

## Rapport från SMHIs utsjöexpedition med R/V Svea



**Expeditionens varaktighet:**

2024-02-06 till 2024-02-13

**Uppdragsgivare:**

Sveriges Meteorologiska och Hydrologiska Institut (SMHI),  
Havs- och Vattenmyndigheten (HaV)

**Samarbetspartners:**

Sveriges Lantbruksuniversitet (SLU), Sjöfartsverket (SjöV)

## SAMMANFATTNING

Under expeditionen, som ingår i det svenska pelagiala övervakningsprogrammet, besöktes Skagerrak, Kattegatt, Öresund och Egentliga Östersjön. I Egentliga Östersjön genomfördes kartering av näringsämnen.

Temperaturen i ytvattnet var normal till något över det normala och varierade från 2–3 °C i Östersjön till 3–6 °C i Västerhavet.

I Skagerrak hade koncentrationen av lösta oorganiska näringsämnen ökat i ytvattnet och de var normala för månaden. Även i Kattegatt var det normala halter av näringsämnen men koncentrationen av DIN (löst oorganiskt kväve) hade ökat sedan januari, silikat hade minskat och fosfathalterna var ungefär de samma. I Egentliga Östersjön hade koncentrationen av näringsämnen ökat vid de flesta stationerna sedan januari. Koncentrationen av DIN var normal medan silikat var över det normala i hela Egentliga Östersjön. Koncentrationen av fosfat var normal i Arkona-, Bornholmns- och Västra Gotlandsbassängen och över det normala i Östra Gotlandsbassängen och norra Egentliga Östersjön.

Syresituationen var god vid samtliga stationer i Skagerrak, Kattegatt och Öresund, ingen syrebrist noterades.

I Arkonabassängen var syresituationen god i bottenvattnet och koncentrationen av syre hade ökat något sedan januari. Det inflöde som skedde i slutet av december 2023 kunde nu ses på sin väg genom Bornholmsbassängen, vid stationerna BY4 och Hanöbukten har syrekoncentrationen minskat sedan januari men vid BY5 är det istället en rejäl ökning av syre i bottenvattnet jämfört med januari. Vid BY5 var det nu närmast botten strax under gränsen för syrebrist (<4ml/l) men däröver var det fortfarande ett lager med akut syrebrist (<2 ml/l). I Östra Gotlandsbassängen var det syrefritt och svavelväte uppmättes från 70 m och det var akut syrebrist från 60 m. I norra Egentliga Östersjön var det syrefritt från 90 m och akut syrebrist från 80 m. I Västra Gotlandsbassängen varierade djupnivån för syrefritt och akut syrebrist från 125 respektive 90 m vid BY31 till 70 respektive 60 m vid BY38.

SMHI:s nästa ordinarie expedition med R/V Svea är planerad till 8:e – 13:e mars, med start i Kalmar och avslut i Lysekil.

## RESULTAT

Expeditionen genomfördes ombord på R/V Svea och startade i Lysekil den 6:e februari och avslutades i Västervik på morgonen den 14:e februari. Vädret under expeditionen var mulet med svaga vindar i varierande riktning i början av expeditionen, för att öka till kulingstyrka från ost under ett par dygn i södra och östra Östersjön. Lufttemperaturen låg mellan -2 och +2 °C hela veckan.

Nästan alla planerade stationer provtogs, 44 av de planerade 46 stationerna. Fyra extra stationer med CTD-mätning gjordes runt Bornholm för att registrera inflödet som skedde i december 2023. Den årliga vinterkarteringen av näringsämnen i Egentliga Östersjön genomfördes.

Sveas instrument för att mäta profiler under gång, MVP, kördes vid ett par transekter i södra Östersjön, samt en station i Västra Gotlandsbassängen. Även Ferryboxsystemet och ADCPn kördes kontinuerligt under hela expeditionen.

Det MVP-system som tappades i Kattegatt i december bärgades under den här expeditionen.

Rapporten är baserad på data som genomgått en första kvalitetskontroll och som är jämförd mot månadsmedelvärde för perioden 1991 – 2020. När ytterligare kvalitetsgranskning genomförts kan vissa värden komma att ändras. Värden som anges i rapporten har avrundats till närmaste tiondel och kan därför skilja sig från publicerade värden. Data publiceras så fort som möjligt på datavärdens hemsida, normalt inom ca en vecka efter avslutad expedition. Vissa analyser utförs efter expeditionen och publiceras därför senare.

Data kan laddas ner här:

<https://sharkweb.smhi.se/hamta-data/>

## Skagerrak

Temperaturen i ytvattnet var normal till något över det normala och varierade från 4 till 6 °C. Salthalten i ytvattnet varierade mellan 31–33 psu och var normal längs Å-snittet och något över det normala närmare kusten vid Släggö och även vid P2. Vid stationerna Å17 till Å15 var det välblandat ner till 30–40 meter där termoklin och haloklin sammanföll. Närmare kusten låg denna skiktning närmare ytan, kring 5–10 meter, och vid P2 var det ett språngskikt vid 5 meter och sedan välblandat ner till 20 meter. Vid Å17 längst ut i Å-snittet ökade temperaturen ner till 100 meter, därunder var det ett lager med kallare vatten som sedan blev varmare igen vid 200 meter.

Stationerna Å17 och Å15 provtogs inte i januari men vid övriga stationer i Skagerrak hade koncentrationen av lösta oorganiska näringsämnen i ytvattnet ökat nu i februari jämfört med förra mättillfället. DIN (löst oorganiskt kväve) varierade mellan 6,2–15,2 µmol/l, fosfat 0,6–0,7 µmol/l och silikat 4,6–12,2 µmol/l. De lägsta halterna uppmättes i yttre delarna av Å-snittet och de högre närmare kusten. Halterna var normala för månaden förutom vid stationen P2 där de var över det normala.

Syresituationen var god vid samtliga stationer i Skagerrak, normala värden för årstiden uppmättes med koncentrationer mellan 5,8–6,9 ml/l.

Klorofyllfluorescens är ett mått på planktonaktivitet som mäts med en sensor monterad på CTDn<sup>1</sup>. Inga kraftiga klorofyllfluorescenstoppar uppmättes, men vid samtliga stationer noterades viss aktivitet i det välblandade ytlagret.

## Kattegatt och Öresund

Temperaturen i ytvattnet hade ökat något sedan januari och var kring 3–4 °C. Vid Fladen och Anholt E var det något över det normala för årstiden. Salthalten i ytvattnet var över det normala och ökade från 26,6 psu vid Anholt E till 30,2 psu vid Fladen. I Öresund var salthalten normal och 16,5 psu. Termoklin och haloklin sammanföll kring 20–30 meter. Vid den kustnära stationen N14 Falkenberg var det även en grundare skiktning vid 5 meter.

Koncentrationen av oorganiska näringsämnen i ytvattnet var inom det normala i Kattegatt. I Öresund var DIN och silikat över det normala. Halterna av DIN hade ökat sedan januari och var mellan 6,6 och 8,3 µmol/l. Halterna av silikat hade minskat (8,7–15,1 µmol/l) och fosfathalterna var ungefär de samma (0,6 µmol/l).

Syrehalterna i Kattegatts bottenvatten var normala för årstiden, kring 6 ml/l vid samtliga stationer.

Klorofyllfluorescensen var högre i ytvattnet i Kattegatt jämfört med Skagerrak, högst var den vid N14 Falkenberg och Anholt E. Vid Anholt E noterades även en klorofyllfluorescenstopp kring 12 meter.

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<sup>1</sup> CTD är ett profilerande mätinstrument och står för Conductivity, Temperature, Depth. SMHI:s CTD är även bestyckad med sensorer som mäter syre och fluorescens bland annat.

## Egentliga Östersjön

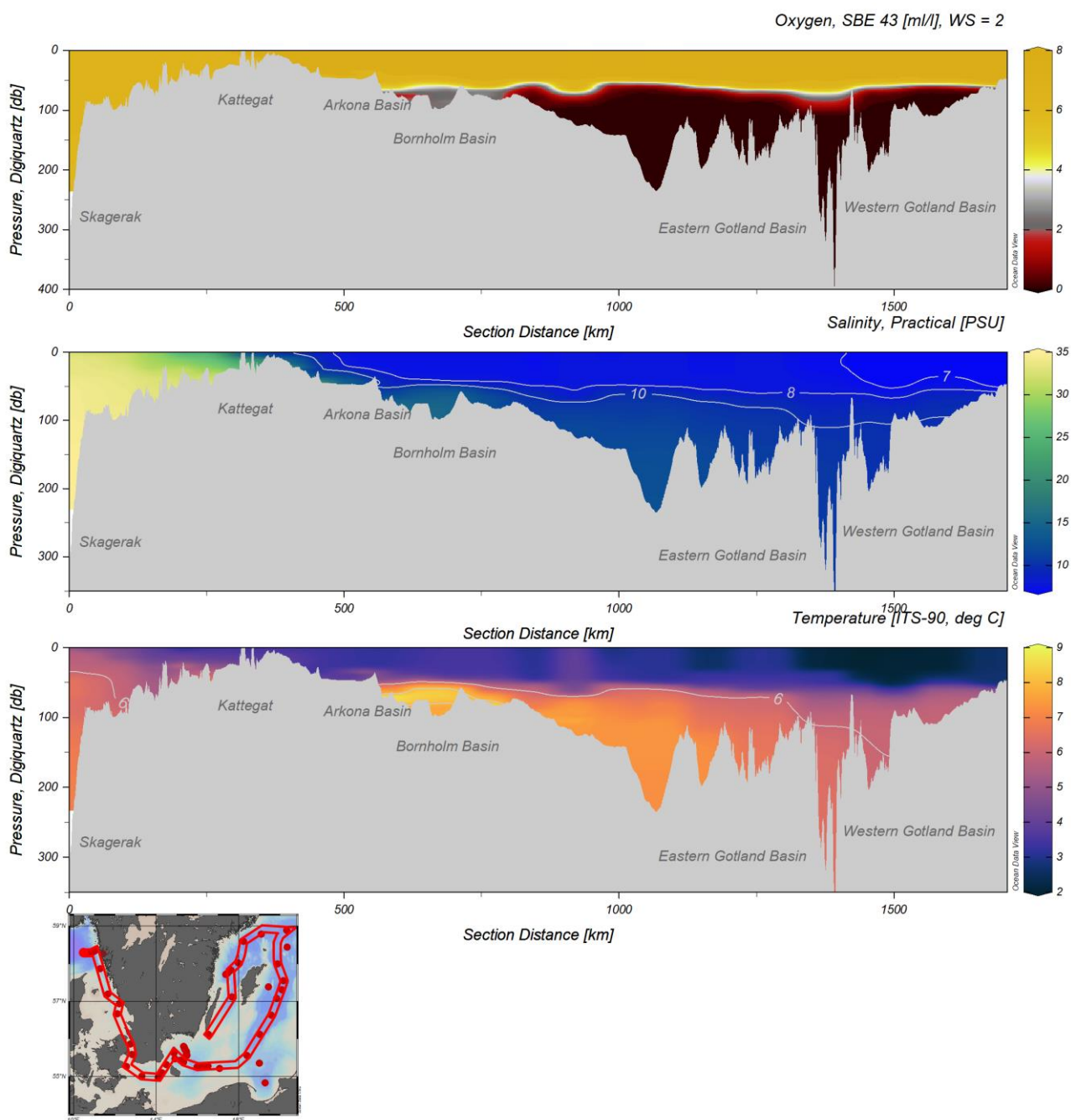
Temperaturen i ytlagret var normal för månaden vid samtliga stationer i Egentliga Östersjön och varierade mellan 2 och 3,5 °C. Kallast var det i Västra Gotlandsbassängen. Salthalten i ytlagret varierade från som lägst 6,8 psu i Västra Gotlandsbassängen till som högst 8,2 psu i Arkonabassängen. Salthalten var över det normala i Östra Gotlandsbassängen och i norra Egentliga Östersjön. I övriga delar varierade den från under normalt till över normalt vid olika stationer. I Arkonabassängen var vattnet välblandat ner till 25 m där termoklin och haloklin sammanföll. I Bornholmsbassängen sträckte sig det välblandade ytlagret ner till 40–50 m, i Östra- och Västra Gotlandsbassängen ner till 50–60 m.

Vid de flesta stationerna hade koncentrationen av näringsämnen ökat i ytvattnet sedan januari. Koncentrationen av löst oorganiskt kväve var normal i ytlagret och varierade kring 2,9–4,9 µmol/l. Koncentrationen av fosfat var normal i Arkona-, Bornholms- och Västra Gotlandsbassängen och över det normala i Östra Gotlandsbassängen och norra Egentliga Östersjön. Fosfathalterna varierade kring 0,66–0,86 µmol/l. Koncentrationen av silikat var över det normala i hela Egentliga Östersjön, 16–20 µmol/l.

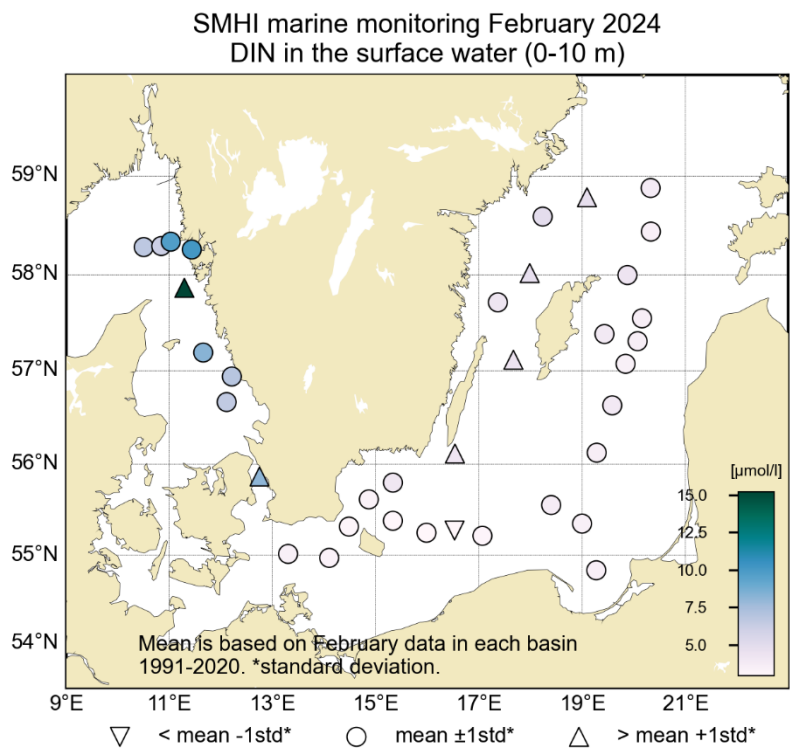
I Arkonabassängen var syresituationen god i bottenvattnet och koncentrationen av syre hade ökat något sedan januari. Det inflöde som skedde i slutet av december 2023 kunde nu ses på sin väg genom Bornholmsbassängen, vid stationerna BY4 och Hanöbukten har syrekoncentrationen minskat sedan januari men vid BY5 är det istället en rejäl ökning av syre i bottenvattnet jämfört med januari. Vid BY5 var det nu närmast botten strax under gränsen för syrebrist (<4ml/l) men däröver var det fortfarande ett lager med akut syrebrist (<2 ml/l). I Östra Gotlandsbassängen var det syrefritt och svavelväte uppmättes från 70 m och det var akut syrebrist från 60 m. I norra Egentliga Östersjön var det syrefritt från 90 m och akut syrebrist från 80 m. I Västra Gotlandsbassängen varierade djupnivån för syrefritt och akut syrebrist från 125 respektive 90 m vid BY31 till 70 respektive 60 m vid BY38.

Fluorescensmätningar från CTDn visade på planktonaktivitet i ytlagret framförallt i Arkonabassängen och Öresund.

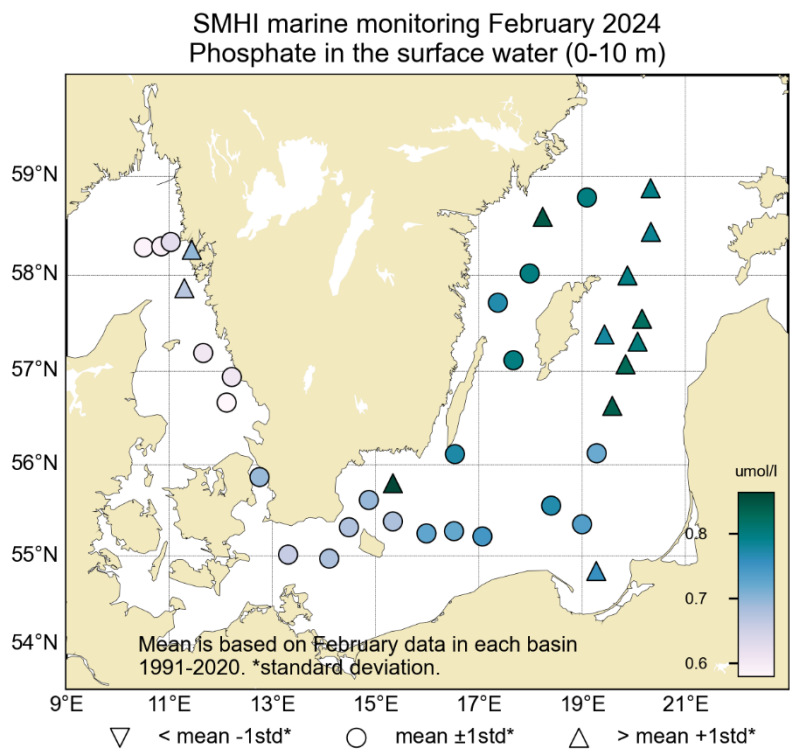
Mer information om algsituationen finns att läsa i Algaware-rapporten för februari:  
<https://www.smhi.se/publikationer/publikationer/algrapporter>.



Figur 1. Snitt som visar syrekonzentration, salthalt och temperatur från mätningar med CTD och MVP, från Skagerrak till Östra Gotlandsbassängen och vidare in i Västra Gotlandsbassängen.

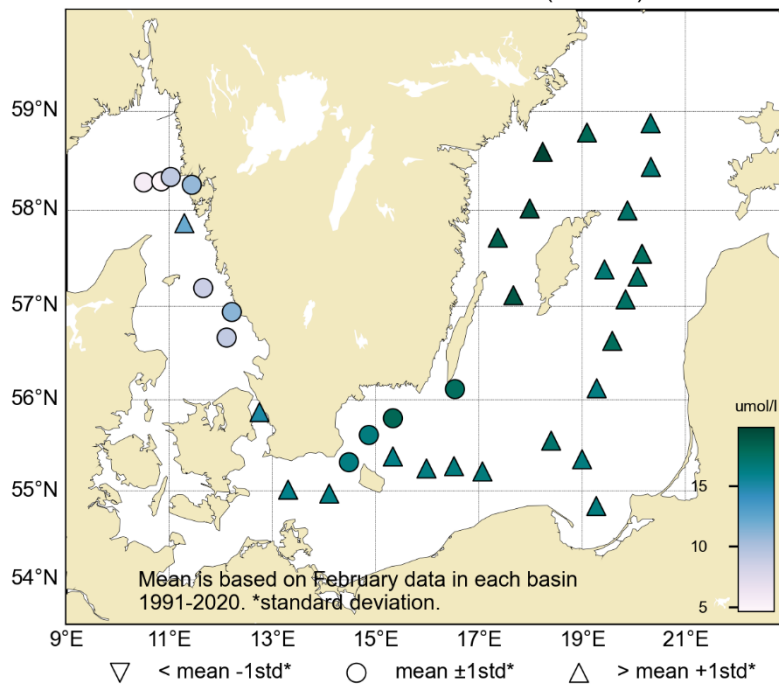


Figur 2. Koncentrationen ( $\mu\text{mol/l}$ ) av oorganiskt kväve i ytvattnet (0-10m).



Figur 3. Koncentrationen ( $\mu\text{mol/l}$ ) av fosfat i ytvattnet (0-10m).

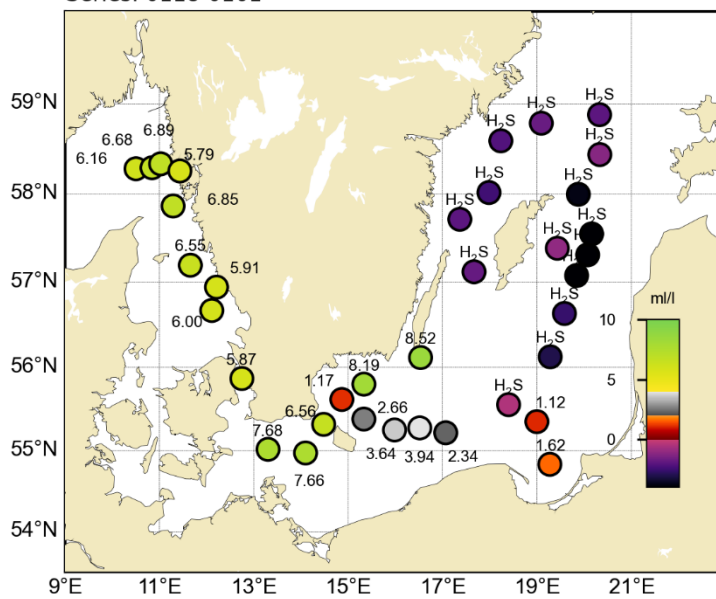
SMHI marine monitoring February 2024  
Silicate in the surface water (0-10 m)



Figur 4. Koncentrationen ( $\mu\text{mol/l}$ ) av silikat i ytvattnet (0-10m).

**Bottom water oxygen concentration (ml/l)**

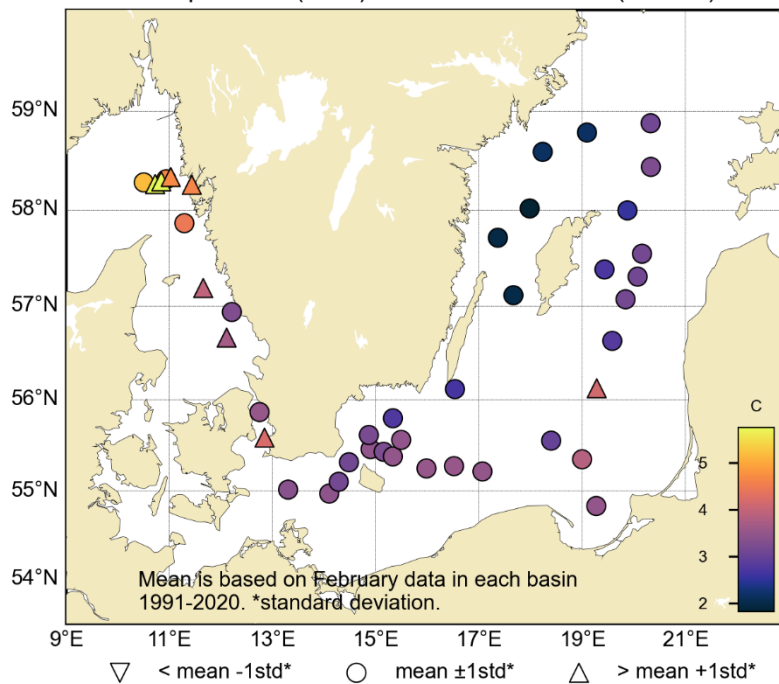
Ship: R/V Svea  
Date: 20240206-20240213  
Series: 0118-0161



Figur 5. Syrekoncentrationen (ml/l) i bottenvattnet.

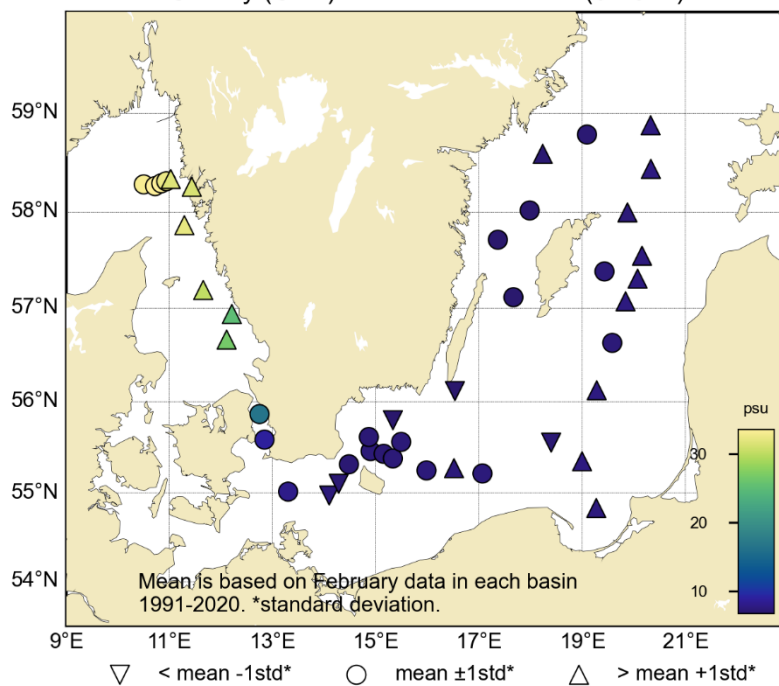


SMHI marine monitoring February 2024  
Temperature (CTD) in the surface water (0-10 m)



Figur 6. Temperaturen i ytvattnet (0-10m).

SMHI marine monitoring February 2024  
Salinity (CTD) in the surface water (0-10 m)



Figur 7. Salthalten i ytvattnet (0-10m).

## DELTAGARE

Namn	Roll	Från
Sara Johansson	Expeditionsledare, Marin kemist	SMHI
Ann-Turi Skjevik	Marinbiolog	SMHI
Sari Sipilä	Kemist	SMHI
Daniel Bergman Sjöstrand	Marin tekniker	SMHI
Monica Linder	Kemist	SMHI

## BILAGOR

- Färdkarta
- Tabell över stationer, analyserade parametrar och antal provtagningsdjup
- Figurer över månadsmedelvärden
- Vertikalprofiler

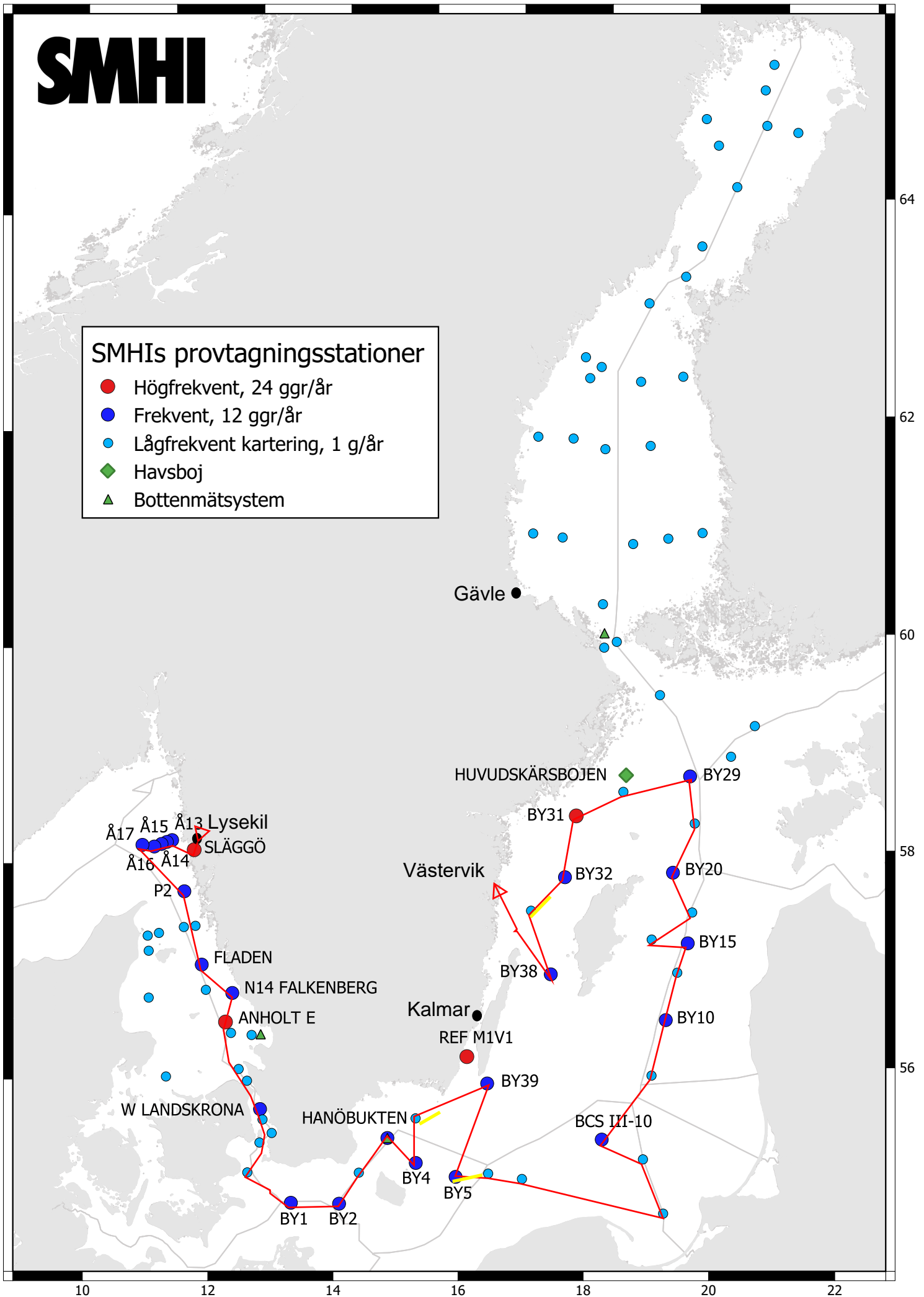
**SMHI**



Havs  
och Vatten  
myndigheten

## SMHIs provtagningsstationer

- Högfrekvent, 24 ggr/år
- Frekvent, 12 ggr/år
- Lågfrekvent kartering, 1 g/år
- ◆ Havsboj
- ▲ Bottenmätsystem





Date: 2024-02-16

Time: 13:31

Ship: 77SE

Year: 2024

Ser no	Cru no	Stat code	Proj	Stat name	Lat	Lon	Start date yyyymmdd	Start time hhmm	Bottom depth m	Secchi depth m	Wind dir vel	Air temp C	Air pres hPa	WCWI	CZPP	No de	No btl	T	T	S	P	D	D	H	P	N	N	N	A	N	A	S	H	C	C		
0153	04	BPEX25	BAS...	BY19	5733.03	02009.66	20240212	0500	161		07 12	1.0	1003	9990	----	15	15	-	x	-	x	-	x	x	x	x	x	x	x	x	x	x	x	-	x	-	x
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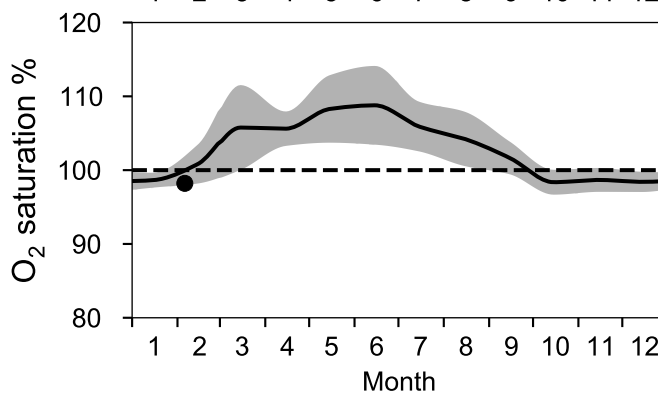
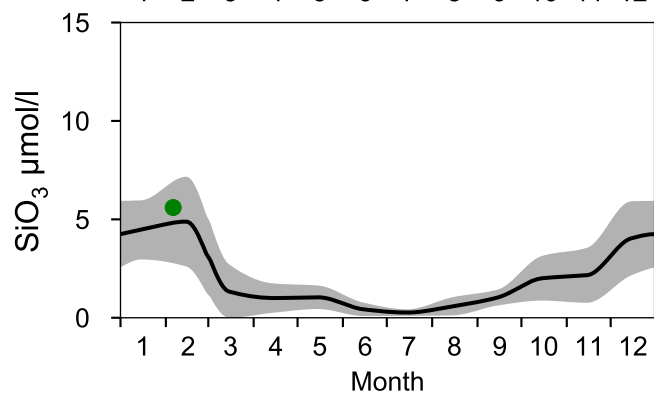
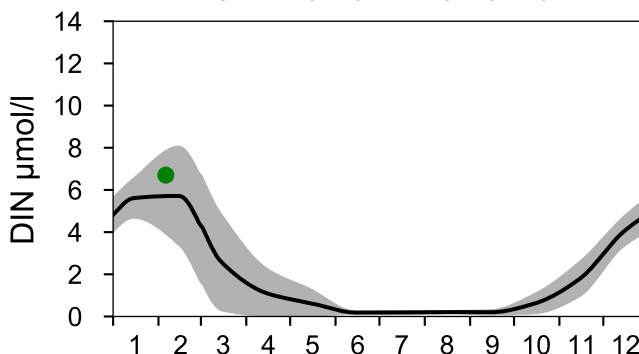
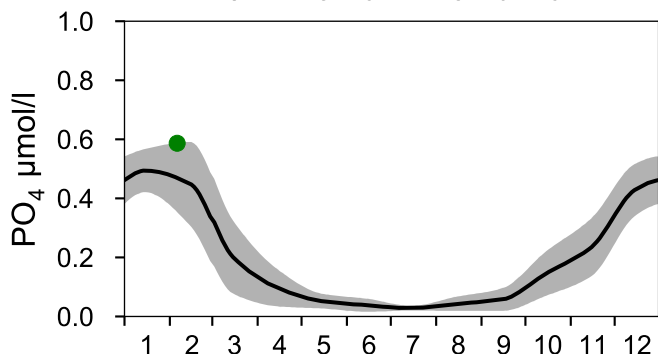
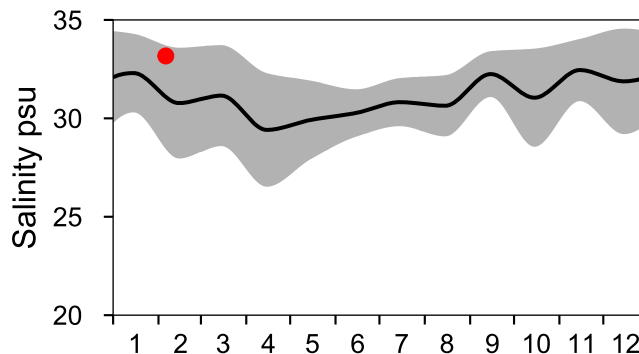
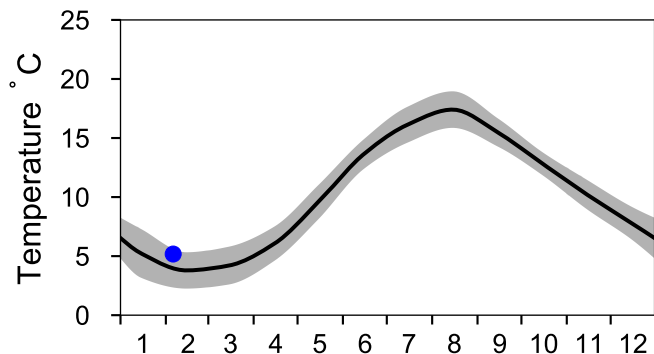
# STATION Å17 SURFACE WATER (0-10 m)

Annual Cycles

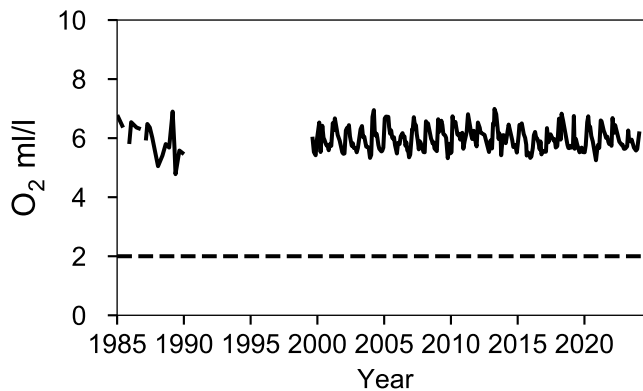
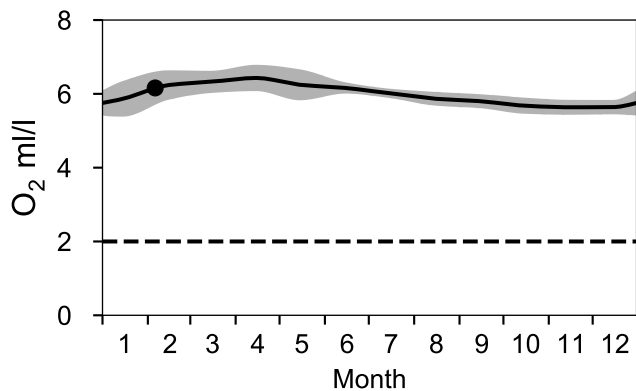
— Mean 1991-2020

■ St.Dev.

● 2024

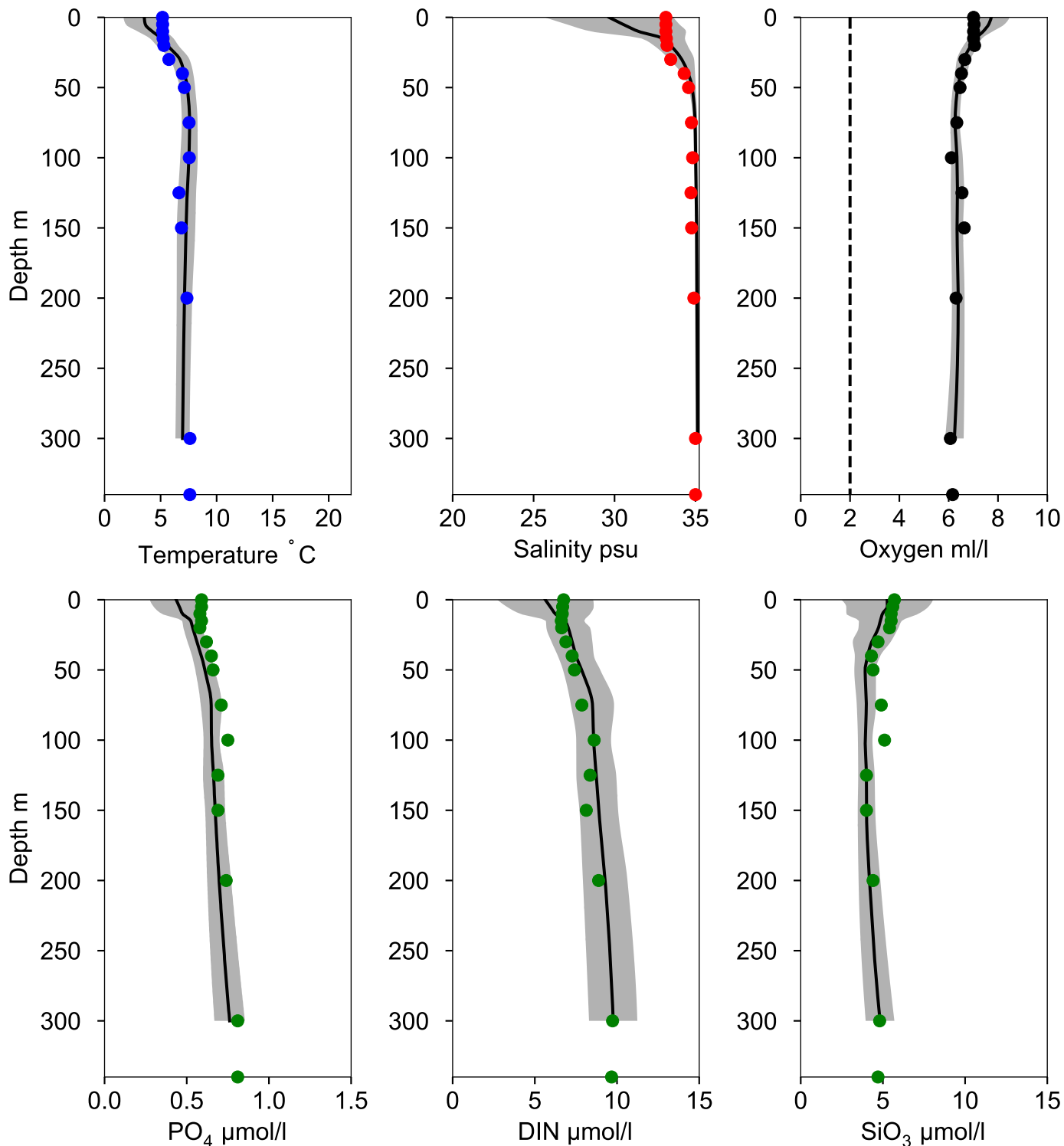


## OXYGEN IN BOTTOM WATER (depth >= 300 m)



# Vertical profiles A17 February

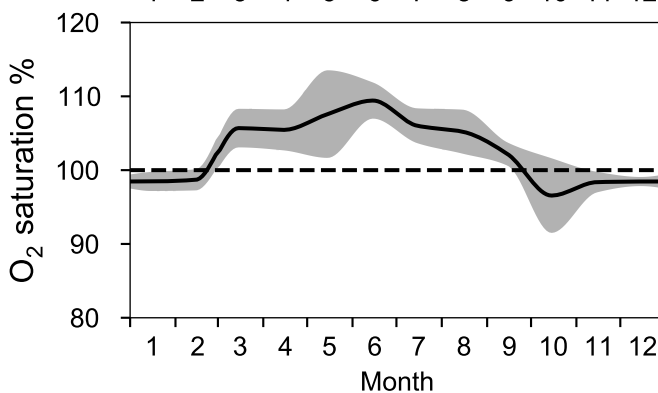
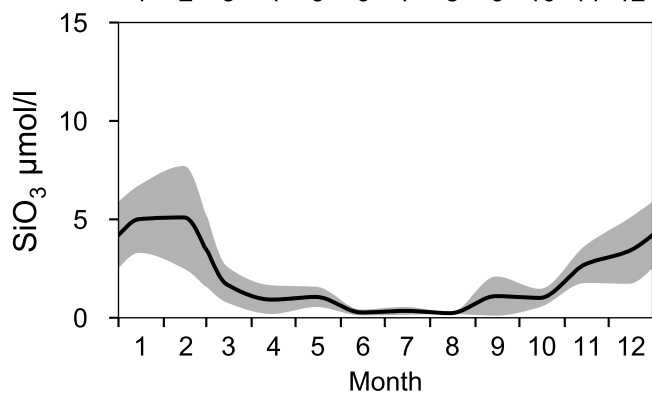
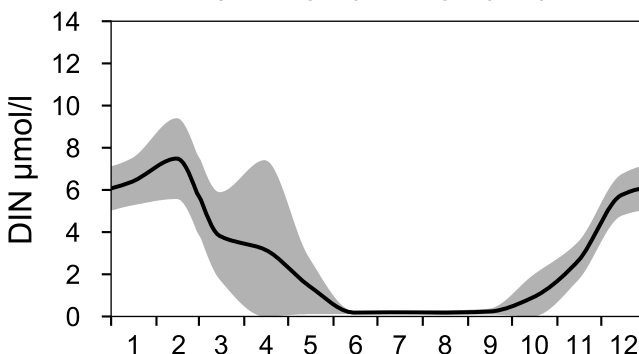
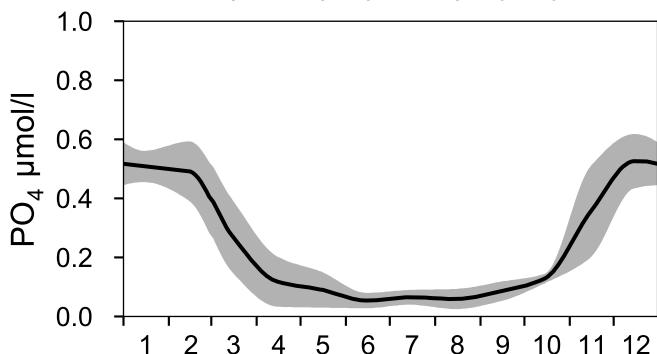
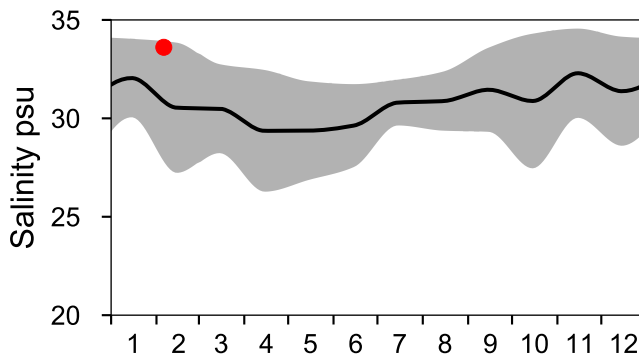
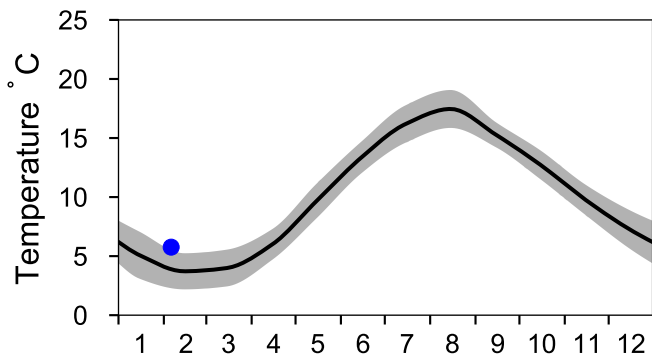
— Mean 1991-2020    ■ St.Dev.    ● 2024-02-06



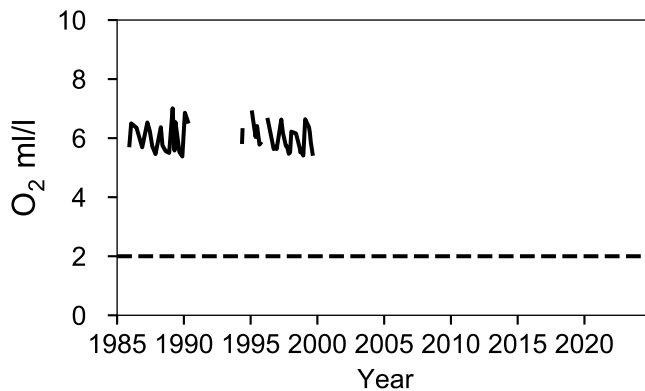
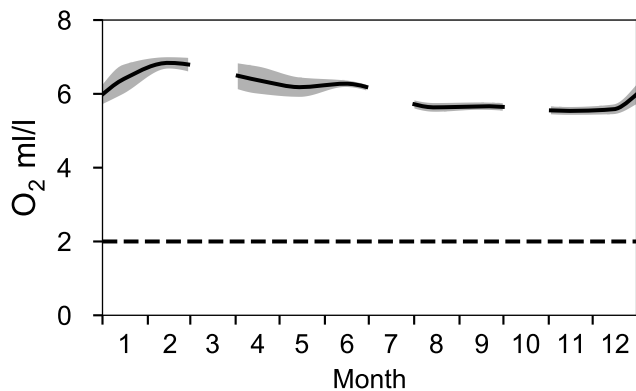
# STATION Å16 SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020    St.Dev.    ● 2024



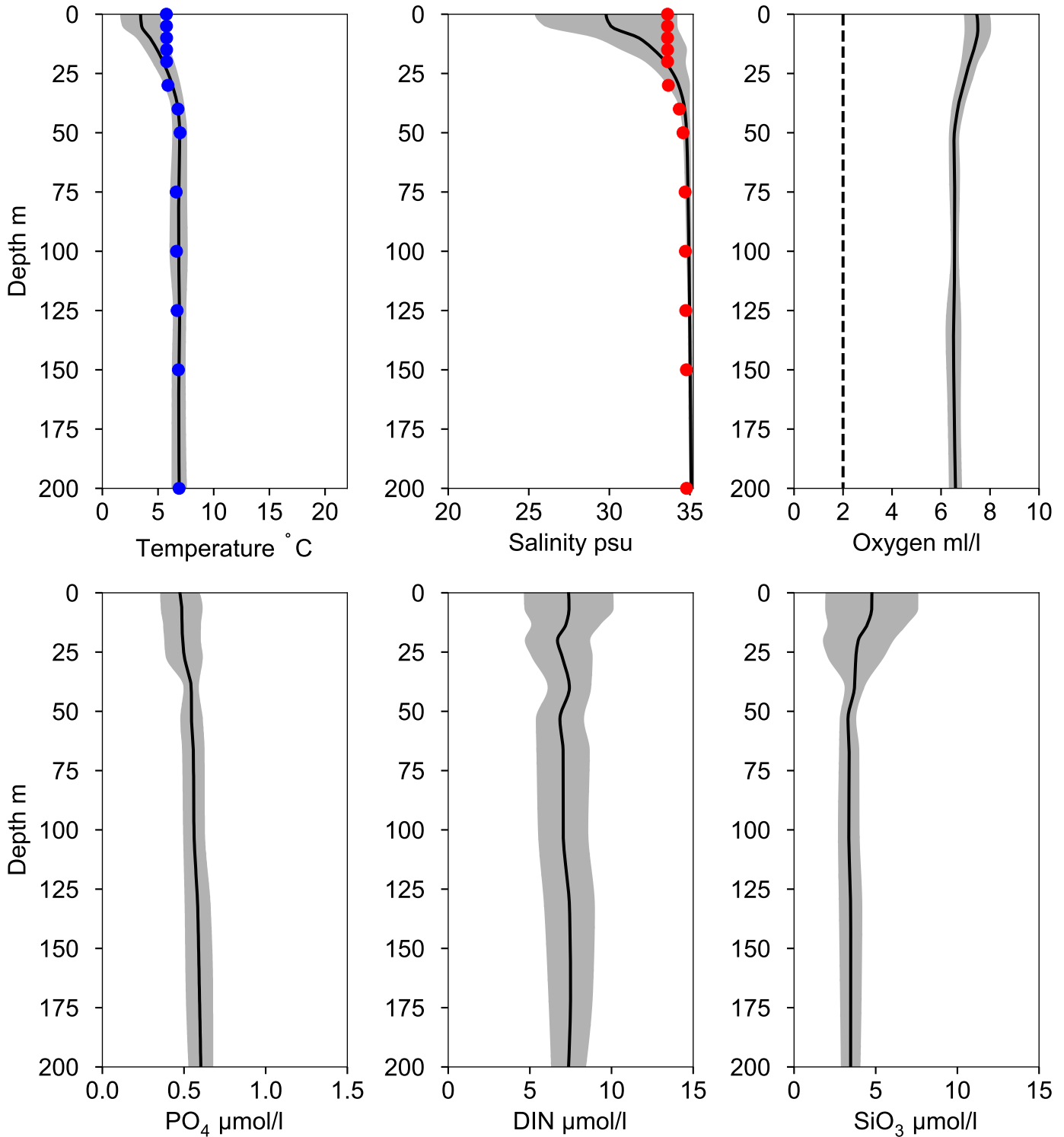
## OXYGEN IN BOTTOM WATER (depth >= 193 m)





# Vertical profiles A16 February

— Mean 1991-2020    St.Dev.    ● 2024-02-06



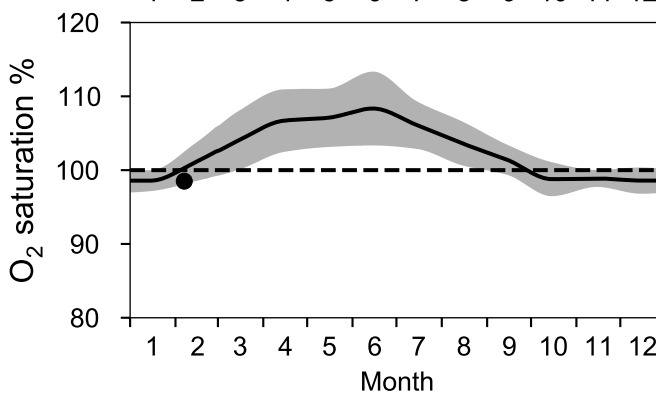
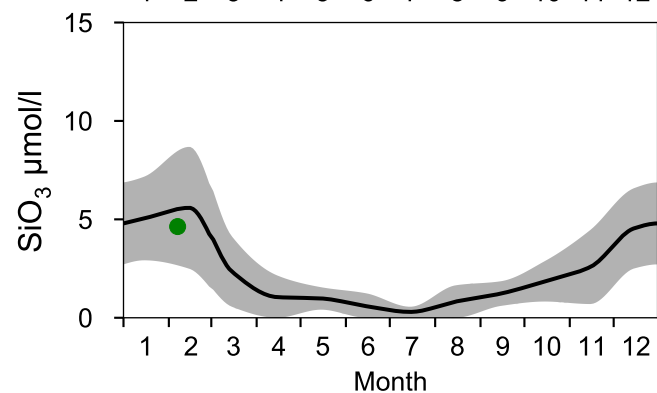
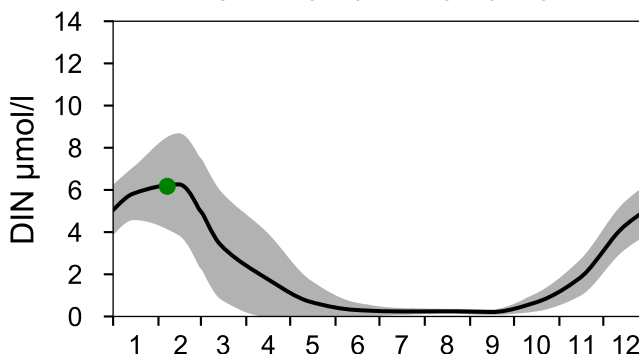
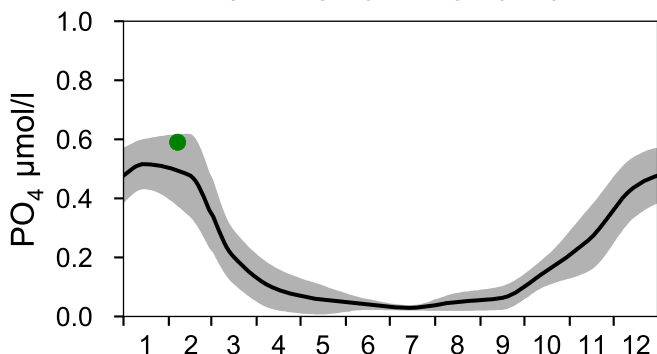
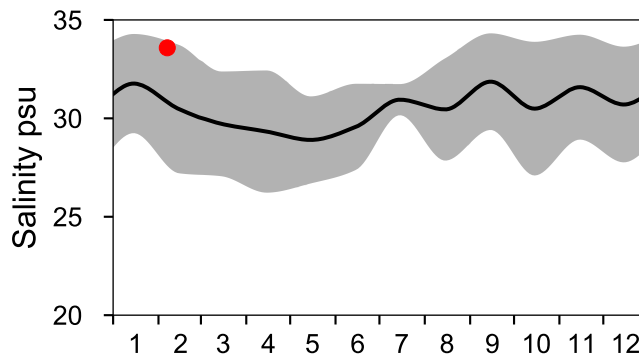
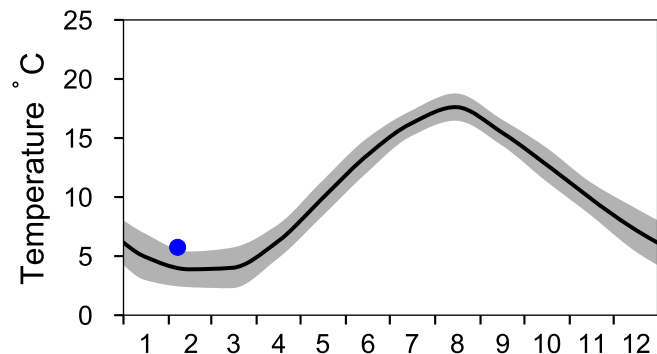
# STATION Å15 SURFACE WATER (0-10 m)

Annual Cycles

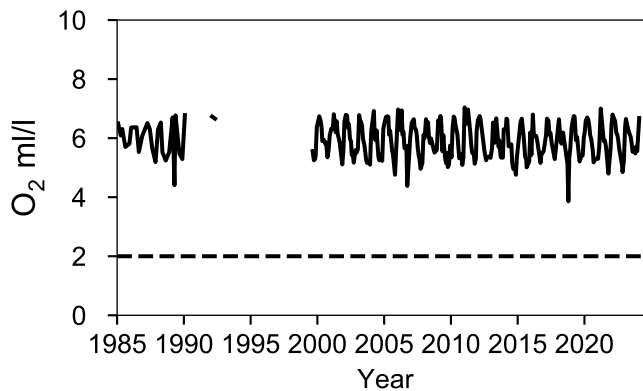
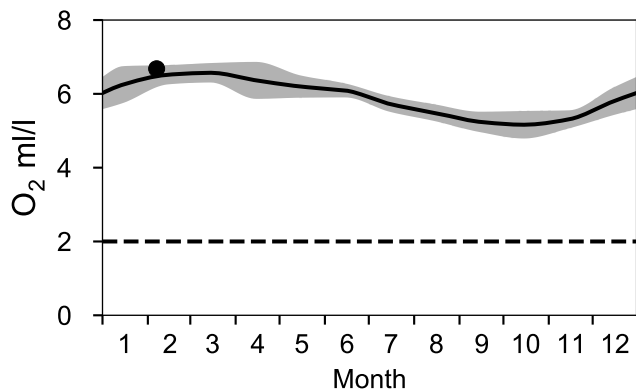
— Mean 1991-2020

■ St.Dev.

