Suomen ympäristökeskus
Finlands miljöcentral
Finnish Environment Institute

ILMATIETEEN LAITOS

# CRUISE REPORT

***R/V Aranda***

Cruise 03/2024

Combine 2 2024
*28.5.2024 – 9.6.2024*

*This report is based on preliminary data and is subject to changes.*

**Objectives of the cruise**

The COMBINE 2 2024 cruise contributed to the HELCOM Baltic Sea integrated physical, chemical and biological monitoring programme and the Finnish marine management plan. The objectives of the cruise were:

1) Long-term monitoring of hydrography, nutrient concentrations, macrozoobenthos and zooplankton
2) Monitoring of microlitter in water and sediment
3) Monitoring of radioactive substances in water and sediment
4) Deployments and/or retrievals of wave buouys, ADCPs and drifting floats in the Bothnian Bay, Bothnian Sea and at Utö
5) Retrieval of a benthic lander and sediment traps at Utö
6) Retrieval of an passive sampler for hazardous substances
7) Research on plankton respiration and sedimentation (Phytotrans-project)
8) Research on benthopelagic coupling (PhD project)

Table 1 The scientific crew

| Name | On board | Organization |
|---|---|---|
| Henrik Nygård | 28.05.2024 - 09.06.2024 | Syke |
| Panu Hänninen | 28.05.2024 - 09.06.2024 | Syke |
| Elisa Lindgren | 28.05.2024 - 09.06.2024 | IL |
| Meri Smedberg | 28.05.2024 - 09.06.2024 | IL |
| Tanja Kinnunen | 28.05.2024 - 09.06.2024 | Syke |
| Pia Varmanen | 28.05.2024 - 09.06.2024 | Syke |
| Mira Granlund | 28.05.2024 - 09.06.2024 | Syke |
| Riikka Mattsson | 28.05.2024 – 31.05.2024 | Syke |
| Niklas Trebs | 28.05.2024 - 09.06.2024 | Syke |
| Tarja Katajisto | 28.05.2024 - 09.06.2024 | Syke |
| Anna-Riina Mustonen | 28.05.2024 - 09.06.2024 | Syke |
| Jyri Tirroniemi | 31.05.2024 - 09.06.2024 | Syke |
| Anna Kangas | 28.05.2024 – 31.05.2024 | Syke |
| Jouko Rissanen | 28.05.2024 - 09.06.2024 | Syke |
| Anne-Mari Lehto | 28.05.2024 – 31.05.2024 | Syke |
| Annaliina Skyttä | 28.05.2024 - 09.06.2024 | Syke |
| Niko Kallio | 28.05.2024 – 31.05.2024 | Syke |
| Kristian Spilling | 28.05.2024 – 31.05.2024 | Syke |
| Josephin Lemke | 28.05.2024 – 31.05.2024 | Syke |
| Sami Kielosto | 31.05.2024 - 09.06.2024 | Syke |
| Andriana Koutsandrea | 28.05.2024 - 09.06.2024 | Novia/ÅA |
| Nayana Banneheka | 28.05.2024 - 09.06.2024 | Novia |
| Jarkko Moberg | 28.05.2024 – 31.05.2024 | Syke |

## Cruise Route

The cruise started in Helsinki on the 28th of May 2024 and first headed towards the easternmost sampling stations in the Gulf of Finland. After sampling in the Gulf of Finland a stop was made in Hanko to exchange some personnel. The cruise continued to Utö to retrieve the benthic lander and sediment traps and deploy wave buouys and an ADCP. After Utö the sampling continued in the Northern Baltic Proper and onwards to the Åland Sea. In the Gulf of Bothnia, sampling was done on the western side on the way north and the eastern side on the return south. Finally, the stations in the Archipelago Sea was sampled before heading back towards Helsinki. On the way back LL9 was revisited. Before Helsinki, the passive sampler was retrieved. The cruise ended in Helsinki on the 9th of June 2024. The full cruise route is shown in Figure 1.

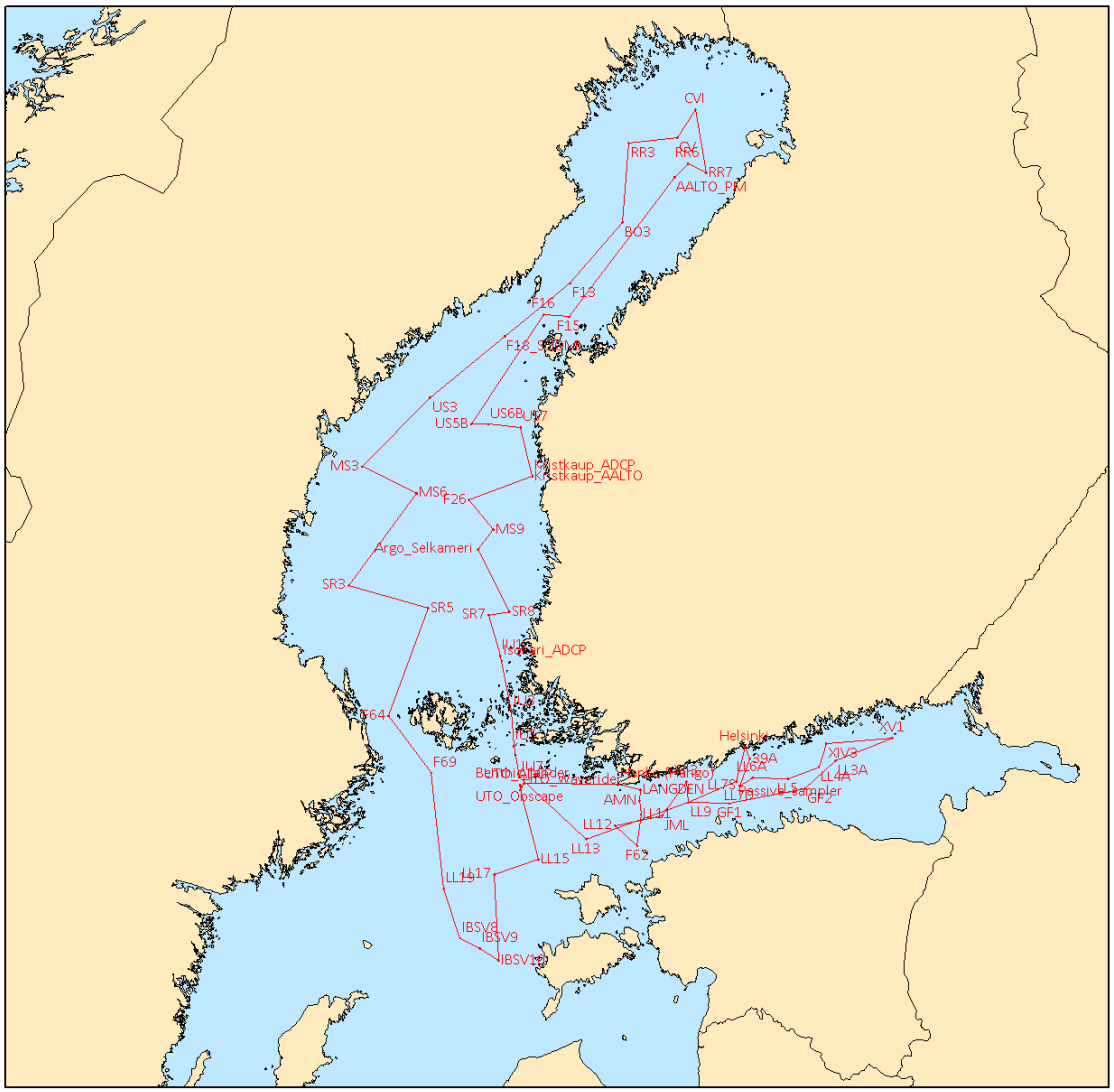


Figure 1. COMBINE 2 2024 cruise route.

## Sampling

A list of sampled stations and samples collected during the cruise is found in Annex 1. At each station a CTD profile was taken and when water samples were collected, the nutrient concentrations ($NO_2$, $NO_x$, $NH_3$, $PO_4$, $SiO_4$, Total N, Total P), chlorophyll-*a*, $O_2$ and pH were measured at standard

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depths. If anoxic conditions were observed, also $H_2S$ was measured at the standard depth where no oxygen was found. The standard sampling depths were 1, 5, 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100, 125, 150, 175, 200, 225 and 250 m, depending on the sampling station's depth. A water sample 1 m above the sea bottom was also taken. Chlorophyll-*a* samples were taken at 1, 5, 10, 15 and 20 m depth. Zooplankton samples were collected using a 100 µm WP-2 net and macrozoobenthos were collected with van Veen grab. Sediment samples were collected using Gemax-corer. Microlitter sampling in surface water was carried out towing a Manta-net for a distance of 1500 m. Secchi depth was recorded when station visits occurred during daytime.

**Observations**

CTD profiles from selected stations can be found in Annex 2. Results for temperature, salinity, oxygen, hydrogen sulphide and nutrient parameters from the standard sampling depths at selected stations can be found in Annex 3, with a comparison to average values measured in the same season since 2000. When referring to average values in the following section, the reference period is 2000-2023, using station specific measurements done in May and June.

*Hydrography*
The warm period in end of May 2024 resulted in high surface temperatures. At almost every sampling station the surface temperature was well above te average at this time of the year. The warmer layer was generally restricted to the upper 10 m. Deeper down the temperature was generally close to the average values or slightly below. In the Northern Baltic Proper the water mass below 70 m was warmer than on average.
In the Gulf of Finland no clear halocline was observed, but the salinity gradually increased towards the bottom. At LL9, the bottom water salinity was 10.0, among the highest values measured during this time of the year st the station. However, when revisiting LL9 on the way back, the bottom salinity was 8.7, indicating that the high salinity was part of a short-term event. In the Northern Baltic Proper, salinity was above the average value in the upper 50 m, whereas deeper down it was close to the average salinity. The halocline situated between 60 and 80 m. In the Bothnian Sea, salinity was generally higher than average, however at some sampling stations, e.g. US5B and F26 the top 20 m were fresher than average. In the Bothnian Bay, the salinity in the surface water was well below the average values.

*Nutrient concentrations*
In the Gulf of Finland and the Northern Baltic Proper, the phosphate concentrations in the surface water was close to the average levels. Closer to the bottom, and below the halocline in the Northern Baltic Proper, the phosphate concentrations were generally above the average values. At LL9 very high phosphate concentration was recorded in the bottom water (7.1 µmol/l), but clearly lower (2.7 µmol/l) on the way back. At F64 in the Åland Sea, clearly elevated phosphate concentrations were observed between 50 and 125 m depth. In the Gulf of Bothnia phosphate concentrations were generally low, however above average concentrations in the deeper water.
Dissolved nitrogen parameters were generally depleted in the surface waters. Only in the Bothnian Bay dissolved nitrogen was still available in the surface water. In the Northern Baltic Proper ammonium concentrations were well above the average values below the halocline.
Silicate concentrations were generally close to the average values at this time of the year, but elevated silicate concentrations were observed in the Bothnian Bay and below the halocline in the Northern Baltic Proper.

*Oxygen conditions*
In the Gulf of Finland, the oxygen conditions in the bottom water was generally below the average values and anoxic conditions and hydrogen sulphide was regularly found at stations deeper than 70 m. At LL9 hydrogen sulphide concentrations of 63.8 µmol/l was recorded, clearly the highest value measured at this station. However, when revisiting LL9 ten days later no hydrogen sulphide was observed. Overall, oxygen conditions in the Gulf of Finland were poorer than the previous year. In the Northern Baltic Proper, water below 70 m were anoxic and hydrogen sulphide was present.

At LL15, LL17 and LL19 hydrogen sulphide concetrations in the near-bottom water exceeded 40 µmol/l. A similar pattern in oxygen conditions was seen at the IBSV stations, although at IBSV10 no hydrogen sulphide was recorded. In the Åland Sea, Bothnian Sea, the Quark and the Bothnian Bay, the water was well oxygenated throughout the water mass.

*Other work*
Zoobenthos and zooplankton samples were taken according to the monitoring plan and taxonomic analyses of the samples will be carried out. Microlitter samples, collected both from surface water and sediment, were frozen and transported back to the laboratory for further analyses. The water and sediment samples for analyses of radioactive substances were successfully taken and will be analysed at a later stage by the Radiation and Nuclear Safety Authority (STUK). The benthic lander and sediment traps were retrieved from the Utö area. All wave buouy and ADCP installations were successfully made and two Argo floats were deployed. The passive sampler for hazardous substances was retrieved and the samplers have been sent for analyses of pharmaceuticals among other substances. Zooplankton samples were taken to study benthopelagic coupling. Zooplankton and benthic larvae were sorted onboard and further analyses of e.g. fatty acid composition will be carried out on the samples. Water samples were collected once per day for the Phytotrans-project and samples of suspended material and fast settling material were taken and filtered. Plankton respiration was measured onboard and further analyses will be carried out in the labotatory.

## Conclusions

The warm period in May 2024 resulted in a clear stratification of the surface water, with a steep thermocline at 5-10 m, depending on station. In the northern area of the Bothnian Bay this surface water layer was also very fresh, likely as a result of meltwater inflow from rivers. Phytoplankton production was still high in the Bothnian Bay.
The oxygen conditions were poor in the Gulf of Finland and high hydrogen sulphide concentrations were observed at many sampling stations. The change compared to the measurements on the spring monitoring cruise a month earlier was obvious, as at most stations in the Gulf of Finland the bottom water was well oxygenated in April 2024. When revisiting LL9 on the way back, the condition had changed again and high hydrogen sulphide concentrations were no longer observed, highlighting the very dynamic conditions in the the Gulf of Finland.
Regarding nutrient conditions, excess phosphate were still available in the surface waters in the Gulf of Finland and the Northern Baltic Proper, indicating a high risk for cyanobacterial blooms during the summer, if weather conditions are favorable.

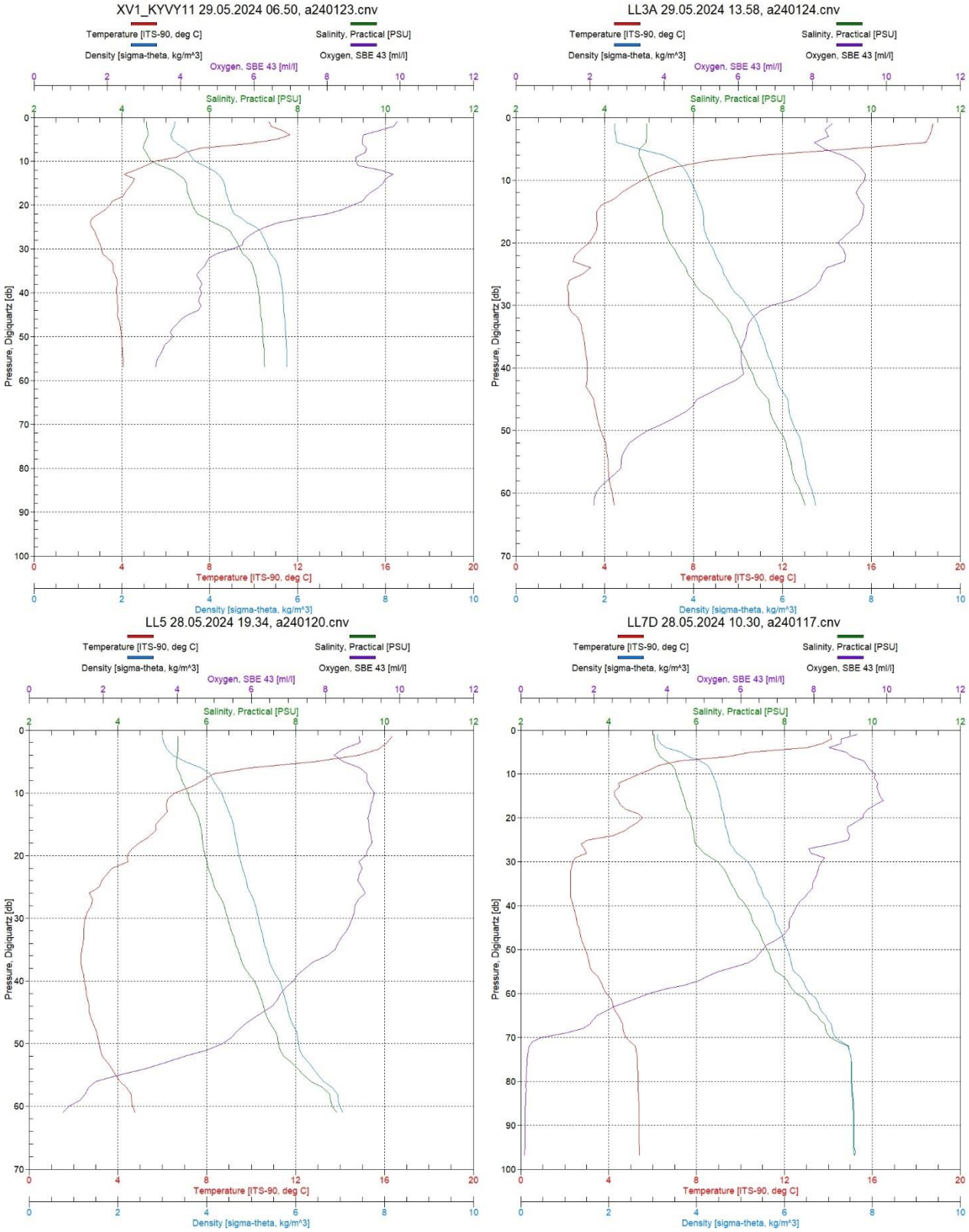
Annex 1. List of sampled stations of the cruise

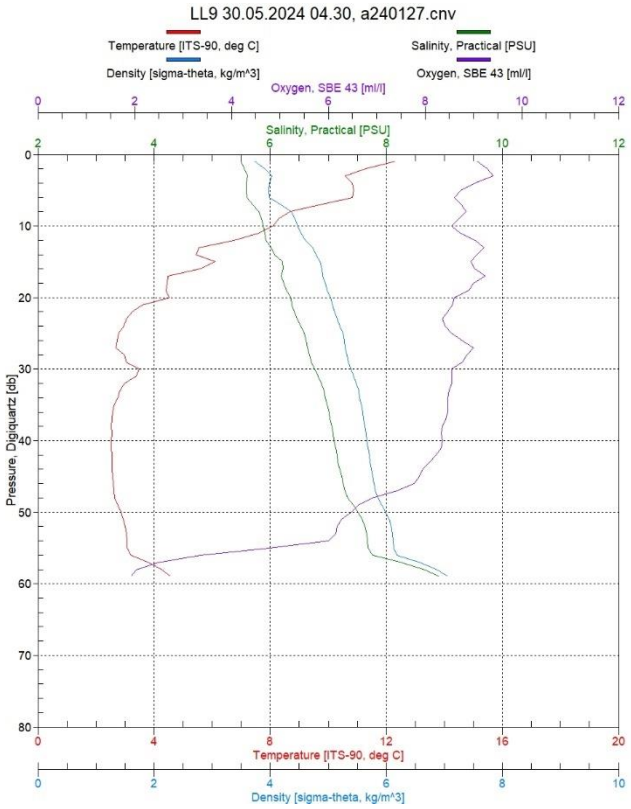
| INDEX | STATION | latitude | longitude | depth | DATE | time | ctd | pH | ox | nu | zo | be | chl | secchi |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Helsinki | Helsinki | 60.16180 | 24.90158 | | 2024-05-28 | 05.26 | | | | | | | | |
| 2024010116 | 39A | 60.06690 | 24.98042 | 42 | 2024-05-28 | 08.00 | x | x | x | x | | | x | x |
| 2024010117 | LL7D | 59.84650 | 24.83788 | 101 | 2024-05-28 | 10.41 | x | | x | x | | | | x |
| 2024010118 | LL7S | 59.85020 | 24.83035 | 77 | 2024-05-28 | 12.27 | x | x | x | x | x | x | x | x |
| 2024010119 | LL6A | 59.91682 | 25.03058 | 73 | 2024-05-28 | 16.36 | x | x | x | x | | x | x | x |
| 2024010120 | LL5 | 59.91692 | 25.59675 | 67 | 2024-05-28 | 19.38 | x | x | x | x | | x | x | |
| 2024010121 | LL4A | 60.01658 | 26.08062 | 59 | 2024-05-28 | 22.59 | x | x | x | x | | x | x | |
| 2024010122 | XIV3 | 60.20313 | 26.19287 | 77 | 2024-05-29 | 02.24 | x | x | x | x | | | x | x |
| 2024010123 | XV1 | 60.25000 | 27.24692 | 64 | 2024-05-29 | 06.56 | x | x | x | x | x | x | x | x |
| 2024010124 | LL3A | 60.06728 | 26.34670 | 68 | 2024-05-29 | 14.02 | x | x | x | x | x | x | x | x |
| 2024010125 | GF2 | 59.84020 | 25.86595 | 84 | 2024-05-29 | 19.58 | x | x | x | x | | x | x | |
| 2024010126 | GF1 | 59.70477 | 24.68330 | 84 | 2024-05-30 | 01.01 | x | x | x | x | x | x | x | x |
| 2024010127 | LL9 | 59.70010 | 24.03022 | 66 | 2024-05-30 | 04.37 | x | x | x | x | x | x | x | x |
| 2024010128 | XII3 | 59.86422 | 23.98580 | 35 | 2024-05-30 | 08.28 | x | x | x | x | | | x | x |
| 2024010129 | JML | 59.58188 | 23.62733 | 80 | 2024-05-30 | 11.28 | x | x | x | x | | x | x | x |
| 2024010130 | LL12 | 59.48347 | 22.89660 | 83 | 2024-05-30 | 15.42 | x | x | x | x | x | x | x | x |
| 2024010131 | F62 | 59.33353 | 23.26348 | 97 | 2024-05-30 | 19.55 | x | x | x | x | | | x | |
| 2024010132 | LL11 | 59.58347 | 23.29652 | 67 | 2024-05-30 | 22.45 | x | x | x | x | | x | x | |
| 2024010133 | AMN | 59.69037 | 23.25742 | 55 | 2024-05-31 | 00.58 | x | x | x | x | | x | x | x |
| 2024010134 | LANGDEN | 59.77680 | 23.26287 | 57 | 2024-05-31 | 02.49 | x | x | x | x | x | x | x | x |
| Hanko (Hango) | Hanko (Hango) | 59.81098 | 22.90388 | | 2024-05-31 | 06.52 | | | | | | | | |
| 2024010135 | Benthic_lander | 59.76937 | 21.42078 | 63 | 2024-05-31 | 18.32 | | | | | | | | |
| 2024010136 | UTO_Obscape | 59.73808 | 21.38077 | 74 | 2024-05-31 | 22.09 | | | | | | | | |
| 2024010137 | UTO_ADCP | 59.75518 | 21.35463 | 72 | 2024-06-01 | 00.33 | | | | | | | | |
| 2024010138 | UTO_Waverider | 59.71613 | 21.36832 | 71 | 2024-06-01 | 03.33 | | | | | | | | |
| 2024010139 | LL15 | 59.18315 | 21.74687 | 131 | 2024-06-01 | 08.34 | x | x | x | x | | x | x | x |
| 2024010140 | LL17 | 59.03317 | 21.07923 | 170 | 2024-06-01 | 12.49 | x | x | x | x | x | x | x | x |
| 2024010141 | IBSV10 | 58.35007 | 21.24628 | 79 | 2024-06-01 | 19.50 | x | x | x | x | x | x | x | |
| 2024010142 | IBSV9 | 58.43323 | 20.94727 | 89 | 2024-06-01 | 23.18 | x | x | x | x | | x | x | |
| 2024010143 | IBSV8 | 58.50012 | 20.63028 | 97 | 2024-06-02 | 01.42 | x | x | x | x | | x | x | x |
| 2024010144 | LL19 | 58.88070 | 20.31083 | 169 | 2024-06-02 | 05.29 | x | x | x | x | | x | x | x |
| 2024010145 | F69 | 59.78323 | 19.93008 | 191 | 2024-06-02 | 13.15 | x | x | x | x | | x | x | x |
| 2024010146 | F64 | 60.18903 | 19.14250 | 287 | 2024-06-02 | 18.36 | x | x | x | x | x | x | x | |
| 2024010147 | SR5 | 61.08330 | 19.57960 | 126 | 2024-06-03 | 06.12 | x | x | x | x | x | x | x | x |
| 2024010148 | SR3 | 61.18333 | 18.22998 | 72 | 2024-06-03 | 14.50 | x | x | x | x | | x | x | x |
| 2024010149 | MS6 | 61.98377 | 19.16370 | 73 | 2024-06-03 | 21.02 | x | x | x | x | | x | x | |
| 2024010150 | MS3 | 62.13445 | 18.16297 | 85 | 2024-06-04 | 01.51 | x | x | x | x | | x | x | x |
| 2024010151 | US3 | 62.75875 | 19.19555 | 178 | 2024-06-04 | 08.15 | x | x | x | x | | x | x | x |
| 2024010152 | F18_SUOMI | 63.31425 | 20.39998 | 95 | 2024-06-04 | 15.18 | x | x | x | x | | x | x | x |
| 2024010153 | F13 | 63.78333 | 21.47922 | 64 | 2024-06-04 | 21.12 | x | x | x | x | | | x | |
| 2024010154 | BO3 | 64.30198 | 22.34338 | 110 | 2024-06-05 | 01.47 | x | x | x | x | x | x | x | x |
| 2024010155 | RR3 | 64.93370 | 22.34590 | 94 | 2024-06-05 | 08.32 | x | x | x | x | | x | x | x |
| 2024010156 | CV | 65.00035 | 23.24620 | 86 | 2024-06-05 | 12.40 | x | x | x | x | | x | x | x |
| 2024010157 | CVI | 65.23365 | 23.56282 | 69 | 2024-06-05 | 15.23 | x | x | x | x | x | x | x | x |
| 2024010158 | RR7 | 64.73397 | 23.82578 | 37 | 2024-06-05 | 21.42 | x | x | x | x | | | x | |
| 2024010159 | RR6 | 64.80042 | 23.47962 | 86 | 2024-06-05 | 23.37 | x | x | x | x | | x | x | |
| 2024010160 | AALTO_PM | 64.68483 | 23.24040 | 69 | 2024-06-06 | 01.58 | | | | | | | | |
| 2024010161 | F15 | 63.51682 | 21.51292 | 48 | 2024-06-06 | 11.29 | x | x | x | x | | x | x | x |
| 2024010162 | F16 | 63.51685 | 21.06285 | 48 | 2024-06-06 | 13.52 | x | x | x | x | x | x | x | x |
| 2024010163 | US5B | 62.58625 | 19.96915 | 222 | 2024-06-06 | 22.08 | x | x | x | x | x | x | x | |
| 2024010164 | US6B | 62.60013 | 20.26312 | 82 | 2024-06-07 | 03.28 | x | x | x | x | | x | x | x |
| 2024010165 | US7 | 62.60018 | 20.82968 | 28 | 2024-06-07 | 07.21 | x | x | x | x | | | x | x |
| 2024010166 | Kristkaup_ADCP | 62.22478 | 21.10720 | 22 | 2024-06-07 | 10.14 | | | | | | | | x |
| 2024010167 | Kristkaup_AALTO | 62.22195 | 21.10810 | 22 | 2024-06-07 | 11.06 | | | | | | | | |
| 2024010168 | F26 | 61.98352 | 20.06305 | 138 | 2024-06-07 | 15.17 | x | x | x | x | | x | x | x |
| 2024010169 | MS9 | 61.76670 | 20.53058 | 101 | 2024-06-07 | 18.34 | x | x | x | x | | x | x | x |
| 2024010170 | Argo_Selkameri | 61.59992 | 20.30933 | 121 | 2024-06-07 | 20.53 | | | | | | | | |
| 2024010171 | SR8 | 61.12657 | 20.93010 | 48 | 2024-06-08 | 00.27 | x | x | x | x | | | x | |
| 2024010172 | SR7 | 61.08352 | 20.59655 | 78 | 2024-06-08 | 02.13 | x | x | x | x | | x | x | x |
| 2024010173 | IU1 | 60.76685 | 20.84672 | 33 | 2024-06-08 | 05.16 | x | x | x | x | | | x | x |
| 2024010174 | Isokari_ADCP | 60.72688 | 20.88153 | 39 | 2024-06-08 | 06.41 | | | | | | | | |
| 2024010175 | IU3 | 60.33333 | 21.11332 | 50 | 2024-06-08 | 10.11 | x | x | x | x | | x | x | x |
| 2024010176 | IU5 | 60.05818 | 21.19840 | 90 | 2024-06-08 | 13.28 | x | x | x | x | | x | x | x |
| 2024010177 | IU7 | 59.81517 | 21.33667 | 93 | 2024-06-08 | 16.48 | x | x | x | x | x | | x | x |
| 2024010178 | LL13 | 59.36685 | 22.46410 | 102 | 2024-06-08 | 23.13 | x | x | x | x | | | x | |
| 2024010179 | LL9 | 59.70012 | 24.03023 | 66 | 2024-06-09 | 05.15 | x | x | x | x | | | x | x |

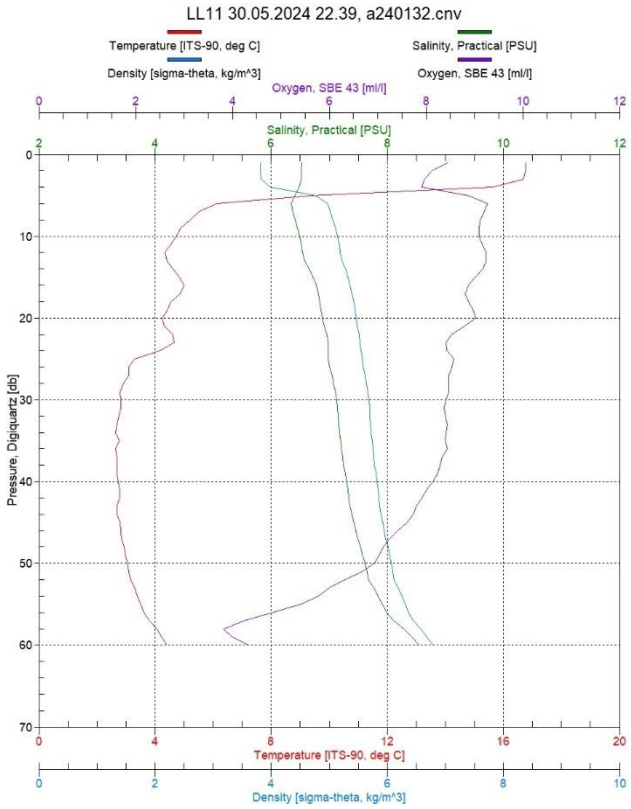
| INDEX | STATION | latitude | longitude | depth | DATE | time | ctd | pH | ox | nu | zo | be | chl | secchi |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2024010180 | Passive_sampler | 59.88413 | 24.78013 | 43 | 2024-06-09 | 08.37 | | | | | | | | |
| Helsinki | Helsinki | 60.16182 | 24.90157 | | 2024-06-09 | 11.21 | | | | | | | | |
| Parameters: ox = oxygen, nu = nutrients, zo = zooplankton, be = benthos, chl = chlorophyll a | | | | | | | | | | | | | | |

Annex 2. CTD profiles, including oxygen profiles, from selected stations.

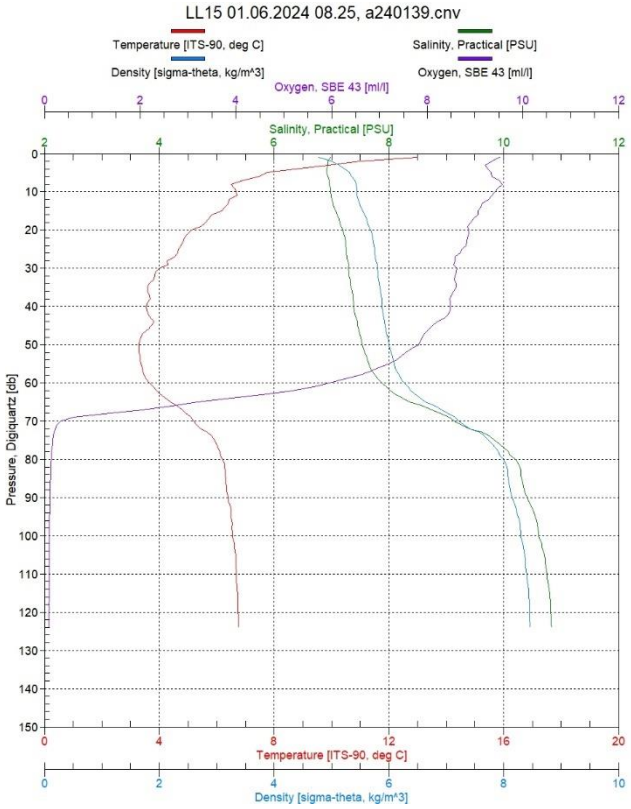
Gulf of Finland (stations XVI, LL3A, LL5, LL7D, LL9 and LL11):

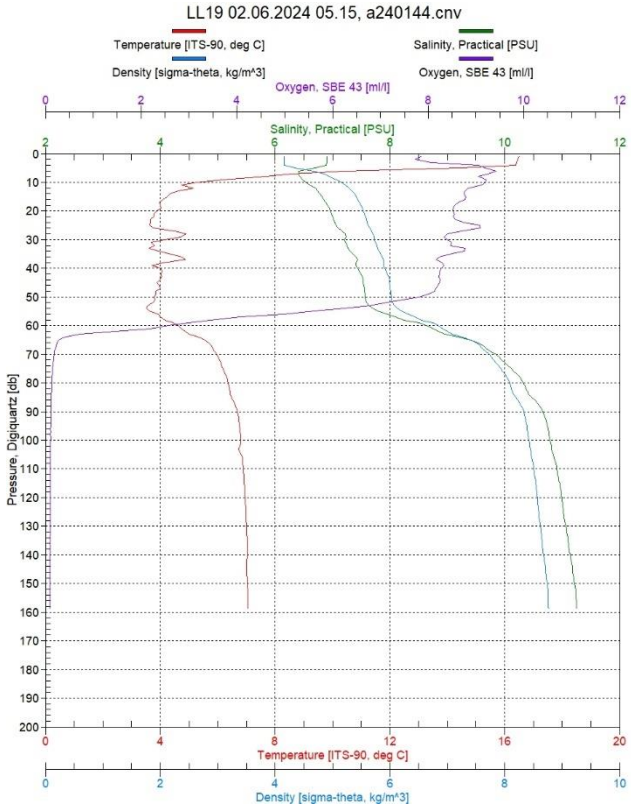




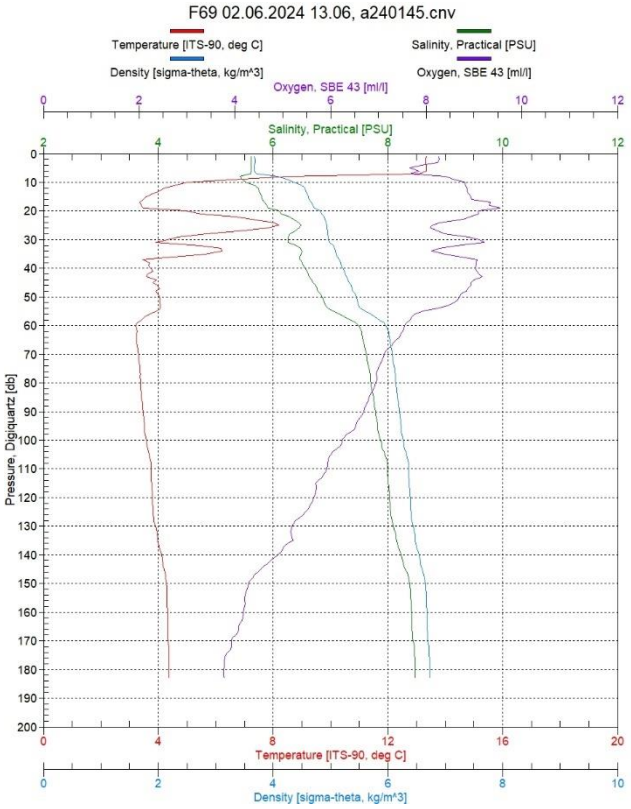



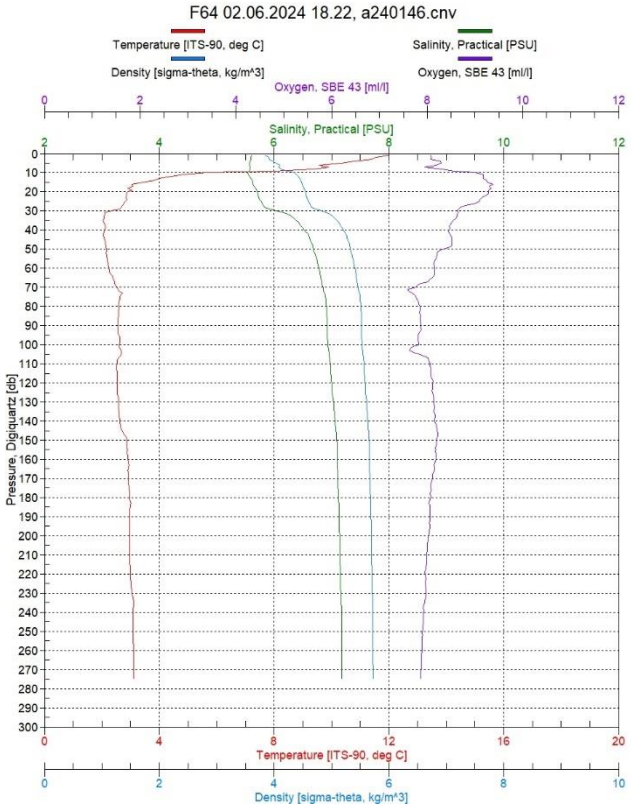

Northern Baltic Proper (stations LL15 and LL19):



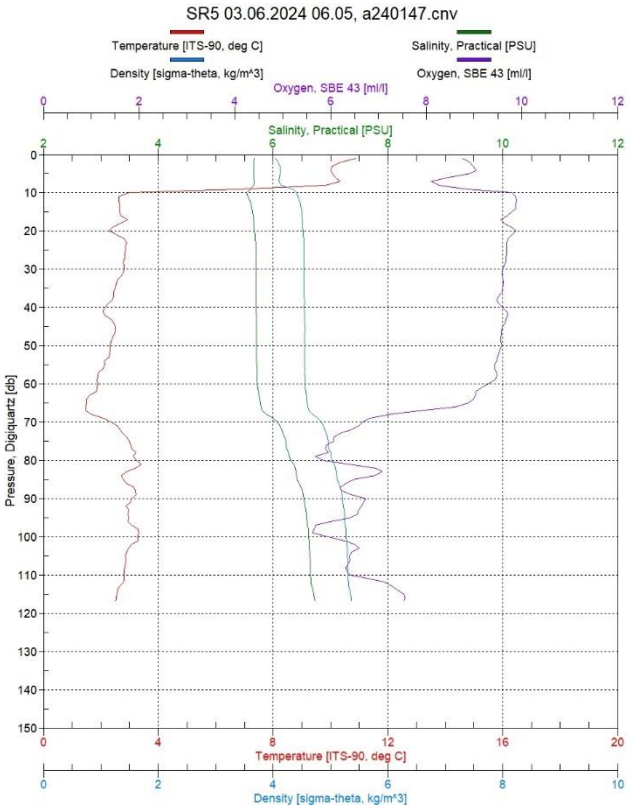



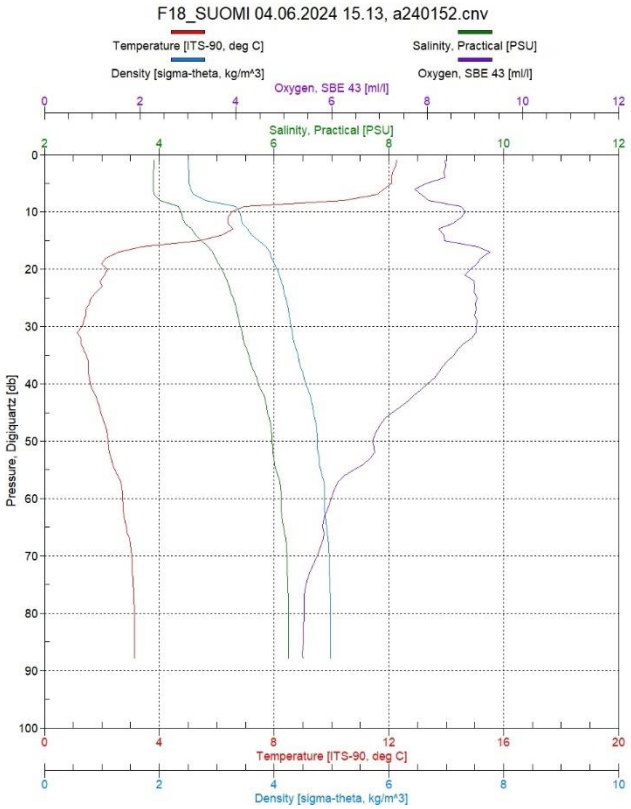
Åland Sea (stations F69 and F64):

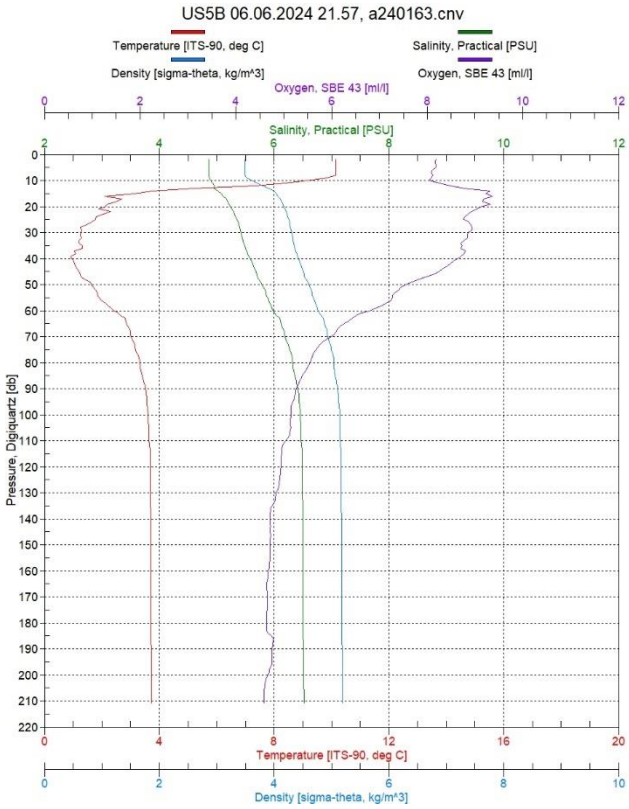


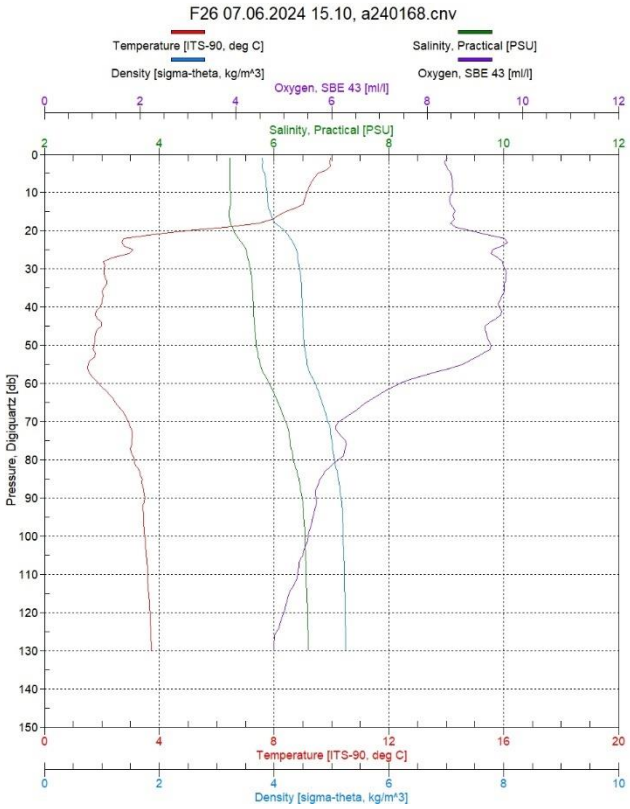




Bothnian Sea (stations SR5, F18_SUOMI, US5B and F26):

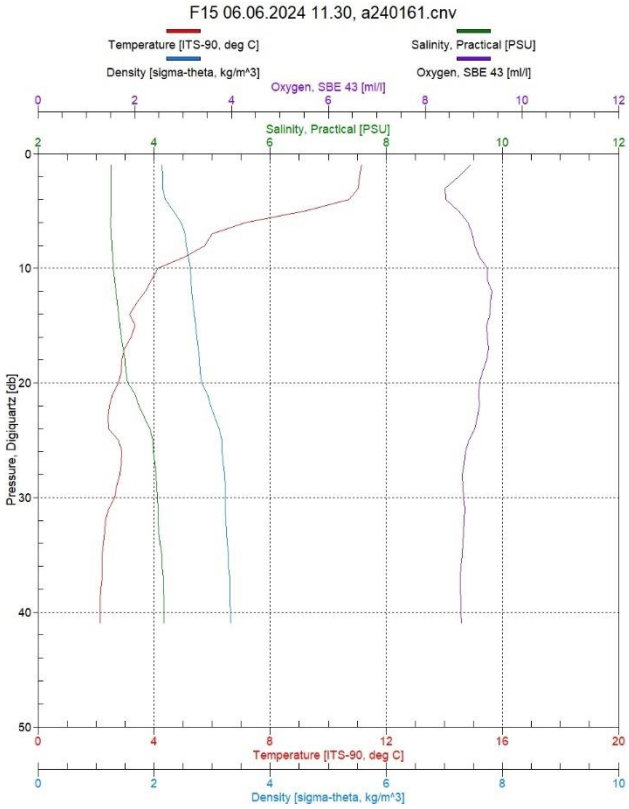


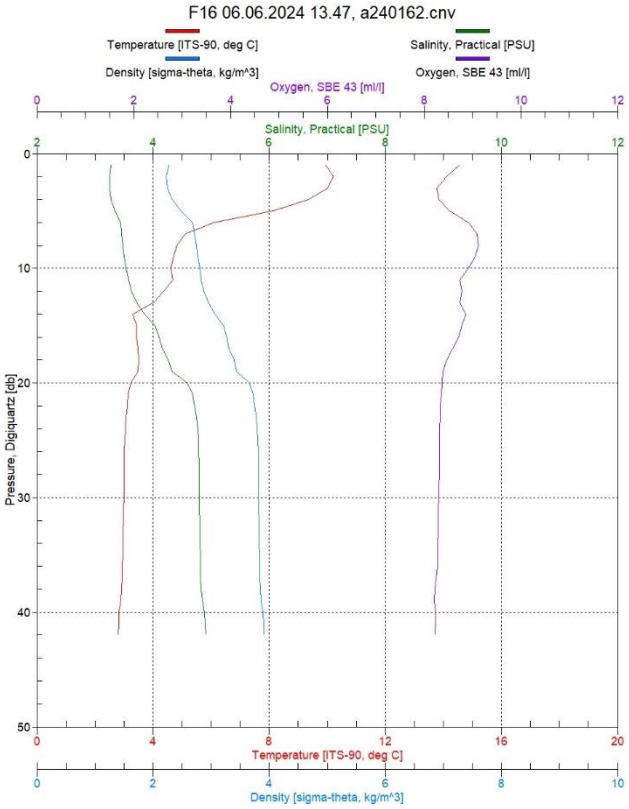





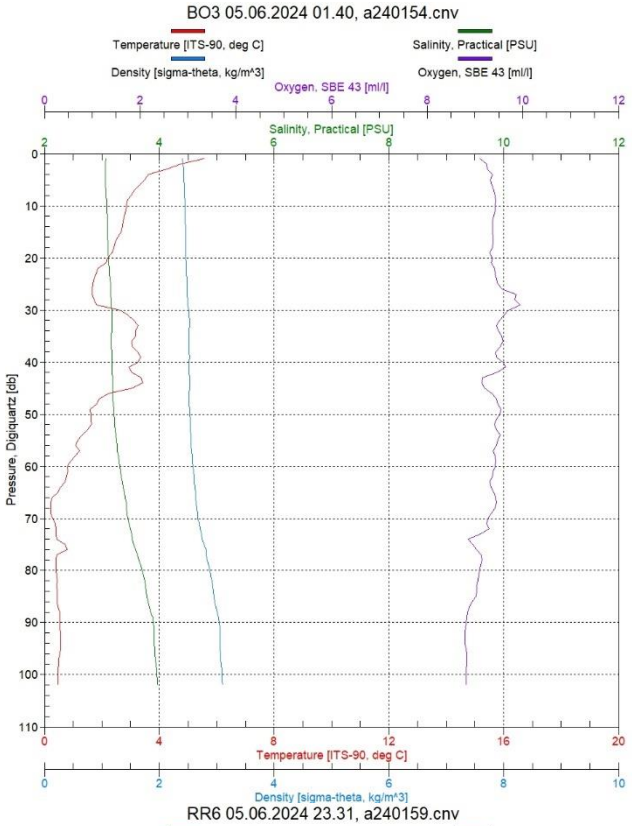



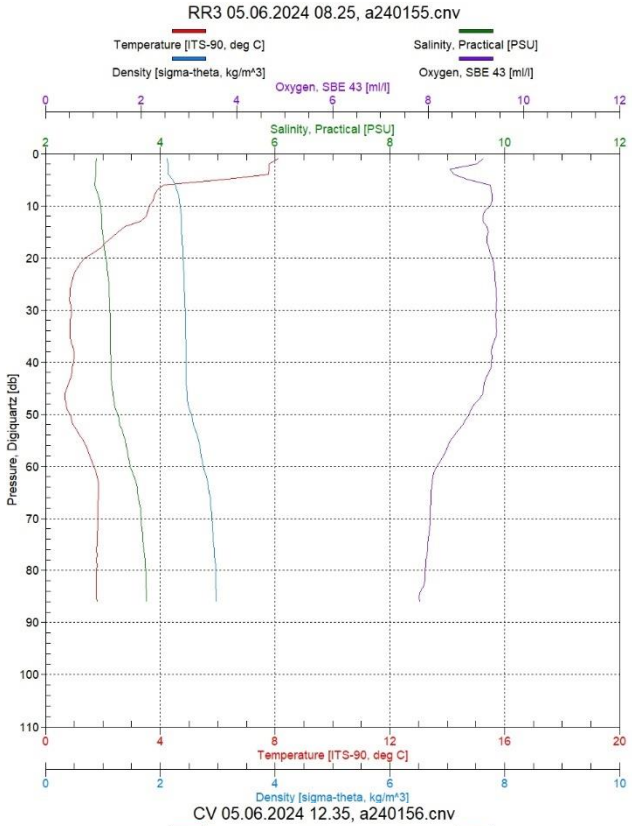

The Quark (stations F16 and F15):

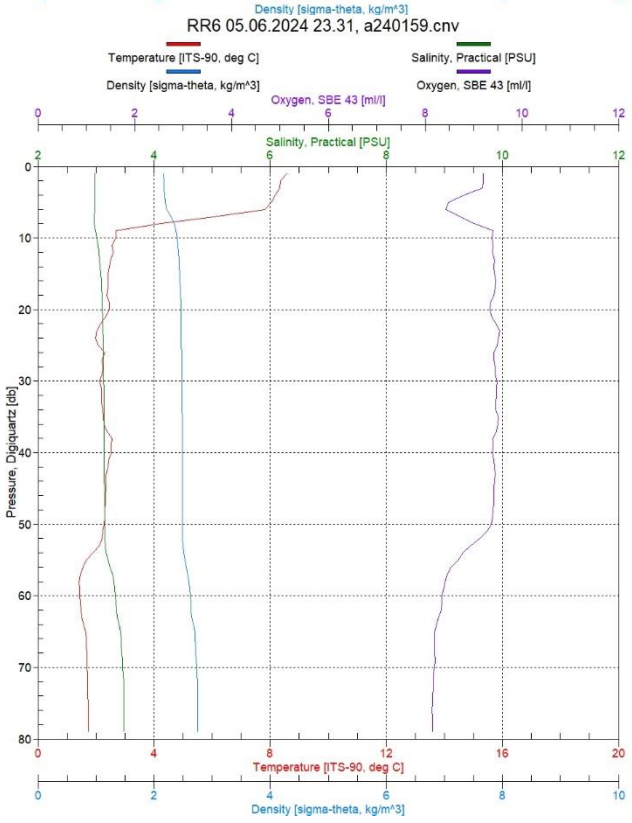


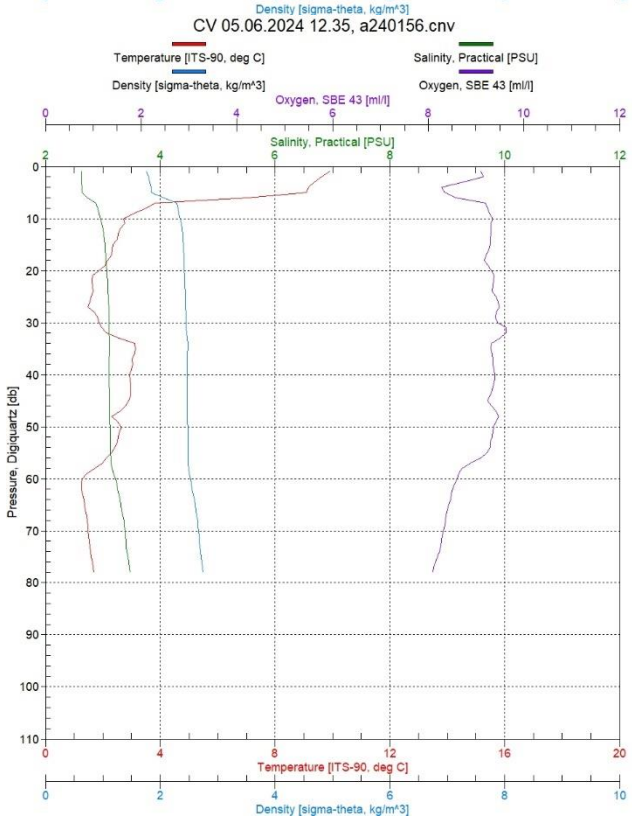



Bothnian Bay (BO3, RR3, RR6 and CV):

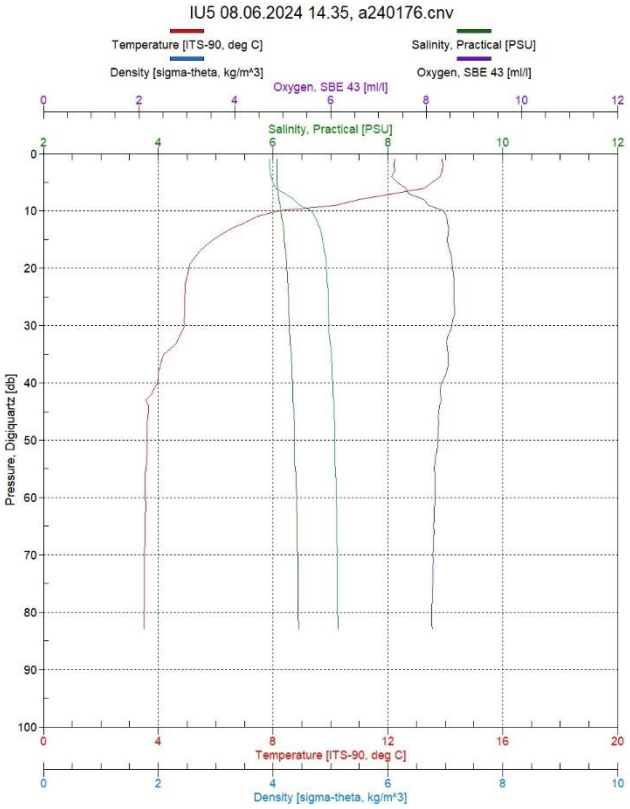


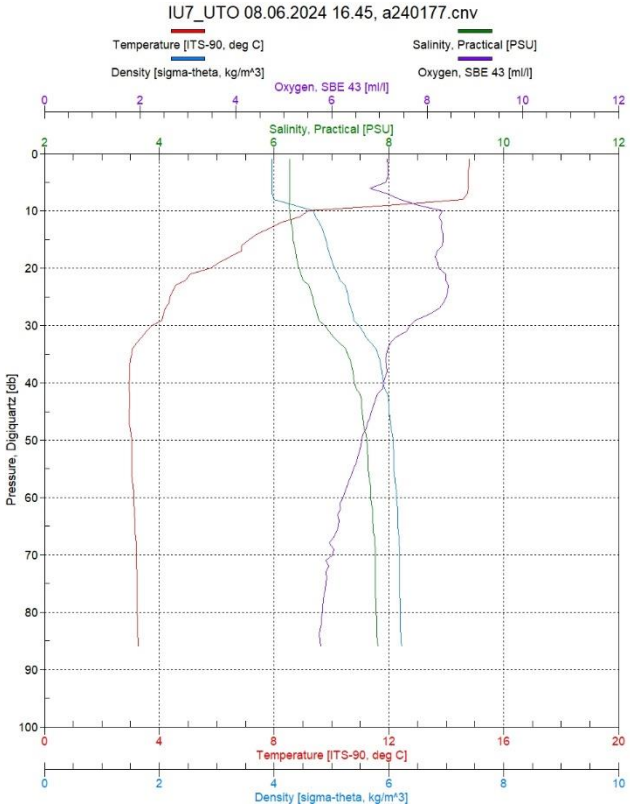



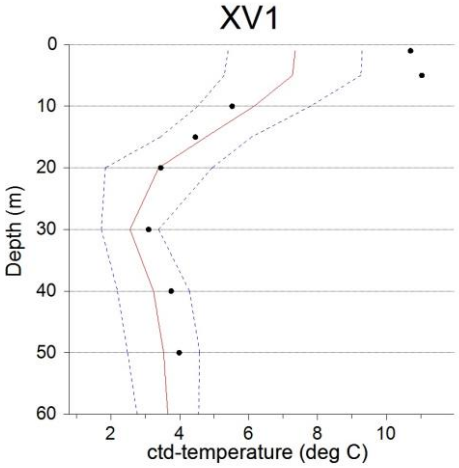
Archipelago Sea (stations IU5 and IU7):

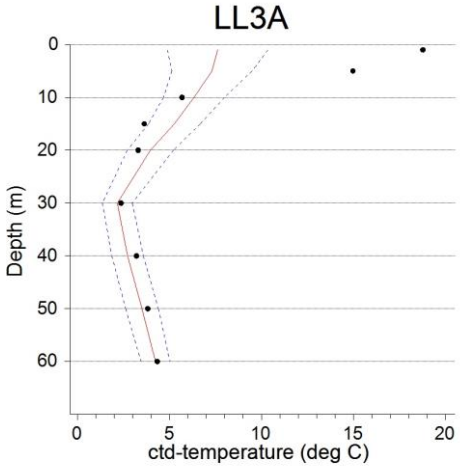


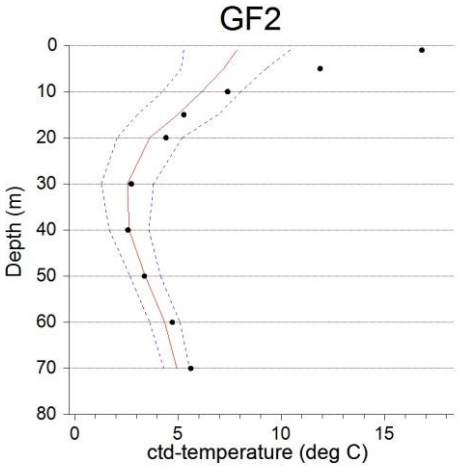



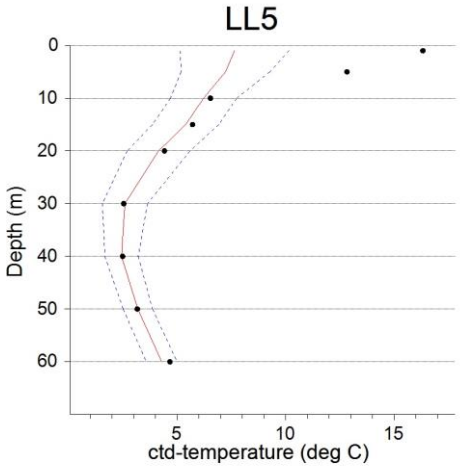
Annex 3. Selected variables at the stations XV1, LL3A, GF2, LL5, LL6A, LL7S, GF1, LL9, JML, LL11, LL12, F62, AMN, LL15, LL17, LL19, F69, F64, F13, BO3, RR3, CV, CVI, RR6, F15, F16, SR5, SR3, MS6, MS3, US3, US5B, US6B, US7, F26, MS9, SR7, IU1, IU3, IU5 and IU7. Mean (red solid line) and standard deviation (blue dotted lines) represent the data collected at the same time of season (May-June) since the year 2000.

