

Report from SMHI's monitoring cruise with R/V Svea

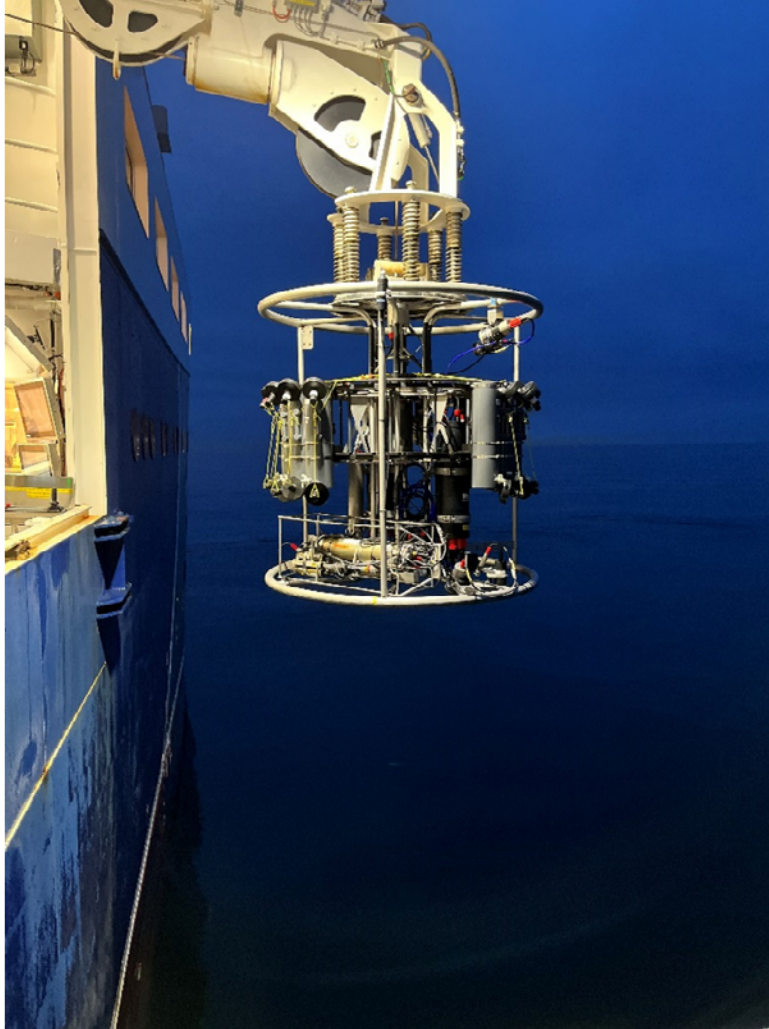


Photo: Madeleine Nilsson, SMHI

Duration of expedition:	2024-03-07 till 2024-03-13
Management:	Swedish Meteorological and Hydrological institute (SMHI), Swedish Agency for Marine and Water Management (SwAM)
Cooperation partners:	Swedish University of Agricultural Sciences (SLU), Swedish Maritime Administration (SMA)

Address:
Göteborgskaderns Plats 3
426 71 Västra Frölunda

Telephone:
011-495 80 00

email:
madeleine.nilsson@smhi.se
anna-kerstin.thell@smhi.se
WWW:
<http://www.smhi.se/>

SUMMARY

During the cruise, which is part of the Swedish pelagic monitoring program, the Skagerrak, the Kattegat, the Sound and the Baltic Proper were visited.

The surface water temperature was normal for the month and varied from 2–4 °C in the Baltic Sea to 3–4 °C in the North Sea. In the North Sea, the salinity of the surface water was below normal for all stations.

In the Skagerrak, the concentration of dissolved inorganic nutrients in the surface water was normal for the month and had decreased since February, indicating that the spring bloom has started and been ongoing since the last cruise. Also, in the Kattegat, a reduction in dissolved inorganic nutrients was visible compared to February and the levels were within normal range.

In the Baltic Sea, the concentration of dissolved inorganic nutrients was still at high winter levels, but a slight decrease in dissolved inorganic nitrogen (DIN) could be seen in comparison to February, which may indicate that the spring bloom is about to start. Silicate levels were slightly above normal while DIN showed normal levels for the month. Phosphate levels were higher than normal in the Baltic Sea Proper and the Western Gotland Basin.

The oxygen situation in the bottom water was good (>4 ml/l) at all stations in the Skagerrak, the Kattegat and the Sound, no oxygen deficiency was noted.

In the Arkona basin, the oxygen situation was still good in the bottom water. In the Bornholm basin, the oxygen concentration had increased further since February as a result of the inflow that took place in December 2023, it was especially clear at station BY5 closest to the bottom. However, there was an intermediate layer with less oxygen present above this oxygenated layer. At stations BY4 and Hanöbukten, where the inflow was only initially visible in January, the concentration of oxygen has now in March returned to low levels. In the Eastern Gotland Basin, severe oxygen deficiency (<2 ml/l) occurred from 60 m and hydrogen sulphide was measured from 70 m. The highest hydrogen sulphide levels occurred in the Eastern Gotland Basin, while they are somewhat lower in the Baltic Sea Proper, here oxygen deficiency occurs from 70 m and hydrogen sulphide from 80 m (BY20). In the Western Gotland Basin, severe oxygen deficiency was present from 60 and 90 m, respectively, and hydrogen sulphide occurred from 80 and 100 m, respectively, at stations BY38 and BY31.

The next cruise with R/V Svea is planned for 9th–15th April, starting in Kalmar and ending in Lysekil.

RESULTS

The cruise was carried out with the research vessel R/V Svea and started in Kalmar in the evening of March 7th and ended in Lysekil on March 13th. The weather during the cruise was mostly cloudy with light winds, but increased to gale force during a couple of days when sampling in the Western Gotland Basin and during transit towards the Bornholm Basin. The air temperature was between -1 and +5 °C during the week.

All 26 planned stations were sampled except a reference measurement at Flinten 7 which had to be cancelled due to lack of time and the traffic situation in the Sound. Profiles of salt, temperature, oxygen and fluorescence in the water column were measured with the CTD¹ mounted on a rosette equipped with 24 bottles for water sampling.

Svea's ferrybox was in operation during most of the time, but due to service and sensor replacement there were a few shorter stops. Daily, a reference sample was taken from the ferrybox for chlorophyll analysis. The instrument for measuring profiles during transit; moving vessel profiler (MVP), was deployed between BY39 and BY38 and in the southern Baltic Proper across the Stolpe Channel. Svea's ADCPs could not be run in full function because one of the two ADCPs were malfunctioning.

Deploying the sea buoy at Huvudskär and replacement of the bottom system at P22 was carried out by extra personnel from SMHI. An extra wave buoy was also deployed at Huvudskär to serve as reference measurement and comparison with the sea buoy's wave sensor. The wave buoy is planned to be deployed for 1–2 months. The measurements at P22 are made on behalf of the county administration in Skåne and the system should be deployed for about 6 months before it is replaced.

This report is based on data that has undergone an initial quality control and is compared against the monthly average for the period 1991–2020. When further quality control has been performed, some values may change. Values stated in the report have been rounded to the nearest tenth and may therefore differ from the published values. The data is published as soon as possible on the data host's website, normally within about a week after the end of the cruise. Some analyses are carried out after the cruise and are therefore published later and is thus not included in this report.

More information about SMHI as a data host and to download data see this link:

<https://www.smhi.se/en/services/open-data/national-archive-for-oceanographic-data/download-data-1.153150>

More information about the algae situation can be found in the Algaware report:

<https://www.smhi.se/publikationer/publikationer/algrapporter>

¹ CTD; Conductivity, Temperature and Depth is a sensor instrument that measures profiles in the water column. SMHI's CTD also has other sensors mounted for measurement of e.g. light intensity, oxygen and fluorescence.

The Skagerrak

The temperature in the surface water was around 3–4 degrees which is normal for the month. The salinity in the surface water, on the other hand, was much lower than normal and ranged between 18–21. A sharp halocline was present at a depth of about 15–20 m and below that the salinity was normal. The thermocline was not very distinct, especially closer to the coast and the surface layer is still somewhat colder than the deeper water mass.

The concentration of dissolved inorganic nutrients in the surface water had decreased sharply since February. The concentration was between 0.9–4.7 $\mu\text{mol/l}$ for dissolved inorganic nitrogen (DIN), 0.1–0.2 $\mu\text{mol/l}$ for phosphate and 3.6–7.8 $\mu\text{mol/l}$ for silicate. Levels were normal for the month except for silicate, which was slightly elevated at the stations in the Å-transect (stations Å13–Å17).

The oxygen situation at the bottom was good at all stations in the Skagerrak, normal levels for the month were measured with concentrations between 5.9–6.5 ml/l.

Fluorescence measurements showed increased levels of chlorophyll at all stations from 0–20 m, but no strong peaks were noted, which indicates moderate plankton activity in the surface layer.

The Kattegat and the Sound

The temperature in the surface water was around 3–4 °C, which is normal for the month and unchanged since February. The salinity in the surface water was below normal and increased from 7.5 in the Sound to 17.9 at station Anholt E. Thermocline and halocline coincided at around 10–20 meters but the thermocline was not as pronounced as the halocline.

The concentration of dissolved inorganic nutrients in the surface water had decreased sharply since February. The DIN concentrations in the surface water were within the normal level and ranged between 0.5 and 4.6 $\mu\text{mol/l}$, highest in the Sound. The concentration of silicate was between 17.4 and 4.0 $\mu\text{mol/l}$, highest in the Sound, which together with station Anholt E had levels above normal. The concentration of phosphate was between 0.6 and 0.1 $\mu\text{mol/l}$, lowest at Anholt E. Phosphate levels were above normal in the Sound and at station Fladen.

The oxygen levels in the bottom water of the Kattegat were normal for the season, around 6 ml/l at all stations. In the Sound, the oxygen concentrations in the bottom water was around 5 ml/l.

Chlorophyll fluorescence was higher in the surface water in the Kattegat compared to Skagerrak, it was highest at stations Fladen and Anholt E. At stations Fladen and N14 Falkenberg, chlorophyll fluorescence maxima around 7 and 11 meters respectively were also noted.

The Baltic Proper

The surface temperature was normal for the month at all stations in the Baltic Proper and ranged between 2 and 4 °C, warmest in the Arkona basin. The salinity in the surface layer was lower than normal in both the Arkona and Bornholm Basins and ranged between 7.1 and 7.5. The salinity was normal to above normal in the surface water in the Eastern Gotland Basin and the northern Baltic Proper. The water was well mixed down to the bottom (40 m) at BY1, but at BY2 a sharp halocline was visible at 30–40 m. In the Bornholm Basin, the thermocline and halocline coincided at 40–50 m. In the Eastern and Western Gotland basins, the stratification extended down to 50–60 m.

In the Arkona and Bornholm Basins, the concentration in the surface water of DIN had decreased since February. Phosphate concentration had also decreased or remained unchanged, while silicate had increased during the same period. The levels of the dissolved inorganic nutrients were normal for the month except for silicate. The concentration of DIN in the Arkona and Bornholm basins ranged between 2.1–3.1 µmol/l, phosphate between 0.6–0.7 µmol/l and silicate between 16–17 µmol/l. Higher levels were measured in the Eastern and Western Gotland Basin with DIN concentrations between 3.3–5.4 µmol/l, phosphate between 0.7–0.8 µmol/l and silicate between 17–21 µmol/l. Levels of phosphate and DIN were higher than normal for the northern parts of the Western Gotland Basin and had increased slightly since February, while they were normal and decreasing since February in the Eastern Gotland Basin. The concentration of silicate continued to be above normal throughout the Baltic Proper.

In the Arkona and Bornholm Basin, the oxygen situation was good in the bottom water and the concentration of oxygen had increased further since February and the inflow that took place at the end of December 2023. At stations BY4 and Hanöbukten, the concentration remains at the same low level as in February and the traces of the inflow that was initially seen in January seems to have disappeared.

At BY5, the concentration was 5 ml/l closest to the bottom and thus no longer below the limit for oxygen deficiency (<4 ml/l), but there is still a layer above with levels close to severe oxygen deficiency (<2 ml/l). In the Eastern Gotland Basin, severe oxygen deficiency occurred from 60 m and hydrogen sulphide from 70 m. The highest hydrogen sulphide concentrations were measured in the Eastern Gotland Basin, while they are somewhat lower in the northern Baltic Proper, where severe oxygen deficiency occurs from 70 m and hydrogen sulphide from 80 m (BY20). In the Western Gotland Basin, severe oxygen deficiency occurred from 60 and 90 m and hydrogen sulphide from 80 and 100 m, respectively, at stations BY38 and BY31.

The fluorescence measurements showed low plankton activity in the surface layer throughout the Baltic Proper.

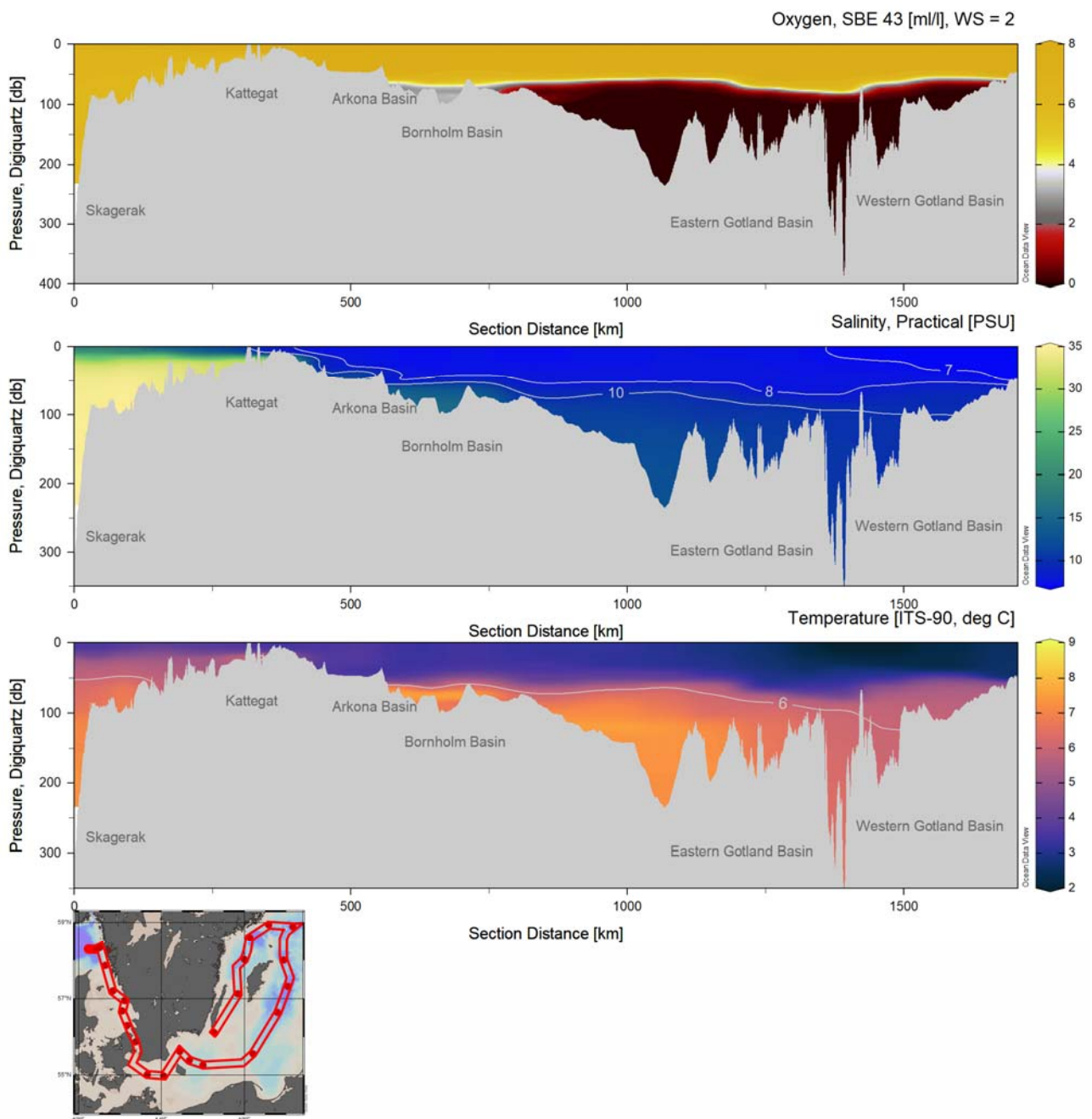


Figure 1. Sections showing oxygen concentration, salinity and temperature from measurements with CTD, from the Skagerrak to the Eastern Gotland Basin and further into the Western Gotland Basin.

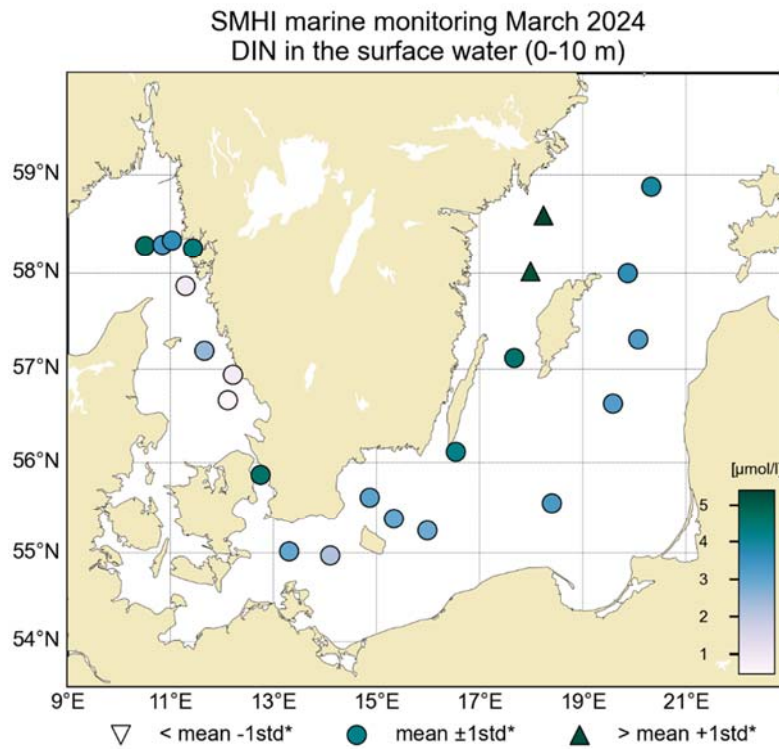


Figure 2. The concentration ($\mu\text{mol/l}$) of inorganic nitrogen (DIN) in the surface water (0-10m). The mean value is based on March's data within each pool 1991 – 2020. *STD is the standard deviation.

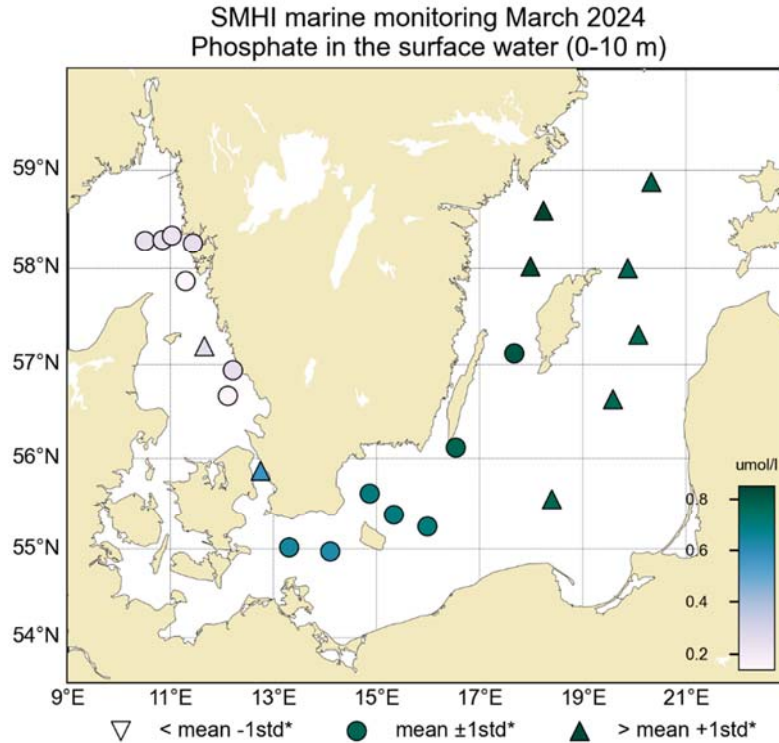


Figure 3. Concentration ($\mu\text{mol/l}$) of phosphate in surface water (0-10m). The mean value is based on March's data within each pool 1991 – 2020. *STD is the standard deviation.

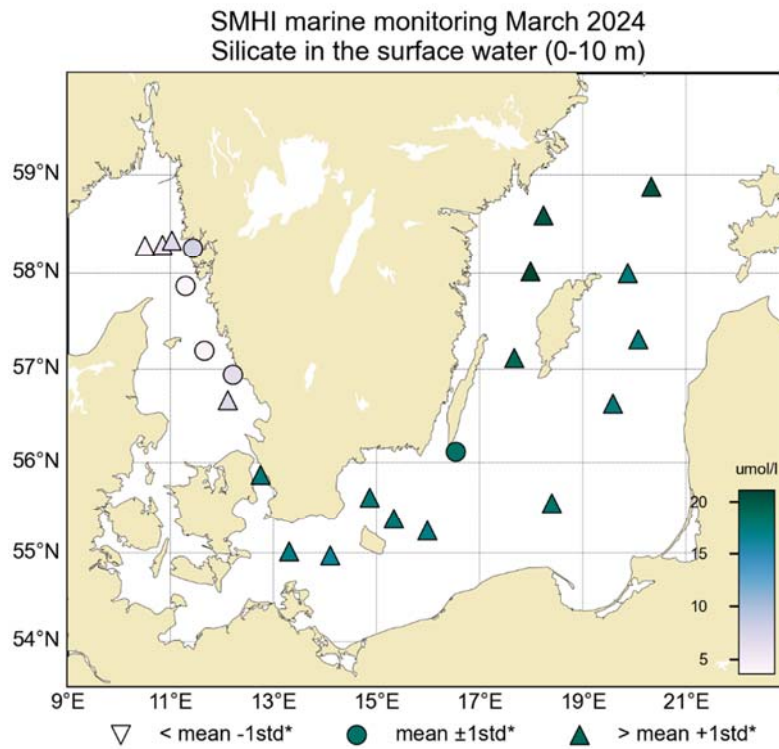


Figure 4. the concentration ($\mu\text{mol/l}$) of silicate in the surface water (0-10m); The mean value is based on March's data within each pool 1991 – 2020. *STD is the standard deviation.

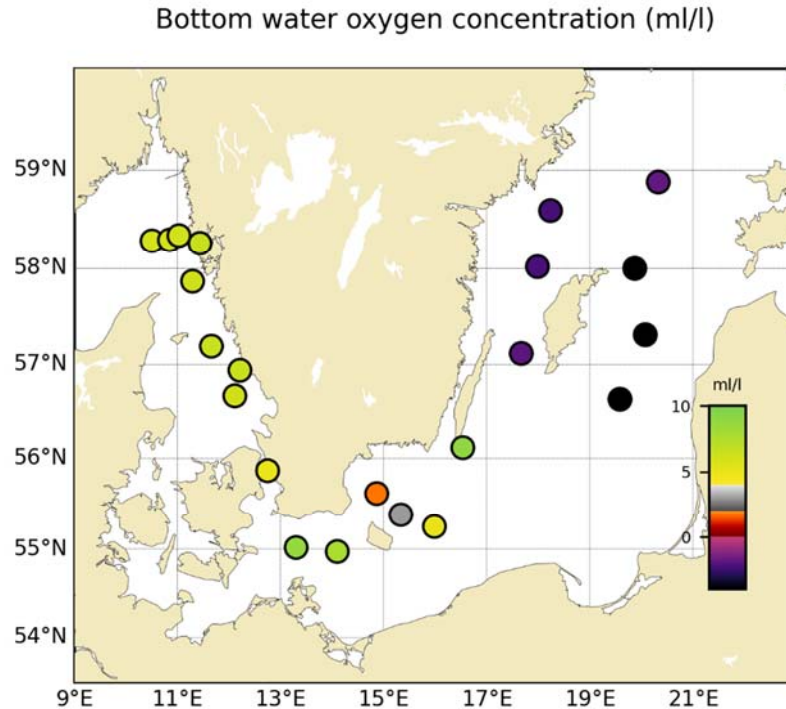


Figure 5. The oxygen concentration (ml/l) in the bottom water. The mean value is based on March's data within each pool 1991 – 2020. *STD is the standard deviation.

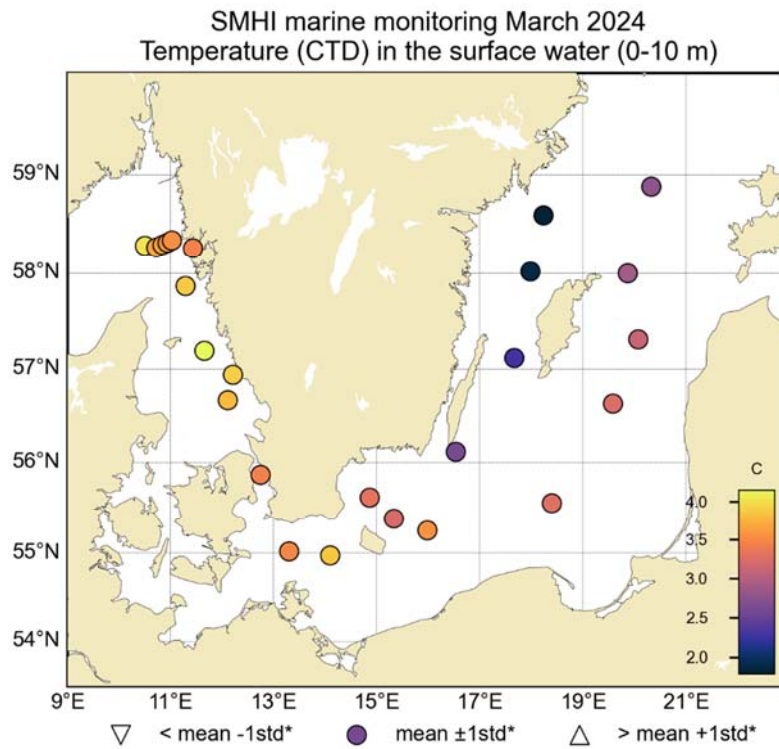


Figure 6. The temperature of the surface water (0-10m). The mean value is based on March's data within each pool 1991 – 2020. *STD is the standard deviation.

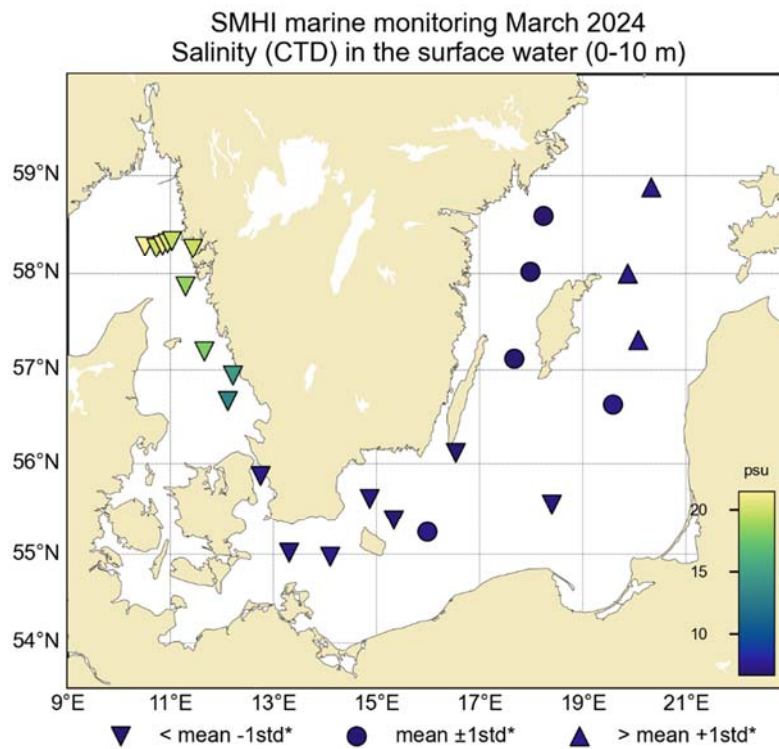


Figure 7. Salinity of surface water (0-10m). The mean value is based on March's data within each pool 1991 – 2020. *STD is the standard deviation.

PARTICIPANTS

Name	Role	From
Anna-Kerstin Thell	Chief scientist, Marine Chemist	SMHI
Madeleine Nilsson	Marine Chemist	SMHI
Ola Kalén	Oceanographer	SMHI
Martin Hansson	Oceanographer	SMHI
Monica Linder	Nutrient analysis, quality assurance, chemist	SMHI
Johan Kronsell	Technician	SMHI
Hampus Bok	Technician	SMHI
Christoffer Johansson Dale	Technician	SMHI

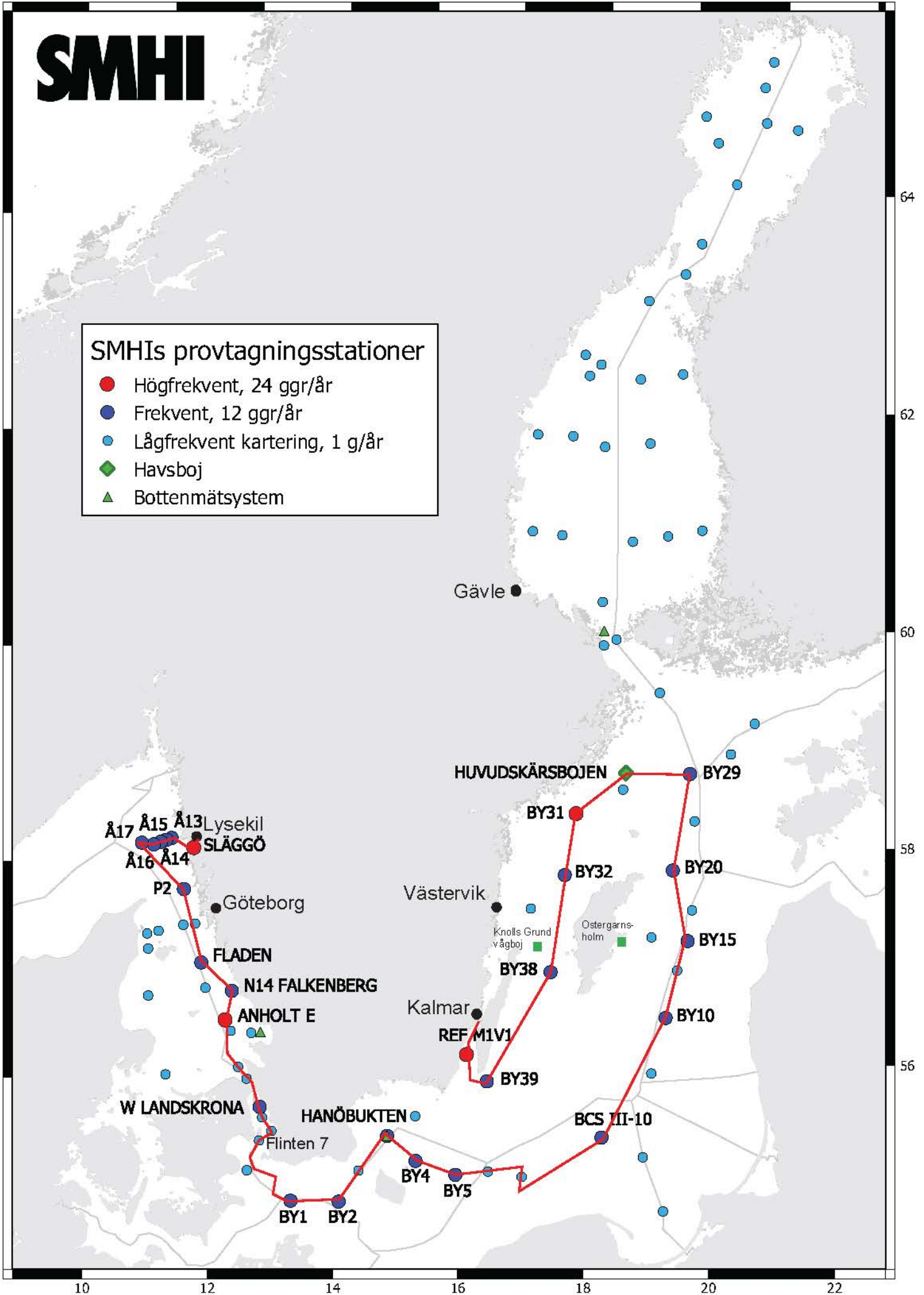
ATTACHMENTS

- Track chart
- Table of stations, parameters analysed and number of sampling depths
- Plots of monthly average and annual cycle of surface water
- Vertical profiles



