3	3.29	1.04	1.12
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia</i> *sp. 4	0.37		
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia okhotensis</i> 6F	0.73	19.84	0.84
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia pacifica</i> 5F	2.20		
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia pacifica</i> 5M	1.10		
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia pacifica</i> 6F	28.91	14.97	5.58
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia pacifica</i> 6M	4.76	0.70	
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia pseudopacifica</i> 6F	5.12		1.12
Anim:Arth:Maxi:Cala:Metridinidae	<i>Metridia pseudopacifica</i> 6M	2.93		
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Calocalanus pavoninus</i> 6F	0.37		
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Calocalanus styliremis</i> 6F	0.37		
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Paracalanus indicus</i> 5	4.39		
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Paracalanus indicus</i> 6F	1.46		
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Paracalanus indicus</i> 6M	0.37		
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Paracalanus parvus</i> 5	0.37		0.28
Anim:Arth:Maxi:Cala:Paracalanidae	<i>Paracalanus parvus</i> 6F	0.37		0.28
Anim:Arth:Maxi:Cala:Scolecitrichidae	<i>Scolecitrichella minor</i> 4			0.28
Anim:Arth:Maxi:Cala:Scolecitrichidae	<i>Scolecitrichella minor</i> 5			0.84
Anim:Arth:Maxi:Cala:Scolecitrichidae	<i>Scolecitrichella minor</i> 6F		0.70	0.84
Anim:Arth:Maxi:Cycl:Oithonidae	<i>Oithona atlantica</i> 4	0.37	1.04	5.86
Anim:Arth:Maxi:Cycl:Oithonidae	<i>Oithona atlantica</i> 5	1.46	2.09	6.98
Anim:Arth:Maxi:Cycl:Oithonidae	<i>Oithona atlantica</i> 6F	4.39	9.40	28.18
Anim:Arth:Maxi:Cycl:Oithonidae	<i>Oithona atlantica</i> 6M	0.73		
Anim:Arth:Maxi:Cycl:Oithonidae	<i>Oithona similis</i> 5	2.56		8.93
Anim:Arth:Maxi:Cycl:Oithonidae	<i>Oithona similis</i> 6F	16.47	2.09	20.93
Anim:Arth:Maxi:Poec:Corycaeidae	<i>Corycaeus anglicus</i> 5		0.35	
Anim:Arth:Maxi:Poec:Corycaeidae	<i>Corycaeus anglicus</i> 6F		0.35	0.28
Anim:Arth:Maxi:Poec:Corycaeidae	<i>Corycaeus anglicus</i> 6M			0.28
Anim:Arth:Maxi:Poec:Oncaeidae	<i>Triconia borealis</i> 6F			0.28
Anim:Arth:Maxi:Poec:Oncaeidae	<i>Triconia conifera</i> 6F		0.35	
Anim:Arth:Ostr:Halo:Halocyprididae	<i>Alacia</i> *sp. s1	0.37		
Anim:Arth:Ostr:Halo:Halocyprididae	<i>Alacia minor</i> s1	0.73	0.04	
Anim:Arth:Ostr:Halo:Halocyprididae	Conchoecinae *sp. s1	1.46	2.09	0.56
Anim:Arth:Ostr:Halo:Halocyprididae	<i>Discoconchoecia elegans</i> s1	6.22	11.84	0.84
Anim:Arth:Thec:	<i>Cirripedia</i> *sp. nauplii s1		0.35	
Anim:Chae:Sagi:.	<i>Chaetognatha</i> *sp. juveniles s1		0.35	
Anim:Chae:Sagi:Aphr:Sagittidae	<i>Mesosagitta minima</i> s2	0.21	0.09	0.03
Anim:Chae:Sagi:Aphr:Sagittidae	<i>Parasagitta elegans</i> s2	0.11	0.04	
Anim:Chae:Sagi:Aphr:Sagittidae	<i>Parasagitta elegans</i> s3	0.02	0.04	0.07
Anim:Chae:Sagi:Aphr:Sagittidae	<i>Parasagitta euneritica</i> s2	0.53		
Anim:Chae:Sagi:Aphr:Sagittidae	<i>Parasagitta euneritica</i> s3	0.21		
Anim:Chae:Sagi:Aphr:Sagittidae	<i>Pseudosagitta scrippsae</i> s3	0.05		
Anim:Chae:Sagi:Aphr:Sagittidae	<i>Serratosagitta bierii</i> s2	0.07		
Anim:Chae:Sagi:Aphr:Sagittidae	<i>Serratosagitta bierii</i> s3	0.02		
Anim:Chae:Sagi:Phra:Eukrohniidae	<i>Eukrohnia hamata</i> s2	0.07	0.09	

Table 3 continued. Zooplankton abundances (individuals m<sup>-3</sup>) from samples collected during the World Class Programme, 2015-2016.

2016-02				
Order	Taxon	SC61	FOC1	Doug4
Anim:Chae:Sagi:Phra:Eukrohniidae	<i>Eukrohnia hamata</i> s3	0.02	0.04	
Anim:Chor:Acti:Gadi:Gadidae	<i>Theragra chalcogramma</i> larvae s1		0.04	
Anim:Chor:Acti:Gadi:Merlucciidae	<i>Merluccius productus</i> eggs s1		0.13	0.70
Anim:Chor:Acti:Gadi:Merlucciidae	<i>Merluccius productus</i> larvae s1		0.13	0.38
Anim:Chor:Acti:Osme:Bathylagidae	<i>Leuroglossus schmidti</i> eggs s1	0.11	0.70	
Anim:Chor:Acti:Osme:Bathylagidae	<i>Leuroglossus schmidti</i> larvae s1		0.04	
Anim:Chor:Acti:Osme:Bathylagidae	<i>Leuroglossus schmidti</i> larvae s2	0.14	0.52	0.07
Anim:Cnid:Hydr:Hydr:	Medusae *sp. s0			0.28
Anim:Cnid:Hydr:Hydr:Tubulariidae	<i>Euphysa japonica</i> s2	0.02		
Anim:Cnid:Hydr:Siph:	<i>Siphonophora</i> *sp. gas floats s2			0.03
Anim:Cnid:Hydr:Siph:	<i>Siphonophora</i> *sp. gas floats s3			0.03
Anim:Cnid:Hydr:Siph:	<i>Siphonophora</i> *sp. larvae s1		0.35	
Anim:Cnid:Hydr:Siph:Agalmidae	<i>Nanomia bijuga</i> nectophores s2			0.52
Anim:Cnid:Hydr:Siph:Diphyidae	<i>Dimophyes arctica</i> eudoxids s1		0.70	
Anim:Cnid:Hydr:Siph:Diphyidae	<i>Dimophyes arctica</i> nectophores s1			0.56
Anim:Cnid:Hydr:Siph:Diphyidae	<i>Dimophyes arctica</i> nectophores s2	0.09	0.22	0.21
Anim:Cnid:Hydr:Siph:Diphyidae	<i>Lensia achilles</i> nectophores s2	0.05		
Anim:Cnid:Hydr:Siph:Diphyidae	<i>Lensia achilles</i> nectophores s3	0.02		
Anim:Cnid:Hydr:Trac:Rhopalonematidae	<i>Aglantha digitalis</i> s2		0.04	0.49
Anim:Ecto:Gymn::	Bryozoa *sp. cyphonautes s1		2.09	10.88
Anim:Moll:Gast::	Gastropoda *sp. veligers s1		1.04	
Anim:Moll:Gast:Thec:Limacinidae	<i>Limacina helicina</i> s0	1.83		
Anim:Uroc:Appe:Copl:Fritillaridae	<i>Fritillaria borealis</i> s1			0.56
Anim:Uroc:Appe:Copl:Oikopleuridae	<i>Oikopleura</i> *sp. s1	0.73	1.04	0.84
Anim:Uroc:Appe:Copl:Oikopleuridae	<i>Oikopleura labradoriensis</i> s1		0.35	
Anim:Uroc:Appe:Copl:Oikopleuridae	<i>Oikopleura labradoriensis</i> s2	0.09	0.26	0.42
Anim:Uroc:Appe:Copl:Oikopleuridae	<i>Oikopleura labradoriensis</i> s3			0.07



Table 4. Sediment Core Information and Descriptions. All cores take in cruise 2016-41.

