

Rapport från SMHIs utsjöexpedition med M/V Aura



Expeditionens varaktighet:	2018-05-26 - 2018-06-01
Uppdragsgivare:	Sveriges Meteorologiska och Hydrologiska Institut, Havs- och Vattenmyndigheten.
Samarbetspartner:	Finlands miljöcentral (SYKE), VG-Shipping.

SAMMANFATTNING

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

Det soliga och varma vädret under maj, i kombination med svaga vindar, hade varmt ytvattnet vars temperatur var över det normala vid alla besökta stationer. Det var fortsatt kraftig blomningen vid främst stationerna i Östersjön. Höga fluorescenstoppar från CTD-sonden noterades på 10-20 meters djup.

I stora delar av Egentliga Östersjöns djupvatten påträffades syrgashalter nära noll i djupvattnet. Helt syrefria förhållanden, då svavelväte bildas, uppmättes i Bornholmsbassängen och Gdanskbukten vid ca 90 meters djup, i Hanöbukten vid 77 meter, samt i Västra och Östra Gotlandsbassängen där det förekom från ca 70 respektive 140 meters djup. Akut syrebrist (< 2 ml/l) påträffades i hela området från ca 70 meter, men också vid botten på 45 meters djup vid en av stationerna i Arkonabassängen. Närsalter i form av löst oorganiskt kväve (DIN) i ytan var under detektionsgränsen i hela området, vilket är normalt för årstiden. För fosfor (DIP) var nivåerna under det normala i Östra, Västra samt Norra Gotlandsbassängen, och normala för övriga havsområden. Silikatkoncentrationerna i ytan var högre än normalt i Gdanskbukten, samt södra delarna av Östra och Västra Gotlandsbassängen. I övriga delar var de normala för årstiden.

Nästa ordinarie expedition planeras till mitten av juli.

RESULTAT

Majexpeditionen genomfördes ombord på det finska fartyget Aura och startade i Göteborg den 26:e maj och avslutades i Åbo den 1:a juni. Vindarna under expeditionen var svaga och kom i huvudsak från nordost till ost. Lufttemperaturen varierade i stort mellan 15 och 20 °C.

Denna rapport är baserad på data som genomgått en första kvalitetskontroll. När data publiceras hos datavärden kan vissa värden ha ändrats då ytterligare kvalitetsgranskning genomförts. Data från denna expedition publiceras så fort som möjligt på datavärdens hemsida, normalt sker detta inom en till två veckor efter avslutad expedition.

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

Skagerrak

Ytvattentemperaturen i Skagerrak var över det normala för årstiden och låg mellan 18-19 °C. Salthalten i ytan var något under det normala och uppmättes till ca 26 psu vid de yttre stationerna och mellan 18,2-20,9 psu vid övriga stationer. Termoklin och haloklin sammanföll på samtliga stationer och var väl utvecklad vid mellan 5-10 meters djup.

Närsalterna var nästan helt förbrukade i ytvattnet, vilket är normalt för årstiden. Löst oorganiskt kväve (summan av nitrat+nitrit+ammonium, ofta betecknat DIN) låg under detektionsgräns. Löst oorganiskt fosfor (endast i formen fosfat eller DIP) låg på normala nivåer. Värden i ytvattnet varierade mellan 0,04-0,05 µmol/l. Silikathalten var normal för årstiden på alla stationer, med halter omkring 0,8 till 1,6 µmol/l, högst närmst kusten.

Blomningen förekom vid de yttre stationerna i området och tydliga fluorescenstoppar påträffades på drygt 20 meters djup på dessa stationer. För mer information om artsammansättning se separat rapport algrapport "AlgAware" som blir tillgänglig en till två veckor efter avslutad expedition.

Syrgasmätnaden var högre än normala i ytvattnet. I djupvattnet var syrgasnivåerna normala.

Kattegatt och Öresund

Ytvattentemperaturen var över det normala för årstiden och var drygt 15 °C. Salthalten var normal till under normal. I ytvattnet i Kattegatt var den mellan 15,8-21,4 psu och i Öresund 7,5 psu. Vid samtliga stationer sammanföll termoklin med haloklin, och skiktningen var extra tydlig vid Fladen och W Landskrona.

Koncentrationerna av DIN var under detektionsgräns i ytvattnet, undantaget Fladen där nivån var ca 0,4 µmol/l. Detta är dock normalt för årstiden. DIP halterna i ytvattnet i Kattegatt låg mellan 0,04 och 0,09 µmol/l, och i Öresund 0,24 µmol/l. Silikathalterna var normala i området med halter mellan 1,4 och 3,3 µmol/l i Kattegatt och 8,2 µmol/l i Öresund.

Fluorescensmätningar med CTD-sonden gav en fluorescenstopp på drygt 15 meter vid Anholt E, men inga fluorescenstoppar förekom på någon av de övriga stationerna.

Bottenvattnet i hela området var väl syresatt vilket också är normalt för årstiden. Närmast botten låg syrgashalterna på 4,6- 5,5 ml/l. För N14 och Anholt E var dessa värden något lägre än normalt.

Egentliga Östersjön

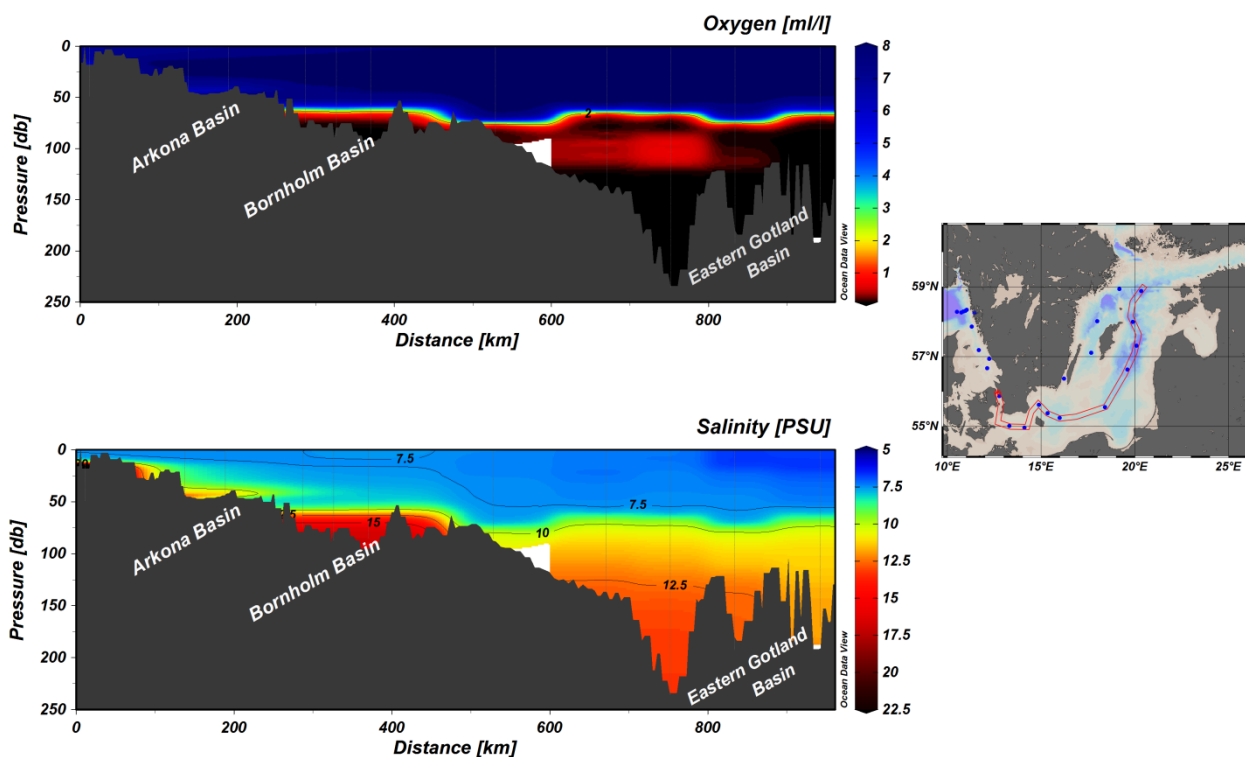
Ytvattentemperaturen var över det normala för årstiden och varierade mellan 10,5-14,9 °C. Salthalten i ytvattnet varierade mellan 6,2 och 7,5 psu, vilket är normala nivåer. Det fanns vid flera stationer en tydlig termoklin på 10-20 meters djup. En tydligare skiktning återfanns på djup mellan 55-75 meter.

Närsalter i ytvattnet i form av löst oorganiskt kväve (DIN) var under detektionsgräns i hela området, vilket är normalt för årstiden. Fosfathalterna var normala i Bornholmsbassängen samt vid BY1, där de varierade mellan 0,17-0,24 $\mu\text{mol/l}$. I resten av det undersökta området var nivåerna under det normala, och varierade mellan 0,05-0,14 $\mu\text{mol/l}$.

Silikatkoncentrationerna i ytan var högre än normalt i södra delarna av Östra och Västra Gotlandsbassängen och normala för årstiden i övriga områden. De varierade mellan 7,6 och 16,8 $\mu\text{mol/l}$.

I stora delar av Egentliga Östersjöns djupvatten påträffades syrgashalter nära noll i djupvattnet. Helt syrefria förhållanden, då svavelväte bildas, uppmättes vid botten i Bornholmsbassängen, Hanöbukten och Gdanskbukten, samt i Västra Gotlandsbassängen från 70 meters djup. I Östra Gotlandsbassängen uppmättes svavelväte från 140 meters djup. Akut syrebrist ($< 2 \text{ ml/l}$) påträffades i hela området från ca 60-80 meter, samt vid botten på ca 45 meters djup vid BY1.

Mätningarna från CTD-sonden visade tydliga fluorescenstoppar precis vid termoklinen på 10-20 meters djup. Detta var extra tydligt vid stationerna i Egentliga Östersjön.



Figur 1. Snitt som visar syre- och salthalt från Öresund, genom Egentliga Östersjön till Östra Gotlandsbassängen.

DELTAGARE

Namn

Johan Kronsell Expeditionsledare
Martin Hansson
Johanna Linders
Jenny Lycken
Sari Sipilä

Från

SMHI
SMHI
SMHI
SMHI
SMHI

BILAGOR

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

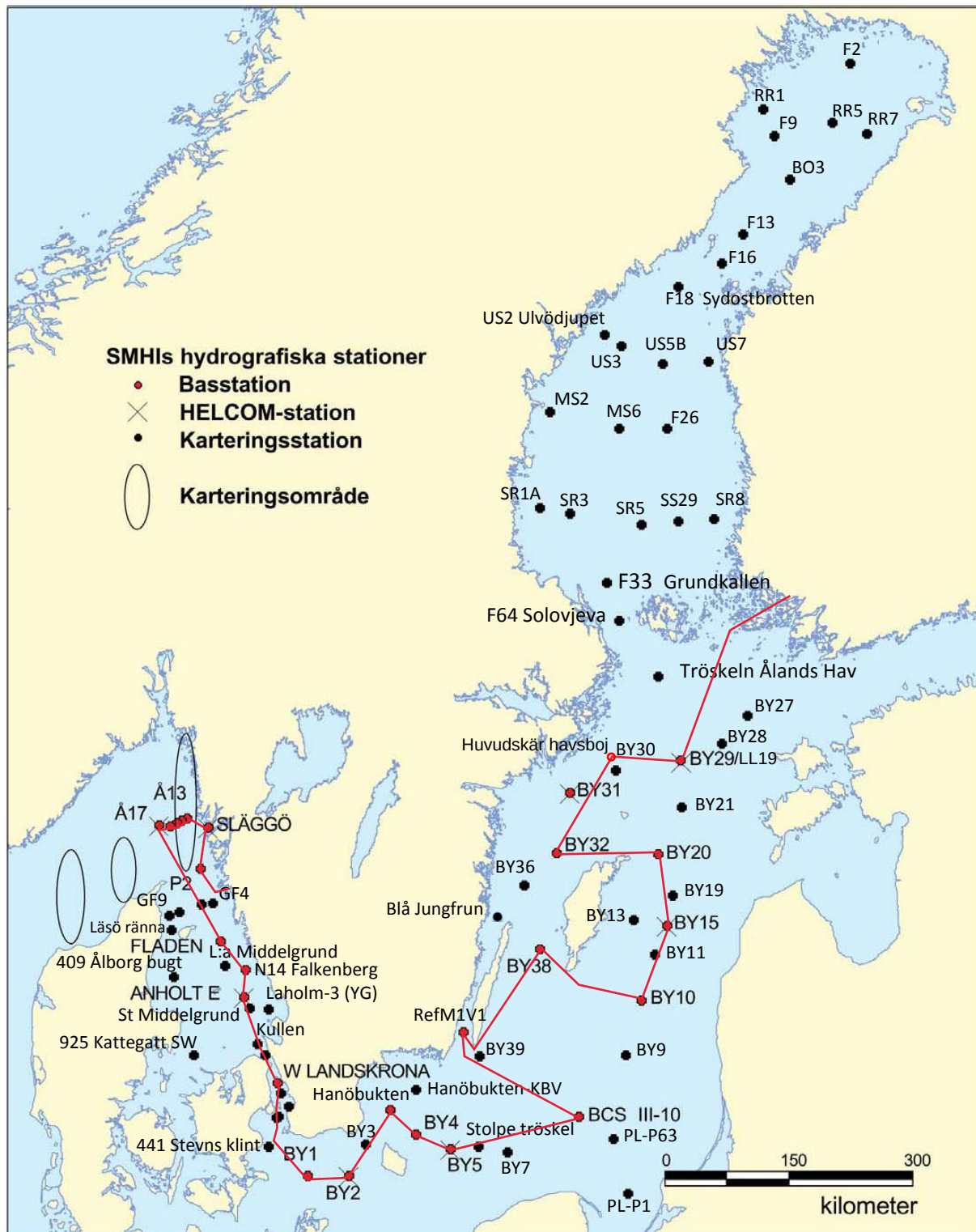


TRACKCHART	
Country:	Sweden
Ship:	M/V AURA
Date:	20180526-20180601
Series:	0026-0051

Ship: M/V AURA

Date: 20180526-20180601

Series: 0026-0051



Date: 2018-06-20
Time: 13:30

Ship: EB
Year: 2018

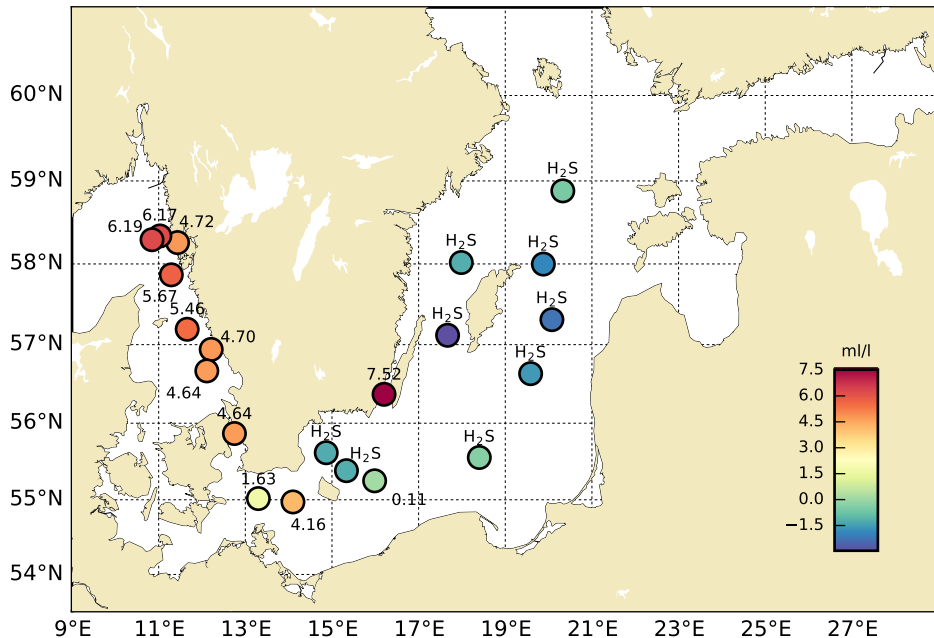
Ser no	Cru no	Stat code	Proj	Stat name	Lat	Lon	Start date yyyymmdd	Start time hhmm	Bottom depth m	Secchi depth m	Wind dir vel	Air temp C	Air pres hPa	WCWI elac	CZPP hohp	No de	No btl	T e	T e	S a	P h	D o	D o	H 2	P h	P t	N n	N n	N n	N n	A t	S h	C c												
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0026	2	SKEX23	BAS...	P2	5752.00	01117.49	20180526	1650	92		31	4.7	23.8	1027	1120	----	10	x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	x	-											
0027	2	FIBG27	BAS...	SLÄGGÖ	5815.59	01126.15	20180526	2110	72		05	5.1	19.7	1027	9990	-x--	9	x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	x	-											
0028	2	SKEX14	BAS...	Å13	5820.41	01101.66	20180526	2345	96		09	6	18	1026	9990	----	10	x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	x	-											
0029	2	SKEX15	BAS...	Å14	5818.98	01056.57	20180527	0115	116		09	5.2	18.2	1027	9990	----	11	-	x	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-											
0030	2	SKEX16	BAS...	Å15	5817.68	01050.78	20180527	0230	136		08	4	17.5	1027	1130	----	12	x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	x	-											
0031	2	SKEX17	BAS...	Å16	5816.01	01043.45	20180527	0355	203		09	4	22.0	1027	1130	----	13	-	x	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-											
0032	2	SKEX18	BAS...	Å17	5817.05	01030.27	20180527	0640	343	8	08	6.5	23.1	1029	1120	-x--	15	x	x	-	x	x	x	-	x	-	x	x	x	x	-	x	-												
0033	2	KANX25	BAS...	FLADEN	5711.55	01139.49	20180527	1455	82	7	12	06	19.7	1027	2730	----	12	x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	x	-											
0034	2	KANX50	BAS...	N14 FALKENBERG	5656.40	01212.73	20180527	1815	30	6	08	6.2	19.7	1026	1130	-x--	7	x	x	x	x	x	-	x	-	x	x	x	x	-	x	-	-	-											
0035	2	KAEX29	BAS...	ANHOLT E	5640.12	01206.69	20180527	2040	62		07	7	18.3	1026	9990	-x--	10	x	x	x	x	x	-	x	x	x	x	x	x	x	-	x	-												
0036	2	SOCX39	BAS...	W LANDSKRONA	5552.00	01244.92	20180528	0245	51		09	10	15.4	1024	1430	----	9	x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	x	-											
0037	2	BPSA02	BAS...	BY1	5500.95	01318.07	20180528	0900	45	6	09	8	16.0	1024	1230	----	8	x	x	x	x	-	x	-	x	-	x	-	x	-	x	-	-	-											
0038	2	BPSA03	BAS...	BY2 ARKONA	5458.27	01405.95	20180528	1250	46	6	09	10	19.7	1024	1330	-x--	8	x	x	x	x	-	x	-	x	-	x	-	x	-	-	-	-	-											
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0040	2	BPSB06	BAS...	BY4 CHRISTIANSÖ	5522.98	01520.05	20180528	2045	91		08	10	14.9	1023	1130	----	12	x	x	x	x	-	x	x	-	x	-	x	-	-	-	-	-	-	-										
0041	2	BPSB07	BAS...	BY5 BORNHOLMSDJ	5515.00	01559.07	20180529	0010	89		10	8	15.2	1023	9990	-x--	12	x	x	x	x	x	-	x	-	x	-	x	-	x	-	x	-	x	-										
0042	2	BPSE11	BAS...	BCS IIII-10	5533.31	01824.03	20180529	0840	89	6	12	3	22.1	1023	1120	----	12	x	x	x	x	-	x	x	-	-	-	-	-	-	-	-	-	-	-										
0043	2	BPWK01	BAS...	REF M1V1	5622.25	01612.12	20180529	1735	20	6	03	3	20.2	1022	0020	-x--	5	x	x	x	x	x	-	x	-	x	-	x	-	-	-	-	-	-	-										
0044	2	BPWX45	BAS...	BY38 KARLSÖDJ	5707.04	01740.12	20180530	0325	107		03	4.3	15.3	1023	1120	----	14	x	x	x	x	-	x	x	-	x	-	x	-	-	-	-	-	-	-										
0045	2	BPEX13	BAS...	BY10	5638.02	01935.11	20180530	1100	141	9	03	5	20.1	1023	0020	----	15	x	x	x	x	-	x	x	-	x	-	x	-	-	-	-	-	-	-										
0046	2	BPEX21	BAS...	BY15 GOTLANDSDJ	5718.74	02004.57	20180530	1540	233		03	9	24.6	1022	1130	-x--	24	x	x	-	x	x	x	x	-	x	-	x	-	-	-	-	-	-	-										
0047	2	BPEX21	BAS...	BY15 GOTLANDSDJ	5718.74	02004.57	20180530	1725	235		03	9	24.6	1022	1130	----	19	-	x	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-										
0048	2	BPEX26	BAS...	BY20 FÄRÖDJ	5759.90	01952.73	20180530	2150	195		01	10	13.3	1023	9990	----	17	x	x	-	x	x	x	-	x	-	x	-	-	-	-	-	-	-	-										
0049	2	BPWX38	BAS...	BY32 NORRKÖPINGSDJ	5801.02	01759.08	20180531	0440	197	6.5	03	8	13.6	1025	0040	----	17	x	x	-	x	x	x	-	x	-	x	-	-	-	-	-	-	-	-										
0050	2	BPNX00	EXT...	HUVUDSKÄR	5856.19	01909.42	20180531	1100	89		05	8	15.1	1028	0030	----	12	-	x	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-										
0051	2	BPNX35	BAS...	BY29 / LL19	5852.91	02019.68	20180531	1500	172	6	25	5.6	20.6	1027	0030	----	16	x	x	-	x	x	x	-	x	-	x	-	-	-	-	-	-	-	-										

Bottom water oxygen concentration (ml/l)

Ship: Aura

Date: 20180526-20180531

Series: 0026-0051



STATION P2 SURFACE WATER (0-10 m)

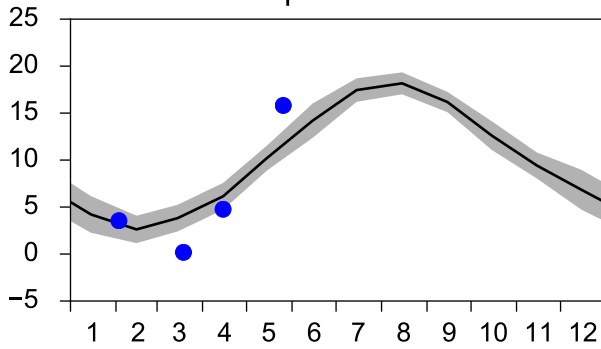
Annual Cycles

— Mean 2001-2015

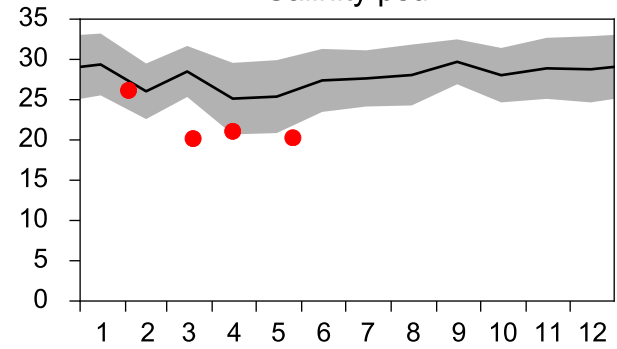
■ St.Dev.

● 2018

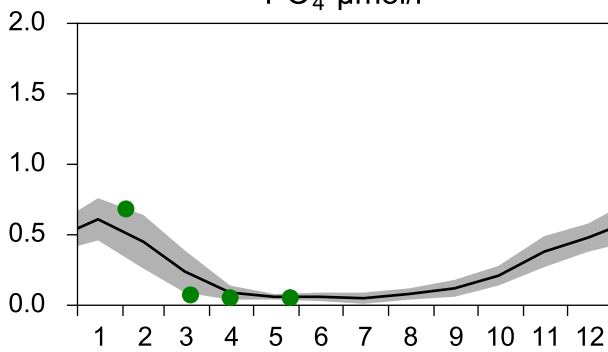
Temperature °C



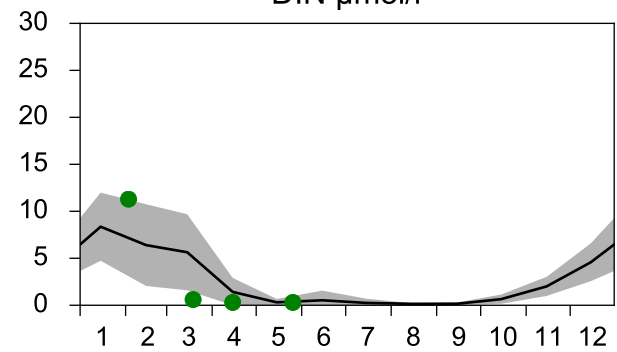
Salinity psu



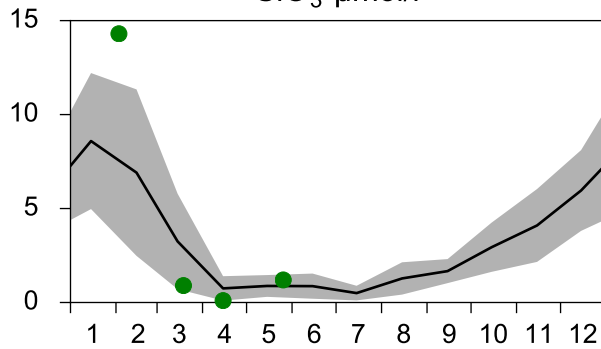
PO₄ µmol/l



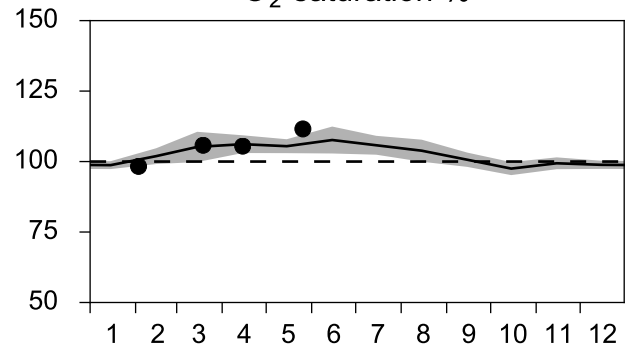
DIN µmol/l



SiO₃ µmol/l

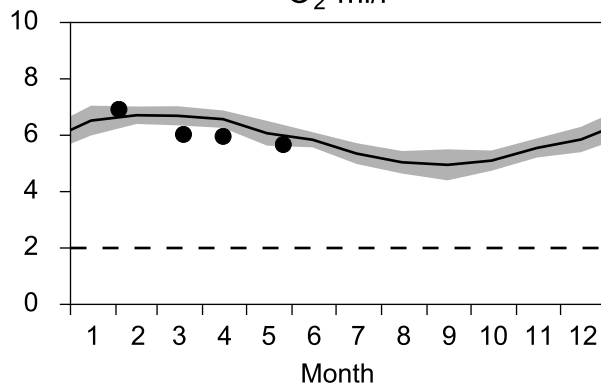


O₂ saturation %

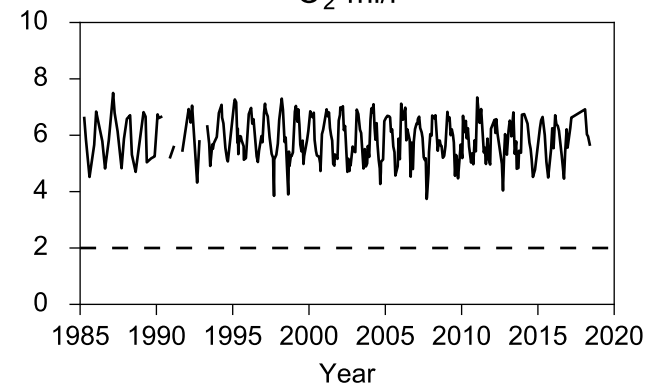


OXYGEN IN BOTTOM WATER (depth >= 75 m)

O₂ ml/l



O₂ ml/l

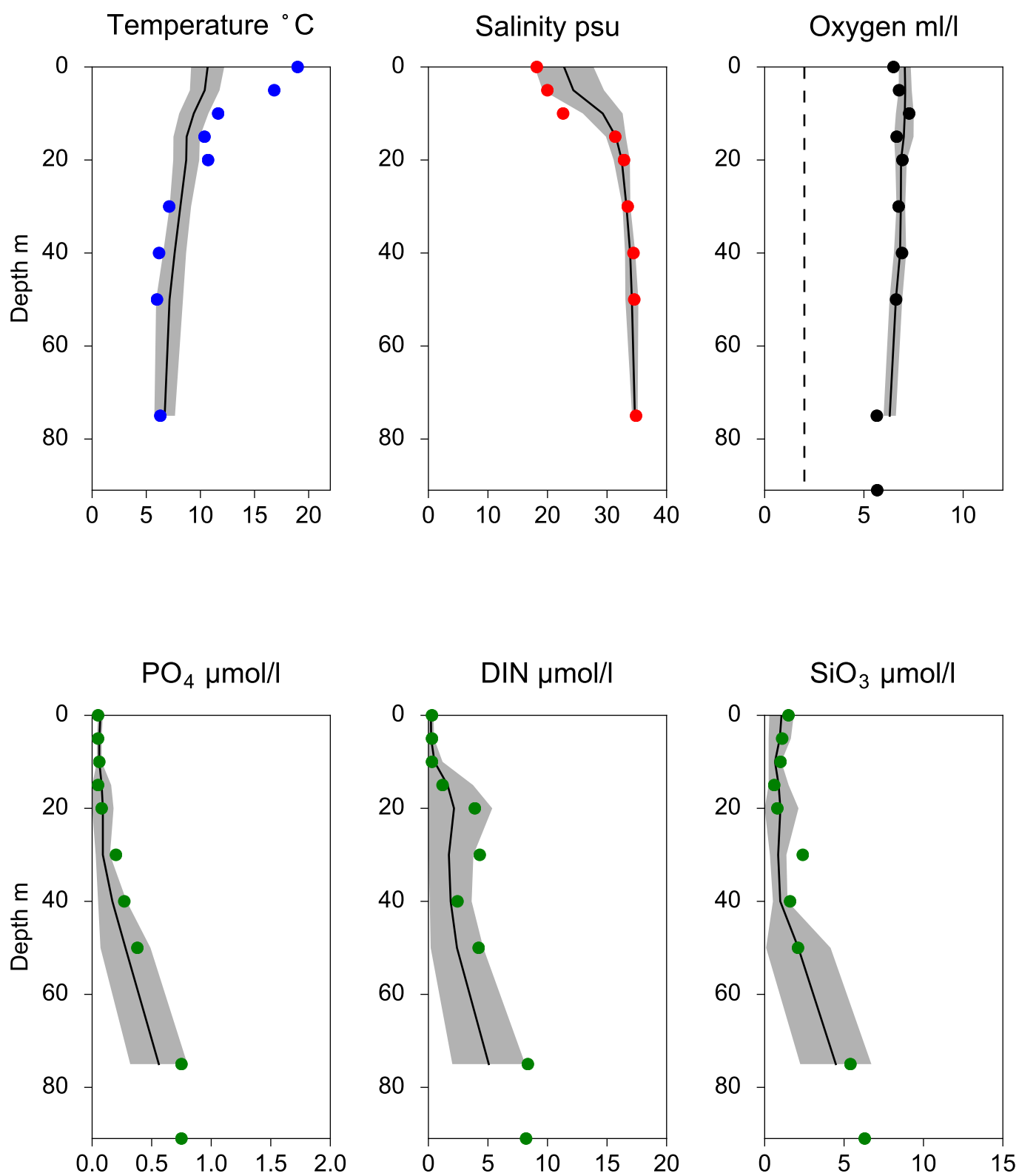


Vertical profiles P2 May

— Mean 2001-2015

■ St.Dev.