SMHIs provtagningsstationer

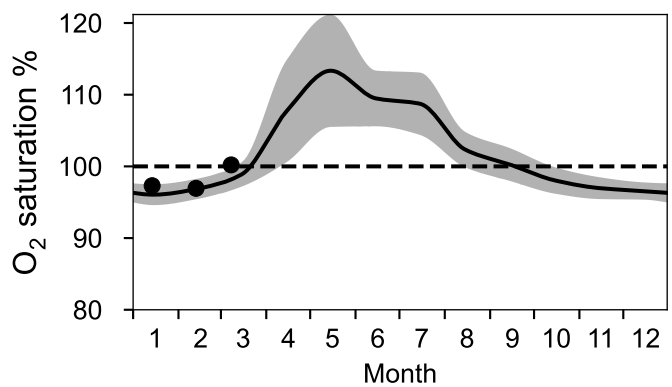
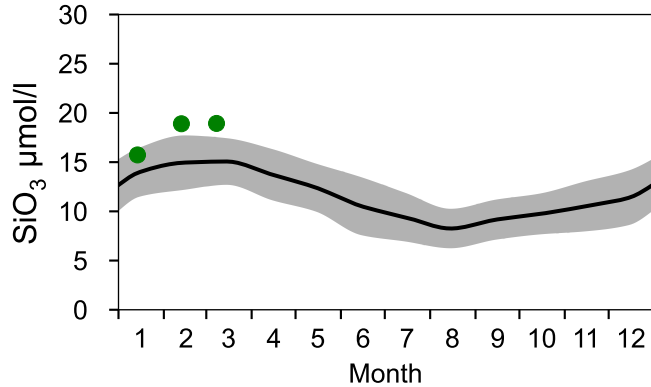
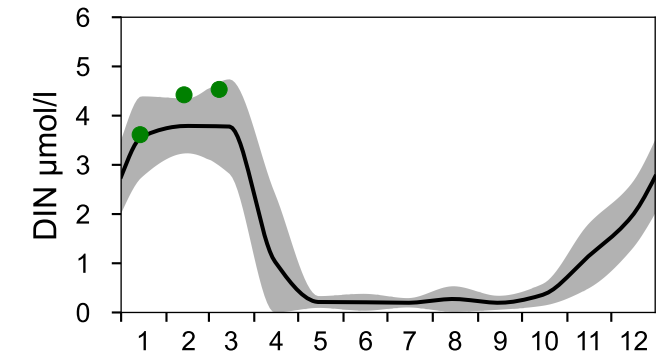
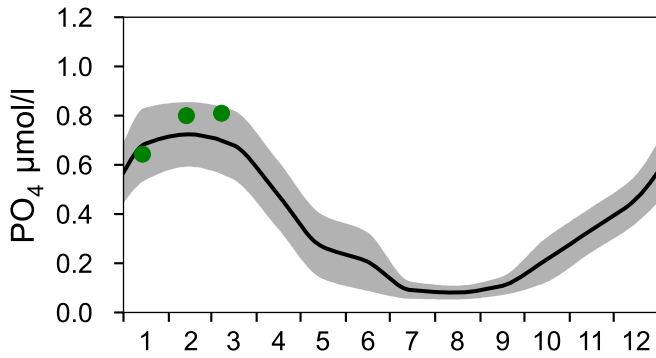
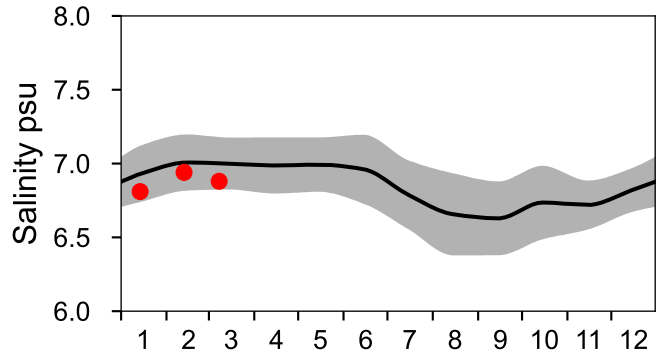
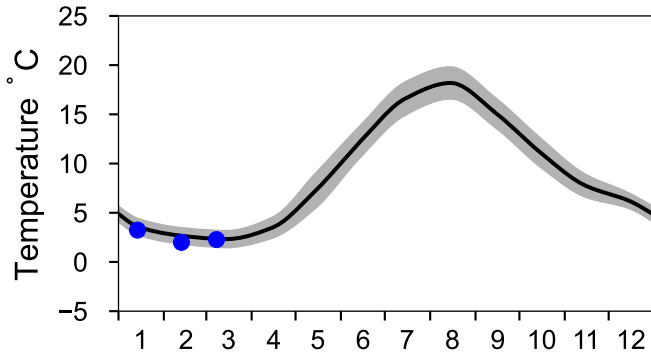
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- Lågfrekvent kartering, 1 g/år
- ◆ Havsboj
- ▲ Bottenmätsystem



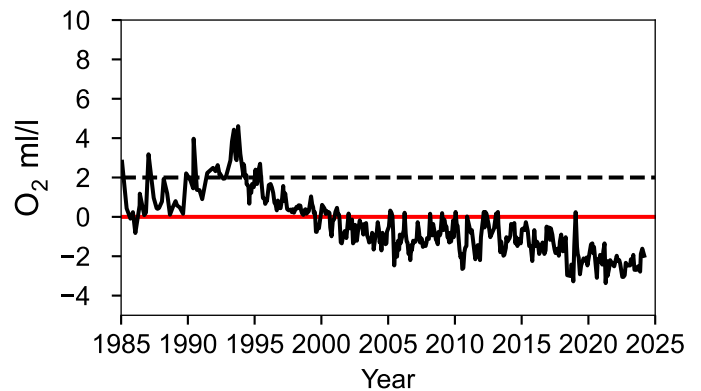
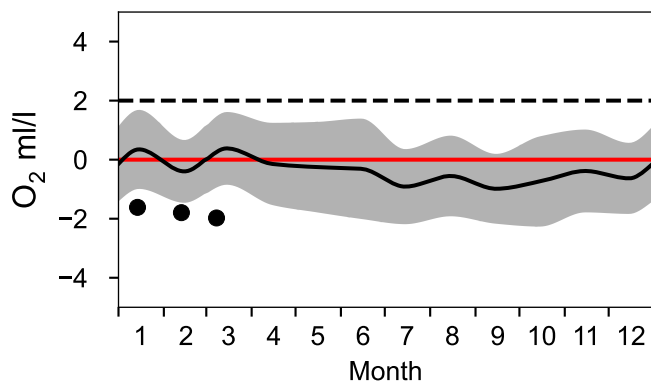
STATION BY38 KARLSÖDJ SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020 St.Dev. ● 2024

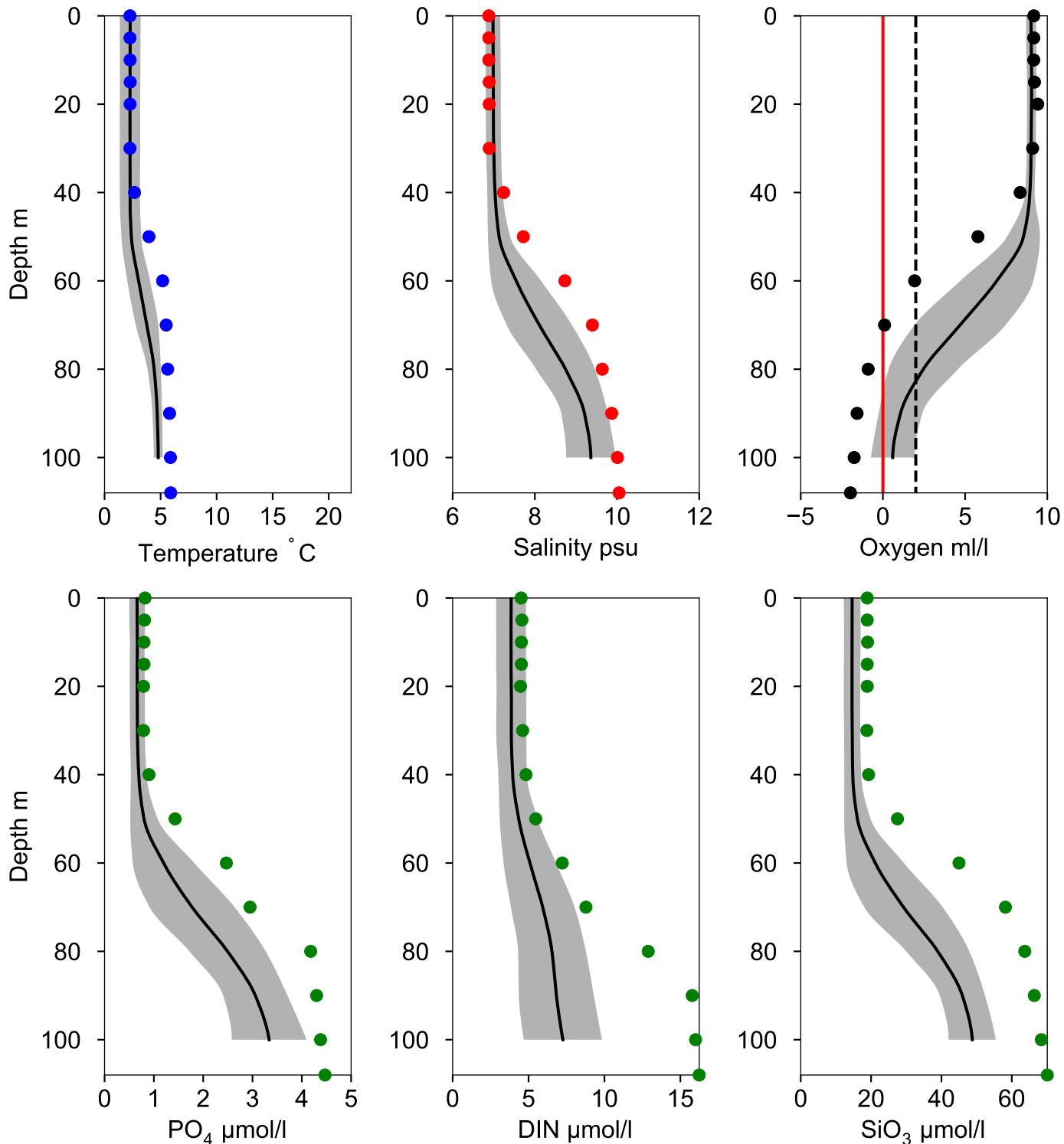


OXYGEN IN BOTTOM WATER (depth >= 100 m)



Vertical profiles BY38 KARLSÖDJ March

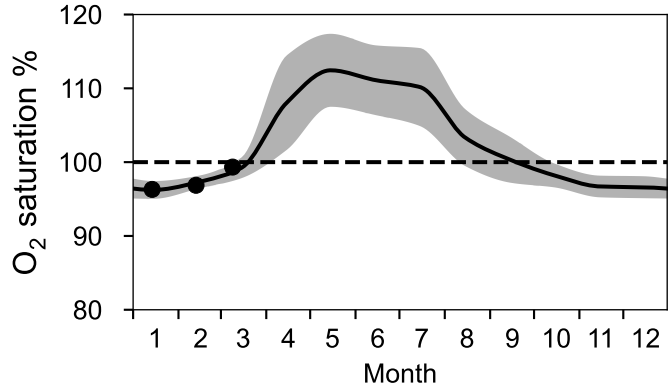
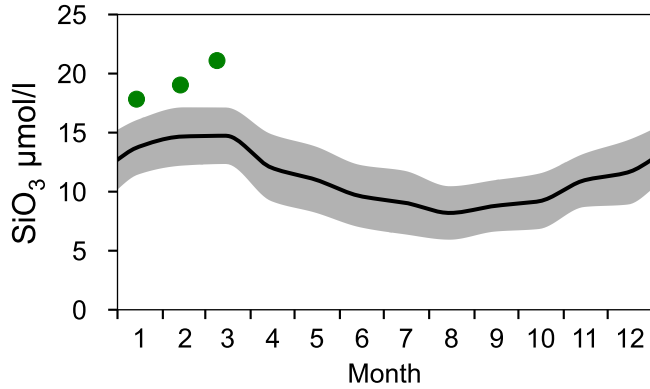
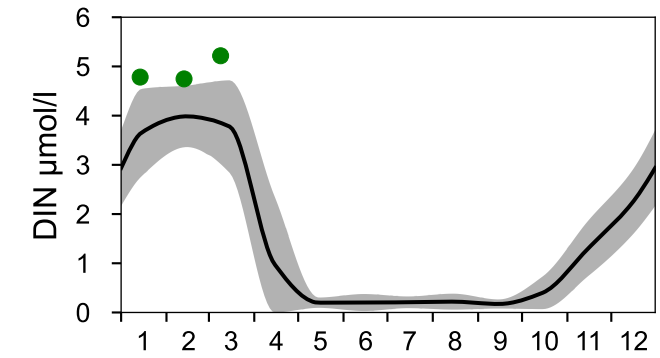
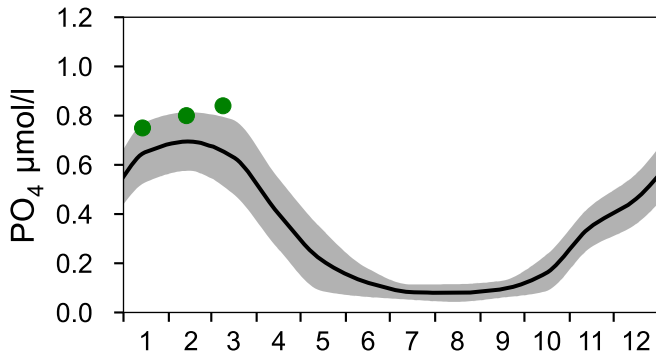
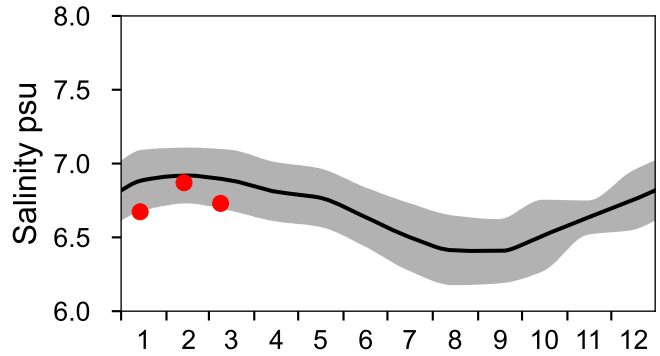
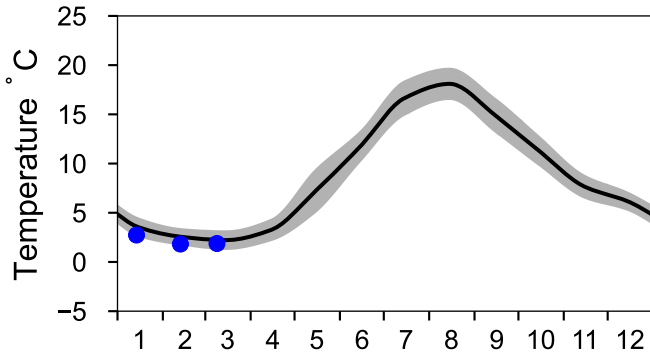
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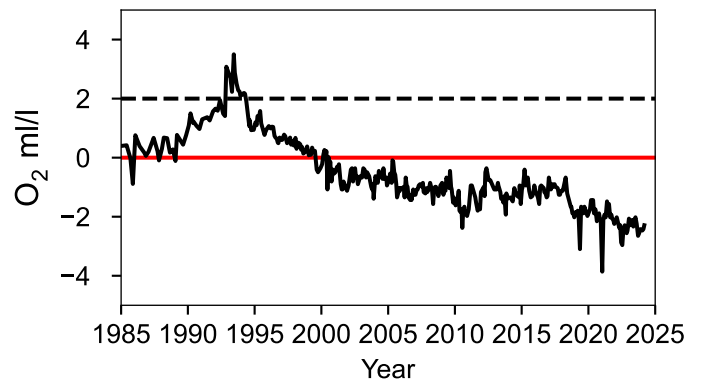
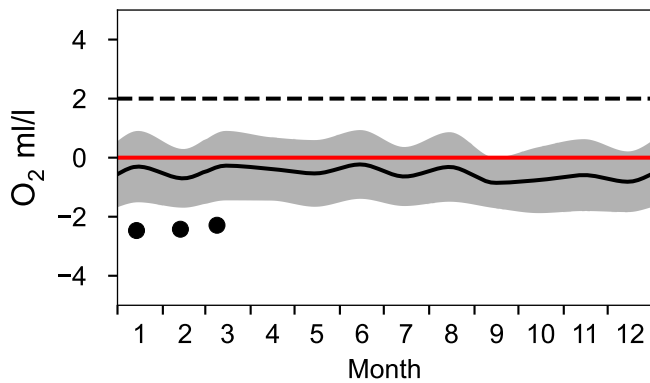
STATION BY32 NORRKÖPINGSDJ SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020 St.Dev. ● 2024

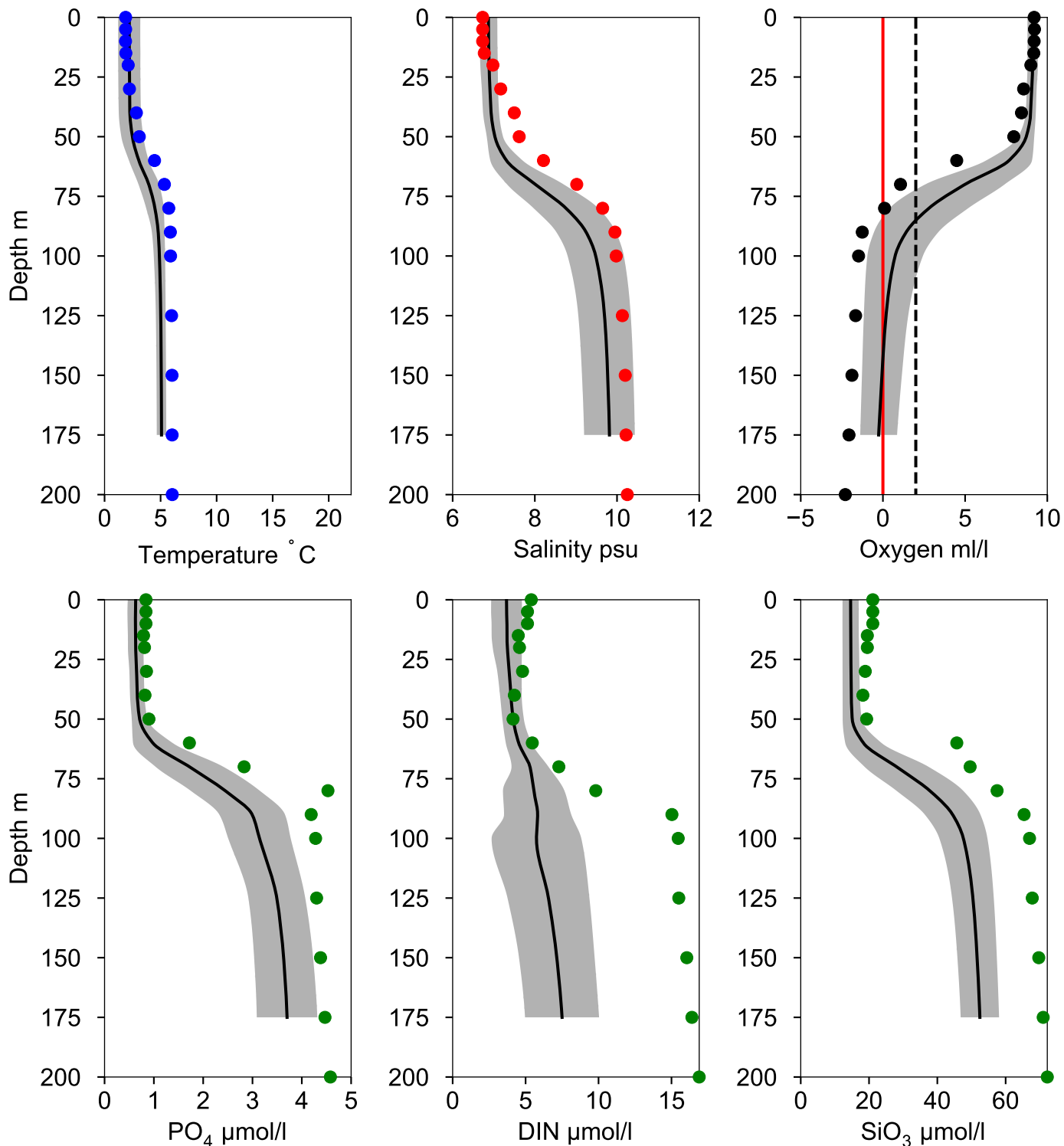


OXYGEN IN BOTTOM WATER (depth >= 175 m)



Vertical profiles BY32 NORRKÖPINGSDJ March

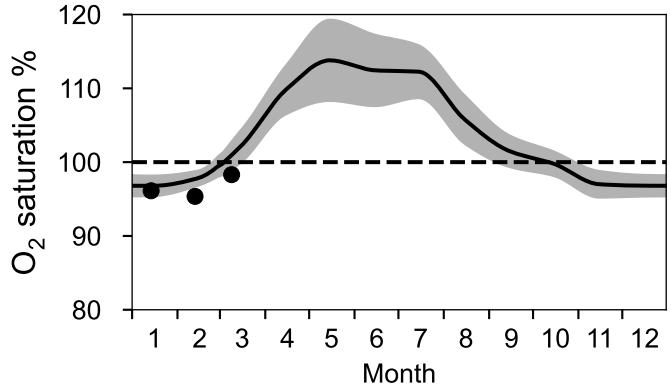
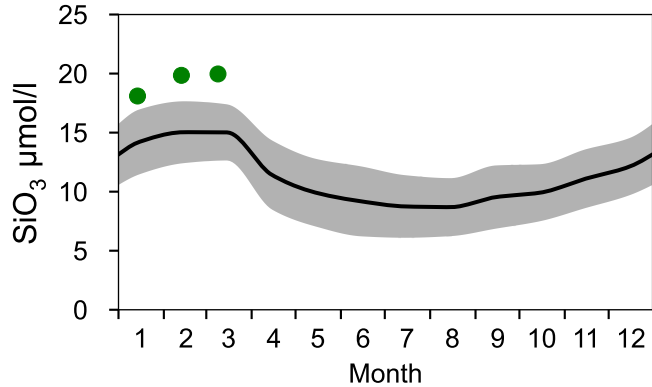
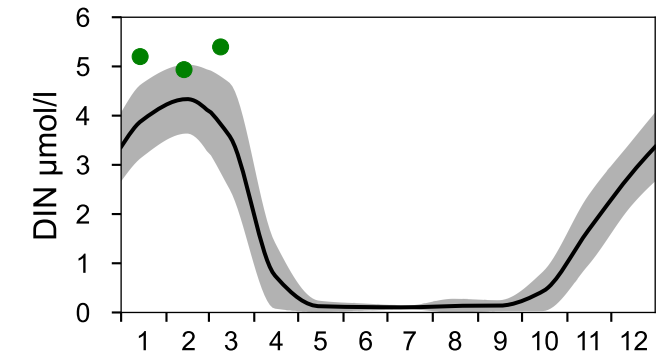
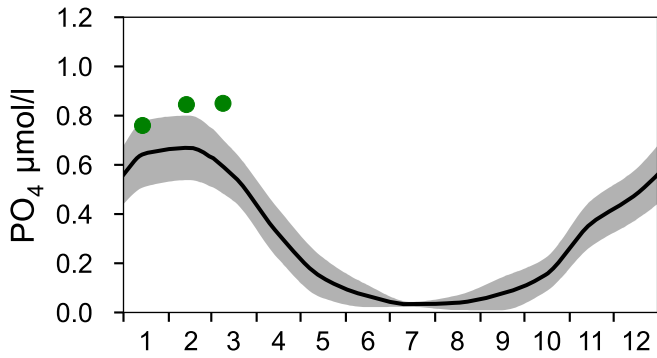
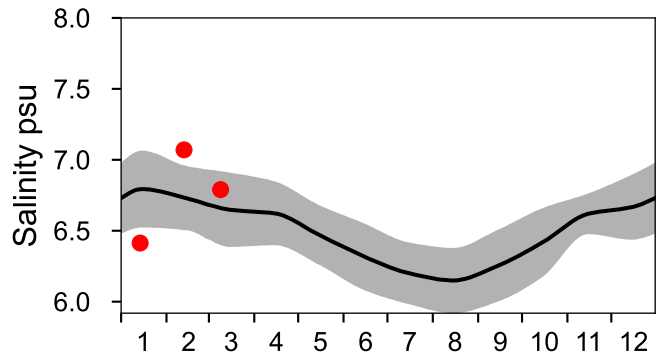
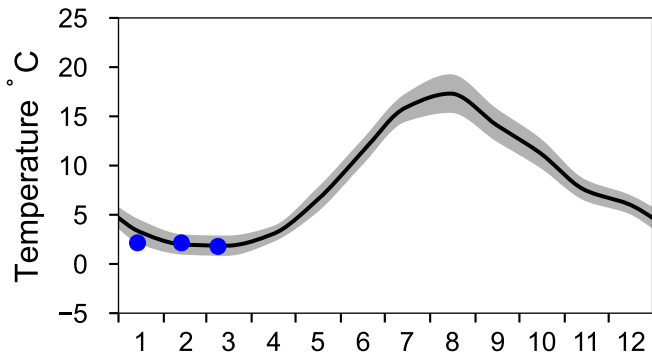
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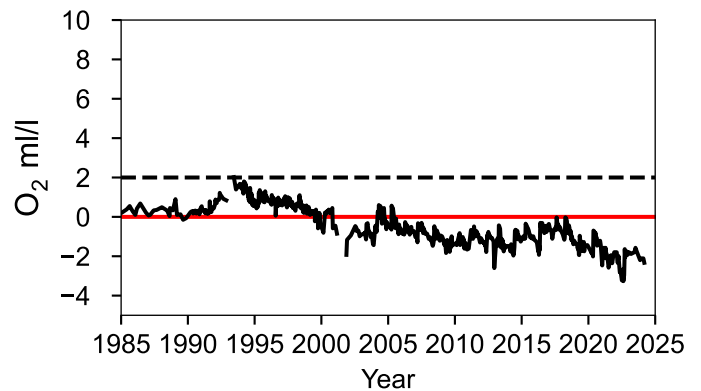
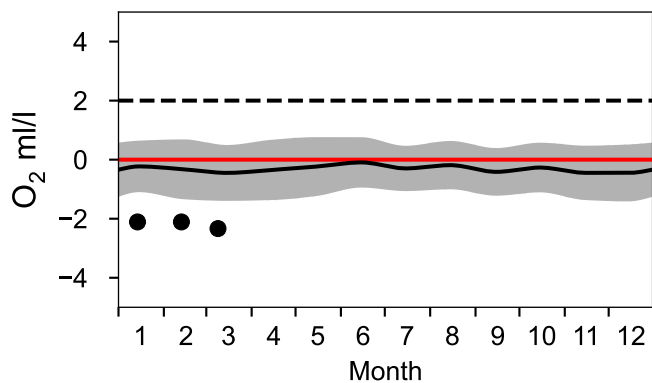
STATION BY31 LANDSORTSDJ SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020 St.Dev. ● 2024

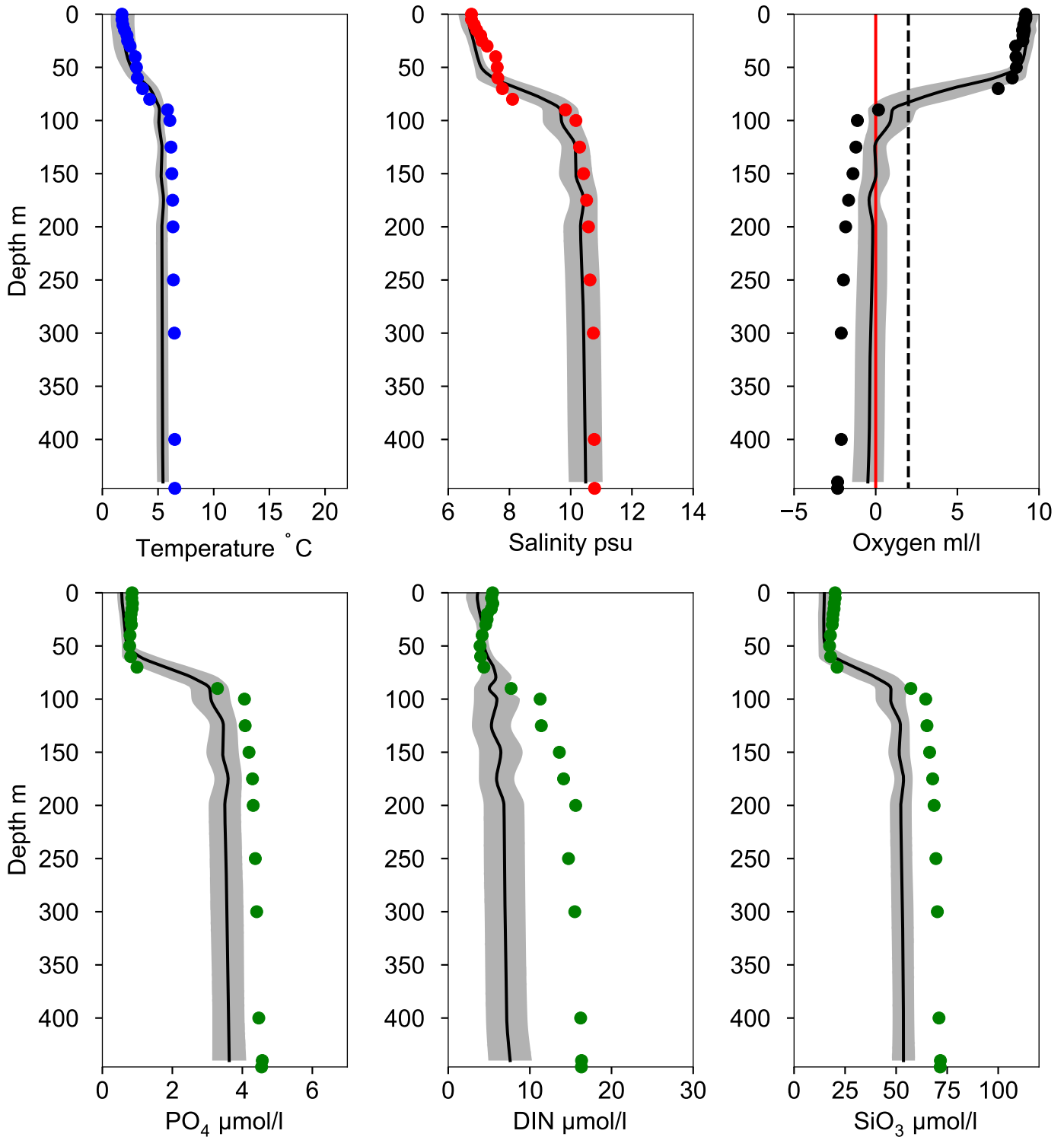


OXYGEN IN BOTTOM WATER (depth >= 419 m)



Vertical profiles BY31 LANDSORTSDJ March

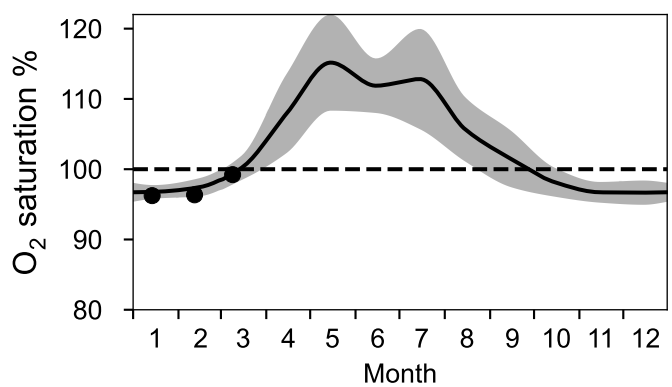
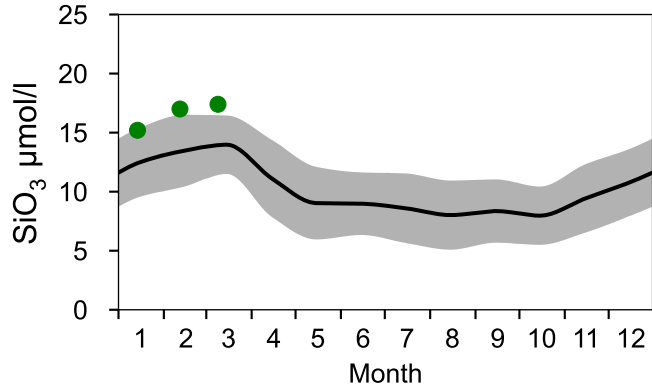
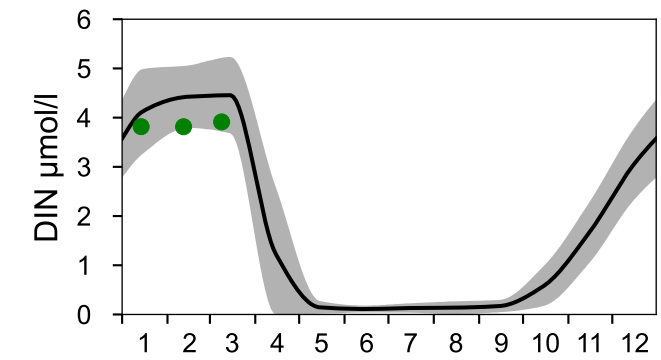
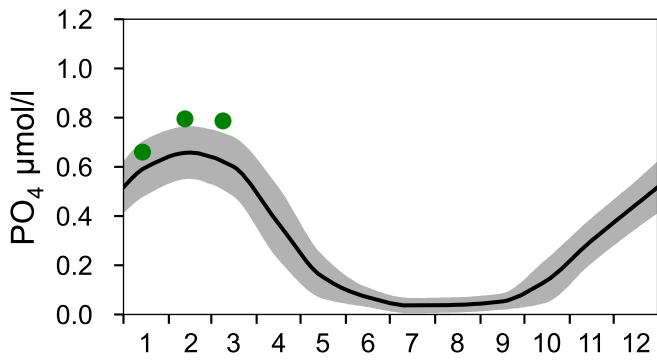
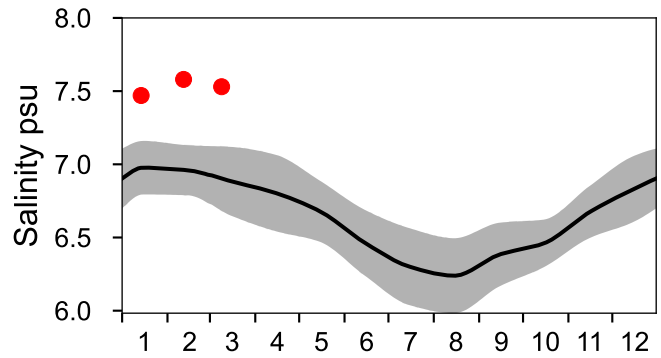
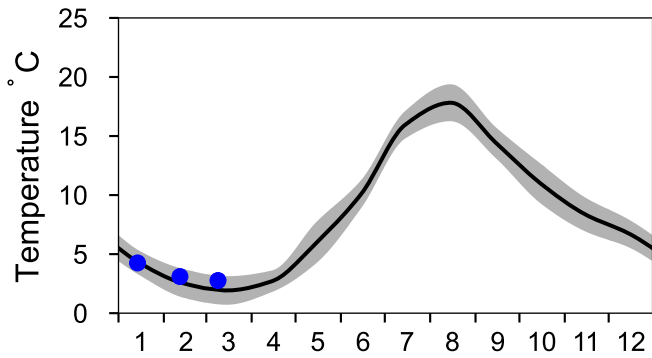
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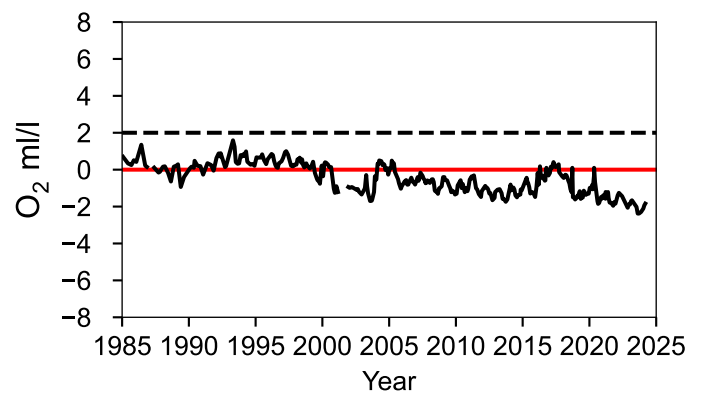
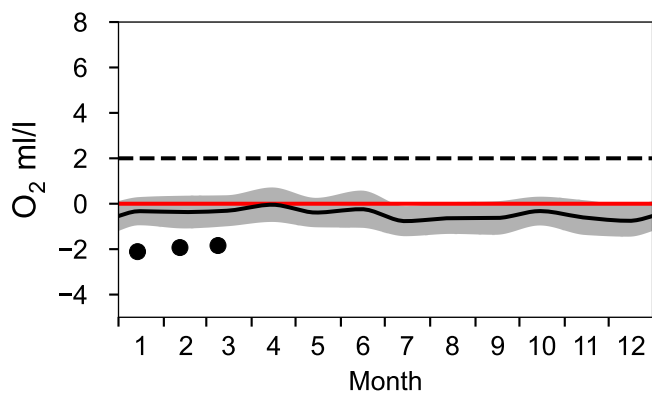
STATION BY29 / LL19 SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020 St.Dev. ● 2024

