Anna-Kerstin Thell
Sveriges Meteorologiska och Hydrologiska Institut
Oceanografiska Laboratoriet
2021-02-04
Dnr: S/Gbg-2021-3

SMHIs utsjöexpedition med R/V Svea
Januari

Expeditionens varaktighet: 2021-01-08 – 2021-01-15
Uppdragsgivare: Sveriges Meteorologiska och Hydrologiska Institut (SMHI), Havs- och Vattenmyndigheten (HaV)
Samarbetspartner: Sveriges Lantbruksuniversitet (SLU)

SAMMANFATTNING

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

Yttemperaturen var i januari månad över det normala i Egentliga Östersjön och varierade mellan 3,4°C i Kattegatt och 6,8°C i Egentliga Östersjön. I Västerhavet fanns ett språngskikt kring 5 – 25 meter och i Östersjön var ytvattnet väl omblandat ner till 40 – 70 meter.

Halten av fosfat och kisel var normal till över det normala i hela området, löst oorganiskt kväve var normalt till under det normala på västkusten och över det normala i Egentliga Östersjön.

Syresituationen i Arkona- och Bornholmsbassängen var normal till över det normala för årstiden. I Östra, Norra och Västra Gotlandsbassängen var det syrebrist (syrgaskoncentration < 2 ml/l) från 65 – 90 meter. Vid BY15 var det låga syrehalter, kring 0,1 ml/l, från 95 meter till 110 meter, vid 90 meter och från 125 meter var det helt syrefritt och svavelväte uppmättes. Svavelväte återfanns mellan 80 till 125 meter i Östra, Norra och Västra Gotlandsbassängen.

Nästa ordinarie expedition är planerad att starta 9 februari. Då kommer även vinterkartering av närsalter i Östersjön att utföras.

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RESULTAT

Expeditionen genomfördes med det svenska forskningsfartyget Svea och startade i Lysekil den 8 januari 2021 och avlutades i samma hamn den 15 januari. Vädret var grått och det var för det mesta friska vindar från olika riktningar. I Östra Gotlandsbassängen blåste det upp till storm som medförde att BY20 Fårödjupet inte kunde provtas. Lufttemperaturen varierade mellan -3,3 och 5,0°C.
Under den här expeditionen utfördes vinterkartering av näringsämnen i Kattegatt och Öresund.

Denna rapport är baserad på data som endast 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 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
Temperaturen i ytvattnet varierade mellan som kallast 4,3°C i yttre och södra delen och som varmast 6,4°C närmast kusten, vilket är normalt för årstiden. Ytsalthalten varierade mellan 24 och 28 psu, lägst i södra delen, vilket är något lägre än normalt i utsjön och förhöjt vid kusten. Det fanns en tydlig skitkning som sammanföll på 5-10 meters djup.

Halterna av näringsämnen i Skagerraks ytvatten varierade för fosfat kring 0,64 µmol/l, löst oorganiskt kväve 5,7 – 7,3 µmol/l och kisel 9,6 – 12,1 µmol/l. De högsta halterna var närmast kusten. Halterna av fosfat och kisel var normala till mycket över det normala och löst oorganiskt kväve var normalt för årstiden.

Syresituationen var god vid samtliga stationer i Skagerrak, med värden normala för årstiden. Lägst koncentration vid botten uppmättes vid Å13, 5,2 ml/l.

Klorofyllfluorescensen, som är ett mätt på planktonaktiviteten uppmätt från CTD-sonden, var låg i hela området.

Kattegatt och Öresund
Yttemperaturen i Kattegatt och Öresund var normal för årstiden och varierade mellan 3,4 – 5,6°C. Ytsalthalten varierade mellan 21 – 23 psu i Kattegatt och i Öresund var salthalten 9 psu, vilket är något lägre än normalt. I Kattegatt och i Öresund var ytvattnet väl omblandat ner till 10 – 25 meter där temperatur- och salthaltssprångskikt sammanföll.

Halterna i ytvattnet av fosfat (0,64 – 0,82 µmol/l) och halten av kisel (10,9 – 17,5 µmol/l) var något förhöjda för årstiden. Vid Anholt E var kiselhalten mycket över det normala. Halterna av löst oorganiskt kväve (4,16 – 7,16 µmol/l) var lägre än normalt.

Det var mestadels goda syreförhållanden i bottenvattnet men som lägst uppmättes 4,6 ml/l i Kattegatt och 3,3 ml/l i Öresund.

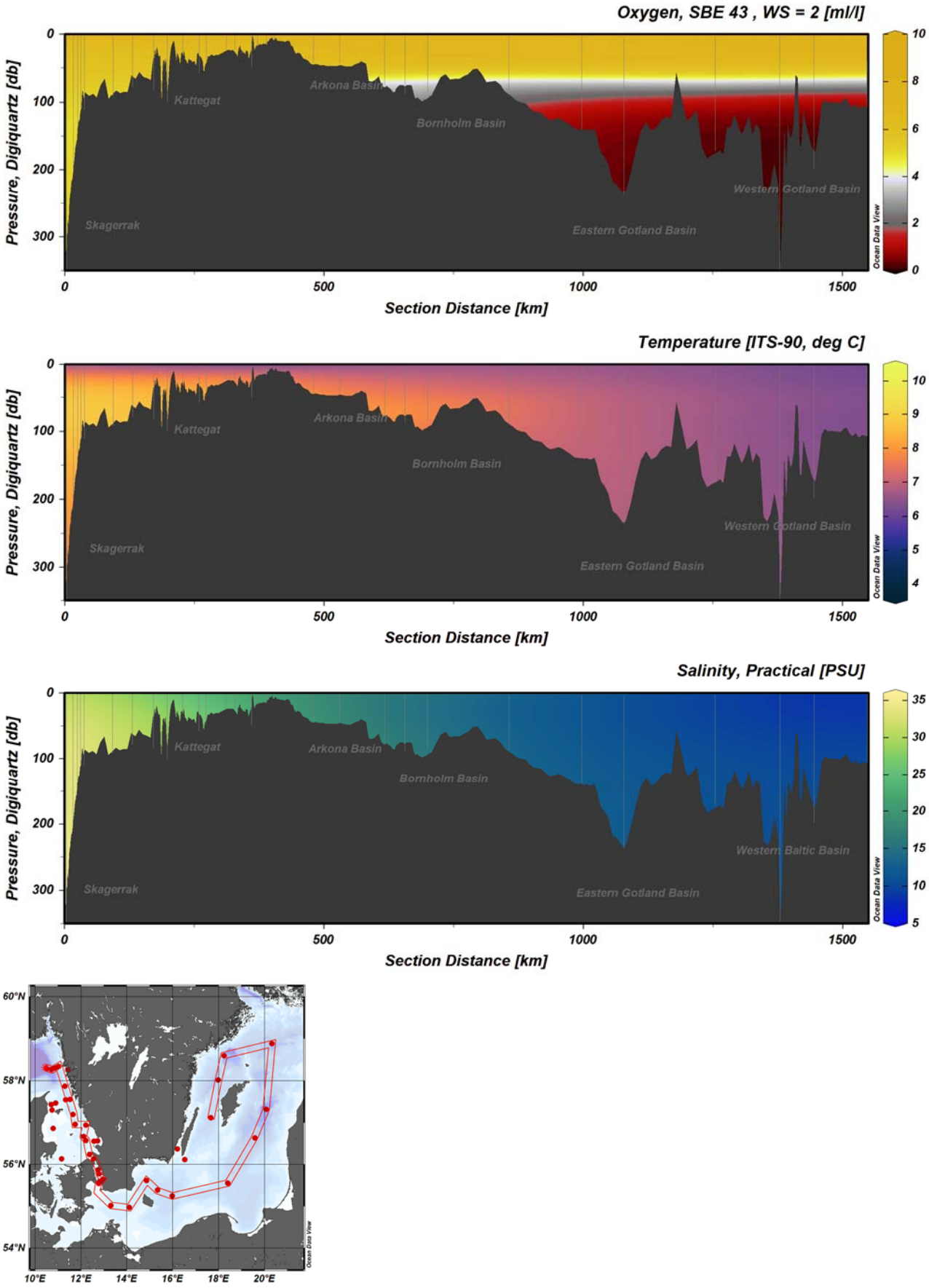
Klorofyllfluorescensen var låg i hela området.