● 2018-05-26



STATION SLÄGGÖ SURFACE WATER (0-10 m)

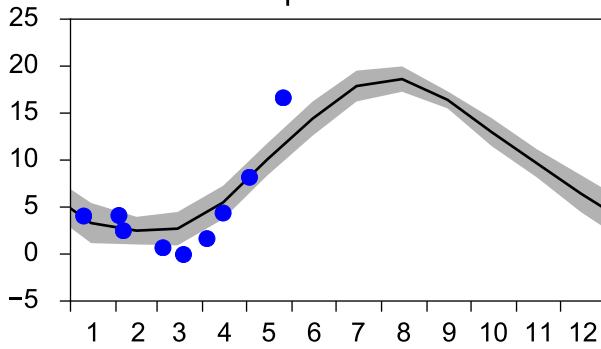
Annual Cycles

— Mean 2001-2015

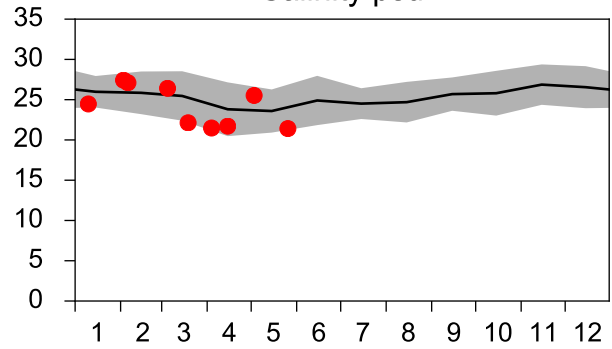
■ St.Dev.

● 2018

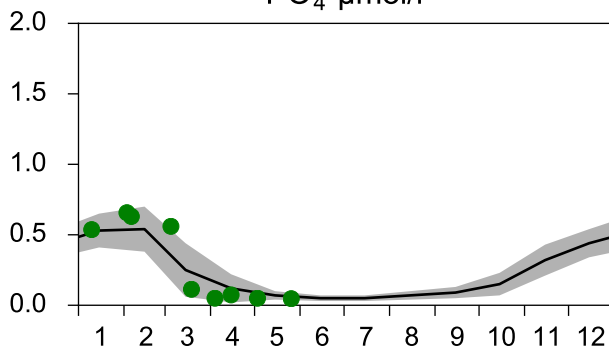
Temperature °C



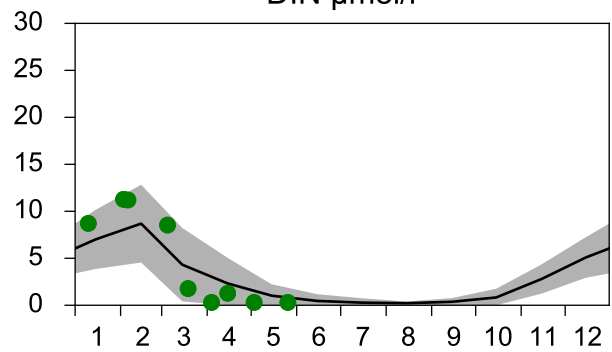
Salinity psu



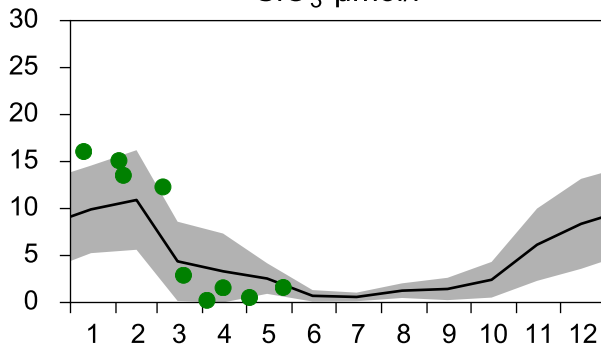
PO₄ µmol/l



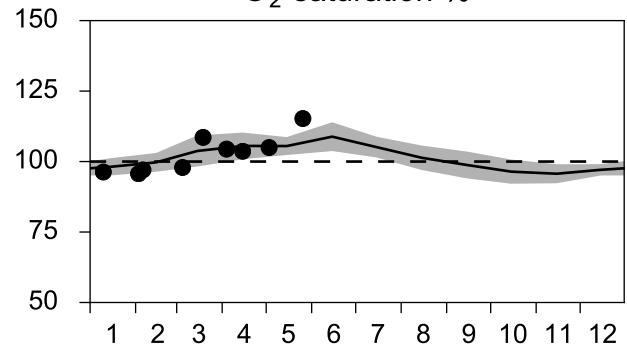
DIN µmol/l



SiO₃ µmol/l

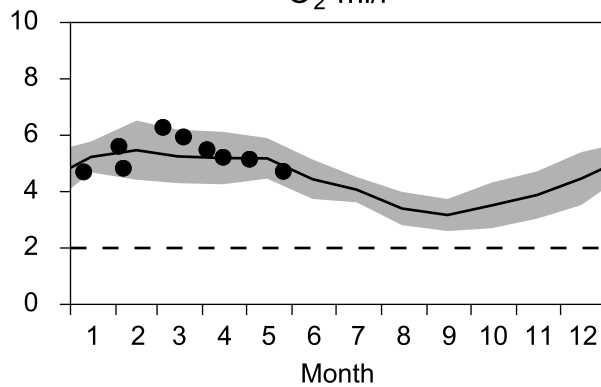


O₂ saturation %

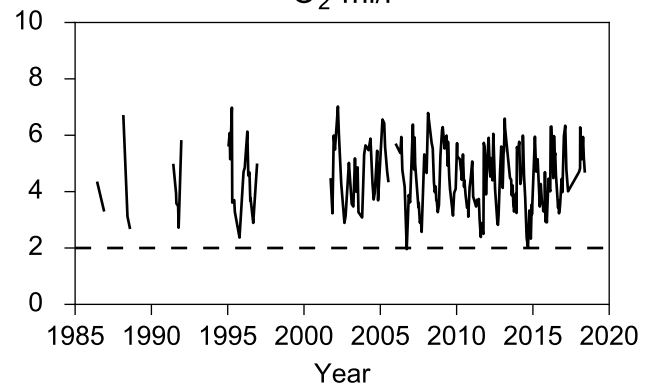


OXYGEN IN BOTTOM WATER (depth >= 64 m)

O₂ ml/l



O₂ ml/l

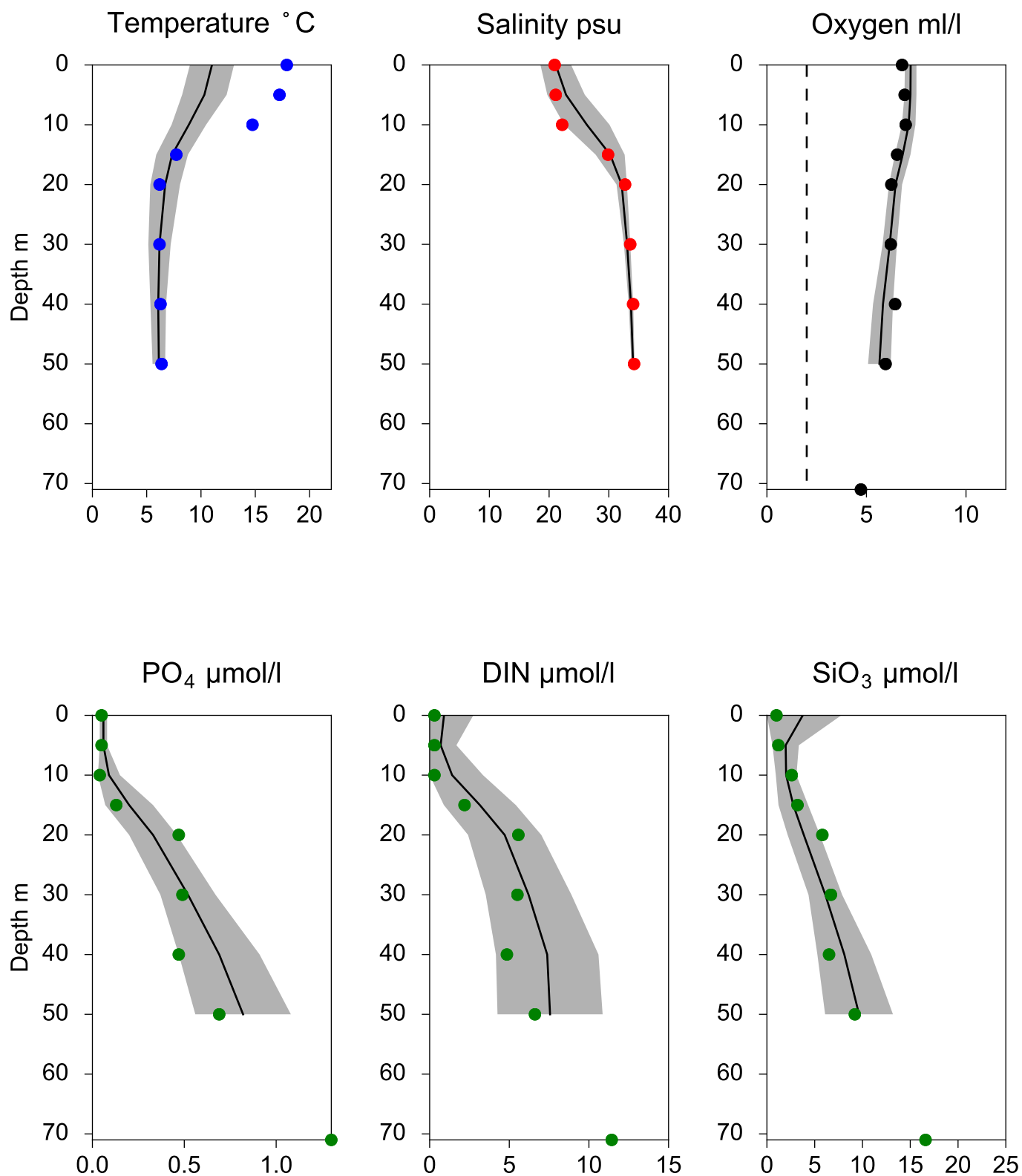


Vertical profiles SLÄGGÖ May

— Mean 2001-2015

■ St.Dev.

● 2018-05-26



STATION Å13 SURFACE WATER (0-10 m)

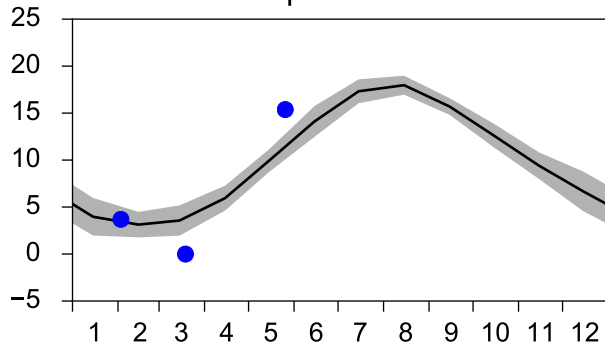
Annual Cycles

— Mean 2001-2015

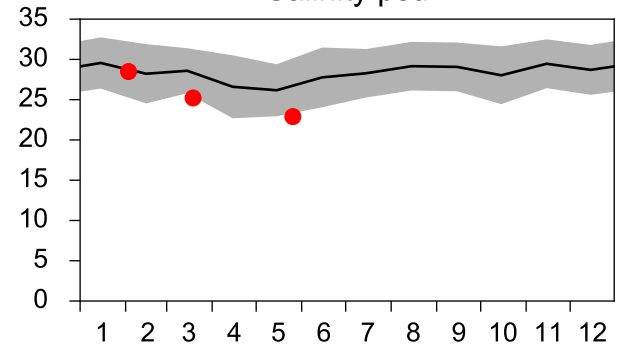
■ St.Dev.

● 2018

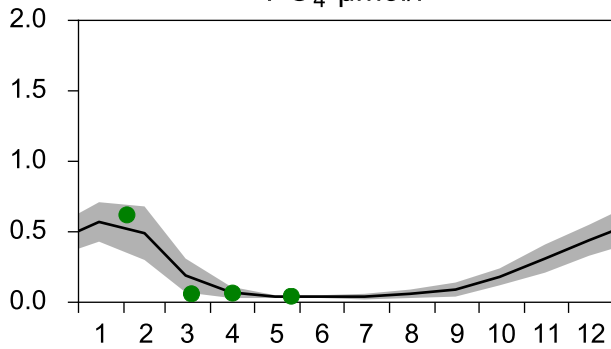
Temperature °C



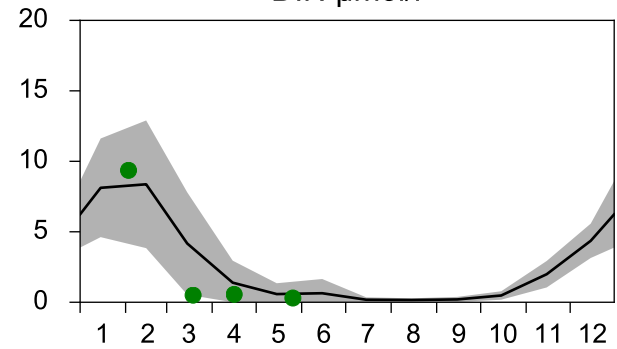
Salinity psu



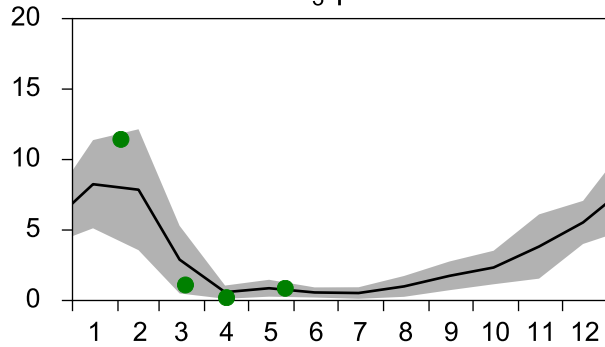
PO₄ µmol/l



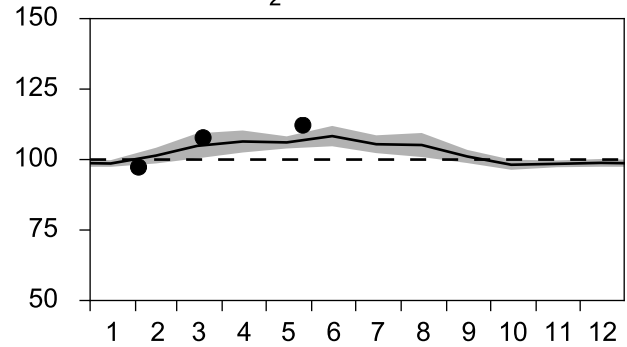
DIN µmol/l



SiO₃ µmol/l

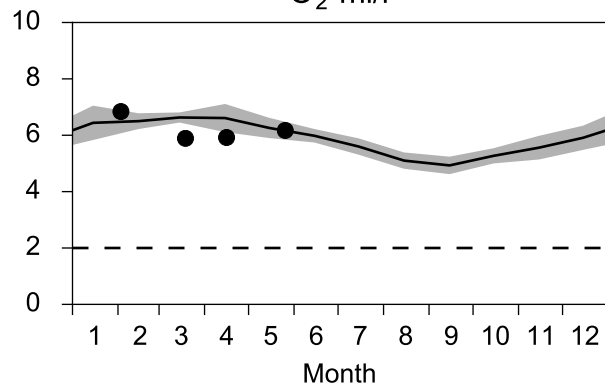


O₂ saturation %

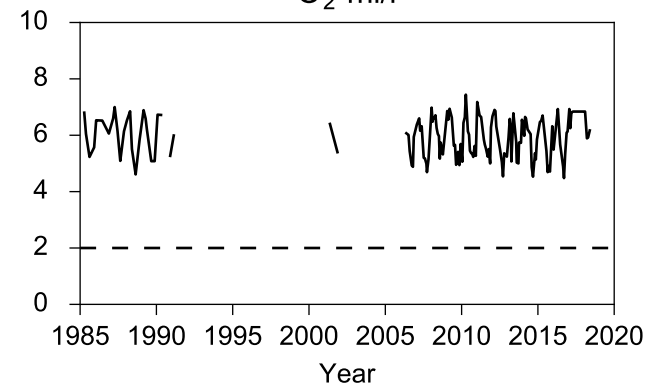


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l



O₂ ml/l

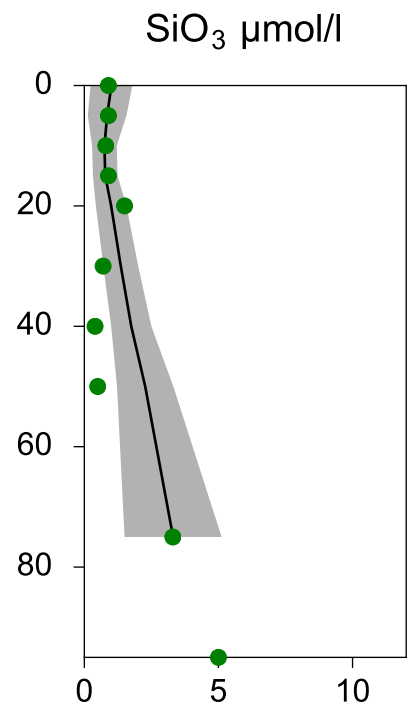
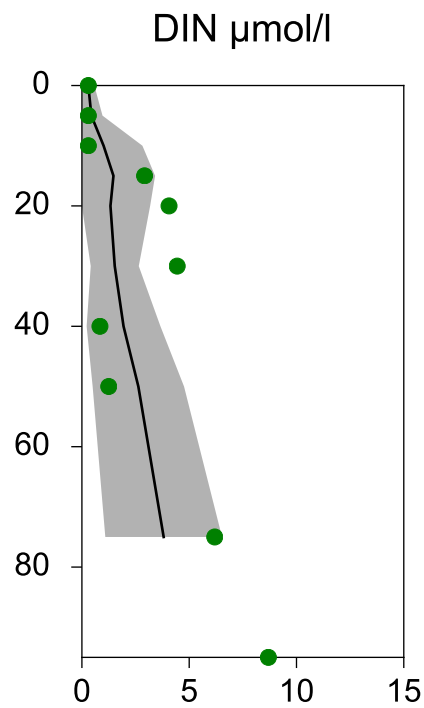
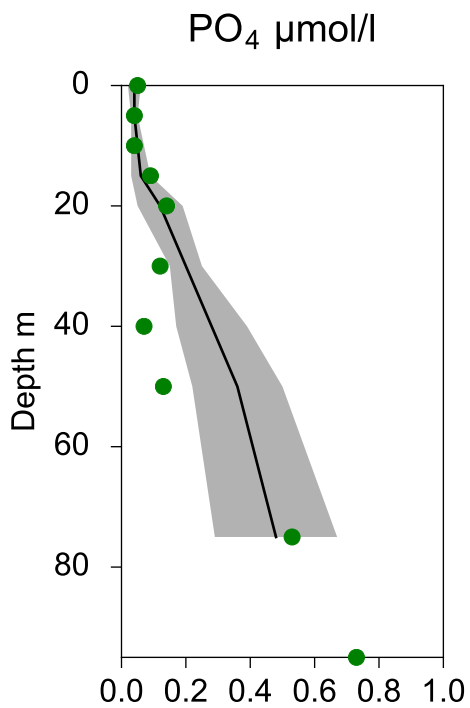
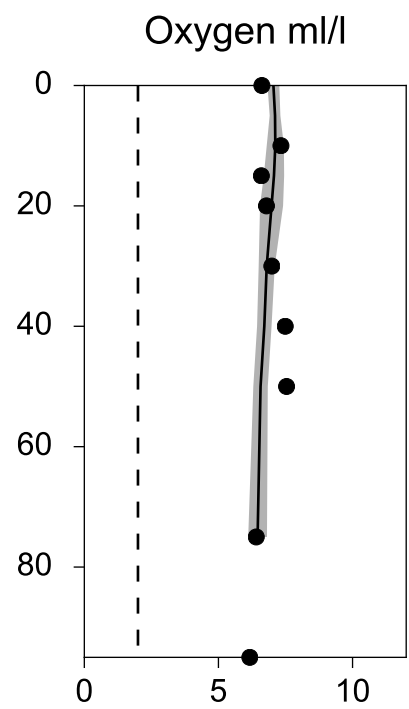
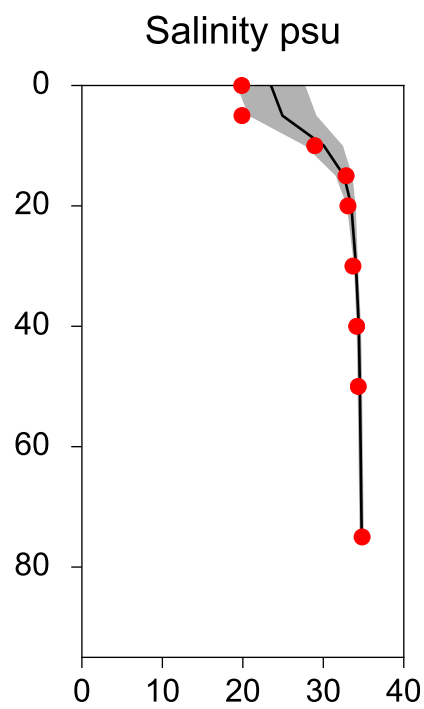
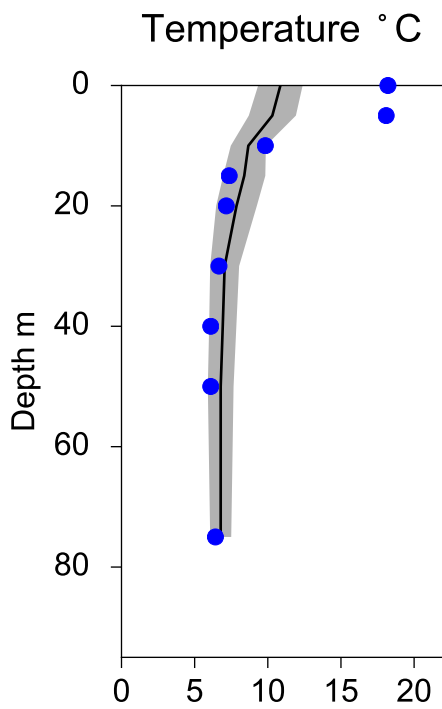


Vertical profiles A13 May

— Mean 2001-2015

■ St.Dev.

● 2018-05-26



STATION Å15 SURFACE WATER (0-10 m)

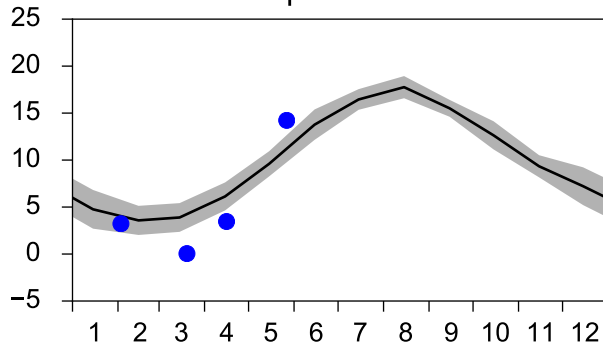
Annual Cycles

— Mean 2001-2015

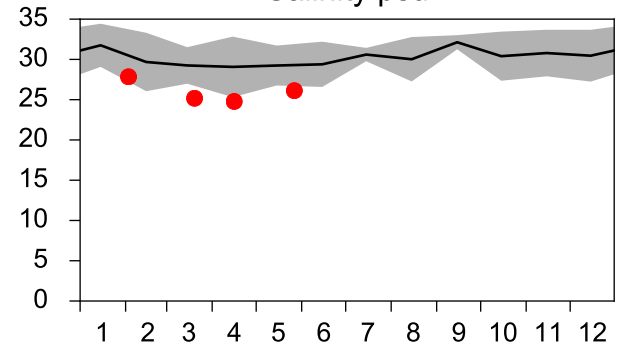
■ St.Dev.

● 2018

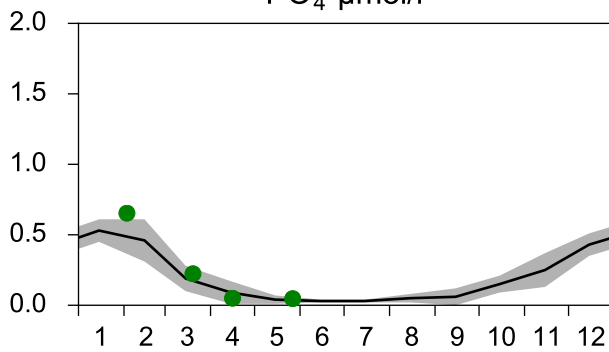
Temperature °C



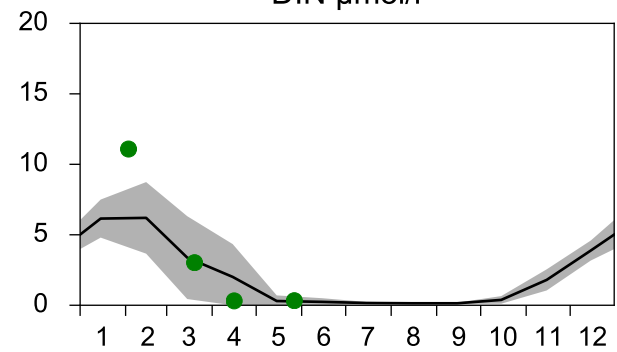
Salinity psu



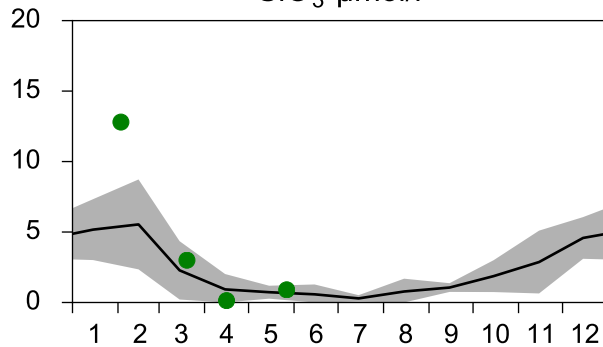
PO₄ µmol/l



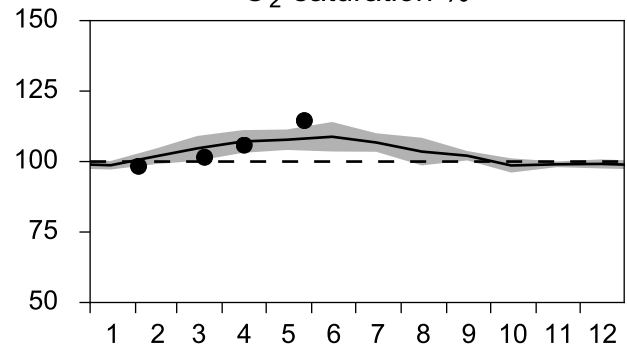
DIN µmol/l



SiO₃ µmol/l

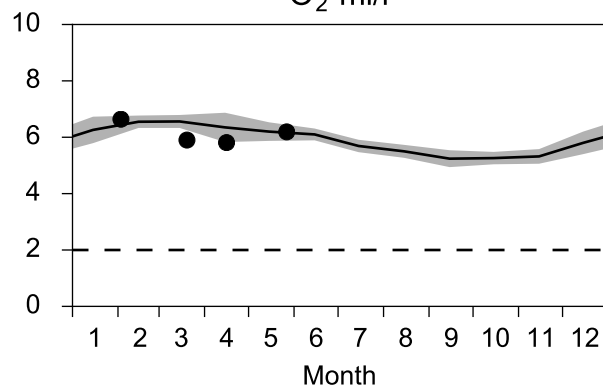


O₂ saturation %

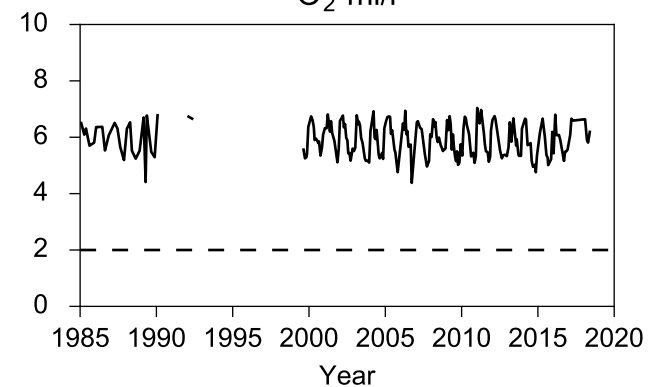


OXYGEN IN BOTTOM WATER (depth >= 125 m)

O₂ ml/l



O₂ ml/l

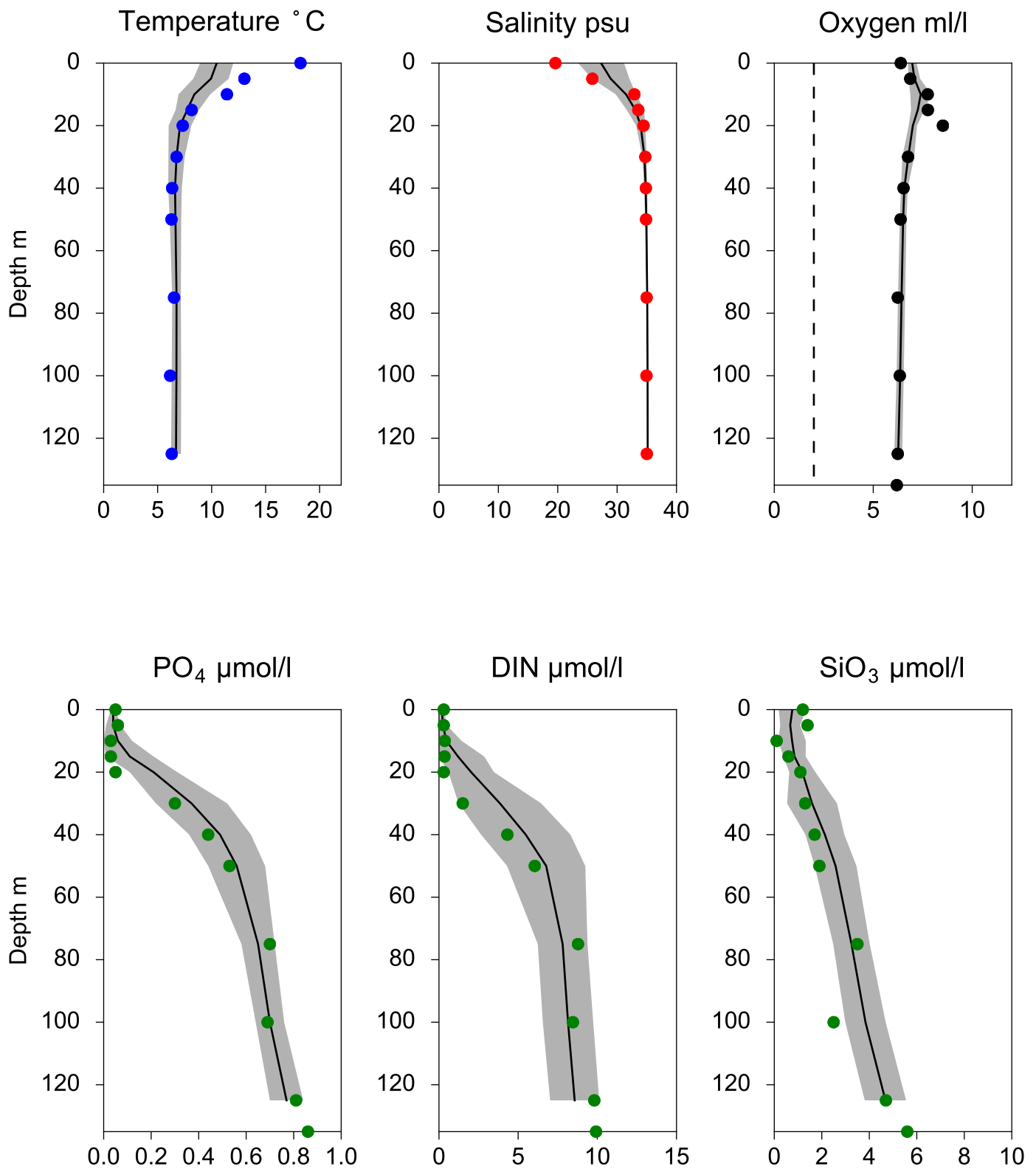


Vertical profiles A15 May

— Mean 2001-2015

■ St.Dev.