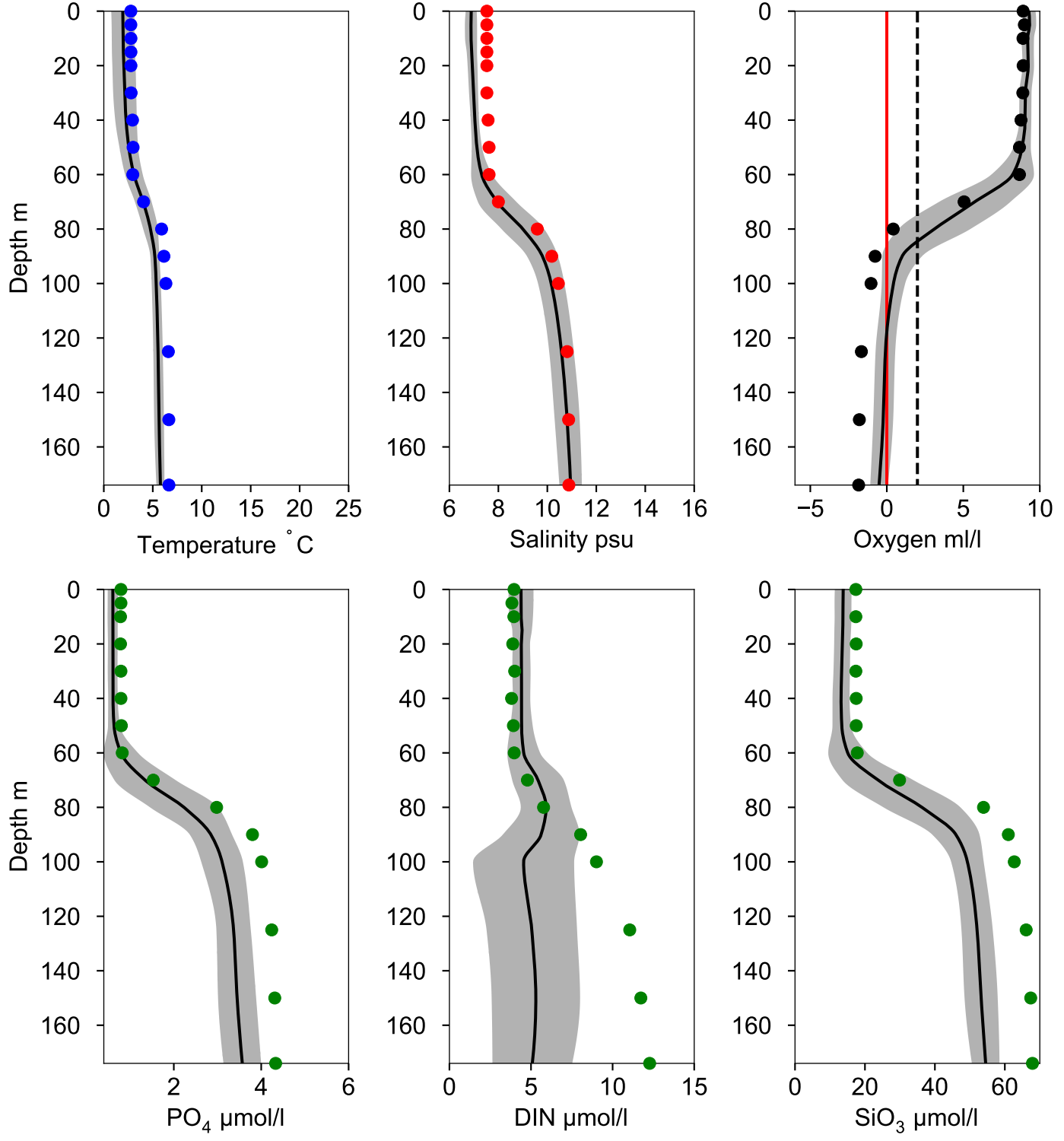


OXYGEN IN BOTTOM WATER (depth >= 150 m)



Vertical profiles BY29 / LL19 March

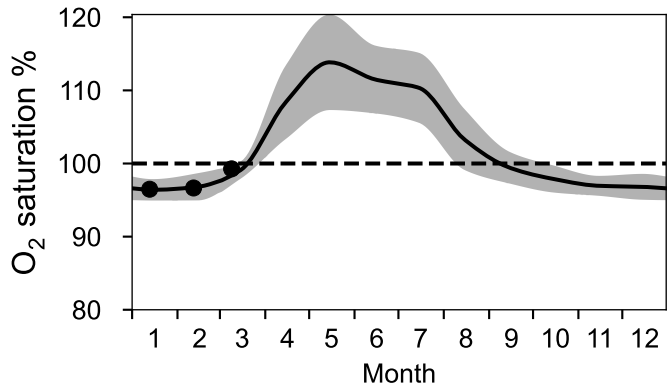
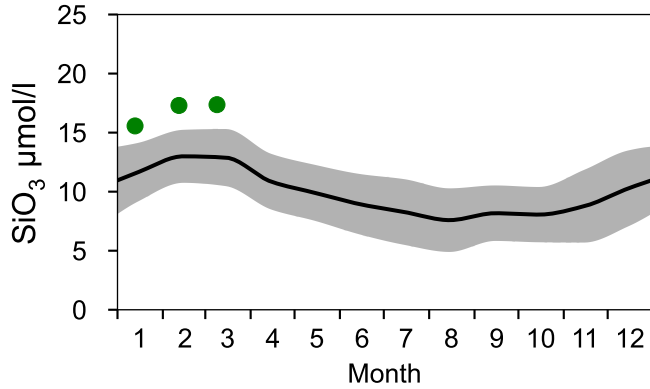
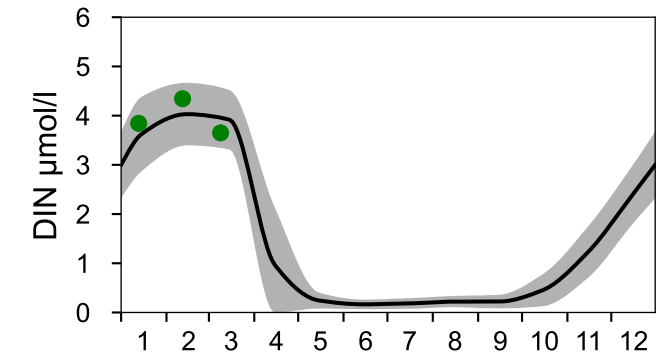
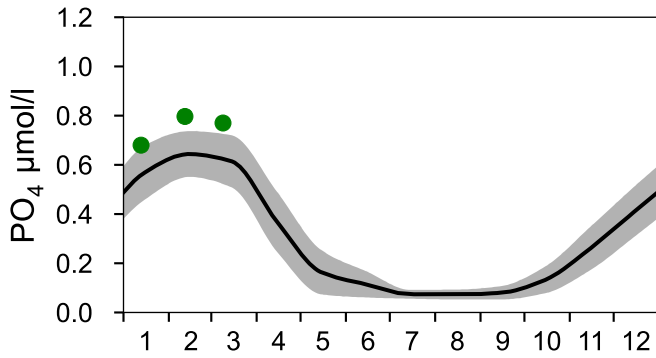
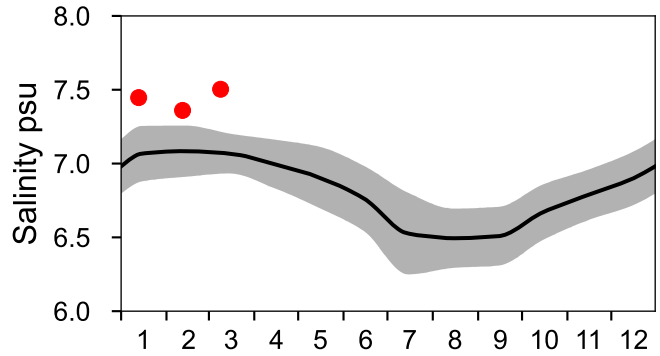
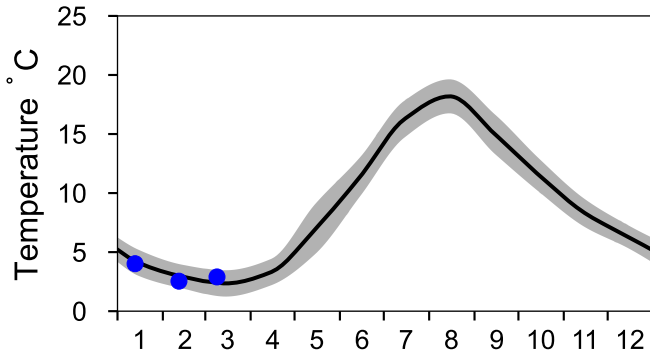
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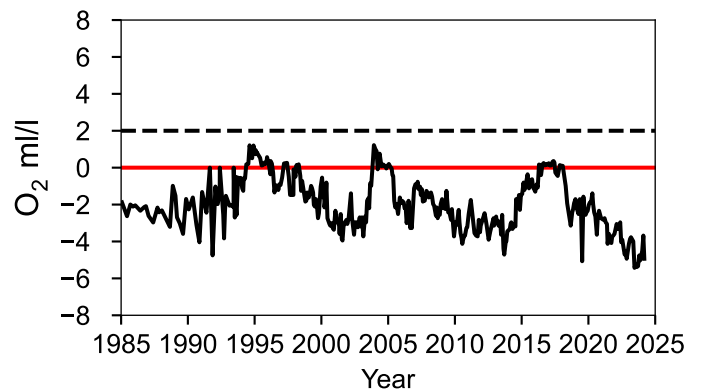
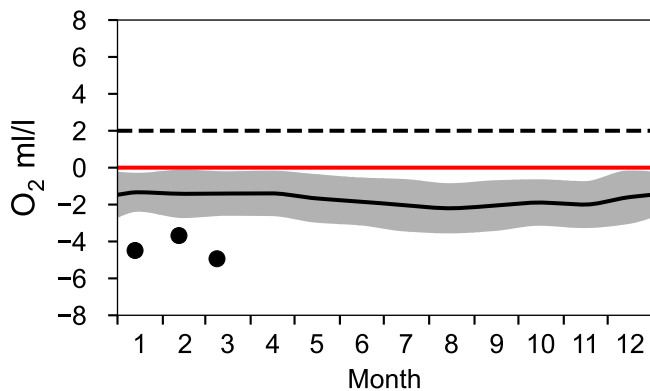
STATION BY20 FÄRÖDJ SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020 St.Dev. ● 2024

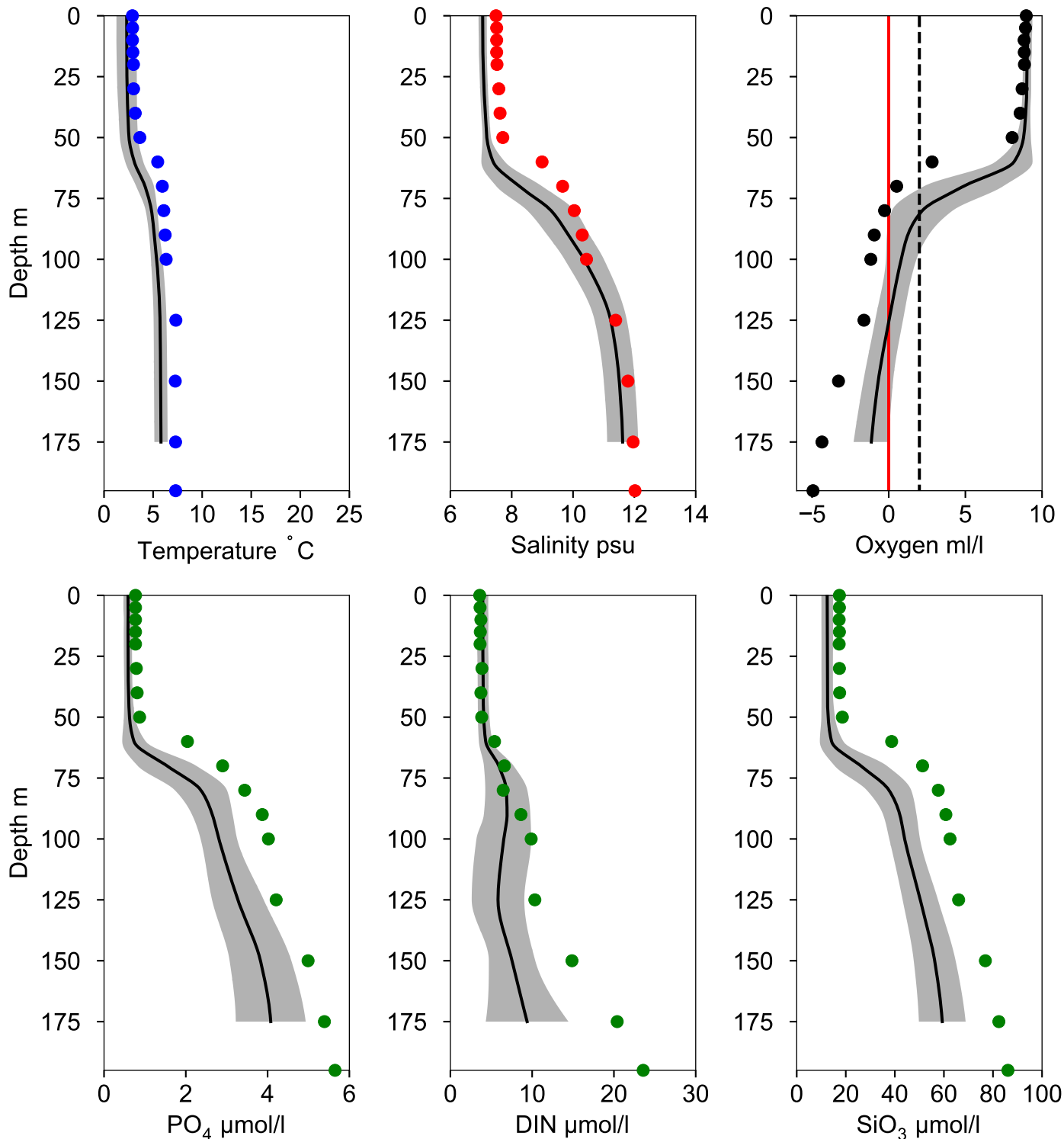


OXYGEN IN BOTTOM WATER (depth >= 175 m)



Vertical profiles BY20 FÅRÖDJ March

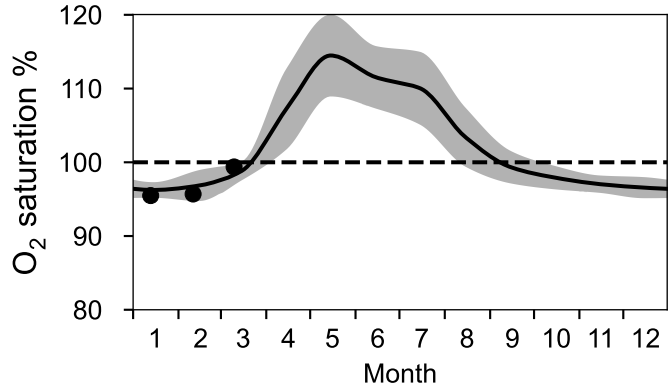
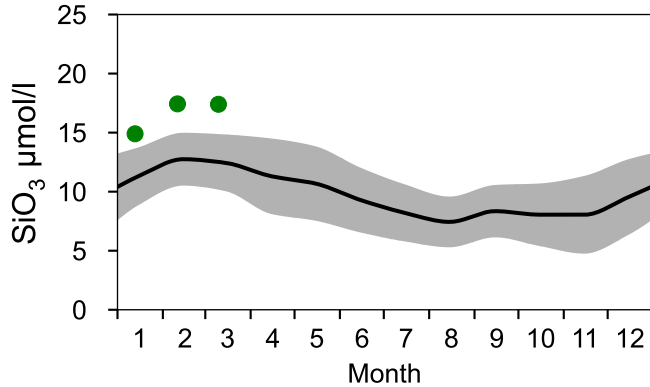
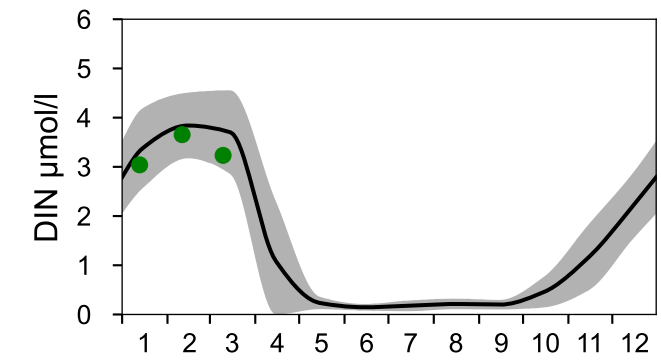
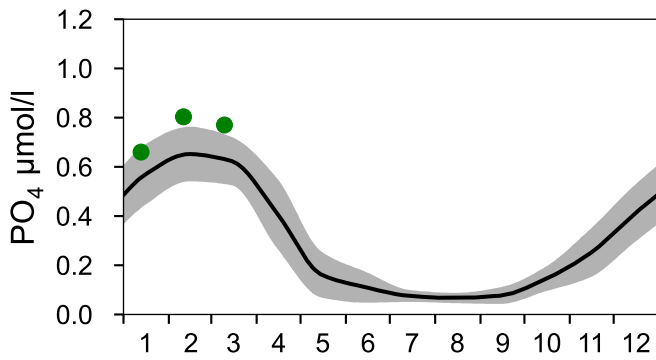
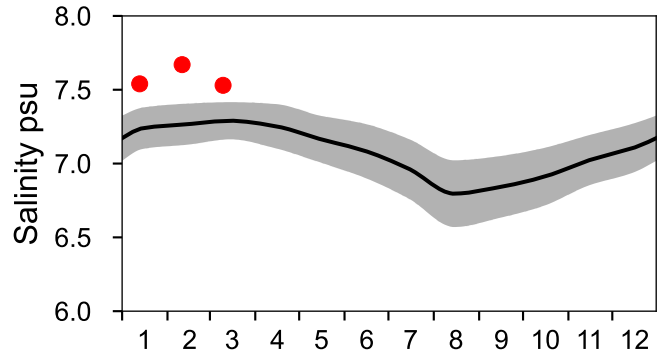
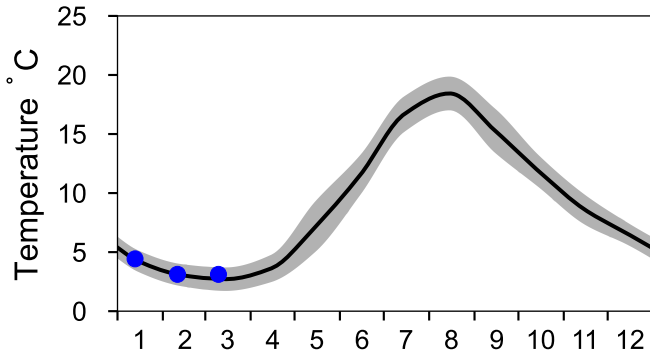
— Mean 1919-2020 St.Dev. ● 2024-03-09



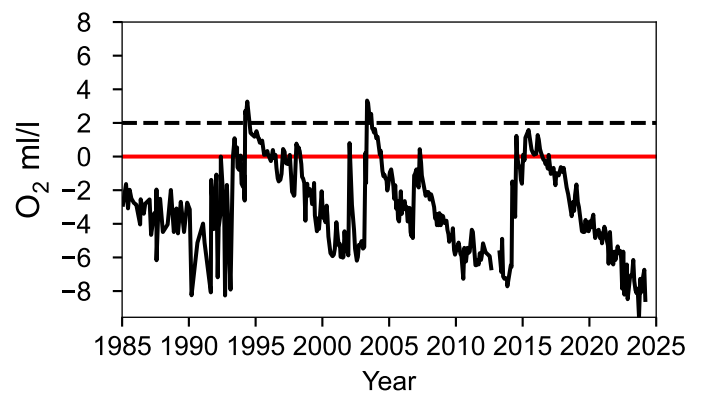
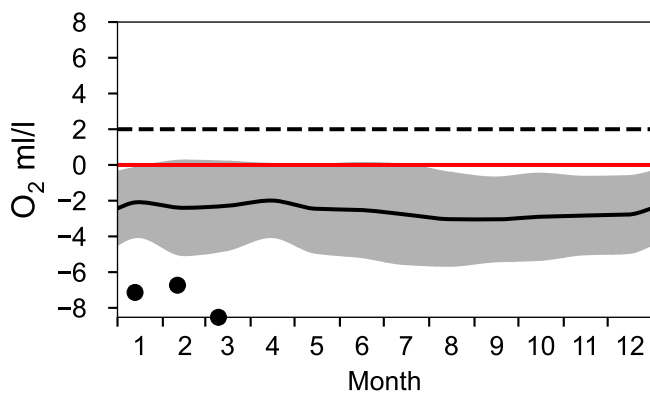
STATION BY15 GOTLANDSDJ SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020 St.Dev. ● 2024

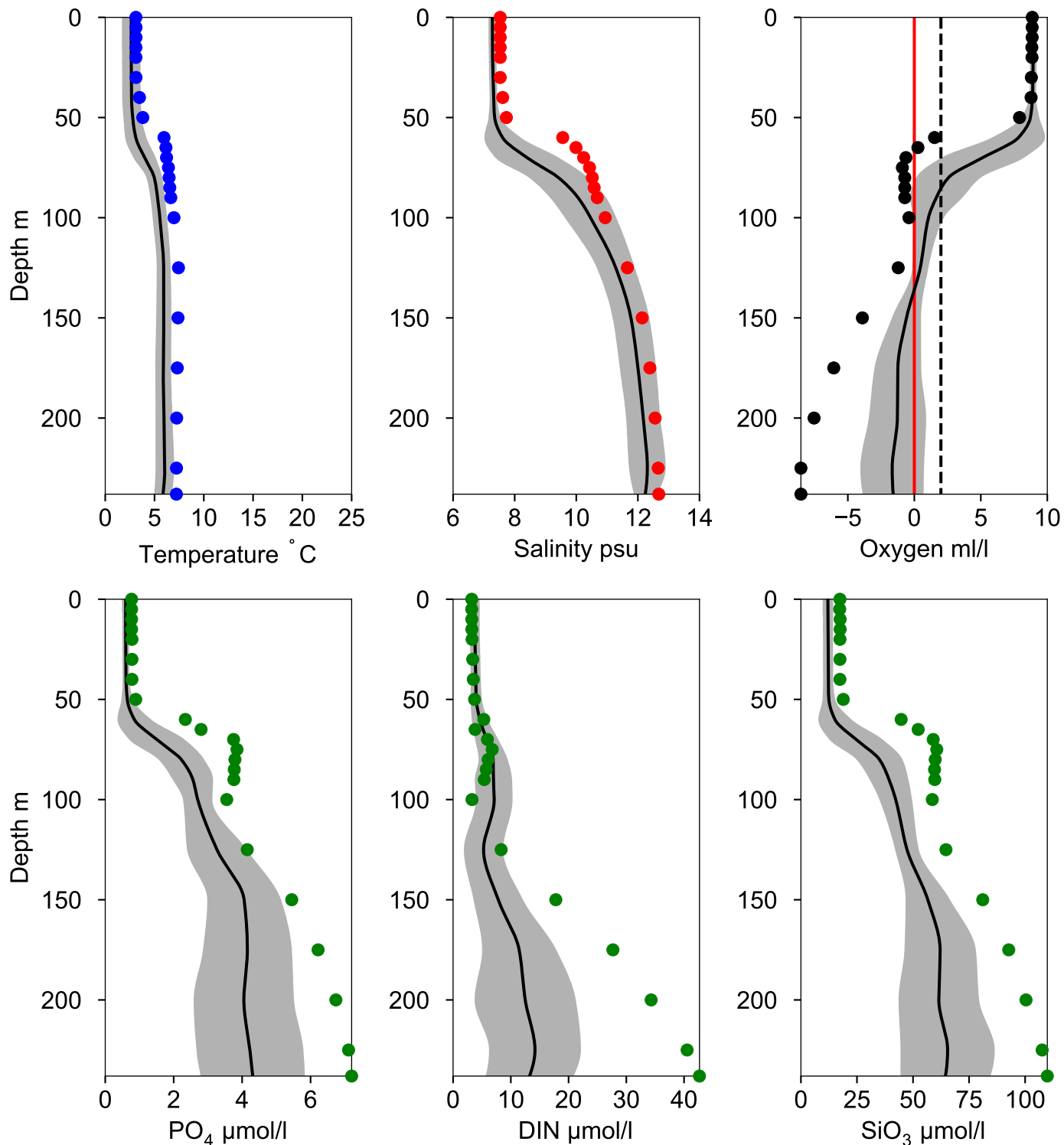


OXYGEN IN BOTTOM WATER (depth >= 225 m)



Vertical profiles BY15 GOTLANDSDJ March

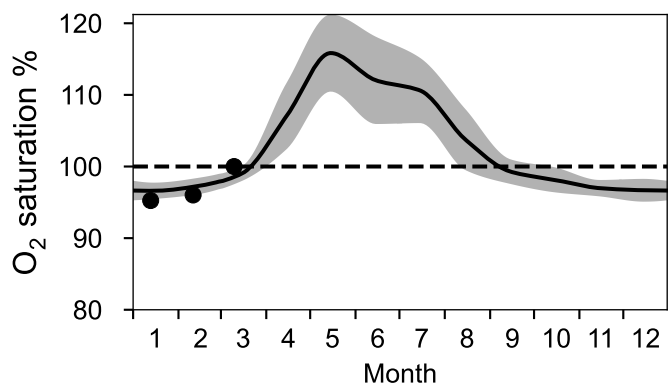
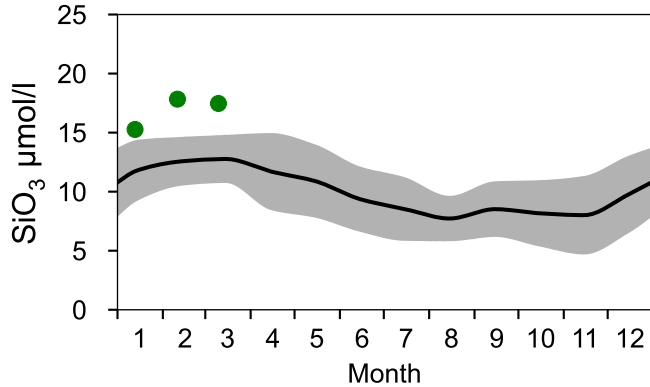
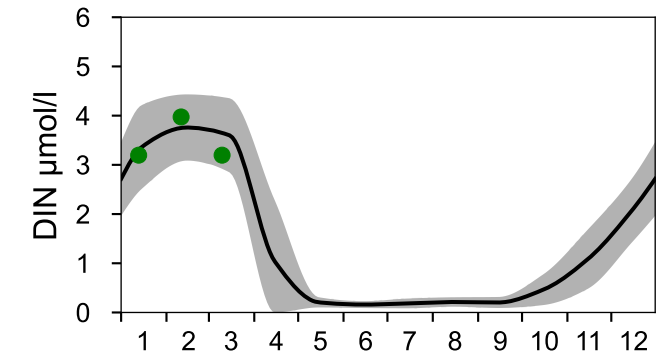
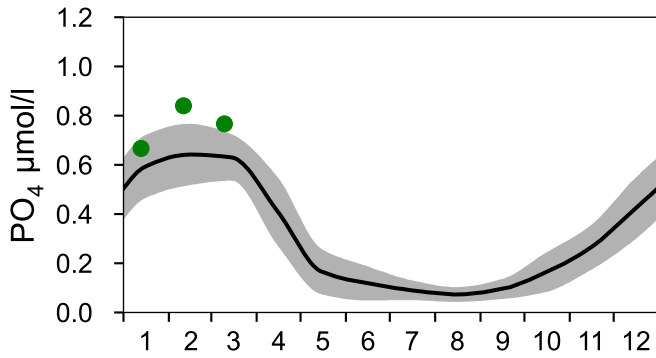
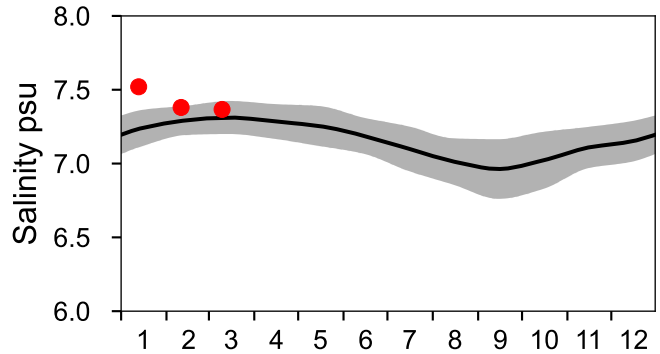
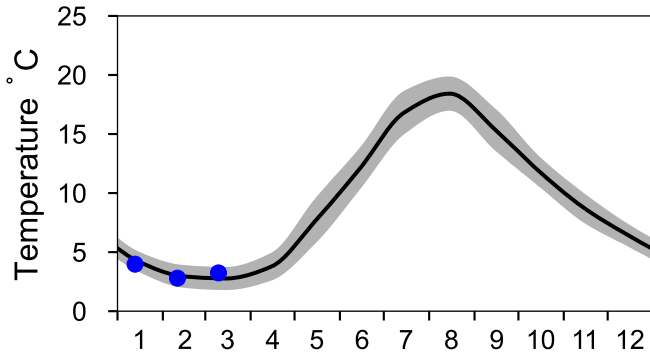
— Mean 1991-2020 St.Dev. ● 2024-03-10



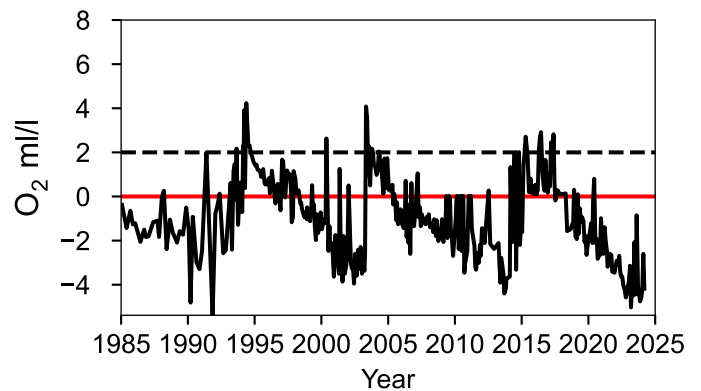
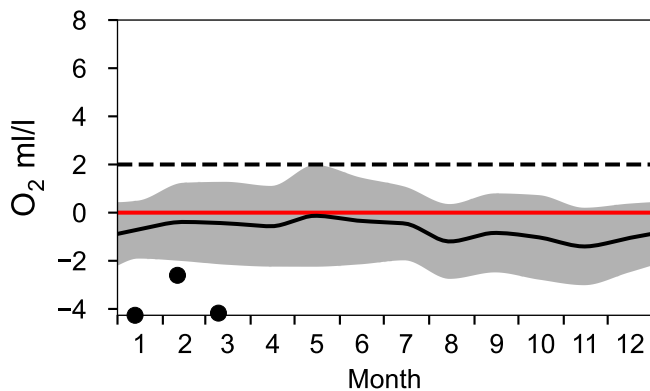
STATION BY10 SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020 St.Dev. ● 2024

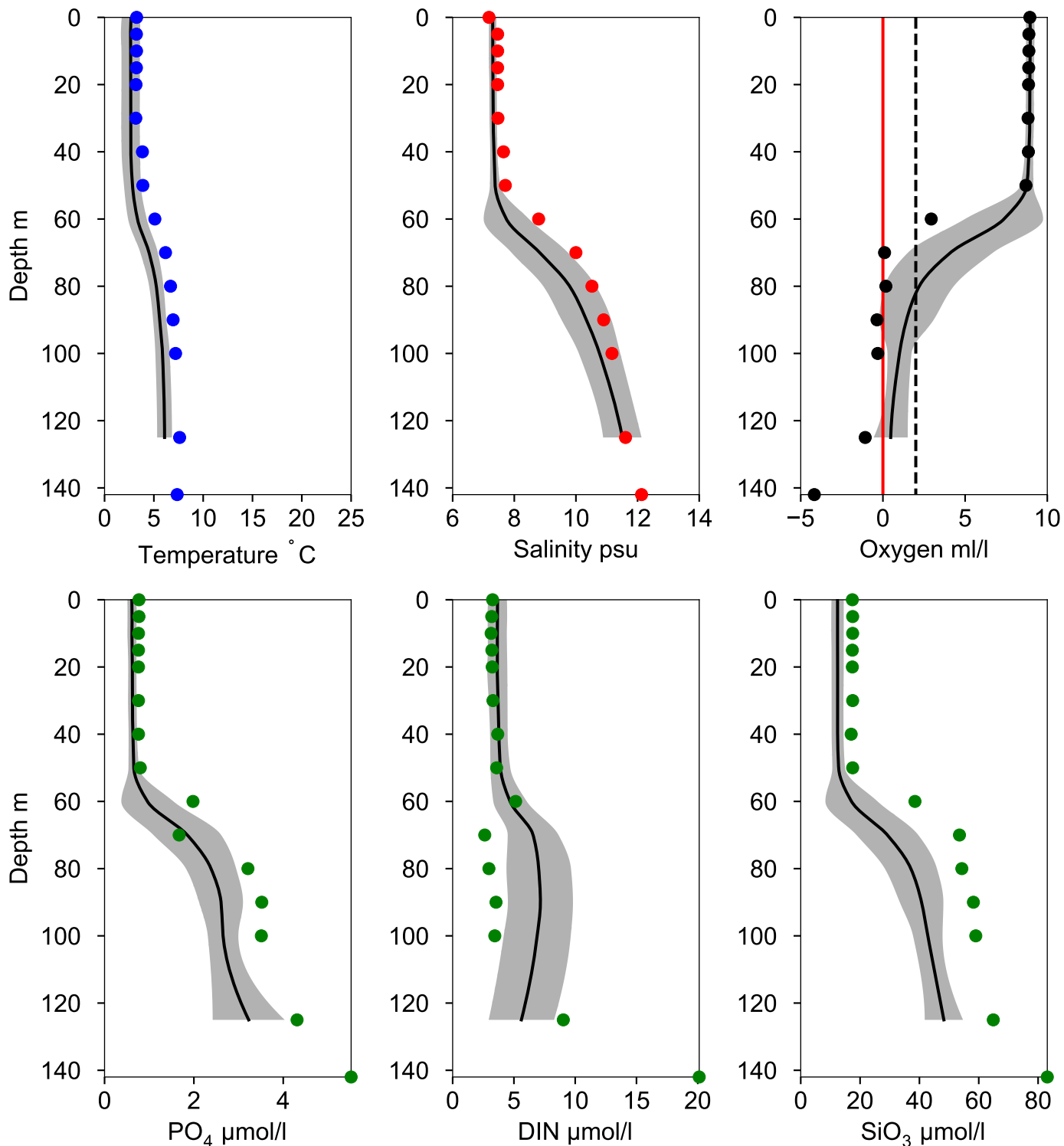


OXYGEN IN BOTTOM WATER (depth >= 125 m)



