

Rapport från SMHIs utsjöexpedition med R/V Svea



Expeditionens varaktighet: 2020-07-07 - 2020-07-13
Uppdragsgivare: Sveriges Meteorologiska och Hydrologiska Institut (SMHI),
Havs- och Vattenmyndigheten (HaV)
Samarbetspartner: Sveriges Lantbruksuniversitet (SLU) och Sjöfartsverket (SjöV)

SAMMANFATTNING

Under expeditionen, som ingår i det svenska pelagiala övervakningsprogrammet, besöktes Skagerrak, Kattegatt, Öresund och Egentliga Östersjön.

Ytvattentemperaturen varierade mellan 12,5-17,3°C vilket är lägre än normalt för årstiden. Salthalten i ytvattnet i Egentliga Östersjöns var över det normala vid alla besökta stationer.

Det oorganiska kvävet var under detektionsgränsen från ytan ner till 20-40 m på nästan alla provtagna stationer vilket är normalt för årstiden. Fosfathalterna var normala för årstiden i alla havsområden. Silikathalten i ytvattnet var över det normala i hela Egentliga Östersjön förutom i Västra Gotlandsbassängen och BY20 Fårödjupet där halterna var normala. I Kattegatt var silikathalterna normala till under det normala och i Skagerrak uppmättes normala halter.

Syresituationen i Egentliga Östersjön fortsätter att vara allvarlig. Helt syrefria förhållanden, då giftigt svavelväte bildas, återfanns i Västra Gotlandsbassängen från 80 meters djup och i Östra Gotlandsbassängen från 125 meters djup. Akut syrebrist (<2 ml/l) återfanns från 60-75 meters djup i hela området. Vid stationen BY1 i Arkonabassängen har syrehalten gått ner till gränsen för akut syrebrist, 2 ml/l. I Skagerrak och Kattegatt var syresituationen god.

SMHIs nästa expedition är planerad till 16-22 augusti med R/V Svea.

RESULTAT

Expeditionen genomfördes ombord på forskningsfartyget R/V Svea och startade i Lysekil den 7:e juli och avslutades i Göteborg den 13:e juli. Vindarna var kraftiga det första dygnet men minskade till måttliga under resten av expeditionen och kom huvudsakligen från sydväst till väst. Lufttemperaturen varierade mellan 12,2 och 17,3°C.

I Hanöbukten sattes det ut ett bottensystem som mäter temperatur, salthalt, syre och ström.

Vågbojen på Knolls grund hade slutat sända data och bytes därför ut.

Prover togs också från vatten- och planktonprover för mätning av selen åt EAWAG i Schweiz (Swiss Federal Institute of Aquatic Science and Technology). Det togs även ytvattenprover åt Uppsala universitet.

Under expeditionen analyserades växtplanktonprover ombord av växtplanktonexperten Marie Johansen, resultaten presenteras i Algaware-rapporten för juli;
<https://www.smhi.se/publikationer/publikationer/algrapporter>.

Daglig algövervakning via satellit utförs av SMHI under sommaren och finns tillgänglig på <http://www.smhi.se/vadret/hav-och-kust/algsituationen>.

Denna rapport är baserad på data som genomgått en första kvalitetskontroll. Efter att ytterligare kvalitetsgranskning genomförts kan vissa värden eller kvalitetsflaggor ha ändrats. Data från denna expedition publiceras så fort som möjligt på datavärdens hemsida, normalt sker detta inom en vecka efter avslutad expedition. Vissa analyser görs efter expeditionen och publiceras senare.

Data kan hämtas från SHARKweb här: <http://www.smhi.se/klimatdata/oceanografi/havsmiljodata>

Skagerrak

Ytvattentemperaturen låg mellan 12,5 och 17,3°C vilket var kallare än normalt för årstiden. Det var varmast närmast kusten. Djupare ner i vattenkolumnen var temperaturen också normal eller något över normal. Salthalten i ytvattnet var mellan 23-32 psu vilket var högre än normalt vid alla stationer förutom vid Släggö där den var något lägre än normalt. Skiktningen var synlig och termoklin och haloklin sammanföll på 15-70 meters djup.

Koncentrationen av närsalter var låg ovanför språngskiktet. I ytvattnet, 0-10 m, noterades normala halter vid samtliga stationer och fosfathalten varierade mellan 0,04-0,07 µmol/l, silikathalten varierade mellan som lägst 0,1 µmol/l i yttre Skagerrak till som högst 0,3 µmol/l nära kusten. Halten av löst oorganiskt kväve (DIN) var under detektionsgränsen (<0,1 µmol/l) vid alla stationer utom vid P2 där halten var 0,7 µmol/l. I djupvattnet under språngskiktet var koncentrationen av näringsämnen normal till lägre än normal.

Syresituationen var god vid samtliga stationer i Skagerrak, med värden normala för årstiden. Lägst koncentration vid botten uppmättes vid kustnära stationen Släggö, 3,9 ml/l.

Viss planktonaktivitet, uppmätt med CTD-fluorescens, syntes vid de flesta stationer på omkring 20-30 meters djup.

Kattegatt och Öresund

Temperaturen i ytvattnet var lägre än normalt för årstiden och varierade mellan 15,6–16,3°C. Salthalten i ytvattnet var något förhöjd och varierade mellan 18 och 26 psu, lägst i Öresund och högst i norra Kattegatt. Termoklin och haloklin sammanföll och återfanns på 17-23 meters djup. I djupvattnet, under ytskiktet, var salthalten normal och temperaturen var i huvudsak normal eller något över det normala.

Löst oorganiskt kväve och fosfat var i princip förbrukade ner till språngskiktet vilket är normalt för årstiden. Halterna av fosfat i ytvattnet varierade mellan 0,05-0,06 µmol/l. Halten av löst oorganiskt kväve var under detektionsgränsen (<0,1 µmol/l) vid samtliga stationer. Silikathalten hade gått ner sen juni och var nu under eller mycket under det normala på samtliga stationer och varierade mellan 0,1-0,3 µmol/l. Närsaltshalterna i djupvattnet var normala till lägre än normala för årstiden.

Vid samtliga besökta stationer var syrehalten i bottenvattnet god. I Kattegatt varierade den mellan 4,9–5,2 ml/l och i Öresund var den 3,7 ml/l.

Fluorescensmätningar från CTDn visade låg planktonaktivitet från ytan ner till 20 meters djup. En fluorescenstopp noterades vid Anholt E kring 20 meter.

Egentliga Östersjön

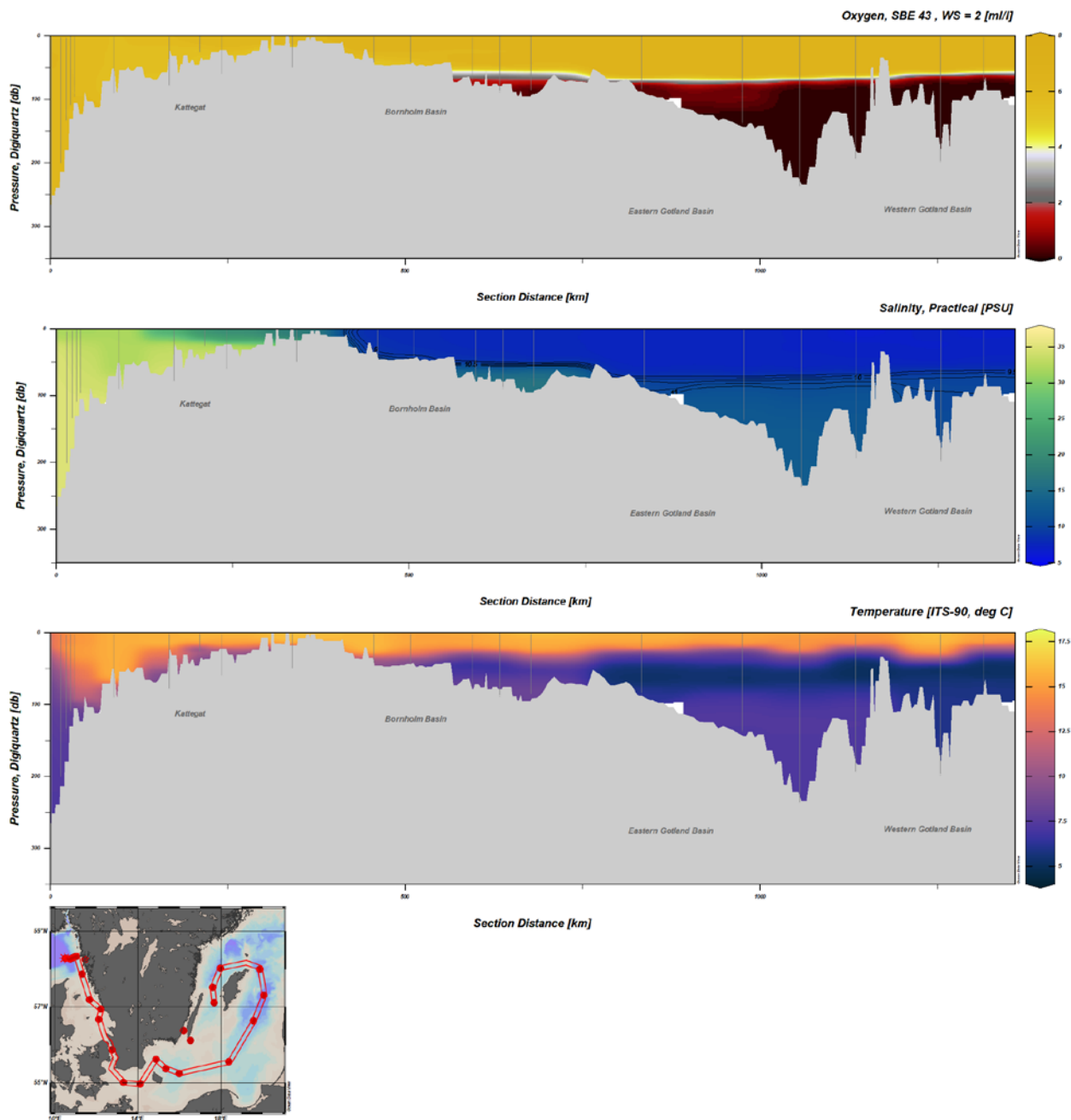
Ytvattentemperaturen, 0-10 m, var något under det normala i hela Egentliga Östersjön och varierade mellan 13,5-16,2°C. Salthalten i ytvattnet var fortfarande över det normala vid alla besökta stationer, och varierade mellan 6,7 och 8,2 psu. Haloklinen återfanns på omkring 60-70 meters djup i Östra- och Västra Gotlandsbassängen. I Bornholmsbassängen, Hanöbukten och i Arkonabassängen på omkring 40 meters djup. Termoklinen återfanns i hela området på 20-30 meters djup.

Halterna av fosfat i ytvattnet var normala i hela området och varierade mellan 0,07–0,28 µmol/l. Löst oorganiskt kväve var från under detektionsgränsen (<0,10 µmol/l) i större delen av området till 0,5 µmol/l vid de nordligaste stationerna. Silikathalten i ytvattnet var över det normala i hela Egentliga Östersjön förutom i Västra Gotlandsbassängen och BY20 Fårödjupet där halterna var normala. Halterna varierade mellan 9,1–16,9 µmol/l.

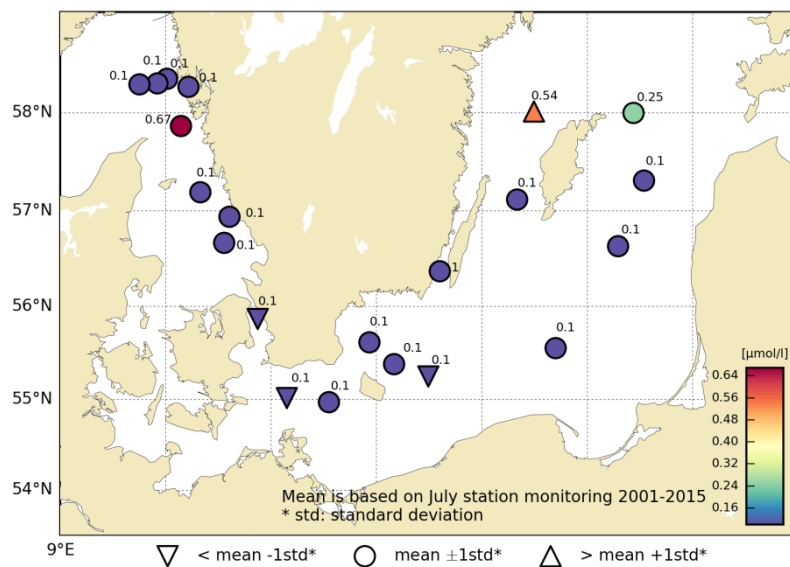
Syresituationen i Egentliga Östersjön fortsätter att vara allvarlig. Helt syrefria förhållanden, då giftigt svavelväte bildas, återfanns i Västra Gotlandsbassängen från 80 meters djup och i Östra Gotlandsbassängen från 125 meters djup. Akut syrebrist (<2 ml/l) återfanns från 60-75 meters djup i hela området. Vid stationen BY1 i Arkonabassängen har syrehalten gått ner till gränsen för akut syrebrist, 2 ml/l.

Det inflöde som skedde i november/december 2019 till Östersjön syns fortfarande vid stationen BCSIII-10 men syrehalten vid botten hade minskat från 1,3 ml/l i juni till 0,9 ml/l nu i juli. Vid BY10 kunde inflödet ses på 80-120 meters djup där syrehalten nu ökade till strax under 1 ml/l istället strax över 1 ml/l som det var i juni. Inflödet syntes svagt på mellan 115 och 120 meters djup vid BY15.

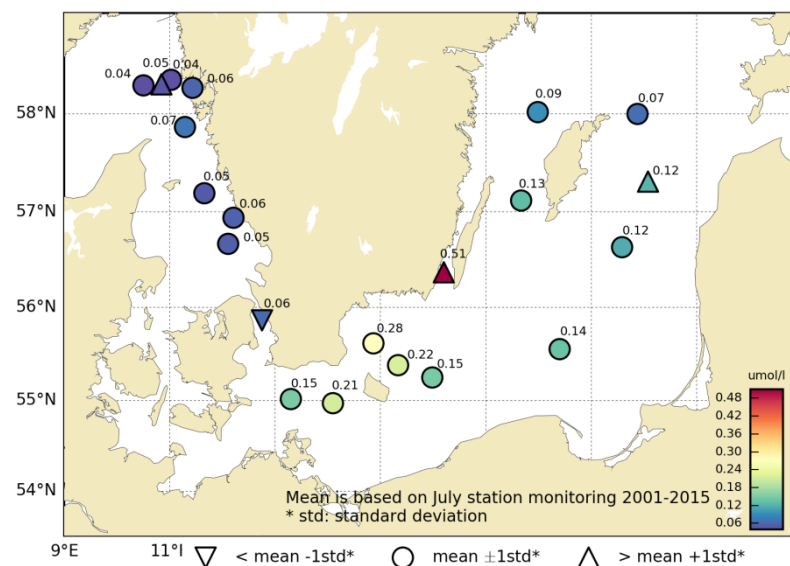
Viss planktonaktivitet, uppskattad från CTD-sondens klorofyllfluorescens, förekom i hela det undersökta området.



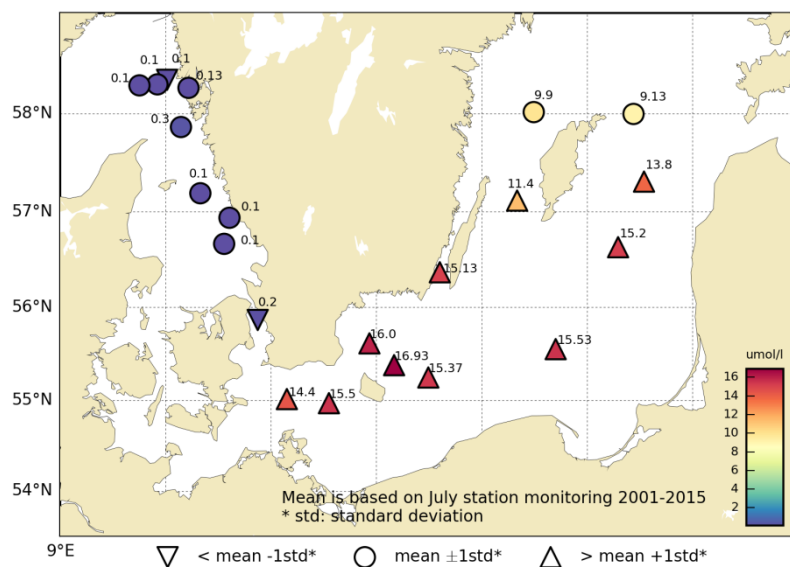
Figur 1. Snitt som visar syre- och salthalt från Skagerrak, genom Öresund till Östra Gotlandsbassängen och vidare in i Västra Gotlandsbassängen.



Figur 2. Koncentrationen av löst oorganiskt kväve i ytvattnet (0-10m).



Figur 3. Koncentrationen av fosfat i ytvattnet (0-10m).



Figur 4. Koncentrationen av silikat i ytvattnet (0-10m).

DELTAGARE

Namn	Roll	Från
Anna-Kerstin Thell	Expeditionsledare	SMHI
Örjan Bäck		SMHI
Marie Johansen		SMHI
Johan Kronsell		SMHI
Jenny Lycken	Kvalitetsansvarig	SMHI
Sari Sipilä		SMHI

BILAGOR

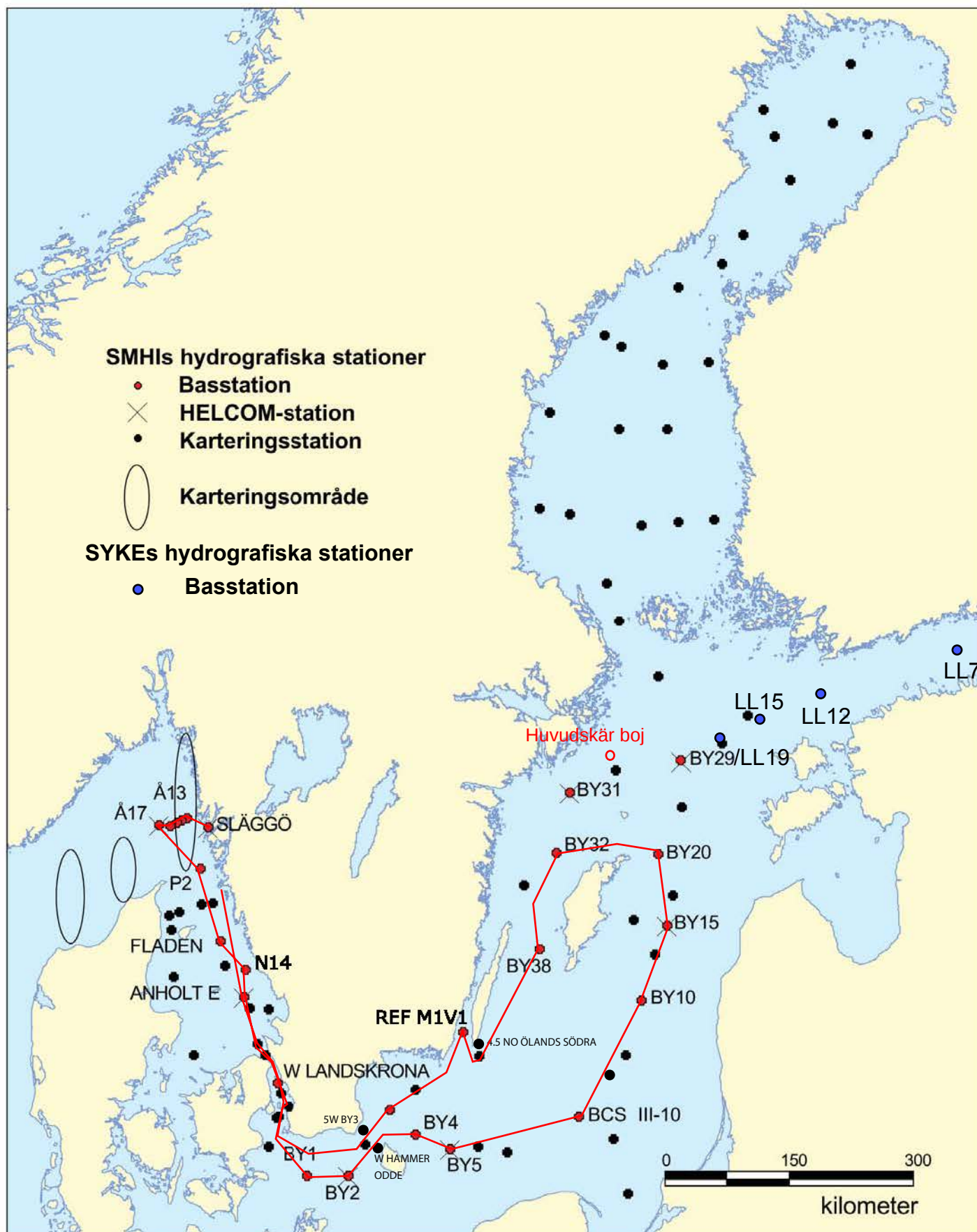
- Färdkarta
- Tabell över stationer, analyserade parametrar och antal provtagningsdjup
- Karta över syrekonzentration i bottenvattnet
- Vertikalprofiler
- Figurer över månadsmedelvärden

TRACKCHART	
Country:	Sweden
Ship:	R/V SVEA
Date:	20200707-20200713
Series:	0469-0494

Ship: R/V SVEA

Date: 20200707-20200713

Series: 0469-0494



Time: 22:47

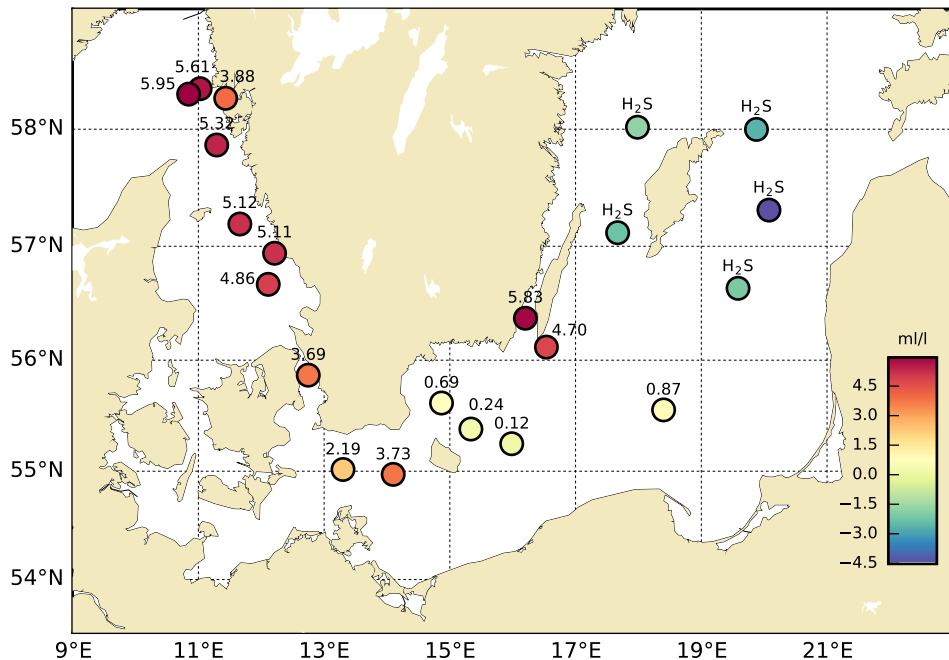
Ser no	Cru no	Stat code	Proj	Stat name	Lat	Lon	Start date yyyymmdd	Start time hhmm	Bottom depth m	Secchi depth m	Wind dir vel	Air temp C	Air pres hPa	WCW elac aove hdsb	CZPP loy apt o	No de	No btl	T e m p l d	T s a l i n g t y	S h o o z h t r r r o o k m u n n	P D H P N N N A N A S H C C
0469	14	FIBG27	BAS... SLÄGGÖ		5815.58	01126.09	20200707	1015	74	7	22 14	13.4 1004	1420 xxx-	9 9	x x x x - x x - x x x x x x x - x - - -			x x x x - x x - x x x x x x x - x - - -			
0470	14	SKEX14	BAS... Å13		5820.39	01101.68	20200707	1400	90		22 12	12.4 1003	1150 x---	10 10	x x x x - x x - x x x x x x x - x - - -			- x - x - x - - - - - - - - - - -			
0471	14	SKEX15	BAS... Å14		5818.99	01056.54	20200707	1540	110		22 12	13.1 1003	1250 ----	11 0	- x - x - - x - - - - - - - - - - -						
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0473	14	SKEX17	BAS... Å16		5816.03	01043.45	20200707	1845	202		21 8	13.2 1002	1640 ----	14 0	- x - x - - x - - - - - - - - - - -						
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0478	14	KAEX29	BAS... ANHOLT E		5640.12	01206.64	20200708	1250	62	6	26 9	14.2 1008	1230 xxxx	10 10	x x x x x x x - x x x x x x x x x x x x						
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0483	14	BPSE11	BAS... BCS III-10		5533.32	01824.01	20200710	0140	90		08 4	14.9 1006	9920 x---	12 12	x x x x - x x x x x x x x x x - x x - -						
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0488	14	BPWX00	EXT... VÅGBØJ KNOLL'S GRUND		5731.08	01736.47	20200711	0830	85		25 7	13.3 1009	1330 ----	12 0	- x						

Bottom water oxygen concentration (ml/l)

Ship: R/V Svea

Date: 20200707-20200713

Series: 0469-0494



STATION SLÄGGÖ SURFACE WATER (0-10 m)

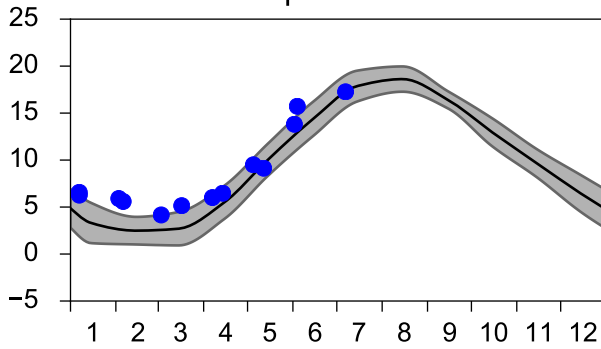
Annual Cycles

— Mean 2001-2015

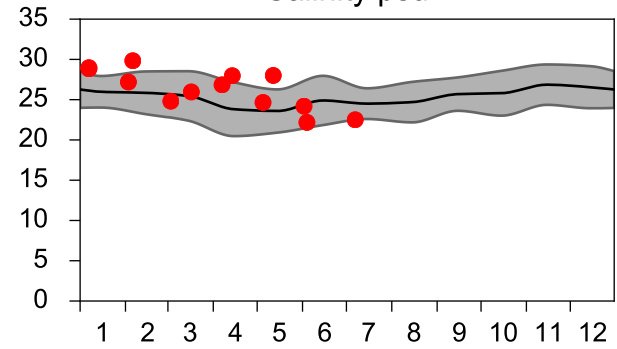
■ St.Dev.