Egentliga Östersjön
Vattentemperaturen i ytvattnet var varmare än normalt för årstiden och den varierade mellan 5,7 – 6,8°C. Salthalten i ytan (6,6 – 8,5 psu) varierade mellan att vara normal och något över det normala i hela det undersökta området. Haloklinen påträffades på djup mellan 40 och 70 meter.

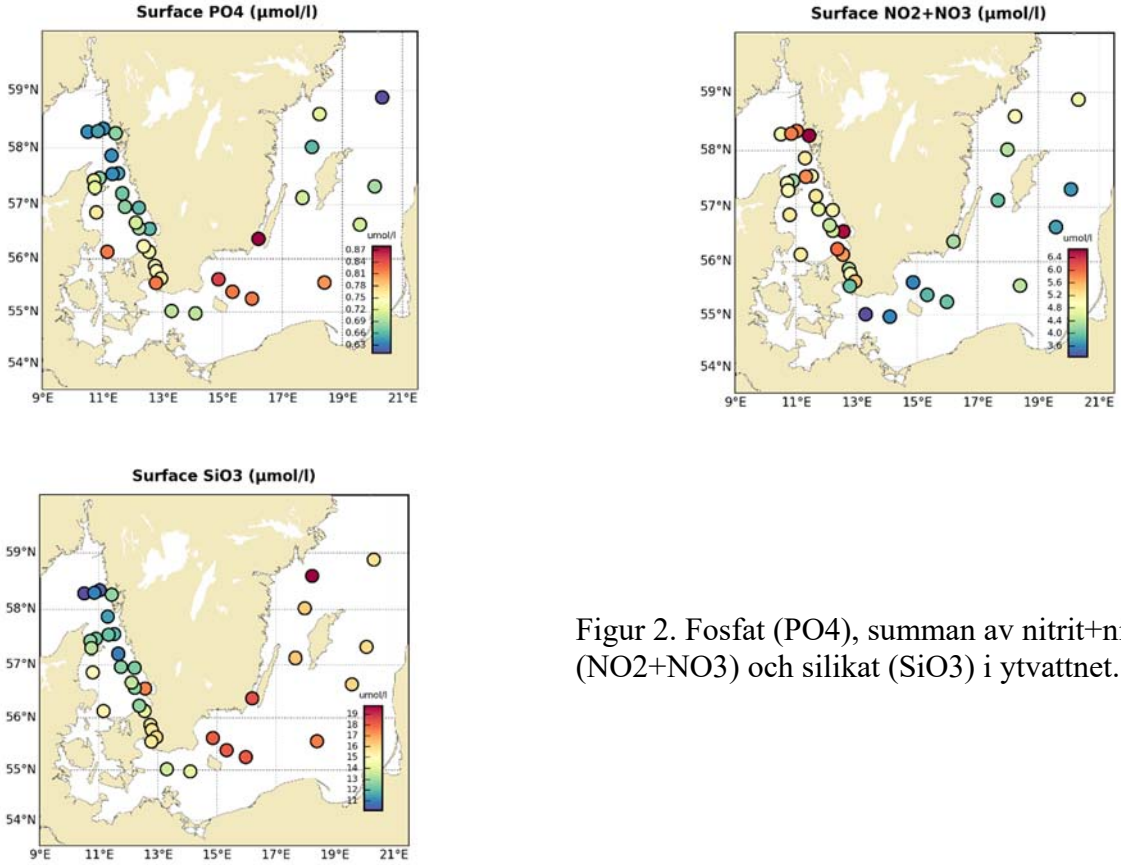
Syresituationen i Arkona- och Bornholmsbassängerna var normal till något över det normala för årstiden. I Östra, Norra och Västra Gotlandsbassängerna var det syrebrist (syrgaskoncentration < 2 ml/l) från 65 – 90 meter. Vid BY15 var det låga syrehalter, kring 0,1 ml/l, mellan 95 och 110 meter, vid 90 meter och från 125 meter var det helt syrefritt och svavelväte uppmättes. Svavelväte återfanns mellan 80 till 125 meter i Östra, Norra och Västra Gotlandsbassängerna.

Närsaltskoncentrationerna i ytvattnet var normala till över det normala i hela området. Halterna av fosfat varierade mellan 0,61 – 0,85 µmol/l, löst oorganiskt kväve mellan 3,25 – 4,92 µmol/l och kiselhalten varierade mellan 13,6 – 19,8 µmol/l.

Planktonaktiviteten var låg i hela området.



Figur 1. Snitt som visar syre, salthalt och temperatur salthalt från Skagerrak, Kattegatt, Öresund, genom Egentliga Östersjön, till Västra Gotlandsbassängen. Grå linjer markerar positioner som data baseras på och underst visas en karta med positionerna utmärkta.



Figur 2. Fosfat (PO4), summan av nitrit+nitrat (NO2+NO3) och silikat (SiO3) i ytvattnet.