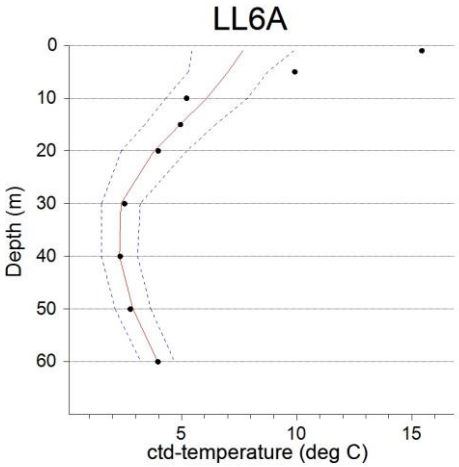
Temperature:

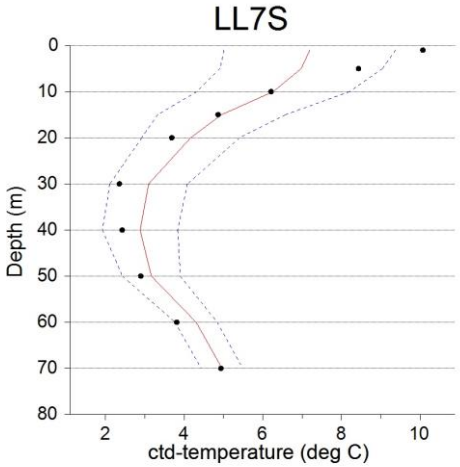


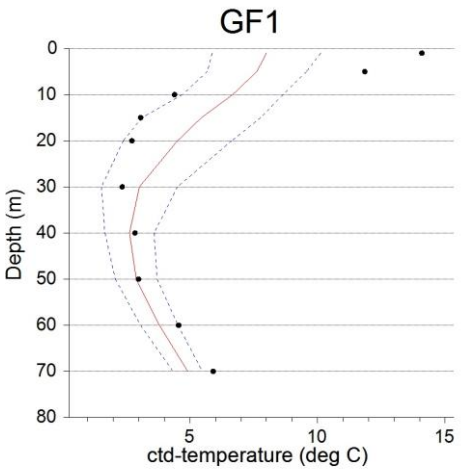



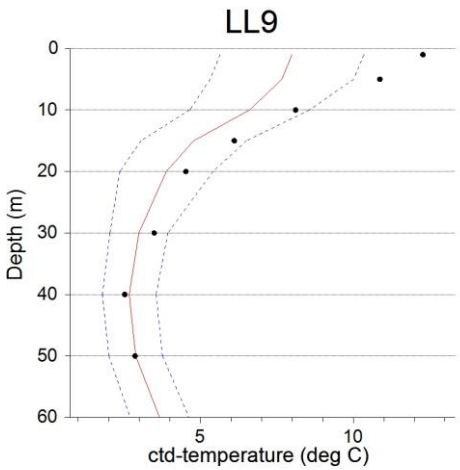



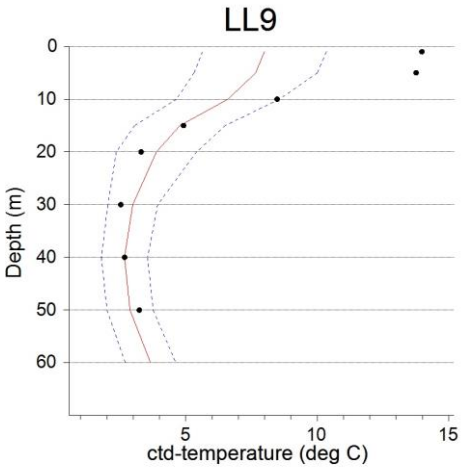



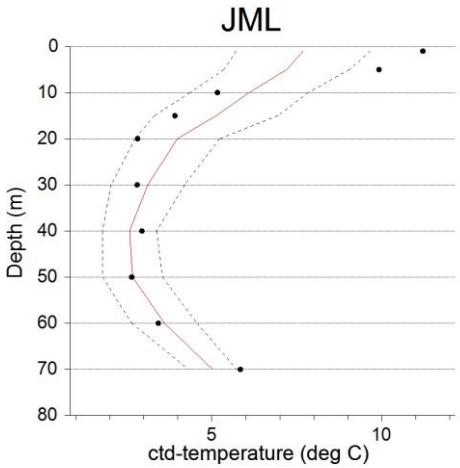



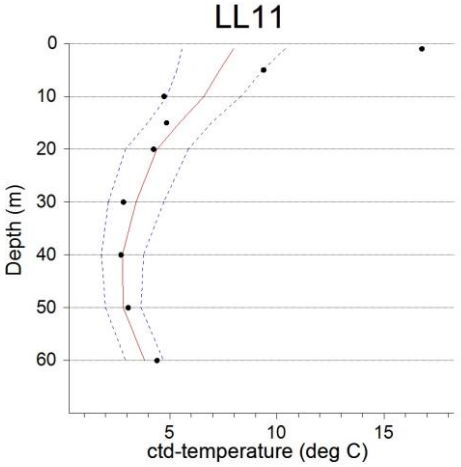



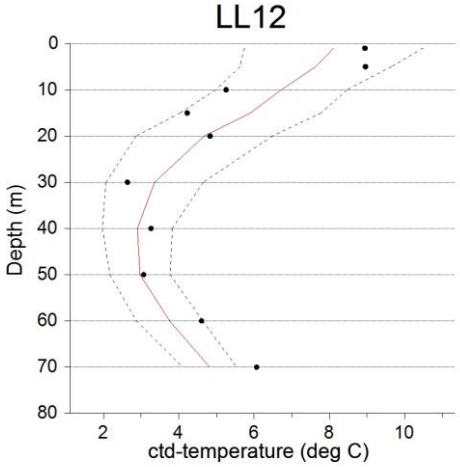

GF1
Depth (m)
0
10
20
30
40
50
60
70
80
5
10
15
ctd-temperature (deg C)

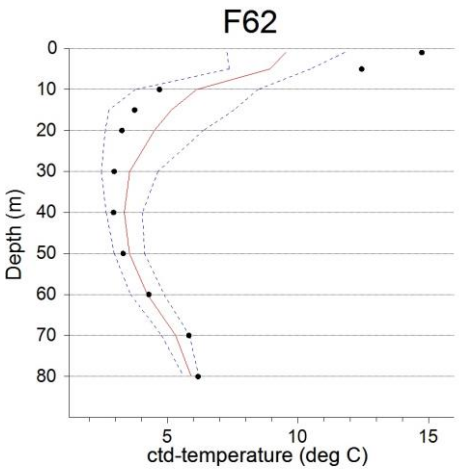

LL9
Depth (m)
0
10
20
30
40
50
60
5
10
ctd-temperature (deg C)

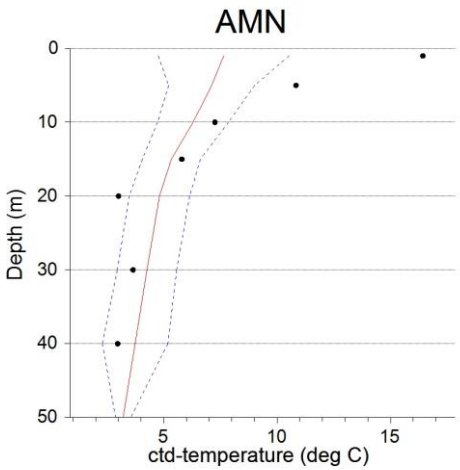

LL9
Depth (m)
0
10
20
30
40
50
60
5
10
15
ctd-temperature (deg C)

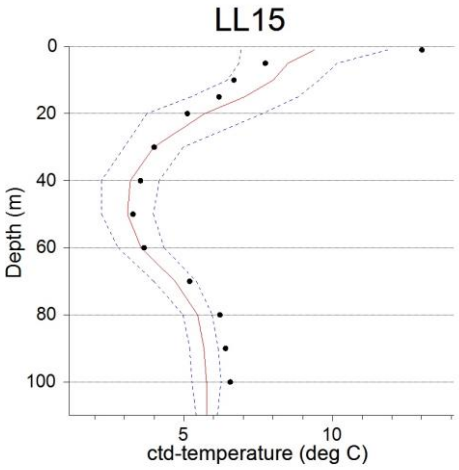

JML
Depth (m)
0
10
20
30
40
50
60
70
80
5
10
ctd-temperature (deg C)

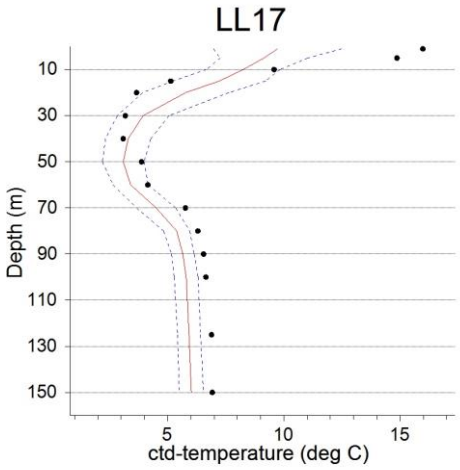

LL11
Depth (m)
0
10
20
30
40
50
60
5
10
15
ctd-temperature (deg C)

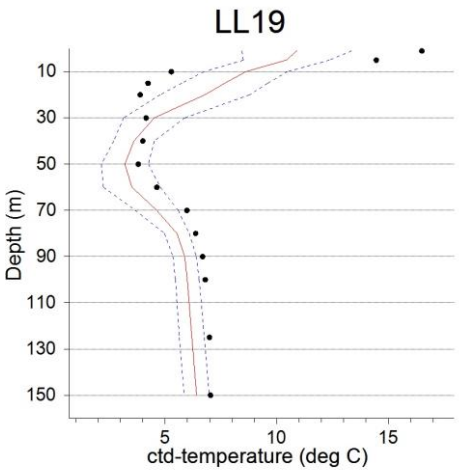

LL12
Depth (m)
0
10
20
30
40
50
60
70
80
2
4
6
8
10
ctd-temperature (deg C)

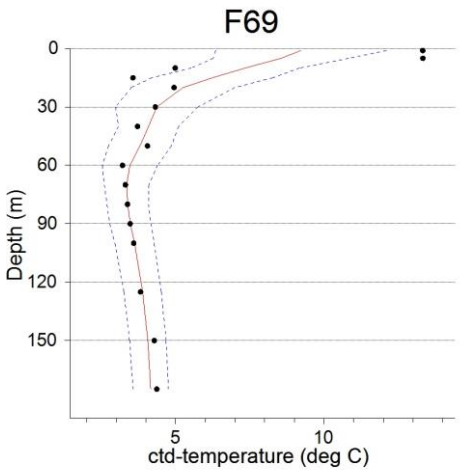

F62
Depth (m)
0
10
20
30
40
50
60
70
80
5
10
15
ctd-temperature (deg C)

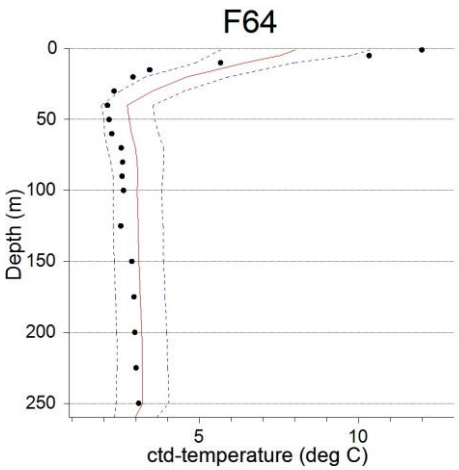

AMN
Depth (m)
0
10
20
30
40
50
5
10
15
ctd-temperature (deg C)

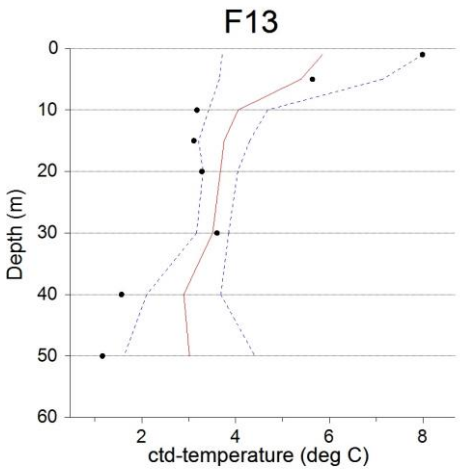

LL15
Depth (m)
0
20
40
60
80
100
5
10
ctd-temperature (deg C)

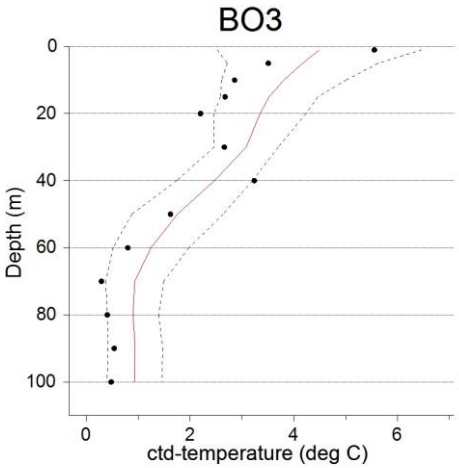

LL17
Depth (m)
10
30
50
70
90
110
130
150
5
10
15
ctd-temperature (deg C)

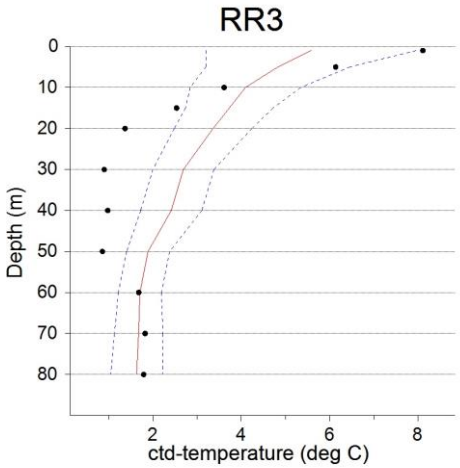

LL19
Depth (m)
10
30
50
70
90
110
130
150
5
10
15
ctd-temperature (deg C)

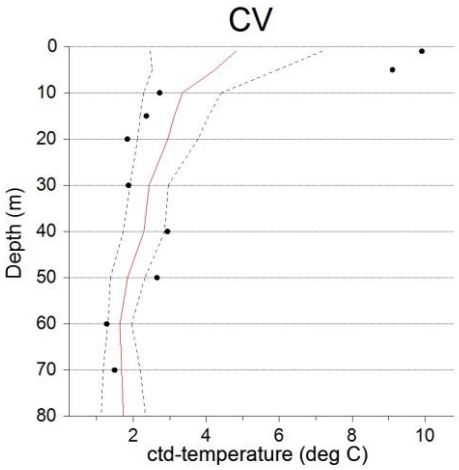

F69
Depth (m)
0
30
60
90
120
150
5
10
ctd-temperature (deg C)

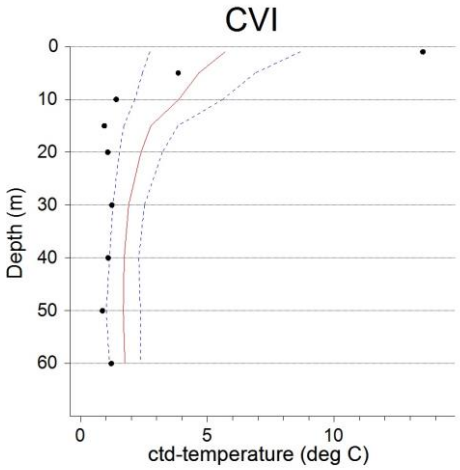

F64
Depth (m)
0
50
100
150
200
250
5
10
ctd-temperature (deg C)

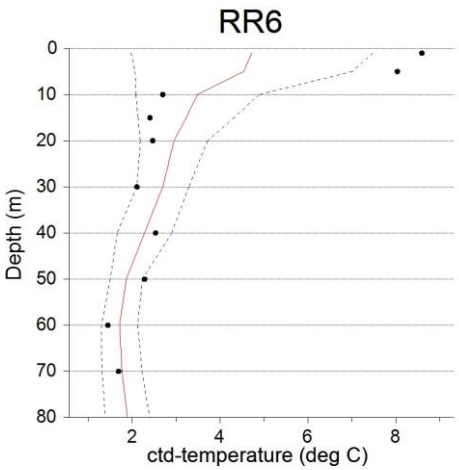

F13
Depth (m)
0
10
20
30
40
50
60
2
4
6
8
ctd-temperature (deg C)

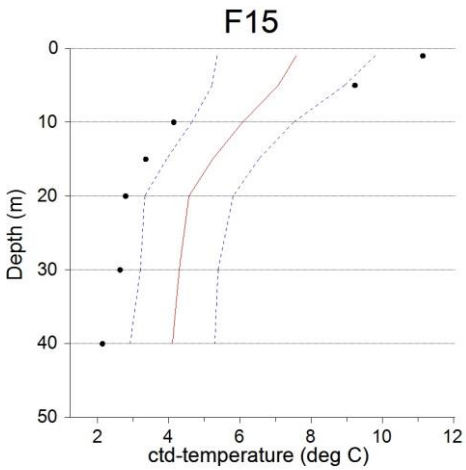

BO3
Depth (m)
0
20
40
60
80
100
0
2
4
6
ctd-temperature (deg C)

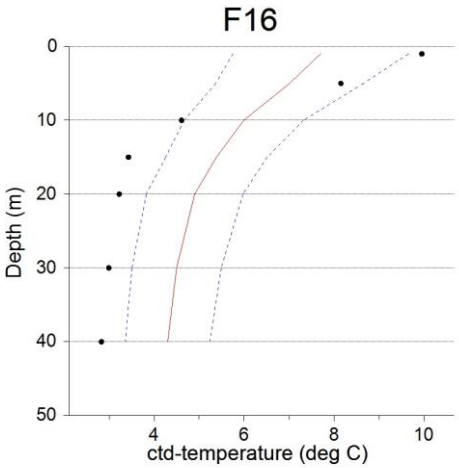

RR3
Depth (m)
0
10
20
30
40
50
60
70
80
2
4
6
8
ctd-temperature (deg C)

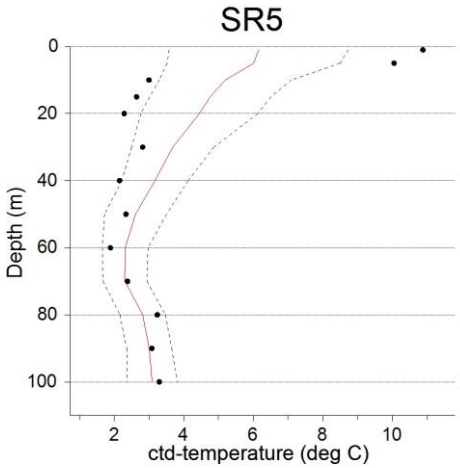

CV
Depth (m)
0
10
20
30
40
50
60
70
80
2
4
6
8
10
ctd-temperature (deg C)

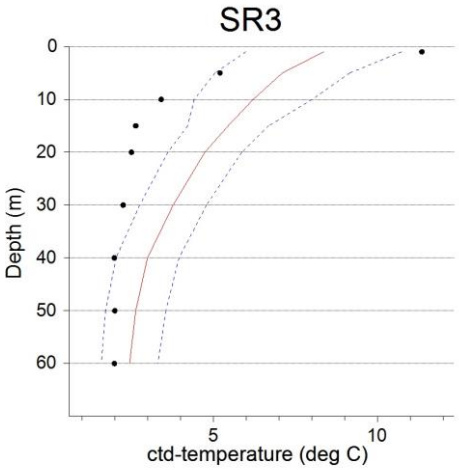

CVI
Depth (m)
0
10
20
30
40
50
60
0
5
10
ctd-temperature (deg C)

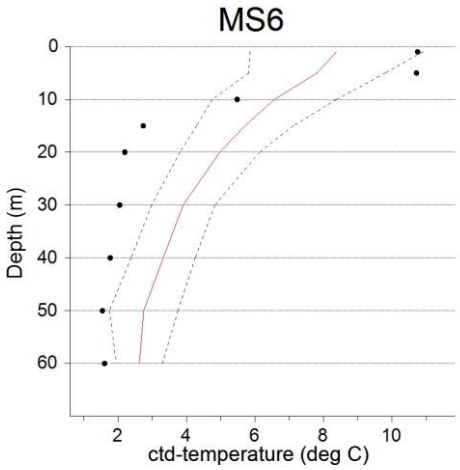

RR6
Depth (m)
0
10
20
30
40
50
60
70
80
2
4
6
8
ctd-temperature (deg C)

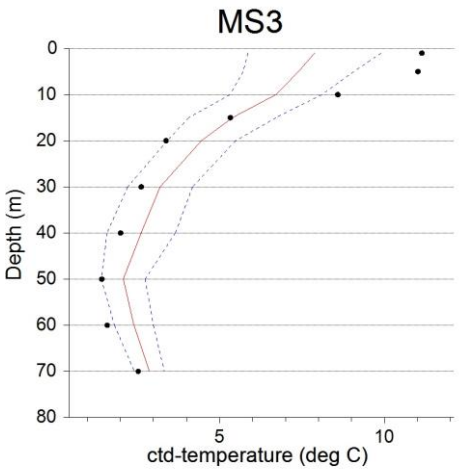

F15
Depth (m)
0
10
20
30
40
50
2
4
6
8
10
12
ctd-temperature (deg C)

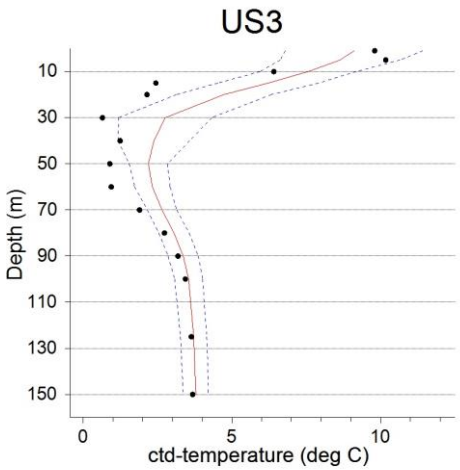

F16
Depth (m)
0
10
20
30
40
50
4
6
8
10
ctd-temperature (deg C)

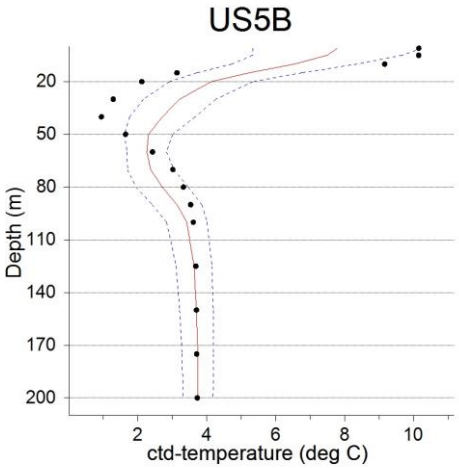

SR5
Depth (m)
0
20
40
60
80
100
2
4
6
8
10
ctd-temperature (deg C)

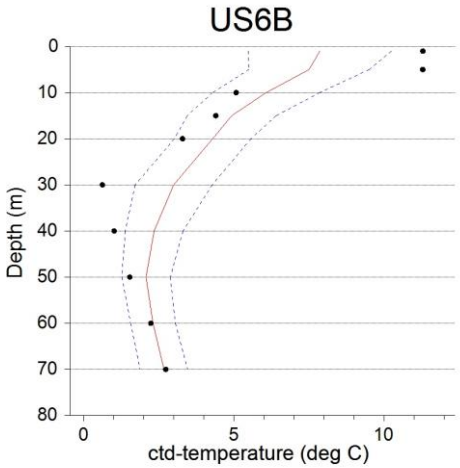

SR3
Depth (m)
0
10
20
30
40
50
60
5
10
ctd-temperature (deg C)

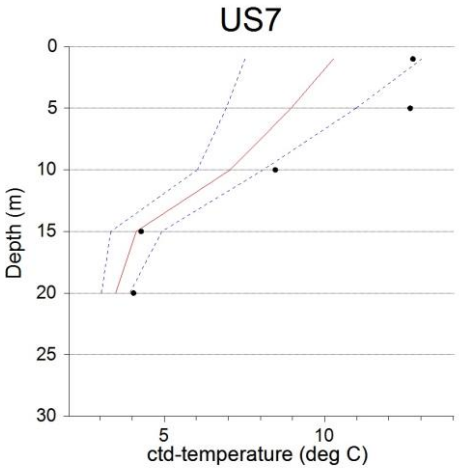

MS6
Depth (m)
0
10
20
30
40
50
60
2
4
6
8
10
ctd-temperature (deg C)

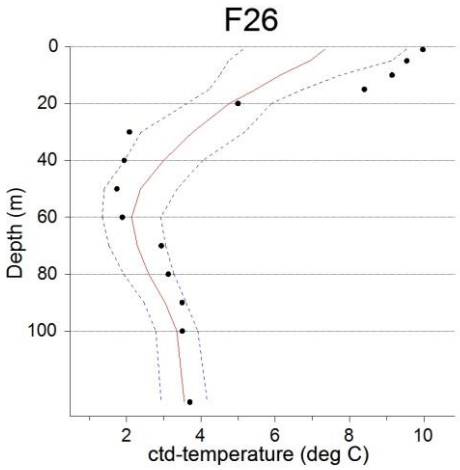

MS3
Depth (m)
0
10
20
30
40
50
60
70
80
5
10
ctd-temperature (deg C)

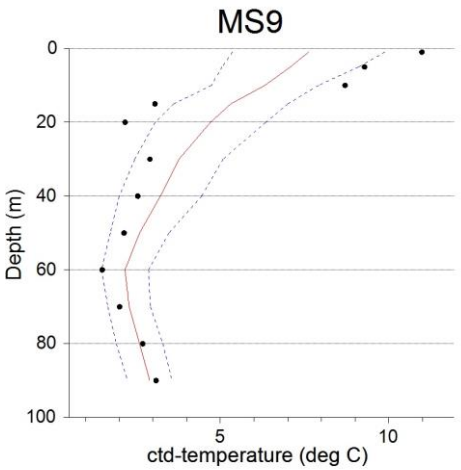

US3
Depth (m)
10
30
50
70
90
110
130
150
0
5
10
ctd-temperature (deg C)

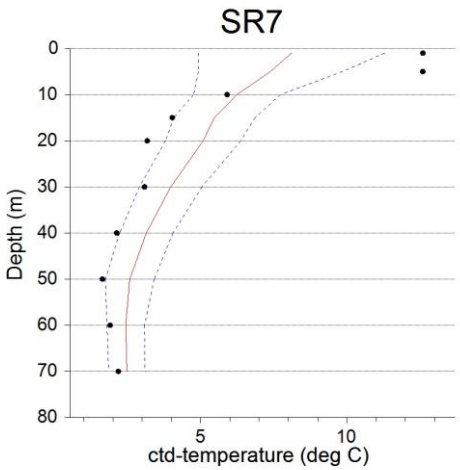

US5B
Depth (m)
20
50
80
110
140
170
200
2
4
6
8
10
ctd-temperature (deg C)

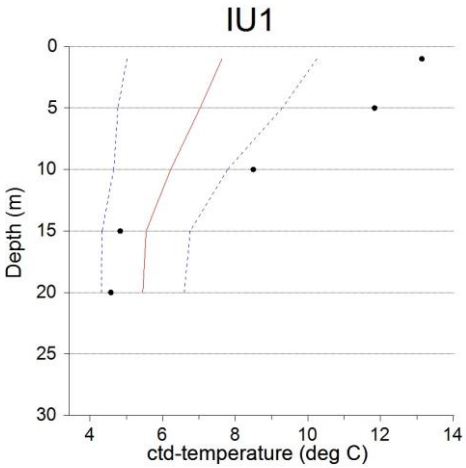

US6B
Depth (m)
0
10
20
30
40
50
60
70
80
0
5
10
ctd-temperature (deg C)

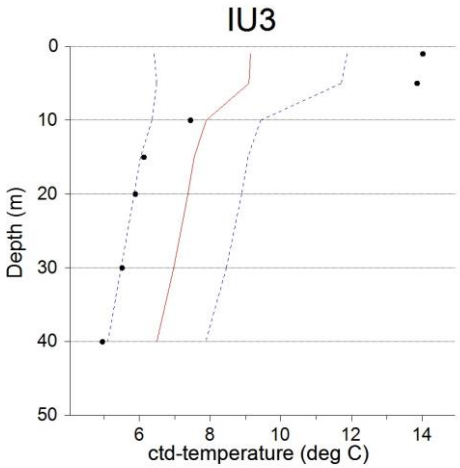

US7
Depth (m)
0
5
10
15
20
25
30
5
10
ctd-temperature (deg C)

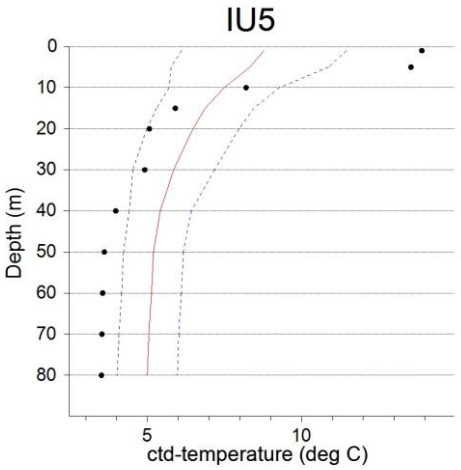

F26
Depth (m)
0
20
40
60
80
100
2
4
6
8
10
ctd-temperature (deg C)

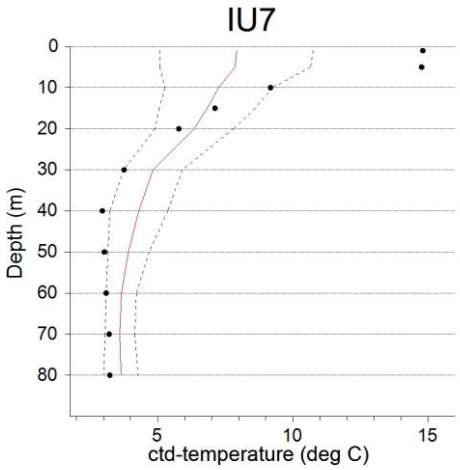

MS9
Depth (m)
0
20
40
60
80
100
5
10
ctd-temperature (deg C)


SR7
Depth (m)
0
10
20
30
40
50
60
70
80
5
10
ctd-temperature (deg C)

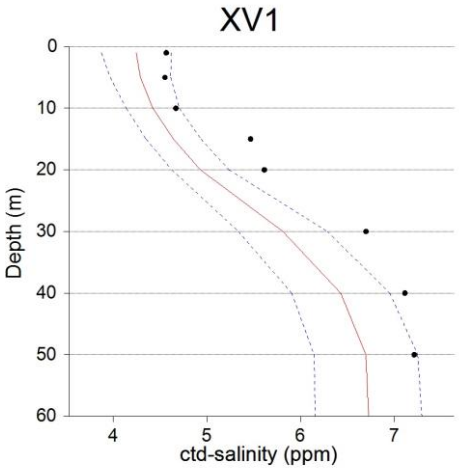

IU1
Depth (m)
0
5
10
15
20
25
30
4
6
8
10
12
14
ctd-temperature (deg C)

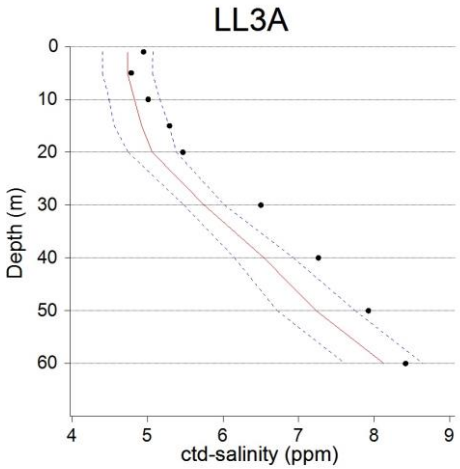

IU3
Depth (m)
0
10
20
30
40
50
6
8
10
12
14
ctd-temperature (deg C)

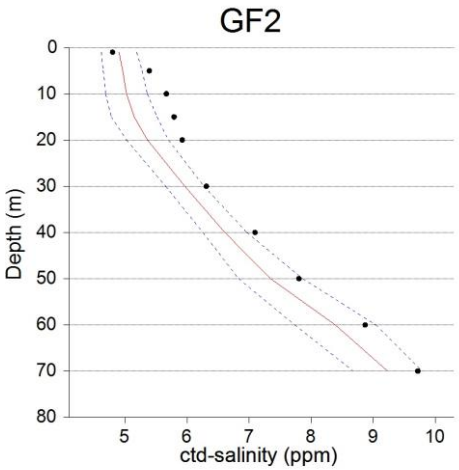

IU5
Depth (m)
0
10
20
30
40
50
60
70
80
5
10
ctd-temperature (deg C)

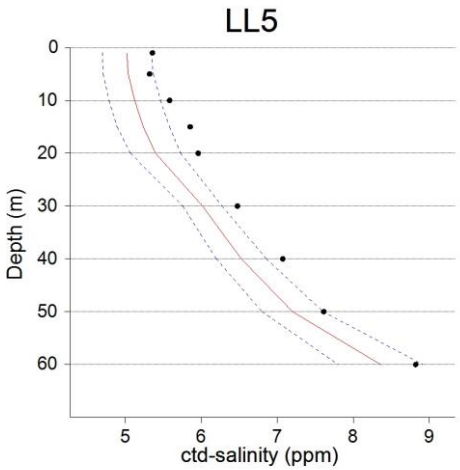

IU7
Depth (m)
0
10
20
30
40
50
60
70
80
5
10
15
ctd-temperature (deg C)

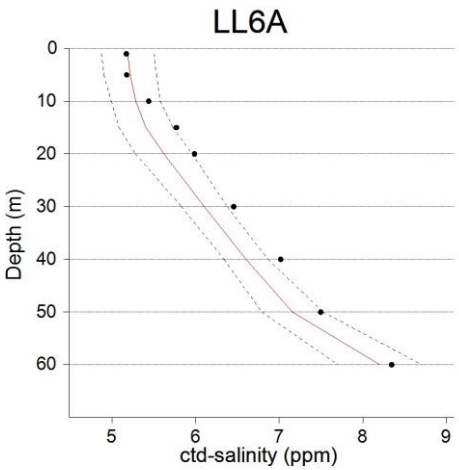
Salinity:

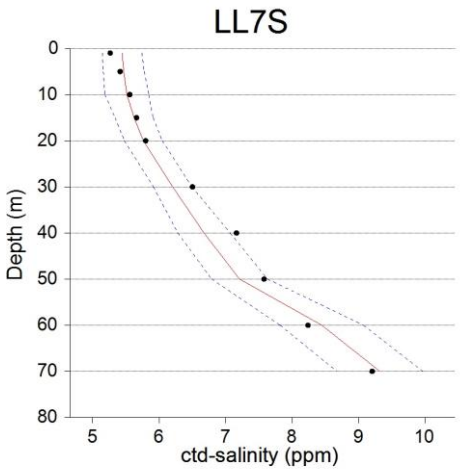

XV1
Depth (m)
ctd-salinity (ppm)

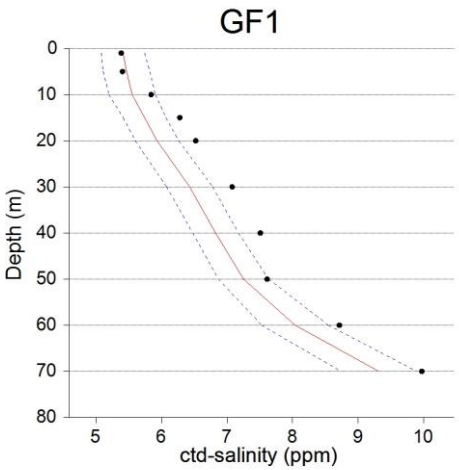

LL3A
Depth (m)
ctd-salinity (ppm)

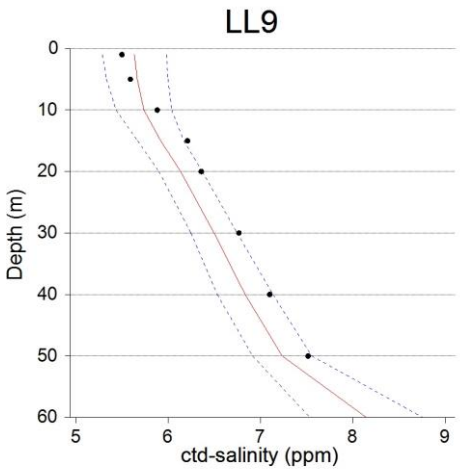

GF2
Depth (m)
ctd-salinity (ppm)

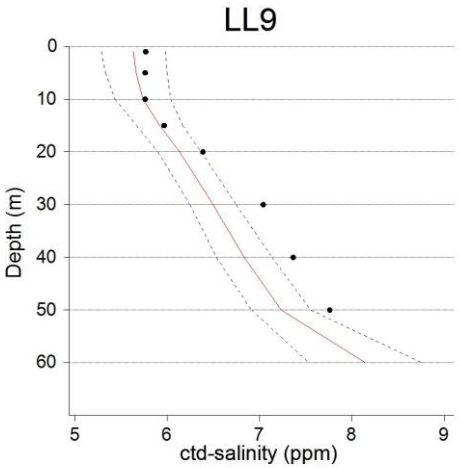

LL5
Depth (m)
ctd-salinity (ppm)

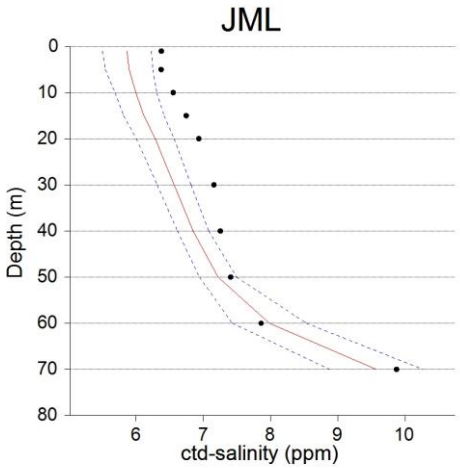

LL6A
Depth (m)
ctd-salinity (ppm)

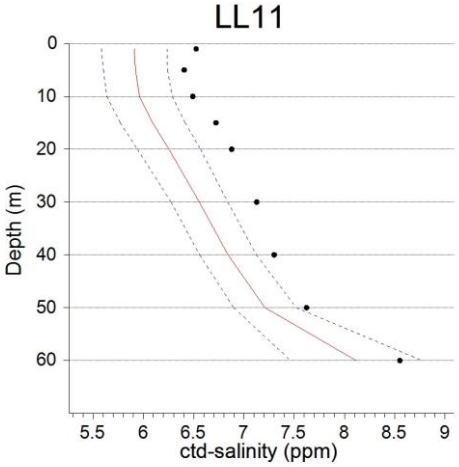

LL7S
Depth (m)
ctd-salinity (ppm)

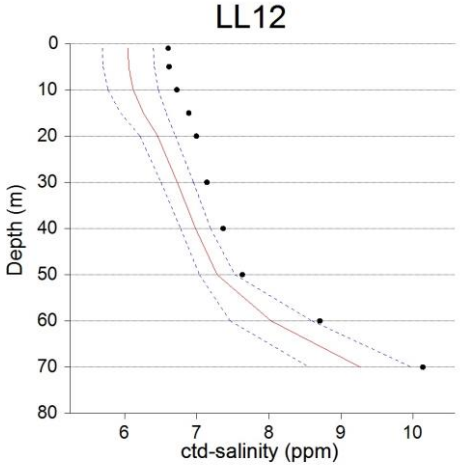

GF1
Depth (m)
0
10
20
30
40
50
60
70
80
5
6
7
8
9
10
ctd-salinity (ppm)

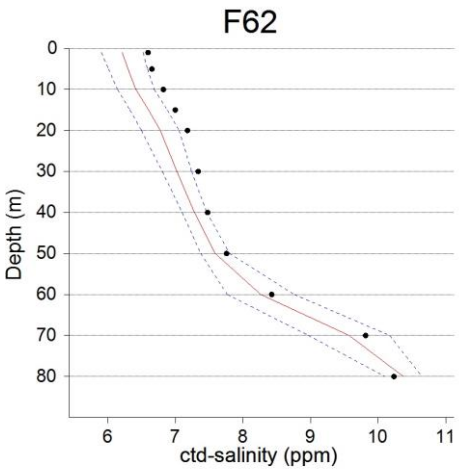

LL9
Depth (m)
0
10
20
30
40
50
60
5
6
7
8
9
ctd-salinity (ppm)

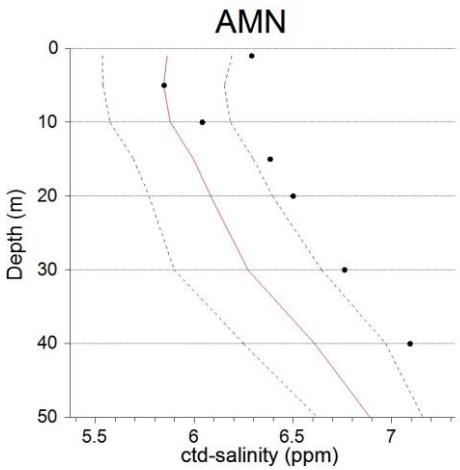

LL9
Depth (m)
0
10
20
30
40
50
60
5
6
7
8
9
ctd-salinity (ppm)

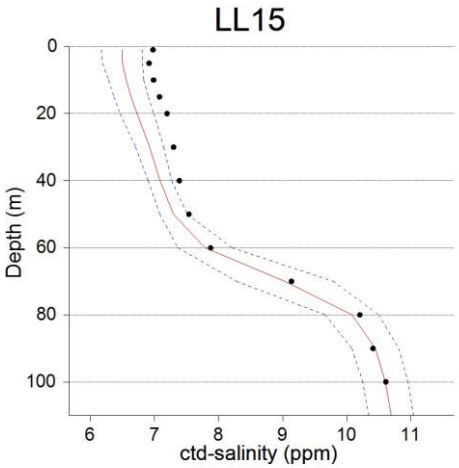

JML
Depth (m)
0
10
20
30
40
50
60
70
80
6
7
8
9
10
ctd-salinity (ppm)

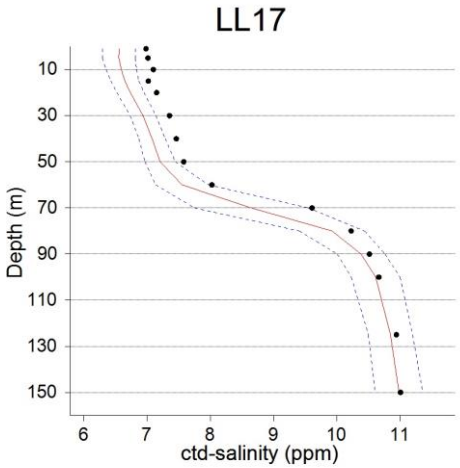

LL11
Depth (m)
0
10
20
30
40
50
60
5.5
6
6.5
7
7.5
8
8.5
9
ctd-salinity (ppm)

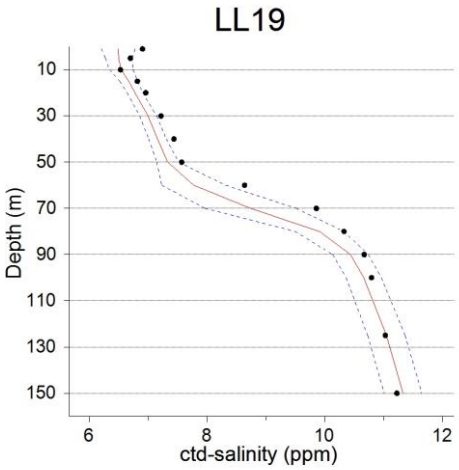

LL12
Depth (m)
0
10
20
30
40
50
60
70
80
6
7
8
9
10
ctd-salinity (ppm)

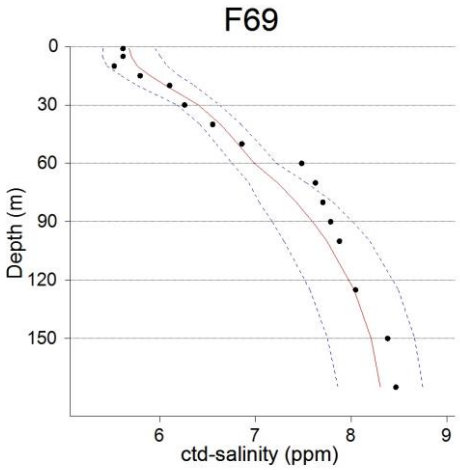

F62
Depth (m)
0
10
20
30
40
50
60
70
80
6
7
8
9
10
11
ctd-salinity (ppm)

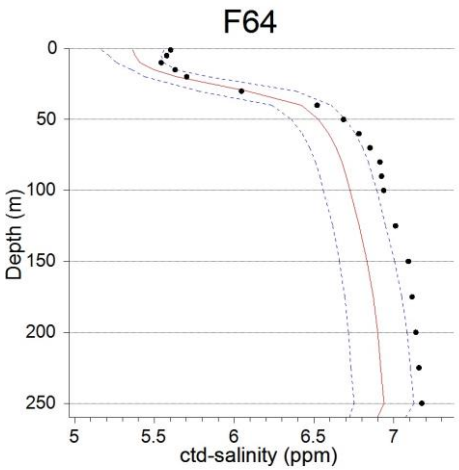

AMN
Depth (m)
0
10
20
30
40
50
5.5
6
6.5
7
ctd-salinity (ppm)

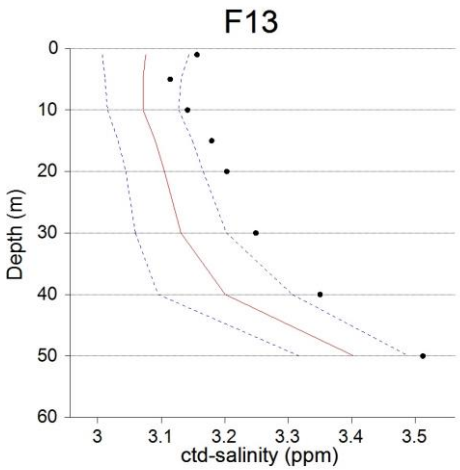

LL15
Depth (m)
0
20
40
60
80
100
6
7
8
9
10
11
ctd-salinity (ppm)

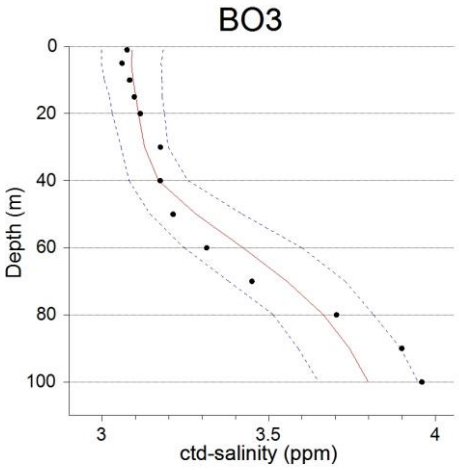

LL17
Depth (m)
10
30
50
70
90
110
130
150
6
7
8
9
10
11
ctd-salinity (ppm)

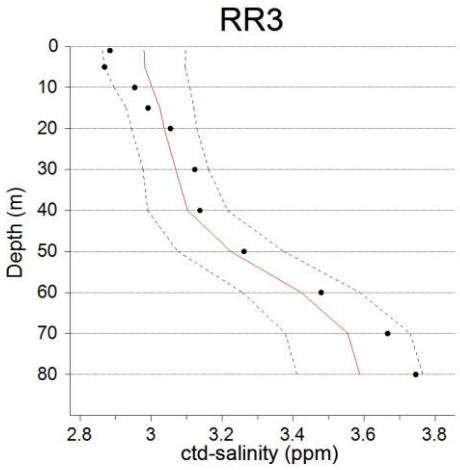

LL19
Depth (m)
10
30
50
70
90
110
130
150
6
8
10
12
ctd-salinity (ppm)

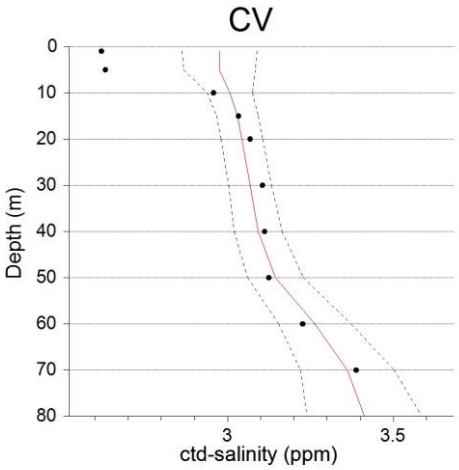

F69
Depth (m)
0
30
60
90
120
150
6
7
8
9
ctd-salinity (ppm)

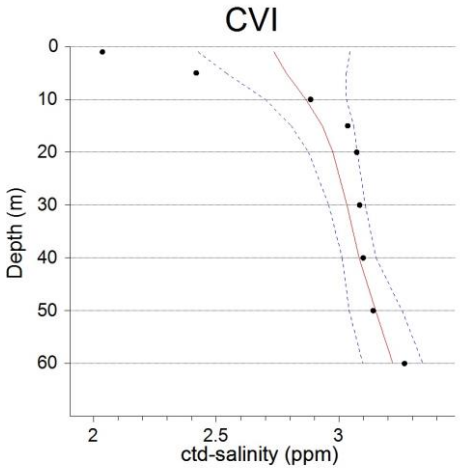

F64
Depth (m)
0
50
100
150
200
250
5
5.5
6
6.5
7
ctd-salinity (ppm)