● 2024

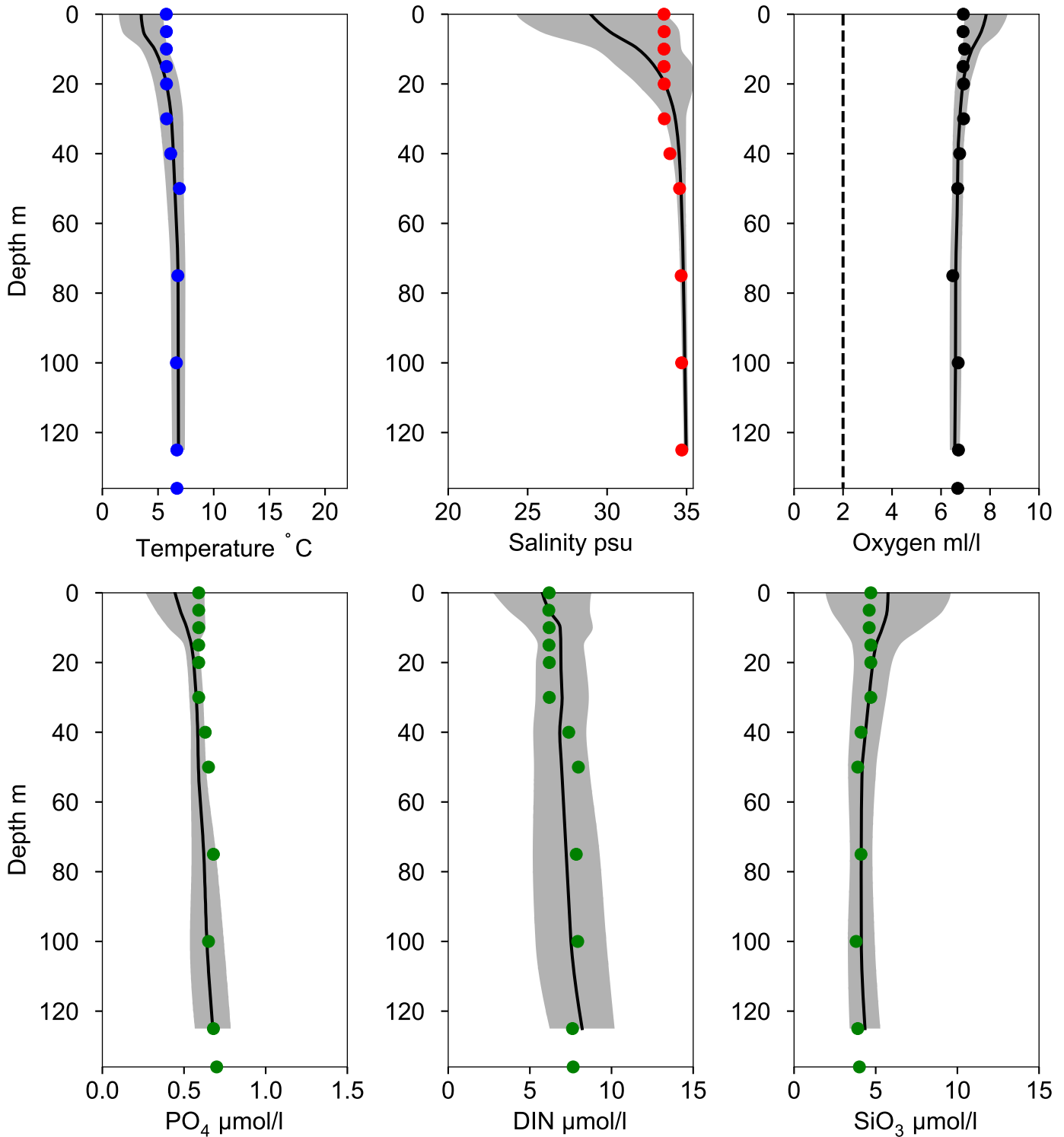


## OXYGEN IN BOTTOM WATER (depth >= 125 m)



# Vertical profiles A15 February

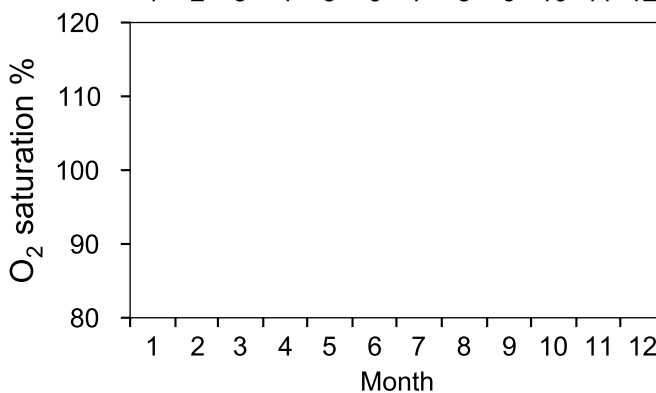
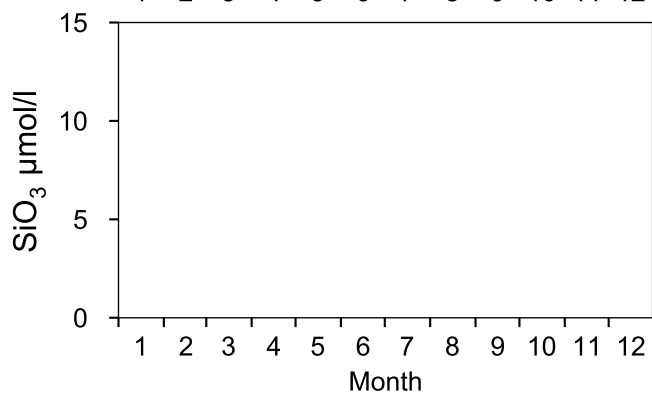
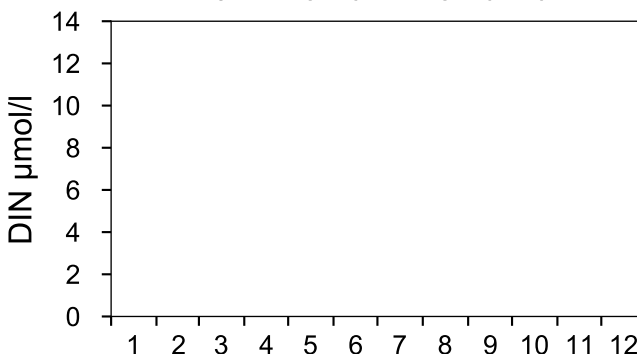
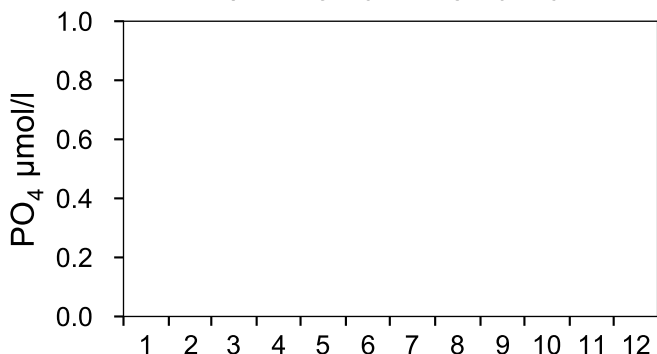
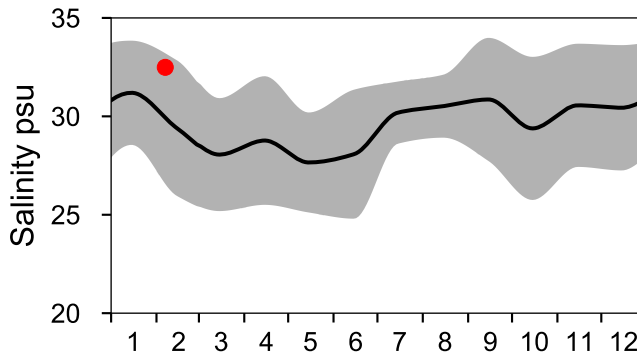
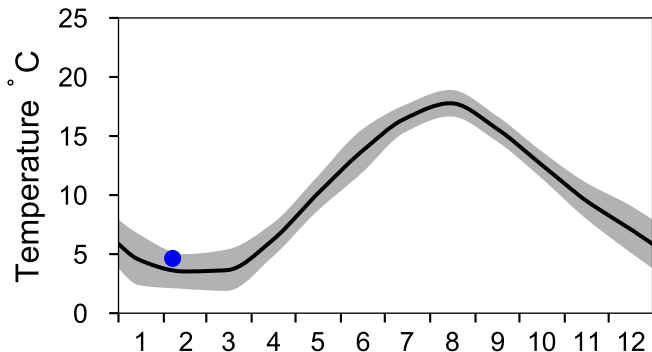
— Mean 1991-2020    ■ St.Dev.    ● 2024-02-07



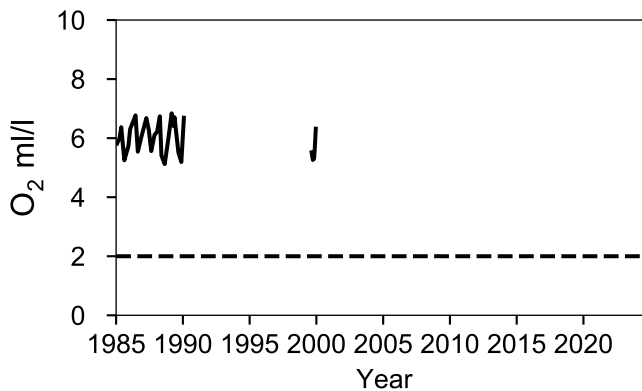
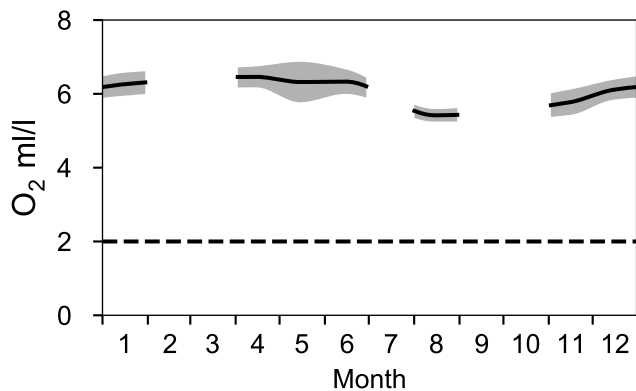
# STATION Å14 SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020    St.Dev.    ● 2024

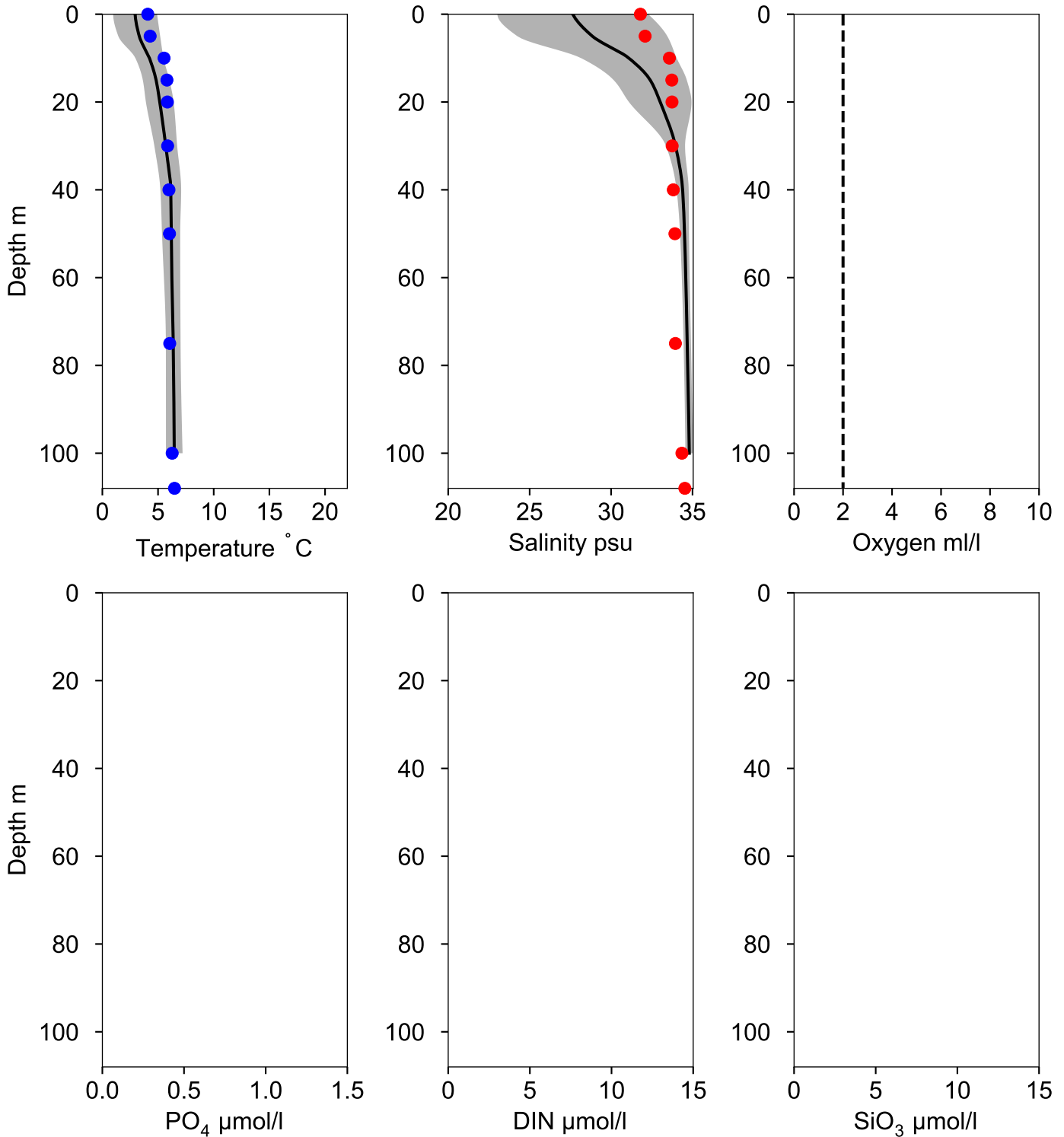


## OXYGEN IN BOTTOM WATER (depth >= 100 m)



# Vertical profiles A14 February

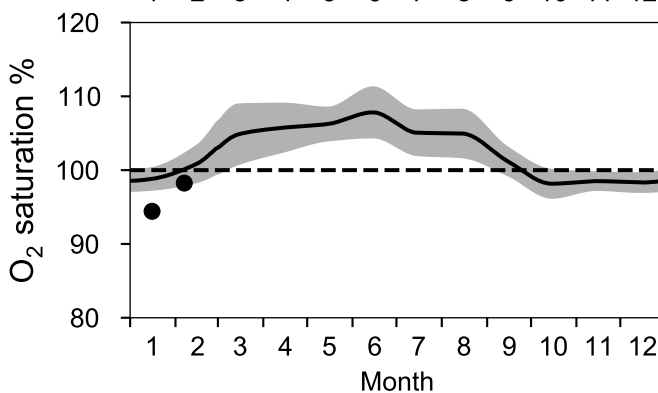
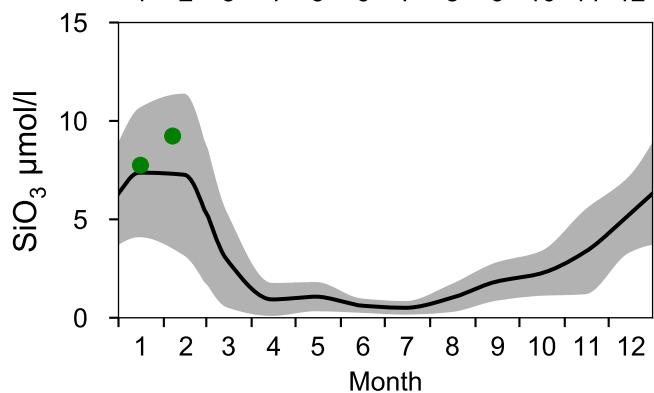
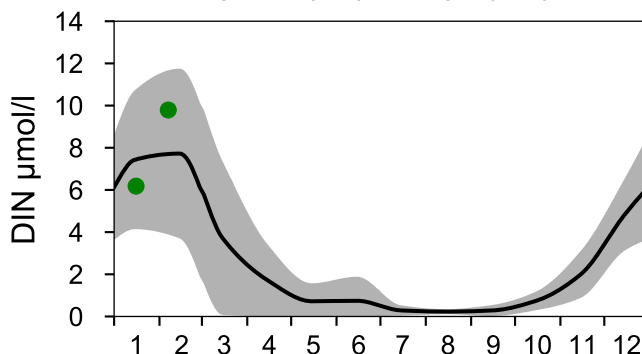
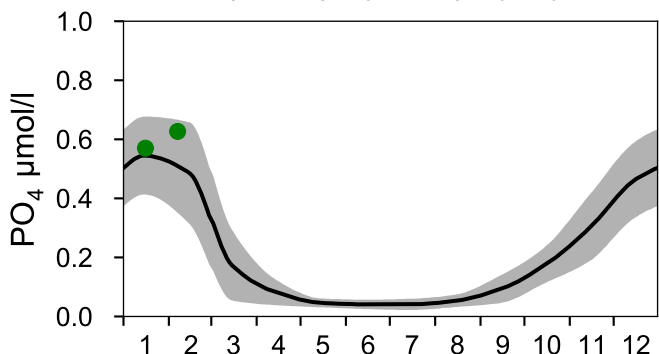
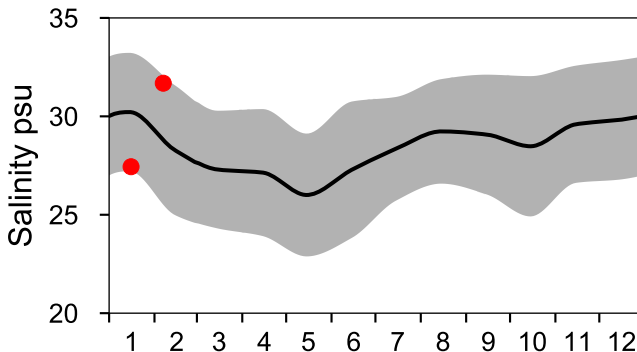
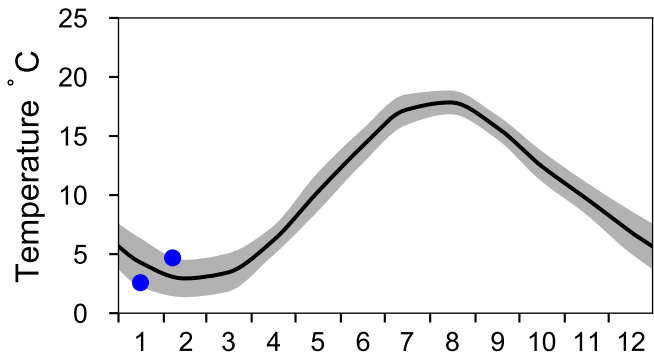
— Mean 1991-2020    ■ St.Dev.    ● 2024-02-07



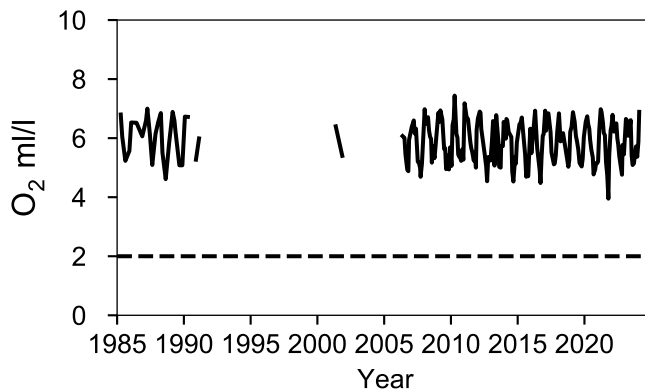
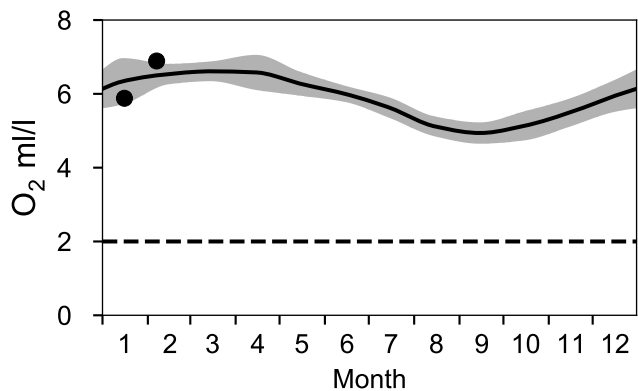
# STATION Å13 SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020    St.Dev.    ● 2024

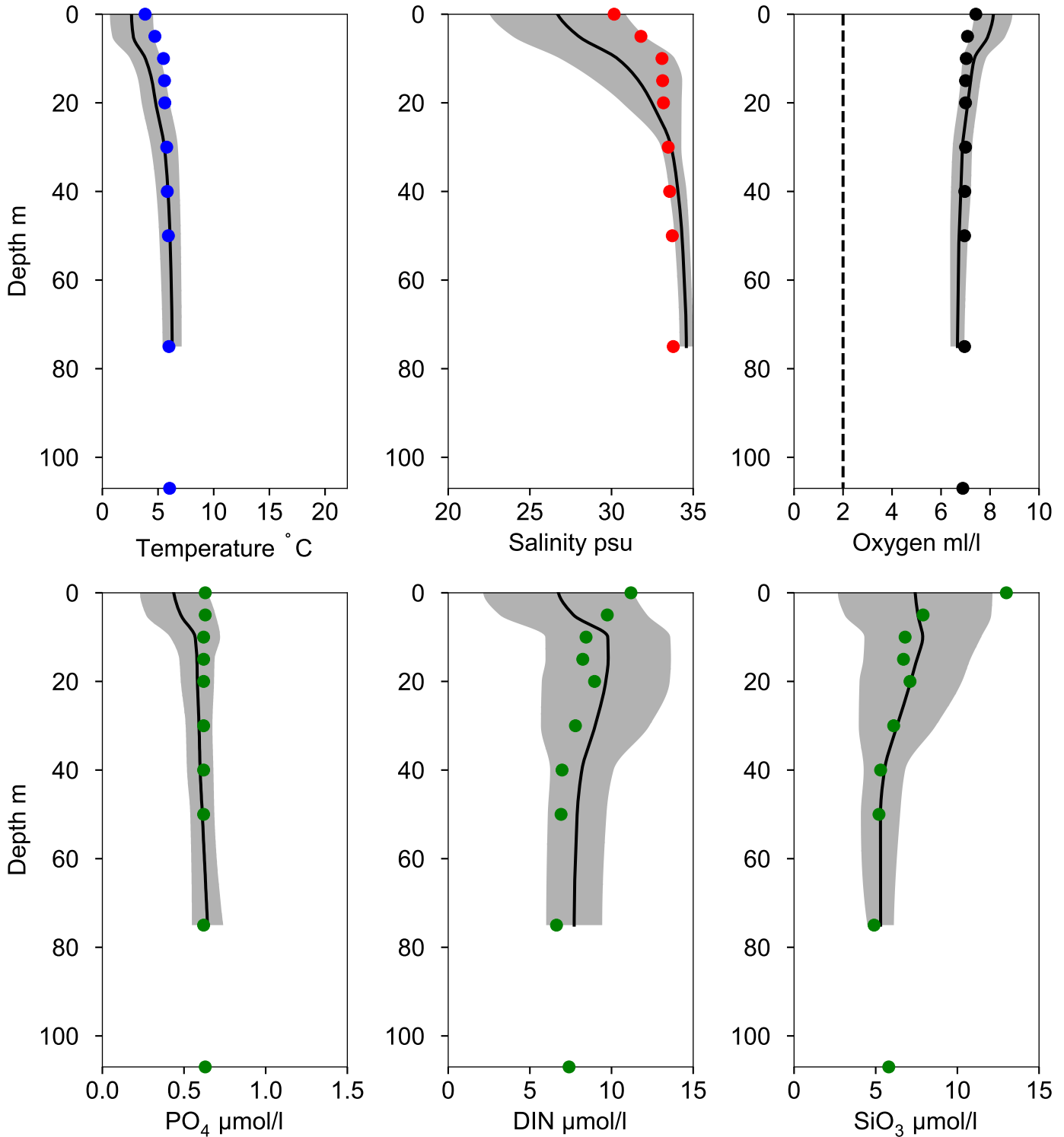


## OXYGEN IN BOTTOM WATER (depth >= 82 m)



# Vertical profiles Å13 February

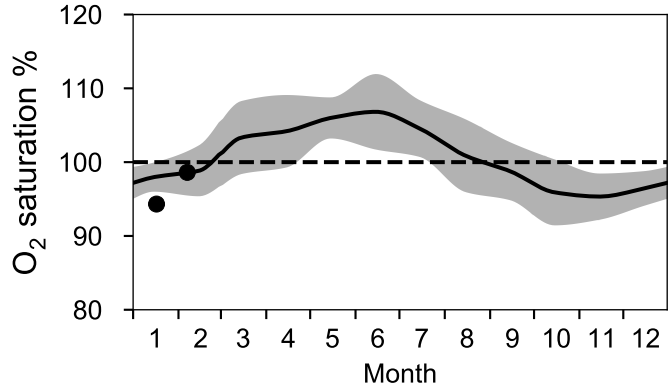
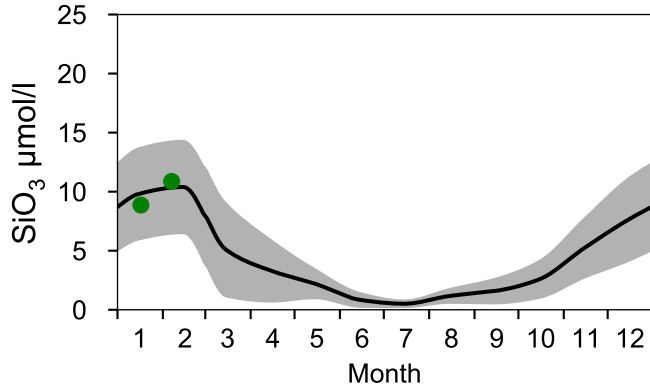
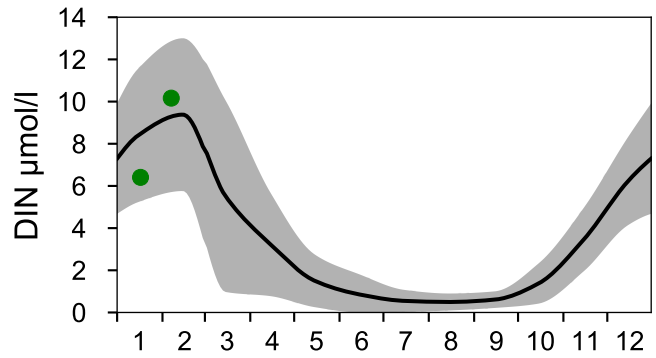
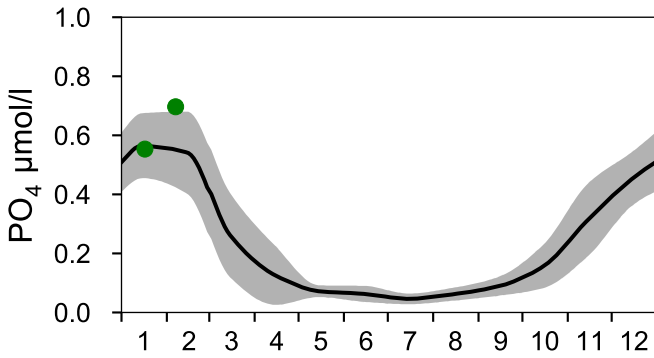
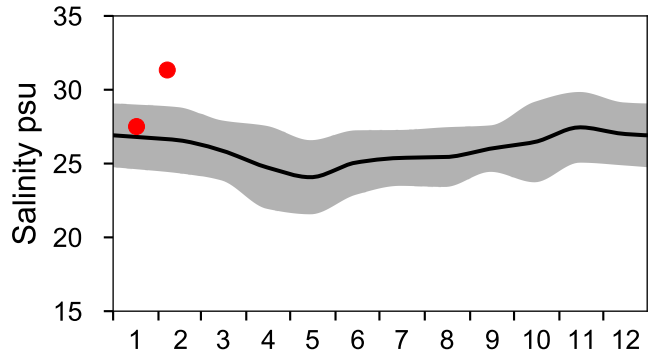
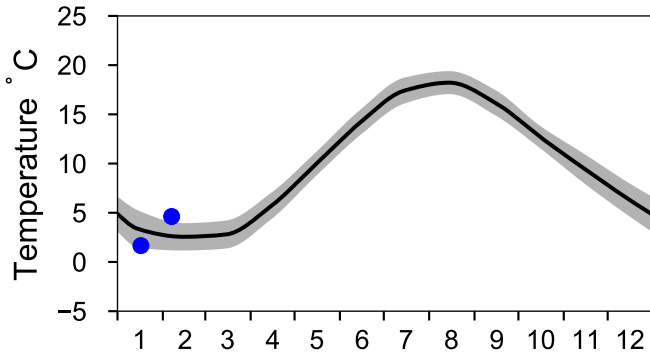
— Mean 1991-2020    ■ St.Dev.    ● 2024-02-07



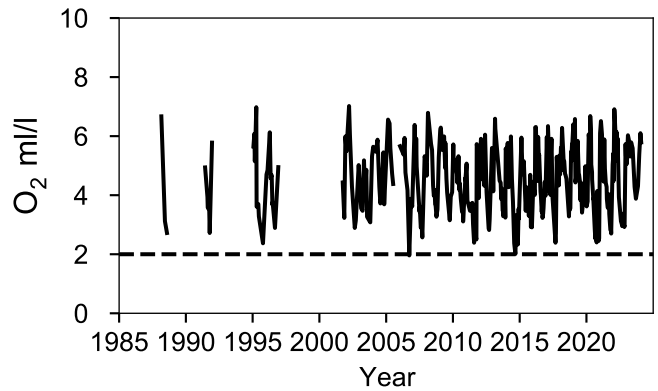
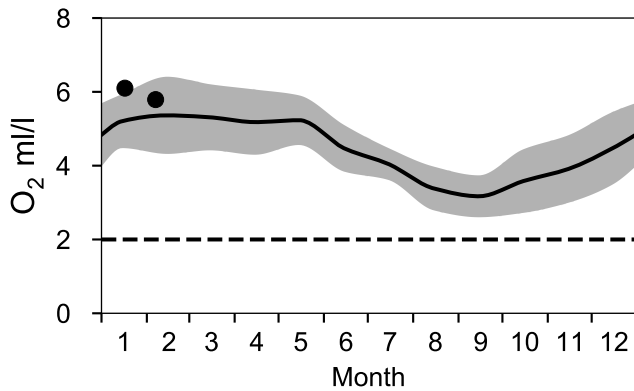
# STATION SLÄGGÖ SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020    St.Dev.    ● 2024



## OXYGEN IN BOTTOM WATER (depth >= 64 m)



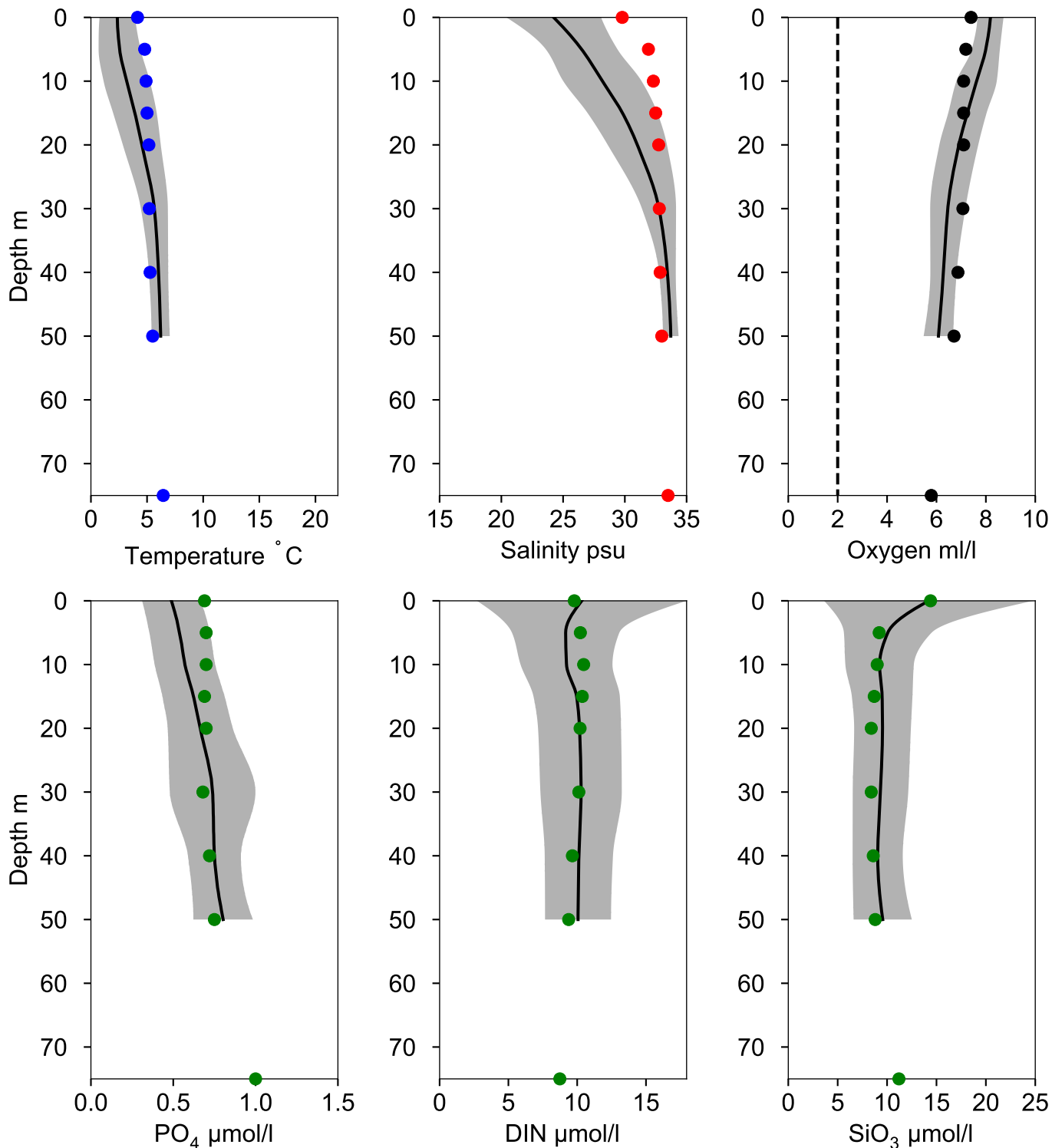


# Vertical profiles SLÄGGÖ February

— Mean 1991-2020

■ St.Dev.

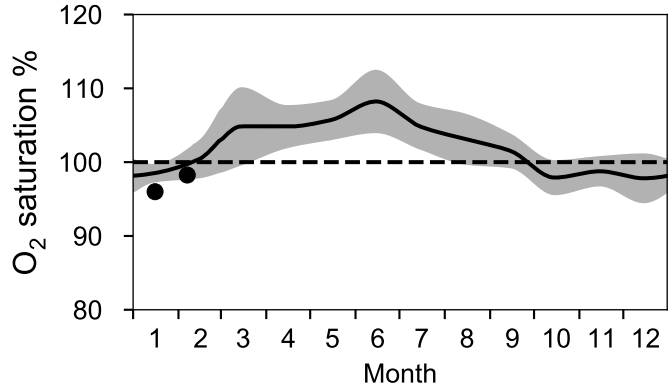
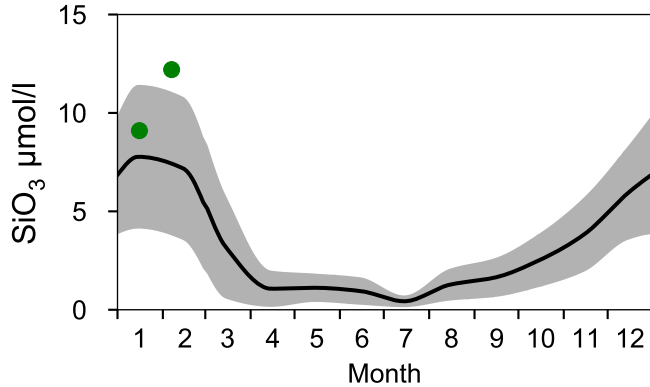
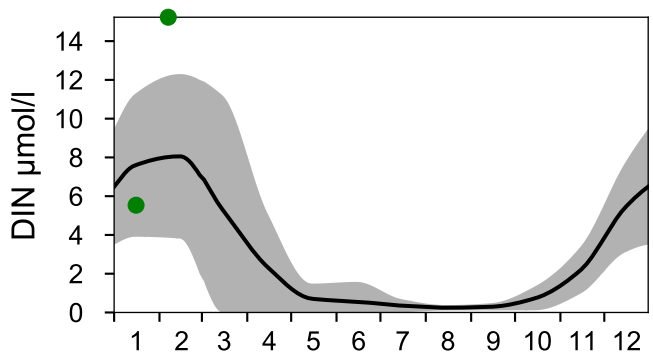
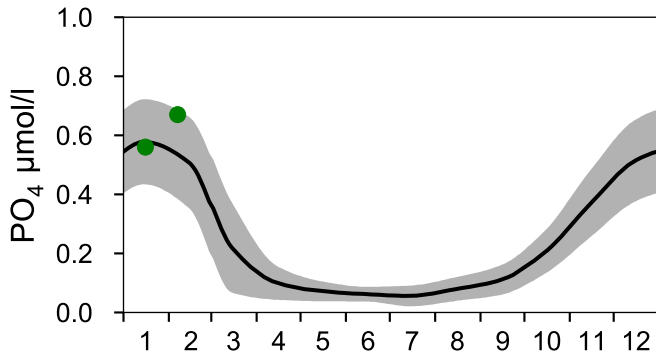
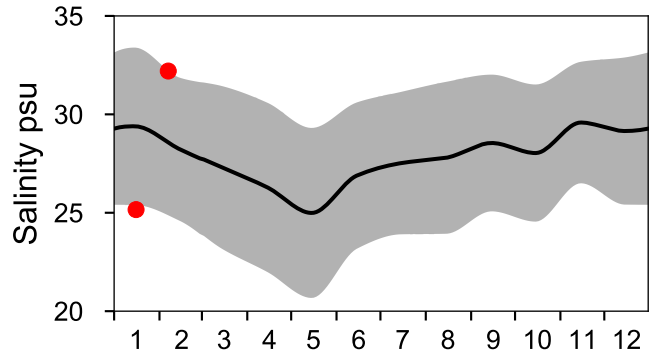
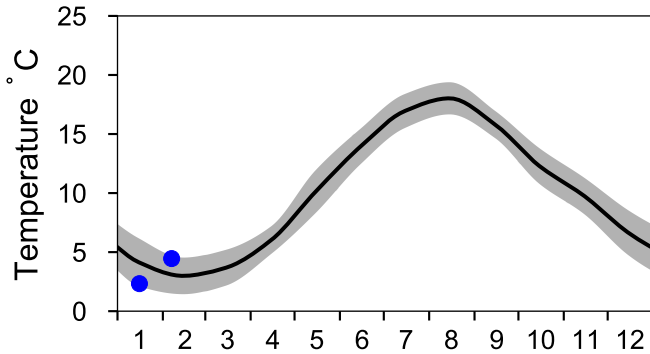
● 2024-02-07



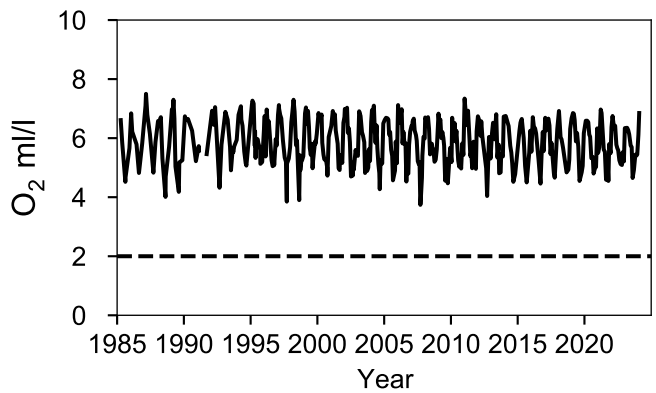
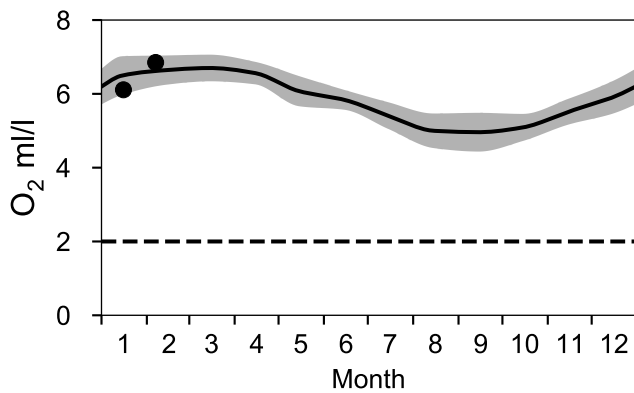
# STATION P2 SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020    St.Dev.    ● 2024



## OXYGEN IN BOTTOM WATER (depth >= 75 m)

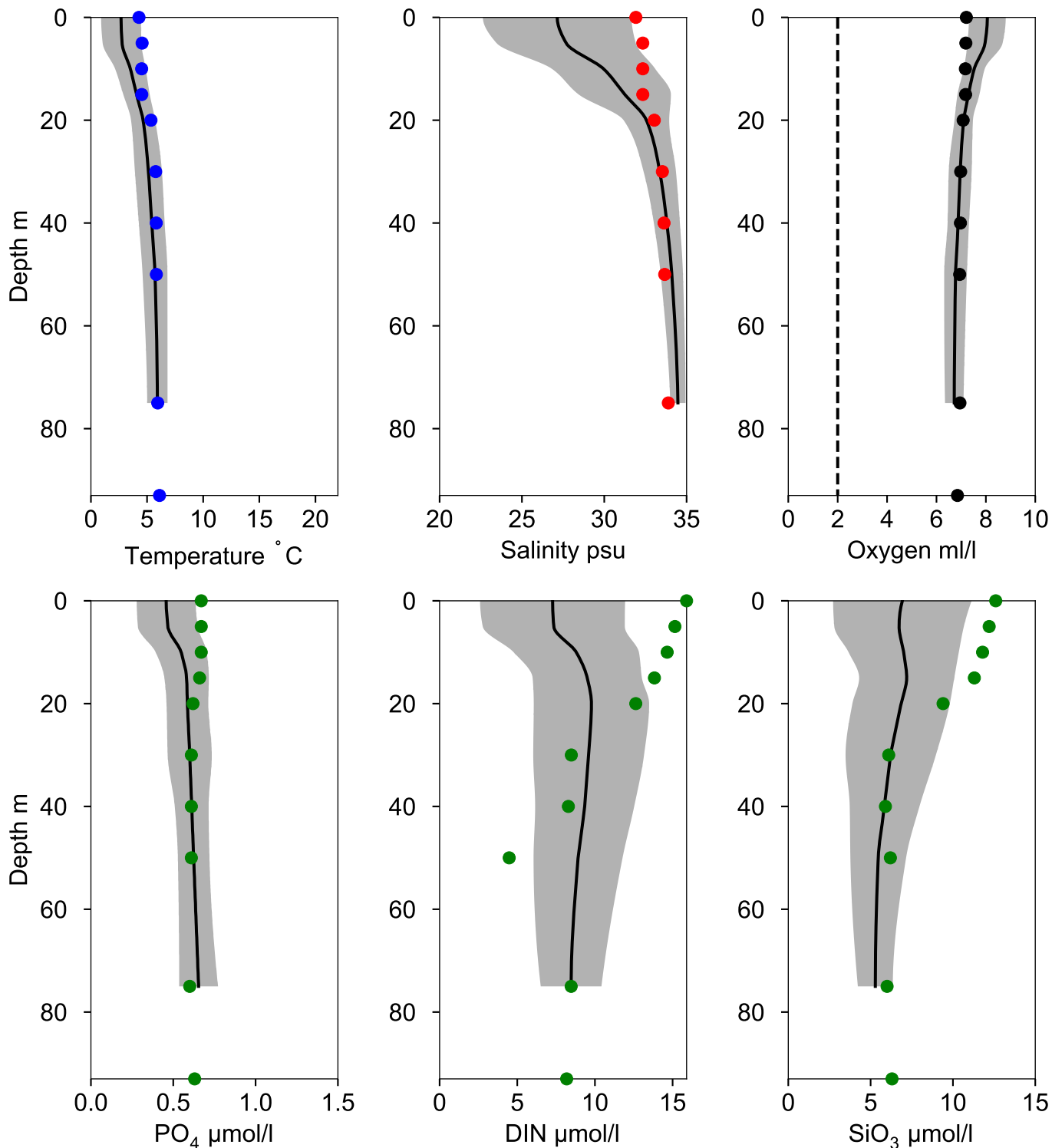


# Vertical profiles P2 February

— Mean 1991-2020

■ St.Dev.

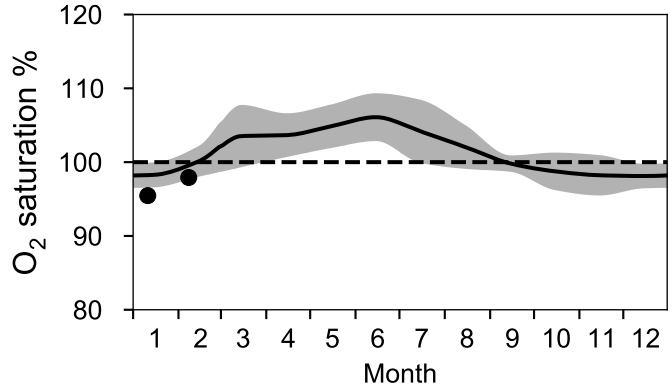
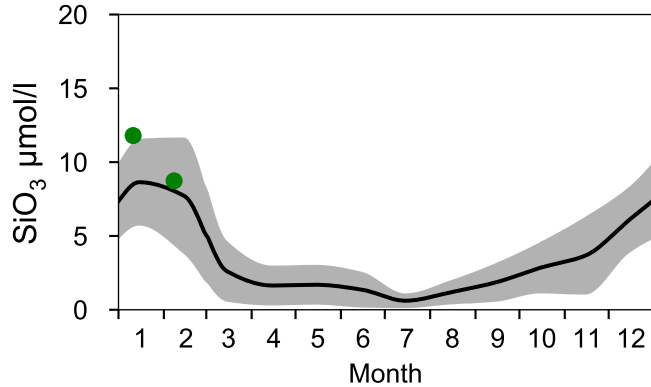
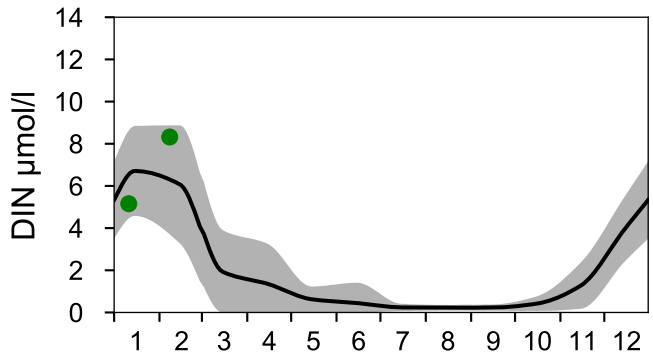
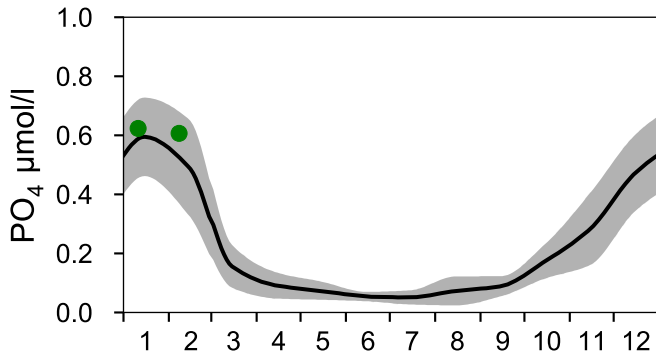
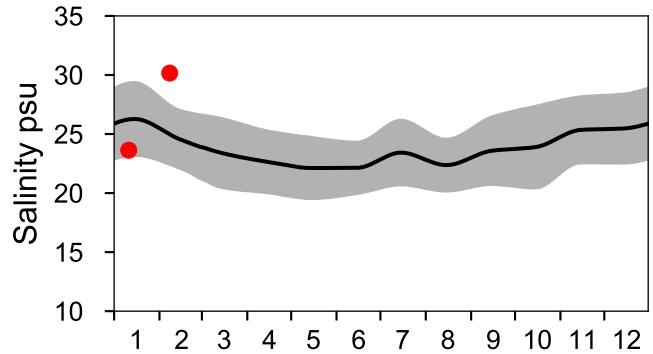
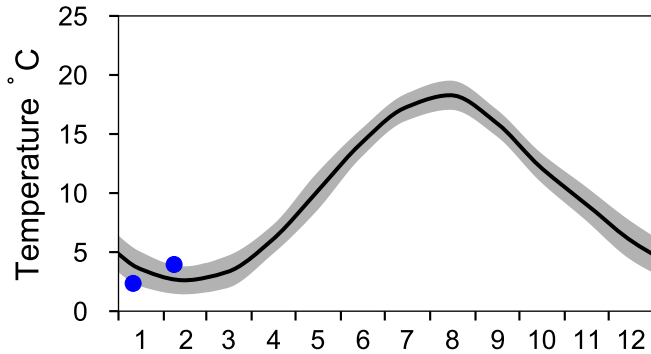
● 2024-02-07



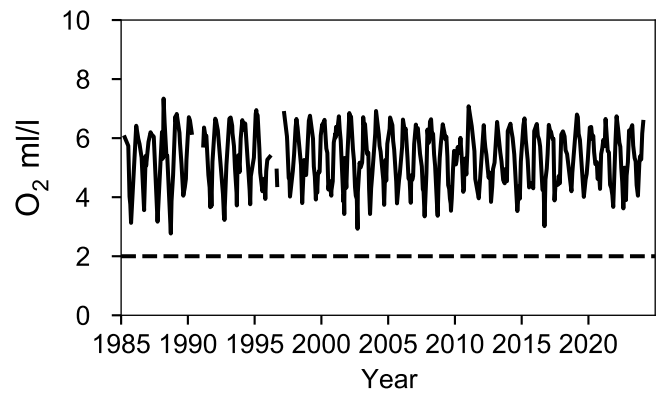
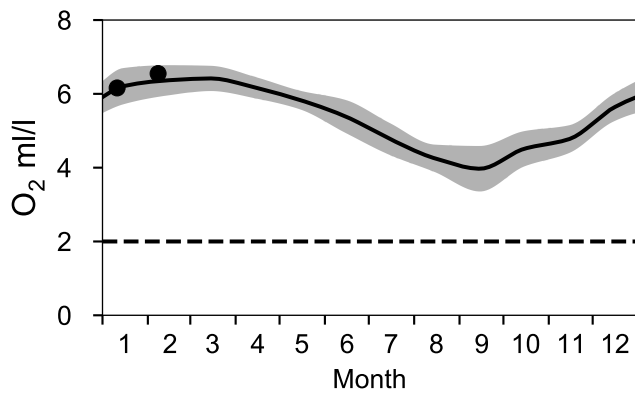
# STATION FLADEN SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020    St.Dev.    ● 2024

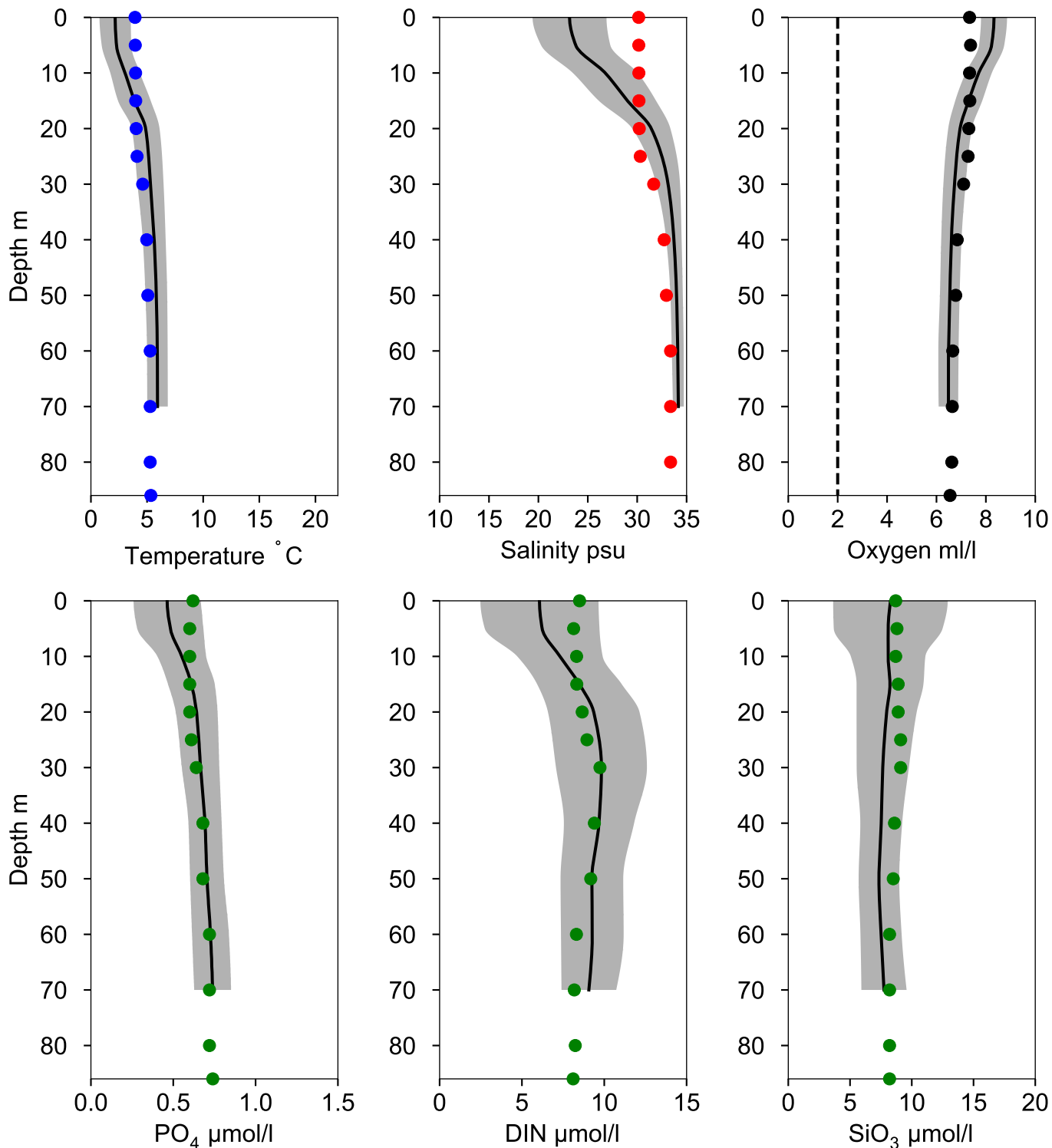


## OXYGEN IN BOTTOM WATER (depth >= 74 m)



# Vertical profiles FLADEN February

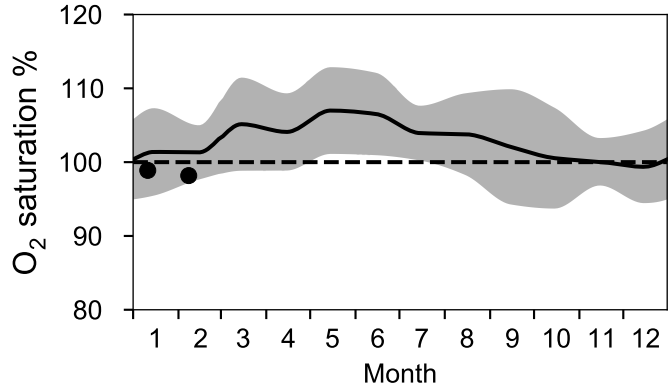
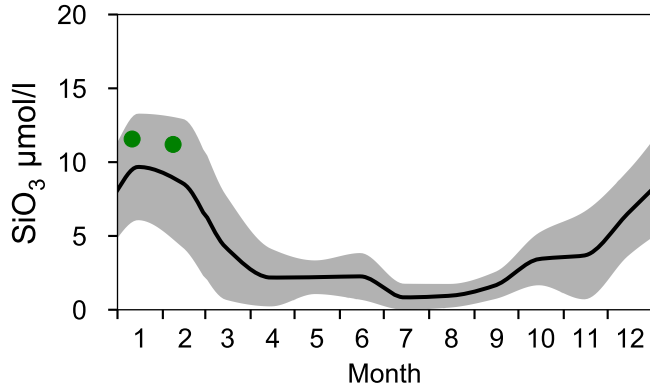
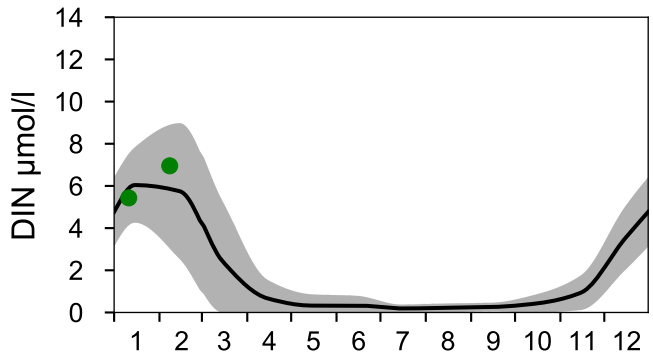
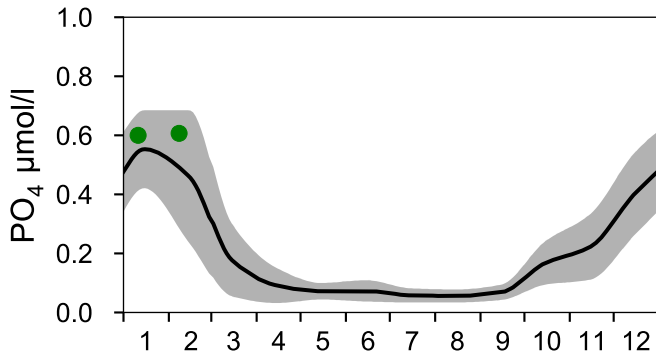
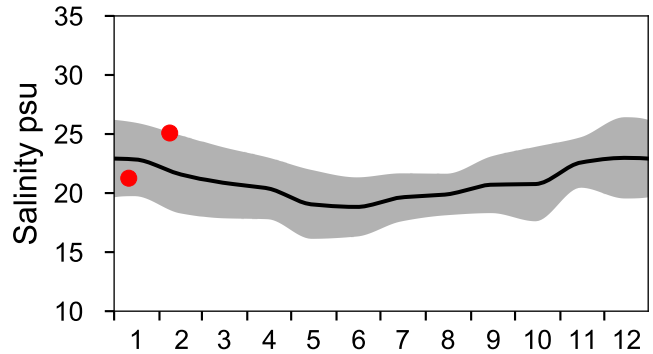
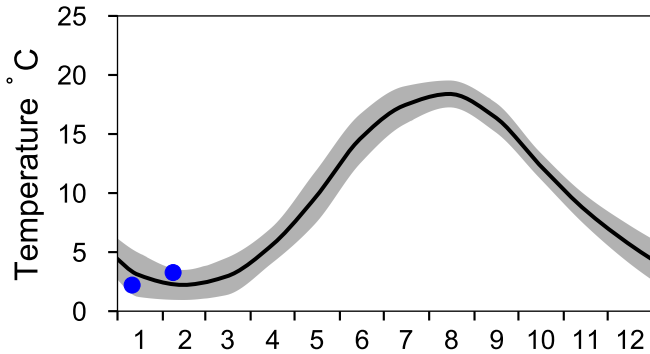
— Mean 1991-2020    St.Dev.    ● 2024-02-08