● 2018-05-27



STATION Å17 SURFACE WATER (0-10 m)

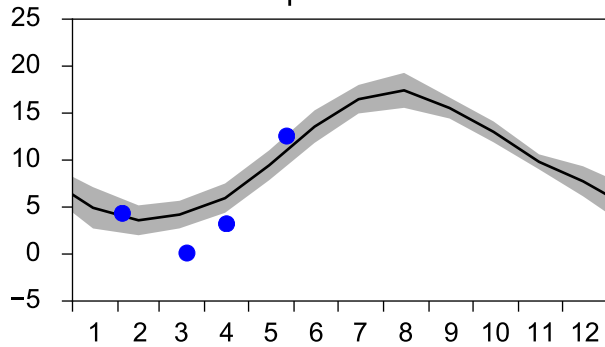
Annual Cycles

— Mean 2001-2015

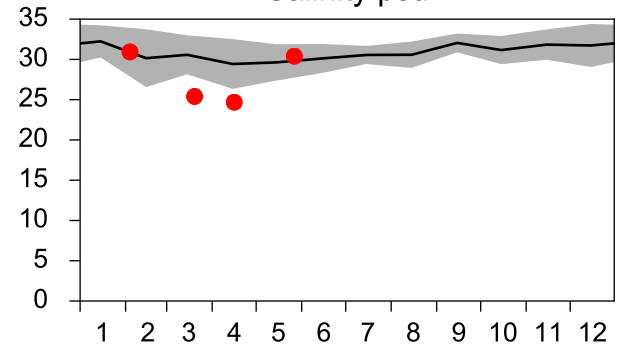
■ St.Dev.

● 2018

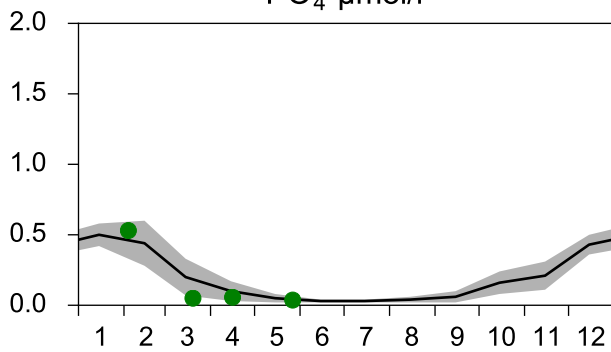
Temperature °C



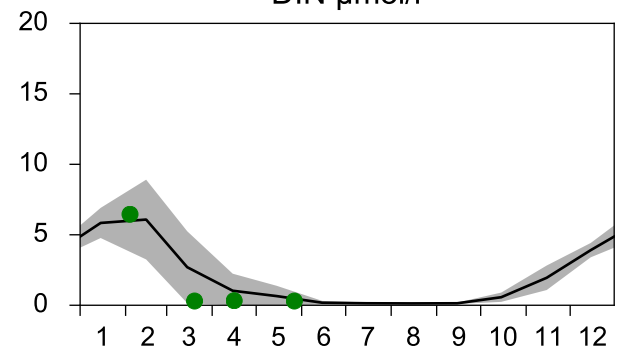
Salinity psu



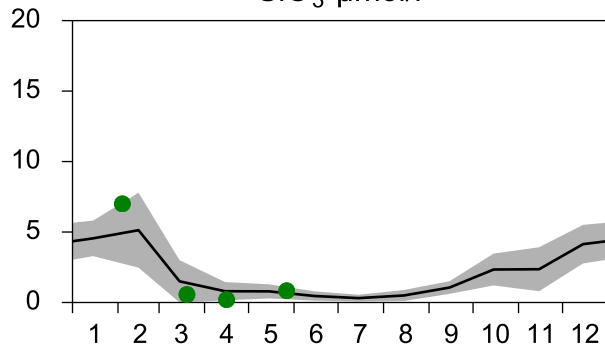
PO₄ µmol/l



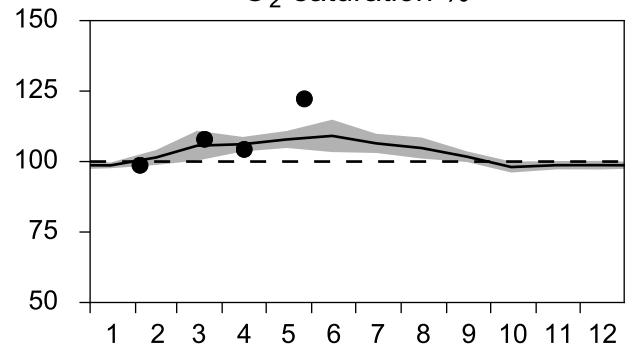
DIN µmol/l



SiO₃ µmol/l

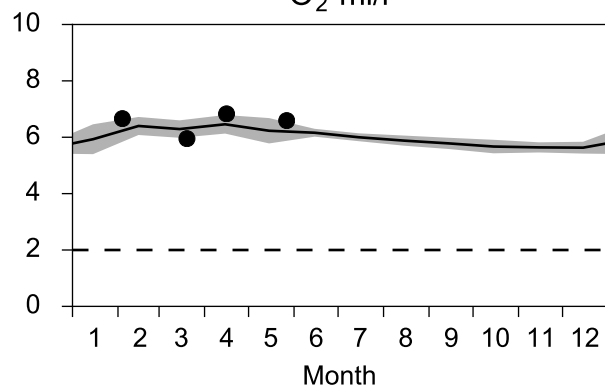


O₂ saturation %

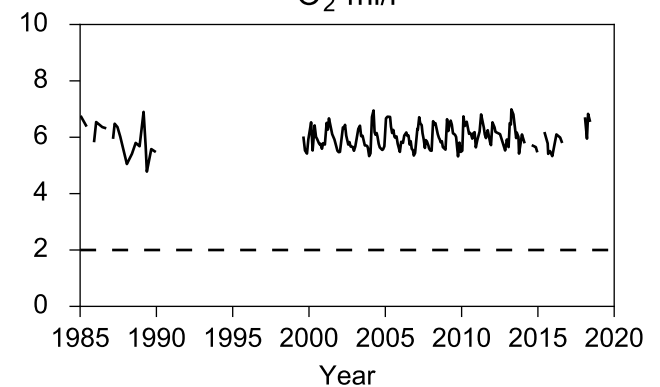


OXYGEN IN BOTTOM WATER (depth >= 300 m)

O₂ ml/l



O₂ ml/l

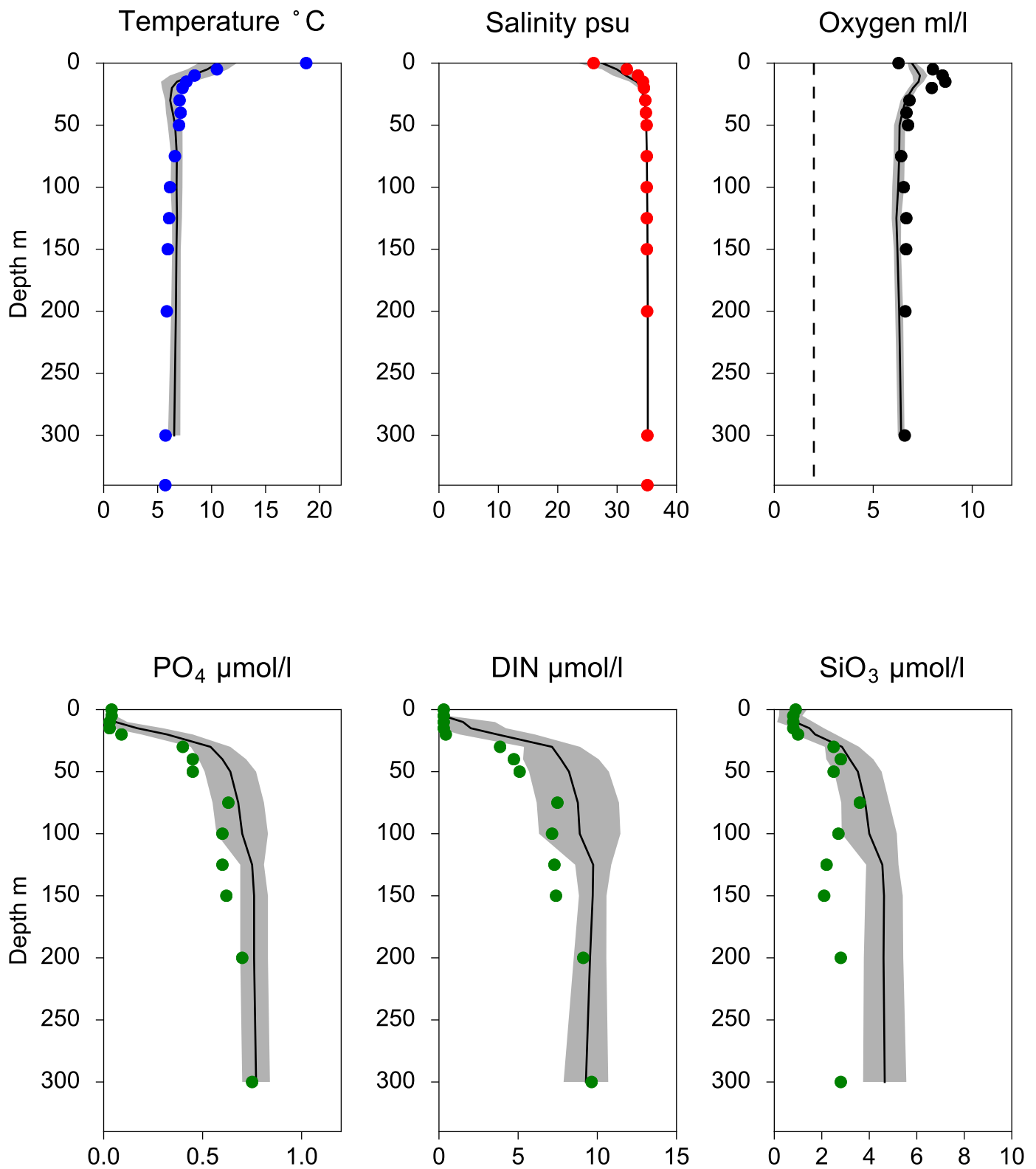


Vertical profiles A17 May

— Mean 2001-2015

■ St.Dev.

● 2018-05-27



STATION FLADEN SURFACE WATER (0-10 m)

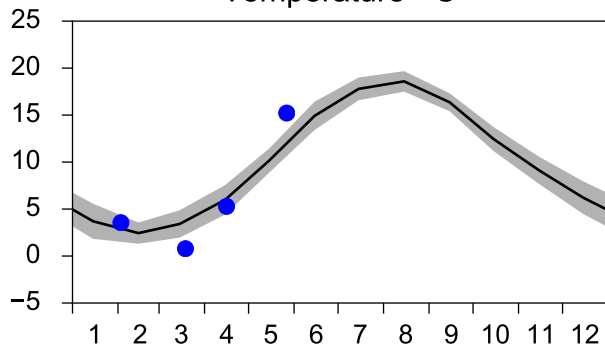
Annual Cycles

— Mean 2001-2015

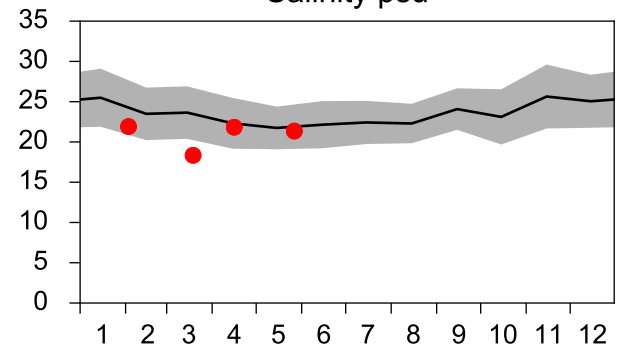
■ St.Dev.

● 2018

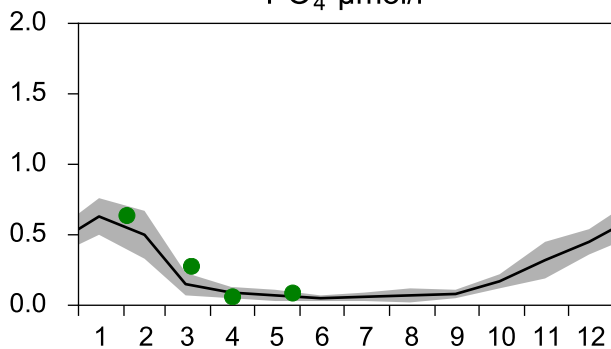
Temperature °C



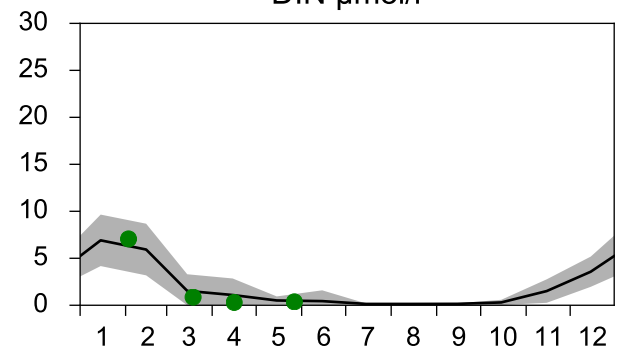
Salinity psu



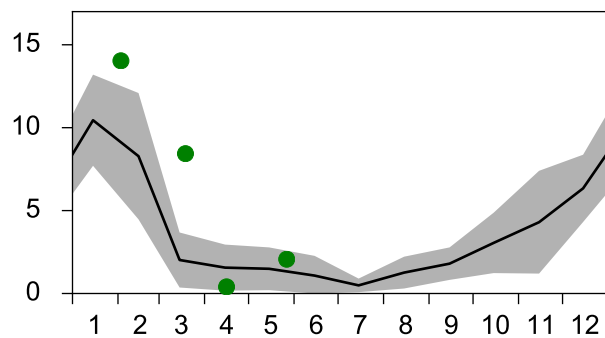
PO₄ µmol/l



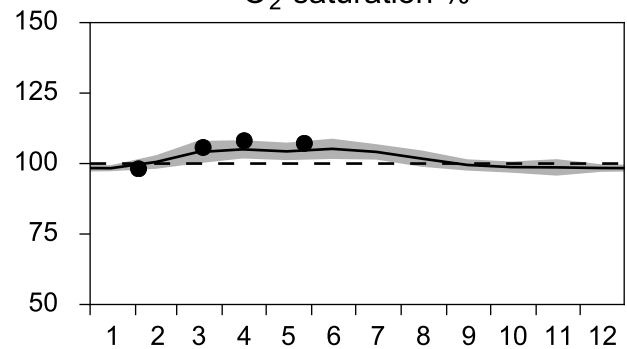
DIN µmol/l



SiO₃ µmol/l

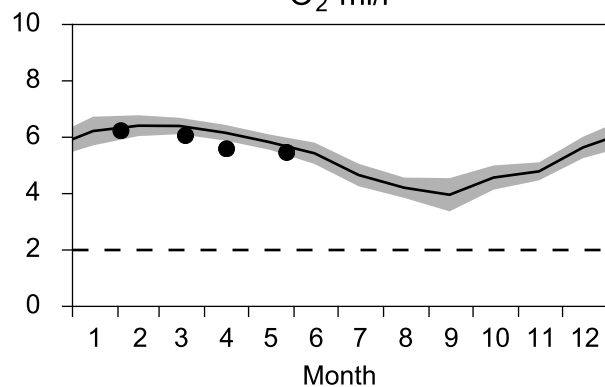


O₂ saturation %

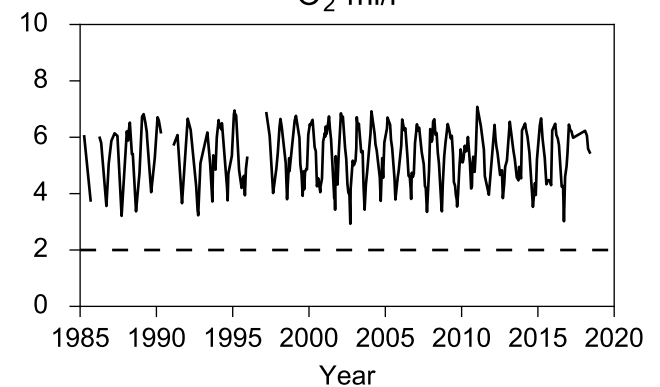


OXYGEN IN BOTTOM WATER (depth >= 74 m)

O₂ ml/l



O₂ ml/l

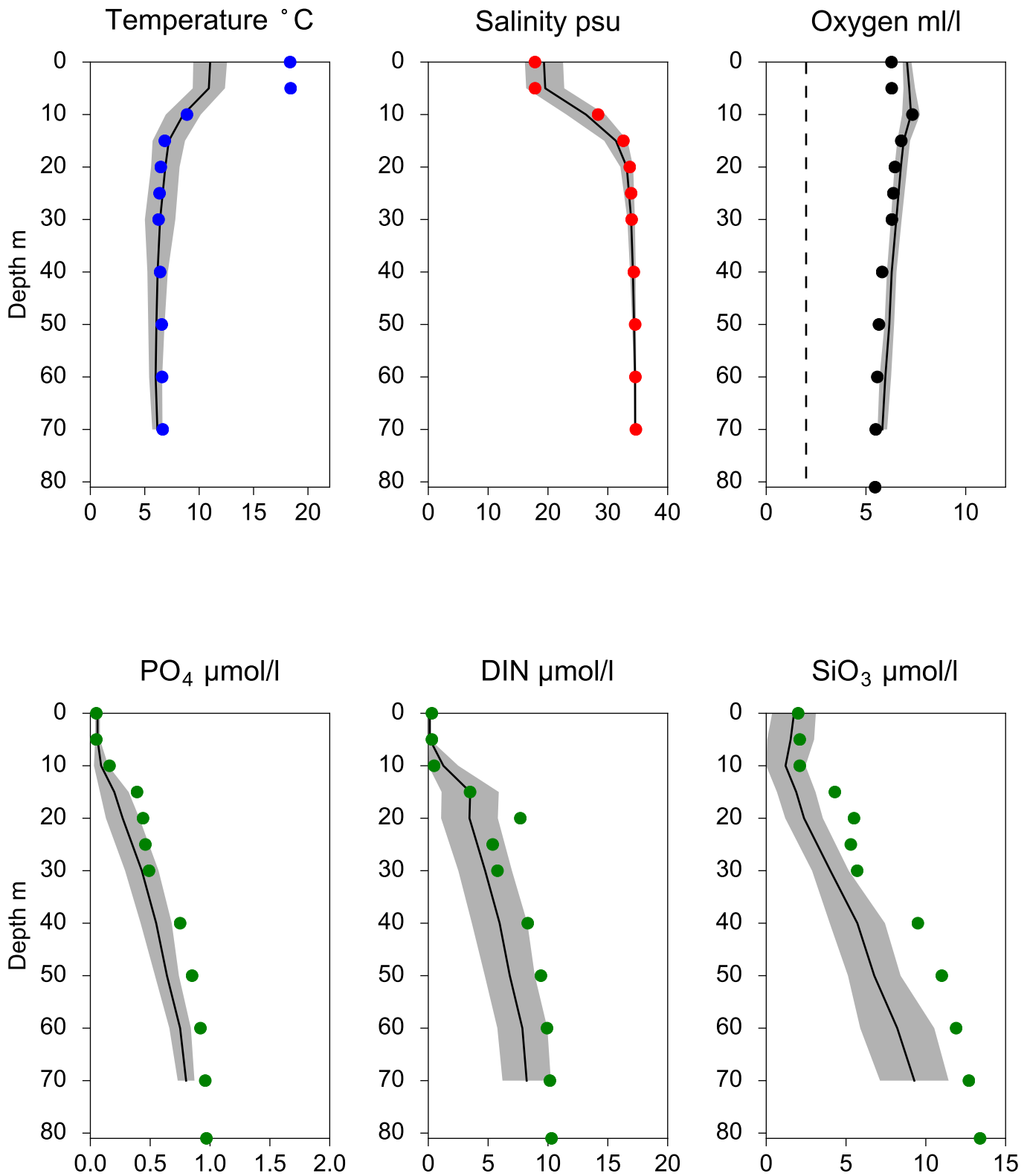


Vertical profiles FLADEN May

— Mean 2001-2015

■ St.Dev.

● 2018-05-27



STATION N14 FALKENBERG SURFACE WATER (0-10 m)

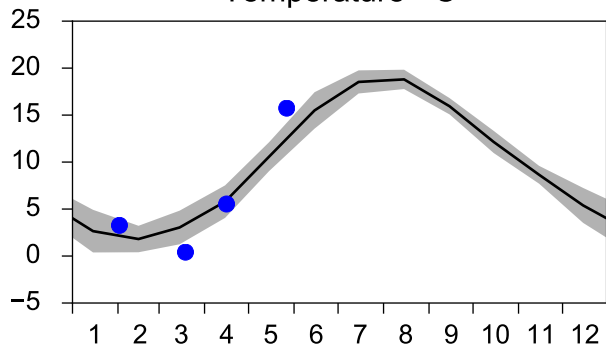
Annual Cycles

— Mean 2001-2015

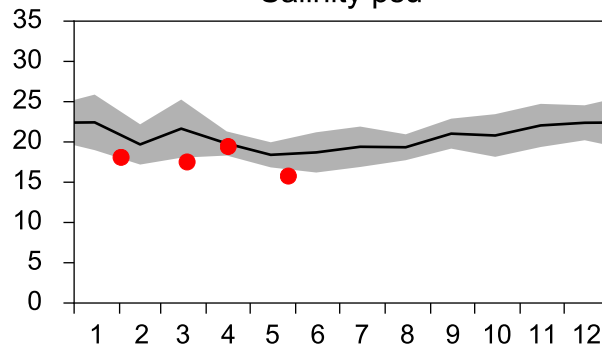
■ St.Dev.

● 2018

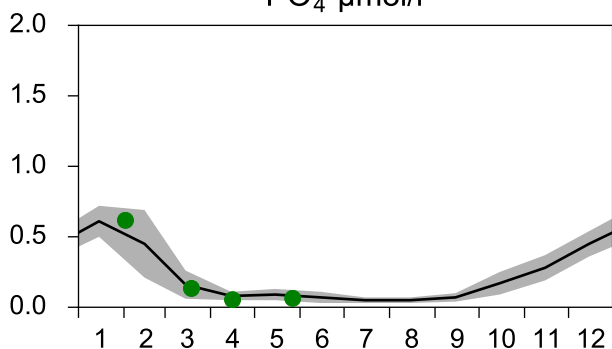
Temperature °C



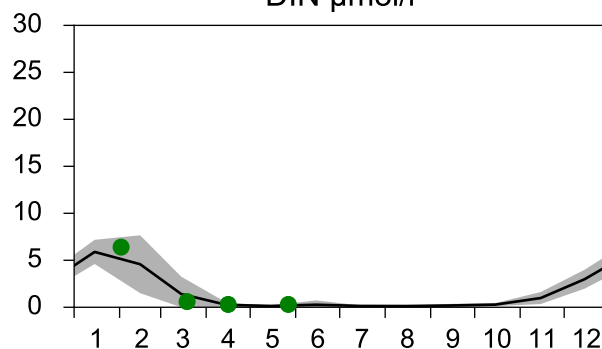
Salinity psu



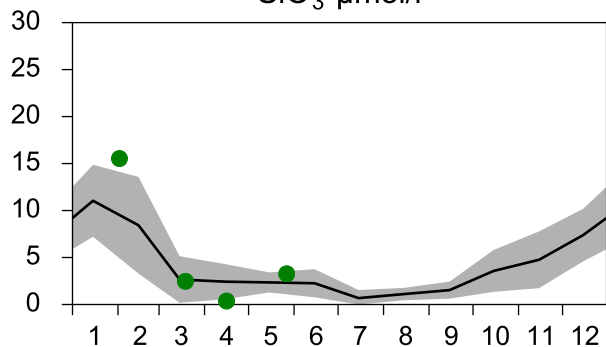
PO₄ µmol/l



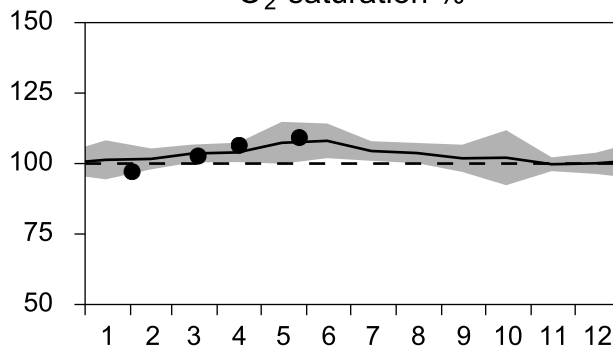
DIN µmol/l



SiO₃ µmol/l

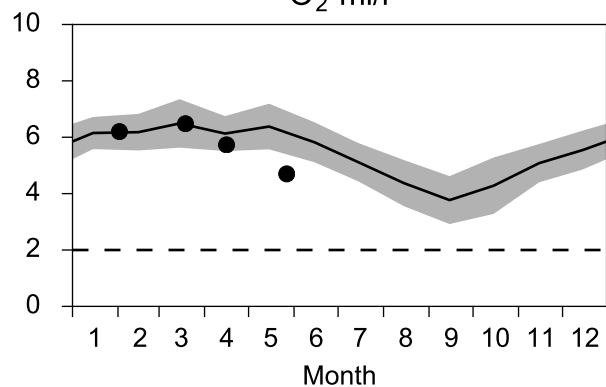


O₂ saturation %

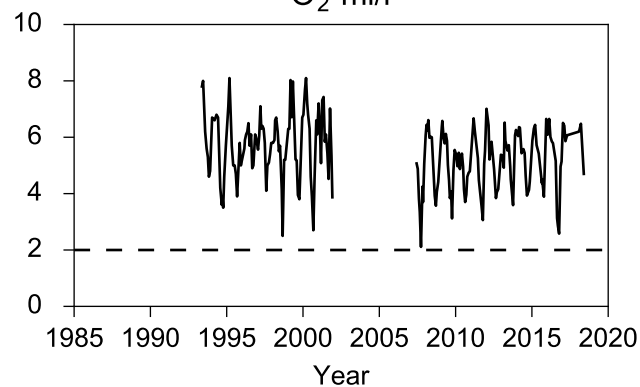


OXYGEN IN BOTTOM WATER (depth >= 25 m)

O₂ ml/l

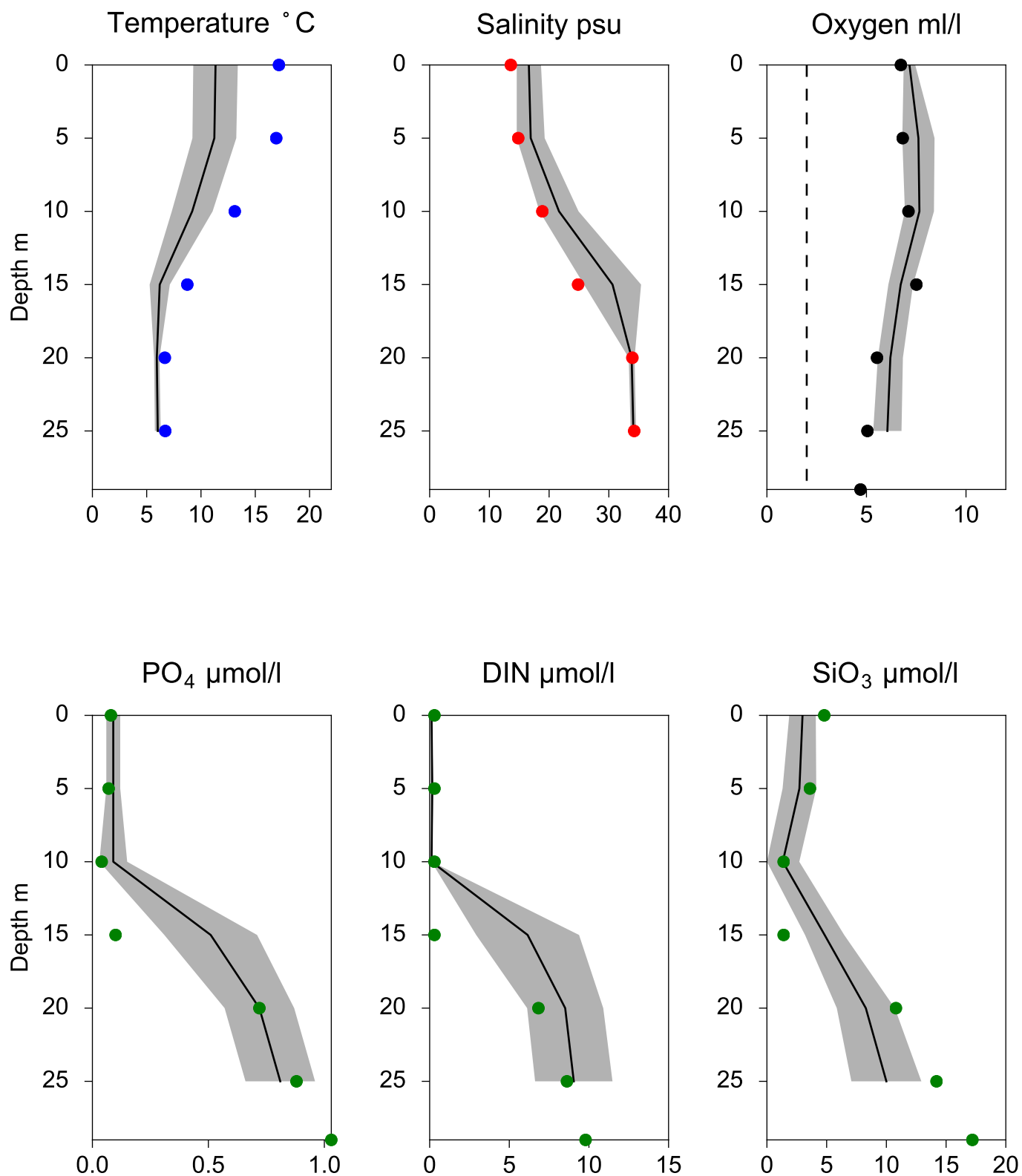


O₂ ml/l



Vertical profiles N14 FALKENBERG May

— Mean 2001-2015 ■ St.Dev. ● 2018-05-27



STATION ANHOLT E SURFACE WATER (0-10 m)

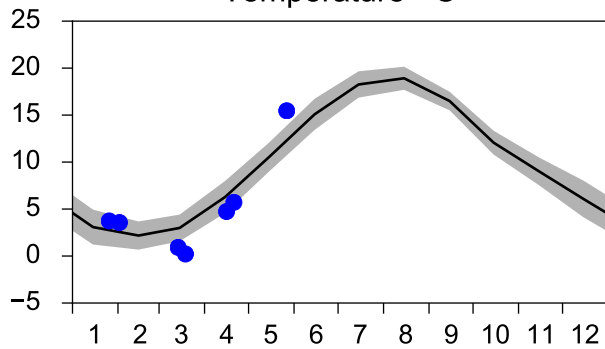
Annual Cycles

— Mean 2001-2015

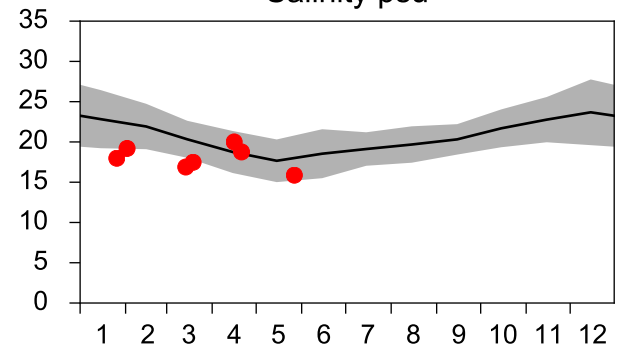
■ St.Dev.