● 2020

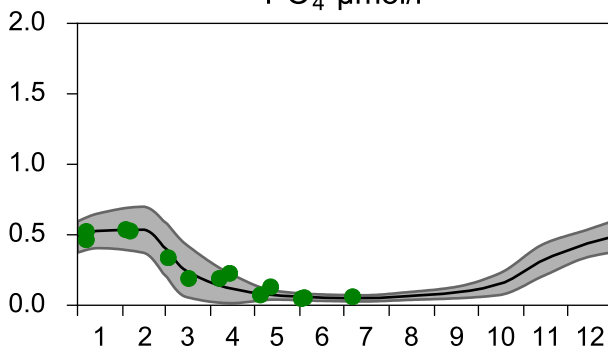
Temperature °C



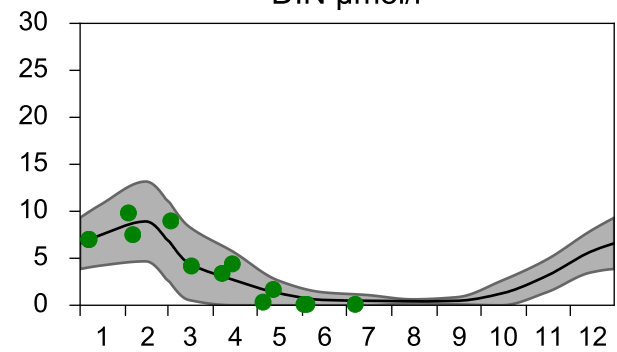
Salinity psu



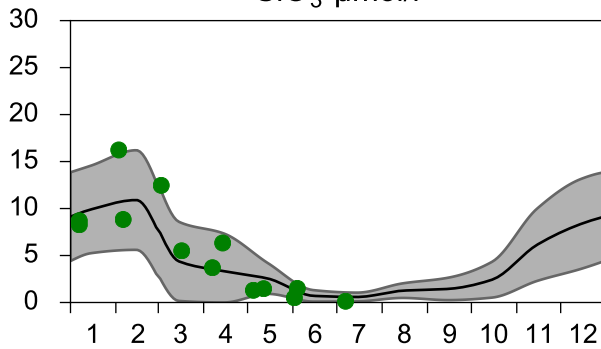
PO₄ µmol/l



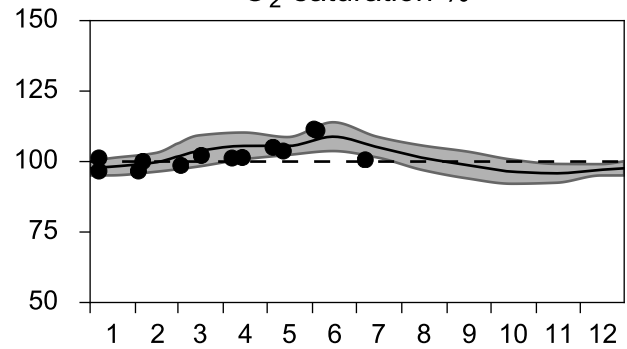
DIN µmol/l



SiO₃ µmol/l

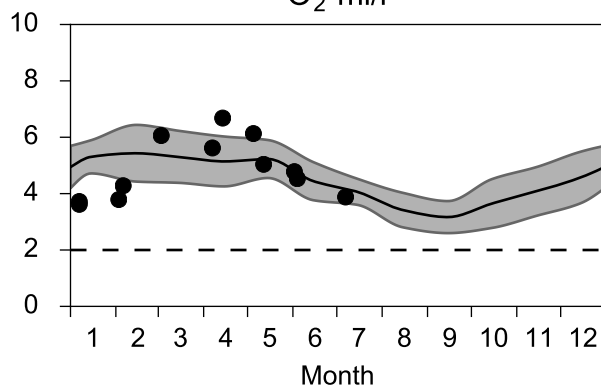


O₂ saturation %

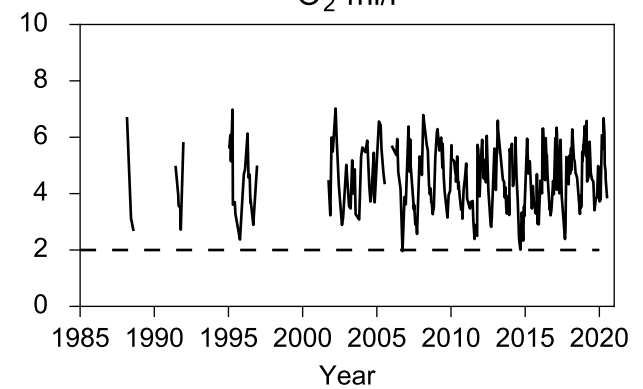


OXYGEN IN BOTTOM WATER (depth >= 64 m)

O₂ ml/l



O₂ ml/l

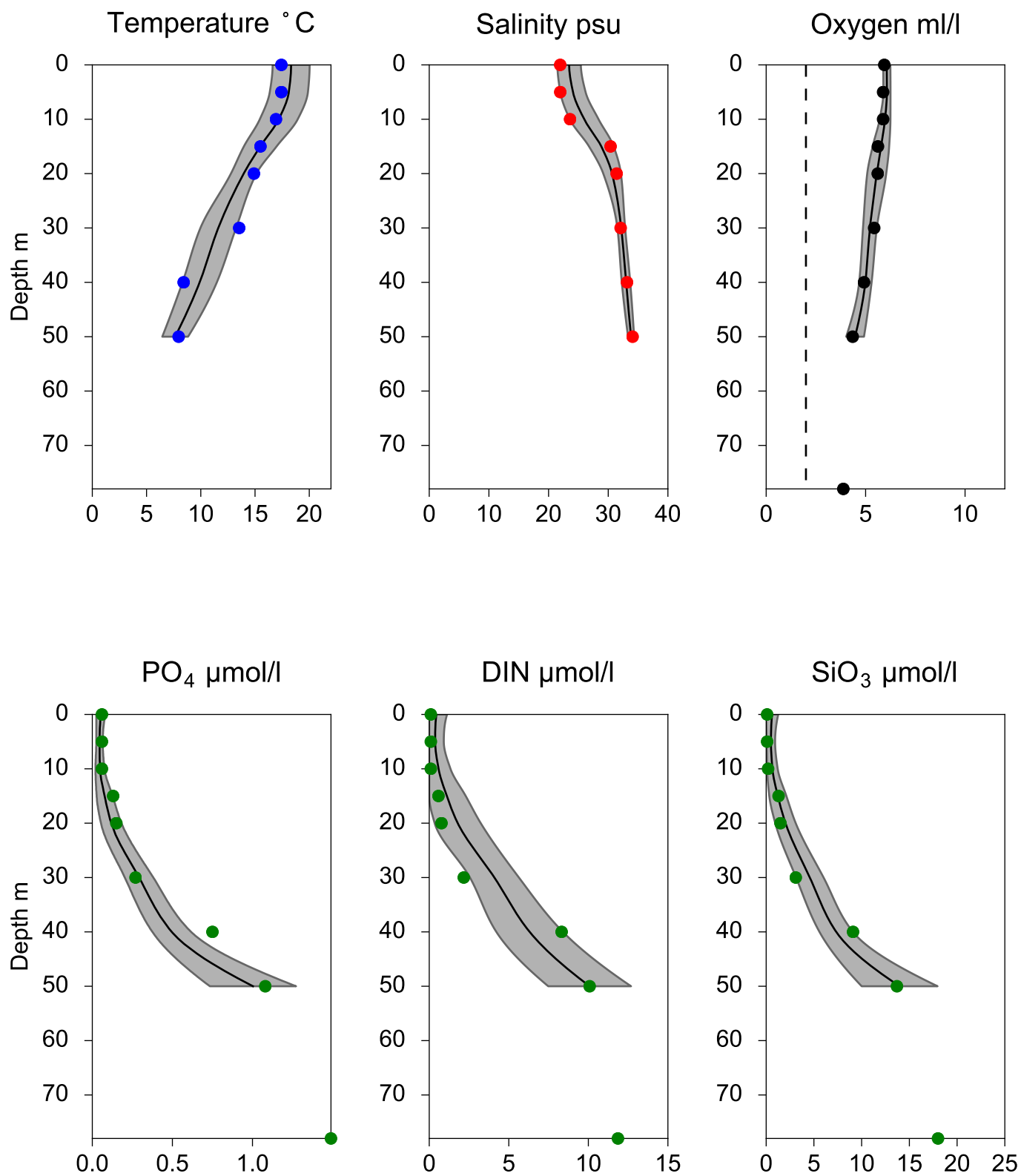


Vertical profiles SLÄGGÖ July

— Mean 2001-2015

■ St.Dev.

● 2020-07-07



STATION Å13 SURFACE WATER (0-10 m)

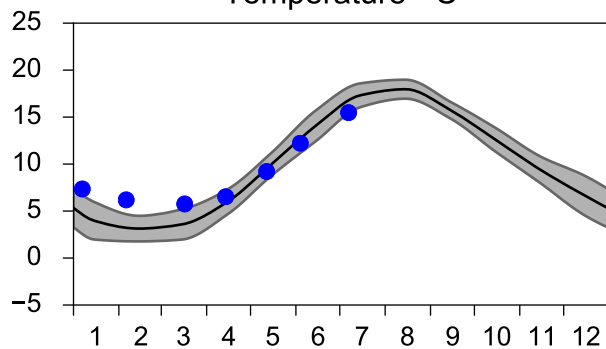
Annual Cycles

— Mean 2001-2015

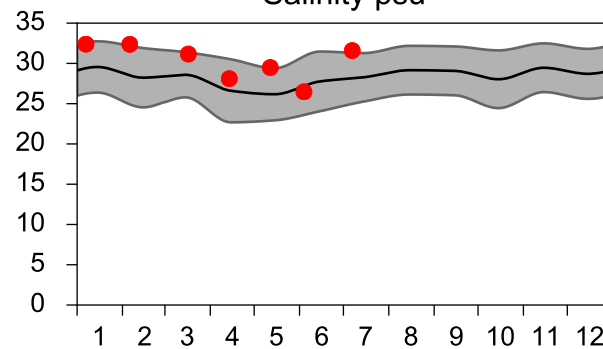
■ St.Dev.

● 2020

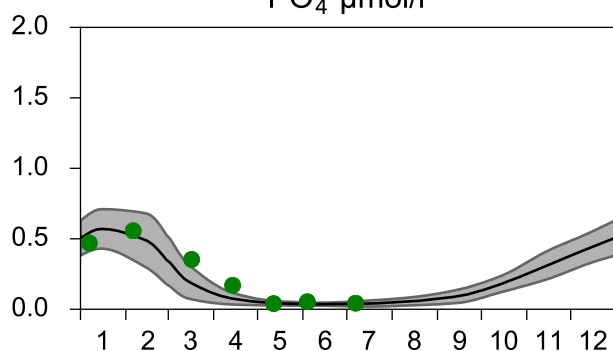
Temperature °C



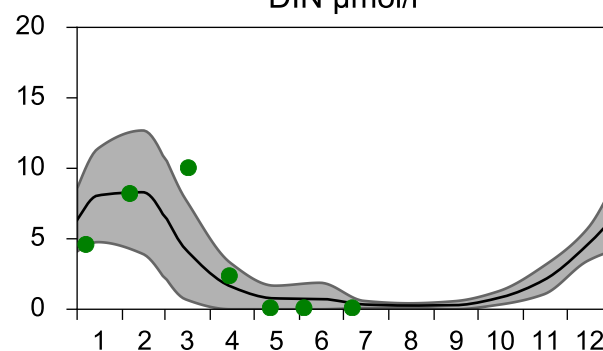
Salinity psu



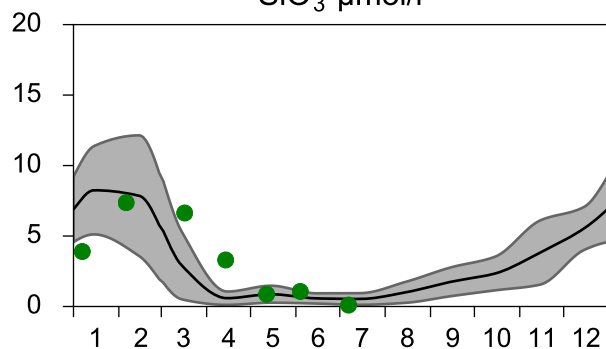
PO₄ µmol/l



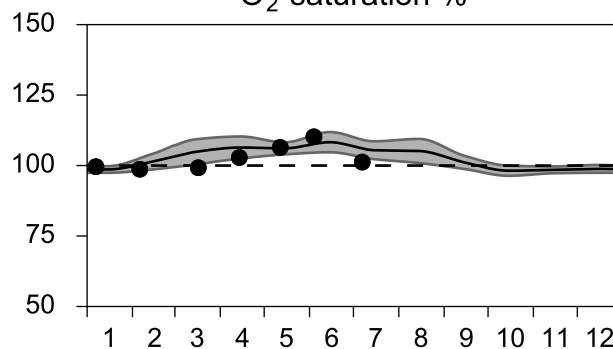
DIN µmol/l



SiO₃ µmol/l

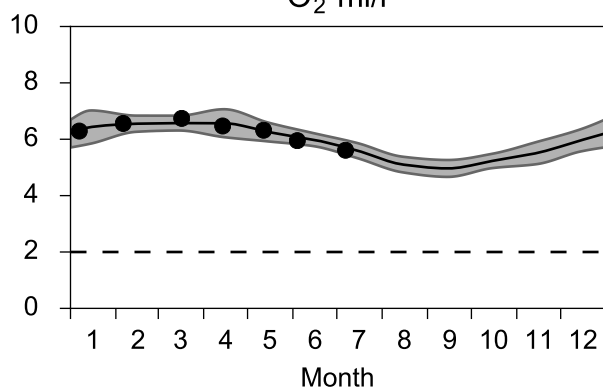


O₂ saturation %

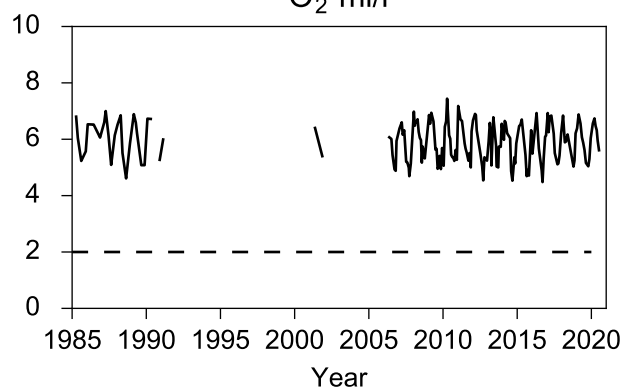


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l



O₂ ml/l

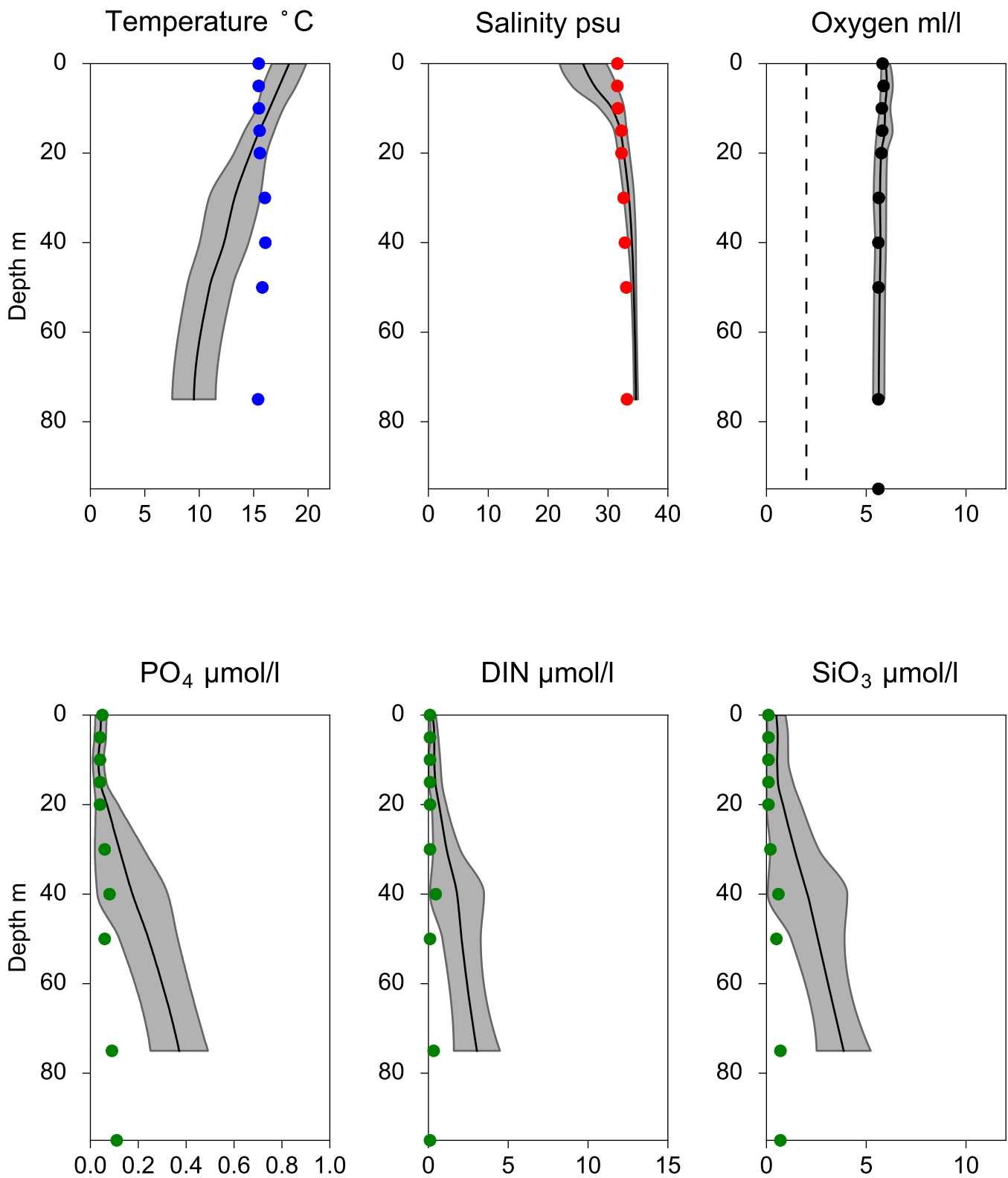


Vertical profiles Å13 July

— Mean 2001-2015

■ St.Dev.

● 2020-07-07



STATION Å15 SURFACE WATER (0-10 m)

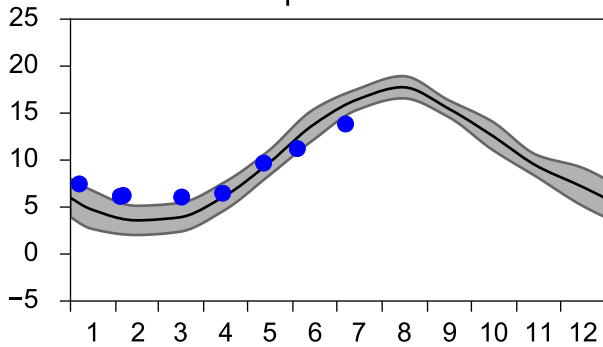
Annual Cycles

— Mean 2001-2015

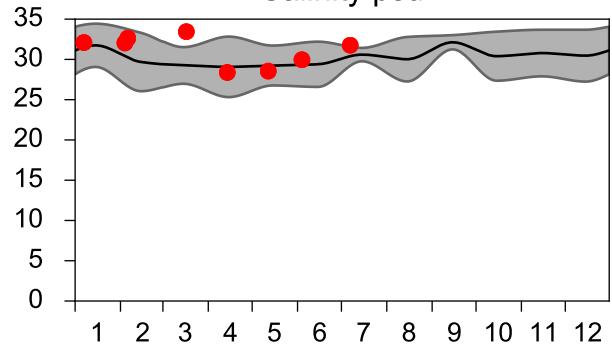
■ St.Dev.

● 2020

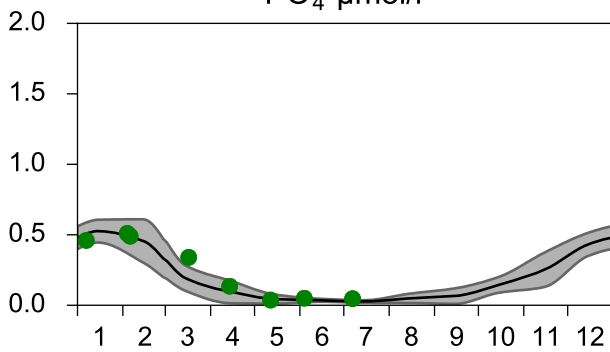
Temperature °C



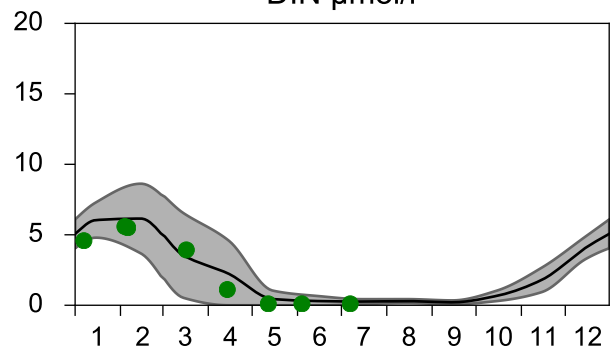
Salinity psu



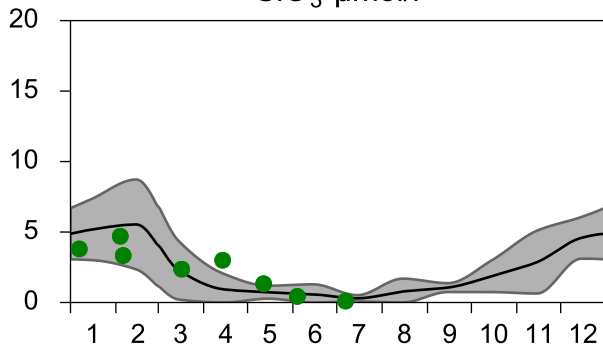
PO₄ µmol/l



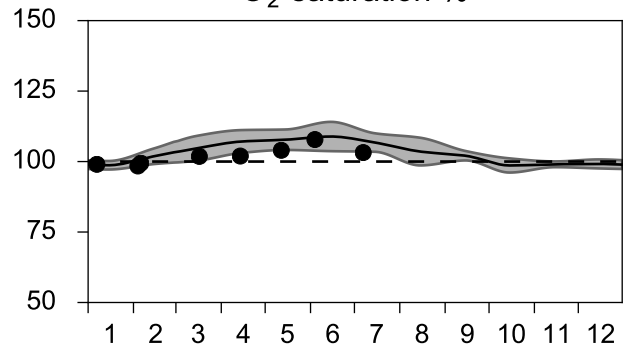
DIN µmol/l



SiO₃ µmol/l

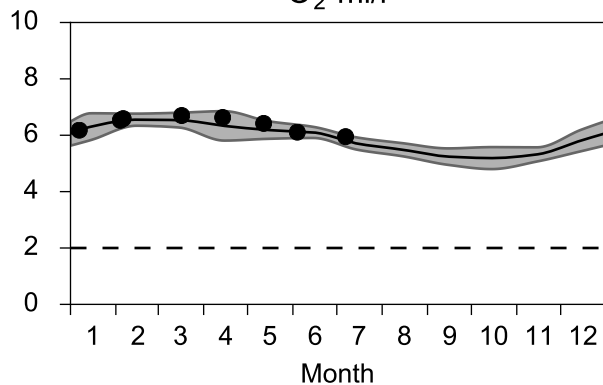


O₂ saturation %

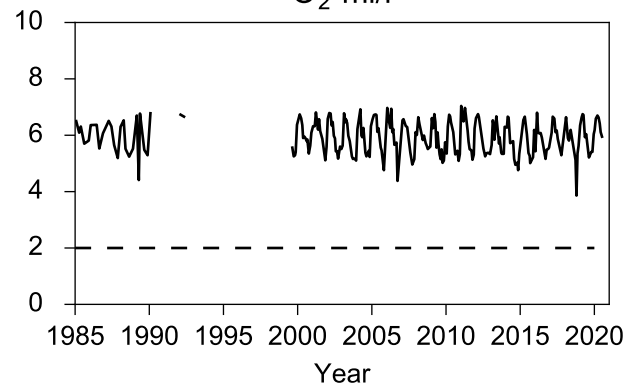


OXYGEN IN BOTTOM WATER (depth >= 125 m)

O₂ ml/l



O₂ ml/l

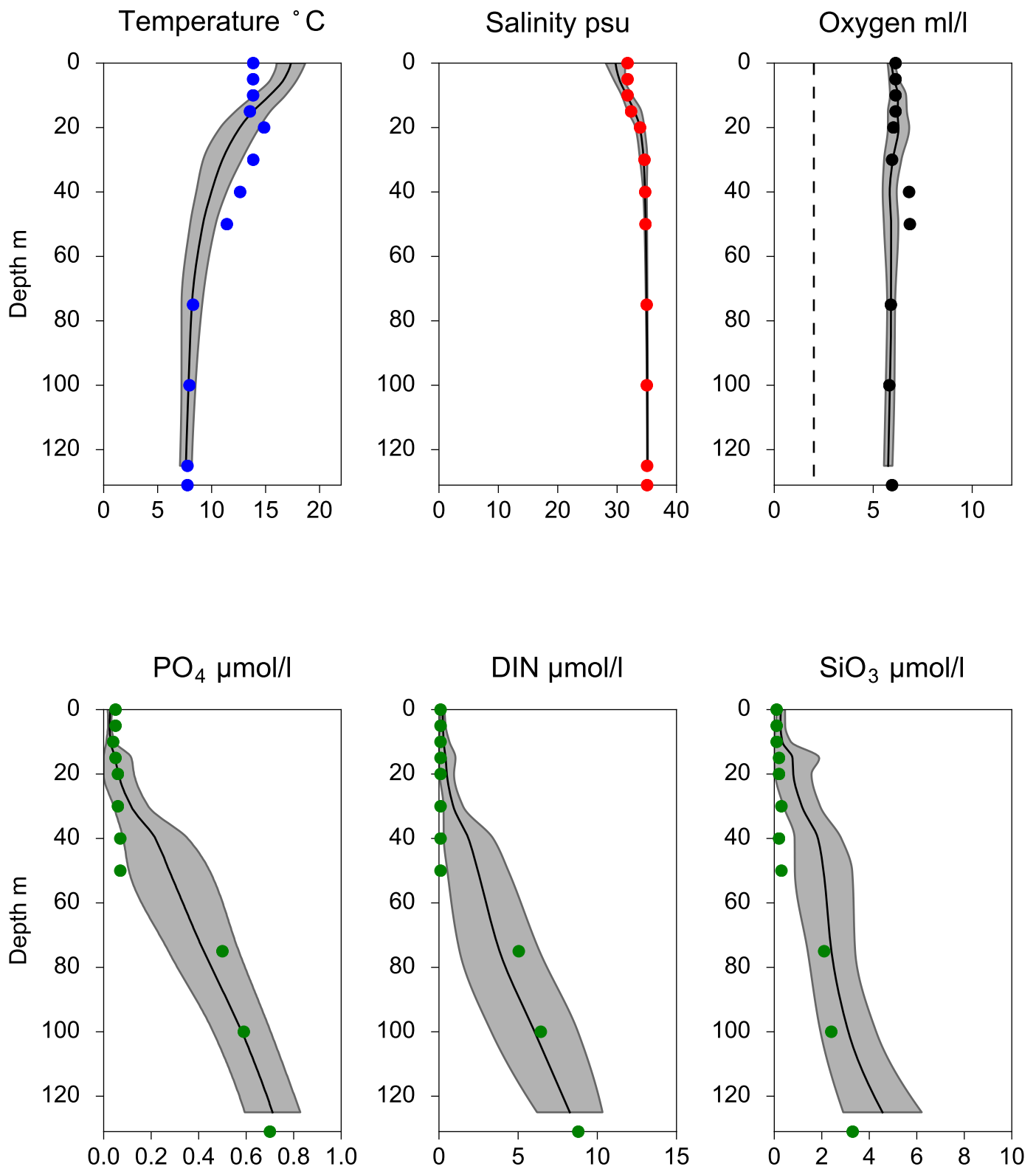


Vertical profiles Å15 July

— Mean 2001-2015

■ St.Dev.

● 2020-07-07



STATION Å17 SURFACE WATER (0-10 m)

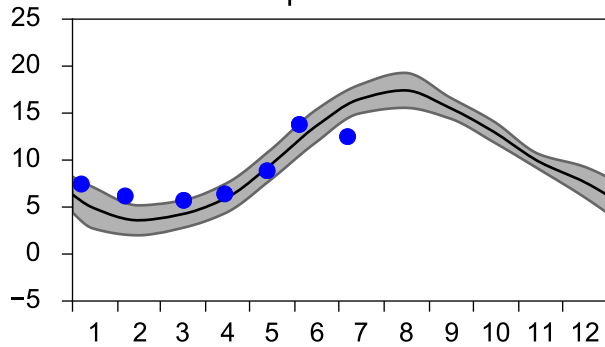
Annual Cycles

— Mean 2001-2015

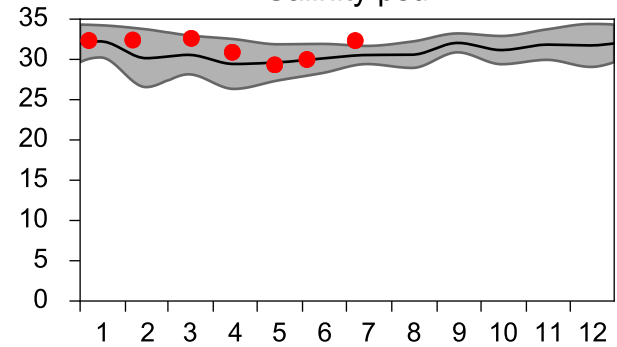
■ St.Dev.

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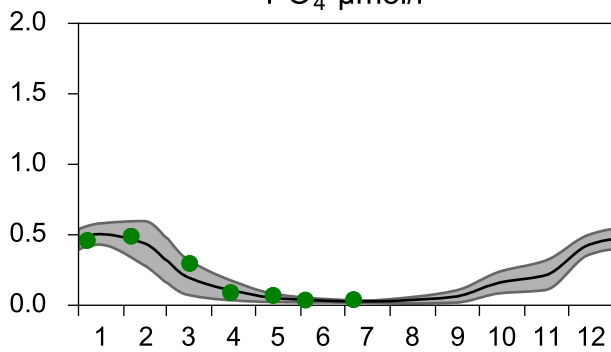
Temperature °C



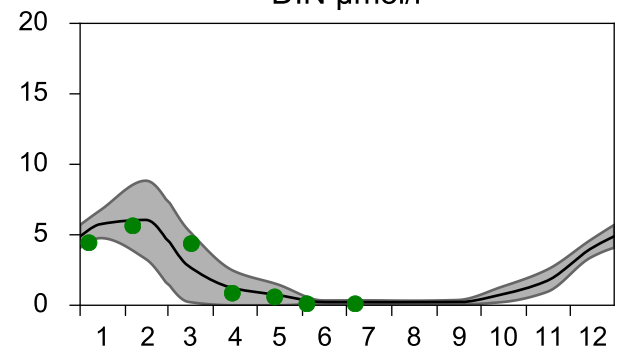
Salinity psu



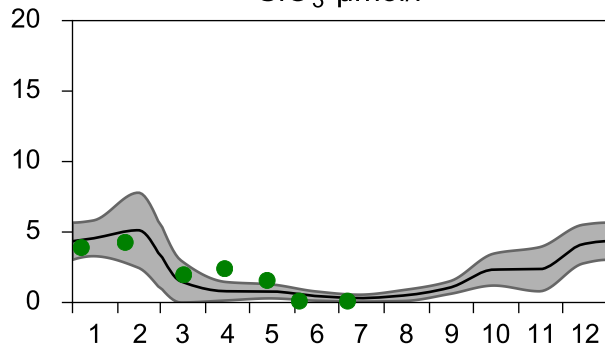
PO₄ µmol/l



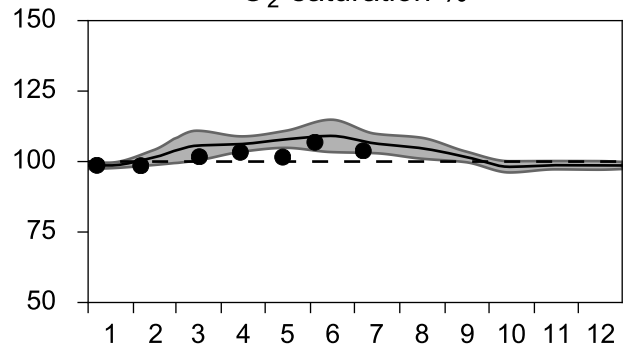
DIN µmol/l



SiO₃ µmol/l

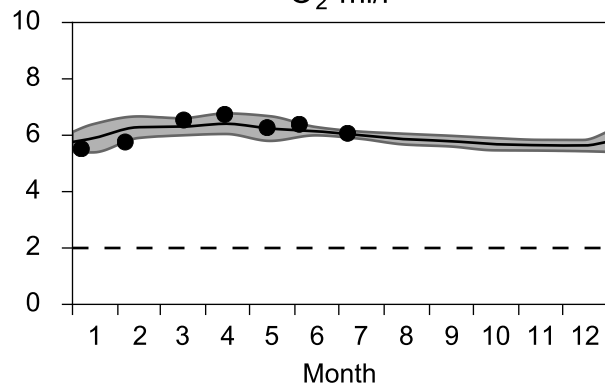


O₂ saturation %

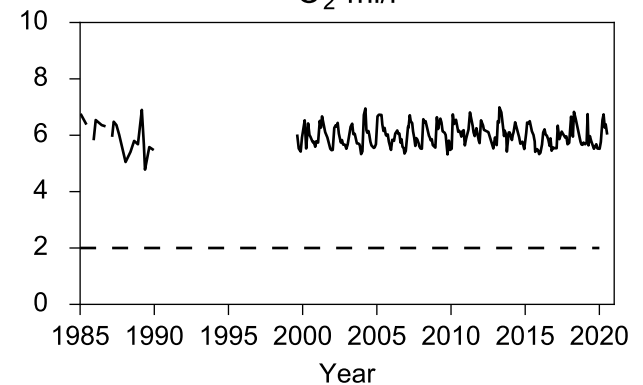


OXYGEN IN BOTTOM WATER (depth >= 300 m)