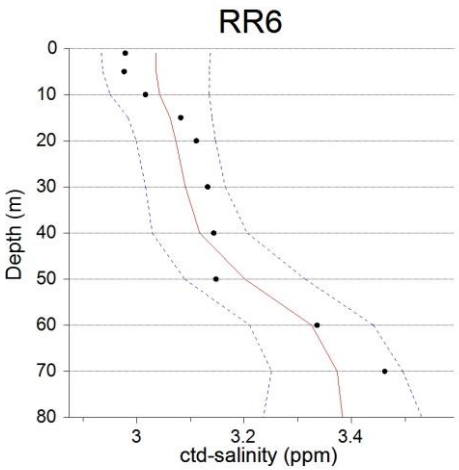

F13
Depth (m)
0
10
20
30
40
50
60
3
3.1
3.2
3.3
3.4
3.5
ctd-salinity (ppm)

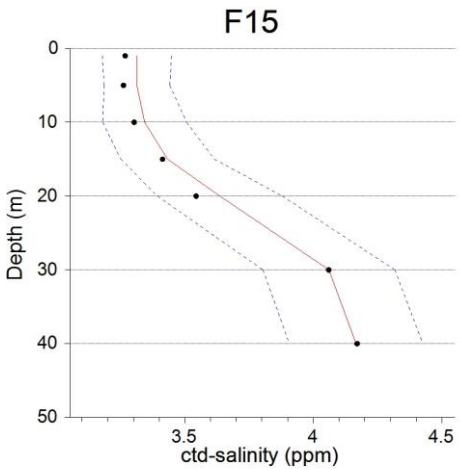

BO3
Depth (m)
0
20
40
60
80
100
3
3.5
4
ctd-salinity (ppm)

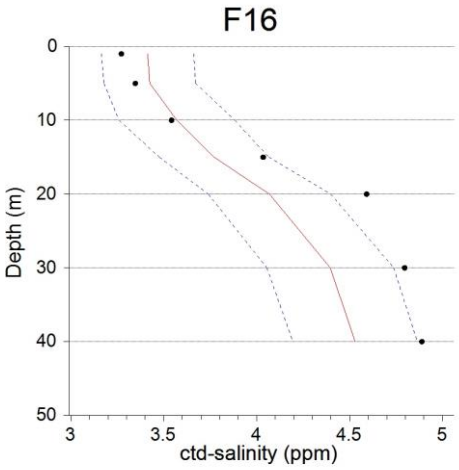

RR3
Depth (m)
0
10
20
30
40
50
60
70
80
2.8
3
3.2
3.4
3.6
3.8
ctd-salinity (ppm)

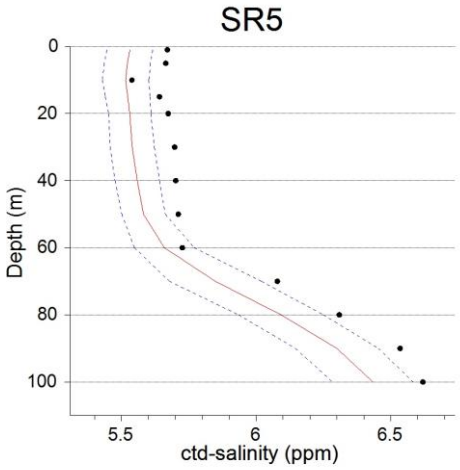

CV
Depth (m)
0
10
20
30
40
50
60
70
80
3
3.5
ctd-salinity (ppm)

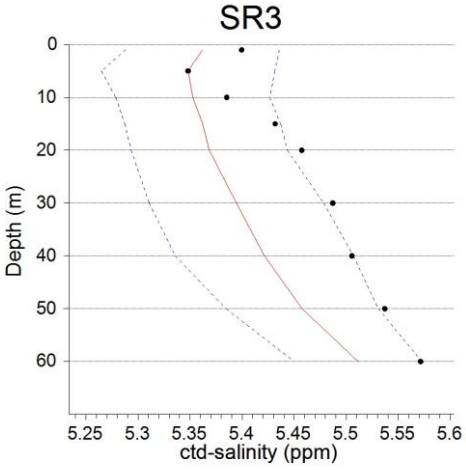

CVI
Depth (m)
0
10
20
30
40
50
60
2
2.5
3
ctd-salinity (ppm)

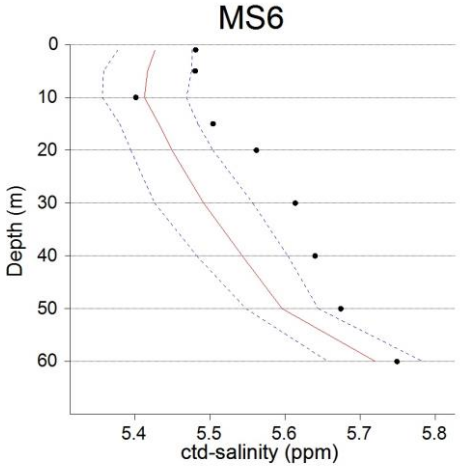

RR6
Depth (m)
0
10
20
30
40
50
60
70
80
3
3.2
3.4
ctd-salinity (ppm)

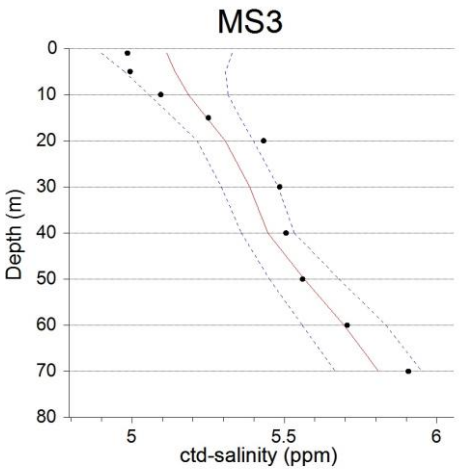

F15
Depth (m)
0
10
20
30
40
50
3.5
4
4.5
ctd-salinity (ppm)

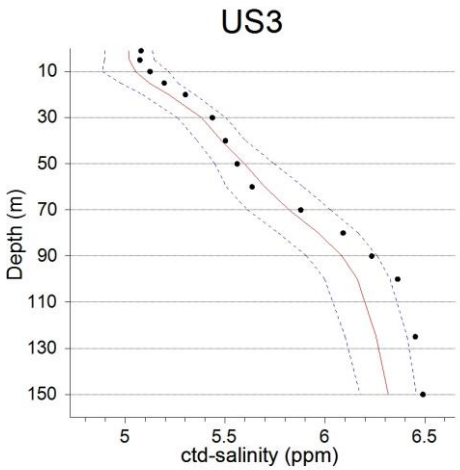

F16
Depth (m)
0
10
20
30
40
50
3
3.5
4
4.5
5
ctd-salinity (ppm)

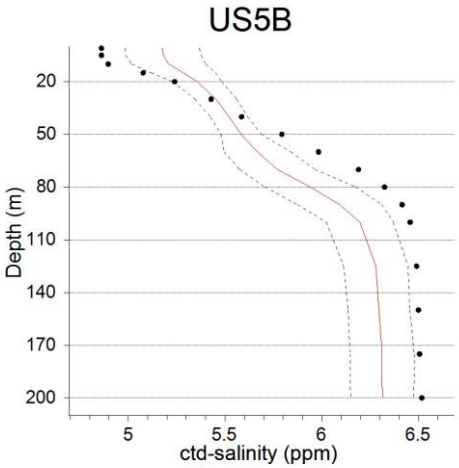

SR5
Depth (m)
0
20
40
60
80
100
5.5
6
6.5
ctd-salinity (ppm)

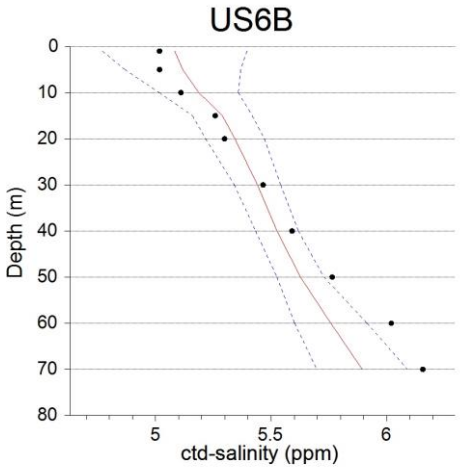

SR3
Depth (m)
0
10
20
30
40
50
60
5.25
5.3
5.35
5.4
5.45
5.5
5.55
5.6
ctd-salinity (ppm)

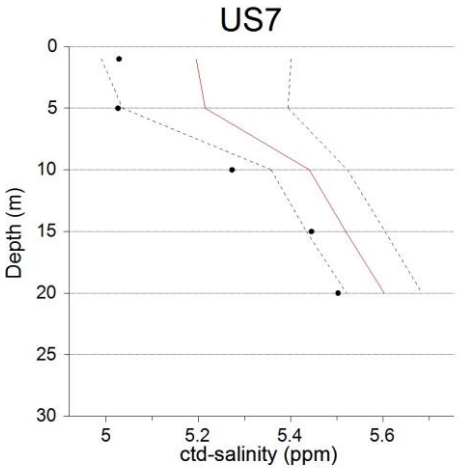

MS6
Depth (m)
0
10
20
30
40
50
60
5.4
5.5
5.6
5.7
5.8
ctd-salinity (ppm)

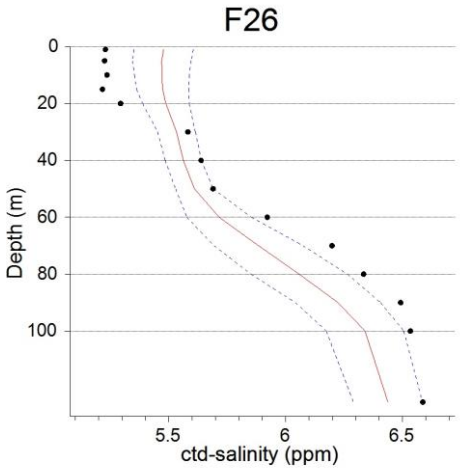

MS3
Depth (m)
0
10
20
30
40
50
60
70
80
5
5.5
6
ctd-salinity (ppm)

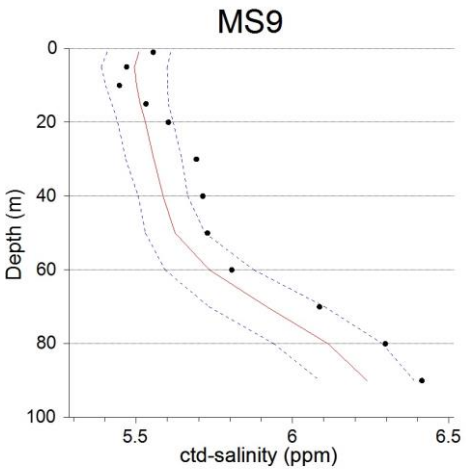

US3
Depth (m)
10
30
50
70
90
110
130
150
5
5.5
6
6.5
ctd-salinity (ppm)

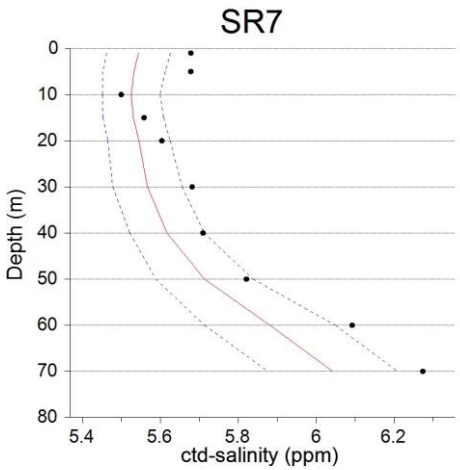

US5B
Depth (m)
20
50
80
110
140
170
200
5
5.5
6
6.5
ctd-salinity (ppm)

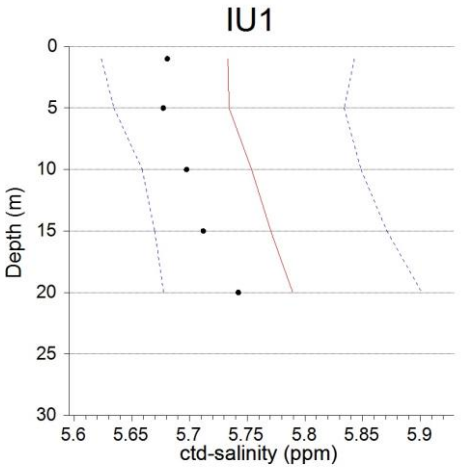

US6B
Depth (m)
0
10
20
30
40
50
60
70
80
5
5.5
6
ctd-salinity (ppm)

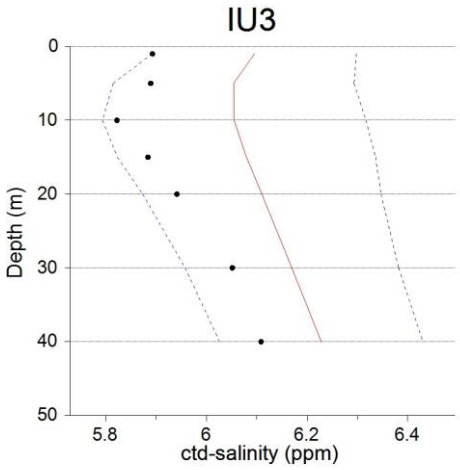

US7
Depth (m)
0
5
10
15
20
25
30
5
5.2
5.4
5.6
ctd-salinity (ppm)

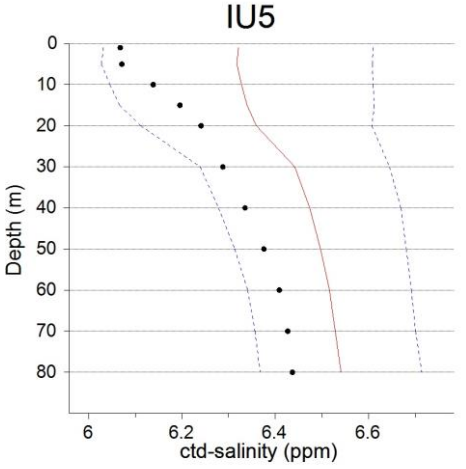

F26
Depth (m)
0
20
40
60
80
100
5.5
6
6.5
ctd-salinity (ppm)

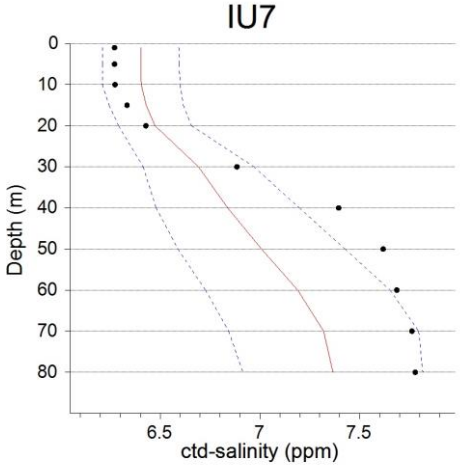

MS9
Depth (m)
0
20
40
60
80
100
5.5
6
6.5
ctd-salinity (ppm)


SR7
Depth (m)
0
10
20
30
40
50
60
70
80
5.4
5.6
5.8
6
6.2
ctd-salinity (ppm)

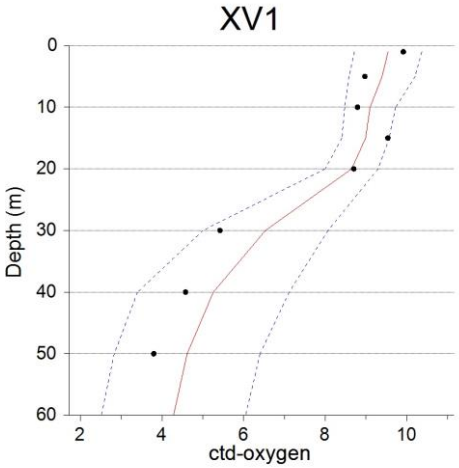

IU1
Depth (m)
0
5
10
15
20
25
30
5.6
5.65
5.7
5.75
5.8
5.85
5.9
ctd-salinity (ppm)

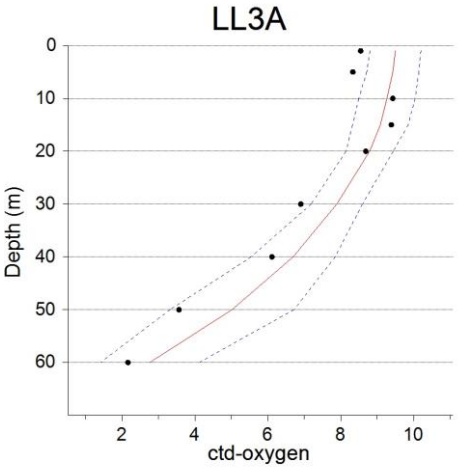

IU3
Depth (m)
0
10
20
30
40
50
5.8
6
6.2
6.4
ctd-salinity (ppm)

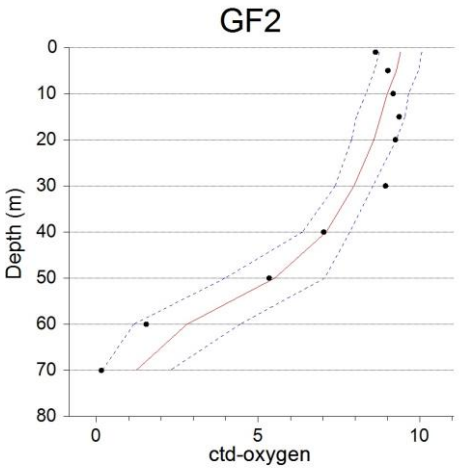

IU5
Depth (m)
0
10
20
30
40
50
60
70
80
6
6.2
6.4
6.6
ctd-salinity (ppm)

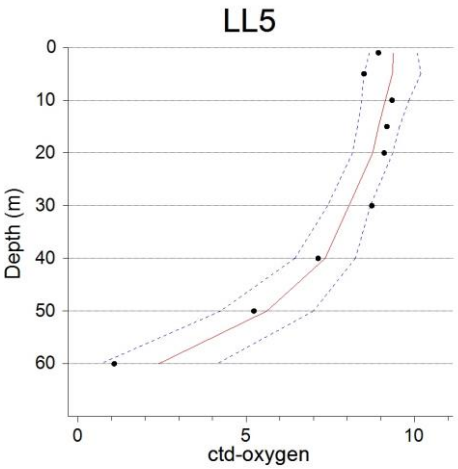

IU7
Depth (m)
0
10
20
30
40
50
60
70
80
6.5
7
7.5
ctd-salinity (ppm)

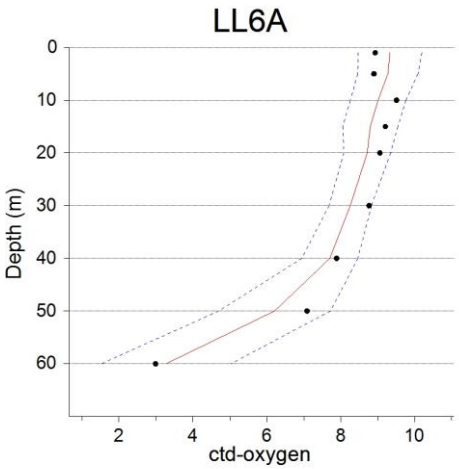
Oxygen:

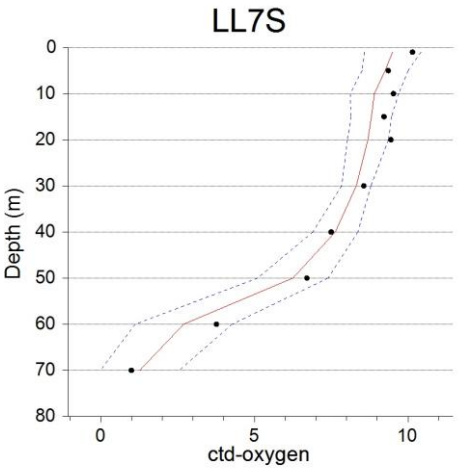

XV1
Depth (m)
ctd-oxygen

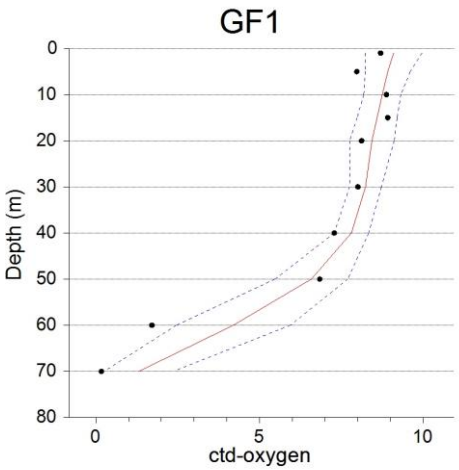

LL3A
Depth (m)
ctd-oxygen

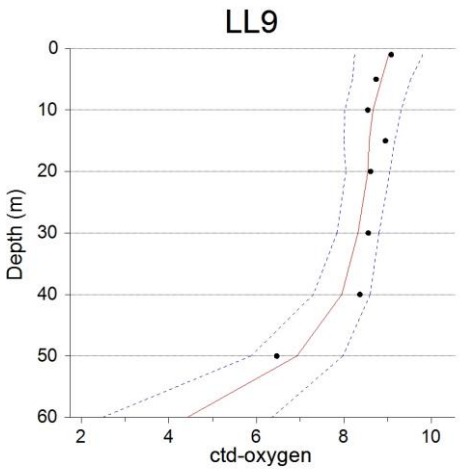

GF2
Depth (m)
ctd-oxygen

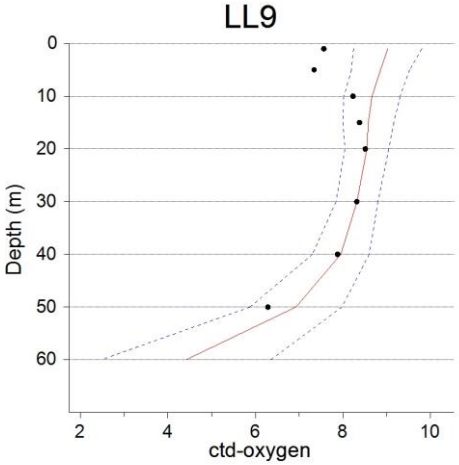

LL5
Depth (m)
ctd-oxygen

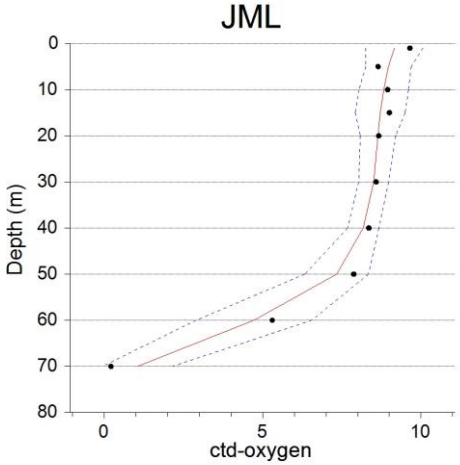

LL6A
Depth (m)
ctd-oxygen

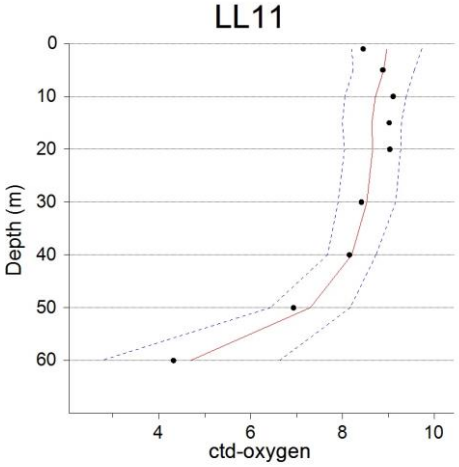

LL7S
Depth (m)
ctd-oxygen

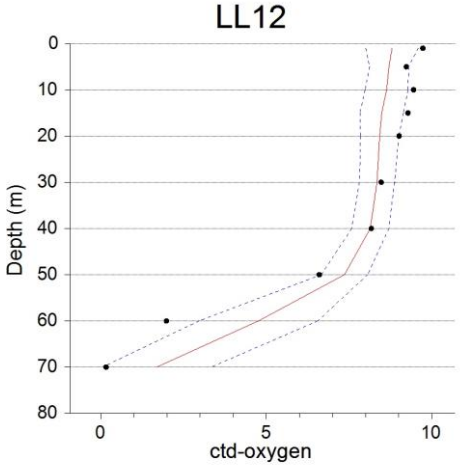

GF1
Depth (m)
0
10
20
30
40
50
60
70
80
0
5
10
ctd-oxygen

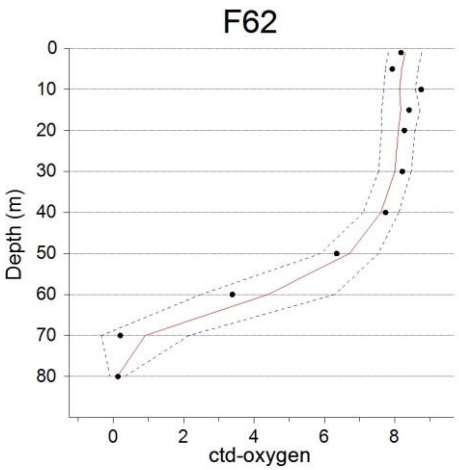

LL9
Depth (m)
0
10
20
30
40
50
60
2
4
6
8
10
ctd-oxygen

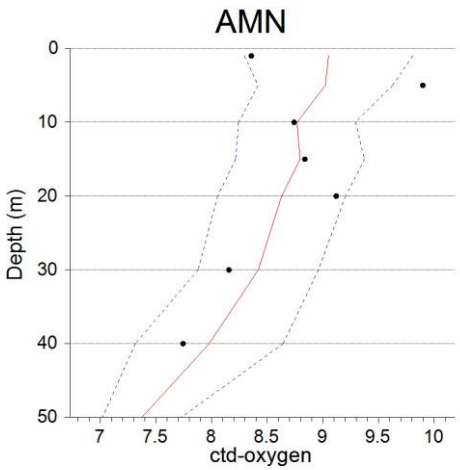

LL9
Depth (m)
0
10
20
30
40
50
60
2
4
6
8
10
ctd-oxygen

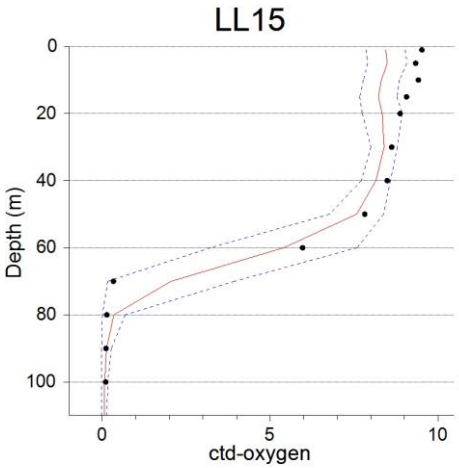

JML
Depth (m)
0
10
20
30
40
50
60
70
80
0
5
10
ctd-oxygen

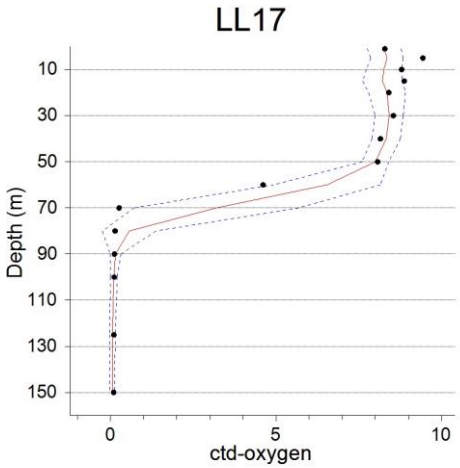

LL11
Depth (m)
0
10
20
30
40
50
60
4
6
8
10
ctd-oxygen

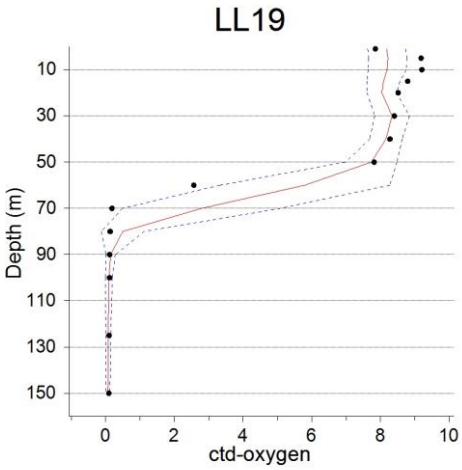

LL12
Depth (m)
0
10
20
30
40
50
60
70
80
0
5
10
ctd-oxygen

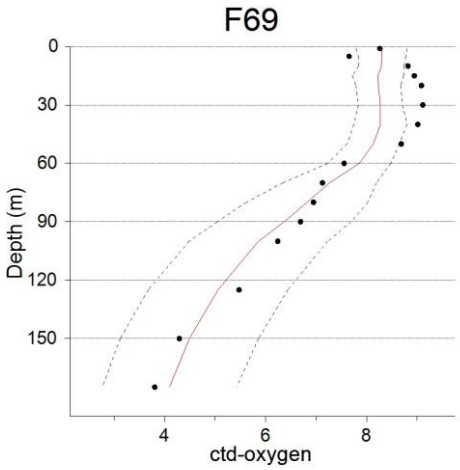

F62
Depth (m)
0
10
20
30
40
50
60
70
80
0
2
4
6
8
ctd-oxygen

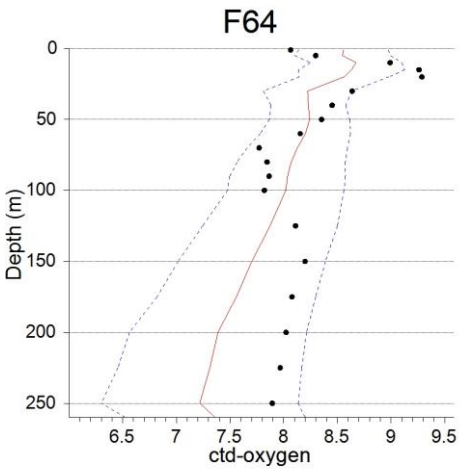

AMN
Depth (m)
0
10
20
30
40
50
7
7.5
8
8.5
9
9.5
10
ctd-oxygen

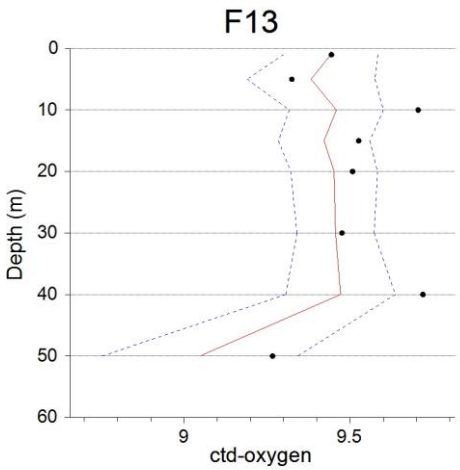

LL15
Depth (m)
0
20
40
60
80
100
0
5
10
ctd-oxygen

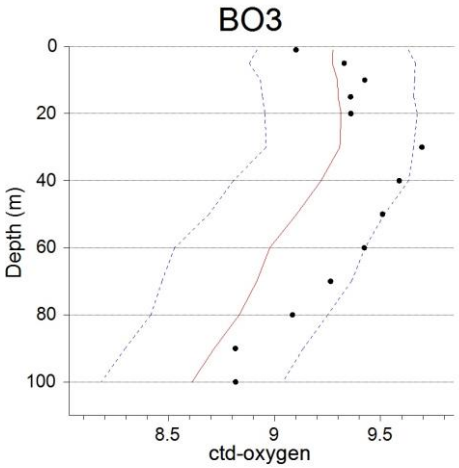

LL17
Depth (m)
10
30
50
70
90
110
130
150
0
5
10
ctd-oxygen

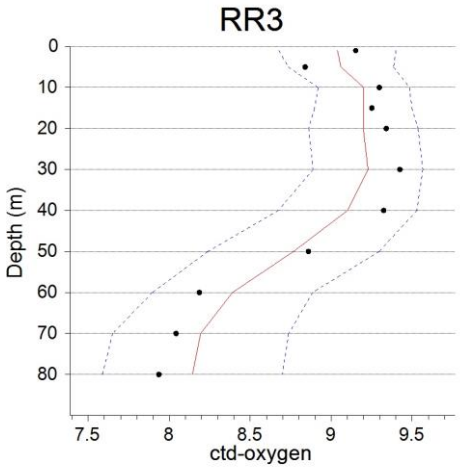

LL19
Depth (m)
10
30
50
70
90
110
130
150
0
2
4
6
8
10
ctd-oxygen

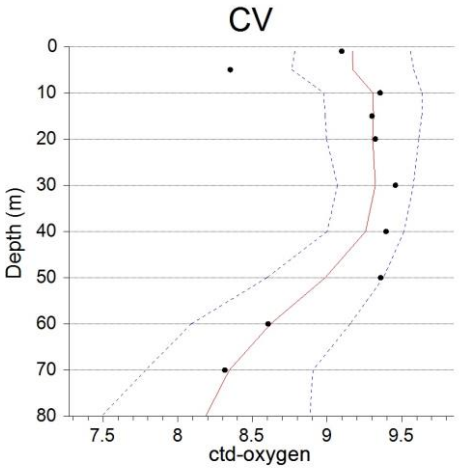

F69
Depth (m)
0
30
60
90
120
150
4
6
8
ctd-oxygen

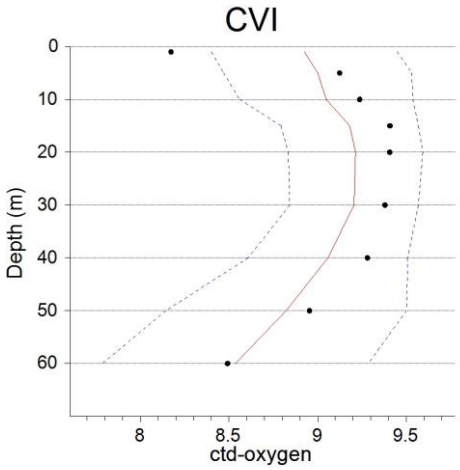

F64
Depth (m)
0
50
100
150
200
250
6.5
7
7.5
8
8.5
9
9.5
ctd-oxygen

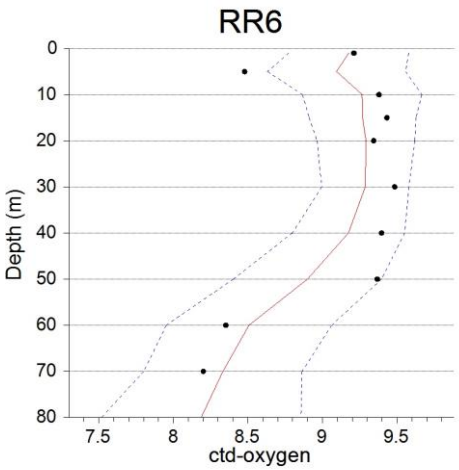

F13
Depth (m)
0
10
20
30
40
50
60
9
9.5
ctd-oxygen

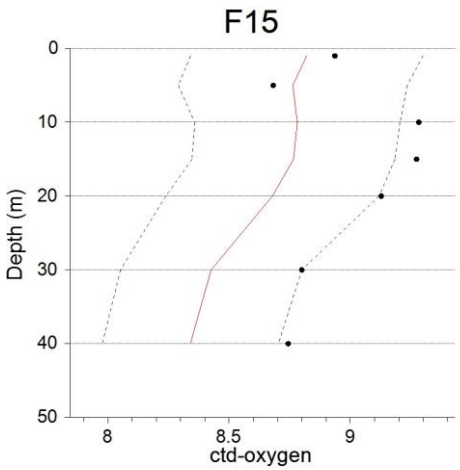

BO3
Depth (m)
0
20
40
60
80
100
8.5
9
9.5
ctd-oxygen

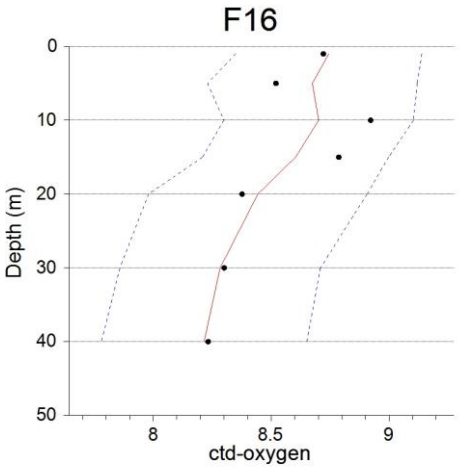

RR3
Depth (m)
0
10
20
30
40
50
60
70
80
7.5
8
8.5
9
9.5
ctd-oxygen

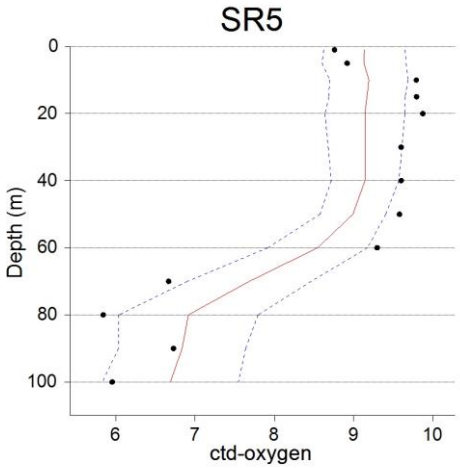

CV
Depth (m)
0
10
20
30
40
50
60
70
80
7.5
8
8.5
9
9.5
ctd-oxygen

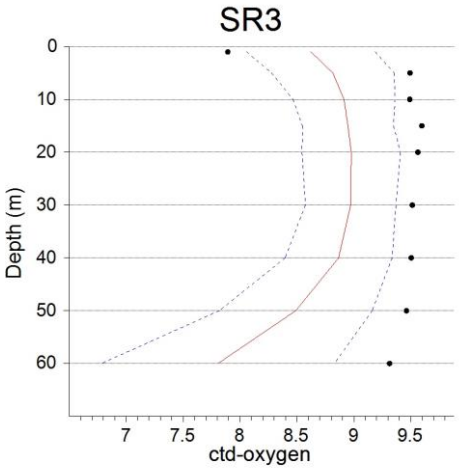

CVI
Depth (m)
0
10
20
30
40
50
60
8
8.5
9
9.5
ctd-oxygen

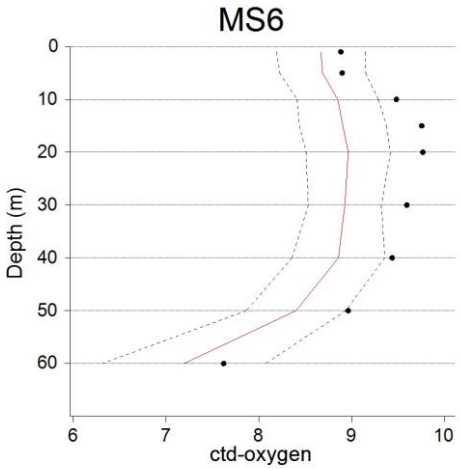

RR6
Depth (m)
0
10
20
30
40
50
60
70
80
7.5
8
8.5
9
9.5
ctd-oxygen

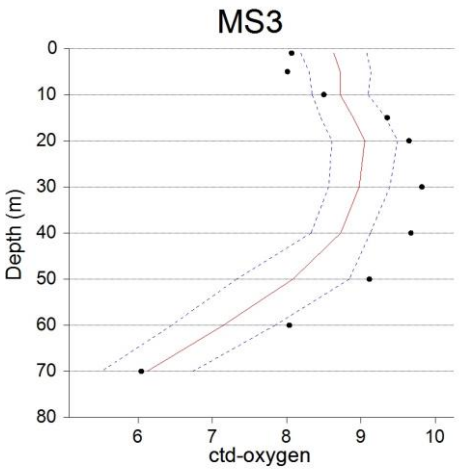

F15
Depth (m)
0
10
20
30
40
50
8
8.5
9
ctd-oxygen

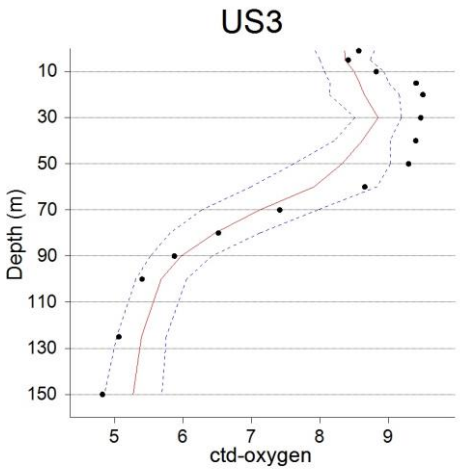

F16
Depth (m)
0
10
20
30
40
50
8
8.5
9
ctd-oxygen

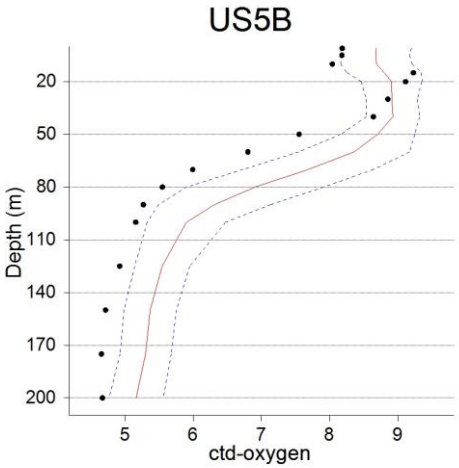

SR5
Depth (m)
0
20
40
60
80
100
6
7
8
9
10
ctd-oxygen

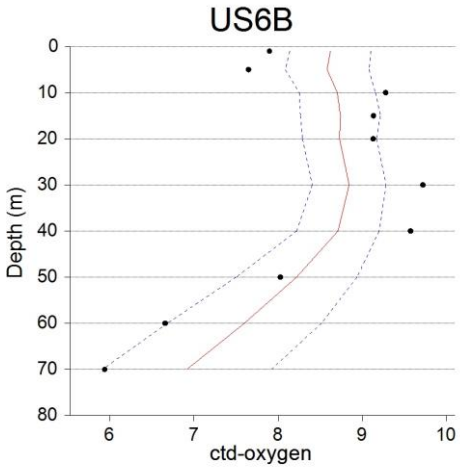

SR3
Depth (m)
0
10
20
30
40
50
60
7
7.5
8
8.5
9
9.5
ctd-oxygen

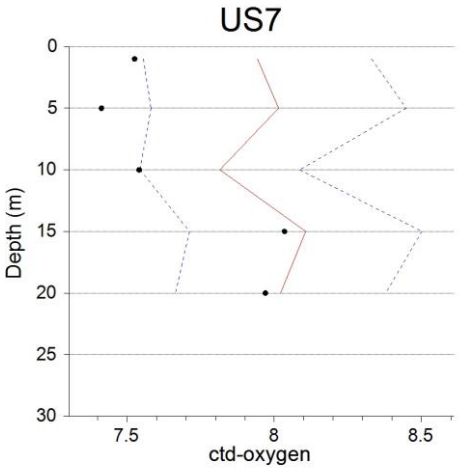

MS6
Depth (m)
0
10
20
30
40
50
60
6
7
8
9
10
ctd-oxygen

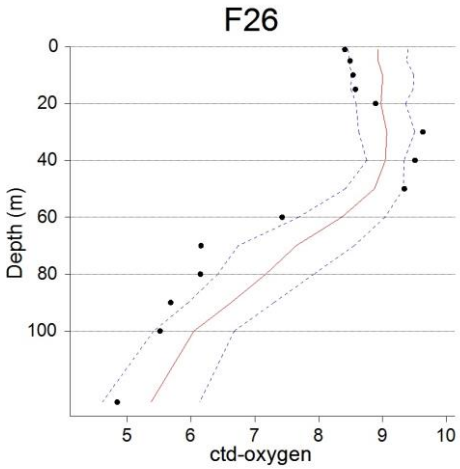

MS3
Depth (m)
0
10
20
30
40
50
60
70
80
6
7
8
9
10
ctd-oxygen

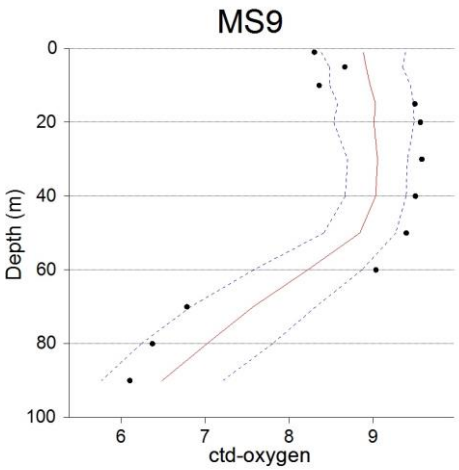

US3
Depth (m)
10
30
50
70
90
110
130
150
5
6
7
8
9
ctd-oxygen

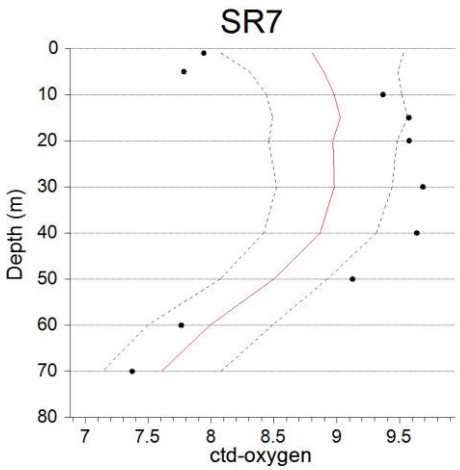

US5B
Depth (m)
20
50
80
110
140
170
200
5
6
7
8
9
ctd-oxygen

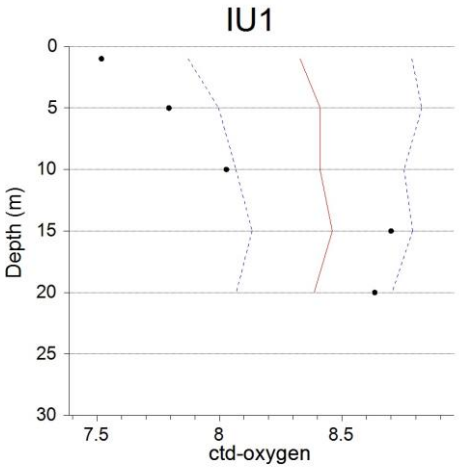

US6B
Depth (m)
0
10
20
30
40
50
60
70
80
6
7
8
9
10
ctd-oxygen

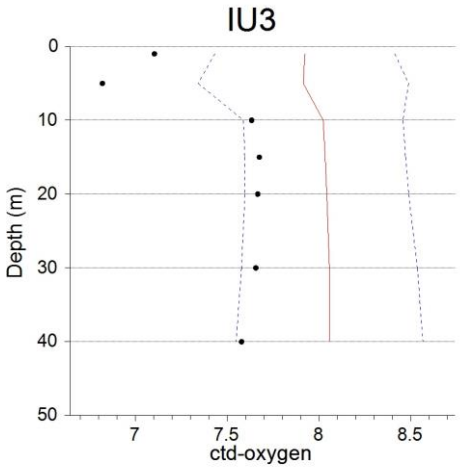

US7
Depth (m)
0
5
10
15
20
25
30
7.5
8
8.5
ctd-oxygen

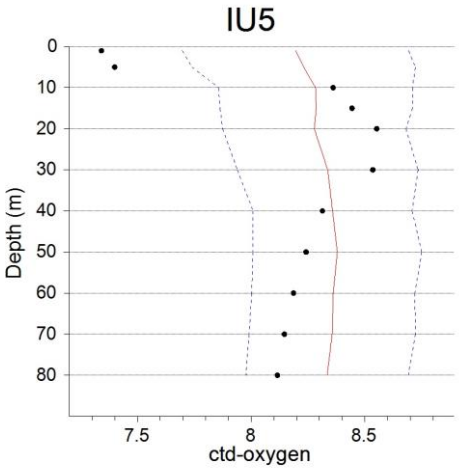

F26
Depth (m)
0
20
40
60
80
100
5
6
7
8
9
10
ctd-oxygen

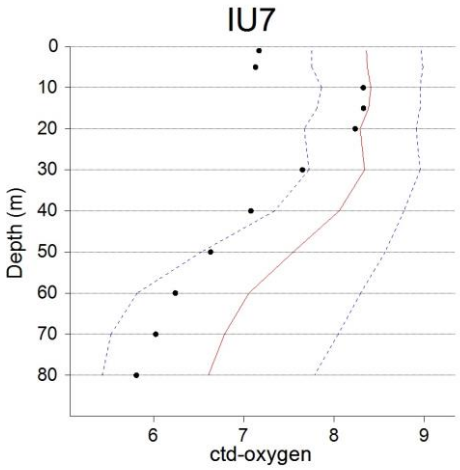

MS9
Depth (m)
0
20
40
60
80
100
6
7
8
9
ctd-oxygen


SR7
Depth (m)
0
10
20
30
40
50
60
70
80
7
7.5
8
8.5
9
9.5
ctd-oxygen

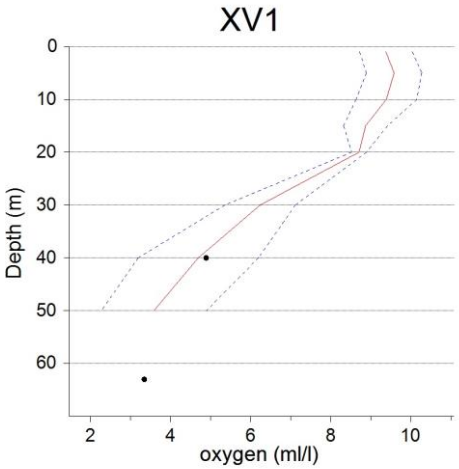

IU1
Depth (m)
0
5
10
15
20
25
30
7.5
8
8.5
ctd-oxygen

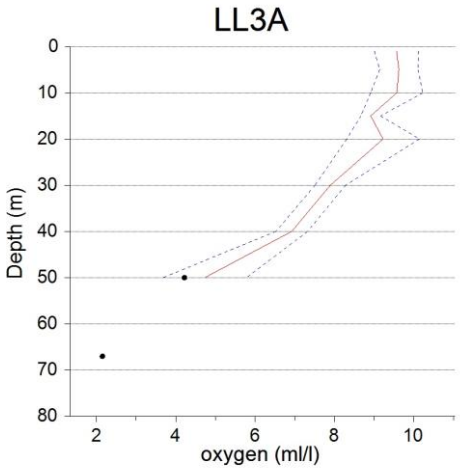

IU3
Depth (m)
0
10
20
30
40
50
7
7.5
8
8.5
ctd-oxygen

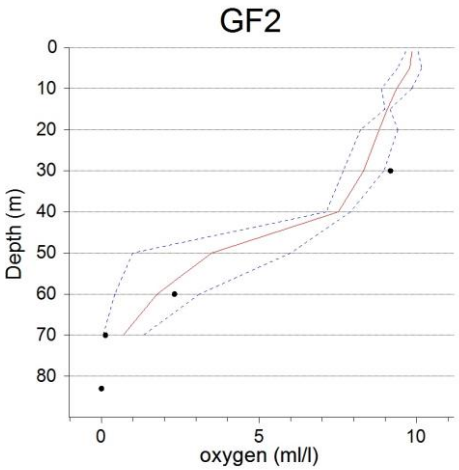

IU5
Depth (m)
0
10
20
30
40
50
60
70
80
7.5
8
8.5
ctd-oxygen

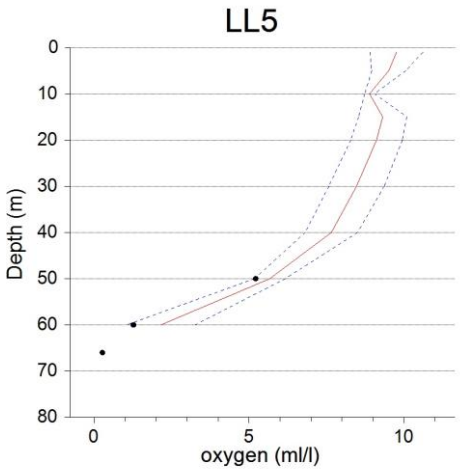

IU7
Depth (m)
0
10
20
30
40
50
60
70
80
6
7
8
9
ctd-oxygen

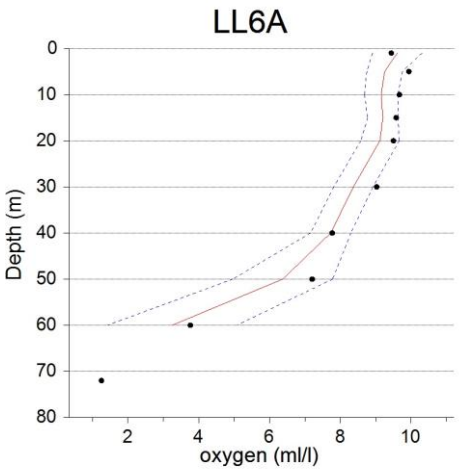
Bottom water oxygen:

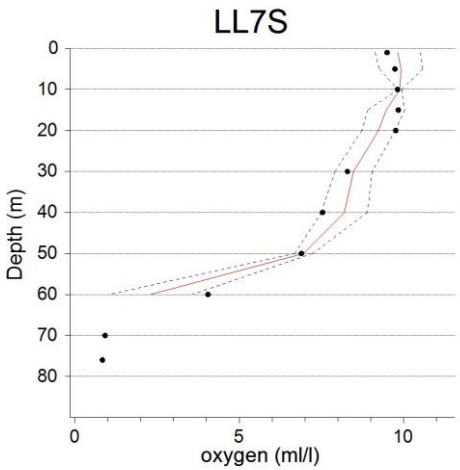


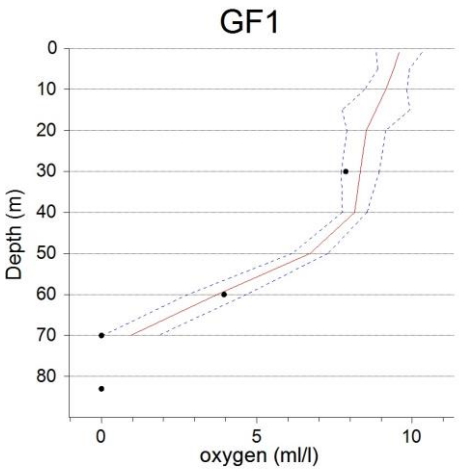



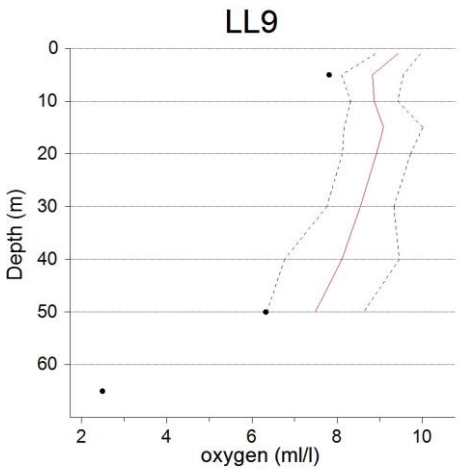



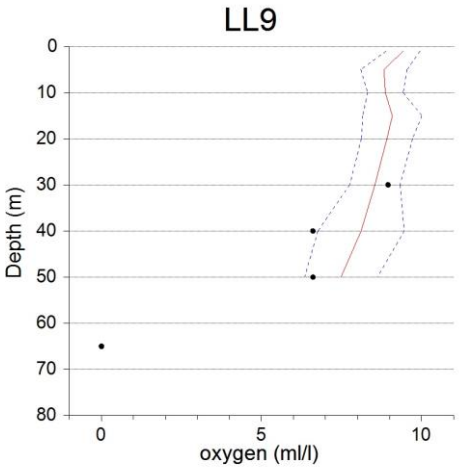



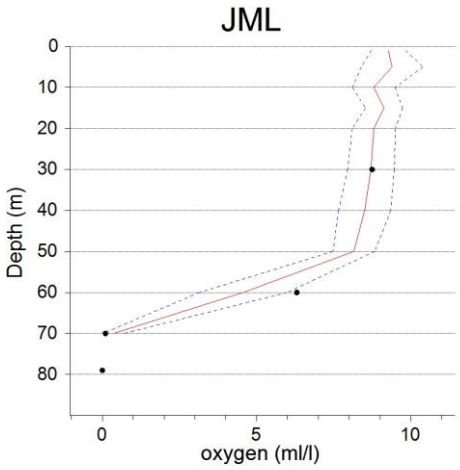



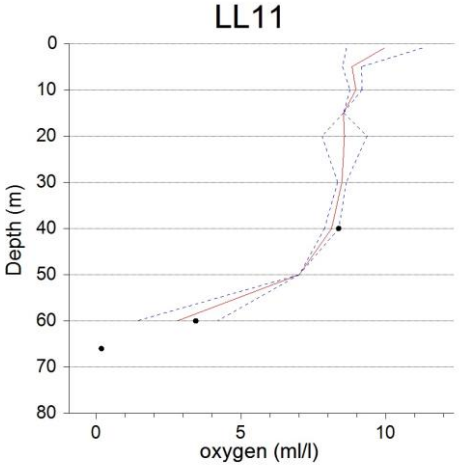



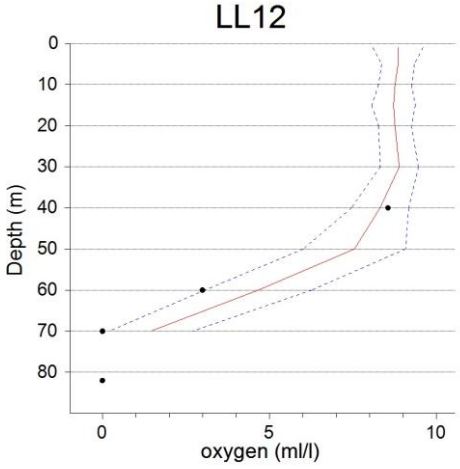

GF1
Depth (m)
0
10
20
30
40
50
60
70
80
0
5
10
oxygen (ml/l)

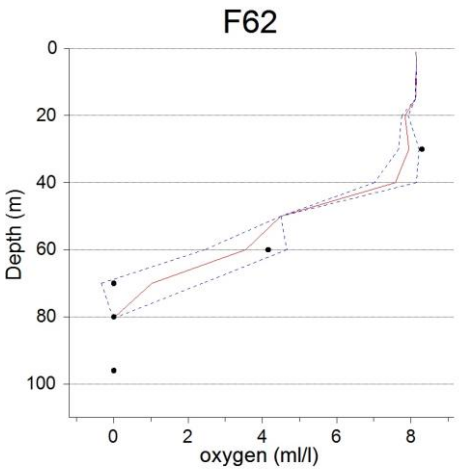

LL9
Depth (m)
0
10
20
30
40
50
60
2
4
6
8
10
oxygen (ml/l)

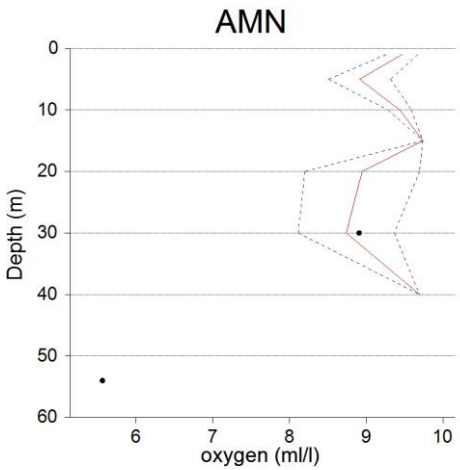

LL9
Depth (m)
0
10
20
30
40
50
60
70
80
0
5
10
oxygen (ml/l)

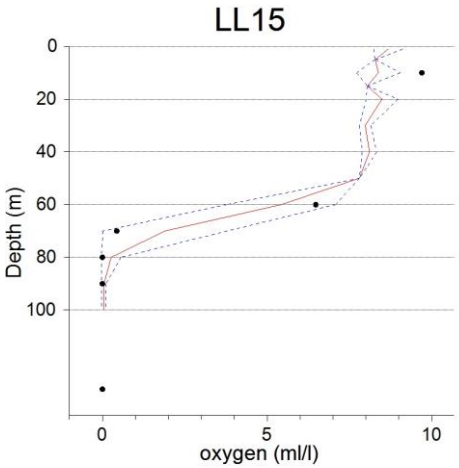

JML
Depth (m)
0
10
20
30
40
50
60
70
80
0
5
10
oxygen (ml/l)

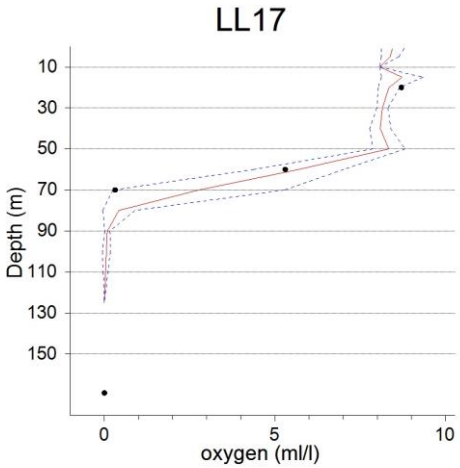

LL11
Depth (m)
0
10
20
30
40
50
60
70
80
0
5
10
oxygen (ml/l)

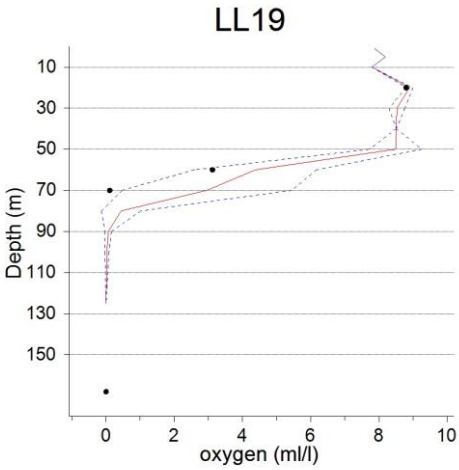

LL12
Depth (m)
0
10
20
30
40
50
60
70
80
0
5
10
oxygen (ml/l)

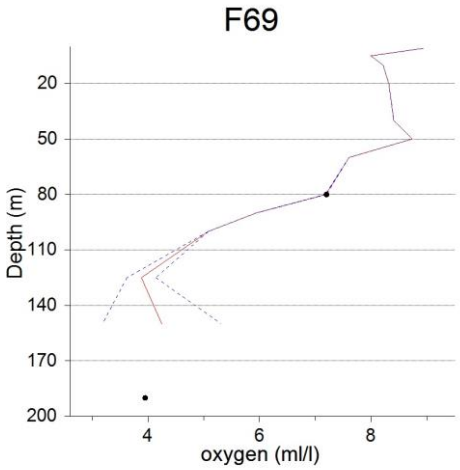

F62
Depth (m)
0
20
40
60
80
100
0
2
4
6
8
oxygen (ml/l)

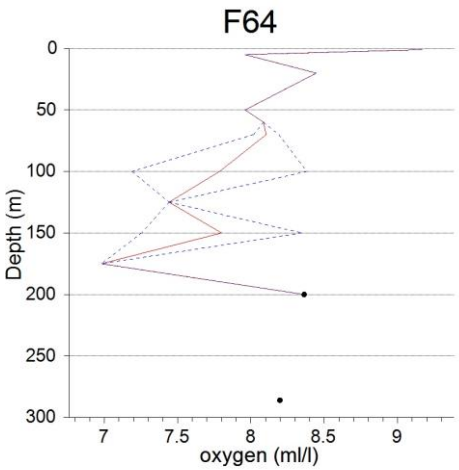

AMN
Depth (m)
0
10
20
30
40
50
60
6
7
8
9
10
oxygen (ml/l)

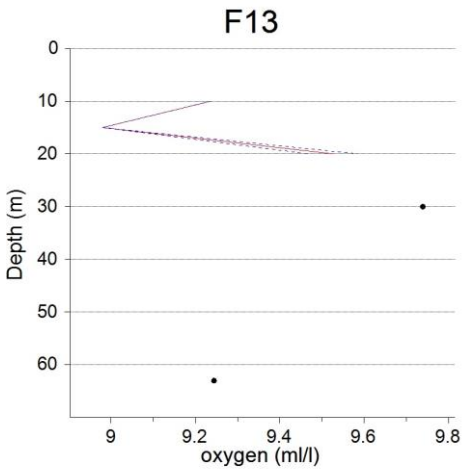

LL15
Depth (m)
0
20
40
60
80
100
0
5
10
oxygen (ml/l)

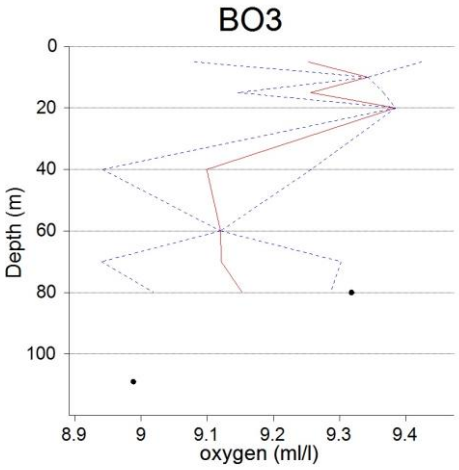

LL17
Depth (m)
10
30
50
70
90
110
130
150
0
5
10
oxygen (ml/l)

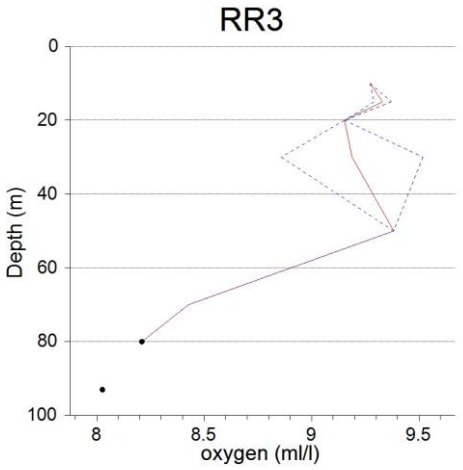

LL19
Depth (m)
10
30
50
70
90
110
130
150
0
2
4
6
8
10
oxygen (ml/l)

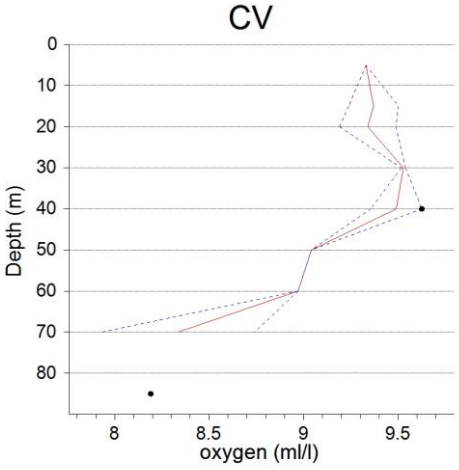

F69
Depth (m)
20
50
80
110
140
170
200
4
6
8
oxygen (ml/l)

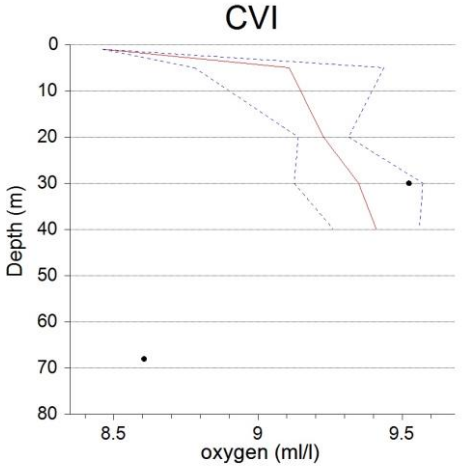

F64
Depth (m)
0
50
100
150
200
250
300
7
7.5
8
8.5
9
oxygen (ml/l)

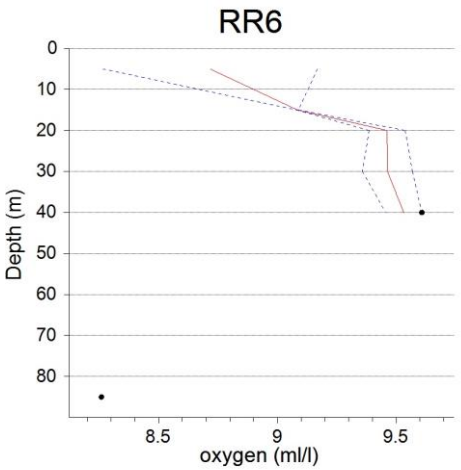

F13
Depth (m)
0
10
20
30
40
50
60
9
9.2
9.4
9.6
9.8
oxygen (ml/l)

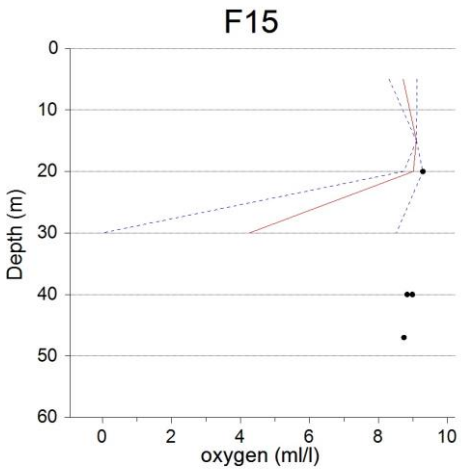

BO3
Depth (m)
0
20
40
60
80
100
8.9
9
9.1
9.2
9.3
9.4
oxygen (ml/l)

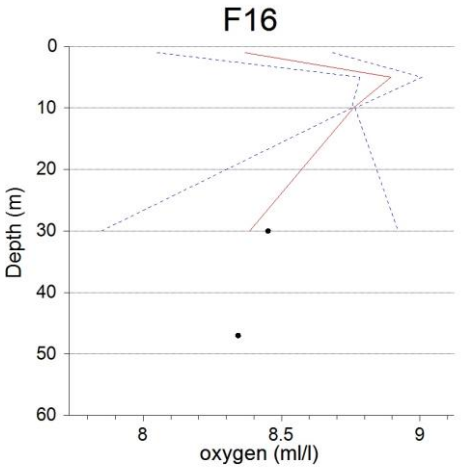

RR3
Depth (m)
0
20
40
60
80
100
8
8.5
9
9.5
oxygen (ml/l)

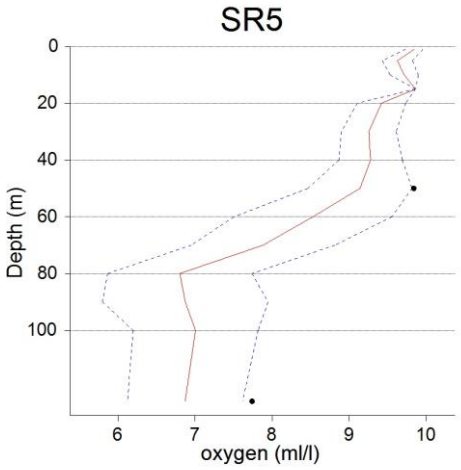

CV
Depth (m)
0
10
20
30
40
50
60
70
80
8
8.5
9
9.5
oxygen (ml/l)

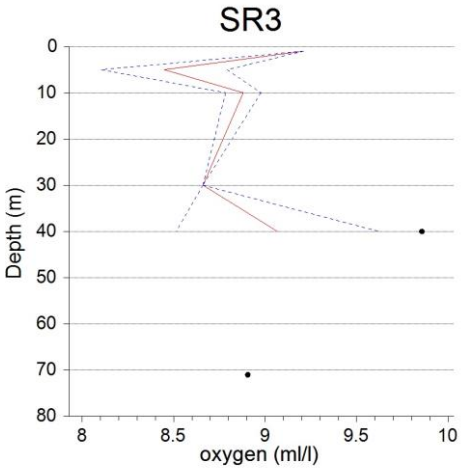

CVI
Depth (m)
0
10
20
30
40
50
60
70
80
8.5
9
9.5
oxygen (ml/l)

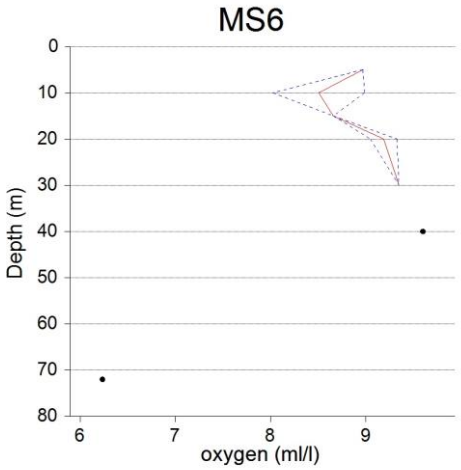

RR6
Depth (m)
0
10
20
30
40
50
60
70
80
8.5
9
9.5
oxygen (ml/l)

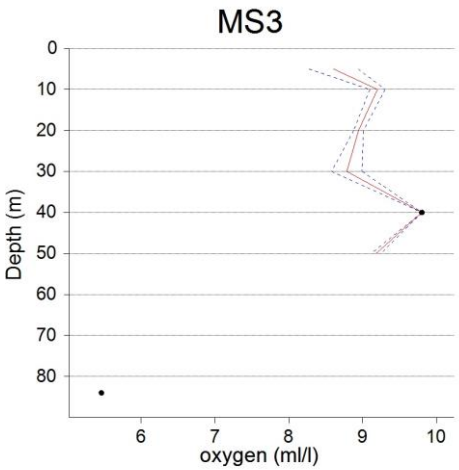

F15
Depth (m)
0
10
20
30
40
50
60
0
2
4
6
8
10
oxygen (ml/l)

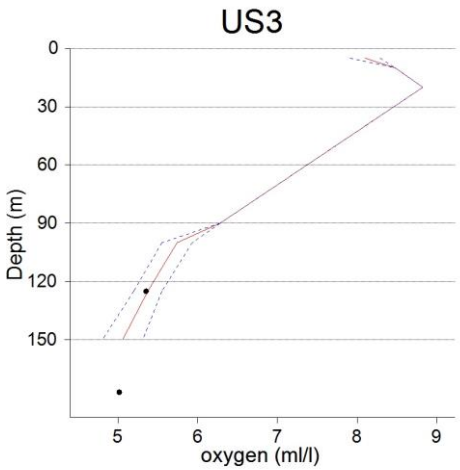

F16
Depth (m)
0
10
20
30
40
50
60
8
8.5
9
oxygen (ml/l)

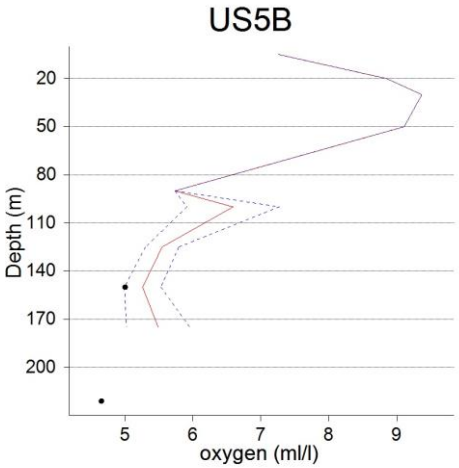

SR5
Depth (m)
0
20
40
60
80
100
6
7
8
9
10
oxygen (ml/l)

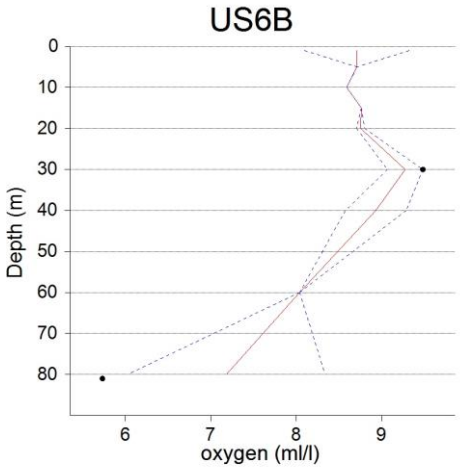

SR3
Depth (m)
0
10
20
30
40
50
60
70
80
8
8.5
9
9.5
10
oxygen (ml/l)

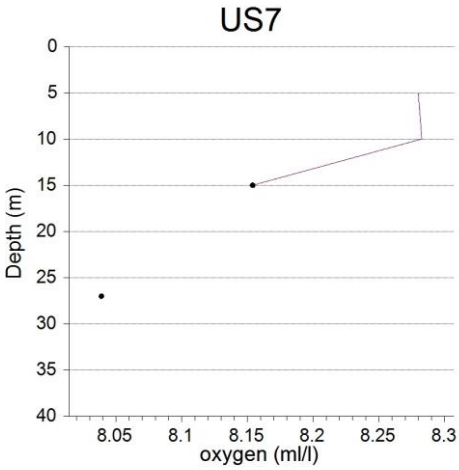

MS6
Depth (m)
0
10
20
30
40
50
60
70
80
6
7
8
9
oxygen (ml/l)

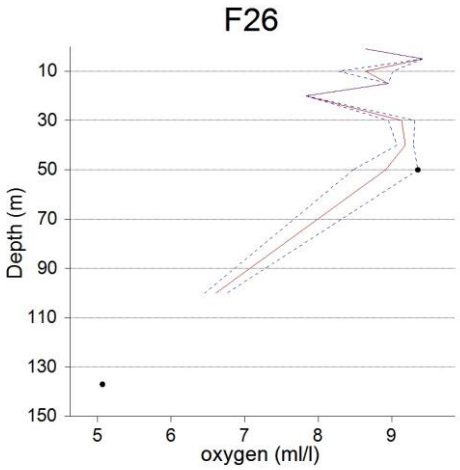

MS3
Depth (m)
0
10
20
30
40
50
60
70
80
6
7
8
9
10
oxygen (ml/l)

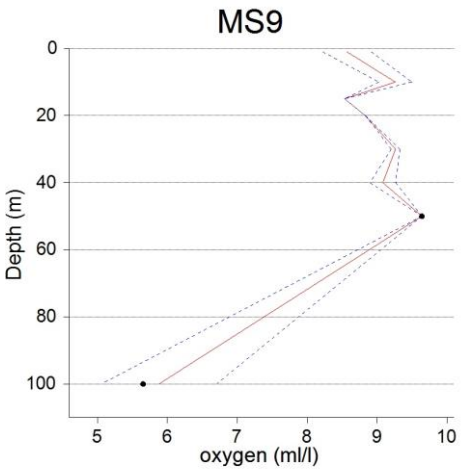

US3
Depth (m)
0
30
60
90
120
150
5
6
7
8
9
oxygen (ml/l)

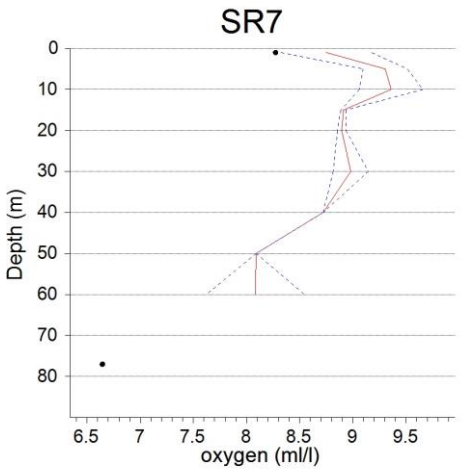

US5B
Depth (m)
20
50
80
110
140
170
200
5
6
7
8
9
oxygen (ml/l)

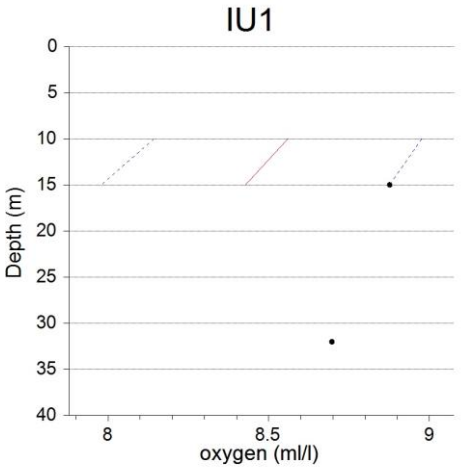

US6B
Depth (m)
0
10
20
30
40
50
60
70
80
6
7
8
9
oxygen (ml/l)

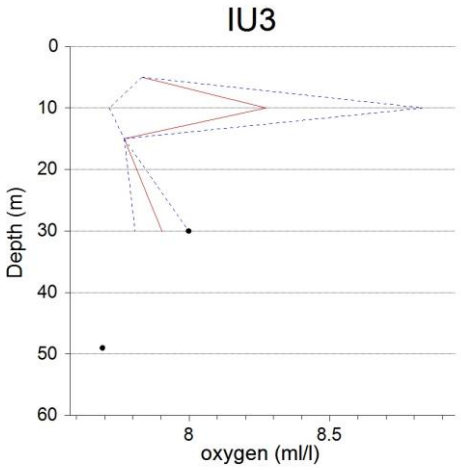

US7
Depth (m)
0
5
10
15
20
25
30
35
40
8.05
8.1
8.15
8.2
8.25
8.3
oxygen (ml/l)

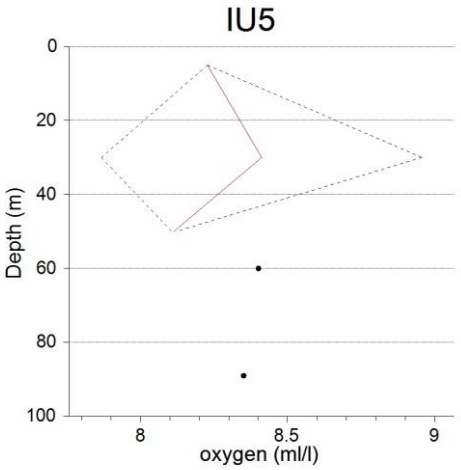

F26
Depth (m)
10
30
50
70
90
110
130
150
5
6
7
8
9
oxygen (ml/l)

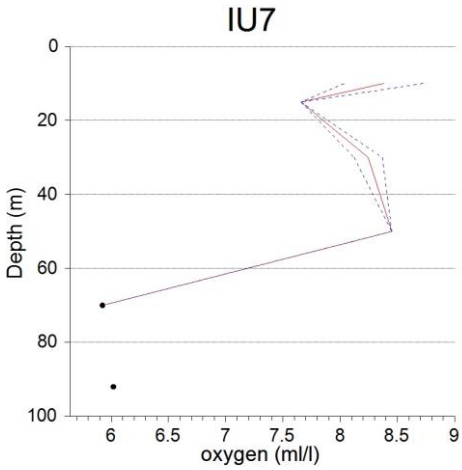

MS9
Depth (m)
0
20
40
60
80
100
5
6
7
8
9
10
oxygen (ml/l)


SR7
Depth (m)
0
10
20
30
40
50
60
70
80
6.5
7
7.5
8
8.5
9
9.5
oxygen (ml/l)

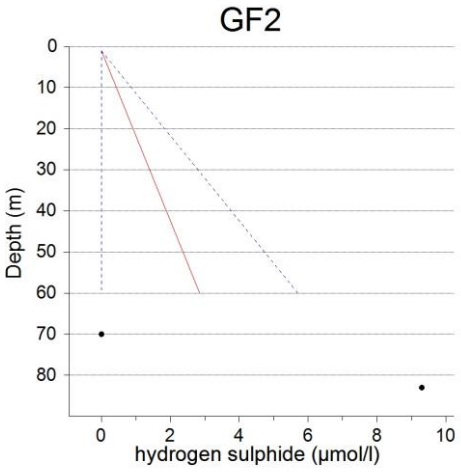

IU1
Depth (m)
0
5
10
15
20
25
30
35
40
8
8.5
9
oxygen (ml/l)

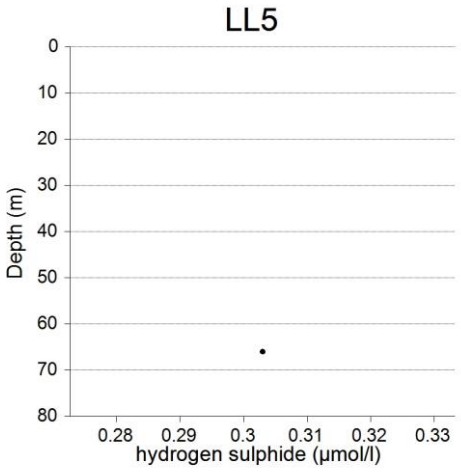

IU3
Depth (m)
0
10
20
30
40
50
60
8
8.5
oxygen (ml/l)

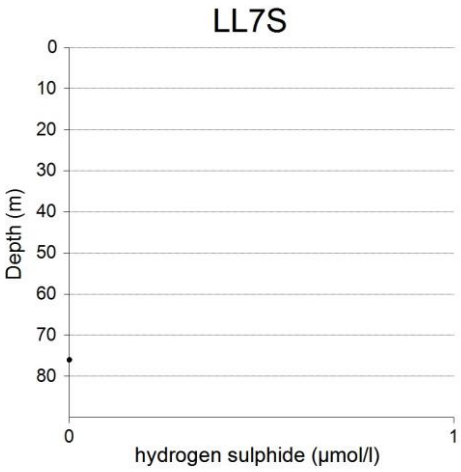

IU5
Depth (m)
0
20
40
60
80
100
8
8.5
9
oxygen (ml/l)

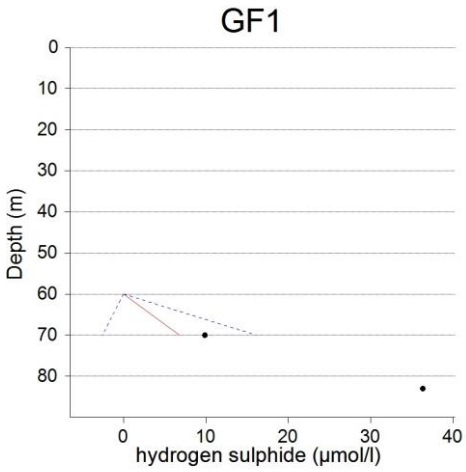

IU7
Depth (m)
0
20
40
60
80
100
6
6.5
7
7.5
8
8.5
9
oxygen (ml/l)

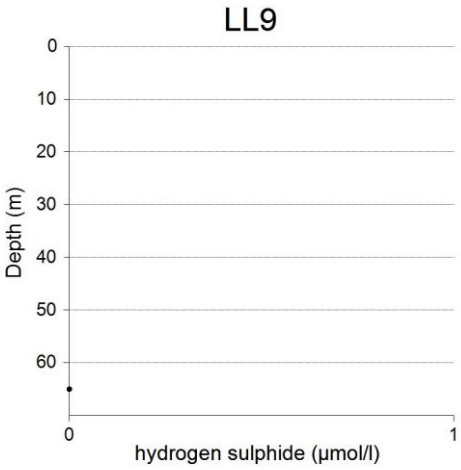
Hydrogen sulphide:

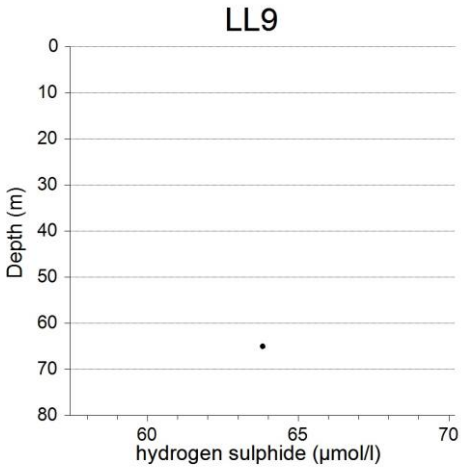


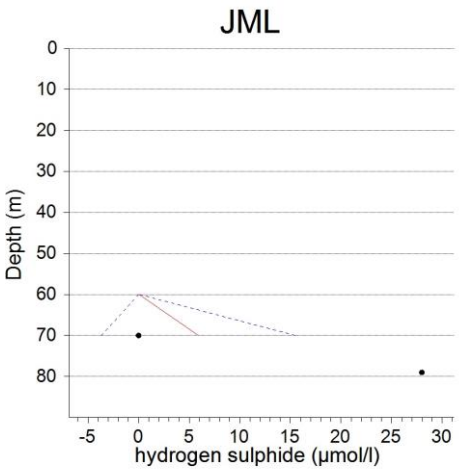



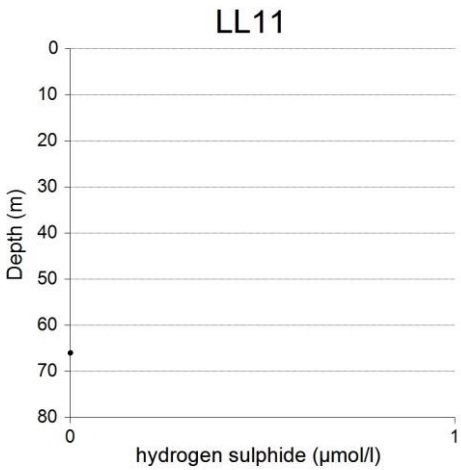



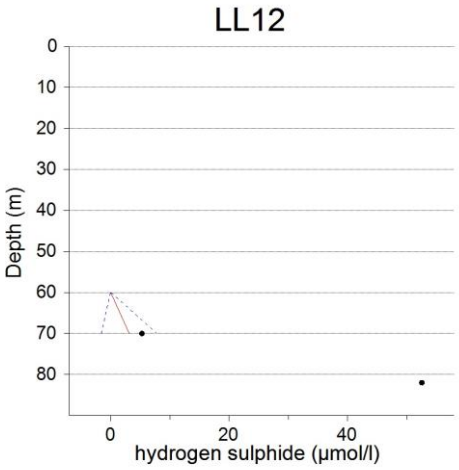



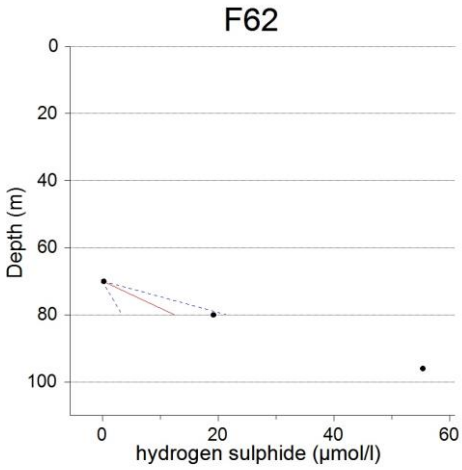



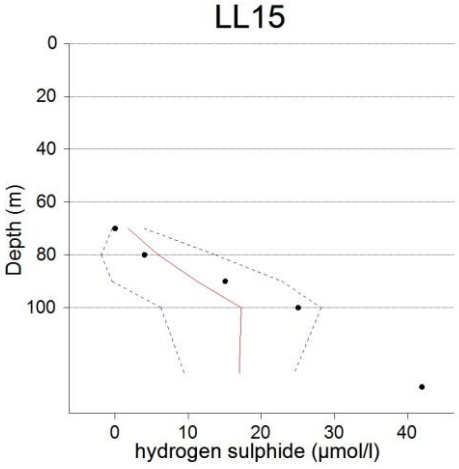



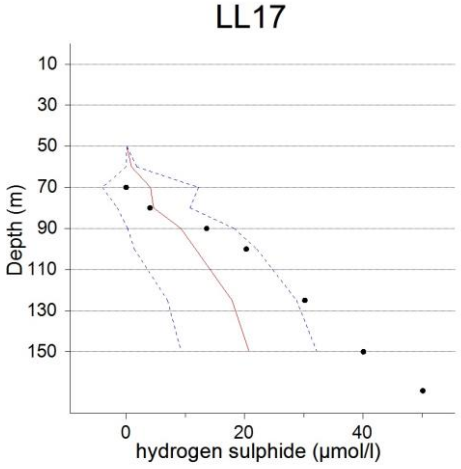

JML
Depth (m)
0
10
20
30
40
50
60
70
80
-5
0
5
10
15
20
25
30
hydrogen sulphide (µmol/l)

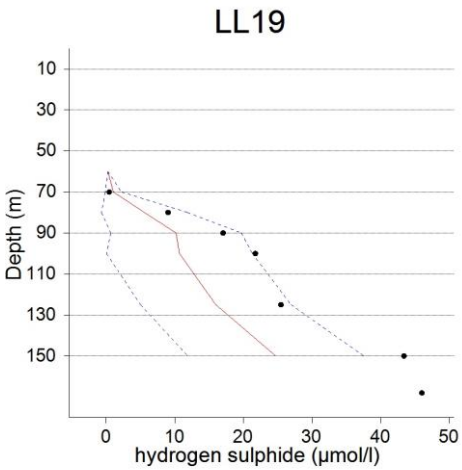

LL11
Depth (m)
0
10
20
30
40
50
60
70
80
0
1
hydrogen sulphide (µmol/l)


LL12
Depth (m)
0
10
20
30
40
50
60
70
80
0
20
40
hydrogen sulphide (µmol/l)

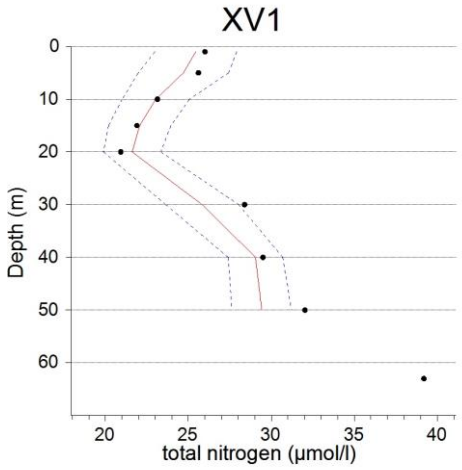

F62
Depth (m)
0
20
40
60
80
100
0
20
40
60
hydrogen sulphide (µmol/l)

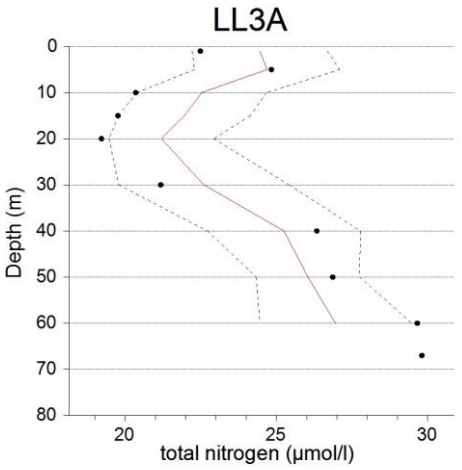

LL15
Depth (m)
0
20
40
60
80
100
0
10
20
30
40
hydrogen sulphide (µmol/l)

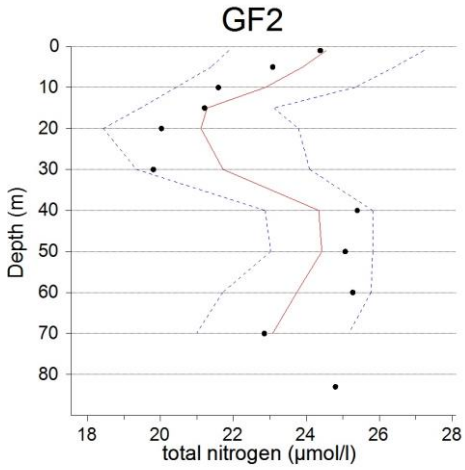

LL17
Depth (m)
10
30
50
70
90
110
130
150
0
20
40
hydrogen sulphide (µmol/l)

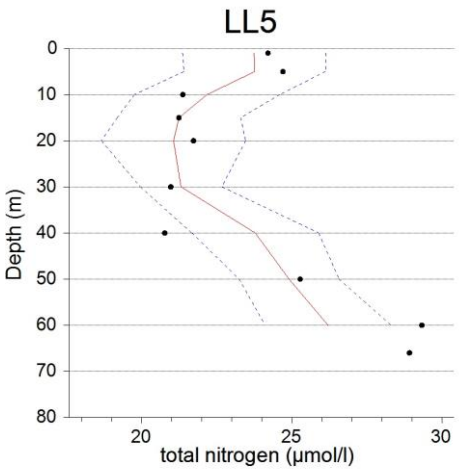


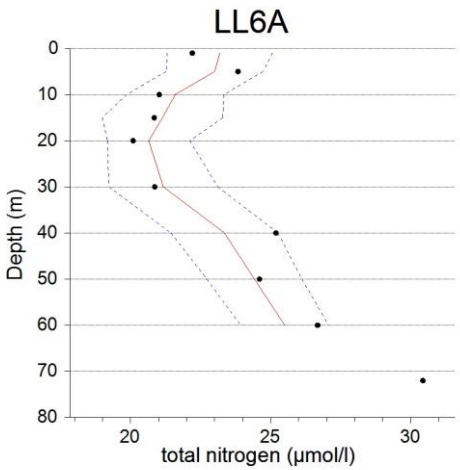

Total nitrogen:

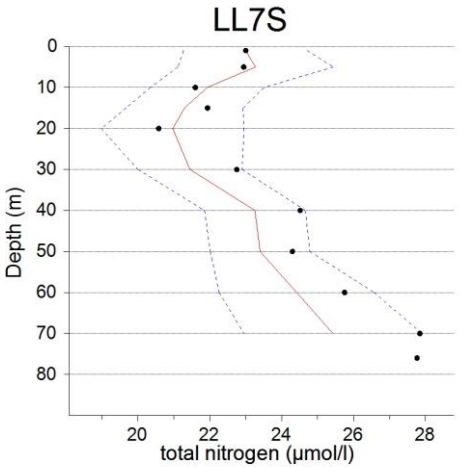


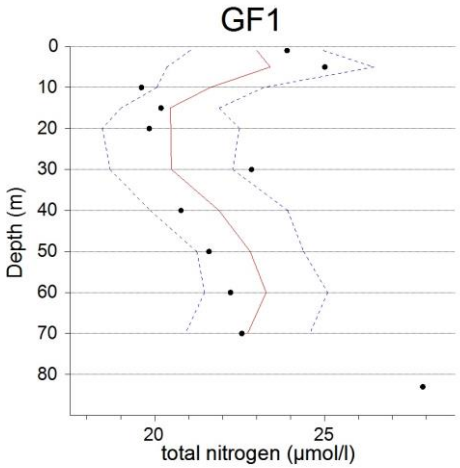



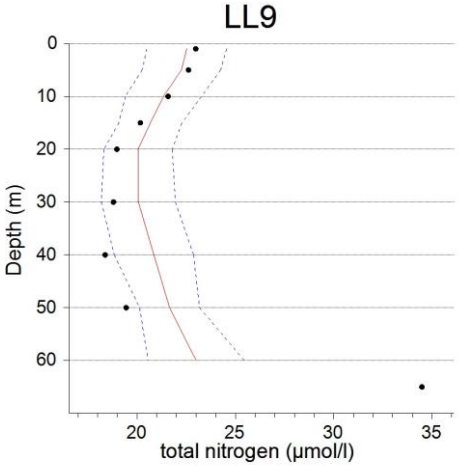



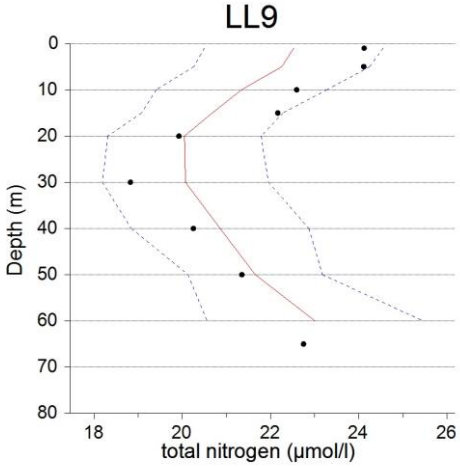

LL5
Depth (m)
0
10
20
30
40
50
60
70
80
20
25
30
total nitrogen (µmol/l)

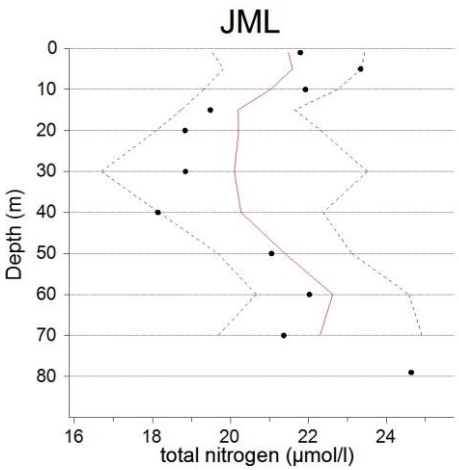

LL6A
Depth (m)
0
10
20
30
40
50
60
70
80
20
25
30
total nitrogen (µmol/l)

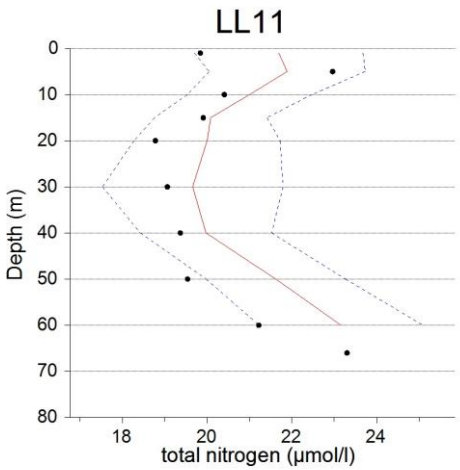

LL7S
Depth (m)
0
10
20
30
40
50
60
70
80
20
22
24
26
28
total nitrogen (µmol/l)

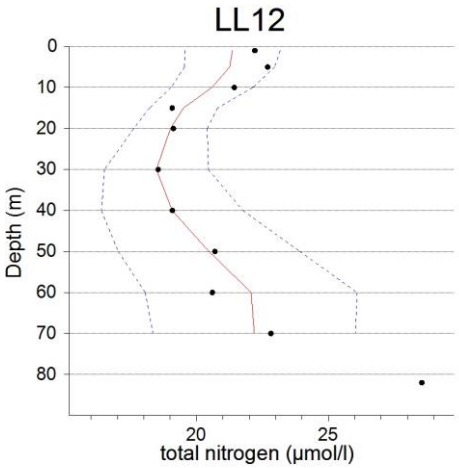

GF1
Depth (m)
0
10
20
30
40
50
60
70
80
20
25
total nitrogen (µmol/l)

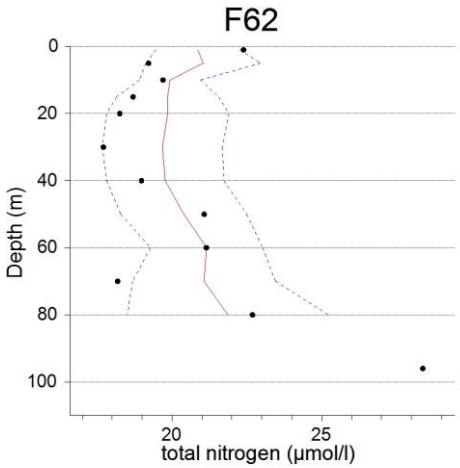

LL9
Depth (m)
0
10
20
30
40
50
60
20
25
30
35
total nitrogen (µmol/l)

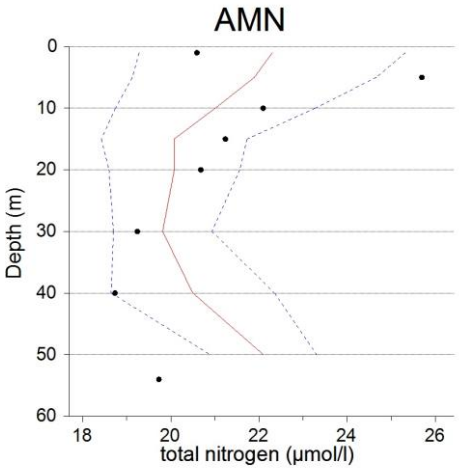

LL9
Depth (m)
0
10
20
30
40
50
60
70
80
18
20
22
24
26
total nitrogen (µmol/l)

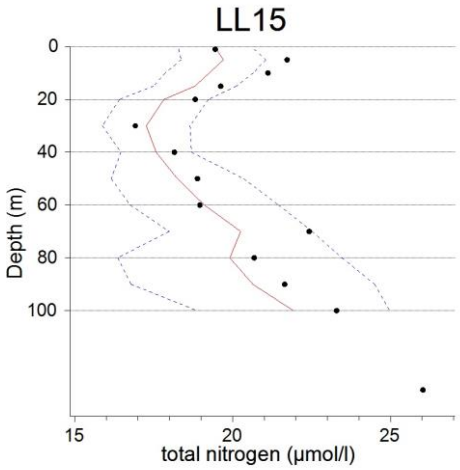

JML
Depth (m)
0
10
20
30
40
50
60
70
80
16
18
20
22
24
total nitrogen (µmol/l)

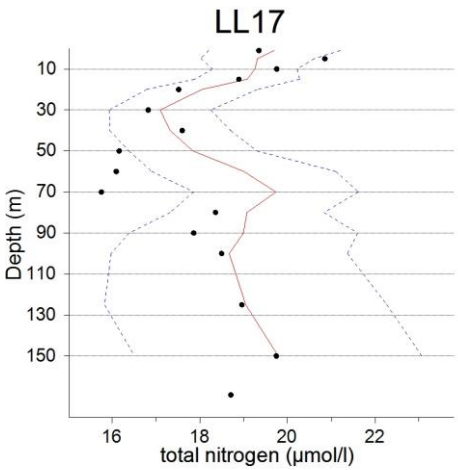

LL11
Depth (m)
0
10
20
30
40
50
60
70
80
18
20
22
24
total nitrogen (µmol/l)

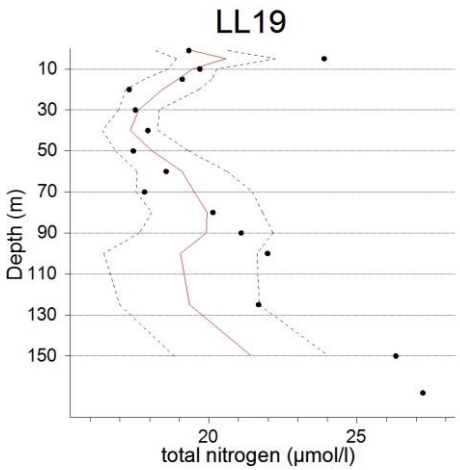

LL12
Depth (m)
0
10
20
30
40
50
60
70
80
20
25
total nitrogen (µmol/l)

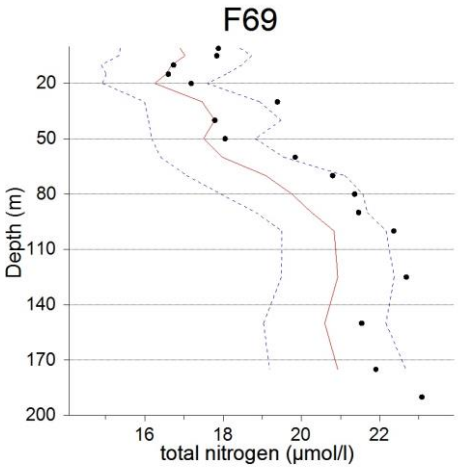

F62
Depth (m)
0
20
40
60
80
100
20
25
total nitrogen (µmol/l)

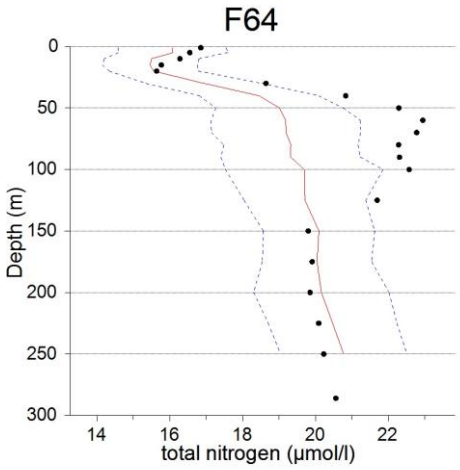

AMN
Depth (m)
0
10
20
30
40
50
60
18
20
22
24
26
total nitrogen (µmol/l)

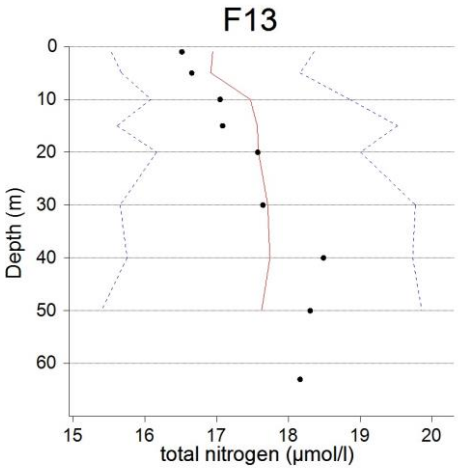

LL15
Depth (m)
0
20
40
60
80
100
15
20
25
total nitrogen (µmol/l)

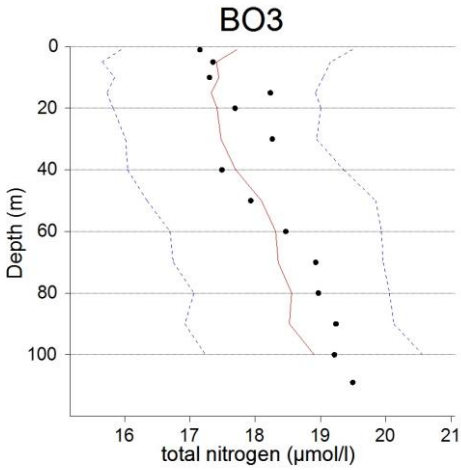

LL17
Depth (m)
10
30
50
70
90
110
130
150
16
18
20
22
total nitrogen (µmol/l)

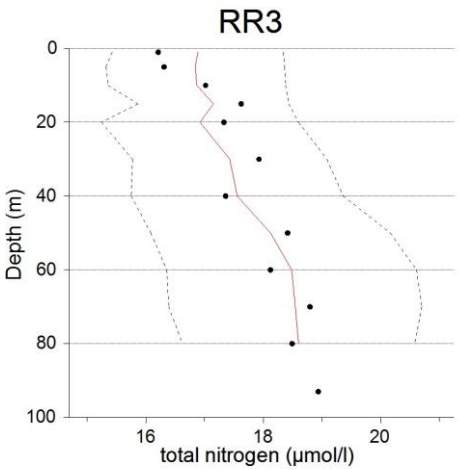

LL19
Depth (m)
10
30
50
70
90
110
130
150
20
25
total nitrogen (µmol/l)

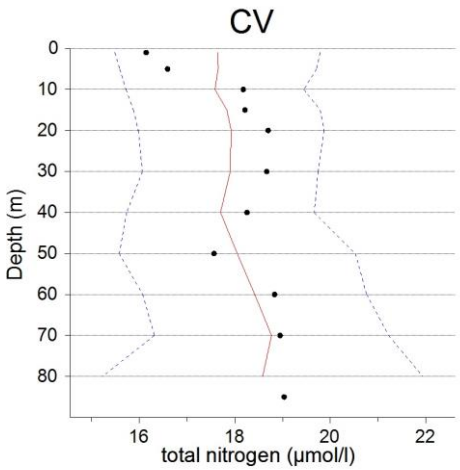

F69
Depth (m)
20
50
80
110
140
170
200
16
18
20
22
total nitrogen (µmol/l)