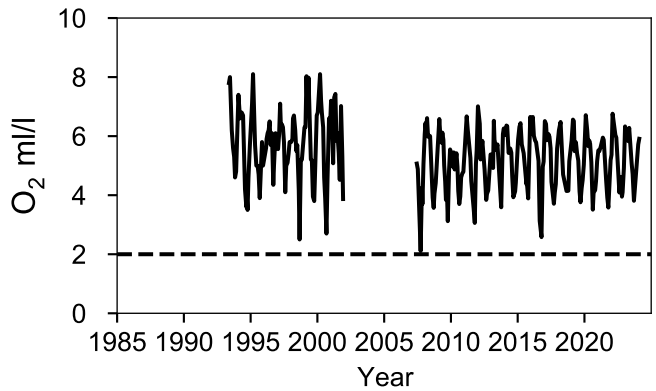
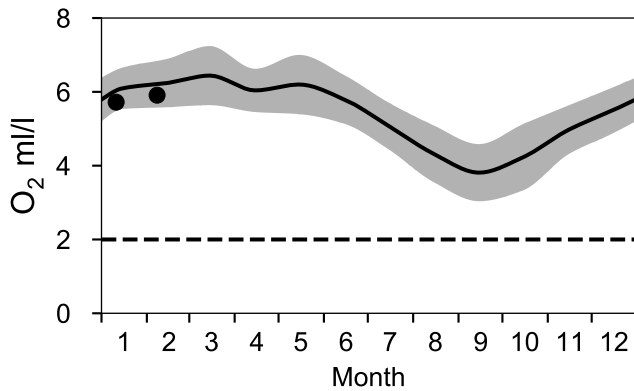
# STATION N14 FALKENBERG SURFACE WATER (0-10 m)

Annual Cycles

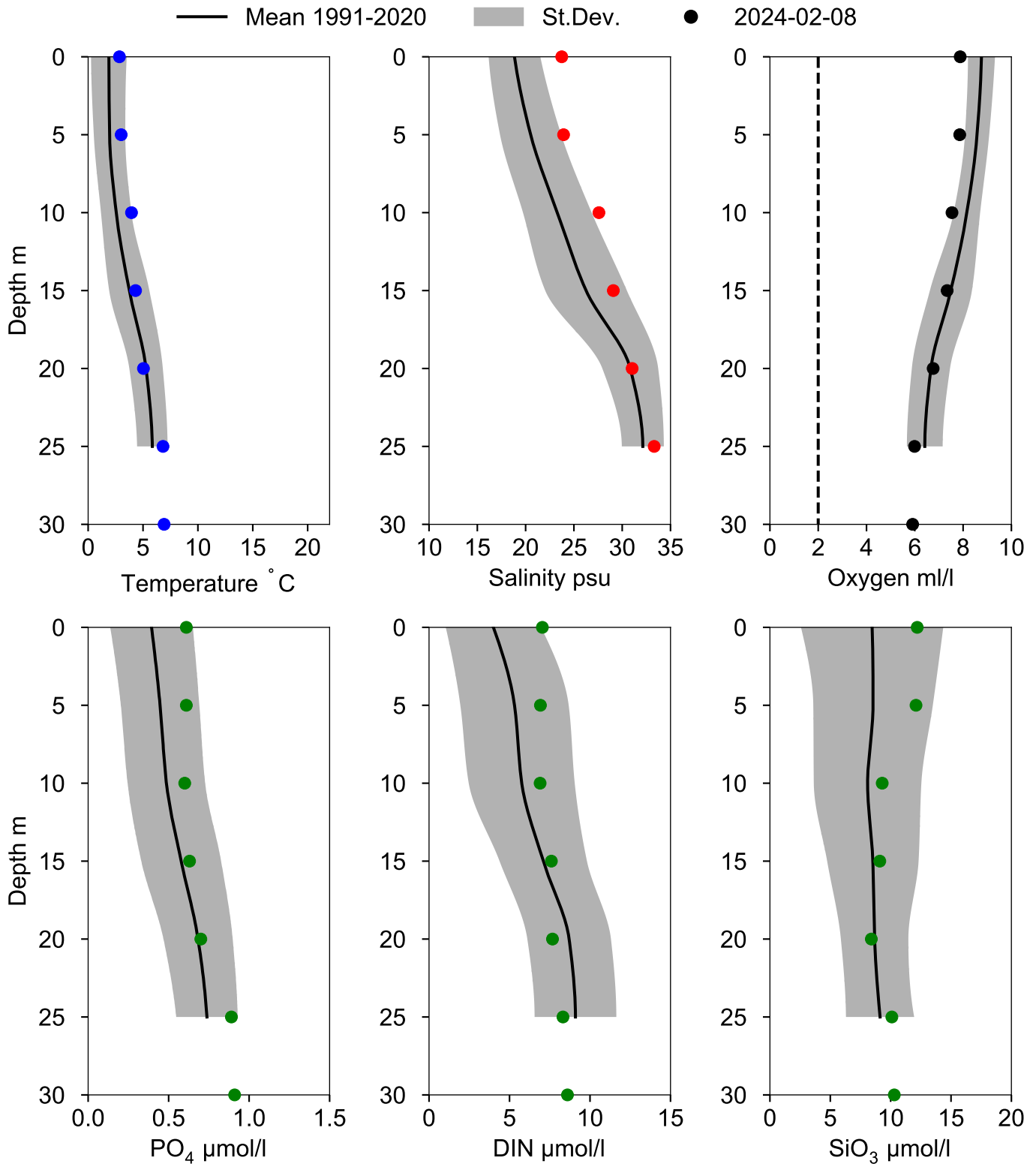
— Mean 1991-2020    St.Dev.    ● 2024



## OXYGEN IN BOTTOM WATER (depth >= 25 m)



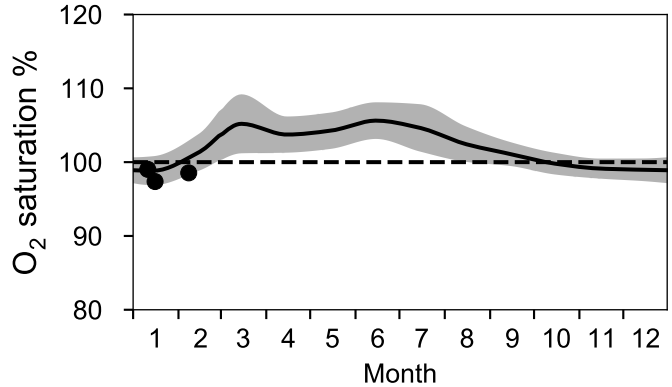
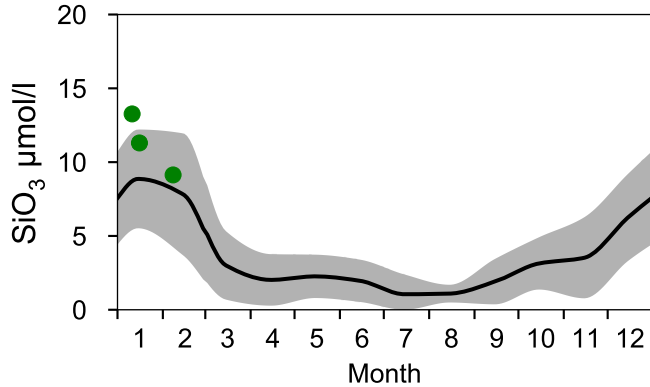
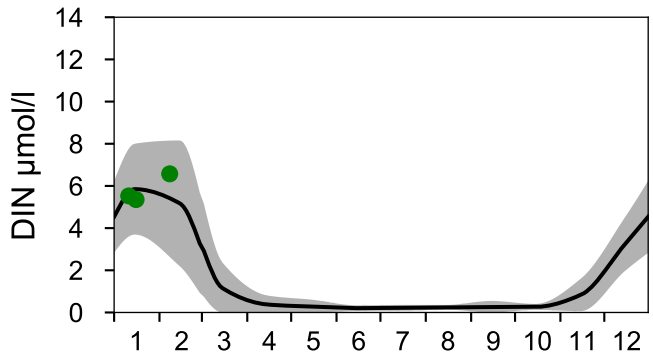
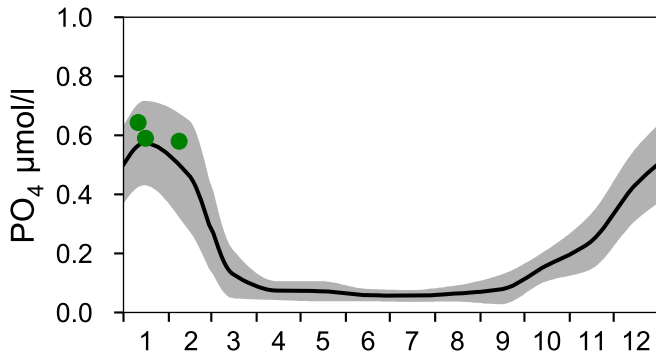
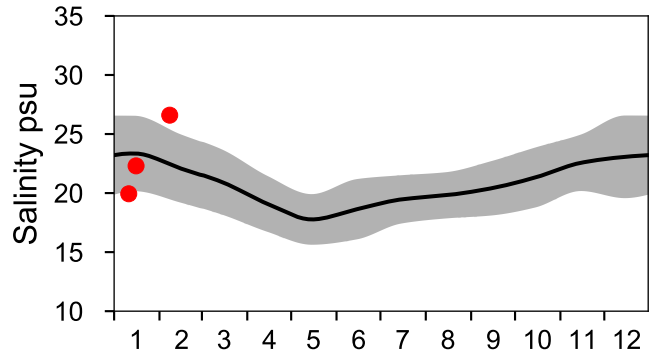
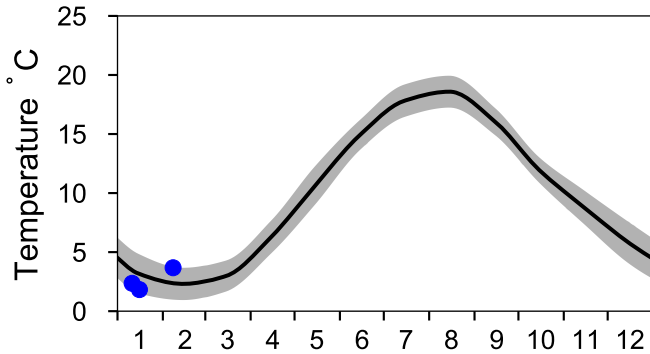
# Vertical profiles N14 FALKENBERG February



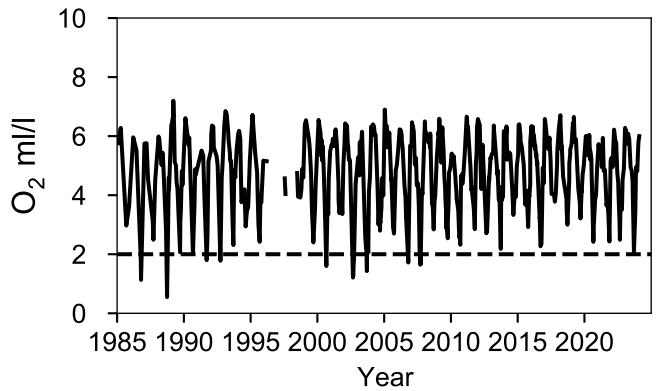
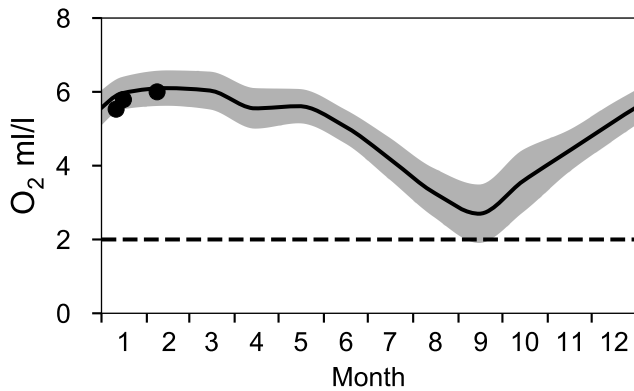
# STATION ANHOLT E SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020    St.Dev.    ● 2024

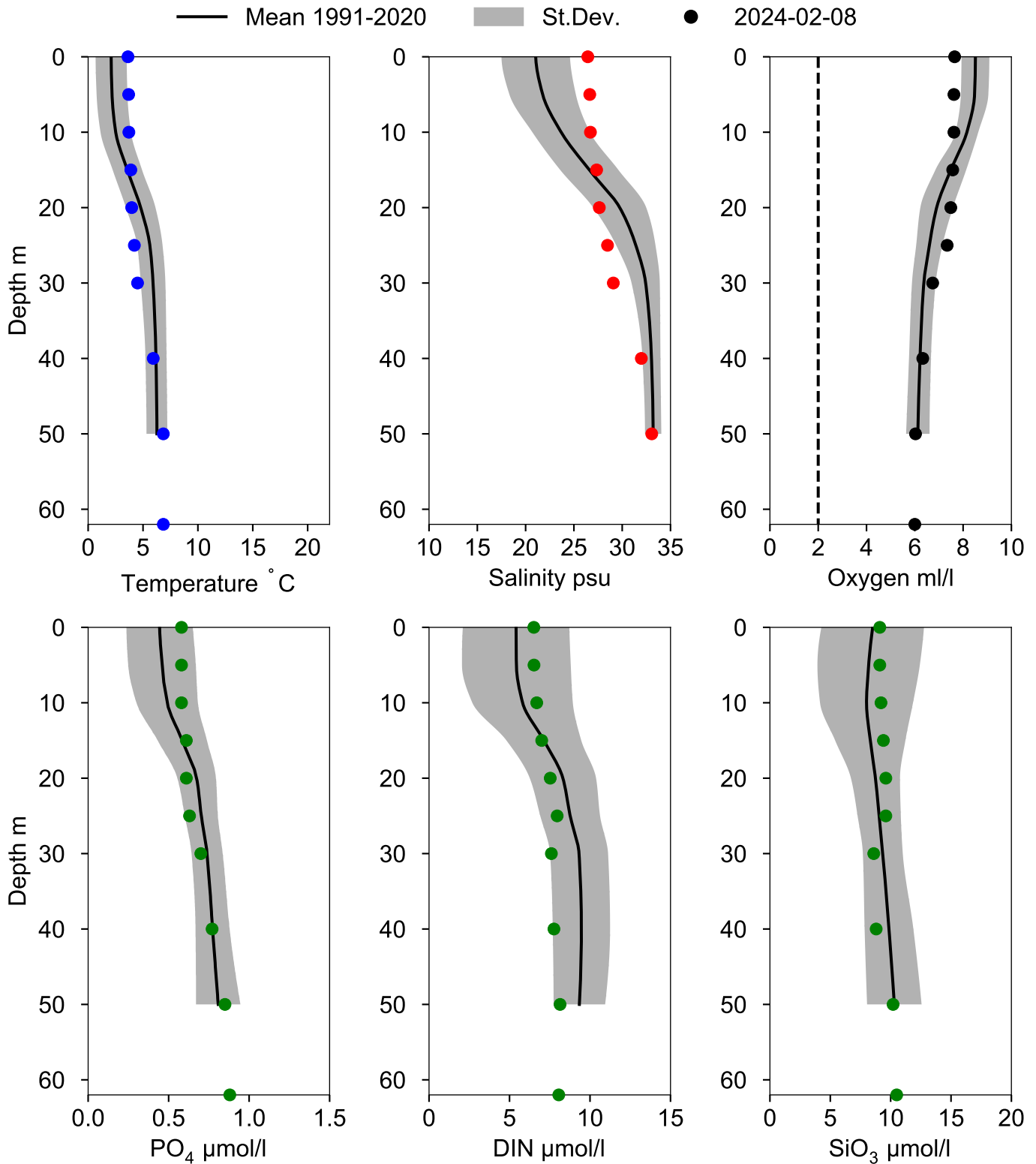


## OXYGEN IN BOTTOM WATER (depth >= 52 m)





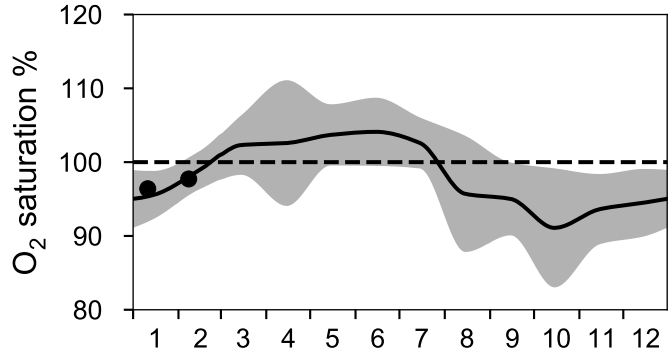
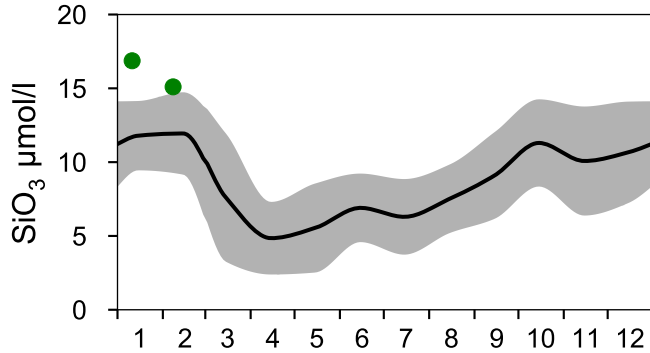
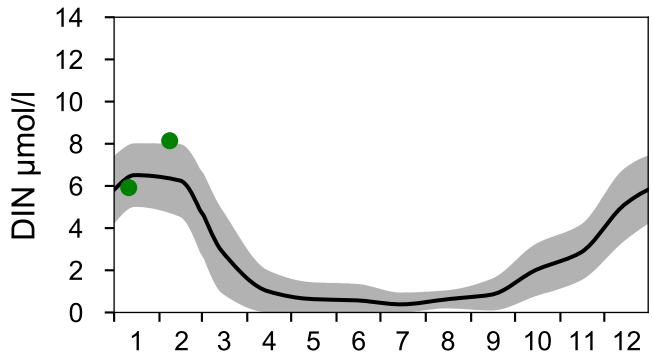
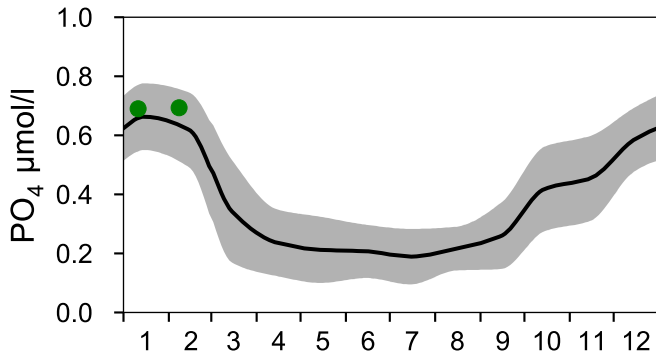
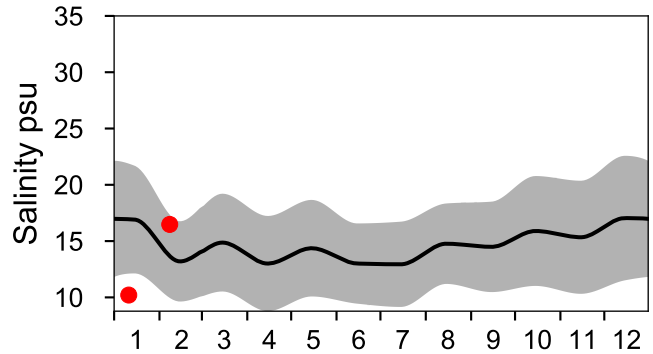
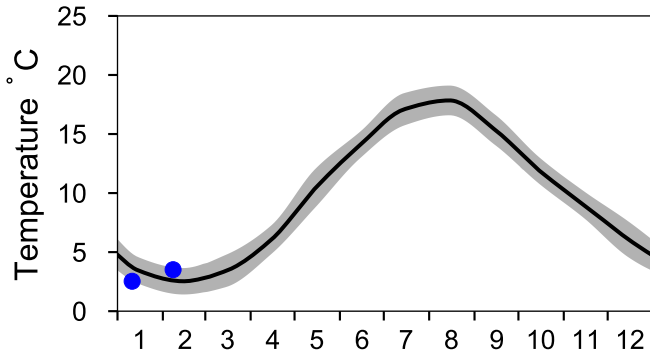
# Vertical profiles ANHOLT E February



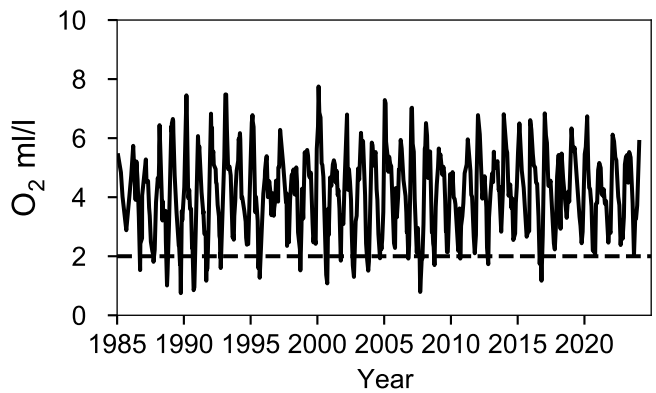
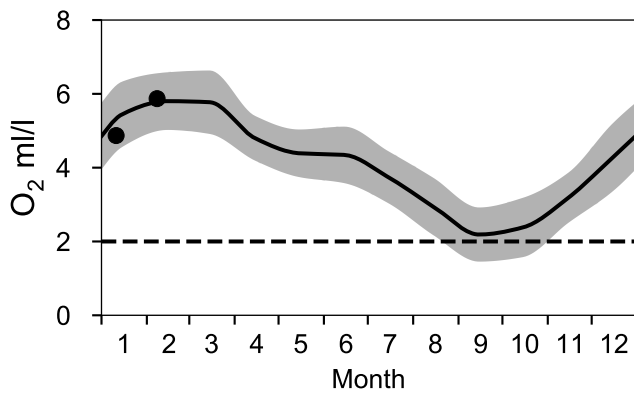
# STATION W LANDSKRONA SURFACE WATER (0-10 m)

Annual Cycles

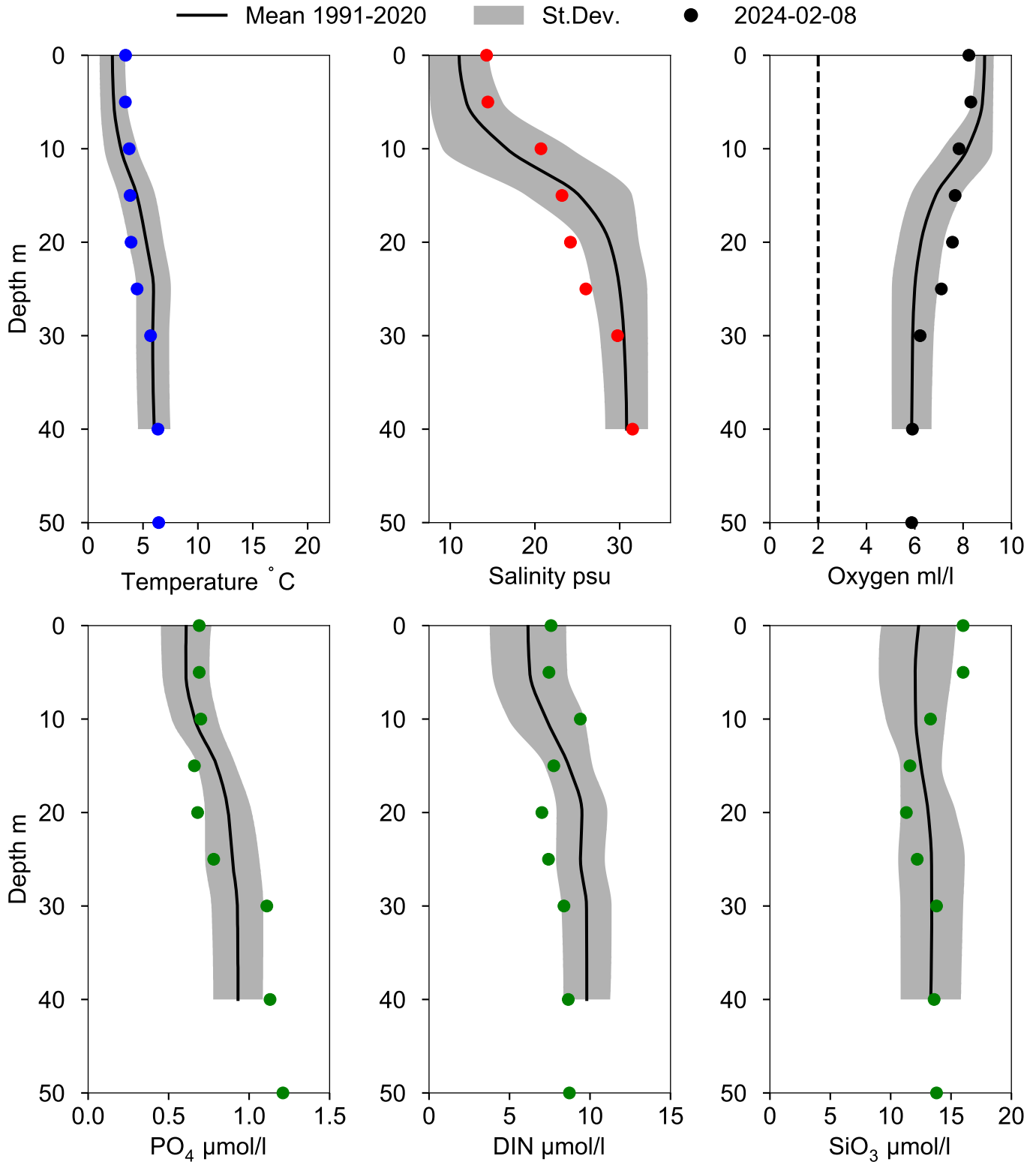
— Mean 1991-2020    St.Dev.    ● 2024



## OXYGEN IN BOTTOM WATER (depth >= 40 m)



# Vertical profiles W LANDSKRONA February

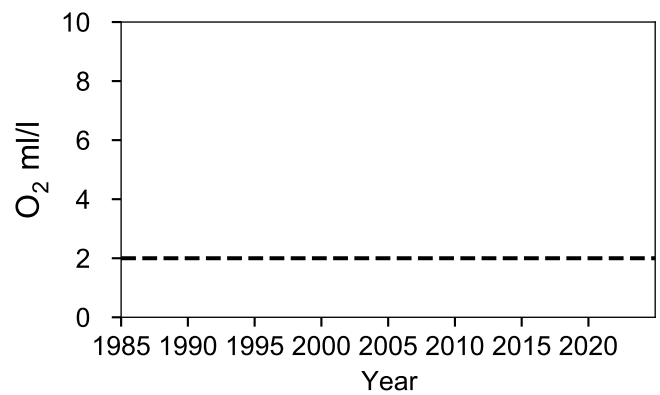
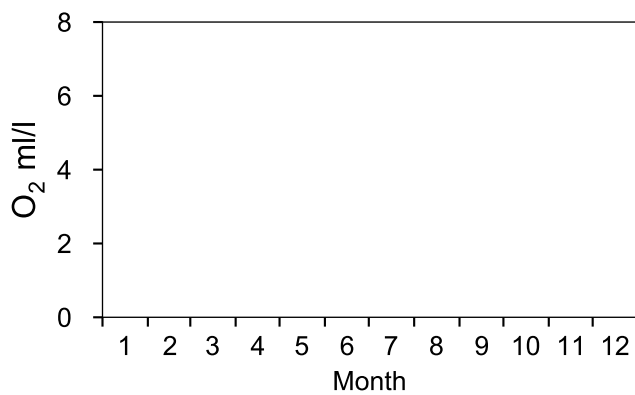
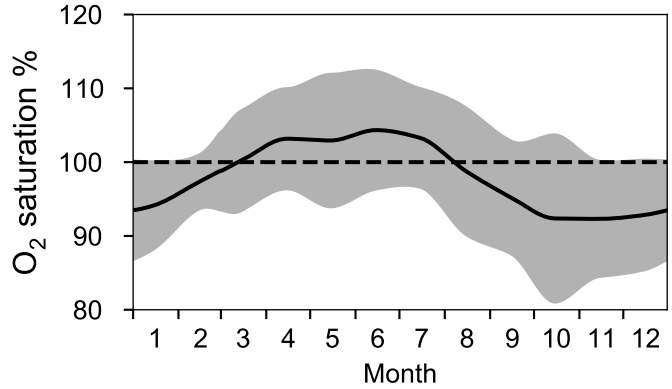
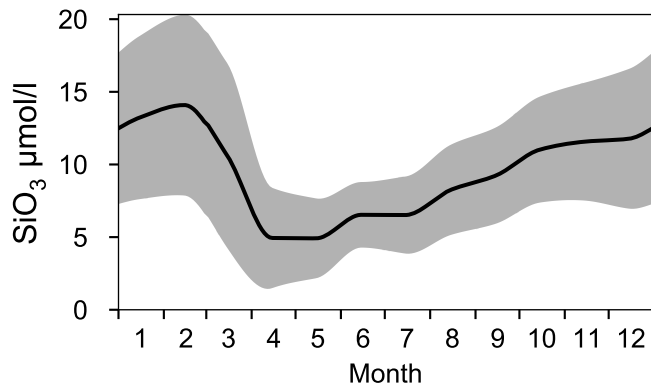
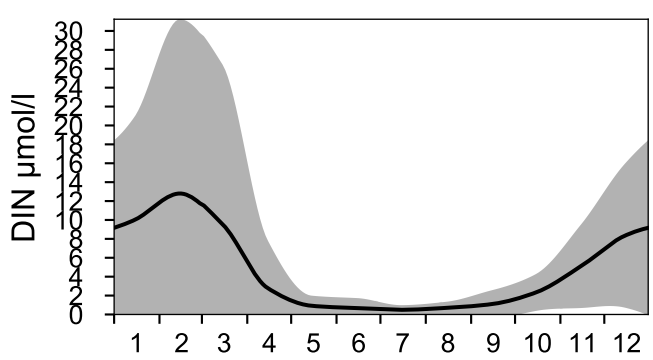
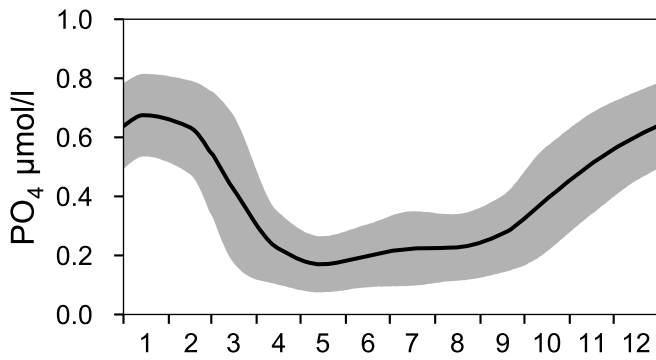
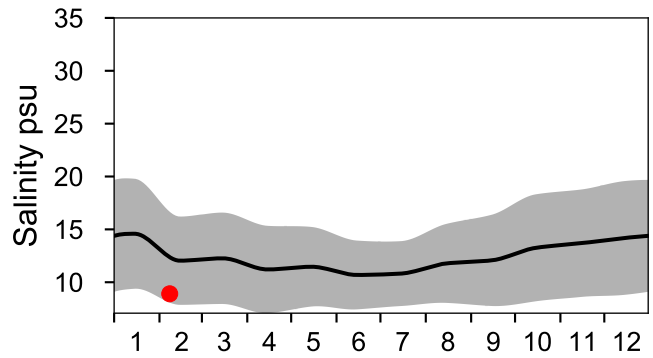
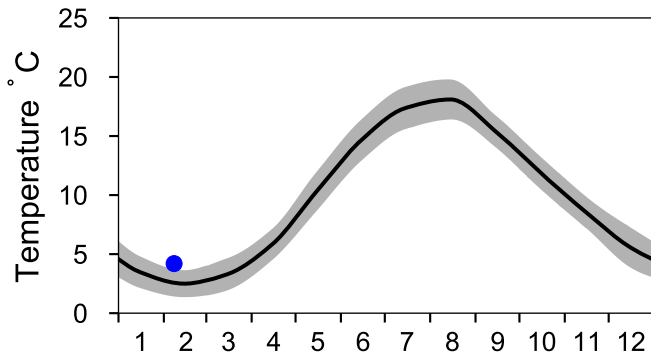


# STATION FLINTEN 7 SURFACE WATER (0-10 m)

## Annual Cycles

Statistics based on data from: Öresund

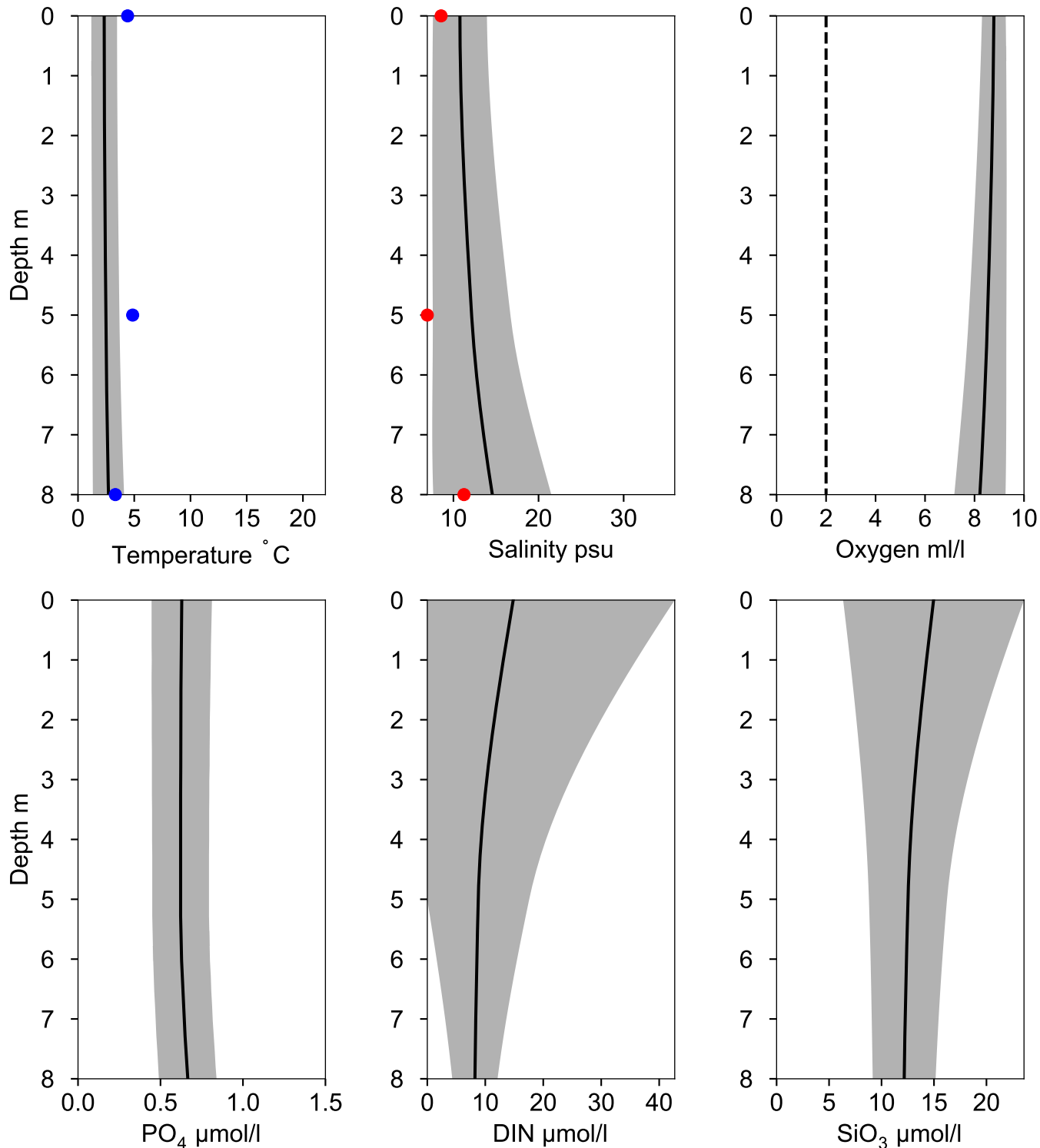
— Mean 1991-2020    St.Dev.    ● 2024



# Vertical profiles FLINTEN 7 February

Statistics based on data from: Öresund

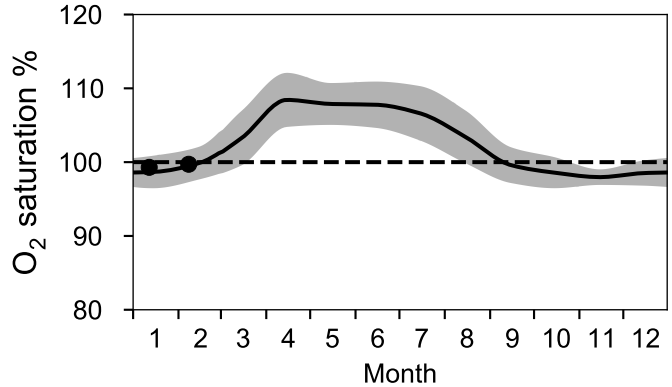
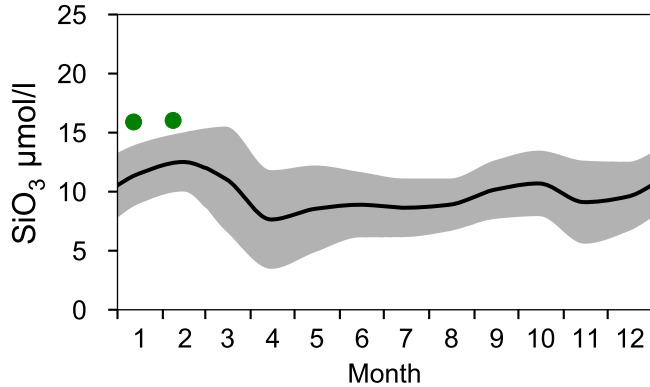
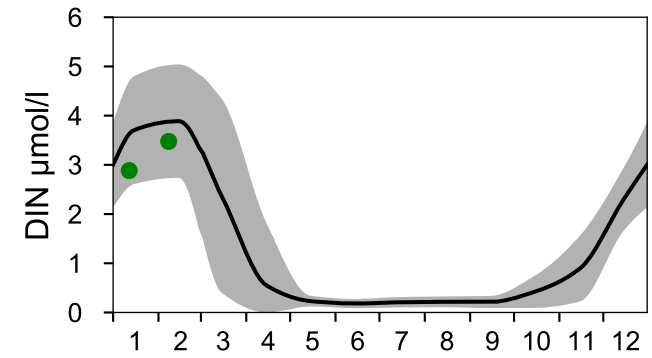
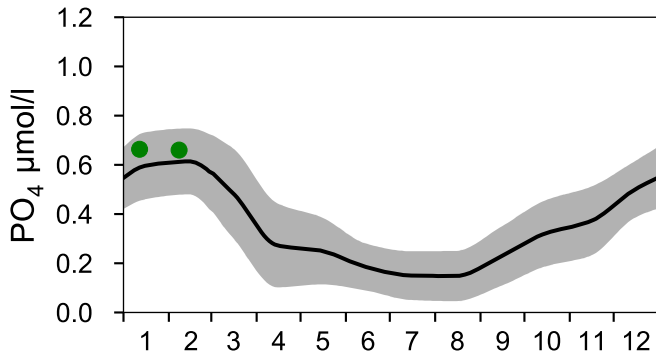
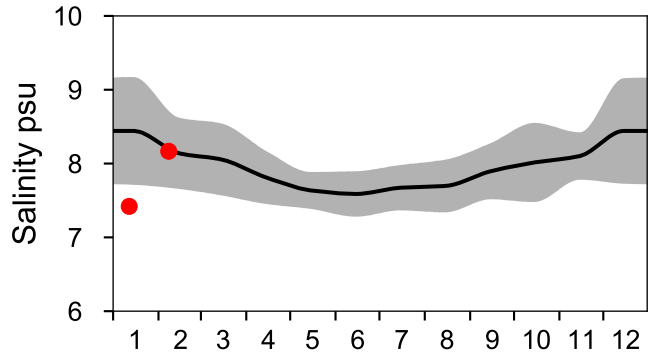
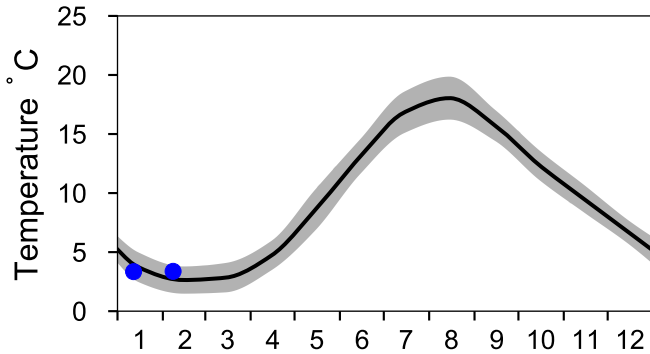
— Mean 1991-2020    ■ St.Dev.    ● 2024-02-08



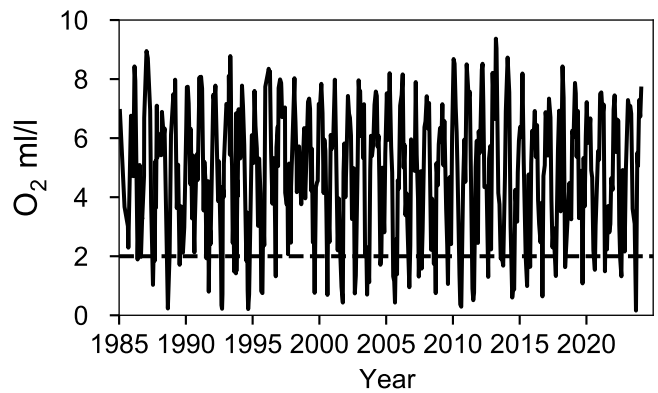
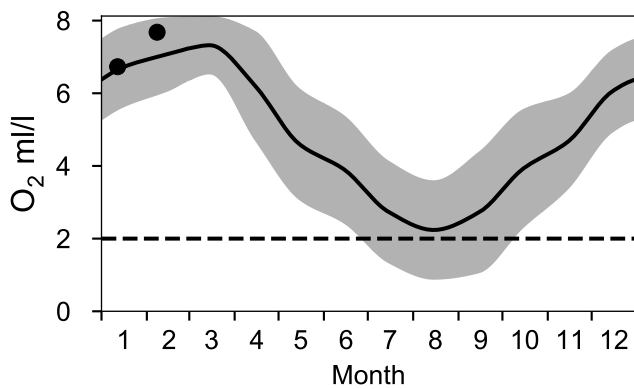
# STATION BY1 SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020    St.Dev.    ● 2024

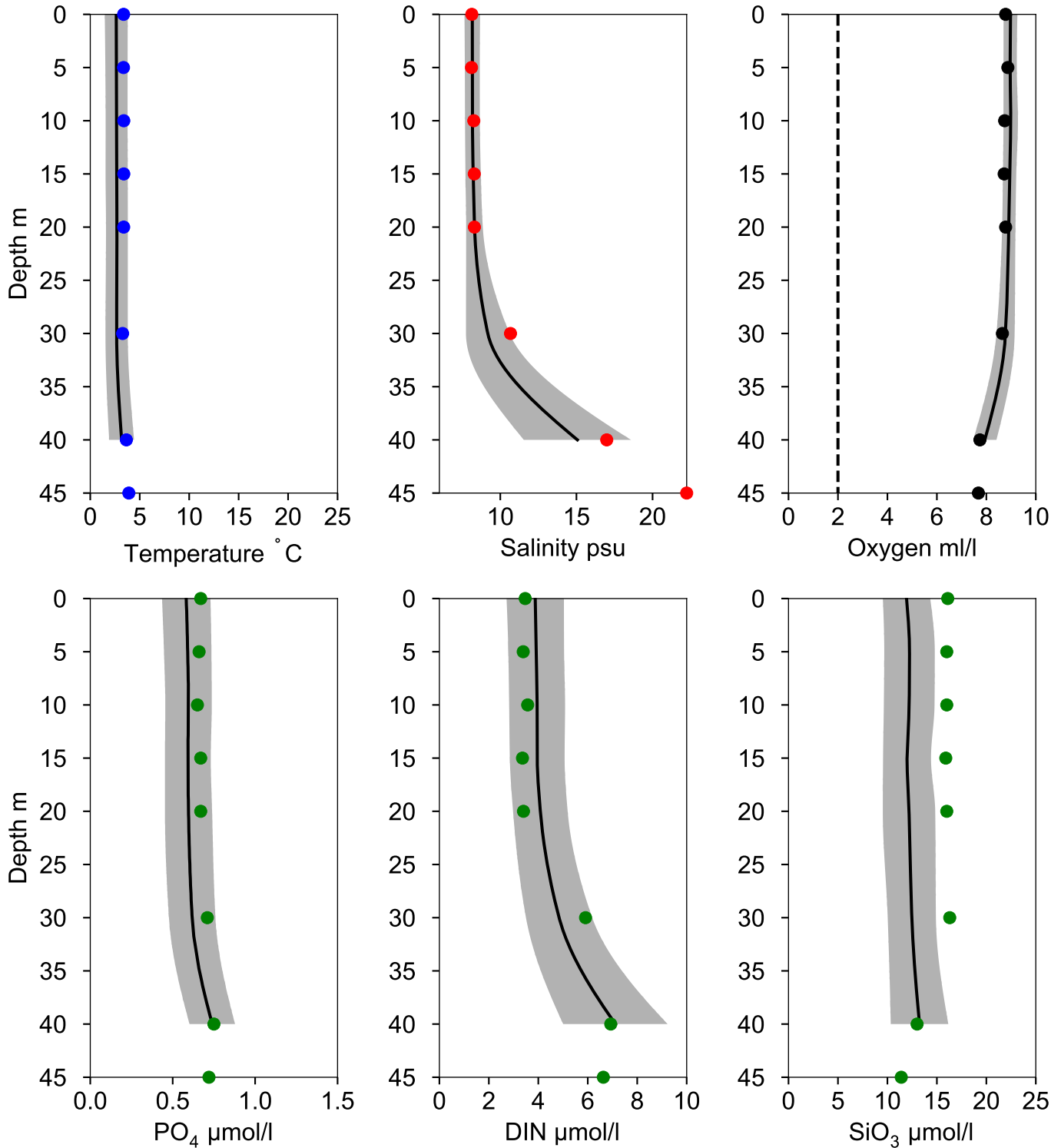


## OXYGEN IN BOTTOM WATER (depth >= 39 m)



# Vertical profiles BY1 February

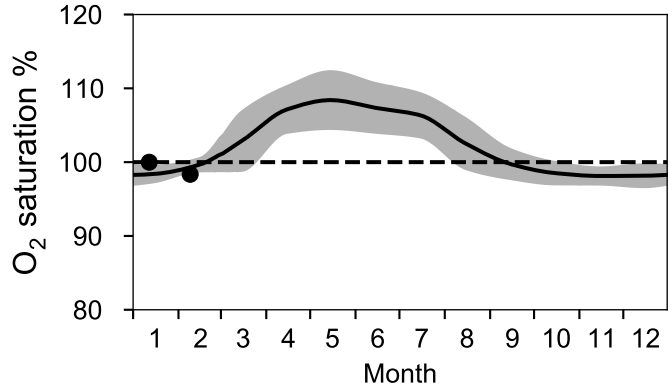
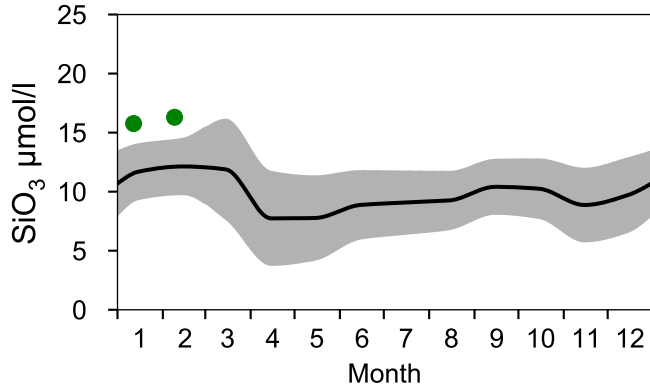
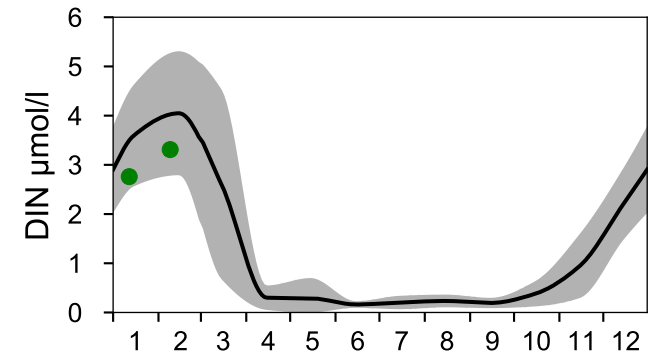
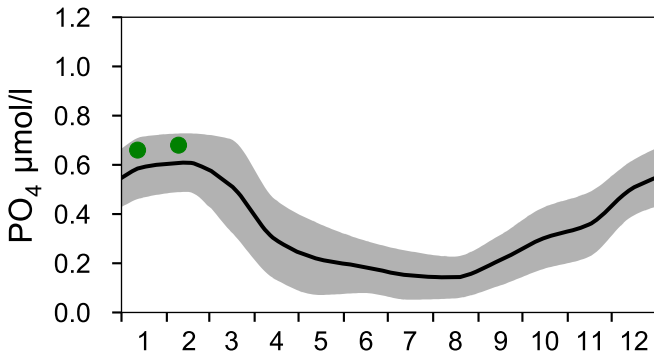
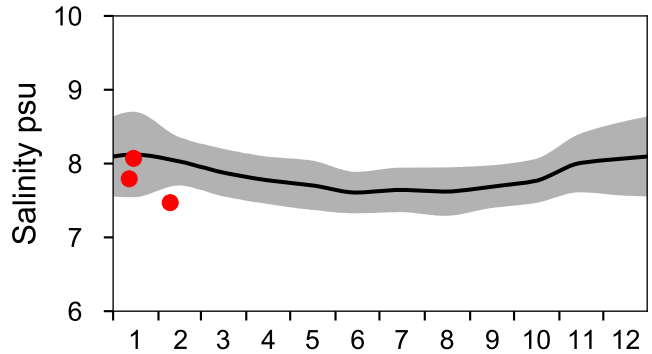
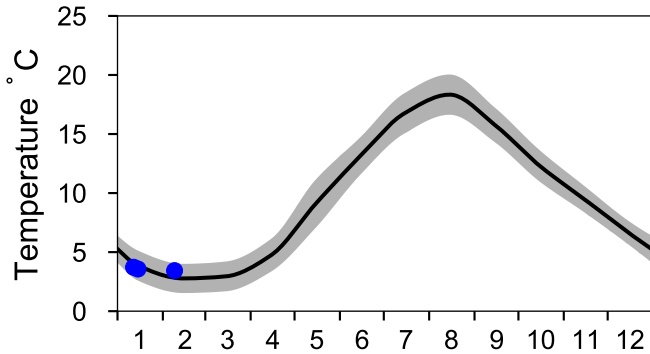
— Mean 1991-2020    ■ St.Dev.    ● 2024-02-08



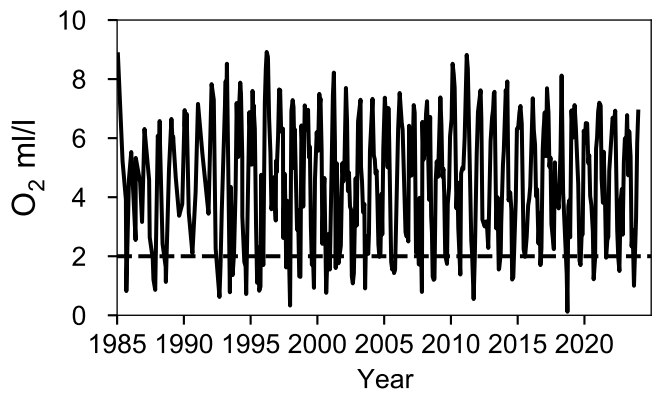
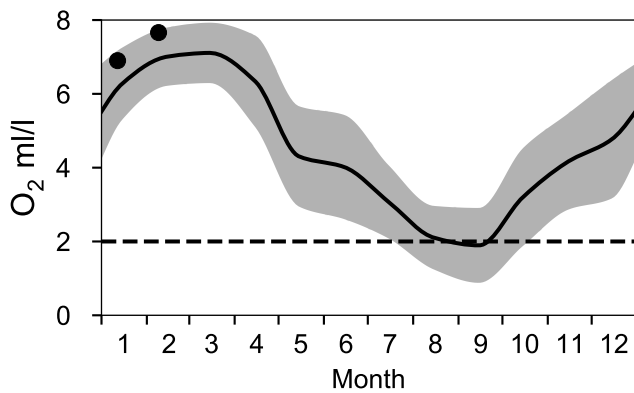
# STATION BY2 ARKONA SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020    St.Dev.    ● 2024



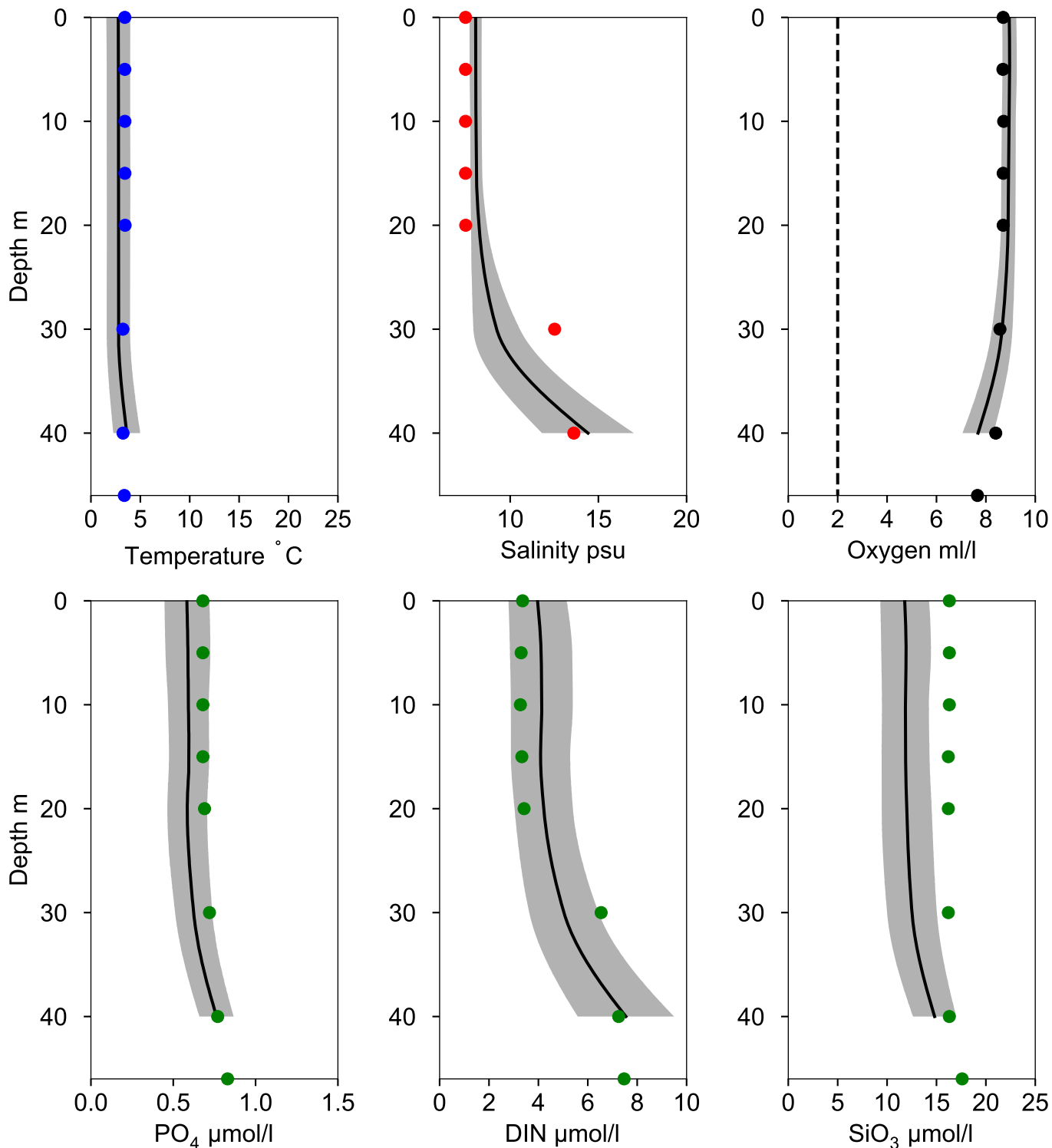
## OXYGEN IN BOTTOM WATER (depth >= 40 m)