O₂ ml/l

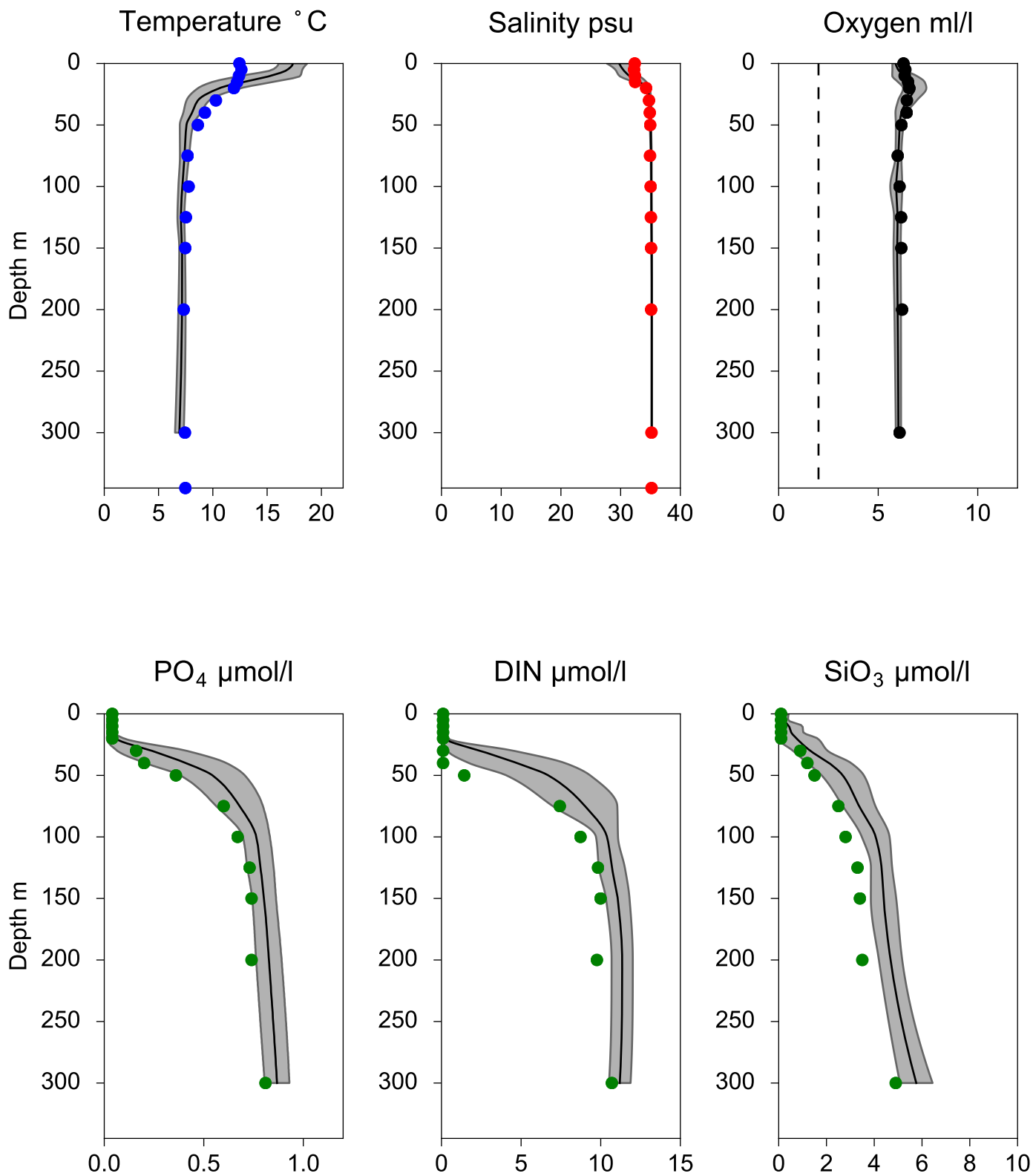


O₂ ml/l



Vertical profiles A17 July

— Mean 2001-2015 ■ St.Dev. ● 2020-07-07



STATION P2 SURFACE WATER (0-10 m)

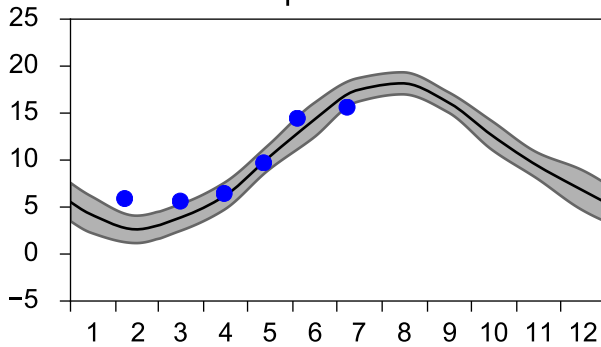
Annual Cycles

— Mean 2001-2015

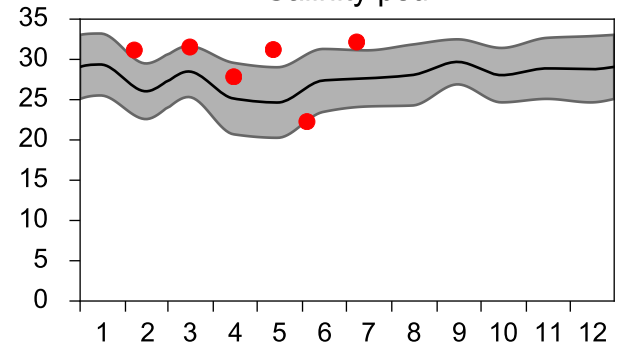
■ St.Dev.

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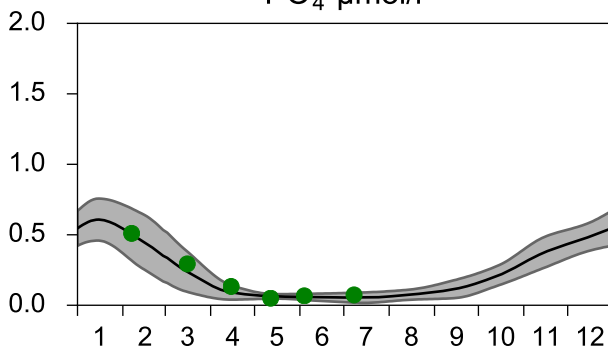
Temperature °C



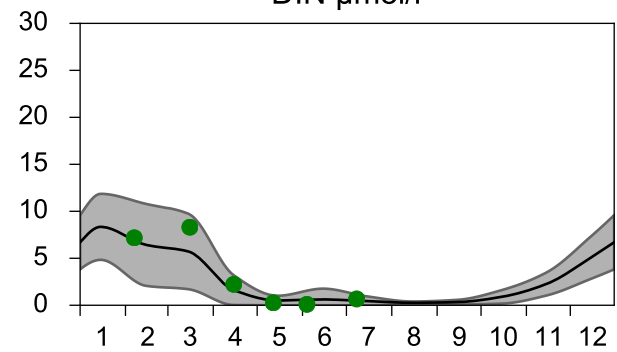
Salinity psu



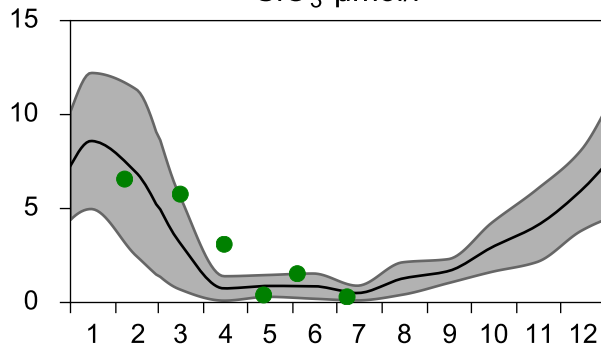
PO₄ µmol/l



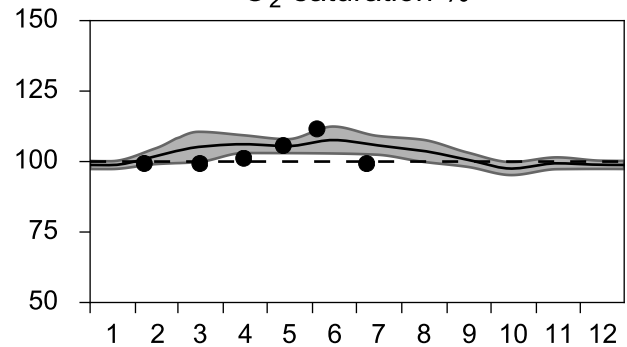
DIN µmol/l



SiO₃ µmol/l

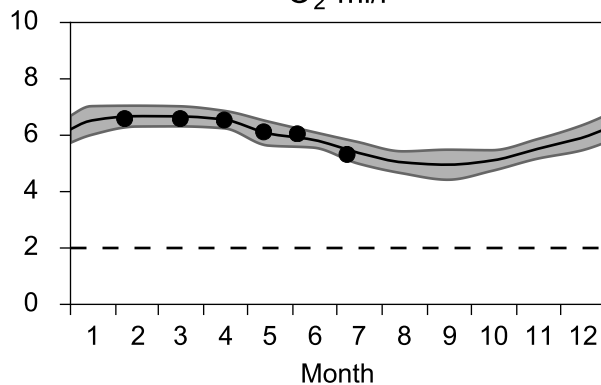


O₂ saturation %

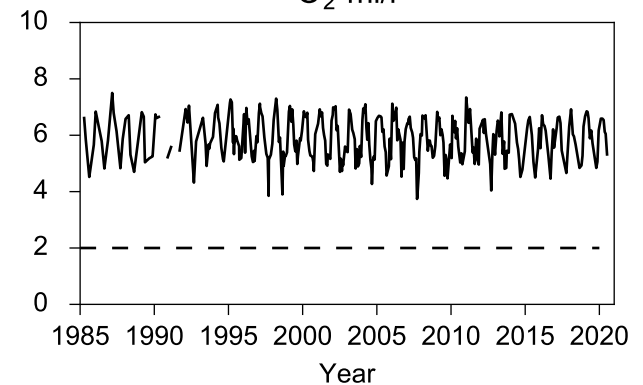


OXYGEN IN BOTTOM WATER (depth ≥ 75 m)

O₂ ml/l



O₂ ml/l

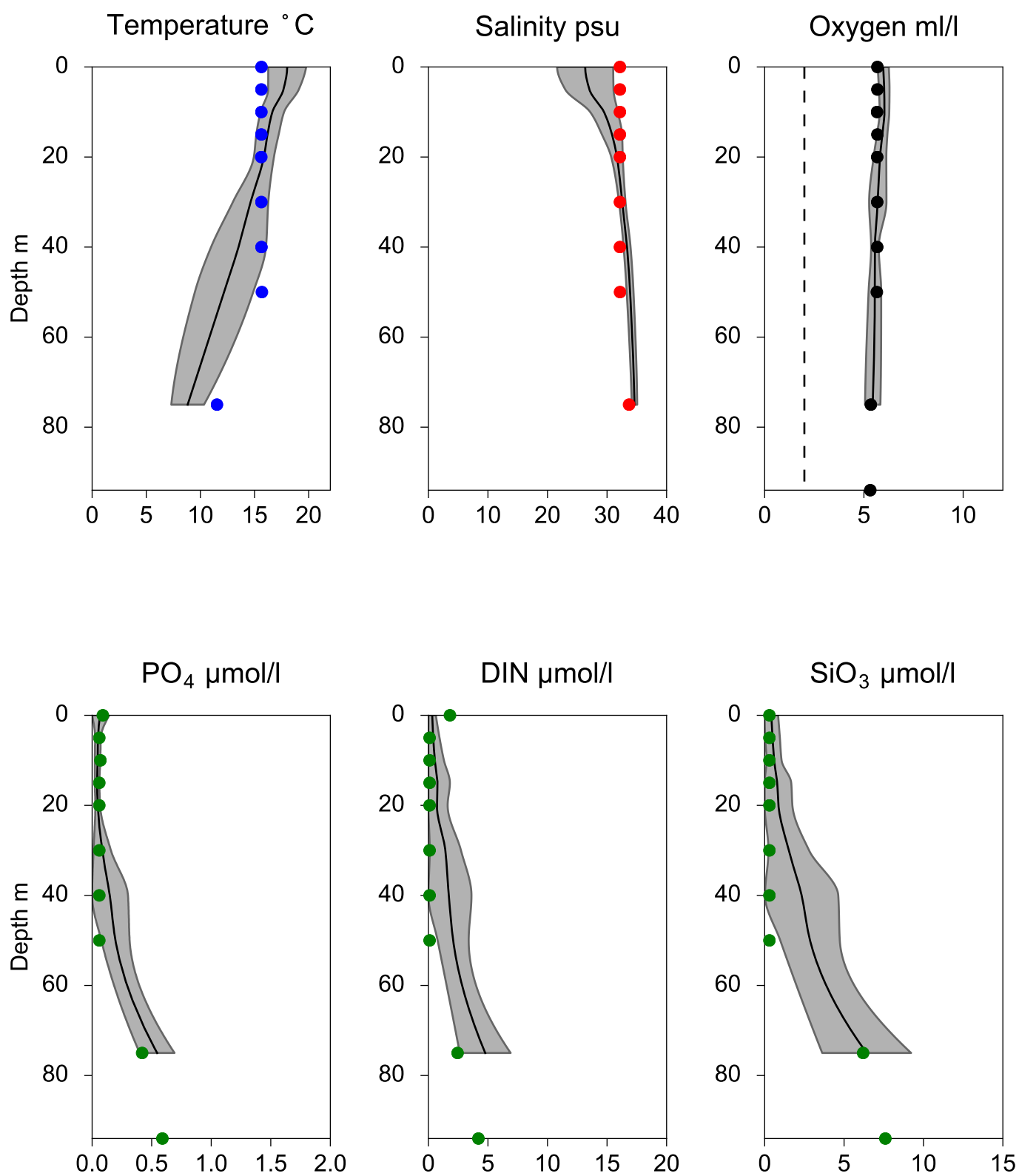


Vertical profiles P2 July

— Mean 2001-2015

■ St.Dev.

● 2020-07-08



STATION FLADEN SURFACE WATER (0-10 m)

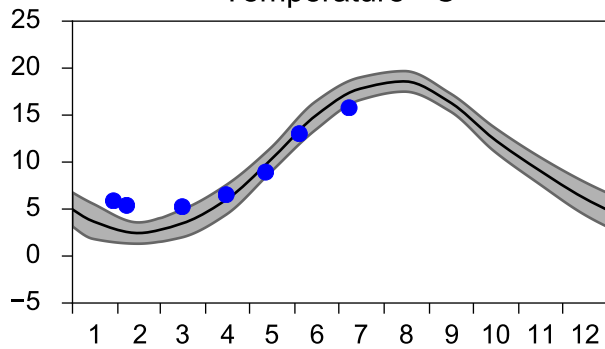
Annual Cycles

— Mean 2001-2015

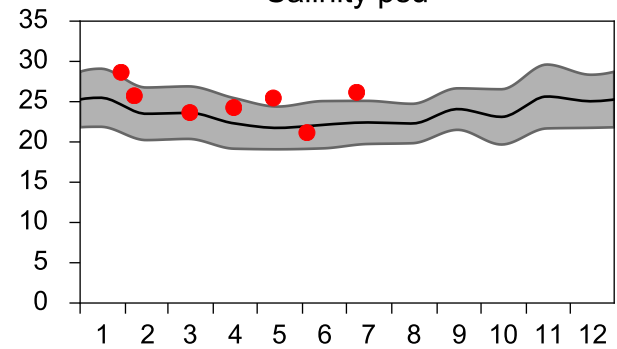
■ St.Dev.

● 2020

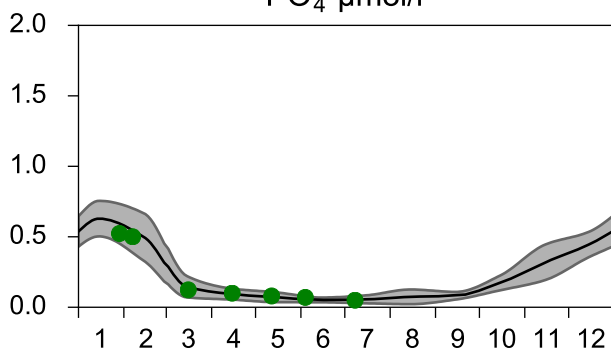
Temperature °C



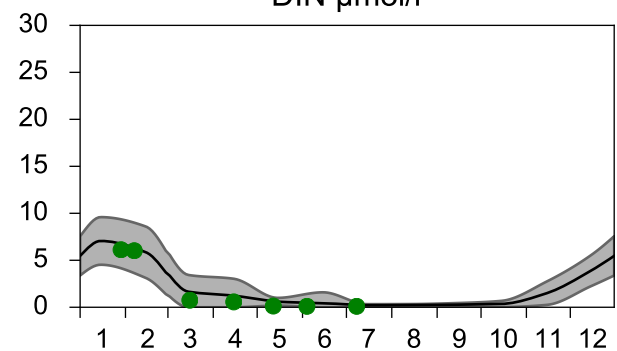
Salinity psu



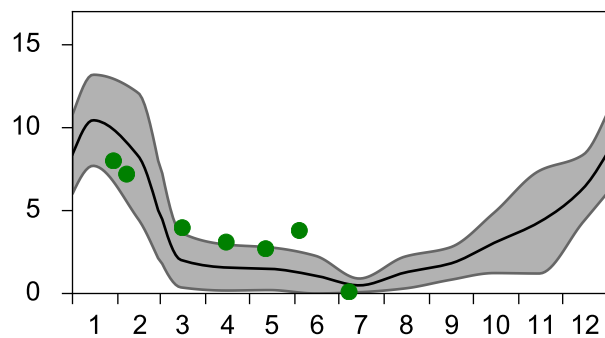
PO₄ µmol/l



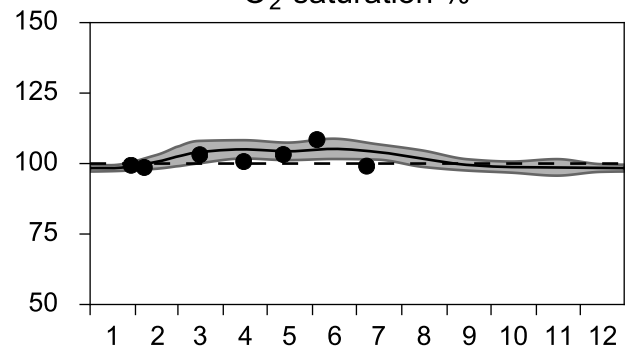
DIN µmol/l



SiO₃ µmol/l

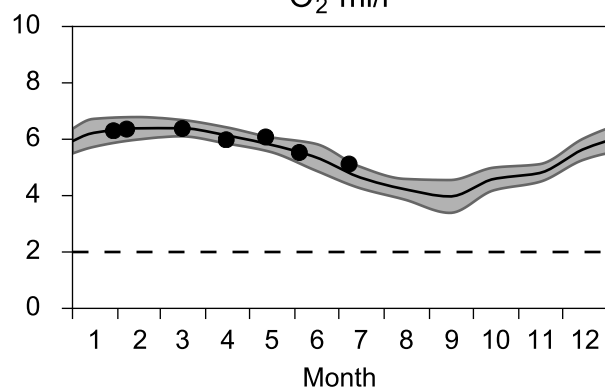


O₂ saturation %

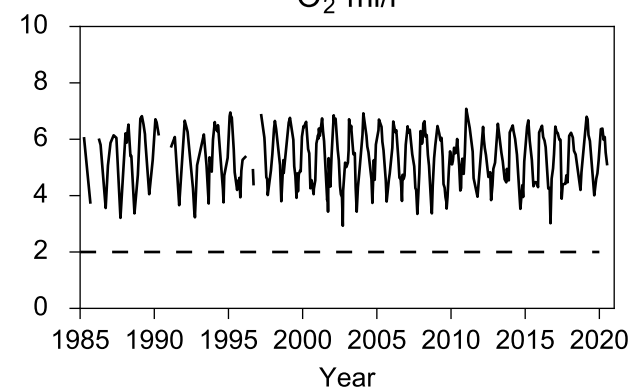


OXYGEN IN BOTTOM WATER (depth >= 74 m)

O₂ ml/l



O₂ ml/l

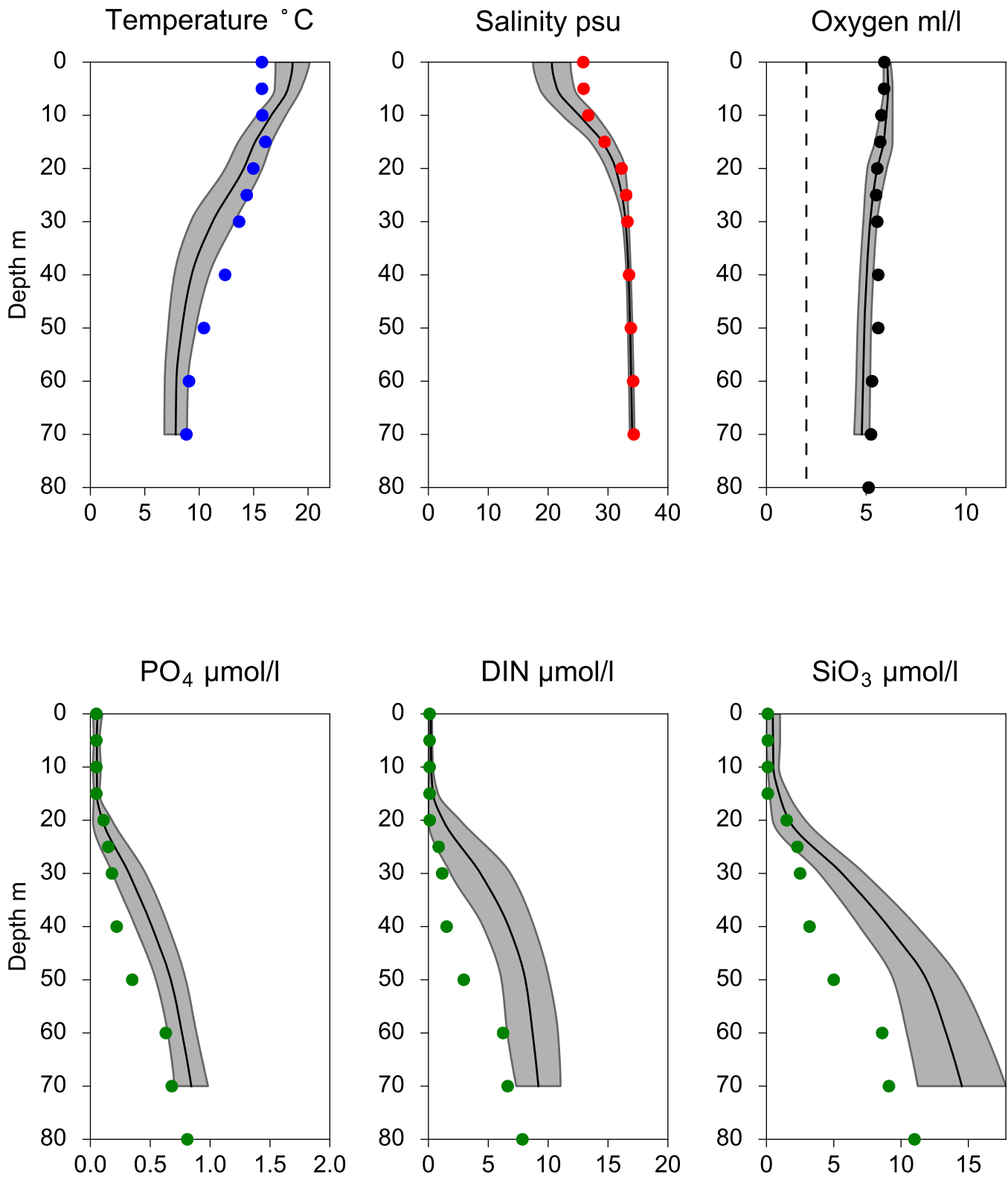


Vertical profiles FLADEN July

— Mean 2001-2015

■ St.Dev.

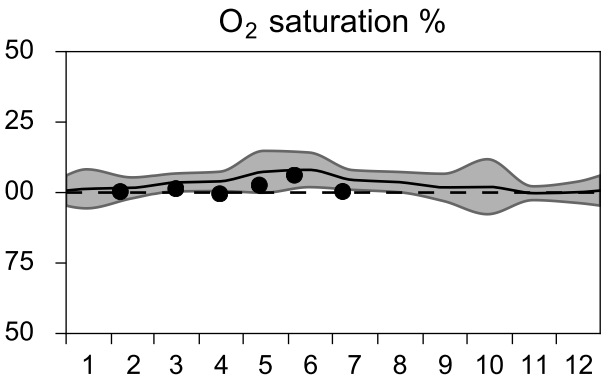
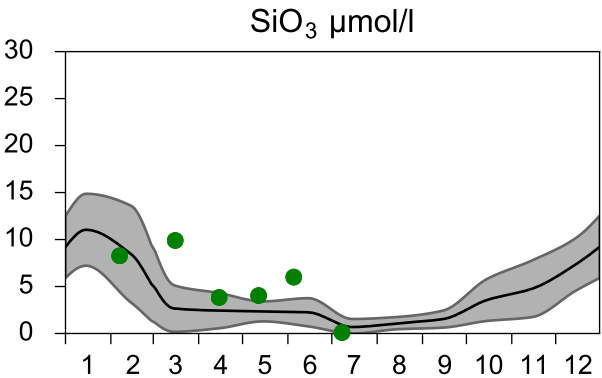
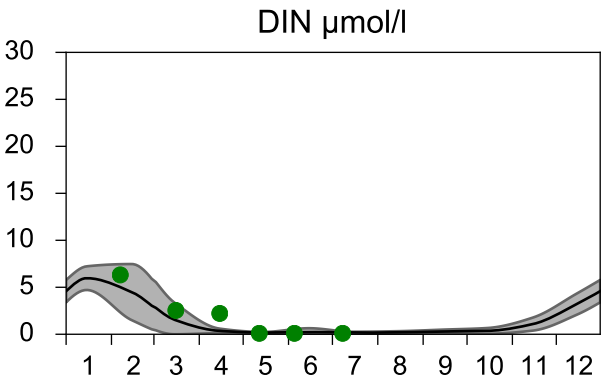
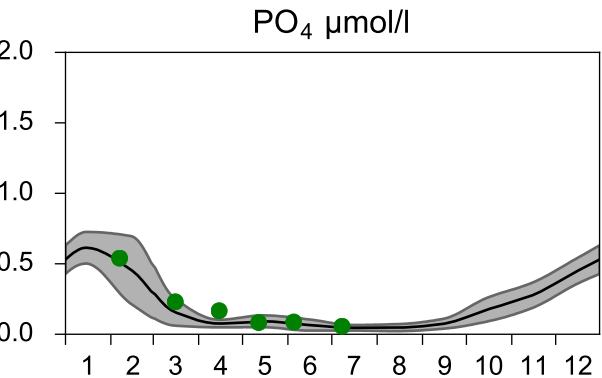
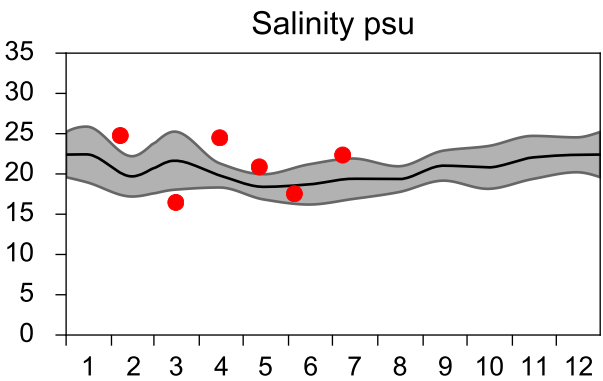
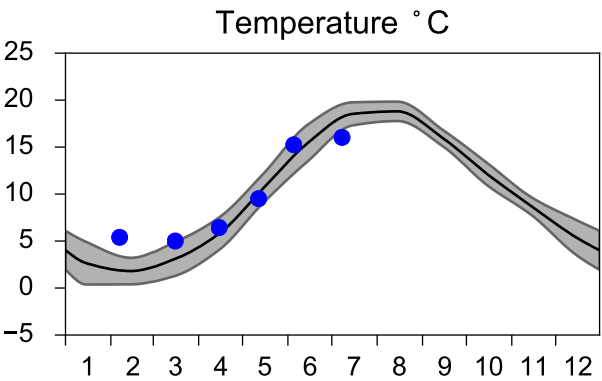
● 2020-07-08



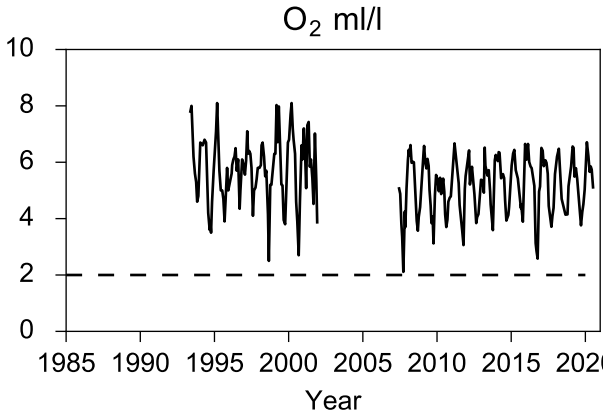
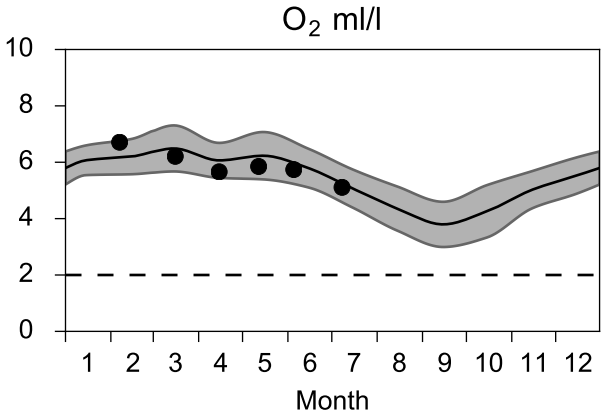
STATION N14 FALKENBERG SURFACE WATER (0-10 m)

Annual Cycles

— Mean 2001-2015 St.Dev. ● 2020

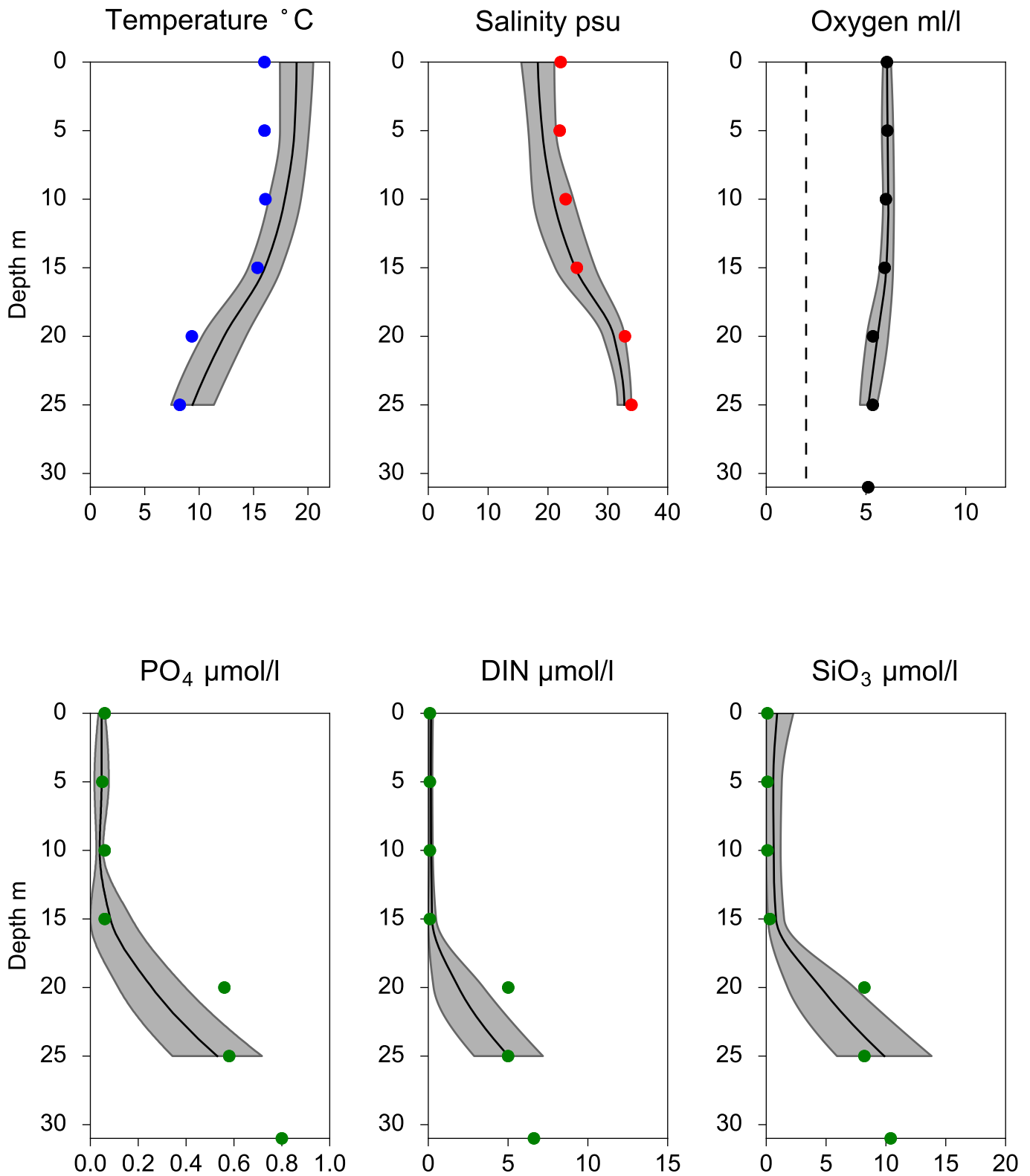


OXYGEN IN BOTTOM WATER (depth >= 20 m)



Vertical profiles N14 FALKENBERG July

— Mean 2001-2015 St.Dev. • 2020-07-08



STATION ANHOLT E SURFACE WATER (0-10 m)

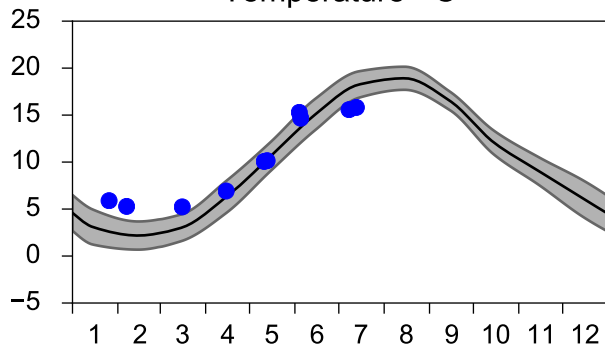
Annual Cycles

— Mean 2001-2015

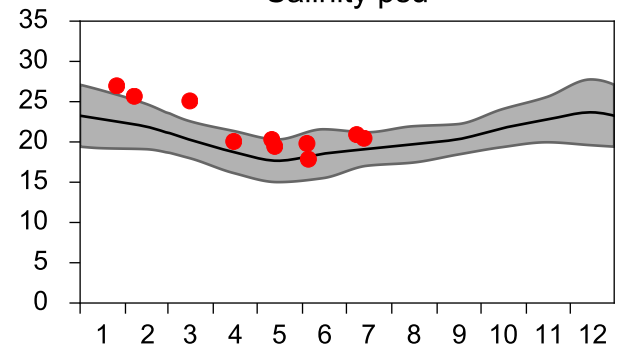
■ St.Dev.