● 2018

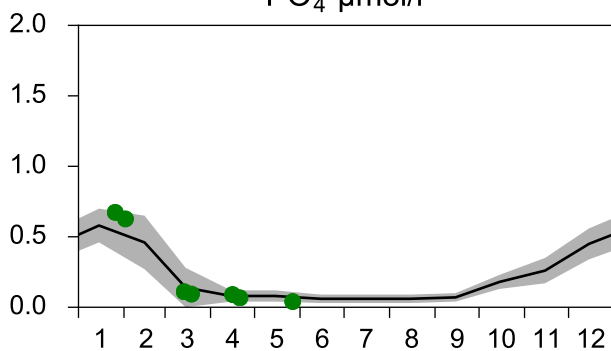
Temperature °C



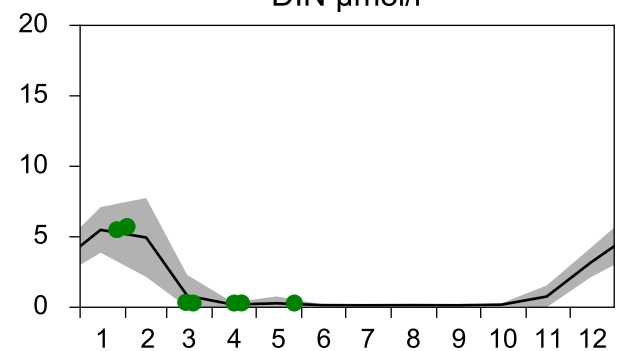
Salinity psu



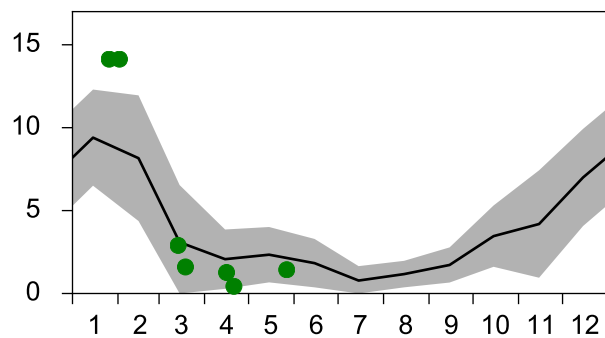
PO₄ µmol/l



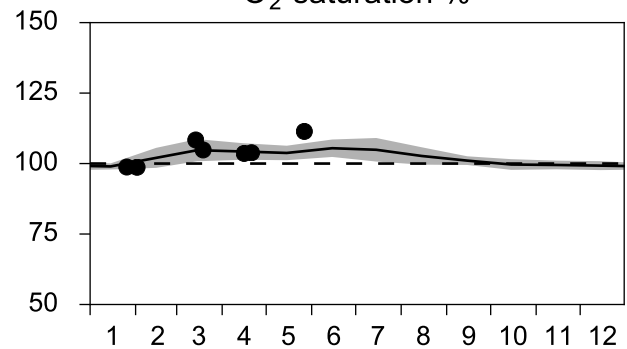
DIN µmol/l



SiO₃ µmol/l

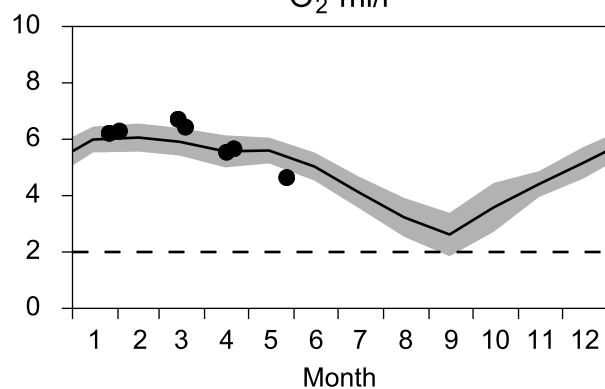


O₂ saturation %

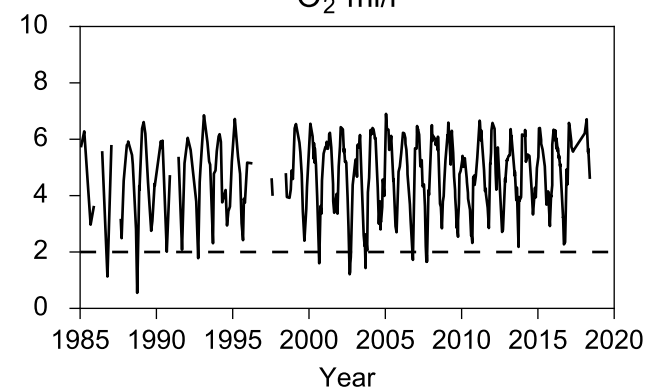


OXYGEN IN BOTTOM WATER (depth >= 52 m)

O₂ ml/l



O₂ ml/l

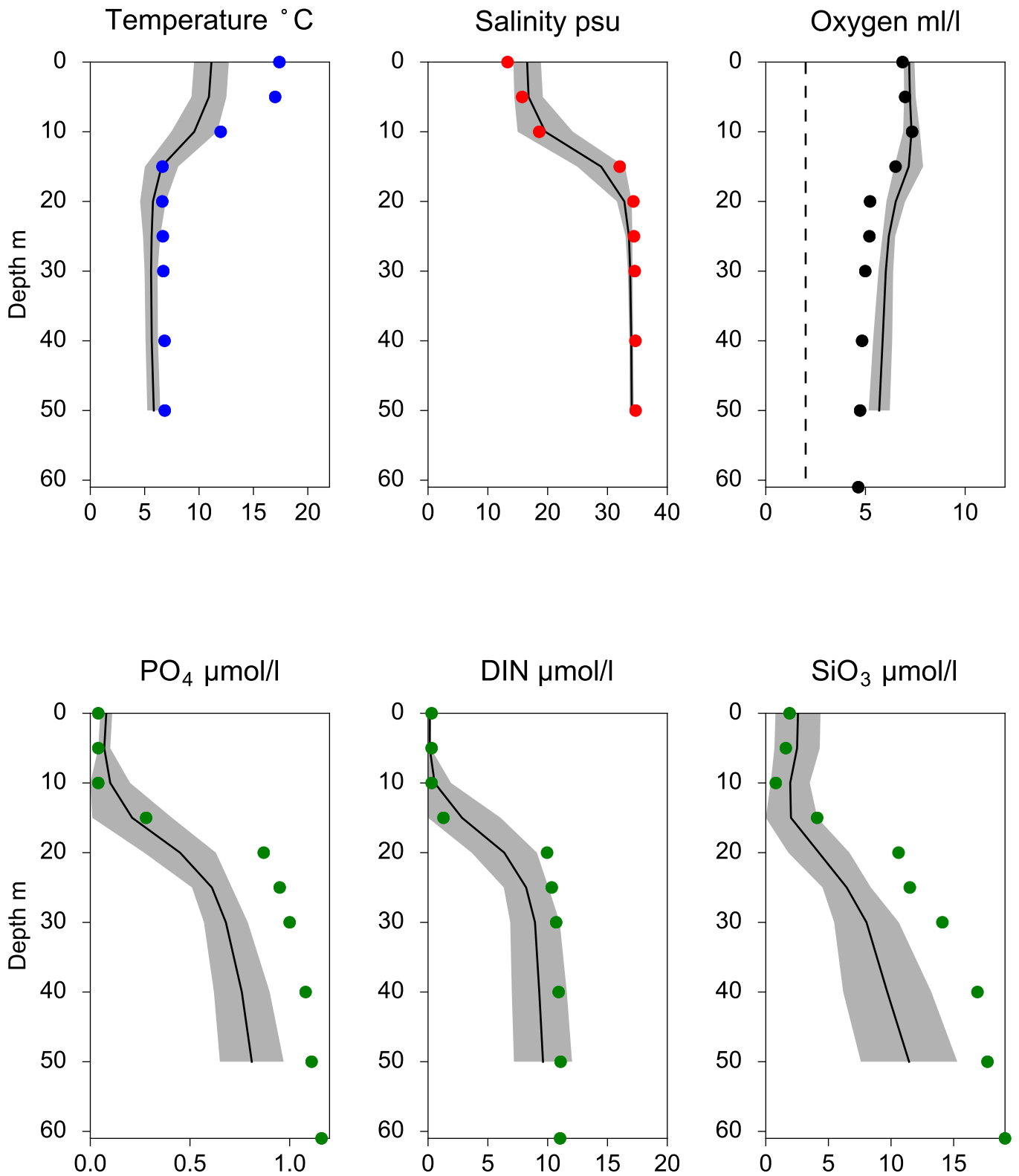


Vertical profiles ANHOLT E May

— Mean 2001-2015

■ St.Dev.

● 2018-05-27



STATION W LANDSKRONA SURFACE WATER (0-10 m)

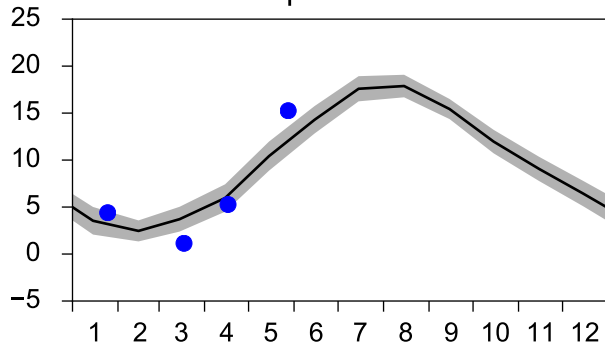
Annual Cycles

— Mean 2001-2015

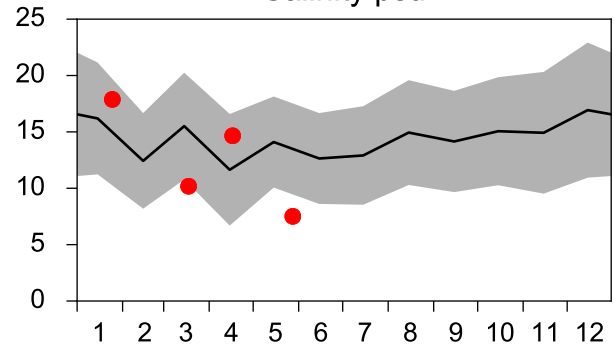
■ St.Dev.

● 2018

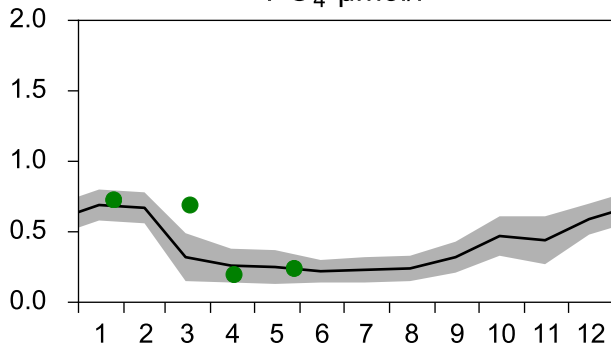
Temperature °C



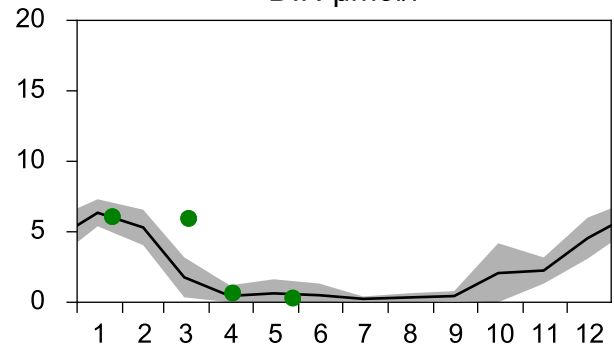
Salinity psu



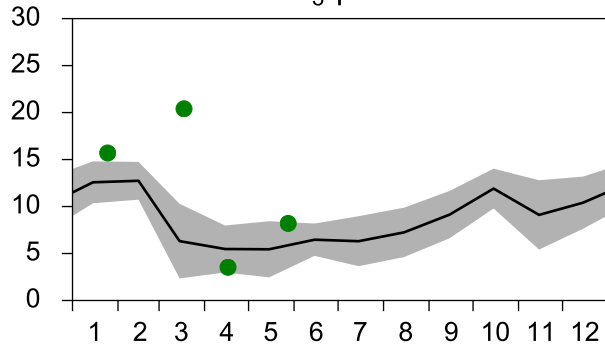
PO₄ µmol/l



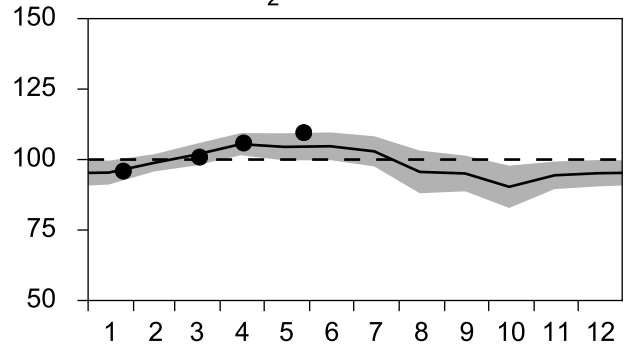
DIN µmol/l



SiO₃ µmol/l

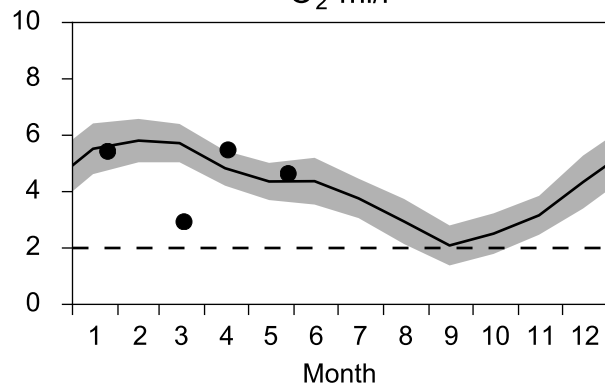


O₂ saturation %

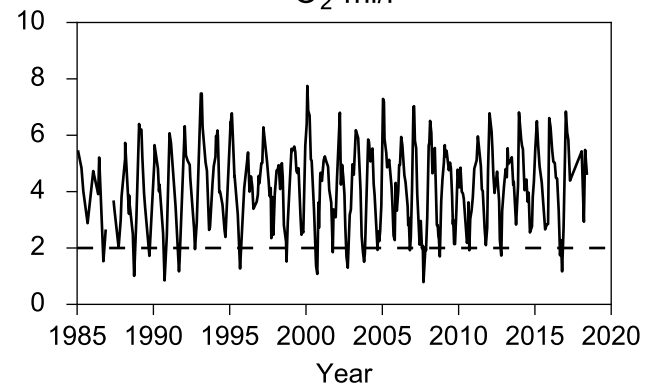


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

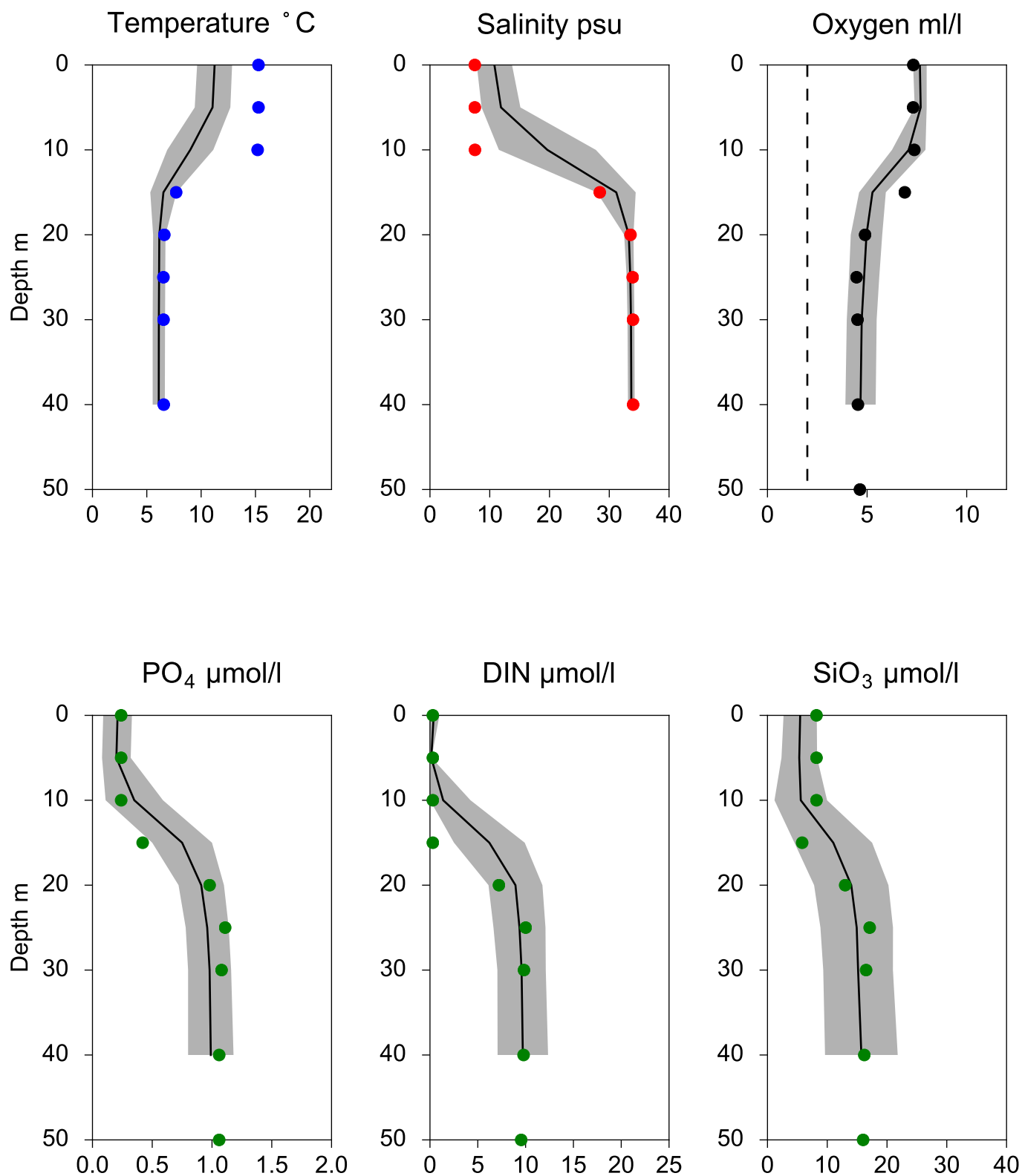


O₂ ml/l



Vertical profiles W LANDSKRONA May

— Mean 2001-2015 St.Dev. • 2018-05-28



STATION BY1 SURFACE WATER (0-10 m)

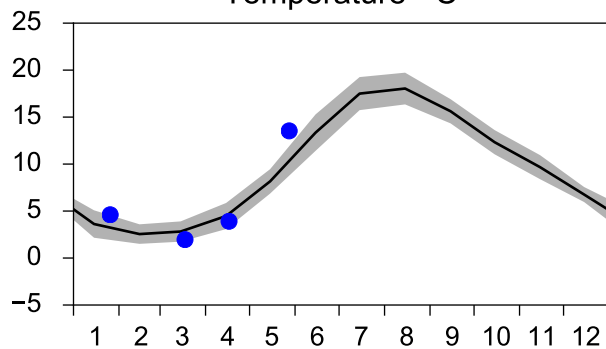
Annual Cycles

— Mean 2001-2015

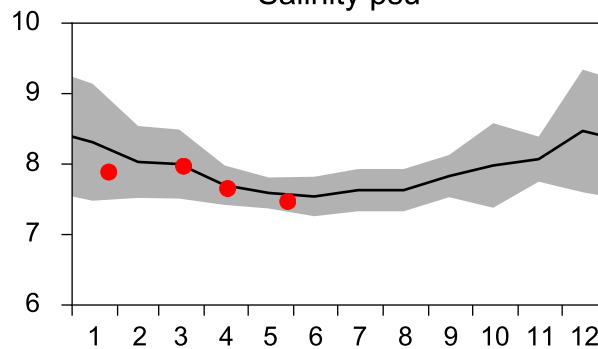
■ St.Dev.

● 2018

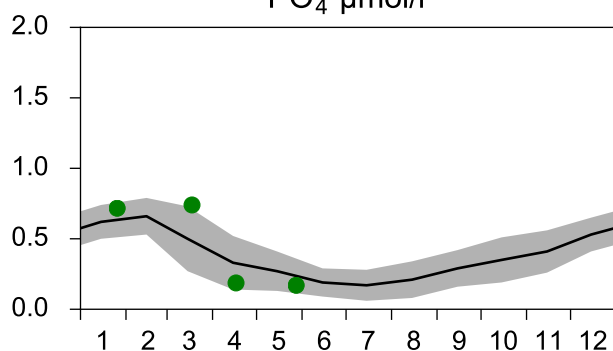
Temperature °C



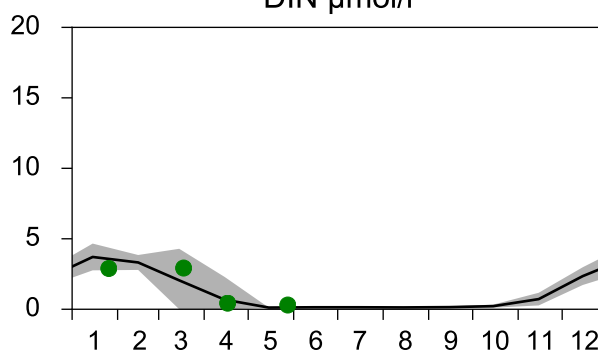
Salinity psu



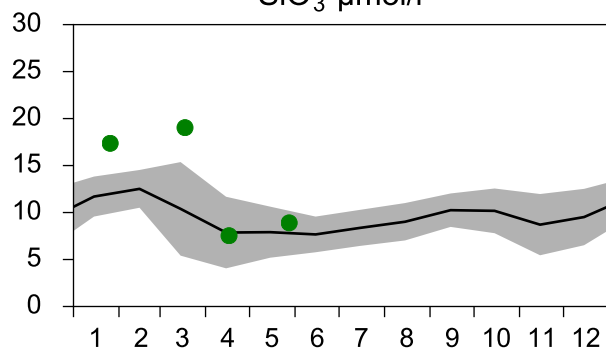
PO₄ µmol/l



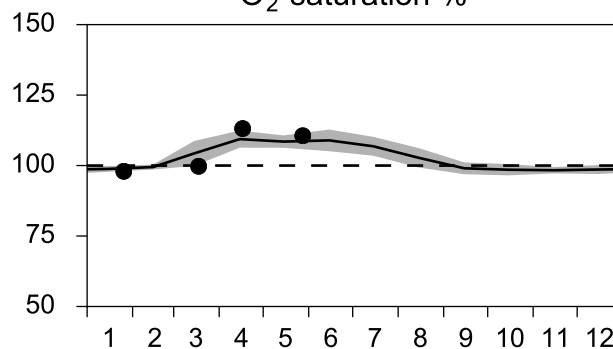
DIN µmol/l



SiO₃ µmol/l

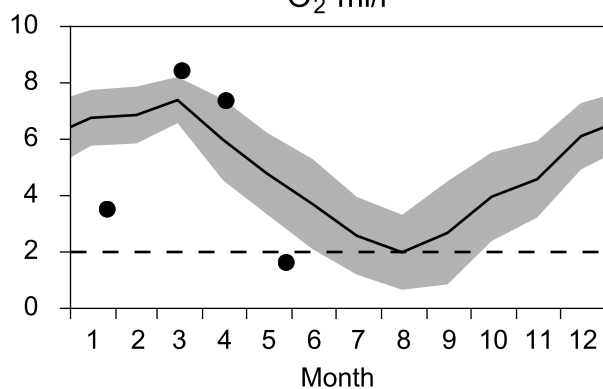


O₂ saturation %

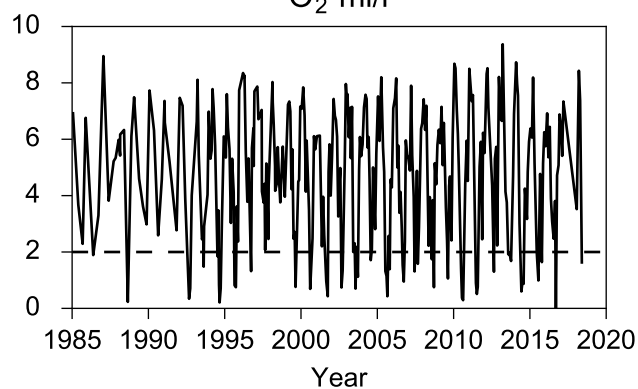


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l



O₂ ml/l



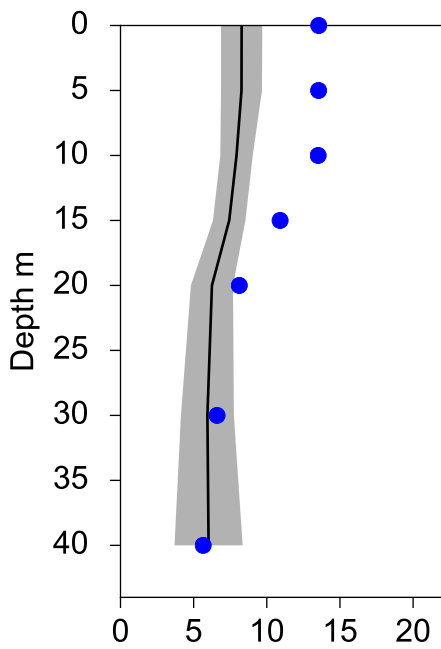
Vertical profiles BY1 May

— Mean 2001-2015

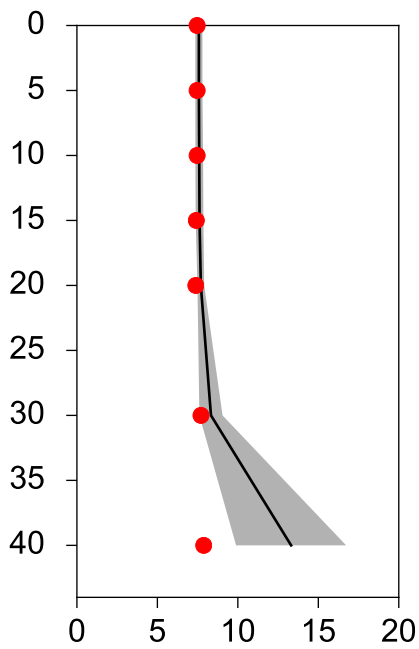
■ St.Dev.