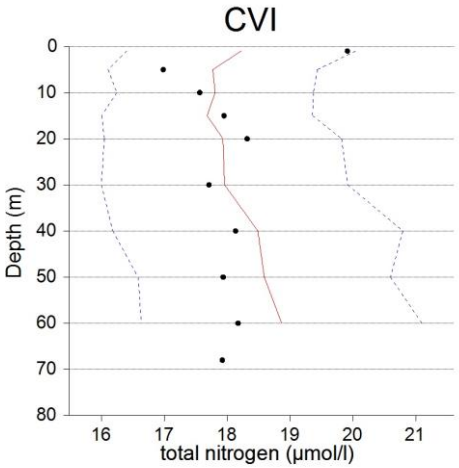

F64
Depth (m)
0
50
100
150
200
250
300
14
16
18
20
22
total nitrogen (µmol/l)

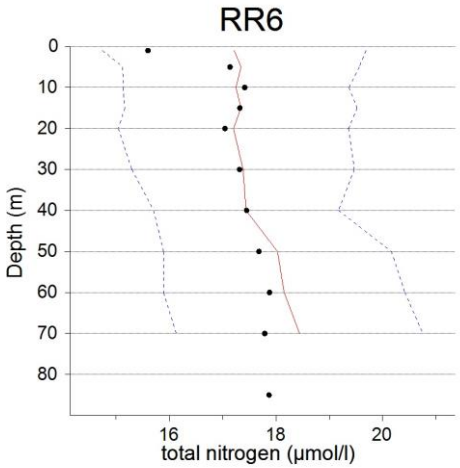

F13
Depth (m)
0
10
20
30
40
50
60
15
16
17
18
19
20
total nitrogen (µmol/l)

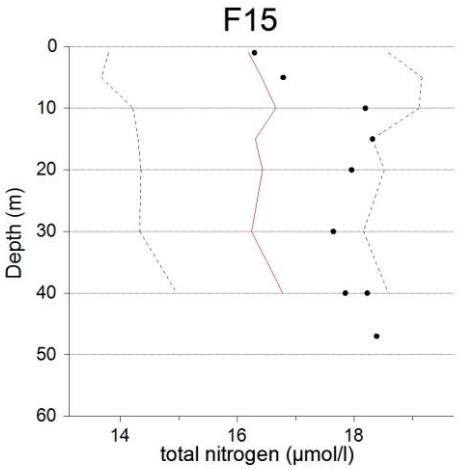

BO3
Depth (m)
0
20
40
60
80
100
16
17
18
19
20
21
total nitrogen (µmol/l)

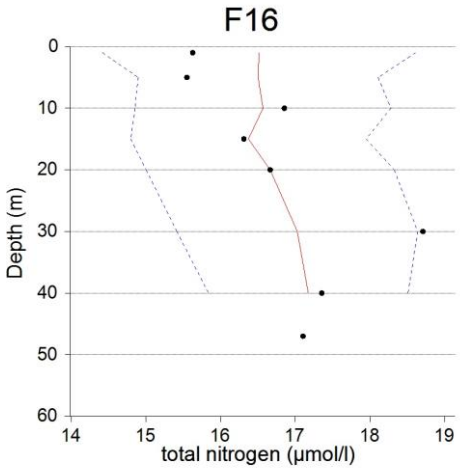

RR3
Depth (m)
0
20
40
60
80
100
16
18
20
total nitrogen (µmol/l)

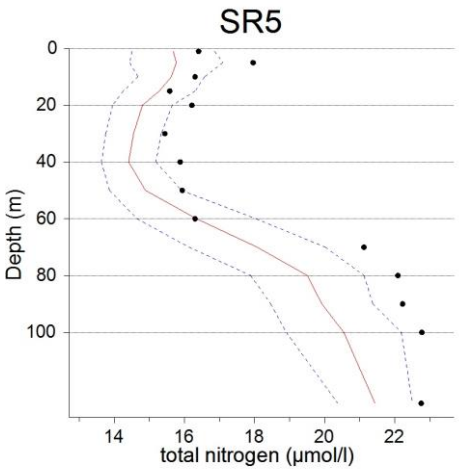

CV
Depth (m)
0
10
20
30
40
50
60
70
80
16
18
20
22
total nitrogen (µmol/l)

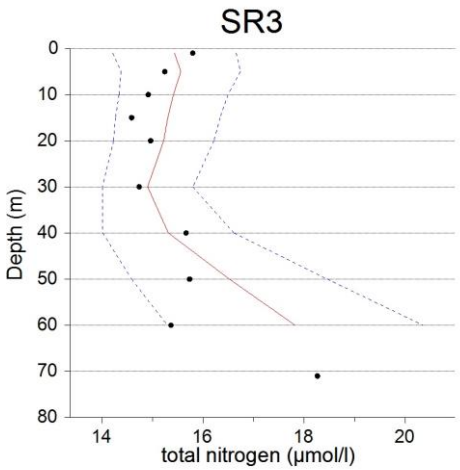

CVI
Depth (m)
0
10
20
30
40
50
60
70
80
16
17
18
19
20
21
total nitrogen (µmol/l)

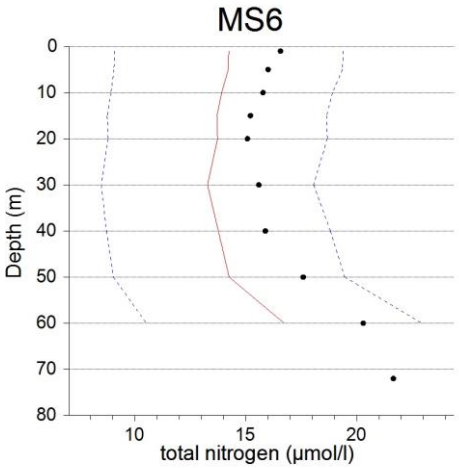

RR6
Depth (m)
0
10
20
30
40
50
60
70
80
16
18
20
total nitrogen (µmol/l)

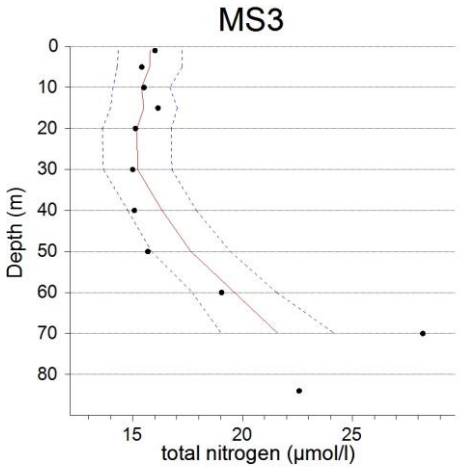

F15
Depth (m)
0
10
20
30
40
50
60
14
16
18
total nitrogen (µmol/l)

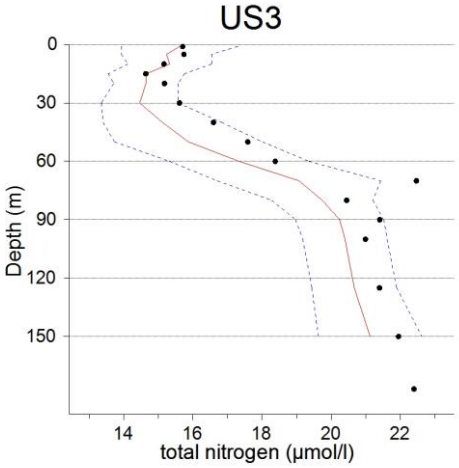

F16
Depth (m)
0
10
20
30
40
50
60
14
15
16
17
18
19
total nitrogen (µmol/l)

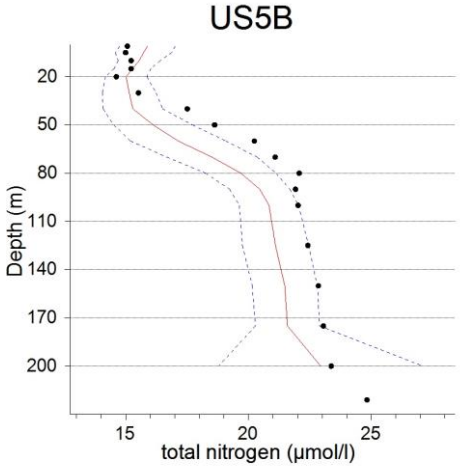

SR5
Depth (m)
0
20
40
60
80
100
14
16
18
20
22
total nitrogen (µmol/l)

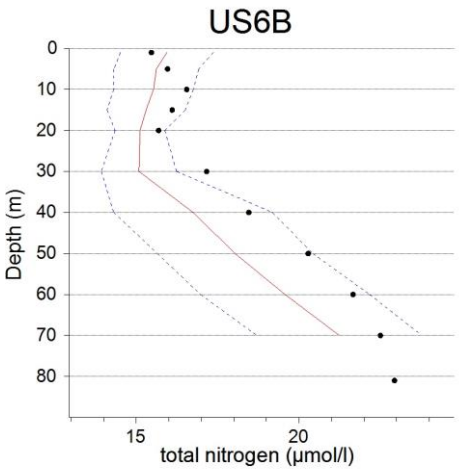

SR3
Depth (m)
0
10
20
30
40
50
60
70
80
14
16
18
20
total nitrogen (µmol/l)

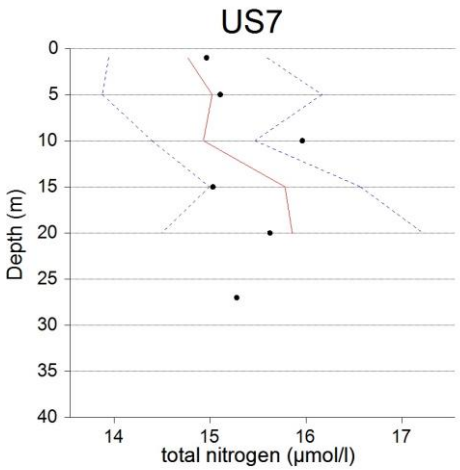

MS6
Depth (m)
0
10
20
30
40
50
60
70
80
10
15
20
total nitrogen (µmol/l)

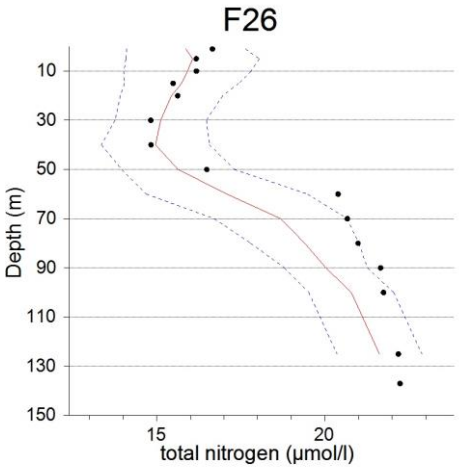

MS3
Depth (m)
0
10
20
30
40
50
60
70
80
15
20
25
total nitrogen (µmol/l)

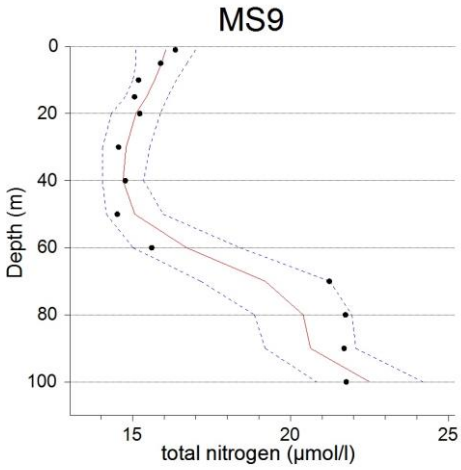

US3
Depth (m)
0
30
60
90
120
150
14
16
18
20
22
total nitrogen (µmol/l)

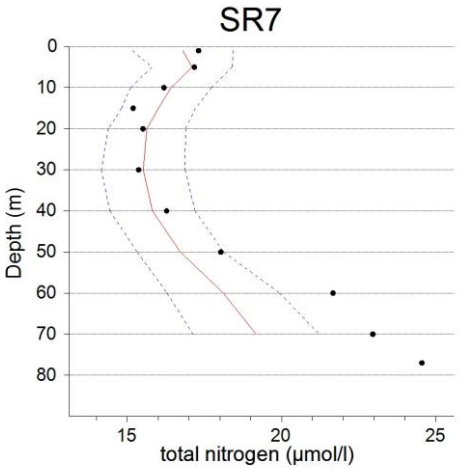

US5B
Depth (m)
20
50
80
110
140
170
200
15
20
25
total nitrogen (µmol/l)

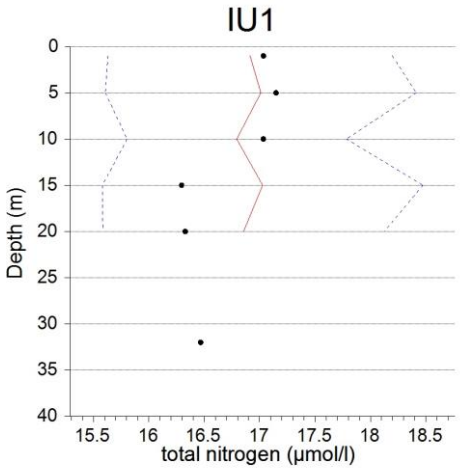

US6B
Depth (m)
0
10
20
30
40
50
60
70
80
15
20
total nitrogen (µmol/l)

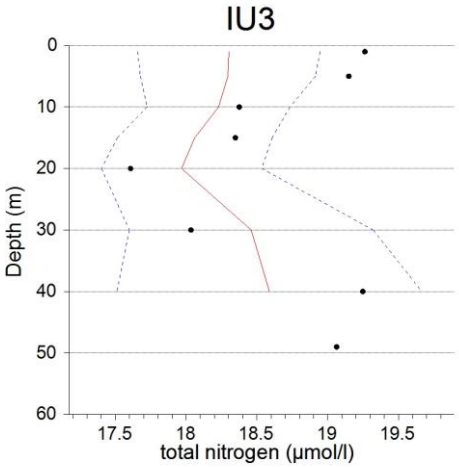

US7
Depth (m)
0
5
10
15
20
25
30
35
40
14
15
16
17
total nitrogen (µmol/l)

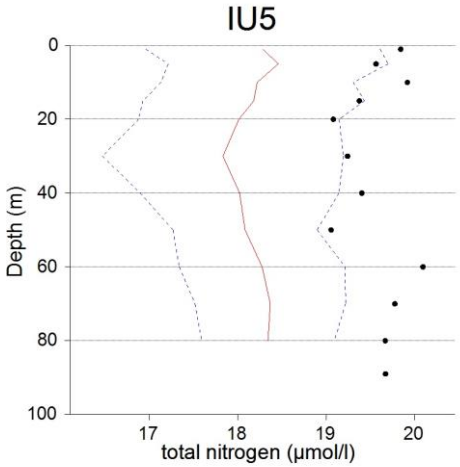

F26
Depth (m)
10
30
50
70
90
110
130
150
15
20
total nitrogen (µmol/l)

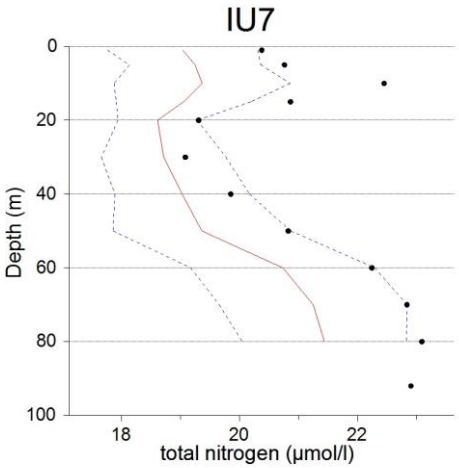

MS9
Depth (m)
0
20
40
60
80
100
15
20
25
total nitrogen (µmol/l)


SR7
Depth (m)
0
10
20
30
40
50
60
70
80
15
20
25
total nitrogen (µmol/l)

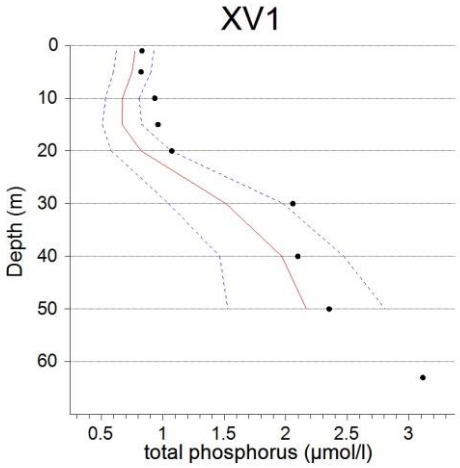

IU1
Depth (m)
0
5
10
15
20
25
30
35
40
15.5
16
16.5
17
17.5
18
18.5
total nitrogen (µmol/l)

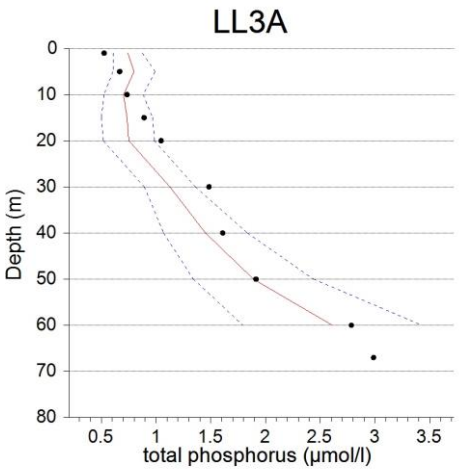


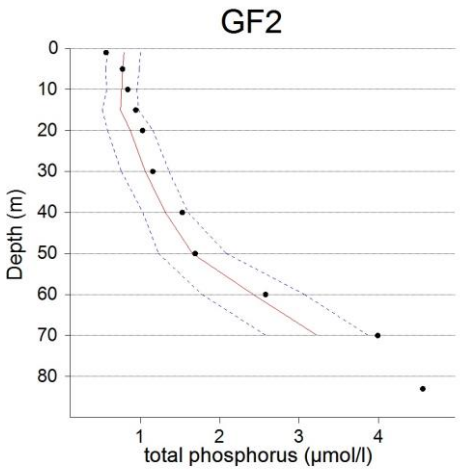



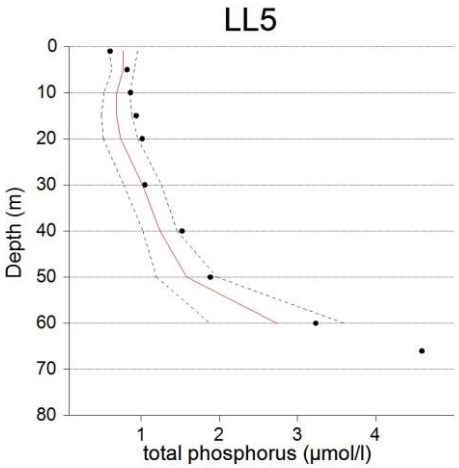



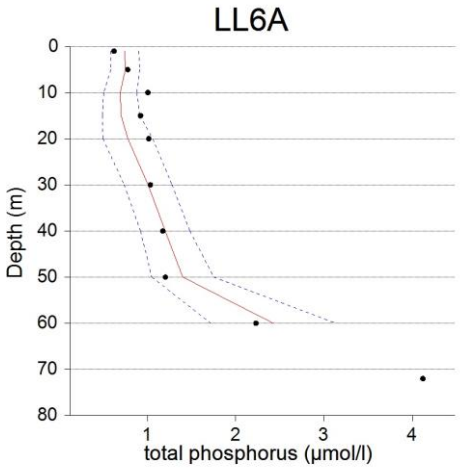

Total phosphorus:

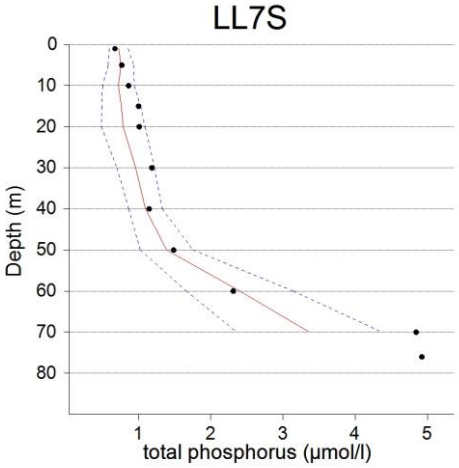


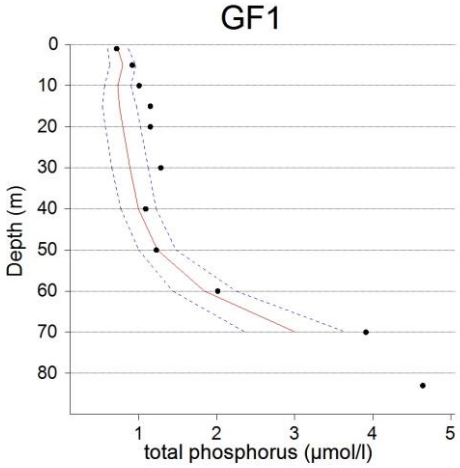

LL3A
Depth (m)
0
10
20
30
40
50
60
70
80
0.5
1
1.5
2
2.5
3
3.5
total phosphorus (µmol/l)

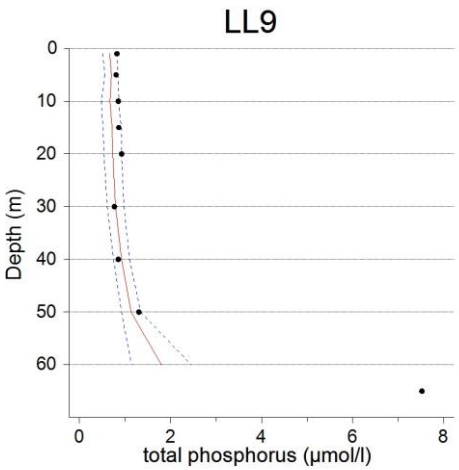

GF2
Depth (m)
0
10
20
30
40
50
60
70
80
1
2
3
4
total phosphorus (µmol/l)

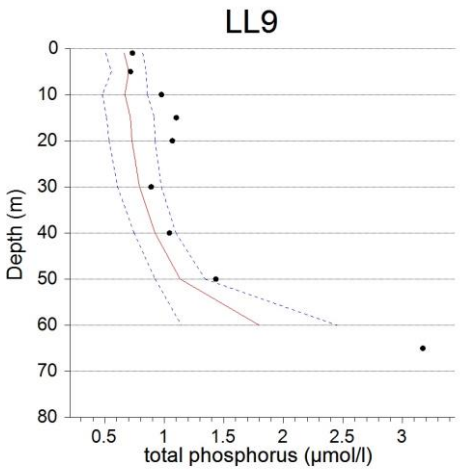

LL5
Depth (m)
0
10
20
30
40
50
60
70
80
1
2
3
4
total phosphorus (µmol/l)

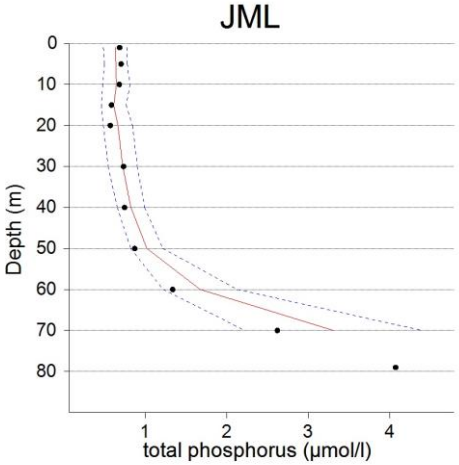

LL6A
Depth (m)
0
10
20
30
40
50
60
70
80
1
2
3
4
total phosphorus (µmol/l)

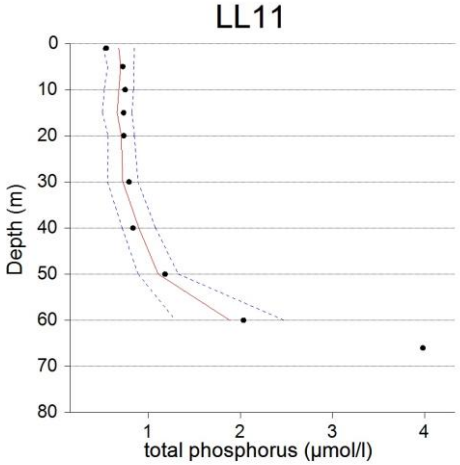

LL7S
Depth (m)
0
10
20
30
40
50
60
70
80
1
2
3
4
5
total phosphorus (µmol/l)

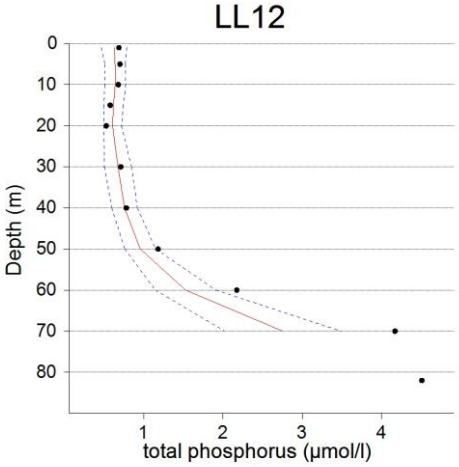

GF1
Depth (m)
0
10
20
30
40
50
60
70
80
1
2
3
4
5
total phosphorus (µmol/l)

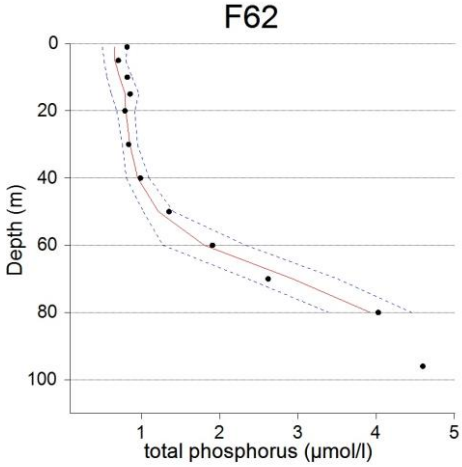

LL9
Depth (m)
0
10
20
30
40
50
60
0
2
4
6
8
total phosphorus (µmol/l)

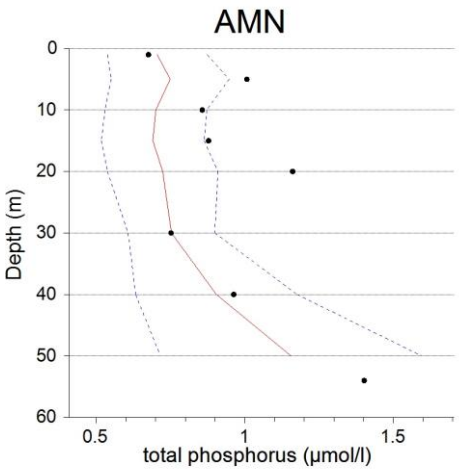

LL9
Depth (m)
0
10
20
30
40
50
60
70
80
0.5
1
1.5
2
2.5
3
total phosphorus (µmol/l)

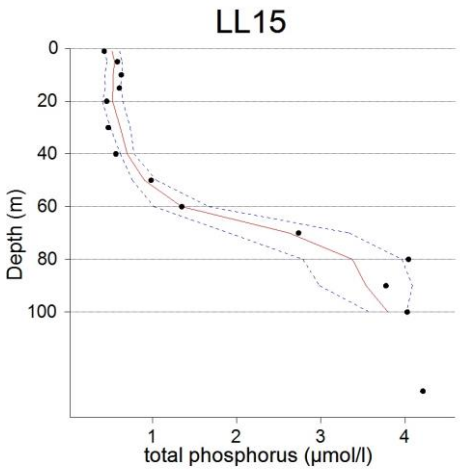

JML
Depth (m)
0
10
20
30
40
50
60
70
80
1
2
3
4
total phosphorus (µmol/l)

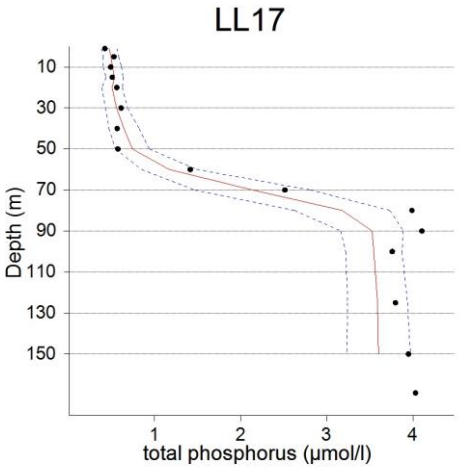

LL11
Depth (m)
0
10
20
30
40
50
60
70
80
1
2
3
4
total phosphorus (µmol/l)

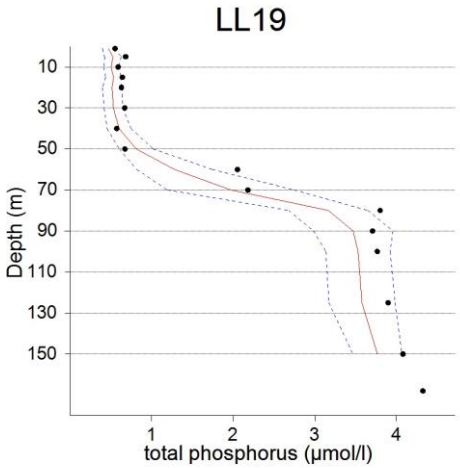

LL12
Depth (m)
0
10
20
30
40
50
60
70
80
1
2
3
4
total phosphorus (µmol/l)

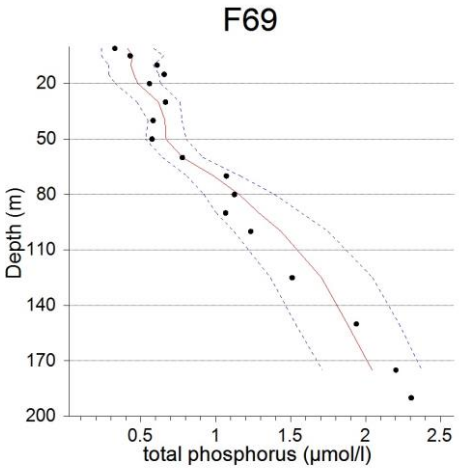

F62
Depth (m)
0
20
40
60
80
100
1
2
3
4
5
total phosphorus (µmol/l)

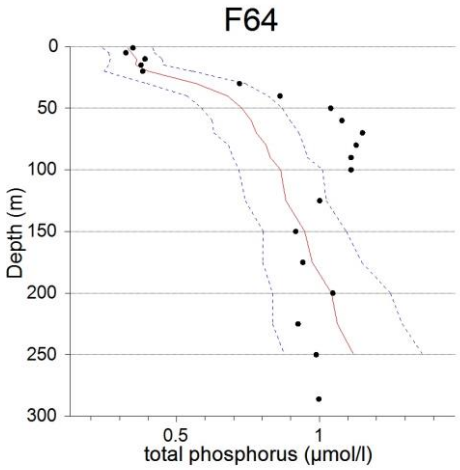

AMN
Depth (m)
0
10
20
30
40
50
60
0.5
1
1.5
total phosphorus (µmol/l)

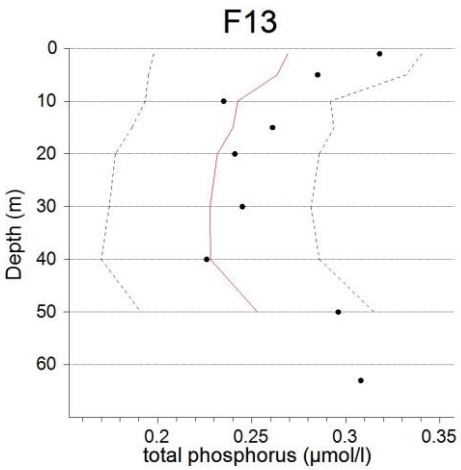

LL15
Depth (m)
0
20
40
60
80
100
1
2
3
4
total phosphorus (µmol/l)

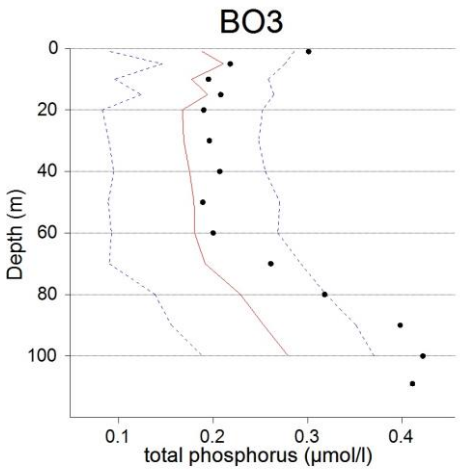

LL17
Depth (m)
10
30
50
70
90
110
130
150
1
2
3
4
total phosphorus (µmol/l)

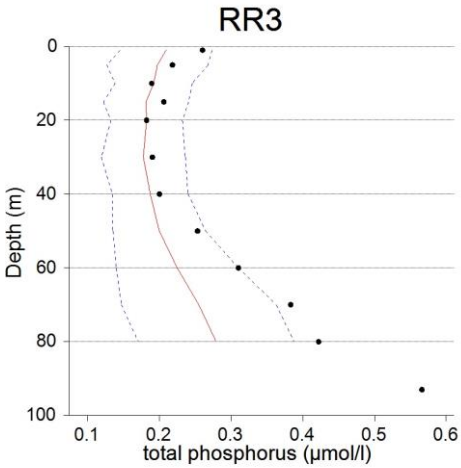

LL19
Depth (m)
10
30
50
70
90
110
130
150
1
2
3
4
total phosphorus (µmol/l)

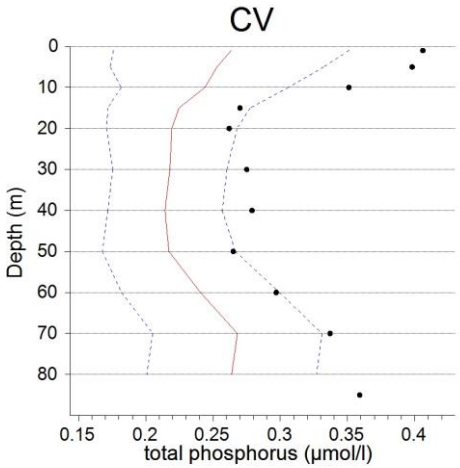

F69
Depth (m)
20
50
80
110
140
170
200
0.5
1
1.5
2
2.5
total phosphorus (µmol/l)

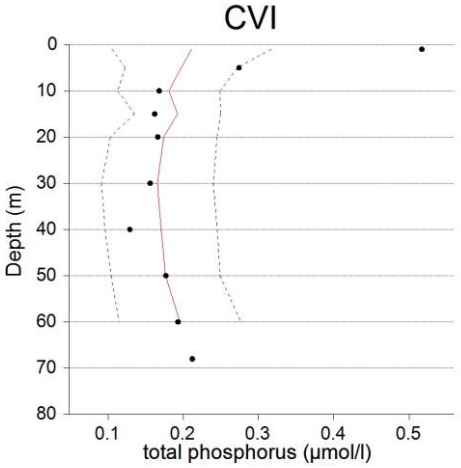

F64
Depth (m)
0
50
100
150
200
250
300
0.5
1
total phosphorus (µmol/l)

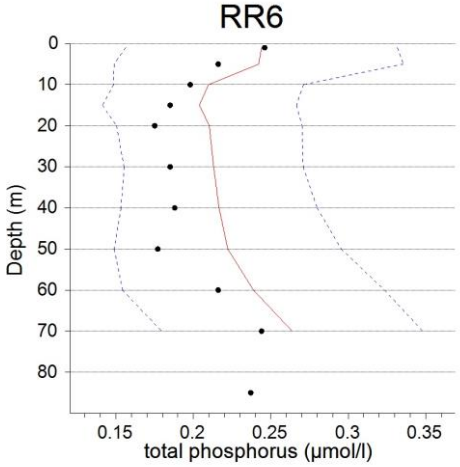

F13
Depth (m)
0
10
20
30
40
50
60
0.2
0.25
0.3
0.35
total phosphorus (µmol/l)

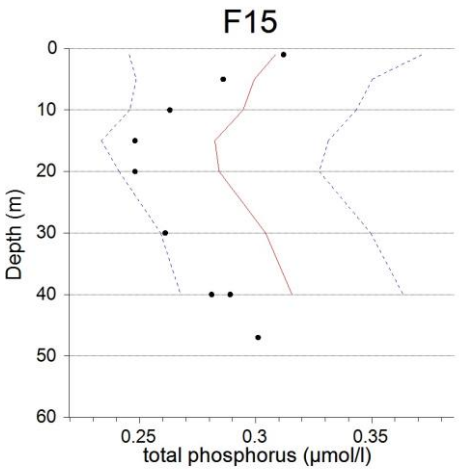

BO3
Depth (m)
0
20
40
60
80
100
0.1
0.2
0.3
0.4
total phosphorus (µmol/l)

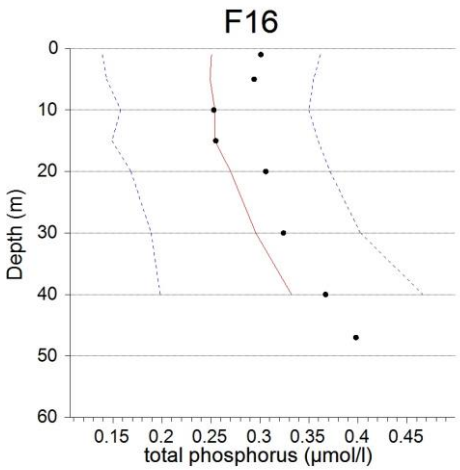

RR3
Depth (m)
0
20
40
60
80
100
0.1
0.2
0.3
0.4
0.5
0.6
total phosphorus (µmol/l)

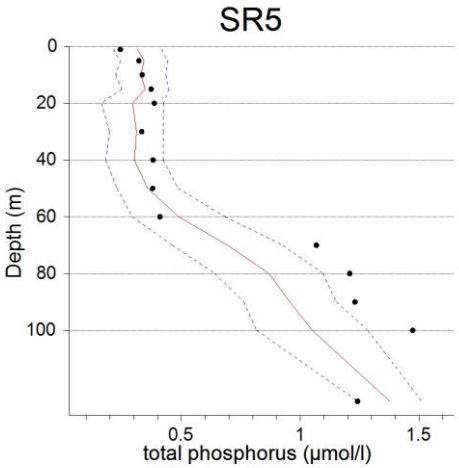

CV
Depth (m)
0
10
20
30
40
50
60
70
80
0.15
0.2
0.25
0.3
0.35
0.4
total phosphorus (µmol/l)

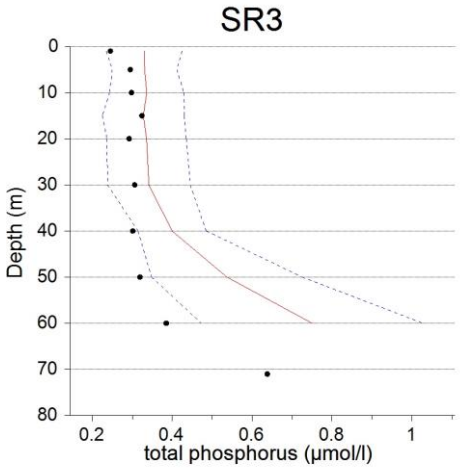

CVI
Depth (m)
0
10
20
30
40
50
60
70
80
0.1
0.2
0.3
0.4
0.5
total phosphorus (µmol/l)

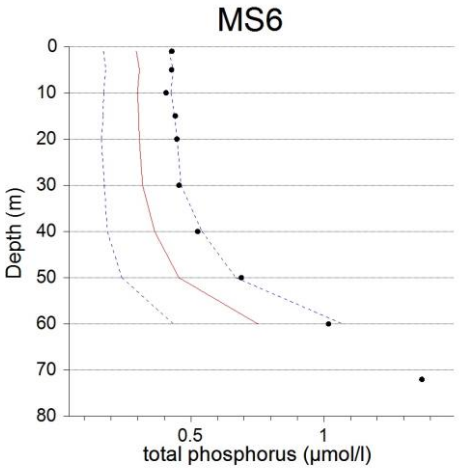

RR6
Depth (m)
0
10
20
30
40
50
60
70
80
0.15
0.2
0.25
0.3
0.35
total phosphorus (µmol/l)

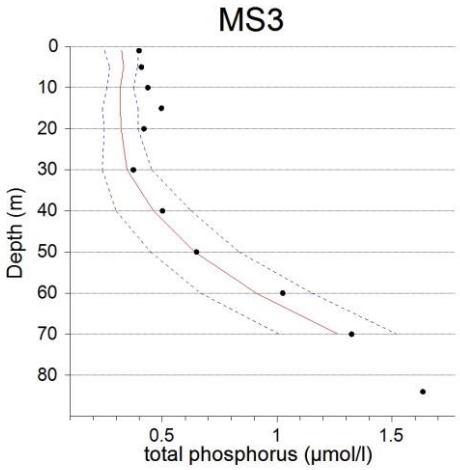

F15
Depth (m)
0
10
20
30
40
50
60
0.25
0.3
0.35
total phosphorus (µmol/l)

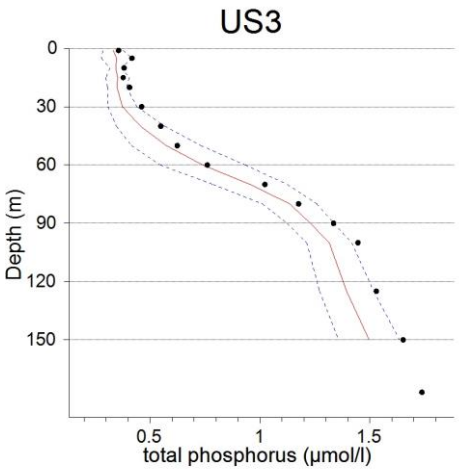

F16
Depth (m)
0
10
20
30
40
50
60
0.15
0.2
0.25
0.3
0.35
0.4
0.45
total phosphorus (µmol/l)

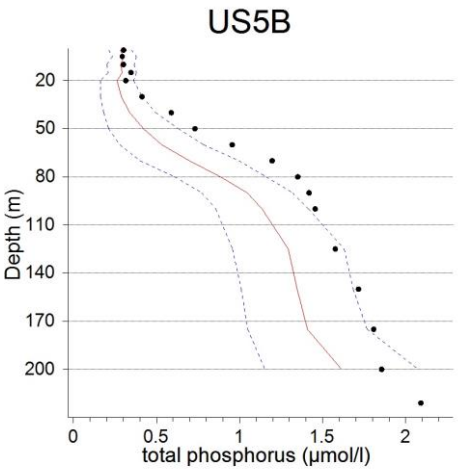

SR5
Depth (m)
0
20
40
60
80
100
0.5
1
1.5
total phosphorus (µmol/l)

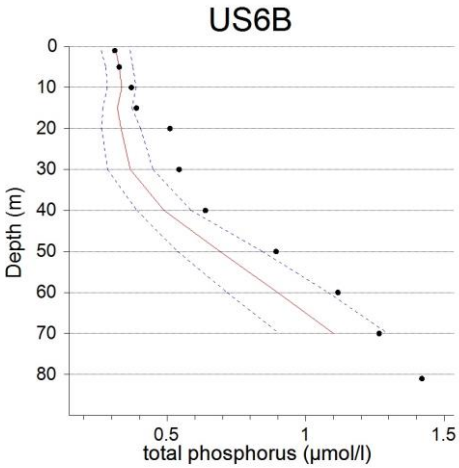

SR3
Depth (m)
0
10
20
30
40
50
60
70
80
0.2
0.4
0.6
0.8
1
total phosphorus (µmol/l)

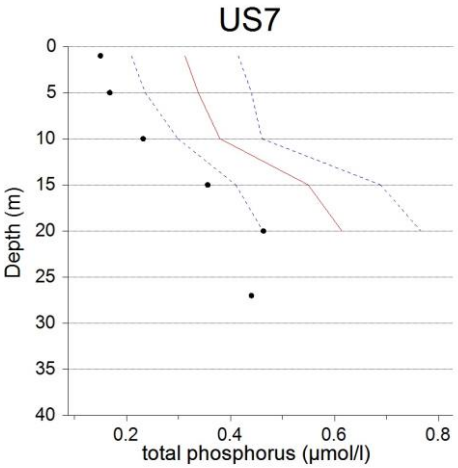

MS6
Depth (m)
0
10
20
30
40
50
60
70
80
0.5
1
total phosphorus (µmol/l)

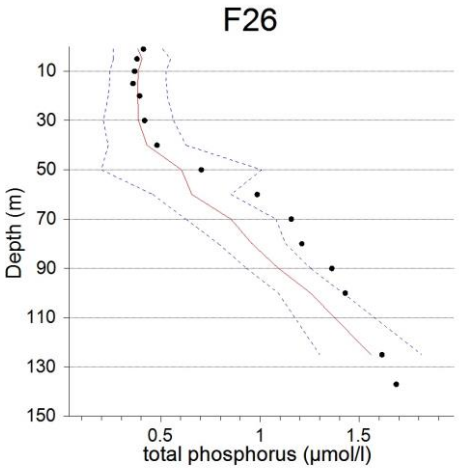

MS3
Depth (m)
0
10
20
30
40
50
60
70
80
0.5
1
1.5
total phosphorus (µmol/l)

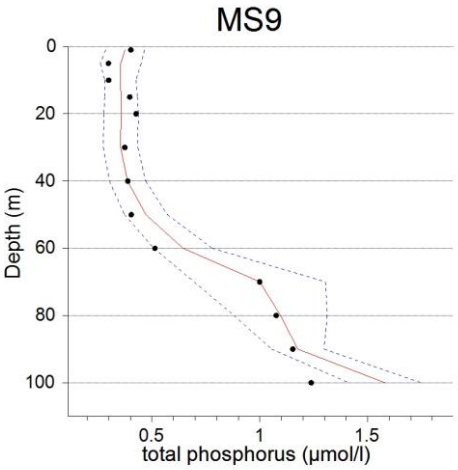

US3
Depth (m)
0
30
60
90
120
150
0.5
1
1.5
total phosphorus (µmol/l)

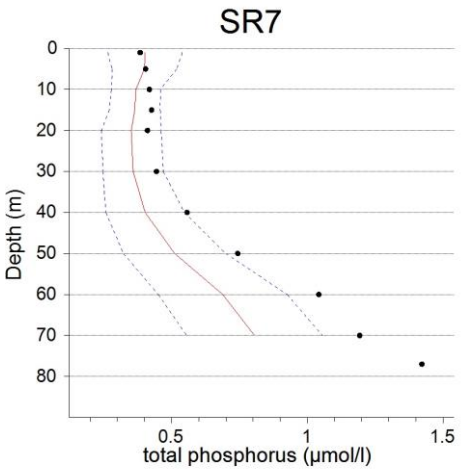

US5B
Depth (m)
20
50
80
110
140
170
200
0
0.5
1
1.5
2
total phosphorus (µmol/l)

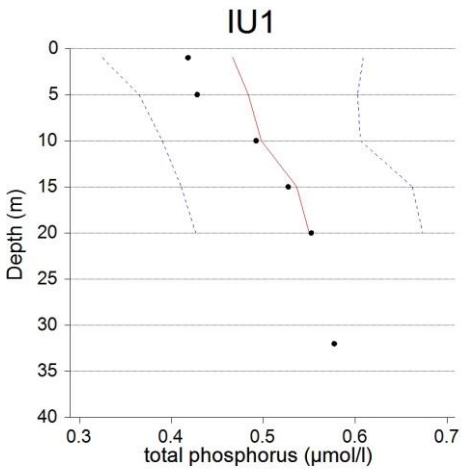

US6B
Depth (m)
0
10
20
30
40
50
60
70
80
0.5
1
1.5
total phosphorus (µmol/l)

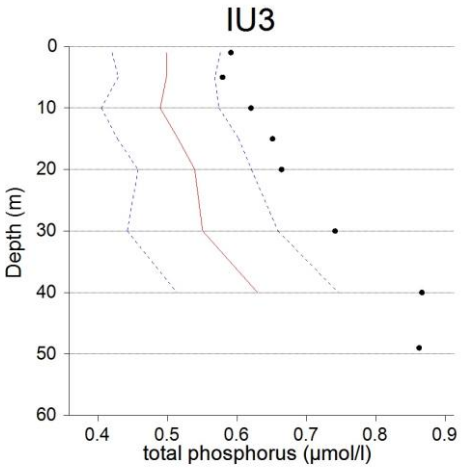

US7
Depth (m)
0
5
10
15
20
25
30
35
40
0.2
0.4
0.6
0.8
total phosphorus (µmol/l)

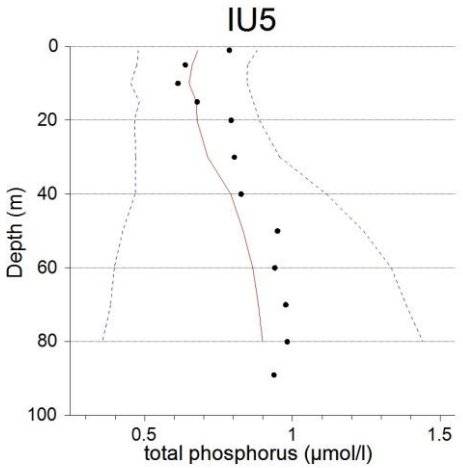

F26
Depth (m)
10
30
50
70
90
110
130
150
0.5
1
1.5
total phosphorus (µmol/l)

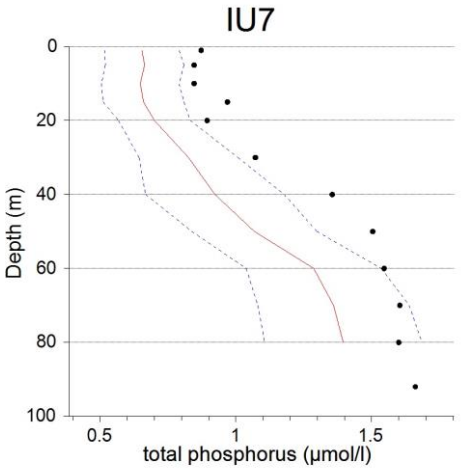

MS9
Depth (m)
0
20
40
60
80
100
0.5
1
1.5
total phosphorus (µmol/l)


SR7
Depth (m)
0
10
20
30
40
50
60
70
80
0.5
1
1.5
total phosphorus (µmol/l)

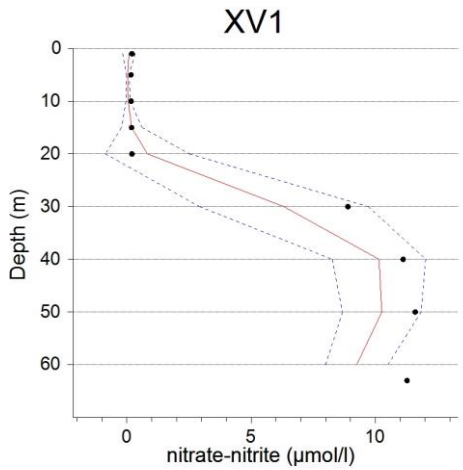

IU1
Depth (m)
0
5
10
15
20
25
30
35
40
0.3
0.4
0.5
0.6
0.7
total phosphorus (µmol/l)

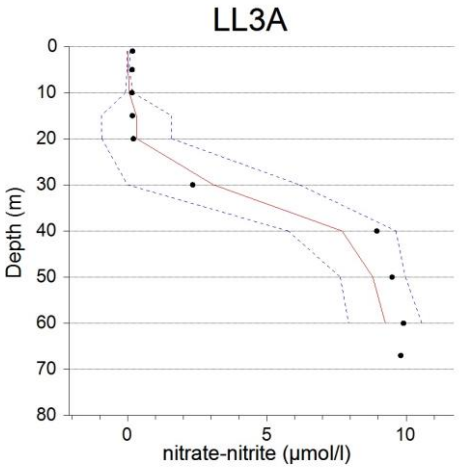

IU3
Depth (m)
0
10
20
30
40
50
60
0.4
0.5
0.6
0.7
0.8
0.9
total phosphorus (µmol/l)

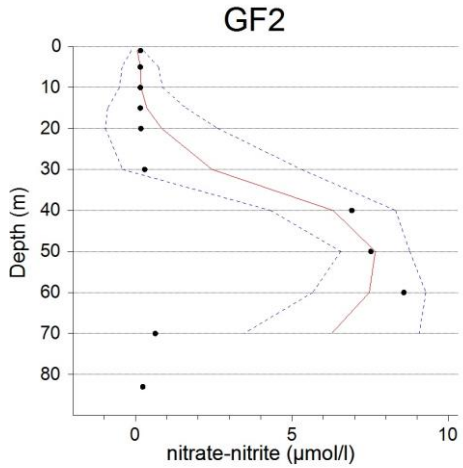

IU5
Depth (m)
0
20
40
60
80
100
0.5
1
1.5
total phosphorus (µmol/l)

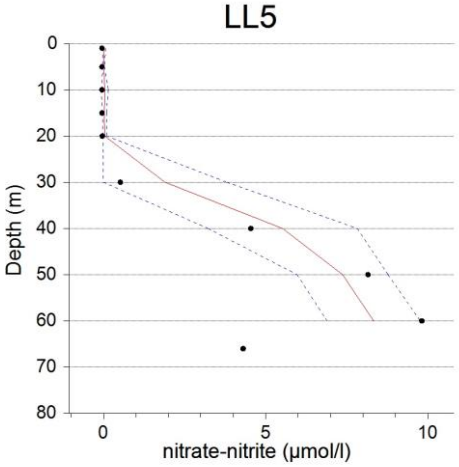

IU7
Depth (m)
0
20
40
60
80
100
0.5
1
1.5
total phosphorus (µmol/l)

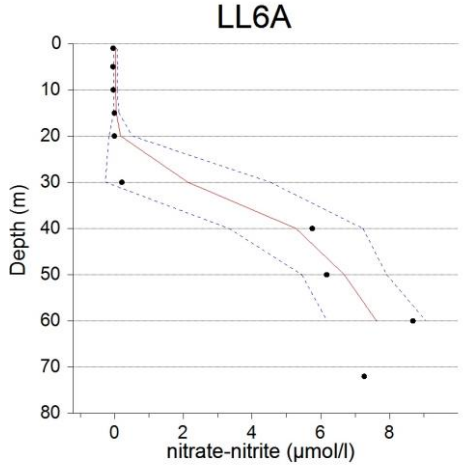
Nitrate-nitrite:

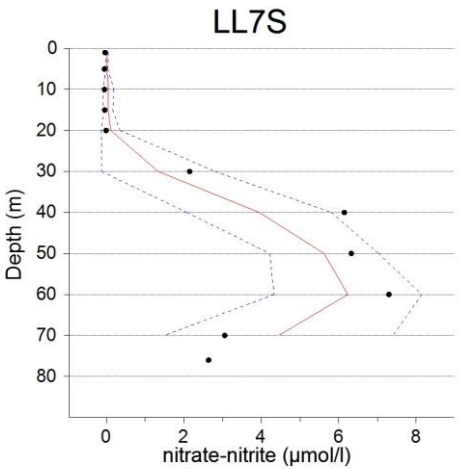


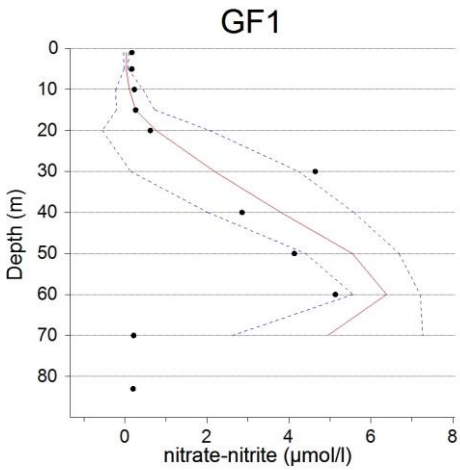



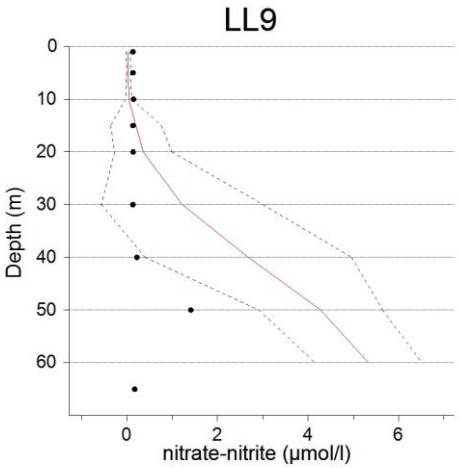



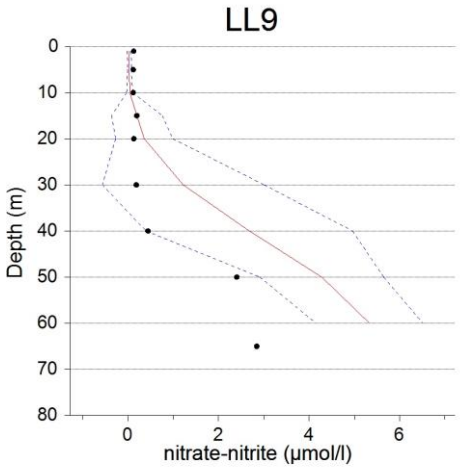



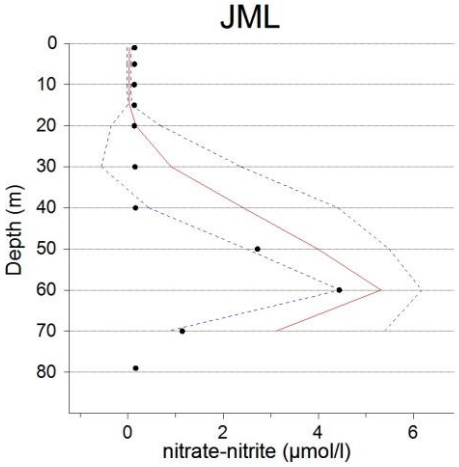



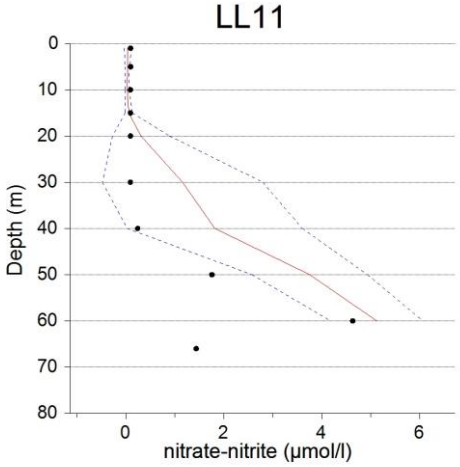

LL7S
Depth (m)
0
10
20
30
40
50
60
70
80
0
2
4
6
8
nitrate-nitrite (µmol/l)

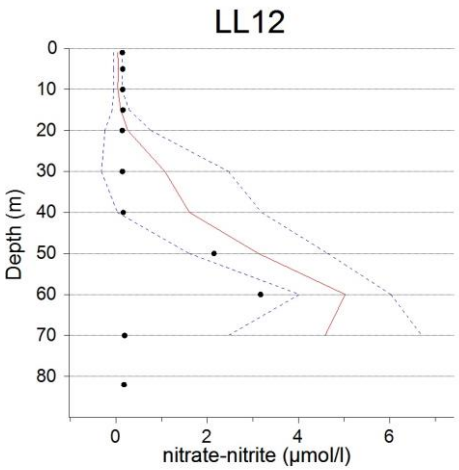

GF1
Depth (m)
0
10
20
30
40
50
60
70
80
0
2
4
6
8
nitrate-nitrite (µmol/l)

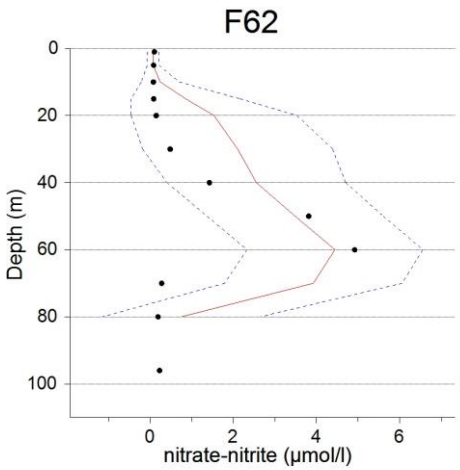

LL9
Depth (m)
0
10
20
30
40
50
60
0
2
4
6
nitrate-nitrite (µmol/l)

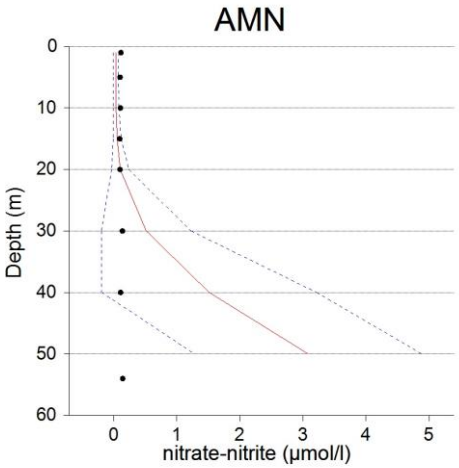

LL9
Depth (m)
0
10
20
30
40
50
60
70
80
0
2
4
6
nitrate-nitrite (µmol/l)

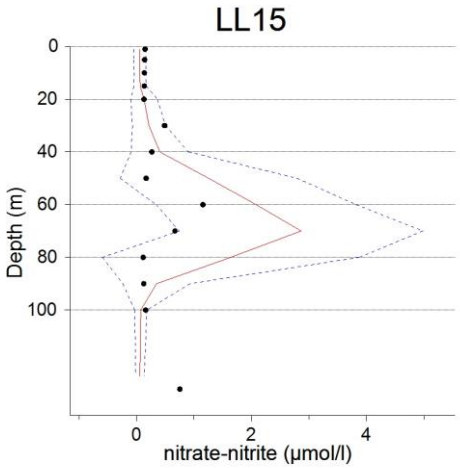

JML
Depth (m)
0
10
20
30
40
50
60
70
80
0
2
4
6
nitrate-nitrite (µmol/l)

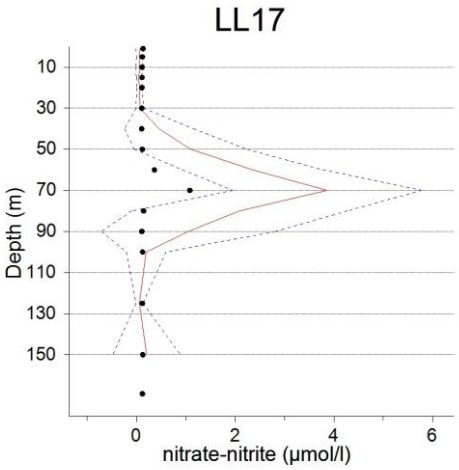

LL11
Depth (m)
0
10
20
30
40
50
60
70
80
0
2
4
6
nitrate-nitrite (µmol/l)

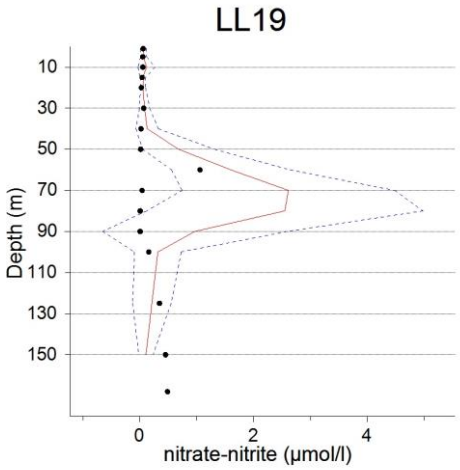

LL12
Depth (m)
0
10
20
30
40
50
60
70
80
0
2
4
6
nitrate-nitrite (µmol/l)

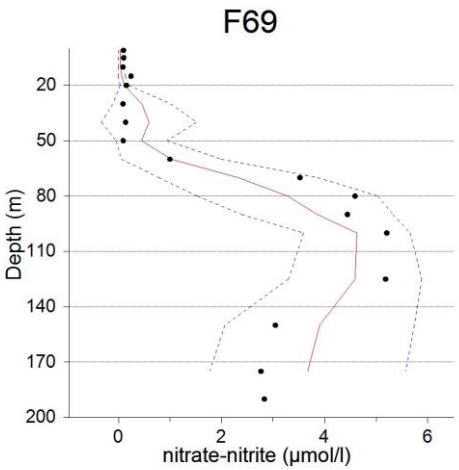

F62
Depth (m)
0
20
40
60
80
100
0
2
4
6
nitrate-nitrite (µmol/l)

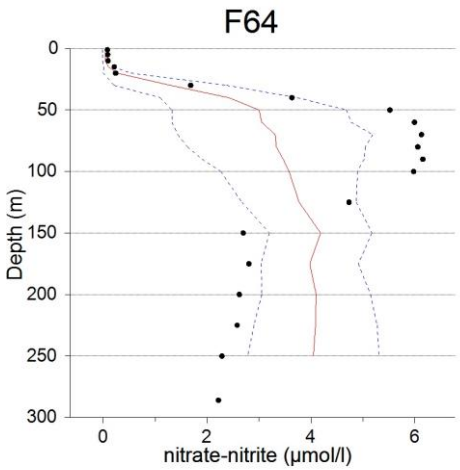

AMN
Depth (m)
0
10
20
30
40
50
60
0
1
2
3
4
5
nitrate-nitrite (µmol/l)

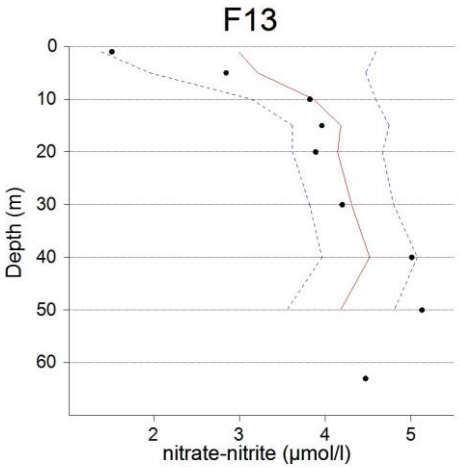

LL15
Depth (m)
0
20
40
60
80
100
0
2
4
nitrate-nitrite (µmol/l)

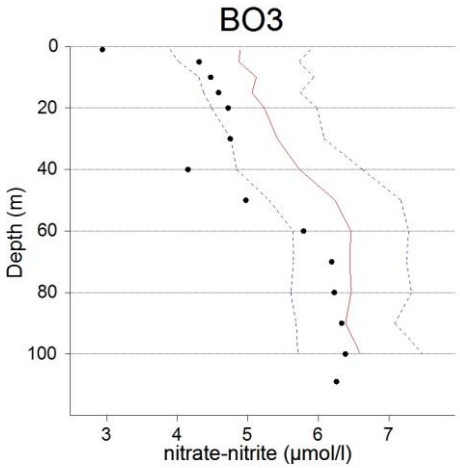

LL17
Depth (m)
10
30
50
70
90
110
130
150
0
2
4
6
nitrate-nitrite (µmol/l)

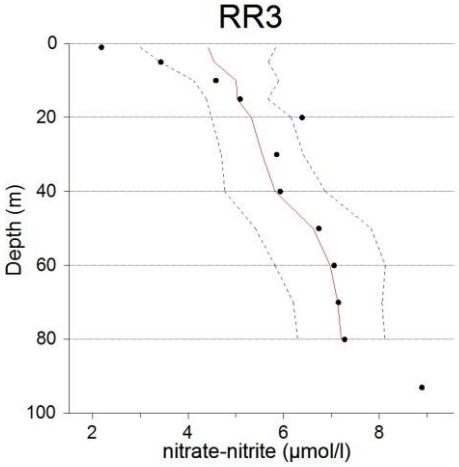

LL19
Depth (m)
10
30
50
70
90
110
130
150
0
2
4
nitrate-nitrite (µmol/l)

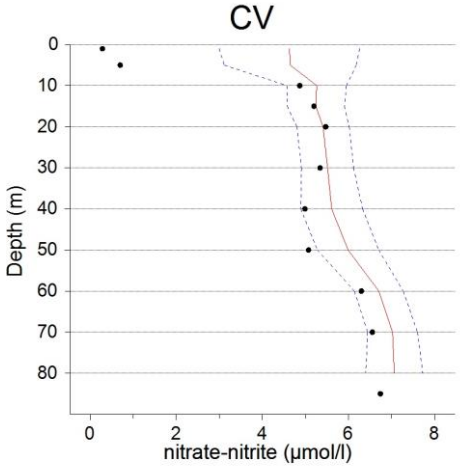

F69
Depth (m)
20
50
80
110
140
170
200
0
2
4
6
nitrate-nitrite (µmol/l)

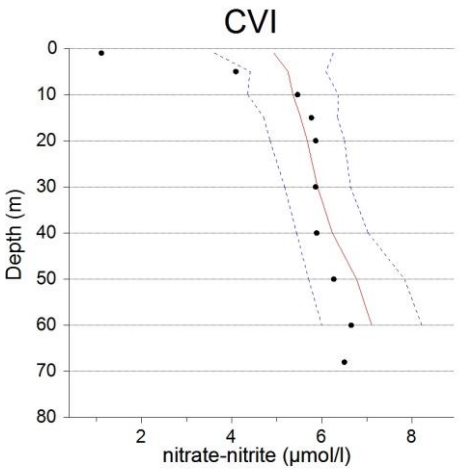

F64
Depth (m)
0
50
100
150
200
250
300
0
2
4
6
nitrate-nitrite (µmol/l)

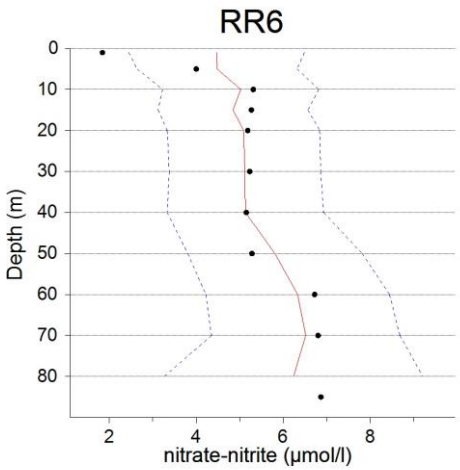

F13
Depth (m)
0
10
20
30
40
50
60
2
3
4
5
nitrate-nitrite (µmol/l)

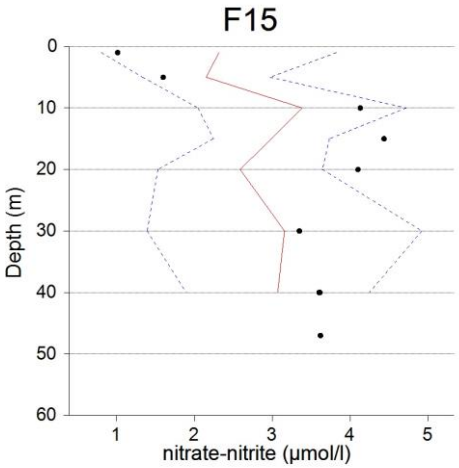

BO3
Depth (m)
0
20
40
60
80
100
3
4
5
6
7
nitrate-nitrite (µmol/l)

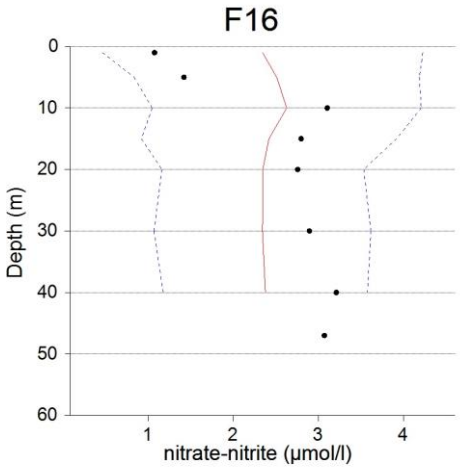

RR3
Depth (m)
0
20
40
60
80
100
2
4
6
8
nitrate-nitrite (µmol/l)

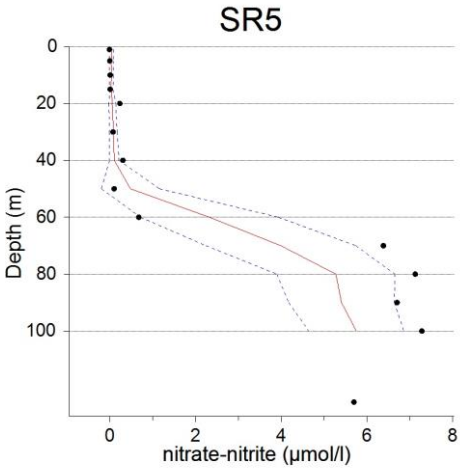

CV
Depth (m)
0
10
20
30
40
50
60
70
80
0
2
4
6
8
nitrate-nitrite (µmol/l)

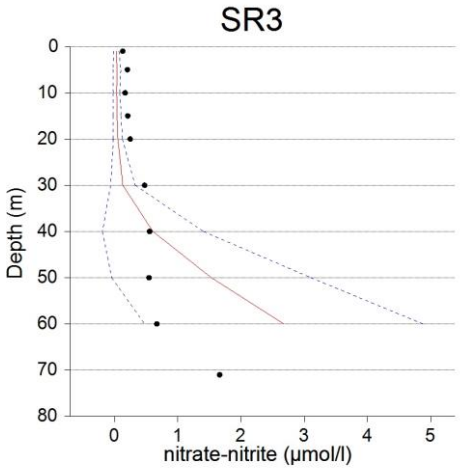

CVI
Depth (m)
nitrate-nitrite (µmol/l)

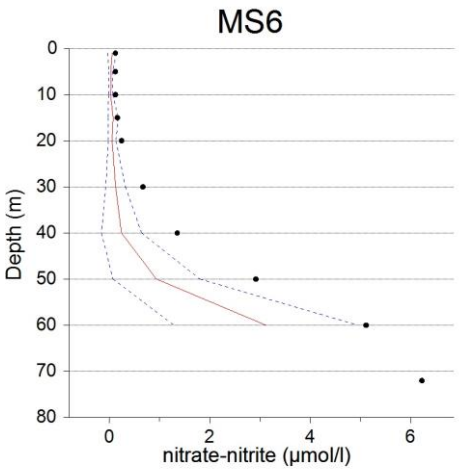

RR6
Depth (m)
nitrate-nitrite (µmol/l)

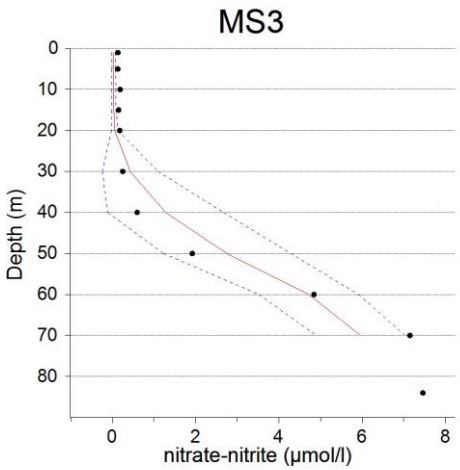

F15
Depth (m)
nitrate-nitrite (µmol/l)

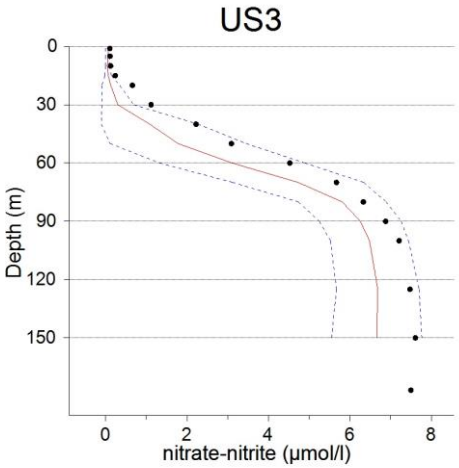

F16
Depth (m)
nitrate-nitrite (µmol/l)

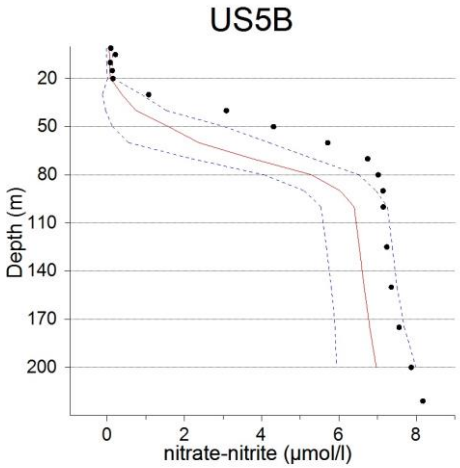

SR5
Depth (m)
nitrate-nitrite (µmol/l)

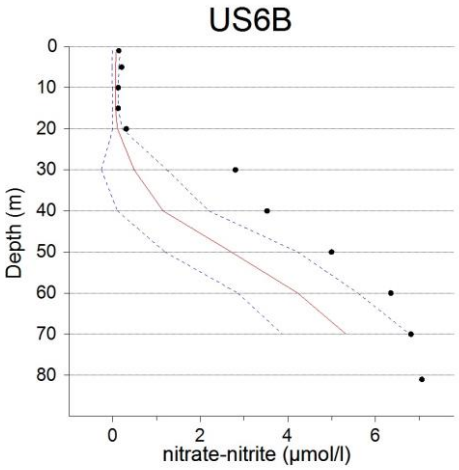

SR3
Depth (m)
nitrate-nitrite (µmol/l)

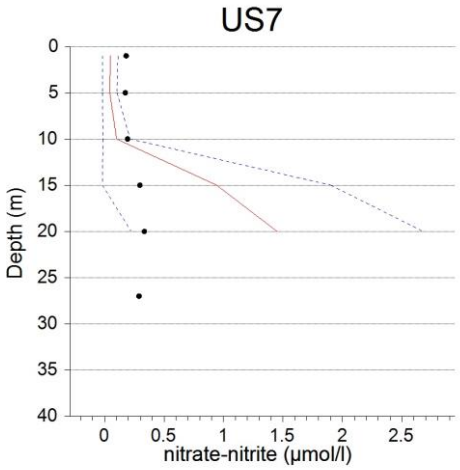

MS6
Depth (m)
0
10
20
30
40
50
60
70
80
0
2
4
6
nitrate-nitrite (µmol/l)

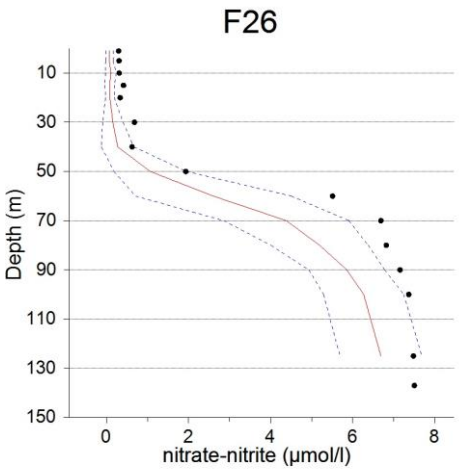

MS3
Depth (m)
0
10
20
30
40
50
60
70
80
0
2
4
6
8
nitrate-nitrite (µmol/l)

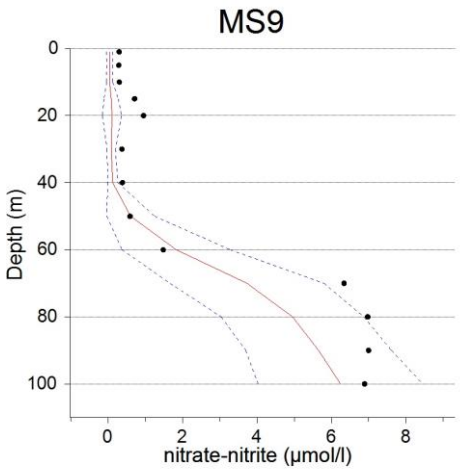

US3
Depth (m)
0
30
60
90
120
150
0
2
4
6
8
nitrate-nitrite (µmol/l)

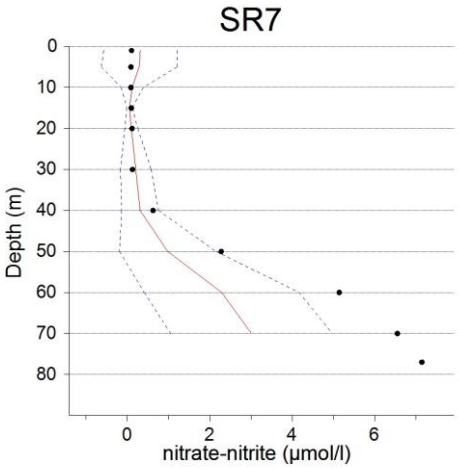

US5B
Depth (m)
20
50
80
110
140
170
200
0
2
4
6
8
nitrate-nitrite (µmol/l)

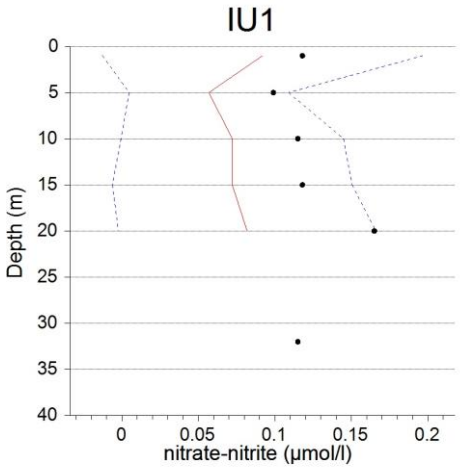

US6B
Depth (m)
0
10
20
30
40
50
60
70
80
0
2
4
6
nitrate-nitrite (µmol/l)

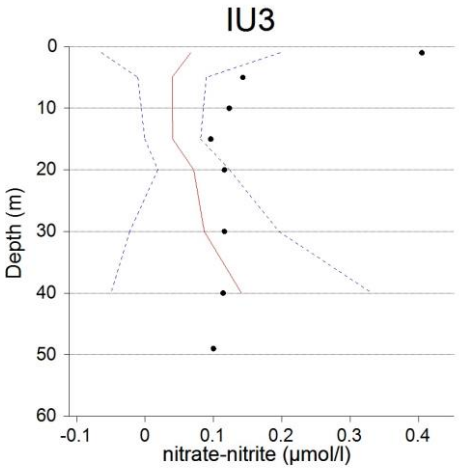

US7
Depth (m)
0
5
10
15
20
25
30
35
40
0
0.5
1
1.5
2
2.5
nitrate-nitrite (µmol/l)

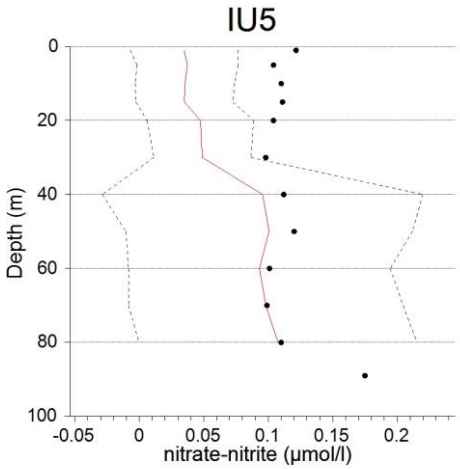

F26
Depth (m)
nitrate-nitrite (µmol/l)

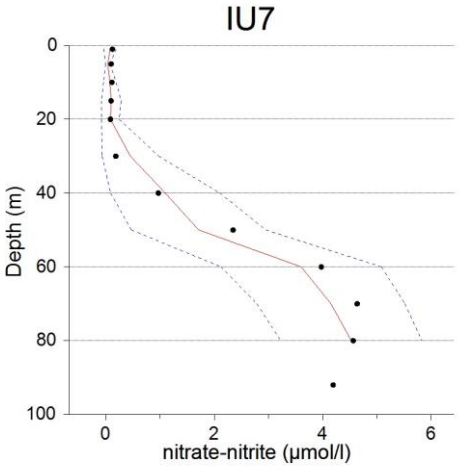

MS9
Depth (m)
nitrate-nitrite (µmol/l)


SR7
Depth (m)
nitrate-nitrite (µmol/l)

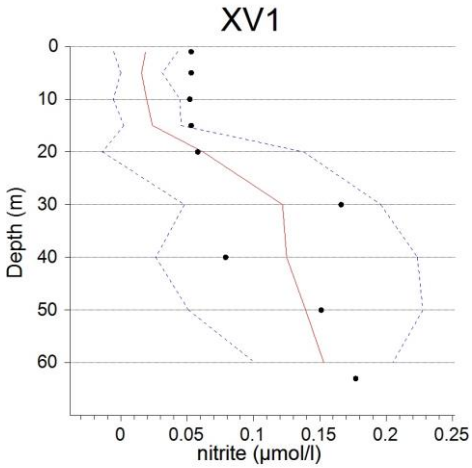

IU1
Depth (m)
nitrate-nitrite (µmol/l)

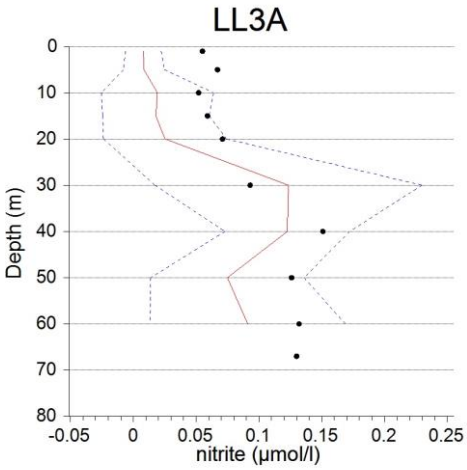

IU3
Depth (m)
nitrate-nitrite (µmol/l)

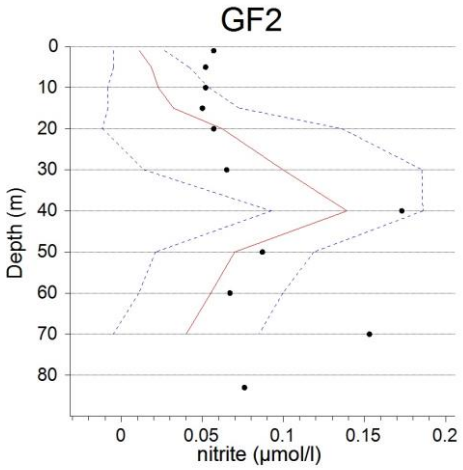

IU5
Depth (m)
nitrate-nitrite (µmol/l)

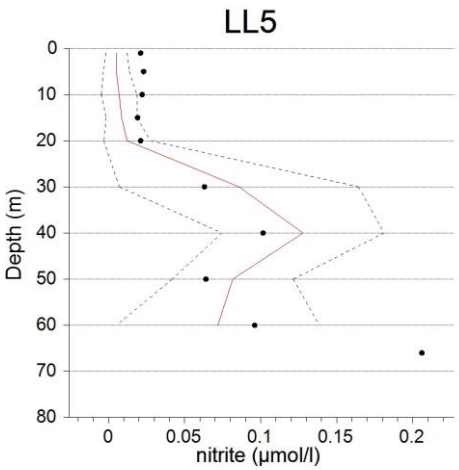

IU7
Depth (m)
0
20
40
60
80
100
0
2
4
6
nitrate-nitrite (µmol/l)

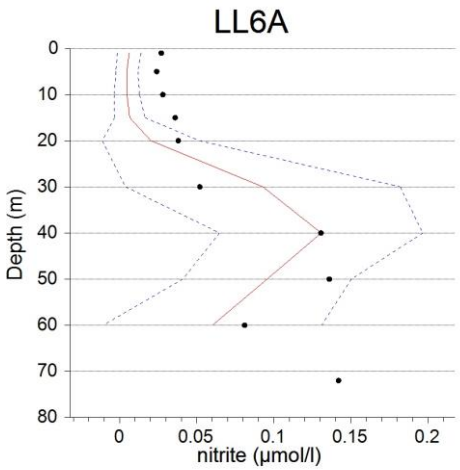
Nitrite:

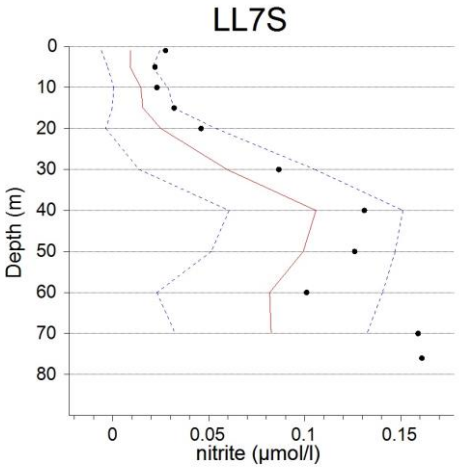

XV1
Depth (m)
0
10
20
30
40
50
60
0
0.05
0.1
0.15
0.2
0.25
nitrite (µmol/l)

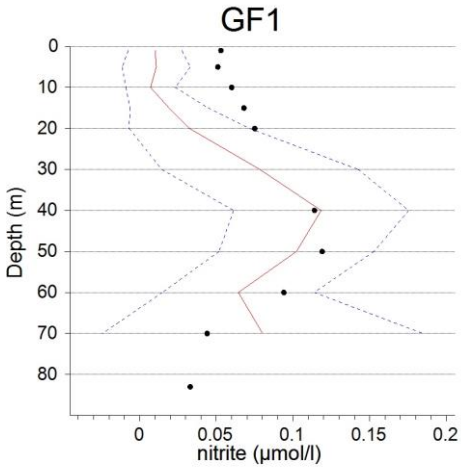

LL3A
Depth (m)
0
10
20
30
40
50
60
70
80
-0.05
0
0.05
0.1
0.15
0.2
0.25
nitrite (µmol/l)

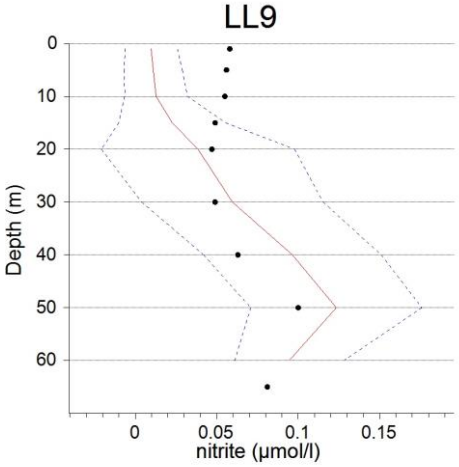

GF2
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.05
0.1
0.15
0.2
nitrite (µmol/l)

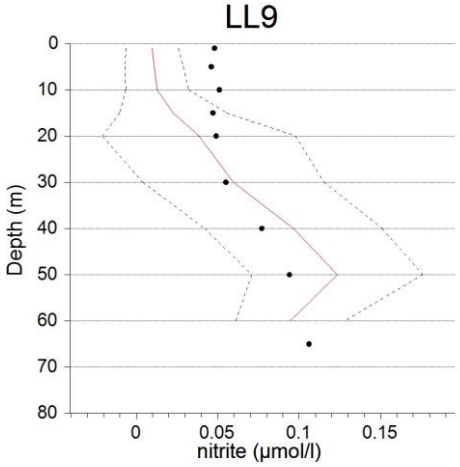

LL5
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.05
0.1
0.15
0.2
nitrite (µmol/l)

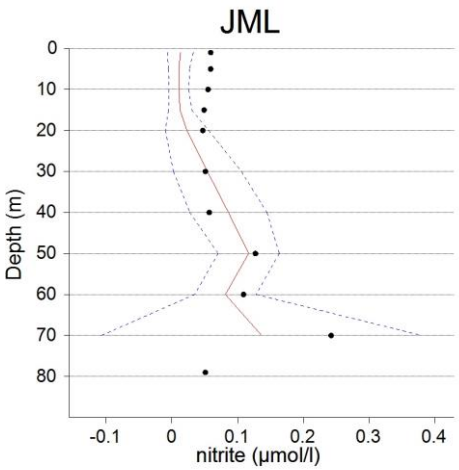

LL6A
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.05
0.1
0.15
0.2
nitrite (µmol/l)

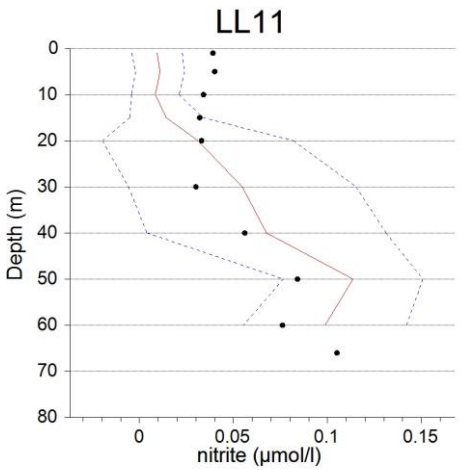

LL7S
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.05
0.1
0.15
nitrite (µmol/l)

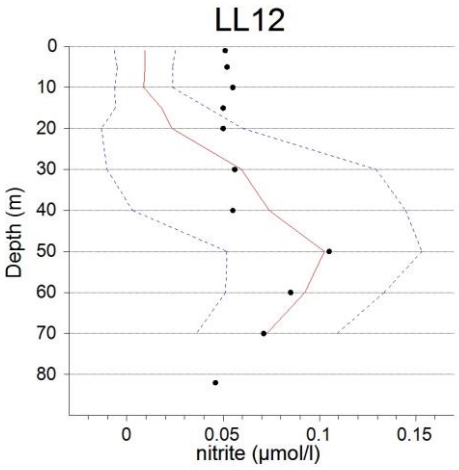

GF1
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.05
0.1
0.15
0.2
nitrite (µmol/l)

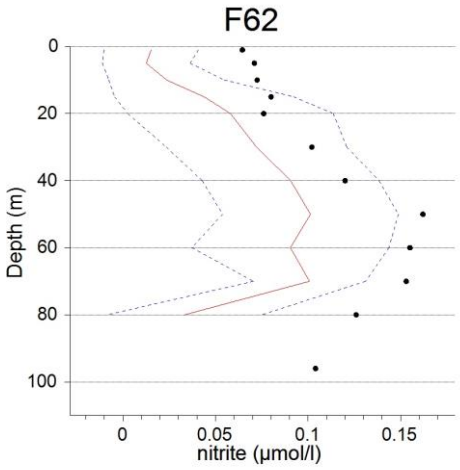

LL9
Depth (m)
0
10
20
30
40
50
60
0
0.05
0.1
0.15
nitrite (µmol/l)

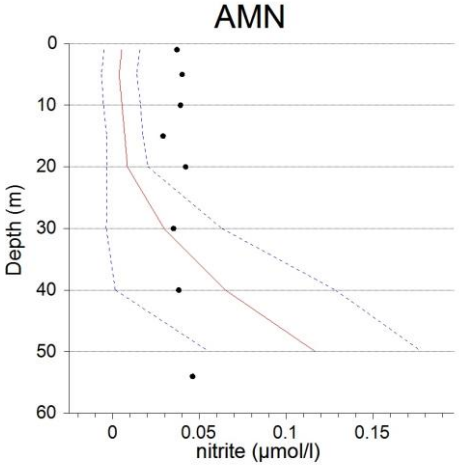

LL9
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.05
0.1
0.15
nitrite (µmol/l)

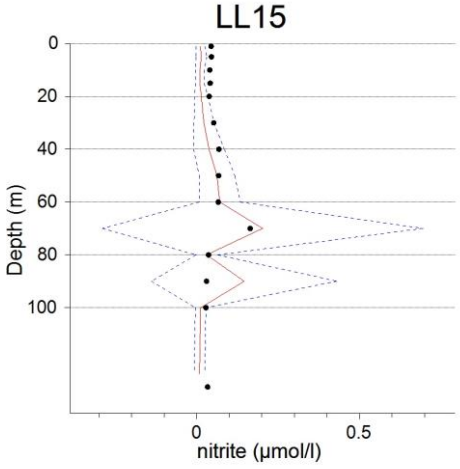

JML
Depth (m)
0
10
20
30
40
50
60
70
80
-0.1
0
0.1
0.2
0.3
0.4
nitrite (µmol/l)

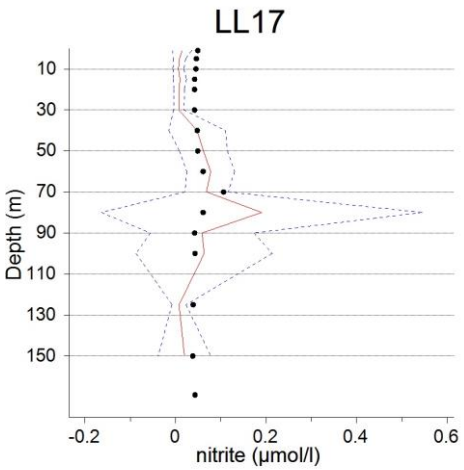

LL11
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.05
0.1
0.15
nitrite (µmol/l)

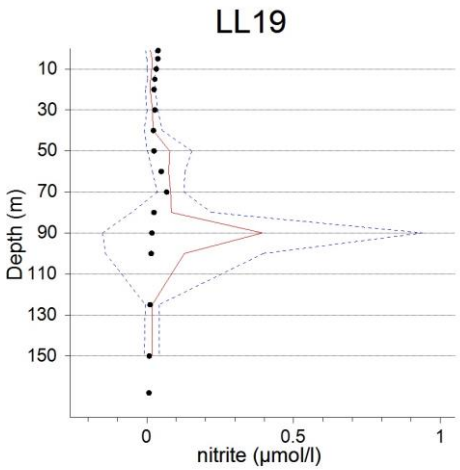

LL12
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.05
0.1
0.15
nitrite (µmol/l)

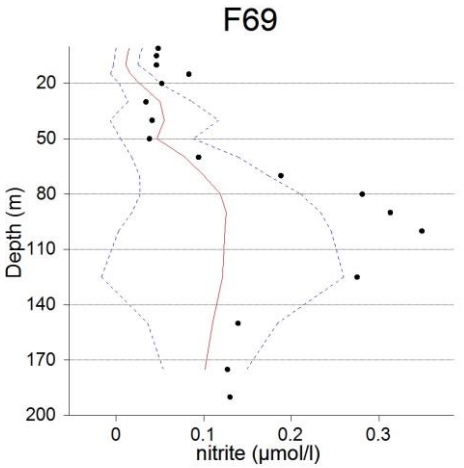

F62
Depth (m)
0
20
40
60
80
100
0
0.05
0.1
0.15
nitrite (µmol/l)

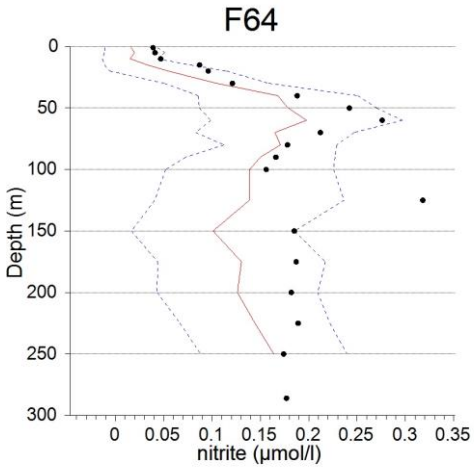

AMN
Depth (m)
0
10
20
30
40
50
60
0
0.05
0.1
0.15
nitrite (µmol/l)

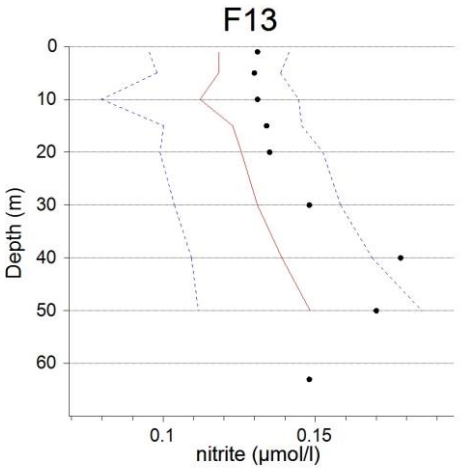

LL15
Depth (m)
0
20
40
60
80
100
0
0.5
nitrite (µmol/l)

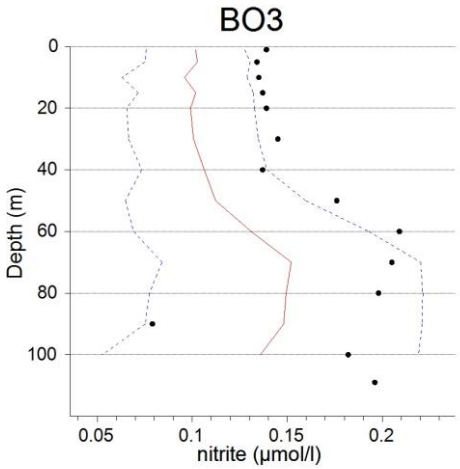

LL17
Depth (m)
10
30
50
70
90
110
130
150
-0.2
0
0.2
0.4
0.6
nitrite (µmol/l)

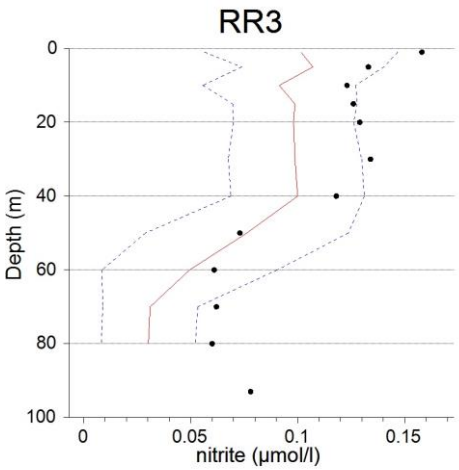

LL19
Depth (m)
10
30
50
70
90
110
130
150
0
0.5
1
nitrite (µmol/l)

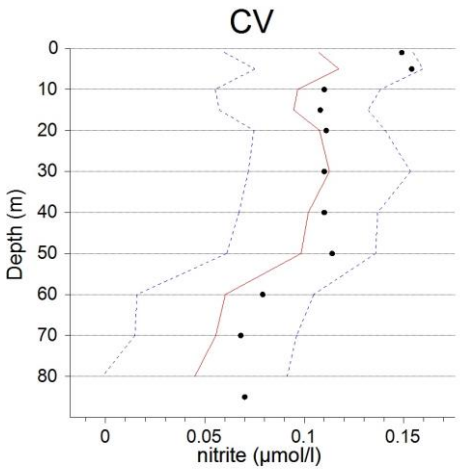

F69
Depth (m)
20
50
80
110
140
170
200
0
0.1
0.2
0.3
nitrite (µmol/l)

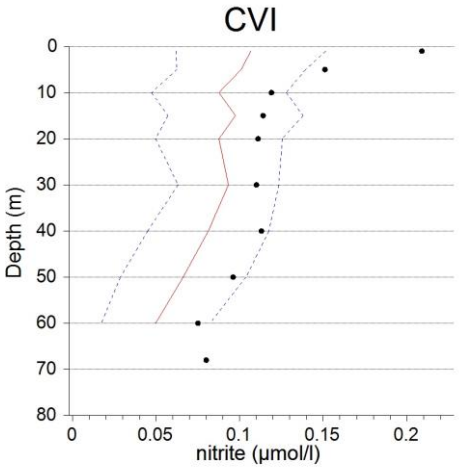

F64
Depth (m)
0
50
100
150
200
250
300
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
nitrite (µmol/l)

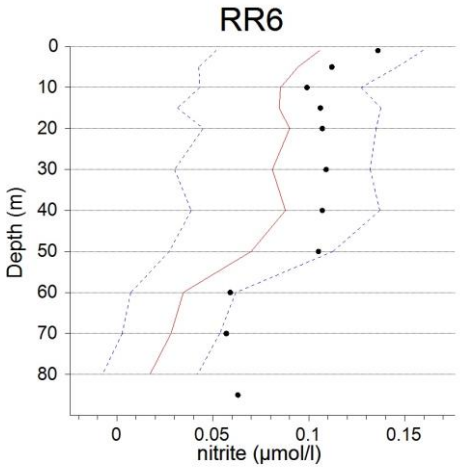

F13
Depth (m)
0
10
20
30
40
50
60
0.1
0.15
nitrite (µmol/l)

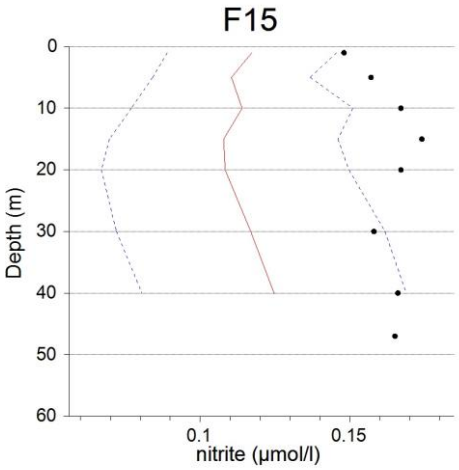

BO3
Depth (m)
0
20
40
60
80
100
0.05
0.1
0.15
0.2
nitrite (µmol/l)

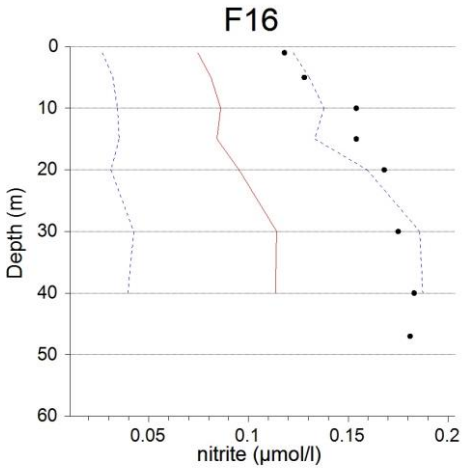

RR3
Depth (m)
0
20
40
60
80
100
0
0.05
0.1
0.15
nitrite (µmol/l)

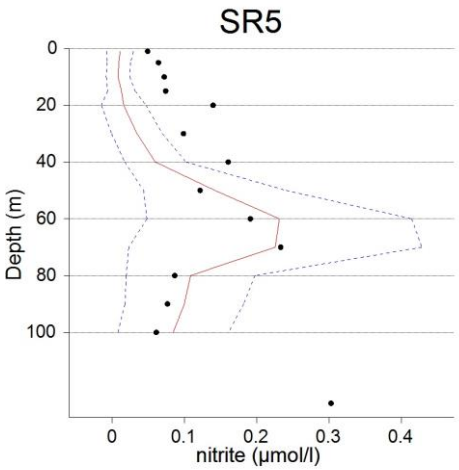

CV
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.05
0.1
0.15
nitrite (µmol/l)

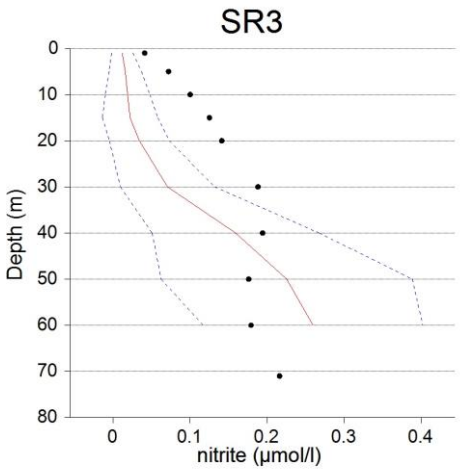

CVI
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.05
0.1
0.15
0.2
nitrite (µmol/l)

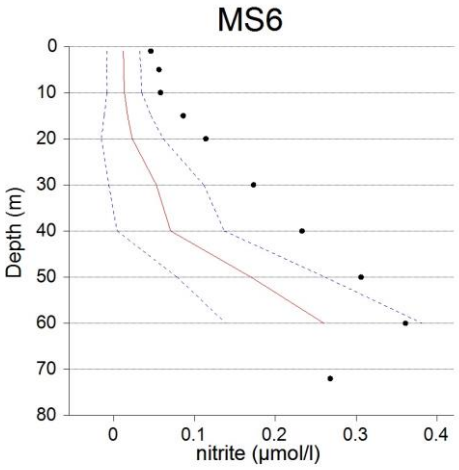

RR6
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.05
0.1
0.15
nitrite (µmol/l)

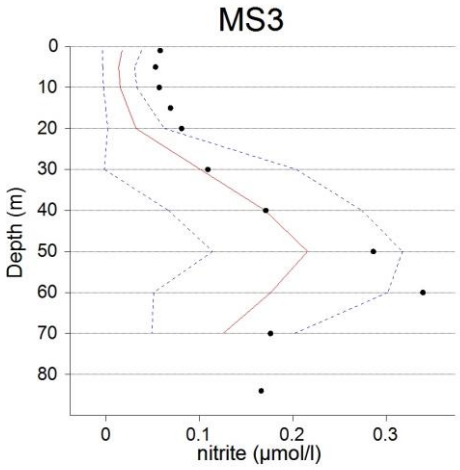

F15
Depth (m)
0
10
20
30
40
50
60
0.1
0.15
nitrite (µmol/l)

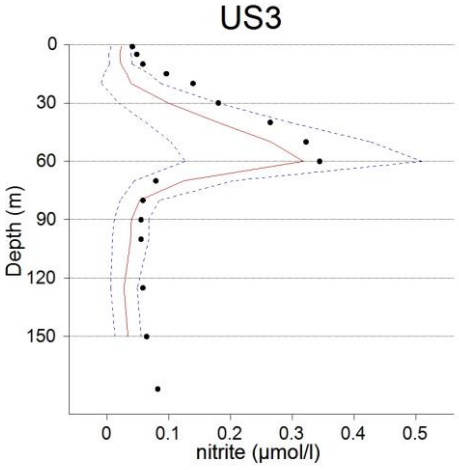

F16
Depth (m)
0
10
20
30
40
50
60
0.05
0.1
0.15
0.2
nitrite (µmol/l)

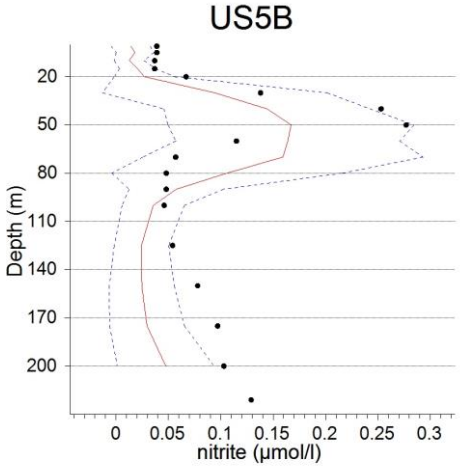

SR5
Depth (m)
0
20
40
60
80
100
0
0.1
0.2
0.3
0.4
nitrite (µmol/l)