● 2020

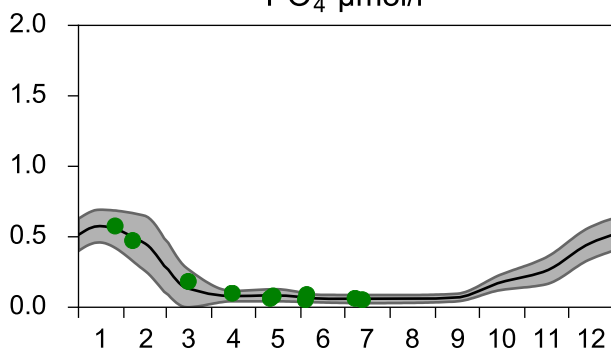
Temperature °C



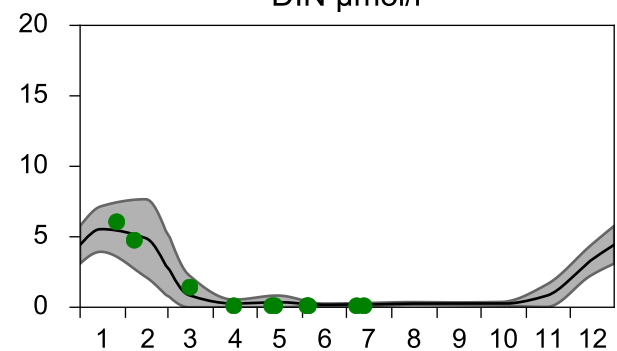
Salinity psu



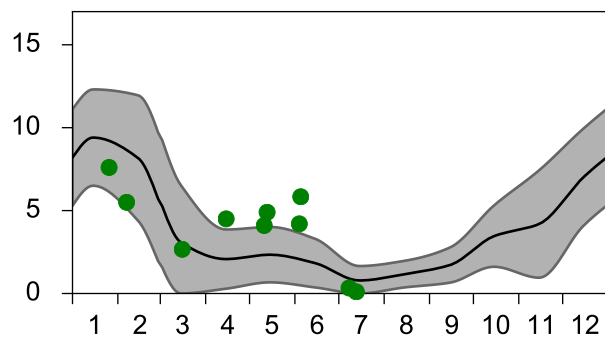
PO₄ µmol/l



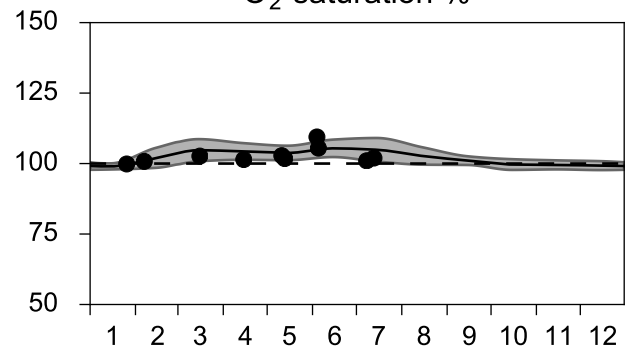
DIN µmol/l



SiO₃ µmol/l

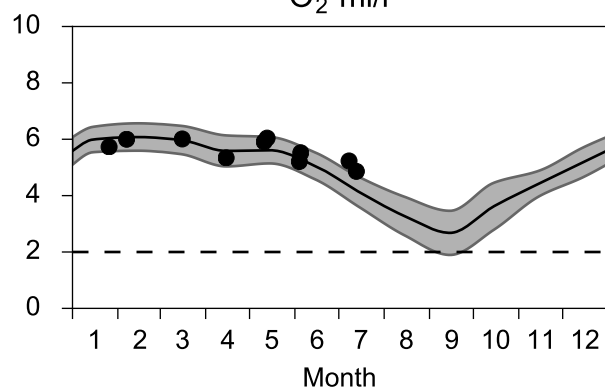


O₂ saturation %

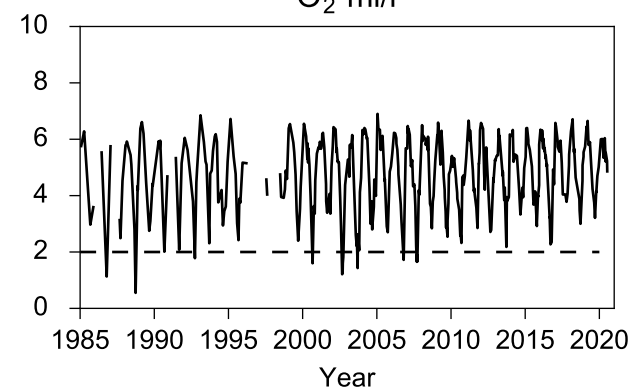


OXYGEN IN BOTTOM WATER (depth >= 52 m)

O₂ ml/l



O₂ ml/l

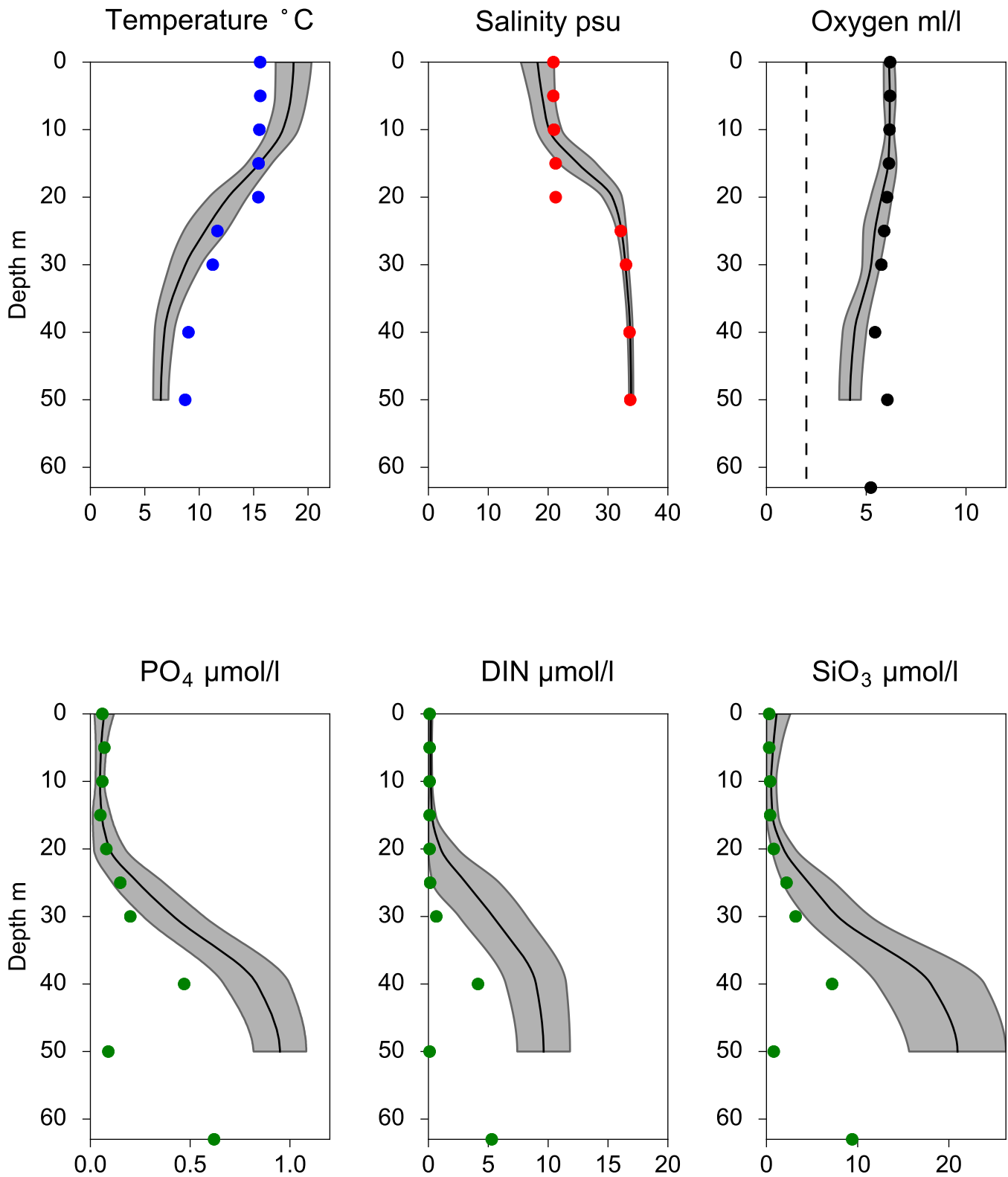


Vertical profiles ANHOLT E July

— Mean 2001-2015

■ St.Dev.

● 2020-07-08



STATION BY1 SURFACE WATER (0-10 m)

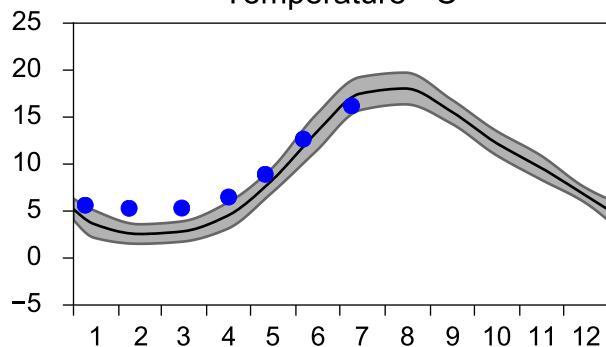
Annual Cycles

— Mean 2001-2015

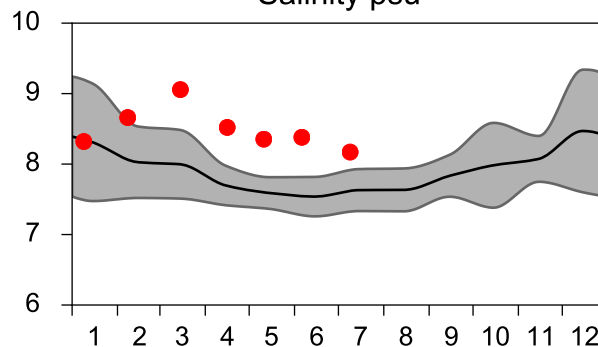
■ St.Dev.

● 2020

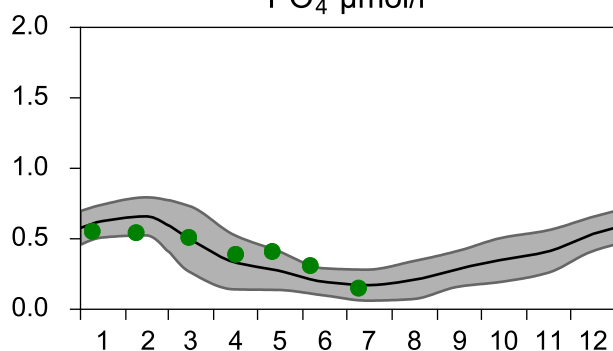
Temperature °C



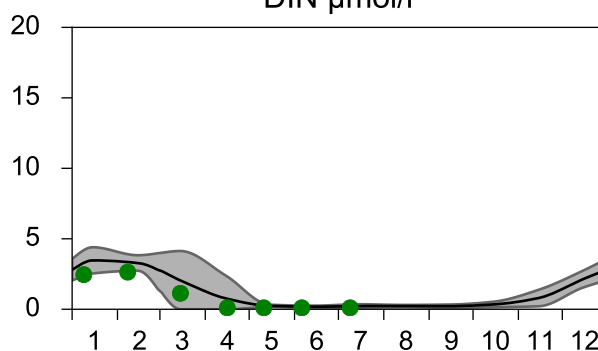
Salinity psu



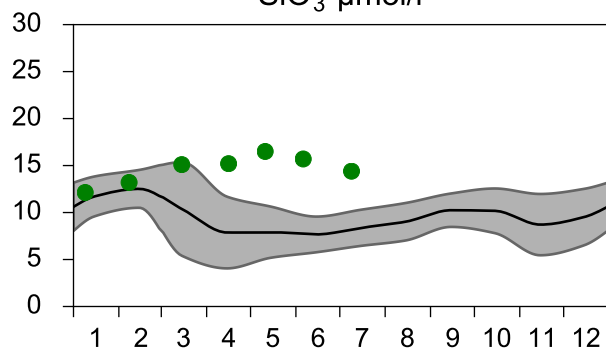
PO₄ µmol/l



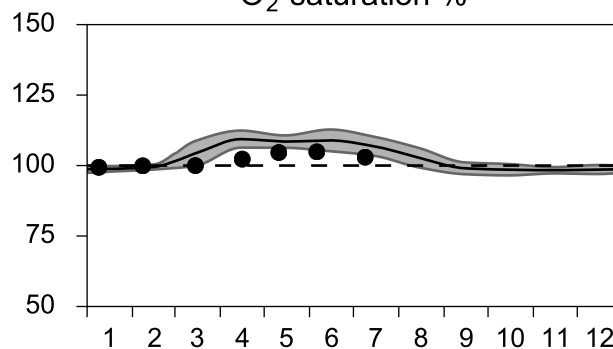
DIN µmol/l



SiO₃ µmol/l

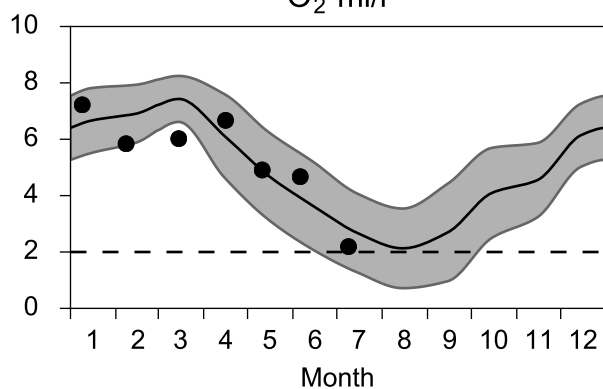


O₂ saturation %

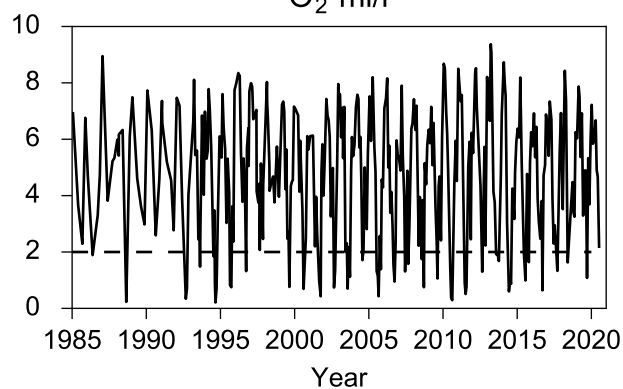


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

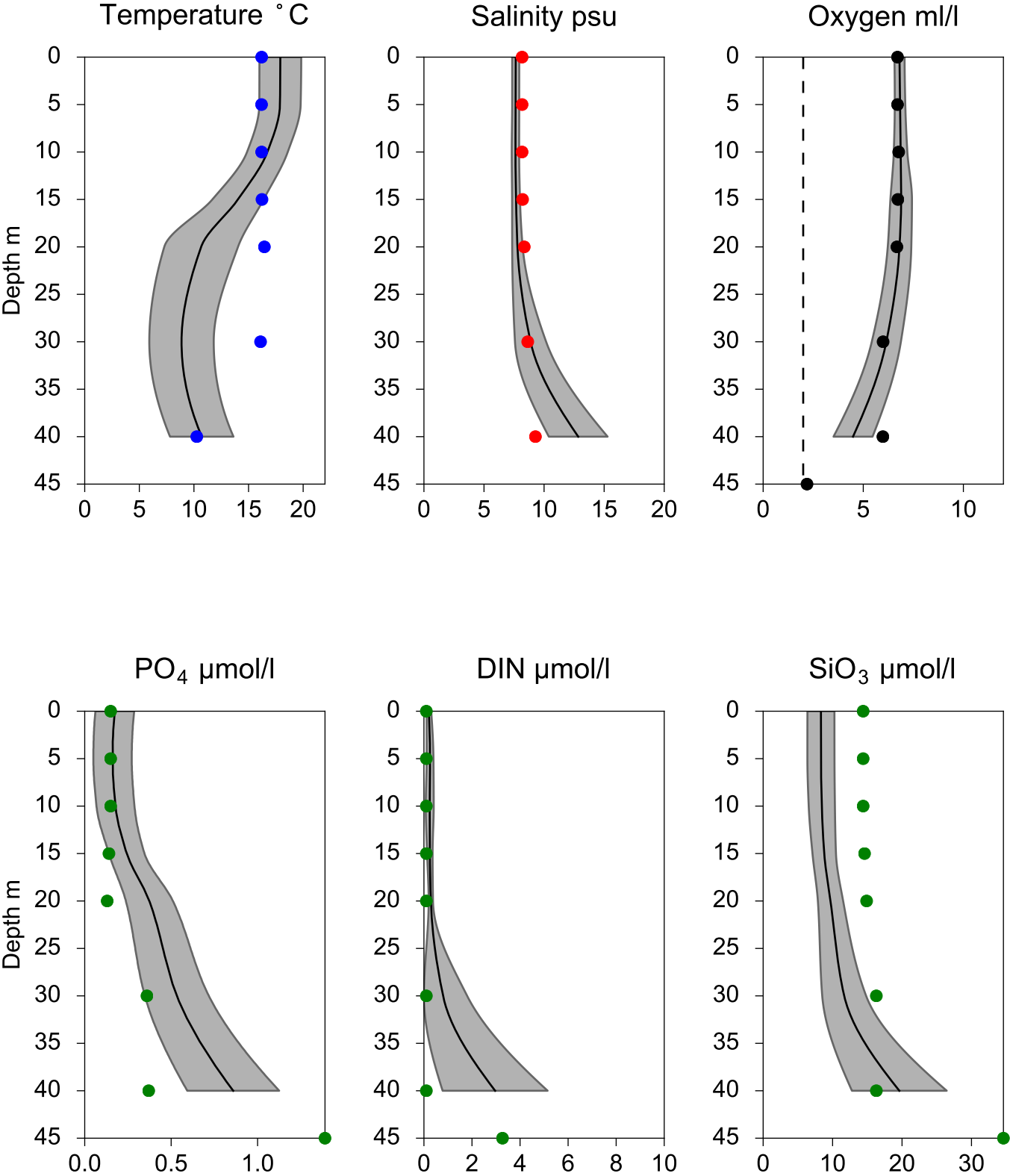


O₂ ml/l



Vertical profiles BY1 July

— Mean 2001-2015 ■ St.Dev. ● 2020-07-09



STATION BY2 ARKONA SURFACE WATER (0-10 m)

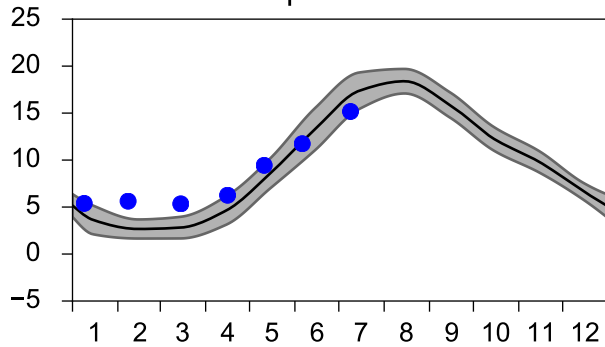
Annual Cycles

— Mean 2001-2015

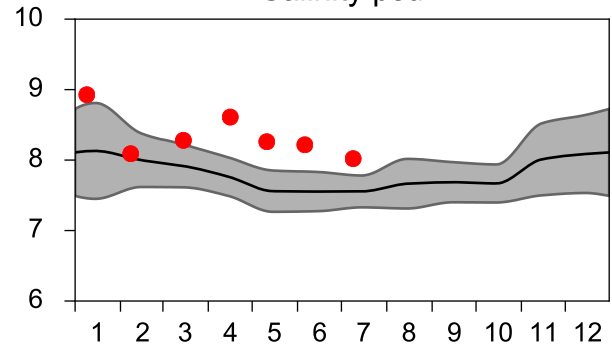
■ St.Dev.