# Vertical profiles BY2 ARKONA February

— Mean 1991-2020    St.Dev.    ● 2024-02-09

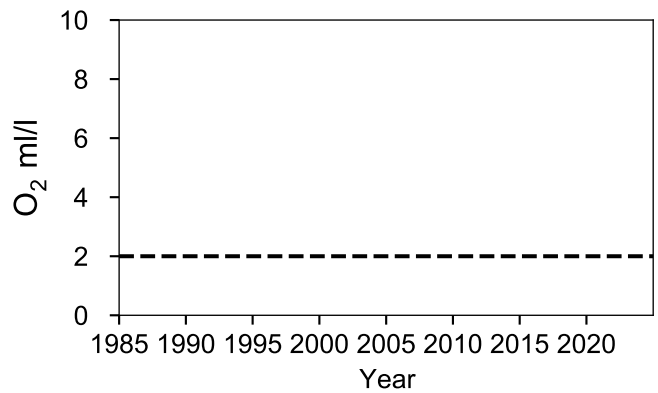
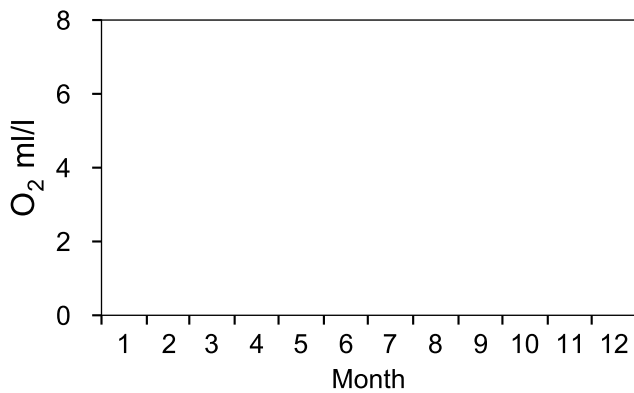
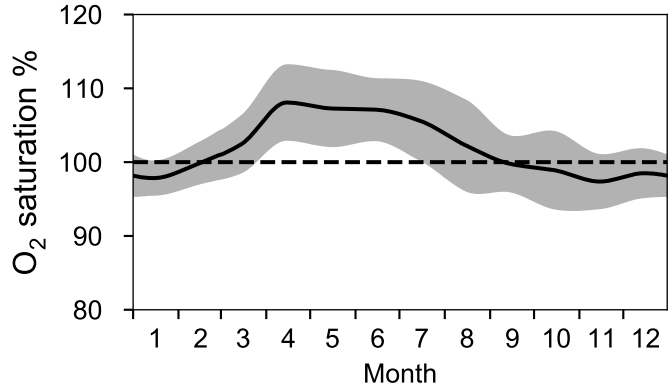
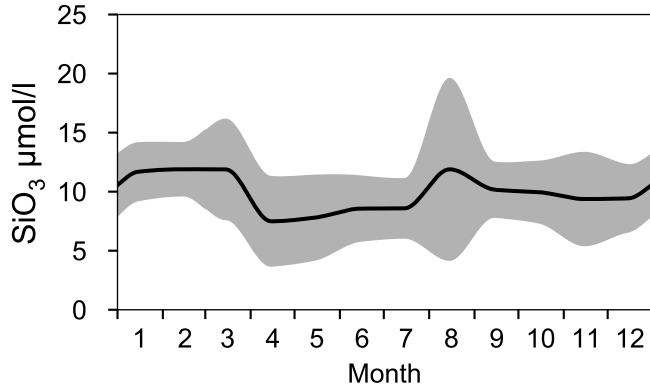
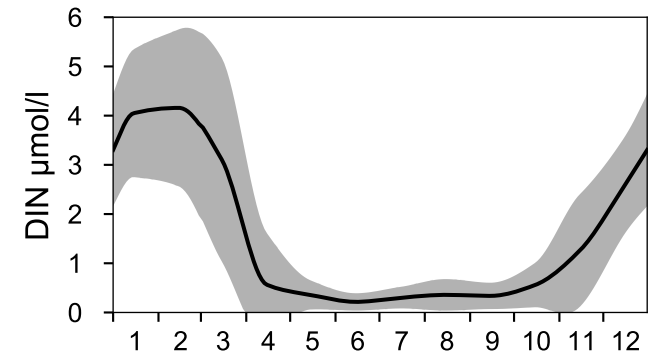
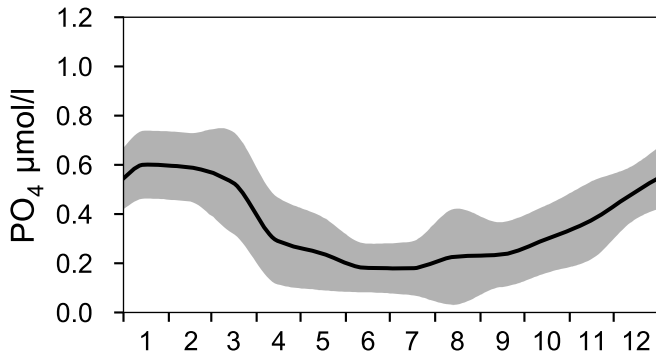
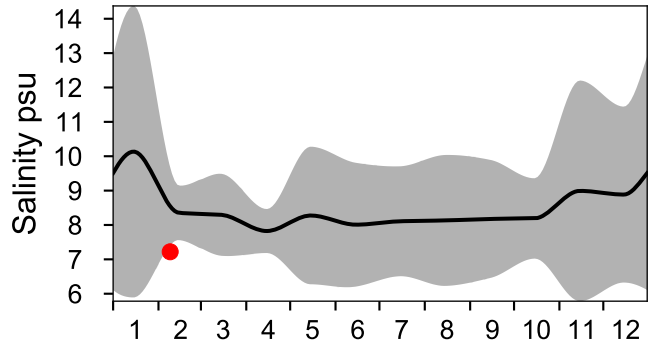
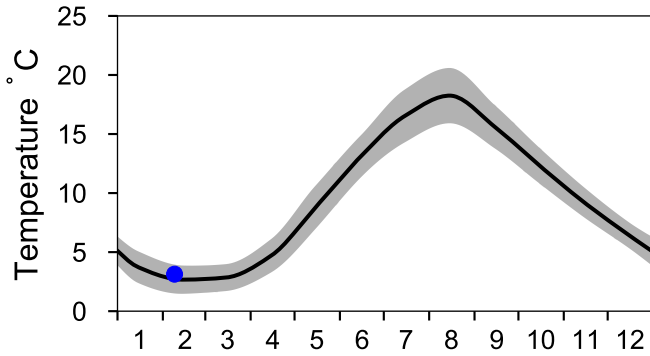


# STATION INFLOW 1 SURFACE WATER (0-10 m)

## Annual Cycles

Statistics based on data from: Arkonahavet

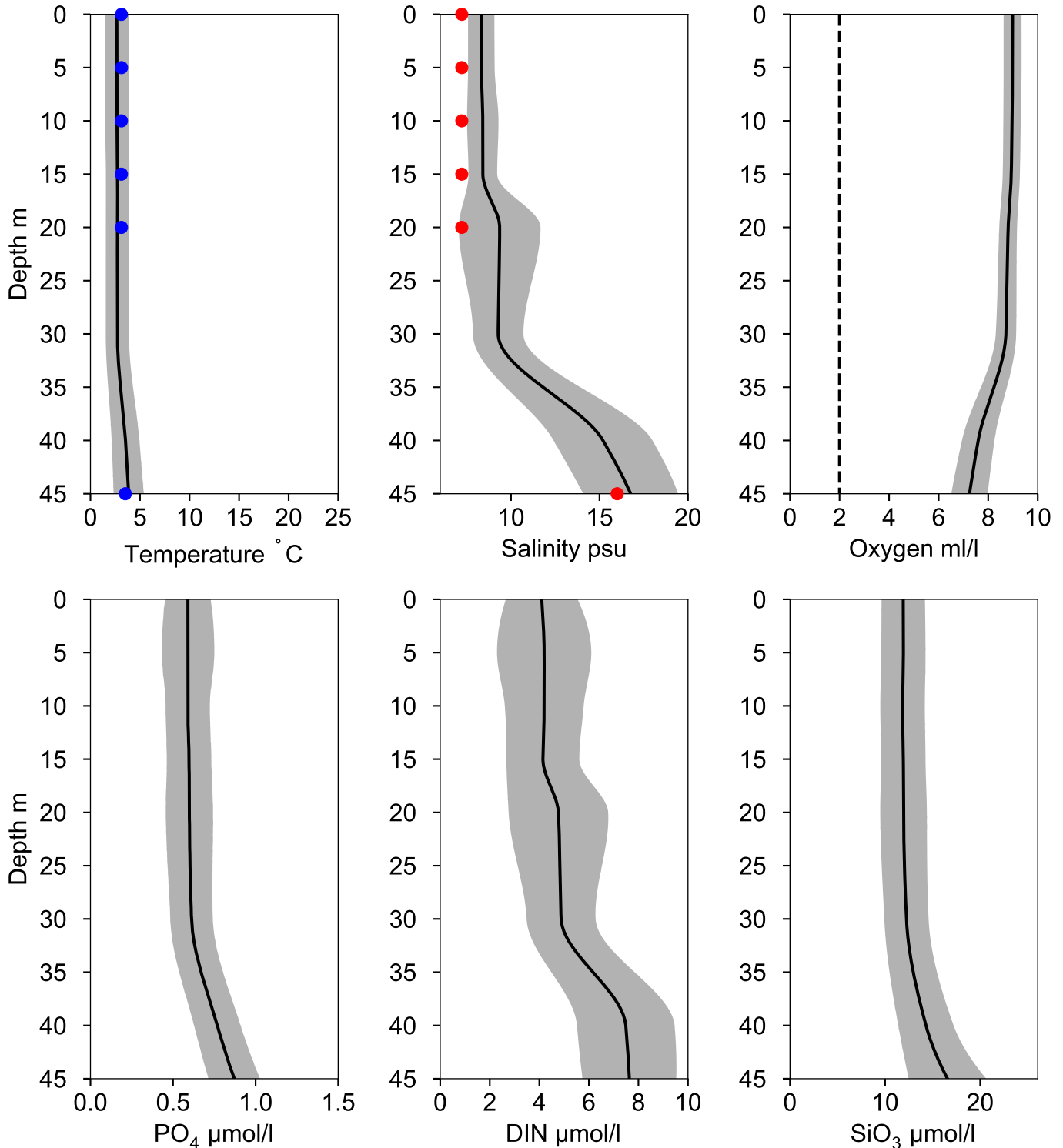
— Mean 1991-2020    St.Dev.    ● 2024



# Vertical profiles INFLOW 1 February

Statistics based on data from: Arkonahavet

— Mean 1991-2020    ■ St.Dev.    ● 2024-02-09

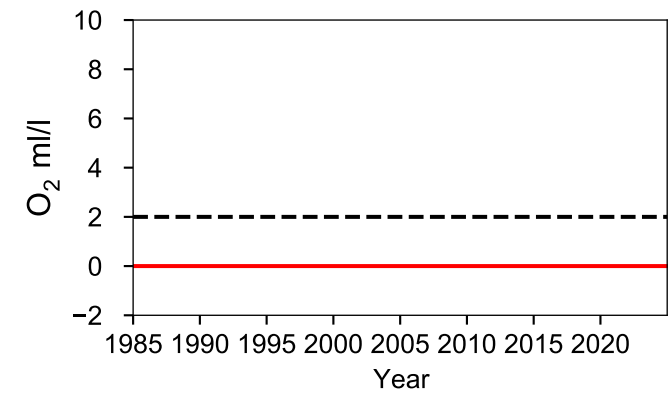
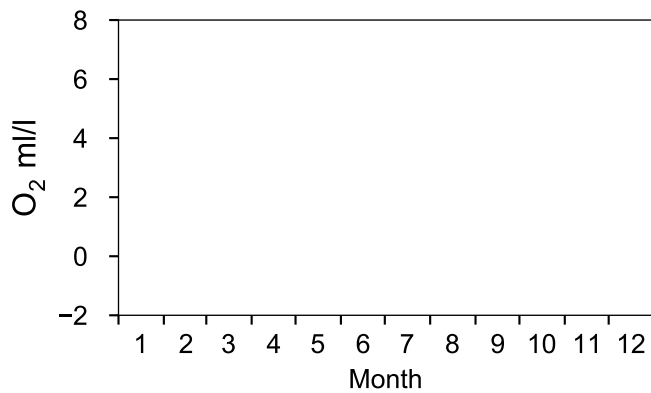
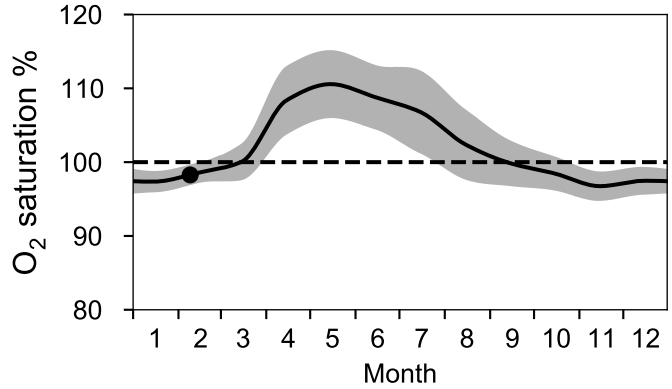
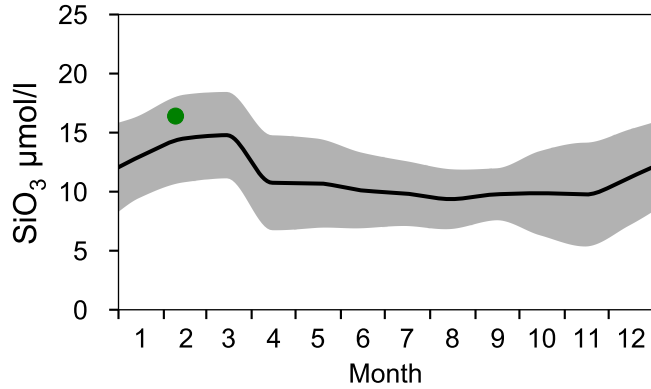
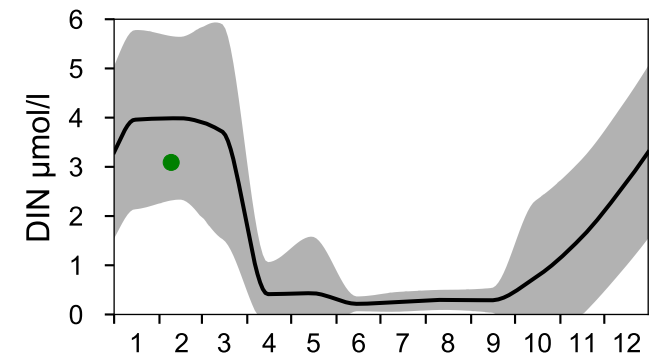
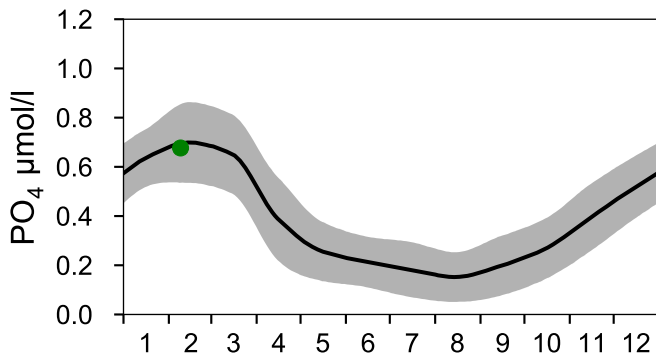
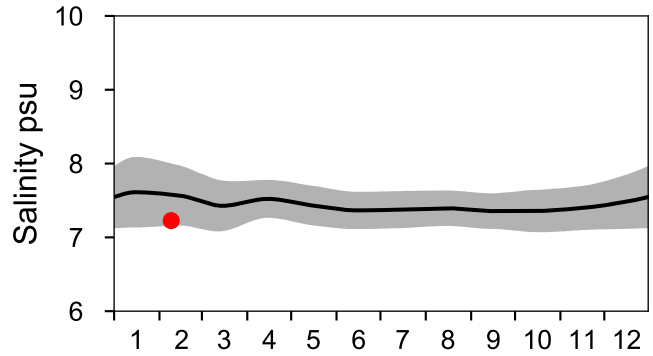
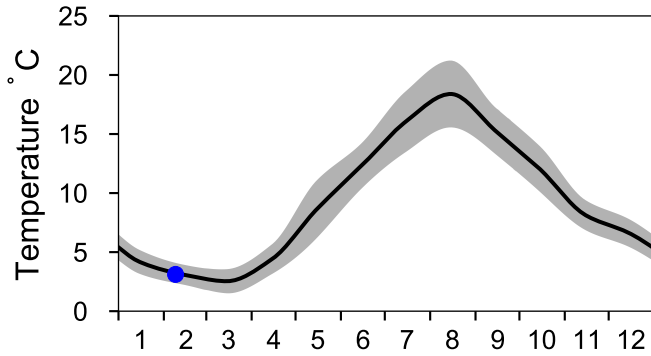


# STATION BY3 HAMRARNE SUND SURFACE WATER (0-10 m)

## Annual Cycles

Statistics based on data from: Bornholmshavet

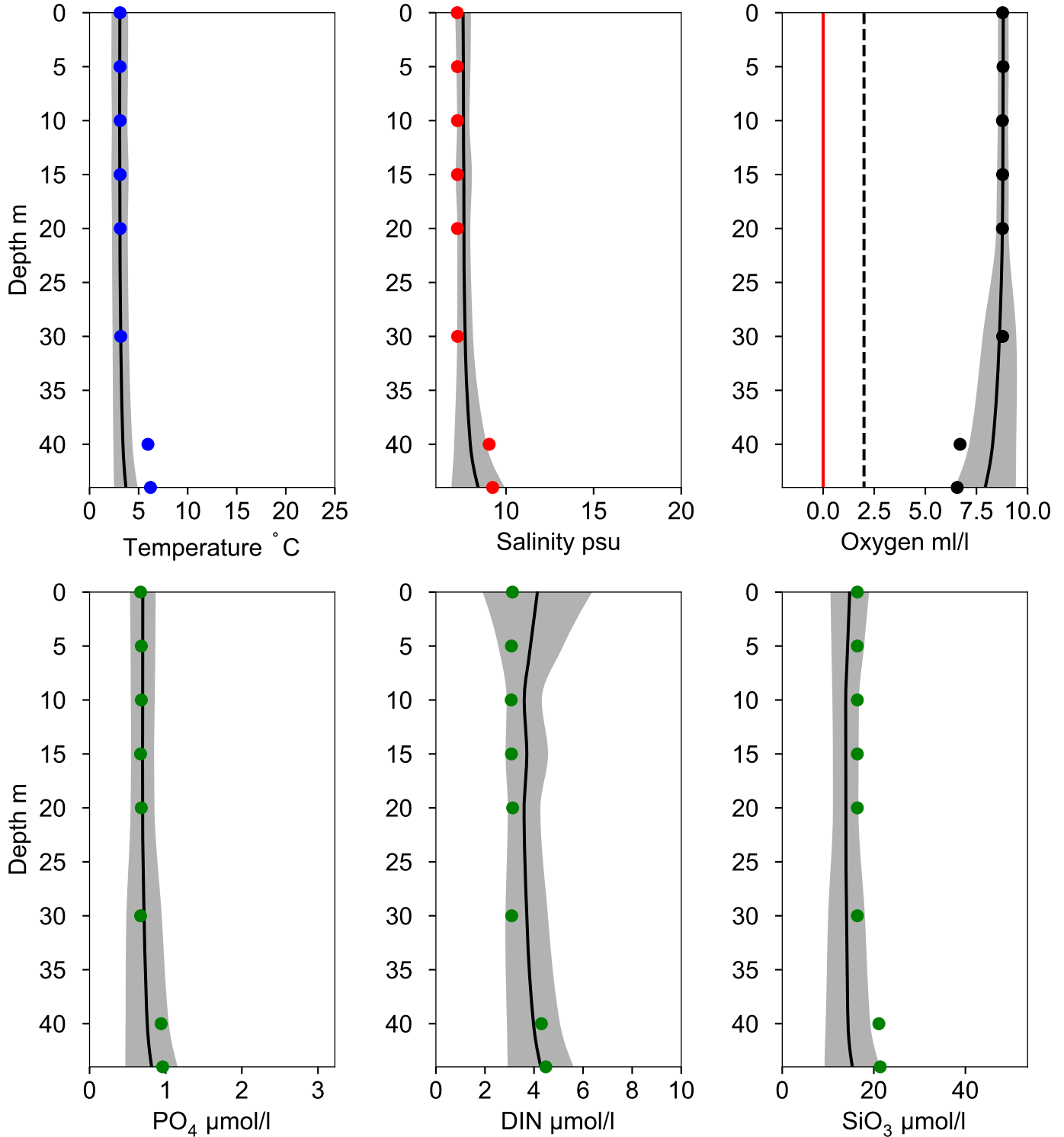
— Mean 1991-2020    St.Dev.    ● 2024



# Vertical profiles BY3 HAMRARNE SUND February

Statistics based on data from: Bornholmshavet

— Mean 1991-2020    St.Dev.    ● 2024-02-09

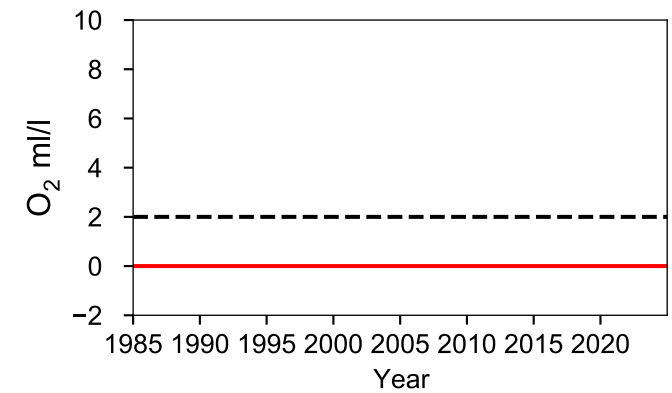
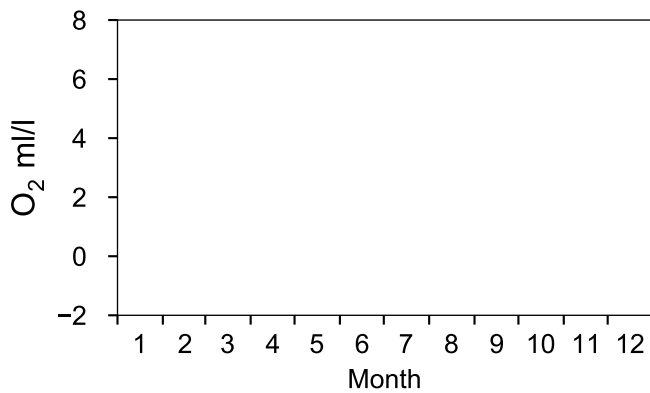
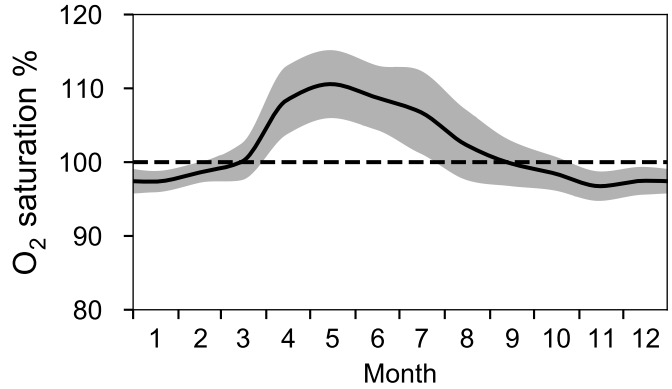
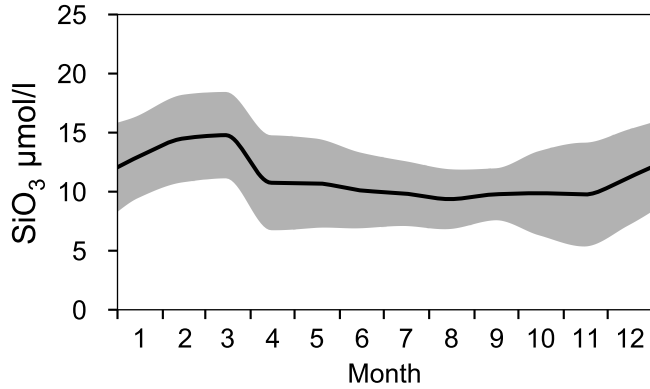
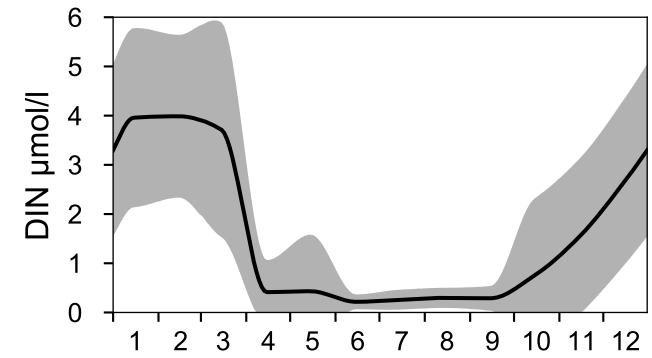
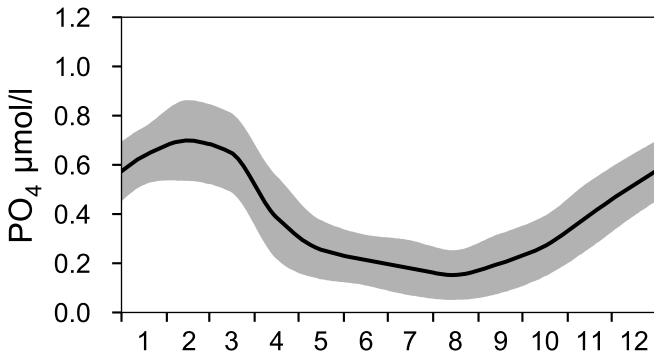
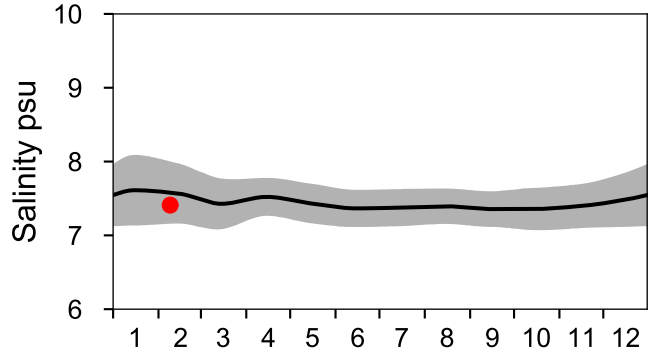
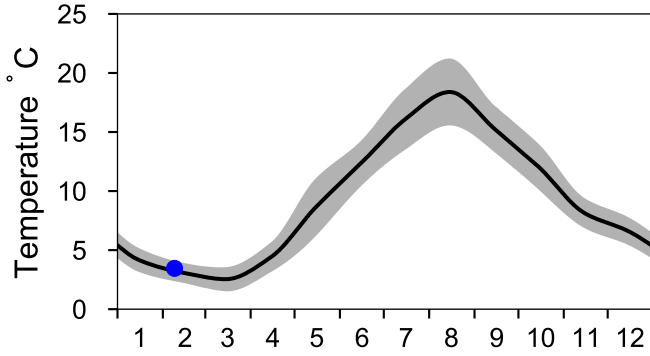


# STATION INFLOW 3 SURFACE WATER (0-10 m)

## Annual Cycles

Statistics based on data from: Bornholmshavet

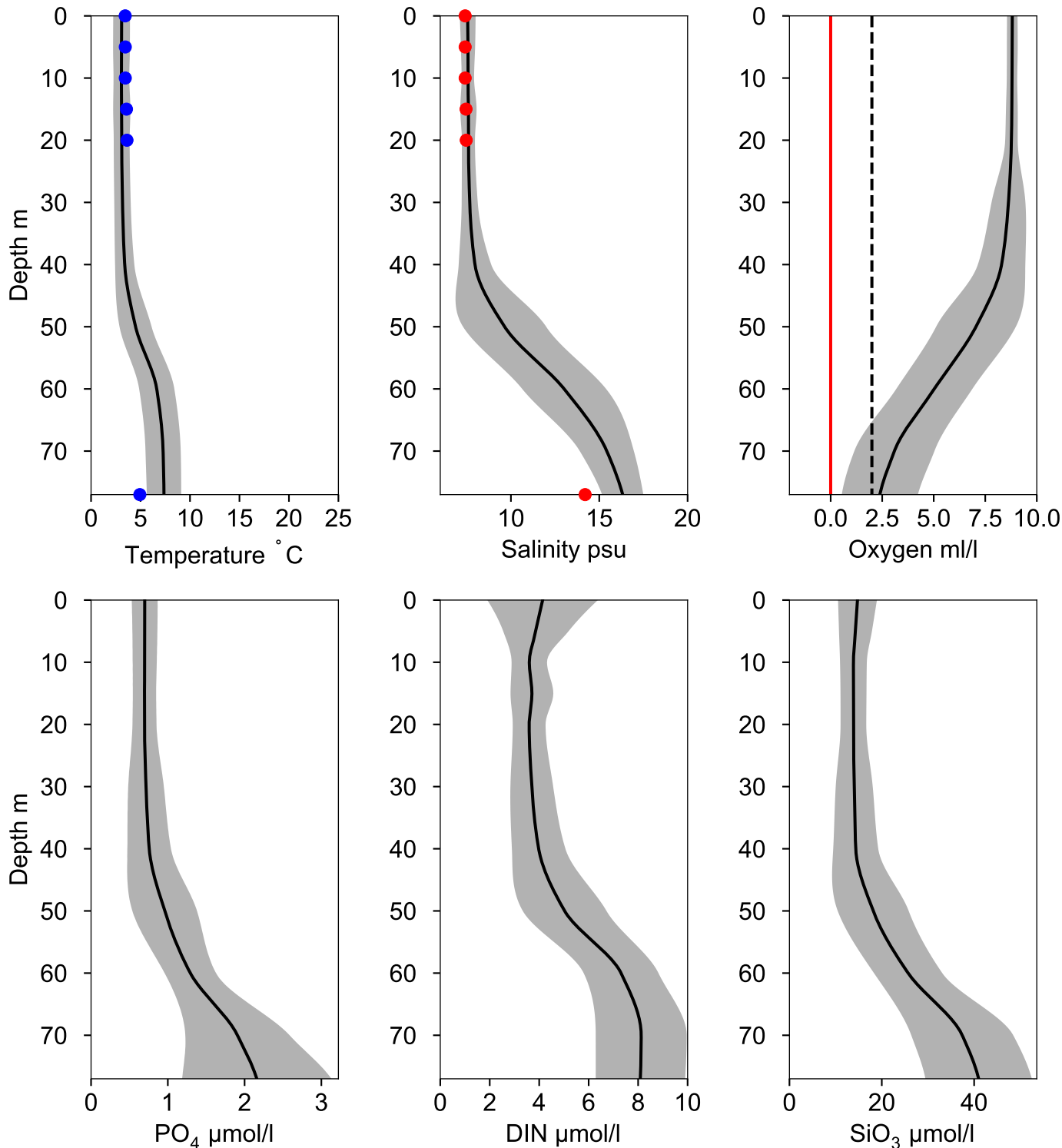
— Mean 1991-2020    St.Dev.    ● 2024



# Vertical profiles INFLOW 3 February

Statistics based on data from: Bornholmshavet

— Mean 1991-2020    ■ St.Dev.    ● 2024-02-09



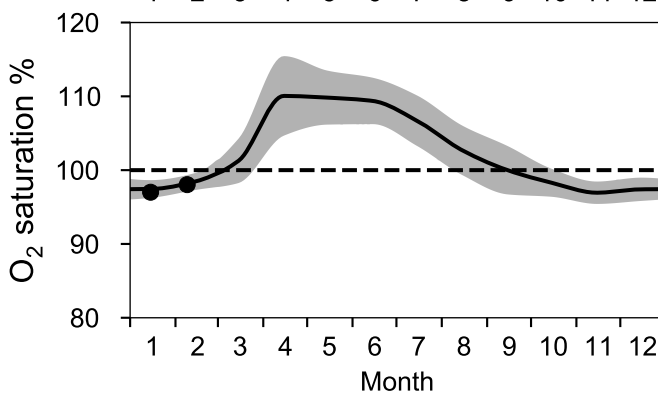
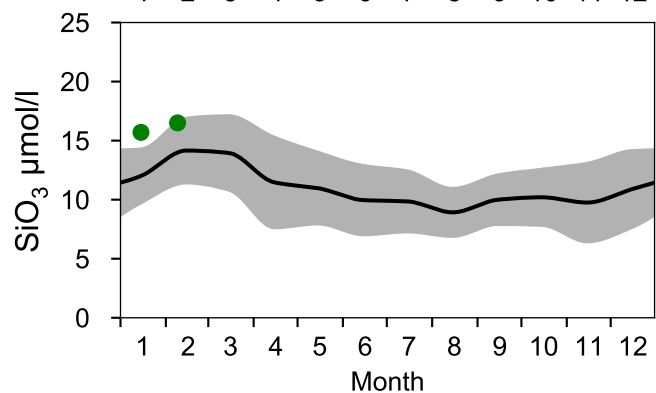
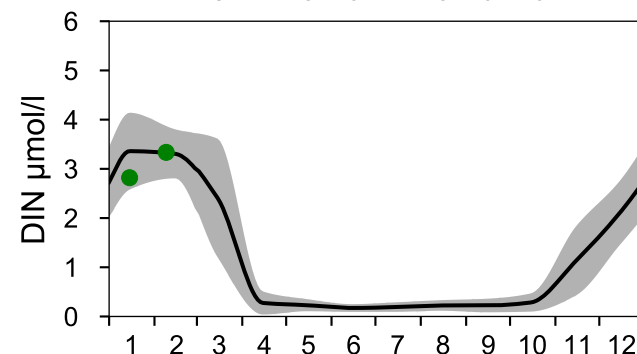
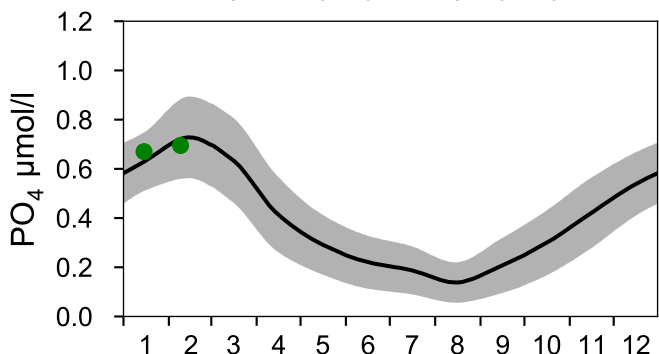
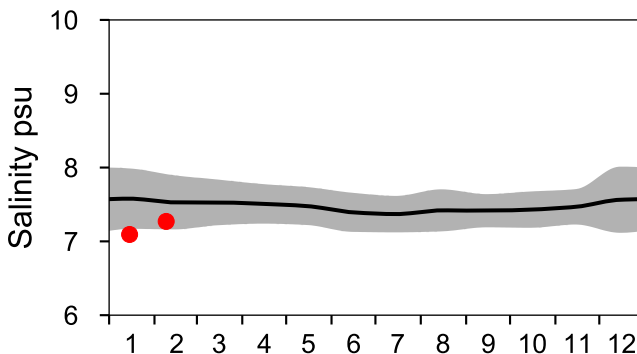
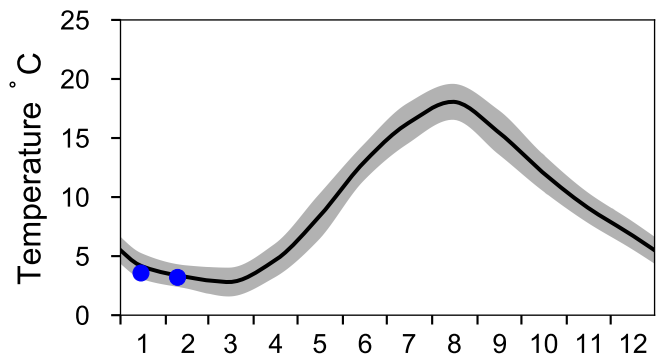
# STATION HANÖBUKTEN SURFACE WATER (0-10 m)

Annual Cycles

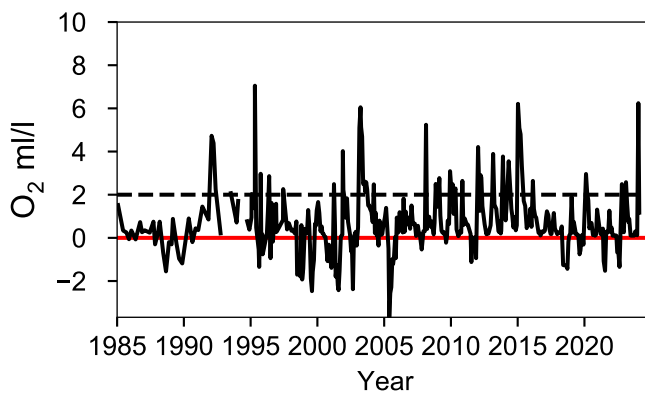
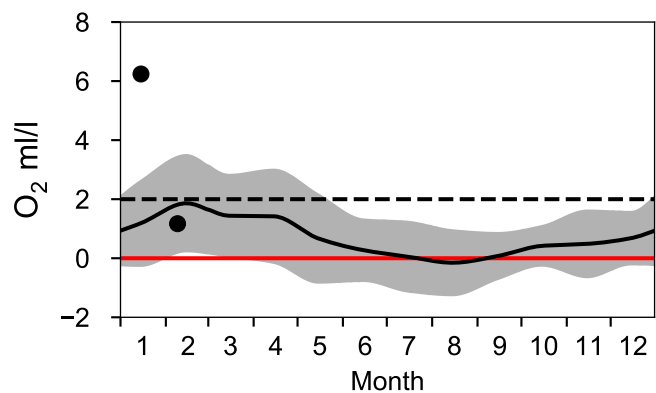
— Mean 1991-2020

■ St.Dev.

● 2024

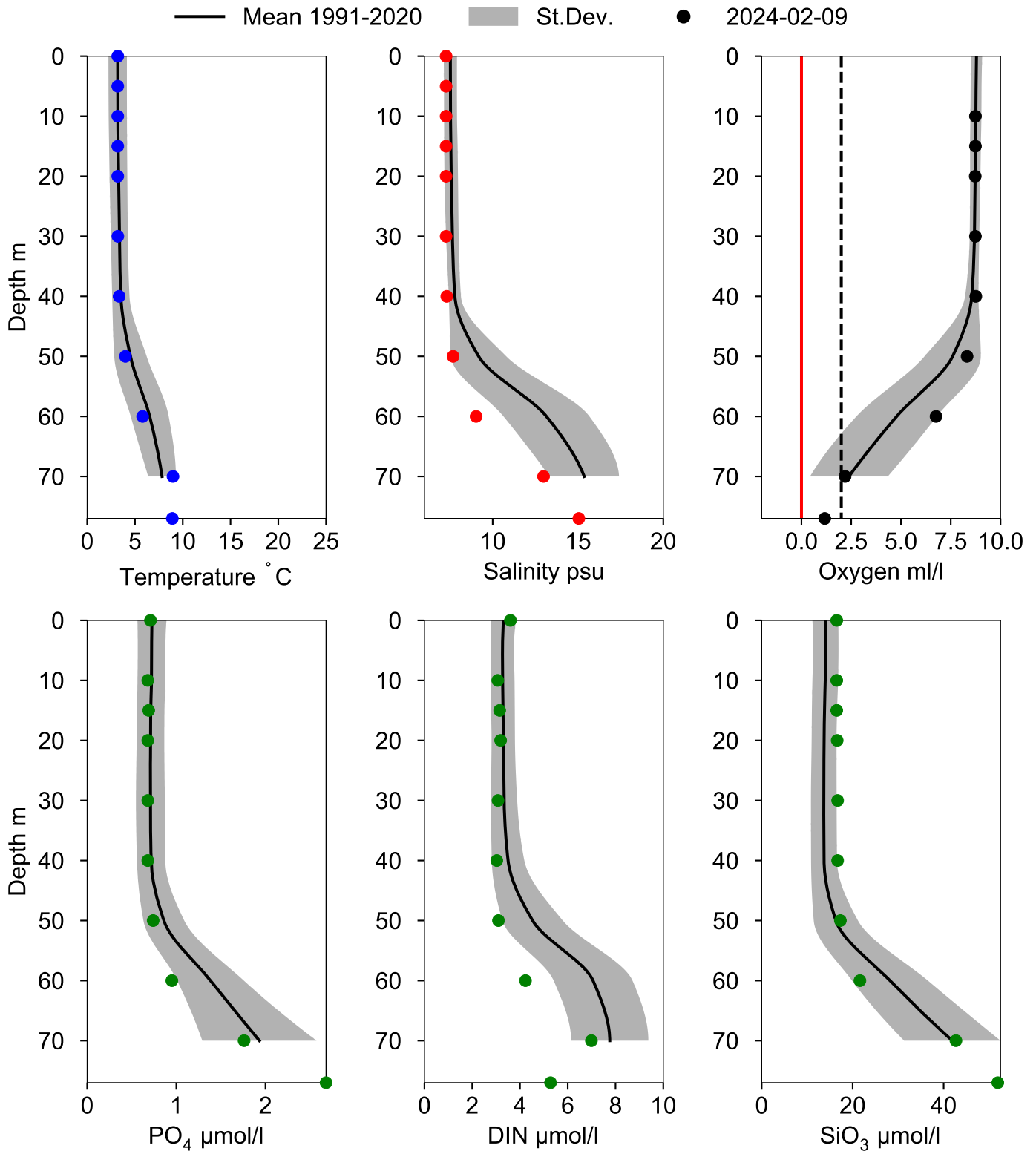


## OXYGEN IN BOTTOM WATER (depth >= 70 m)





# Vertical profiles HANÖBUKTEN February

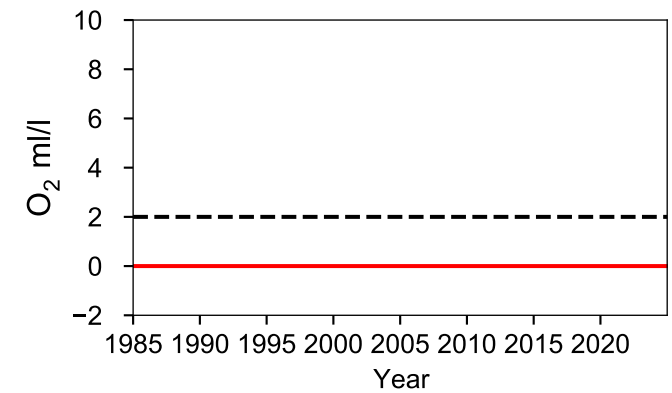
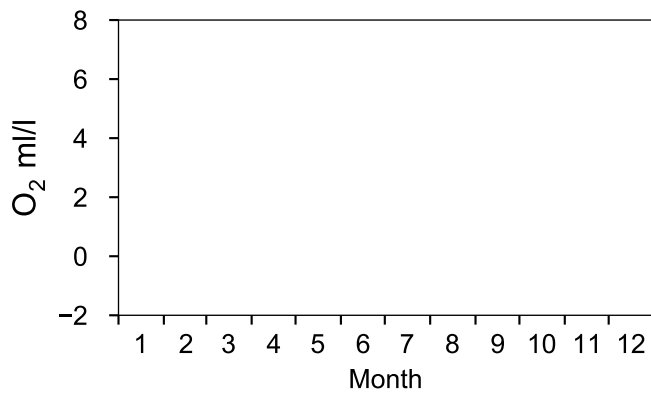
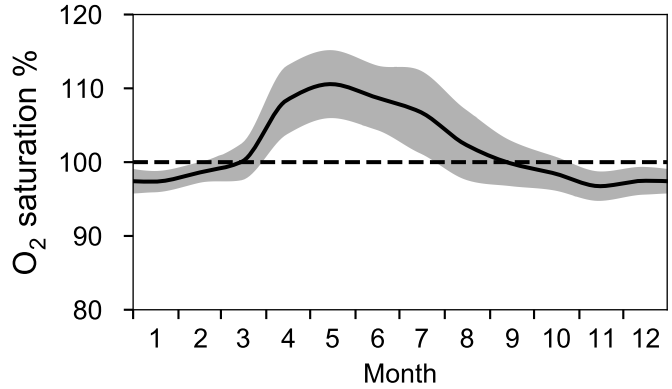
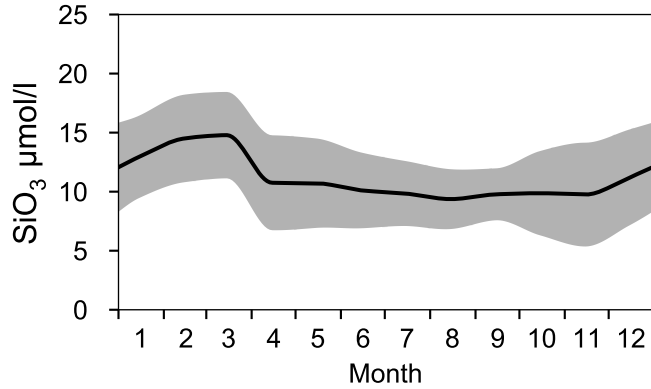
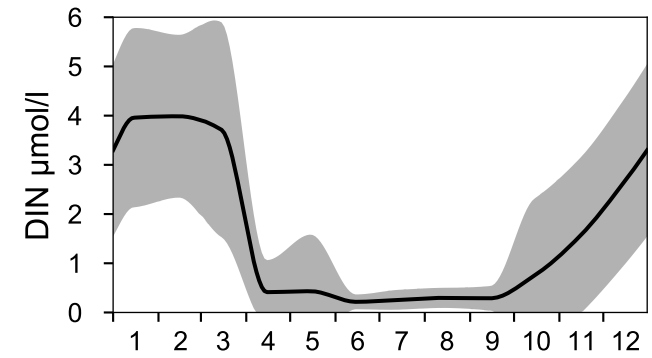
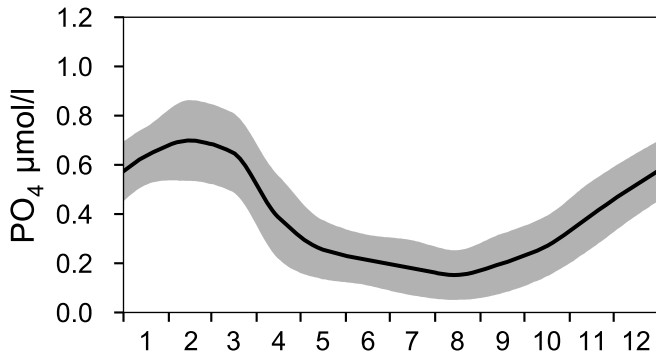
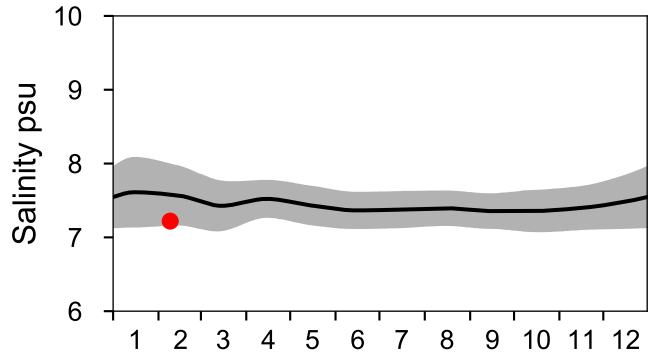
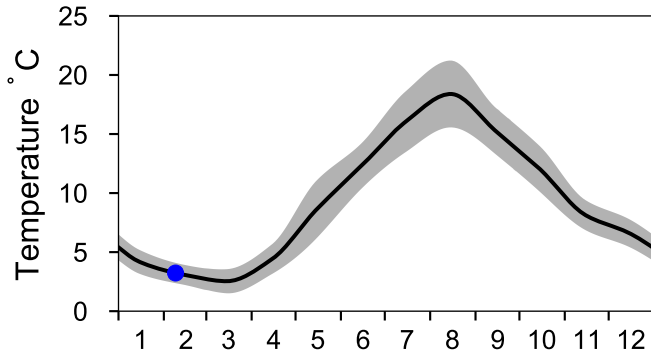


# STATION INFLOW-4 SURFACE WATER (0-10 m)

## Annual Cycles

Statistics based on data from: Bornholmshavet

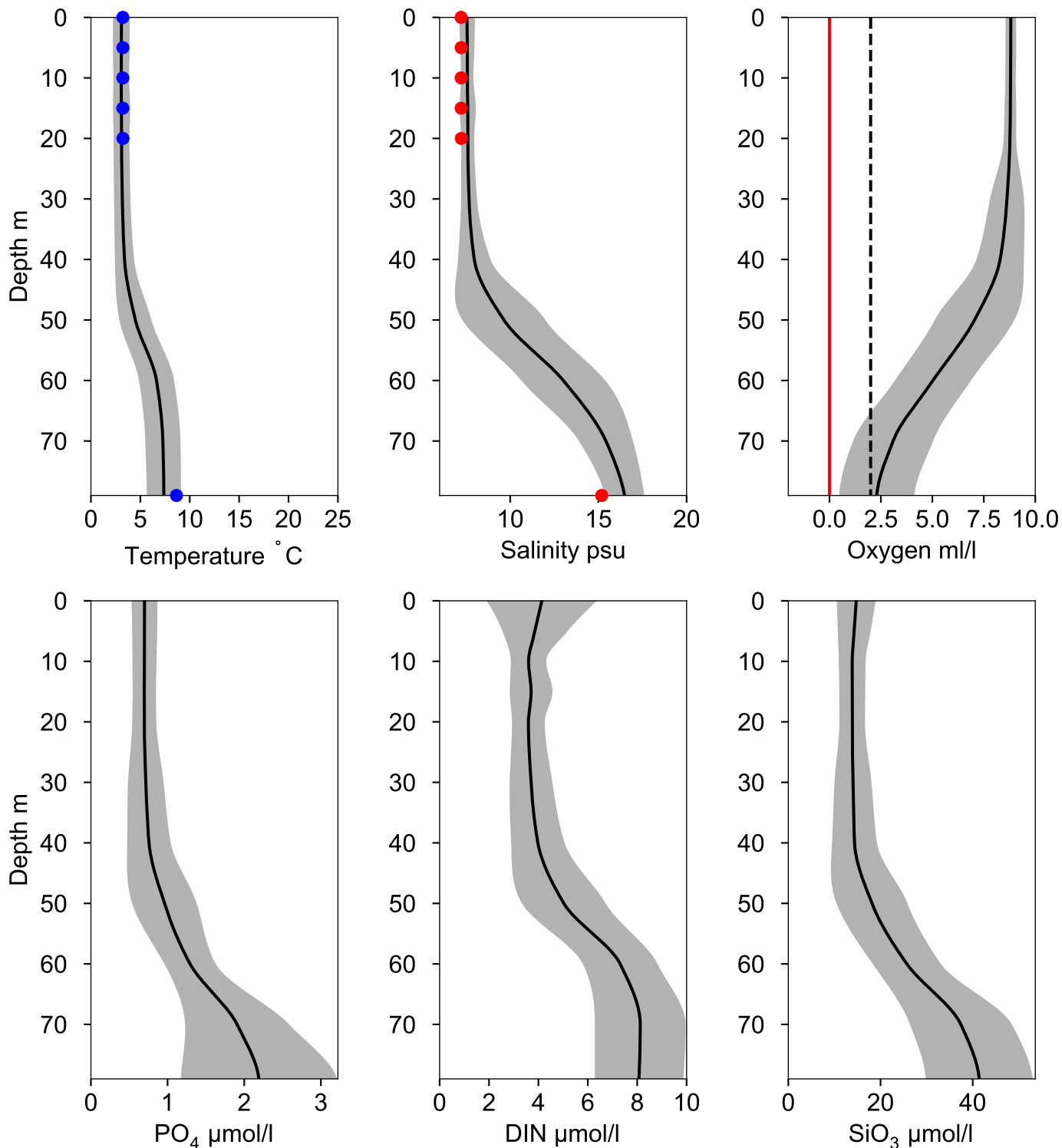
— Mean 1991-2020    St.Dev.    ● 2024



# Vertical profiles INFLOW-4 February

Statistics based on data from: Bornholmshavet

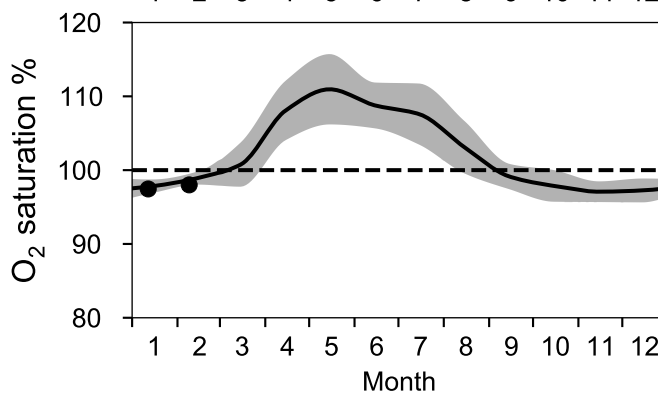
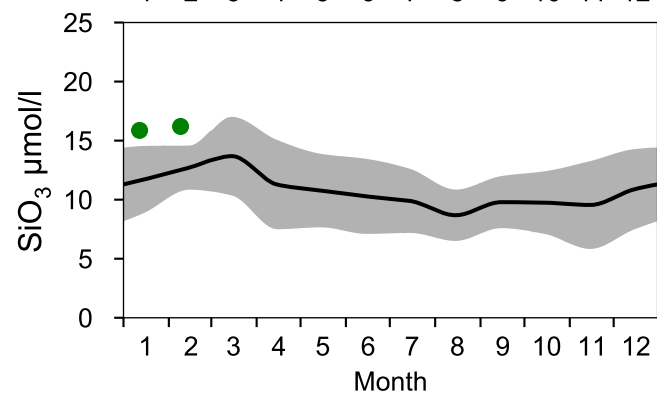
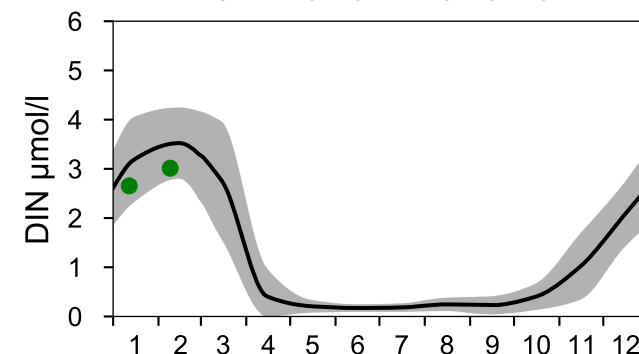
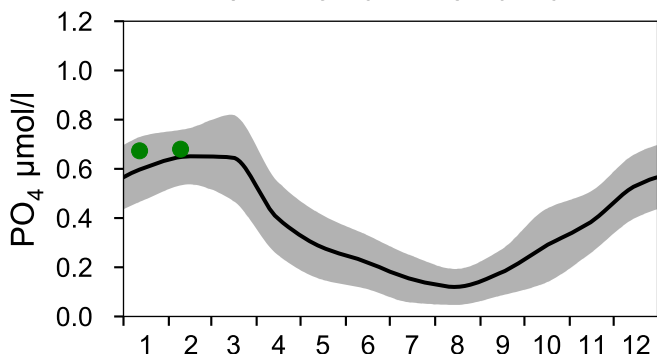
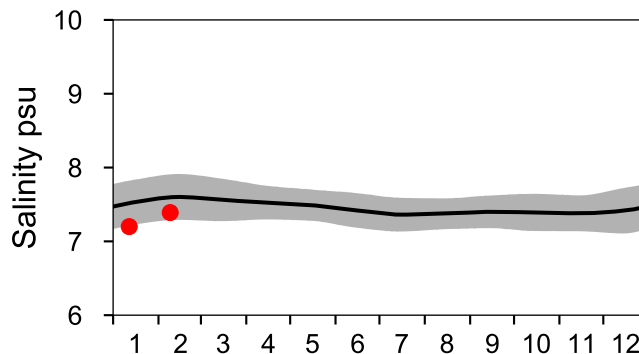
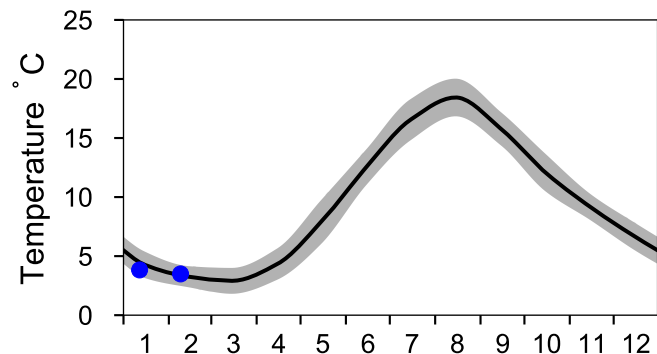
— Mean 1991-2020    ■ St.Dev.    ● 2024-02-09



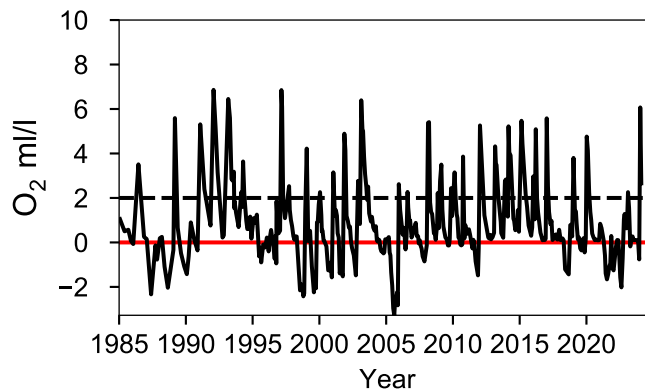
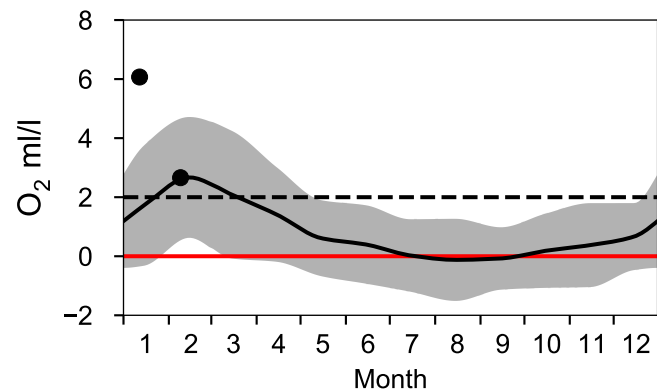
# STATION BY4 CHRISTIANSÖ SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020    St.Dev.    ● 2024