<b>Core Name: GC74</b>	
Date	May 18, 2017
Event No.	15
Core Length	35 cm

Latitude	53° 15.801 N
Longitude	127° 55.423 W
Water Depth	135 m

Core Depth (cm)	Description/Comments
0-1	light olive grey mud, hummocky and unconsolidated, heart urchin present
1-2	dark gray mud with greener mottling, increased consolidation,
2-3	dark olive gray mud with dark gray mottling, increased consolidation
3-4	dark olive gray mud with dark gray mottling, increased consolidation
4-5	dark olive gray mud with dark gray mottling, high level of consolidation
5-6	dark olive gray mud with dark gray mottling, high level of consolidation, worms, some "rust" coloured pockets
6-7	dark olive gray mud with dark gray mottling, high level of consolidation, worms, some "rust" coloured pockets
7-8	dark olive gray mud with dark gray mottling, high level of consolidation, dry
8-9	dark olive gray mud with dark gray mottling, high level of consolidation, dry, worms present
9-10	dark olive gray mud with dark gray mottling, high level of consolidation, dry, worms present

Core Depth (cm)	Description/Comments
10-12	dark gray mud with streaks, consolidated
12-14	dark gray mud with streaks, consolidated
14-16	dark gray mud with streaks, consolidated, sulphidic
16-18	dark gray mud with streaks, consolidated
18-20	dark gray mud with streaks, consolidated
20-25	dark gray mud with streaks, consolidated
25-30	dark gray mud with streaks, some grit/sand, consolidated
30-32	dark gray sandy mud

Table 4 continued. Sediment Core Information and Descriptions. All cores take in cruise 2016-41.

<b>Core Name: GC36</b>	
Date	May 18, 2017
Event No.	16
Core Length	50 cm

Latitude	53° 28.590 N
Longitude	128° 38.069 W
Water Depth	168 m

Core Depth (cm)	Description/Comments
0-1	light olive grey mud, hummocky and unconsolidated, benthos present
1-2	light olive grey mud, hummocky and unconsolidated, benthos present
2-3	olive grey mud with grey streaks, slightly consolidated, heart urchin present
3-4	light olive grey mud, slightly consolidated, benthos present with heart urchin
4-5	light olive grey mud, slightly consolidated, benthos present with heart urchin
5-6	olive grey mud with grey mottling, slight sulfidic smell, increased consolidation
6-7	olive grey mud with grey mottling, worms present, slight sulfidic smell, increased consolidation
7-8	increased consolidated olive grey mud, sulfidic smell
8-9	increased consolidated olive grey mud, sulfidic smell
9-10	increased consolidated olive grey mud

Core Depth (cm)	Description/Comments
10-12	increased consolidated, sticky olive grey mud with mottling
12-14	increased consolidated, sticky olive grey mud with mottling
14-16	increased consolidated, sticky olive grey mud with mottling, worms, burrows and bivalves present
16-18	increased consolidated, sticky olive grey mud with mottling with burrows
18-20	increased consolidated, sticky olive grey mud with mottling
20-25	increased consolidated, sticky olive grey mud with mottling
25-30	very consolidated olive grey mud with mottling
30-35	very consolidated olive grey mud with mottling
35-40	very consolidated olive grey mud with mottling
40-45	very consolidated olive grey mud with mottling
45-50	very consolidated olive grey mud with mottling, black unidentified patches

Table 4 continued. Sediment Core Information and Descriptions. All cores take in cruise 2016-41.

<b>Core Name: FOC1</b>	
Date	May 19, 2017
Event No.	23
Core Length	49 cm

Latitude	53° 44.268 N
Longitude	129° 02.017 W
Water Depth	368 m

Core Depth (cm)	Description/Comments
0-1	unconsolidated mud with olive gray veneer and a dark gray underlayer, polychaetes, amphipods, terrestrial debris
1-2	unconsolidated mud dark gray
2-3	dark gray mud with <5% sandy grit, polychaetes present
3-4	dark gray mud with darker mottling, less grit than above, small sea cucumber present
4-5	dark gray mud with darker mottling, terrestrial debris present
5-6	dark gray mud with darker mottling, slight grit present
6-7	dark gray mud with darker mottling, small pocket of water at base, shell fragments present, kaolinite ("limey") smell
7-8	dark gray mud with increased darker mottling, increased consolidation, water pocket at base
8-9	dark gray mud with increased darker mottling, increased consolidation, water pocket at top, increased grit in black mottled areas and more compact
9-10	dark gray mud but increased black (~50% of area), increased consolidation, water pocket at base

Core Depth (cm)	Description/Comments
10-12	dark gray mud with increased darker mottling, increased consolidation, water pocket goes through layer, terrestrial debris
12-14	dark gray mud with increased darker mottled areas, a few very compact areas, black pockets of sooty materia, no grit, shell fragment present
14-16	Closer to olive gray, less blackened areas, fewer water pockets than layers above
16-18	olive gray, no mottling, no grit, sediment quite smooth, fewer water pockets, shell fragments present, pteropod shell present
18-20	olive gray, no mottling, one small water pocket, shell fragments present
20-25	olive gray, no mottling, consolidated, shell fragments present
25-30	olive gray, no mottling, consolidated, a few small water pockets, shell fragments present
30-35	dark gray, no grit, smooth texture, sticky and consolidated, water pocket at base, shell fragments present
35-40	dark gray, some minor black mottling, consolidated, water pocket mid-layer, shell fragments present
40-45	dark gray, no grit, smooth texture, sticky and consolidated
45-49	dark gray, no grit, smooth texture, sticky and consolidated, shell fragment present

Table 4 continued. Sediment Core Information and Descriptions. All cores take in cruise 2016-41.

<b>Core Name: Doug45S</b>	
Date	May 20, 2017
Event No.	27
Core Length	>50 cm

Latitude	53° 12.040 N
Longitude	129° 11.630 W
Water Depth	429 m

Core Depth (cm)	Description/Comments
0-1	dark olive green mud, unconsolidated, hummocky, terrestrial debris and shell fragments
1-2	dark olive green mud, no grit, unconsolidated, heart urchin present
2-3	dark olive green mud, no grit, slight consolidation
3-4	dark olive green mud, no grit, slight consolidation
4-5	dark olive green mud with darker streaks no grit, slight consolidation
5-6	dark olive green mud with darker streaks no grit, slight consolidation
6-7	dark olive green mud, no grit, increased consolidation
7-8	dark olive green mud, no grit, increased consolidation
8-9	dark olive green mud, no grit, increased consolidation
9-10	dark olive green mud, no grit, increased consolidation

Core Depth (cm)	Description/Comments
10-12	dark olive green mud, no grit, consolidated, slight sulfidic smell
12-14	dark olive green mud, no grit, consolidated
14-16	dark olive green mud, no grit, sticky component, consolidated
16-18	dark olive green mud, no grit, sticky component, consolidated
18-20	dark olive green mud, no grit, sticky component, consolidated, terrestrial debris, ghost shrimp present
20-25	dark olive green mud, no grit, sticky component, consolidated
25-30	dark olive green mud, no grit, sticky component, consolidated
30-35	dark olive green mud, no grit, sticky component, consolidated, terrestrial debris, scaphopod shell present.
35-40	dark olive green mud, no grit, sticky component, consolidated
40-45	dark olive green mud, no grit, sticky component, consolidated
45-50	dark olive green mud, no grit, sticky component, consolidated

Table 4 continued. Sediment Core Information and Descriptions. All cores take in cruise 2016-41.

<b>Core Name: WC57</b>	
Date	May 20, 2017
Event No.	37
Core Length	>50 cm

Latitude	53° 14.137 N
Longitude	129° 06.903 W
Water Depth	505 m

Core Depth (cm)	Description/Comments
0-1	extremely porous and unconsolidated veneer dark olive gray very fine mud, no grit
1-2	dark olive gray mud, unconsolidated
2-3	dark olive gray mud, slight increase in consolidation
3-4	dark olive gray mud, heart urchin present
4-5	dark olive gray mud
5-6	dark olive gray mud with water pocket at top of layer
6-7	dark olive gray mud, the water pocket from above continues through this layer
7-8	dark olive gray mud, increased consolidation, no grit, water pocket present and slight sulphidic smell
8-9	dark olive gray mud
9-10	dark olive gray mud with minor amounts of grit, small water pocket present

Core Depth (cm)	Description/Comments
10-12	dark olive gray mud with black mottling, slight grit, still soft consolidation, terrestrial debris present, water pocket present
12-14	dark olive gray mud with black mottling, slight grit, still soft consolidation, water pocket at base
14-16	dark olive gray mud with black mottling, slight grit, still soft consolidation, water pocket at base
16-18	dark olive gray mud with black mottling, significant water pockets, <i>Arenicola</i> sp. Present, layer not sampled.
18-20	dark olive gray mud, slight increase in consolidation, water pocket at base.
20-25	dark olive gray mud, slight increase in consolidation
25-30	dark olive gray mud, no grit, still soft consistency, sticky component, terrestrial material present
30-35	dark olive gray mud, no grit, still soft consistency but increased consolidation, sticky component
35-40	dark olive green mud with black mottled areas, still soft consistency, no grit, water pockets present, shell fragments, terrestrial material present
40-45	dark olive green mud with black mottled areas, still soft consistency, slight grit, water pockets present, shell fragments, terrestrial material present
45-50	dark olive gray, no mottling, water pockets present, some consolidation but still soft

Table 4 continued. Sediment Core Information and Descriptions. All cores take in cruise 2016-41.