Vertical profiles BY10 March

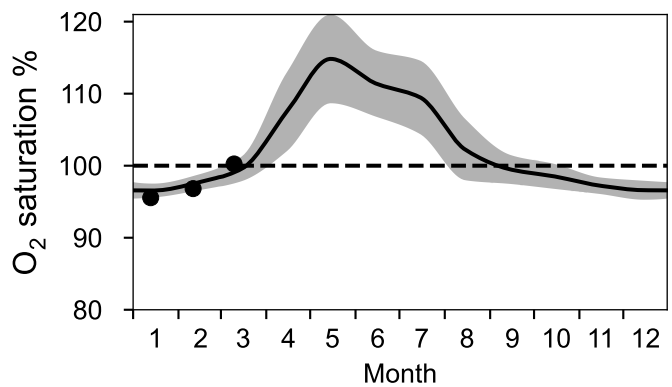
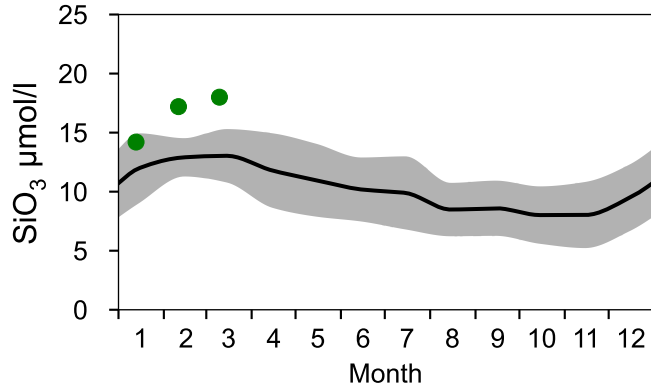
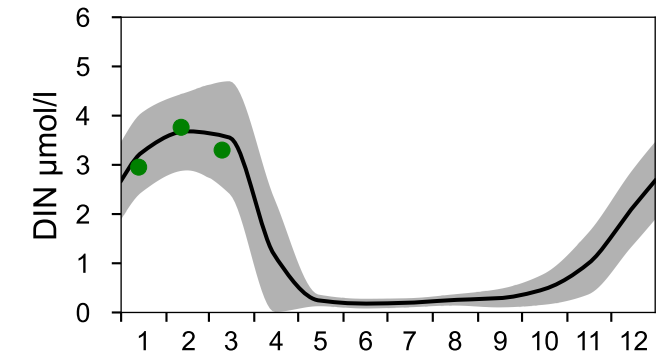
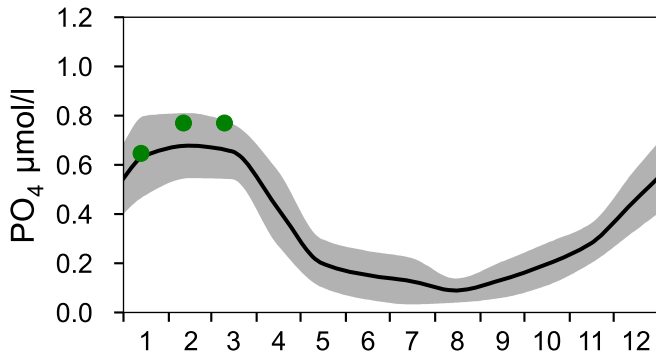
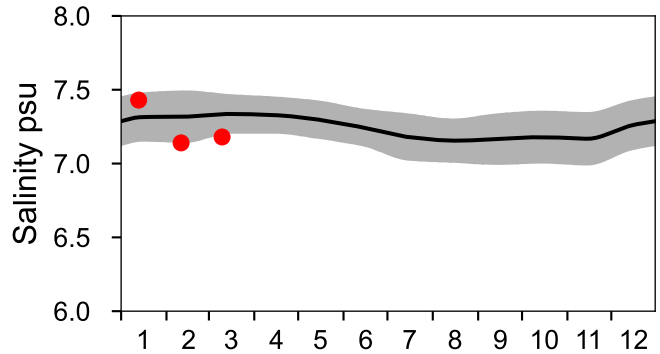
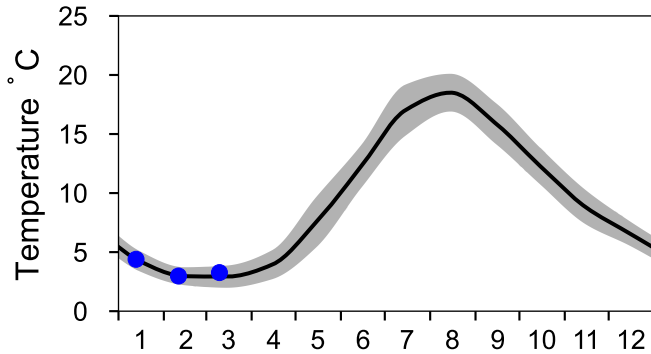
— Mean 1991-2020 St.Dev. ● 2024-03-10



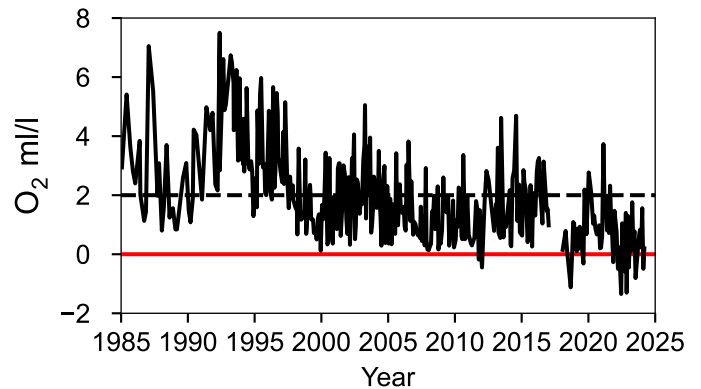
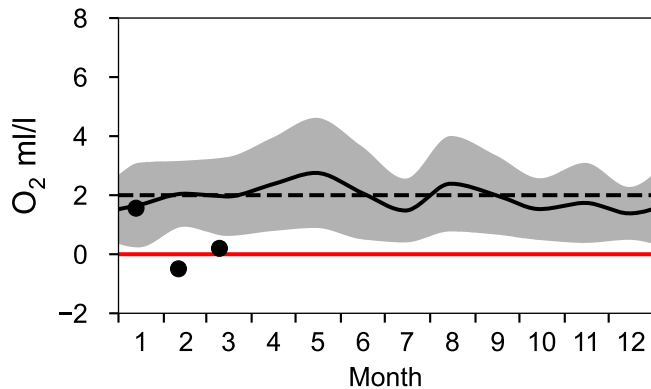
STATION BCS III-10 SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020 St.Dev. ● 2024

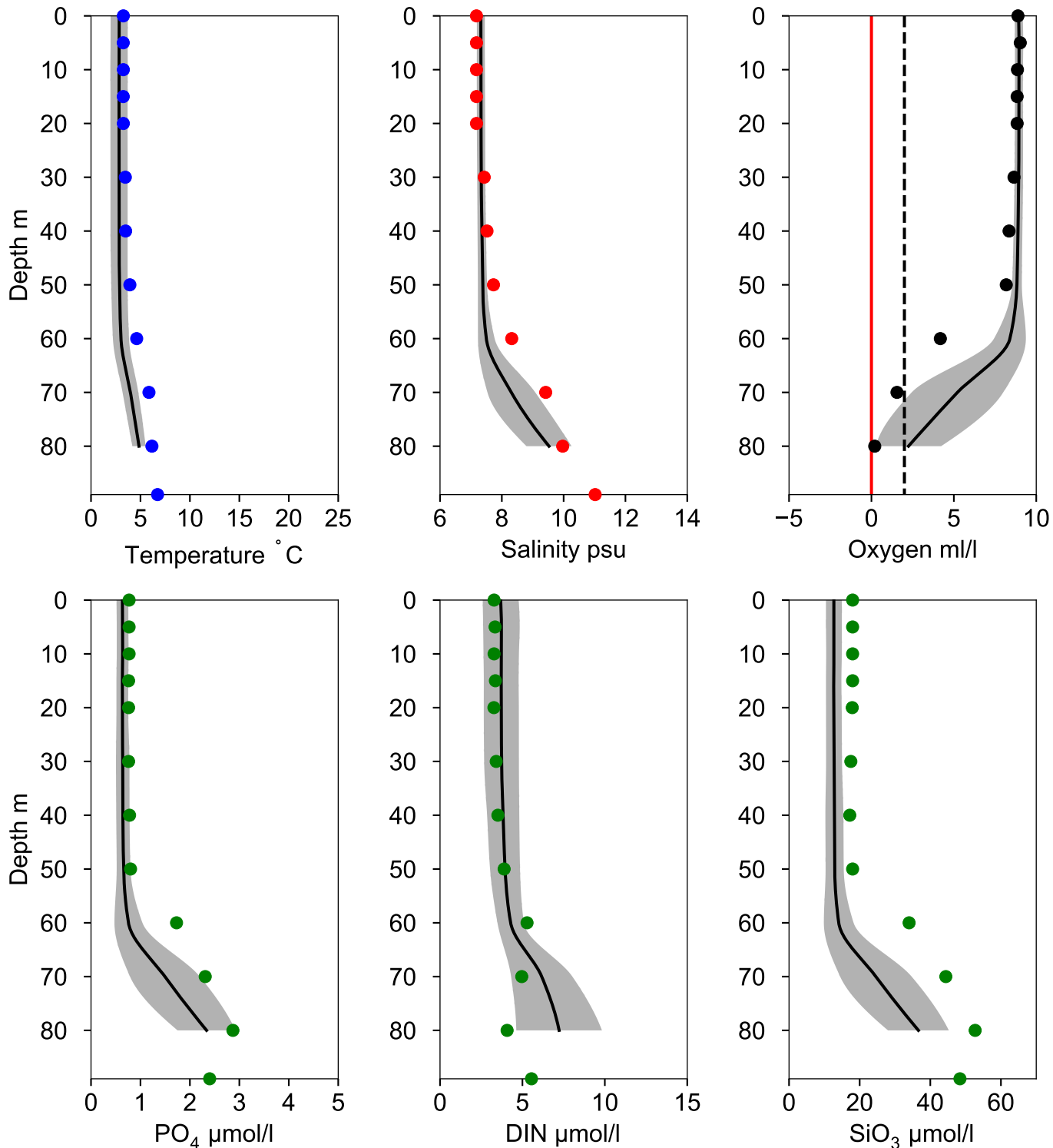


OXYGEN IN BOTTOM WATER (depth >= 80 m)



Vertical profiles BCS III-10 March

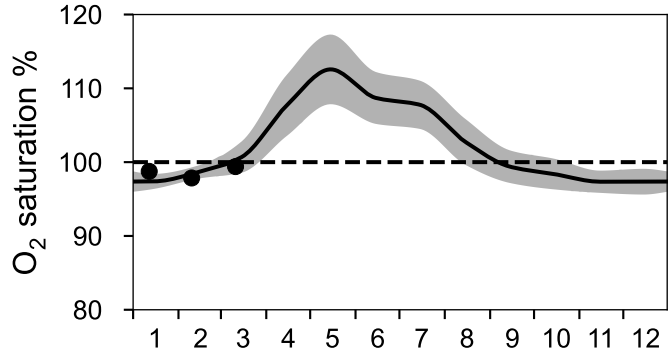
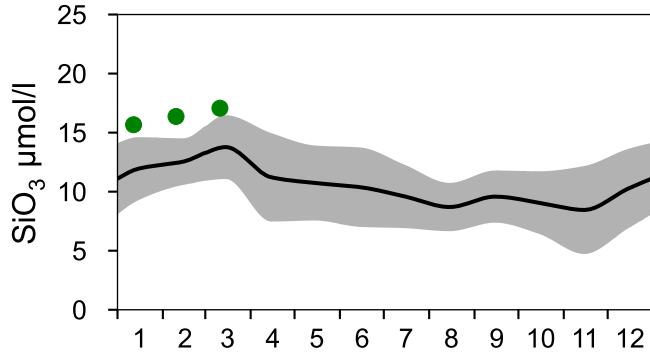
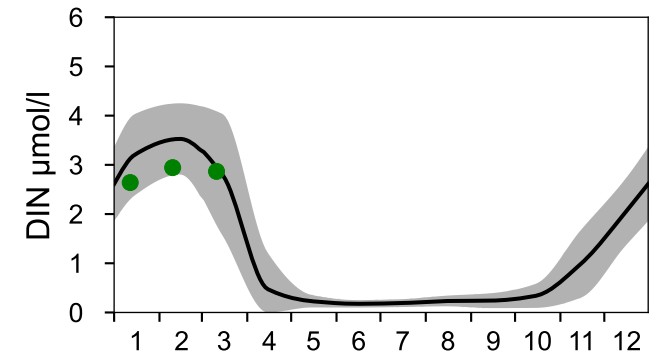
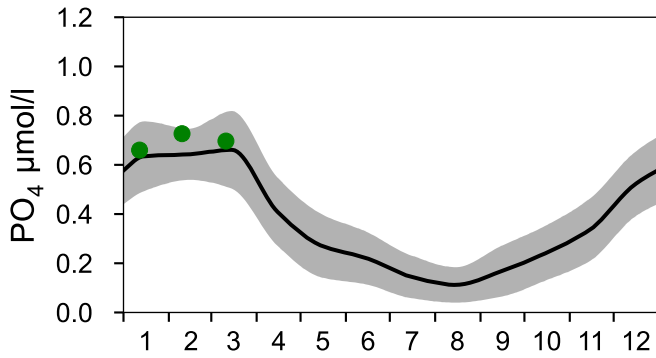
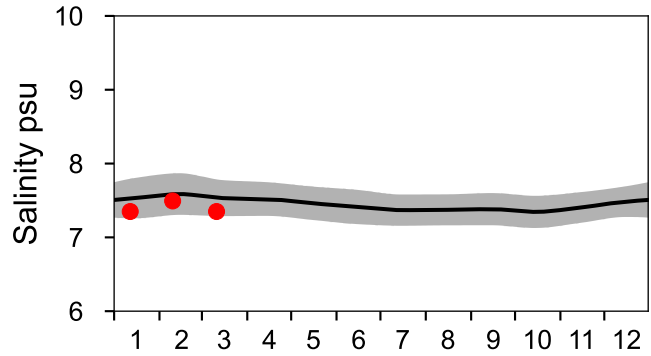
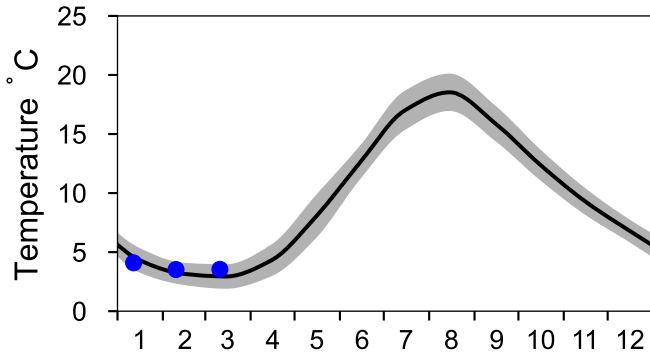
— Mean 1919-2020 St.Dev. ● 2024-03-10



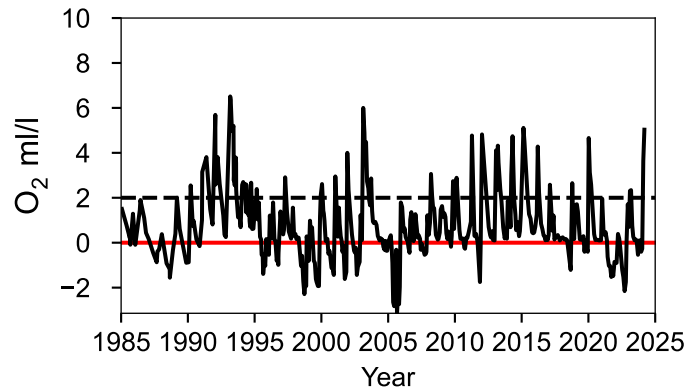
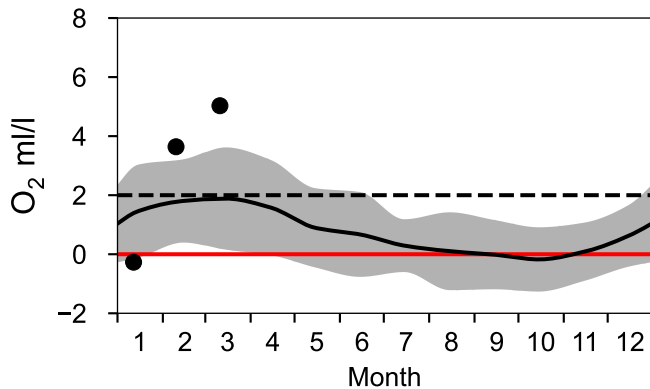
STATION BY5 BORNHOLMSDJ SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020 St.Dev. ● 2024

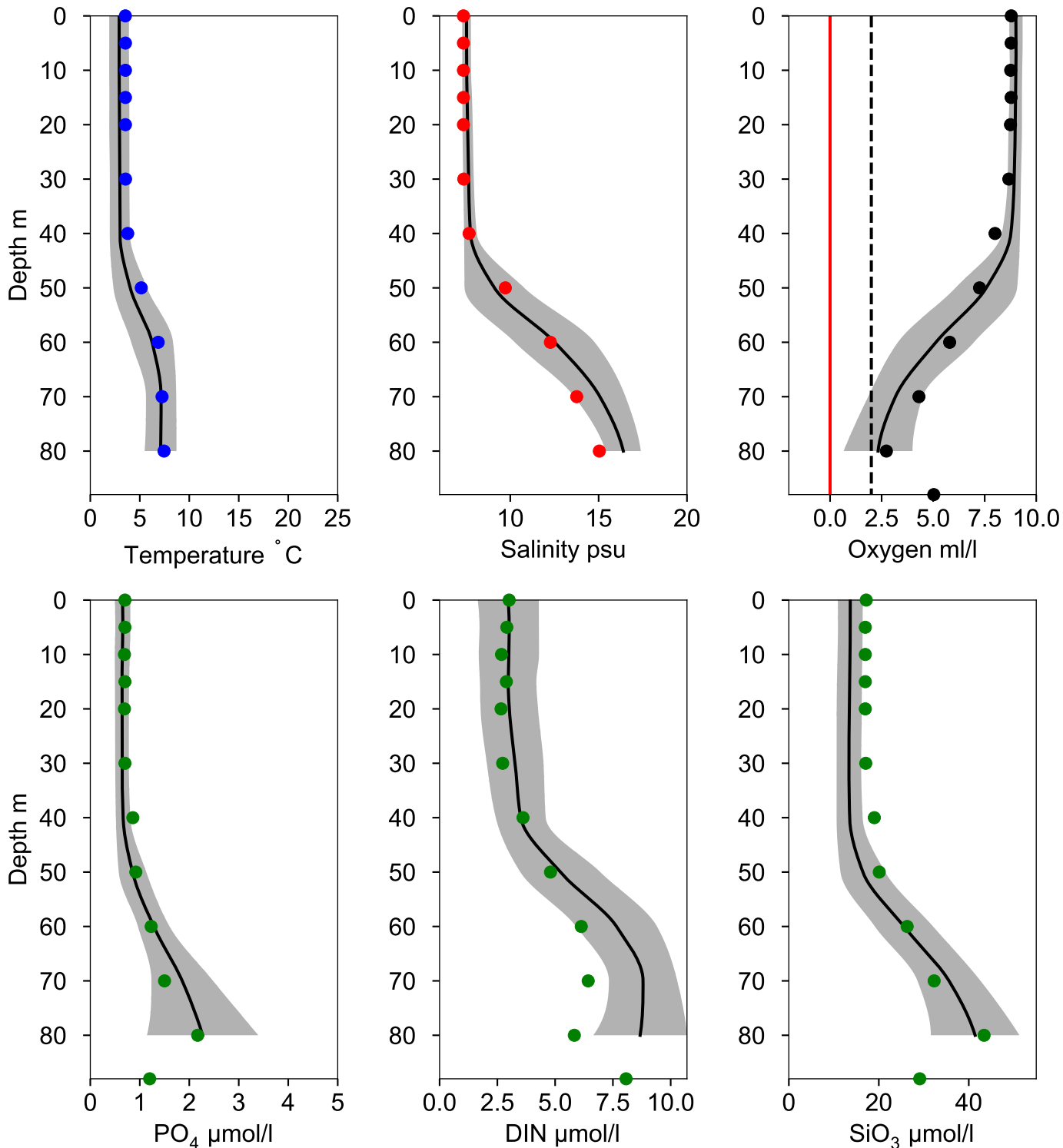


OXYGEN IN BOTTOM WATER (depth >= 80 m)



Vertical profiles BY5 BORNHOLMSDJ March

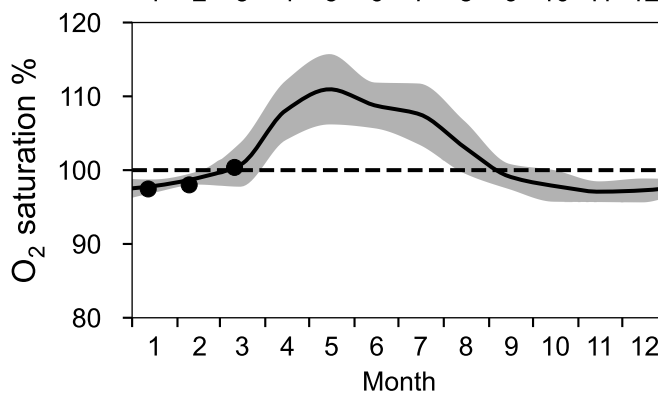
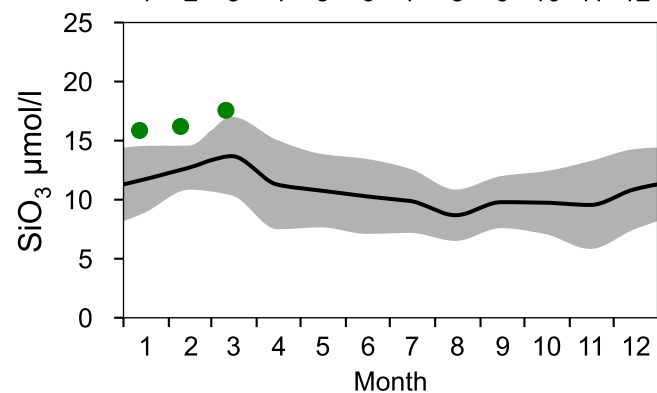
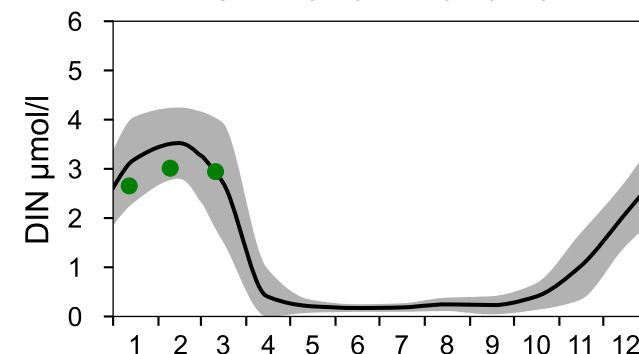
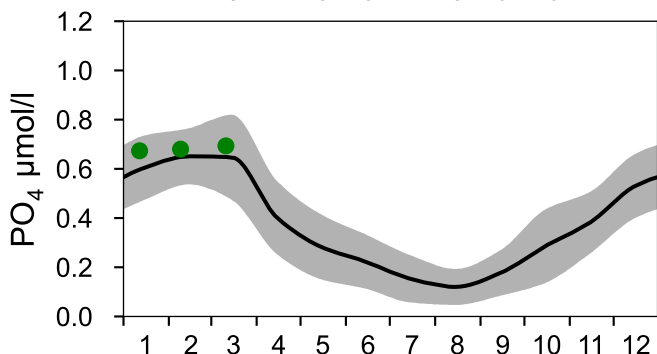
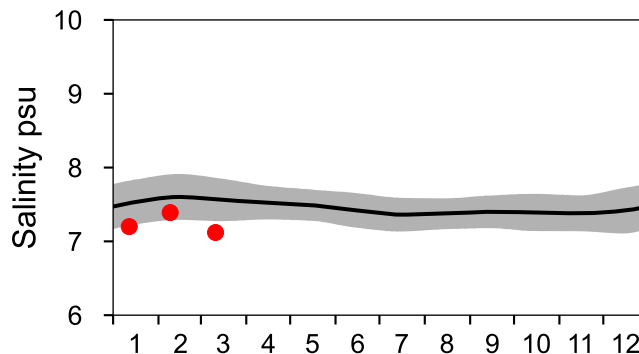
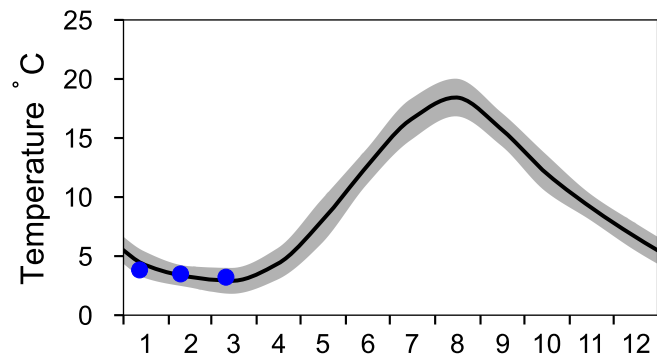
— Mean 1919-2020 St.Dev. ● 2024-03-11



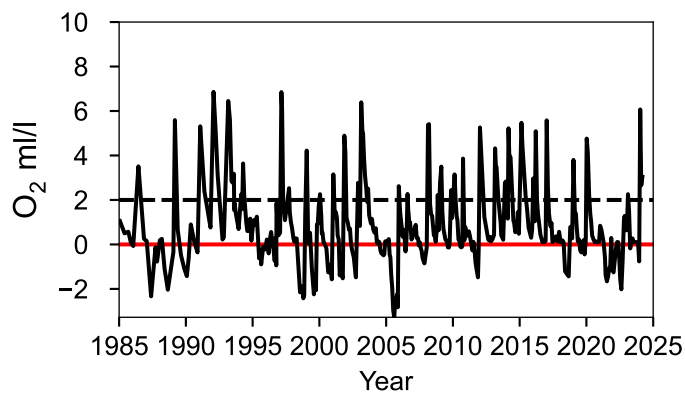
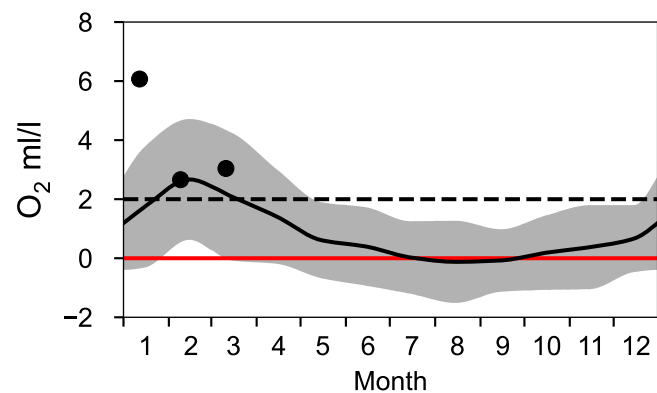
STATION BY4 CHRISTIANSÖ SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020 St.Dev. ● 2024

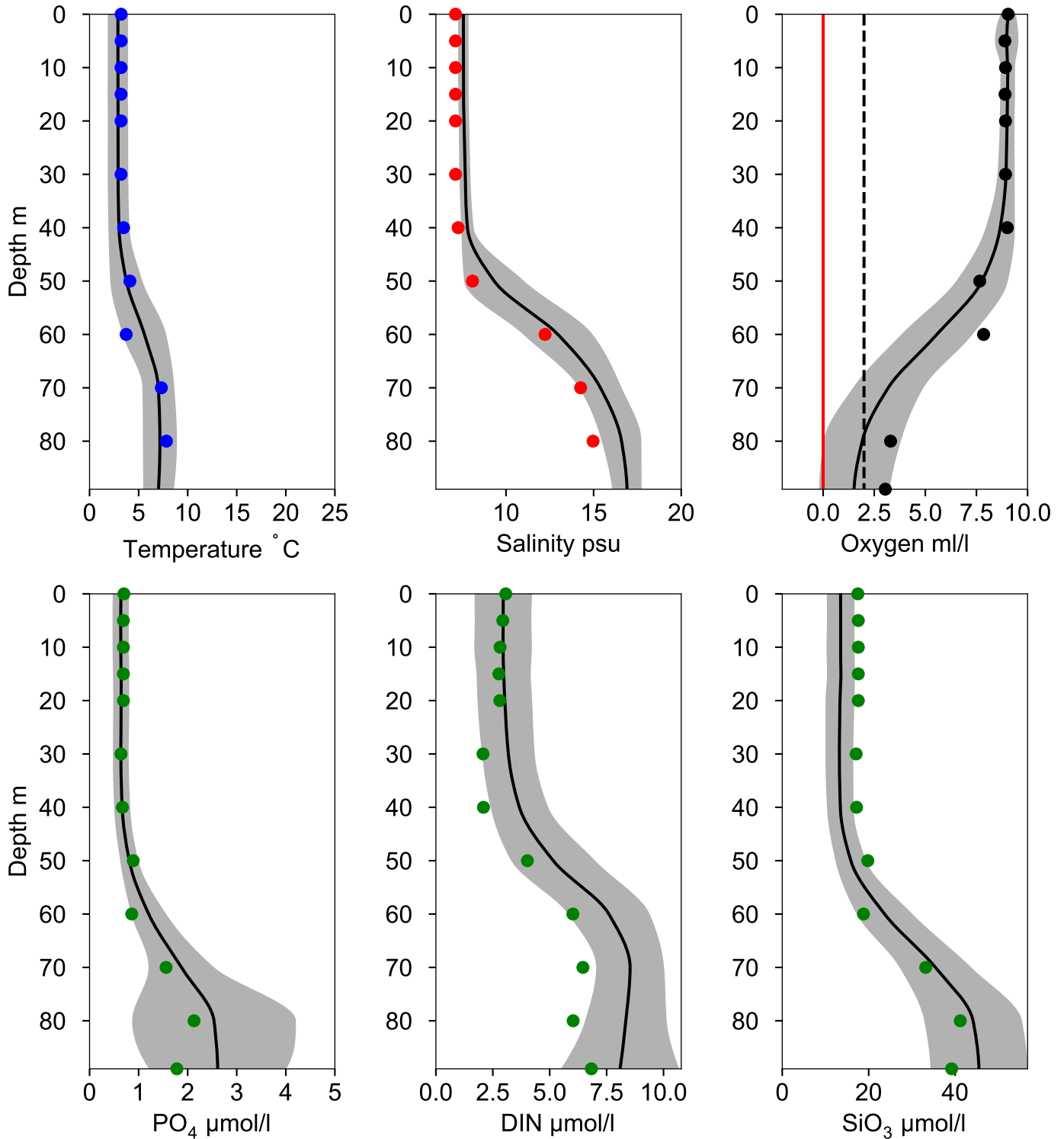


OXYGEN IN BOTTOM WATER (depth >= 80 m)