DELTAGARE

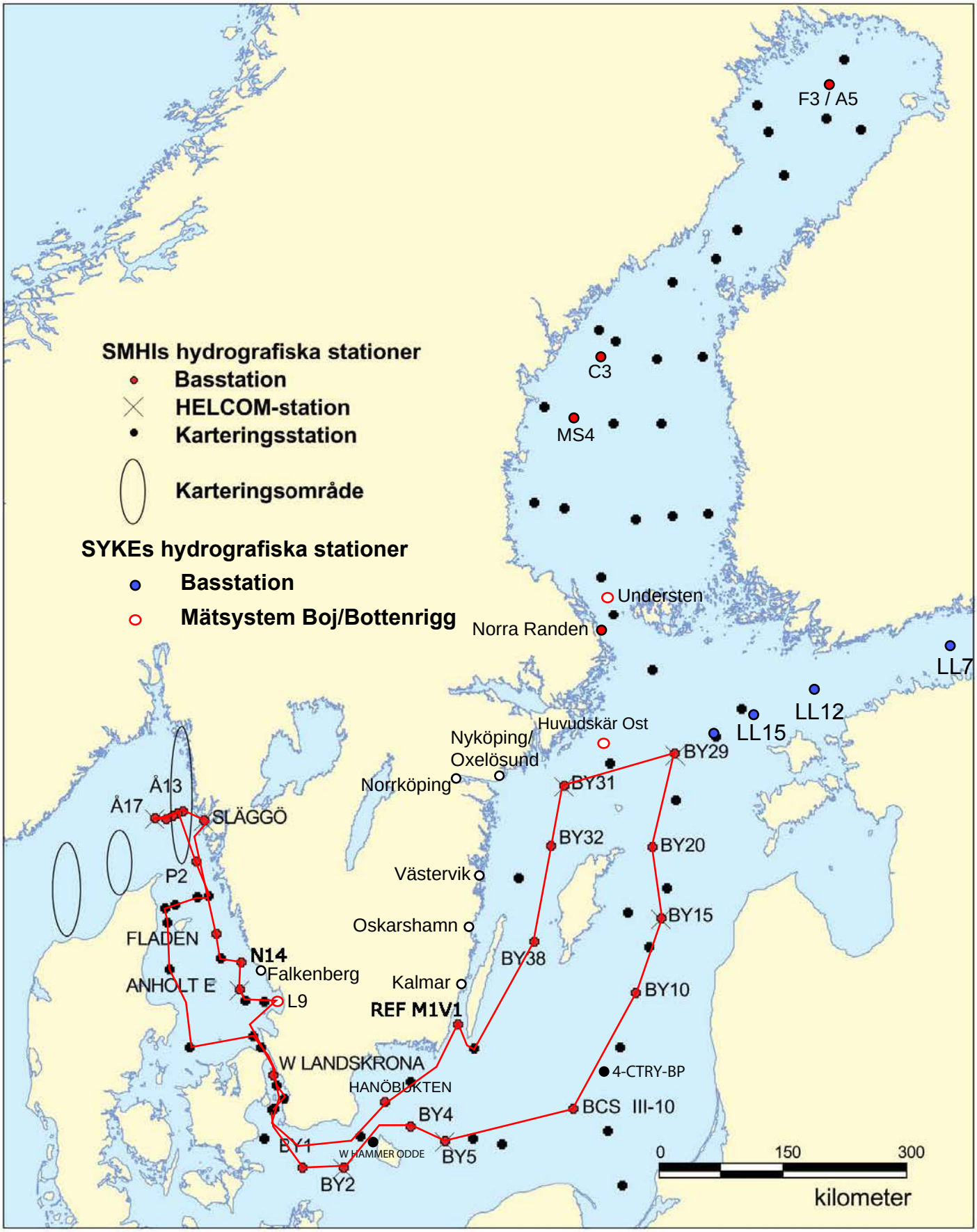
Namn	Roll	Från
Anna-Kerstin Thell	Expeditionsledare	SMHI
Kristin Andreasson		SMHI
Ola Kalén		SMHI
Monica Lindner		SMHI
Madeleine Nilsson		SMHI

BILAGOR

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

SMHI
Havs
och Vatten
myndigheten

TRACKCHART
Country: Sweden
Ship: R/V Svea
Date: 210108-210115
Series: 0001-0042



Ship: SE
Year: 2021

Date: 2021-02-01
Time: 19:09

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	Wind vel	Air temp C	Air pres hPa	WCWI elac aove tueo hdsb	CZPP hohp loy apt o p	No de	No btl	Temp_btl	Temp_ctd	Salt_btl	Salt_ctd	Ph	Doxy_btl	Doxy_ctd	H2s	Phos	Ptot	Ntri	Ntra	Ntrz	Amon	Ntot	Alky	Sio3-si	Humus	Comnt_visit	Comnt_samp
0001	01	FIBG27	BAS...	SLÄGGÖ	5815.58	01126.12	20210108	1120	77					1018	1620	-xx-	9		x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0002	01	SKEX14	BAS...	Å13	5820.35	01101.61	20210108	1400	114		02	9	-0.7	1019	2630	----	10		x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0003	01	SKEX18	BAS...	Å17	5817.05	01030.27	20210108	1720	351		04	10	-0.1	1020	9999	--x-	15		x	x	-	x	x	x	x	-	x	-	x	x	x	x	-	-	x	-	x	-
0004	01	SKEX17	BAS...	Å16	5816.1	01043.49	20210108	2000	200				-0.5	1021	9990	----	13		-	x	-	x	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-
0005	01	SKEX16	BAS...	Å15	5817.66	01050.75	20210108	2130	137				-0.4	1022	9990	----	12		x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0006	01	SKEX15	BAS...	Å14	5818.95	01056.61	20210108	2250	107		36	8	-0.3	1022	9990	----	11		-	x	-	x	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-
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0010	01	KANX06	BAS...	GF8	5727.94	01054.02	20210109	1000	42	9	36	1	2.1	1024	2820	----	8		x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0011	01	KANX07	BAS...	GF9	5725.48	01042.6	20210109	1015	27	7	36	1	1.8	1024	2820	----	6		x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0012	01	KANX09	BAS...	LÄSÖ RÄNNA	5717.59	01044.63	20210109	1145	46	7	18	1	1.9	1023	2820	----	9		x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0013	01	KAWA11	BAS...	409 ÅLBORG BUGT	5651.36	01047.49	20210109	1520	15		21	1	2.0	1024	2720	----	4		x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0014	01	KAWX14	BAS...	925 KATTEGAT SW	5607.91	01109.44	20210109	2020	49		24	4	2.0	1024	9990	----	9		x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	x	-
0015	01	SOCX39	BAS...	W LANDSKRONA	5552	01244.9	20210110	0300	52		22	5	1.8	1022	9990	----	9		x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0016	01	SOCX41	BAS...	ÖRESUND-7	5546.31	01247.68	20210110	0430	20		22	7	2.3	1022	9990	----	5		x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0017	01	SOCX44	BAS...	ÖRESUND-4	5538	01257.03	20210110	0600	16		23	7	2.6	1022	9990	----	4		x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0018	01	SOSX00	EXT...	FLINTEN 7	5535.32	01250.62	20210110	0720	7		23	12	2.4	1021	1320	----	2		-	x	-	x	-	-	x	-	-	-	-	-	-	-	-	-	-	-	x	-
0019	01	SOSX46	BAS...	ÖRESUND-2	5532.89	01246.88	20210110	0820	11		23	12	1.8	1021	1330	----	3		x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
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0021	01	BPSA03	BAS...	BY2 ARKONA	5458.29	01405.94	20210110	1715	47		22	13	2.5	1015	9990	--x-	8		x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0022	01	BPSB06	BAS...	BY4 CHRISTIANSÖ	5522.97	01520.02	20210110	2330	91		27	6	4	1010	9990	----	12		x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0023	01	BPSB07	BAS...	BY5 BORNHOLMSDJ	5515.00	01559.03	20210111	0245	90		28	6	5	1010	9990	--x-	12		x	x	x	x	x	x	x	-	x	-	x	x	x	x	-	-	x	-	x	-
0024	01	BPSE11	BAS...	BCS III-10	5533.34	01824.03	20210111	1130	90	13	09	13	3.2	1009	2840	--xx	12		x	x	x	x	x	x	x	x	x	-	x	x	x	x	-	x	x	-	-	-
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0039	01	KAEX29	BAS...	ANHOLT E	5640.09	01206.65	20210115	0130	60		02	8	-2.0	1022	9990	--x-	10		x	x	x	x	x	x	x	-	x	-	x	x	x	x	-	-	x	-	x	-
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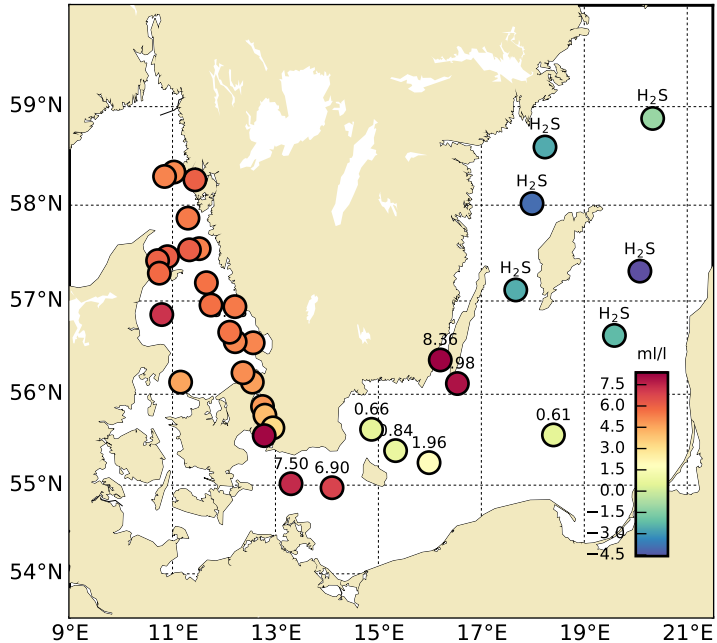
0041	01	KANX26	BAS...	L:A MIDDELGRUND	5657.41	01144.83	20210115	0530	102		03	7	-2.5	1024	9990	----	14		x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0042	01	KANX25	BAS...	FLADEN	5711.56	01139.47	20210115	0800	85		06	7	-2.3	1025	1220	----	13		x	x	x	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-