<b>Core Name: SC61</b>	
Date	May 20, 2017
Event No.	38
Core Length	>50 cm

Latitude	53° 11.946 N
Longitude	129° 25.182 W
Water Depth	511 m

Core Depth (cm)	Description/Comments
0-2	extremely porous and unconsolidated hummocky mud, black with olive grey streaks (mixed surface veneer?), sulphidic
2-3	extremely porous and unconsolidated hummocky mud, black with olive grey streaks (mixed surface veneer?), sulphidic, heart urchin at edge of box
3-4	black mud with fewer olive grey streaks, increased consolidation, sulphidic
4-5	black mud with fewer olive grey streaks, increased consolidation, sulphidic
5-6	black mud, increased consolidation, sulphidic
6-7	black mud, increased consolidation, sulphidic
7-8	black mud, increased consolidation, sulphidic
8-9	black mud, increased consolidation, sulphidic
9-10	black mud, increased consolidation, sulphidic

Core Depth (cm)	Description/Comments
10-12	black mud, increased consolidation, sulphidic
12-14	black mud, increased consolidation, sulphidic
14-16	black mud, increased consolidation, sulphidic, small shell fragment
16-18	black mud, increased consolidation, sulphidic, small shell fragment
18-20	black mud, increased consolidation but still somewhat soft, sulphidic, small shell fragment
20-25	black mud, increased consolidation but still somewhat soft, sulphidic
25-30	black mud, increased consolidation but still somewhat soft, sulphidic
30-35	black mud, increased consolidation but still somewhat soft, sulphidic
35-40	black mud, increased consolidation but still somewhat soft, sulphidic
40-45	black mud, increased consolidation but still somewhat soft, sulphidic
45-50	black mud, increased consolidation but still somewhat soft, sulphidic



Table 5. Results of the <sup>210</sup>Pb analysis and <sup>226</sup>Ra analysis.

Core Depth (cm)	Dry Wt./ Wet cc. (g/cm3) (33 ppt corrected)	% Loss on Drying	Mass in extrapolated section (g/cm2)	Cumulative Mass to Bottom of Current Section (g/cm2)	Plot-point of cumulative mass in current section (g/cm2)	Po-209 counts less detector back-ground	Po-210 Counts Less Detector Back-ground and Po-209 Spike Standard Blank	Weight of Sample Counted-Salt (g)	Count Time (sec)	Po-210 Total Activity (DPM/g) (salt corrected)	Error Po-210 +/- 1 S.D. (DPM/g)	Ra-226 Activity (DPM/g dry wt.)	Error Ra-226 +/- 1 S.D. (DPM/g dry wt.)
<b>Doug45S</b>													
0-1	0.154	83.38	0.154	0.154	0.077	1291	4107	0.365	60000	85.92	1.34		
1-2	0.166	82.45	0.166	0.320	0.237	1407	4403	0.369	60000	83.68	1.27		
2-3	0.187	80.78	0.187	0.507	0.413	1476	4447	0.369	60000	80.51	1.22		
3-4	0.190	80.55	0.190	0.697	0.602	1259	4112	0.393	60000	82.13	1.28	1.158	0.073
4-5	0.203	79.55	0.203	0.900	0.799	1515	4330	0.369	60000	76.36	1.06		
5-6	0.211	78.96	0.211	1.111	1.006	1653	4349	0.372	60000	69.90	1.12		
6-7	0.211	79.05	0.211	1.322	1.217	1363	3603	0.387	60000	67.44	1.13		
7-8	0.219	78.34	0.219	1.541	1.432	1526	3504	0.394	60000	57.48	0.97		
8-9	0.225	77.99	0.225	1.766	1.654	1399	3709	0.425	60000	61.62	1.02		
9-10	0.223	78.04	0.223	1.989	1.877	1388	3067	0.391	60000	55.81	1.01		
10-12	0.231	77.51	0.462	2.451	2.220	1171	2494	0.447	60000	46.97	0.95		
12-14	0.232	77.35	0.465	2.915	2.683	1199	2021	0.398	60000	41.67	0.93		
14-16	0.237	77.10	0.475	3.390	3.153	1216	1823	0.397	60000	37.18	0.87		
16-18	0.238	76.95	0.477	3.867	3.628	1218	1867	0.402	60000	37.54	0.87		
18-20	0.240	76.87	0.480	4.347	4.107	1036	1708	0.433	60000	33.82	0.82	1.071	0.045
20-25	0.248	76.26	1.239	5.586	4.966	1082	1405	0.429	60000	29.79	0.80		
25-30	0.244	76.51	1.222	6.808	6.197	1222	1271	0.449	60000	22.82	0.66		
30-35	0.259	75.42	1.297	8.104	7.456	1165	838	0.447	60000	15.85	0.55		
35-40	0.260	75.42	1.302	9.407	8.756	1127	593	0.421	60000	12.31	0.52		
40-45	0.263	75.19	1.315	10.722	10.064	1186	375	0.367	60000	8.48	0.44	1.148	0.045
5-6 Dup	0.210	79.05	0.61	3.78	3.47	1385	3823	0.376	60000	72.41	1.1700		
18-20 Dup	0.241	76.85	1.62	12.21	11.40	1363	1560	0.428	60000	34.6122	0.8800		
<b>FOC1</b>													
0-1	0.226	77.90	0.226	0.226	0.113	2804	4094	0.315	60000	45.17	0.71		
1-2	0.225	77.91	0.225	0.451	0.338	2751	4113	0.309	60000	47.18	0.74		
2-3	0.253	75.87	0.253	0.704	0.578	1714	2509	0.320	60000	44.62	0.89		
3-4	0.288	73.48	0.288	0.993	0.848	2827	4172	0.348	60000	41.35	0.64	0.930	0.050
4-5	0.305	72.34	0.305	1.297	1.145	2797	3955	0.332	60000	41.55	0.66		
5-6	0.319	71.41	0.319	1.616	1.457	2598	3445	0.326	60000	39.67	0.68		
6-7	0.324	71.06	0.324	1.940	1.778	1632	2146	0.330	60000	38.84	0.84		
7-8	0.320	71.34	0.320	2.260	2.100	2836	3685	0.331	60000	38.21	0.63		
8-9	0.343	69.79	0.343	2.603	2.431	2587	2643	0.322	60000	30.86	0.60		
9-10	0.364	68.52	0.364	2.967	2.785	2890	2237	0.332	60000	22.69	0.48		
10-12	0.367	68.37	0.733	3.701	3.334	2955	1568	0.333	60000	15.50	0.40		

Table 5. Results of the <sup>210</sup>Pb analysis and <sup>226</sup>Ra analysis.

Core Depth (cm)	Dry Wt./ Wet cc. (g/cm3) (33 ppt corrected)	% Loss on Drying	Mass in extrapolated section (g/cm2)	Cumulative Mass to Bottom of Current Section (g/cm2)	Plot-point of cumulative mass in current section (g/cm2)	Po-209 counts less detector back-ground	Po-210 Counts Less Detector Back-ground and Po-209 Spike Standard Blank	Weight of Sample Counted-Salt (g)	Count Time (sec)	Po-210 Total Activity (DPM/g) (salt corrected)	Error Po-210 +/- 1 S.D. (DPM/g)	Ra-226 Activity (DPM/g dry wt.)	Error Ra-226 +/- 1 S.D. (DPM/g dry wt.)
12-14	0.373	67.88	0.746	4.447	4.074	2247	1215	0.328	60000	16.03	0.46		
14-16	0.389	66.93	0.779	5.226	4.836	2855	841	0.328	60000	8.76	0.31		
16-18	0.425	64.80	0.849	6.075	5.650	2339	308	0.346	60000	3.71	0.22		
18-20	0.416	65.05	0.888	6.963	6.519	2218	199	0.339	60000	2.58	0.19	0.970	0.040
20-25	0.416	65.31	2.080	9.043	8.003	2248	207	0.331	60000	2.71	0.19		
25-30	0.566	53.86	2.829	11.872	10.457	2570	177	0.347	60000	1.93	0.15		
30-35	0.386	67.63	1.930	13.802	12.837	2308	141	0.366	60000	1.62	0.14		
35-40	0.358	69.66	1.791	15.593	14.697	2571	128	0.347	60000	1.40	0.16		
40-45	0.478	60.92	2.392	17.985	16.789	1838	61	0.347	60000	0.94	0.11	0.890	0.040
45-50	0.428	65.18	2.140	20.125	19.055	2907	120	0.358	60000	1.13	0.11		
18-20 Dup	0.471	61.16	3.57	24.52	22.79	2167	217	0.335	60000	2.7400	0.1900		
40-45 Dup			3.68	31.78	29.94	2658	105	0.359	60000	1.0700	0.5600		