Vertical profiles BY4 CHRISTIANSÖ March

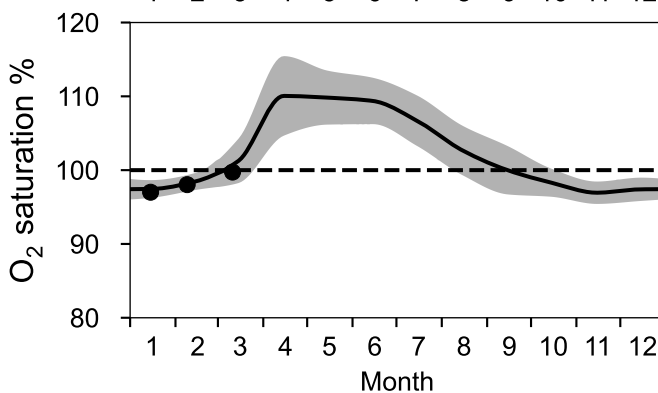
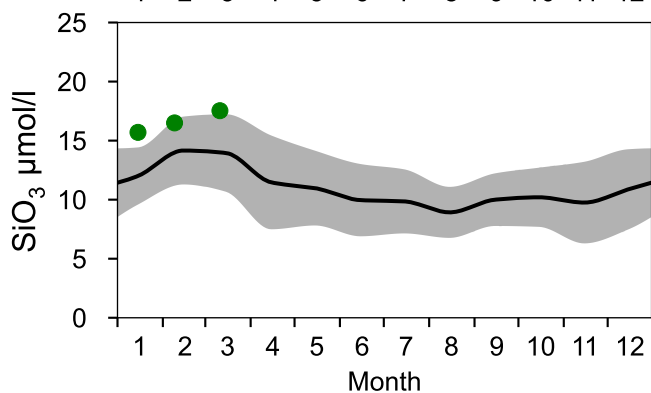
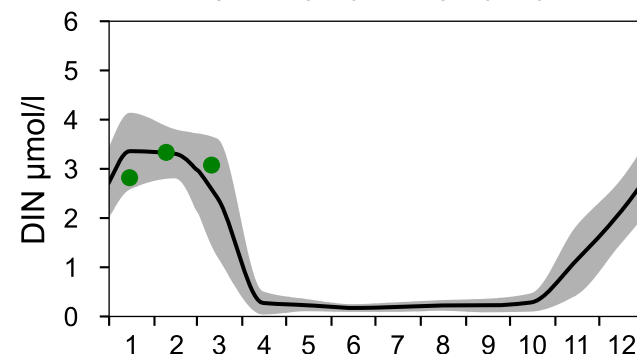
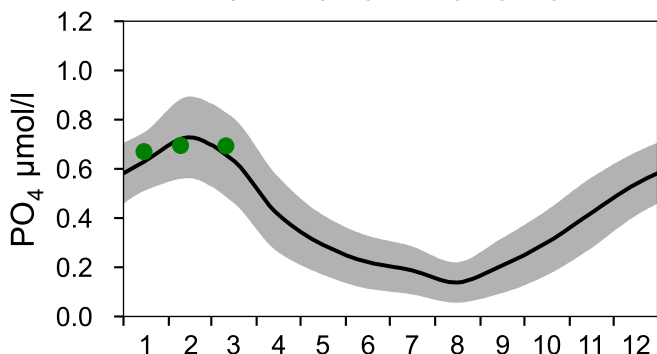
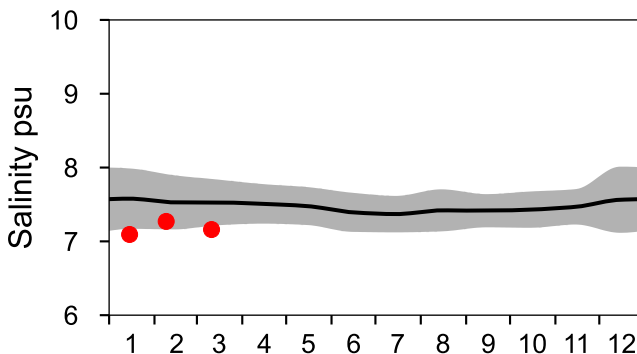
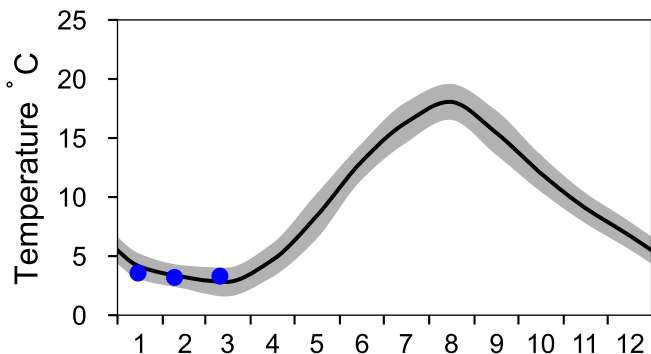
— Mean 1919-2020 St.Dev. ● 2024-03-11



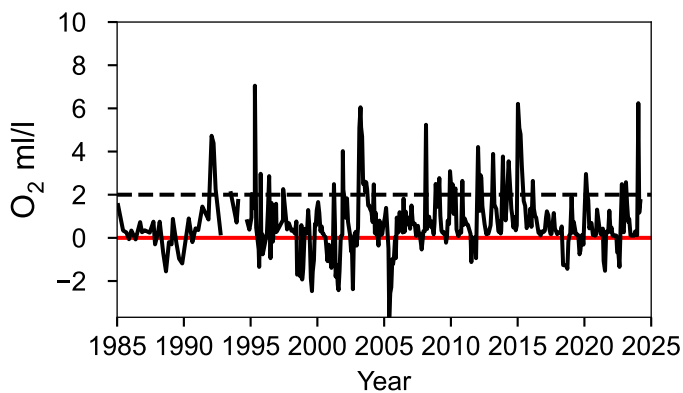
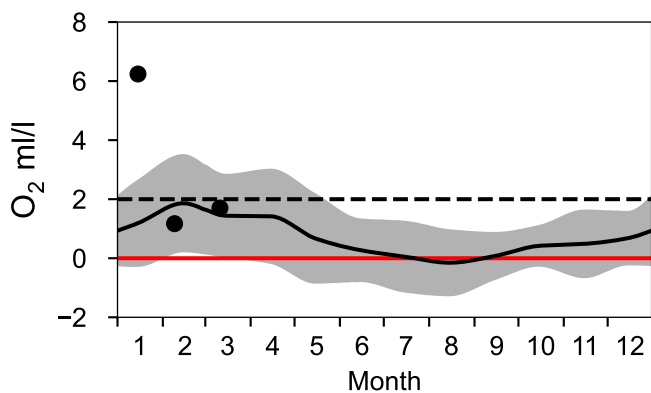
STATION HANÖBUKTEN SURFACE WATER (0-10 m)

Annual Cycles

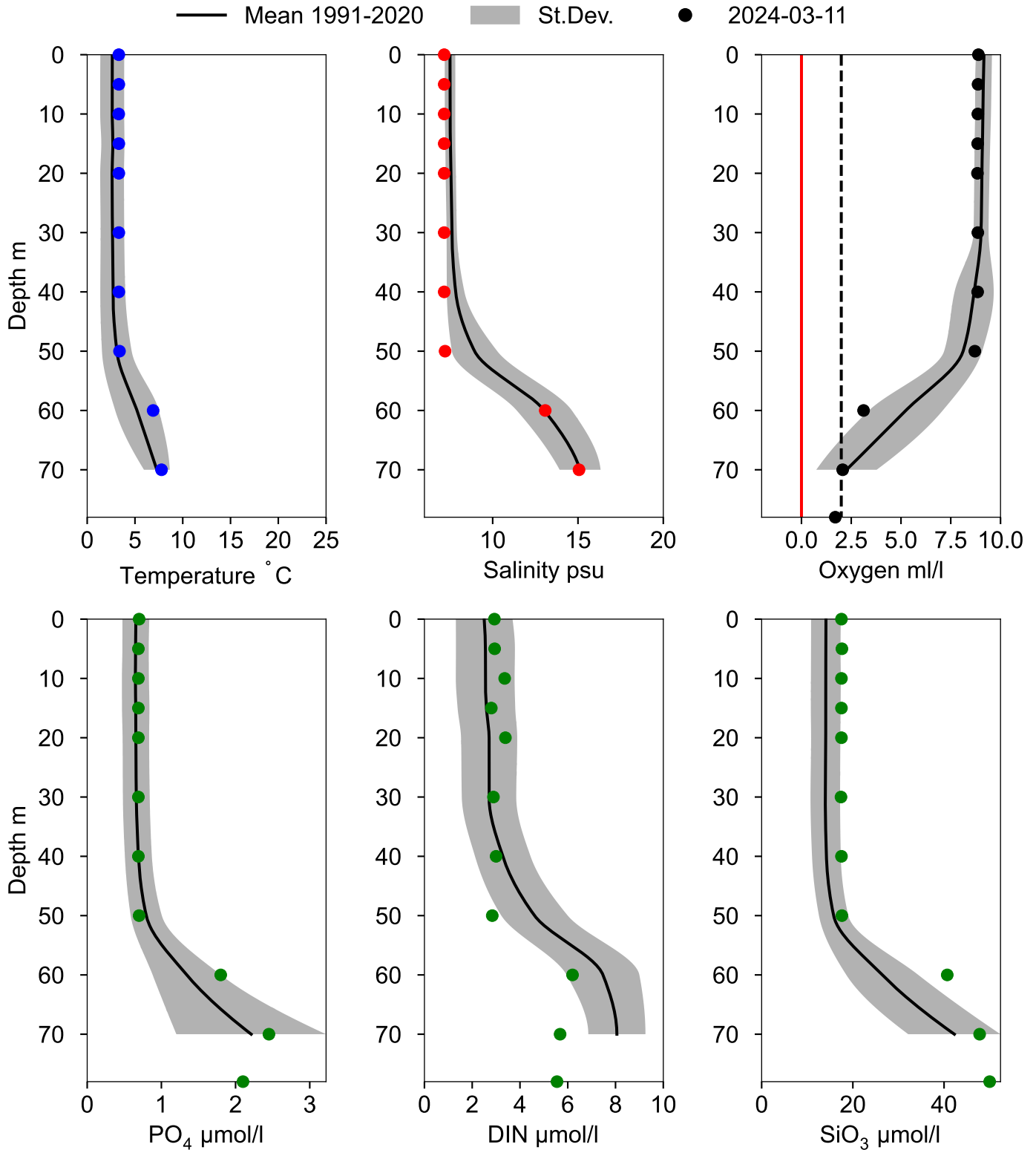
— Mean 1991-2020 St.Dev. ● 2024



OXYGEN IN BOTTOM WATER (depth >= 70 m)



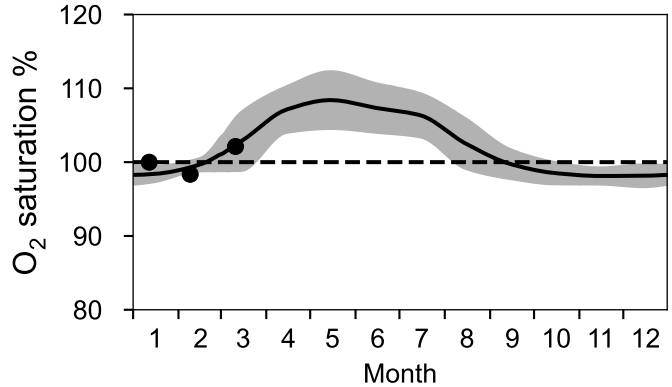
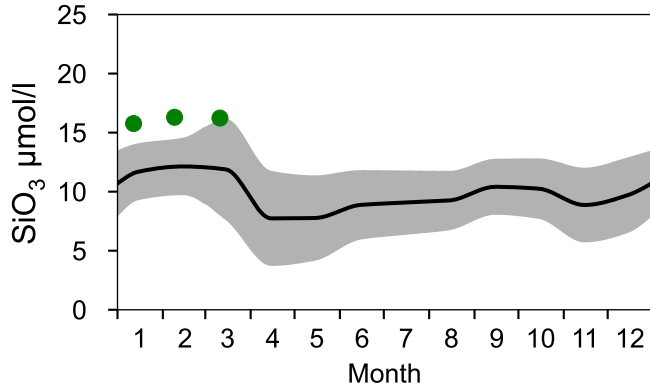
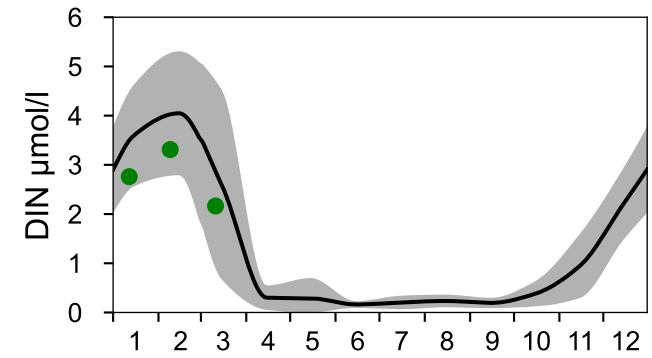
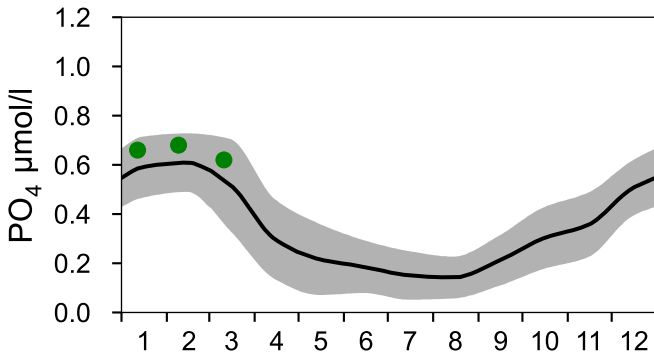
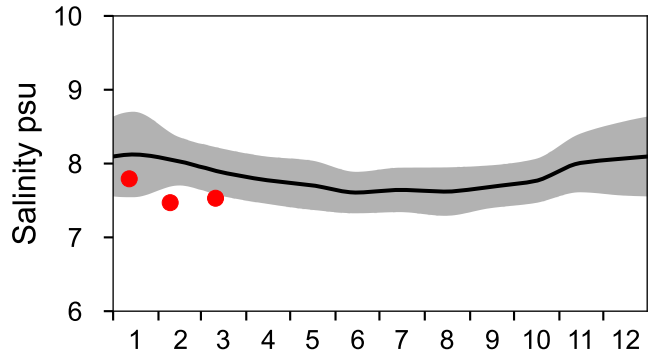
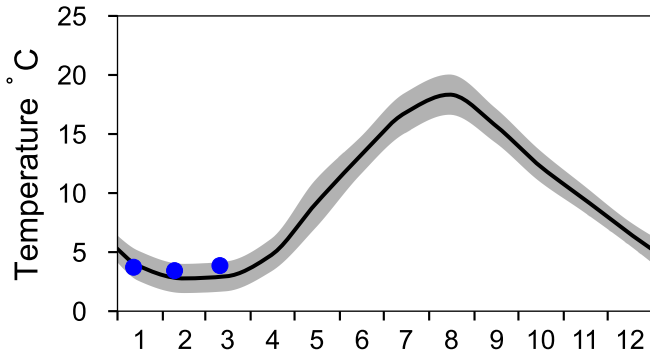
Vertical profiles HANÖBUKTEN March



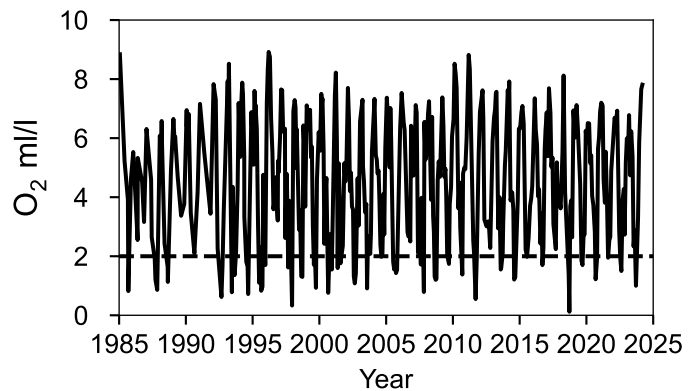
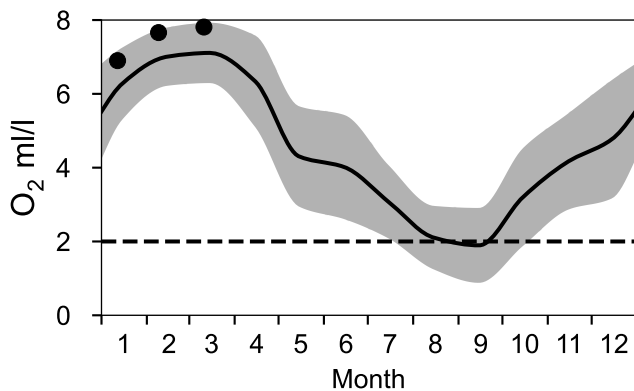
STATION BY2 ARKONA SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020 St.Dev. ● 2024

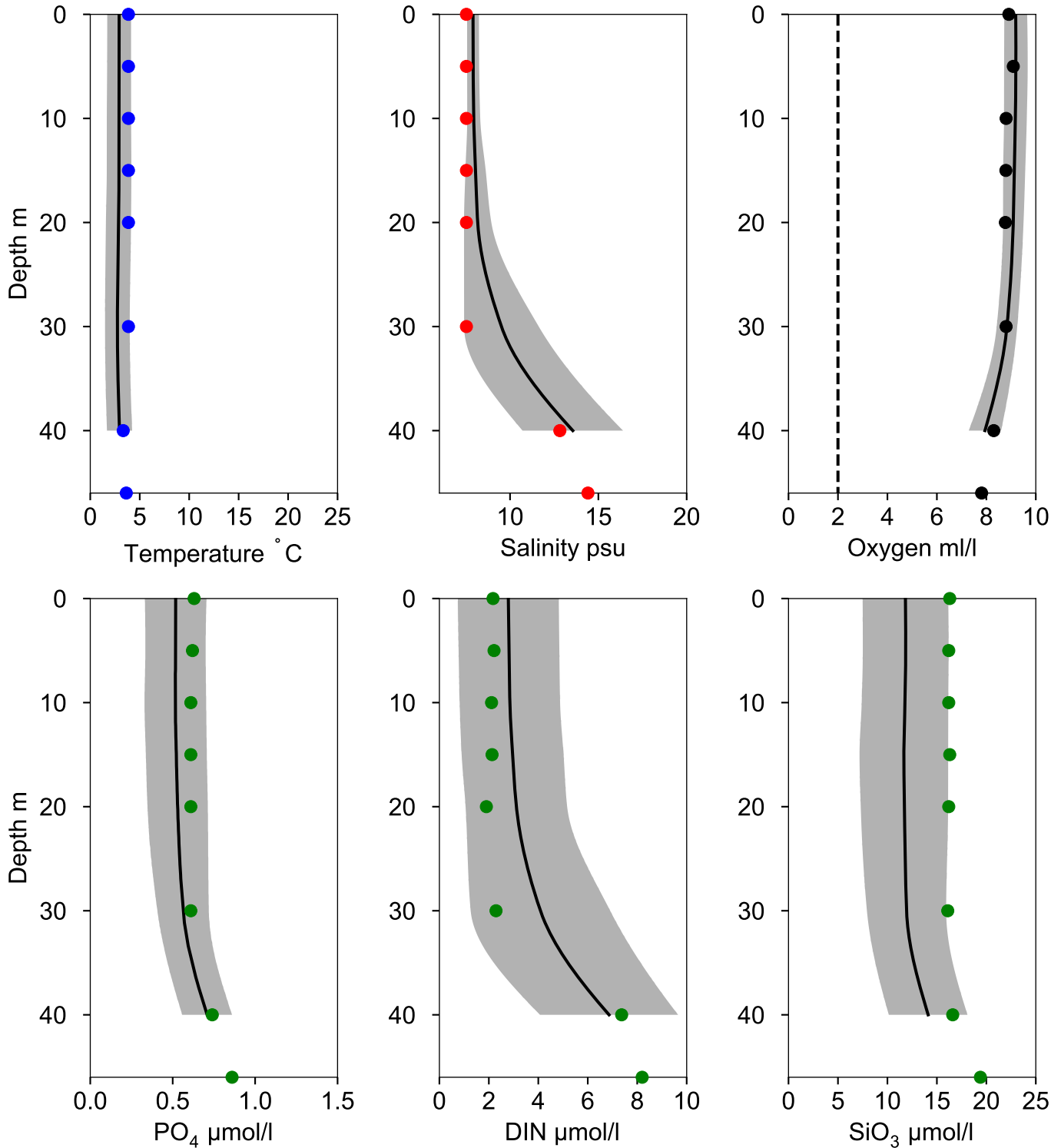


OXYGEN IN BOTTOM WATER (depth >= 40 m)



Vertical profiles BY2 ARKONA March

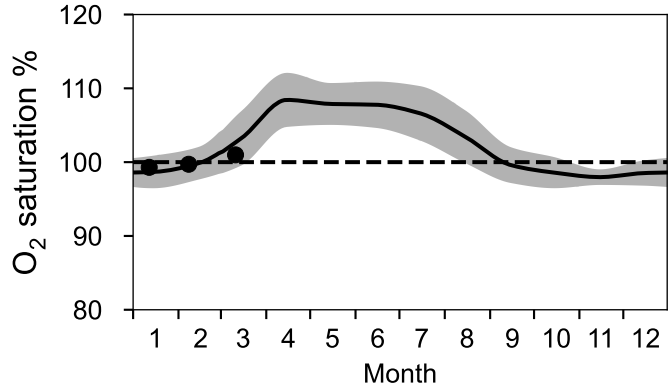
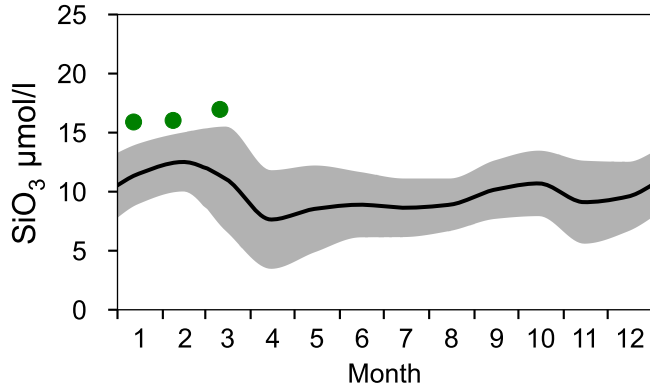
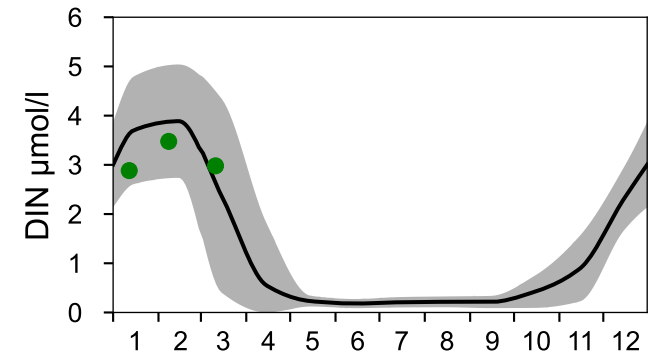
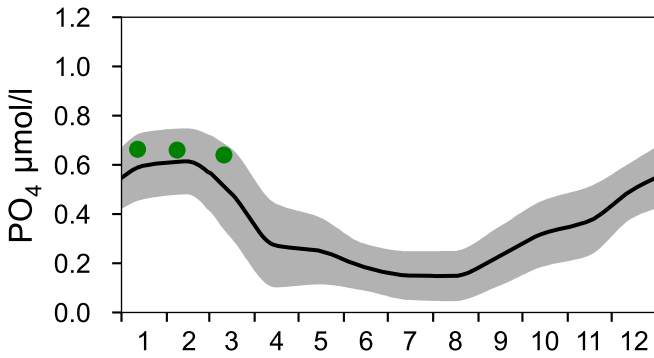
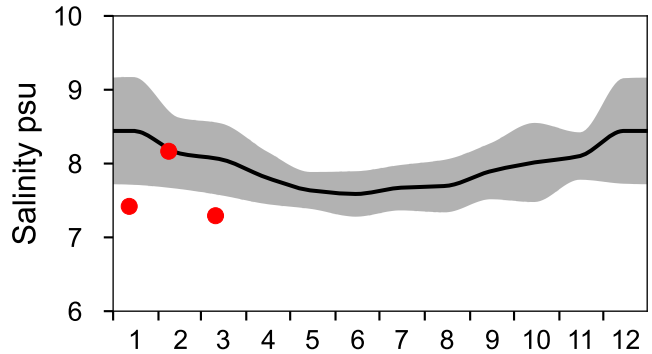
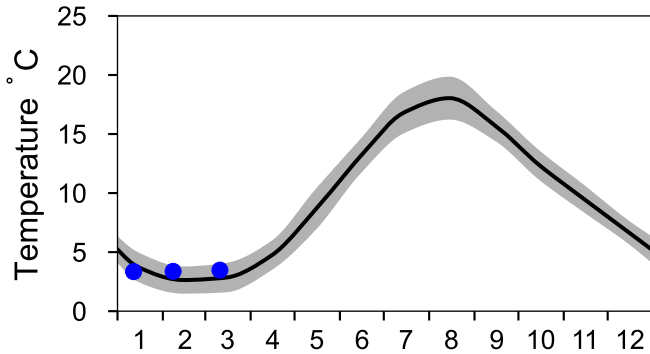
— Mean 1919-2020 ■ St.Dev. ● 2024-03-11



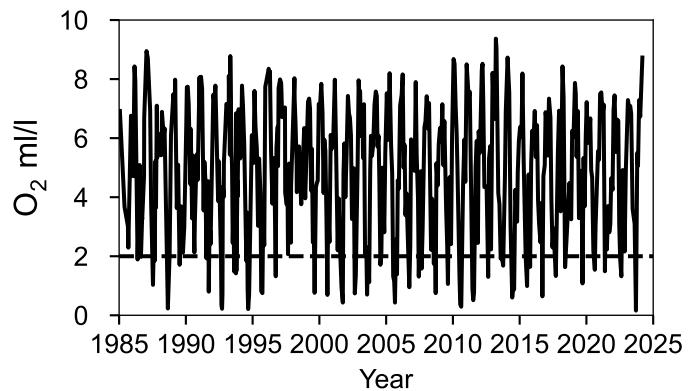
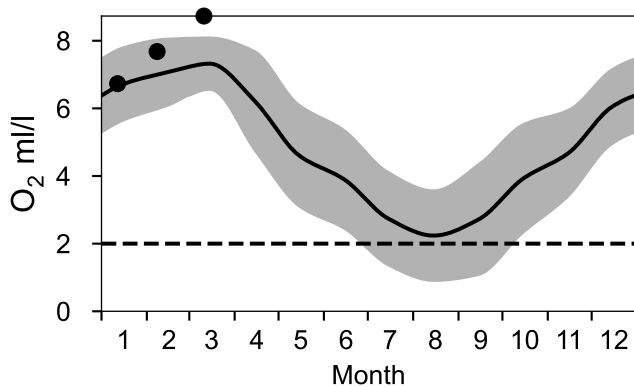
STATION BY1 SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020 St.Dev. ● 2024

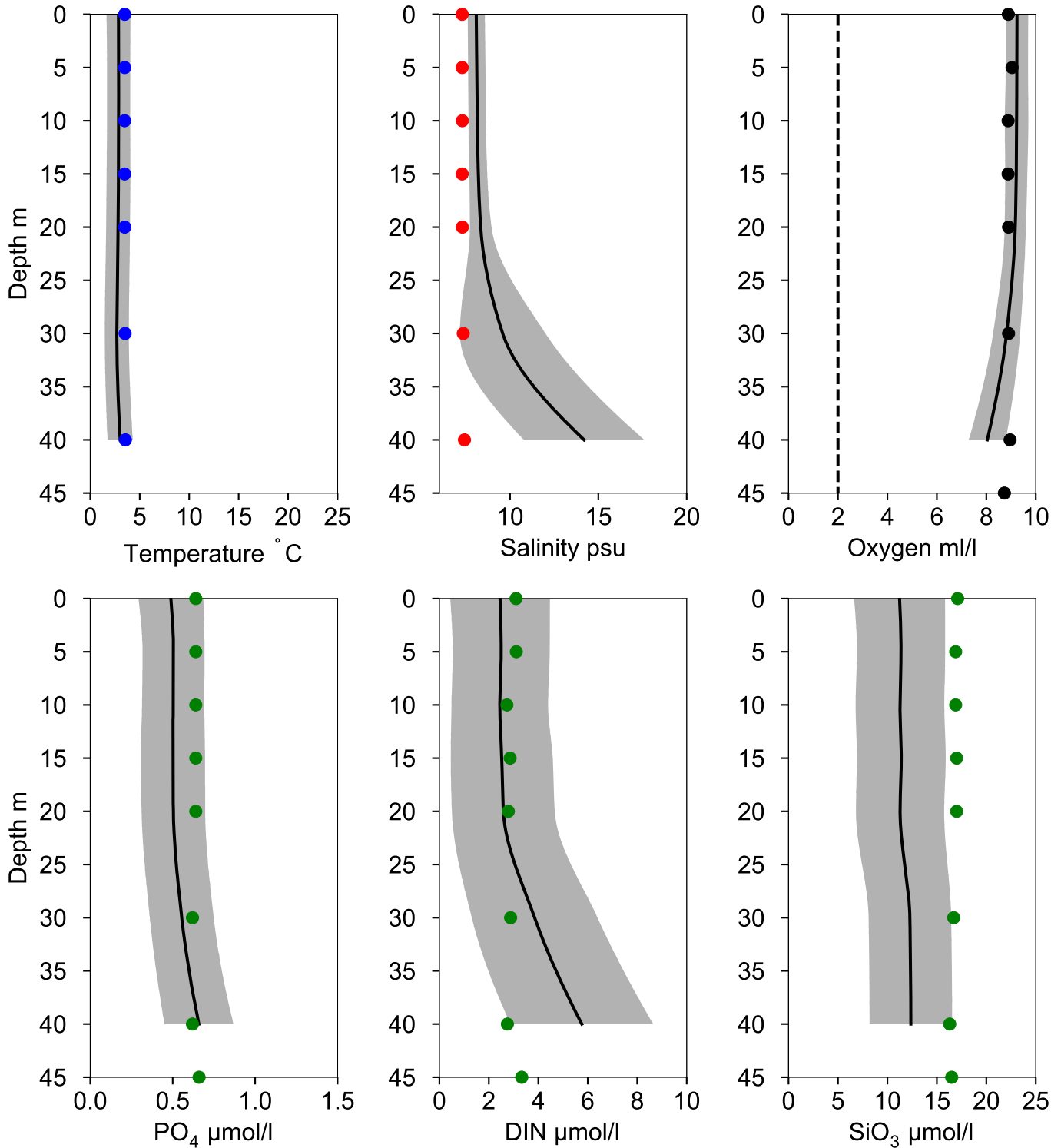


OXYGEN IN BOTTOM WATER (depth >= 39 m)



Vertical profiles BY1 March

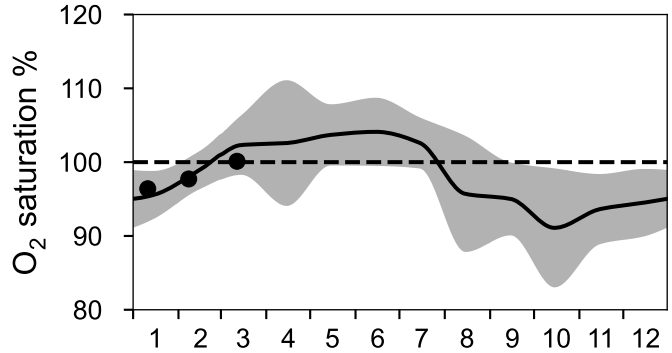
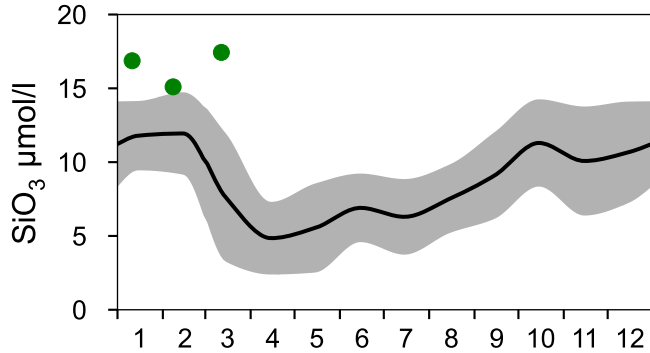
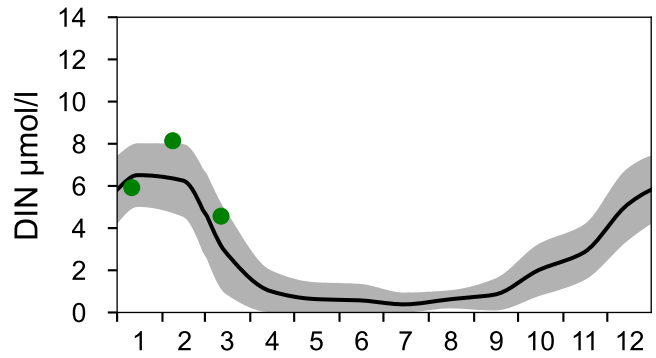
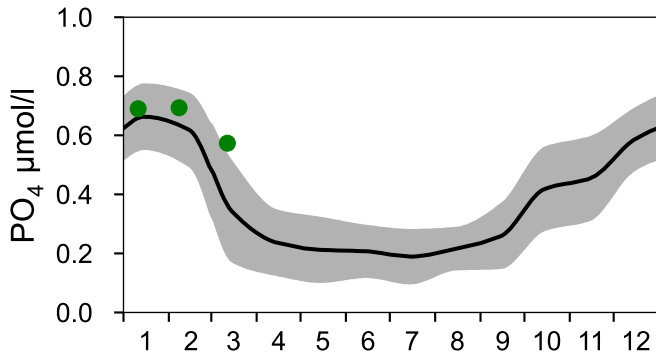
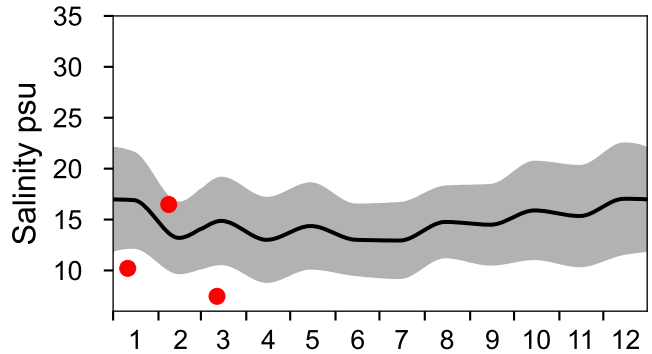
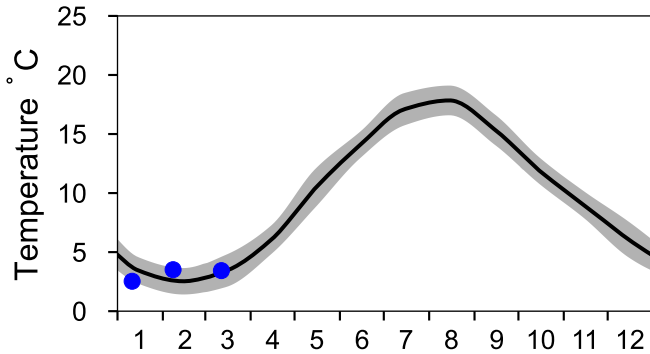
— Mean 1991-2020 St.Dev. ● 2024-03-11



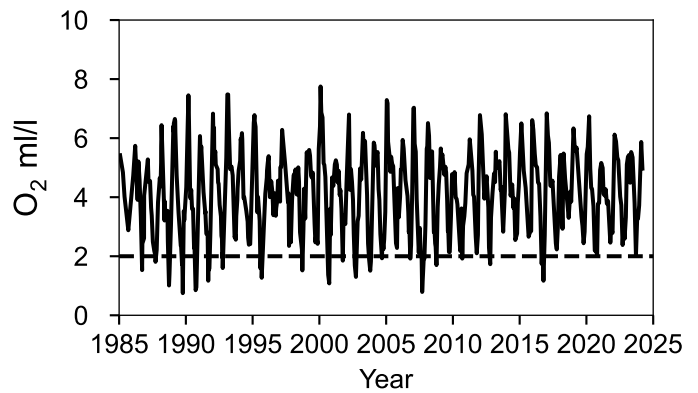
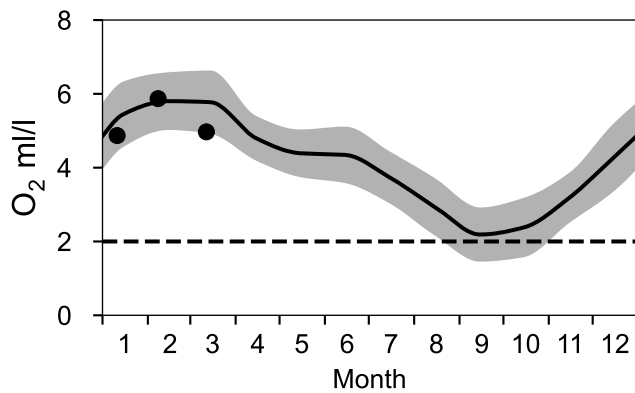
STATION W LANDSKRONA SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020 St.Dev. ● 2024