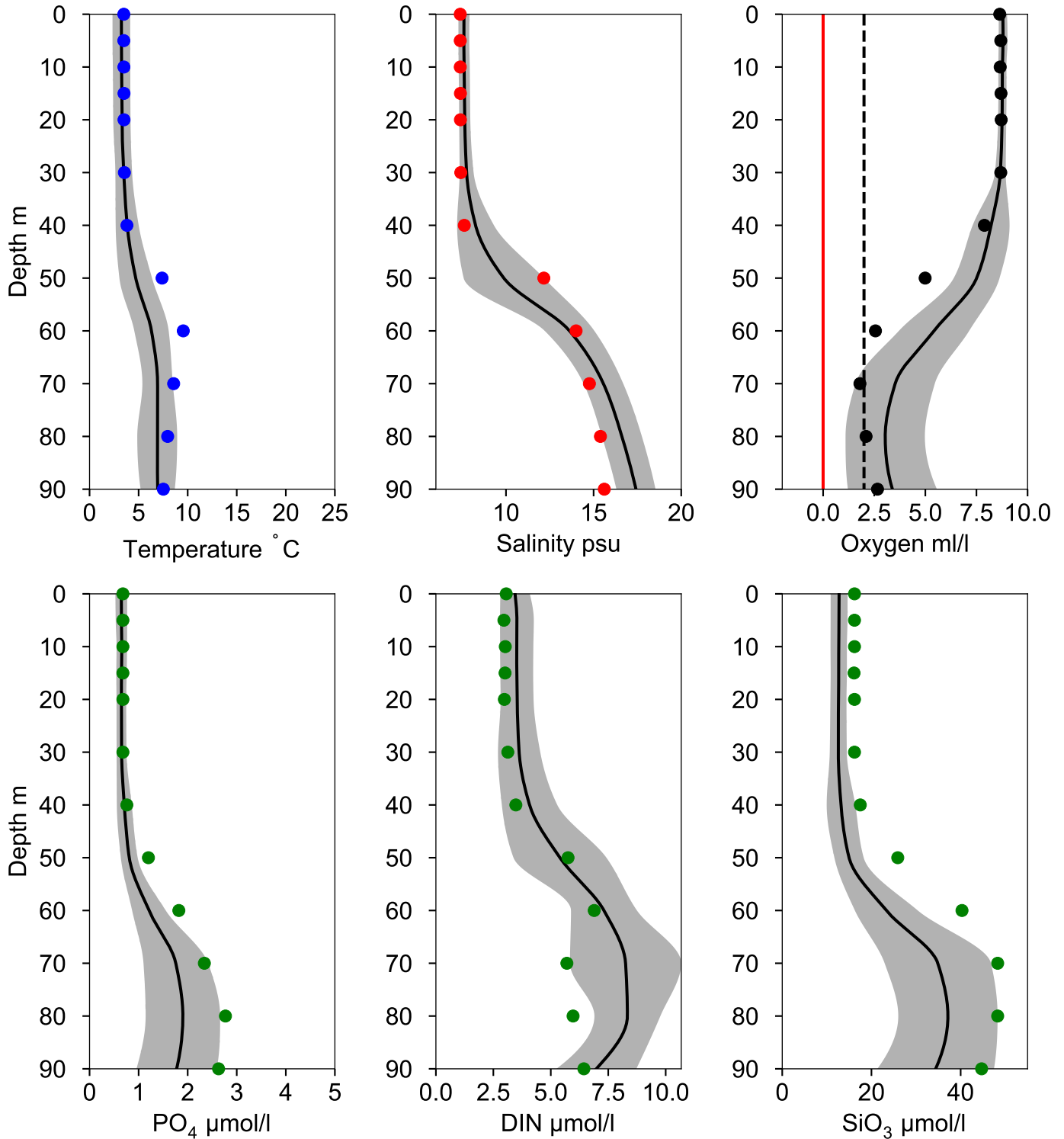


## OXYGEN IN BOTTOM WATER (depth >= 80 m)



# Vertical profiles BY4 CHRISTIANSÖ February

— Mean 1991-2020    St.Dev.    ● 2024-02-09

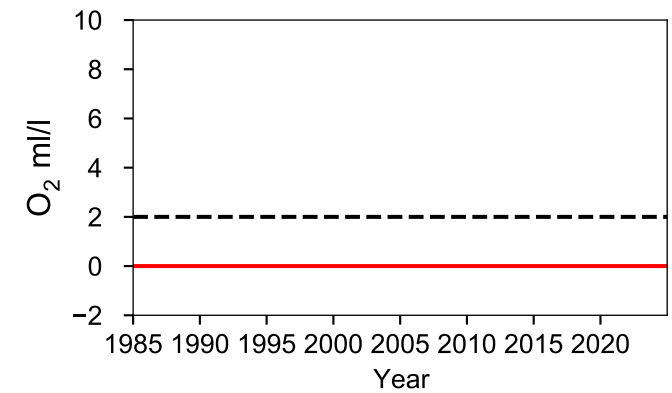
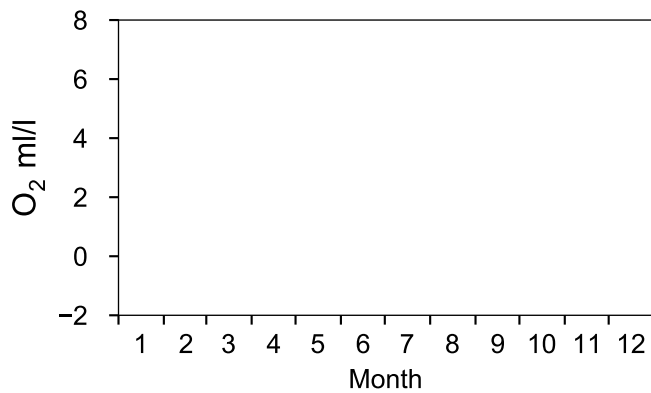
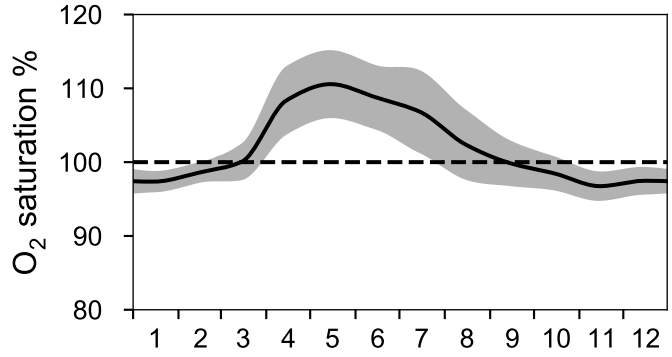
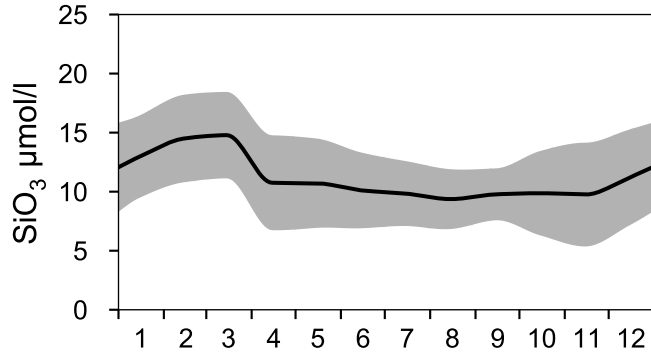
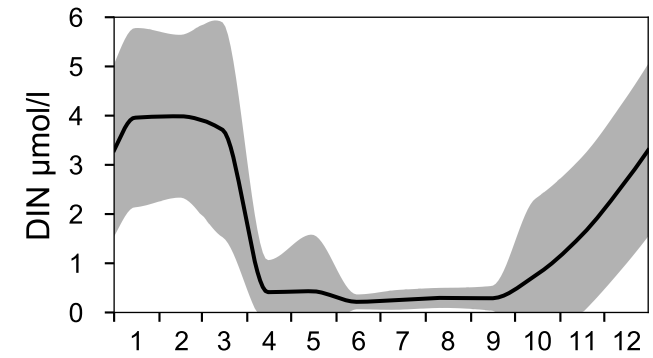
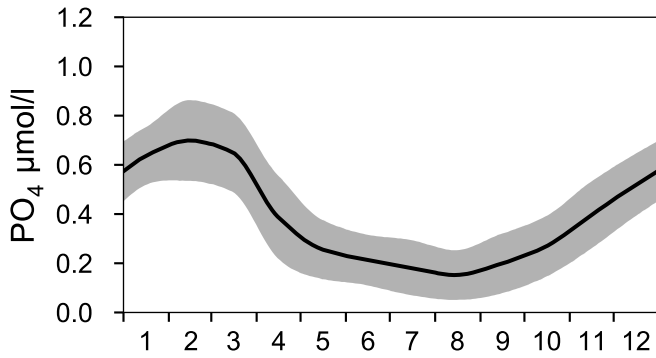
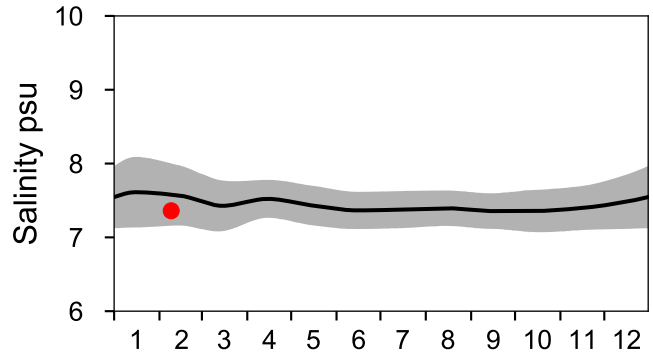
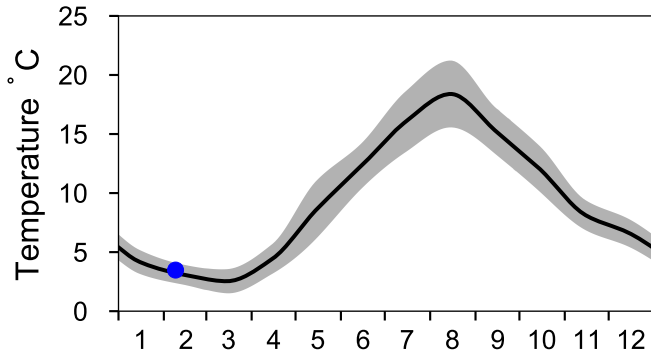


# STATION INFLOW 5 SURFACE WATER (0-10 m)

## Annual Cycles

Statistics based on data from: Bornholmshavet

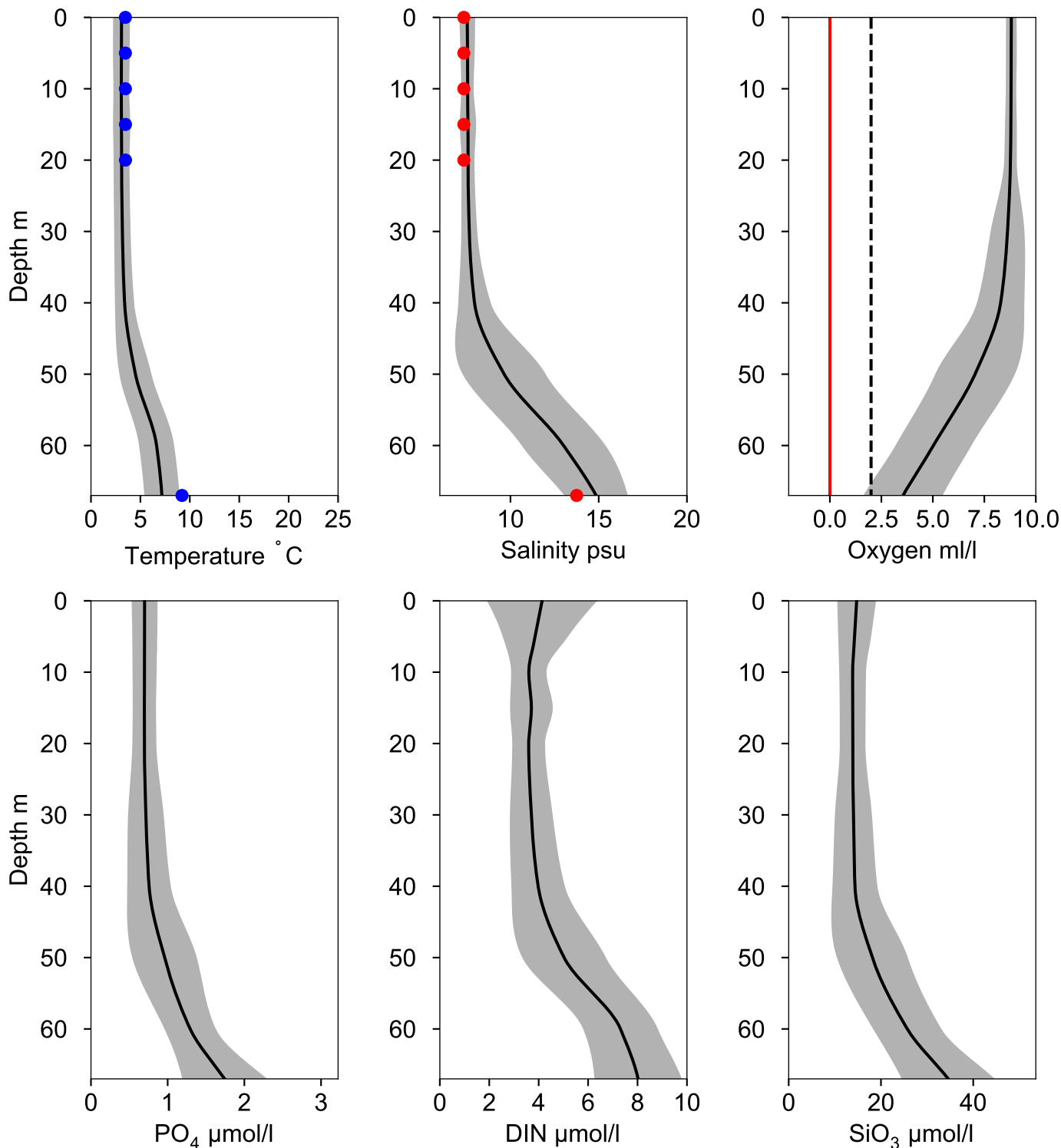
— Mean 1991-2020    St.Dev.    ● 2024



# Vertical profiles INFLOW 5 February

Statistics based on data from: Bornholmshavet

— Mean 1991-2020    ■ St.Dev.    ● 2024-02-09

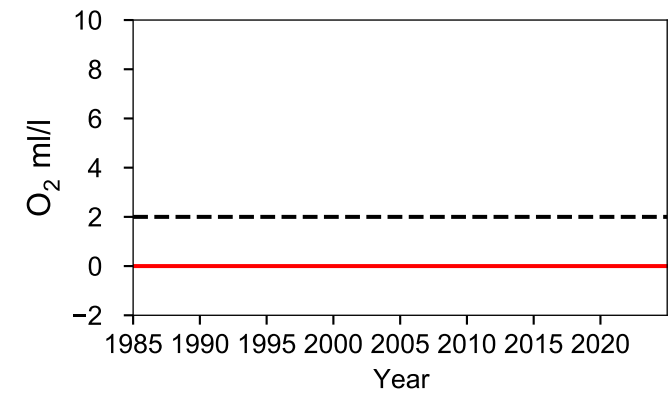
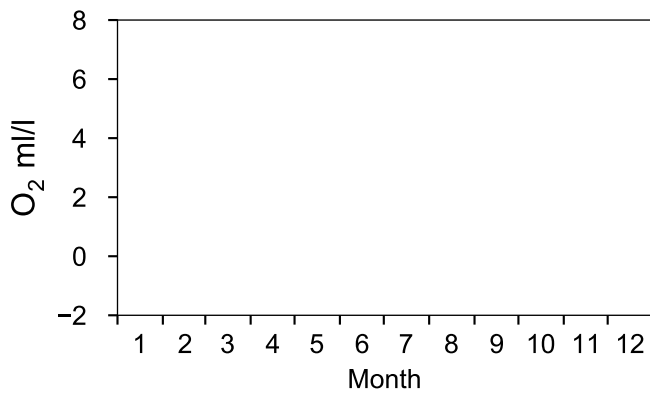
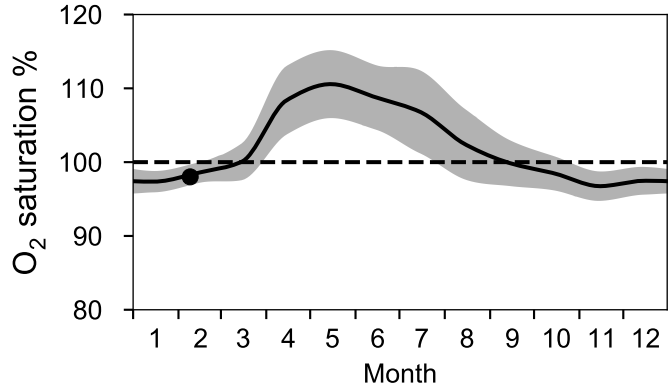
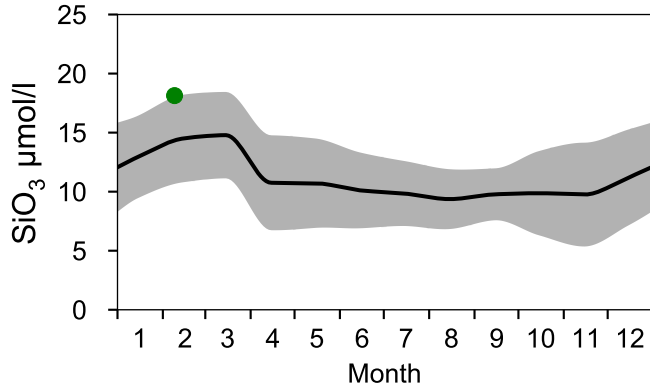
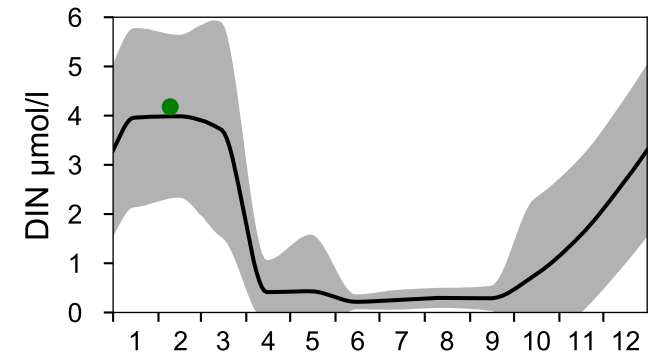
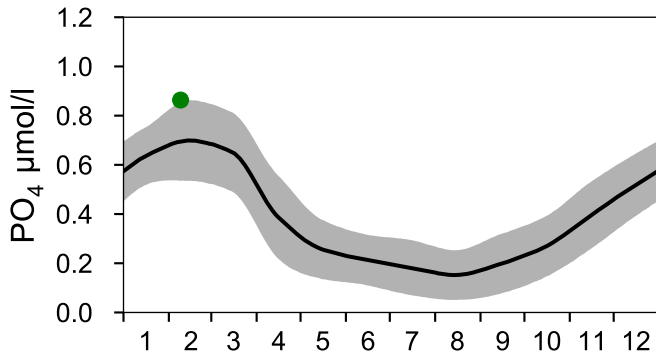
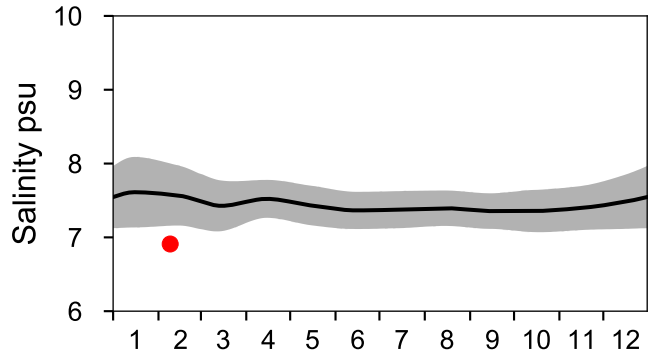
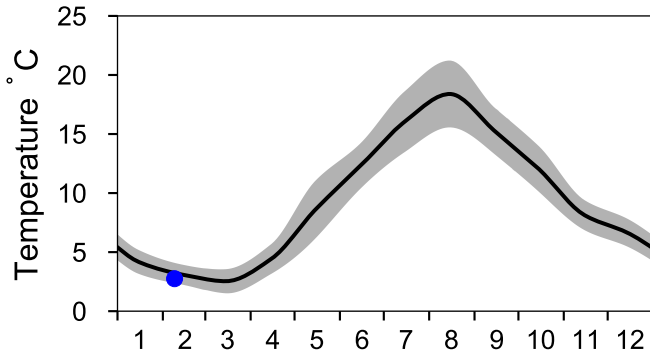


# STATION HANÖBUKTEN-KBV SURFACE WATER (0-10 m)

## Annual Cycles

Statistics based on data from: Bornholmshavet

— Mean 1991-2020    St.Dev.    ● 2024

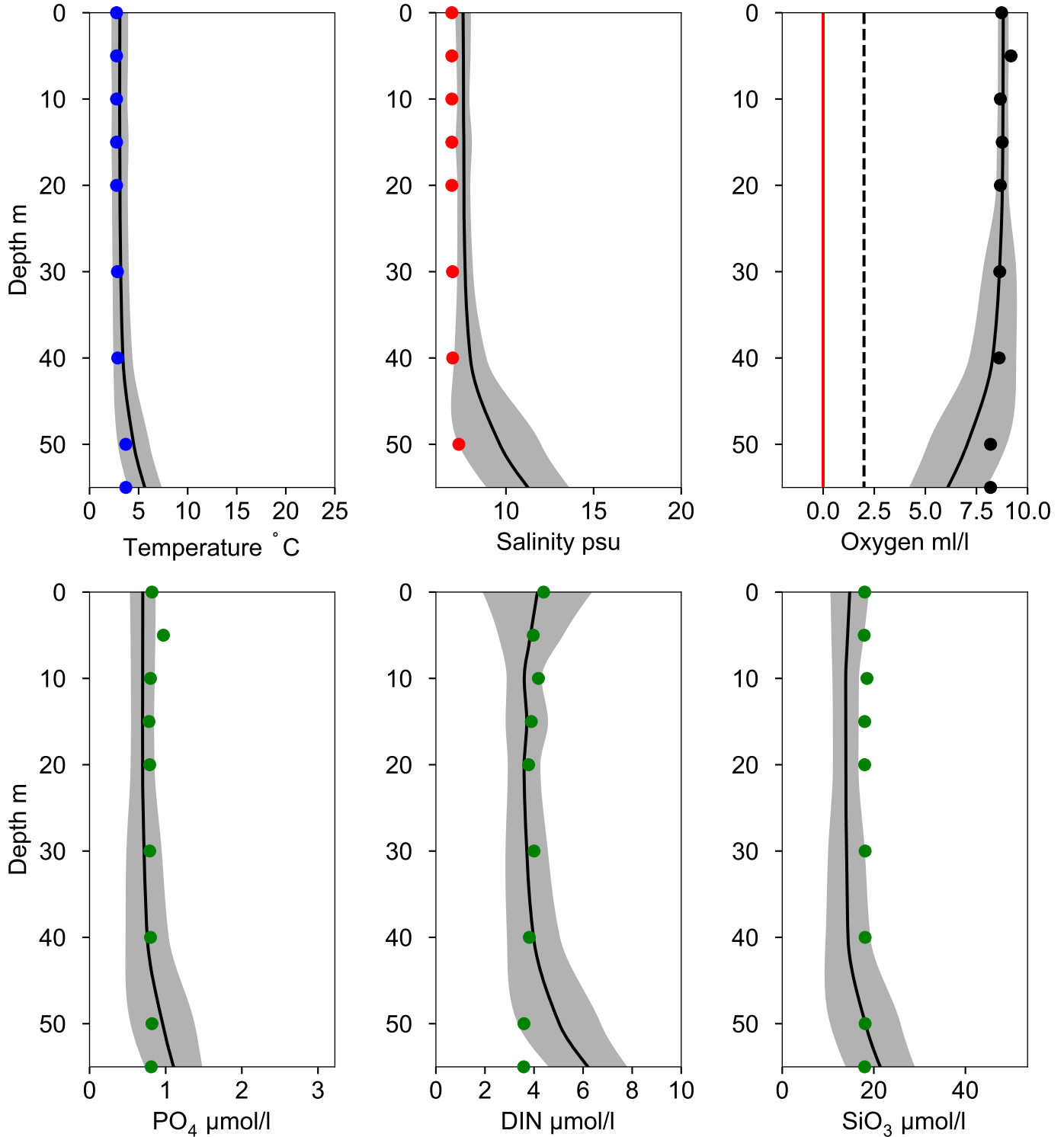




# Vertical profiles HANÖBUKTEN-KBV February

Statistics based on data from: Bornholmshavet

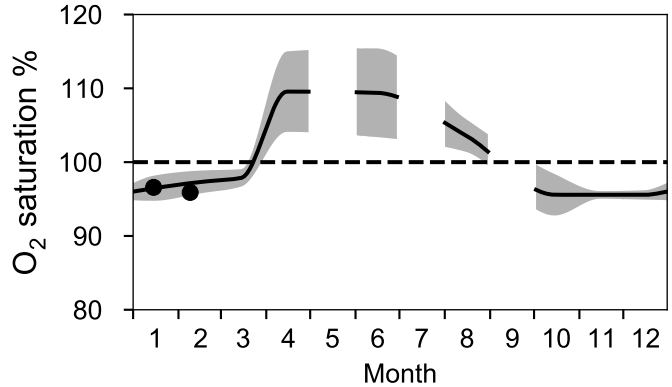
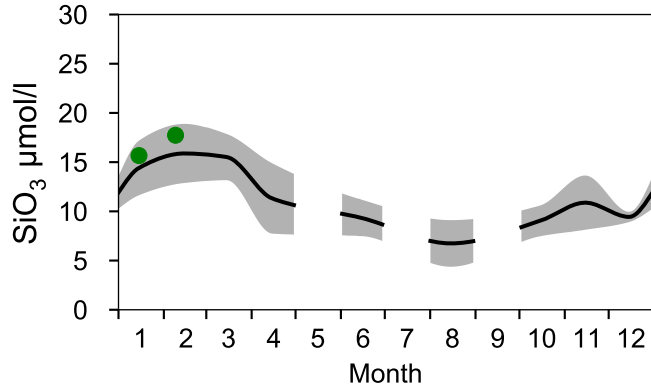
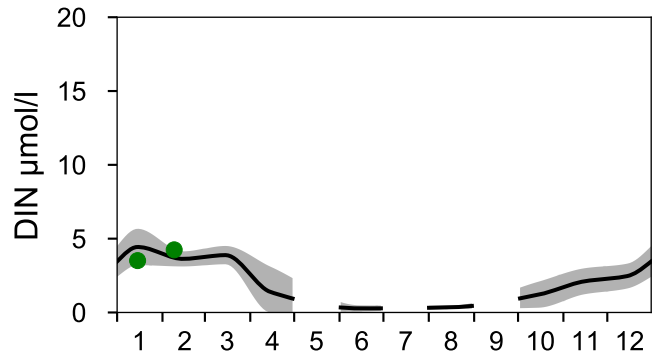
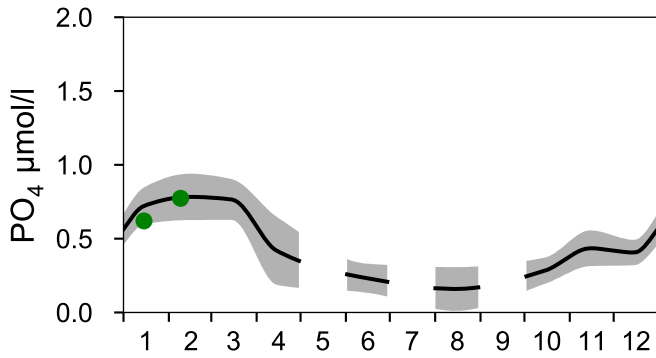
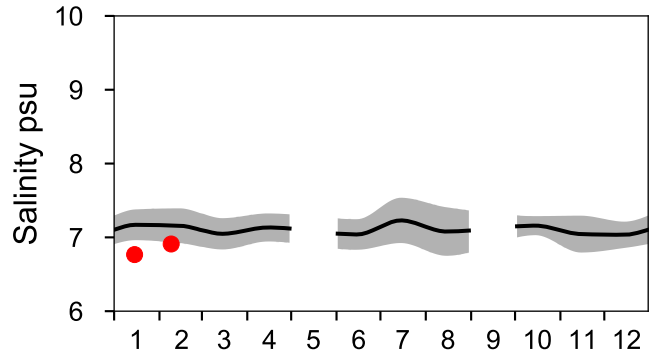
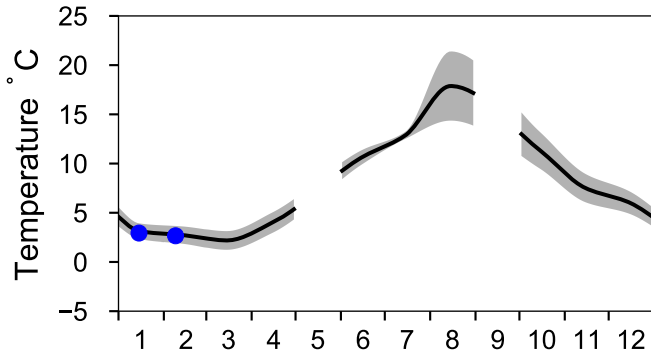
— Mean 1991-2020    ■ St.Dev.    ● 2024-02-09



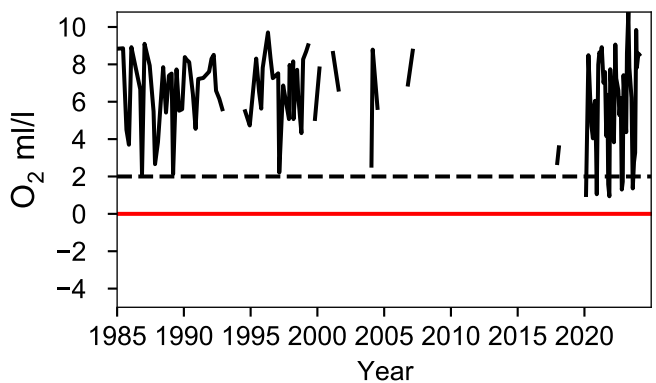
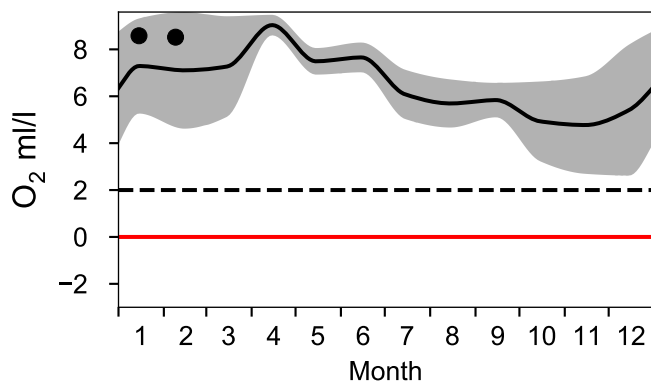
# STATION BY39 ÖLANDS S UDDE SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020    St.Dev.    ● 2024

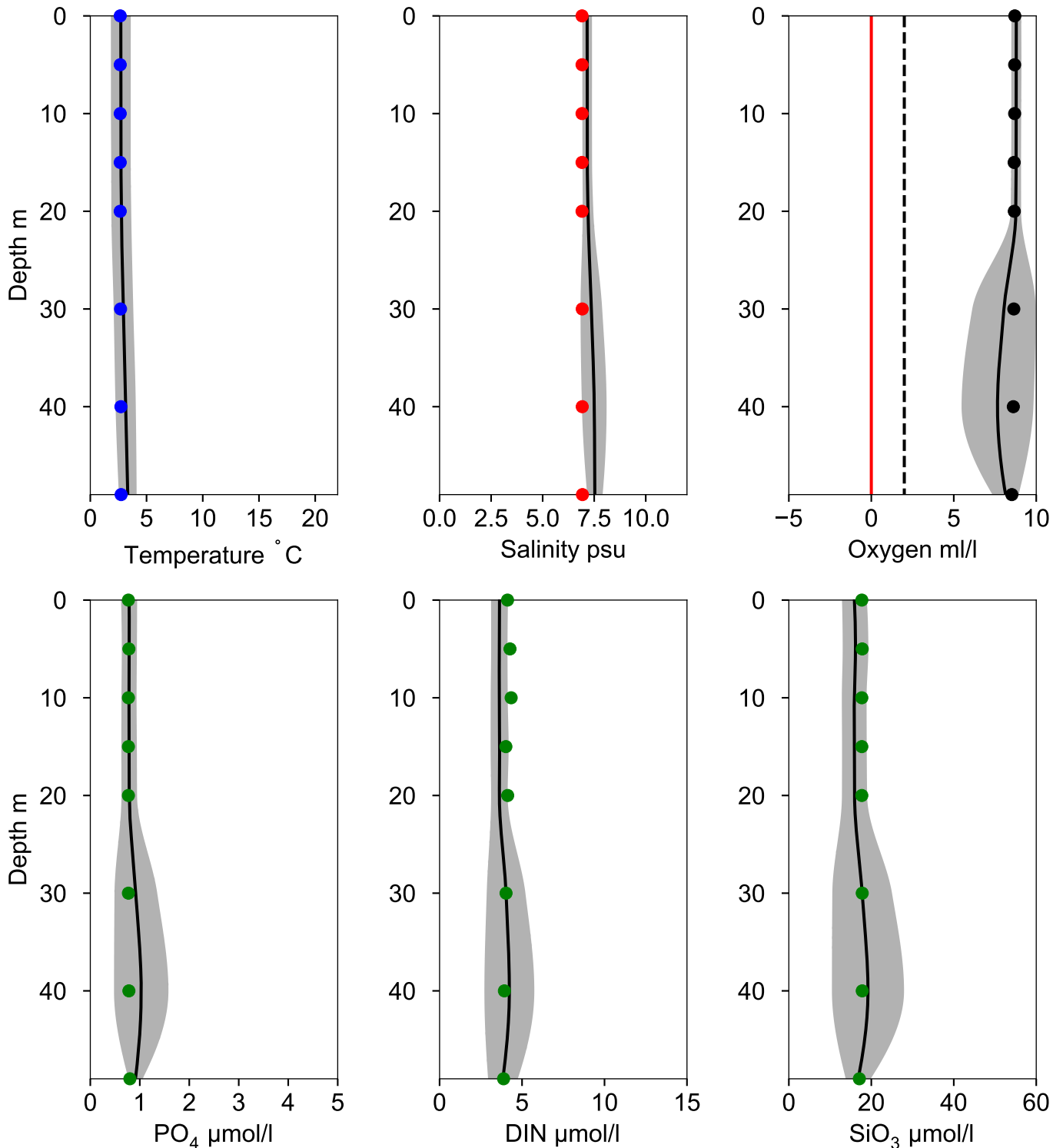


## OXYGEN IN BOTTOM WATER (depth >= 40 m)



# Vertical profiles BY39 ÖLANDS S UDDE February

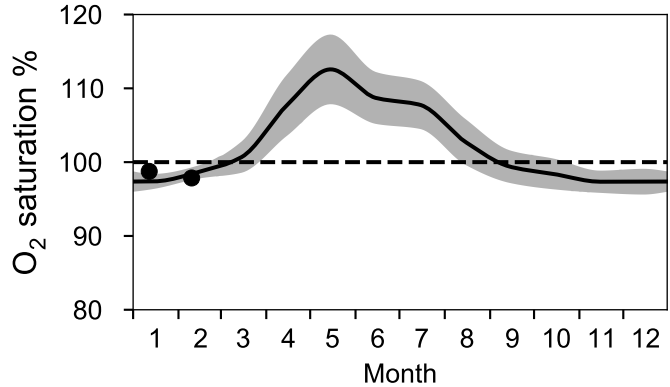
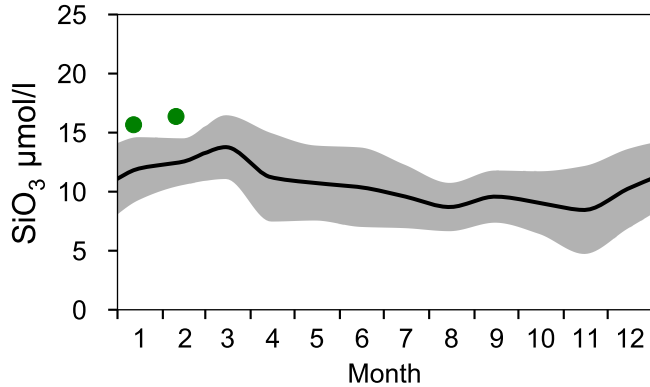
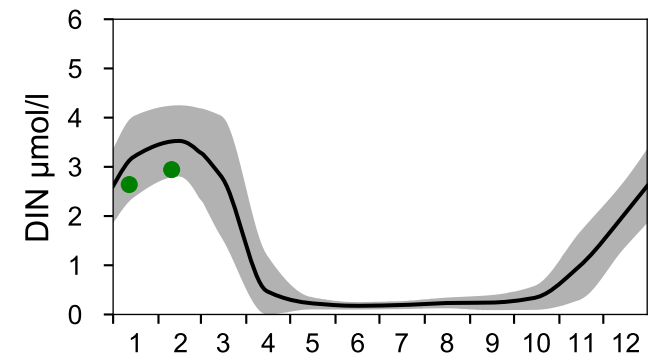
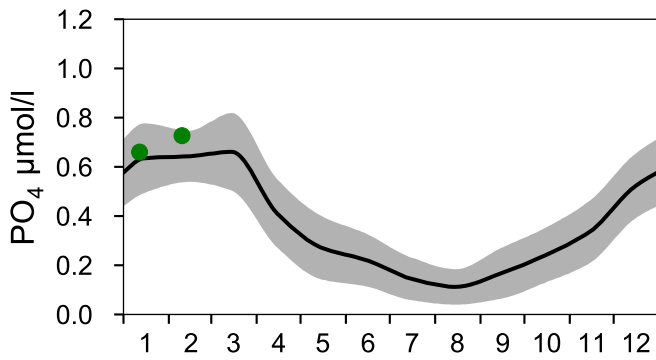
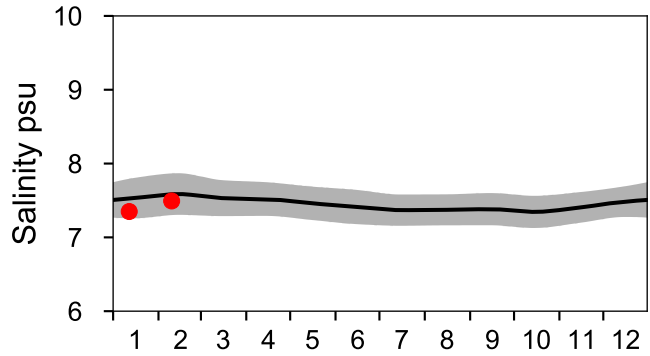
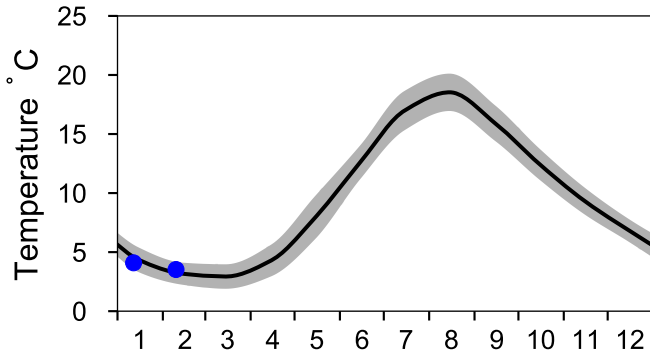
— Mean 1991-2020    ■ St.Dev.    ● 2024-02-09



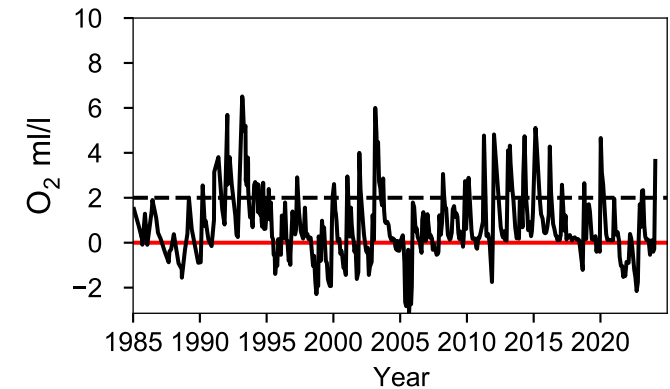
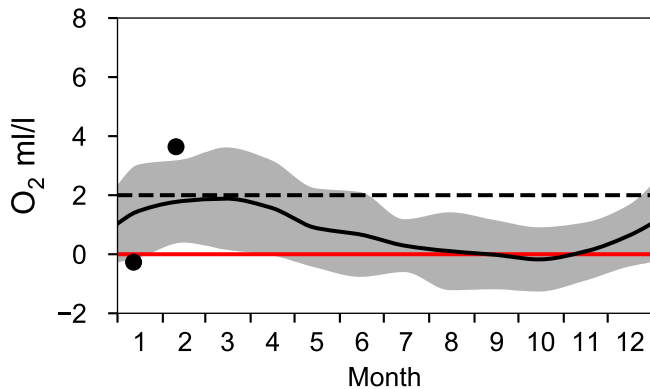
# STATION BY5 BORNHOLMSDJ SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020    St.Dev.    ● 2024

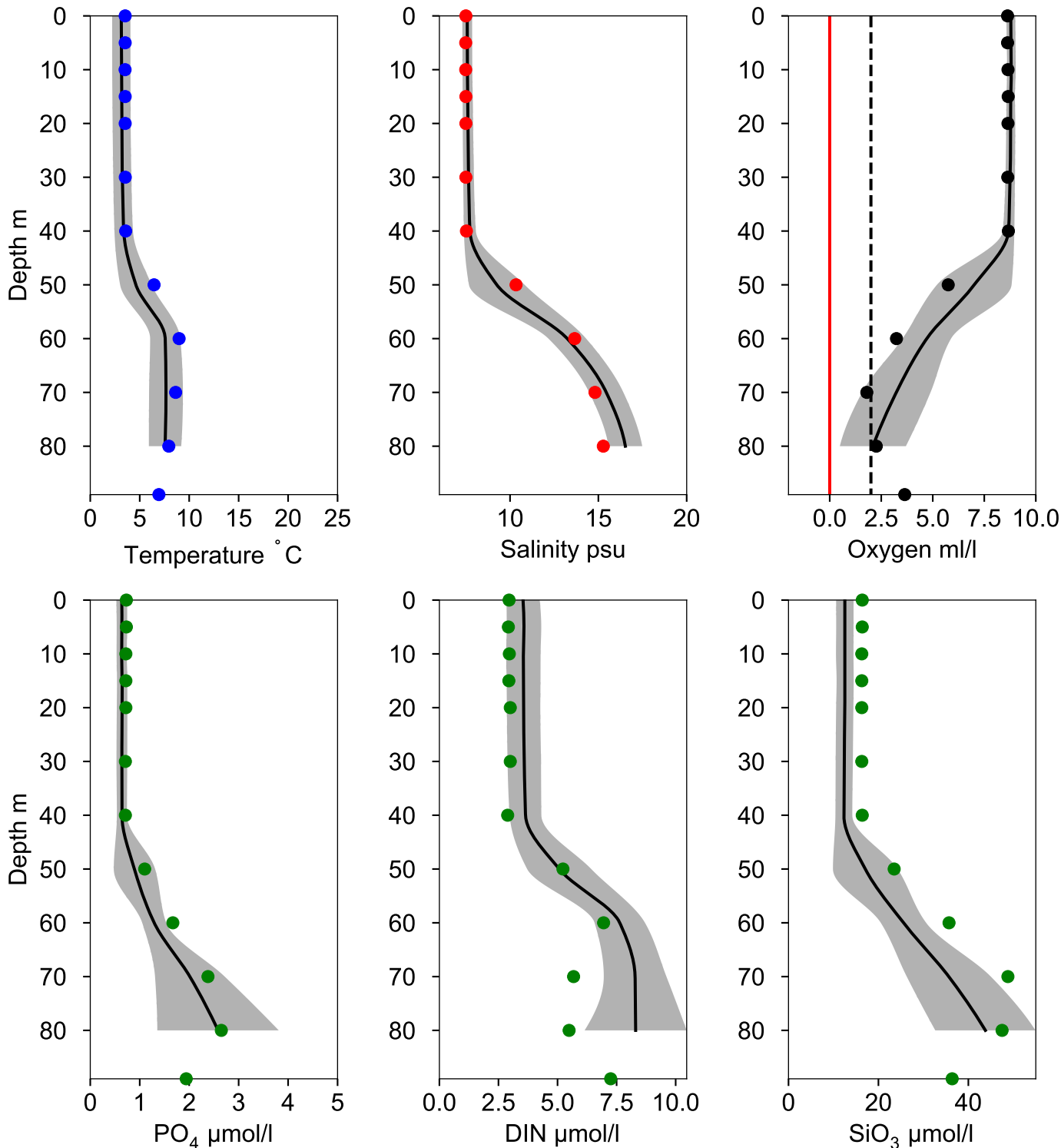


## OXYGEN IN BOTTOM WATER (depth >= 80 m)



# Vertical profiles BY5 BORNHOLMSDJ February

— Mean 1991-2020    ■ St.Dev.    ● 2024-02-10

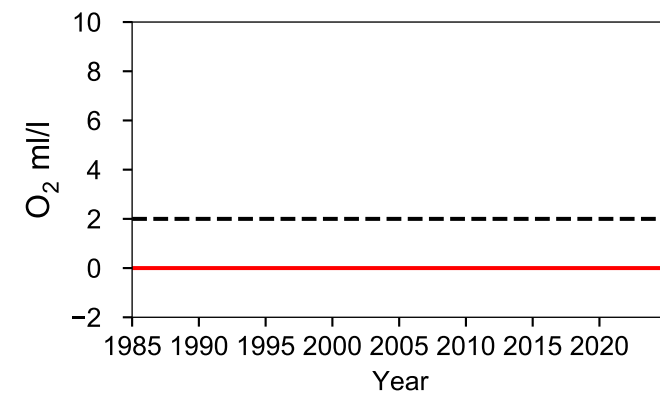
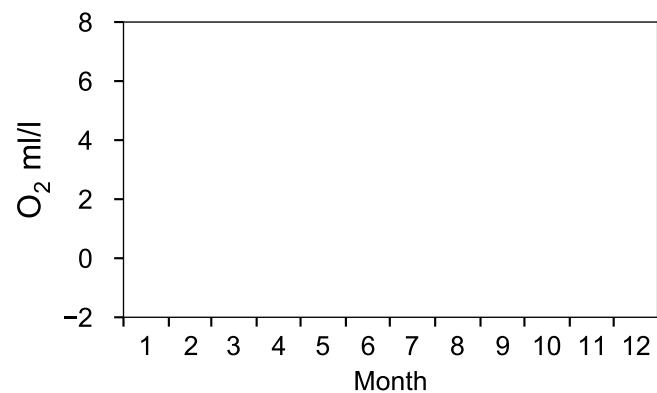
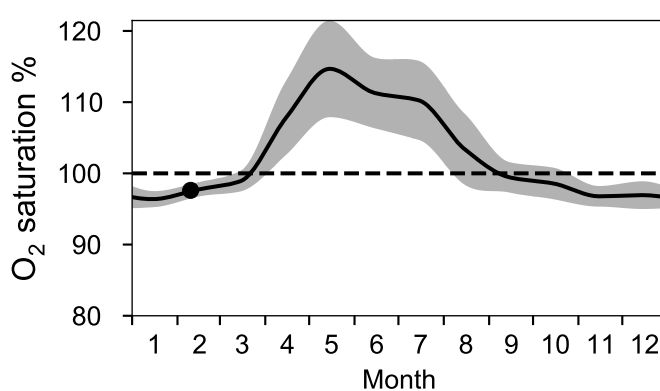
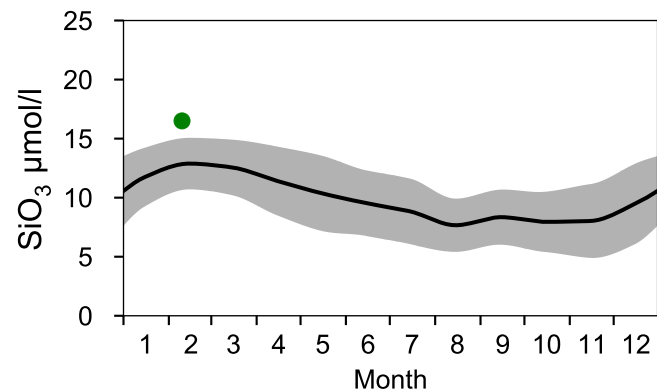
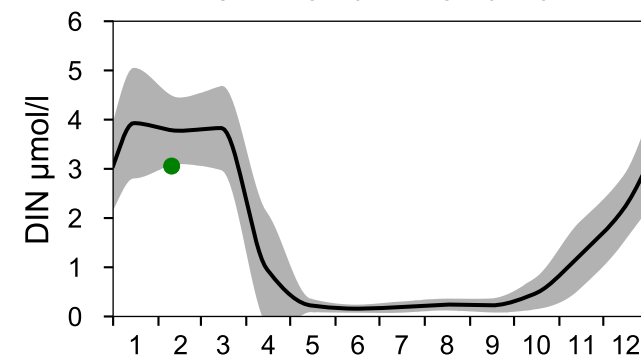
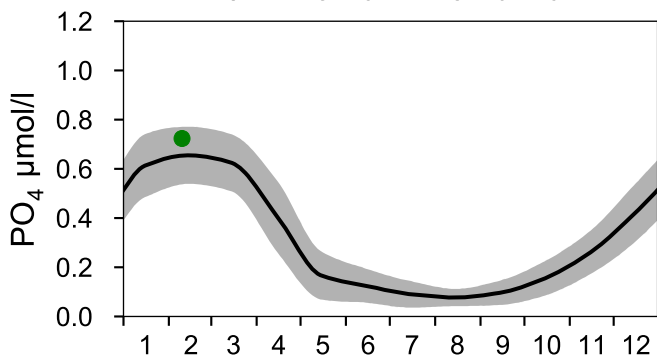
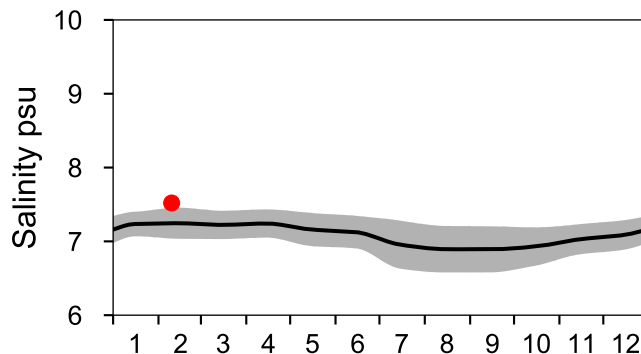
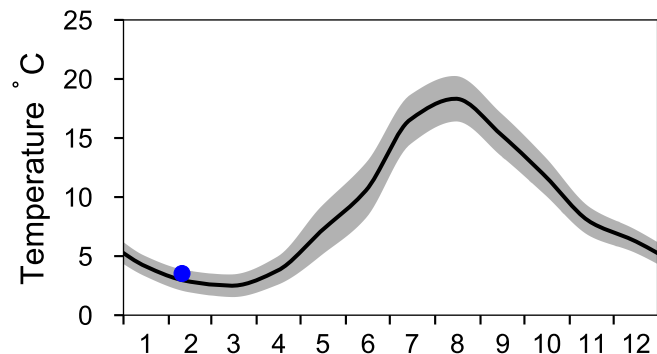


# STATION STOLPE TRÖSKEL SURFACE WATER (0-10 m)

## Annual Cycles

Statistics based on data from: Östra Gotlandshavet

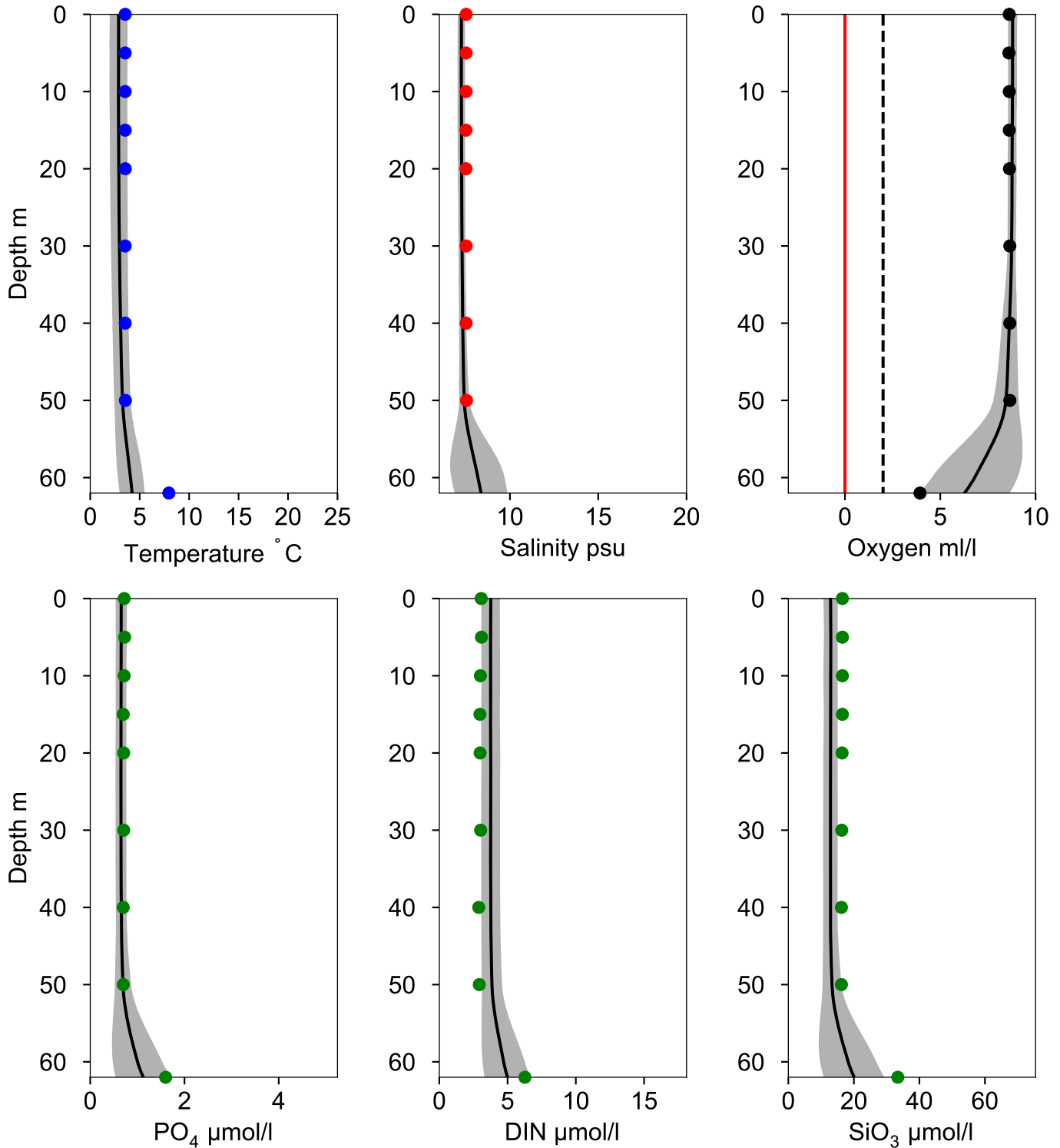
— Mean 1991-2020    St.Dev.    ● 2024



# Vertical profiles STOLPE TRÖSKEL February

Statistics based on data from: Östra Gotlandshavet

— Mean 1991-2020    St.Dev.    ● 2024-02-10

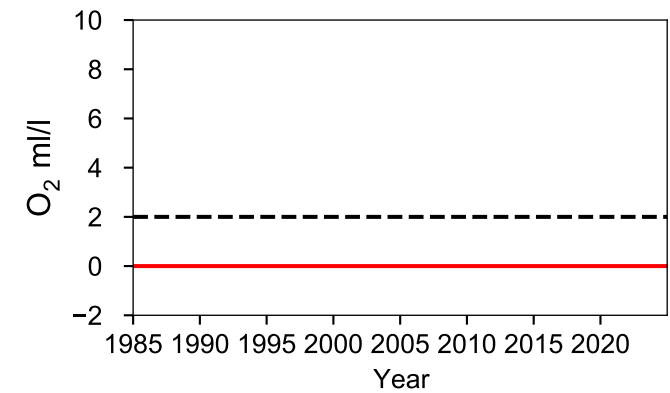
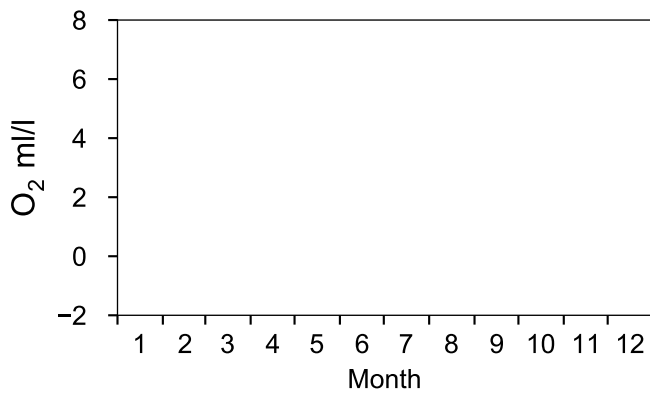
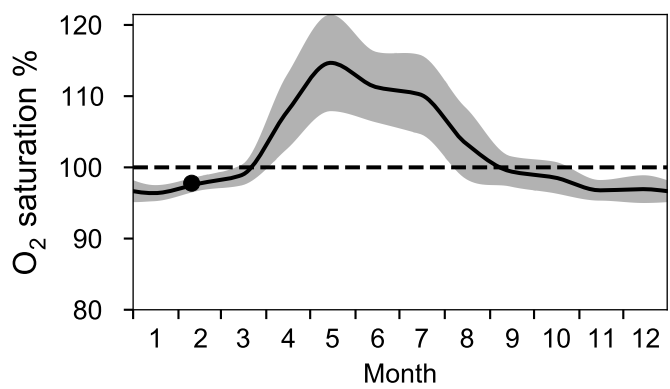
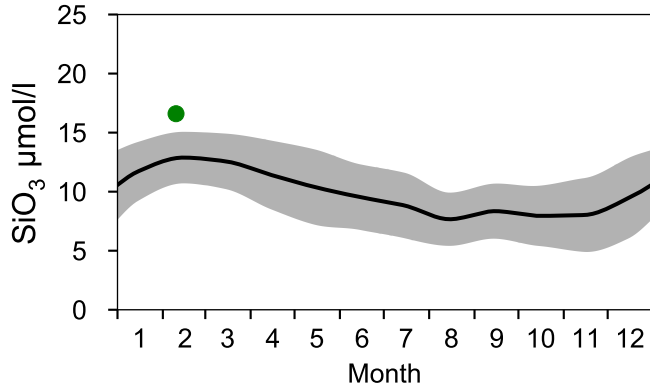
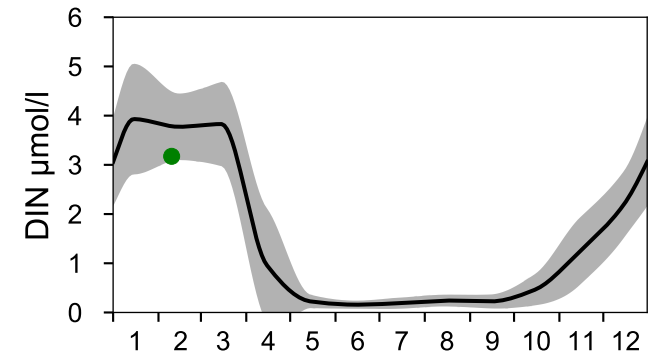
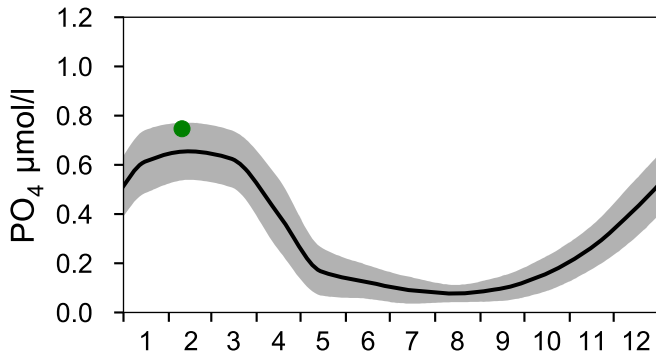
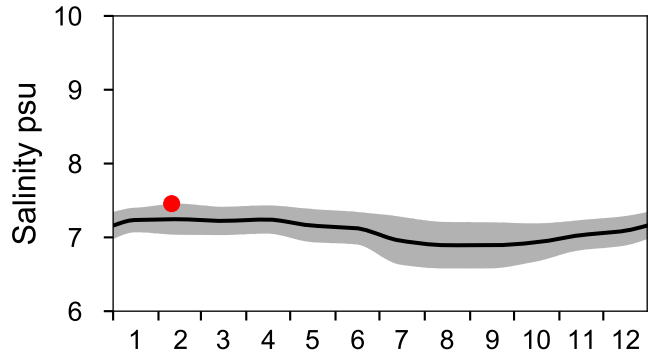
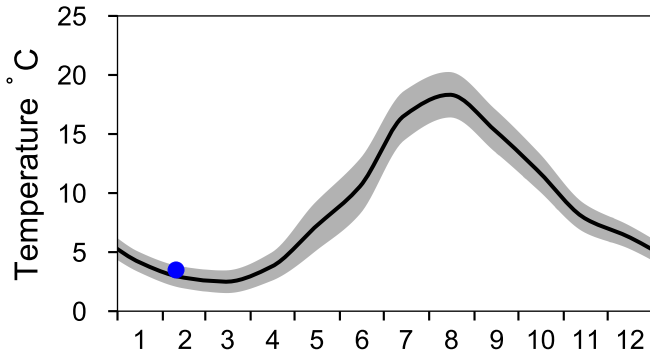