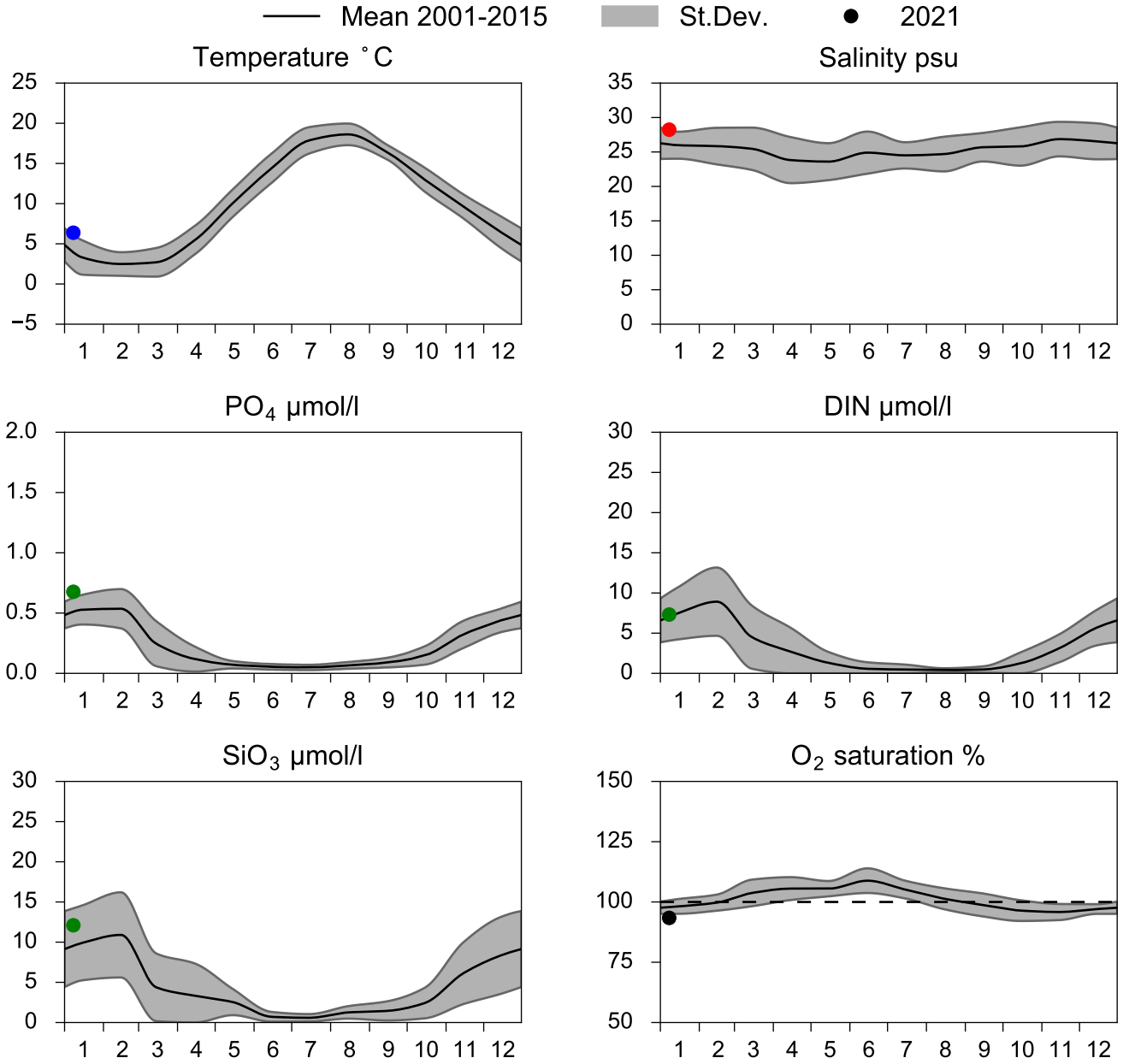
Bottom water oxygen concentration (ml/l)

Ship: R/V Svea
Date: 20210108-20210115
Series: 0001-0042

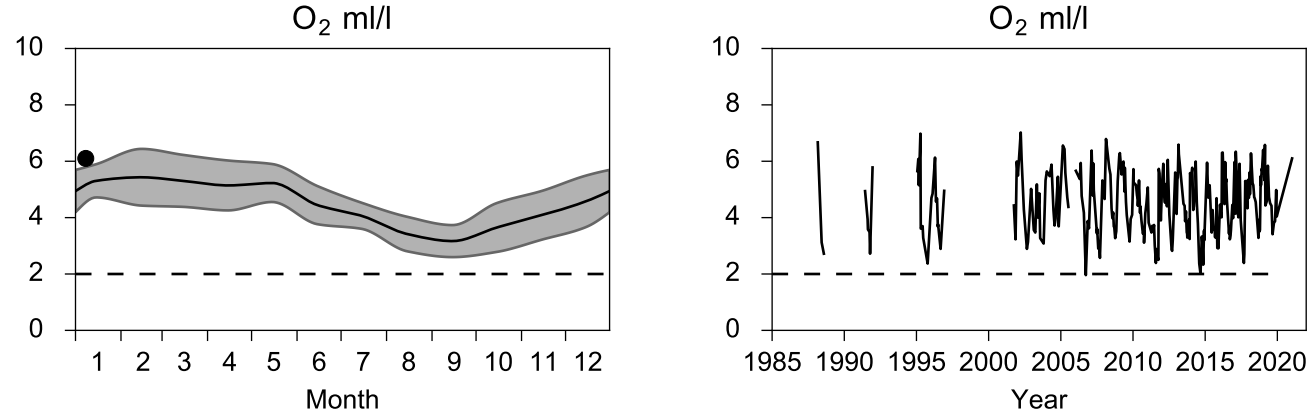


STATION SLÄGGÖ SURFACE WATER (0-10 m)