SC61

0-2	0.136	84.78	0.273	0.273	0.136	1156	4972	0.361	60000	117.2879	1.6670		
2-3	0.181	81.23	0.181	0.454	0.363	1096	4863	0.392	60000	111.3893	1.6007		
3-4	0.174	81.76	0.174	0.628	0.541	1064	4178	0.364	60000	106.1468	1.6459	1.630	0.090
4-5	0.180	81.31	0.180	0.808	0.718	1065	4099	0.416	60000	90.9395	1.4237		
5-6	0.179	81.42	0.179	0.987	0.897	1056	4288	0.428	60000	92.6471	1.4348		
6-7	0.176	81.66	0.176	1.162	1.074	1211	3678	0.396	60000	75.3740	1.2488		
7-8	0.181	81.18	0.181	1.344	1.253	1161	3607	0.414	60000	73.6704	1.2327		
8-9	1.880	80.67	0.187	1.531	1.437	1364	3657	0.408	60000	64.7600	1.0700		
9-10	0.186	80.89	0.186	1.716	1.623	2424	3495	0.403	60000	70.2419	1.1921		
10-12	0.185	80.92	0.369	2.086	1.901	1167	3155	0.403	60000	65.4079	1.1710		
12-14	0.190	80.60	0.379	2.465	2.275	1067	2622	0.405	60000	59.2183	1.1643		
14-16	0.186	80.86	0.371	2.836	2.650	1151	2595	0.401	60000	54.9243	1.0819		
16-18	0.190	80.56	0.380	3.216	3.026	1084	2036	0.401	60000	45.6559	1.0172		
18-20	0.192	80.43	0.384	3.600	3.408	1077	1886	0.413	60000	41.3336	0.9570	1.290	0.090
20-25	0.190	80.52	0.950	4.550	4.075	1245	1948	0.408	60000	37.3807	0.8511		
25-30	0.202	79.66	1.008	5.558	5.054	1168	1368	0.402	60000	28.5200	0.7700		
30-35	0.206	79.36	1.028	6.586	6.072	1143	1068	0.409	60000	21.4983	0.6962		
35-40	0.197	79.98	0.987	7.573	7.079	1080	628	0.407	60000	13.7234	0.5632		
40-45	0.215	78.67	1.074	8.647	8.110	1267	630	0.406	60000	11.7733	0.4825		
45-50	0.203	79.56	1.017	9.664	9.156	1262	481	0.412	60000	8.9347	0.4152	1.590	0.090
8-9 Cup	0.186	80.88				1245	3080	0.388	60000	62.7800	1.1300		
25-30 Dup	0.20	79.77				1110	1161	0.404	60000	25.3670	0.7500		

## Appendix A. Zooplankton taxonomic nomenclature coding used at the Institute of Ocean Sciences.

Order	Kingdom:	Phylum:	Class:	Order:	Family:
Anim:::	Animalia				
Anim:Anne:Clit::	Animalia	Annelida	Clitellata		
Anim:Anne:Poly::	Animalia	Annelida	Polychaeta		
Anim:Anne:Poly:Acic:	Animalia	Annelida	Polychaeta	Aciculata	
Anim:Anne:Poly:Acic:Alciopidae	Animalia	Annelida	Polychaeta	Aciculata	Alciopidae
Anim:Anne:Poly:Acic:Amphinomidae	Animalia	Annelida	Polychaeta	Aciculata	Amphinomidae
Anim:Anne:Poly:Acic:Lopadorhynchidae	Animalia	Annelida	Polychaeta	Aciculata	Lopadorhynchidae
Anim:Anne:Poly:Acic:Nereidae	Animalia	Annelida	Polychaeta	Aciculata	Nereidae
Anim:Anne:Poly:Acic:Phyllodocidae	Animalia	Annelida	Polychaeta	Aciculata	Phyllodocidae
Anim:Anne:Poly:Acic:Polynoidae	Animalia	Annelida	Polychaeta	Aciculata	Polynoidae
Anim:Anne:Poly:Acic:Syllidae	Animalia	Annelida	Polychaeta	Aciculata	Syllidae
Anim:Anne:Poly:Acic:Tomopteridae	Animalia	Annelida	Polychaeta	Aciculata	Tomopteridae
Anim:Anne:Poly:Acic:Typhloscolecidae	Animalia	Annelida	Polychaeta	Aciculata	Typhloscolecidae
Anim:Anne:Poly:Cana:Chaetopteridae	Animalia	Annelida	Polychaeta	Canalipalpata	Chaetopteridae
Anim:Anne:Poly:Cana:Magelonidae	Animalia	Annelida	Polychaeta	Canalipalpata	Magelonidae
Anim:Anne:Poly:Cana:Canalipalpata	Animalia	Annelida	Polychaeta	Canalipalpata	Canalipalpata
Anim:Anne:Poly:Cana:Pectinariidae	Animalia	Annelida	Polychaeta	Canalipalpata	Pectinariidae
Anim:Anne:Poly:Cana:Poeobiidae	Animalia	Annelida	Polychaeta	Canalipalpata	Poeobiidae
Anim:Anne:Poly:Cana:Polygordiidae	Animalia	Annelida	Polychaeta	Canalipalpata	Polygordiidae
Anim:Anne:Poly:Cana:Spionidae	Animalia	Annelida	Polychaeta	Canalipalpata	Spionidae
Anim:Anne:Poly:Cana:Terebellidae	Animalia	Annelida	Polychaeta	Canalipalpata	Terebellidae
Anim:Arth:::	Animalia	Arthropoda			
Anim:Arth:Arac::	Animalia	Arthropoda	Arachnida		
Anim:Arth:Arac:Acar:Halacaridae	Animalia	Arthropoda	Arachnida	Acariformes	Halacaridae
Anim:Arth:Arac:Aran:	Animalia	Arthropoda	Arachnida	Araneae	
Anim:Arth:Bran:Dipl:	Animalia	Arthropoda	Branchiopoda	Diplostraca	
Anim:Arth:Bran:Dipl:Podonidae	Animalia	Arthropoda	Branchiopoda	Diplostraca	Podonidae
Anim:Arth:Inse::	Animalia	Arthropoda	Insecta		
Anim:Arth:Mala:Amph:	Animalia	Arthropoda	Malacostraca	Amphipoda	
Anim:Arth:Mala:Amph:Calliopiidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Calliopiidae
Anim:Arth:Mala:Amph:Cylopodidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Cylopodidae
Anim:Arth:Mala:Amph:Cyphocarididae	Animalia	Arthropoda	Malacostraca	Amphipoda	Cyphocarididae
Anim:Arth:Mala:Amph:Cystisomatidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Cystisomatidae
Anim:Arth:Mala:Amph:Dairellidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Dairellidae
Anim:Arth:Mala:Amph:Eusiridae	Animalia	Arthropoda	Malacostraca	Amphipoda	Eusiridae
Anim:Arth:Mala:Amph:Gammaridea	Animalia	Arthropoda	Malacostraca	Amphipoda	Gammaridea
Anim:Arth:Mala:Amph:Hyperidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Hyperidae
Anim:Arth:Mala:Amph:Lanceolidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Lanceolidae
Anim:Arth:Mala:Amph:Lestrigonidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Lestrigonidae
Anim:Arth:Mala:Amph:Lycæidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Lycæidae
Anim:Arth:Mala:Amph:Lysianassidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Lysianassidae
Anim:Arth:Mala:Amph:Melphidippidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Melphidippidae
Anim:Arth:Mala:Amph:Mimonectidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Mimonectidae
Anim:Arth:Mala:Amph:Mimoscinidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Mimoscinidae
Anim:Arth:Mala:Amph:Oedicerotidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Oedicerotidae
Anim:Arth:Mala:Amph:Opisidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Opisidae
Anim:Arth:Mala:Amph:Oxycephalidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Oxycephalidae
Anim:Arth:Mala:Amph:Paraphronimidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Paraphronimidae
Anim:Arth:Mala:Amph:Phronimidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Phronimidae
Anim:Arth:Mala:Amph:Phrosinidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Phrosinidae
Anim:Arth:Mala:Amph:Platyscelidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Platyscelidae
Anim:Arth:Mala:Amph:Scinidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Scinidae
Anim:Arth:Mala:Amph:Stilipedidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Stilipedidae
Anim:Arth:Mala:Amph:Vibiliidae	Animalia	Arthropoda	Malacostraca	Amphipoda	Vibiliidae
Anim:Arth:Mala:Cuma:	Animalia	Arthropoda	Malacostraca	Cumacea	
Anim:Arth:Mala:Cuma:Diastylidae	Animalia	Arthropoda	Malacostraca	Cumacea	Diastylidae
Anim:Arth:Mala:Cuma:Lampropididae	Animalia	Arthropoda	Malacostraca	Cumacea	Lampropididae
Anim:Arth:Mala:Cuma:Nannastacidae	Animalia	Arthropoda	Malacostraca	Cumacea	Nannastacidae
Anim:Arth:Mala:Deca:	Animalia	Arthropoda	Malacostraca	Decapoda	
Anim:Arth:Mala:Deca:Alpheoidea	Animalia	Arthropoda	Malacostraca	Decapoda	Alpheoidea
Anim:Arth:Mala:Deca:Axiidae	Animalia	Arthropoda	Malacostraca	Decapoda	Axiidae