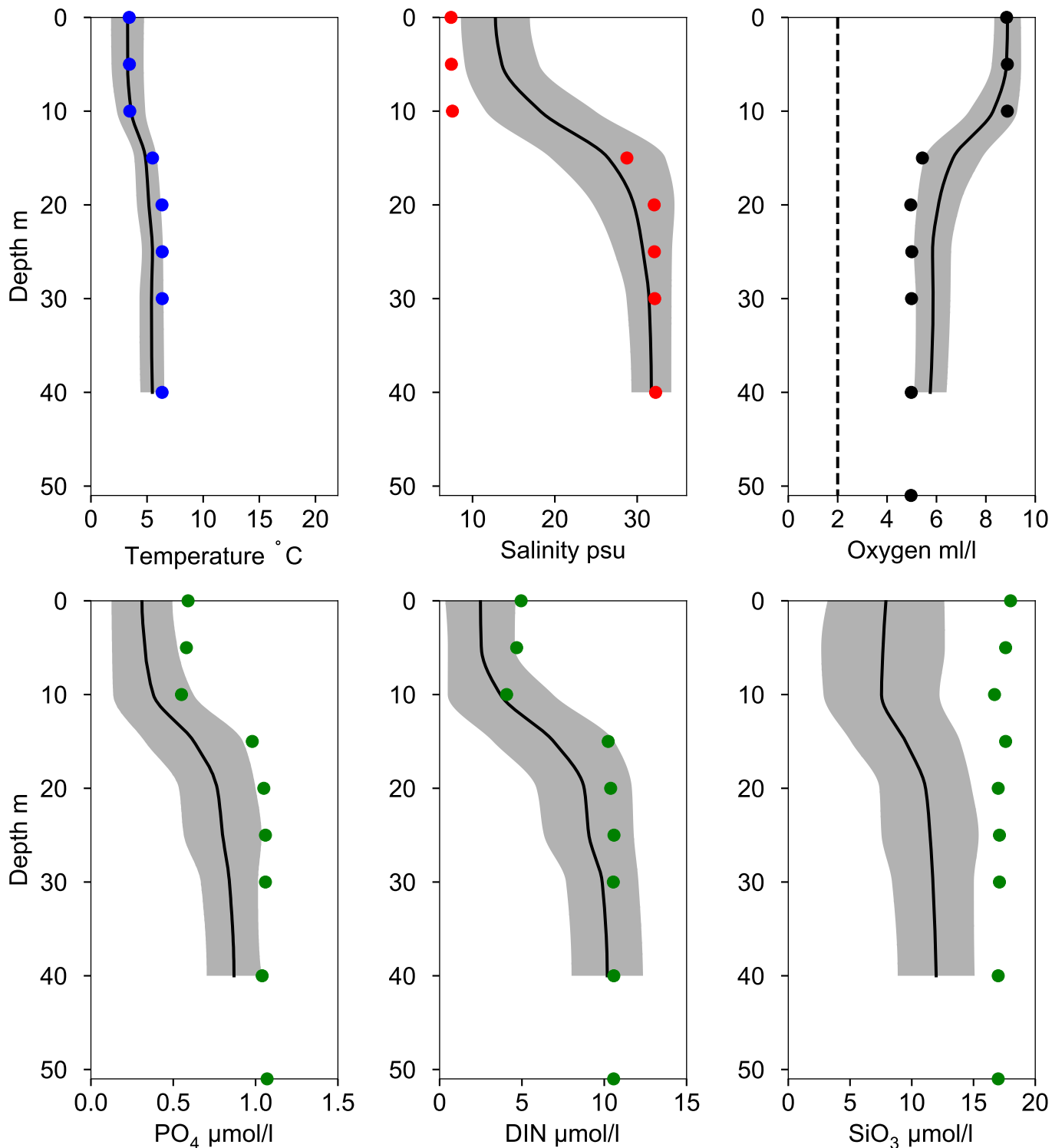


OXYGEN IN BOTTOM WATER (depth >= 40 m)



Vertical profiles W LANDSKRONA March

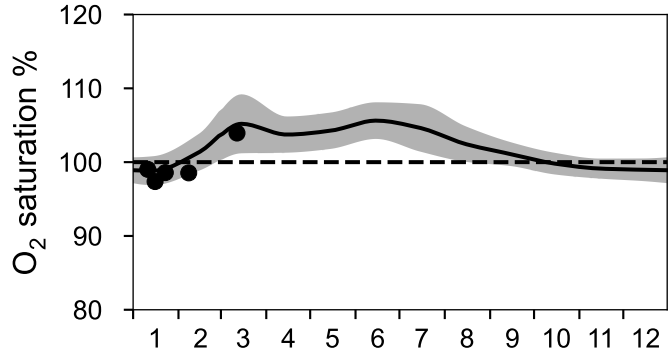
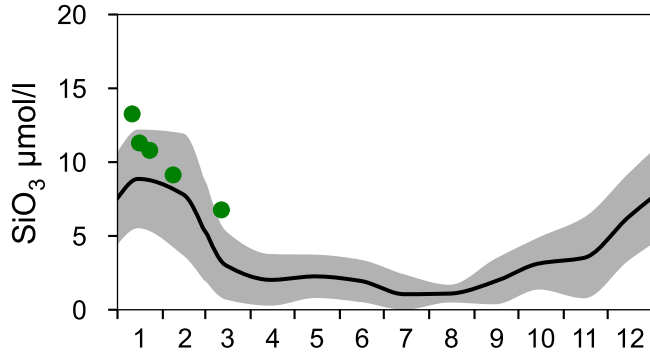
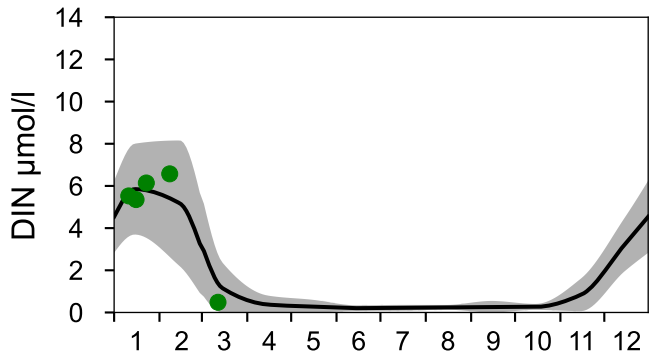
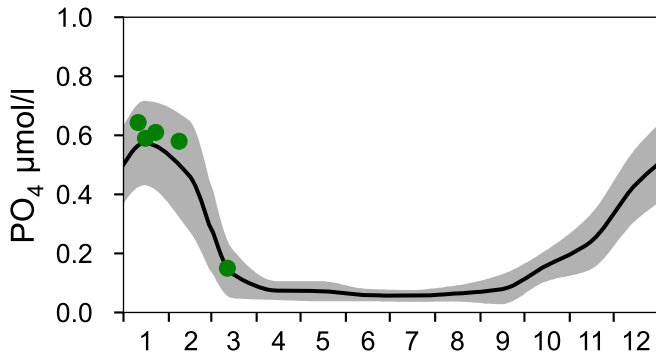
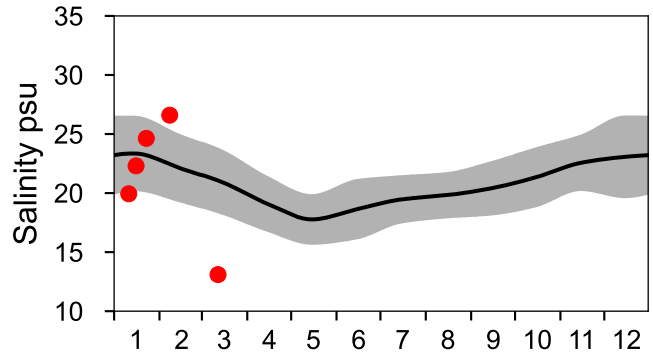
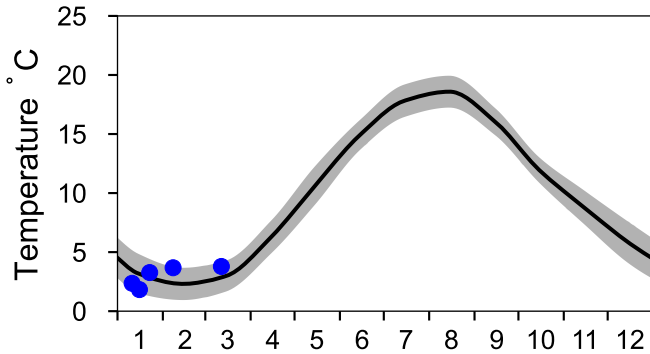
— Mean 1919-2020 St.Dev. ● 2024-03-12



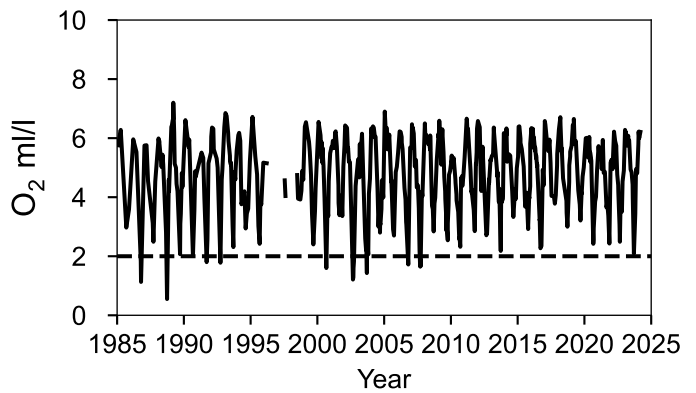
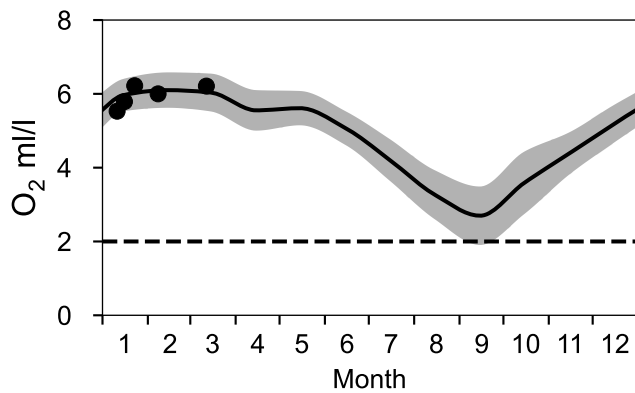
STATION ANHOLT E SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020 St.Dev. ● 2024

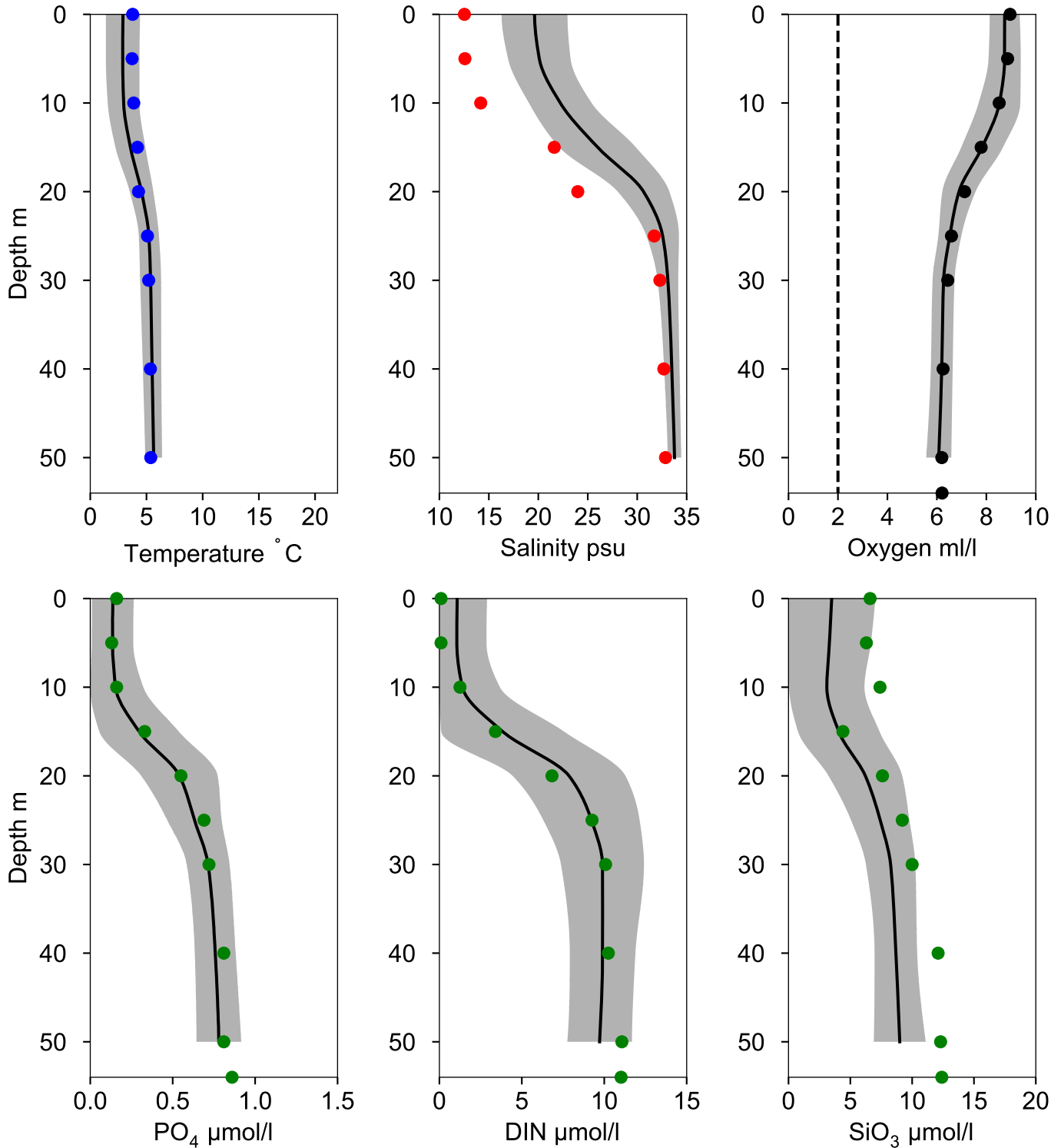


OXYGEN IN BOTTOM WATER (depth >= 52 m)



Vertical profiles ANHOLT E March

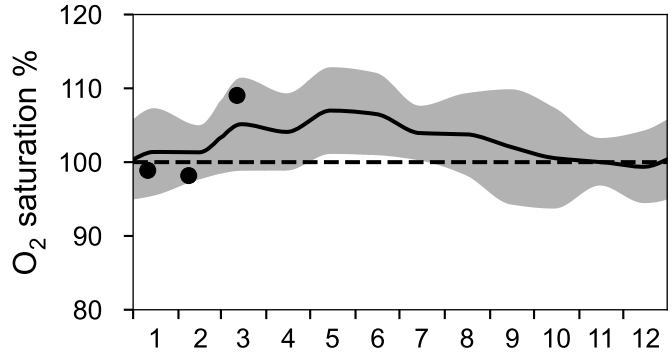
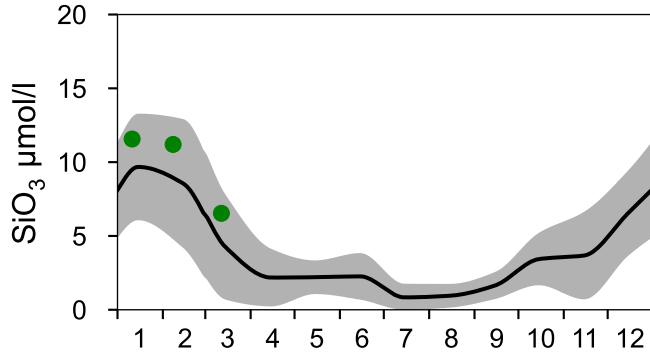
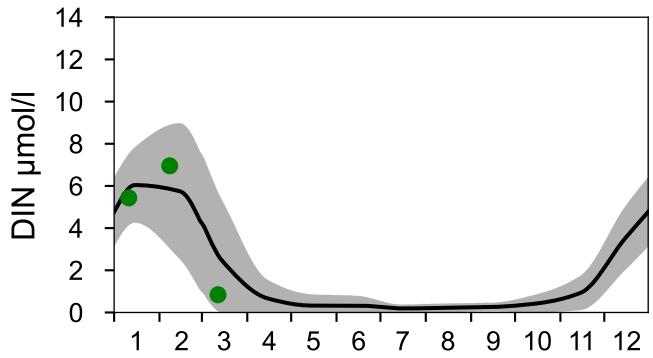
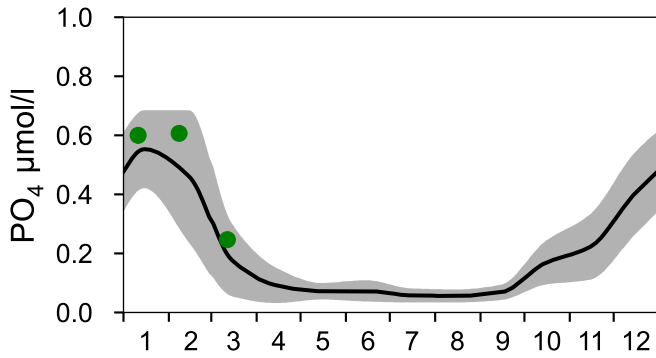
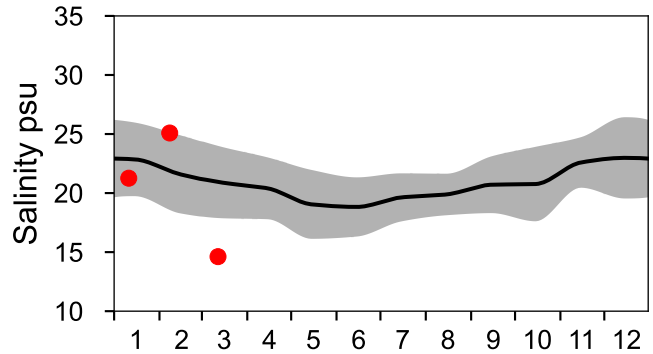
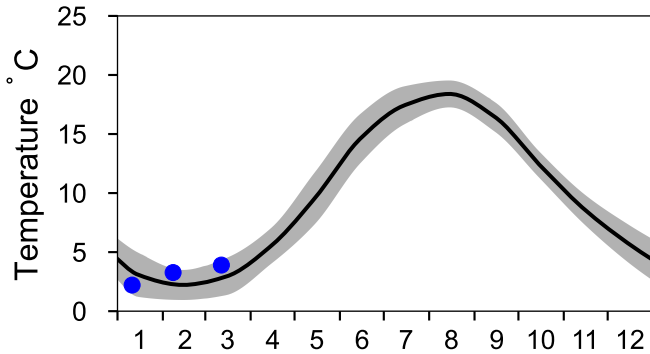
— Mean 1991-2020 St.Dev. ● 2024-03-12



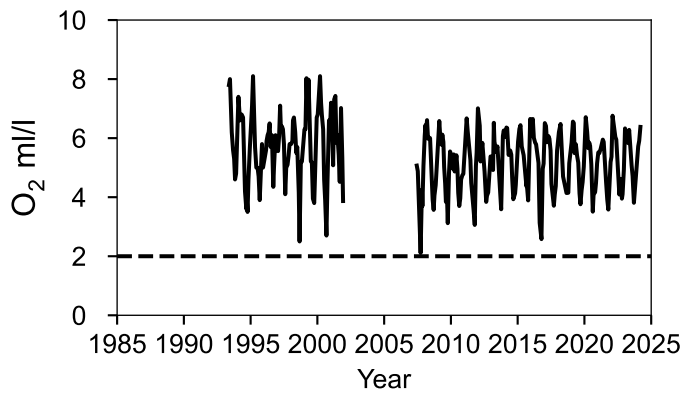
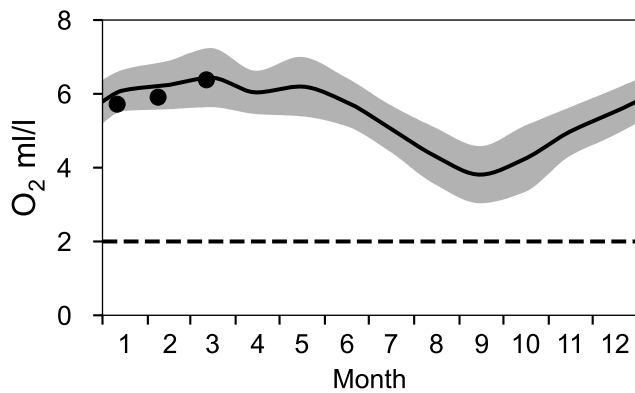
STATION N14 FALKENBERG SURFACE WATER (0-10 m)

Annual Cycles

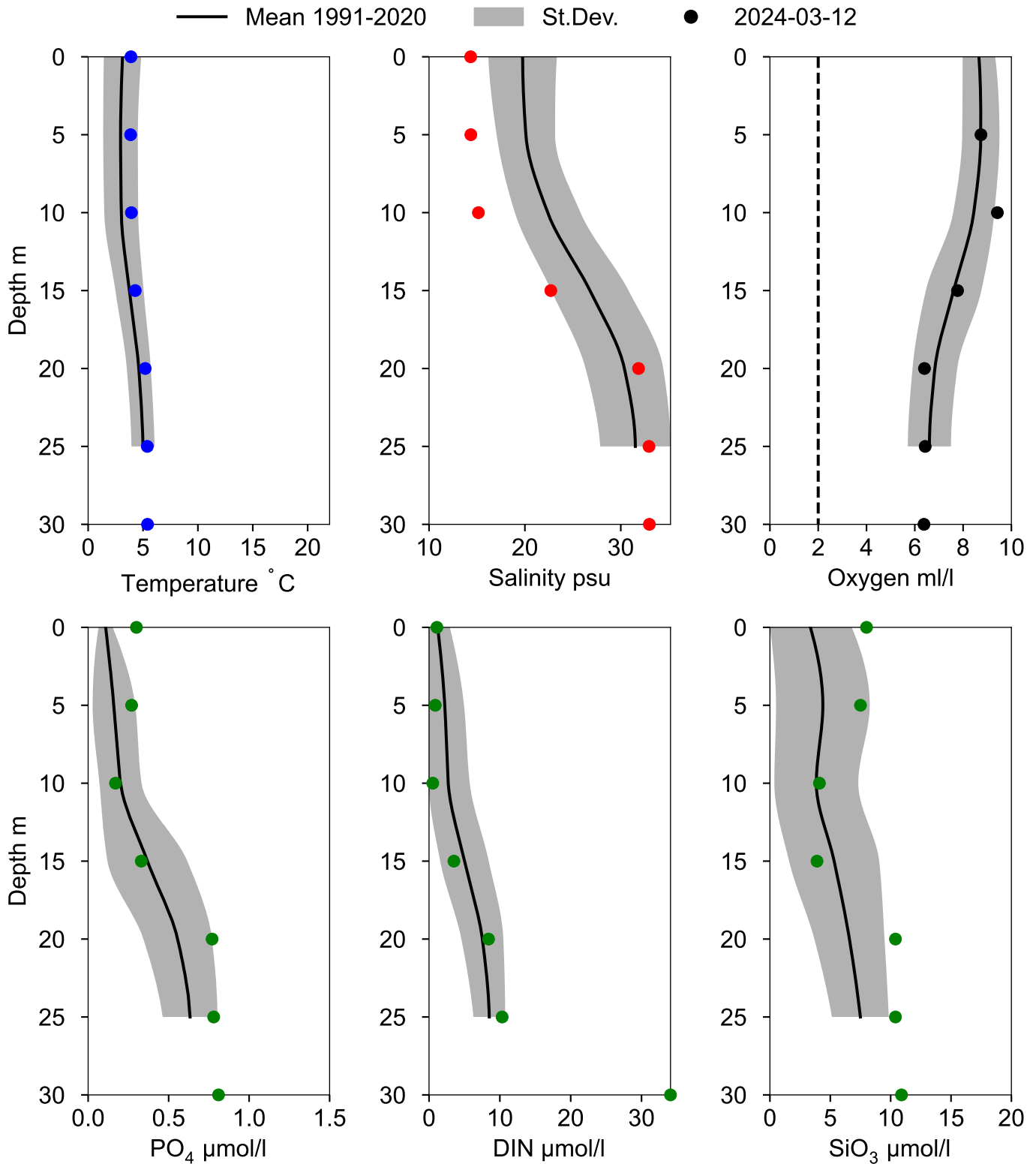
— Mean 1991-2020 St.Dev. ● 2024



OXYGEN IN BOTTOM WATER (depth >= 25 m)



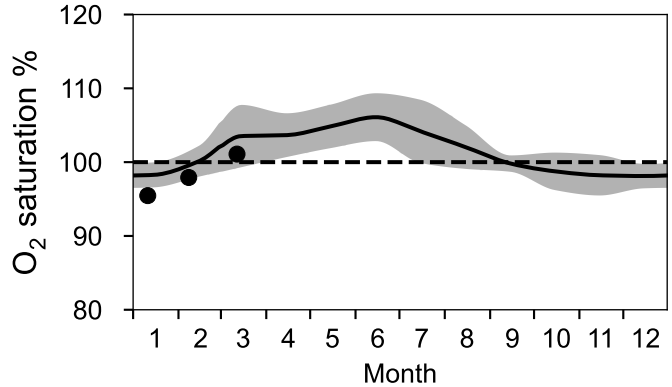
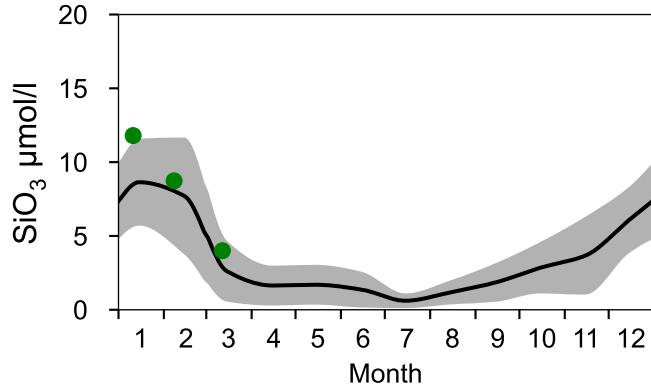
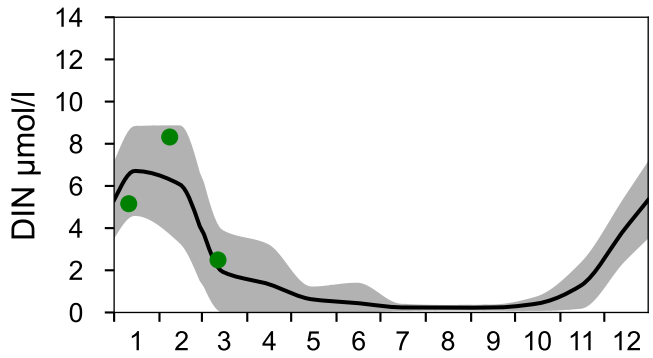
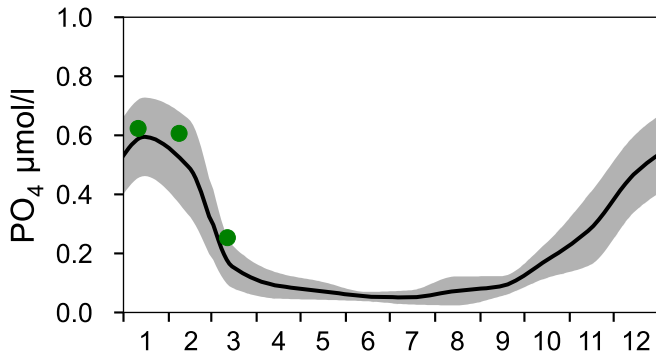
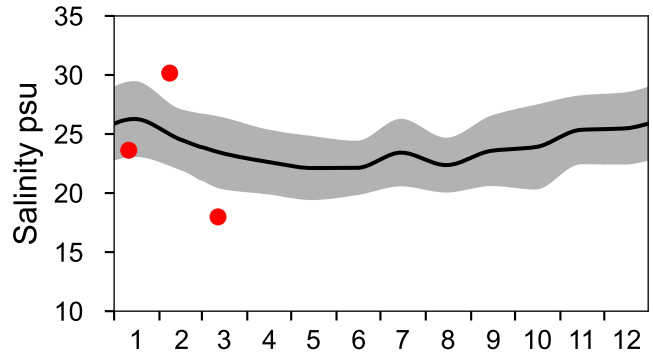
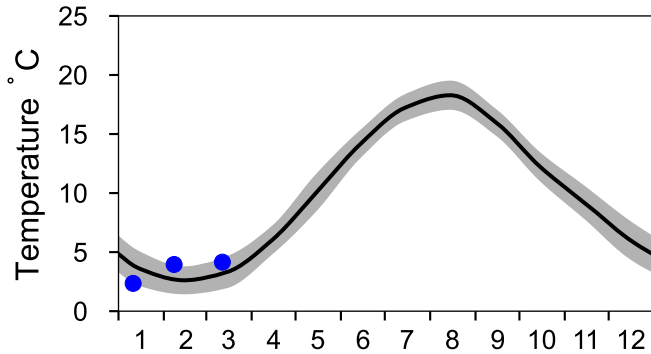
Vertical profiles N14 FALKENBERG March



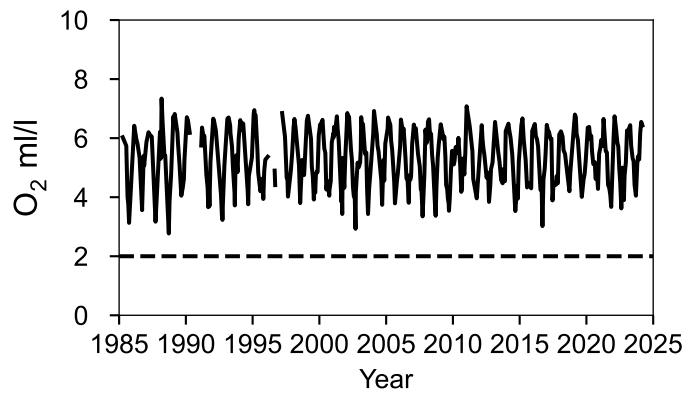
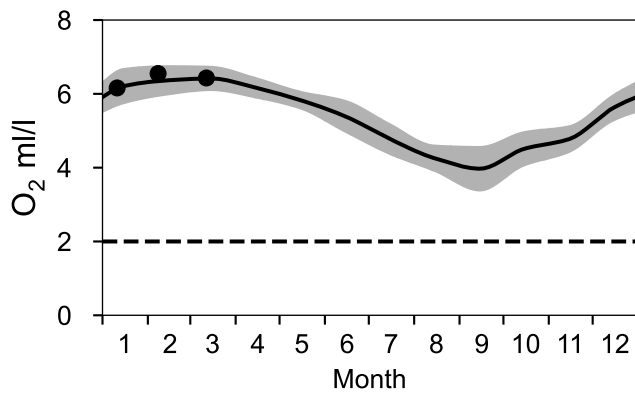
STATION FLADEN SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020 St.Dev. ● 2024

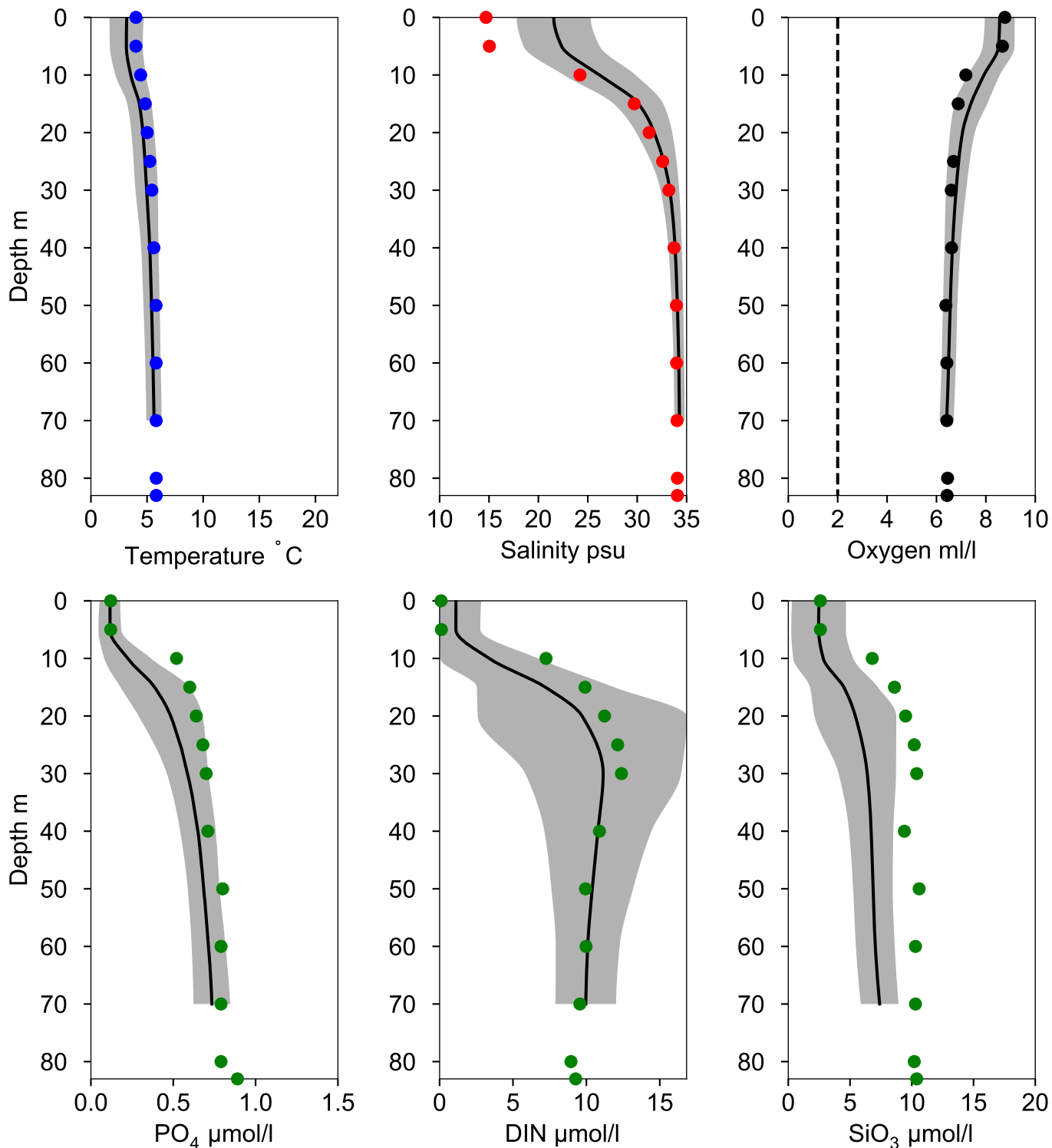


OXYGEN IN BOTTOM WATER (depth >= 74 m)