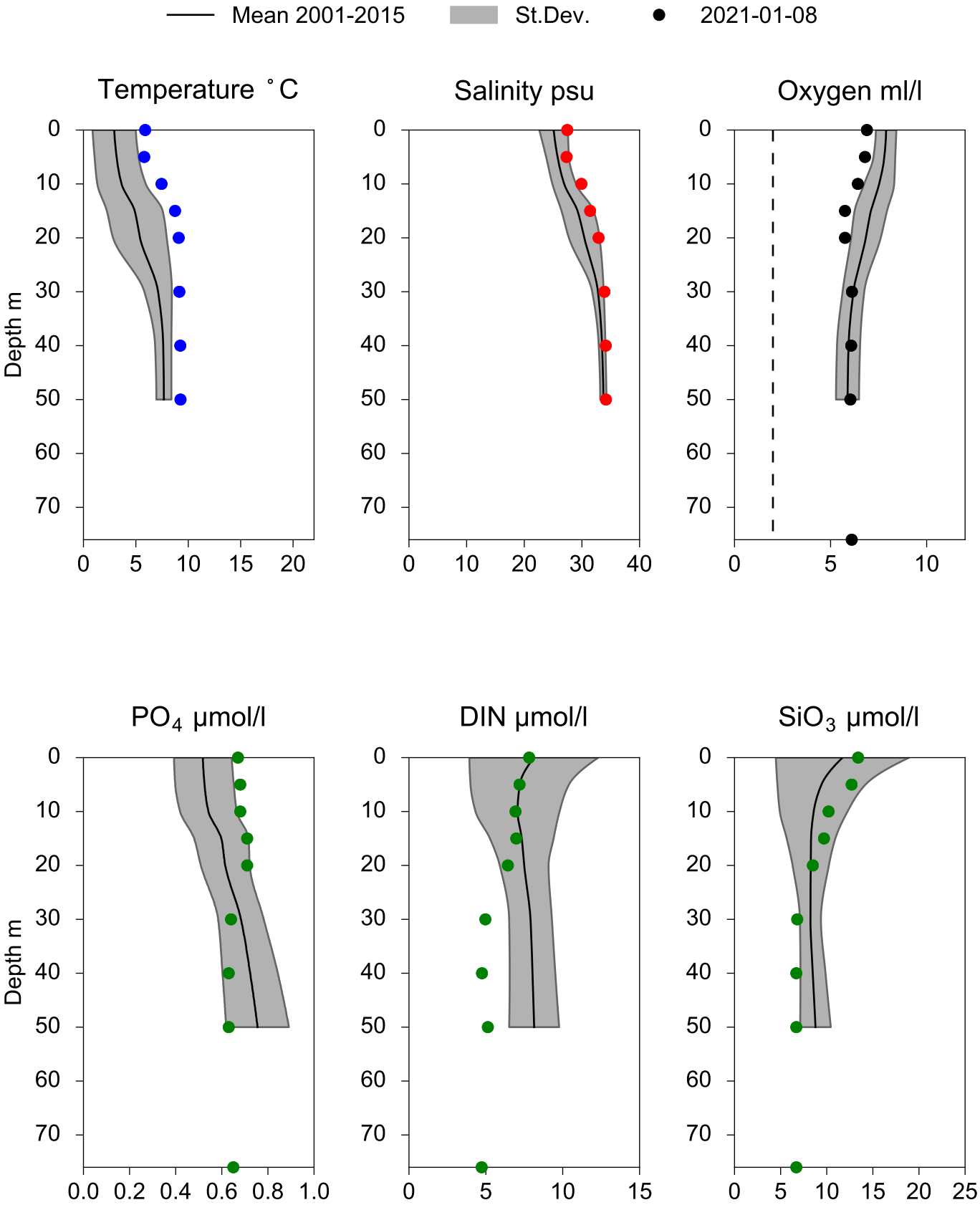
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 64 m)