# STATION BY7 STOLPE RÄNNA SURFACE WATER (0-10 m)

## Annual Cycles

Statistics based on data from: Östra Gotlandshavet

— Mean 1991-2020    St.Dev.    ● 2024

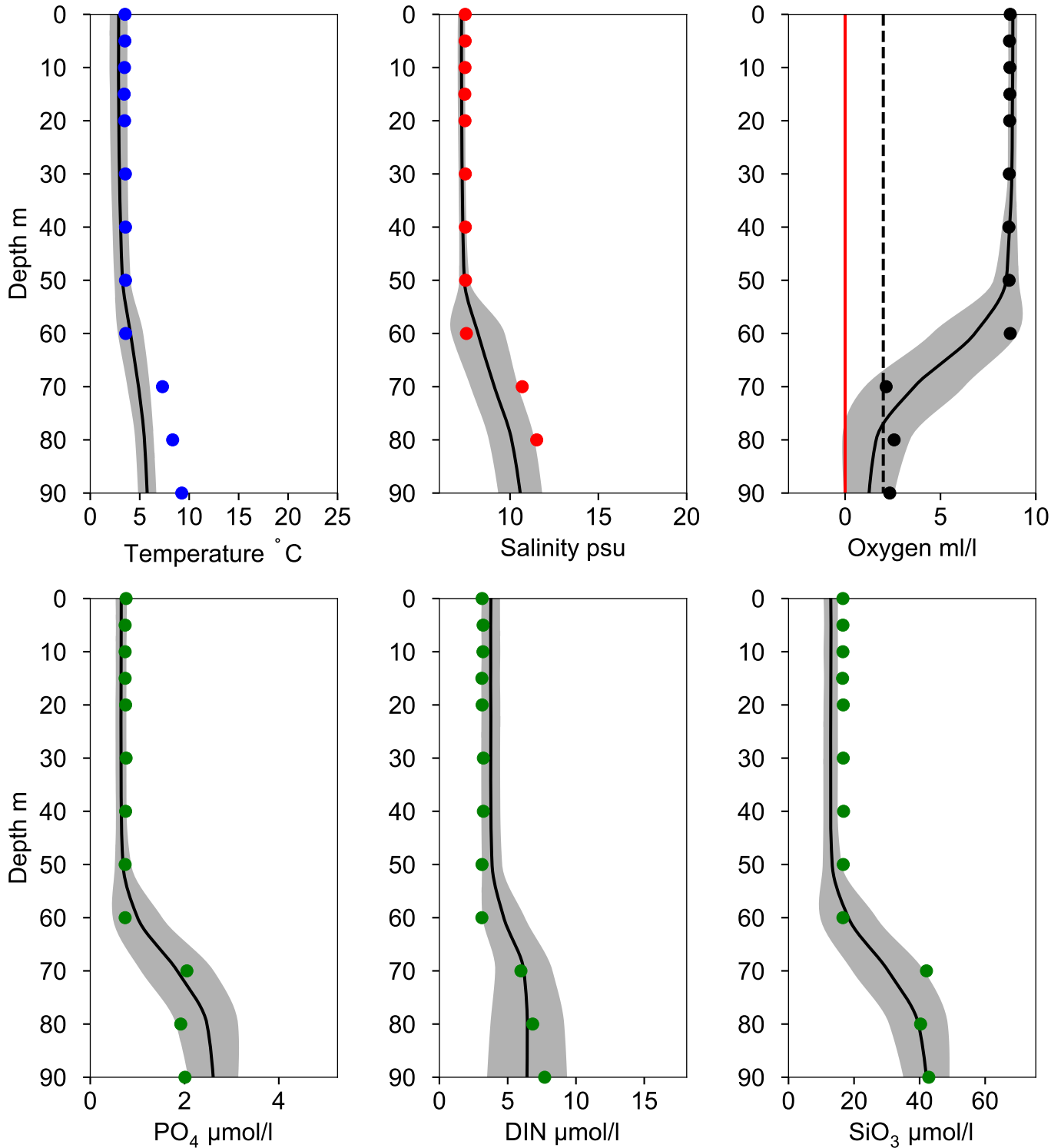




# Vertical profiles BY7 STOLPE RÄNNA February

Statistics based on data from: Östra Gotlandshavet

— Mean 1991-2020    ■ St.Dev.    ● 2024-02-10

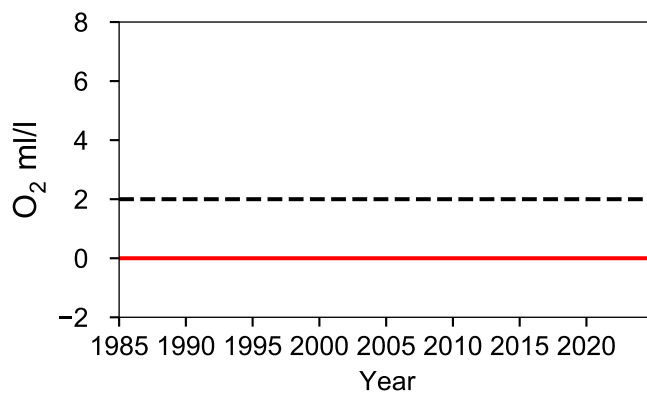
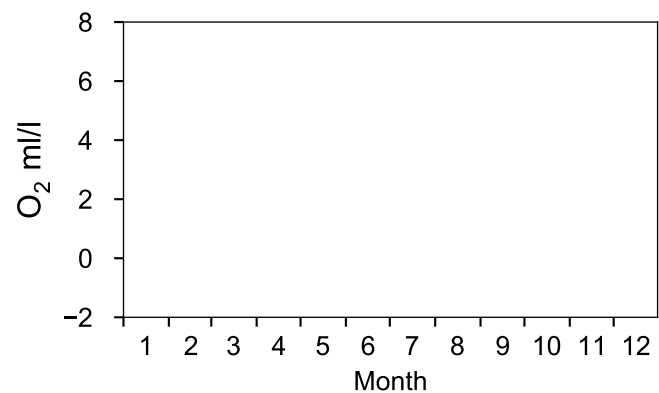
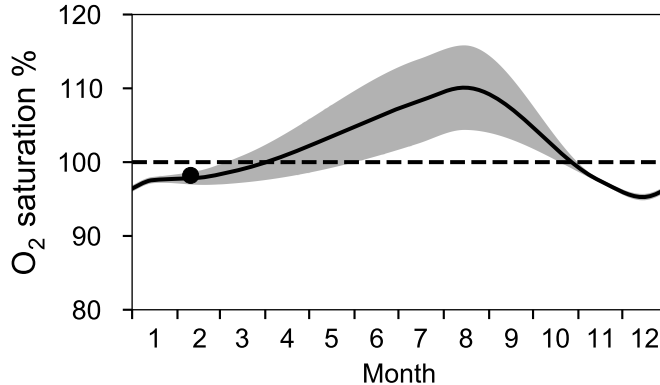
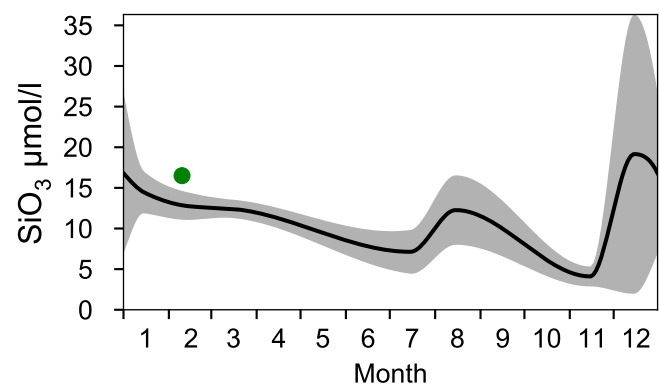
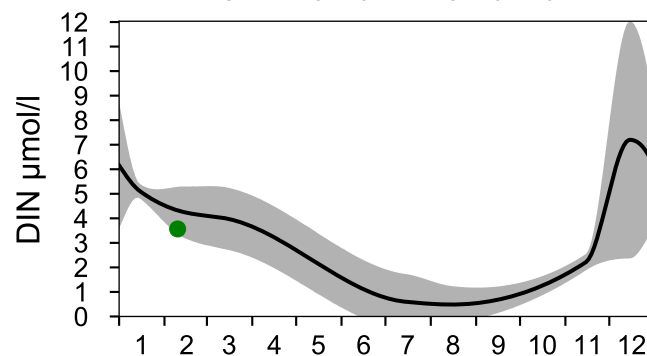
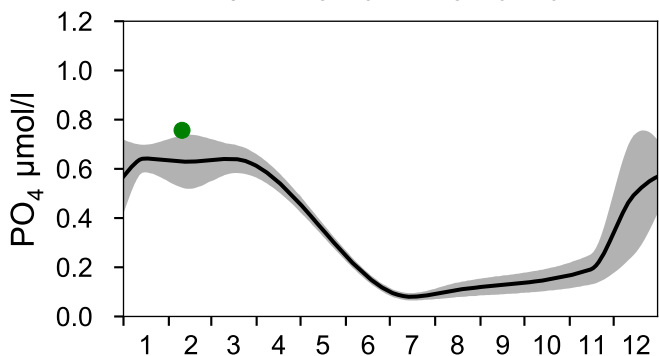
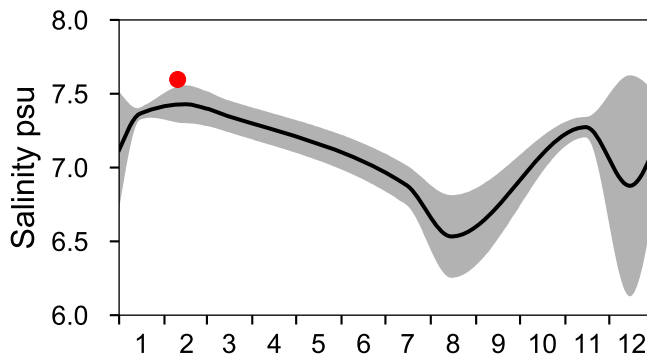
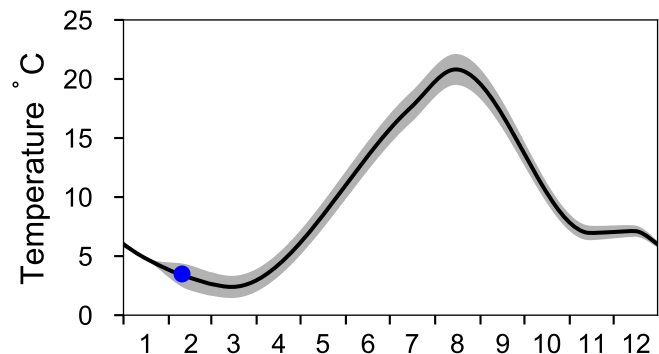


# STATION PL-P1 SURFACE WATER (0-10 m)

## Annual Cycles

Statistics based on data from: Gdanskbukten

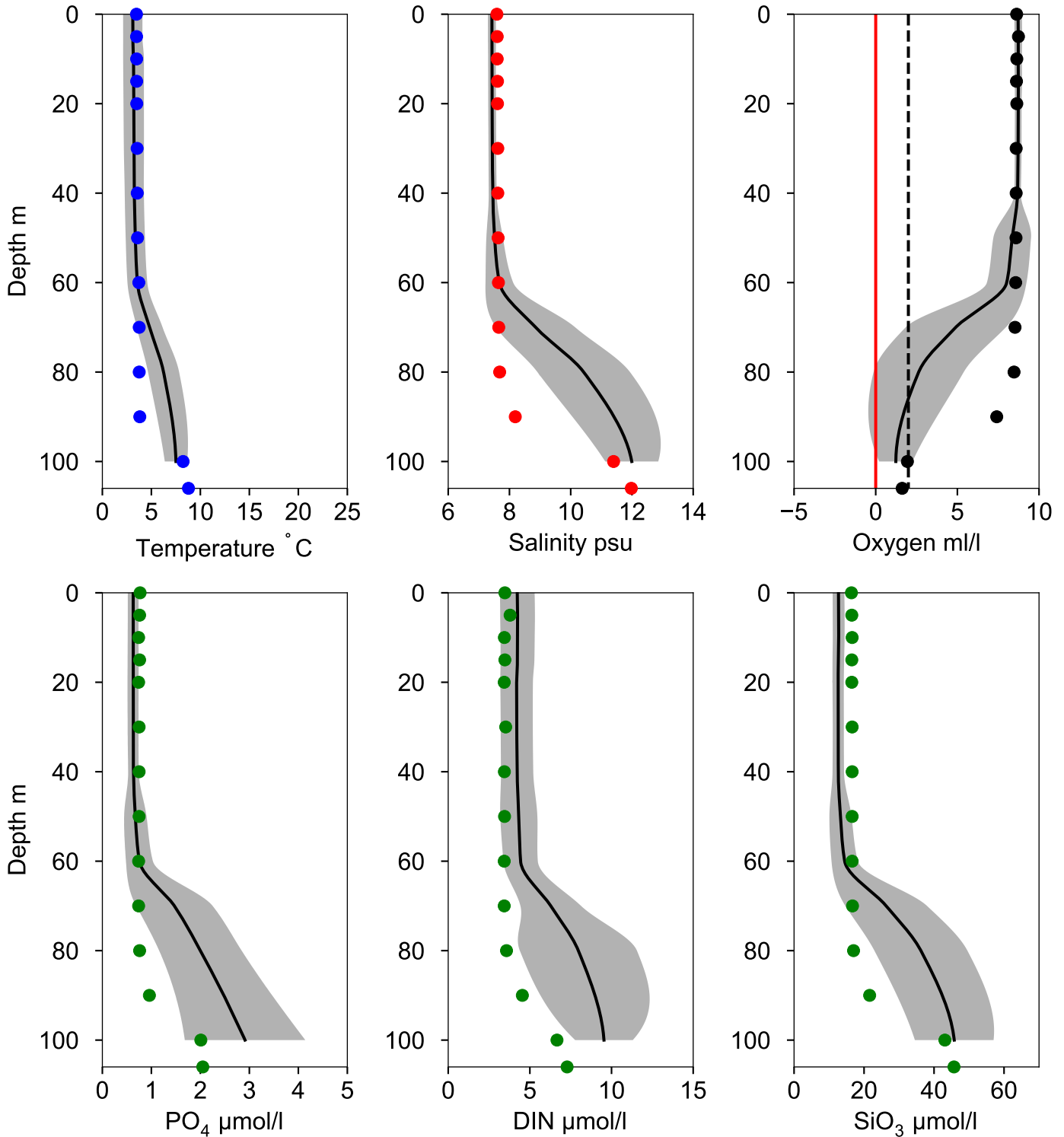
— Mean 1991-2020    St.Dev.    ● 2024



# Vertical profiles PL-P1 February

Statistics based on data from: Gdanskbukten

— Mean 1991-2020    ■ St.Dev.    ● 2024-02-10

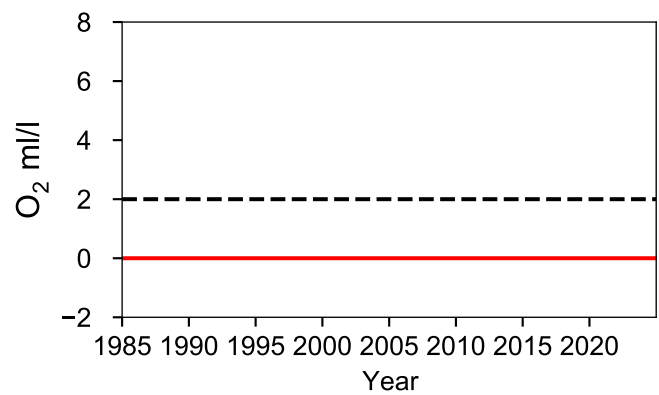
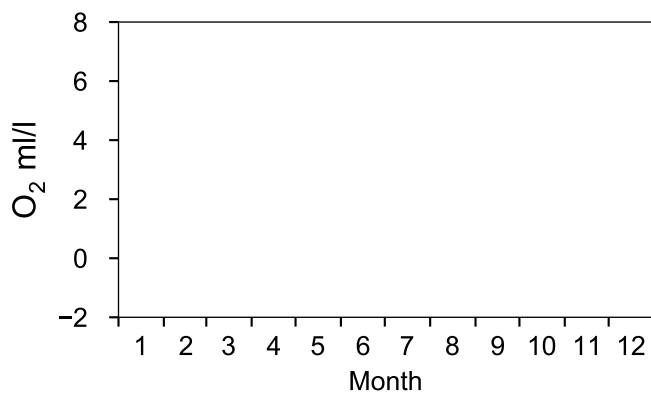
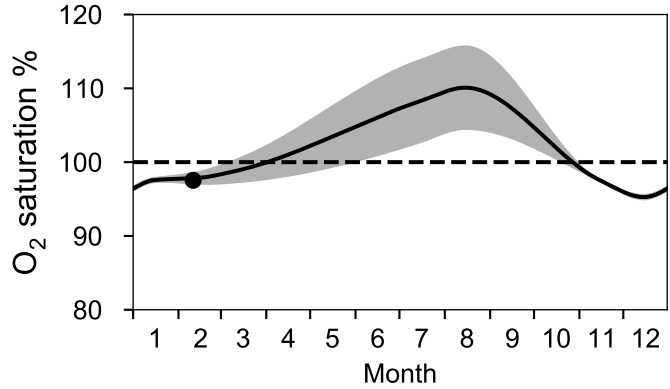
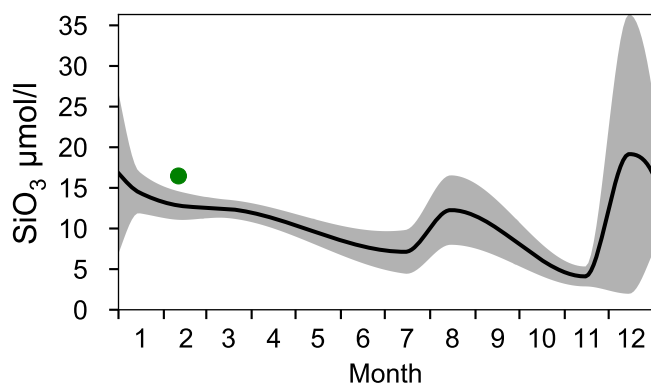
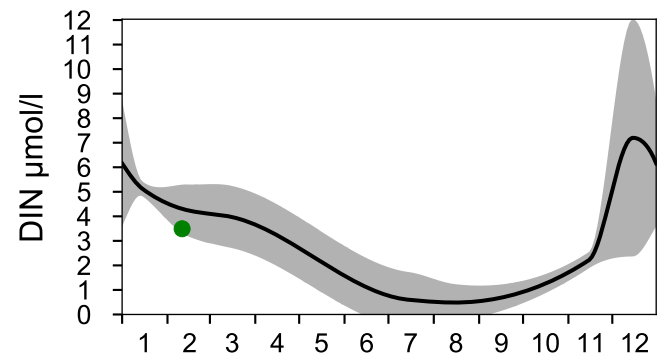
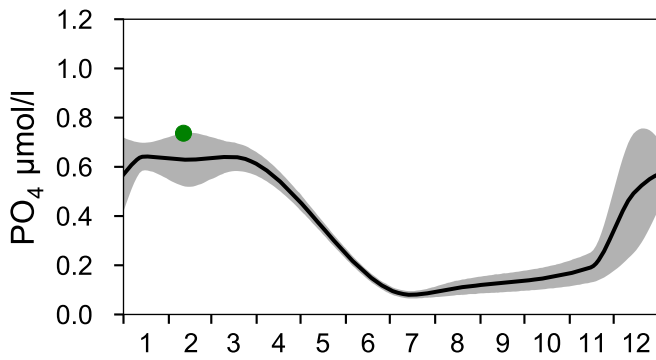
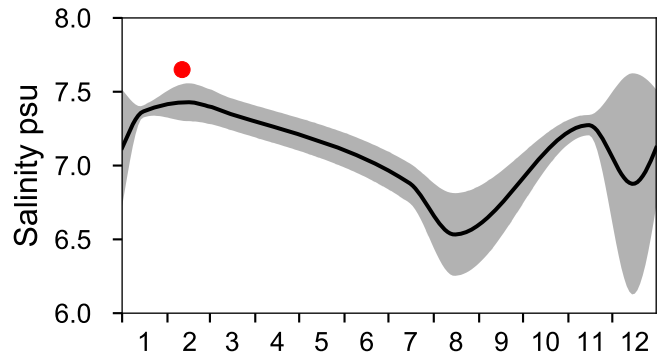
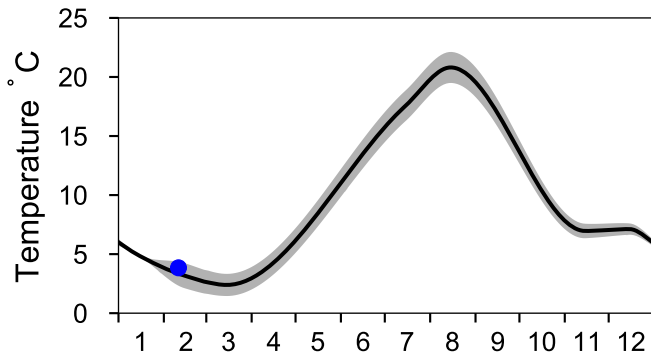


# STATION PL-P63 SURFACE WATER (0-10 m)

## Annual Cycles

Statistics based on data from: Gdanskbukten

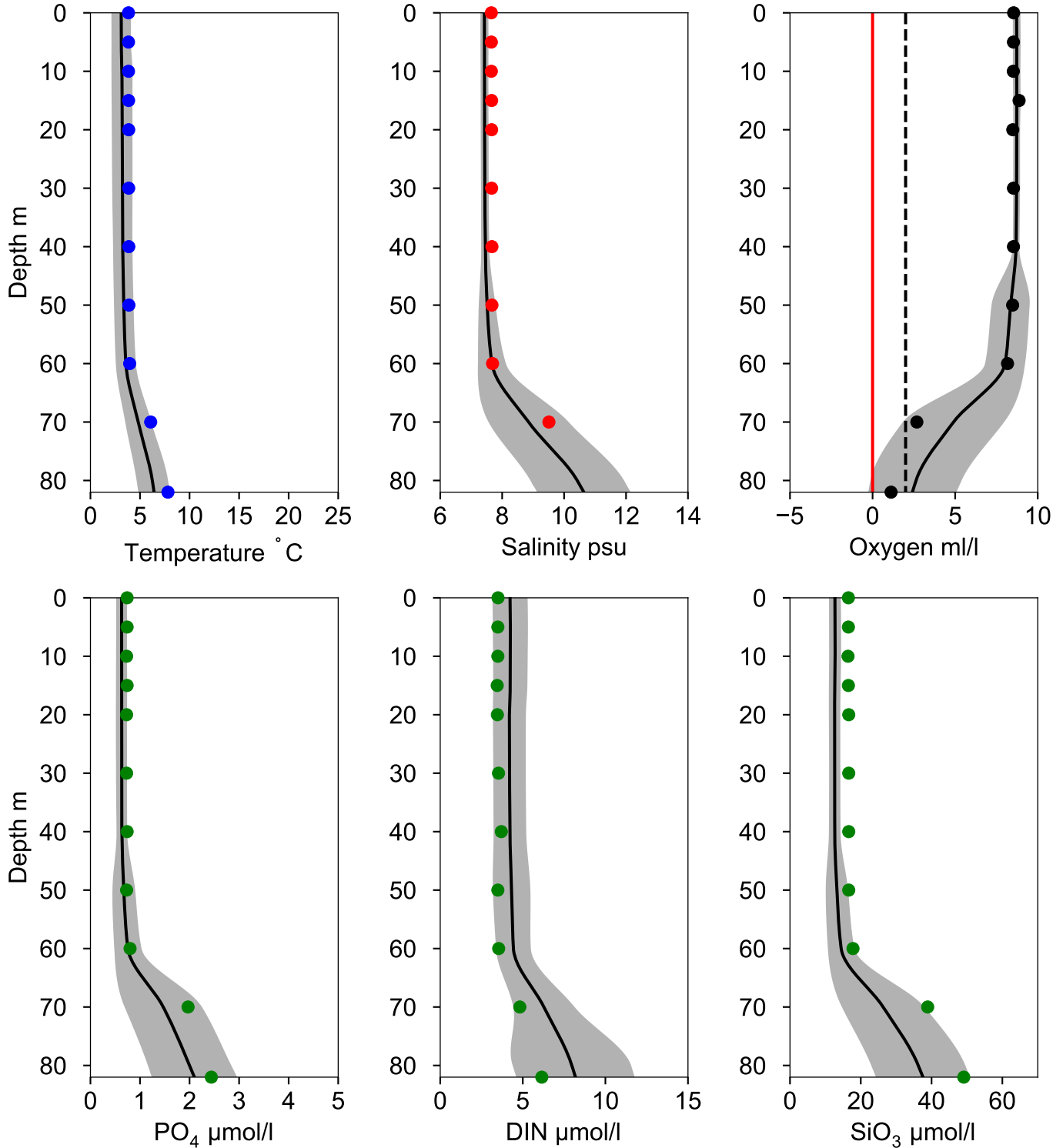
— Mean 1991-2020    St.Dev.    ● 2024



# Vertical profiles PL-P63 February

Statistics based on data from: Gdanskbukten

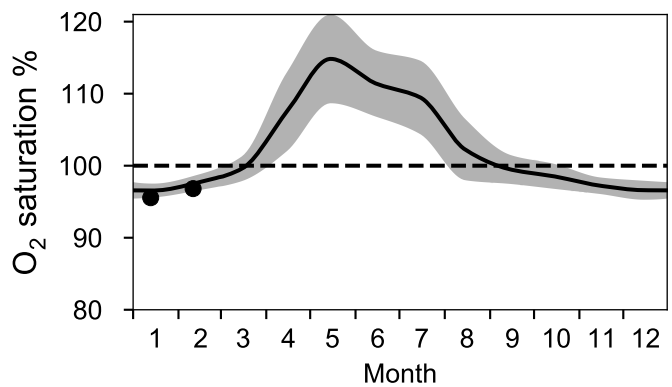
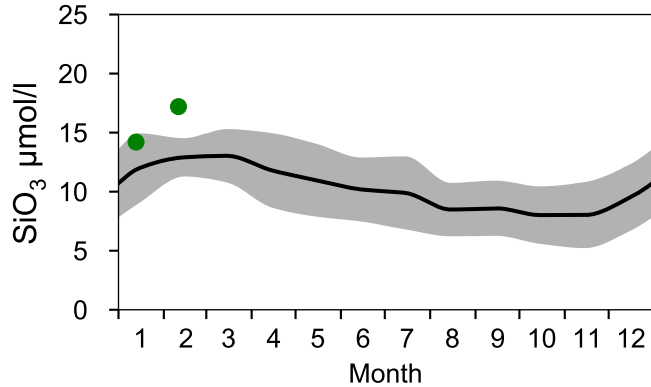
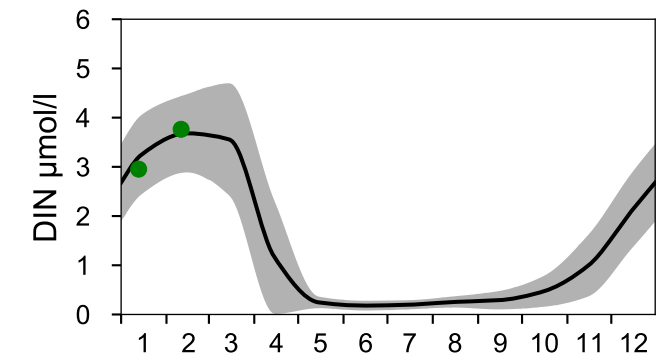
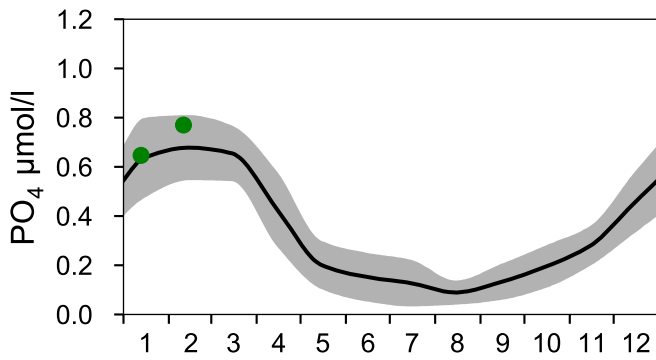
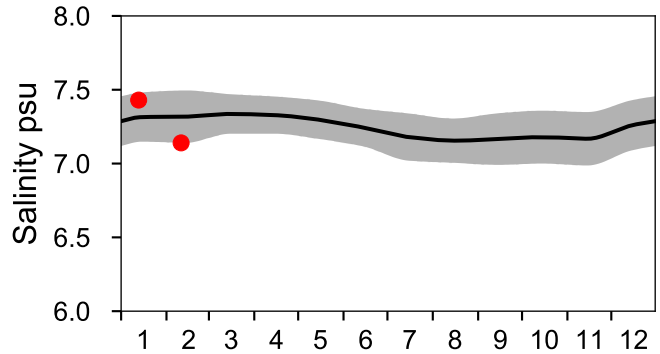
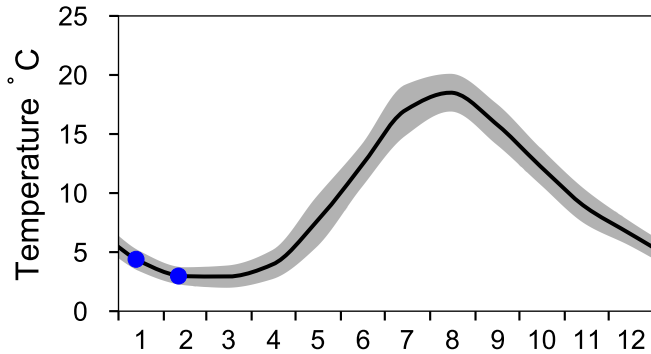
— Mean 1991-2020    ■ St.Dev.    ● 2024-02-11



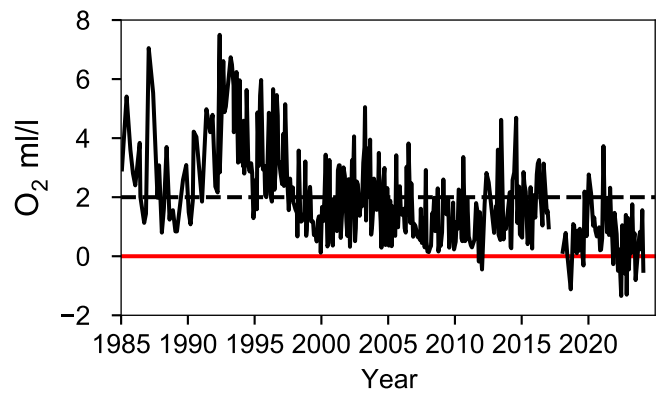
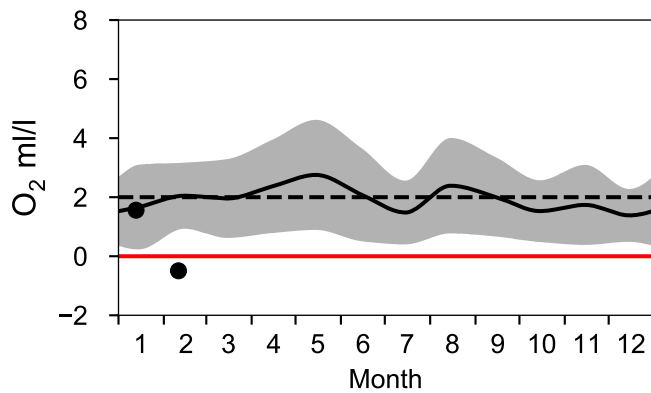
# STATION BCS III-10 SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020    St.Dev.    ● 2024

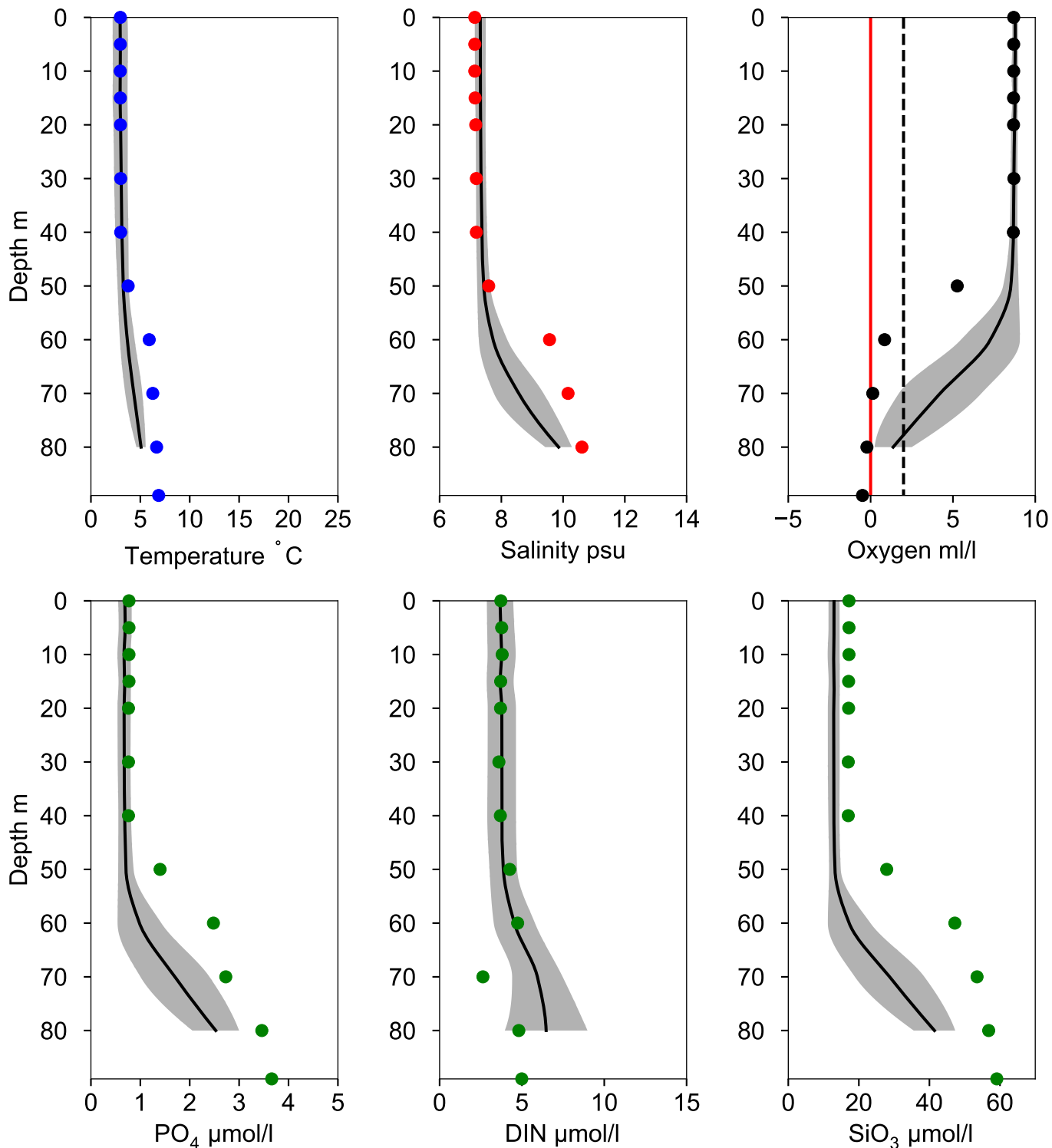


## OXYGEN IN BOTTOM WATER (depth >= 80 m)



# Vertical profiles BCS III-10 February

— Mean 1919-2020    St.Dev.    ● 2024-02-11

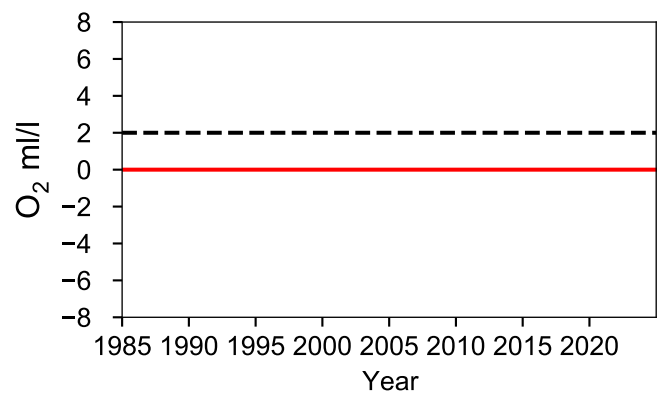
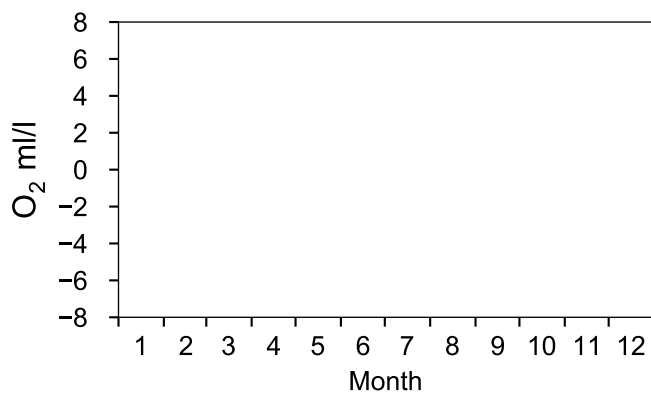
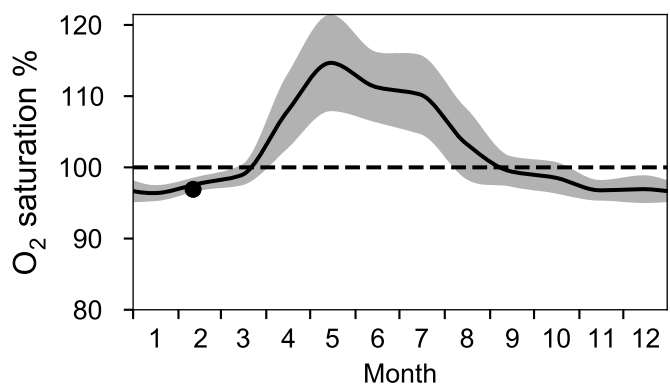
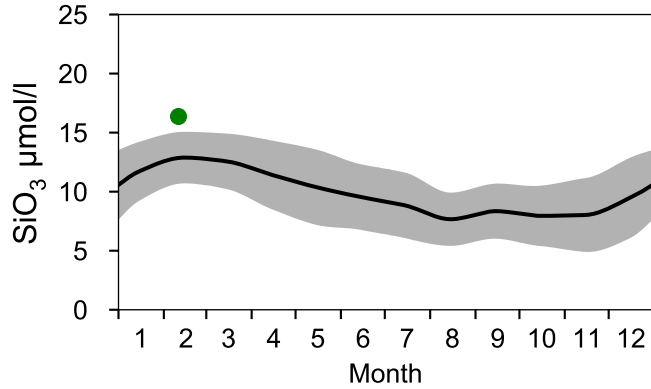
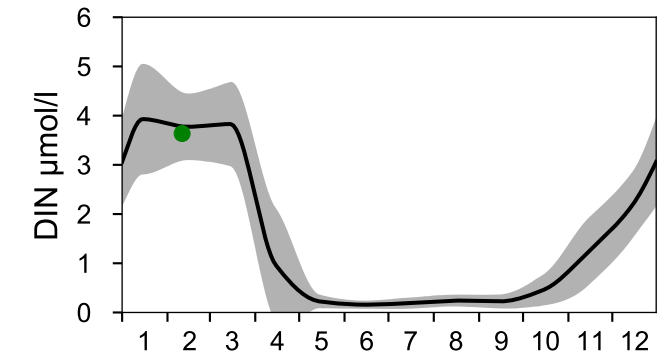
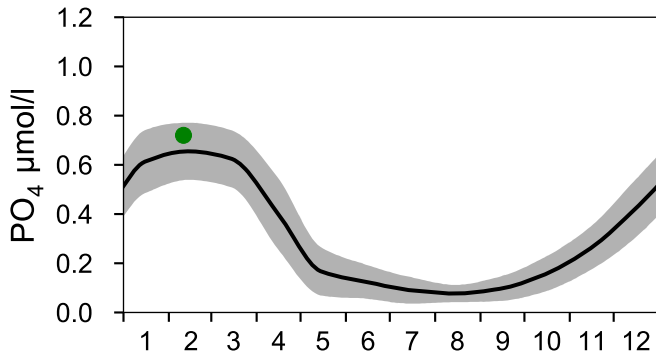
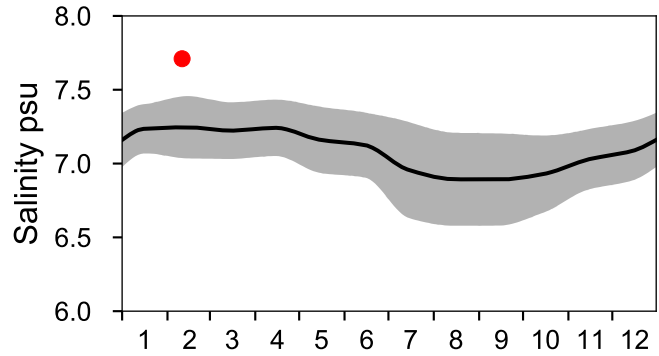
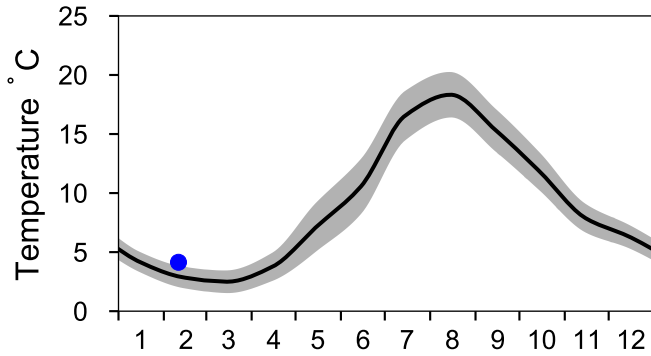


# STATION BY9 KLAIPEDA SURFACE WATER (0-10 m)

## Annual Cycles

Statistics based on data from: Östra Gotlandshavet

— Mean 1991-2020    St.Dev.    ● 2024

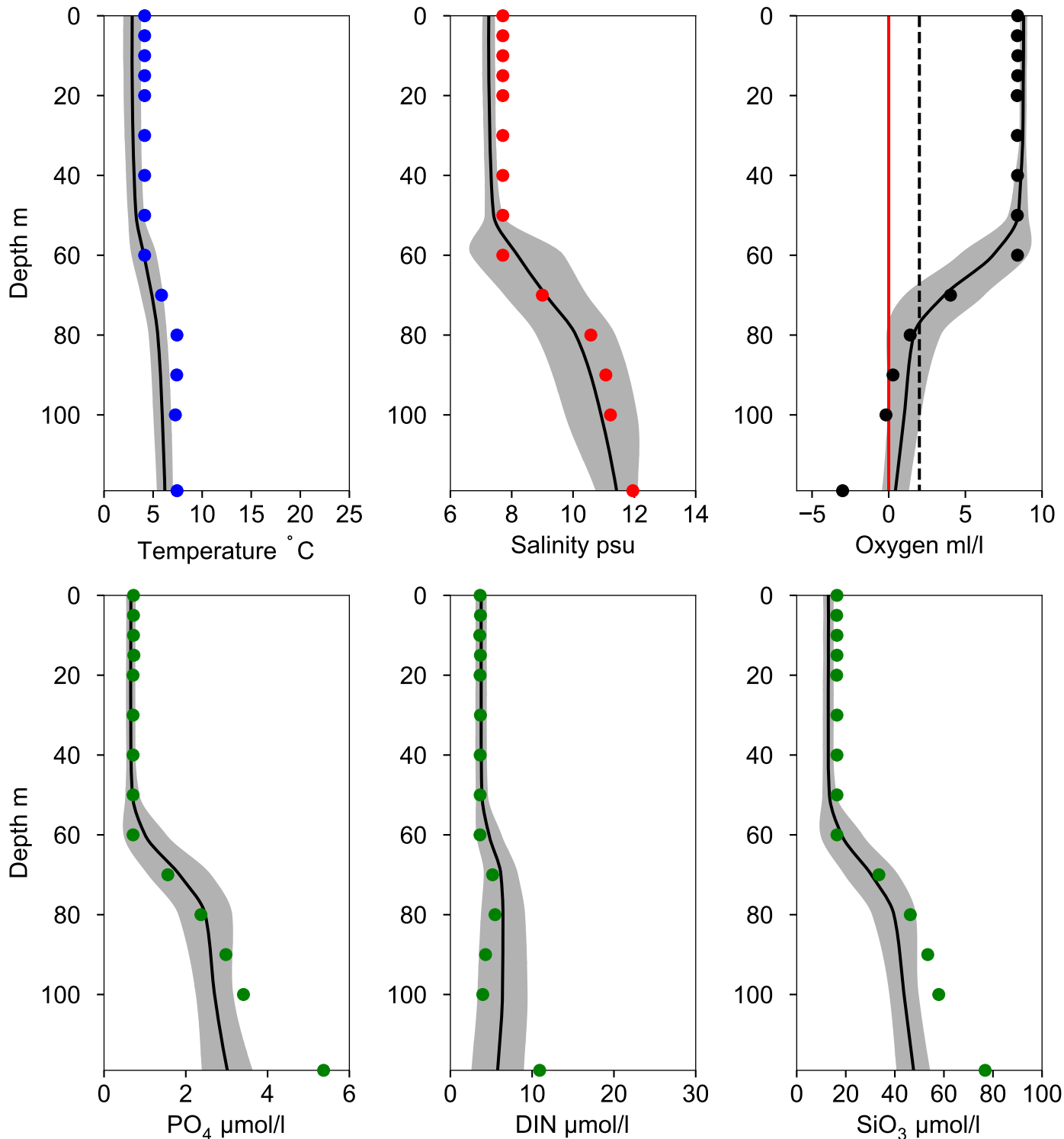




# Vertical profiles BY9 KLAIPEDA February

Statistics based on data from: Östra Gotlandshavet

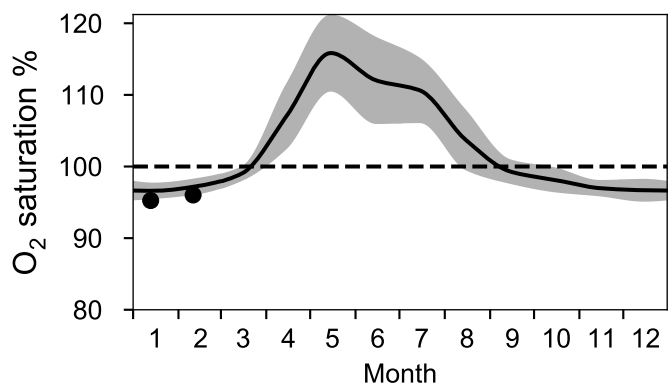
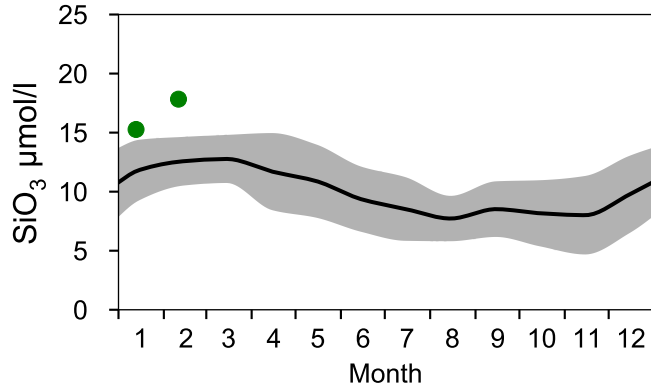
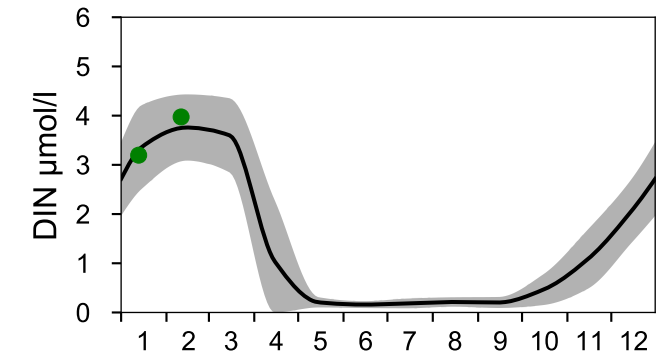
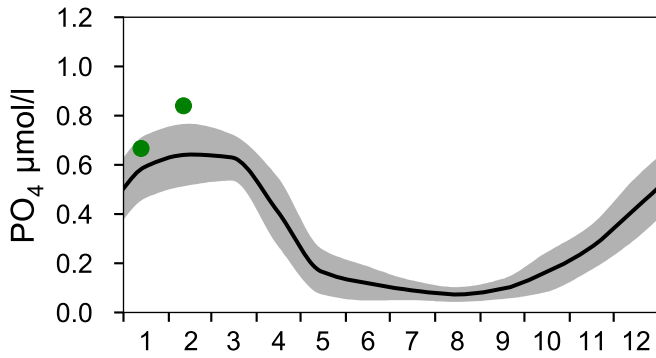
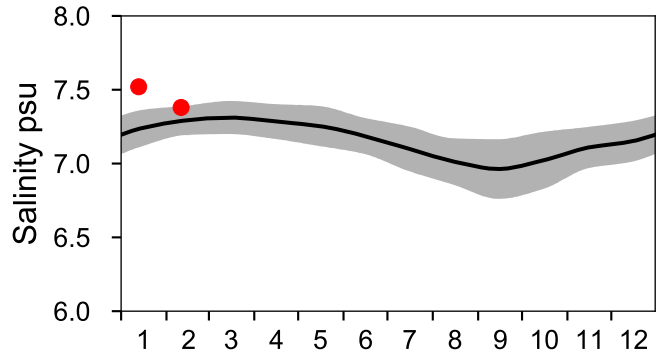
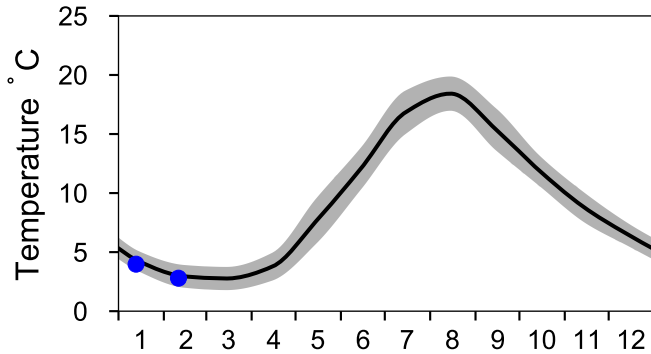
— Mean 1919-2020    ■ St.Dev.    ● 2024-02-11



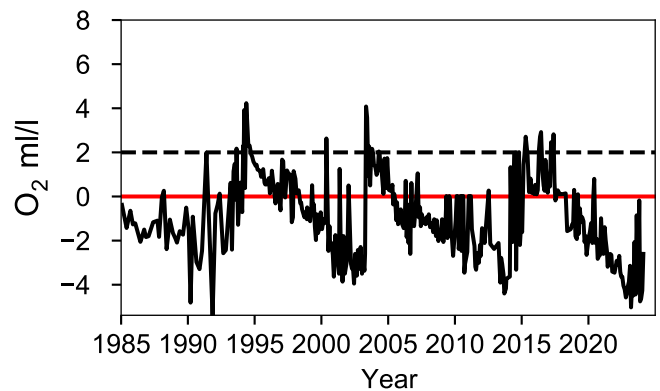
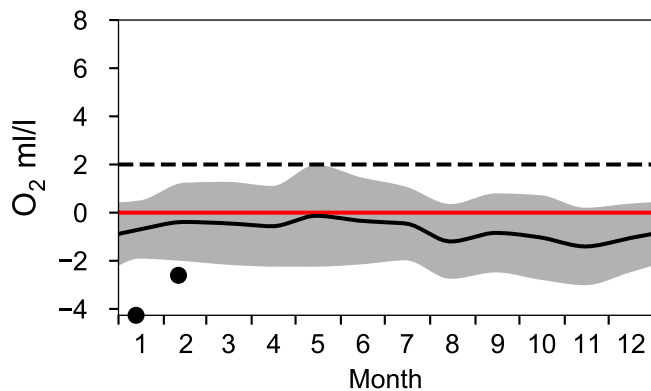
# STATION BY10 SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020    St.Dev.    ● 2024