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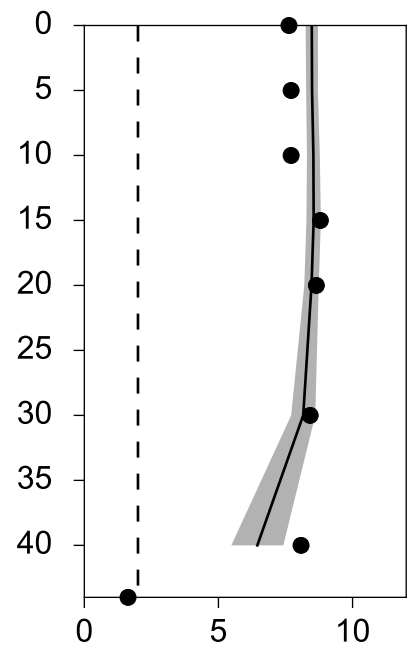
Temperature °C



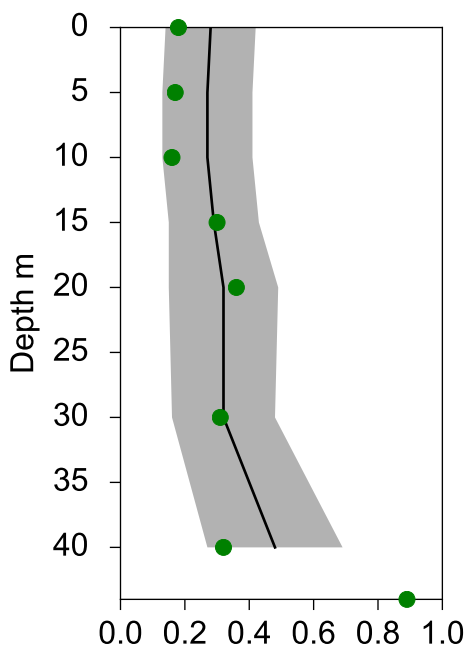
Salinity psu



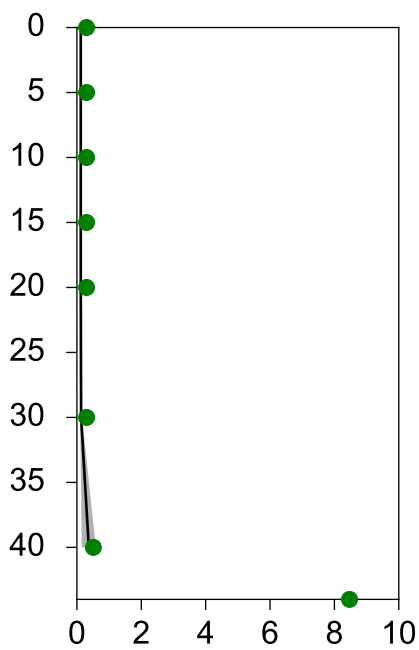
Oxygen ml/l



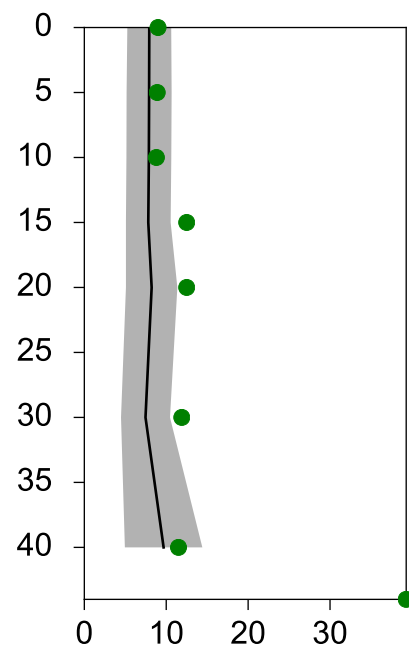
PO₄ μmol/l



DIN μmol/l



SiO₃ μmol/l



STATION BY2 ARKONA SURFACE WATER (0-10 m)

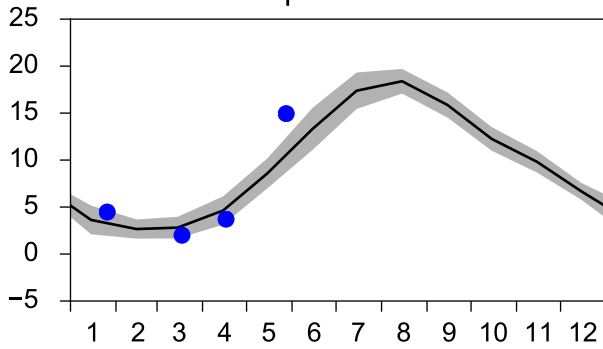
Annual Cycles

— Mean 2001-2015

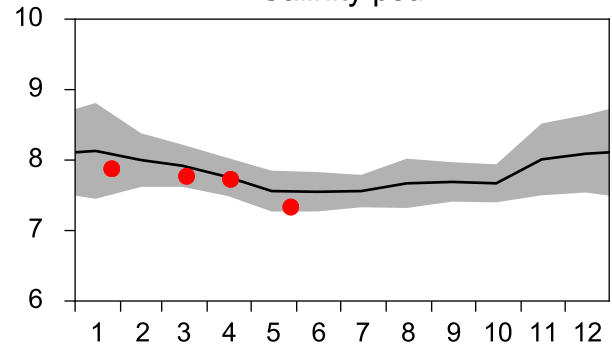
■ St.Dev.

● 2018

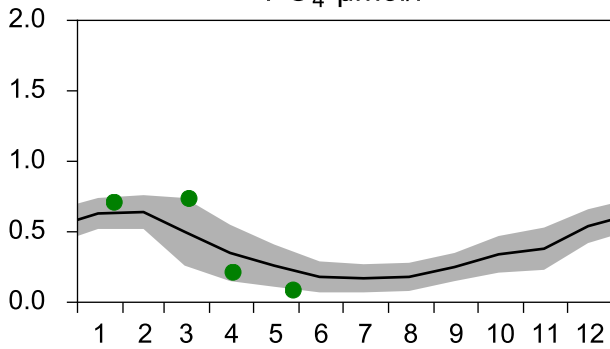
Temperature °C



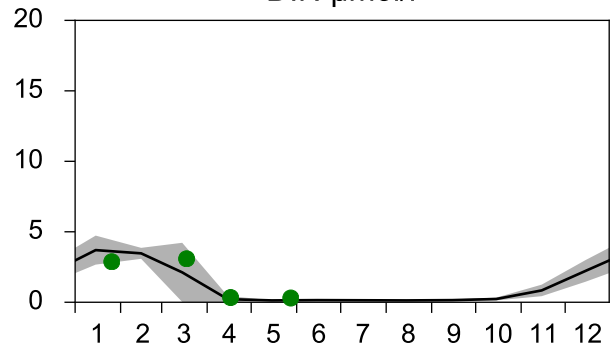
Salinity psu



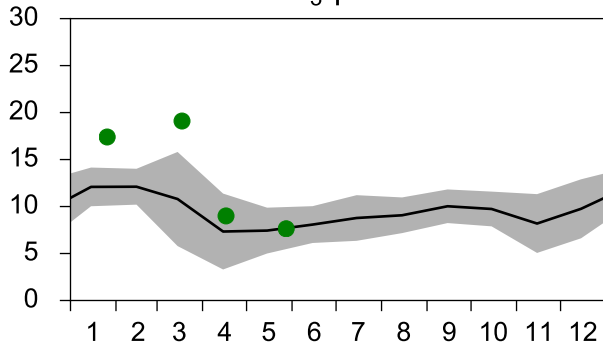
PO₄ µmol/l



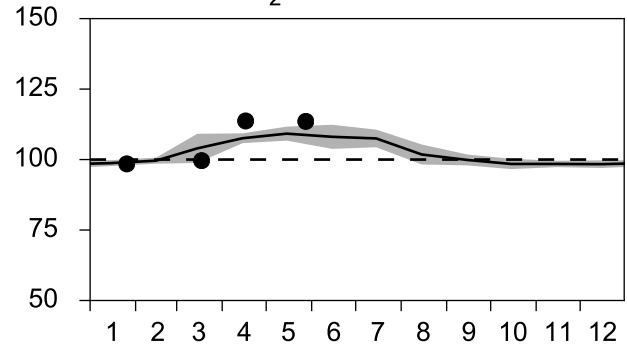
DIN µmol/l



SiO₃ µmol/l

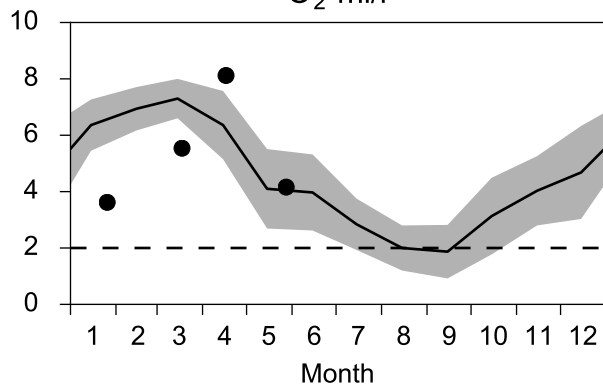


O₂ saturation %

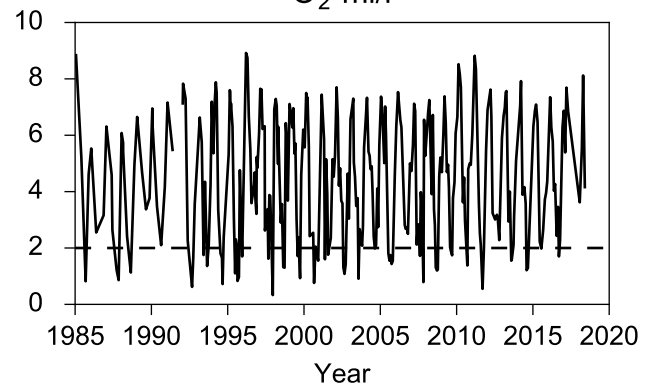


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

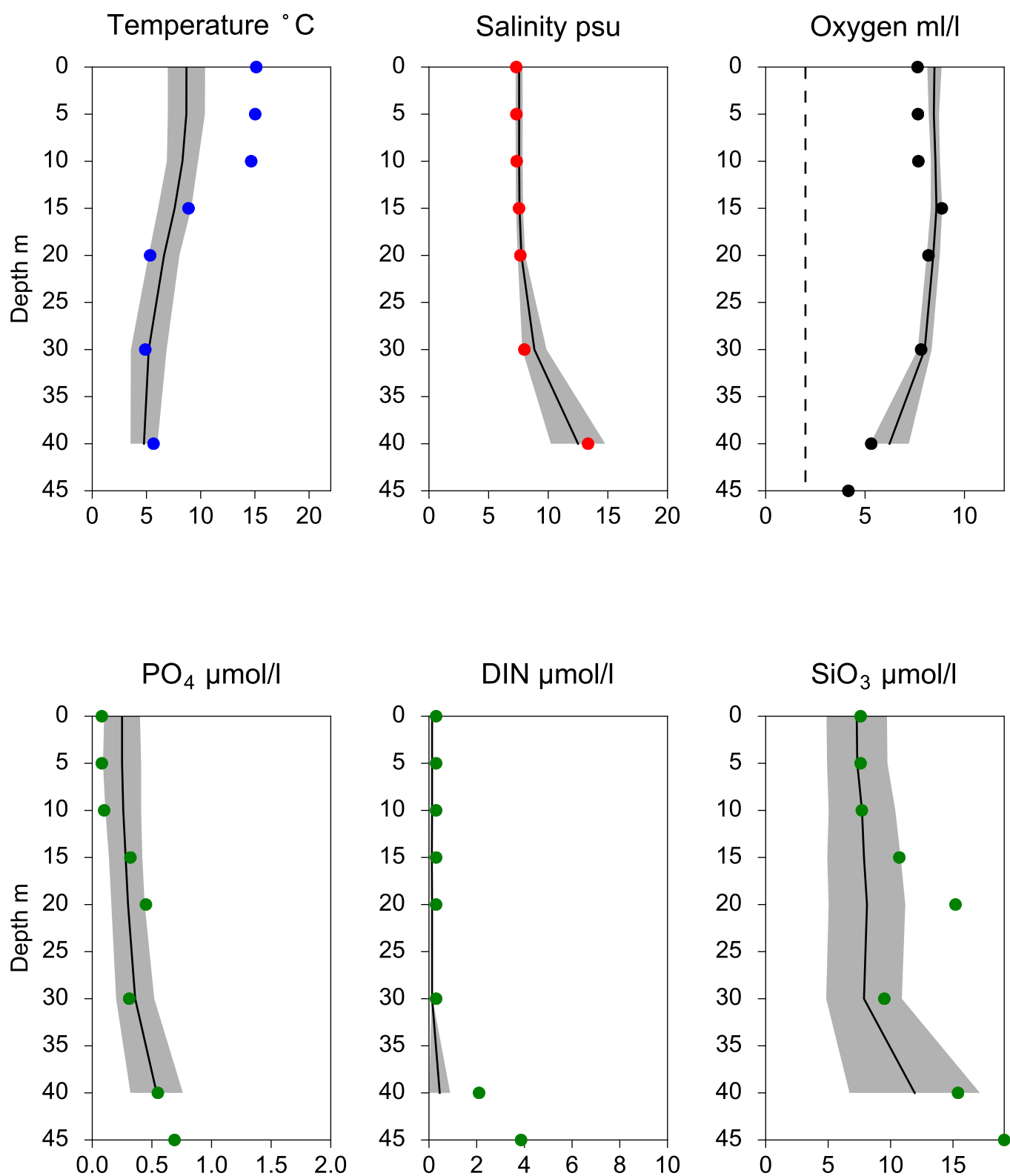


O₂ ml/l



Vertical profiles BY2 ARKONA May

— Mean 2001-2015 St.Dev. • 2018-05-28



STATION HANÖBUKTEN SURFACE WATER (0-10 m)

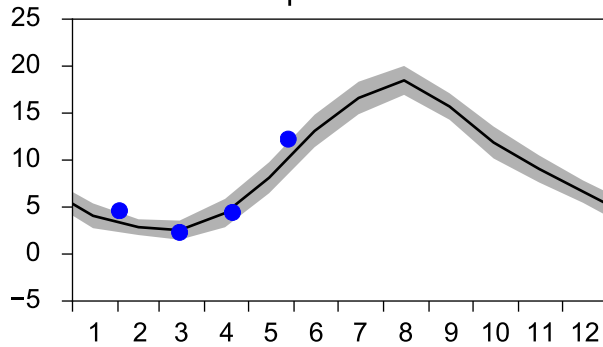
Annual Cycles

— Mean 2001-2015

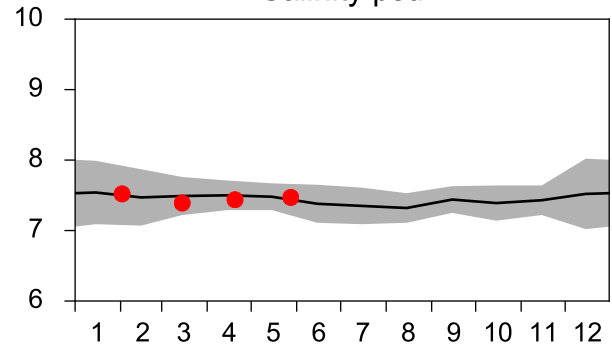
■ St.Dev.

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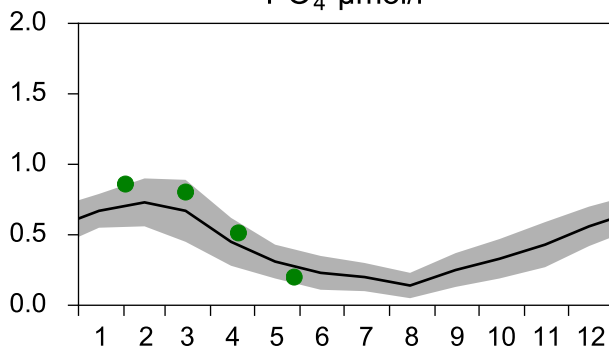
Temperature °C



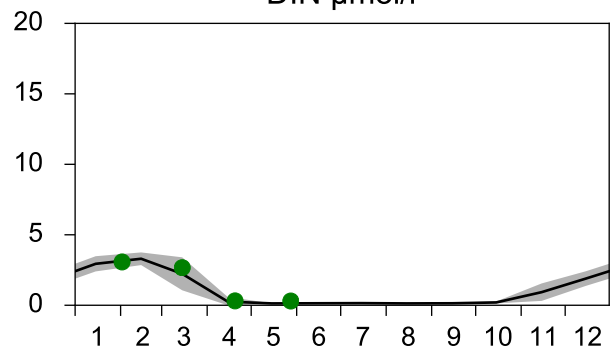
Salinity psu



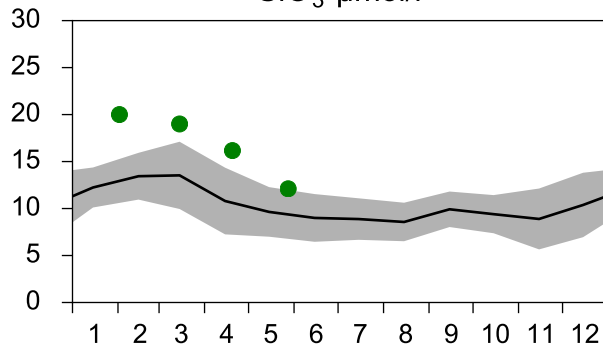
PO₄ µmol/l



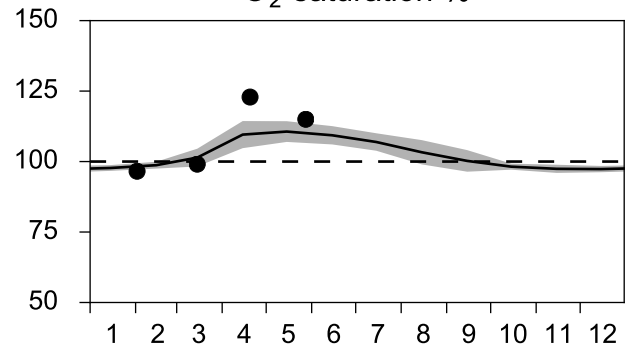
DIN µmol/l



SiO₃ µmol/l

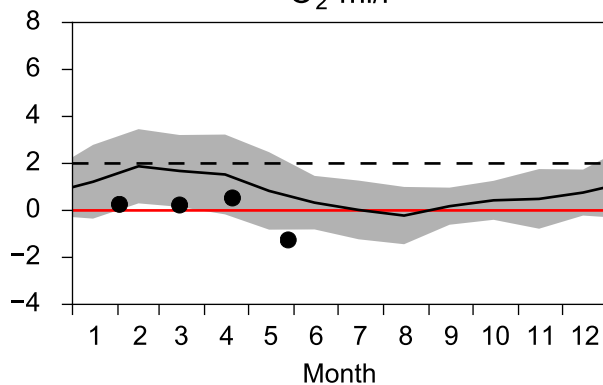


O₂ saturation %

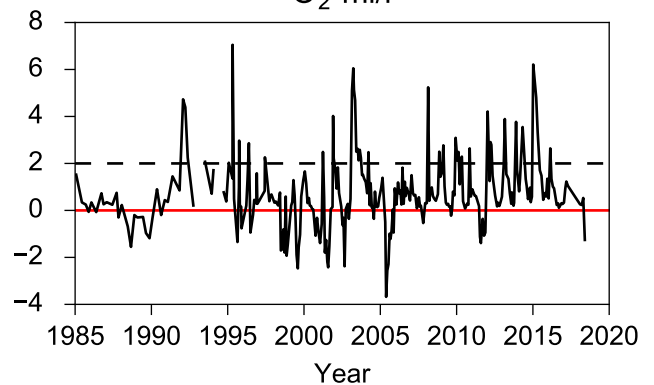


OXYGEN IN BOTTOM WATER (depth >= 70 m)

O₂ ml/l



O₂ ml/l



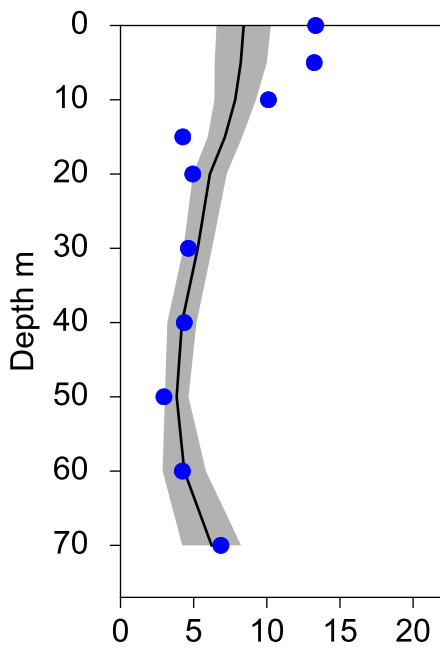
Vertical profiles HANÖBUKTEN May

— Mean 2001-2015

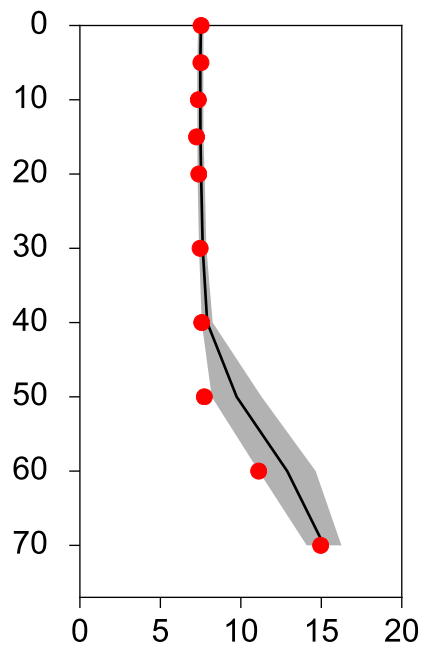
■ St.Dev.

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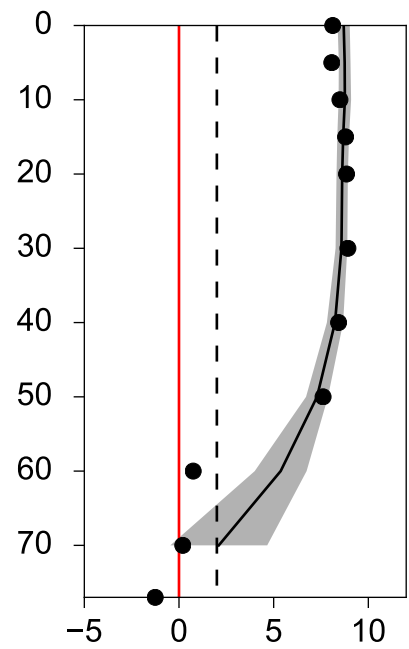
Temperature °C



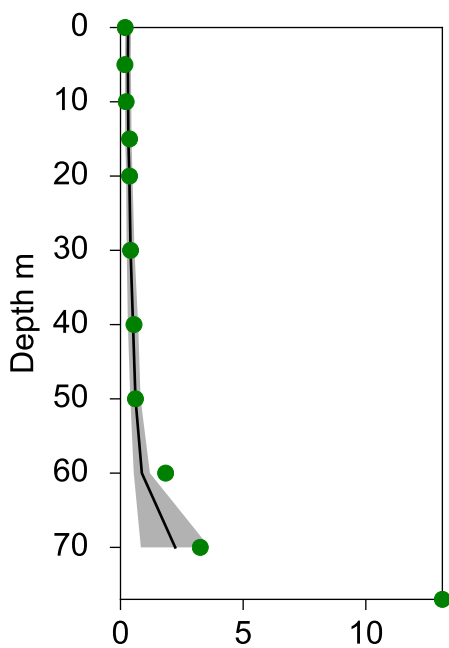
Salinity psu



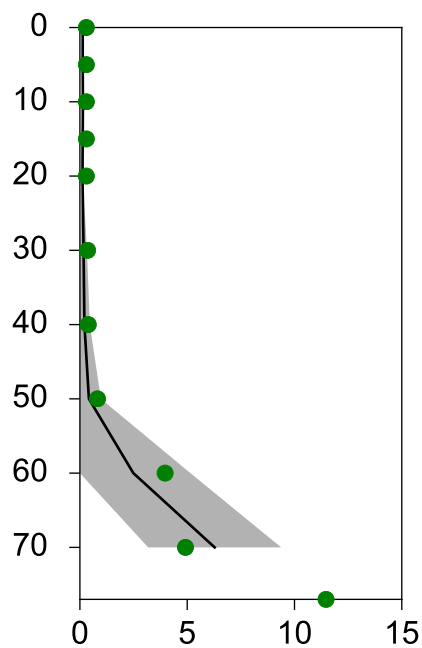
Oxygen ml/l



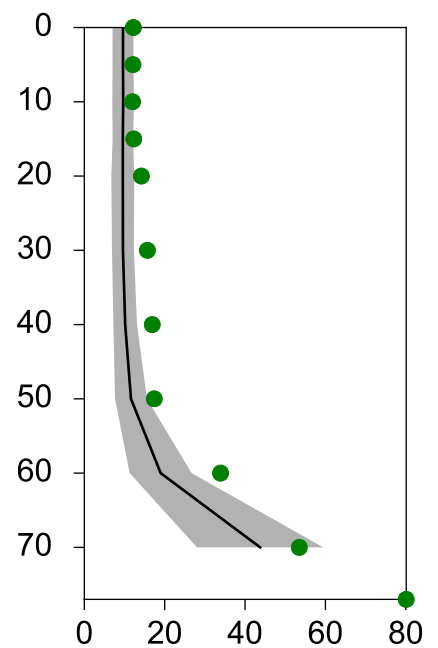
PO₄ μmol/l



DIN μmol/l



SiO₃ μmol/l



STATION BY4 CHRISTIANSÖ SURFACE WATER (0-10 m)

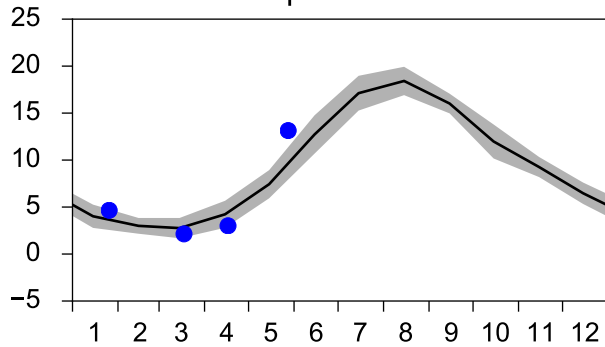
Annual Cycles

— Mean 2001-2015

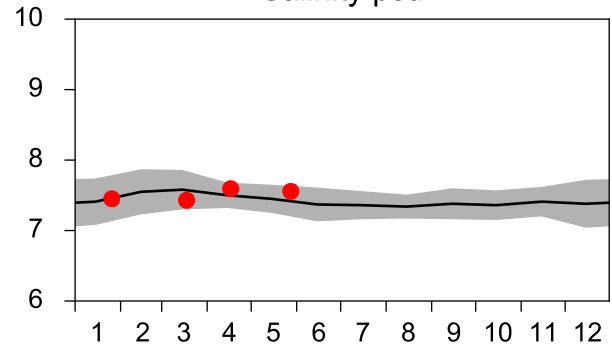
■ St.Dev.

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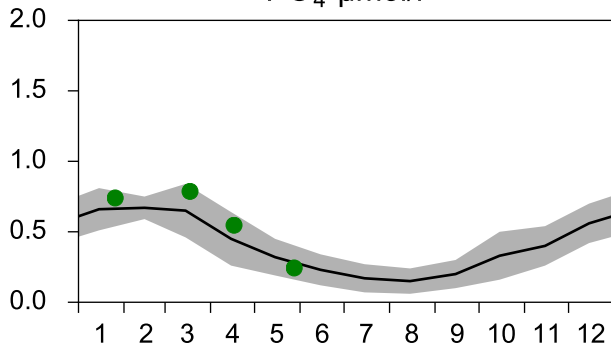
Temperature °C



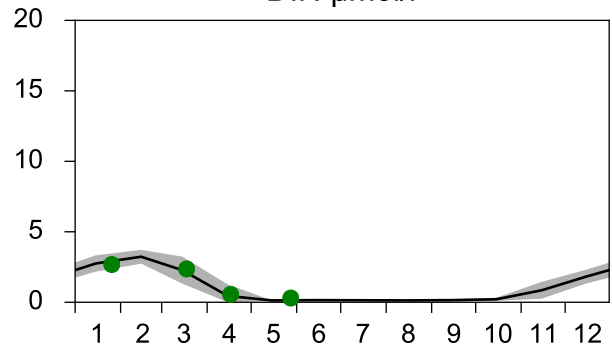
Salinity psu



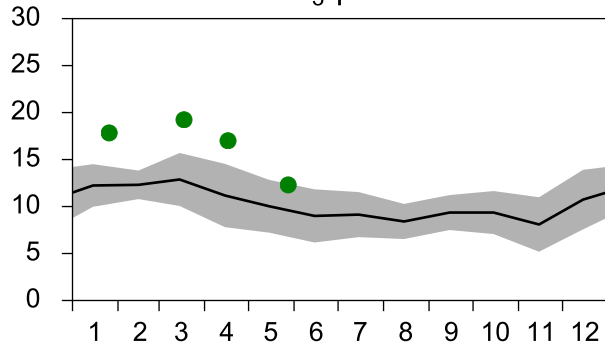
PO₄ µmol/l



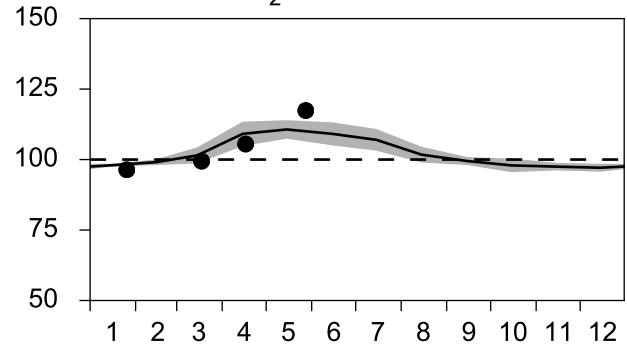
DIN µmol/l



SiO₃ µmol/l

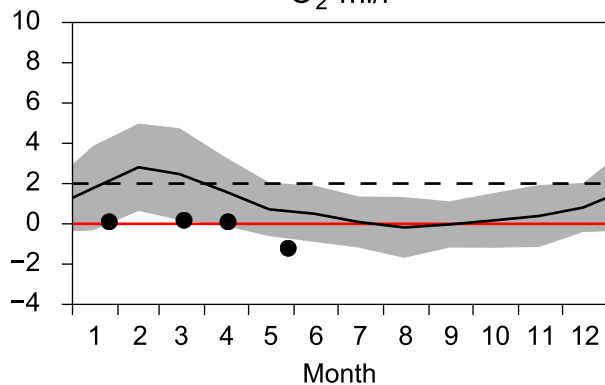


O₂ saturation %

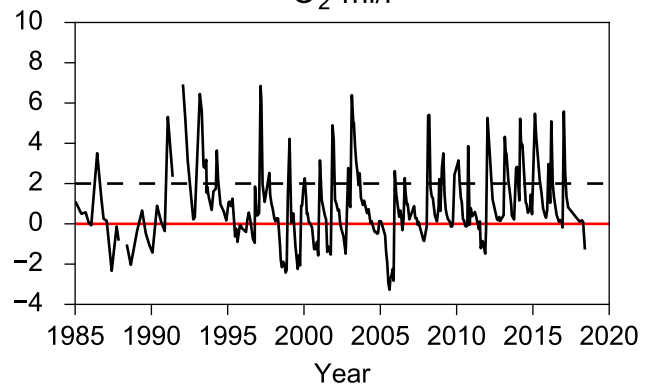


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l



O₂ ml/l

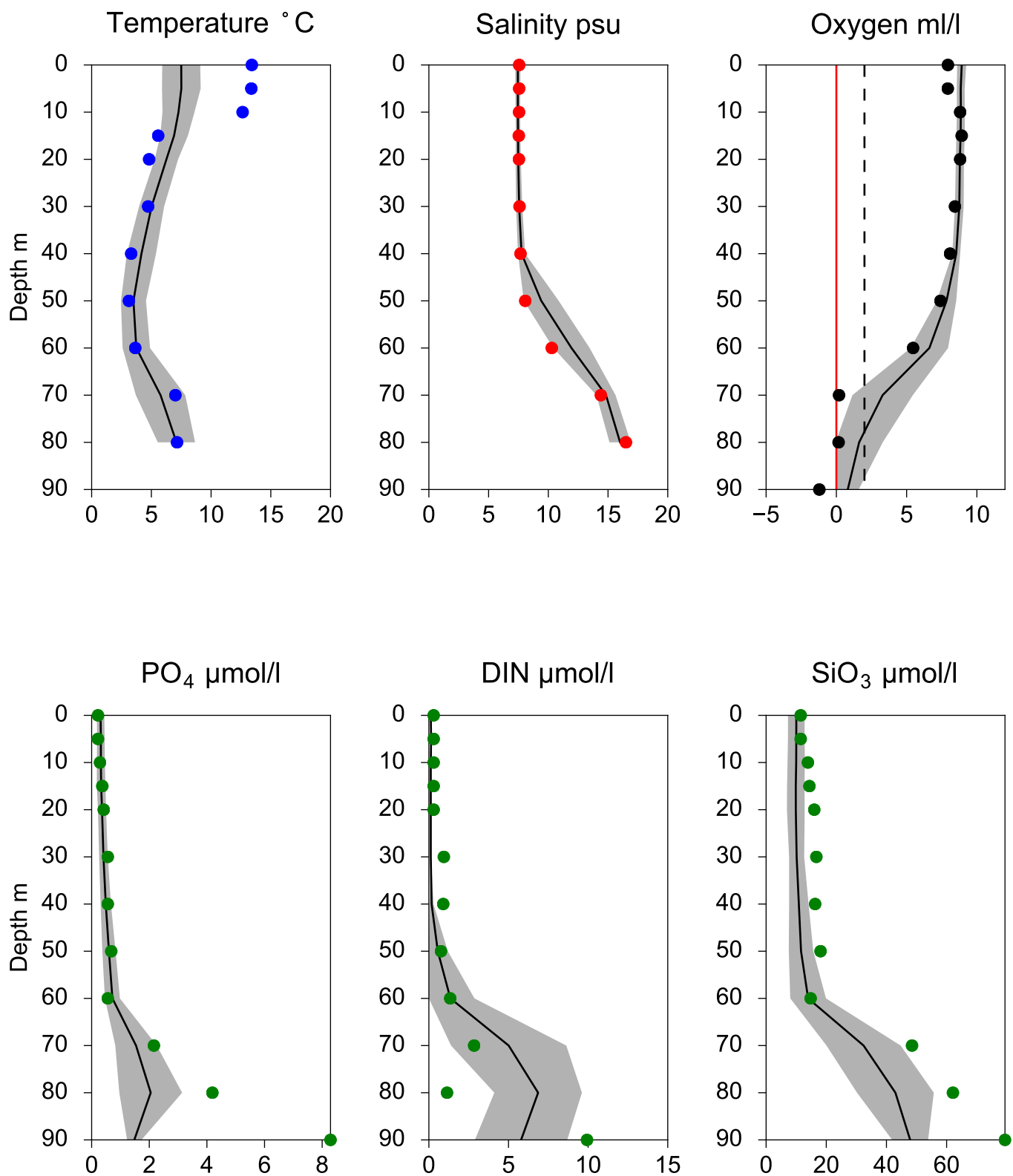


Vertical profiles BY4 CHRISTIANSÖ May

— Mean 2001-2015

■ St.Dev.