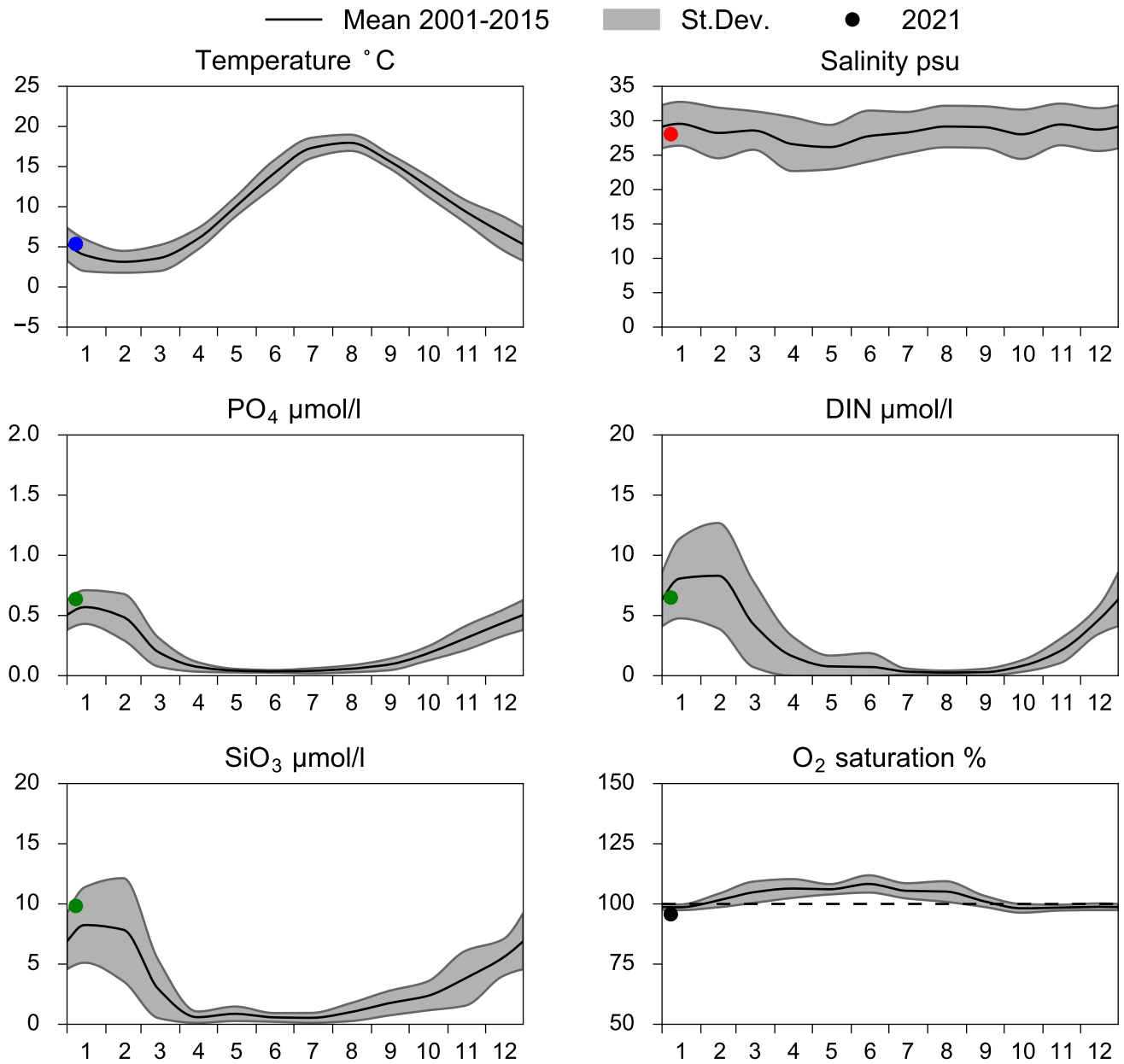


Vertical profiles SLÄGGÖ
January

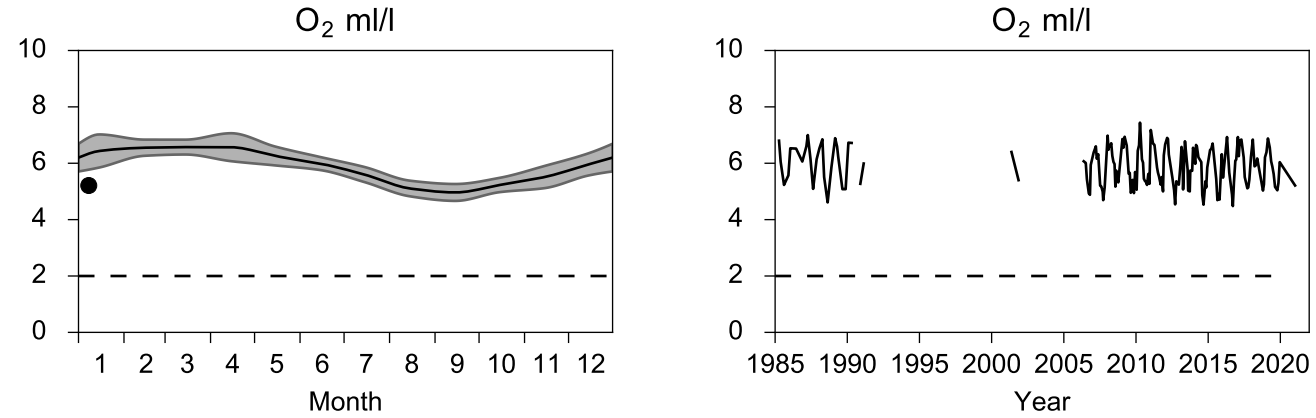


STATION Å13 SURFACE WATER (0-10 m)

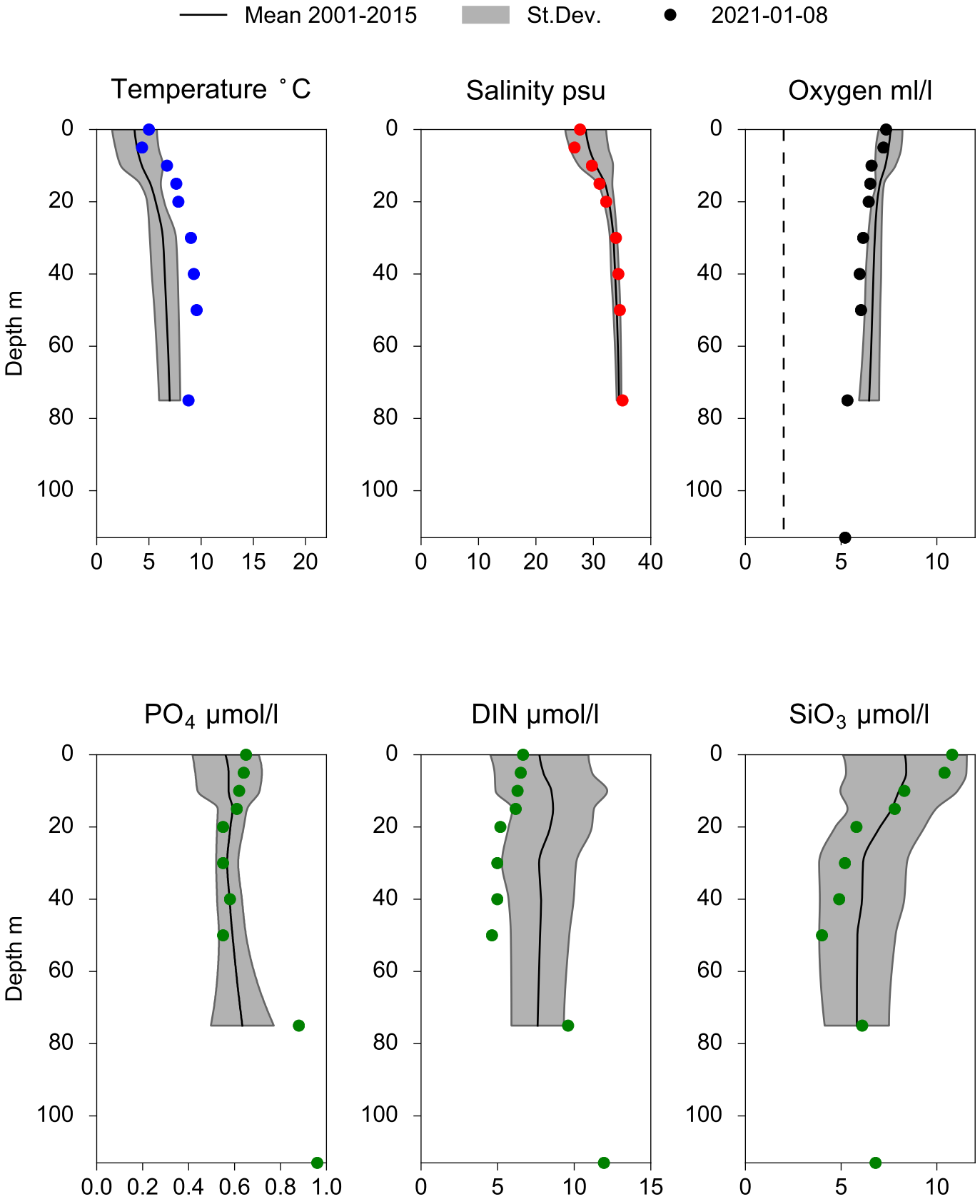
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 80 m)



Vertical profiles Å13
January

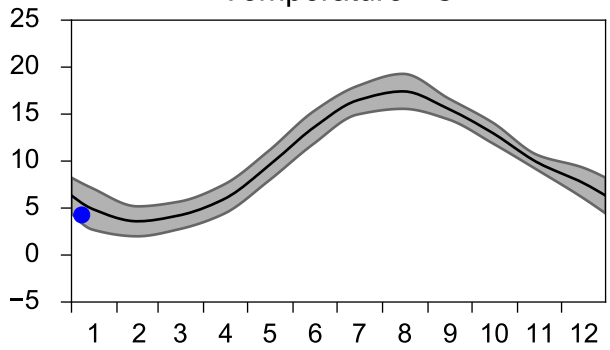


STATION Å17 SURFACE WATER (0-10 m)