## Appendix A Continued. Zooplankton taxonomic nomenclature coding used at the Institute of Ocean Sciences.

Order	Kingdom:	Phylum:	Class:	Order:	Family:
Anim:Arth:Mala:Deca:Callianassidae	Animalia	Arthropoda	Malacostraca	Decapoda	Callianassidae
Anim:Arth:Mala:Deca:Cancridae	Animalia	Arthropoda	Malacostraca	Decapoda	Cancridae
Anim:Arth:Mala:Deca:Crangonidae	Animalia	Arthropoda	Malacostraca	Decapoda	Crangonidae
Anim:Arth:Mala:Deca:Epialtidae	Animalia	Arthropoda	Malacostraca	Decapoda	Epialtidae
Anim:Arth:Mala:Deca:Galatheidae	Animalia	Arthropoda	Malacostraca	Decapoda	Galatheidae
Anim:Arth:Mala:Deca:Grapsidae	Animalia	Arthropoda	Malacostraca	Decapoda	Grapsidae
Anim:Arth:Mala:Deca:Hippidae	Animalia	Arthropoda	Malacostraca	Decapoda	Hippidae
Anim:Arth:Mala:Deca:Hippolytidae	Animalia	Arthropoda	Malacostraca	Decapoda	Hippolytidae
Anim:Arth:Mala:Deca:Lithodidae	Animalia	Arthropoda	Malacostraca	Decapoda	Lithodidae
Anim:Arth:Mala:Deca:Majidae	Animalia	Arthropoda	Malacostraca	Decapoda	Majidae
Anim:Arth:Mala:Deca:Oplophoridae	Animalia	Arthropoda	Malacostraca	Decapoda	Oplophoridae
Anim:Arth:Mala:Deca:Oregonidae	Animalia	Arthropoda	Malacostraca	Decapoda	Oregonidae
Anim:Arth:Mala:Deca:Paguridae	Animalia	Arthropoda	Malacostraca	Decapoda	Paguridae
Anim:Arth:Mala:Deca:Pandalidae	Animalia	Arthropoda	Malacostraca	Decapoda	Pandalidae
Anim:Arth:Mala:Deca:Panopeidae	Animalia	Arthropoda	Malacostraca	Decapoda	Panopeidae
Anim:Arth:Mala:Deca:Pasiphaeidae	Animalia	Arthropoda	Malacostraca	Decapoda	Pasiphaeidae
Anim:Arth:Mala:Deca:Penaeidae	Animalia	Arthropoda	Malacostraca	Decapoda	Penaeidae
Anim:Arth:Mala:Deca:Pinnotheridae	Animalia	Arthropoda	Malacostraca	Decapoda	Pinnotheridae
Anim:Arth:Mala:Deca:Pisidae	Animalia	Arthropoda	Malacostraca	Decapoda	Pisidae
Anim:Arth:Mala:Deca:Pleocyemata	Animalia	Arthropoda	Malacostraca	Decapoda	Pleocyemata
Anim:Arth:Mala:Deca:Porcellanidae	Animalia	Arthropoda	Malacostraca	Decapoda	Porcellanidae
Anim:Arth:Mala:Deca:Portunidae	Animalia	Arthropoda	Malacostraca	Decapoda	Portunidae
Anim:Arth:Mala:Deca:Sergestidae	Animalia	Arthropoda	Malacostraca	Decapoda	Sergestidae
Anim:Arth:Mala:Deca:Varunidae	Animalia	Arthropoda	Malacostraca	Decapoda	Varunidae
Anim:Arth:Mala:Deca:Xanthidae	Animalia	Arthropoda	Malacostraca	Decapoda	Xanthidae
Anim:Arth:Mala:Euph:	Animalia	Arthropoda	Malacostraca	Euphausiacea	
Anim:Arth:Mala:Euph:Bentheuphausiidae	Animalia	Arthropoda	Malacostraca	Euphausiacea	Bentheuphausiidae
Anim:Arth:Mala:Euph:Euphausiidae	Animalia	Arthropoda	Malacostraca	Euphausiacea	Euphausiidae
Anim:Arth:Mala:Isop:	Animalia	Arthropoda	Malacostraca	Isopoda	
Anim:Arth:Mala:Isop:Dajidae	Animalia	Arthropoda	Malacostraca	Isopoda	Dajidae
Anim:Arth:Mala:Isop:Munnopsidae	Animalia	Arthropoda	Malacostraca	Isopoda	Munnopsidae
Anim:Arth:Mala:Lept:	Animalia	Arthropoda	Malacostraca	Leptostraca	
Anim:Arth:Mala:Lept:Nebaliidae	Animalia	Arthropoda	Malacostraca	Leptostraca	Nebaliidae
Anim:Arth:Mala:Loph:	Animalia	Arthropoda	Malacostraca	Lophogastrida	
Anim:Arth:Mala:Loph:Eucopiidae	Animalia	Arthropoda	Malacostraca	Lophogastrida	Eucopiidae
Anim:Arth:Mala:Loph:Lophogastridae	Animalia	Arthropoda	Malacostraca	Lophogastrida	Lophogastridae
Anim:Arth:Mala:Mysi:Mysidae	Animalia	Arthropoda	Malacostraca	Mysida	Mysidae
Anim:Arth:Mala:Tana:	Animalia	Arthropoda	Malacostraca	Tanaidacea	
Anim:Arth:Maxi::	Animalia	Arthropoda	Maxillopoda		
Anim:Arth:Maxi:Cala:	Animalia	Arthropoda	Maxillopoda	Calanoida	
Anim:Arth:Maxi:Cala:Acartiidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Acartiidae
Anim:Arth:Maxi:Cala:Aetideidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Aetideidae
Anim:Arth:Maxi:Cala:Arietellidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Arietellidae
Anim:Arth:Maxi:Cala:Augaptilidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Augaptilidae
Anim:Arth:Maxi:Cala:Bathypontiidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Bathypontiidae
Anim:Arth:Maxi:Cala:Calanidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Calanidae
Anim:Arth:Maxi:Cala:Candaciidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Candaciidae
Anim:Arth:Maxi:Cala:Centropagidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Centropagidae
Anim:Arth:Maxi:Cala:Clausocalanidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Clausocalanidae
Anim:Arth:Maxi:Cala:Diaptomidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Diaptomidae
Anim:Arth:Maxi:Cala:Discoidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Discoidae
Anim:Arth:Maxi:Cala:Eucalanidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Eucalanidae
Anim:Arth:Maxi:Cala:Euchaetidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Euchaetidae
Anim:Arth:Maxi:Cala:Heterorhabdidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Heterorhabdidae
Anim:Arth:Maxi:Cala:Lucicutiidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Lucicutiidae
Anim:Arth:Maxi:Cala:Mecynoceridae	Animalia	Arthropoda	Maxillopoda	Calanoida	Mecynoceridae
Anim:Arth:Maxi:Cala:Megacalanidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Megacalanidae
Anim:Arth:Maxi:Cala:Metridinidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Metridinidae
Anim:Arth:Maxi:Cala:Nullosetigeridae	Animalia	Arthropoda	Maxillopoda	Calanoida	Nullosetigeridae
Anim:Arth:Maxi:Cala:Paracalanidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Paracalanidae
Anim:Arth:Maxi:Cala:Phaennidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Phaennidae