● 2020

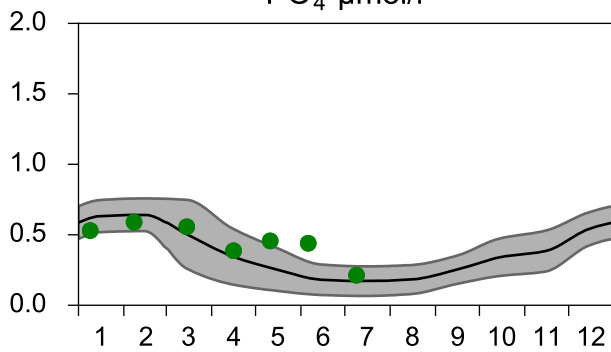
Temperature °C



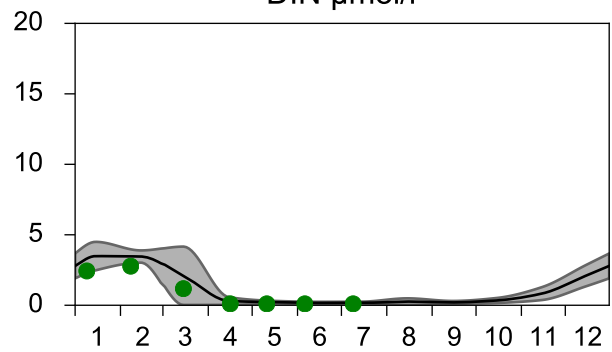
Salinity psu



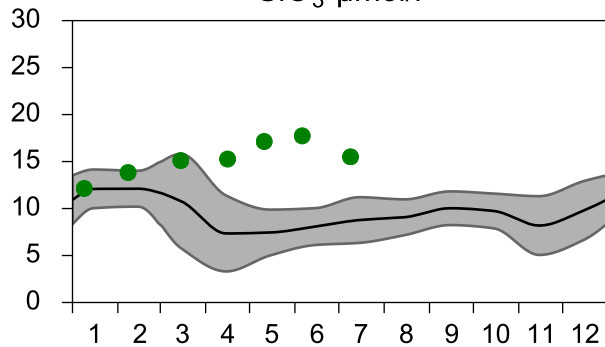
PO₄ µmol/l



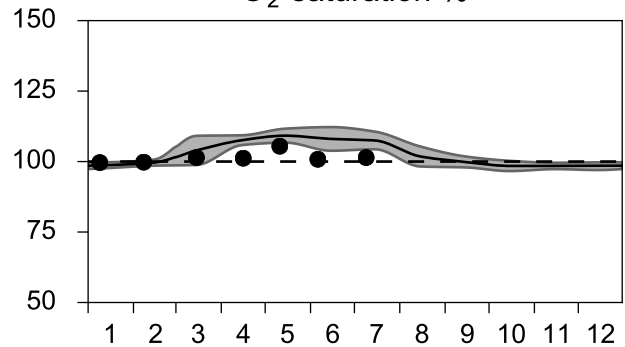
DIN µmol/l



SiO₃ µmol/l

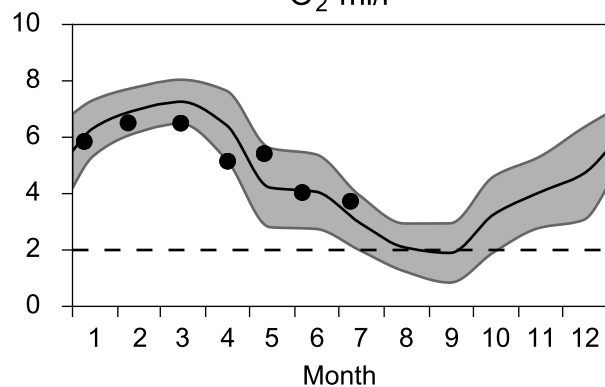


O₂ saturation %

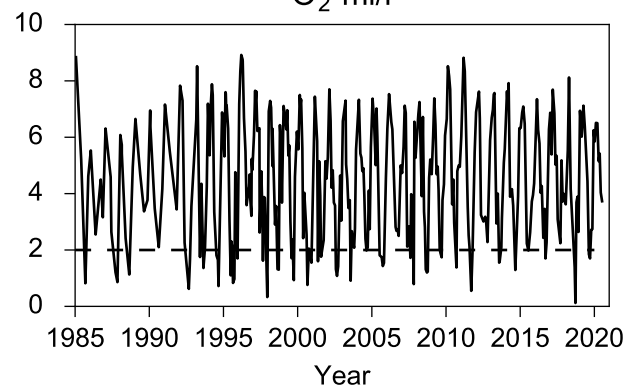


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

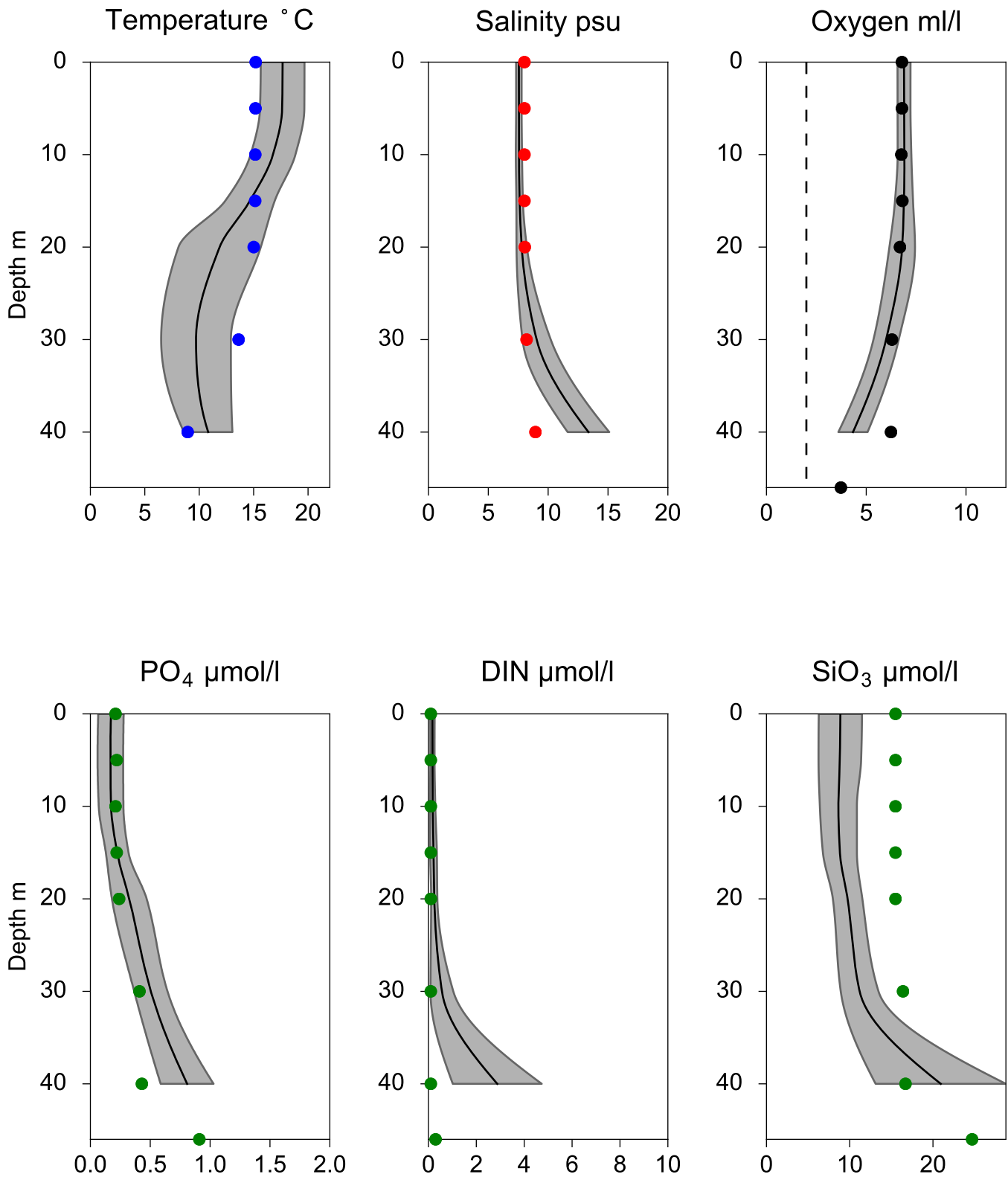


O₂ ml/l



Vertical profiles BY2 ARKONA July

— Mean 2001-2015 St.Dev. • 2020-07-09



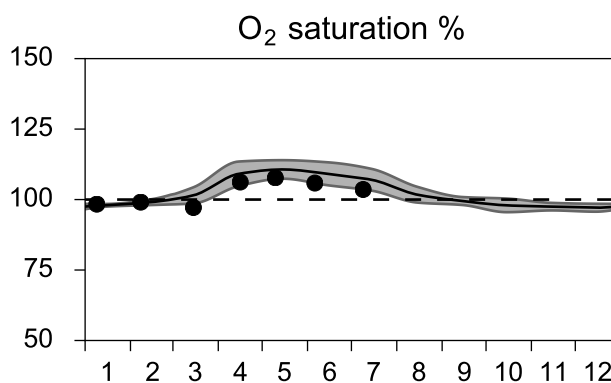
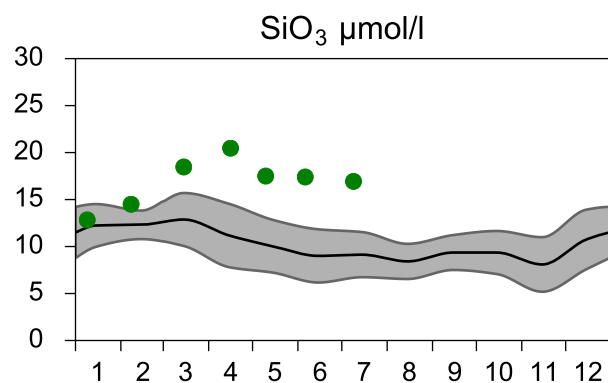
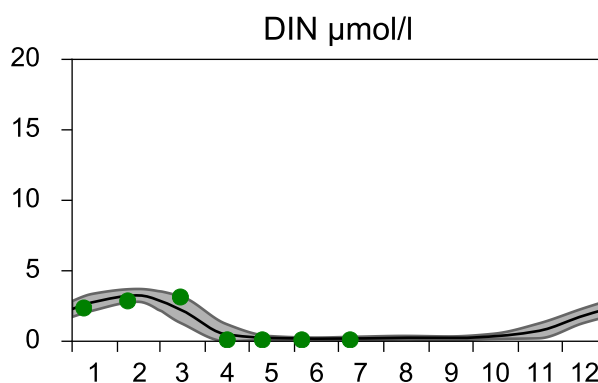
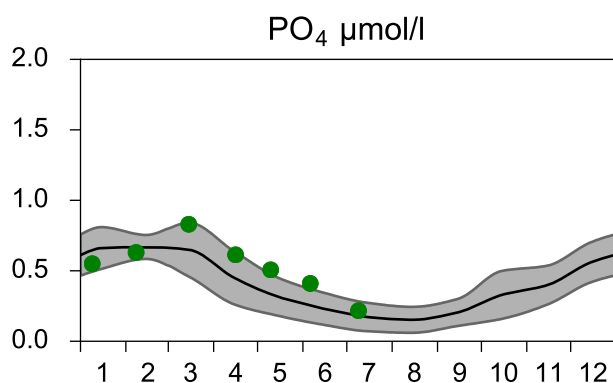
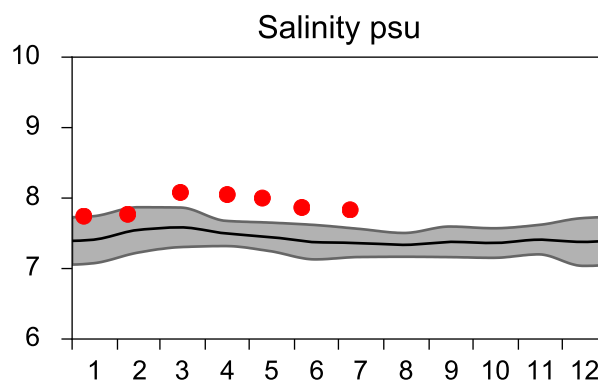
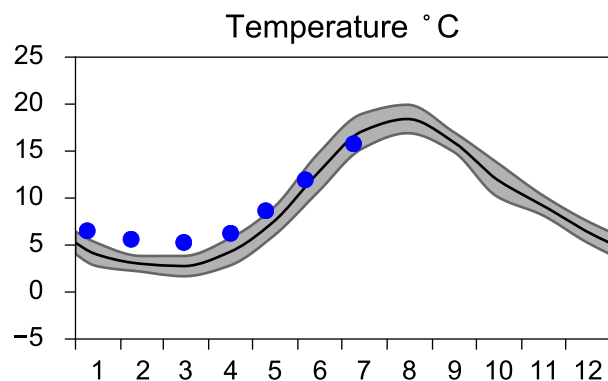
STATION BY4 CHRISTIANSÖ SURFACE WATER (0-10 m)

Annual Cycles

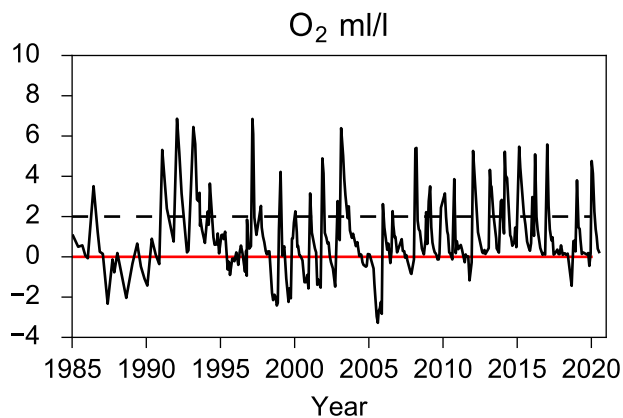
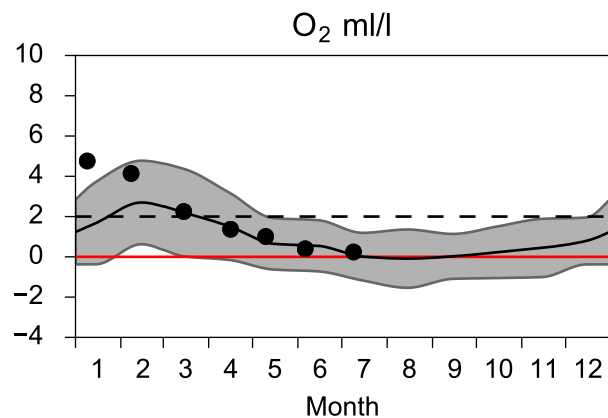
— Mean 2001-2015

■ St.Dev.

● 2020



OXYGEN IN BOTTOM WATER (depth >= 80 m)

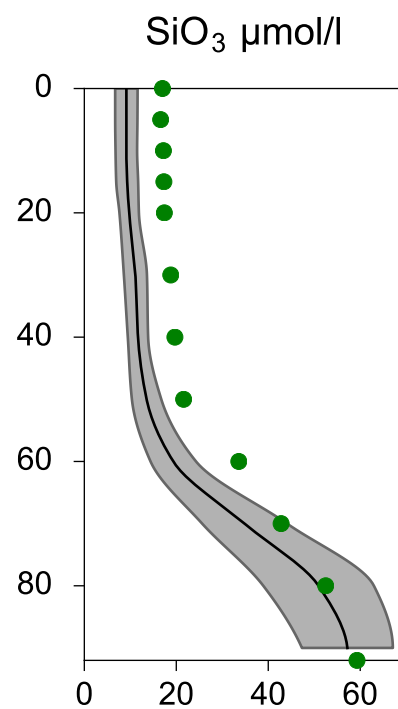
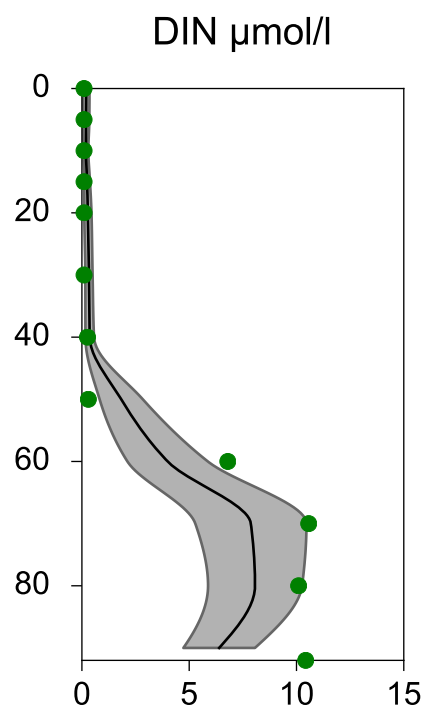
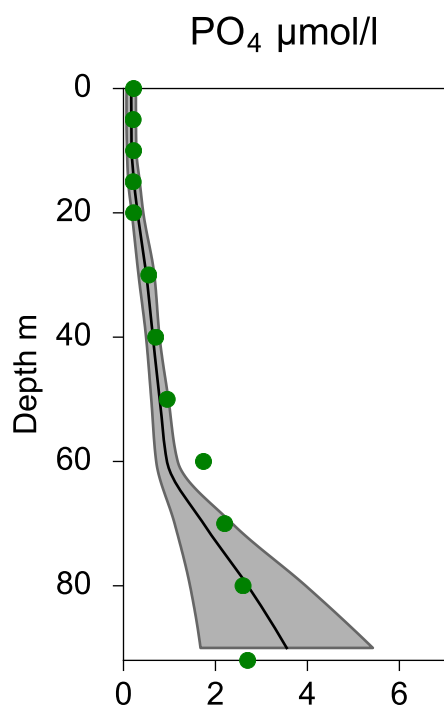
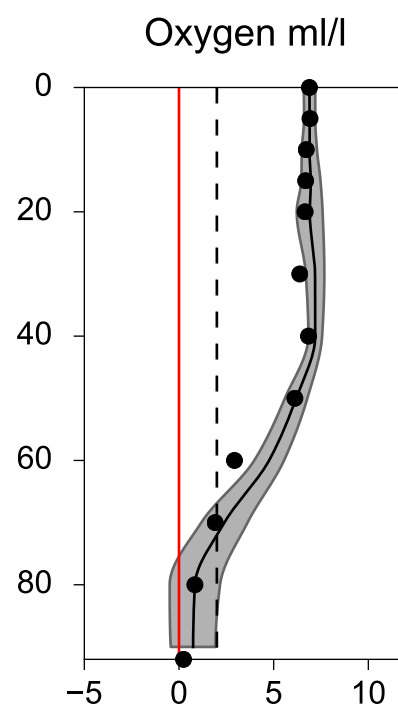
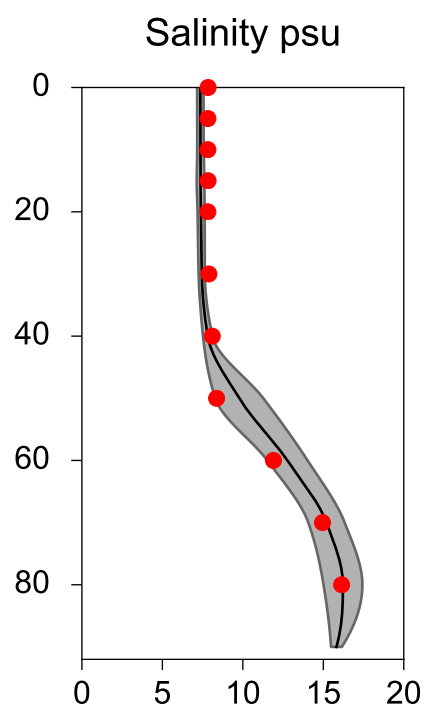
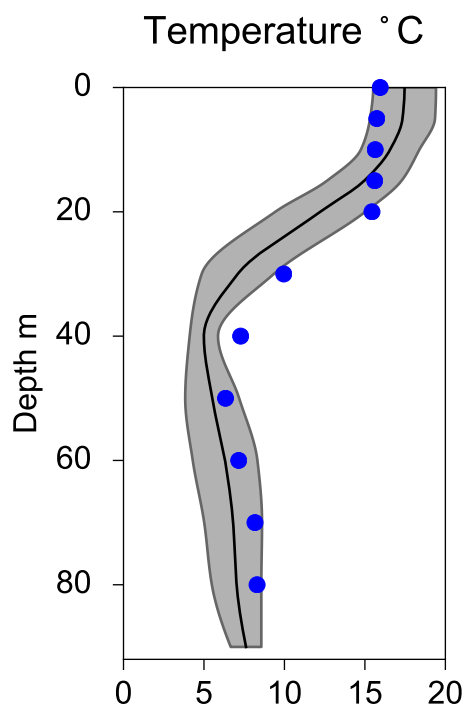


Vertical profiles BY4 CHRISTIANSÖ July

— Mean 2001-2015

■ St.Dev.

● 2020-07-09



STATION BY5 BORNHOLMSDJ SURFACE WATER (0-10 m)

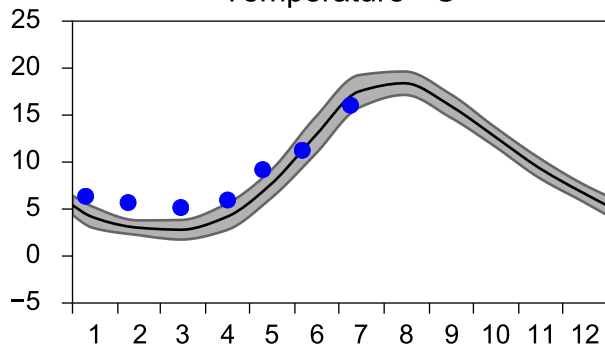
Annual Cycles

— Mean 2001-2015

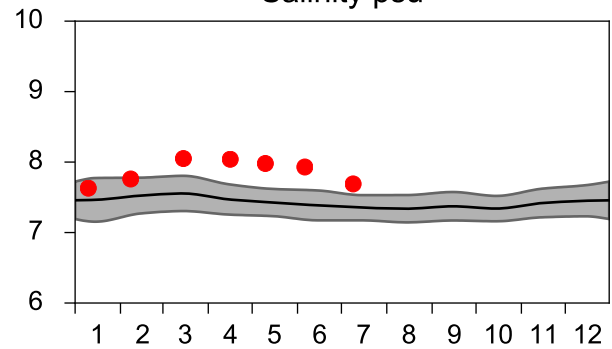
■ St.Dev.

● 2020

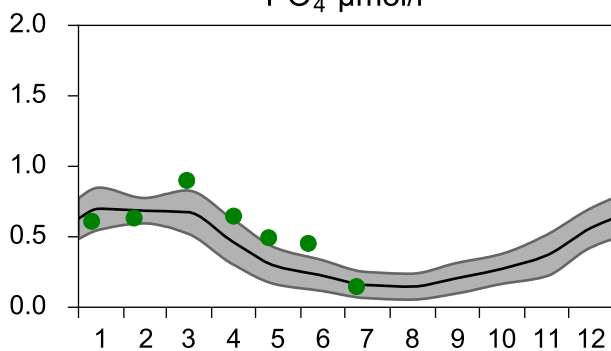
Temperature °C



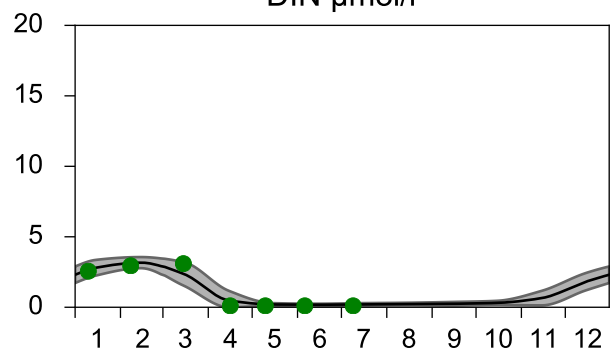
Salinity psu



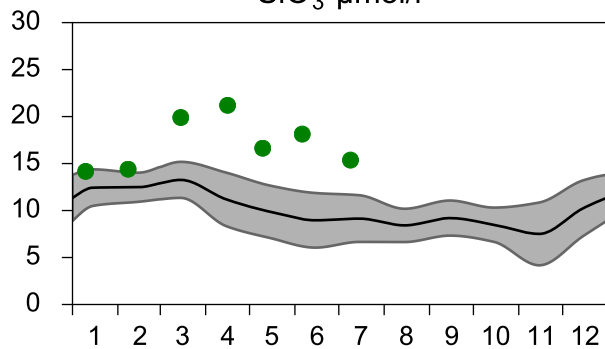
PO₄ µmol/l



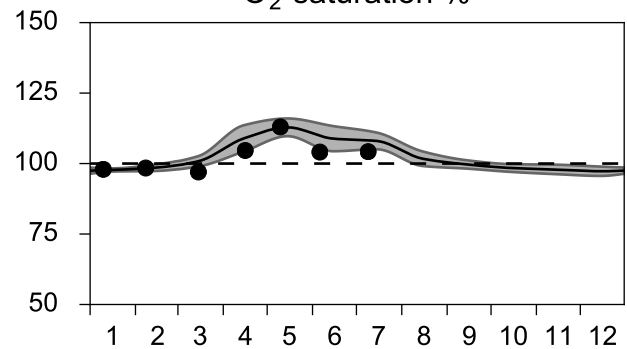
DIN µmol/l



SiO₃ µmol/l

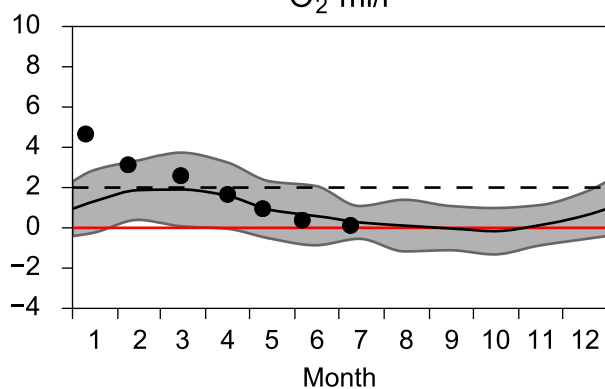


O₂ saturation %

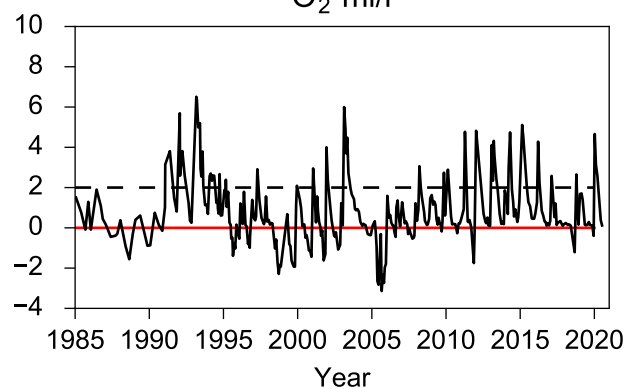


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

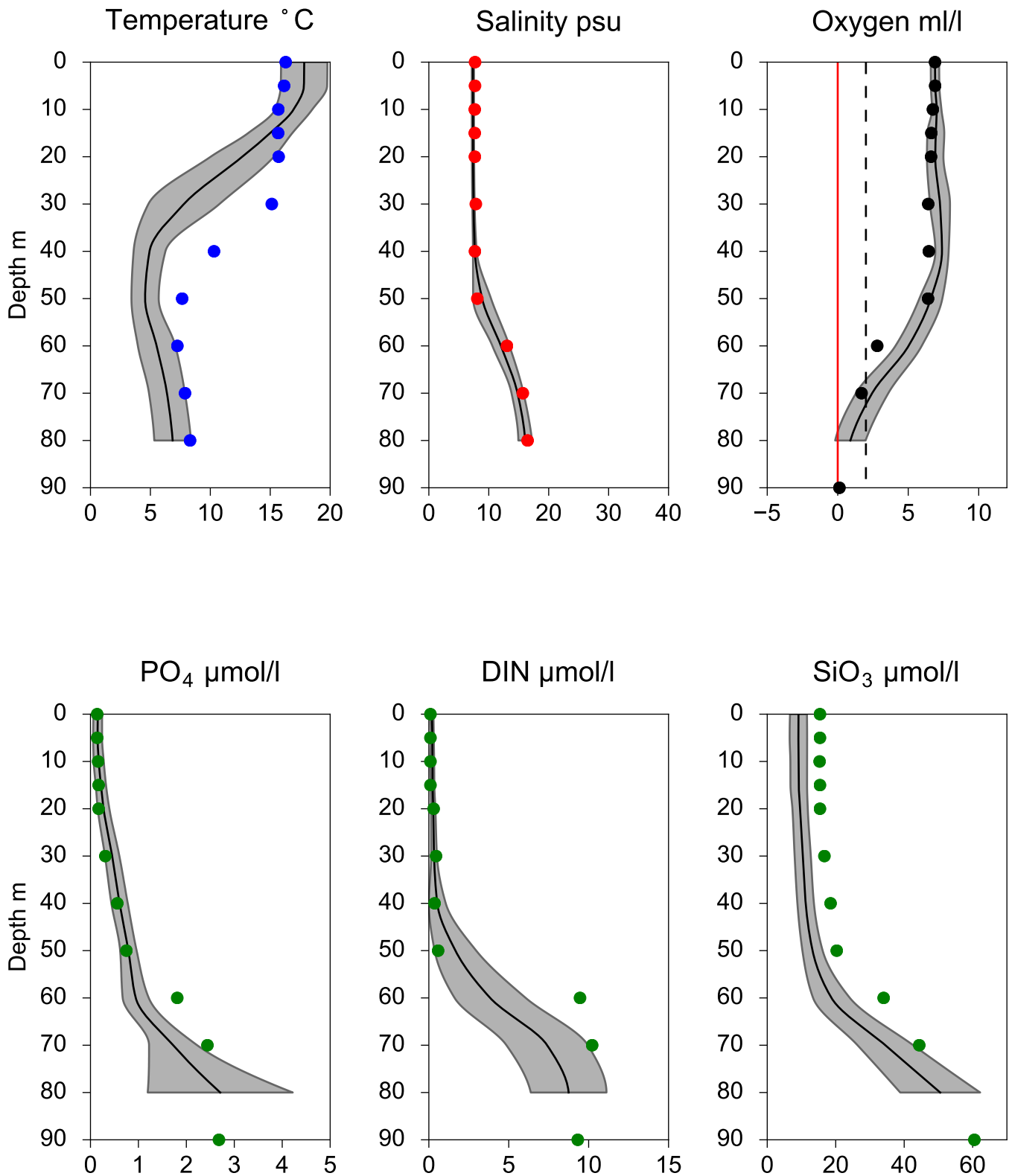


O₂ ml/l



Vertical profiles BY5 BORNHOLMSDJ July

— Mean 2001-2015 St.Dev. • 2020-07-09



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

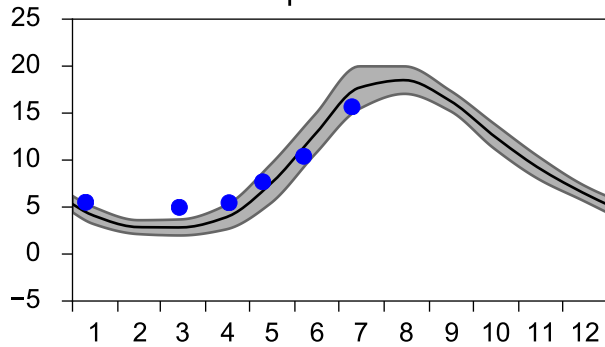
Annual Cycles

— Mean 2001-2015

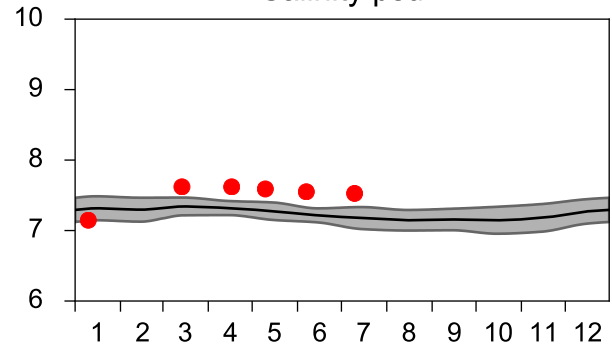
■ St.Dev.

● 2020

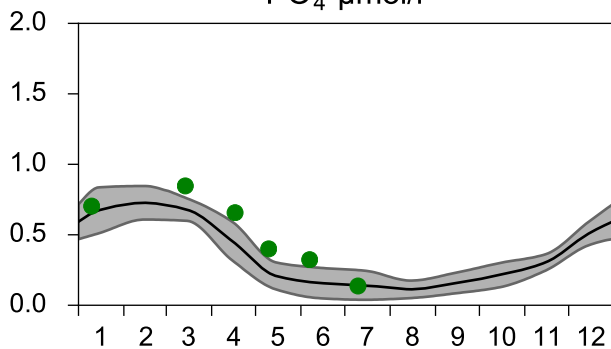
Temperature °C



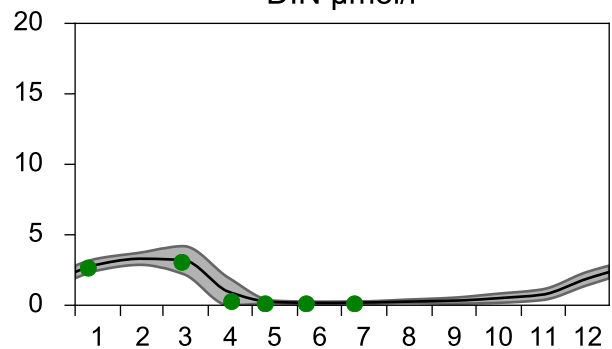
Salinity psu



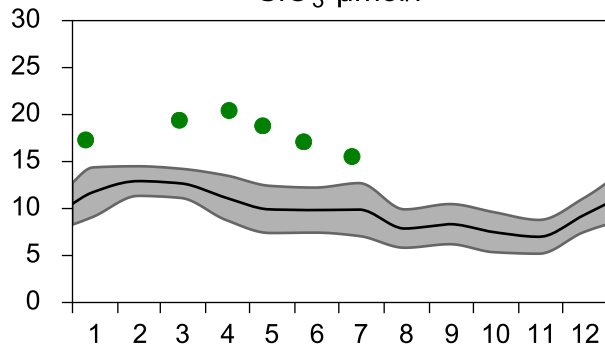
PO₄ µmol/l



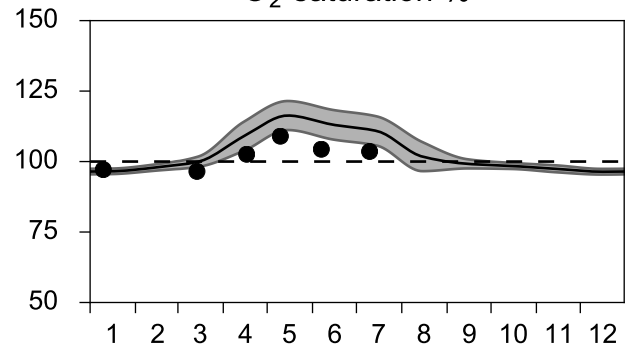
DIN µmol/l



SiO₃ µmol/l

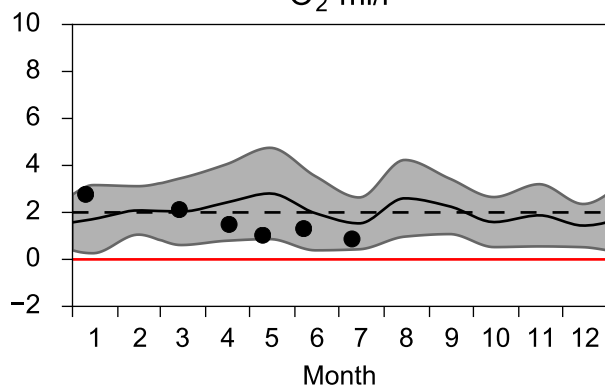


O₂ saturation %

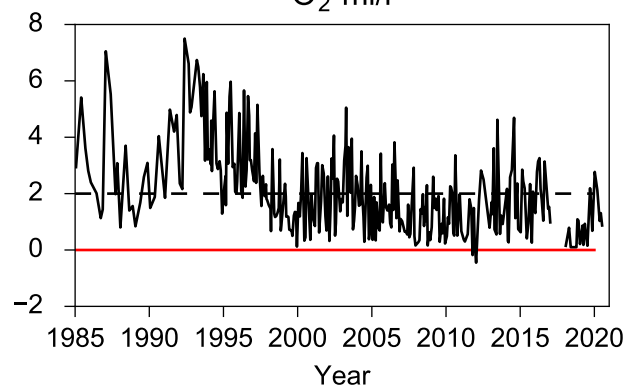


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

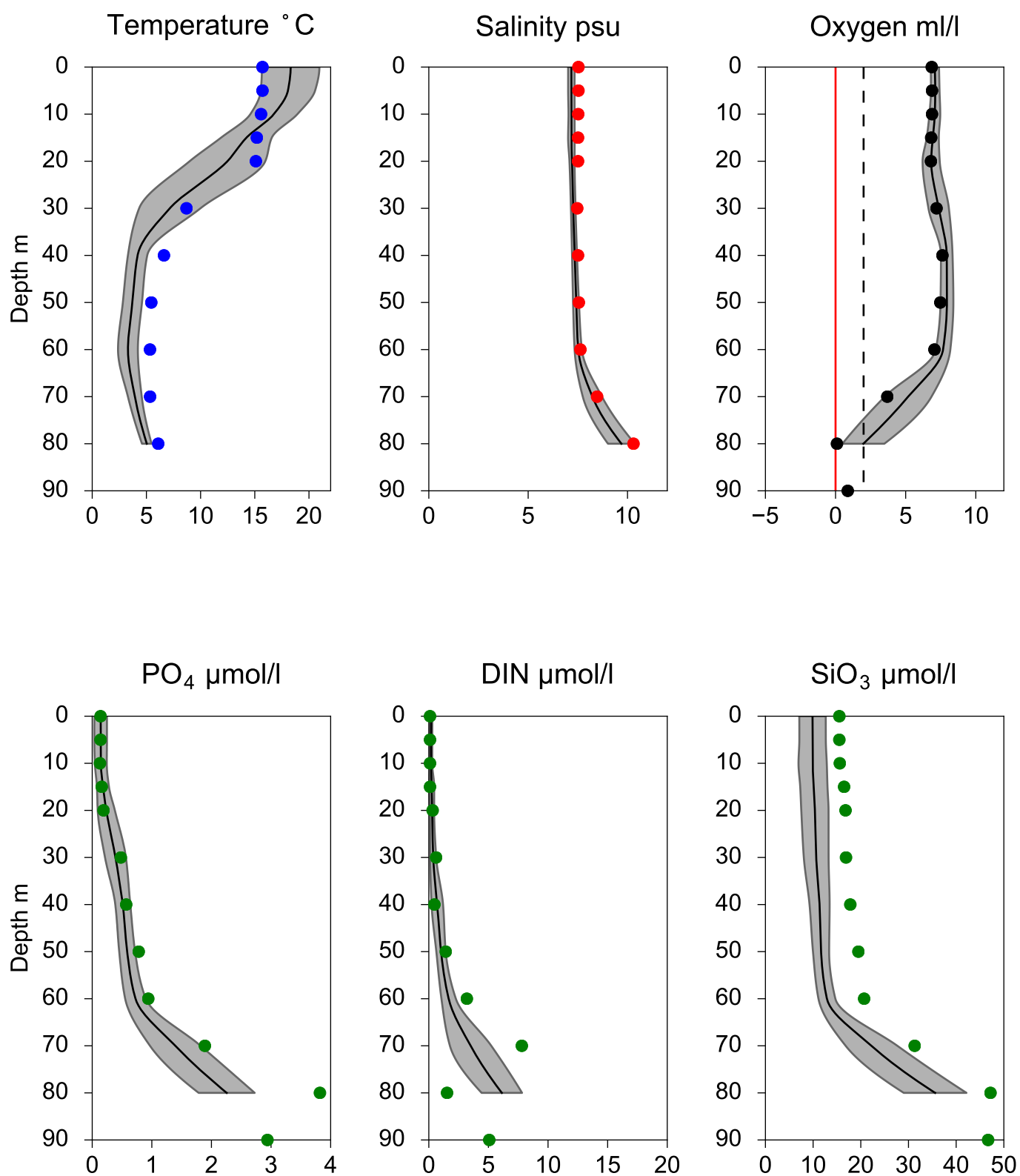


O₂ ml/l



Vertical profiles BCS III-10 July

— Mean 2001-2015 St.Dev. • 2020-07-10



STATION BY10 SURFACE WATER (0-10 m)

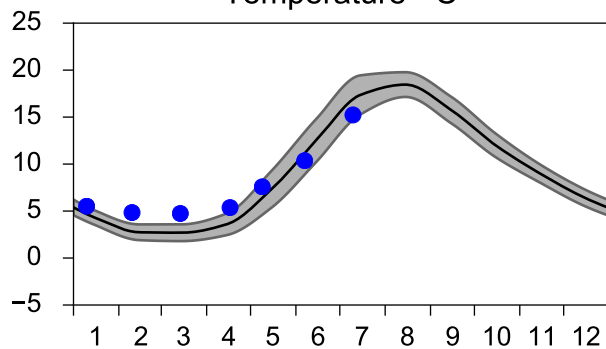
Annual Cycles

— Mean 2001-2015

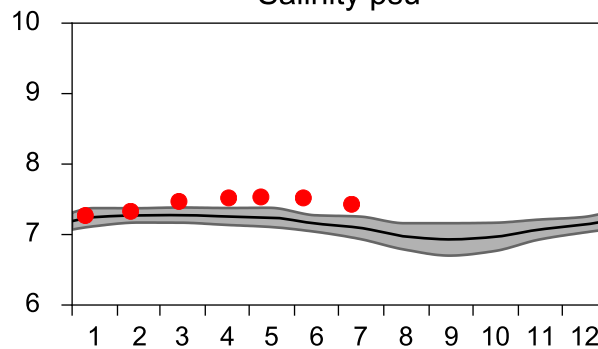
■ St.Dev.