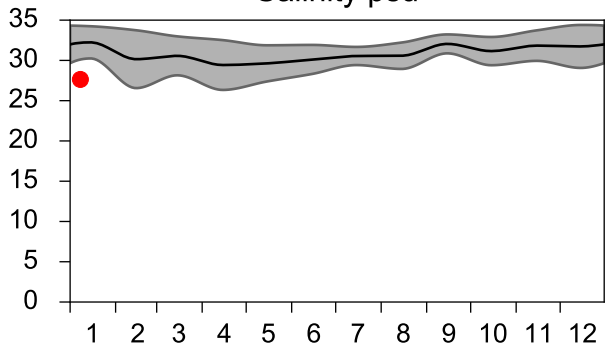
Annual Cycles

Mean 2001-2015 St.Dev. 2021

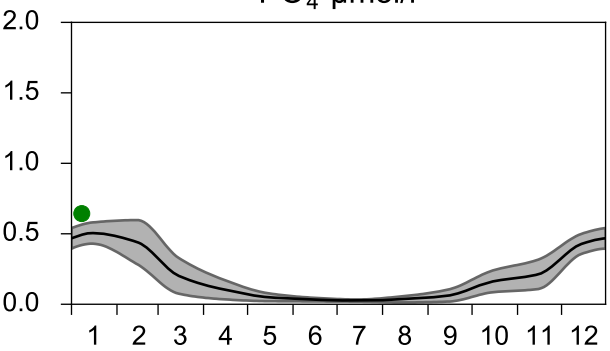
Temperature ˚C



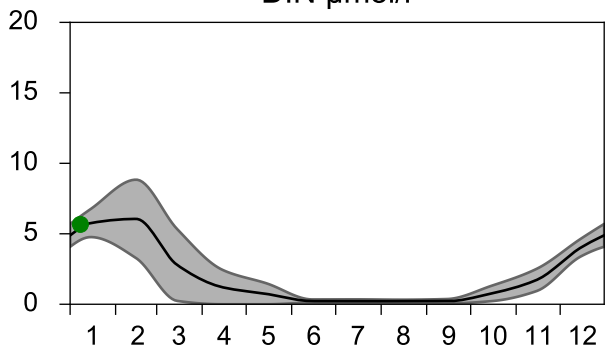
Salinity psu



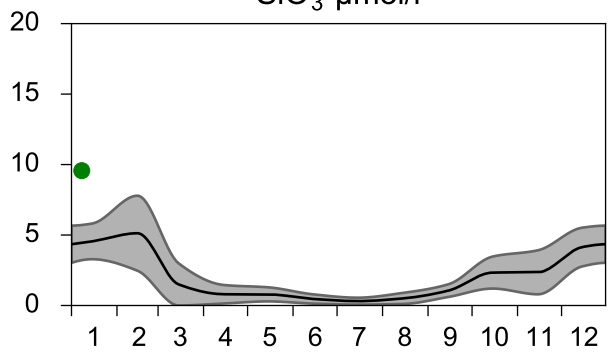
PO_4 µmol/l



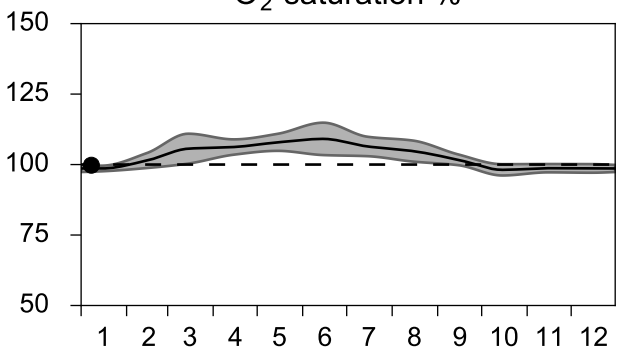
DIN µmol/l



SiO_3 µmol/l

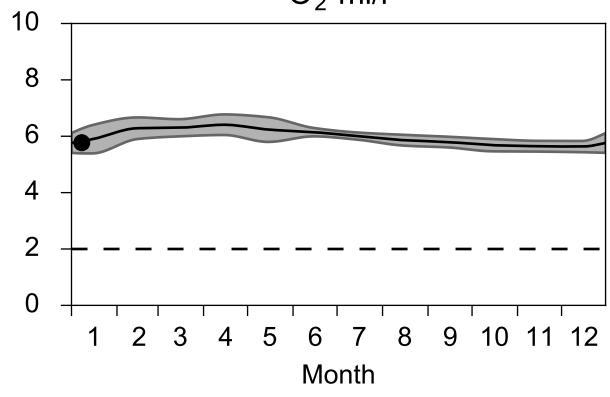


O_2 saturation %

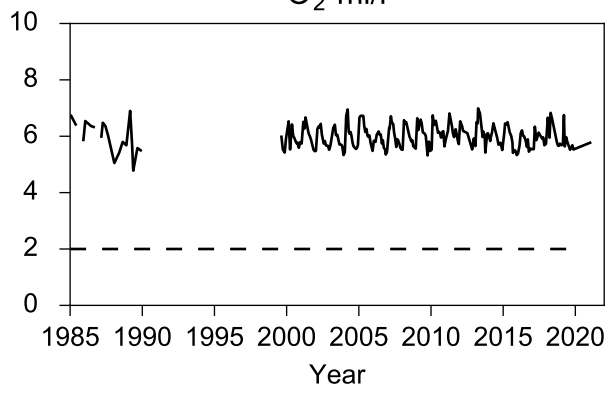


OXYGEN IN BOTTOM WATER (depth >= 300 m)