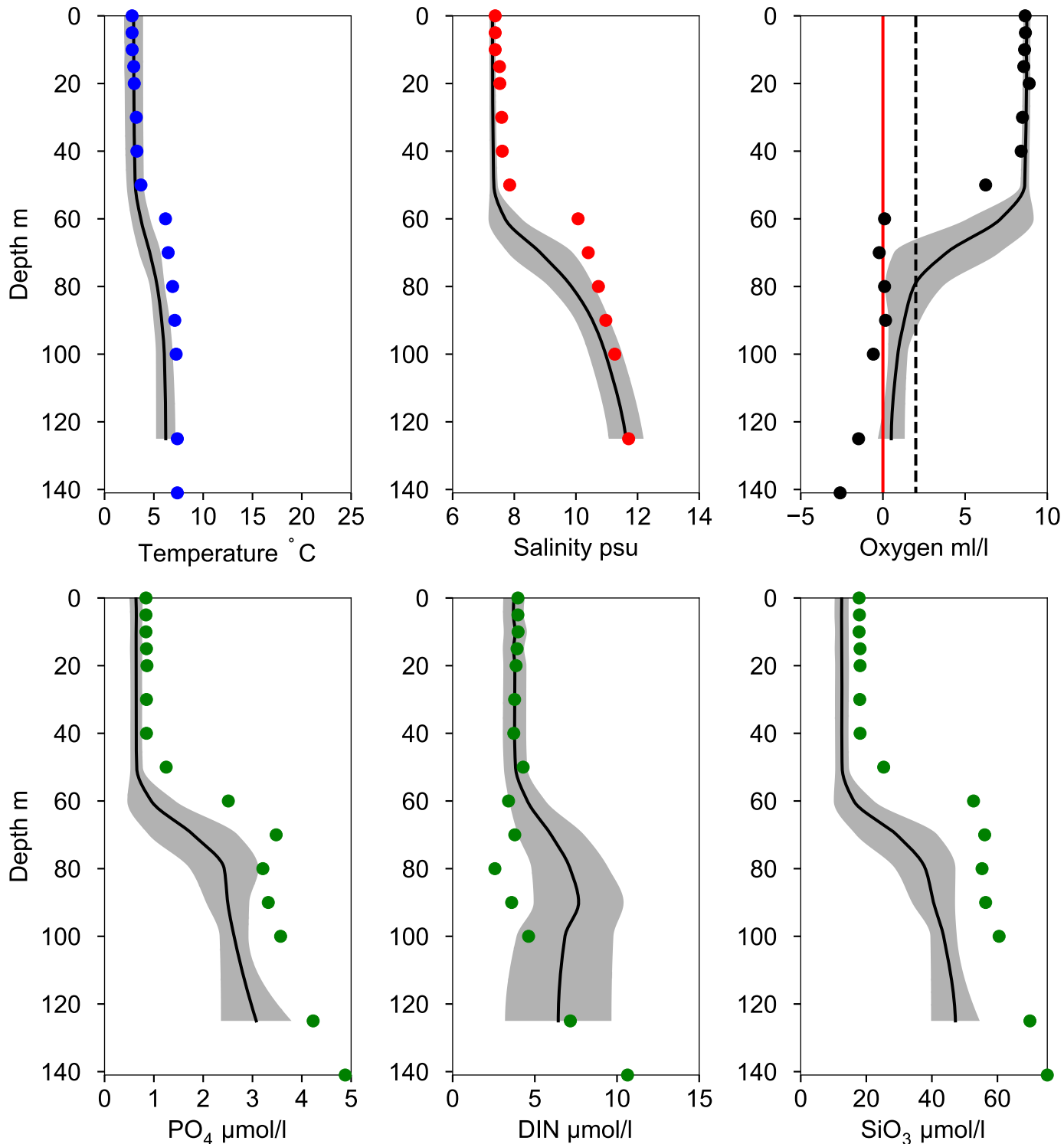


## OXYGEN IN BOTTOM WATER (depth >= 125 m)



# Vertical profiles BY10 February

— Mean 1919-2020    ■ St.Dev.    ● 2024-02-11

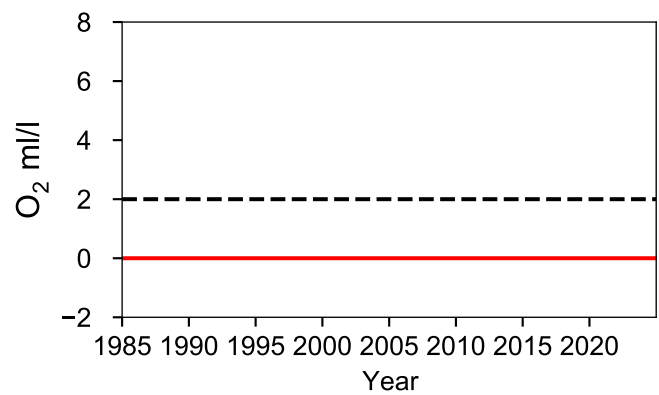
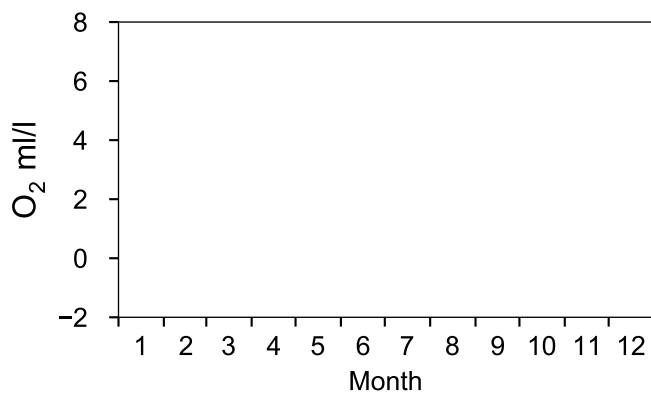
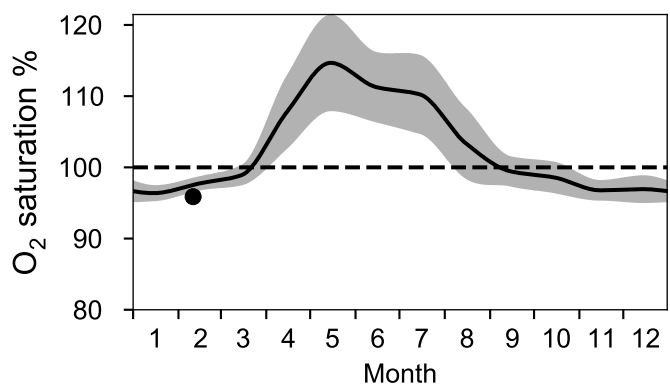
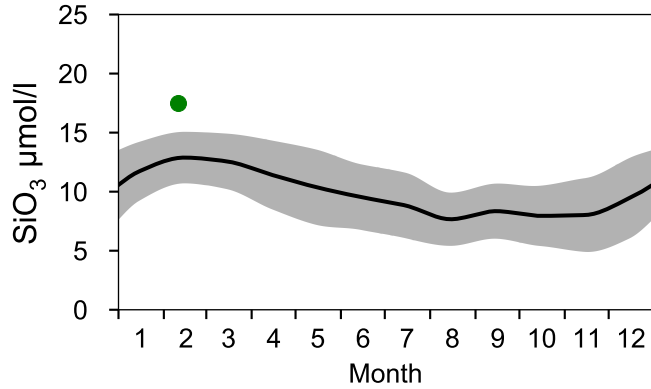
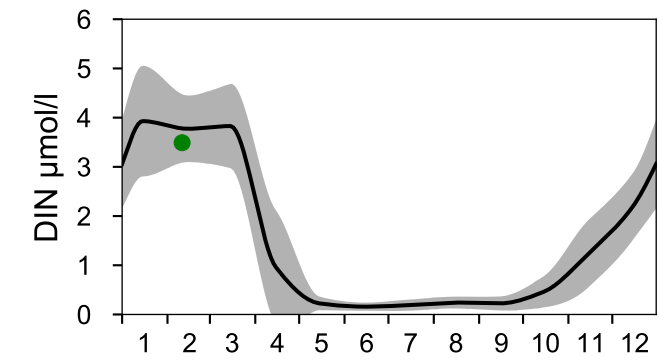
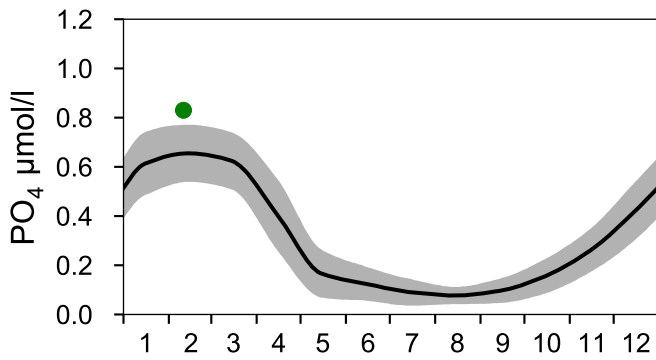
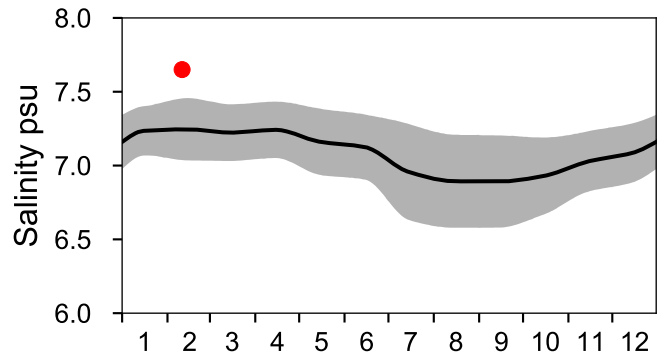
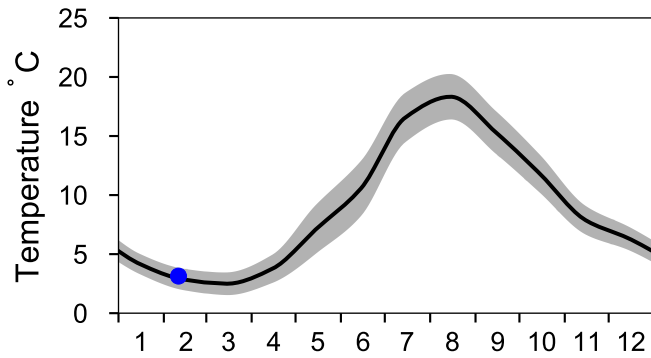


# STATION BY11 SURFACE WATER (0-10 m)

## Annual Cycles

Statistics based on data from: Östra Gotlandshavet

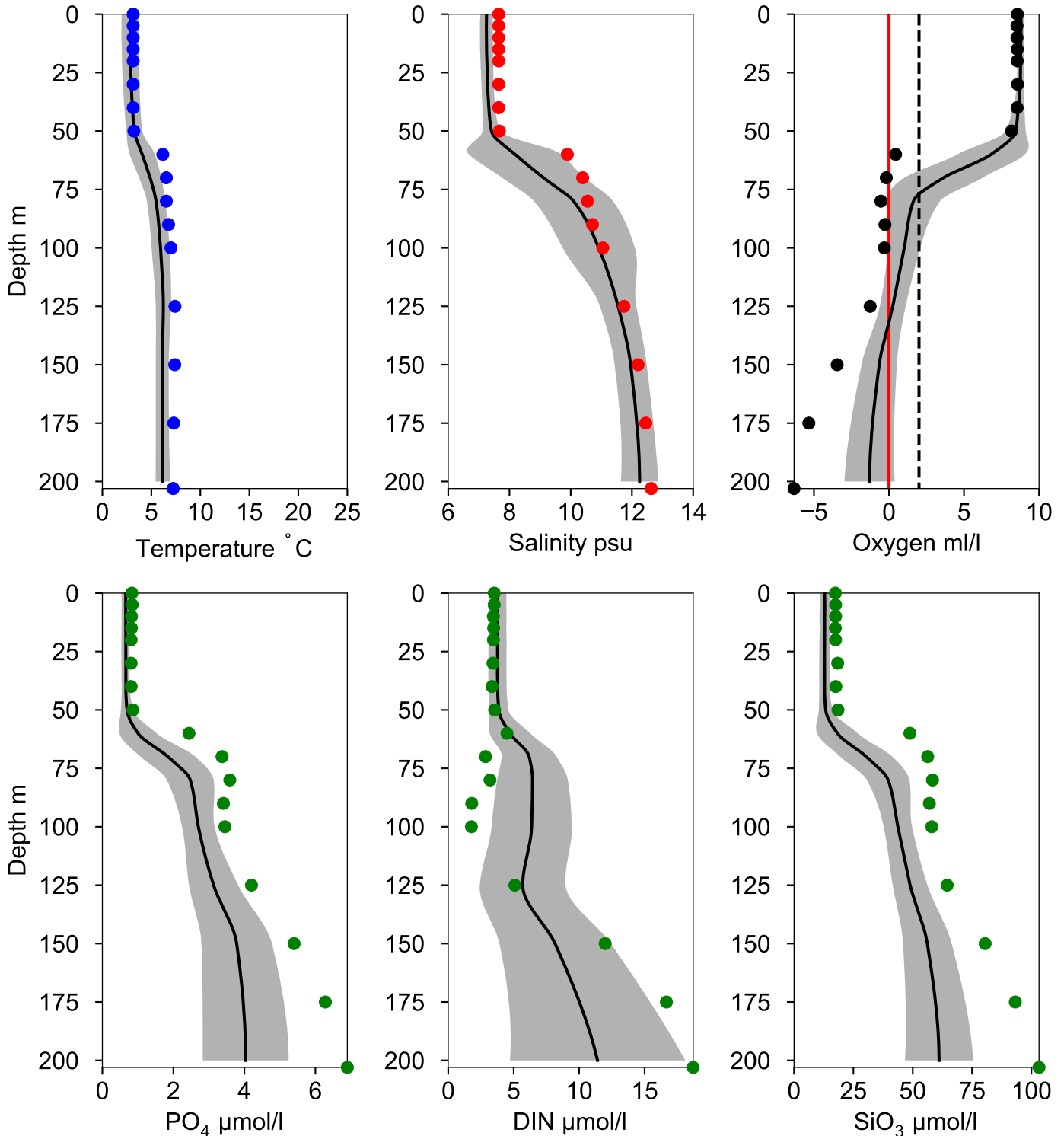
— Mean 1991-2020    St.Dev.    ● 2024



# Vertical profiles BY11 February

Statistics based on data from: Östra Gotlandshavet

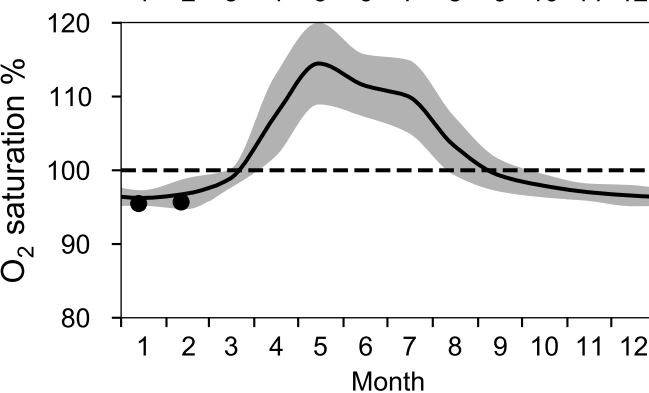
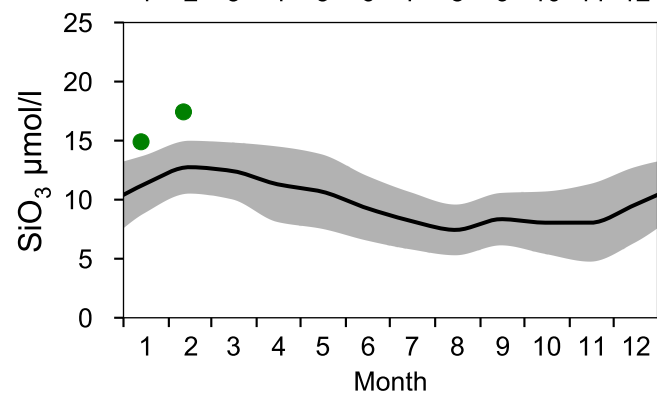
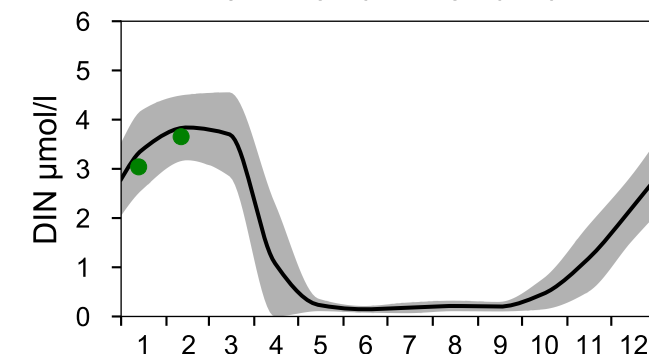
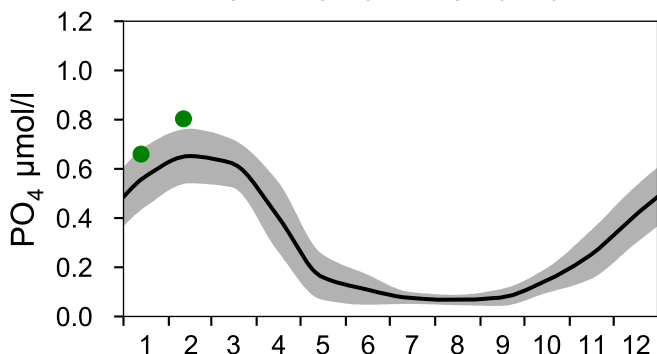
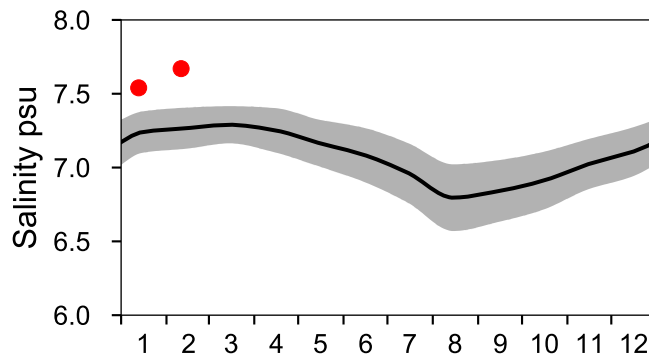
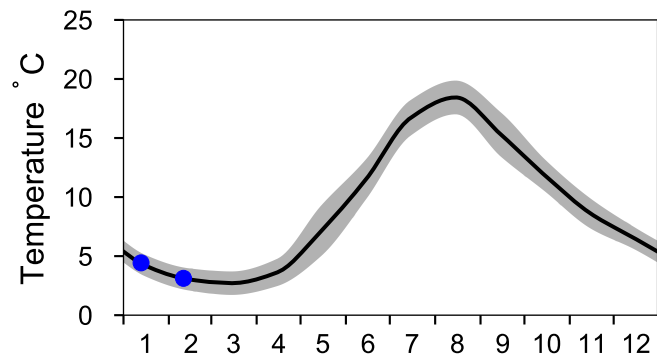
— Mean 1991-2020    ■ St.Dev.    ● 2024-02-11



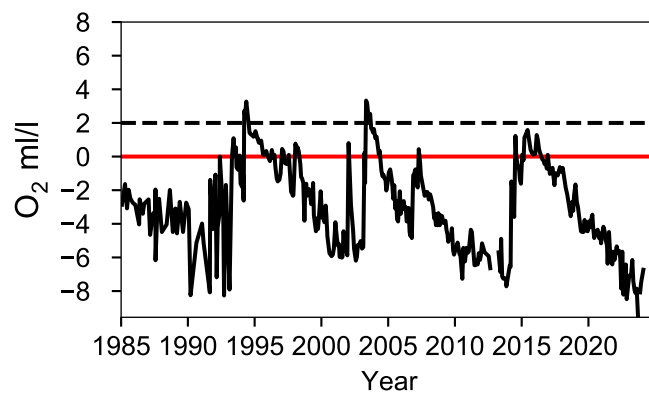
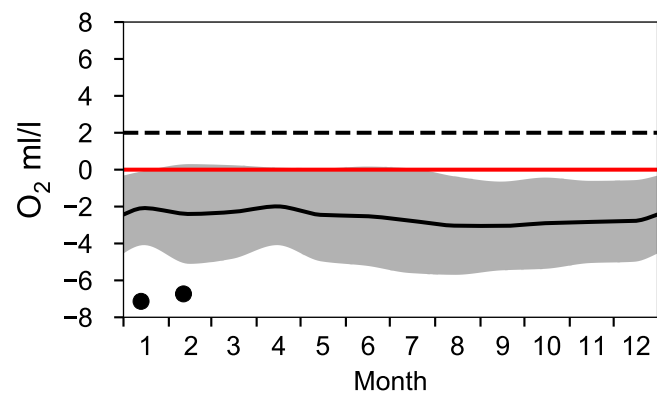
# STATION BY15 GOTLANDSDJ SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020    St.Dev.    ● 2024

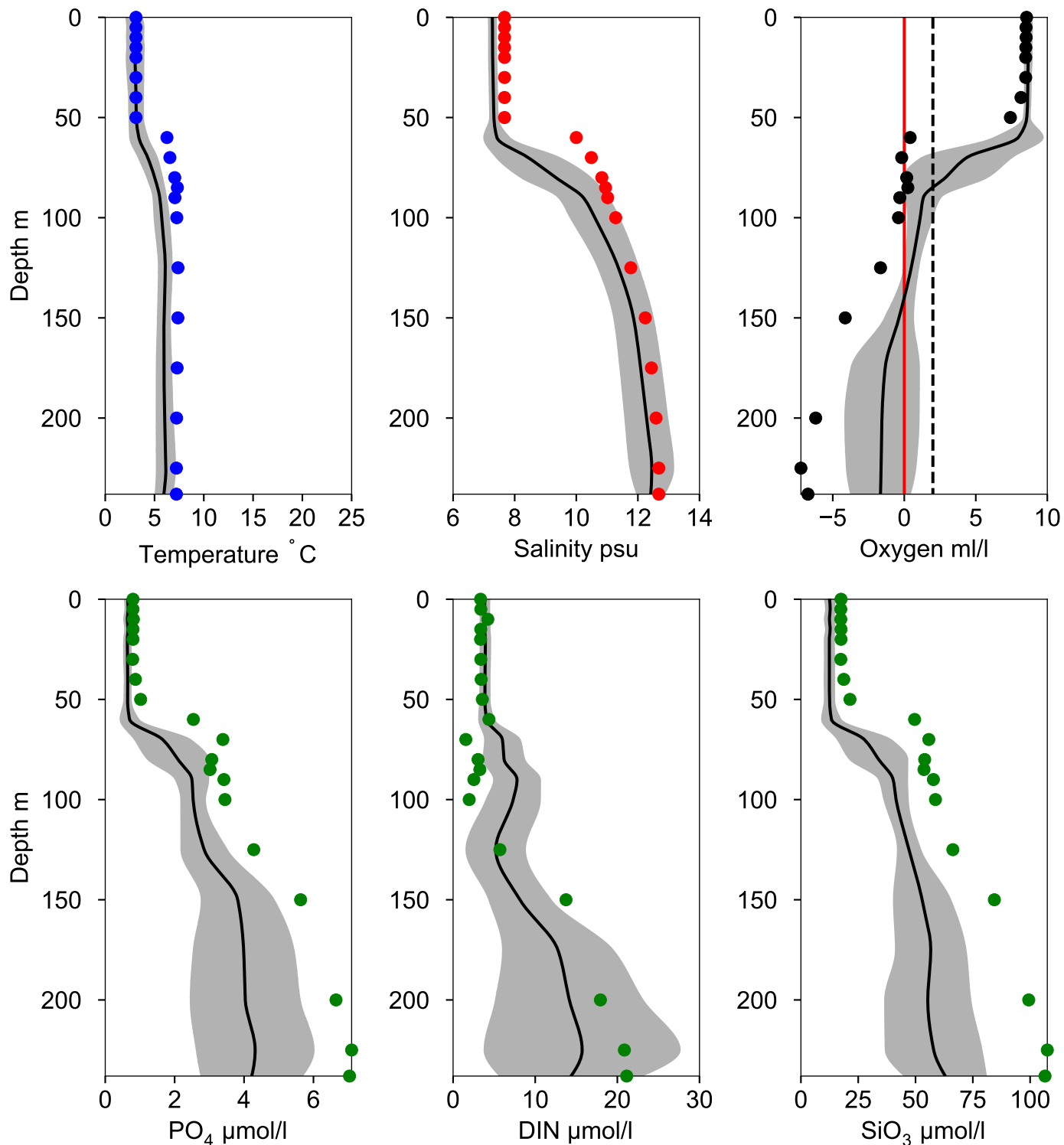


## OXYGEN IN BOTTOM WATER (depth >= 225 m)



# Vertical profiles BY15 GOTLANDSDJ February

— Mean 1919-2020    ■ St.Dev.    ● 2024-02-11

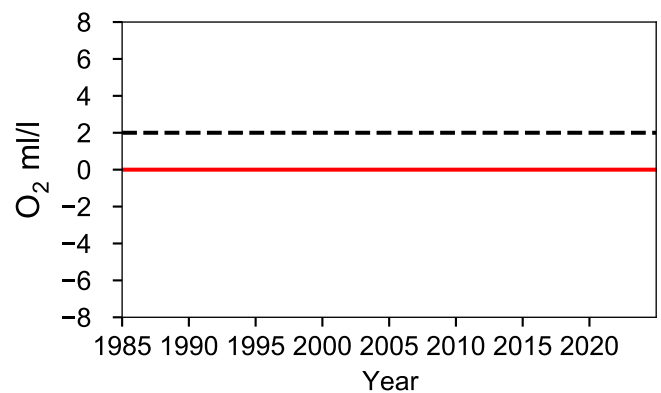
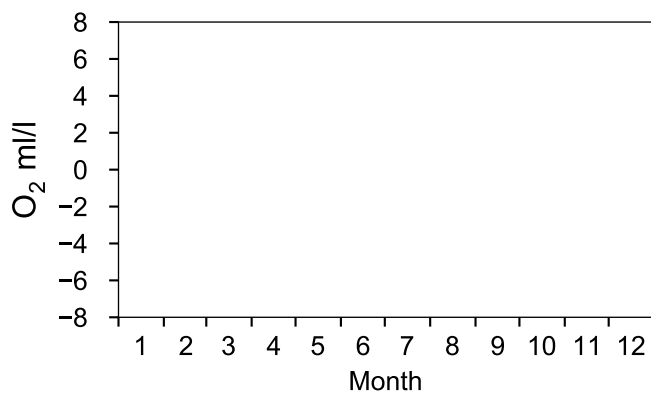
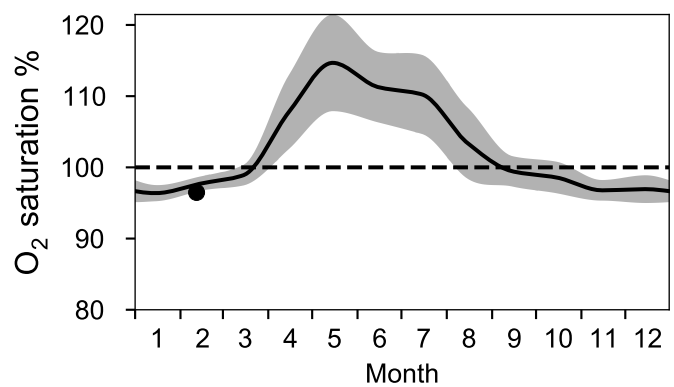
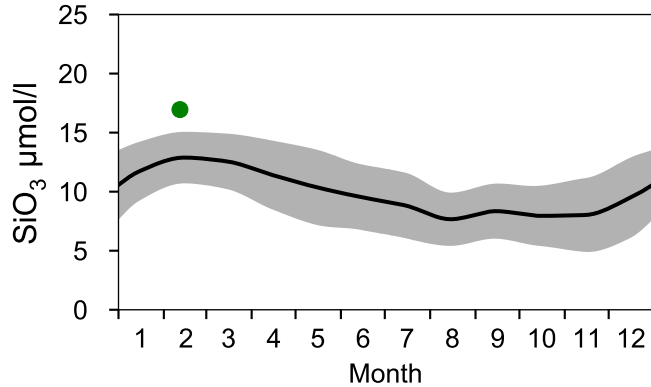
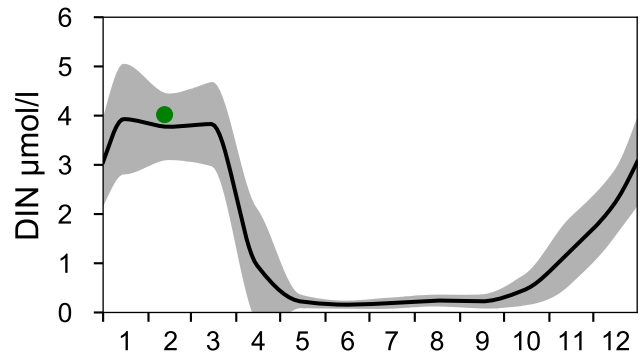
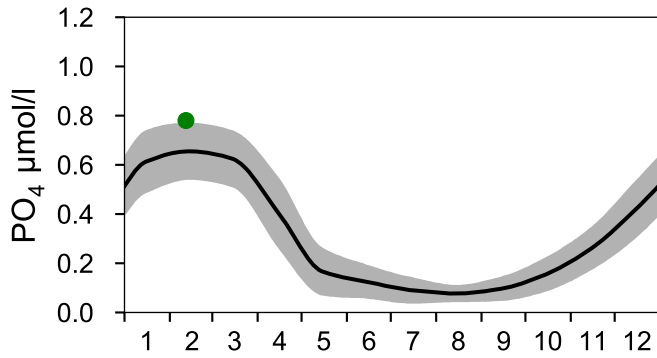
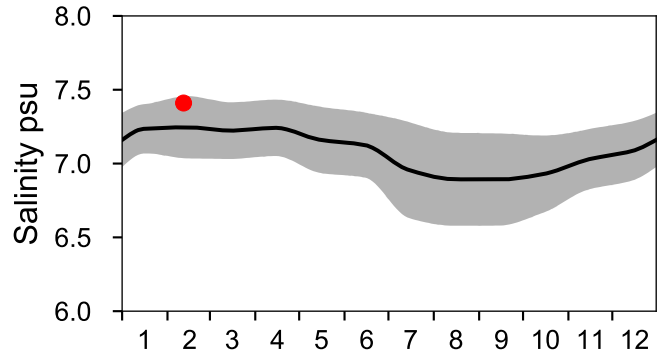
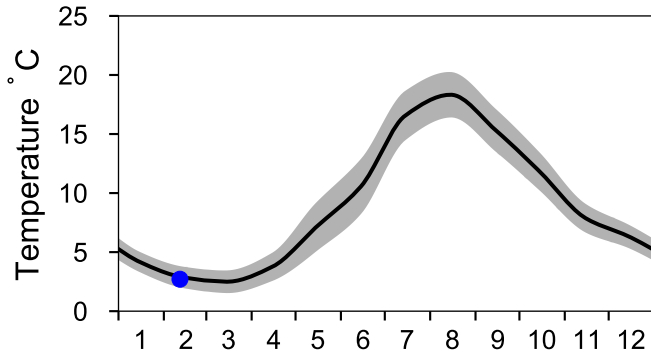


# STATION BY13 SURFACE WATER (0-10 m)

## Annual Cycles

Statistics based on data from: Östra Gotlandshavet

— Mean 1991-2020    St.Dev.    ● 2024

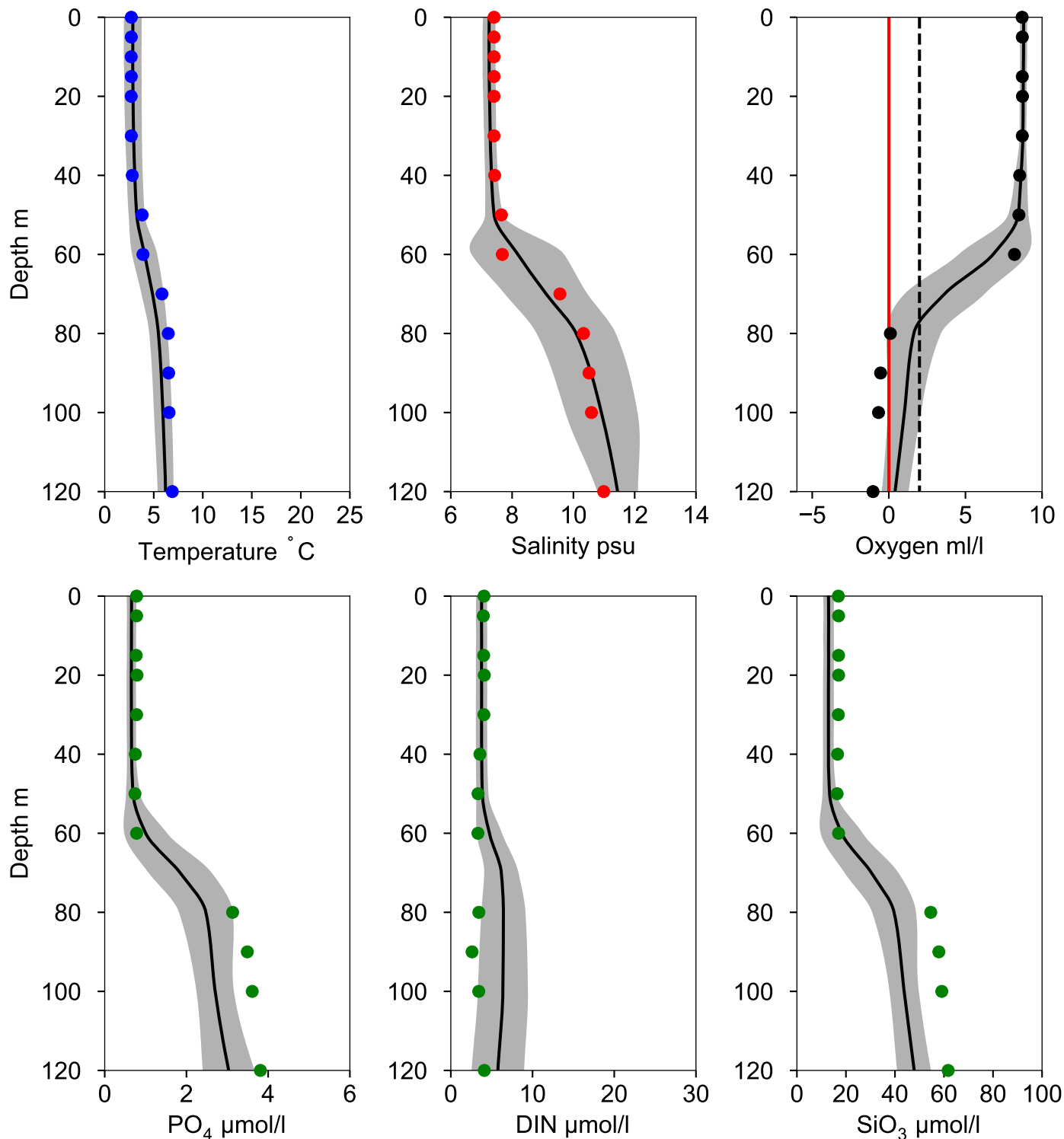




# Vertical profiles BY13 February

Statistics based on data from: Östra Gotlandshavet

— Mean 1991-2020    ■ St.Dev.    ● 2024-02-12

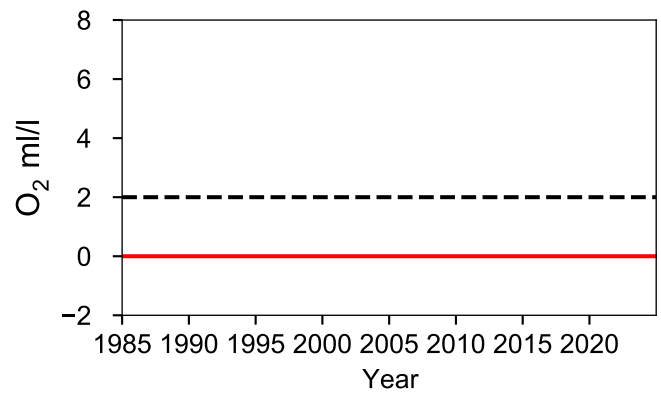
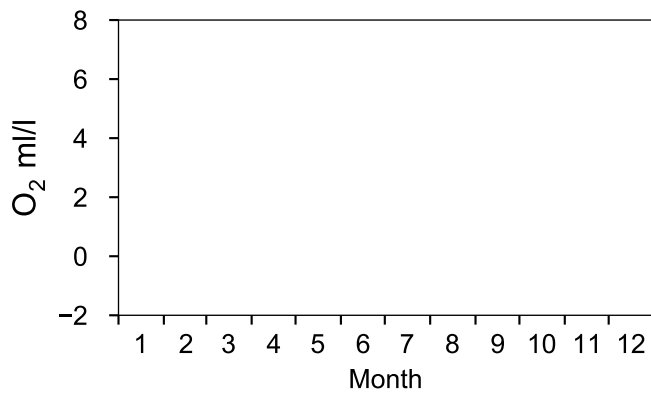
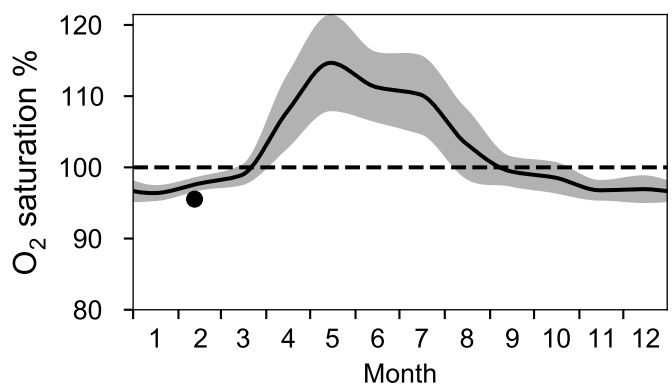
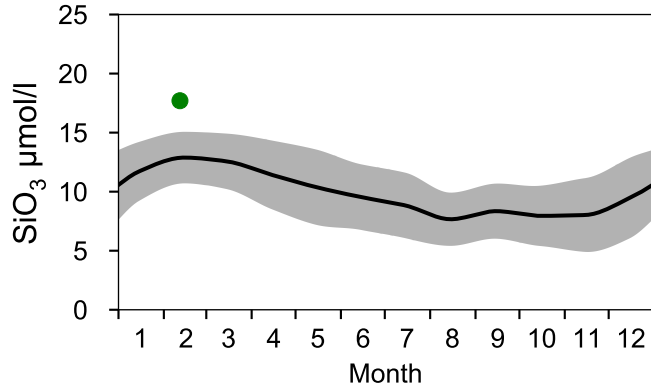
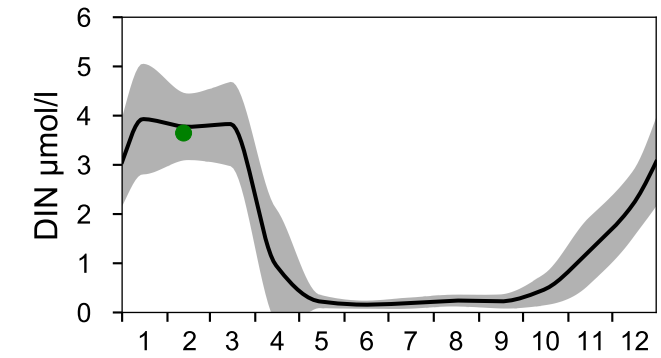
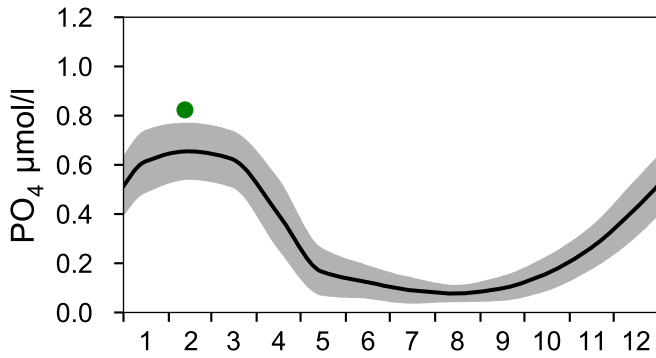
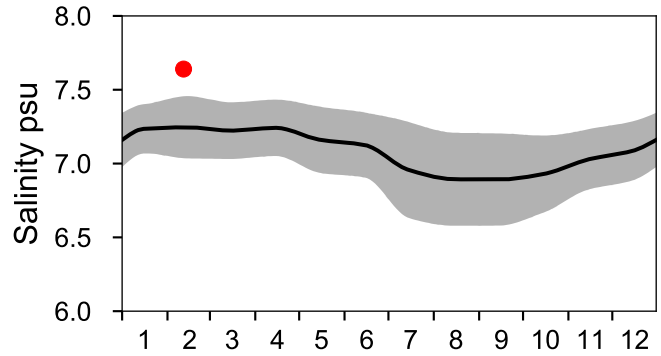
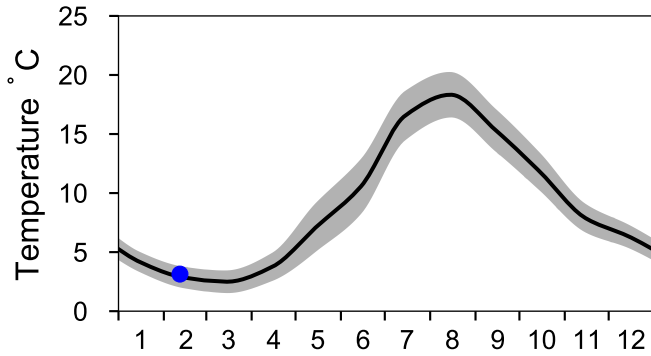


# STATION BY19 SURFACE WATER (0-10 m)

## Annual Cycles

Statistics based on data from: Östra Gotlandshavet

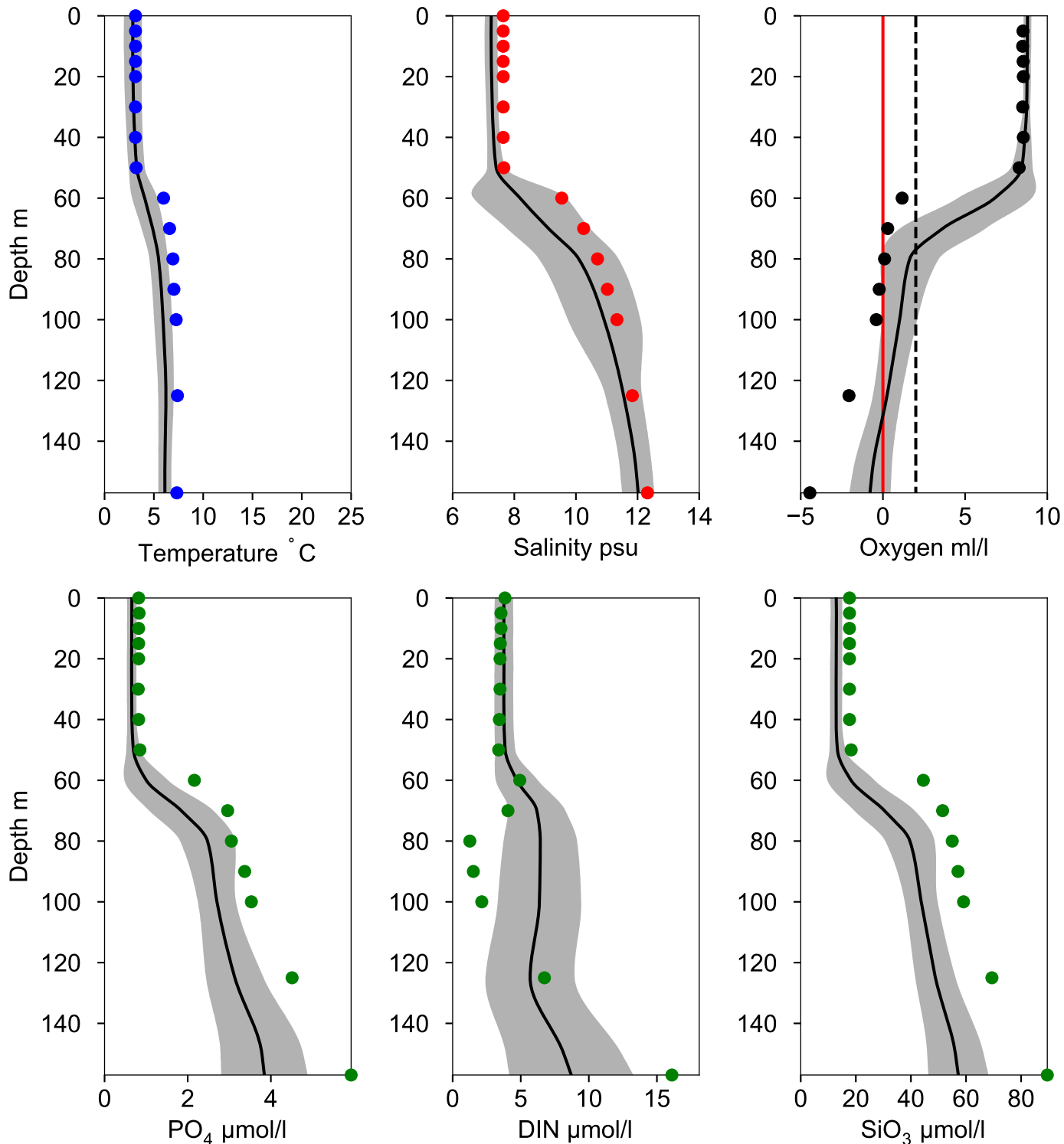
— Mean 1991-2020    St.Dev.    ● 2024



# Vertical profiles BY19 February

Statistics based on data from: Östra Gotlandshavet

— Mean 1991-2020    ■ St.Dev.    ● 2024-02-12



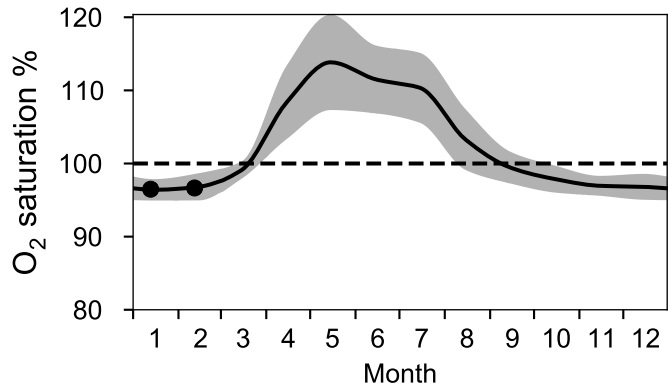
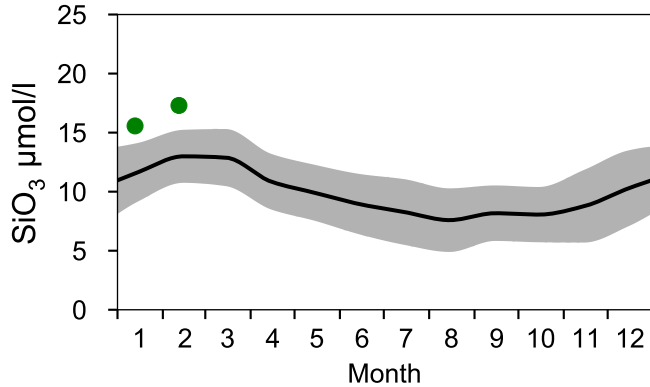
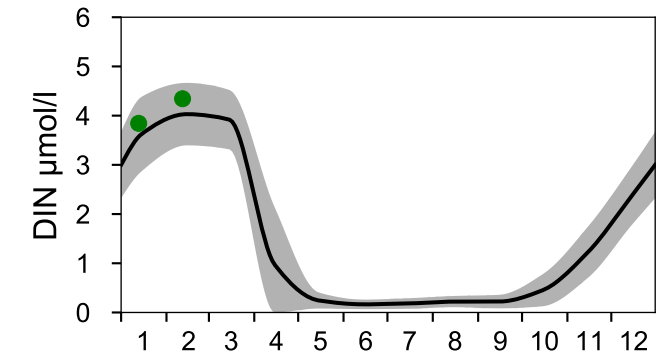
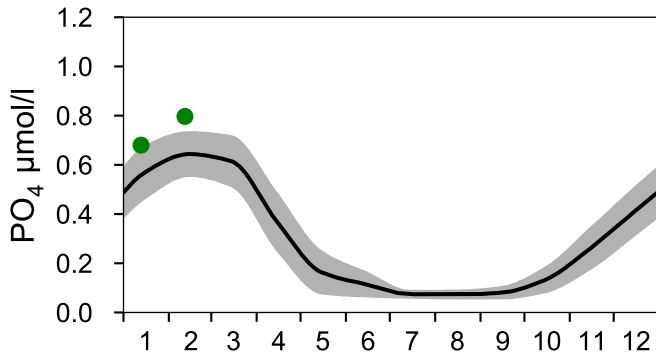
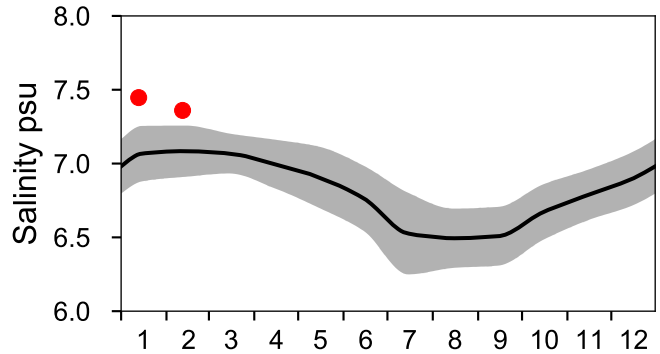
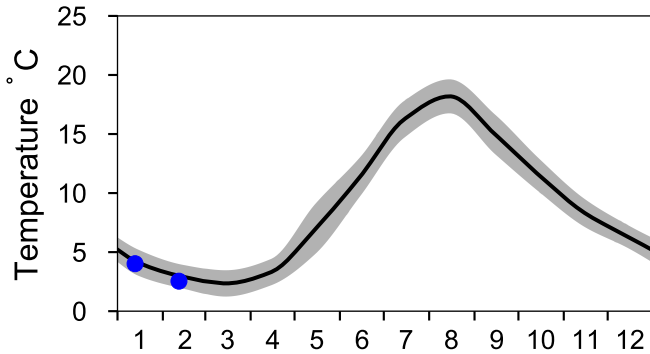
# STATION BY20 FÄRÖDJ SURFACE WATER (0-10 m)

Annual Cycles

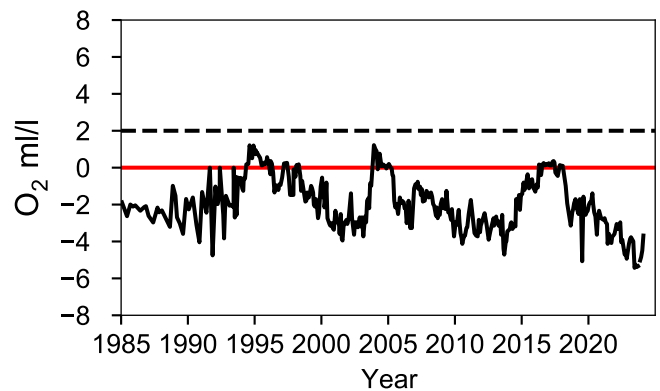
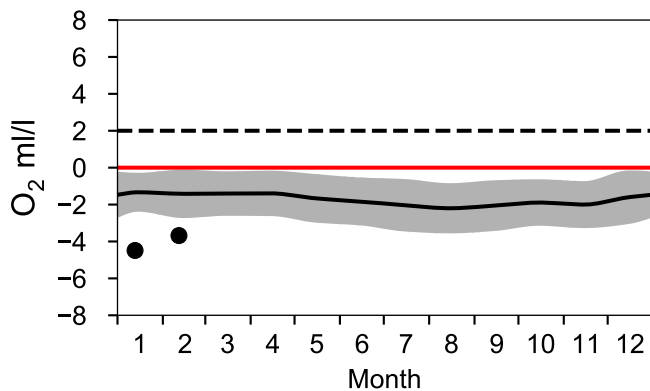
— Mean 1991-2020

■ St.Dev.

● 2024

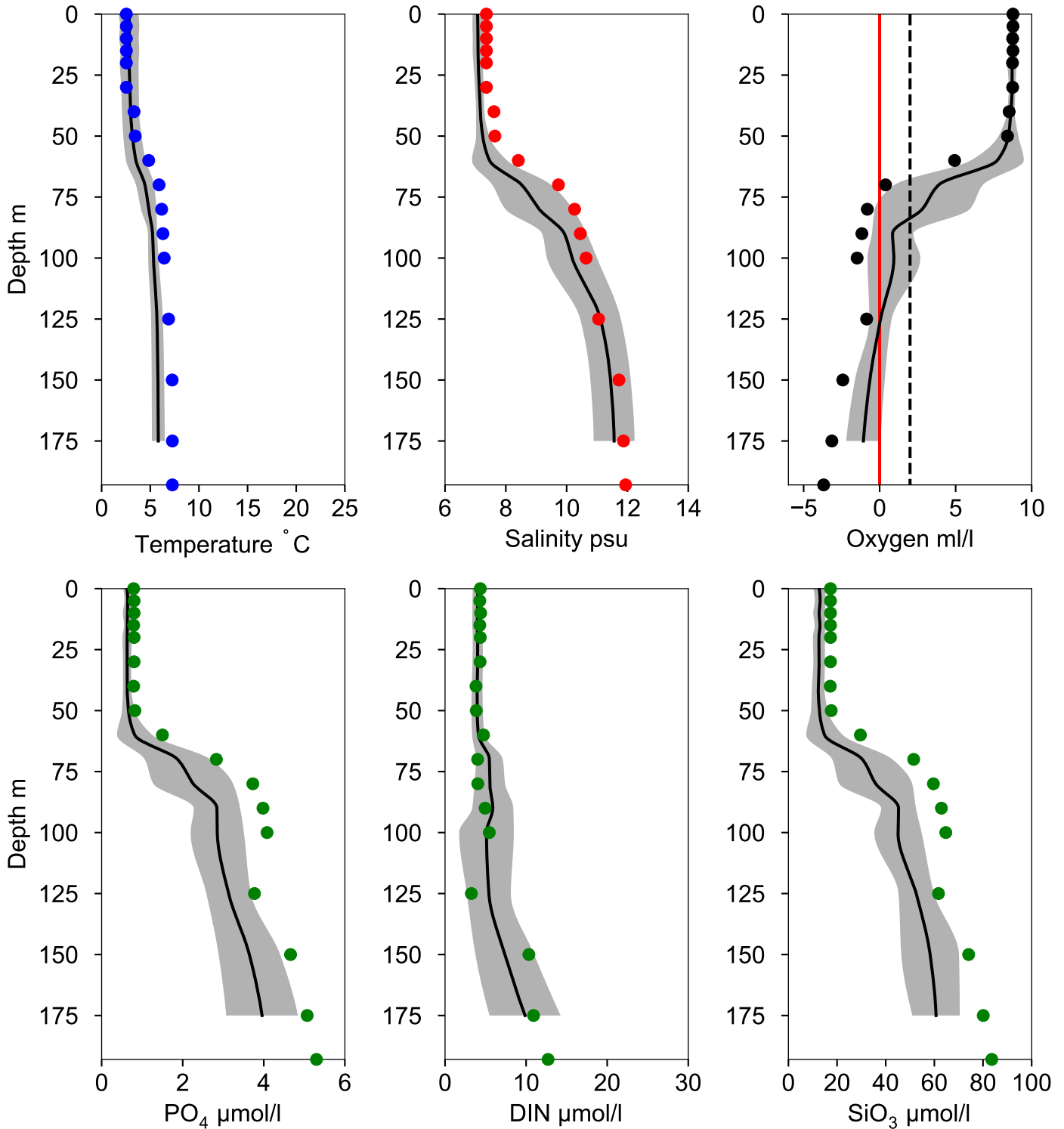


## OXYGEN IN BOTTOM WATER (depth >= 175 m)



# Vertical profiles BY20 FÅRÖDJ February

— Mean 1991-2020    ■ St.Dev.    ● 2024-02-12

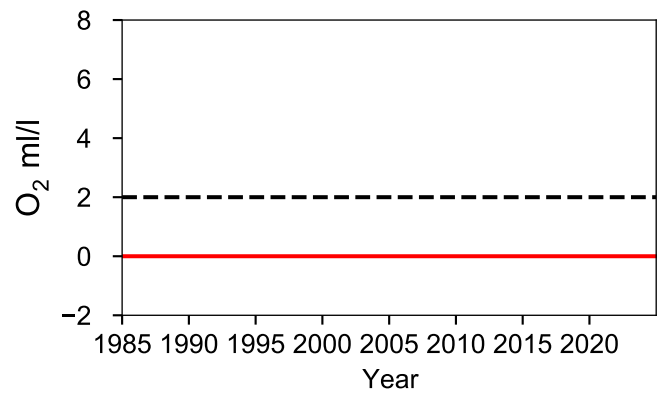
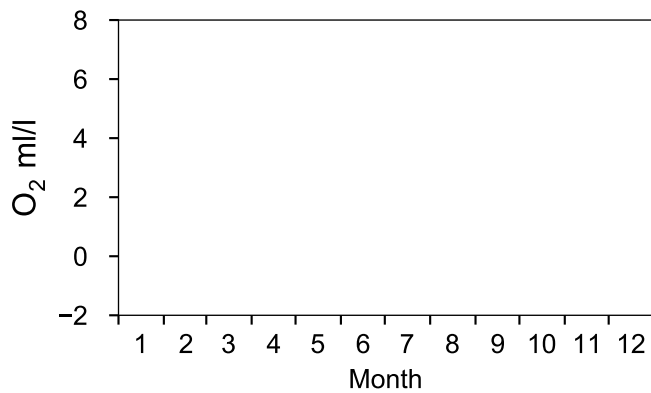
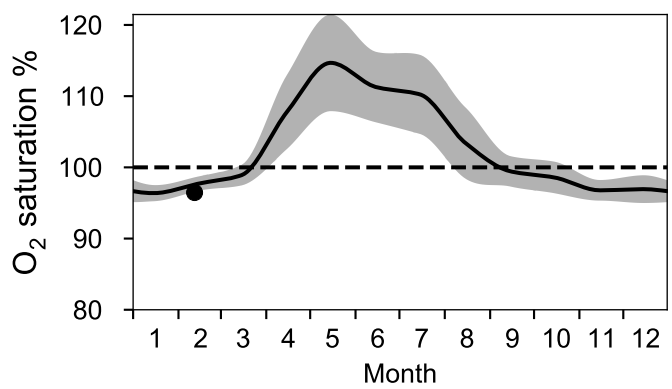
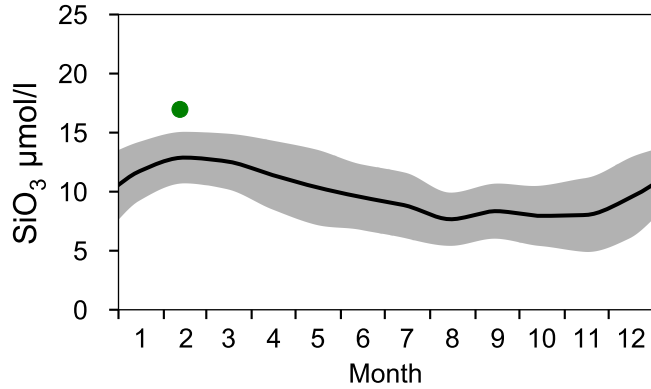
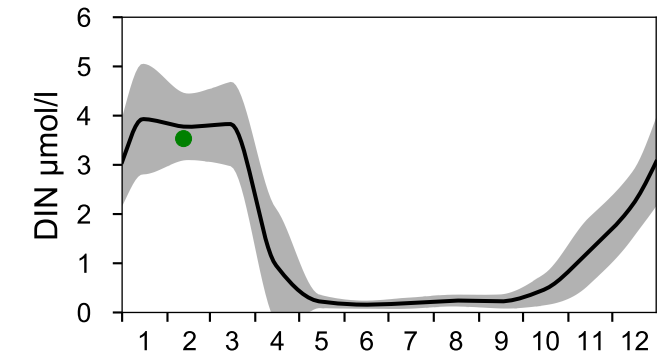
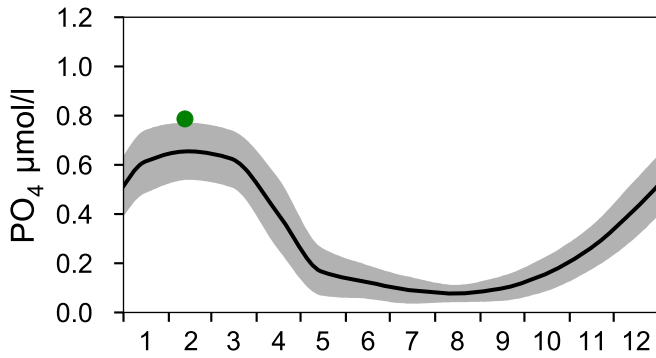
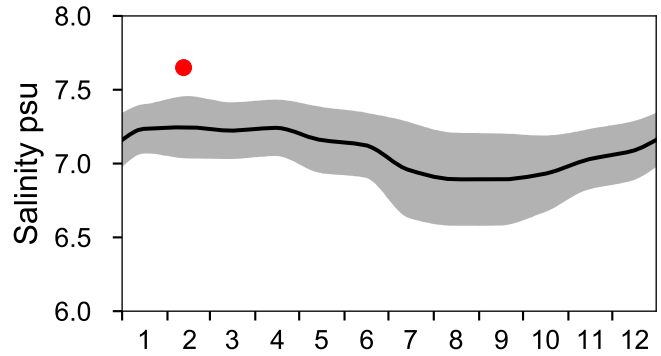
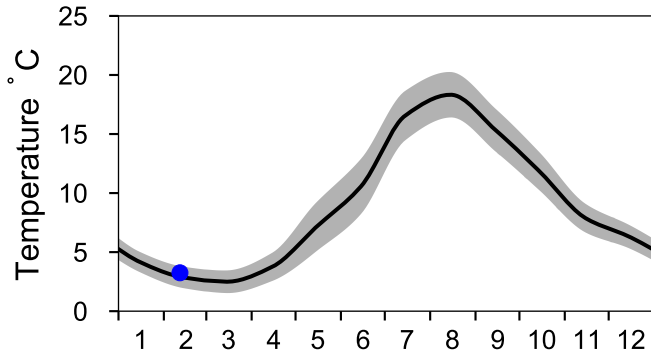