● 2020

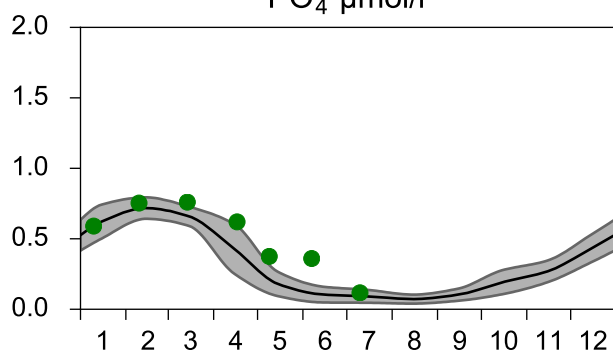
Temperature °C



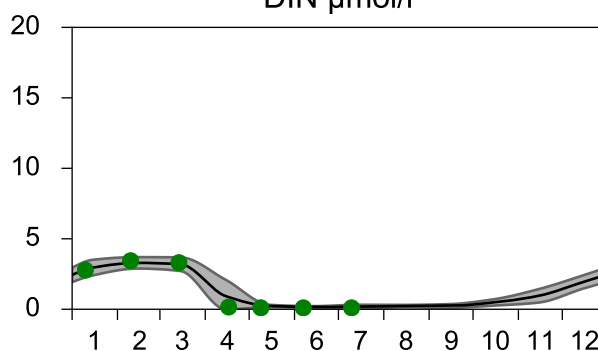
Salinity psu



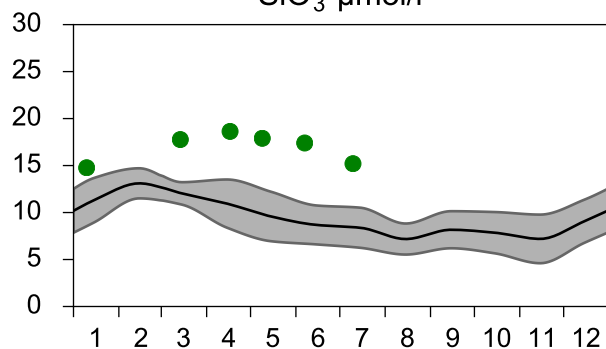
PO₄ µmol/l



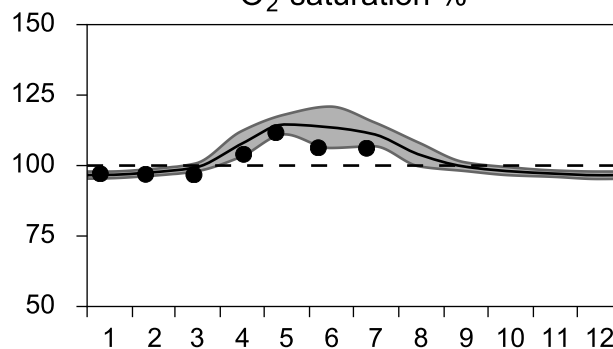
DIN µmol/l



SiO₃ µmol/l

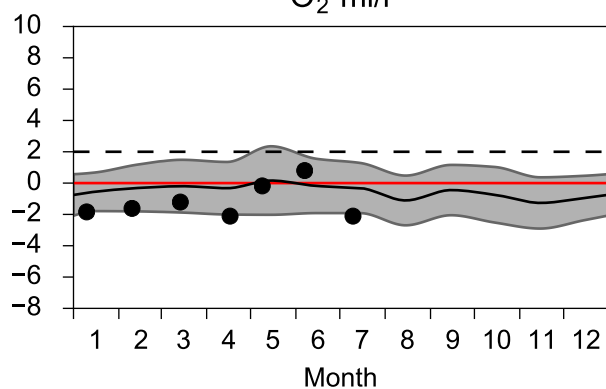


O₂ saturation %

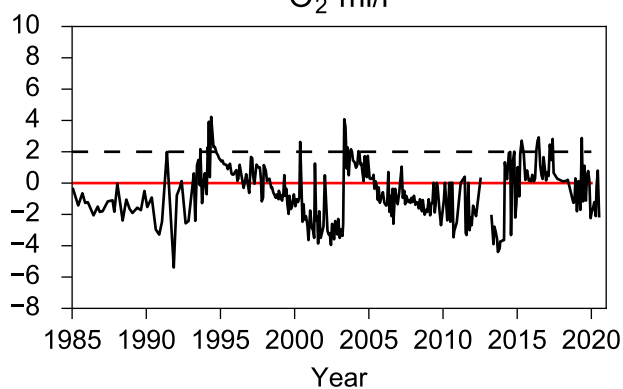


OXYGEN IN BOTTOM WATER (depth >= 125 m)

O₂ ml/l

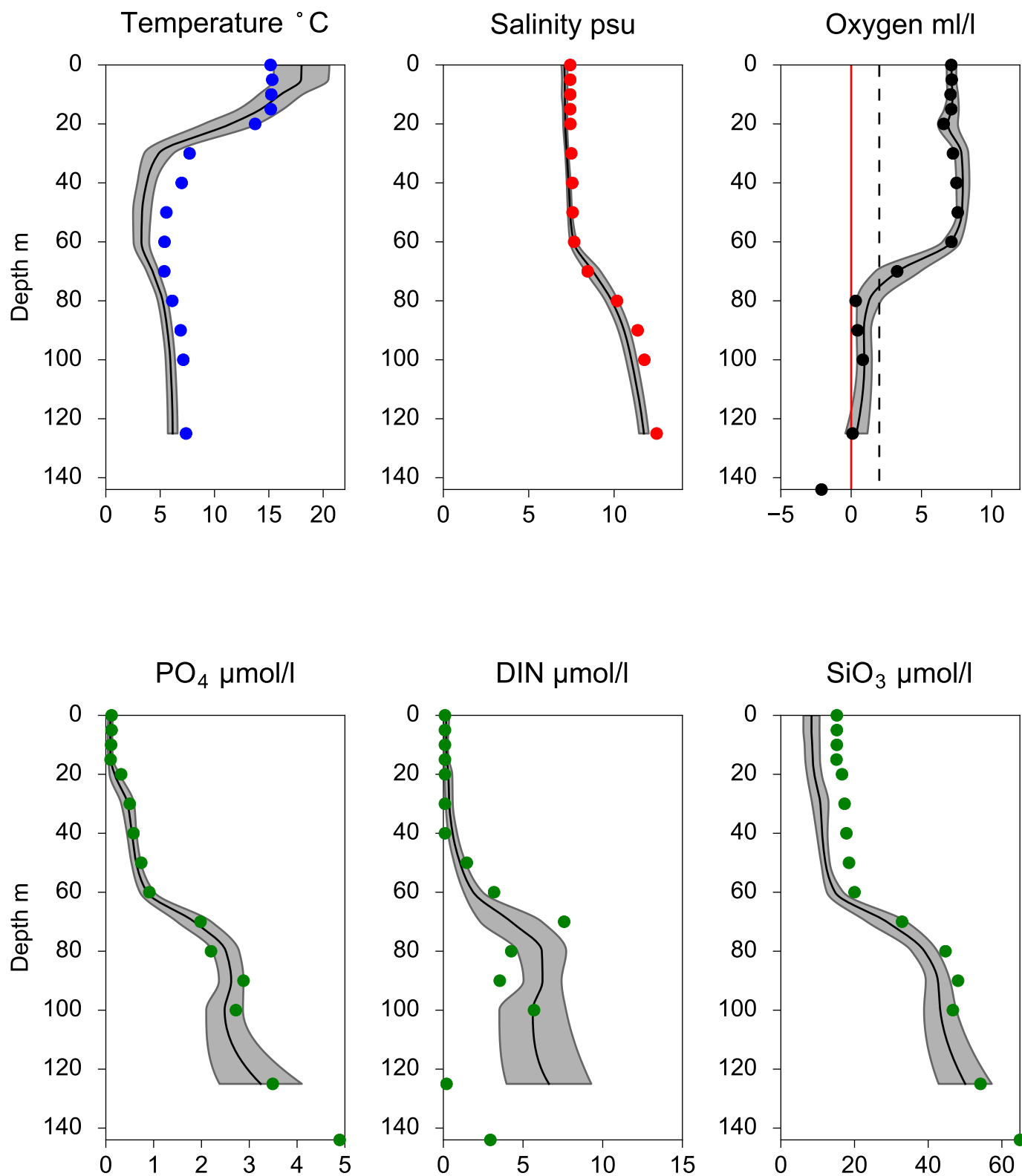


O₂ ml/l



Vertical profiles BY10 July

— Mean 2001-2015 St.Dev. • 2020-07-10



STATION BY15 GOTLANDSDJ SURFACE WATER (0-10 m)

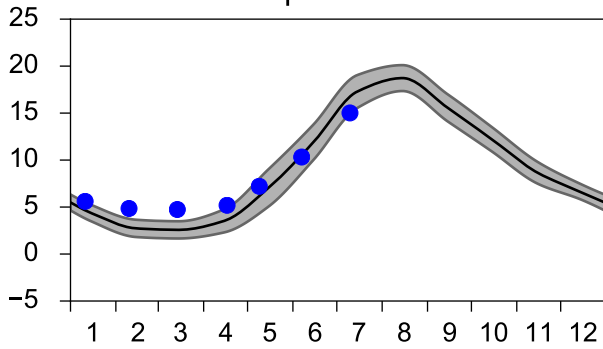
Annual Cycles

— Mean 2001-2015

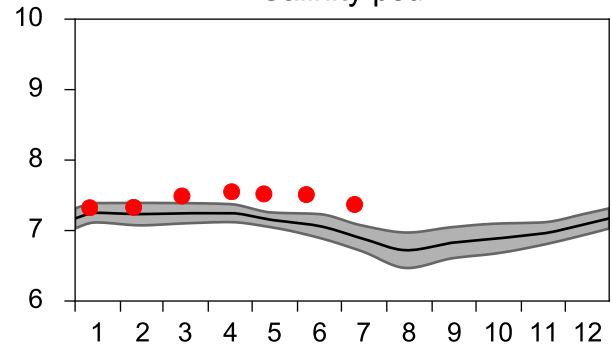
■ St.Dev.

● 2020

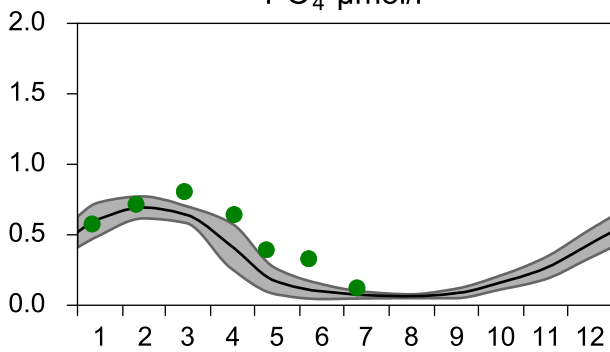
Temperature °C



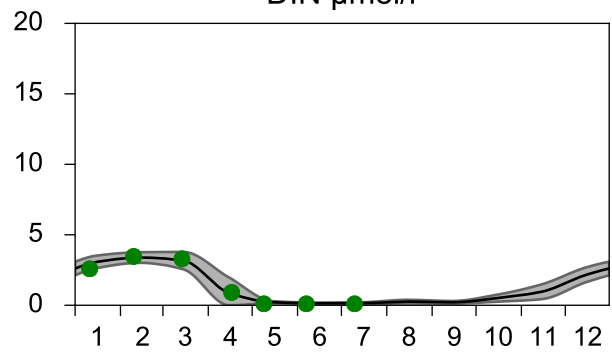
Salinity psu



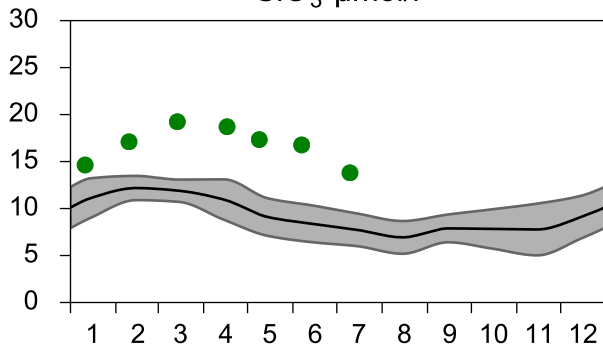
PO₄ µmol/l



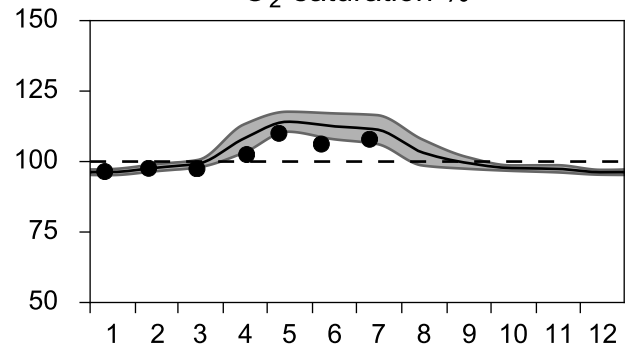
DIN µmol/l



SiO₃ µmol/l

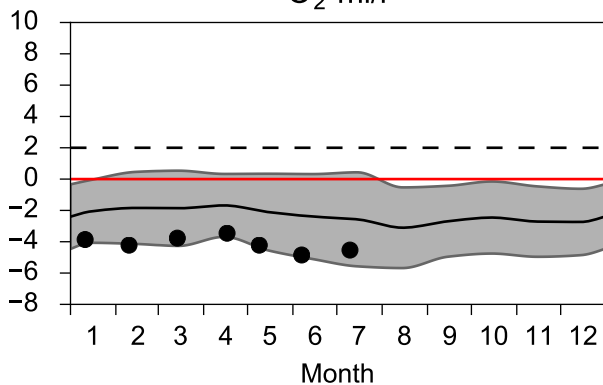


O₂ saturation %

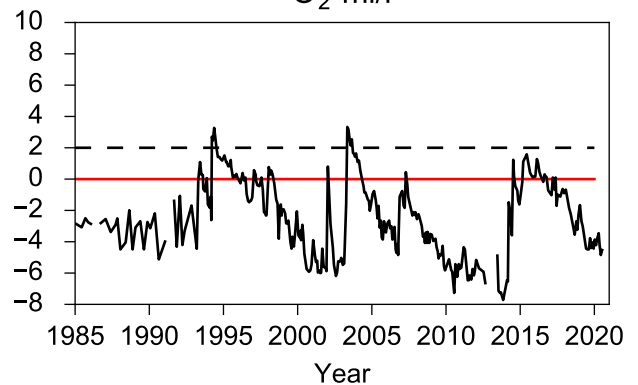


OXYGEN IN BOTTOM WATER (depth >= 225 m)

O₂ ml/l

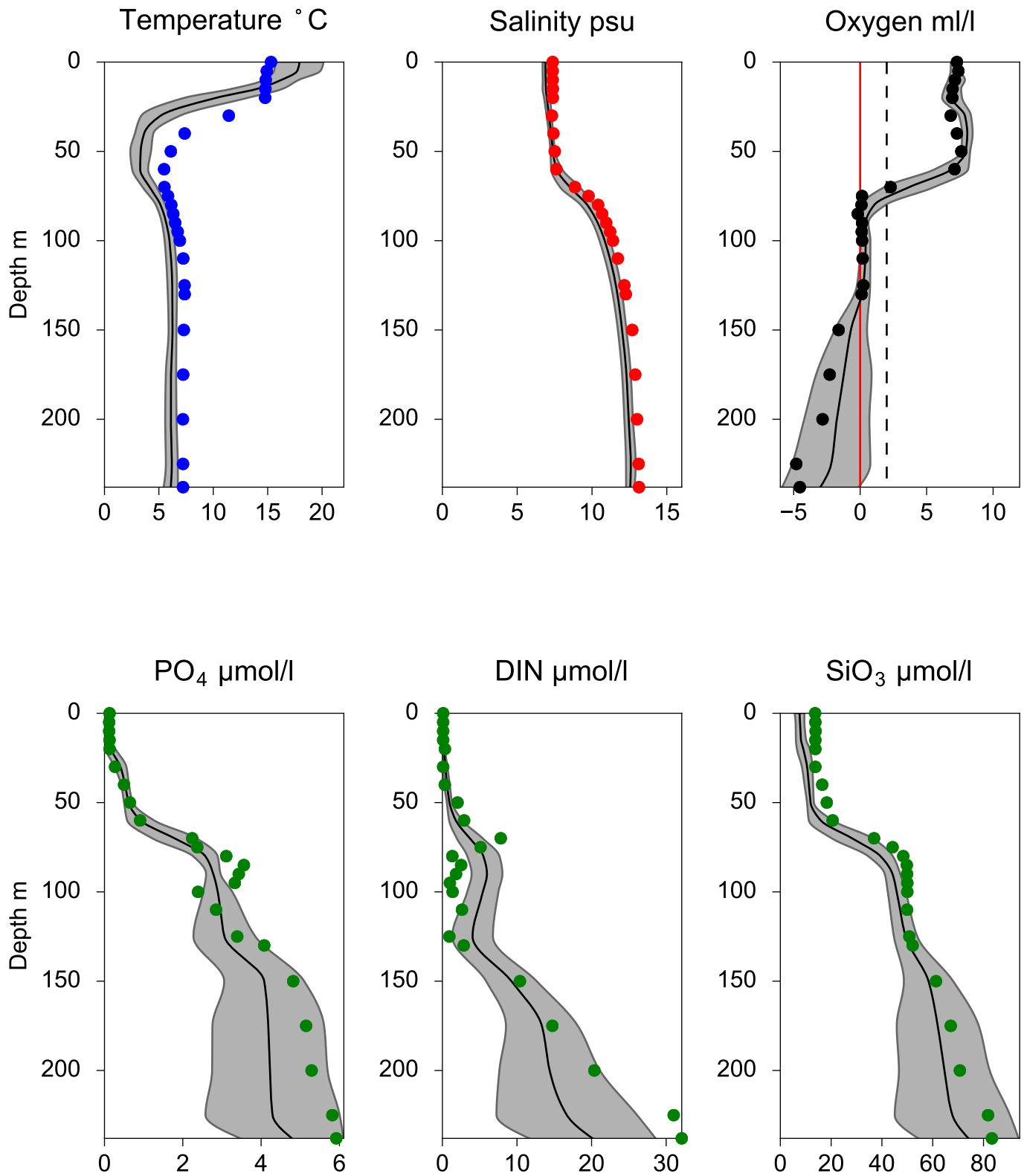


O₂ ml/l



Vertical profiles BY15 GOTLANDSDJ July

— Mean 2001-2015 St.Dev. • 2020-07-10



STATION BY20 FÅRÖDJ SURFACE WATER (0-10 m)

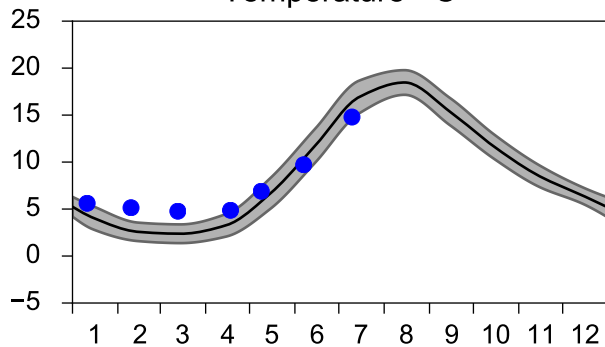
Annual Cycles

— Mean 2001-2015

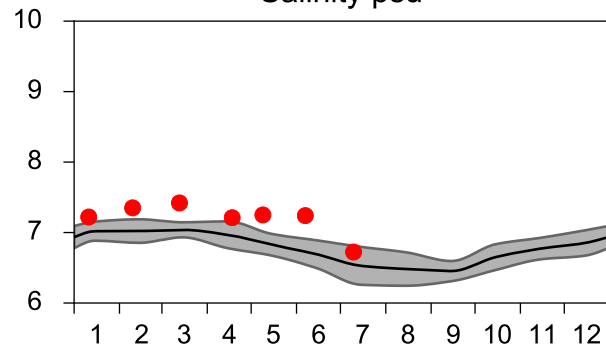
■ St.Dev.

● 2020

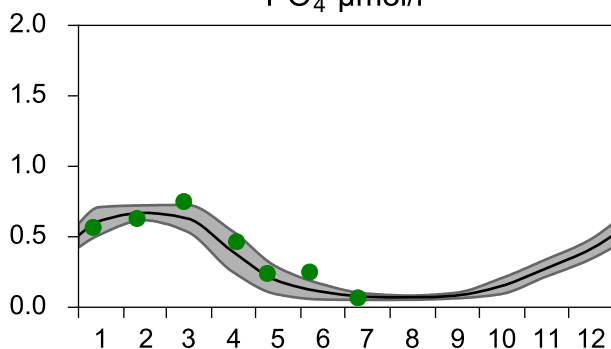
Temperature °C



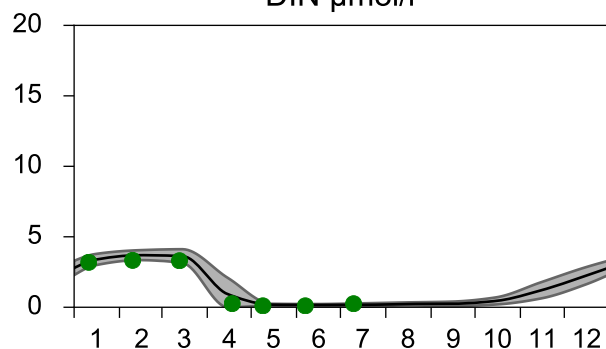
Salinity psu



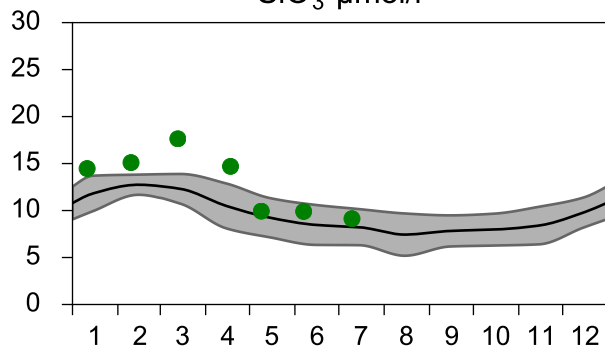
PO₄ µmol/l



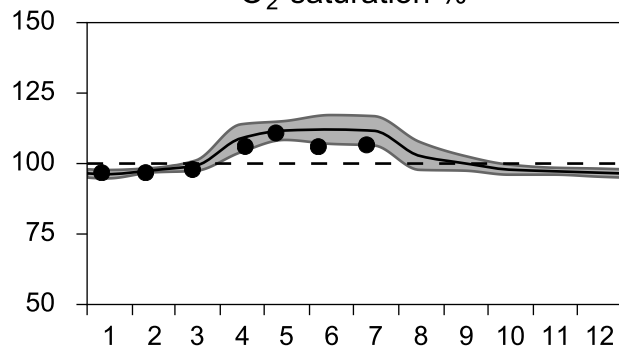
DIN µmol/l



SiO₃ µmol/l

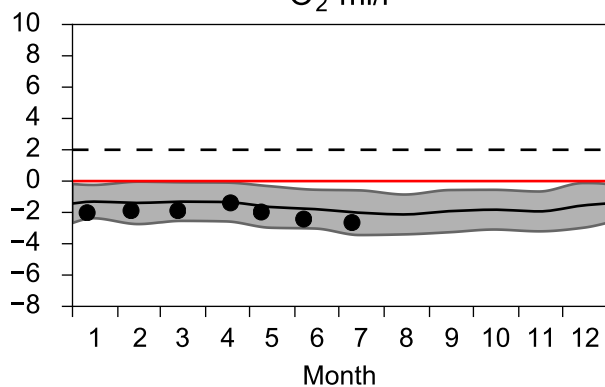


O₂ saturation %

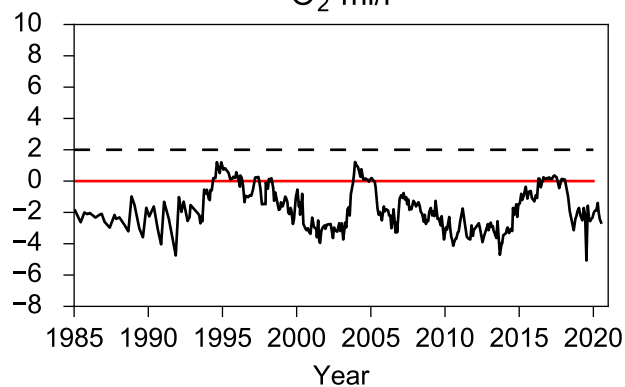


OXYGEN IN BOTTOM WATER (depth >= 175 m)

O₂ ml/l



O₂ ml/l

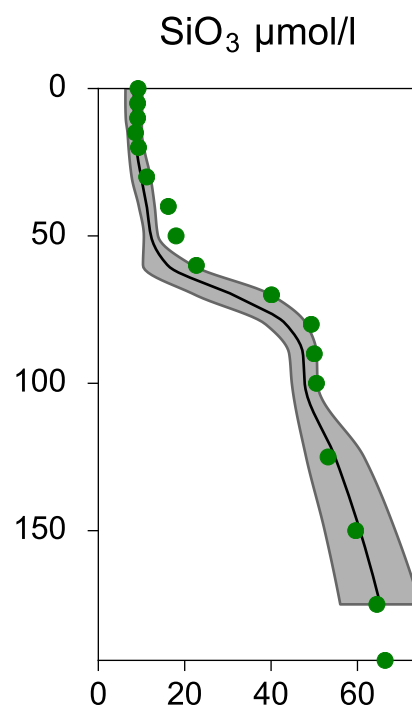
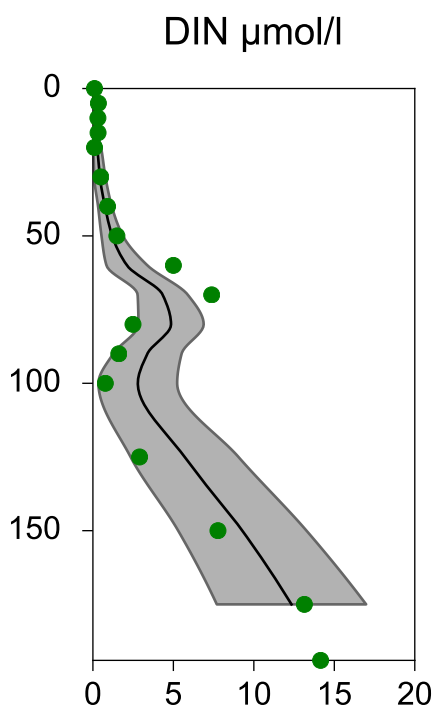
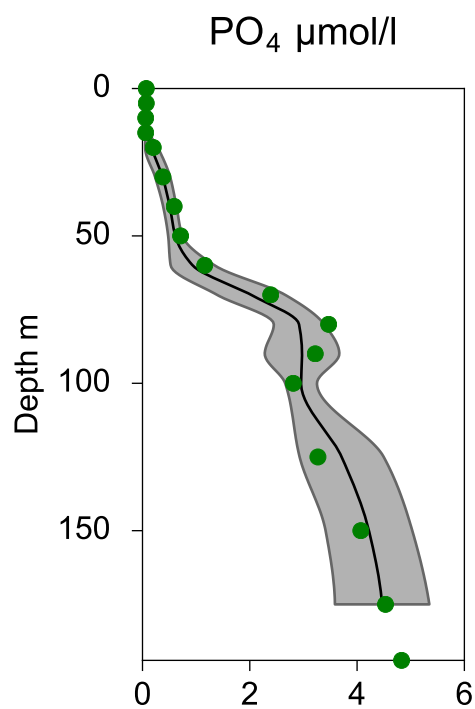
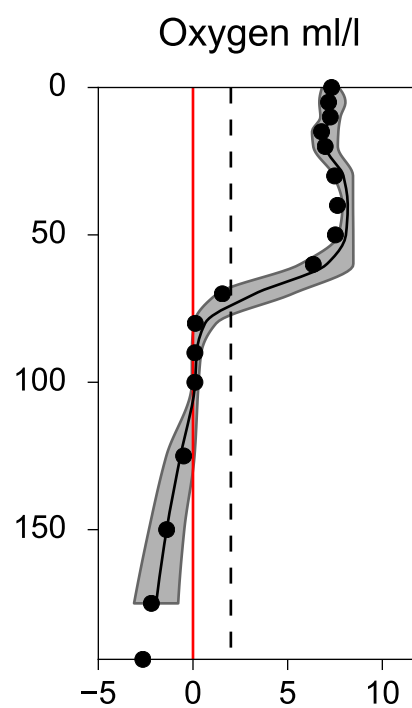
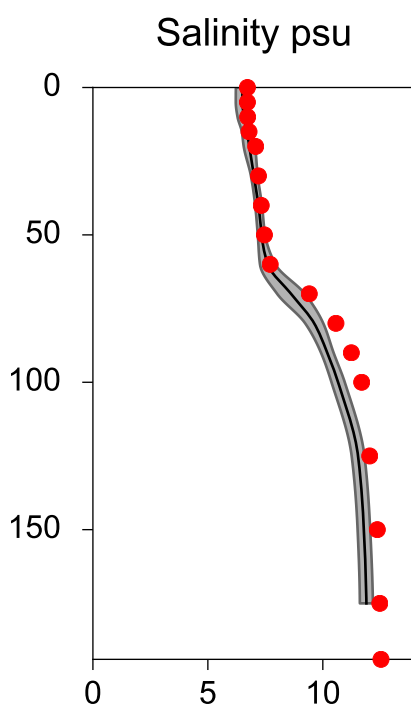
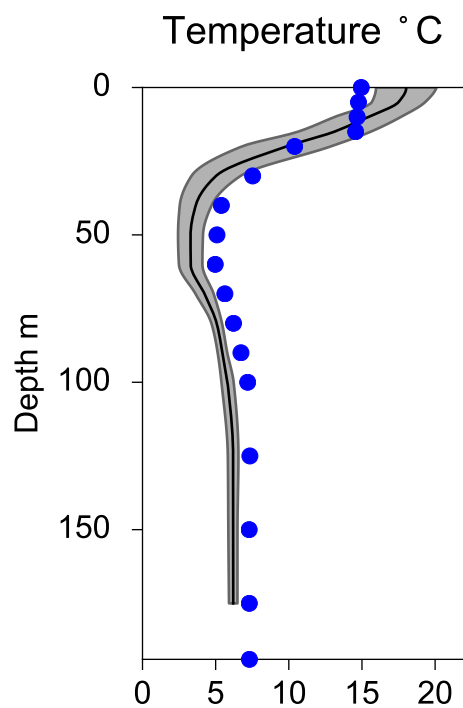


Vertical profiles BY20 FÅRÖDJ July

— Mean 2001-2015

■ St.Dev.