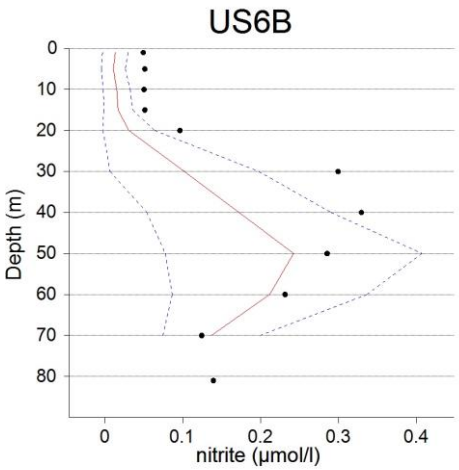

SR3
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.1
0.2
0.3
0.4
nitrite (µmol/l)

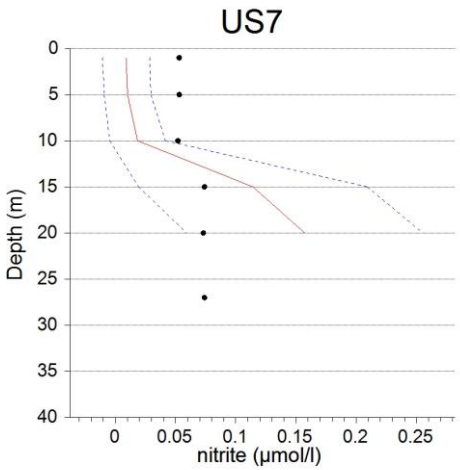

MS6
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.1
0.2
0.3
0.4
nitrite (µmol/l)

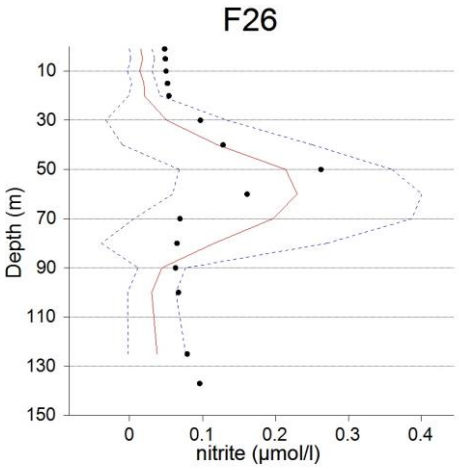

MS3
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.1
0.2
0.3
nitrite (µmol/l)

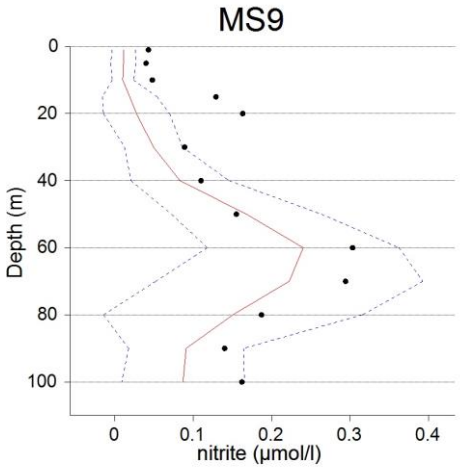

US3
Depth (m)
0
30
60
90
120
150
0
0.1
0.2
0.3
0.4
0.5
nitrite (µmol/l)

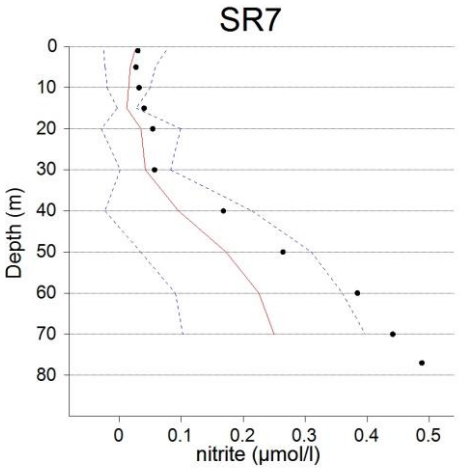

US5B
Depth (m)
20
50
80
110
140
170
200
0
0.05
0.1
0.15
0.2
0.25
0.3
nitrite (µmol/l)

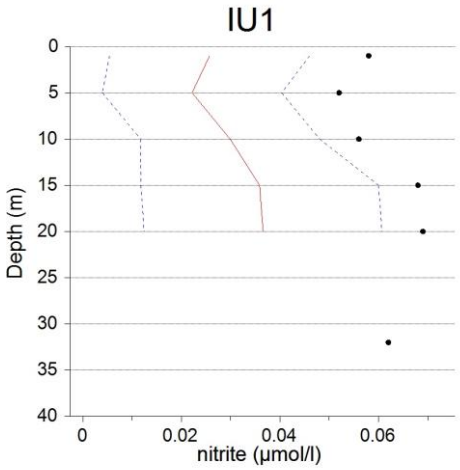

US6B
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.1
0.2
0.3
0.4
nitrite (µmol/l)

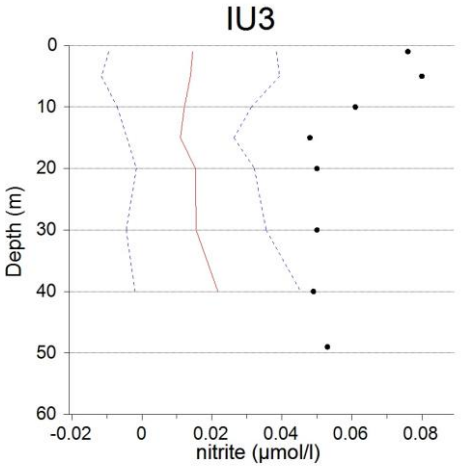

US7
Depth (m)
0
5
10
15
20
25
30
35
40
0
0.05
0.1
0.15
0.2
0.25
nitrite (µmol/l)

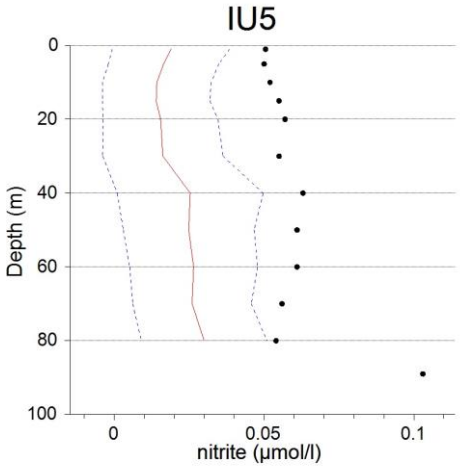

F26
Depth (m)
10
30
50
70
90
110
130
150
0
0.1
0.2
0.3
0.4
nitrite (µmol/l)

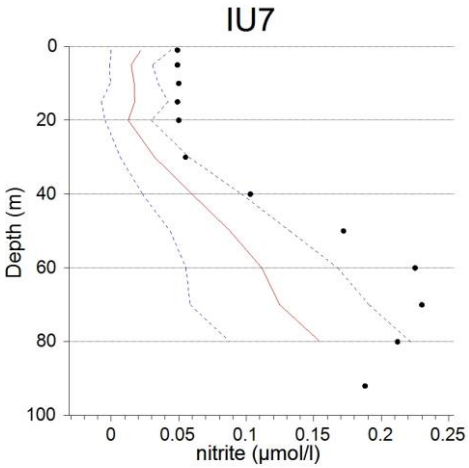

MS9
Depth (m)
0
20
40
60
80
100
0
0.1
0.2
0.3
0.4
nitrite (µmol/l)


SR7
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.1
0.2
0.3
0.4
0.5
nitrite (µmol/l)

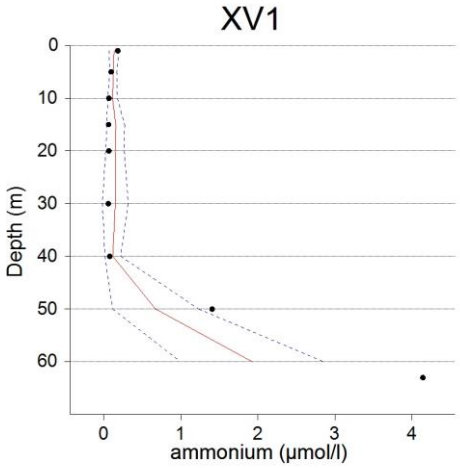

IU1
Depth (m)
0
5
10
15
20
25
30
35
40
0
0.02
0.04
0.06
nitrite (µmol/l)

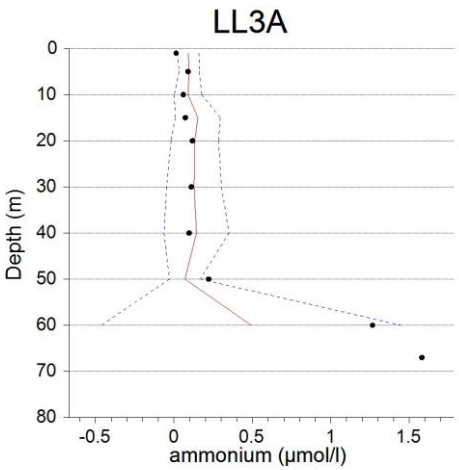

IU3
Depth (m)
0
10
20
30
40
50
60
-0.02
0
0.02
0.04
0.06
0.08
nitrite (µmol/l)

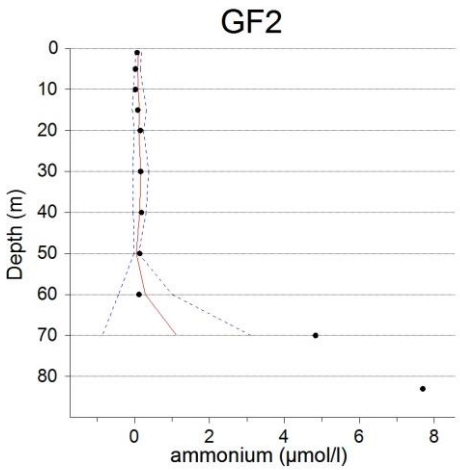

IU5
Depth (m)
0
20
40
60
80
100
0
0.05
0.1
nitrite (µmol/l)

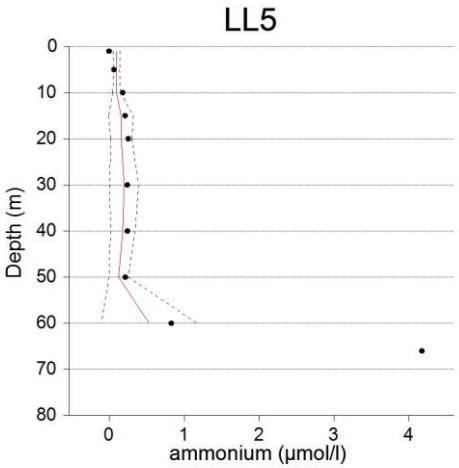

IU7
Depth (m)
0
20
40
60
80
100
0
0.05
0.1
0.15
0.2
0.25
nitrite (µmol/l)

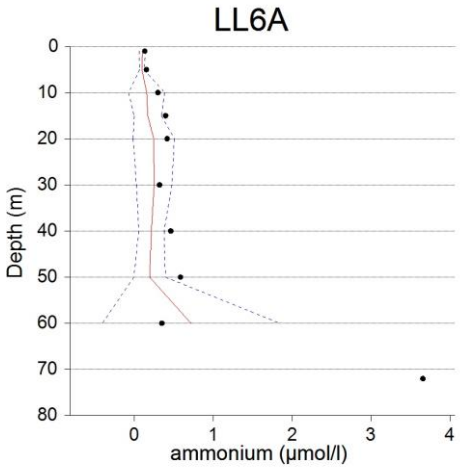
Ammonium:

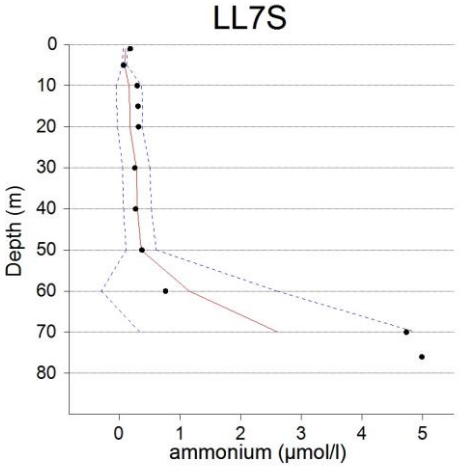

XV1
Depth (m)
0
10
20
30
40
50
60
0
1
2
3
4
ammonium (µmol/l)

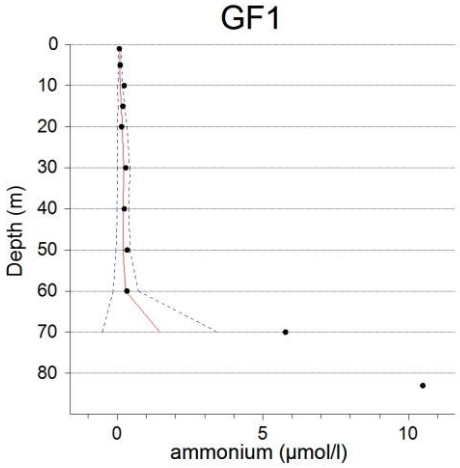

LL3A
Depth (m)
0
10
20
30
40
50
60
70
80
-0.5
0
0.5
1
1.5
ammonium (µmol/l)

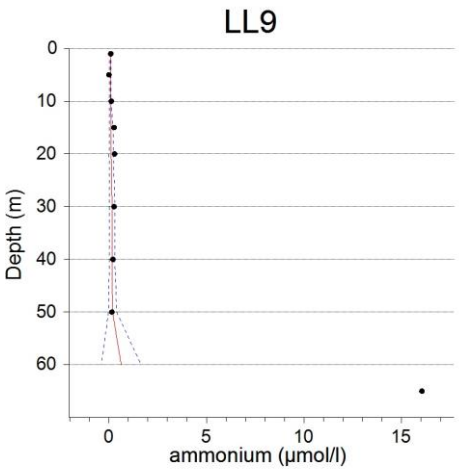

GF2
Depth (m)
0
10
20
30
40
50
60
70
80
0
2
4
6
8
ammonium (µmol/l)

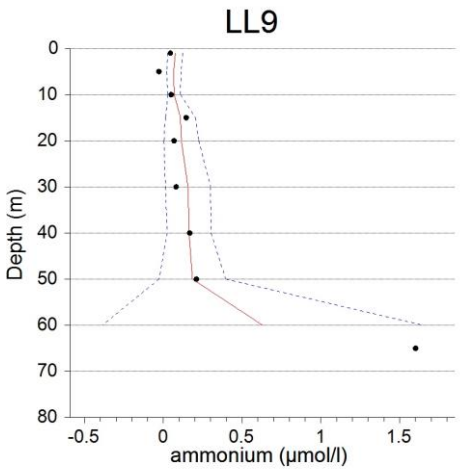

LL5
Depth (m)
0
10
20
30
40
50
60
70
80
0
1
2
3
4
ammonium (µmol/l)

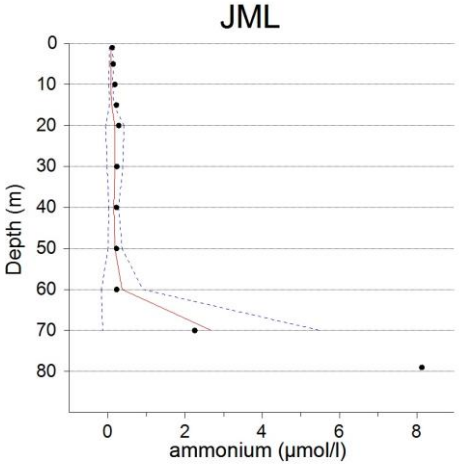

LL6A
Depth (m)
0
10
20
30
40
50
60
70
80
0
1
2
3
4
ammonium (µmol/l)

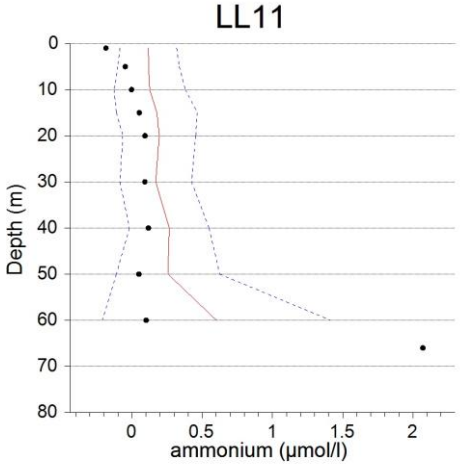

LL7S
Depth (m)
0
10
20
30
40
50
60
70
80
0
1
2
3
4
5
ammonium (µmol/l)

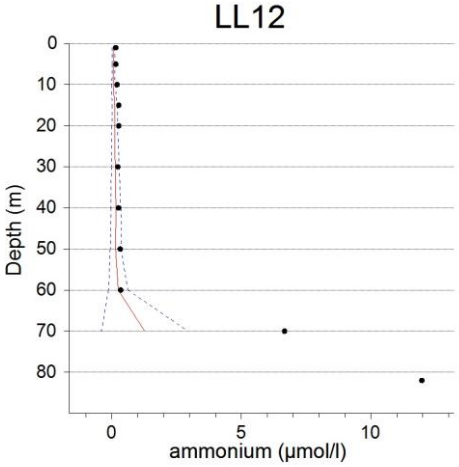

GF1
Depth (m)
0
10
20
30
40
50
60
70
80
0
5
10
ammonium (µmol/l)

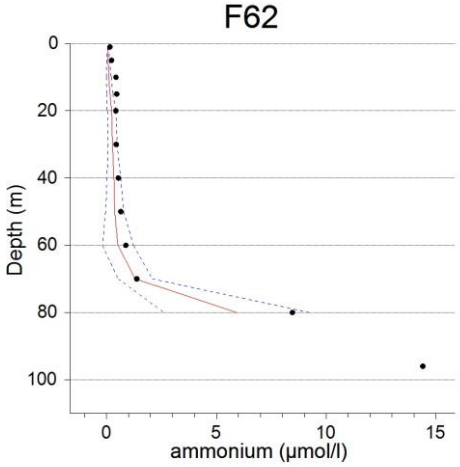

LL9
Depth (m)
0
10
20
30
40
50
60
0
5
10
15
ammonium (µmol/l)

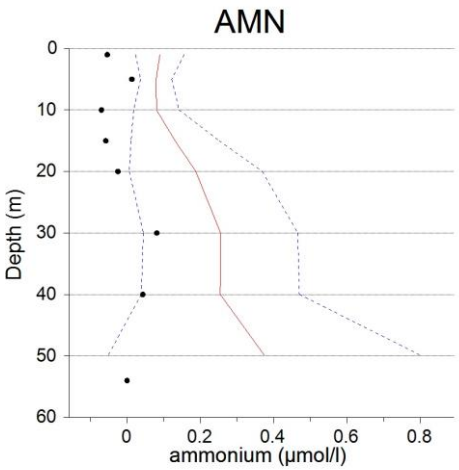

LL9
Depth (m)
0
10
20
30
40
50
60
70
80
-0.5
0
0.5
1
1.5
ammonium (µmol/l)

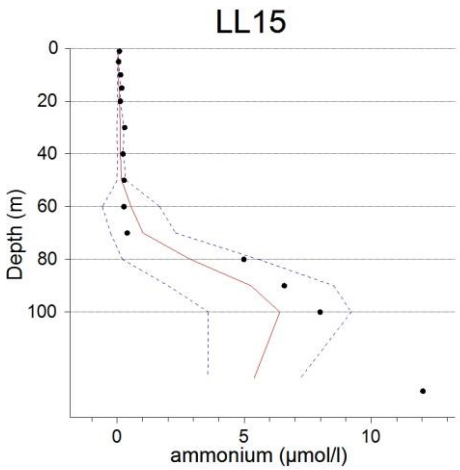

JML
Depth (m)
0
10
20
30
40
50
60
70
80
0
2
4
6
8
ammonium (µmol/l)

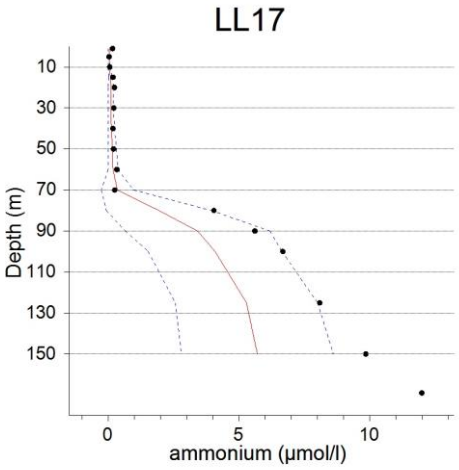

LL11
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.5
1
1.5
2
ammonium (µmol/l)

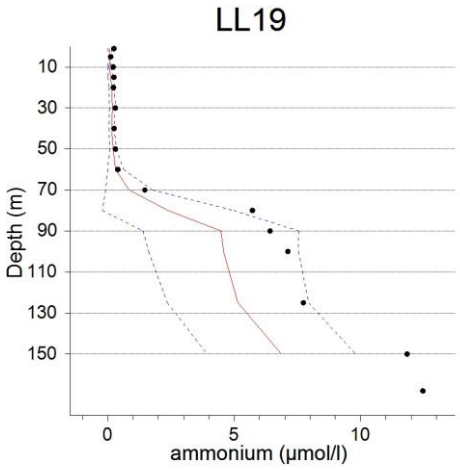

LL12
Depth (m)
0
10
20
30
40
50
60
70
80
0
5
10
ammonium (µmol/l)

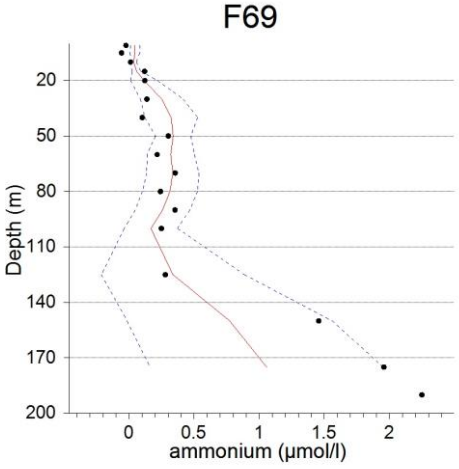

F62
Depth (m)
0
20
40
60
80
100
0
5
10
15
ammonium (µmol/l)

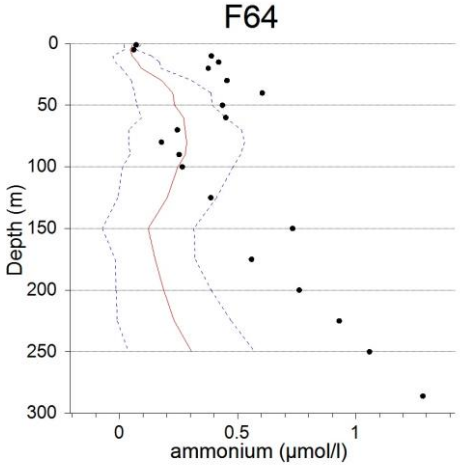

AMN
Depth (m)
0
10
20
30
40
50
60
0
0.2
0.4
0.6
0.8
ammonium (µmol/l)

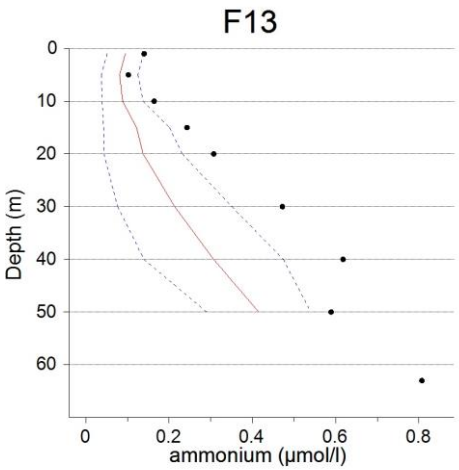

LL15
Depth (m)
0
20
40
60
80
100
0
5
10
ammonium (µmol/l)

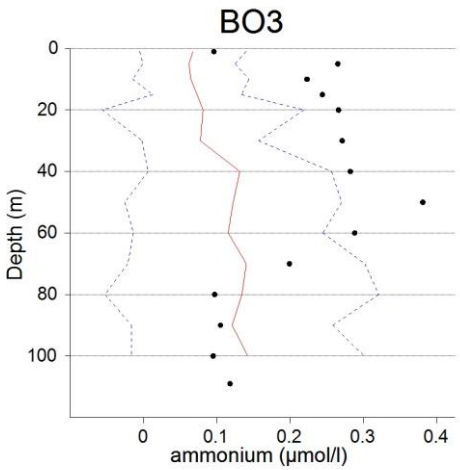

LL17
Depth (m)
10
30
50
70
90
110
130
150
0
5
10
ammonium (µmol/l)

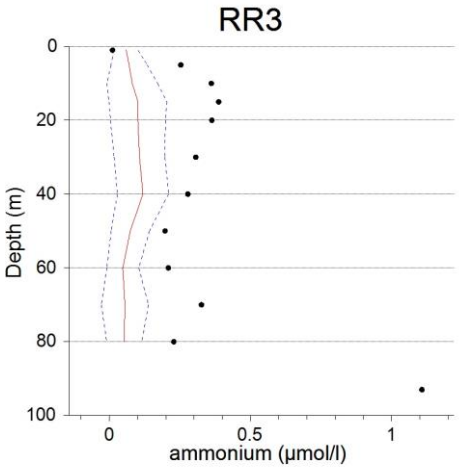

LL19
Depth (m)
10
30
50
70
90
110
130
150
0
5
10
ammonium (µmol/l)

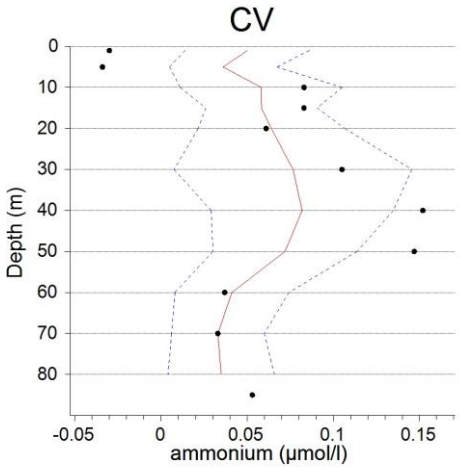

F69
Depth (m)
20
50
80
110
140
170
200
0
0.5
1
1.5
2
ammonium (µmol/l)

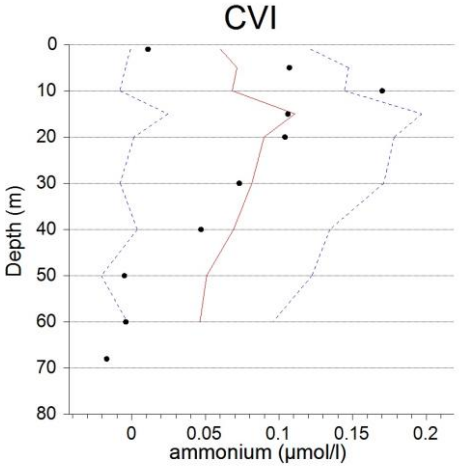

F64
Depth (m)
0
50
100
150
200
250
300
0
0.5
1
ammonium (µmol/l)

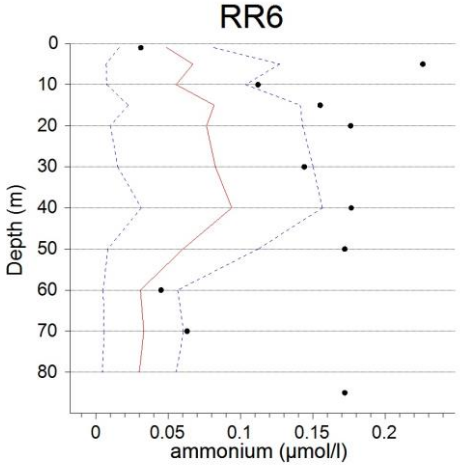

F13
Depth (m)
0
10
20
30
40
50
60
0
0.2
0.4
0.6
0.8
ammonium (µmol/l)

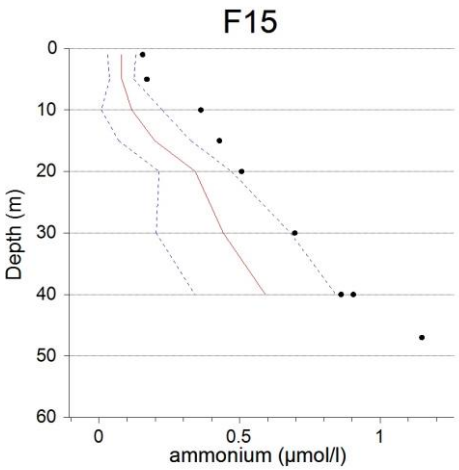

BO3
Depth (m)
0
20
40
60
80
100
0
0.1
0.2
0.3
0.4
ammonium (µmol/l)

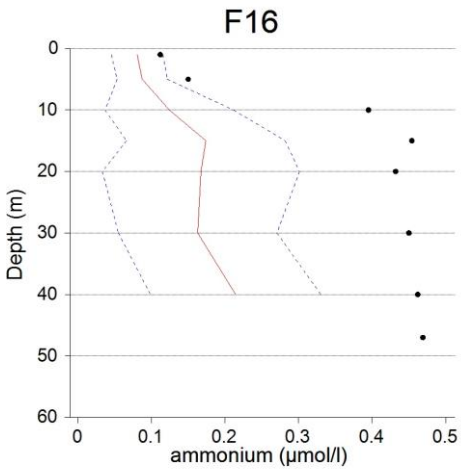

RR3
Depth (m)
0
20
40
60
80
100
0
0.5
1
ammonium (µmol/l)

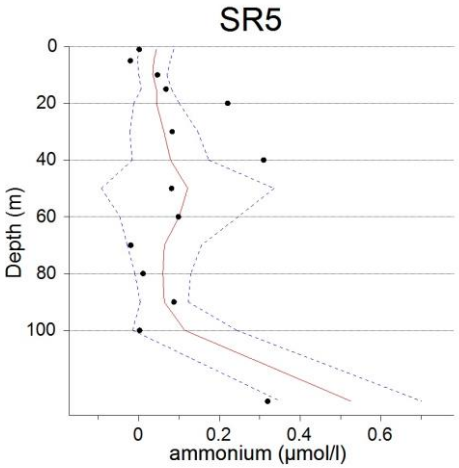

CV
Depth (m)
0
10
20
30
40
50
60
70
80
-0.05
0
0.05
0.1
0.15
ammonium (µmol/l)

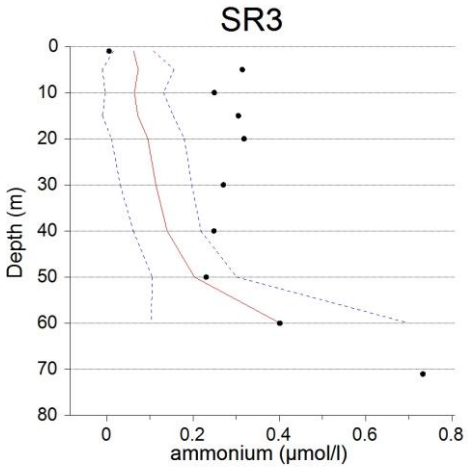

CVI
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.05
0.1
0.15
0.2
ammonium (µmol/l)

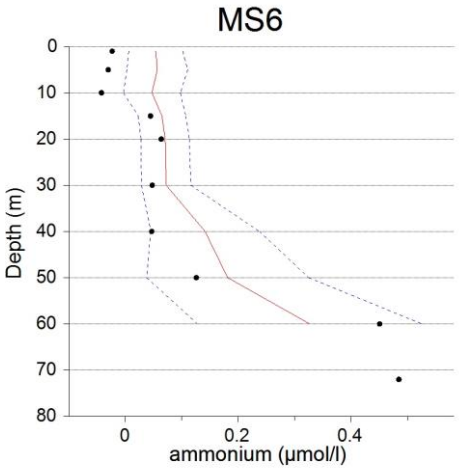

RR6
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.05
0.1
0.15
0.2
ammonium (µmol/l)

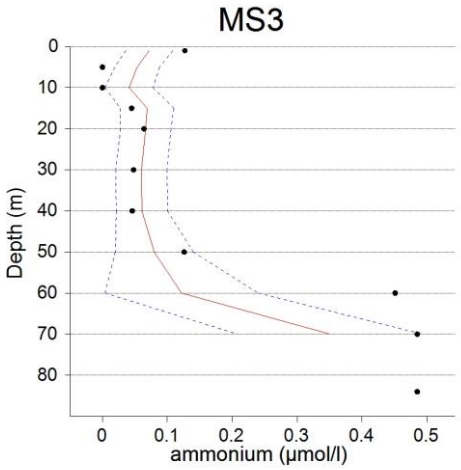

F15
Depth (m)
0
10
20
30
40
50
60
0
0.5
1
ammonium (µmol/l)

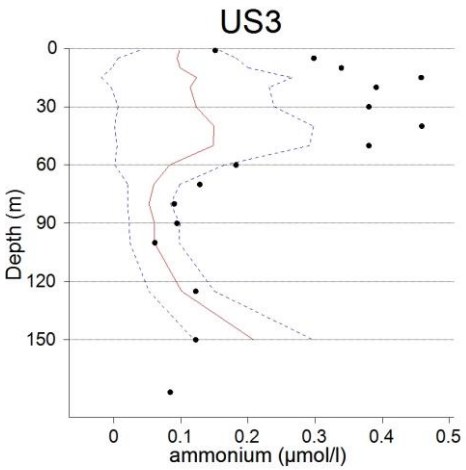

F16
Depth (m)
0
10
20
30
40
50
60
0
0.1
0.2
0.3
0.4
0.5
ammonium (µmol/l)

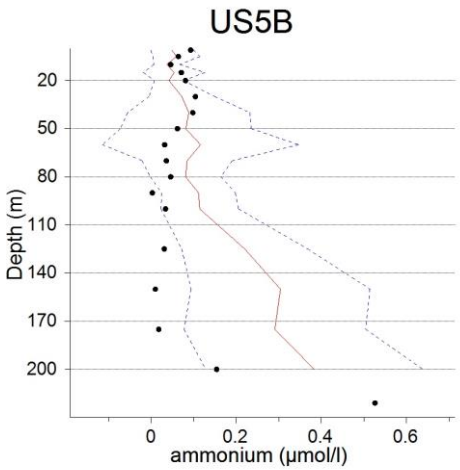

SR5
Depth (m)
0
20
40
60
80
100
0
0.2
0.4
0.6
ammonium (µmol/l)

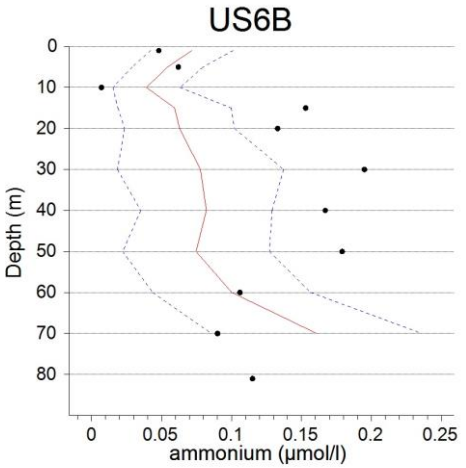

SR3
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.2
0.4
0.6
0.8
ammonium (µmol/l)

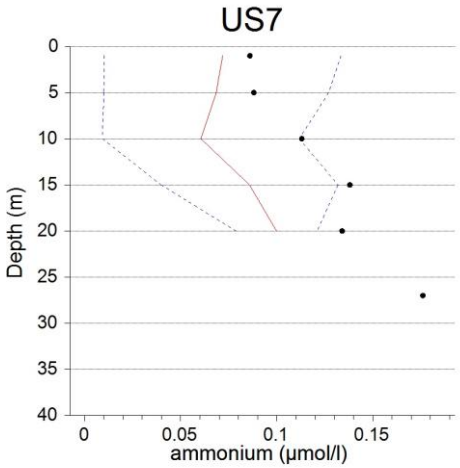

MS6
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.2
0.4
ammonium (µmol/l)

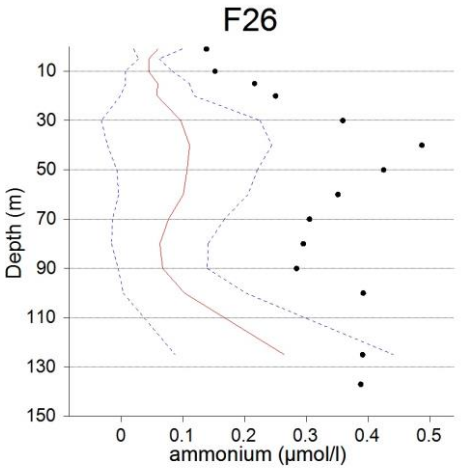

MS3
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.1
0.2
0.3
0.4
0.5
ammonium (µmol/l)

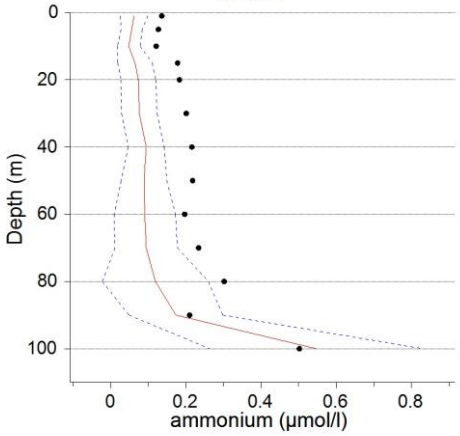

US3
Depth (m)
0
30
60
90
120
150
0
0.1
0.2
0.3
0.4
0.5
ammonium (µmol/l)

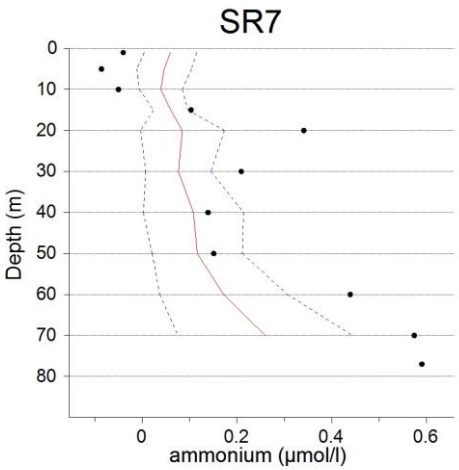

US5B
Depth (m)
20
50
80
110
140
170
200
0
0.2
0.4
0.6
ammonium (µmol/l)

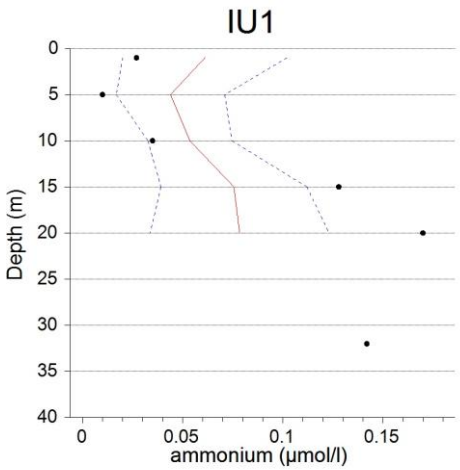

US6B
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.05
0.1
0.15
0.2
0.25
ammonium (µmol/l)

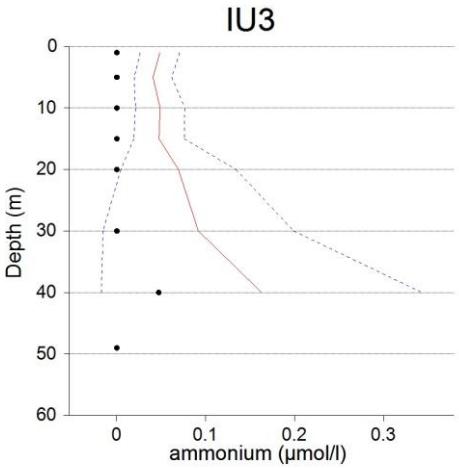

US7
Depth (m)
0
5
10
15
20
25
30
35
40
0
0.05
0.1
0.15
ammonium (µmol/l)

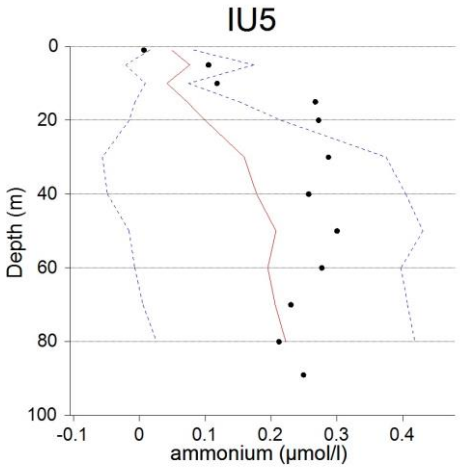

F26
Depth (m)
10
30
50
70
90
110
130
150
0
0.1
0.2
0.3
0.4
0.5
ammonium (µmol/l)

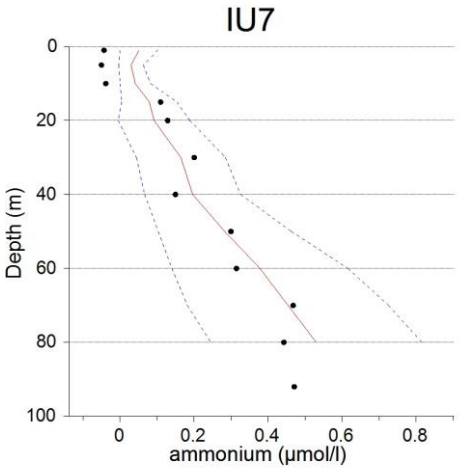

MS9
Depth (m)
0
20
40
60
80
100
0
0.2
0.4
0.6
0.8
ammonium (µmol/l)


SR7
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.2
0.4
0.6
ammonium (µmol/l)

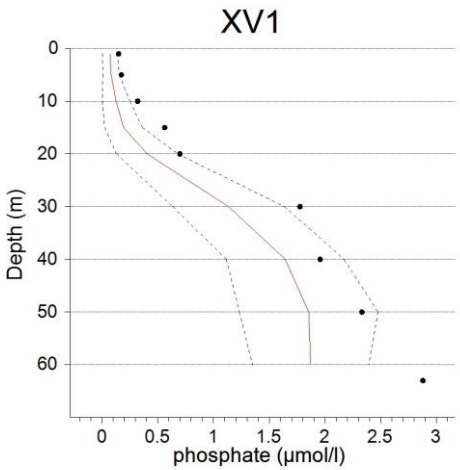

IU1
Depth (m)
0
5
10
15
20
25
30
35
40
0
0.05
0.1
0.15
ammonium (µmol/l)

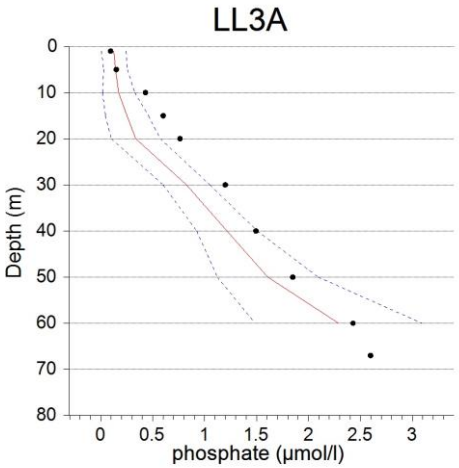

IU3
Depth (m)
0
10
20
30
40
50
60
0
0.1
0.2
0.3
ammonium (µmol/l)

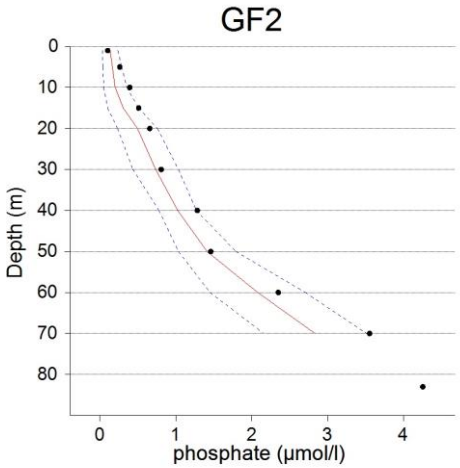

IU5
Depth (m)
0
20
40
60
80
100
-0.1
0
0.1
0.2
0.3
0.4
ammonium (µmol/l)

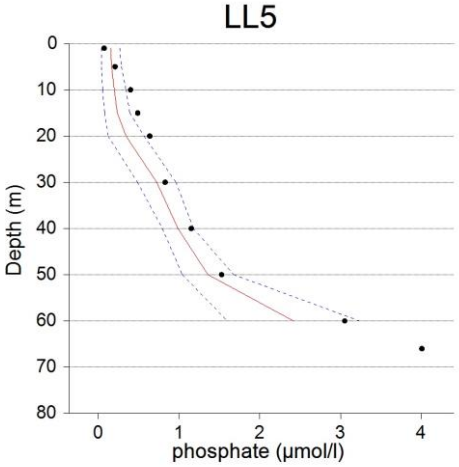

IU7
Depth (m)
0
20
40
60
80
100
0
0.2
0.4
0.6
0.8
ammonium (µmol/l)

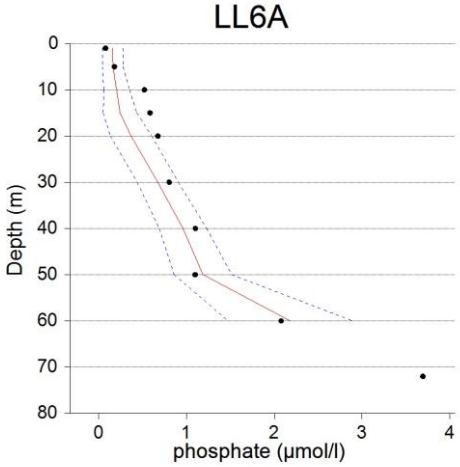
Phosphate:

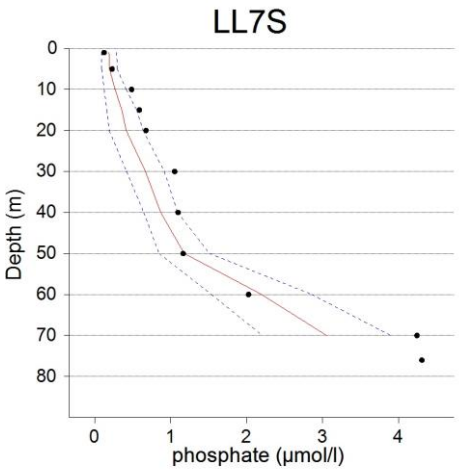

XV1
Depth (m)
0
10
20
30
40
50
60
0
0.5
1
1.5
2
2.5
3
phosphate (µmol/l)

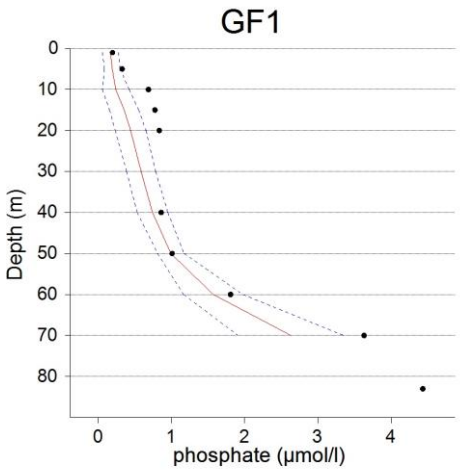

LL3A
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.5
1
1.5
2
2.5
3
phosphate (µmol/l)

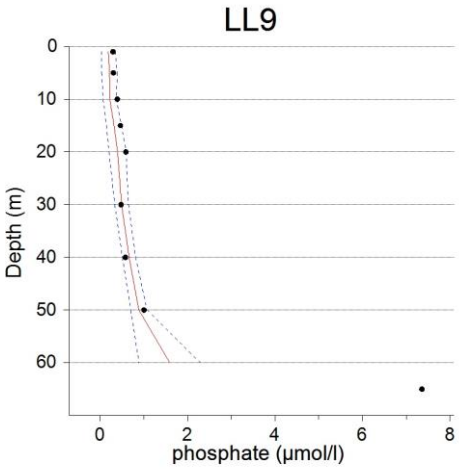

GF2
Depth (m)
0
10
20
30
40
50
60
70
80
0
1
2
3
4
phosphate (µmol/l)

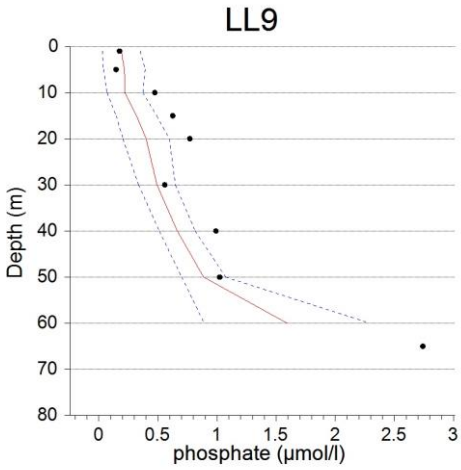

LL5
Depth (m)
0
10
20
30
40
50
60
70
80
0
1
2
3
4
phosphate (µmol/l)

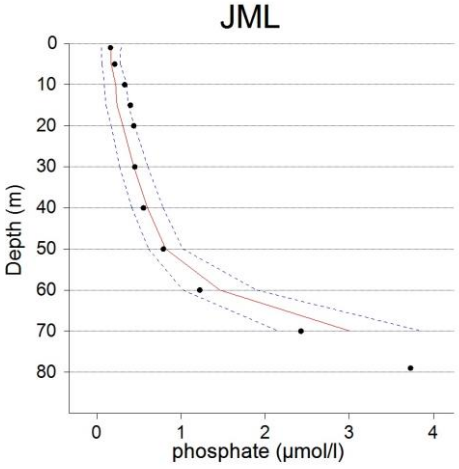

LL6A
Depth (m)
0
10
20
30
40
50
60
70
80
0
1
2
3
4
phosphate (µmol/l)

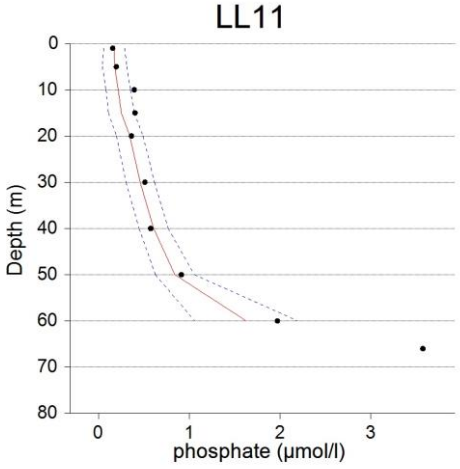

LL7S
Depth (m)
0
10
20
30
40
50
60
70
80
0
1
2
3
4
phosphate (µmol/l)

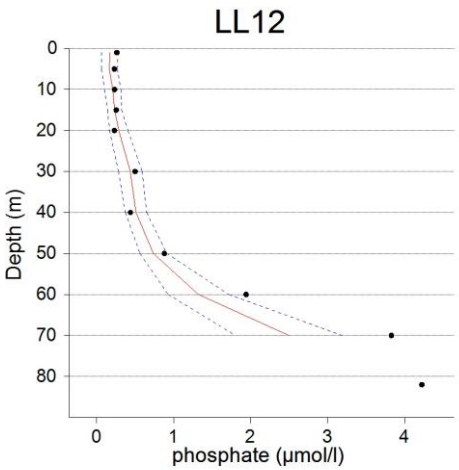

GF1
Depth (m)
0
10
20
30
40
50
60
70
80
0
1
2
3
4
phosphate (µmol/l)

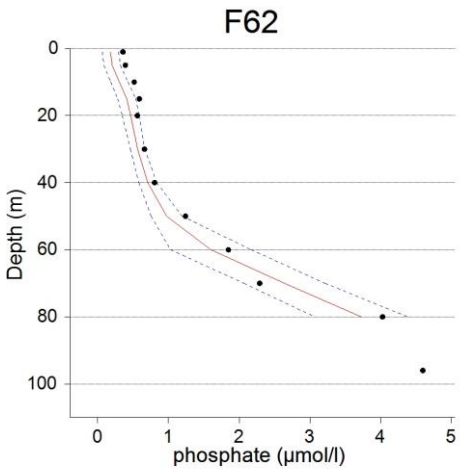

LL9
Depth (m)
0
10
20
30
40
50
60
0
2
4
6
8
phosphate (µmol/l)

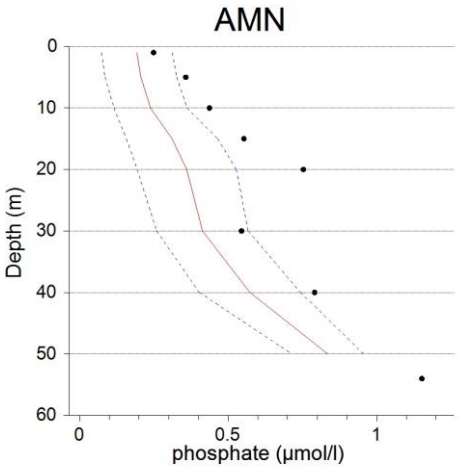

LL9
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.5
1
1.5
2
2.5
3
phosphate (µmol/l)

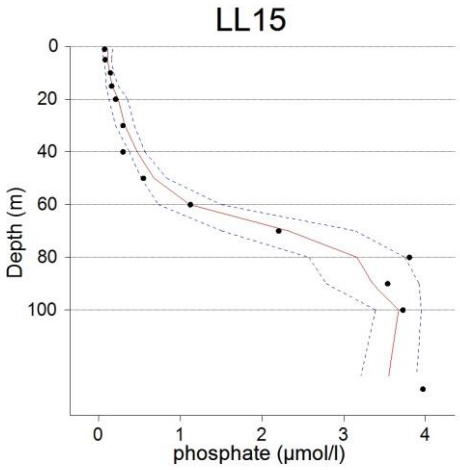

JML
Depth (m)
0
10
20
30
40
50
60
70
80
0
1
2
3
4
phosphate (µmol/l)

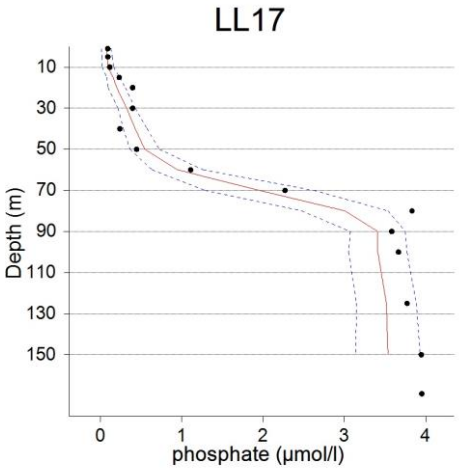

LL11
Depth (m)
0
10
20
30
40
50
60
70
80
0
1
2
3
phosphate (µmol/l)

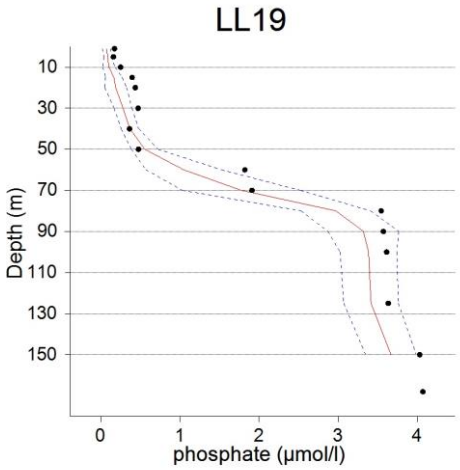

LL12
Depth (m)
0
10
20
30
40
50
60
70
80
0
1
2
3
4
phosphate (µmol/l)