## Appendix A Continued. Zooplankton taxonomic nomenclature coding used at the Institute of Ocean Sciences

Order	Kingdom:	Phylum:	Class:	Order:	Family:
Anim:Arth:Maxi:Cala:Pontellidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Pontellidae
Anim:Arth:Maxi:Cala:Pseudodiaptomidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Pseudodiaptomidae
Anim:Arth:Maxi:Cala:Rhincalanidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Rhincalanidae
Anim:Arth:Maxi:Cala:Scolecitrichidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Scolecitrichidae
Anim:Arth:Maxi:Cala:Spinocalanidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Spinocalanidae
Anim:Arth:Maxi:Cala:Temoridae	Animalia	Arthropoda	Maxillopoda	Calanoida	Temoridae
Anim:Arth:Maxi:Cala:Tharybidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Tharybidae
Anim:Arth:Maxi:Cala:Tortanidae	Animalia	Arthropoda	Maxillopoda	Calanoida	Tortanidae
Anim:Arth:Maxi:Cycl:	Animalia	Arthropoda	Maxillopoda	Cyclopoida	
Anim:Arth:Maxi:Cycl:Oithonidae	Animalia	Arthropoda	Maxillopoda	Cyclopoida	Oithonidae
Anim:Arth:Maxi:Harp:	Animalia	Arthropoda	Maxillopoda	Harpacticoida	
Anim:Arth:Maxi:Harp:Aegisthidae	Animalia	Arthropoda	Maxillopoda	Harpacticoida	Aegisthidae
Anim:Arth:Maxi:Harp:Clytemnestridae	Animalia	Arthropoda	Maxillopoda	Harpacticoida	Clytemnestridae
Anim:Arth:Maxi:Harp:Ectinosomatidae	Animalia	Arthropoda	Maxillopoda	Harpacticoida	Ectinosomatidae
Anim:Arth:Maxi:Mons:	Animalia	Arthropoda	Maxillopoda	Monstrilloida	
Anim:Arth:Maxi:Mons:Monstrillidae	Animalia	Arthropoda	Maxillopoda	Monstrilloida	Monstrillidae
Anim:Arth:Maxi:Morm:Mormonillidae	Animalia	Arthropoda	Maxillopoda	Mormonilloida	Mormonillidae
Anim:Arth:Maxi:Poec:Clausidiidae	Animalia	Arthropoda	Maxillopoda	Poecilostomatoida	Clausidiidae
Anim:Arth:Maxi:Poec:Corycaeidae	Animalia	Arthropoda	Maxillopoda	Poecilostomatoida	Corycaeidae
Anim:Arth:Maxi:Poec:Lubbockiidae	Animalia	Arthropoda	Maxillopoda	Poecilostomatoida	Lubbockiidae
Anim:Arth:Maxi:Poec:Macrochironidae	Animalia	Arthropoda	Maxillopoda	Poecilostomatoida	Macrochironidae
Anim:Arth:Maxi:Poec:Oncaeidae	Animalia	Arthropoda	Maxillopoda	Poecilostomatoida	Oncaeidae
Anim:Arth:Maxi:Poec:Sapphirinidae	Animalia	Arthropoda	Maxillopoda	Poecilostomatoida	Sapphirinidae
Anim:Arth:Maxi:Poec:Urocopiidae	Animalia	Arthropoda	Maxillopoda	Poecilostomatoida	Urocopiidae
Anim:Arth:Maxi:Siph:	Animalia	Arthropoda	Maxillopoda	Siphonostomatoida	
Anim:Arth:Maxi:Siph:Caligidae	Animalia	Arthropoda	Maxillopoda	Siphonostomatoida	Caligidae
Anim:Arth:Maxi:Siph:Rataniidae	Animalia	Arthropoda	Maxillopoda	Siphonostomatoida	Rataniidae
Anim:Arth:Ostr::	Animalia	Arthropoda	Ostracoda		
Anim:Arth:Ostr:Halo:Halocyprididae	Animalia	Arthropoda	Ostracoda	Halocyprida	Halocyprididae
Anim:Arth:Ostr:Myod:Cypridinidae	Animalia	Arthropoda	Ostracoda	Myodocopida	Cypridinidae
Anim:Arth:Ostr:Myod:Philomedidae	Animalia	Arthropoda	Ostracoda	Myodocopida	Philomedidae
Anim:Arth:Ostr:Podo:Paradoxostomatidae	Animalia	Arthropoda	Ostracoda	Podocopida	Paradoxostomatidae
Anim:Arth:Pedu:Lepa:Lepadidae	Animalia	Arthropoda	Pedunculata	Lepadomorpha	Lepadidae
Anim:Arth:Pycn::	Animalia	Arthropoda	Pycnogonida		
Anim:Arth:Thec:	Animalia	Arthropoda		Thecostraca	Cirripedia
Anim:Chae:Sagi::	Animalia	Chaetognatha			
Anim:Chae:Sagi:Aphr:Krohnittidae	Animalia	Chaetognatha	Sagittoidea	Aphragmophora	Krohnittidae
Anim:Chae:Sagi:Aphr:Sagittidae	Animalia	Chaetognatha	Sagittoidea	Aphragmophora	Sagittidae
Anim:Chae:Sagi:Phra:Eukrohniidae	Animalia	Chaetognatha	Sagittoidea	Phragmophora	Eukrohniidae
Anim:Chor:Acti::	Animalia	Chordata	Actinopterygii		
Anim:Chor:Acti:Angu:Nemichthyidae	Animalia	Chordata	Actinopterygii	Anguilliformes	Nemichthyidae
Anim:Chor:Acti:Aulo:Paralepididae	Animalia	Chordata	Actinopterygii	Aulopiformes	Paralepididae
Anim:Chor:Acti:Belo:Scomberesocidae	Animalia	Chordata	Actinopterygii	Beloniformes	Scomberesocidae
Anim:Chor:Acti:Clup:Clupeidae	Animalia	Chordata	Actinopterygii	Clupeiformes	Clupeidae
Anim:Chor:Acti:Clup:Engraulidae	Animalia	Chordata	Actinopterygii	Clupeiformes	Engraulidae
Anim:Chor:Acti:Gadi:Gadidae	Animalia	Chordata	Actinopterygii	Gadiformes	Gadidae
Anim:Chor:Acti:Gadi:Merlucciidae	Animalia	Chordata	Actinopterygii	Gadiformes	Merlucciidae
Anim:Chor:Acti:Myct:Myctophidae	Animalia	Chordata	Actinopterygii	Myctophiformes	Myctophidae
Anim:Chor:Acti:Ophi:Bythitidae	Animalia	Chordata	Actinopterygii	Ophidiiformes	Bythitidae
Anim:Chor:Acti:Osme:Argentinidae	Animalia	Chordata	Actinopterygii	Osmeriformes	Argentinidae
Anim:Chor:Acti:Osme:Bathylagidae	Animalia	Chordata	Actinopterygii	Osmeriformes	Bathylagidae
Anim:Chor:Acti:Osme:Microstomatidae	Animalia	Chordata	Actinopterygii	Osmeriformes	Microstomatidae
Anim:Chor:Acti:Osme:Opisthoproctidae	Animalia	Chordata	Actinopterygii	Osmeriformes	Opisthoproctidae
Anim:Chor:Acti:Osme:Osmeridae	Animalia	Chordata	Actinopterygii	Osmeriformes	Osmeridae
Anim:Chor:Acti:Para:Macrouridae	Animalia	Chordata	Actinopterygii	Paracanthopterygii	Macrouridae
Anim:Chor:Acti:Perc:	Animalia	Chordata	Actinopterygii	Perciformes	
Anim:Chor:Acti:Perc:Ammodytidae	Animalia	Chordata	Actinopterygii	Perciformes	Ammodytidae
Anim:Chor:Acti:Perc:Anarhichadidae	Animalia	Chordata	Actinopterygii	Perciformes	Anarhichadidae
Anim:Chor:Acti:Perc:Bathymasteridae	Animalia	Chordata	Actinopterygii	Perciformes	Bathymasteridae
Anim:Chor:Acti:Perc:Carangidae	Animalia	Chordata	Actinopterygii	Perciformes	Carangidae
Anim:Chor:Acti:Perc:Clinidae	Animalia	Chordata	Actinopterygii	Perciformes	Clinidae