Vertical profiles FLADEN March

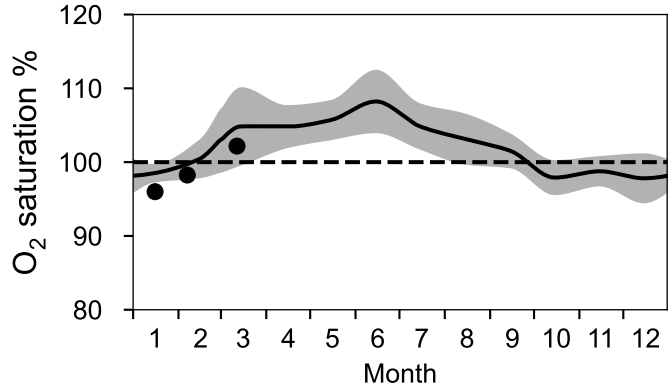
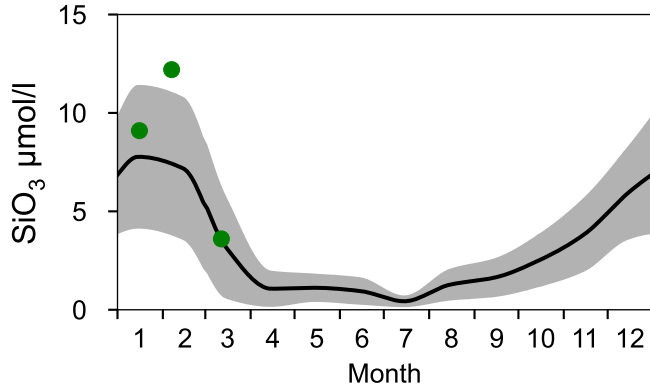
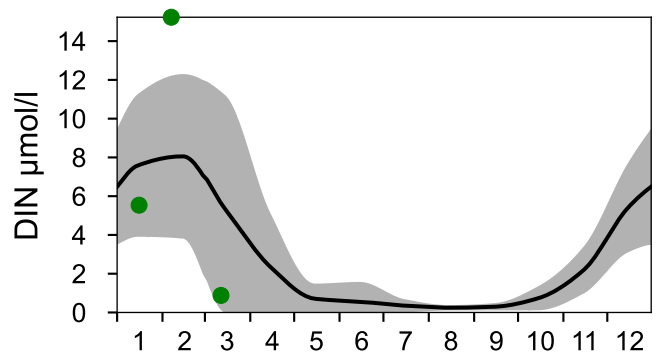
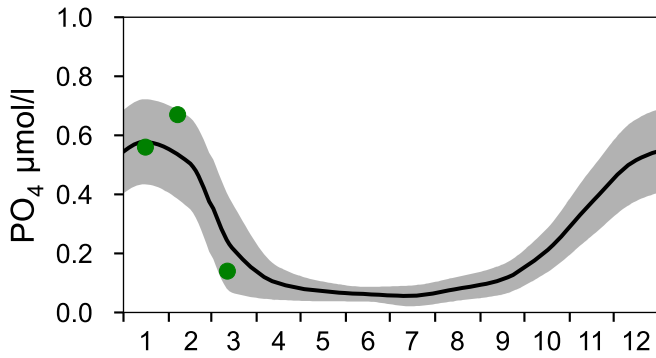
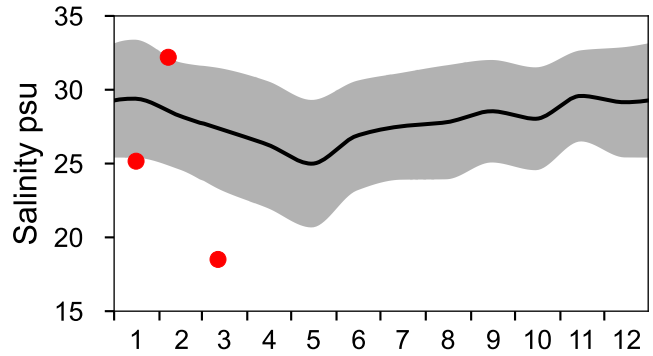
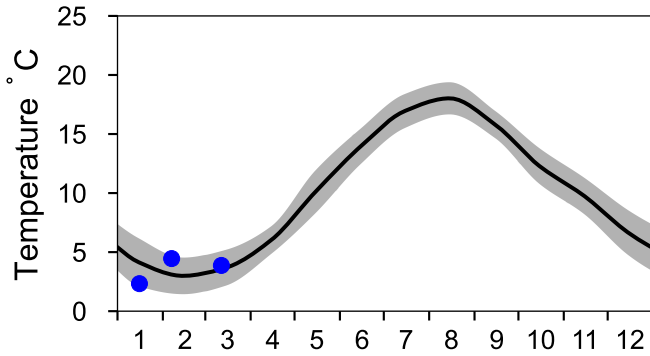
— Mean 1991-2020 St.Dev. ● 2024-03-12



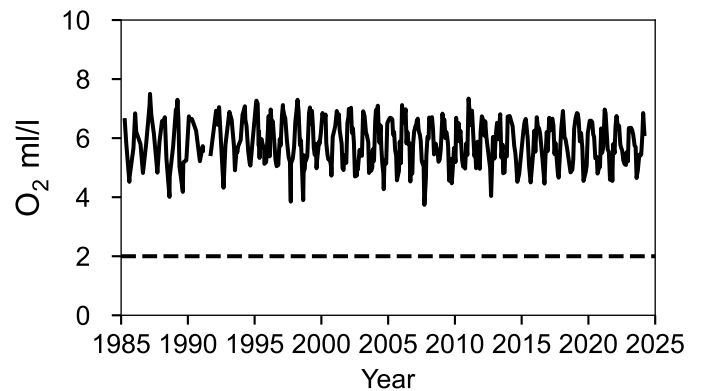
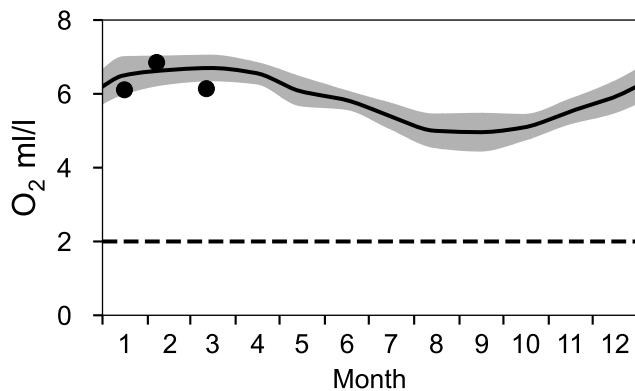
STATION P2 SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020 St.Dev. ● 2024

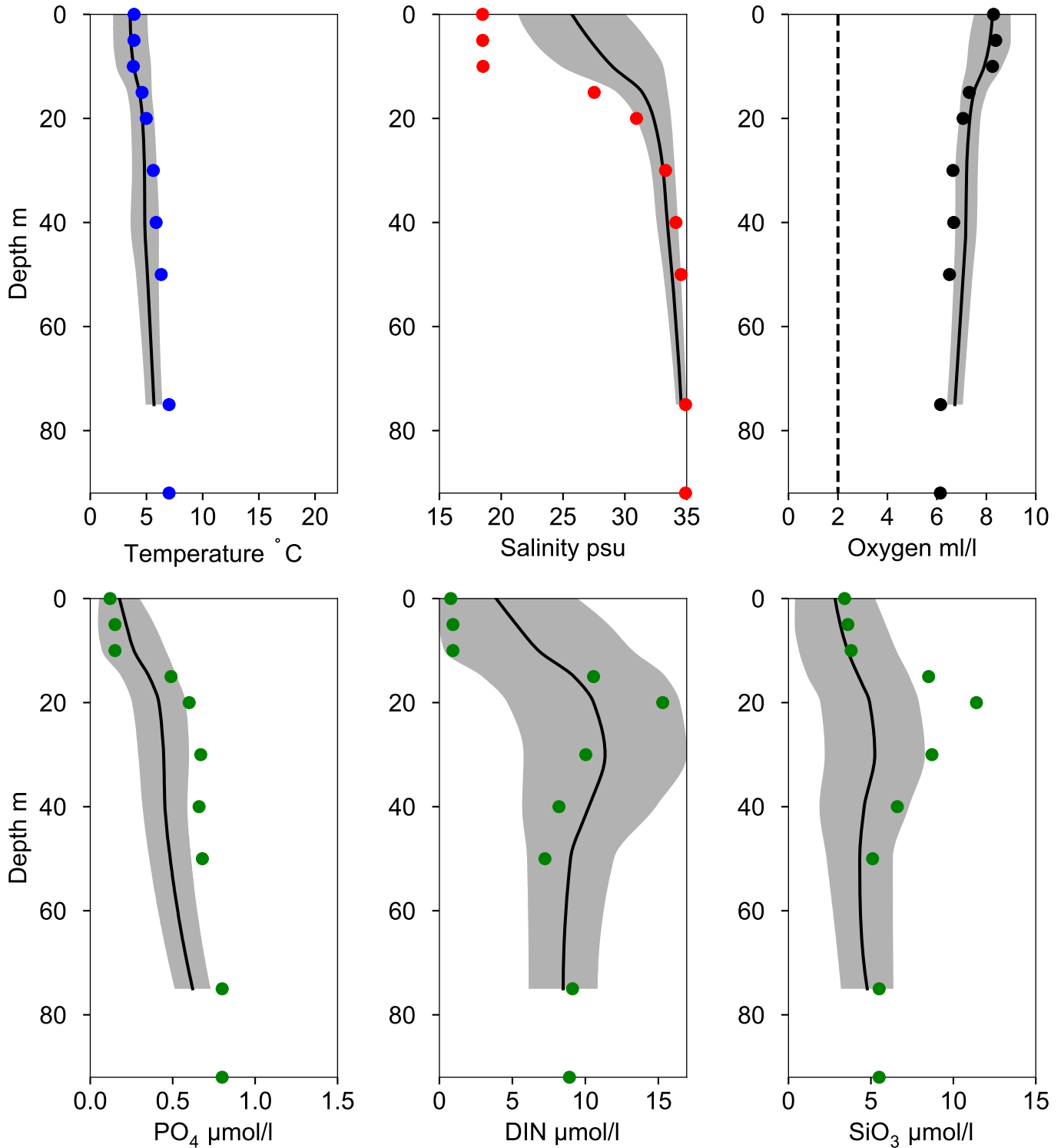


OXYGEN IN BOTTOM WATER (depth >= 75 m)



Vertical profiles P2 March

— Mean 1991-2020 St.Dev. ● 2024-03-12



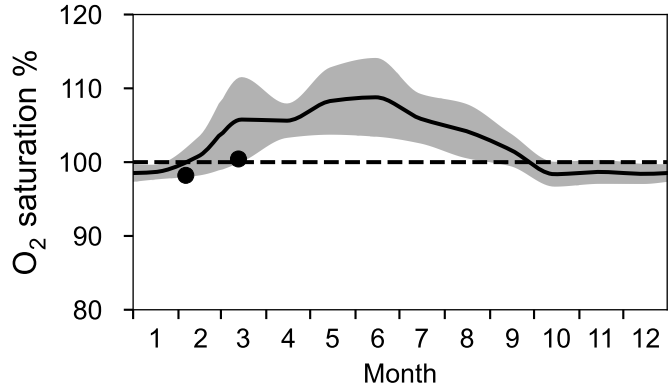
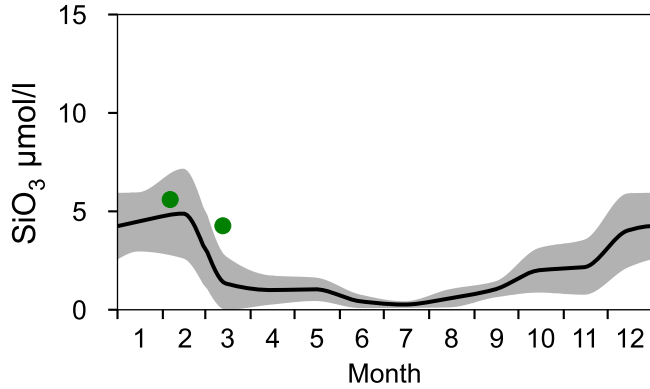
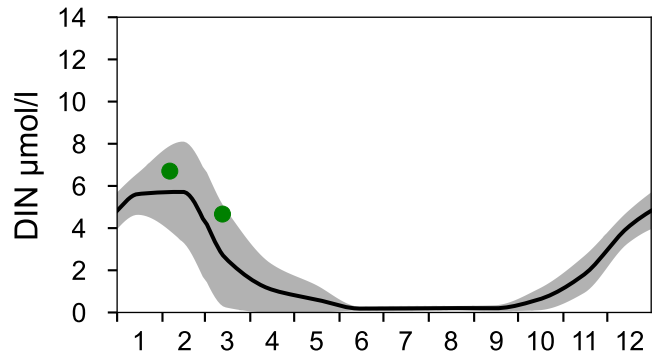
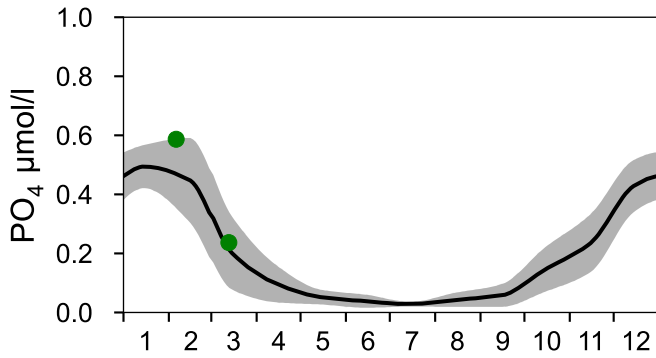
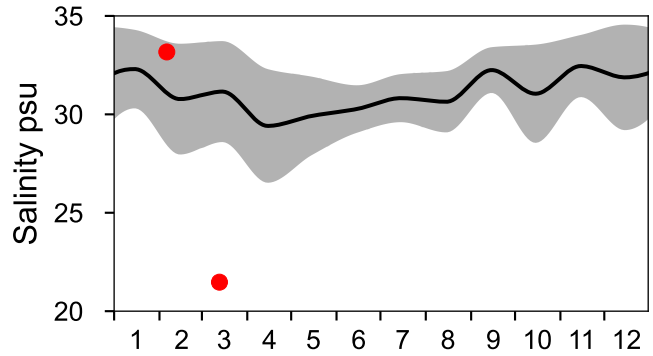
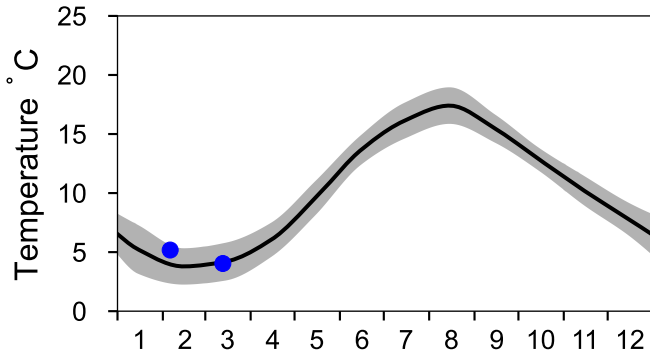
STATION Å17 SURFACE WATER (0-10 m)

Annual Cycles

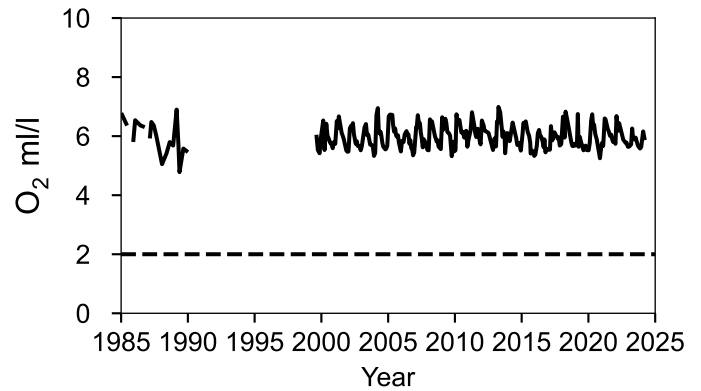
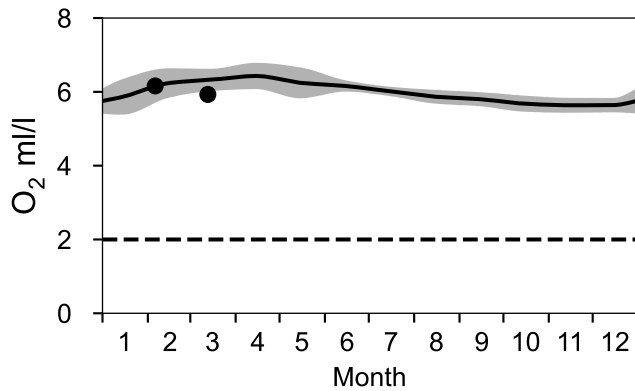
— Mean 1991-2020

■ St.Dev.

● 2024

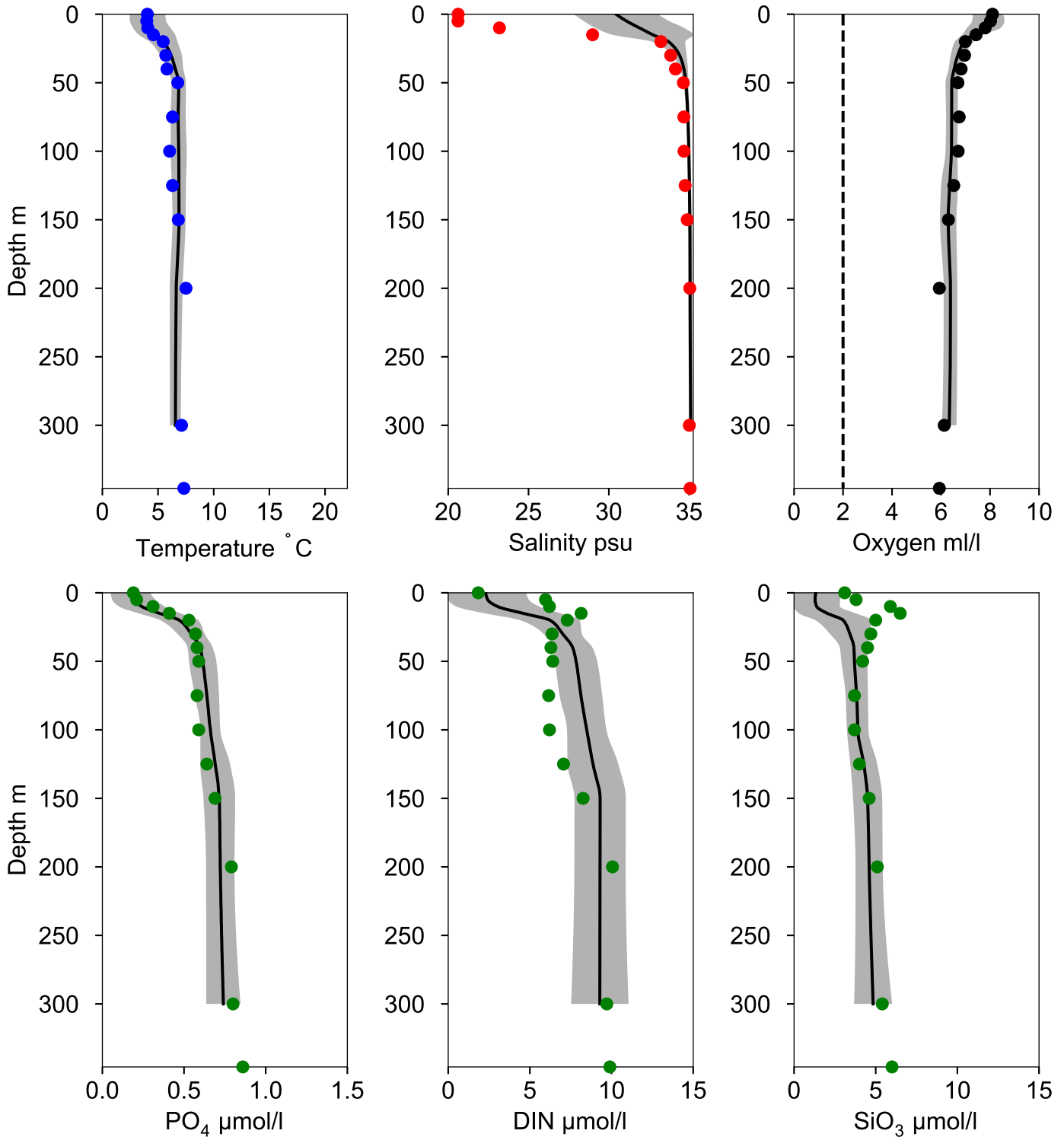


OXYGEN IN BOTTOM WATER (depth >= 300 m)



Vertical profiles Å17 March

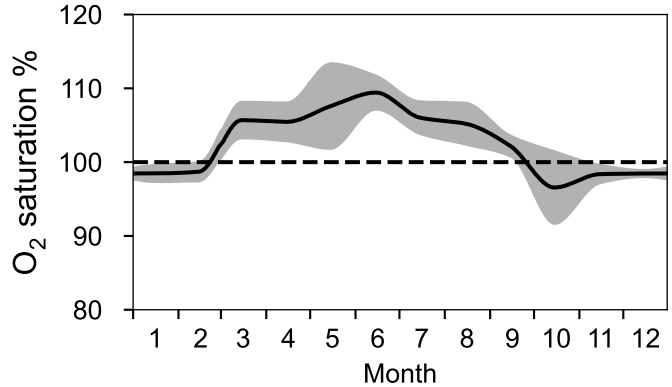
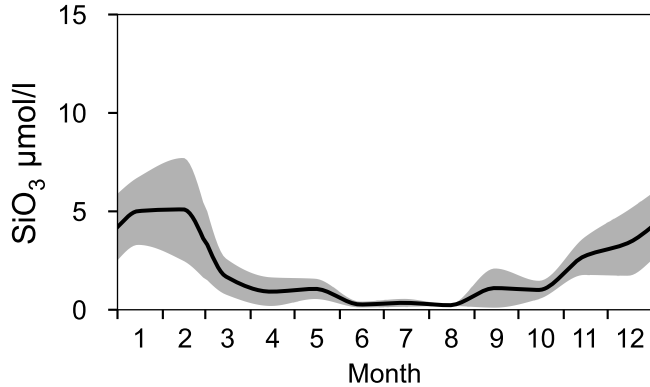
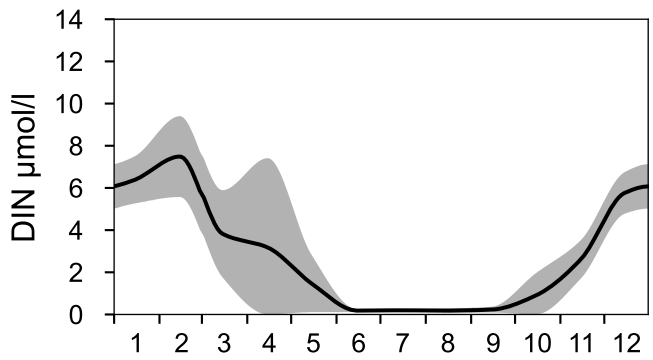
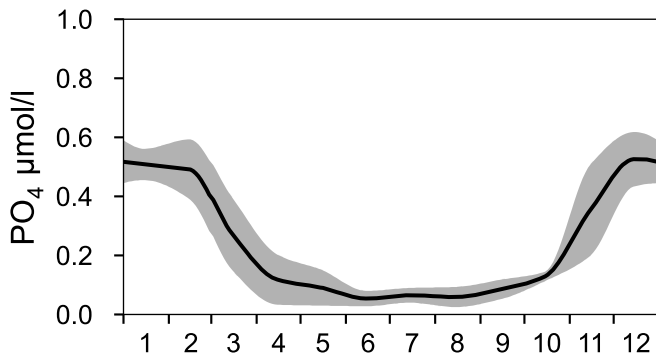
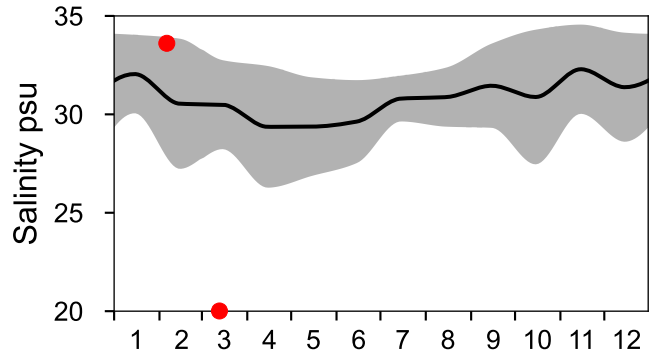
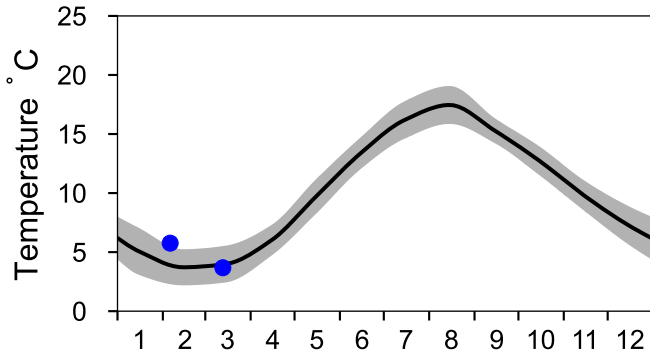
— Mean 1991-2020 ■ St.Dev. ● 2024-03-13



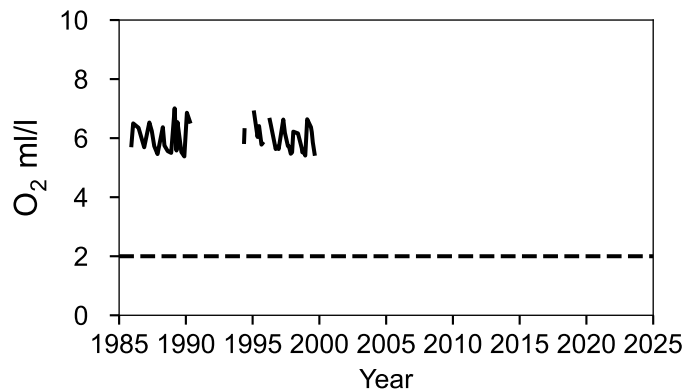
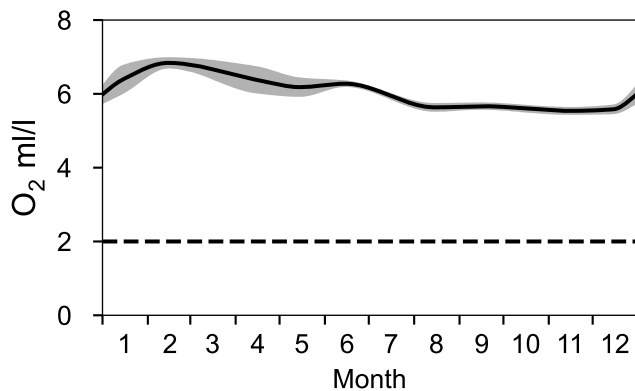
STATION Å16 SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020 St.Dev. ● 2024

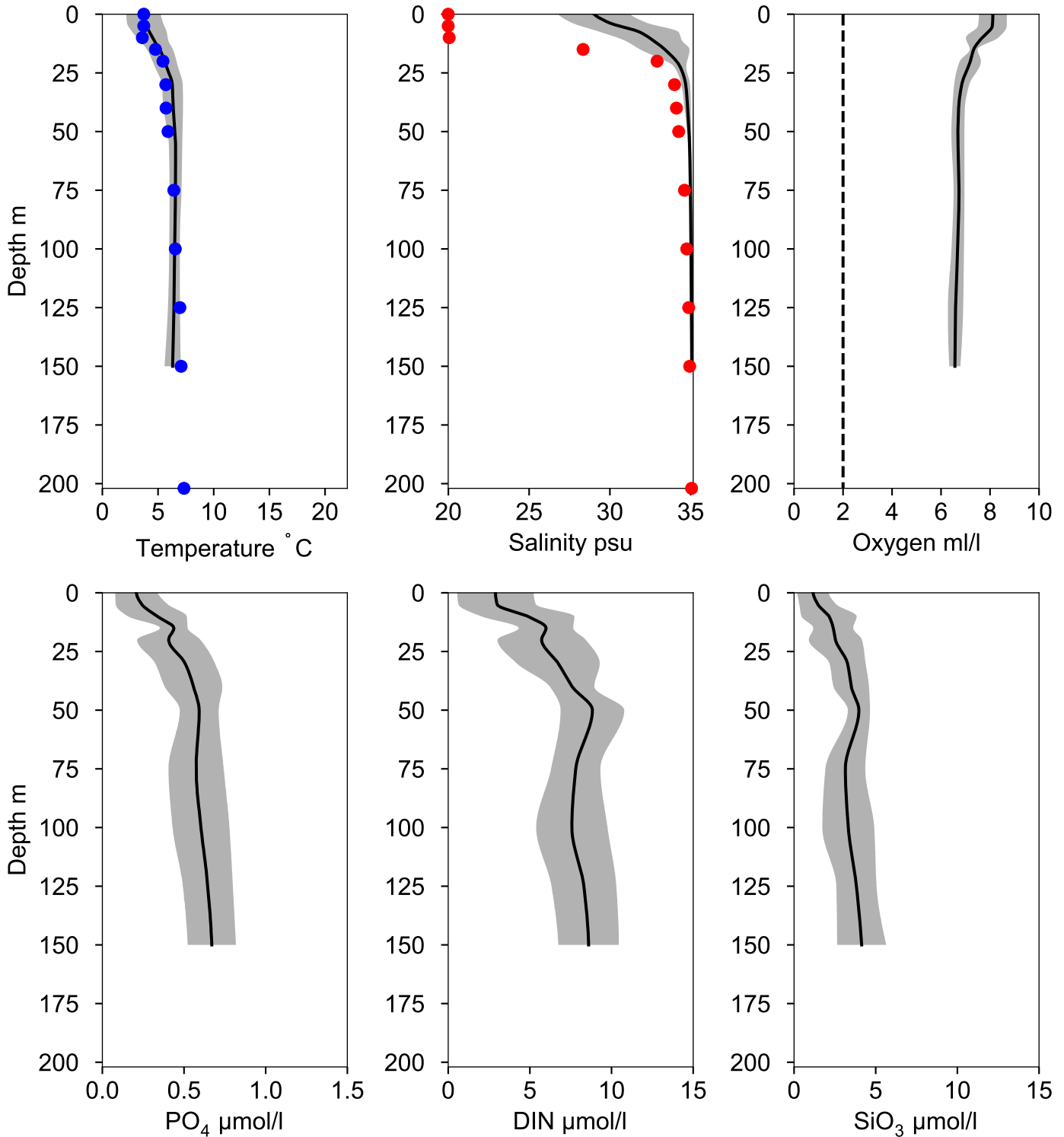


OXYGEN IN BOTTOM WATER (depth >= 193 m)



Vertical profiles Å16 March

— Mean 1991-2020 ■ St.Dev. ● 2024-03-13



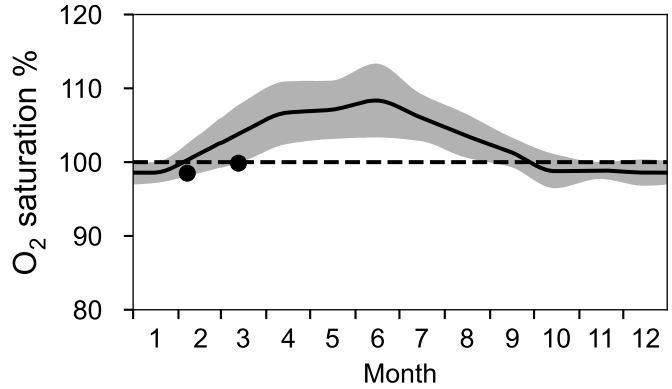
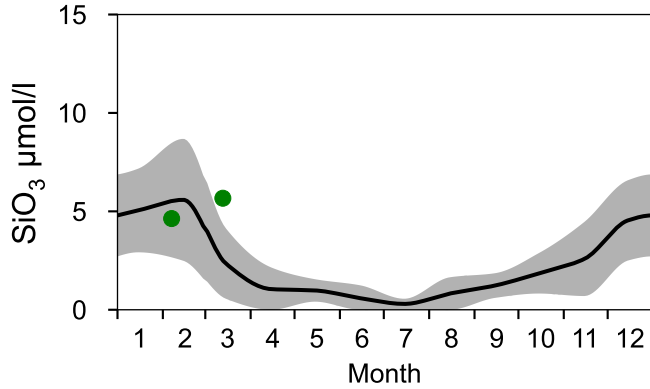
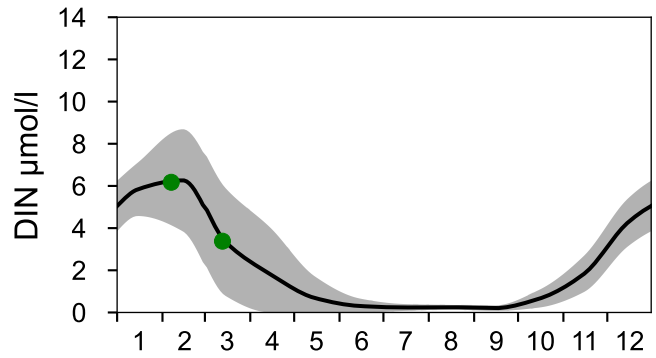
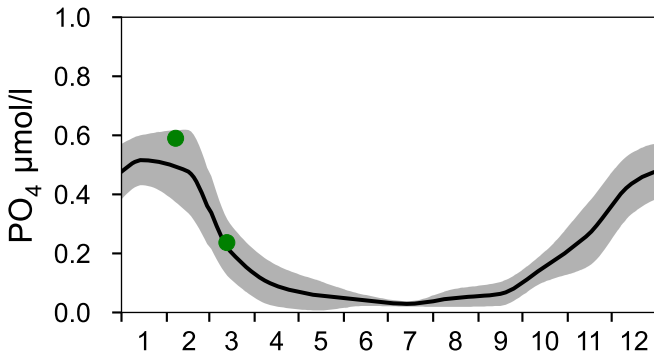
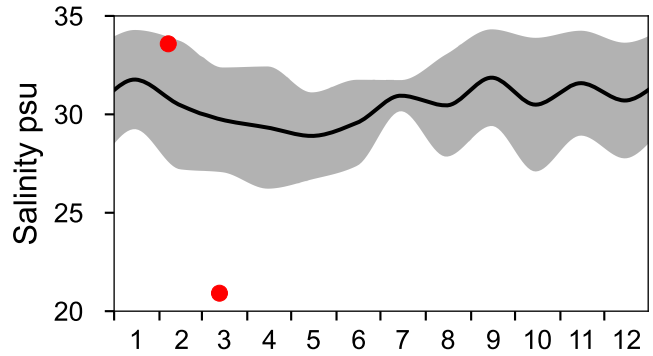
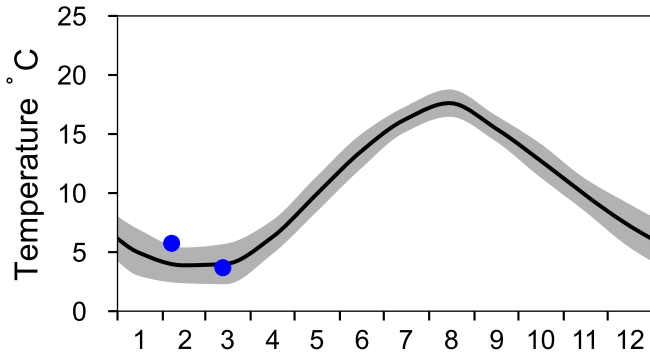
STATION Å15 SURFACE WATER (0-10 m)

Annual Cycles

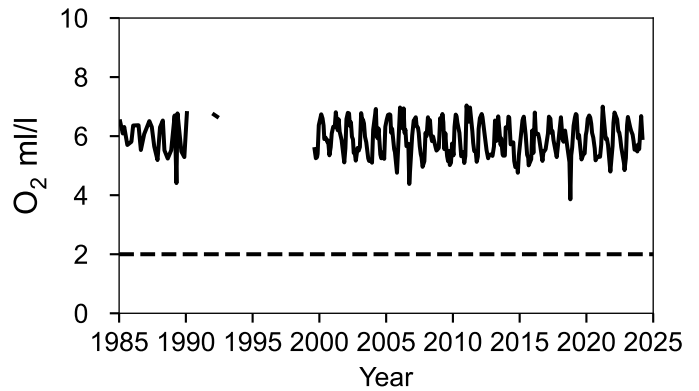
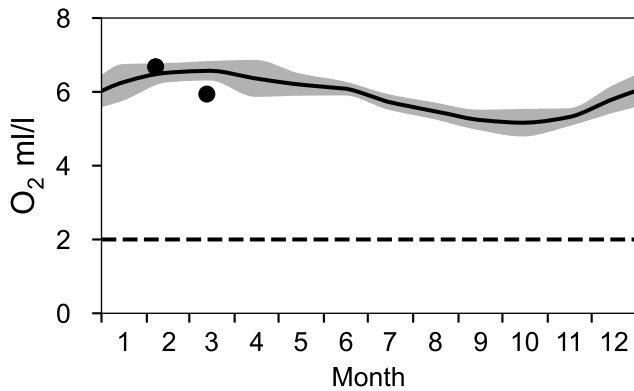
— Mean 1991-2020

■ St.Dev.