# STATION BY21 SURFACE WATER (0-10 m)

## Annual Cycles

Statistics based on data from: Östra Gotlandshavet

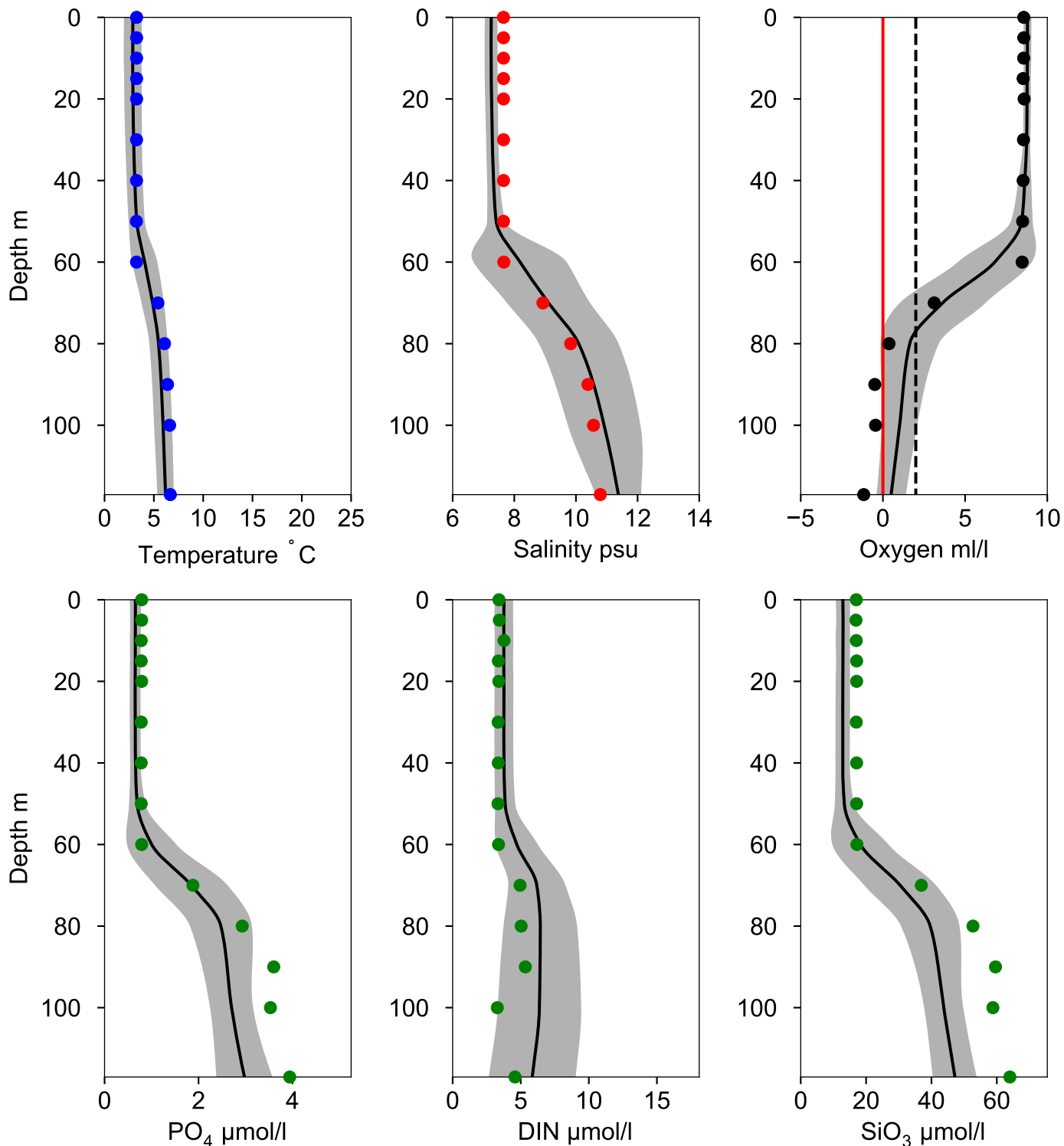
— Mean 1991-2020    St.Dev.    ● 2024



# Vertical profiles BY21 February

Statistics based on data from: Östra Gotlandshavet

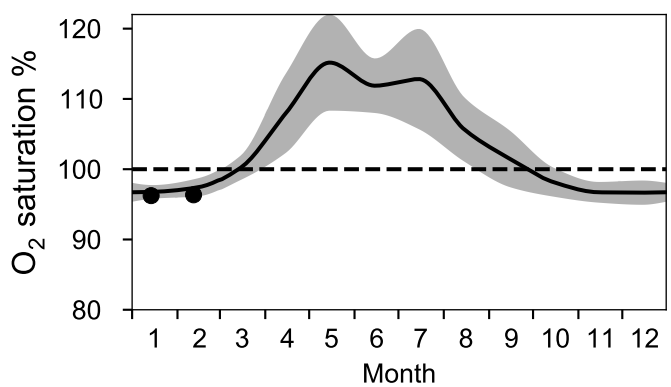
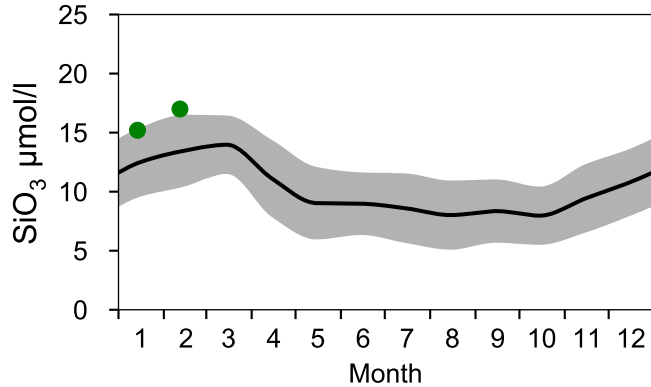
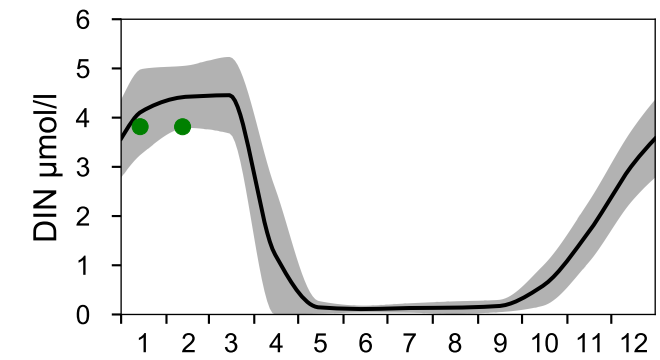
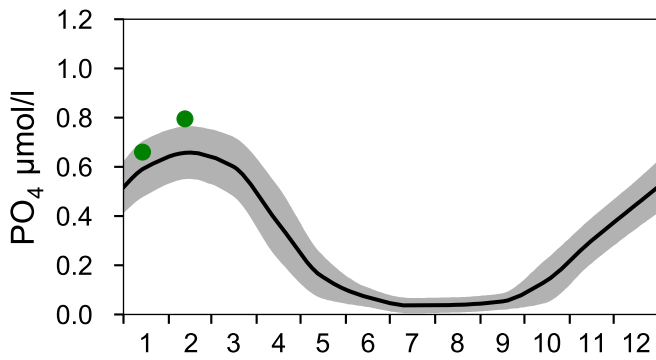
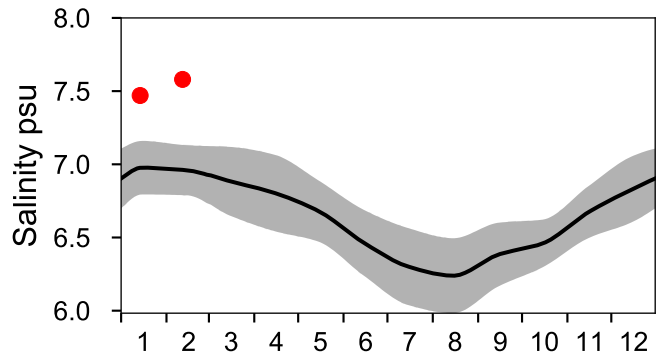
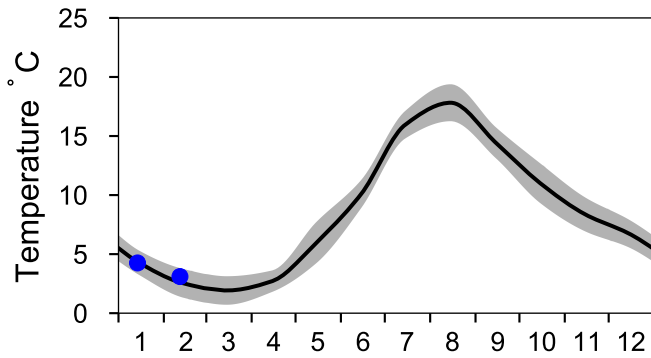
— Mean 1991-2020    ■ St.Dev.    ● 2024-02-12



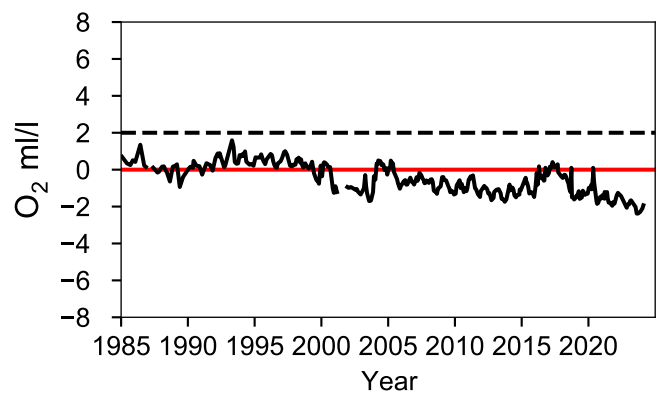
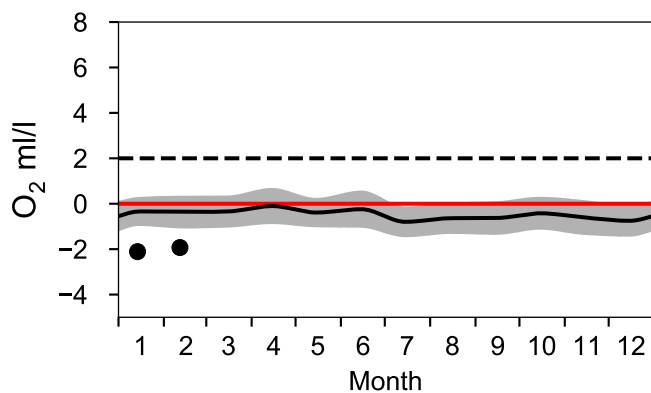
# STATION BY29 / LL19 SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020    St.Dev.    ● 2024



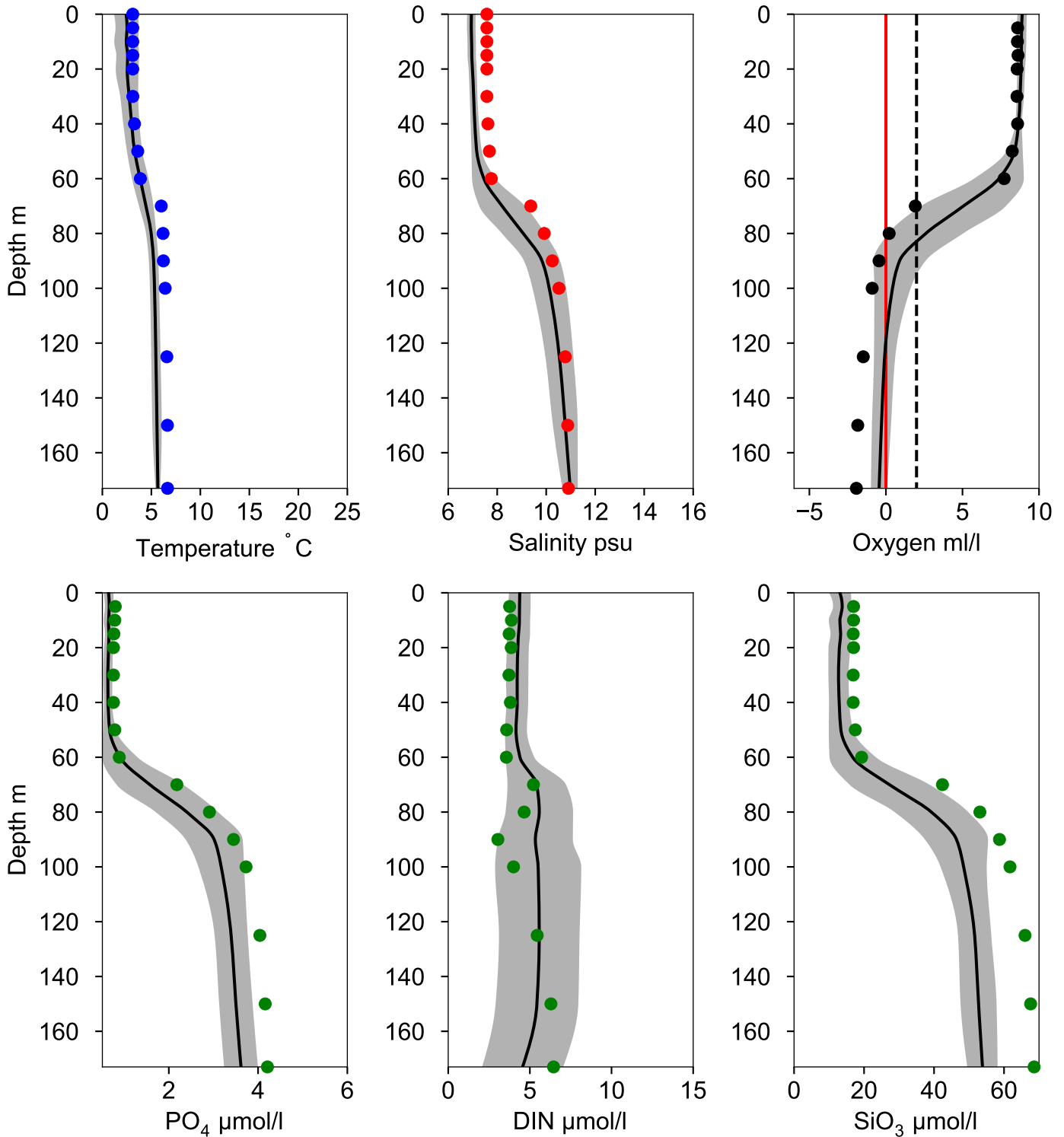
## OXYGEN IN BOTTOM WATER (depth >= 150 m)





# Vertical profiles BY29 / LL19 February

— Mean 1991-2020    ■ St.Dev.    ● 2024-02-12

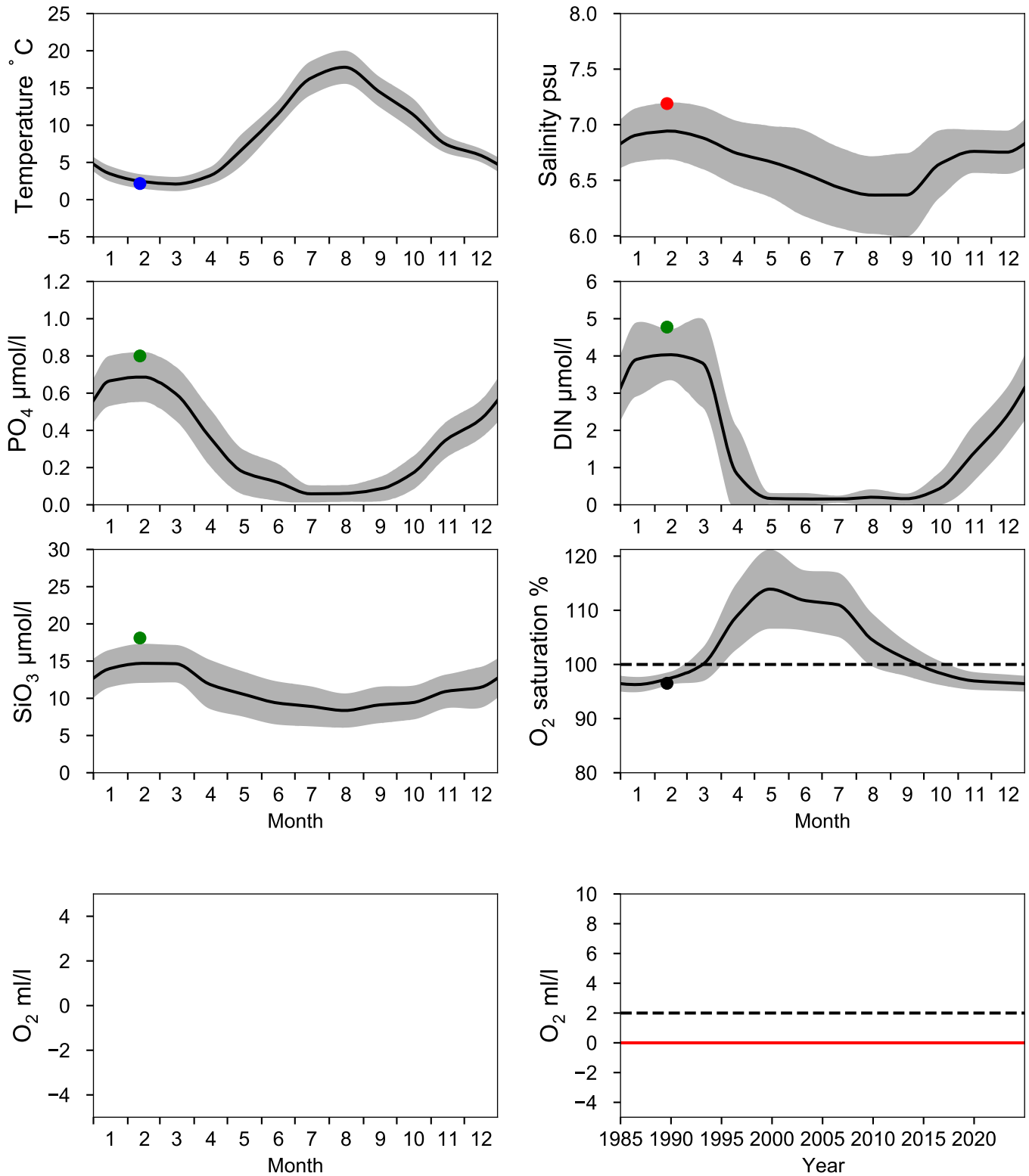


# STATION BY30 SURFACE WATER (0-10 m)

## Annual Cycles

Statistics based on data from: Västra Gotlandshavet

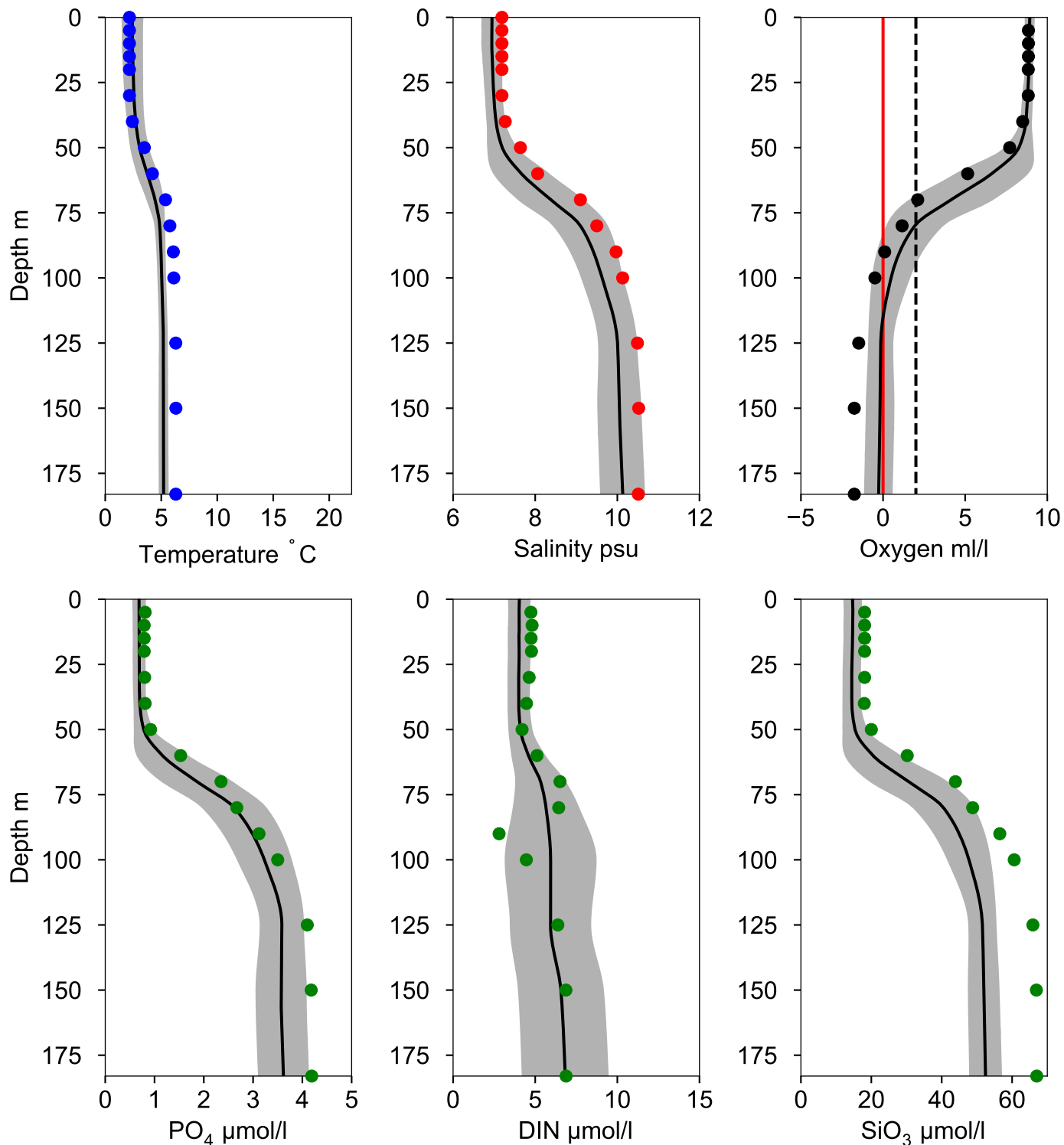
— Mean 1991-2020    St.Dev.    ● 2024



# Vertical profiles BY30 February

Statistics based on data from: Västra Gotlandshavet

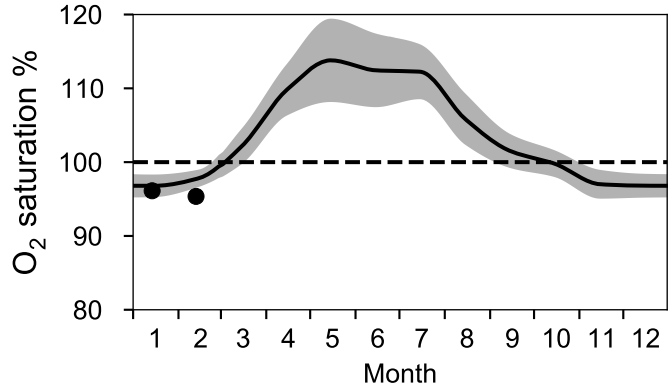
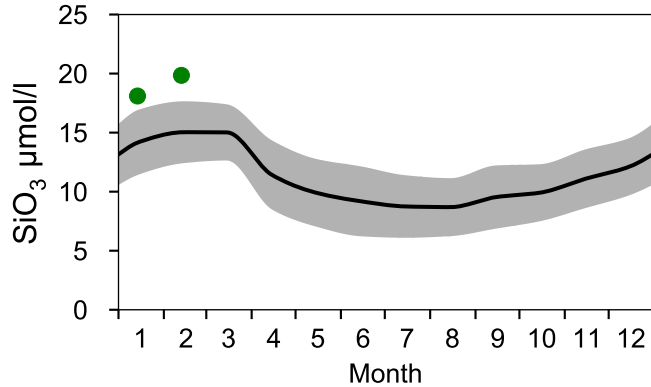
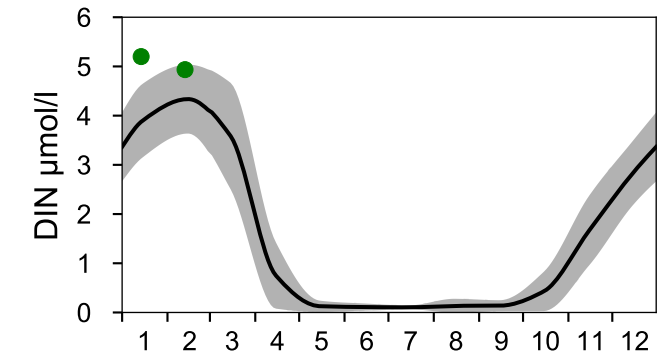
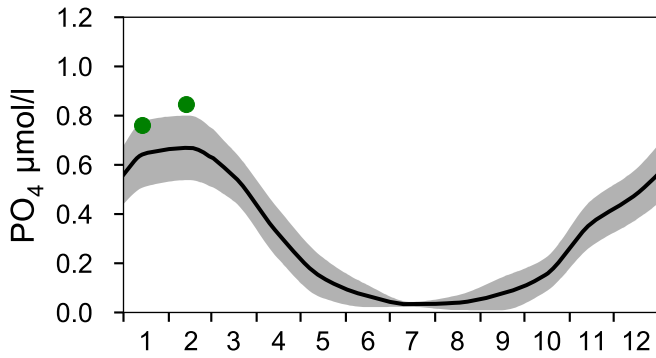
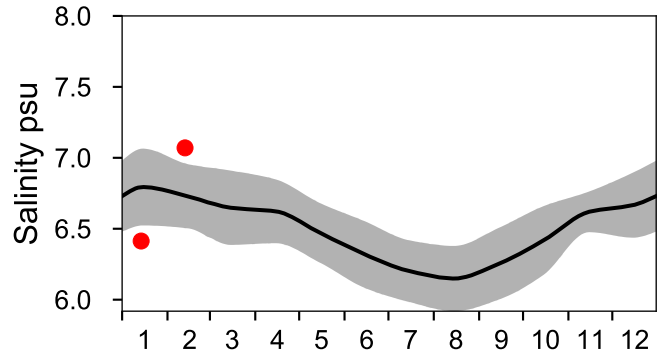
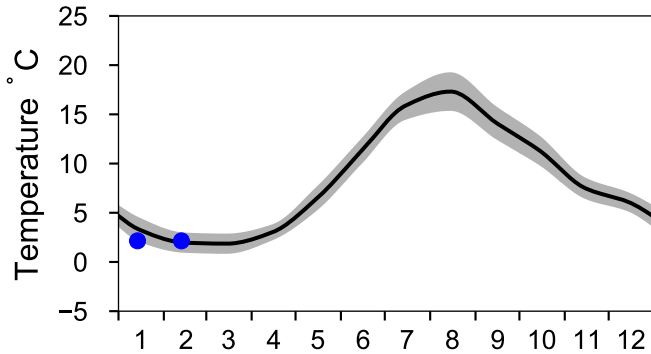
— Mean 1991-2020    St.Dev.    ● 2024-02-12



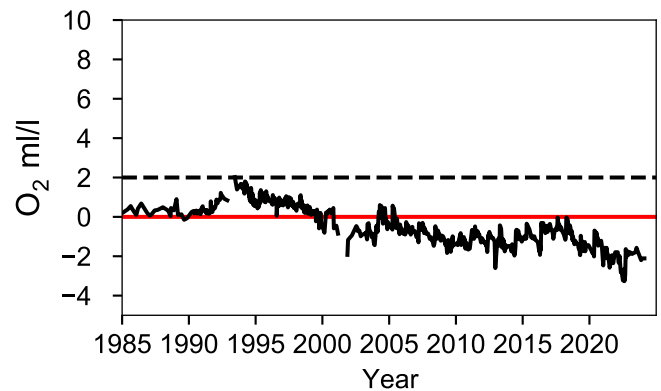
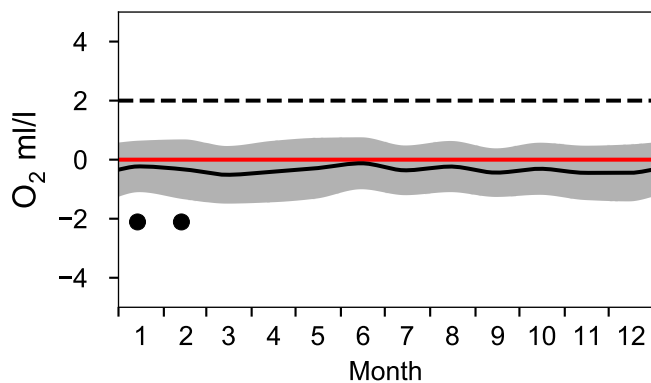
# STATION BY31 LANDSORTSDJ SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020    St.Dev.    ● 2024

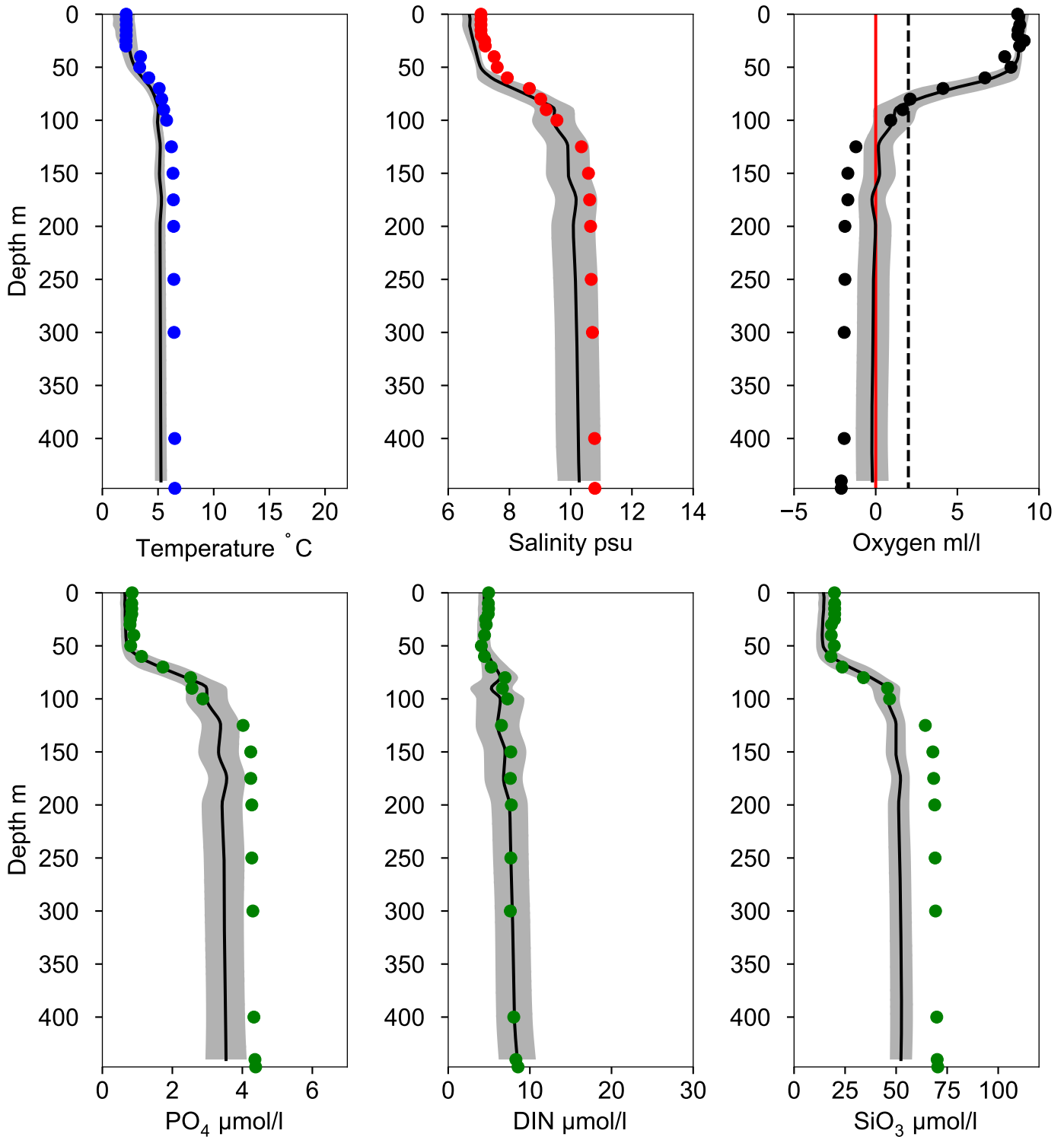


## OXYGEN IN BOTTOM WATER (depth >= 419 m)



# Vertical profiles BY31 LANDSORTSDJ February

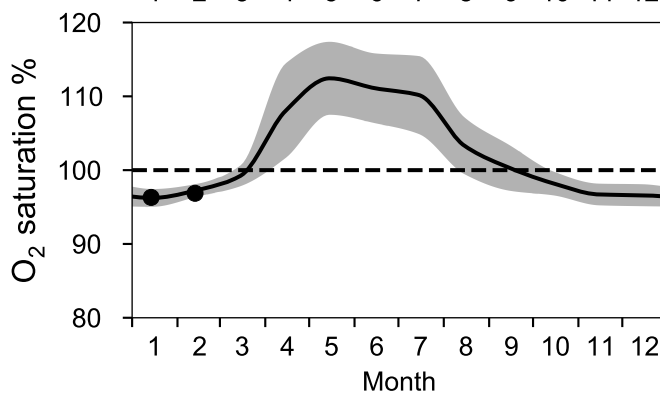
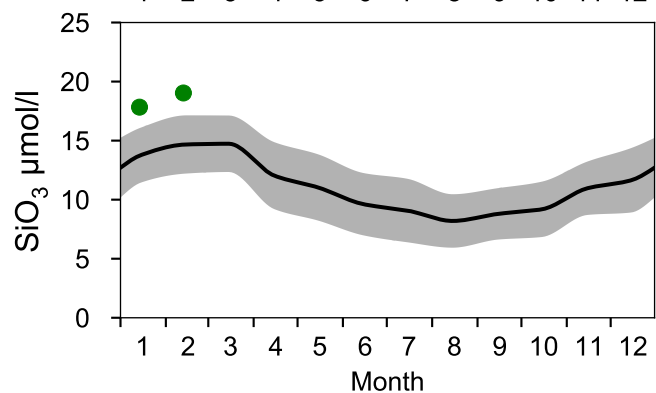
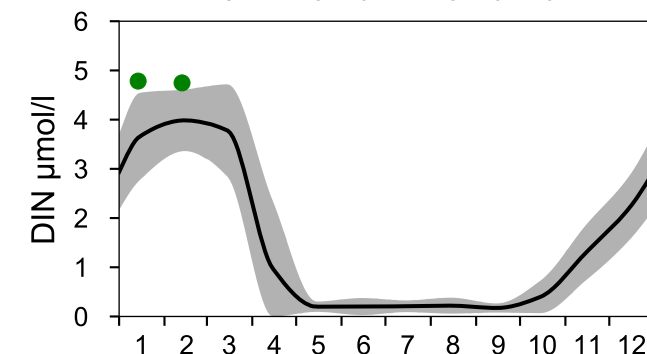
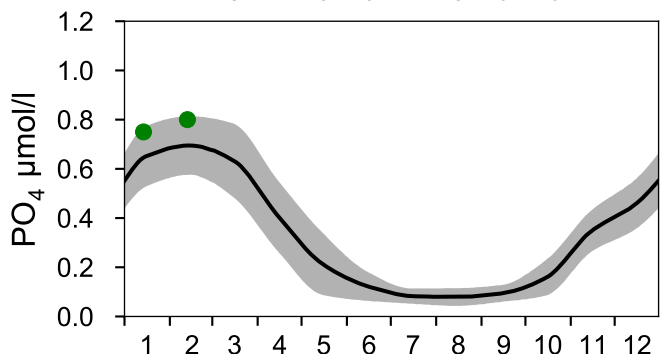
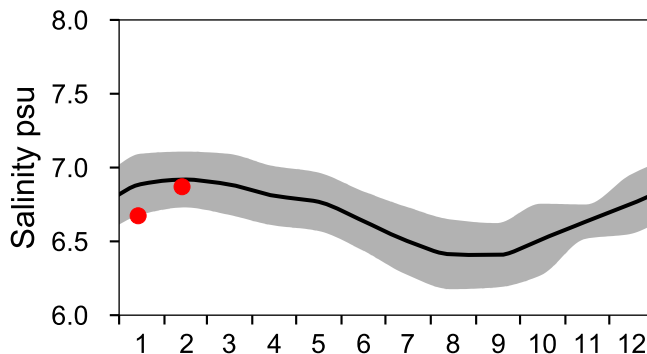
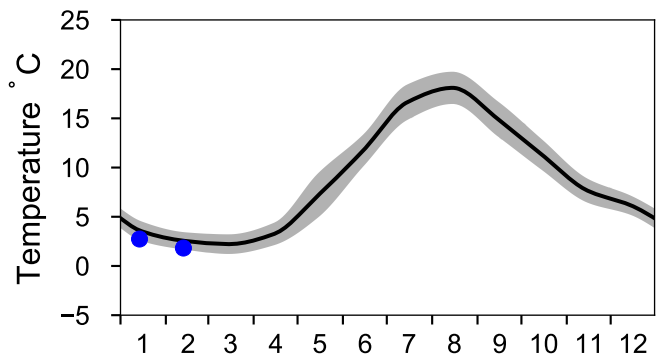
— Mean 1991-2020    St.Dev.    ● 2024-02-13



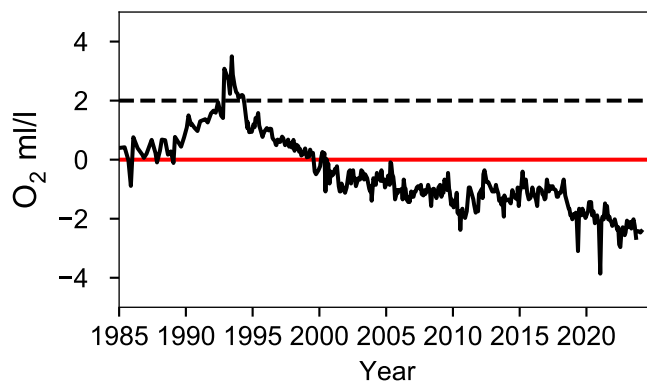
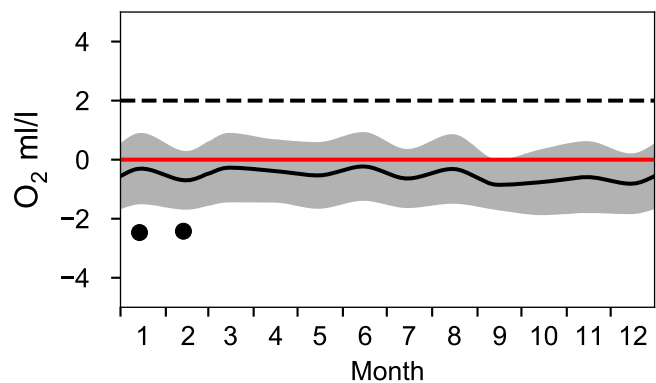
# STATION BY32 NORRKÖPINGSDJ SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020    St.Dev.    ● 2024

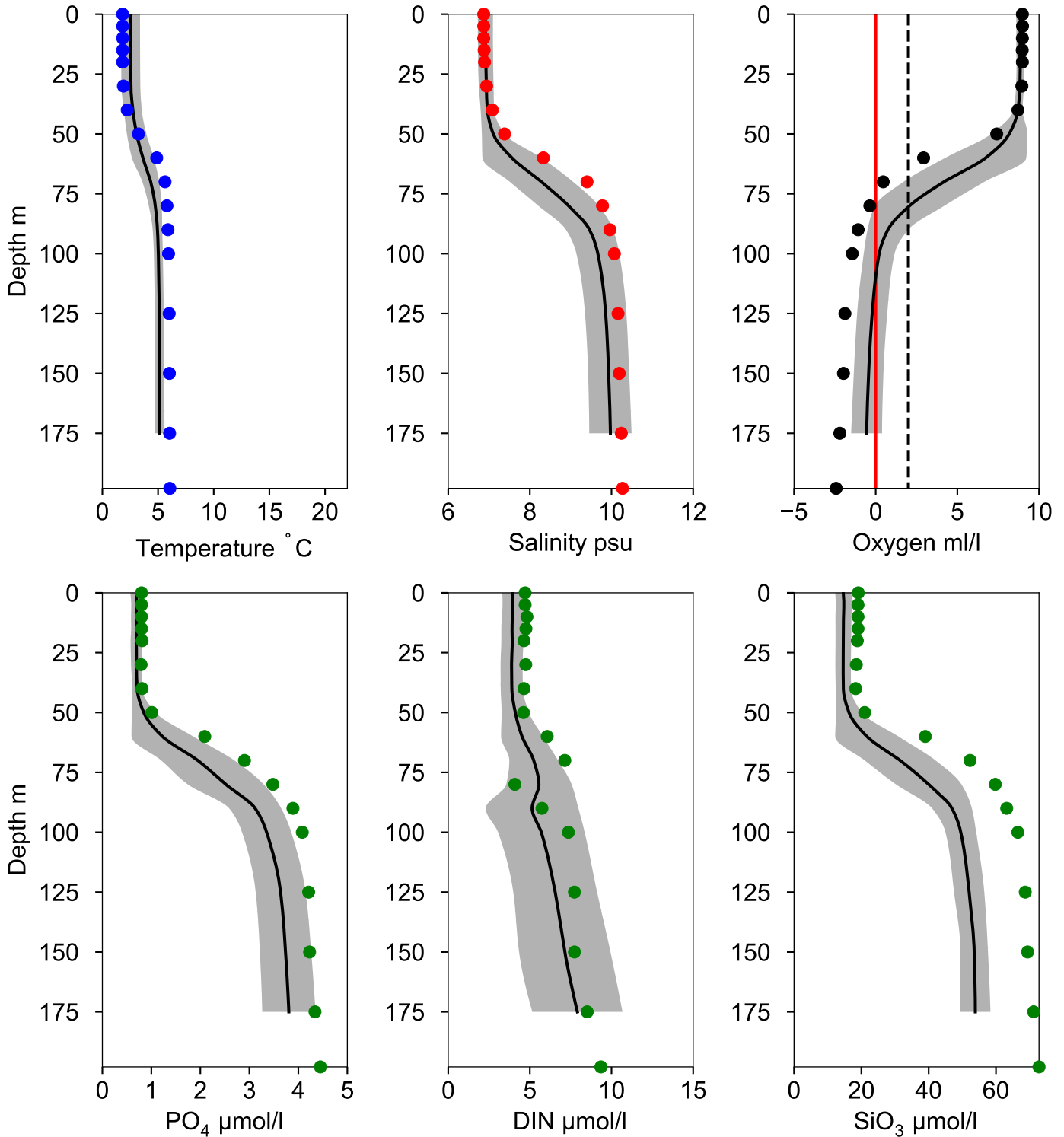


## OXYGEN IN BOTTOM WATER (depth >= 175 m)



# Vertical profiles BY32 NORRKÖPINGSDJ February

— Mean 1991-2020    ■ St.Dev.    ● 2024-02-13

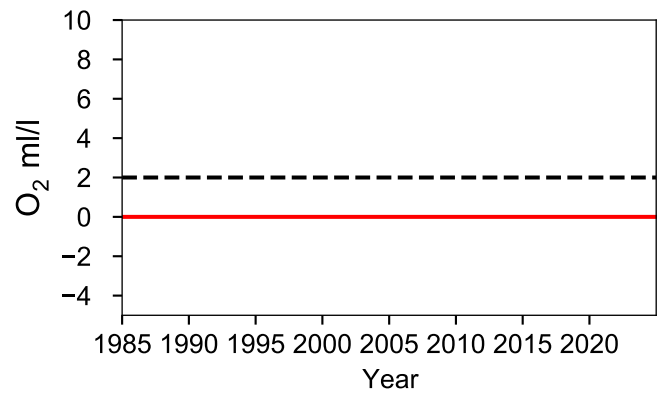
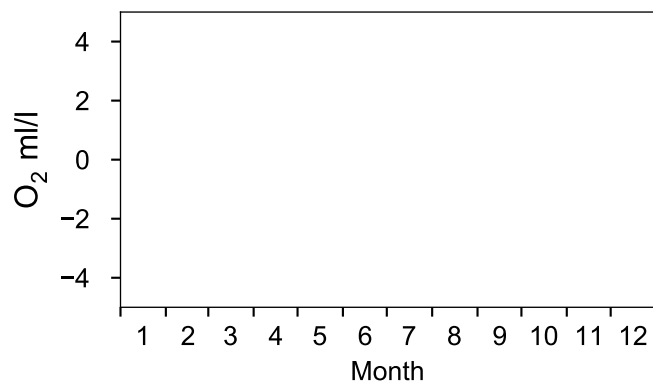
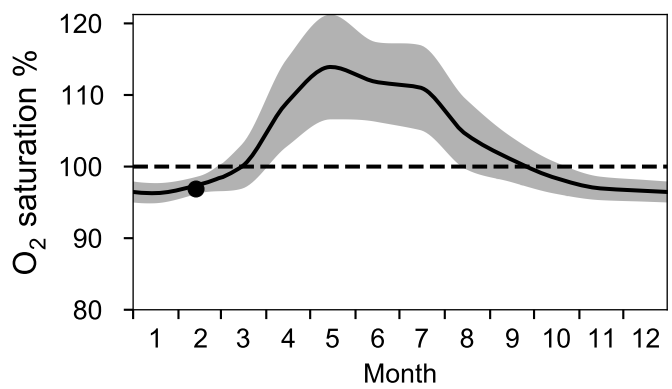
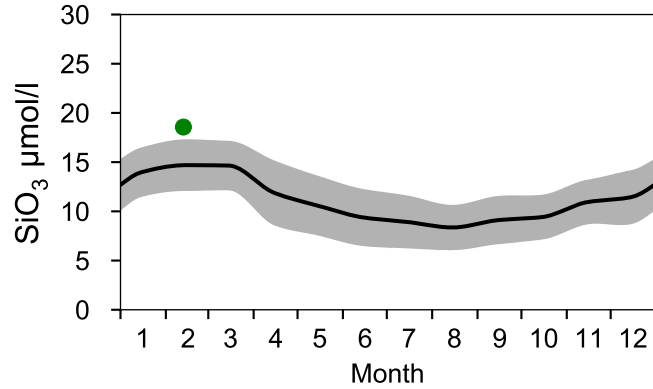
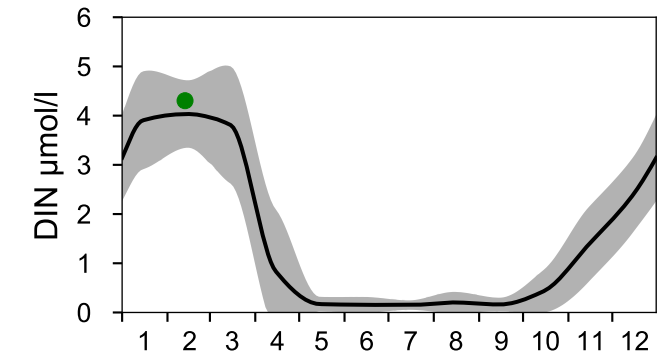
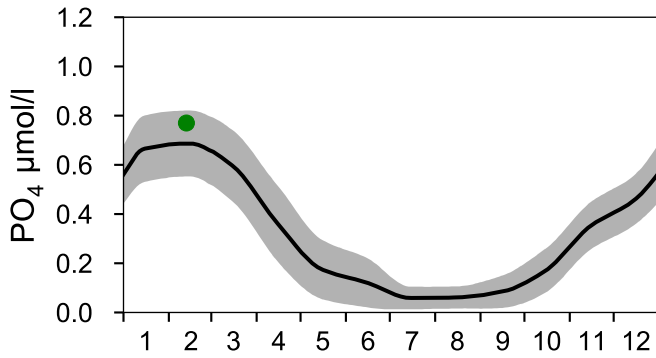
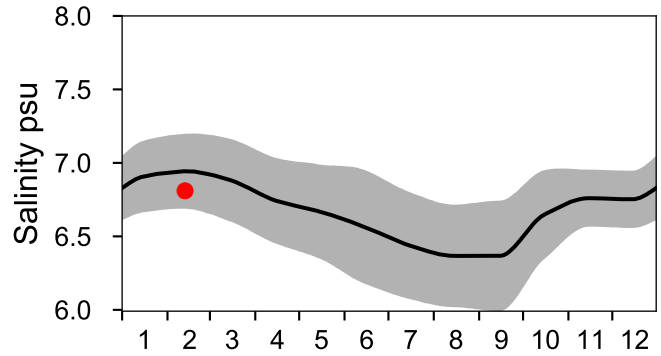
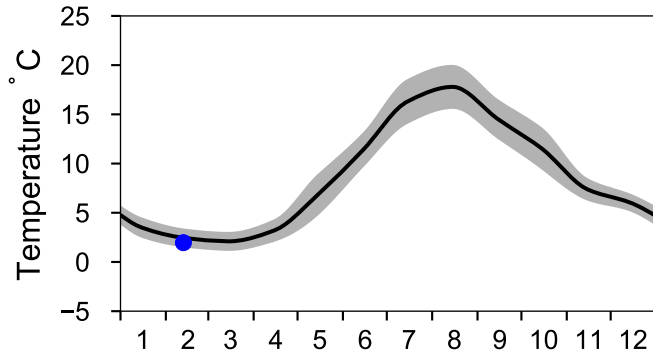


# STATION BY36 SURFACE WATER (0-10 m)

## Annual Cycles

Statistics based on data from: Västra Gotlandshavet

— Mean 1991-2020    St.Dev.    ● 2024

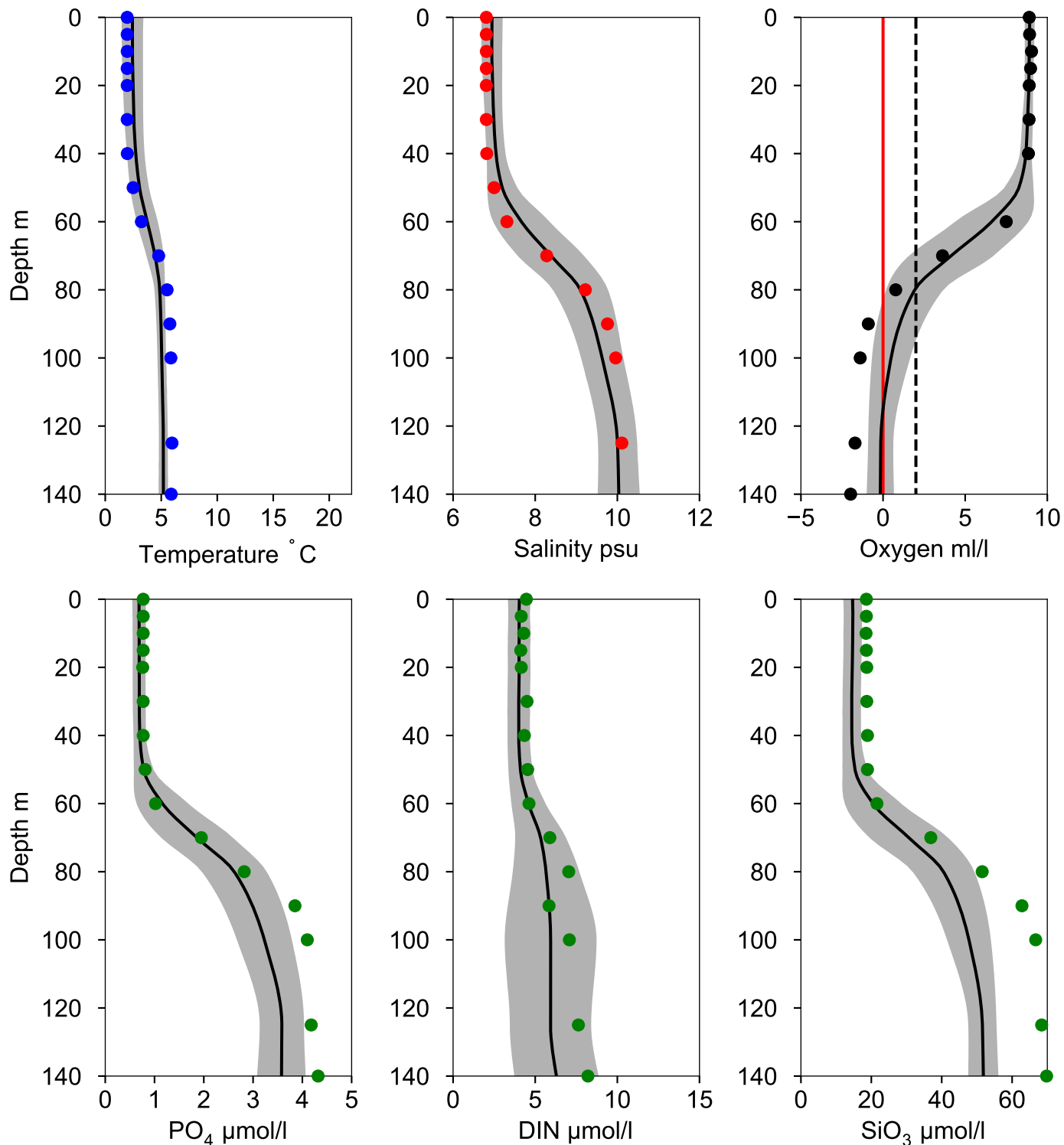




# Vertical profiles BY36 February

Statistics based on data from: Västra Gotlandshavet

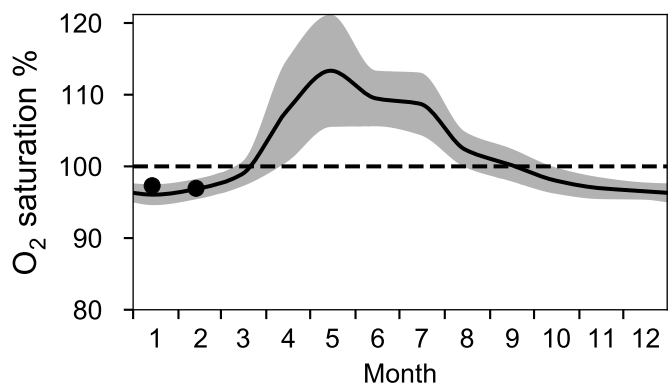
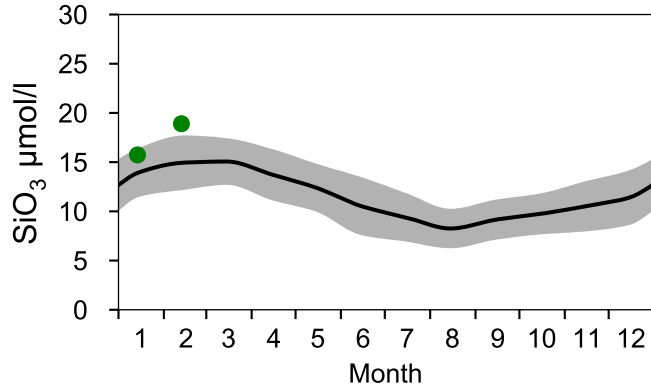
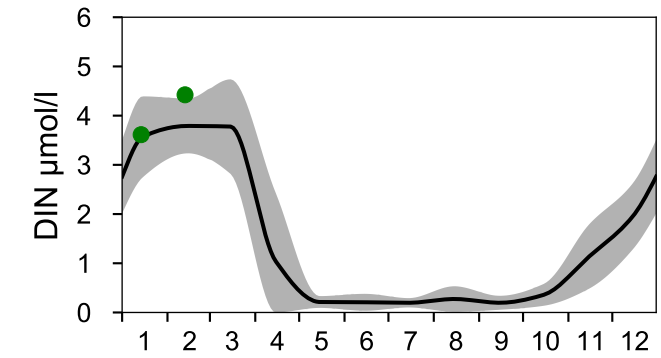
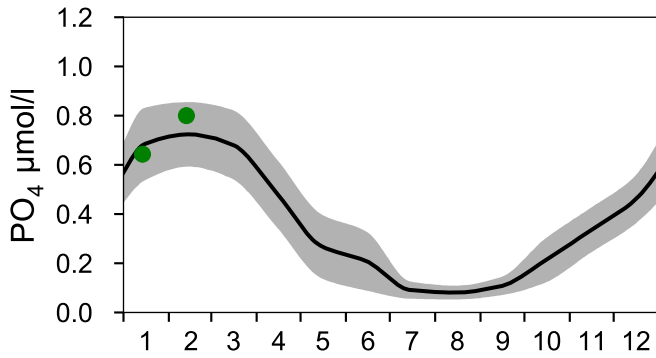
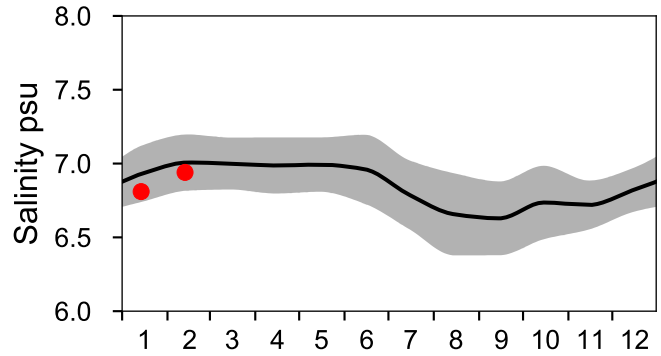
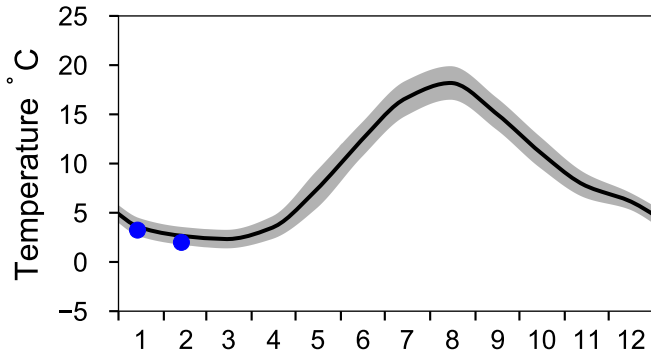
— Mean 1991-2020    St.Dev.    ● 2024-02-13



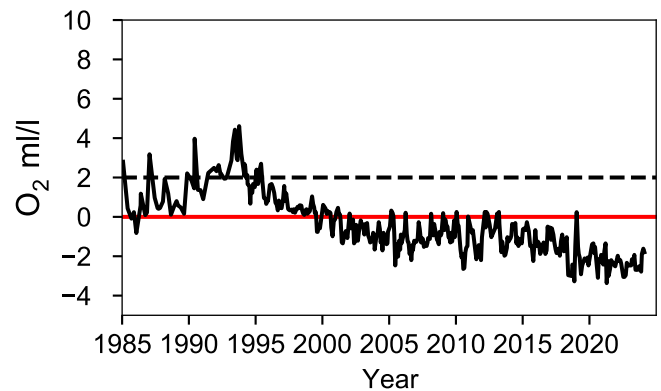
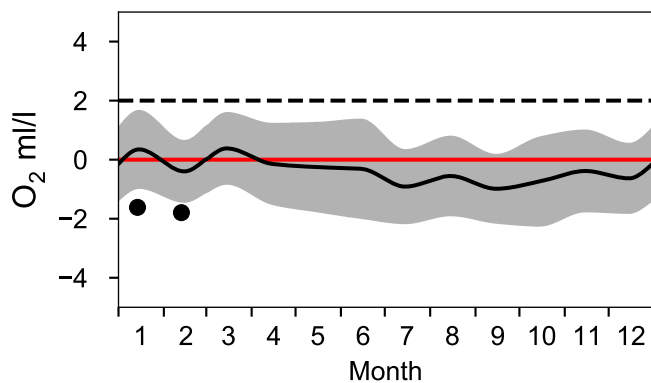
# STATION BY38 KARLSÖDJ SURFACE WATER (0-10 m)

Annual Cycles

— Mean 1991-2020    St.Dev.    ● 2024



## OXYGEN IN BOTTOM WATER (depth >= 100 m)



# Vertical profiles BY38 KARLSÖDJ February

— Mean 1991-2020    ■ St.Dev.    ● 2024-02-13