## Appendix A Continued. Zooplankton taxonomic nomenclature coding used at the Institute of Ocean Sciences

Order	Kingdom:	Phylum:	Class:	Order:	Family:
Anim:Chor:Acti:Perc:Gobiesocidae	Animalia	Chordata	Actinopterygii	Perciformes	Gobiesocidae
Anim:Chor:Acti:Perc:Gobiidae	Animalia	Chordata	Actinopterygii	Perciformes	Gobiidae
Anim:Chor:Acti:Perc:Icosteidae	Animalia	Chordata	Actinopterygii	Perciformes	Icosteidae
Anim:Chor:Acti:Perc:Pleuronectidae	Animalia	Chordata	Actinopterygii	Perciformes	Pleuronectidae
Anim:Chor:Acti:Perc:Ptilichthyidae	Animalia	Chordata	Actinopterygii	Perciformes	Ptilichthyidae
Anim:Chor:Acti:Perc:Stichaeidae	Animalia	Chordata	Actinopterygii	Perciformes	Stichaeidae
Anim:Chor:Acti:Perc:Zaproridae	Animalia	Chordata	Actinopterygii	Perciformes	Zaproridae
Anim:Chor:Acti:Perc:Zoarcoidei	Animalia	Chordata	Actinopterygii	Perciformes	Cryptacanthodidae
Anim:Chor:Acti:Pleu:Paralichthyidae	Animalia	Chordata	Actinopterygii	Pleuronectiformes	Paralichthyidae
Anim:Chor:Acti:Pleu:Pleuronectidae	Animalia	Chordata	Actinopterygii	Pleuronectiformes	Pleuronectidae
Anim:Chor:Acti:Scor:Agonidae	Animalia	Chordata	Actinopterygii	Scorpaeniformes	Agonidae
Anim:Chor:Acti:Scor:Anoplopomatidae	Animalia	Chordata	Actinopterygii	Scorpaeniformes	Anoplopomatidae
Anim:Chor:Acti:Scor:Cottidae	Animalia	Chordata	Actinopterygii	Scorpaeniformes	Cottidae
Anim:Chor:Acti:Scor:Cyclopteridae	Animalia	Chordata	Actinopterygii	Scorpaeniformes	Cyclopteridae
Anim:Chor:Acti:Scor:Hemitripteridae	Animalia	Chordata	Actinopterygii	Scorpaeniformes	Hemitripteridae
Anim:Chor:Acti:Scor:Hexagrammidae	Animalia	Chordata	Actinopterygii	Scorpaeniformes	Hexagrammidae
Anim:Chor:Acti:Scor:Liparidae	Animalia	Chordata	Actinopterygii	Scorpaeniformes	Liparidae
Anim:Chor:Acti:Scor:Scorpaenidae	Animalia	Chordata	Actinopterygii	Scorpaeniformes	Scorpaenidae
Anim:Chor:Acti:Scor:Scorpaeniformes	Animalia	Chordata	Actinopterygii	Scorpaeniformes	
Anim:Chor:Acti:Stom:Gonostomatidae	Animalia	Chordata	Actinopterygii	Stomiiformes	Gonostomatidae
Anim:Chor:Acti:Stom:Sternoptychidae	Animalia	Chordata	Actinopterygii	Stomiiformes	Sternoptychidae
Anim:Chor:Acti:Stom:Stomiidae	Animalia	Chordata	Actinopterygii	Stomiiformes	Stomiidae
Anim:Chor:Acti:Sygn:Syngnathidae	Animalia	Chordata	Actinopterygii	Syngnathiformes	Syngnathidae
Anim:Cnid:::	Animalia	Cnidaria			
Anim:Cnid:Anth:Haloclavidae	Animalia	Cnidaria	Anthozoa	Actinaria	Haloclavidae
Anim:Cnid:Hydr:::	Animalia	Cnidaria	Hydrozoa		
Anim:Cnid:Hydr:Hydr:	Animalia	Cnidaria	Hydrozoa	Hydroida	
Anim:Cnid:Hydr:Hydr:Aequoreidae	Animalia	Cnidaria	Hydrozoa	Hydroida	Aequoreidae
Anim:Cnid:Hydr:Hydr:Bougainvilliidae	Animalia	Cnidaria	Hydrozoa	Hydroida	Bougainvilliidae
Anim:Cnid:Hydr:Hydr:Calycoptidae	Animalia	Cnidaria	Hydrozoa	Hydroida	Calycoptidae
Anim:Cnid:Hydr:Hydr:Campanulariidae	Animalia	Cnidaria	Hydrozoa	Hydroida	Campanulariidae
Anim:Cnid:Hydr:Hydr:Campanulinidae	Animalia	Cnidaria	Hydrozoa	Hydroida	Campanulinidae
Anim:Cnid:Hydr:Hydr:Corynidae	Animalia	Cnidaria	Hydrozoa	Hydroida	Corynidae
Anim:Cnid:Hydr:Hydr:Laodiceidae	Animalia	Cnidaria	Hydrozoa	Hydroida	Laodiceidae
Anim:Cnid:Hydr:Hydr:Meliceritidae	Animalia	Cnidaria	Hydrozoa	Hydroida	Meliceritidae
Anim:Cnid:Hydr:Hydr:Mitrocomidae	Animalia	Cnidaria	Hydrozoa	Hydroida	Mitrocomidae
Anim:Cnid:Hydr:Hydr:Olindiidae	Animalia	Cnidaria	Hydrozoa	Hydroida	Olindiidae
Anim:Cnid:Hydr:Hydr:Pandeidae	Animalia	Cnidaria	Hydrozoa	Hydroida	Pandeidae
Anim:Cnid:Hydr:Hydr:Polyorchidae	Animalia	Cnidaria	Hydrozoa	Hydroida	Polyorchidae
Anim:Cnid:Hydr:Hydr:Porpitidae	Animalia	Cnidaria	Hydrozoa	Hydroida	Porpitidae
Anim:Cnid:Hydr:Hydr:Proboscidactylidae	Animalia	Cnidaria	Hydrozoa	Hydroida	Proboscidactylidae
Anim:Cnid:Hydr:Hydr:Rathkeidae	Animalia	Cnidaria	Hydrozoa	Hydroida	Rathkeidae
Anim:Cnid:Hydr:Hydr:Tubulariidae	Animalia	Cnidaria	Hydrozoa	Hydroida	Tubulariidae
Anim:Cnid:Hydr:Siph:	Animalia	Cnidaria	Hydrozoa	Siphonophora	
Anim:Cnid:Hydr:Siph:Agalmidae	Animalia	Cnidaria	Hydrozoa	Siphonophora	Agalmidae
Anim:Cnid:Hydr:Siph:Clausophyidae	Animalia	Cnidaria	Hydrozoa	Siphonophora	Clausophyidae
Anim:Cnid:Hydr:Siph:Diphyidae	Animalia	Cnidaria	Hydrozoa	Siphonophora	Diphyidae
Anim:Cnid:Hydr:Siph:Hippopodiidae	Animalia	Cnidaria	Hydrozoa	Siphonophora	Hippopodiidae
Anim:Cnid:Hydr:Siph:Prayidae	Animalia	Cnidaria	Hydrozoa	Siphonophora	Prayidae
Anim:Cnid:Hydr:Siph:Sphaeronectidae	Animalia	Cnidaria	Hydrozoa	Siphonophora	Sphaeronectidae
Anim:Cnid:Hydr:Trac:Aeginidae	Animalia	Cnidaria	Hydrozoa	Trachylina	Aeginidae
Anim:Cnid:Hydr:Trac:Cuninidae	Animalia	Cnidaria	Hydrozoa	Trachylina	Cuninidae
Anim:Cnid:Hydr:Trac:Geryoniidae	Animalia	Cnidaria	Hydrozoa	Trachylina	Geryoniidae
Anim:Cnid:Hydr:Trac:Halicreatidae	Animalia	Cnidaria	Hydrozoa	Trachylina	Halicreatidae
Anim:Cnid:Hydr:Trac:Rhopalonematidae	Animalia	Cnidaria	Hydrozoa	Trachylina	Rhopalonematidae
Anim:Cnid:Hydr:Trac:Solmarisidae	Animalia	Cnidaria	Hydrozoa	Trachylina	Solmarisidae
Anim:Cnid:Scyp:::	Animalia	Cnidaria	Scyphozoa		
Anim:Cnid:Scyp:Coro:Atollidae	Animalia	Cnidaria	Scyphozoa	Coronatae	Atollidae
Anim:Cnid:Scyp:Coro:Nausithoidae	Animalia	Cnidaria	Scyphozoa	Coronatae	Nausithoidae
Anim:Cnid:Scyp:Coro:Periphyllidae	Animalia	Cnidaria	Scyphozoa	Coronatae	Periphyllidae
Anim:Cnid:Scyp:Coro:Tetraplatidae	Animalia	Cnidaria	Scyphozoa	Coronatae	Tetraplatidae