● 2024

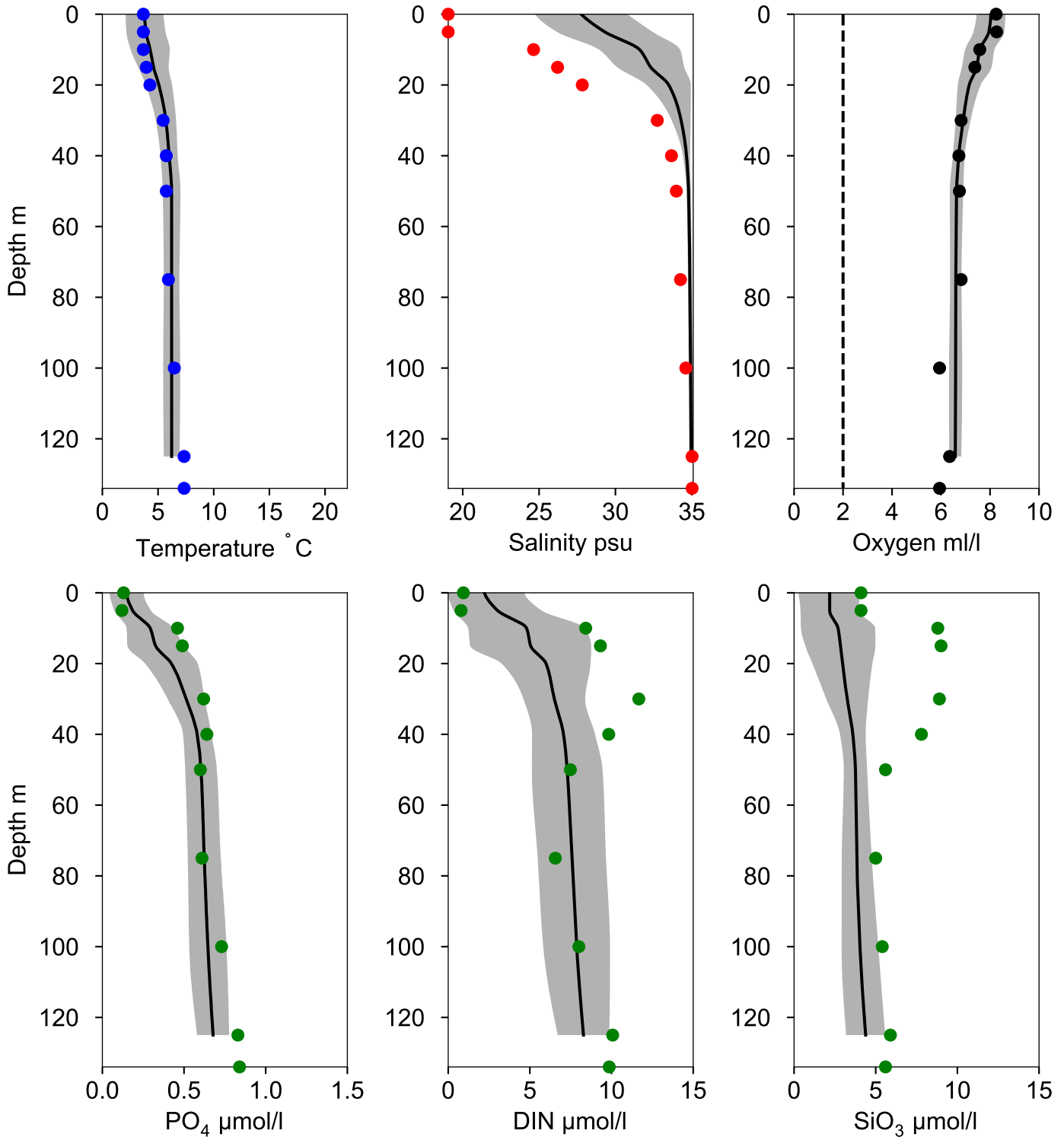


OXYGEN IN BOTTOM WATER (depth >= 125 m)



Vertical profiles A15 March

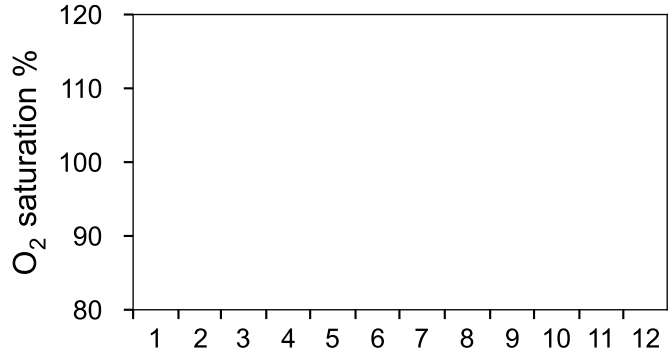
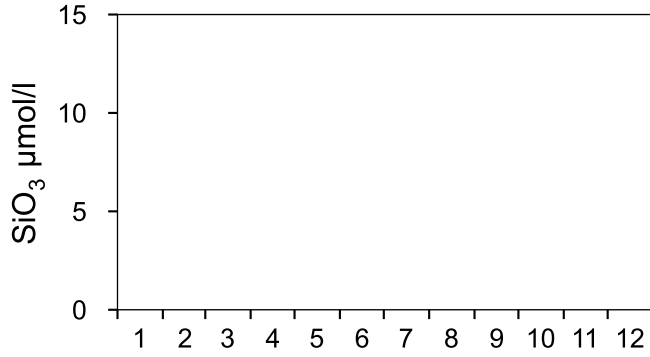
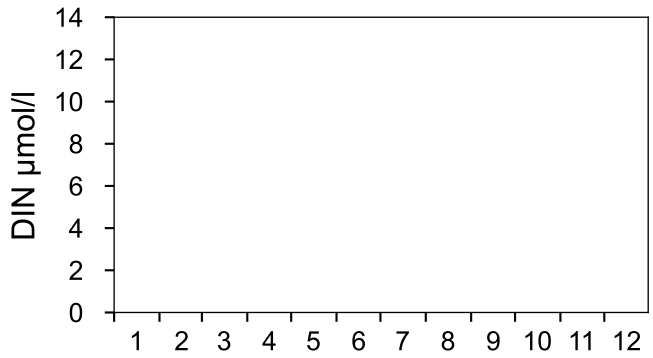
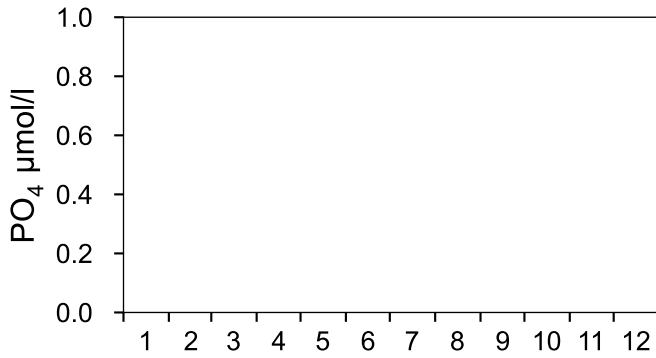
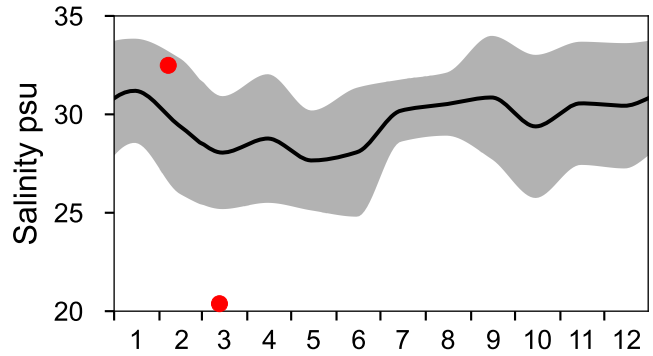
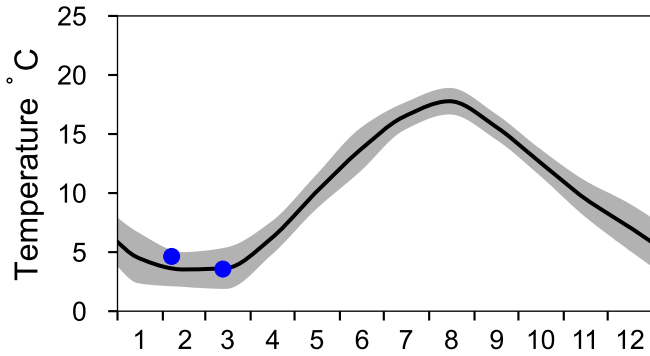
— Mean 1991-2020 St.Dev. ● 2024-03-13



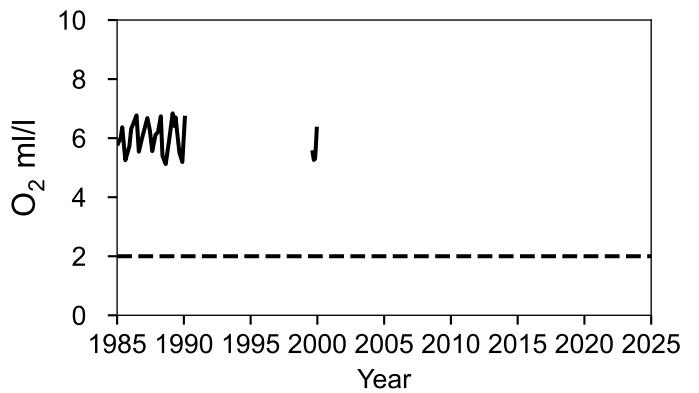
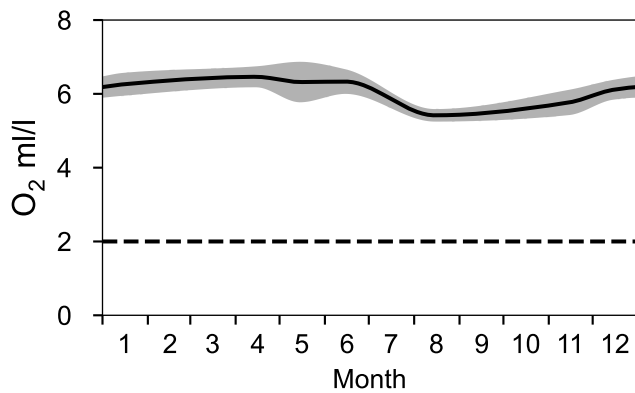
STATION Å14 SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020 St.Dev. ● 2024

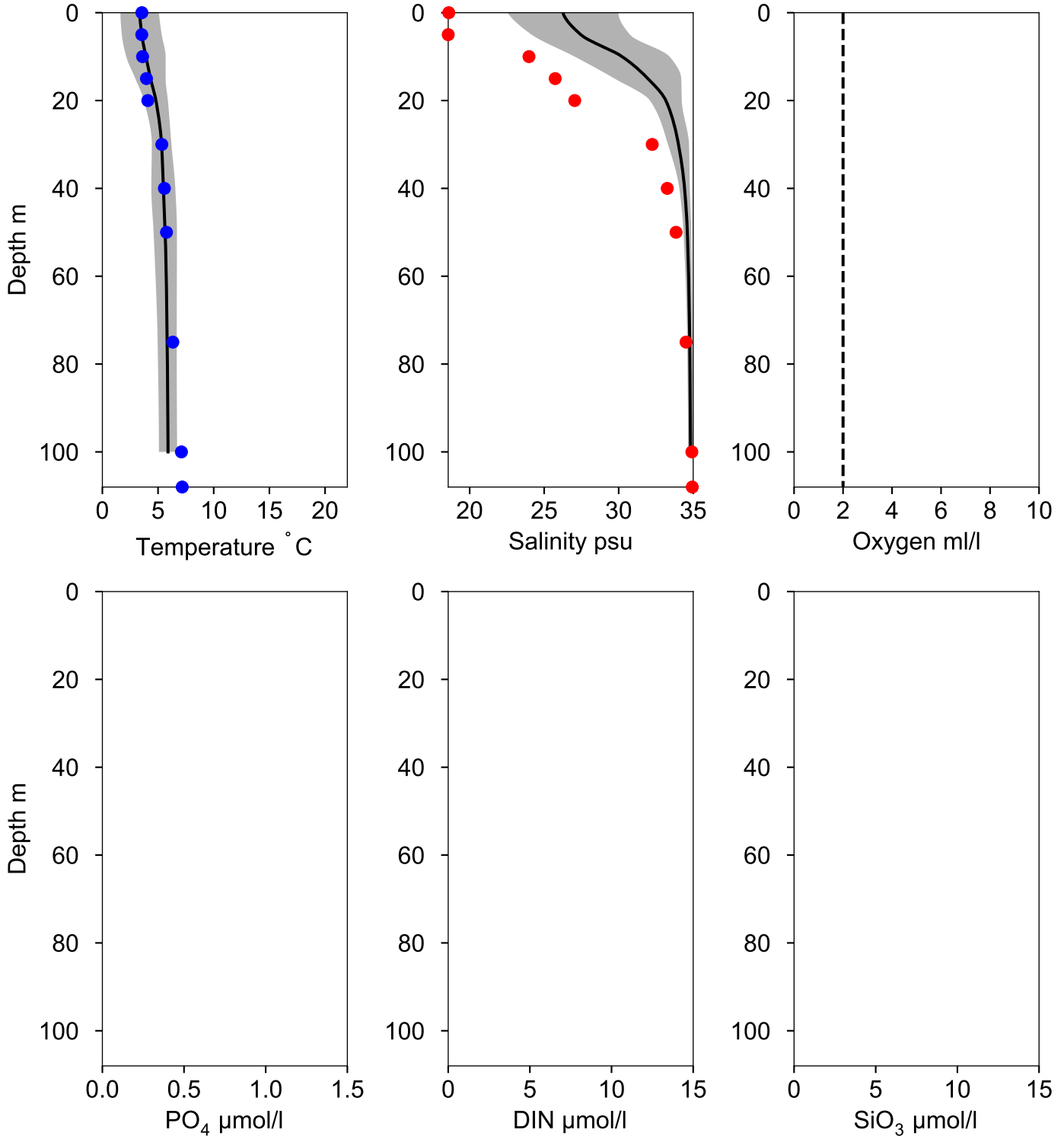


OXYGEN IN BOTTOM WATER (depth >= 100 m)



Vertical profiles A14 March

— Mean 1991-2020 St.Dev. ● 2024-03-13



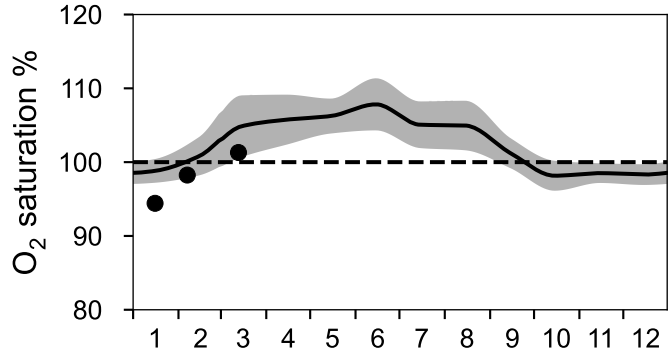
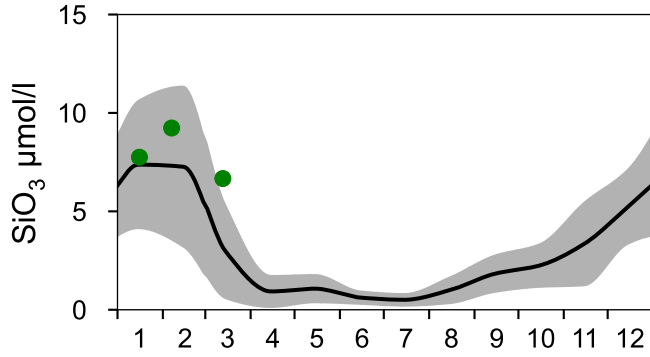
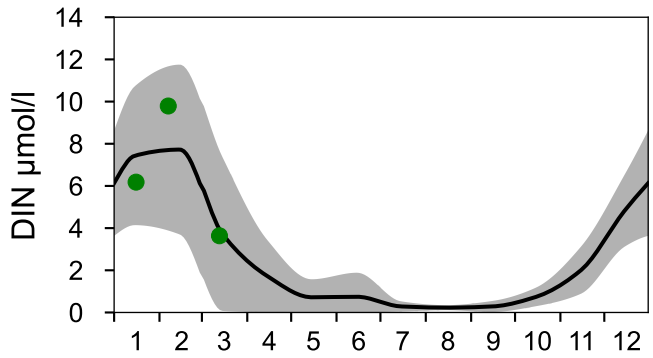
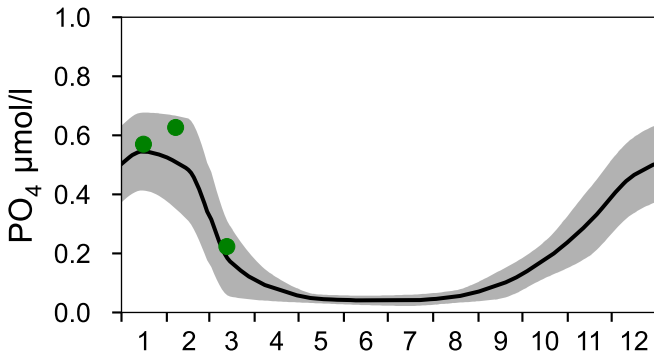
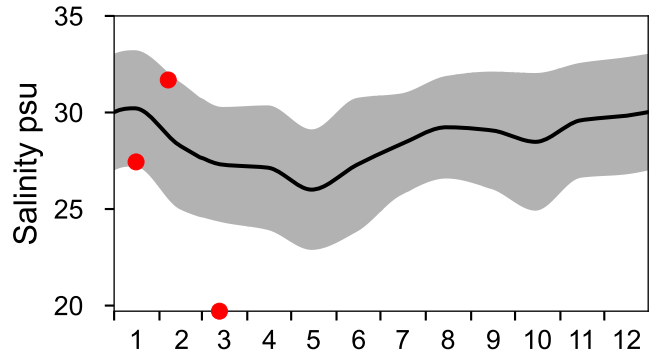
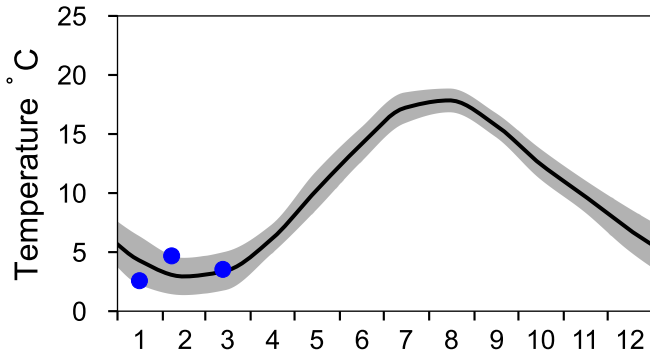
STATION Å13 SURFACE WATER (0-10 m)

Annual Cycles

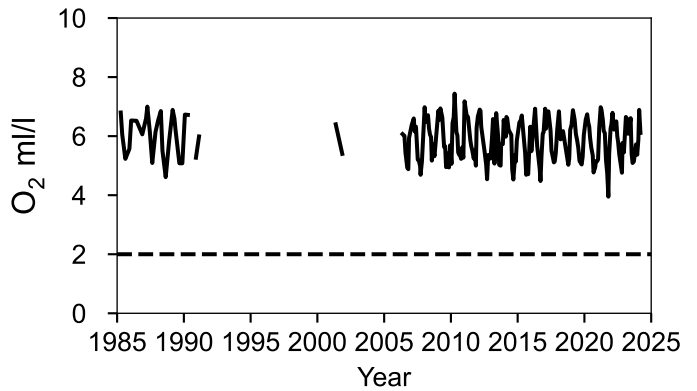
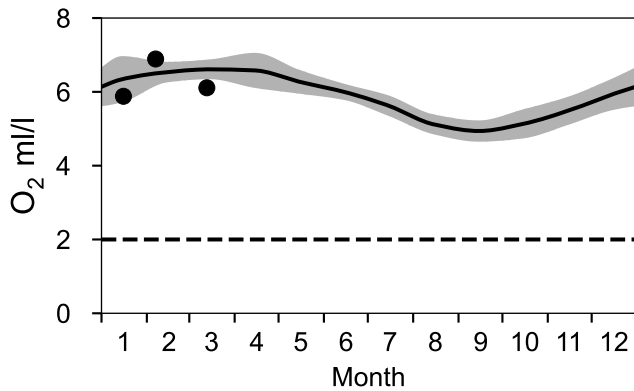
— Mean 1991-2020

■ St.Dev.

● 2024

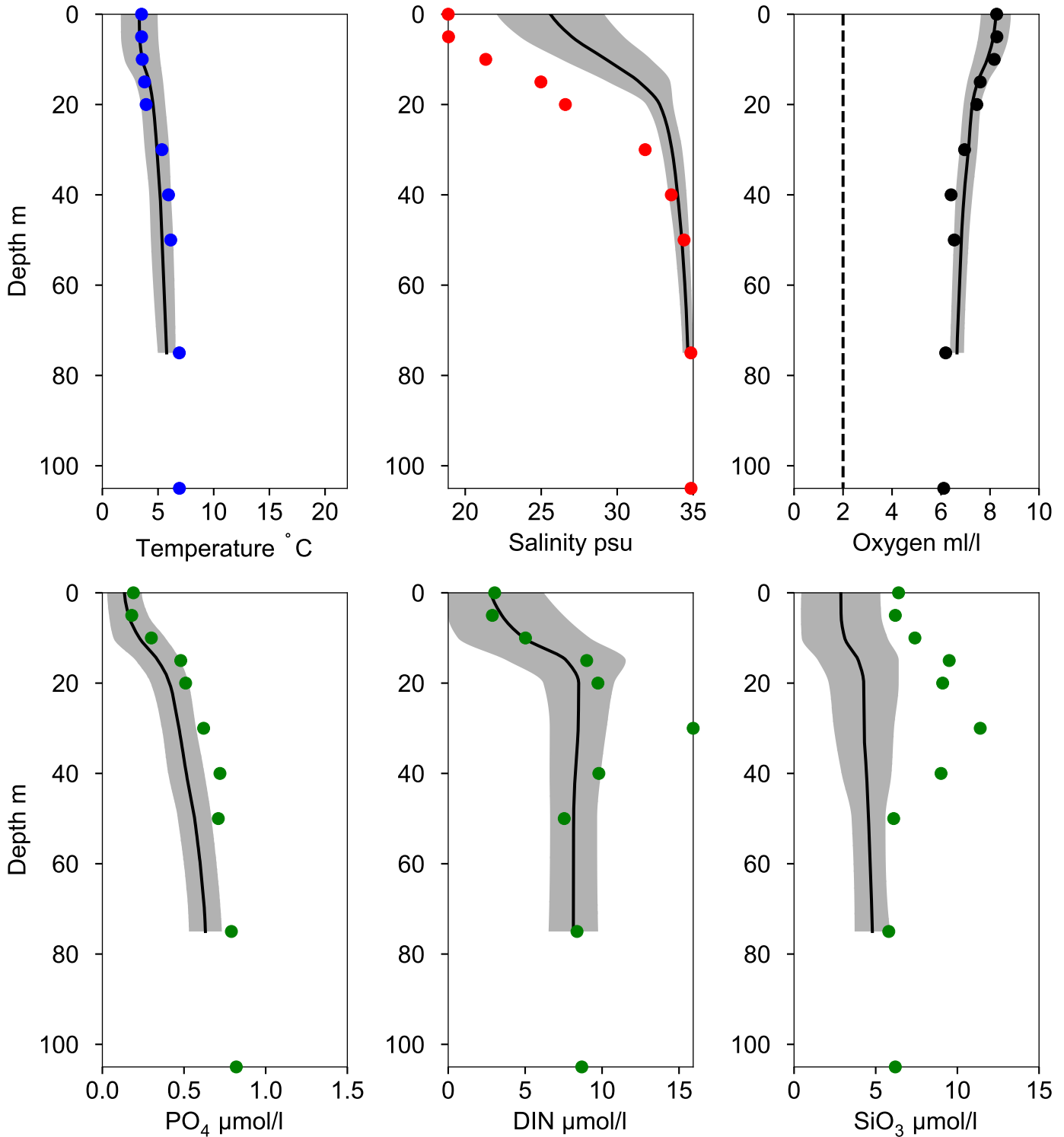


OXYGEN IN BOTTOM WATER (depth >= 82 m)



Vertical profiles A13 March

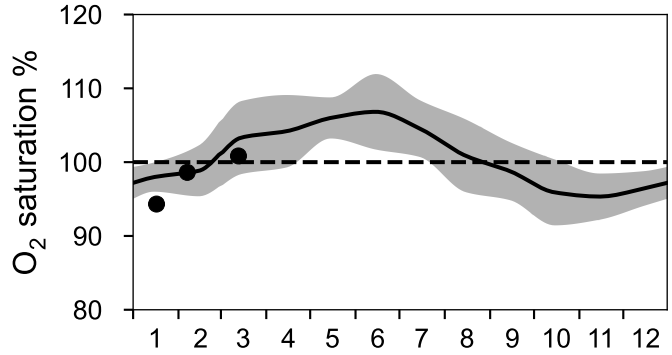
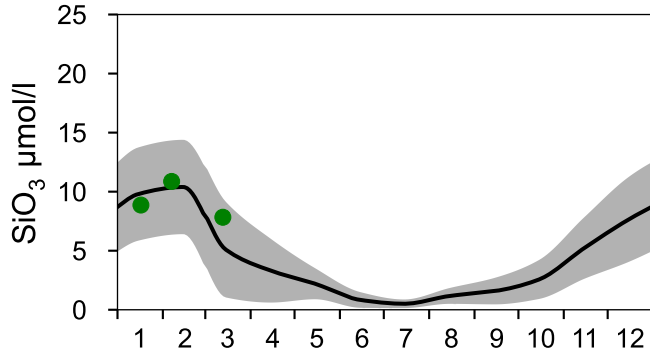
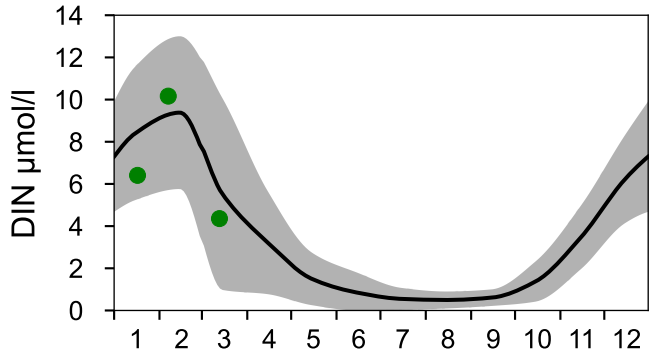
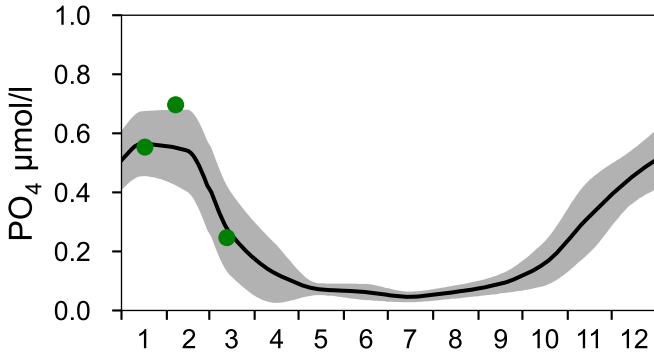
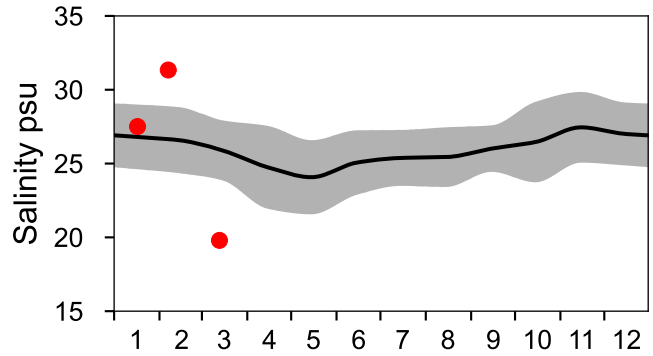
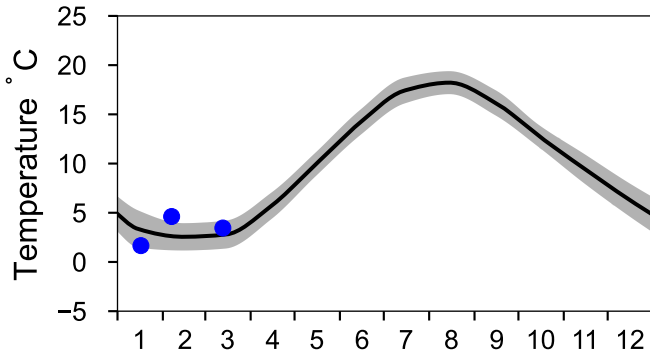
— Mean 1991-2020 ■ St.Dev. ● 2024-03-13



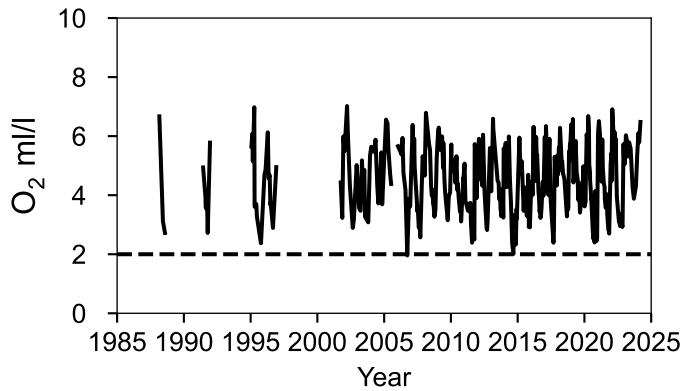
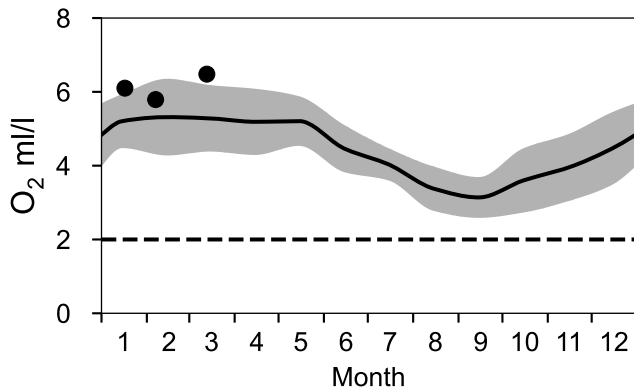
STATION SLÄGGÖ SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020 St.Dev. ● 2024



OXYGEN IN BOTTOM WATER (depth >= 64 m)



Vertical profiles SLÄGGÖ March

— Mean 1991-2020 St.Dev. ● 2024-03-13