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STATION BY5 BORNHOLMSDJ SURFACE WATER (0-10 m)

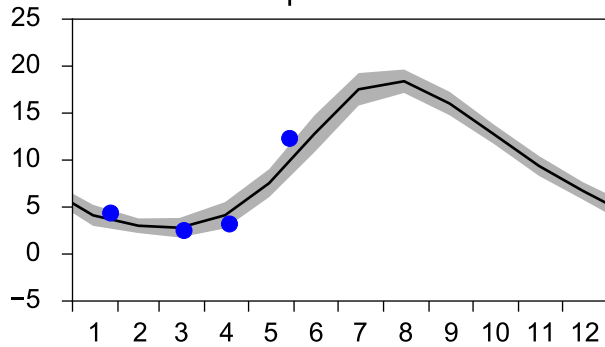
Annual Cycles

— Mean 2001-2015

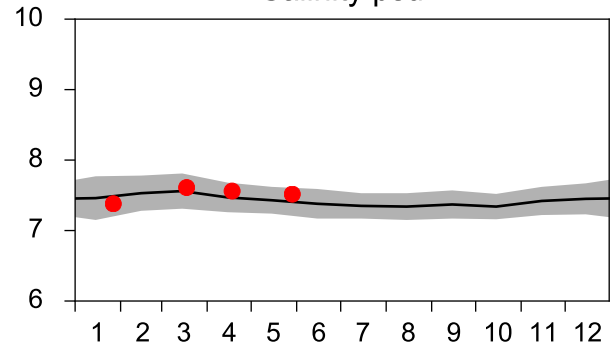
■ St.Dev.

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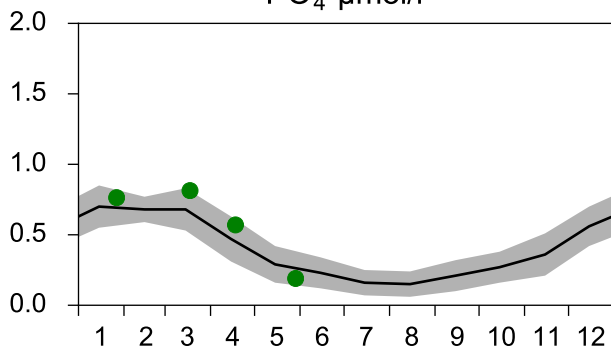
Temperature °C



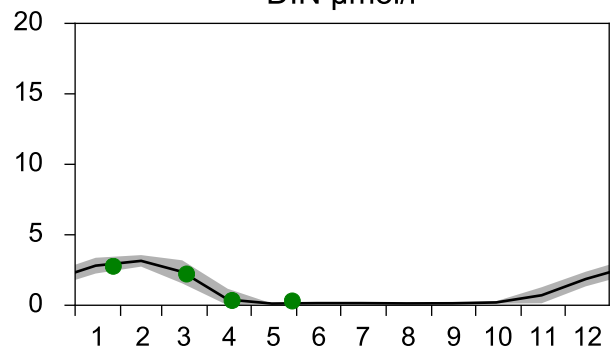
Salinity psu



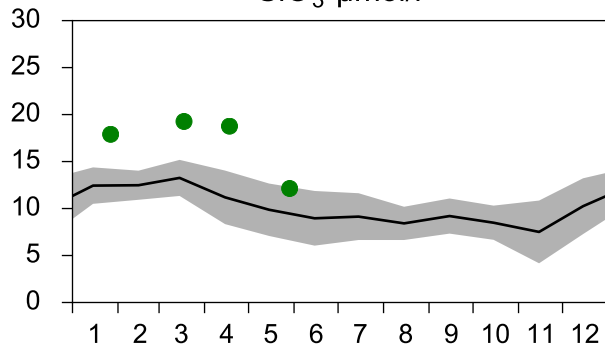
PO₄ µmol/l



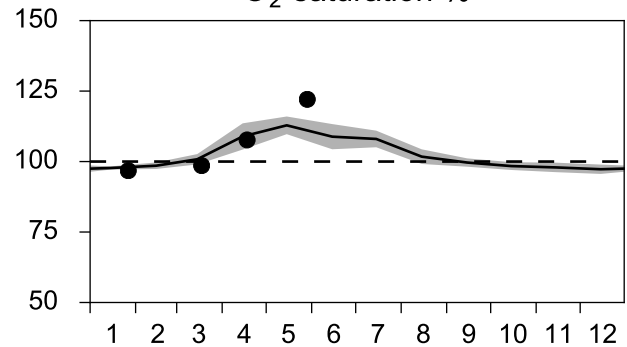
DIN µmol/l



SiO₃ µmol/l

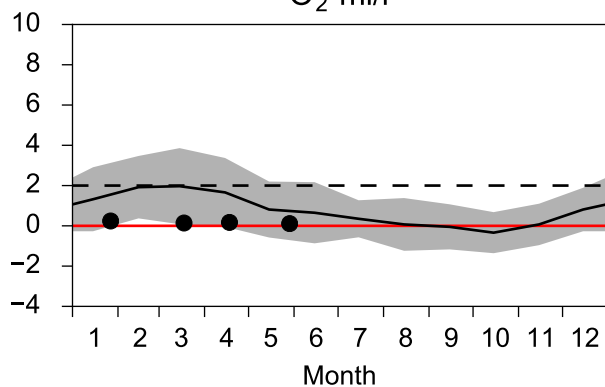


O₂ saturation %

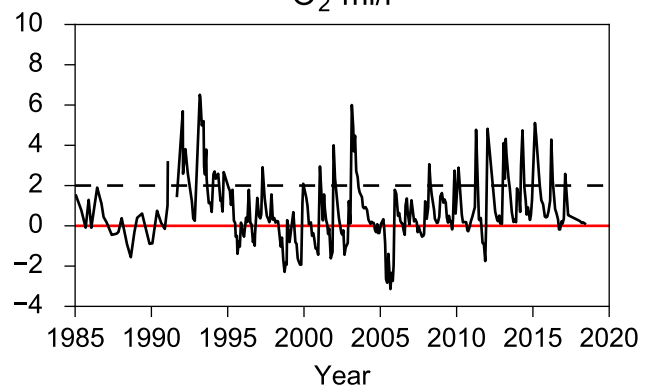


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l



O₂ ml/l



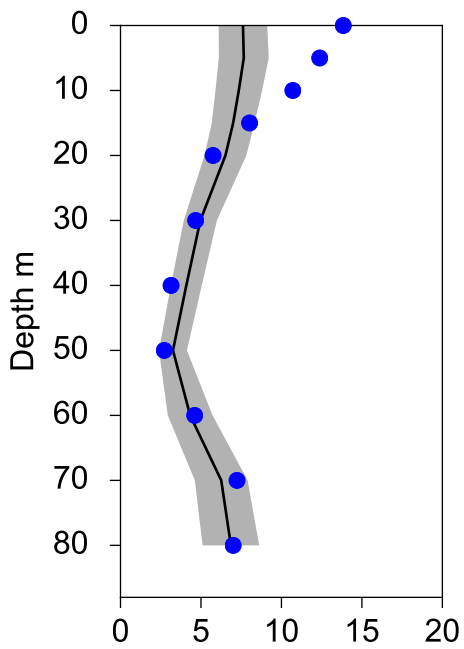
Vertical profiles BY5 BORNHOLMSDJ May

— Mean 2001-2015

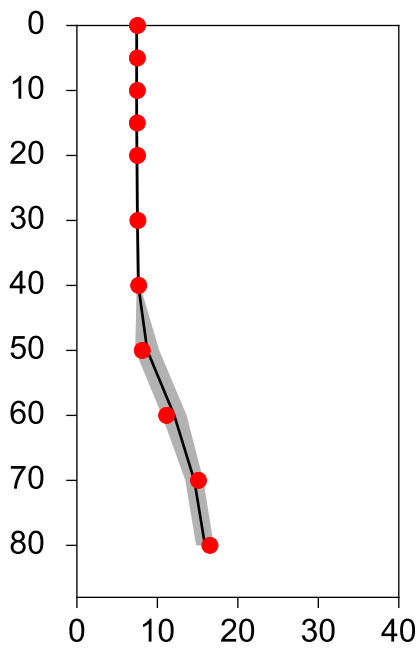
■ St.Dev.

● 2018-05-29

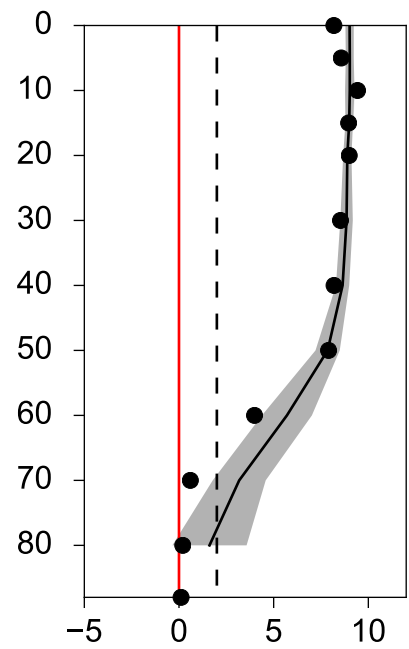
Temperature °C



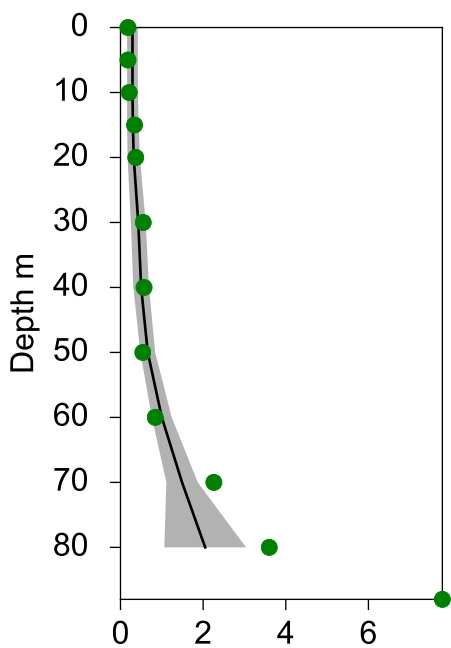
Salinity psu



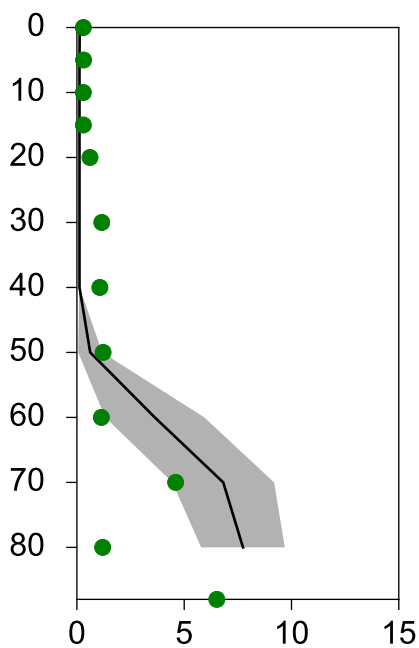
Oxygen ml/l



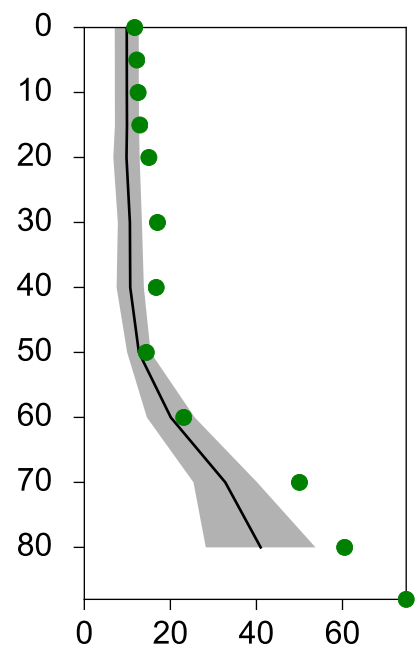
PO₄ μmol/l



DIN μmol/l



SiO₃ μmol/l



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

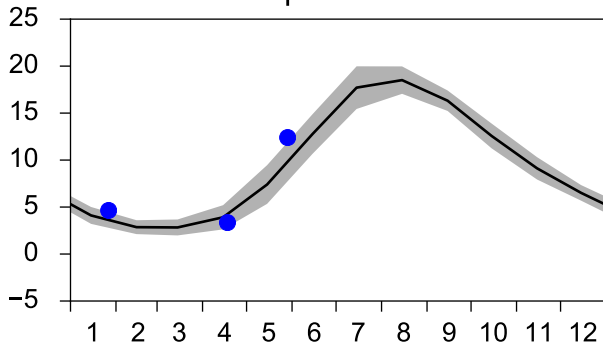
Annual Cycles

— Mean 2001-2015

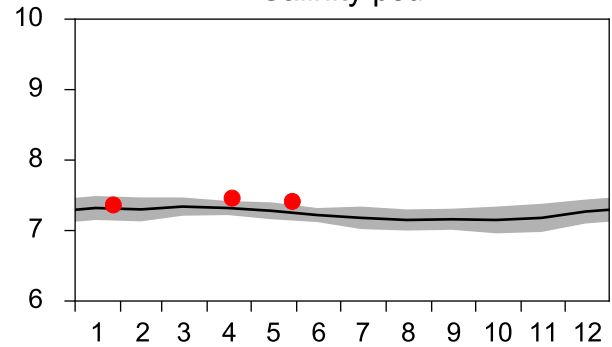
■ St.Dev.

● 2018

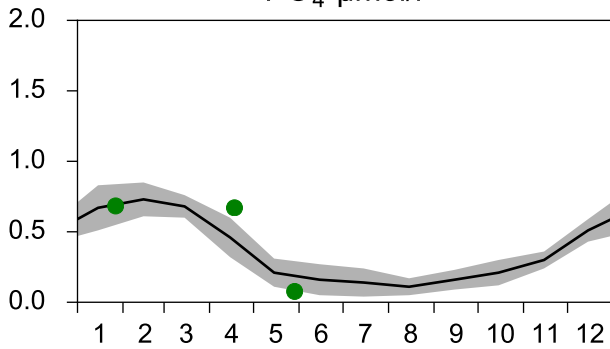
Temperature °C



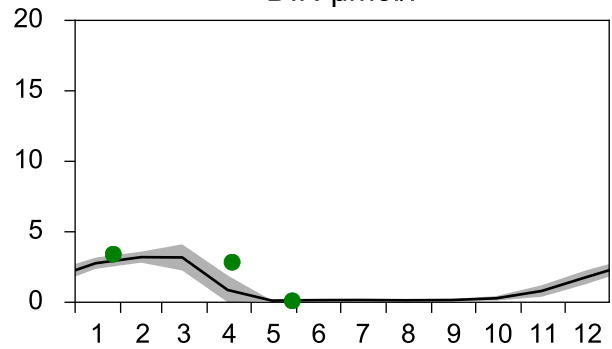
Salinity psu



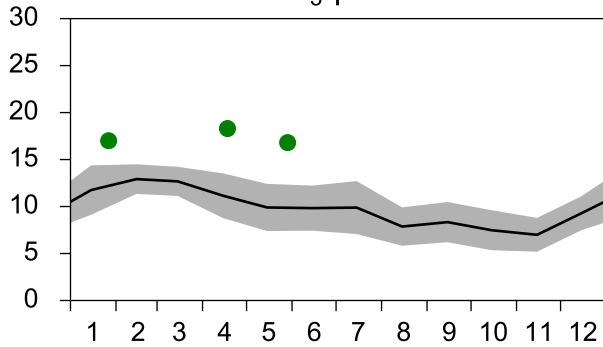
PO₄ µmol/l



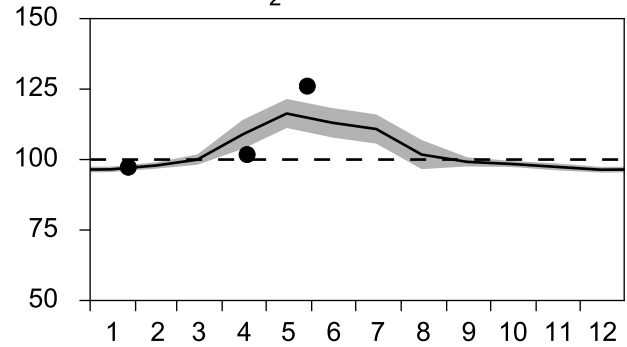
DIN µmol/l



SiO₃ µmol/l

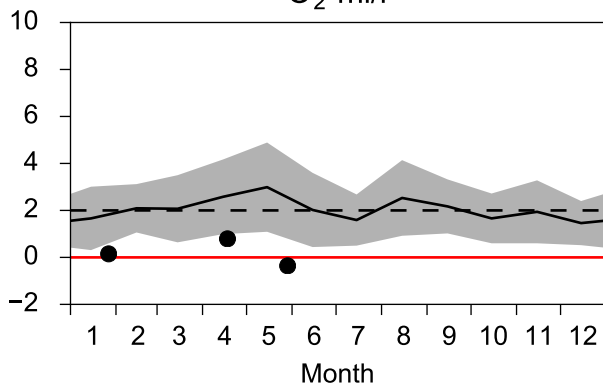


O₂ saturation %

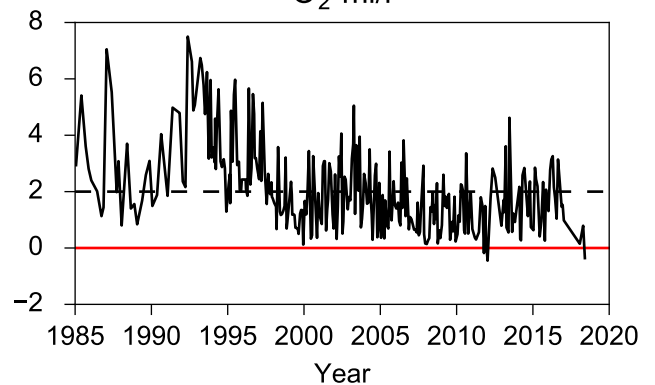


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

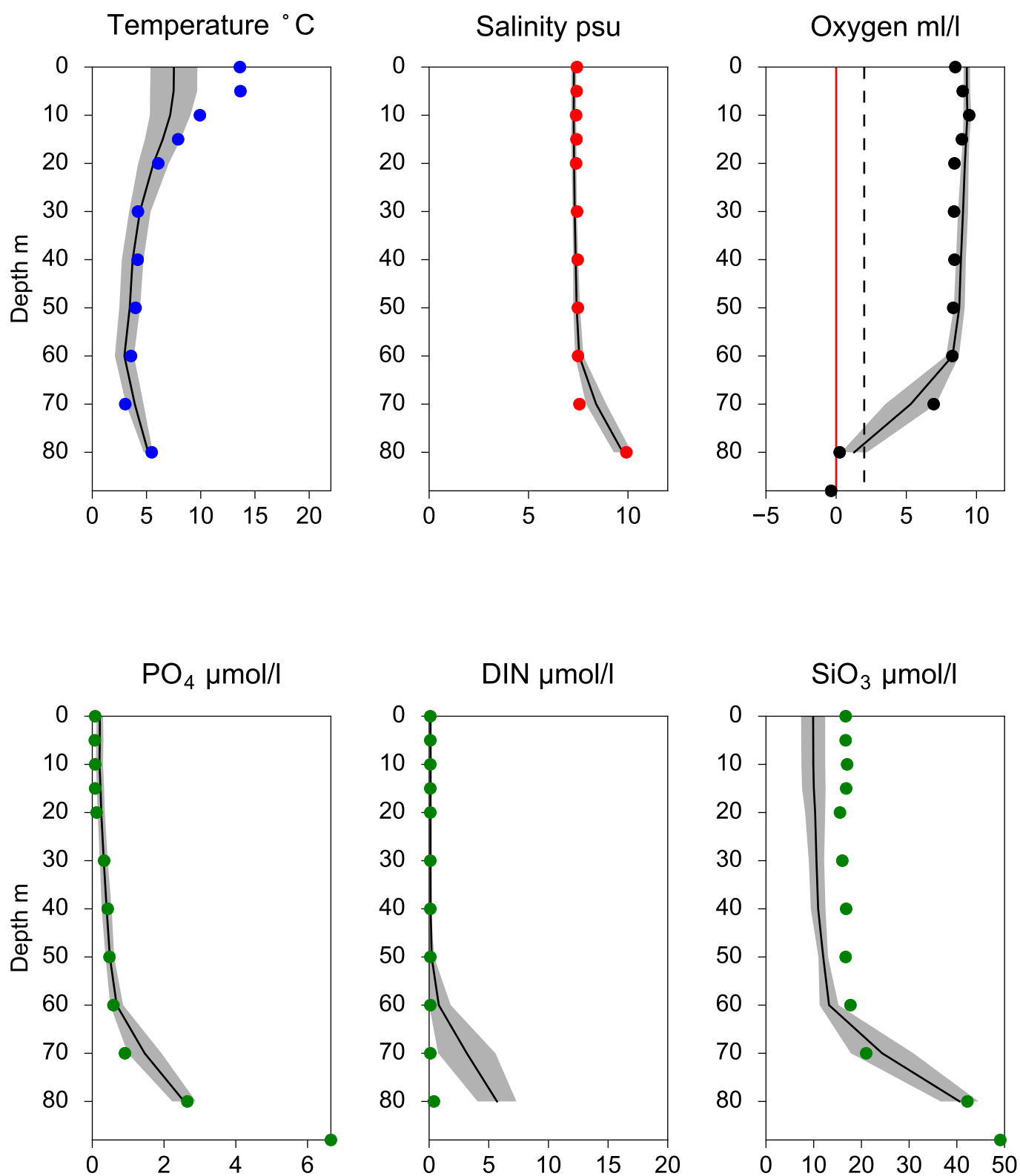


O₂ ml/l



Vertical profiles BCS III-10 May

— Mean 2001-2015 ■ St.Dev. ● 2018-05-29



STATION REF M1V1 SURFACE WATER (0-10 m)

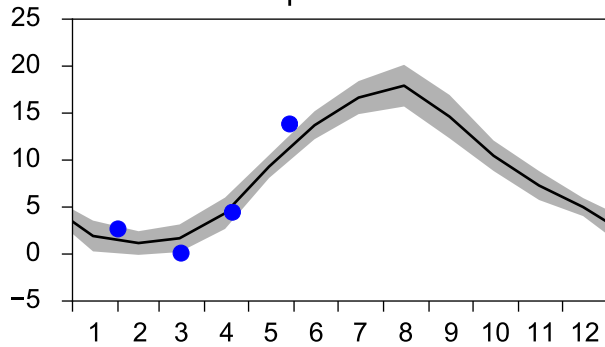
Annual Cycles

— Mean 2001-2015

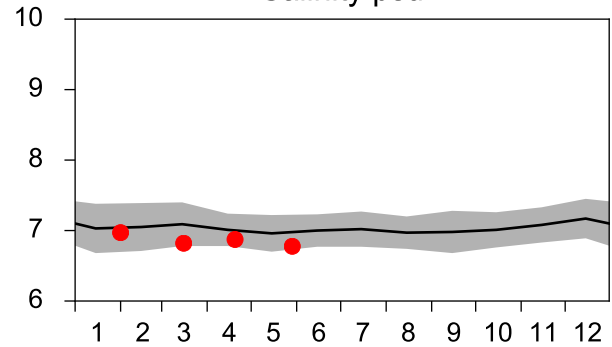
■ St.Dev.

● 2018

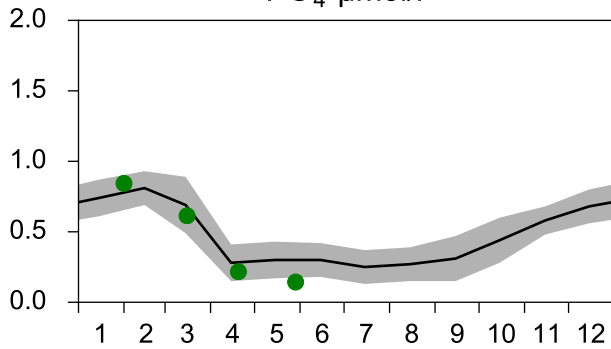
Temperature °C



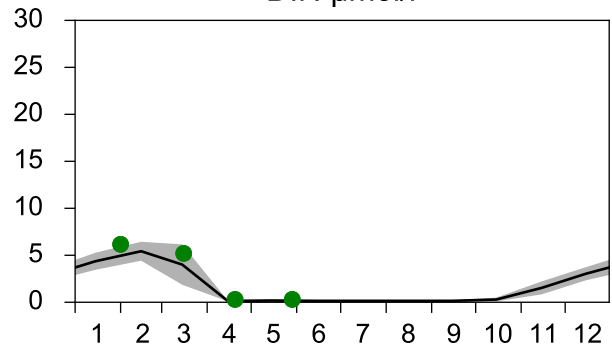
Salinity psu



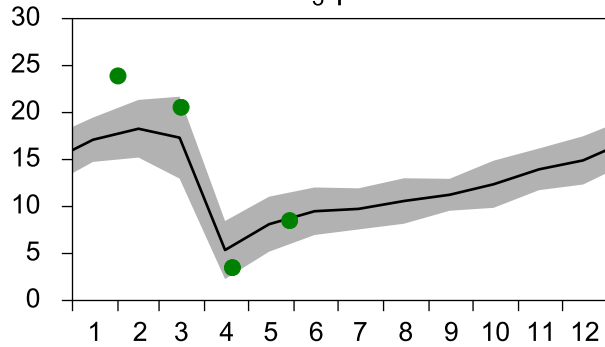
PO₄ µmol/l



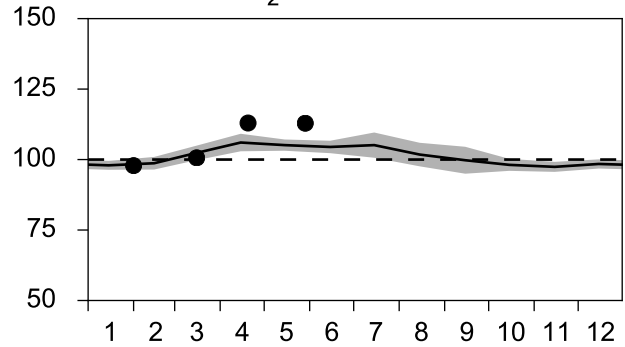
DIN µmol/l



SiO₃ µmol/l

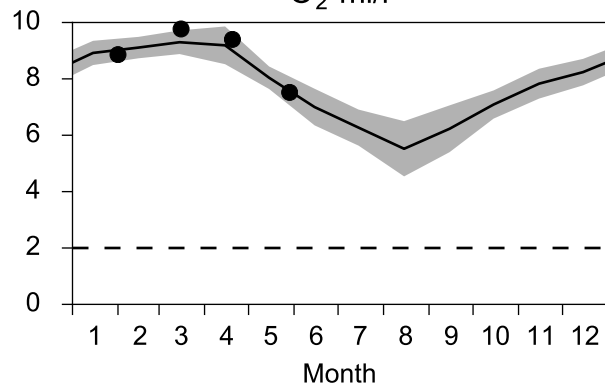


O₂ saturation %

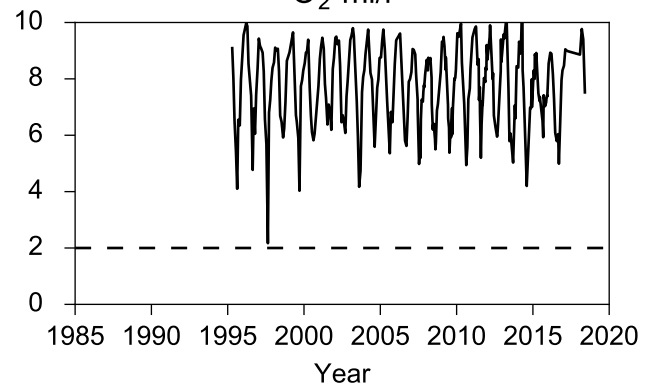


OXYGEN IN BOTTOM WATER (depth >= 17 m)