## Appendix A Continued. Zooplankton taxonomic nomenclature coding used at the Institute of Ocean Sciences

Order	Kingdom:	Phylum:	Class:	Order:	Family:
Anim: Cnid: Scyp: Sema: Cyaneidae	Animalia	Cnidaria	Scyphozoa	Semaeostomeae	Cyaneidae
Anim: Cnid: Scyp: Sema: Pelagiidae	Animalia	Cnidaria	Scyphozoa	Semaeostomeae	Pelagiidae
Anim: Cnid: Scyp: Sema: Ulmaridae	Animalia	Cnidaria	Scyphozoa	Semaeostomeae	Ulmaridae
Anim: Cten: :	Animalia	Ctenophora			
Anim: Cten: Nuda: :	Animalia	Ctenophora	Nuda		
Anim: Cten: Nuda: Bero: Beroidae	Animalia	Ctenophora	Nuda	Beroida	Beroidae
Anim: Cten: Tent: Cydi: :	Animalia	Ctenophora	Tentaculata	Cydippida	
Anim: Cten: Tent: Cydi: Dryodoridae	Animalia	Ctenophora	Tentaculata	Cydippida	Dryodoridae
Anim: Cten: Tent: Cydi: Lampeidae	Animalia	Ctenophora	Tentaculata	Cydippida	Lampeidae
Anim: Cten: Tent: Cydi: Pleurobrachiidae	Animalia	Ctenophora	Tentaculata	Cydippida	Pleurobrachiidae
Anim: Cten: Tent: Loba: :	Animalia	Ctenophora	Tentaculata	Lobata	
Anim: Cten: Tent: Loba: Bolinopsidae	Animalia	Ctenophora	Tentaculata	Lobata	Bolinopsidae
Anim: Cten: Tent: Thal: Thalassocalycidae	Animalia	Ctenophora	Tentaculata	Thalassocalycida	Thalassocalycidae
Anim: Echi: :	Animalia	Echinodermata			
Anim: Echi: Aste: :	Animalia	Echinodermata	Asteroidea		
Anim: Echi: Echi: Echi: :	Animalia	Echinodermata	Echinoidea	Echinoidea	
Anim: Echi: Holo: :	Animalia	Echinodermata	Holothuroidea		
Anim: Echi: Ophi: Ophi: :	Animalia	Echinodermata	Ophiuroidea	Ophiurida	
Anim: Ecto: Gymn: :	Animalia	Ectoprocta	Gymnolaemata		
Anim: Moll: :	Animalia	Mollusca			
Anim: Moll: Biva: Phol: :	Animalia	Mollusca	Bivalvia	Pholadomyoidea	
Anim: Moll: Ceph: :	Animalia	Mollusca	Cephalopoda		
Anim: Moll: Ceph: Octo: :	Animalia	Mollusca	Cephalopoda	Octopoda	
Anim: Moll: Ceph: Octo: Bolitaenidae	Animalia	Mollusca	Cephalopoda	Octopoda	Bolitaenidae
Anim: Moll: Ceph: Octo: Octopodidae	Animalia	Mollusca	Cephalopoda	Octopoda	Octopodidae
Anim: Moll: Ceph: Teut: :	Animalia	Mollusca	Cephalopoda	Teuthida	
Anim: Moll: Ceph: Teut: Chiroteuthidae	Animalia	Mollusca	Cephalopoda	Teuthida	Chiroteuthidae
Anim: Moll: Ceph: Teut: Cranchiidae	Animalia	Mollusca	Cephalopoda	Teuthida	Cranchiidae
Anim: Moll: Ceph: Teut: Enoploteuthidae	Animalia	Mollusca	Cephalopoda	Teuthida	Enoploteuthidae
Anim: Moll: Ceph: Teut: Gonatidae	Animalia	Mollusca	Cephalopoda	Teuthida	Gonatidae
Anim: Moll: Ceph: Teut: Ommastrephidae	Animalia	Mollusca	Cephalopoda	Teuthida	Ommastrephidae
Anim: Moll: Ceph: Teut: Onychoteuthidae	Animalia	Mollusca	Cephalopoda	Teuthida	Onychoteuthidae
Anim: Moll: Gast: :	Animalia	Mollusca	Gastropoda		
Anim: Moll: Gast: Ceph: Gastropteridae	Animalia	Mollusca	Gastropoda	Cephalaspidea	Gastropteridae
Anim: Moll: Gast: Gymn: :	Animalia	Mollusca	Gastropoda	Gymnosomata	
Anim: Moll: Gast: Gymn: Clionidae	Animalia	Mollusca	Gastropoda	Gymnosomata	Clionidae
Anim: Moll: Gast: Gymn: Cliosidae	Animalia	Mollusca	Gastropoda	Gymnosomata	Cliosidae
Anim: Moll: Gast: Gymn: Pneumodermatidae	Animalia	Mollusca	Gastropoda	Gymnosomata	Pneumodermatidae
Anim: Moll: Gast: Gymn: Thliptodontidae	Animalia	Mollusca	Gastropoda	Gymnosomata	Thliptodontidae
Anim: Moll: Gast: Neot: Atlantidae	Animalia	Mollusca	Gastropoda	Neotaenioglossa	Atlantidae
Anim: Moll: Gast: Neot: Capulidae	Animalia	Mollusca	Gastropoda	Neotaenioglossa	Capulidae
Anim: Moll: Gast: Neot: Carinariidae	Animalia	Mollusca	Gastropoda	Neotaenioglossa	Carinariidae
Anim: Moll: Gast: Neot: Littorinidae	Animalia	Mollusca	Gastropoda	Neotaenioglossa	Littorinidae
Anim: Moll: Gast: Thec: :	Animalia	Mollusca	Gastropoda	Thecosomata	
Anim: Moll: Gast: Thec: Cavoliniidae	Animalia	Mollusca	Gastropoda	Thecosomata	Cavoliniidae
Anim: Moll: Gast: Thec: Cymbuliidae	Animalia	Mollusca	Gastropoda	Thecosomata	Cymbuliidae
Anim: Moll: Gast: Thec: Desmopteridae	Animalia	Mollusca	Gastropoda	Thecosomata	Desmopteridae
Anim: Moll: Gast: Thec: Limacinidae	Animalia	Mollusca	Gastropoda	Thecosomata	Limacinidae
Anim: Moll: Gast: Thec: Peraclididae	Animalia	Mollusca	Gastropoda	Thecosomata	Peraclididae
Anim: Nema: :	Animalia	Nemata			
Anim: Neme: :	Animalia	Nemertea			
Anim: Neme: Enop: Pela: Nectonemertidae	Animalia	Nemertea	Enopla	Pelagica	Nectonemertidae
Anim: Neme: Enop: Pela: Pelagonemertidae	Animalia	Nemertea	Enopla	Pelagica	Pelagonemertidae
Anim: Phor: :	Animalia	Phoronida			
Anim: Plat: Cest: :	Animalia	Platyhelminthes	Cestoda		
Anim: Plat: Trem: :	Animalia	Platyhelminthes	Trematoda		
Anim: Plat: Turb: :	Animalia	Platyhelminthes	Turbellaria		
Anim: Plat: Turb: Tric: Planariidae	Animalia	Platyhelminthes	Turbellaria	Tricladida	Planariidae
Anim: Roti: :	Animalia	Rotifera			
Anim: Sipu: :	Animalia	Sipuncula			
Anim: Tard: :	Animalia	Tardigrada			



## Appendix A Continued. Zooplankton taxonomic nomenclature coding used at the Institute of Ocean Sciences

Order	Kingdom:	Phylum:	Class:	Order:	Family:
Anim:Uroc:Appe:Copl:	Animalia	Chordata	Appendicularia	Copelata	
Anim:Uroc:Appe:Copl:Fritillaridae	Animalia	Chordata	Appendicularia	Copelata	Fritillaridae
Anim:Uroc:Appe:Copl:Oikopleuridae	Animalia	Chordata	Appendicularia	Copelata	Oikopleuridae
Anim:Uroc:Asci::	Animalia	Chordata	Asciacea		
Anim:Uroc:Thal::	Animalia	Chordata	Thaliacea		
Anim:Uroc:Thal:Doli:Doliolidae	Animalia	Chordata	Thaliacea	Doliolida	Doliolidae
Anim:Uroc:Thal:Doli:Doliopsoididae	Animalia	Chordata	Thaliacea	Doliolida	Doliopsoididae
Anim:Uroc:Thal:Salp:Salpidae	Animalia	Chordata	Thaliacea	Salpida	Salpidae
Plan:Pyrr:Dino:Noct:Noctilucaeae	Plantae	Pyrrophytophyta (Division)	Dinophyceae	Noctilucales	Noctilucaeae
Prot:Cili::	Protozoa	Ciliophora			
Prot:Cili:Cili:Olig:Tintinnidae	Protozoa	Ciliophora	Ciliatea	Oligotrichida	Tintinnidae
Prot:Phae:Phae:Atlanticellidae	Protozoa	Actinopoda	Phaeodaria	Phaeogromia	Atlanticellidae
Prot:Phae:Phae:Aulacanthidae	Protozoa	Actinopoda	Phaeodaria	Phaeocystida	Aulacanthidae
Prot:Phae:Phae:Aulosphaeridae	Protozoa	Actinopoda	Phaeodaria	Phaeosphaeria	Aulosphaeridae
Prot:Phae:Phae:Castanellidae	Protozoa	Actinopoda	Phaeodaria	Phaeogromia	Castanellidae
Prot:Phae:Phae:Challengeridae	Protozoa	Actinopoda	Phaeodaria	Phaeogromia	Challengeridae
Prot:Phae:Phae:Challengeridae	Protozoa	Actinopoda	Phaeodaria	Phaeogromia	Medusettidae
Prot:Phae:Phae:Coelodendridae	Protozoa	Actinopoda	Phaeodaria	Phaeoconchia	Coelodendridae
Prot:Phae:Phae:Challengeridae	Protozoa	Actinopoda	Phaeodaria	Phaeogromia	Challengeridae
Prot:Phae:Phae:Challengeridae	Protozoa	Actinopoda	Phaeodaria	Phaeogromia	Medusettidae
Prot:Phae:Phae:Coelodendridae	Protozoa	Actinopoda	Phaeodaria	Phaeoconchia	Coelodendridae
Prot:Phae:Phae:Concharidae	Protozoa	Actinopoda	Phaeodaria	Phaeoconchia	Concharidae
Prot:Phae:Phae:Sagosphaeridae	Protozoa	Actinopoda	Phaeodaria	Phaeosphaeria	Sagosphaeridae
Prot:Phae:Phae:Tuscaroridae	Protozoa	Actinopoda	Phaeodaria	Phaeogromia	Tuscaroridae
Prot:Prot::	Protozoa	Protozoa			
Prot:Prot:Acan:Arth:	Protozoa	Protozoa	Acantharia	Arthracanthida	
Prot:Prot:Gran:Fora:	Protozoa	Protozoa	Granuloreticulosea	Foraminiferida	
Prot:Prot:Gran:Fora:Globigerinidae	Protozoa	Protozoa	Granuloreticulosea	Foraminiferida	Globigerinidae
Prot:Prot:Heli::	Protozoa	Protozoa	Heliozoa		
Prot:Prot:Laby:Radi:	Protozoa	Protozoa	Labyrinthulea	Radiolaria	
Prot:Prot:Poly:Nass:	Protozoa	Protozoa	Polycystina	Nassellaria	
Prot:Prot:Poly:Nass:Acropyramididae	Protozoa	Protozoa	Polycystina	Nassellaria	Acropyramididae
Prot:Prot:Poly:Spum:	Protozoa	Protozoa	Polycystina	Spumellaria	
Prot:Prot:Poly:Spum:Orodendrum	Protozoa	Protozoa	Polycystina	Spumellaria	Orodendrum
Prot:Radi:Enta:Orosphaeridae	Protozoa	Actinopoda	Radiolaria	Entactinaria	Orosphaeridae
Prot:Sarc:Zoom::	Protozoa	Sarcomastigophora	Zoomastigophora		