● 2020-07-10



STATION BY32 NORRKÖPINGSDJ SURFACE WATER (0-10 m)

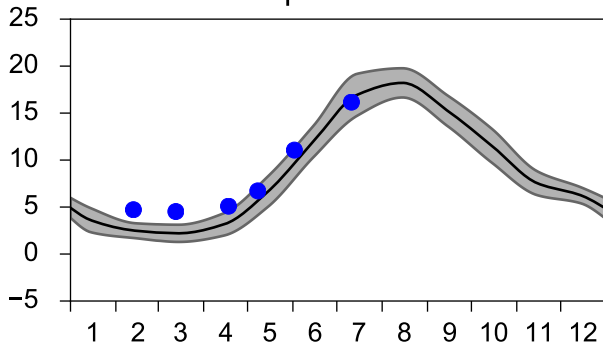
Annual Cycles

— Mean 2001-2015

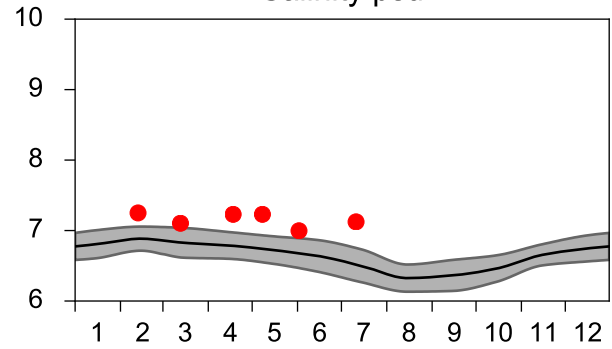
■ St.Dev.

● 2020

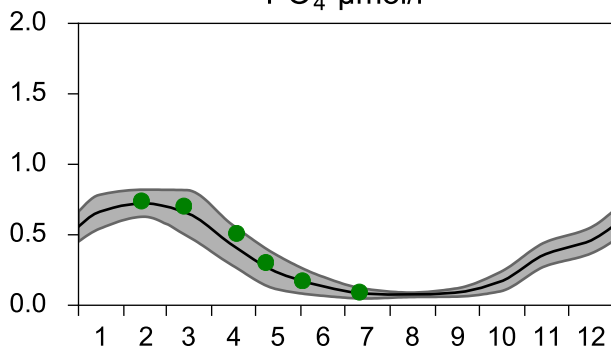
Temperature °C



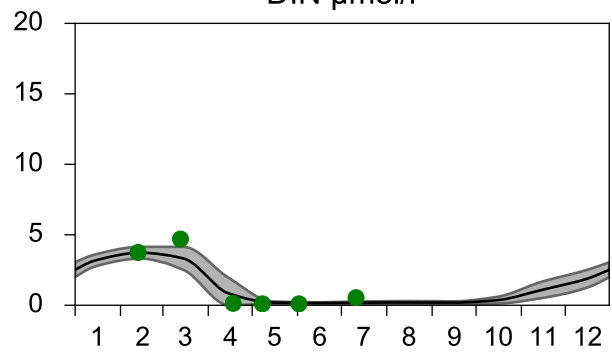
Salinity psu



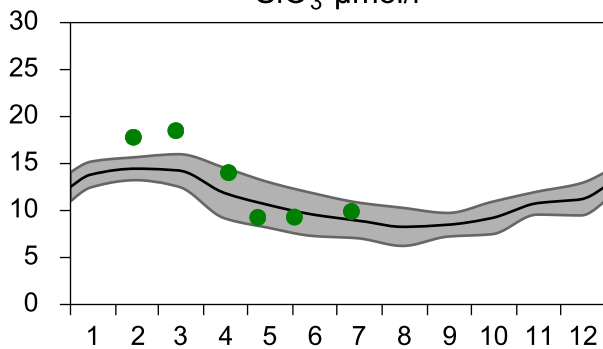
PO₄ µmol/l



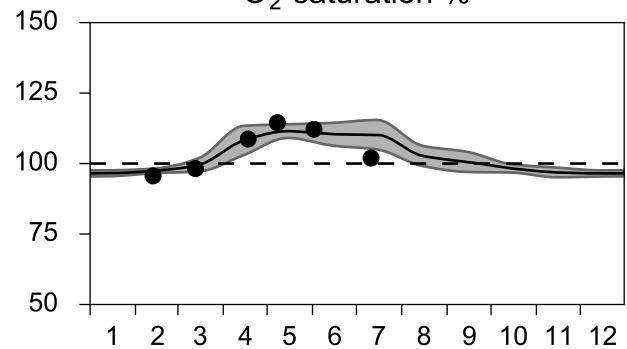
DIN µmol/l



SiO₃ µmol/l

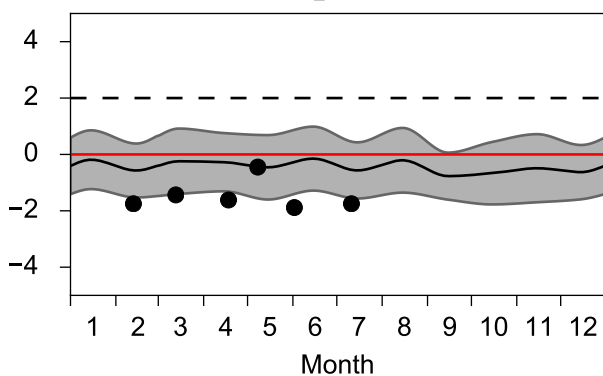


O₂ saturation %

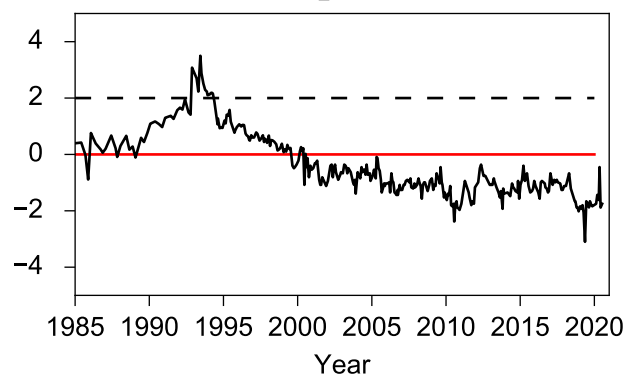


OXYGEN IN BOTTOM WATER (depth >= 175 m)

O₂ ml/l



O₂ ml/l

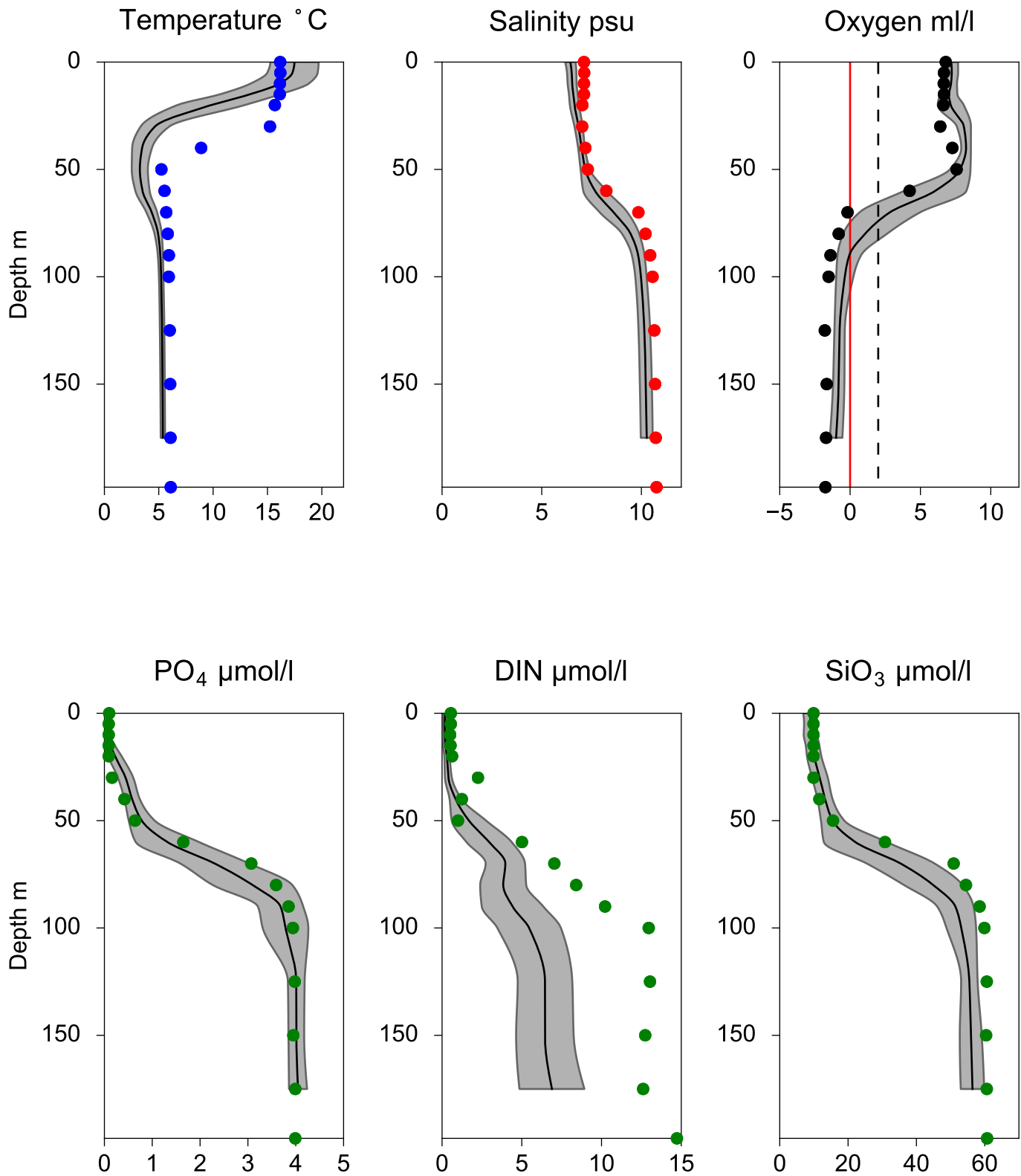


Vertical profiles BY32 NORRKÖPINGSDJ July

— Mean 2001-2015

■ St.Dev.

● 2020-07-11



STATION BY38 KARLSÖDJ SURFACE WATER (0-10 m)

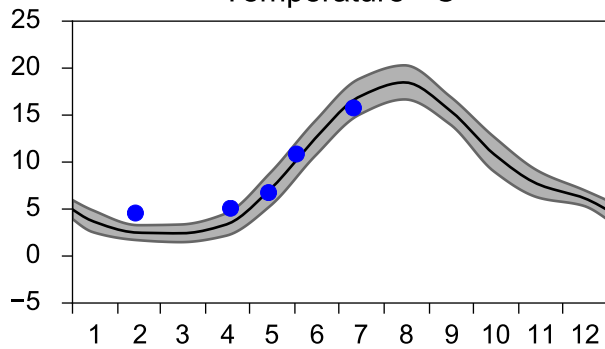
Annual Cycles

— Mean 2001-2015

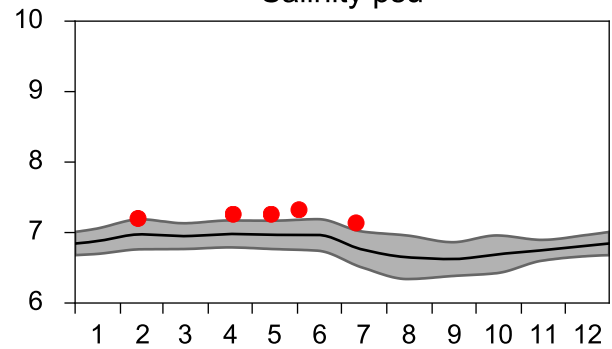
■ St.Dev.

● 2020

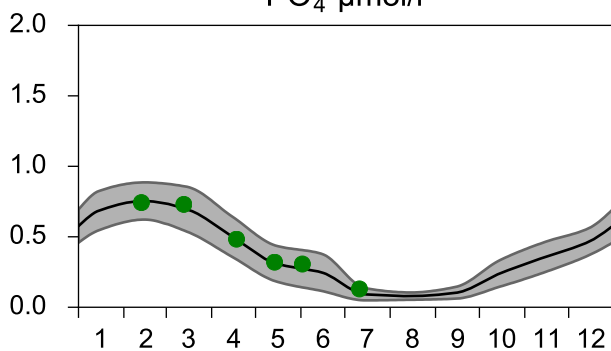
Temperature °C



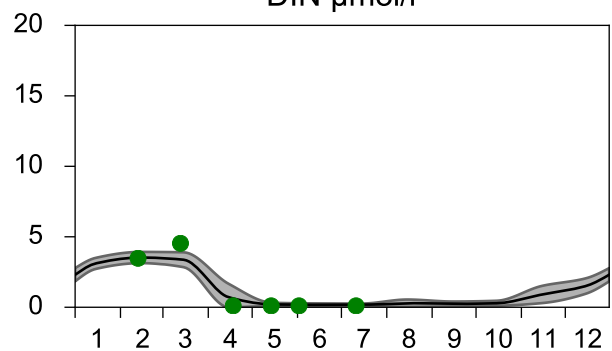
Salinity psu



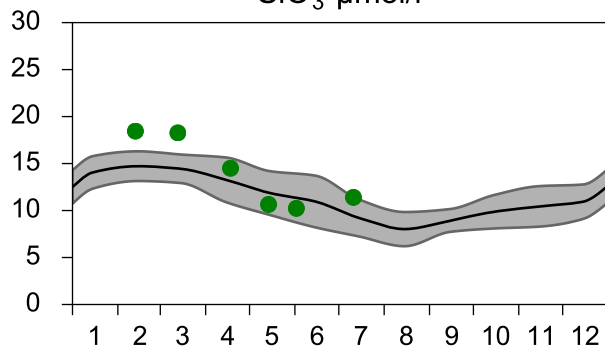
PO₄ µmol/l



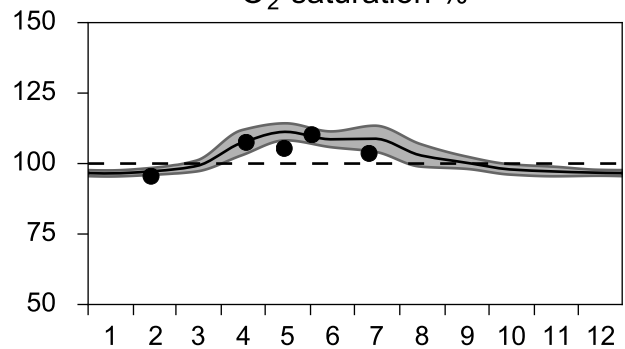
DIN µmol/l



SiO₃ µmol/l

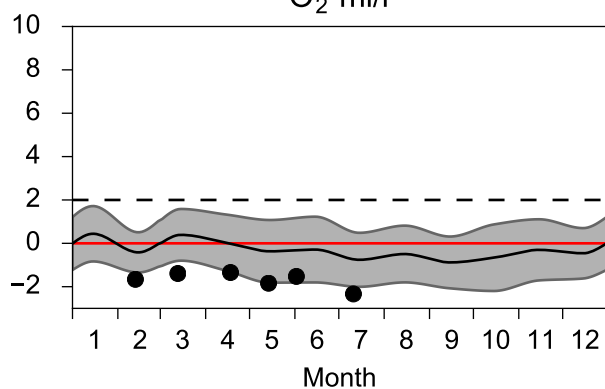


O₂ saturation %

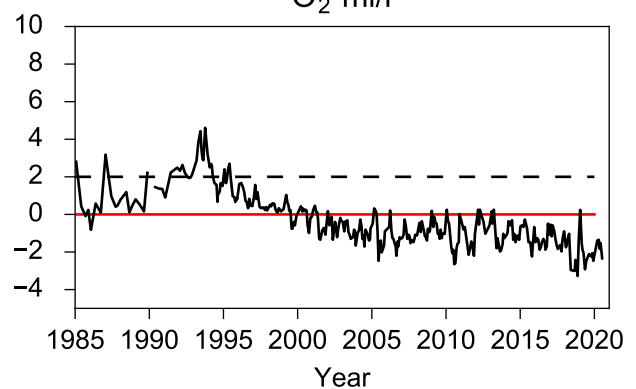


OXYGEN IN BOTTOM WATER (depth >= 100 m)

O₂ ml/l



O₂ ml/l

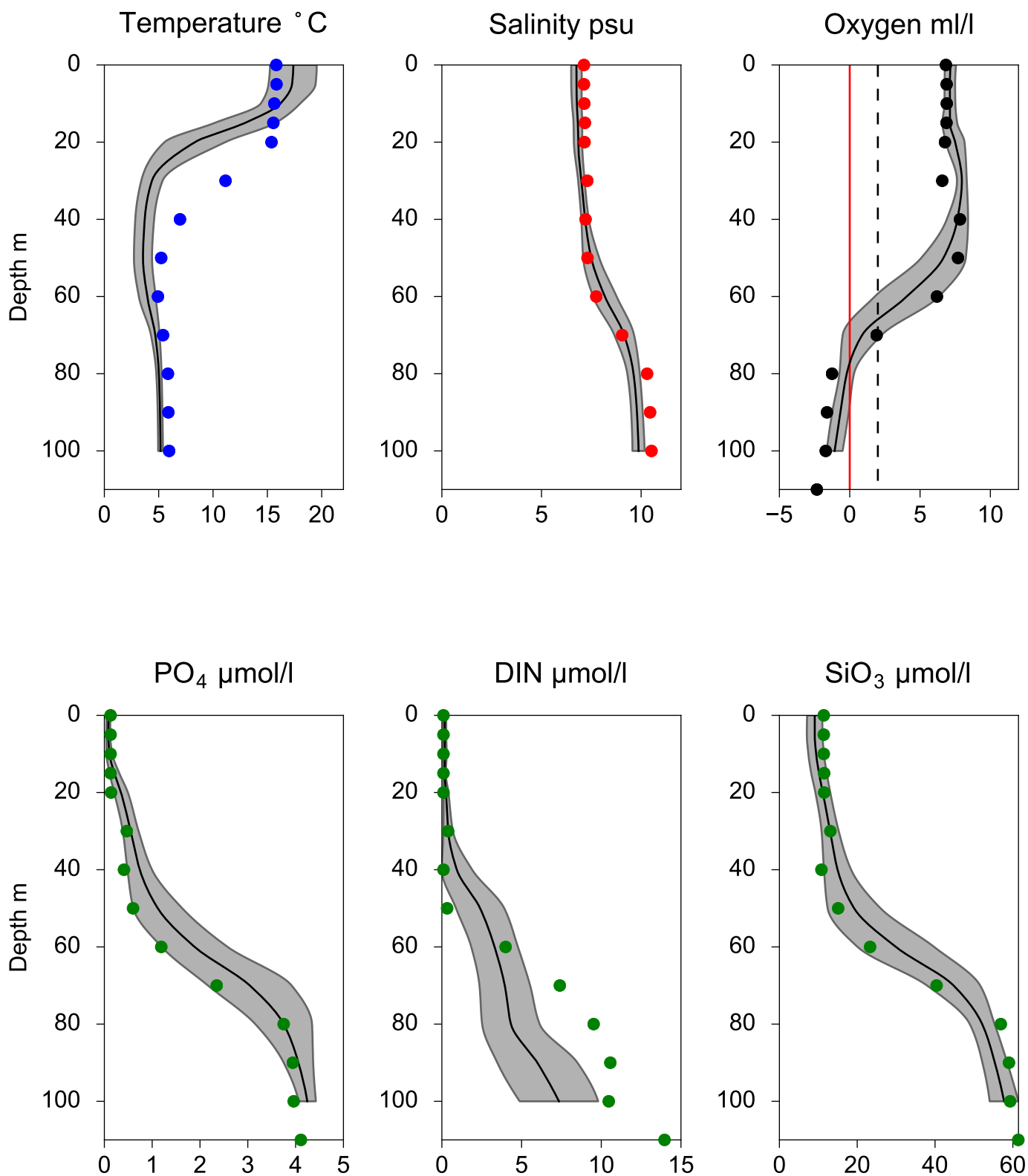


Vertical profiles BY38 KARLSÖDJ July

— Mean 2001-2015

■ St.Dev.

● 2020-07-11



STATION REF M1V1 SURFACE WATER (0-10 m)

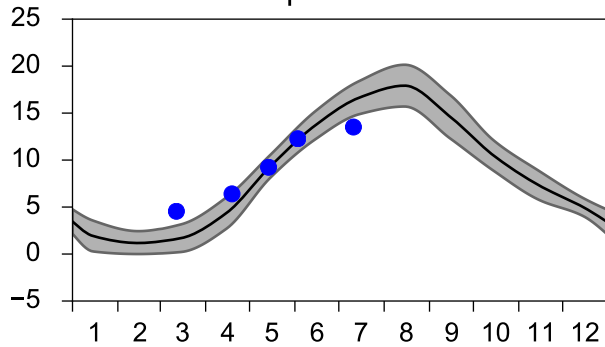
Annual Cycles

— Mean 2001-2015

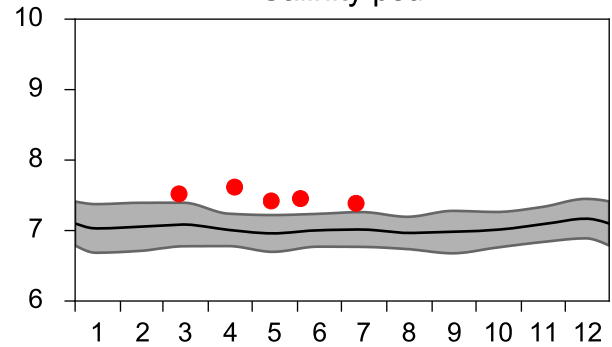
■ St.Dev.

● 2020

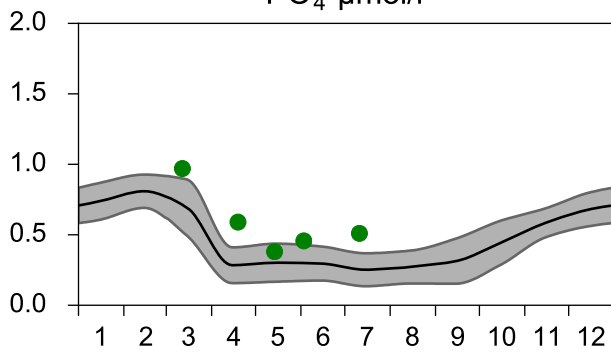
Temperature °C



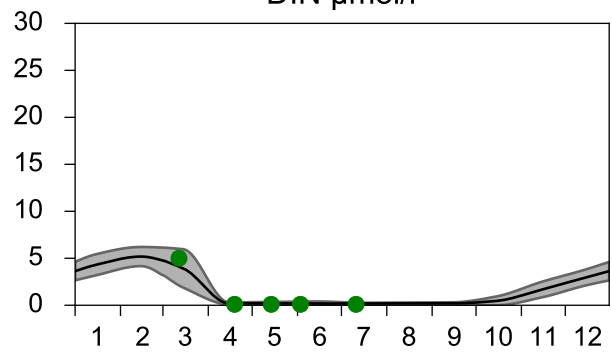
Salinity psu



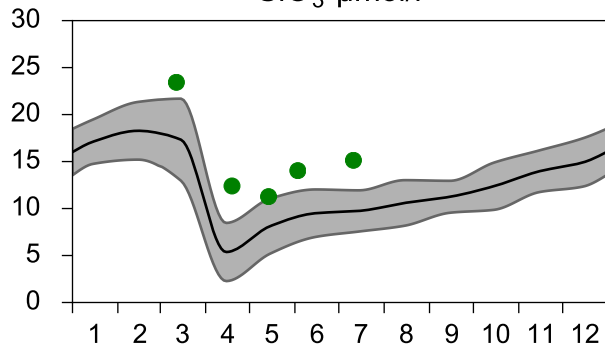
PO₄ µmol/l



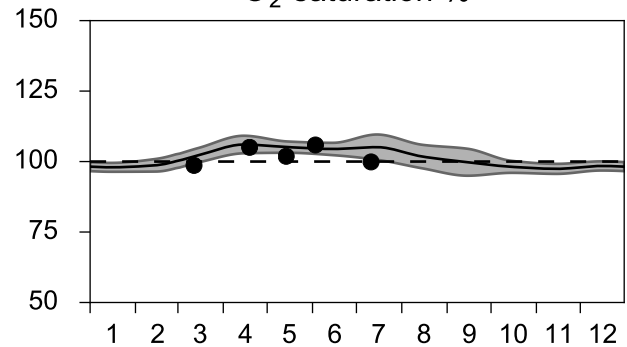
DIN µmol/l



SiO₃ µmol/l

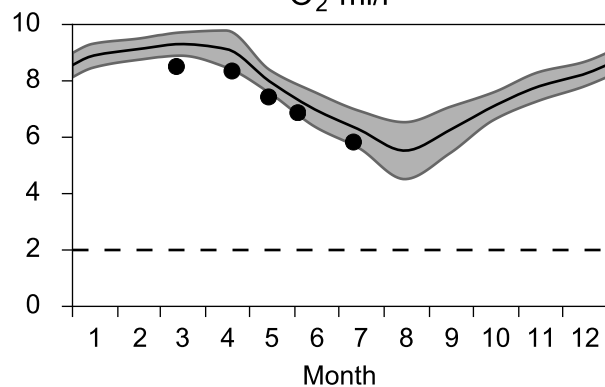


O₂ saturation %

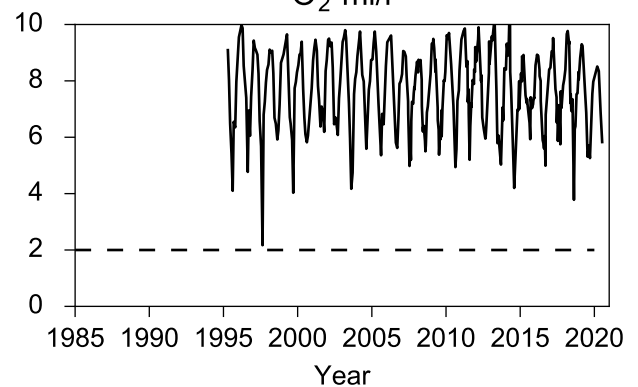


OXYGEN IN BOTTOM WATER (depth >= 15 m)

O₂ ml/l



O₂ ml/l

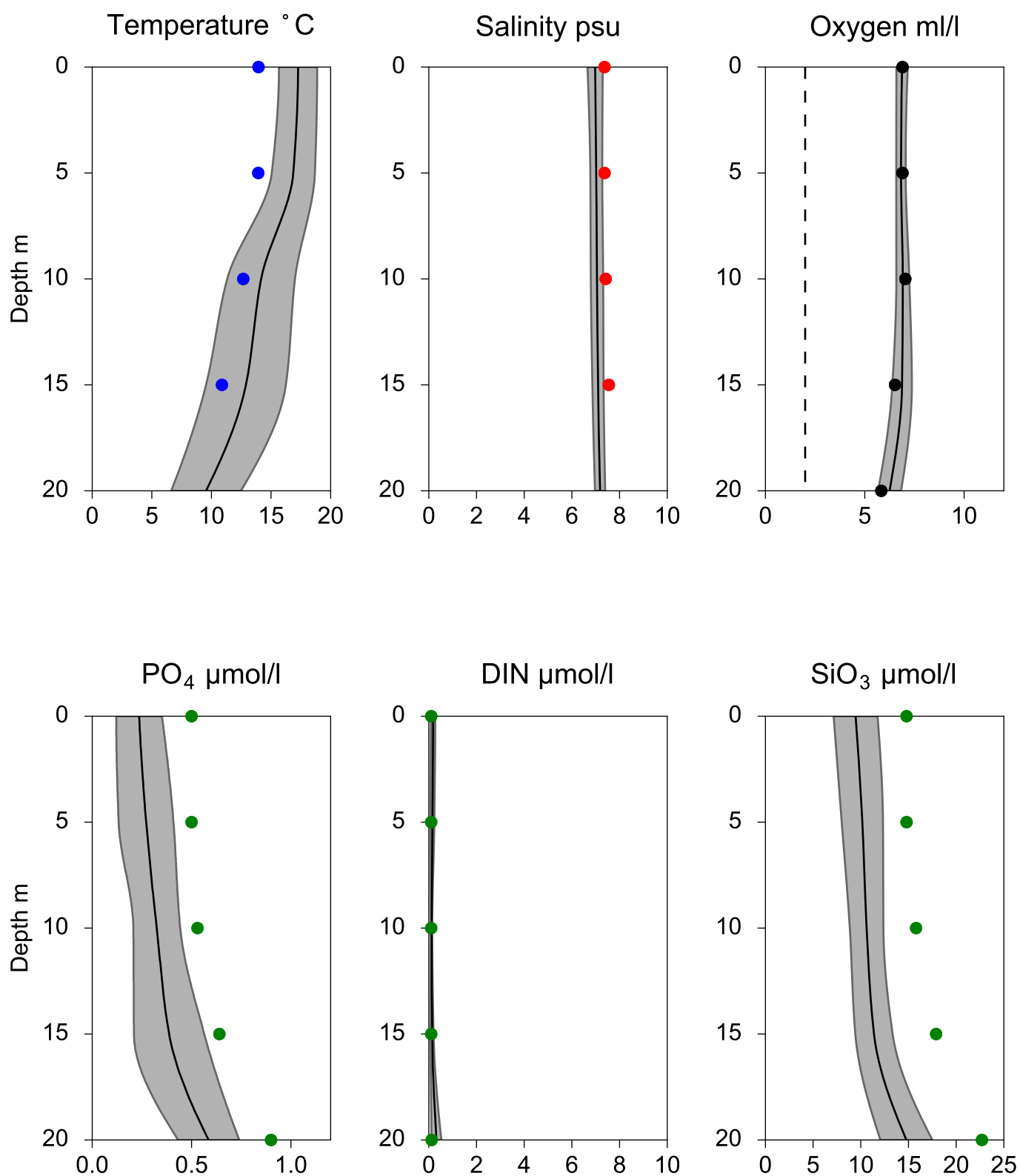


Vertical profiles REF M1V1 July

— Mean 2001-2015

■ St.Dev.