O₂ ml/l

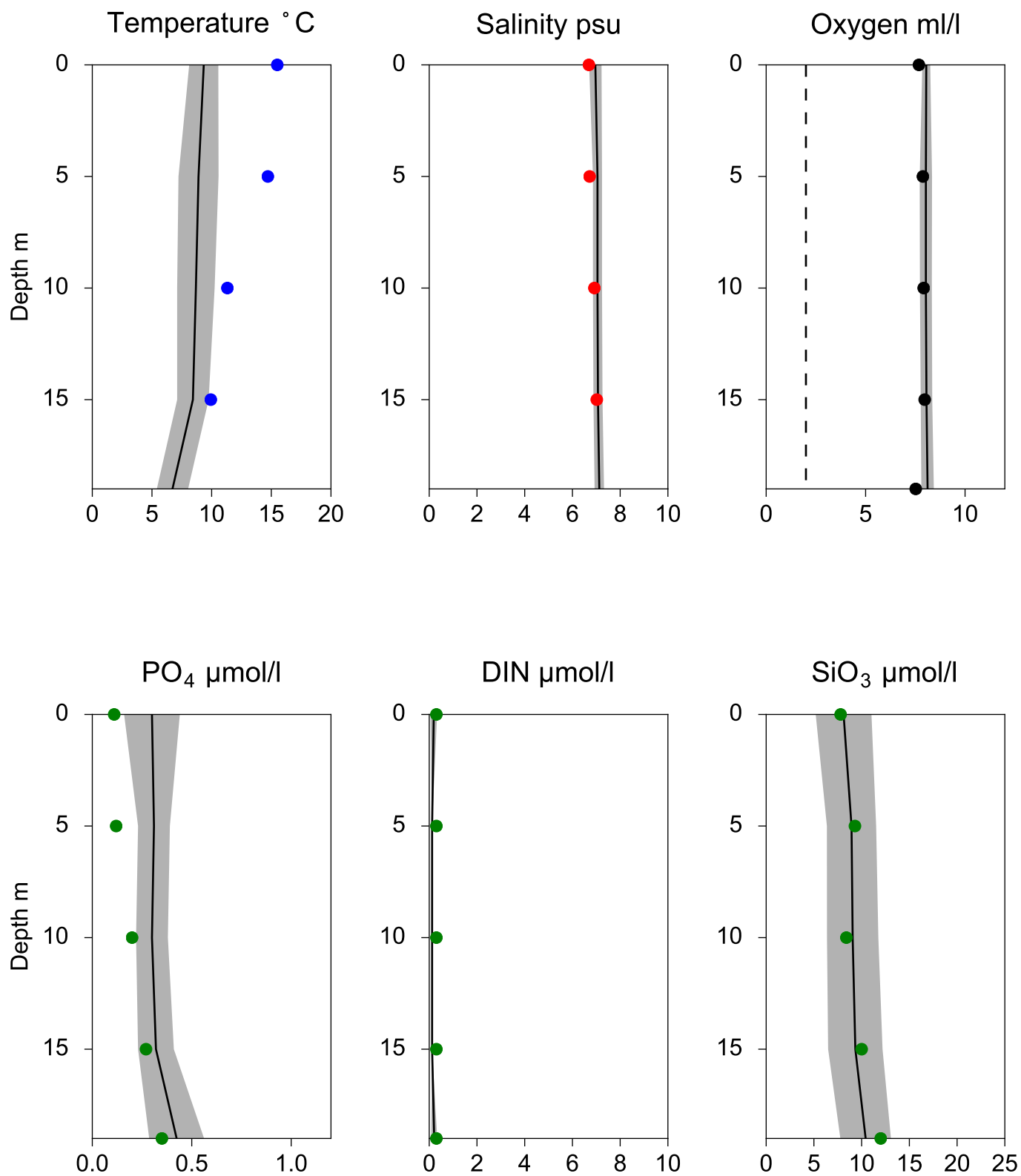


O₂ ml/l



Vertical profiles REF M1V1 May

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STATION BY38 KARLSÖDJ SURFACE WATER (0-10 m)

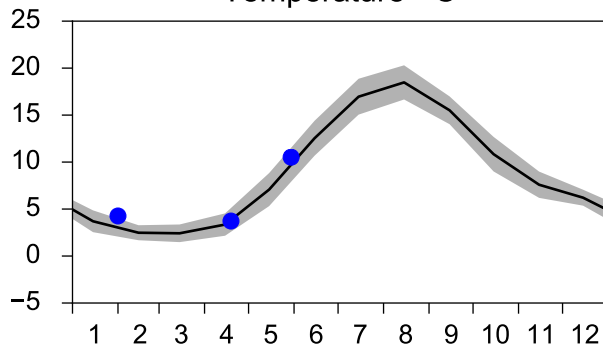
Annual Cycles

— Mean 2001-2015

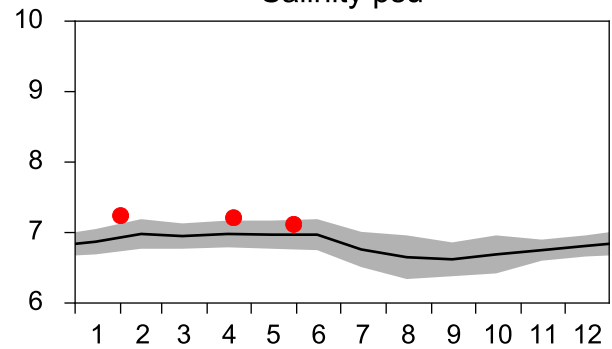
■ St.Dev.

● 2018

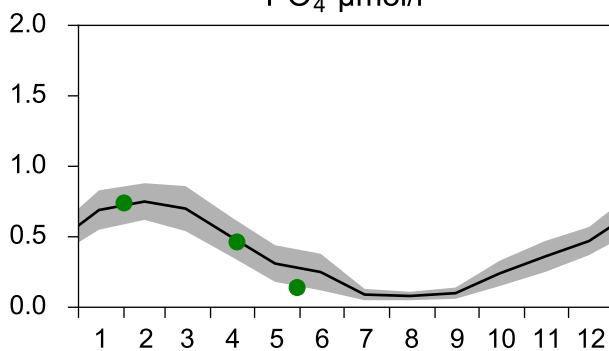
Temperature °C



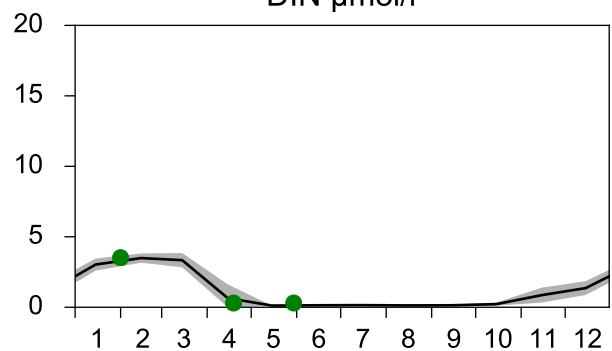
Salinity psu



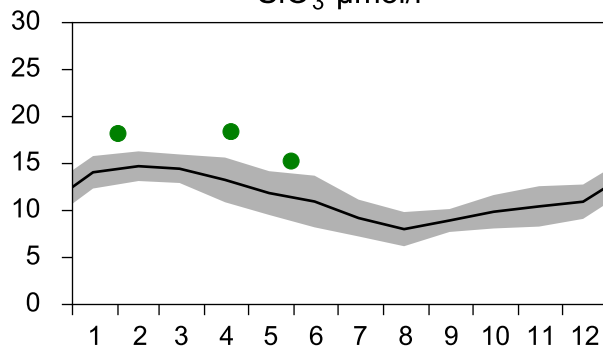
PO₄ µmol/l



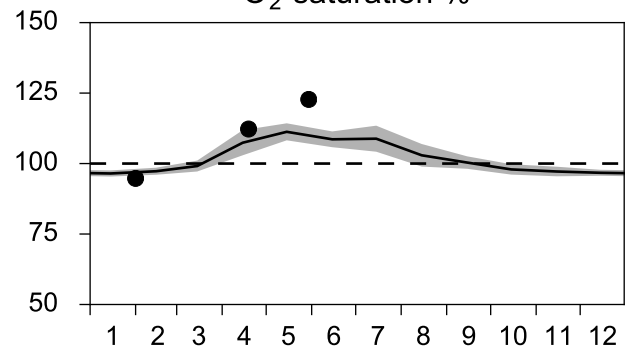
DIN µmol/l



SiO₃ µmol/l

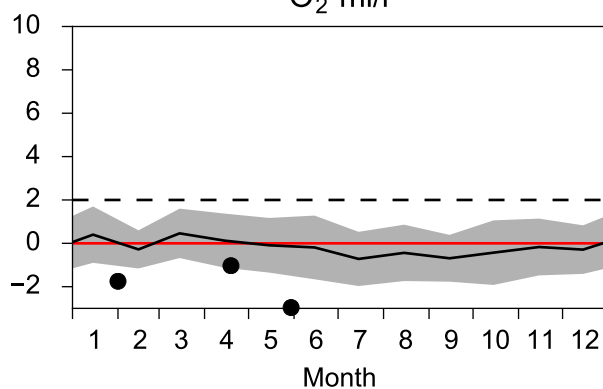


O₂ saturation %

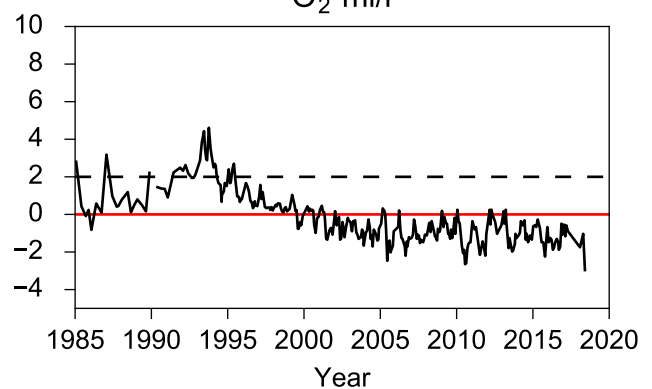


OXYGEN IN BOTTOM WATER (depth >= 100 m)

O₂ ml/l



O₂ ml/l

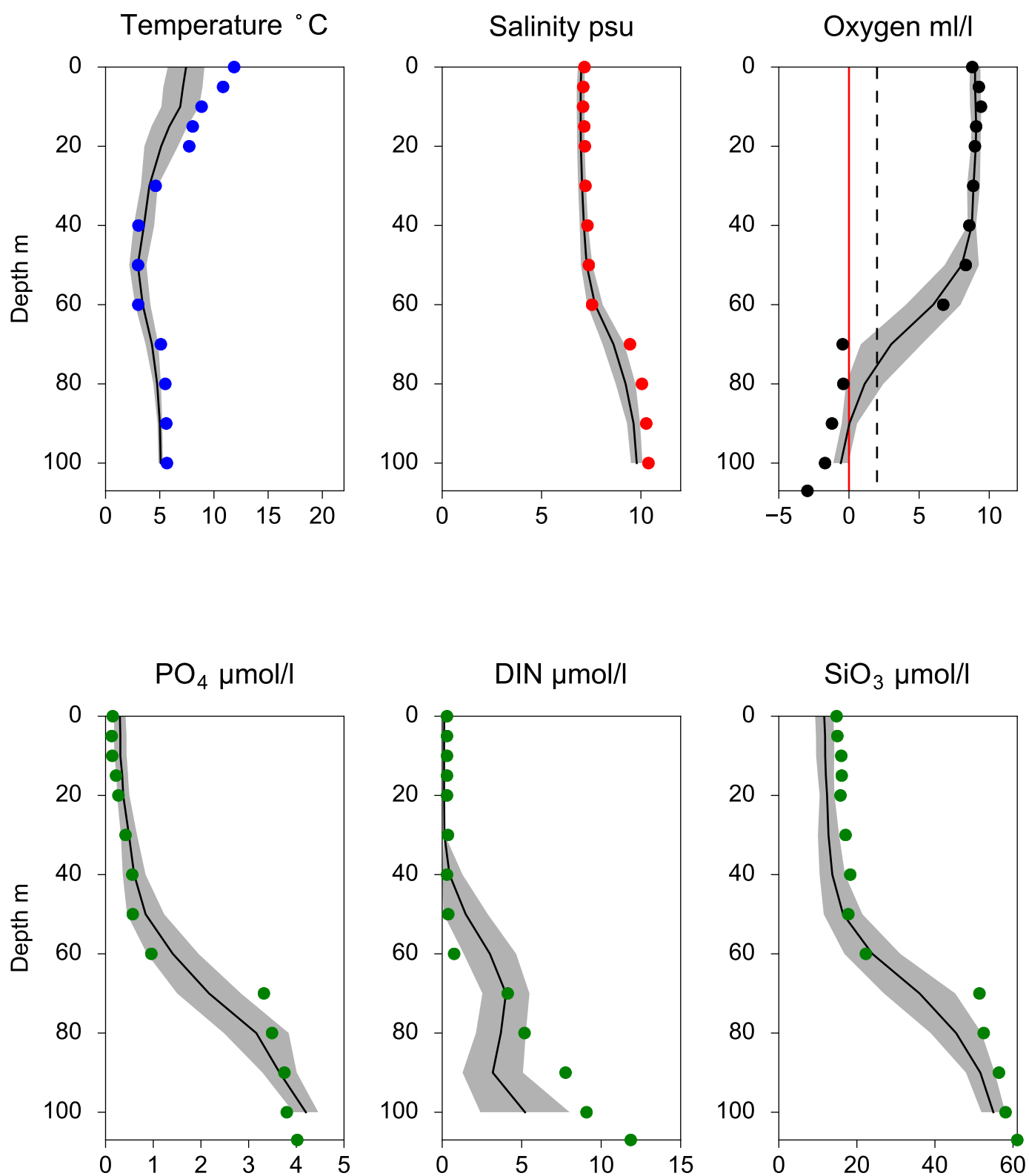


Vertical profiles BY38 KARLSÖDJ May

— Mean 2001-2015

■ St.Dev.

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STATION BY10 SURFACE WATER (0-10 m)

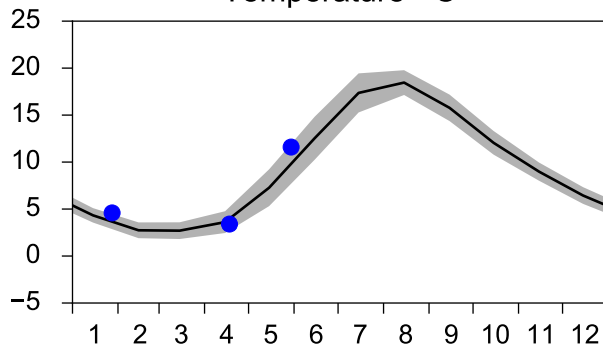
Annual Cycles

— Mean 2001-2015

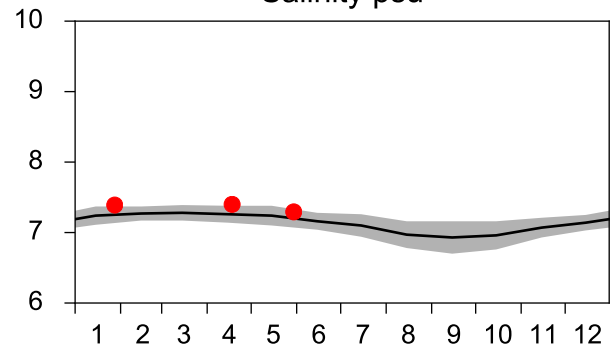
■ St.Dev.

● 2018

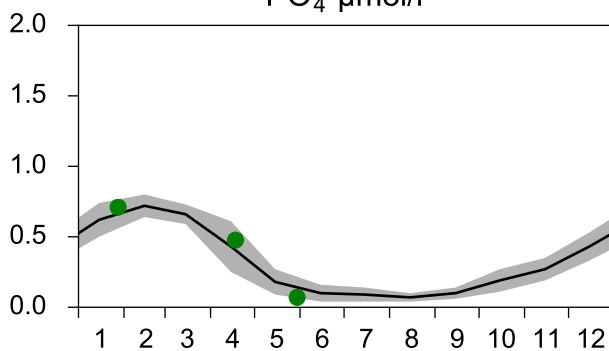
Temperature °C



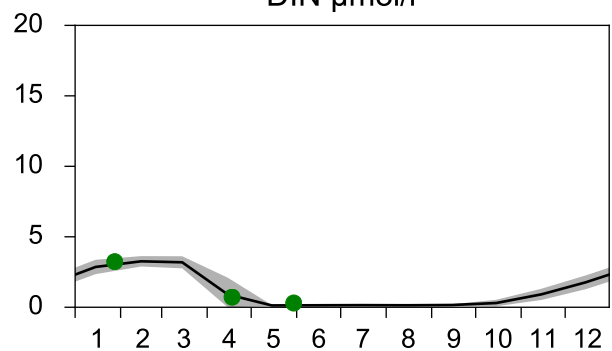
Salinity psu



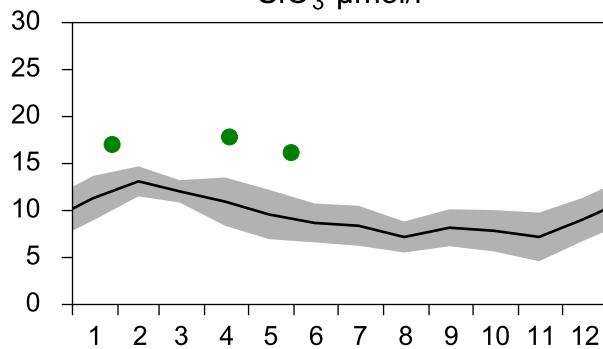
PO₄ µmol/l



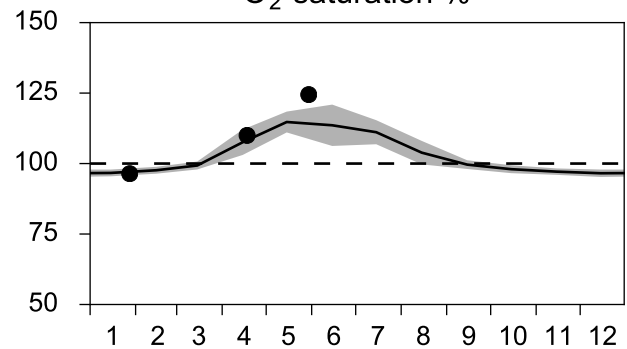
DIN µmol/l



SiO₃ µmol/l

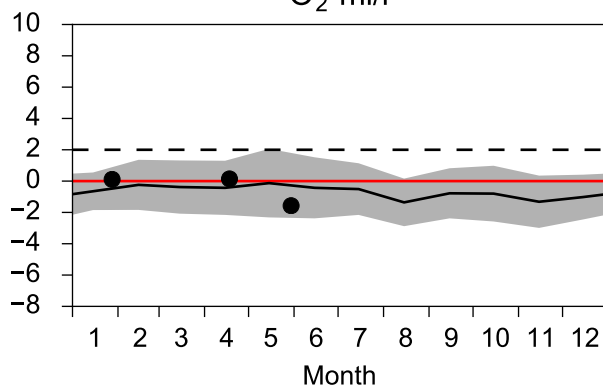


O₂ saturation %

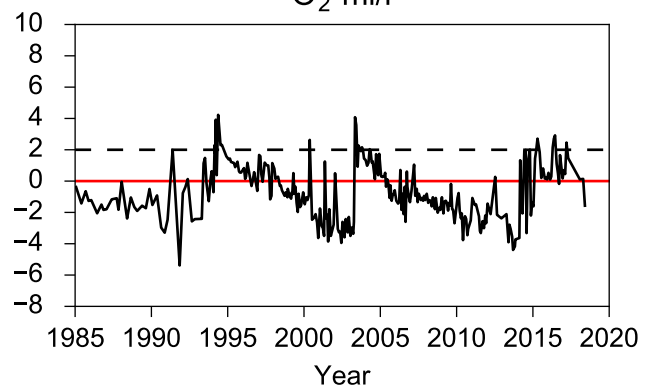


OXYGEN IN BOTTOM WATER (depth >= 125 m)

O₂ ml/l

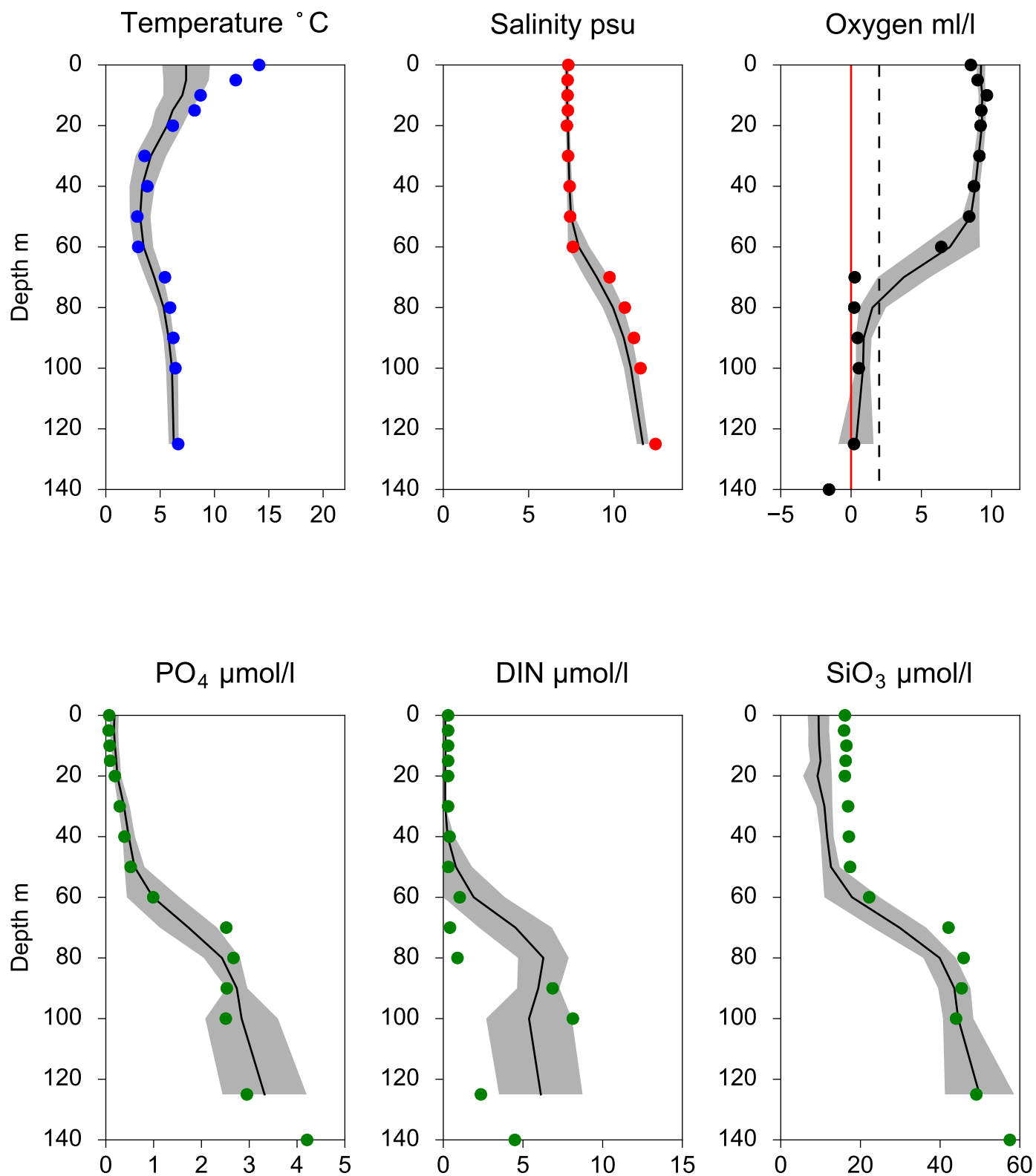


O₂ ml/l



Vertical profiles BY10 May

— Mean 2001-2015 ■ St.Dev. ● 2018-05-30



STATION BY15 GOTLANDSDJ SURFACE WATER (0-10 m)

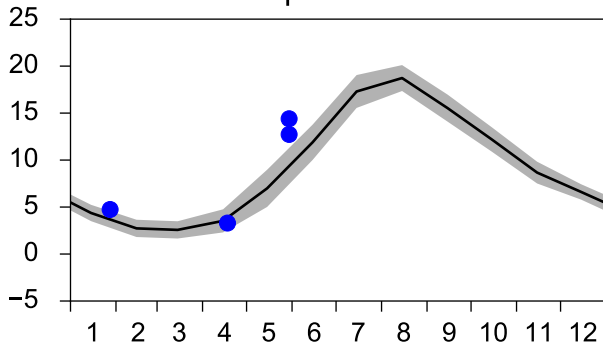
Annual Cycles

— Mean 2001-2015

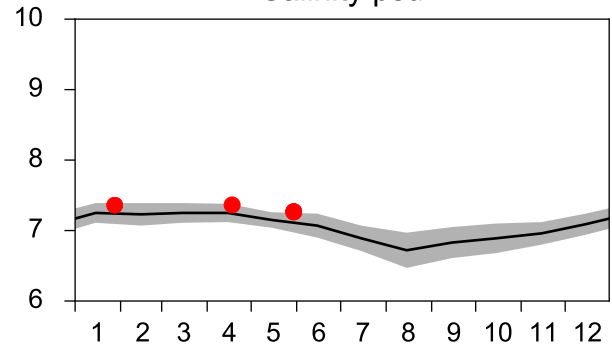
■ St.Dev.

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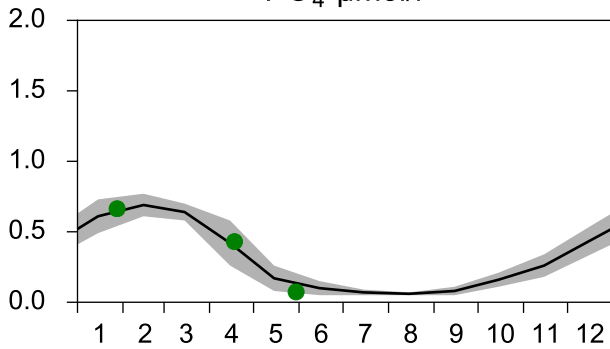
Temperature °C



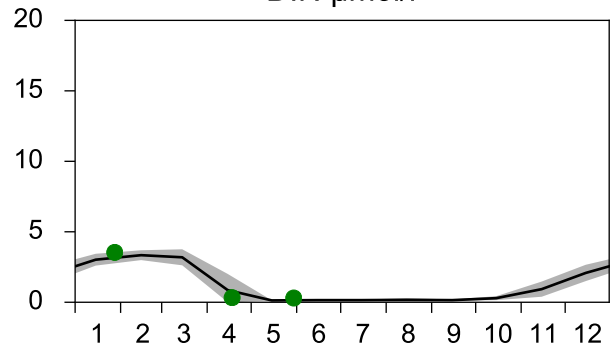
Salinity psu



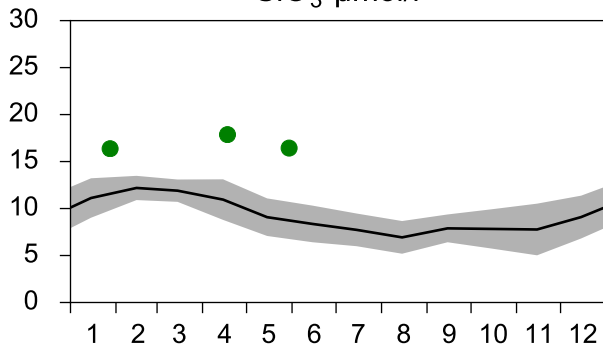
PO₄ µmol/l



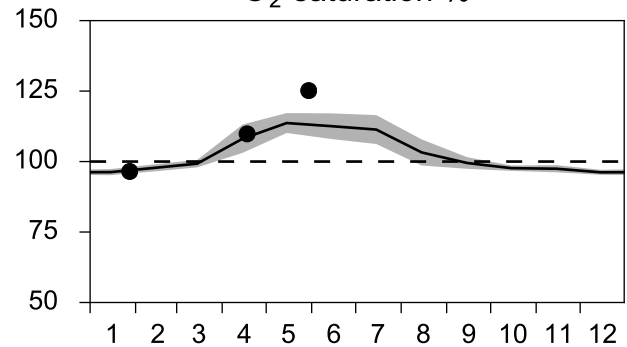
DIN µmol/l



SiO₃ µmol/l

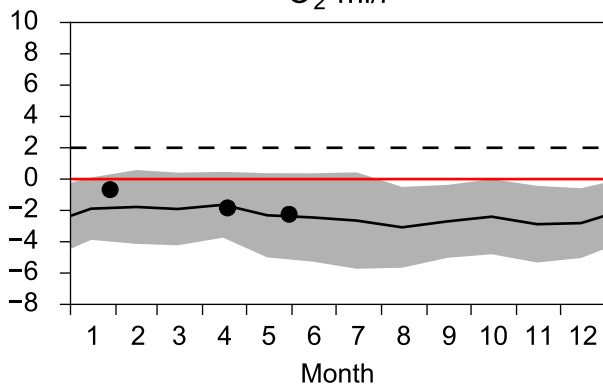


O₂ saturation %

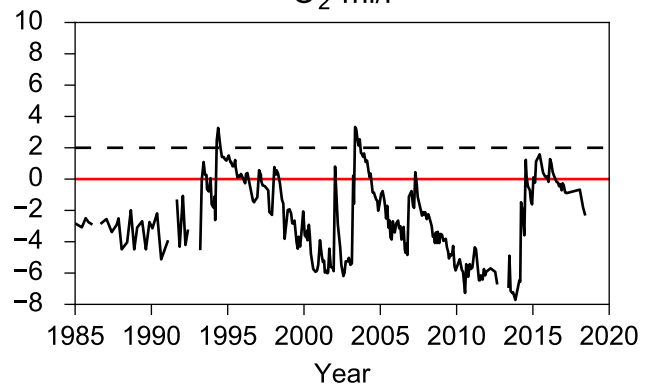


OXYGEN IN BOTTOM WATER (depth >= 225 m)

O₂ ml/l

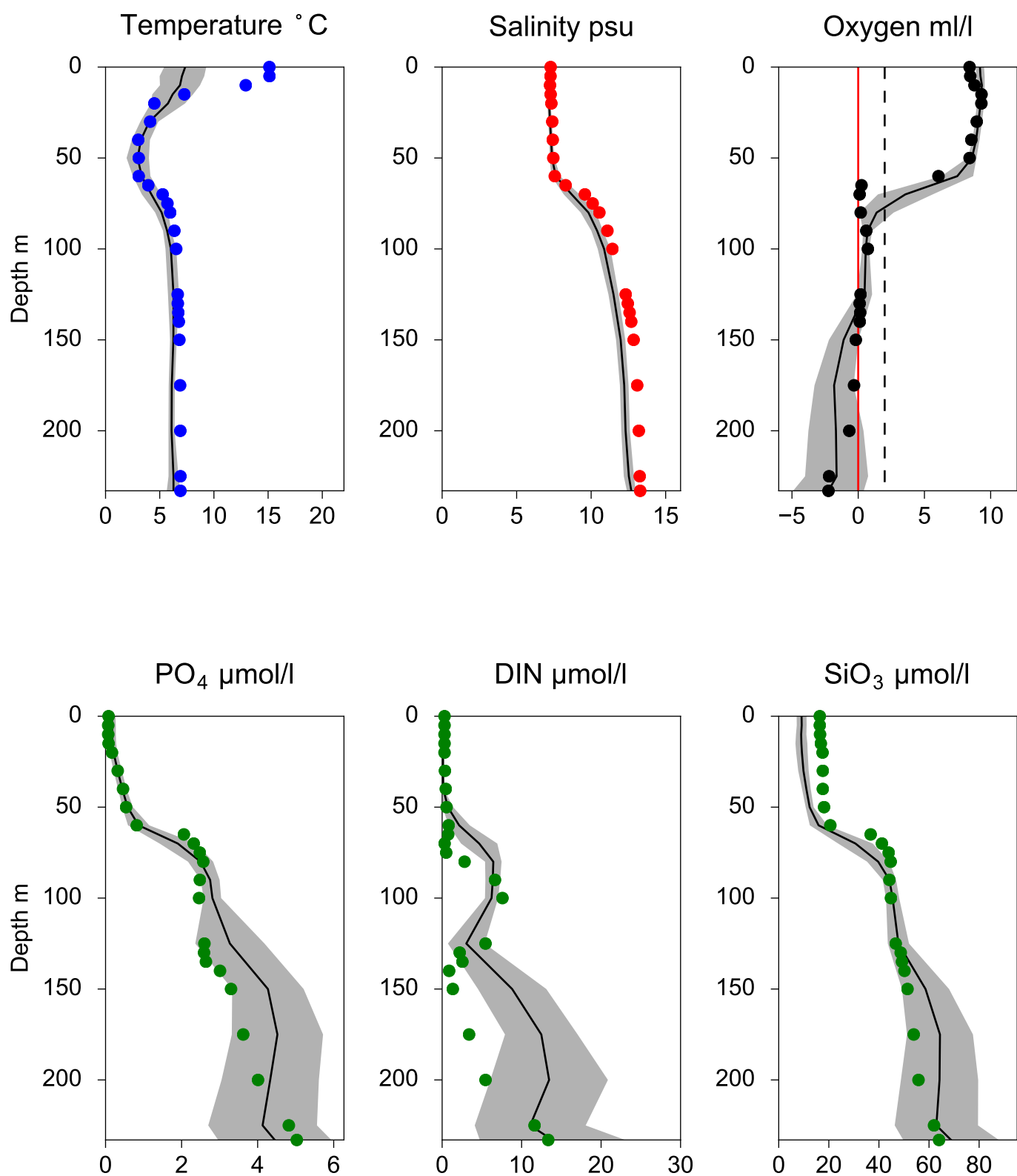


O₂ ml/l



Vertical profiles BY15 GOTLANDSDJ May

— Mean 2001-2015 St.Dev. • 2018-05-30



STATION BY20 FÅRÖDJ SURFACE WATER (0-10 m)

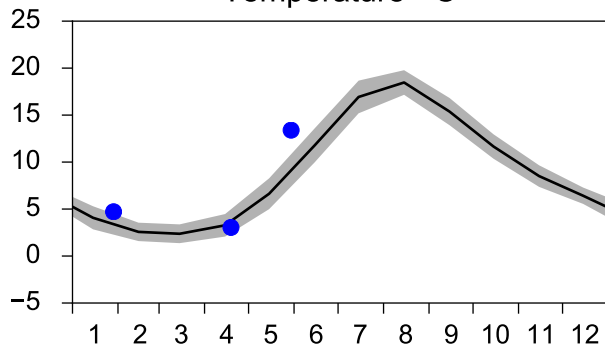
Annual Cycles

— Mean 2001-2015

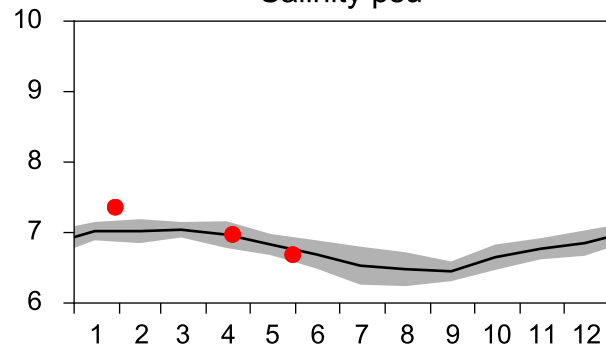
■ St.Dev.