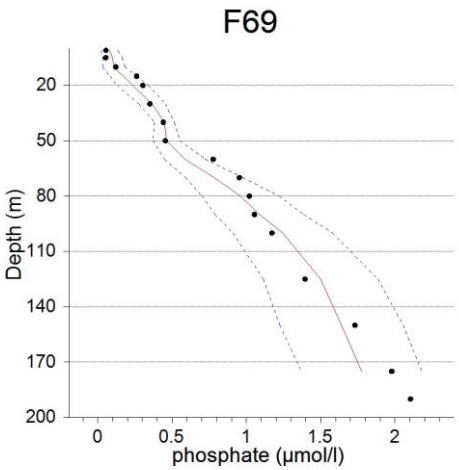

F62
Depth (m)
0
20
40
60
80
100
0
1
2
3
4
5
phosphate (µmol/l)

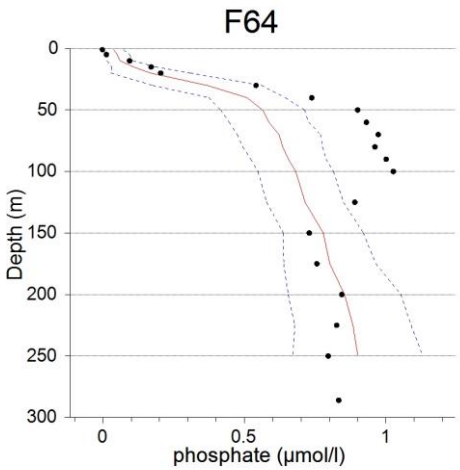

AMN
Depth (m)
0
10
20
30
40
50
60
0
0.5
1
phosphate (µmol/l)

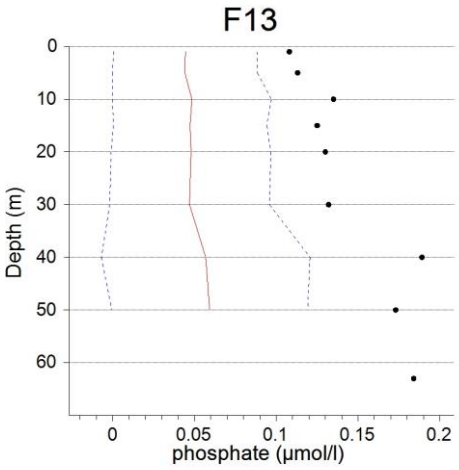

LL15
Depth (m)
0
20
40
60
80
100
0
1
2
3
4
phosphate (µmol/l)

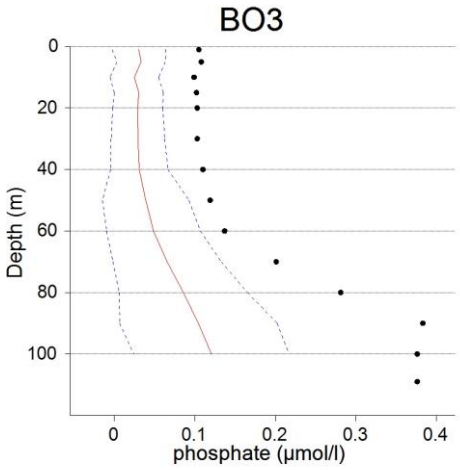

LL17
Depth (m)
10
30
50
70
90
110
130
150
0
1
2
3
4
phosphate (µmol/l)

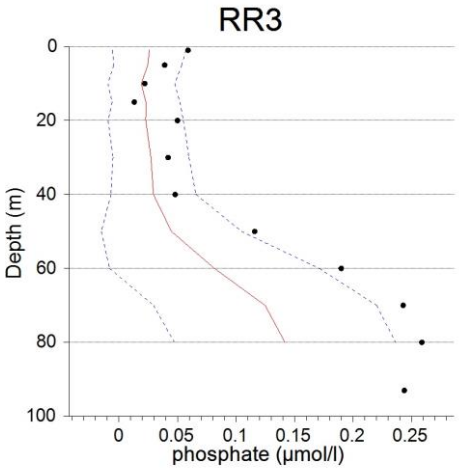

LL19
Depth (m)
10
30
50
70
90
110
130
150
0
1
2
3
4
phosphate (µmol/l)

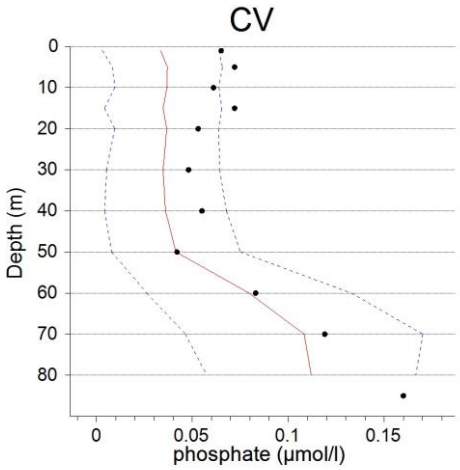

F69
Depth (m)
20
50
80
110
140
170
200
0
0.5
1
1.5
2
phosphate (µmol/l)

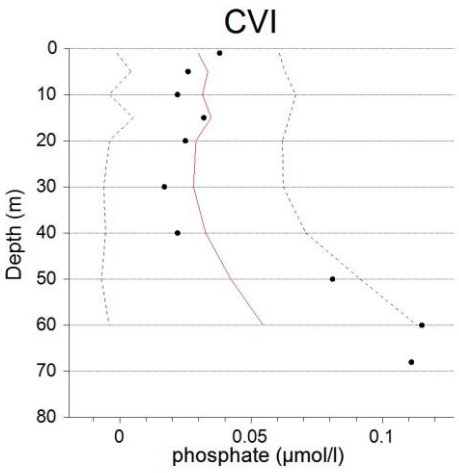

F64
Depth (m)
0
50
100
150
200
250
300
0
0.5
1
phosphate (µmol/l)

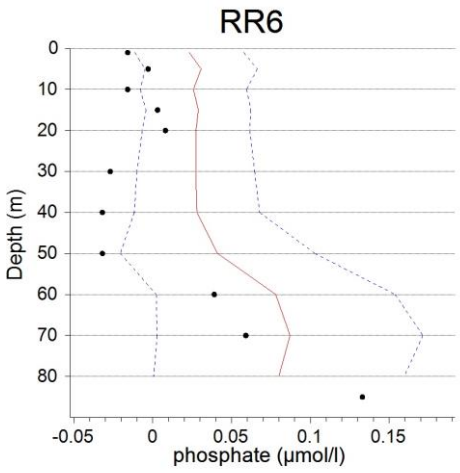

F13
Depth (m)
0
10
20
30
40
50
60
0
0.05
0.1
0.15
0.2
phosphate (µmol/l)

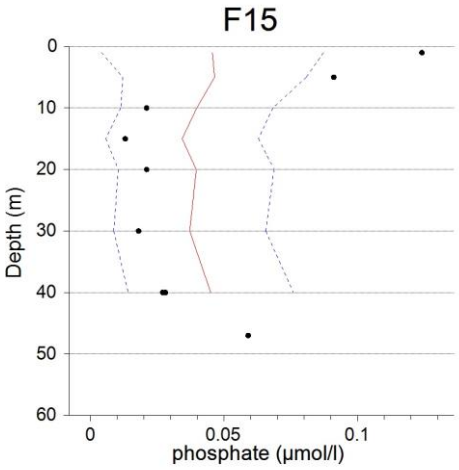

BO3
Depth (m)
0
20
40
60
80
100
0
0.1
0.2
0.3
0.4
phosphate (µmol/l)

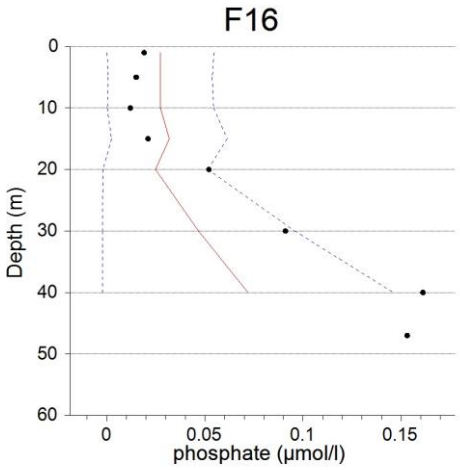

RR3
Depth (m)
0
20
40
60
80
100
0
0.05
0.1
0.15
0.2
0.25
phosphate (µmol/l)

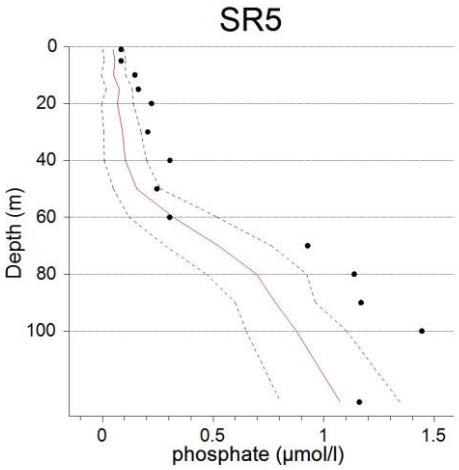

CV
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.05
0.1
0.15
phosphate (µmol/l)

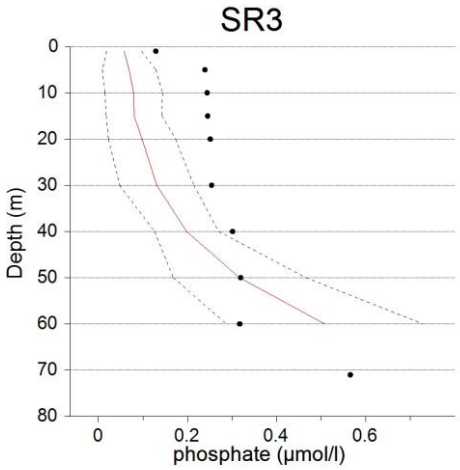

CVI
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.05
0.1
phosphate (µmol/l)

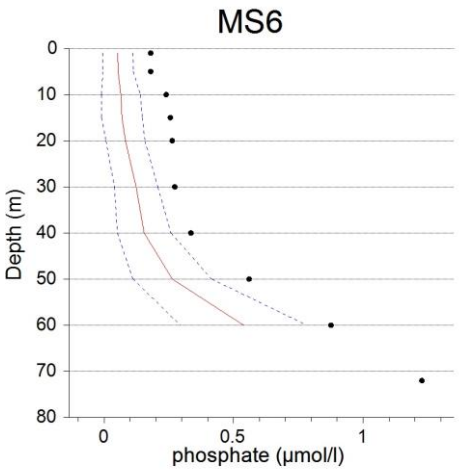

RR6
Depth (m)
0
10
20
30
40
50
60
70
80
-0.05
0
0.05
0.1
0.15
phosphate (µmol/l)

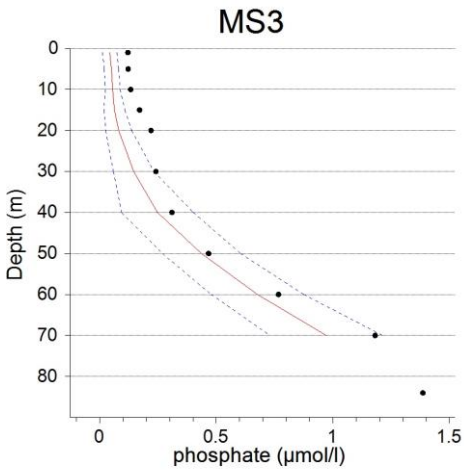

F15
Depth (m)
0
10
20
30
40
50
60
0
0.05
0.1
phosphate (µmol/l)

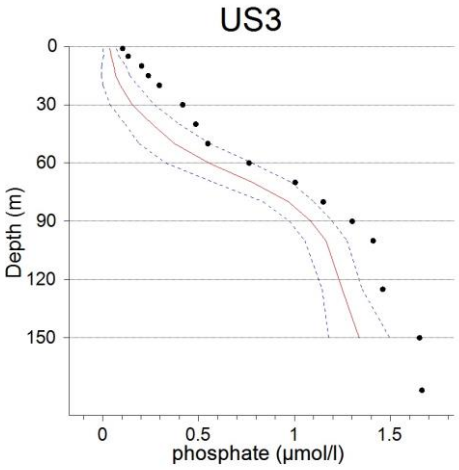

F16
Depth (m)
0
10
20
30
40
50
60
0
0.05
0.1
0.15
phosphate (µmol/l)

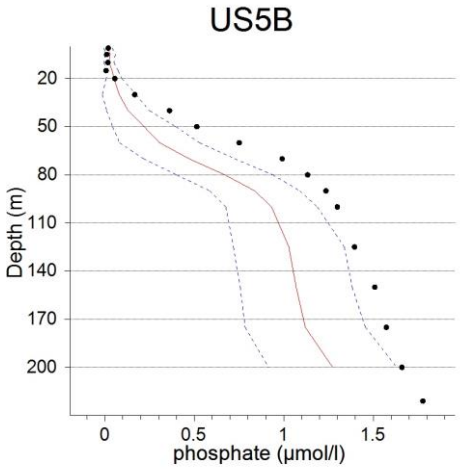

SR5
Depth (m)
0
20
40
60
80
100
0
0.5
1
1.5
phosphate (µmol/l)

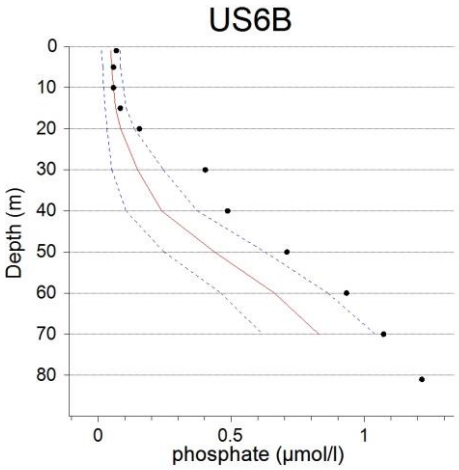

SR3
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.2
0.4
0.6
phosphate (µmol/l)

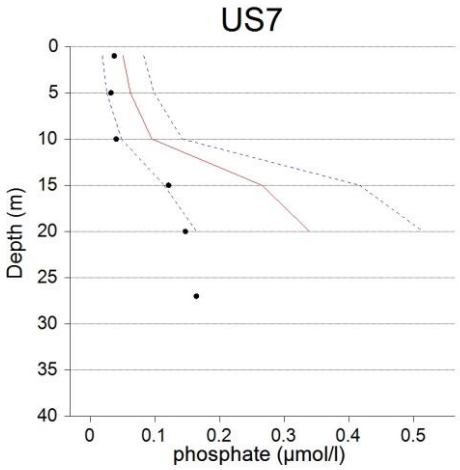

MS6
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.5
1
phosphate (µmol/l)

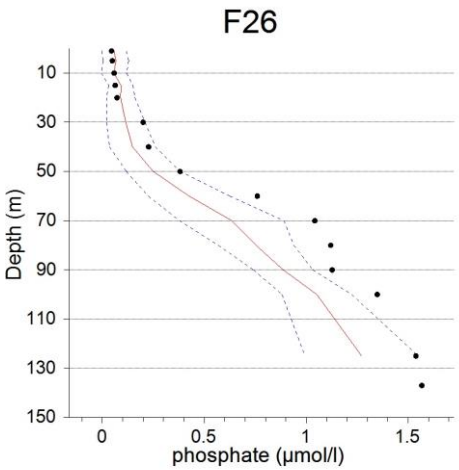

MS3
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.5
1
1.5
phosphate (µmol/l)

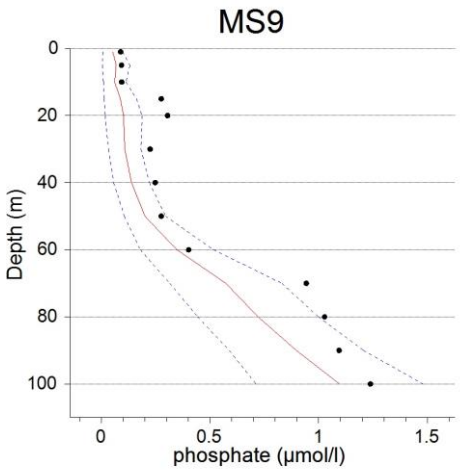

US3
Depth (m)
0
30
60
90
120
150
0
0.5
1
1.5
phosphate (µmol/l)

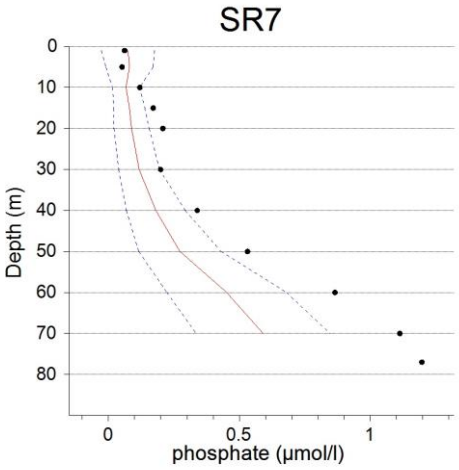

US5B
Depth (m)
20
50
80
110
140
170
200
0
0.5
1
1.5
phosphate (µmol/l)

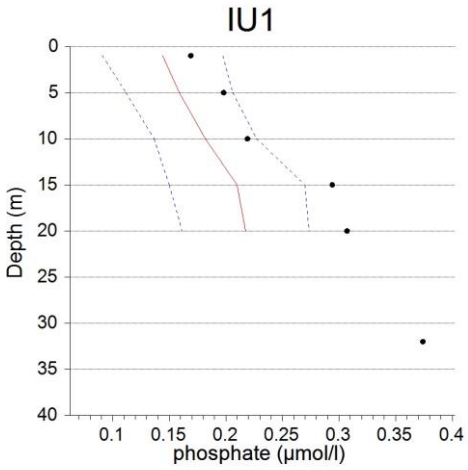

US6B
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.5
1
phosphate (µmol/l)

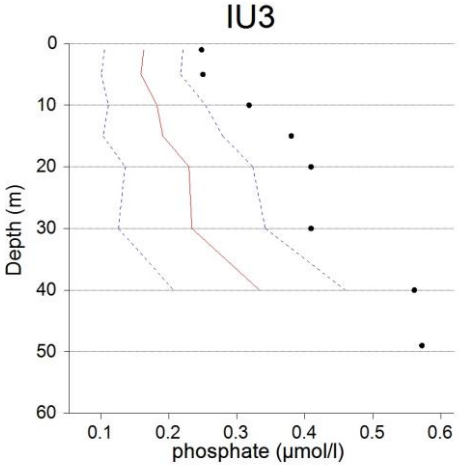

US7
Depth (m)
0
5
10
15
20
25
30
35
40
0
0.1
0.2
0.3
0.4
0.5
phosphate (µmol/l)

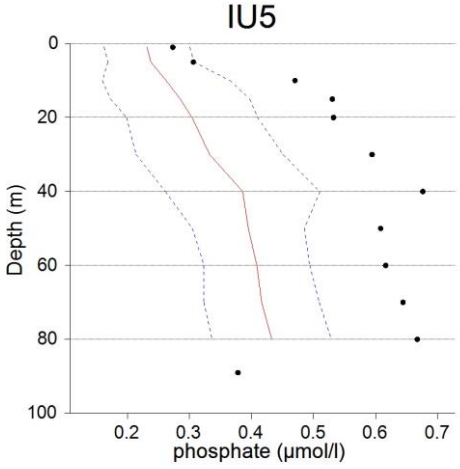

F26
Depth (m)
10
30
50
70
90
110
130
150
0
0.5
1
1.5
phosphate (µmol/l)

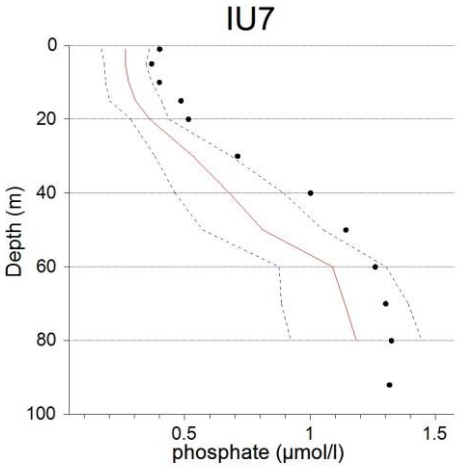

MS9
Depth (m)
0
20
40
60
80
100
0
0.5
1
1.5
phosphate (µmol/l)


SR7
Depth (m)
0
10
20
30
40
50
60
70
80
0
0.5
1
phosphate (µmol/l)

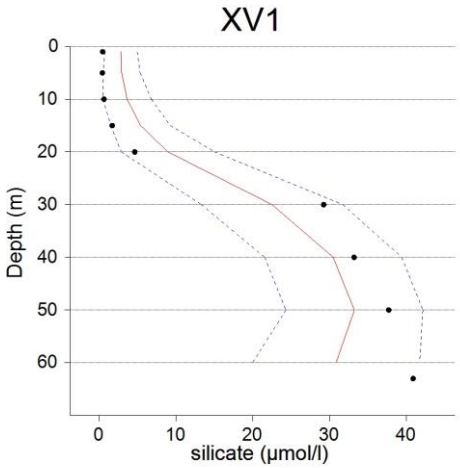

IU1
Depth (m)
0
5
10
15
20
25
30
35
40
0.1
0.15
0.2
0.25
0.3
0.35
0.4
phosphate (µmol/l)

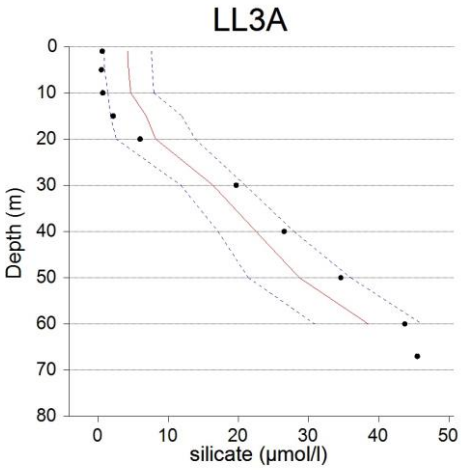

IU3
Depth (m)
0
10
20
30
40
50
60
0.1
0.2
0.3
0.4
0.5
0.6
phosphate (µmol/l)

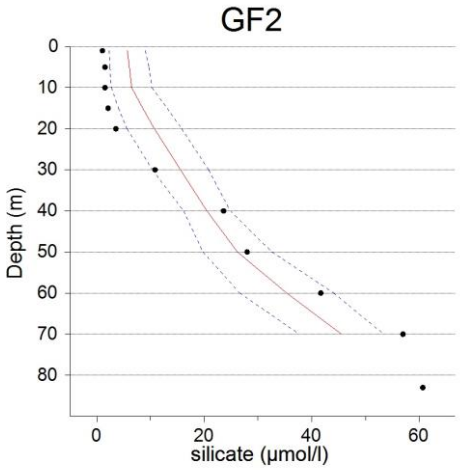

IU5
Depth (m)
0
20
40
60
80
100
0.2
0.3
0.4
0.5
0.6
0.7
phosphate (µmol/l)

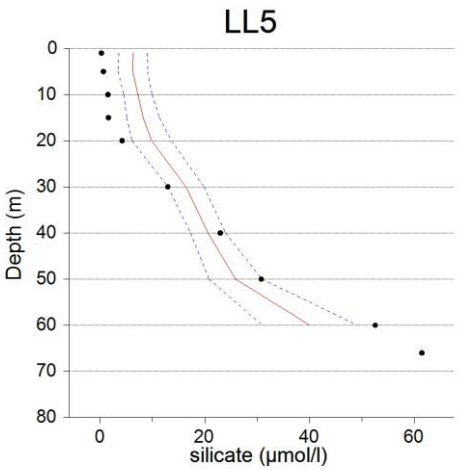

IU7
Depth (m)
0
20
40
60
80
100
0.5
1
1.5
phosphate (µmol/l)

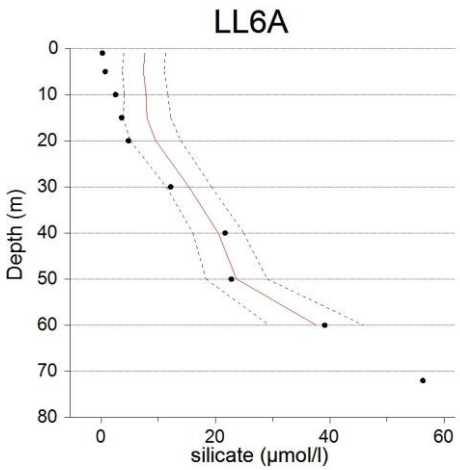
Silicate:

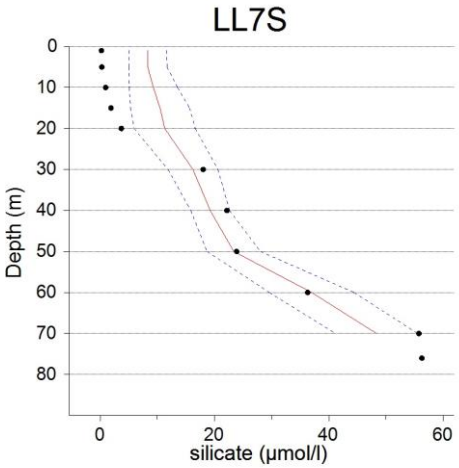

XV1
Depth (m)
0
10
20
30
40
50
60
0
10
20
30
40
silicate (µmol/l)

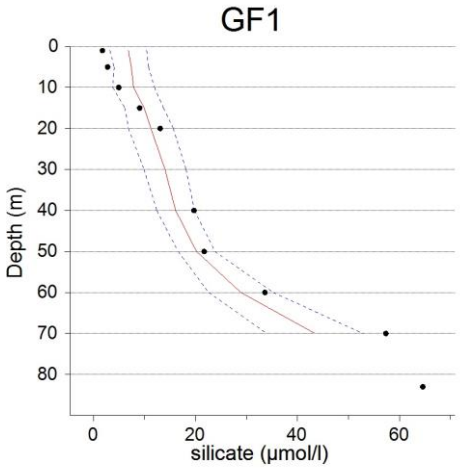

LL3A
Depth (m)
0
10
20
30
40
50
60
70
80
0
10
20
30
40
50
silicate (µmol/l)

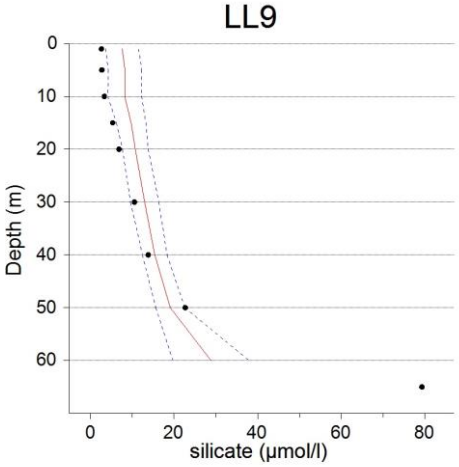

GF2
Depth (m)
0
10
20
30
40
50
60
70
80
0
20
40
60
silicate (µmol/l)

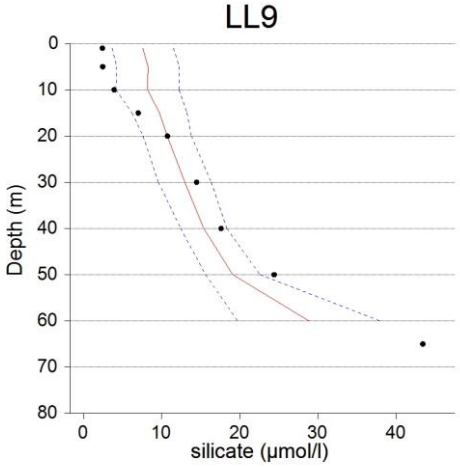

LL5
Depth (m)
silicate (µmol/l)

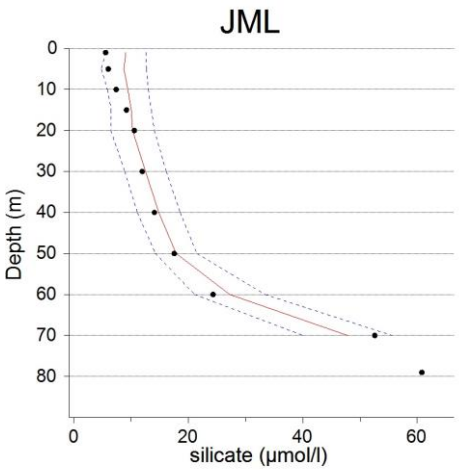

LL6A
Depth (m)
silicate (µmol/l)

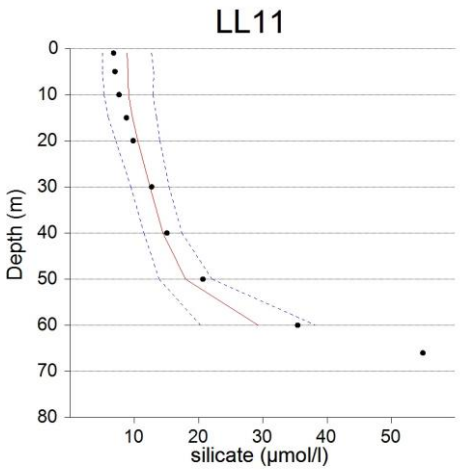

LL7S
Depth (m)
silicate (µmol/l)

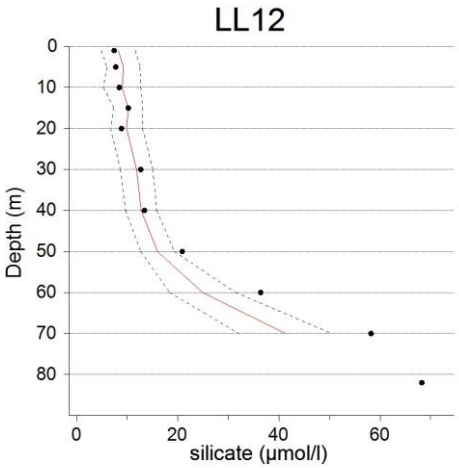

GF1
Depth (m)
silicate (µmol/l)

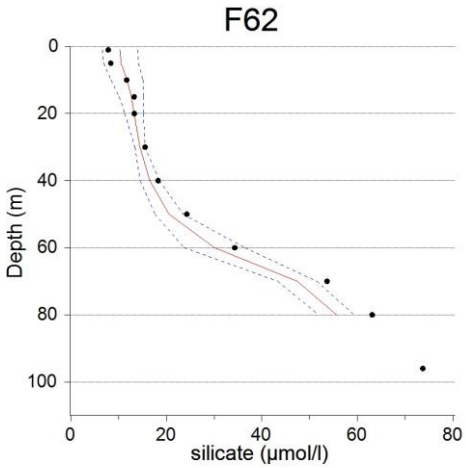

LL9
Depth (m)
silicate (µmol/l)

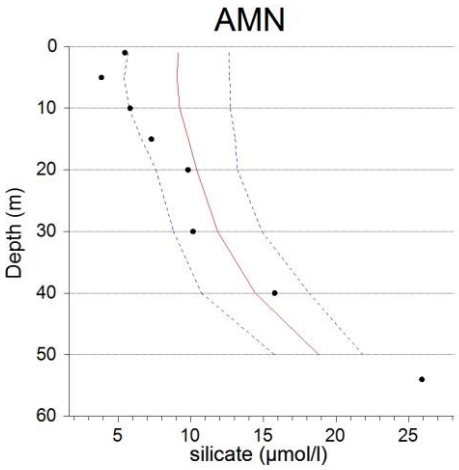

LL9
Depth (m)
silicate (µmol/l)

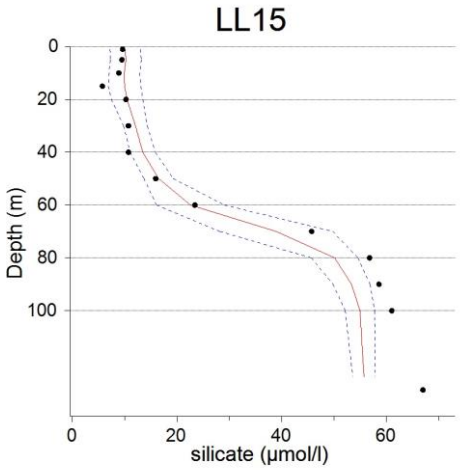

JML
Depth (m)
0
10
20
30
40
50
60
70
80
0
20
40
60
silicate (µmol/l)

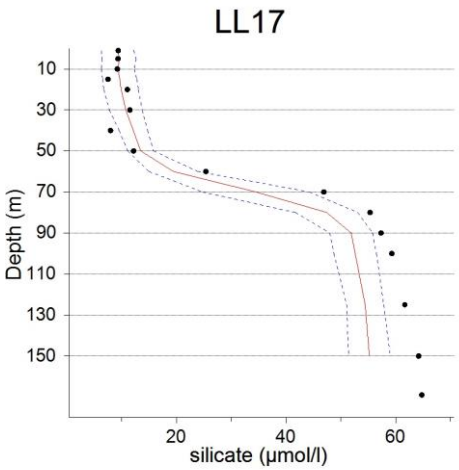

LL11
Depth (m)
0
10
20
30
40
50
60
70
80
10
20
30
40
50
silicate (µmol/l)

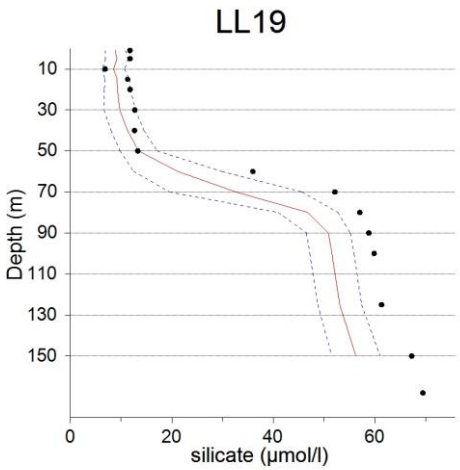

LL12
Depth (m)
0
10
20
30
40
50
60
70
80
0
20
40
60
silicate (µmol/l)

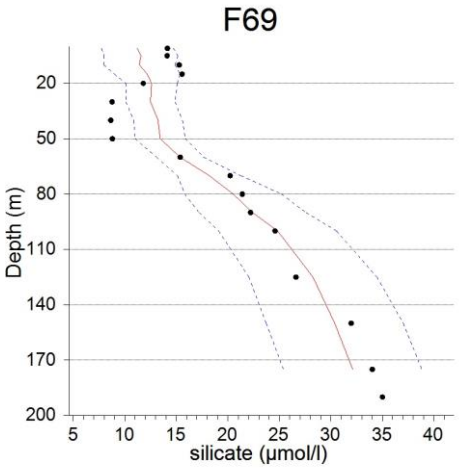

F62
Depth (m)
0
20
40
60
80
100
0
20
40
60
80
silicate (µmol/l)

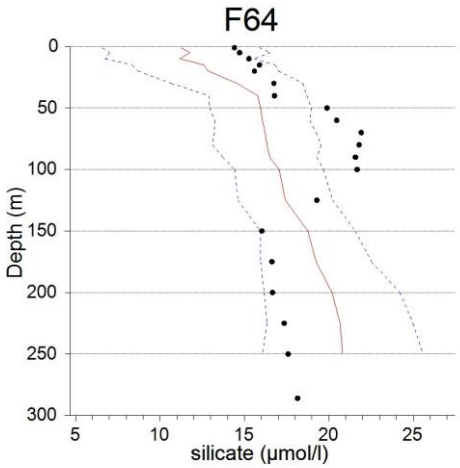

AMN
Depth (m)
0
10
20
30
40
50
60
5
10
15
20
25
silicate (µmol/l)

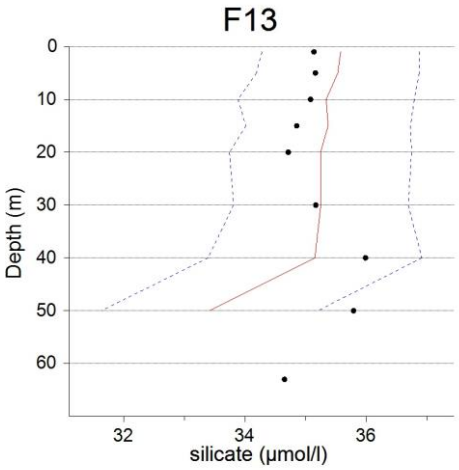

LL15
Depth (m)
0
20
40
60
80
100
0
20
40
60
silicate (µmol/l)

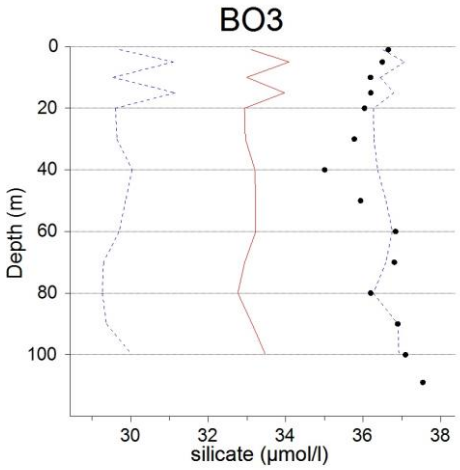

LL17
Depth (m)
10
30
50
70
90
110
130
150
20
40
60
silicate (µmol/l)

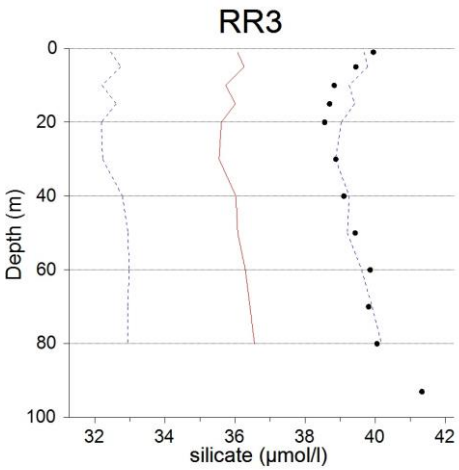

LL19
Depth (m)
10
30
50
70
90
110
130
150
0
20
40
60
silicate (µmol/l)

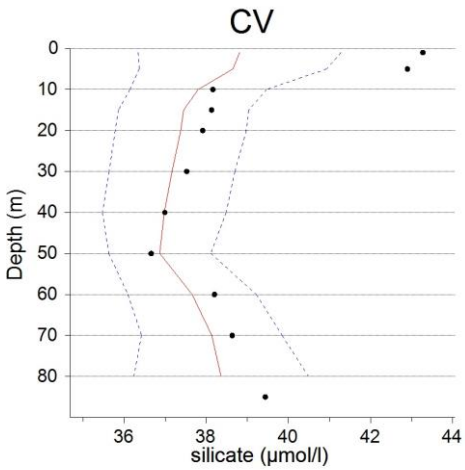

F69
Depth (m)
20
50
80
110
140
170
200
5
10
15
20
25
30
35
40
silicate (µmol/l)

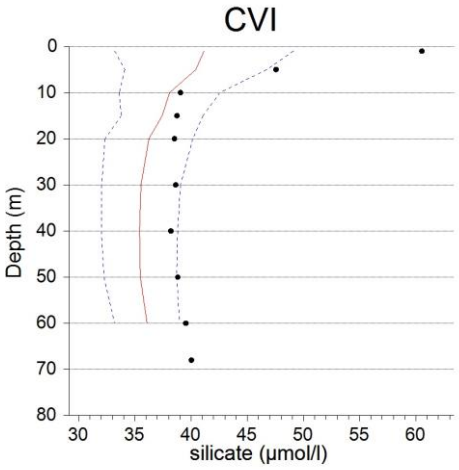

F64
Depth (m)
0
50
100
150
200
250
300
5
10
15
20
25
silicate (µmol/l)

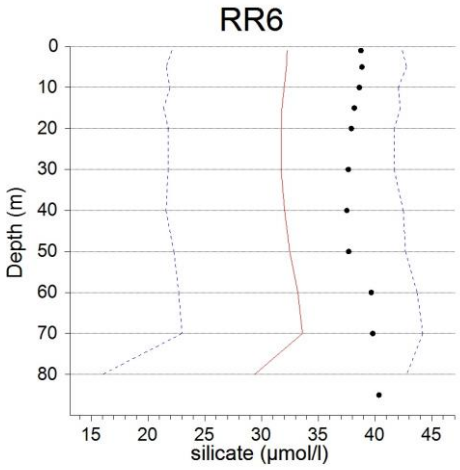

F13
Depth (m)
0
10
20
30
40
50
60
32
34
36
silicate (µmol/l)

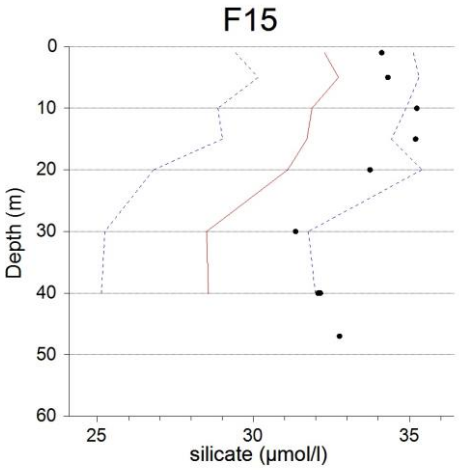

BO3
Depth (m)
0
20
40
60
80
100
30
32
34
36
38
silicate (µmol/l)

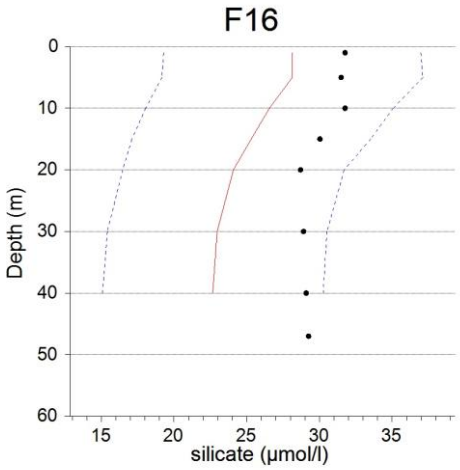

RR3
Depth (m)
0
20
40
60
80
100
32
34
36
38
40
42
silicate (µmol/l)

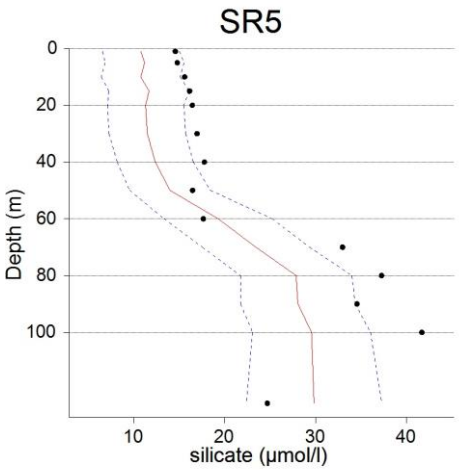

CV
Depth (m)
0
10
20
30
40
50
60
70
80
36
38
40
42
44
silicate (µmol/l)

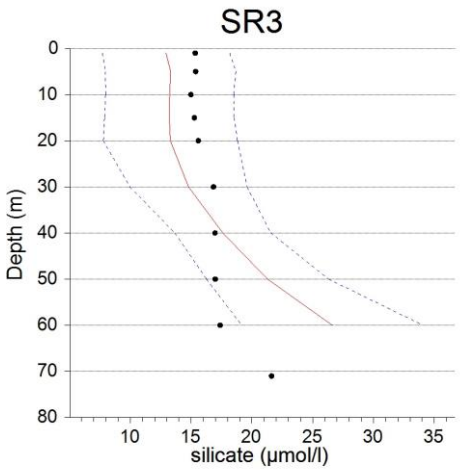

CVI
Depth (m)
0
10
20
30
40
50
60
70
80
30
35
40
45
50
55
60
silicate (µmol/l)

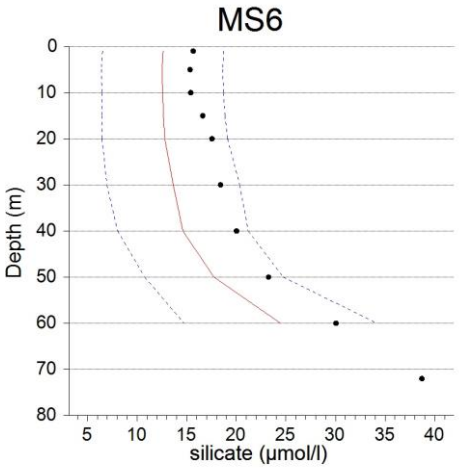

RR6
Depth (m)
0
10
20
30
40
50
60
70
80
15
20
25
30
35
40
45
silicate (µmol/l)

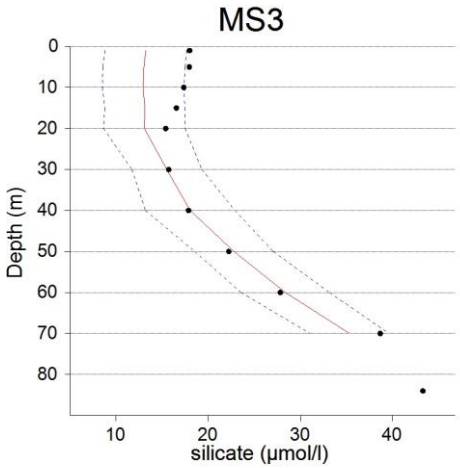

F15
Depth (m)
0
10
20
30
40
50
60
25
30
35
silicate (µmol/l)

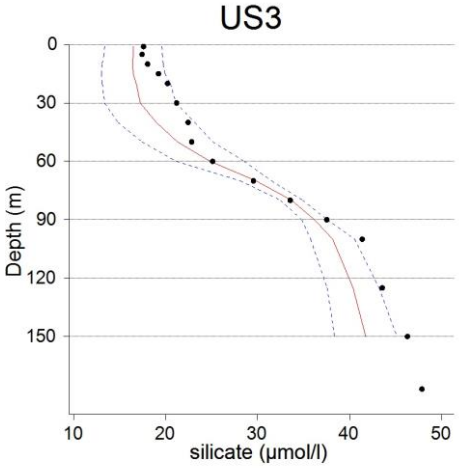

F16
Depth (m)
0
10
20
30
40
50
60
15
20
25
30
35
silicate (µmol/l)

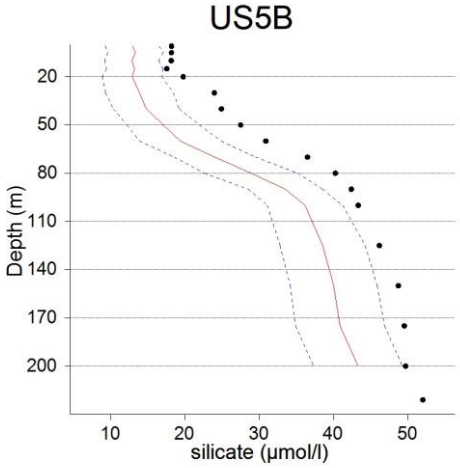

SR5
Depth (m)
0
20
40
60
80
100
10
20
30
40
silicate (µmol/l)

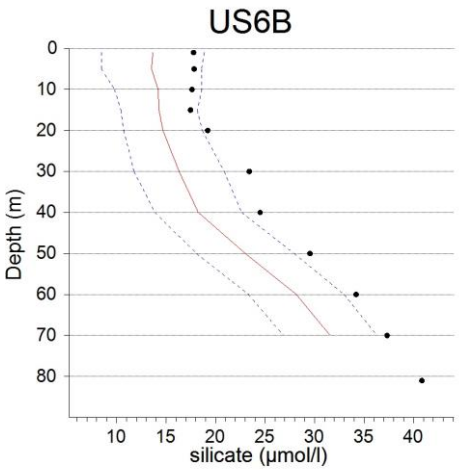

SR3
Depth (m)
0
10
20
30
40
50
60
70
80
10
15
20
25
30
35
silicate (µmol/l)

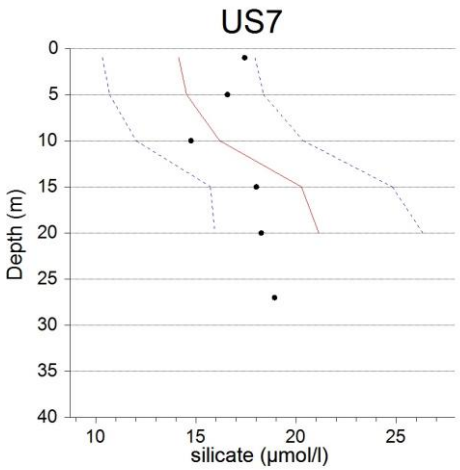

MS6
Depth (m)
0
10
20
30
40
50
60
70
80
5
10
15
20
25
30
35
40
silicate (µmol/l)

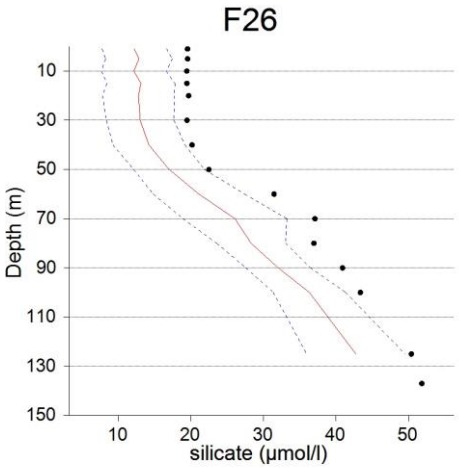

MS3
Depth (m)
0
10
20
30
40
50
60
70
80
10
20
30
40
silicate (µmol/l)

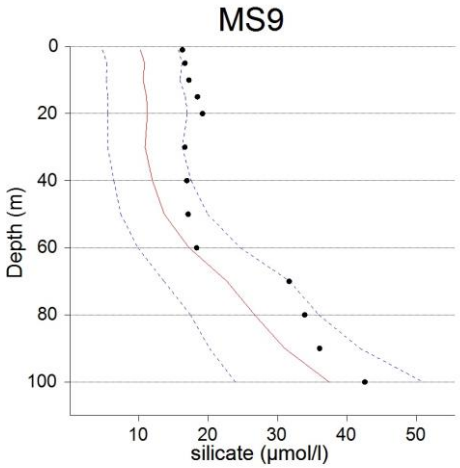

US3
Depth (m)
0
30
60
90
120
150
10
20
30
40
50
silicate (µmol/l)

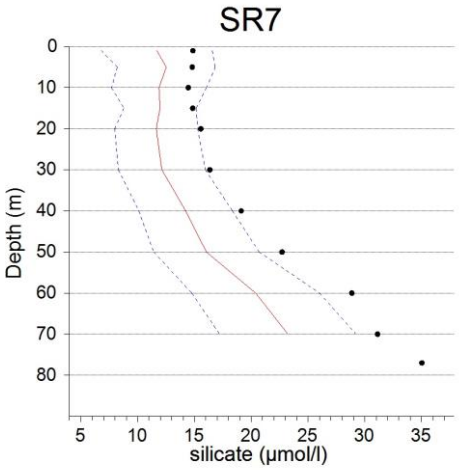

US5B
Depth (m)
20
50
80
110
140
170
200
10
20
30
40
50
silicate (µmol/l)

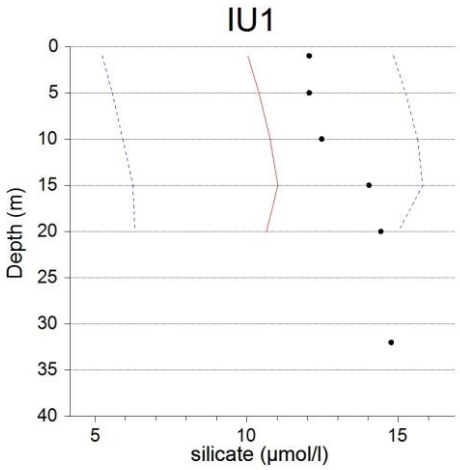

US6B
Depth (m)
0
10
20
30
40
50
60
70
80
10
15
20
25
30
35
40
silicate (µmol/l)

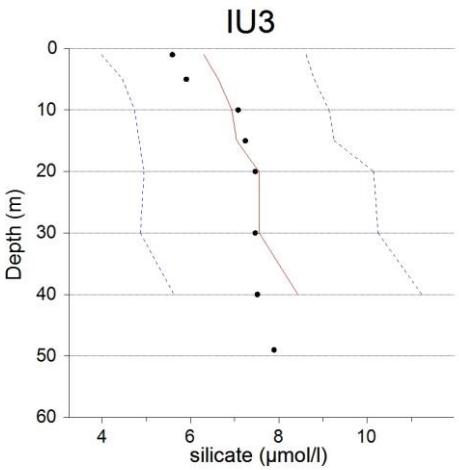

US7
Depth (m)
0
5
10
15
20
25
30
35
40
10
15
20
25
silicate (µmol/l)

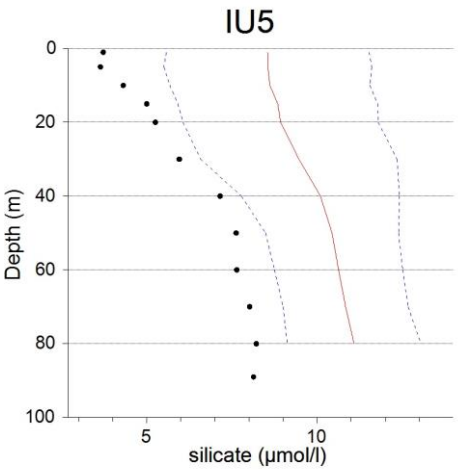

F26
Depth (m)
10
30
50
70
90
110
130
150
10
20
30
40
50
silicate (µmol/l)

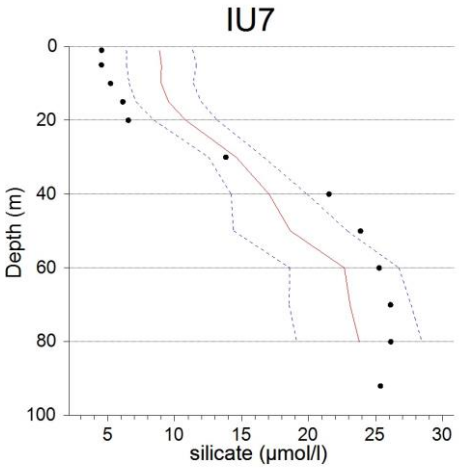

MS9
Depth (m)
0
20
40
60
80
100
10
20
30
40
50
silicate (µmol/l)


SR7
Depth (m)
0
10
20
30
40
50
60
70
80
5
10
15
20
25
30
35
silicate (µmol/l)


IU1
Depth (m)
0
5
10
15
20
25
30
35
40
5
10
15
silicate (µmol/l)


IU3
Depth (m)
0
10
20
30
40
50
60
4
6
8
10
silicate (µmol/l)


IU5
Depth (m)
0
20
40
60
80
100
5
10
silicate (µmol/l)


IU7
Depth (m)
0
20
40
60
80
100
5
10
15
20
25
30
silicate (µmol/l)