● 2020-07-11



STATION HANÖBUKTEN SURFACE WATER (0-10 m)

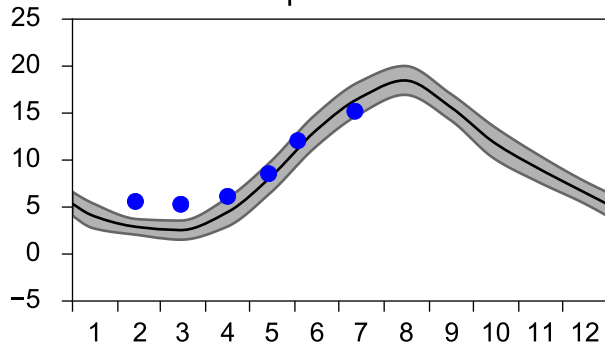
Annual Cycles

— Mean 2001-2015

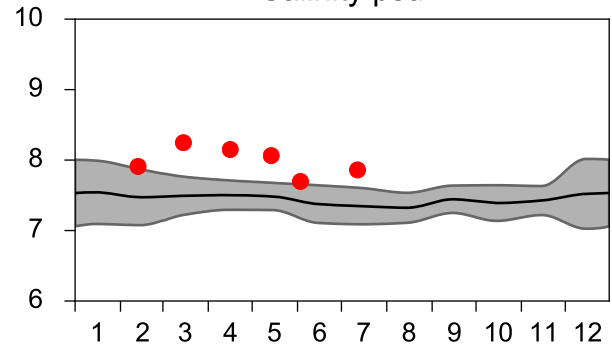
■ St.Dev.

● 2020

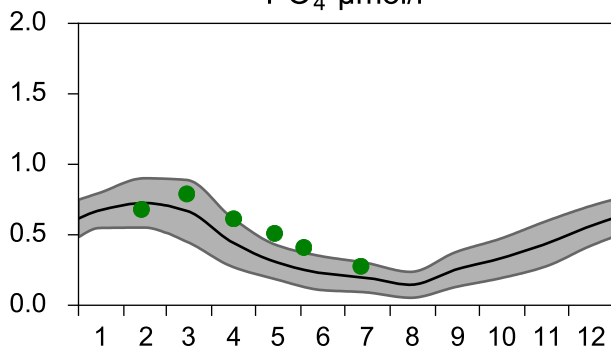
Temperature °C



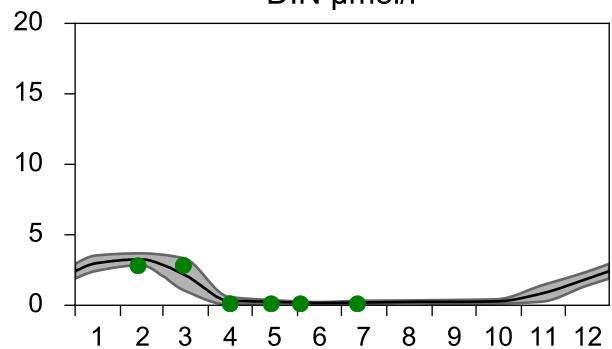
Salinity psu



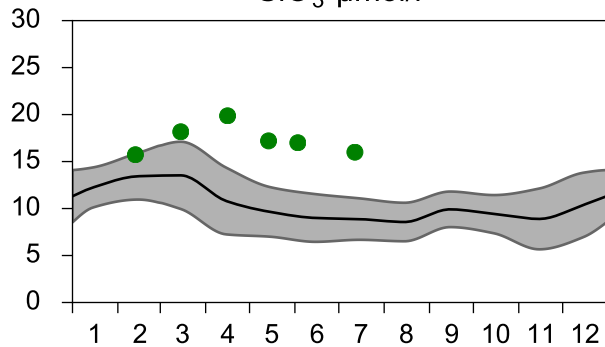
PO₄ µmol/l



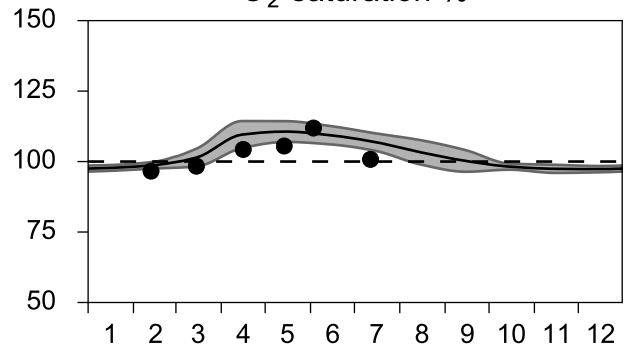
DIN µmol/l



SiO₃ µmol/l

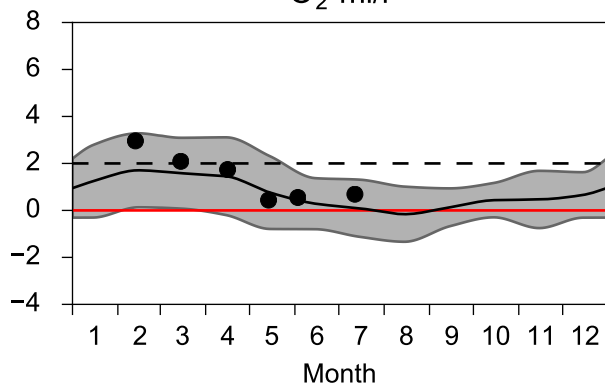


O₂ saturation %

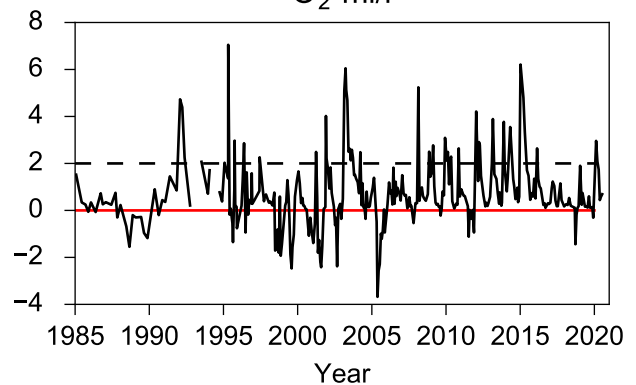


OXYGEN IN BOTTOM WATER (depth >= 70 m)

O₂ ml/l



O₂ ml/l



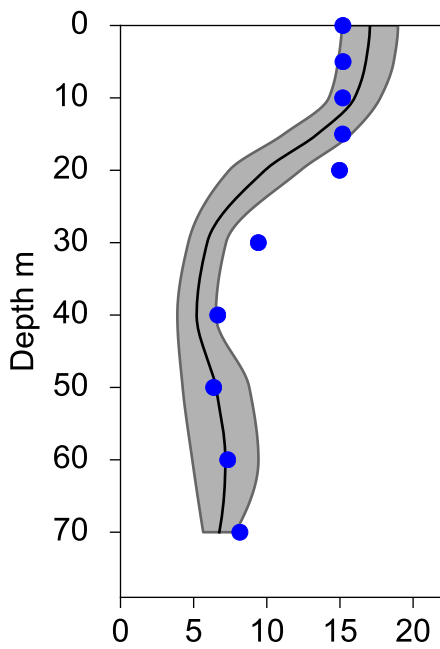
Vertical profiles HANÖBUKTEN July

— Mean 2001-2015

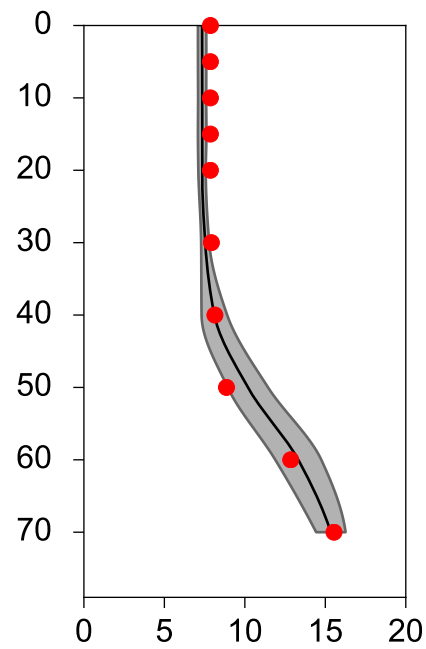
■ St.Dev.

● 2020-07-12

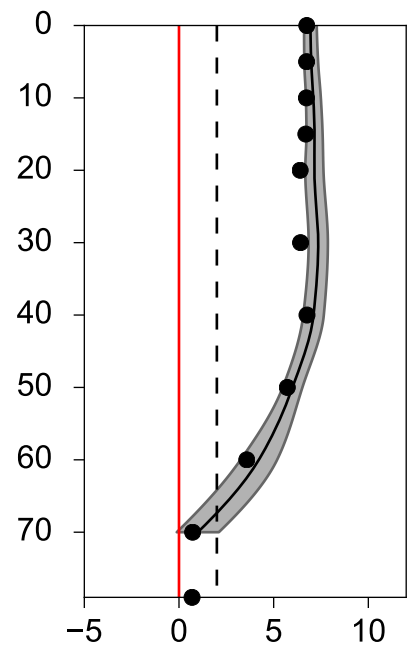
Temperature °C



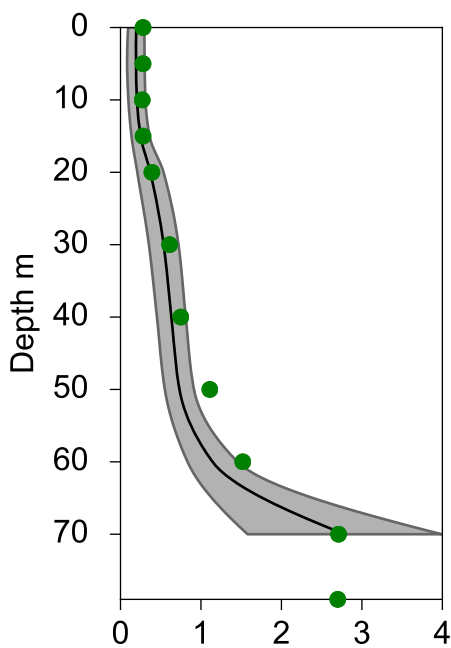
Salinity psu



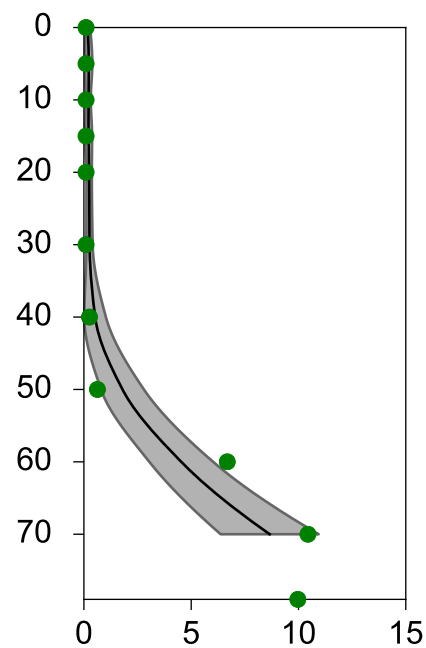
Oxygen ml/l



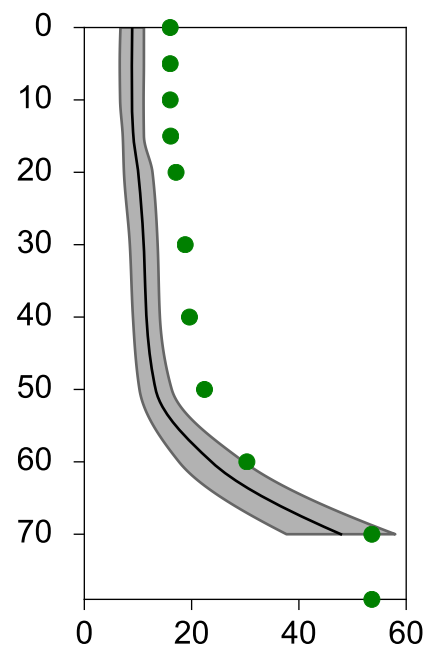
PO₄ μmol/l



DIN μmol/l



SiO₃ μmol/l



STATION W LANDSKRONA SURFACE WATER (0-10 m)

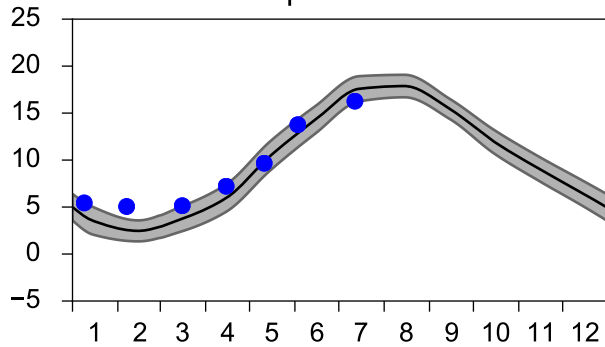
Annual Cycles

— Mean 2001-2015

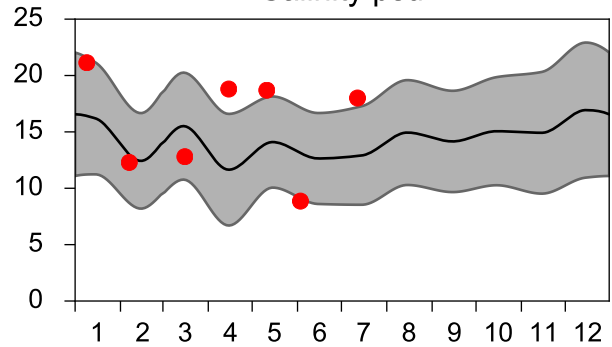
■ St.Dev.

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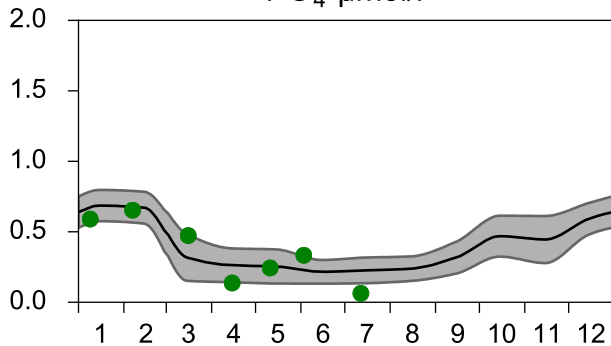
Temperature °C



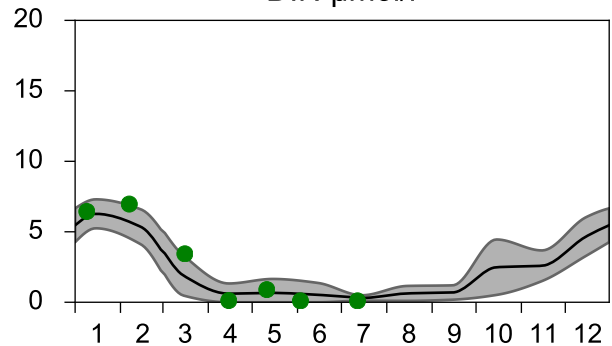
Salinity psu



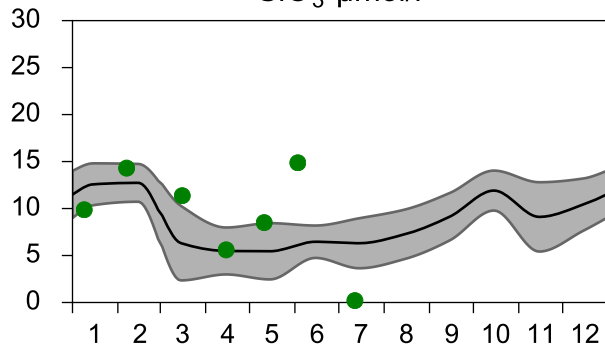
PO₄ µmol/l



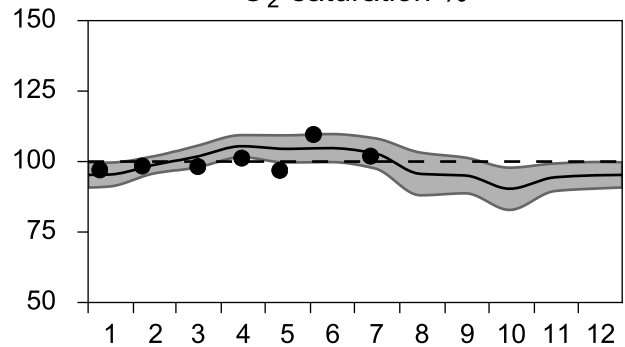
DIN µmol/l



SiO₃ µmol/l

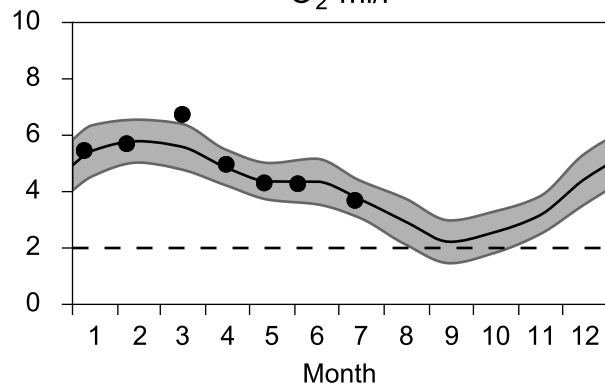


O₂ saturation %

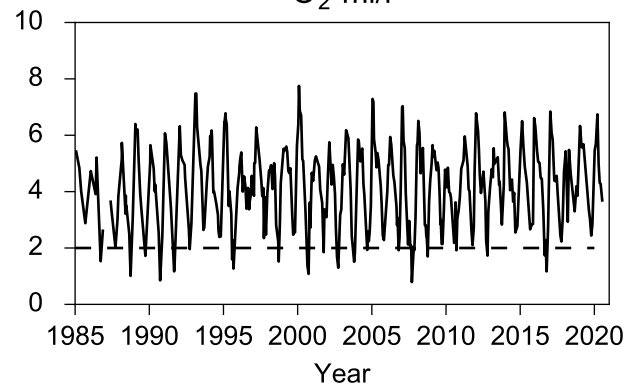


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l



O₂ ml/l

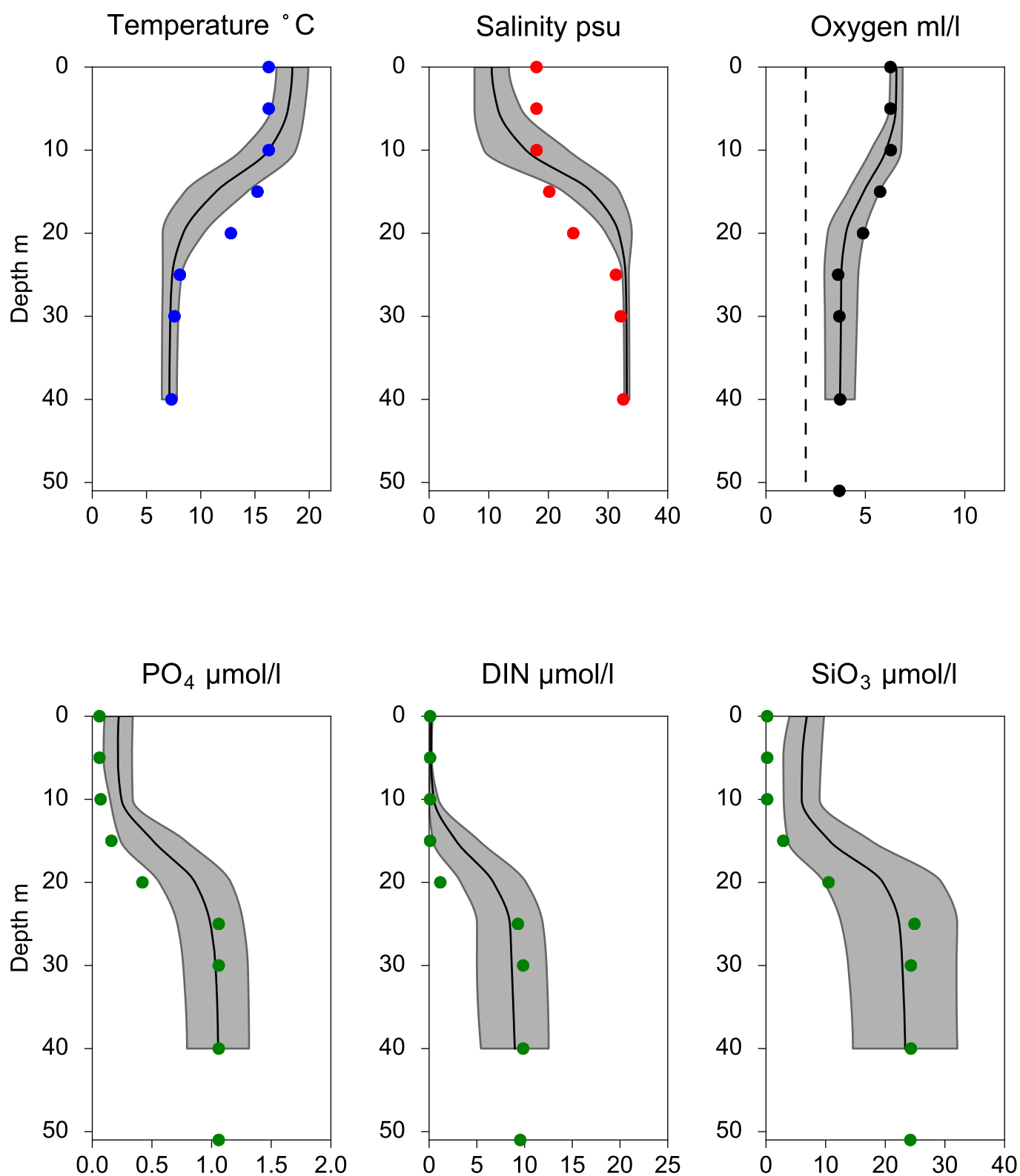


Vertical profiles W LANDSKRONA July

— Mean 2001-2015

■ St.Dev.

● 2020-07-12



STATION ANHOLT E SURFACE WATER (0-10 m)

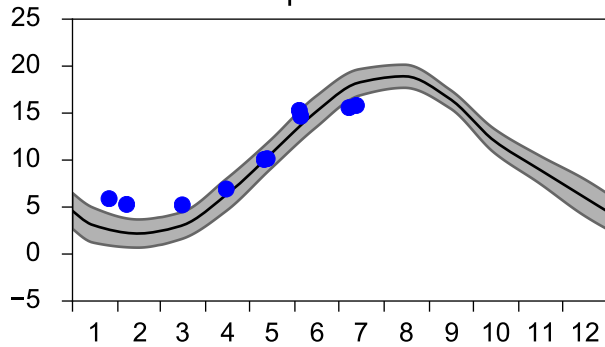
Annual Cycles

— Mean 2001-2015

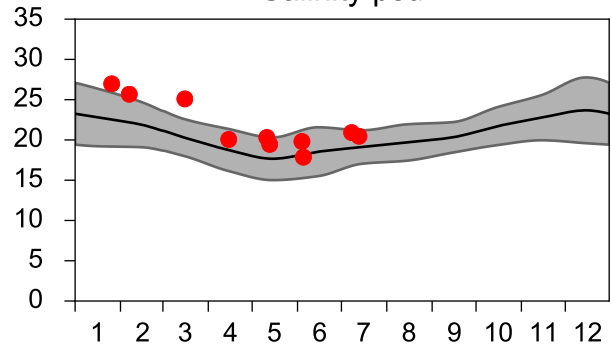
■ St.Dev.

● 2020

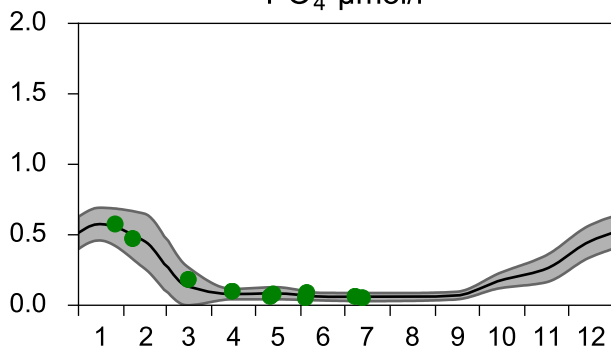
Temperature °C



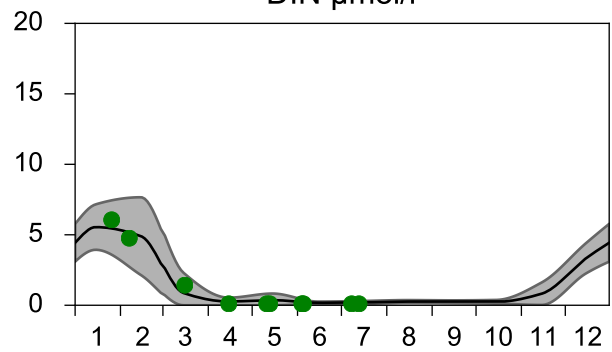
Salinity psu



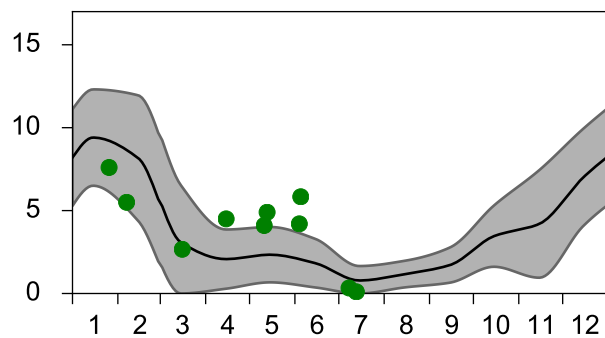
PO₄ μmol/l



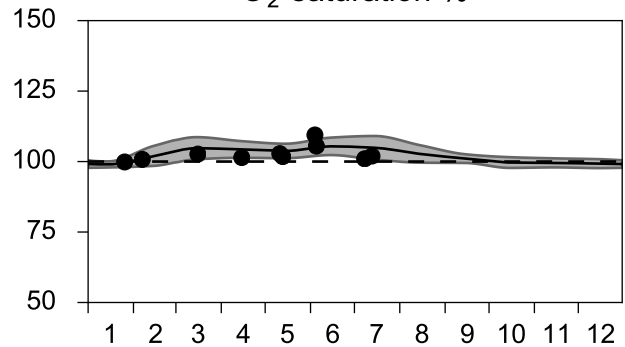
DIN μmol/l



SiO₃ μmol/l

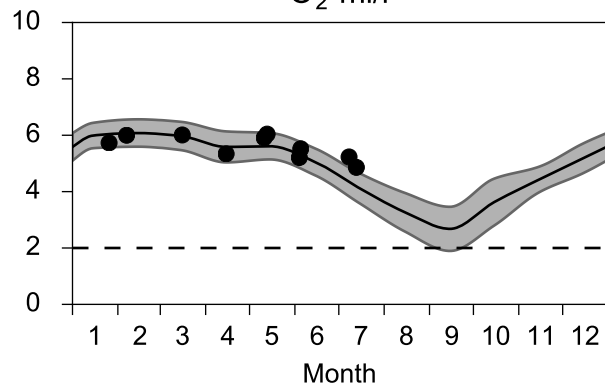


O₂ saturation %

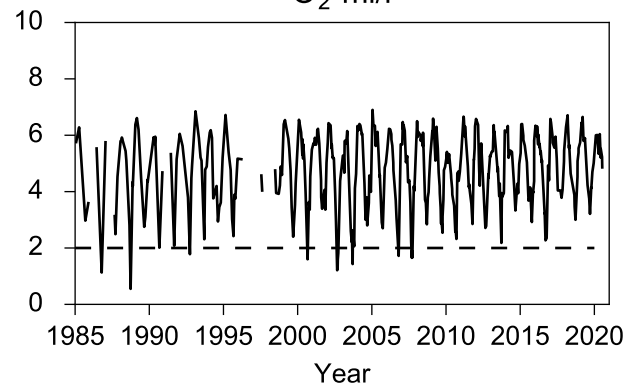


OXYGEN IN BOTTOM WATER (depth >= 52 m)

O₂ ml/l



O₂ ml/l



Vertical profiles ANHOLT E July

— Mean 2001-2015

■ St.Dev.

● 2020-07-13