● 2018

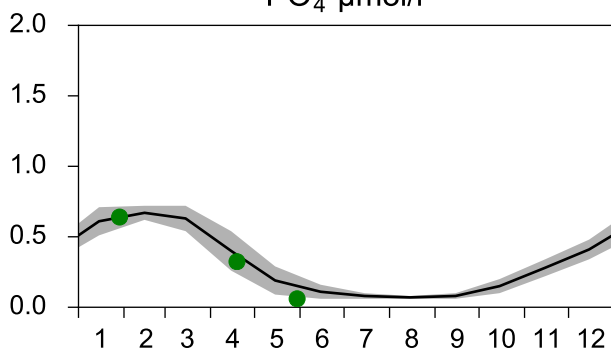
Temperature °C



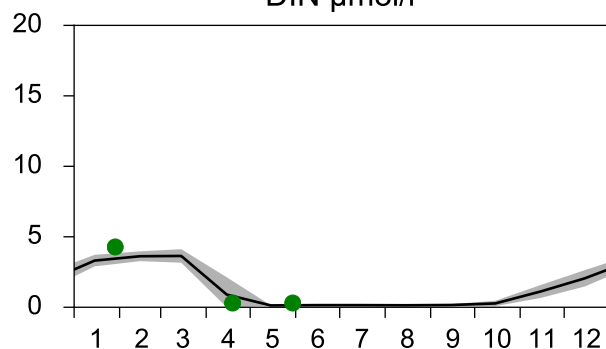
Salinity psu



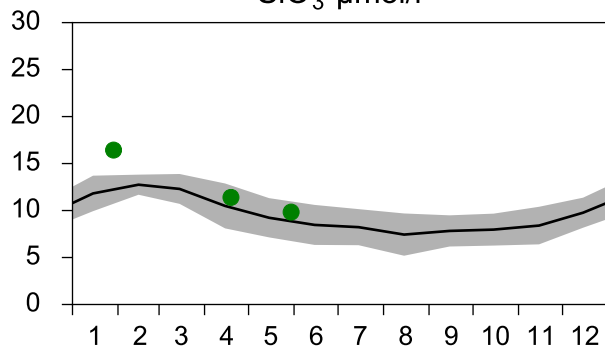
PO₄ µmol/l



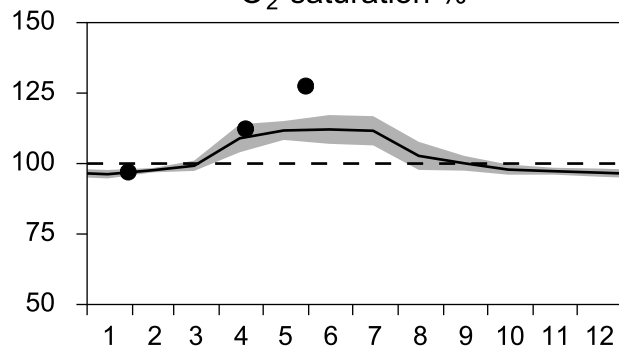
DIN µmol/l



SiO₃ µmol/l

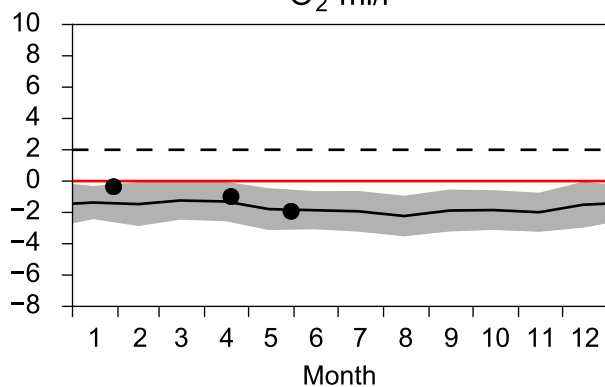


O₂ saturation %

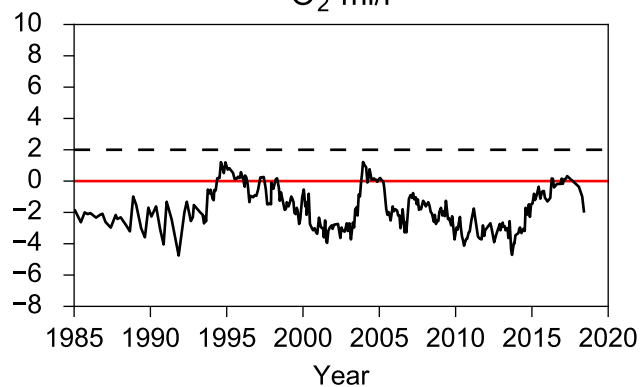


OXYGEN IN BOTTOM WATER (depth >= 175 m)

O₂ ml/l



O₂ ml/l

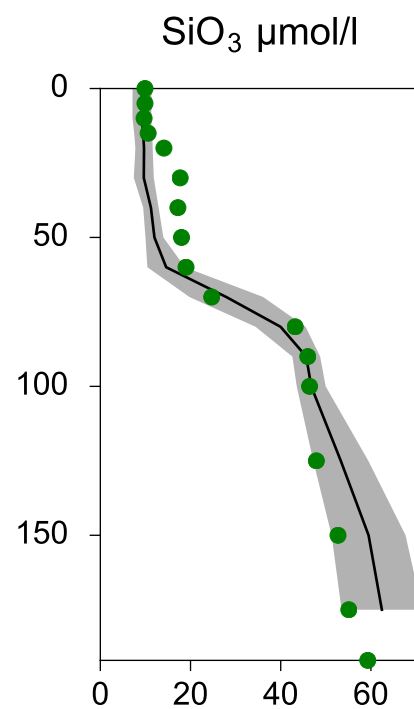
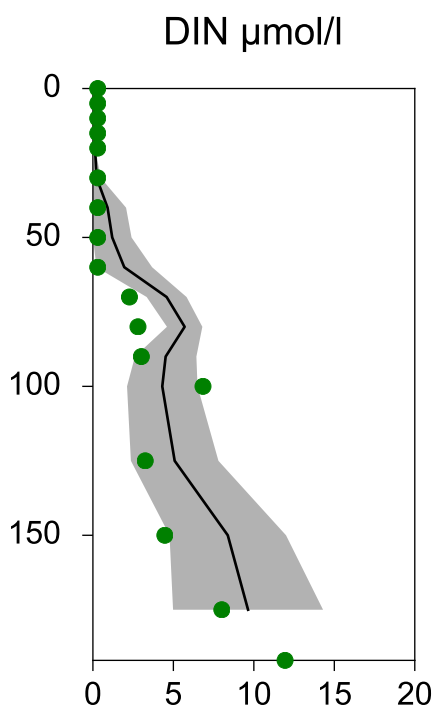
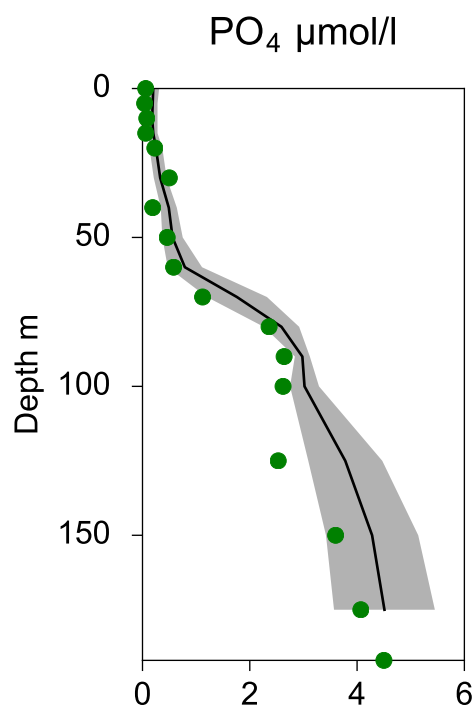
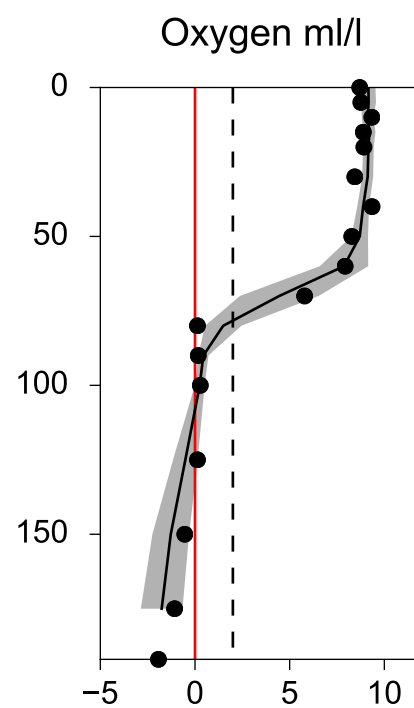
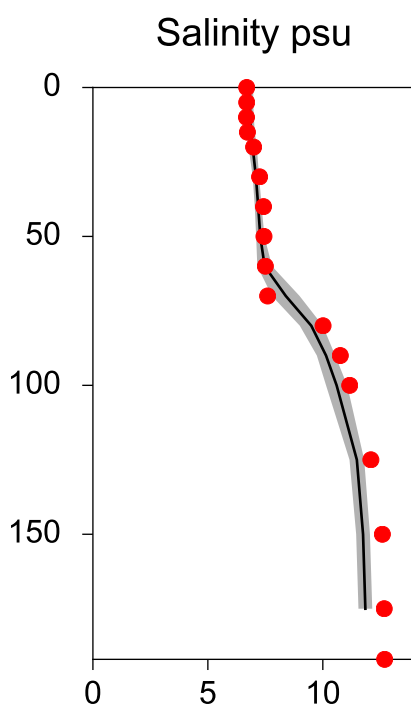
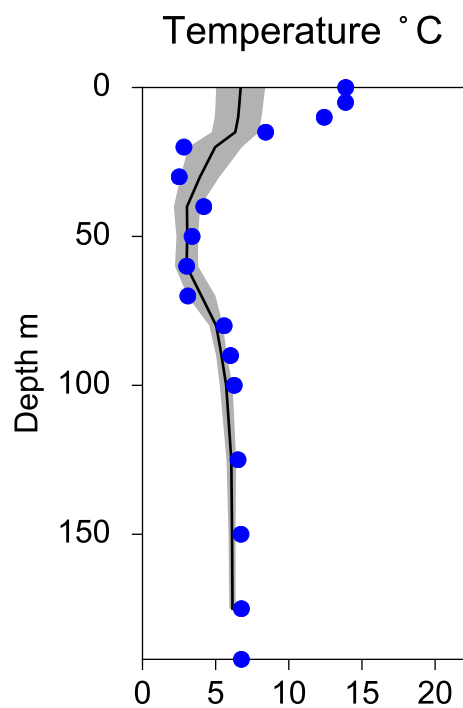


Vertical profiles BY20 FÅRÖDJ May

— Mean 2001-2015

■ St.Dev.

● 2018-05-30



STATION BY32 NORRKÖPINGSDJ SURFACE WATER (0-10 m)

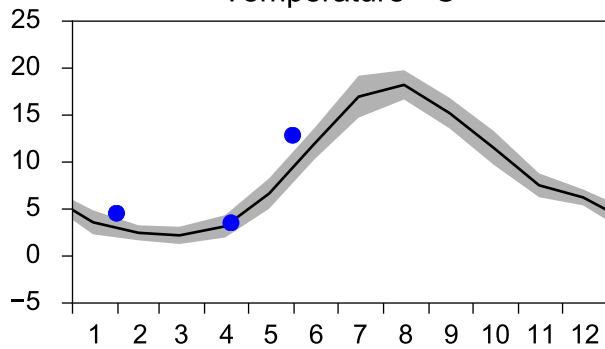
Annual Cycles

— Mean 2001-2015

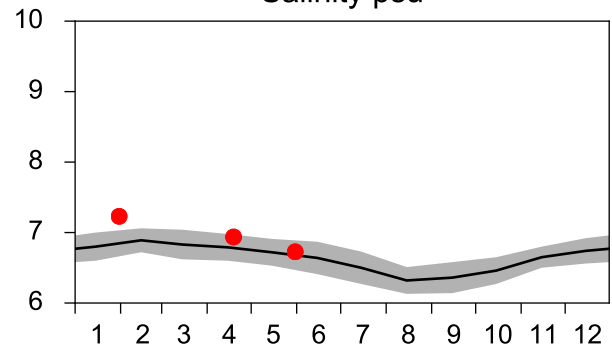
■ St.Dev.

● 2018

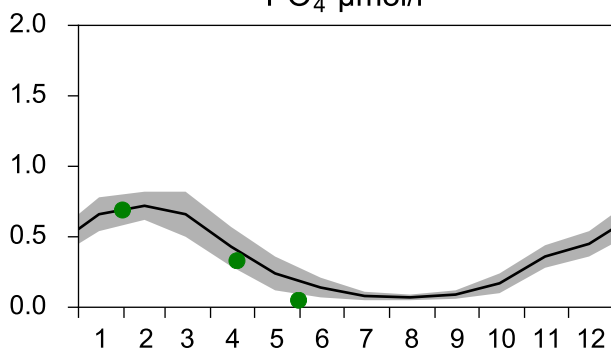
Temperature °C



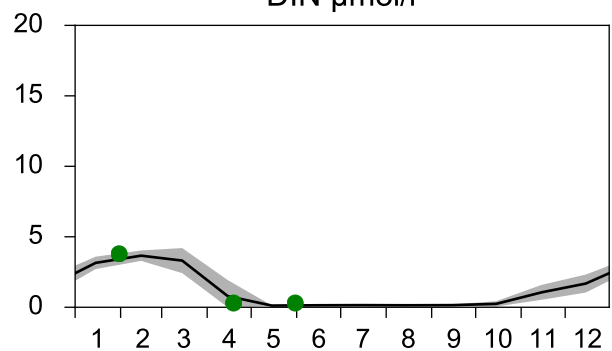
Salinity psu



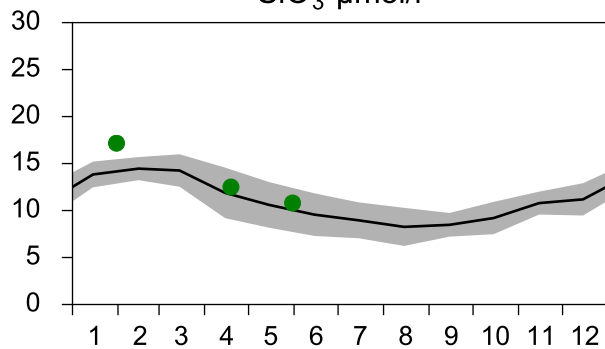
PO₄ µmol/l



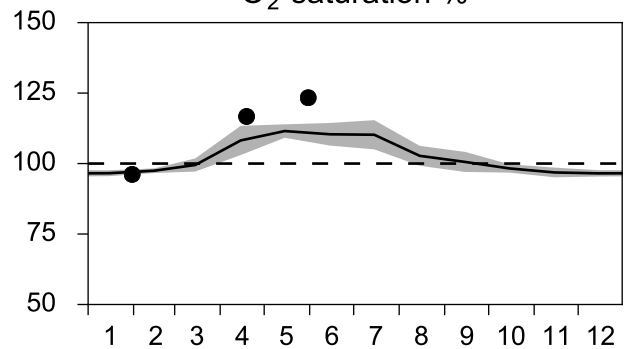
DIN µmol/l



SiO₃ µmol/l

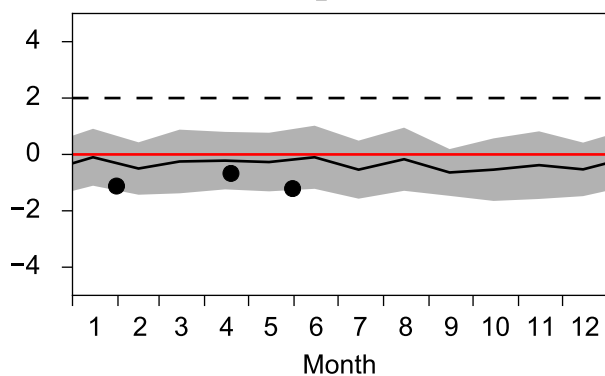


O₂ saturation %

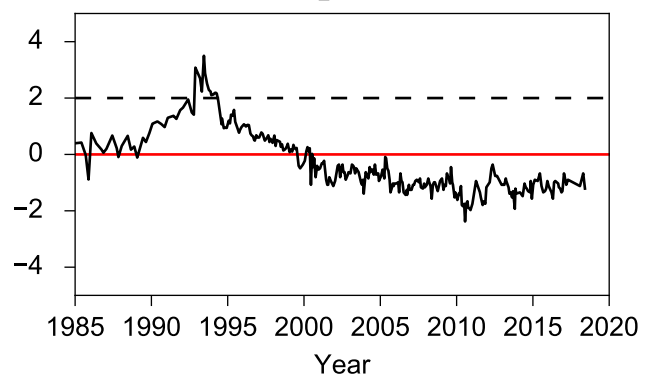


OXYGEN IN BOTTOM WATER (depth >= 175 m)

O₂ ml/l



O₂ ml/l

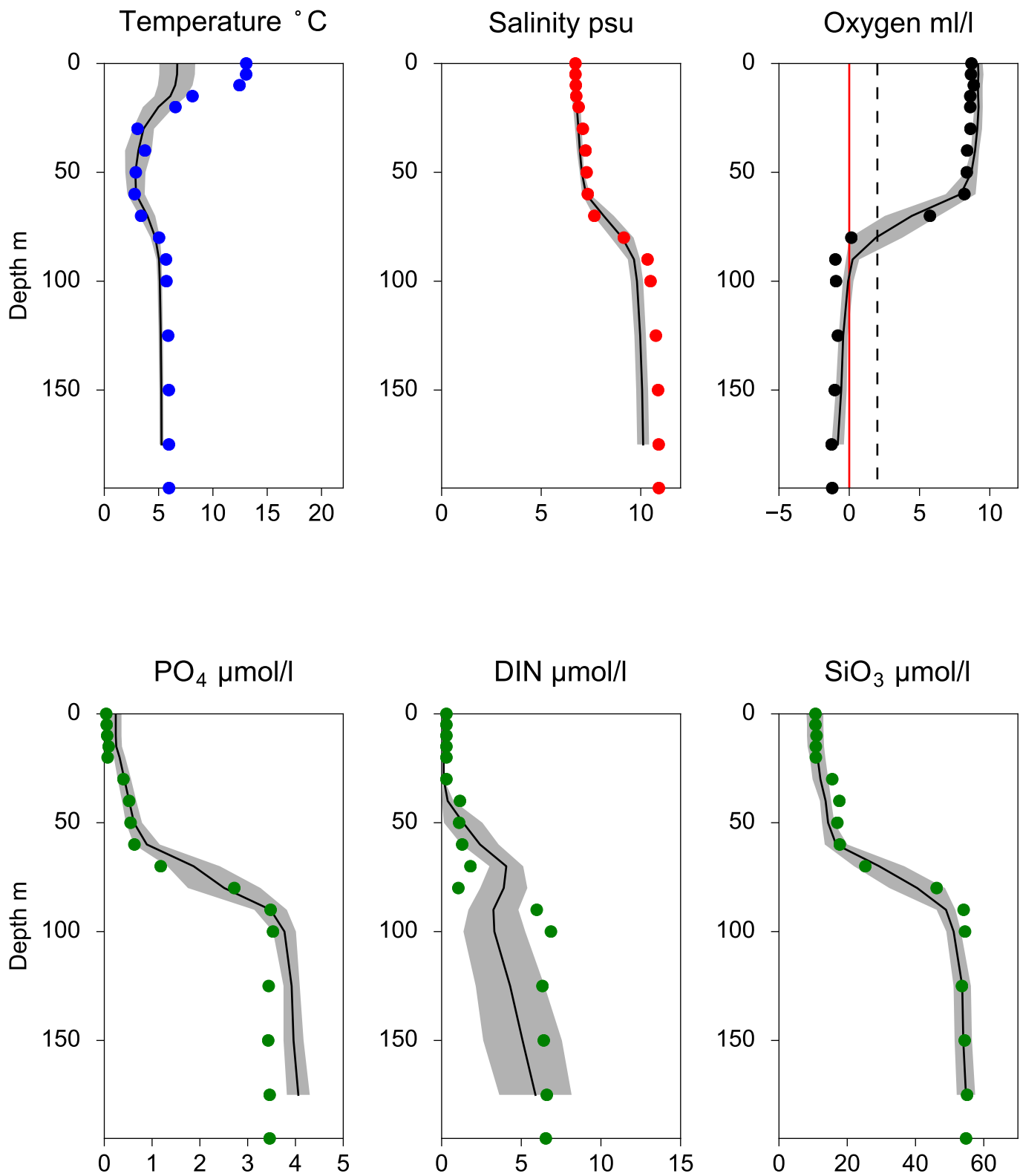


Vertical profiles BY32 NORRKÖPINGSDJ May

— Mean 2001-2015

■ St.Dev.

● 2018-05-31



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

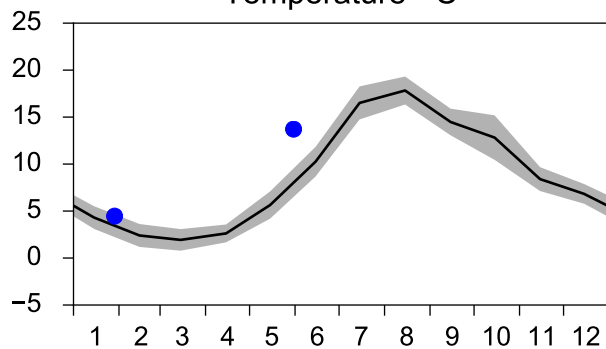
Annual Cycles

— Mean 2001-2015

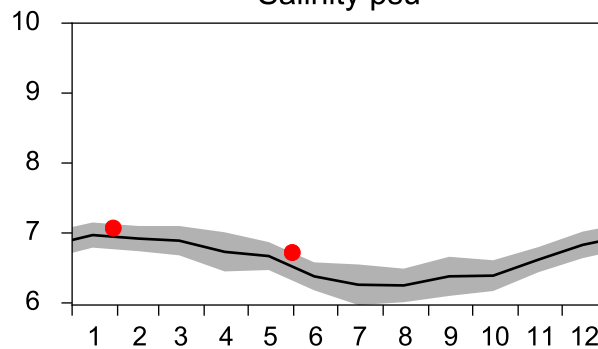
■ St.Dev.

● 2018

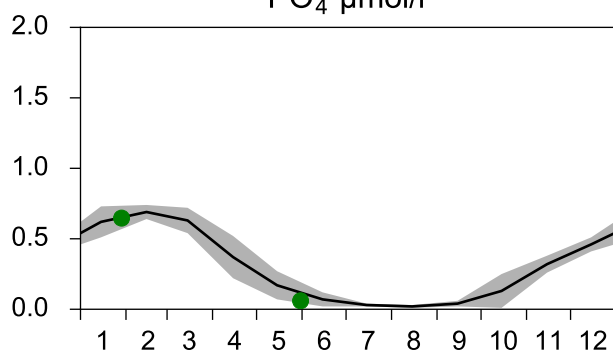
Temperature °C



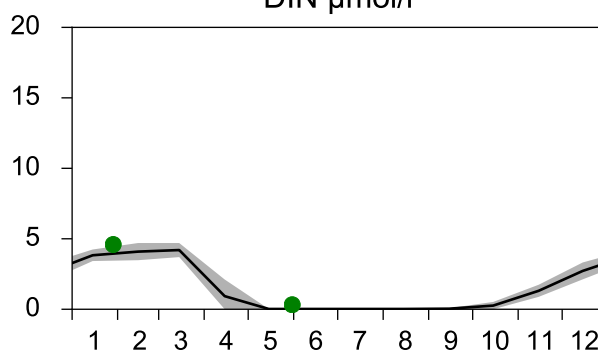
Salinity psu



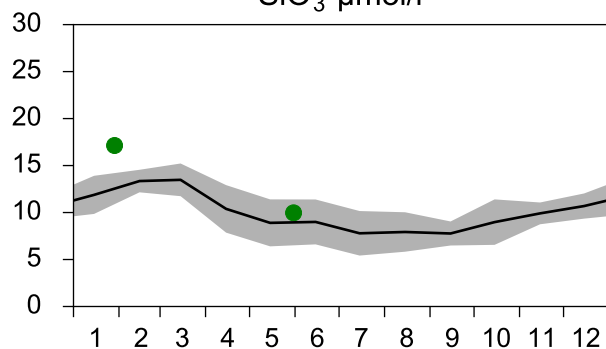
PO₄ µmol/l



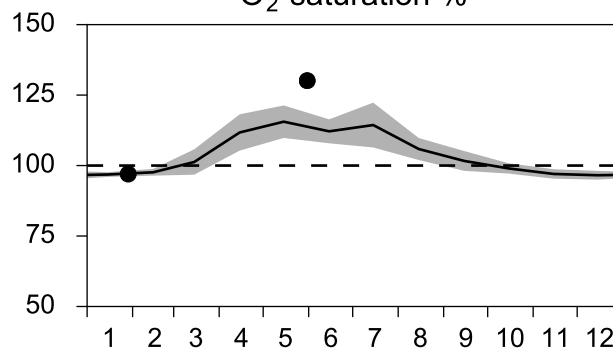
DIN µmol/l



SiO₃ µmol/l

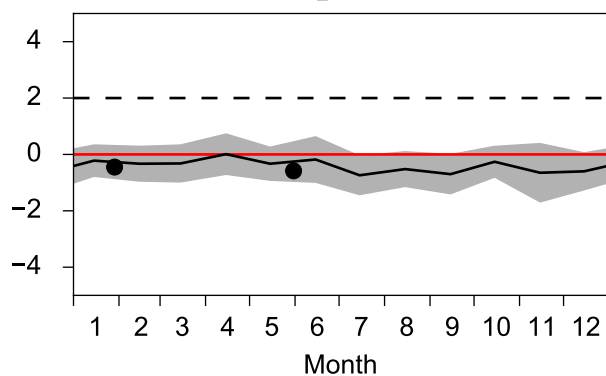


O₂ saturation %

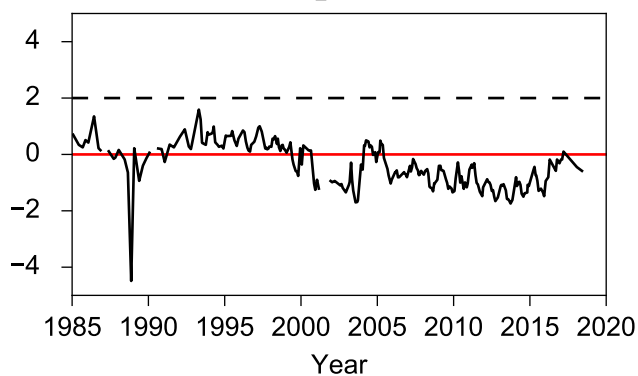


OXYGEN IN BOTTOM WATER (depth >= 150 m)

O₂ ml/l



O₂ ml/l



Vertical profiles BY29 / LL19 May

— Mean 2001-2015 St.Dev. • 2018-05-31