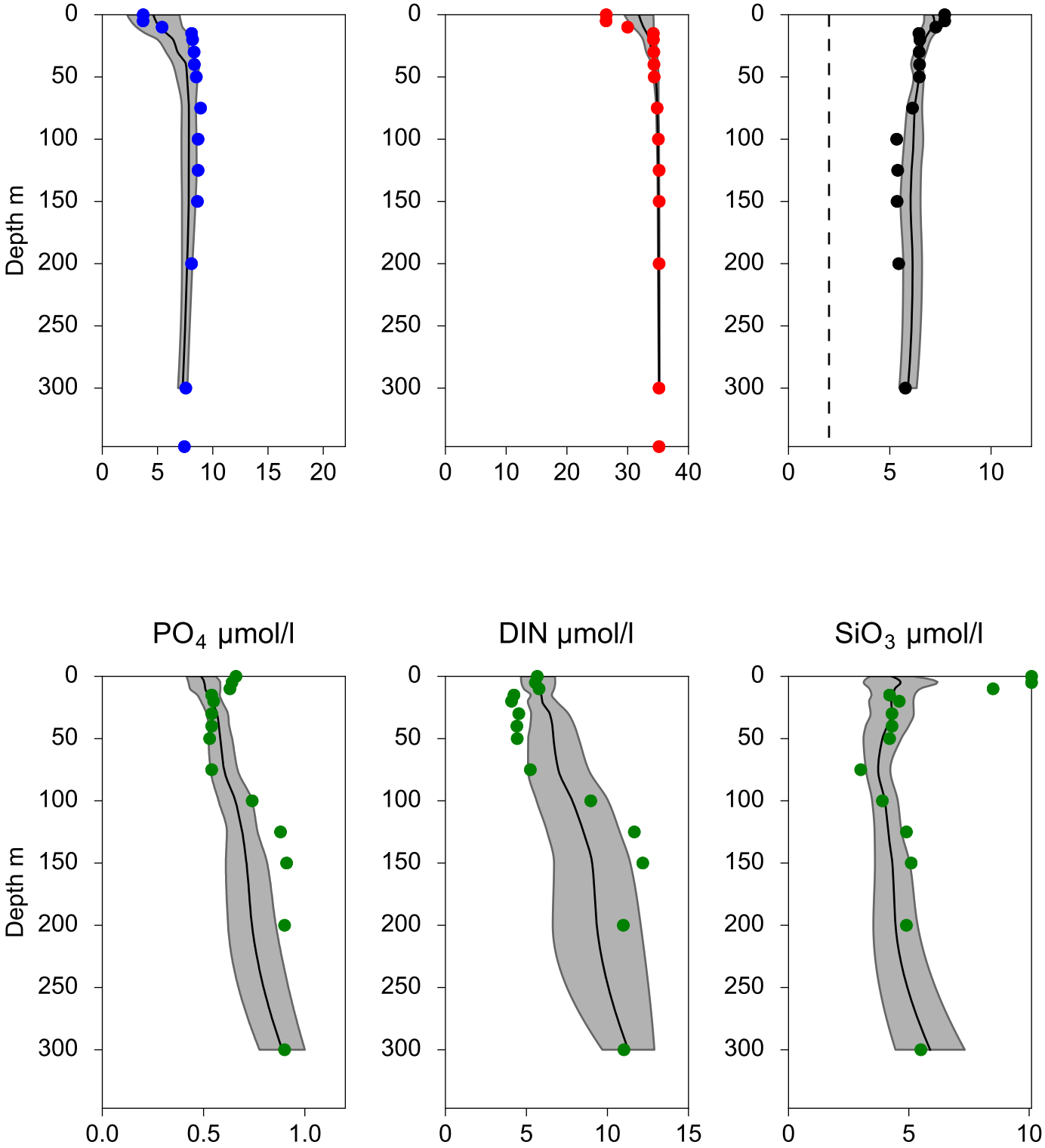
O_2 ml/l



O_2 ml/l

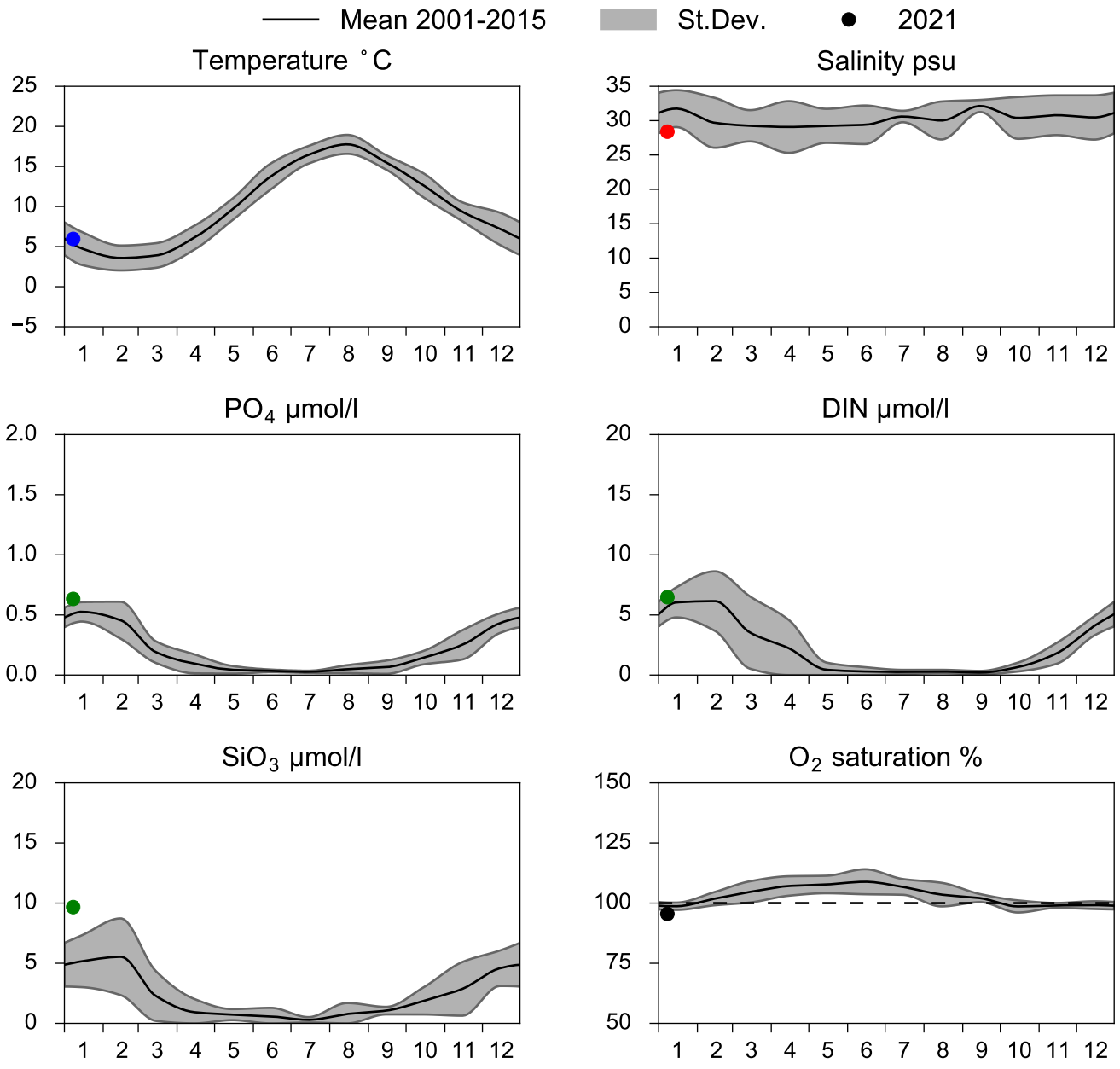


Vertical profiles Å17
January

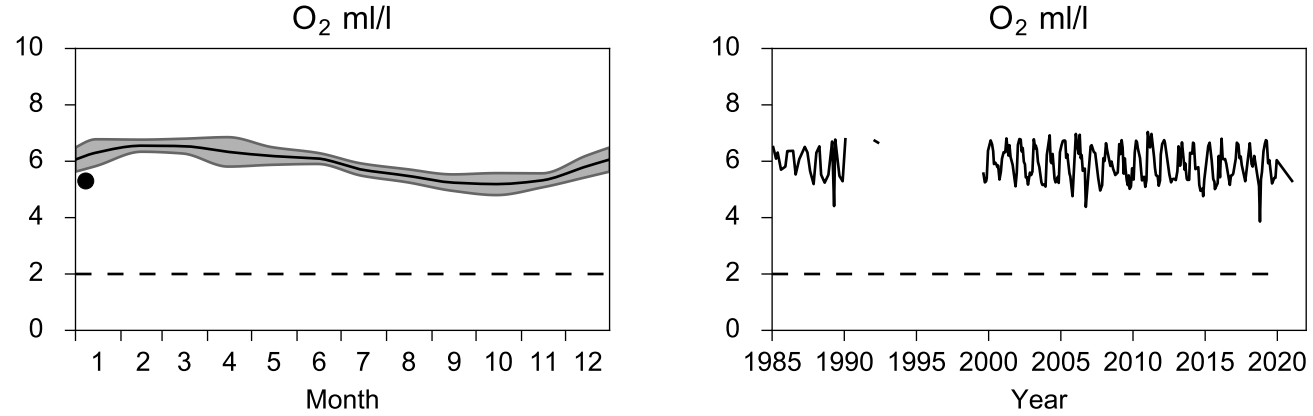


STATION Å15 SURFACE WATER (0-10 m)

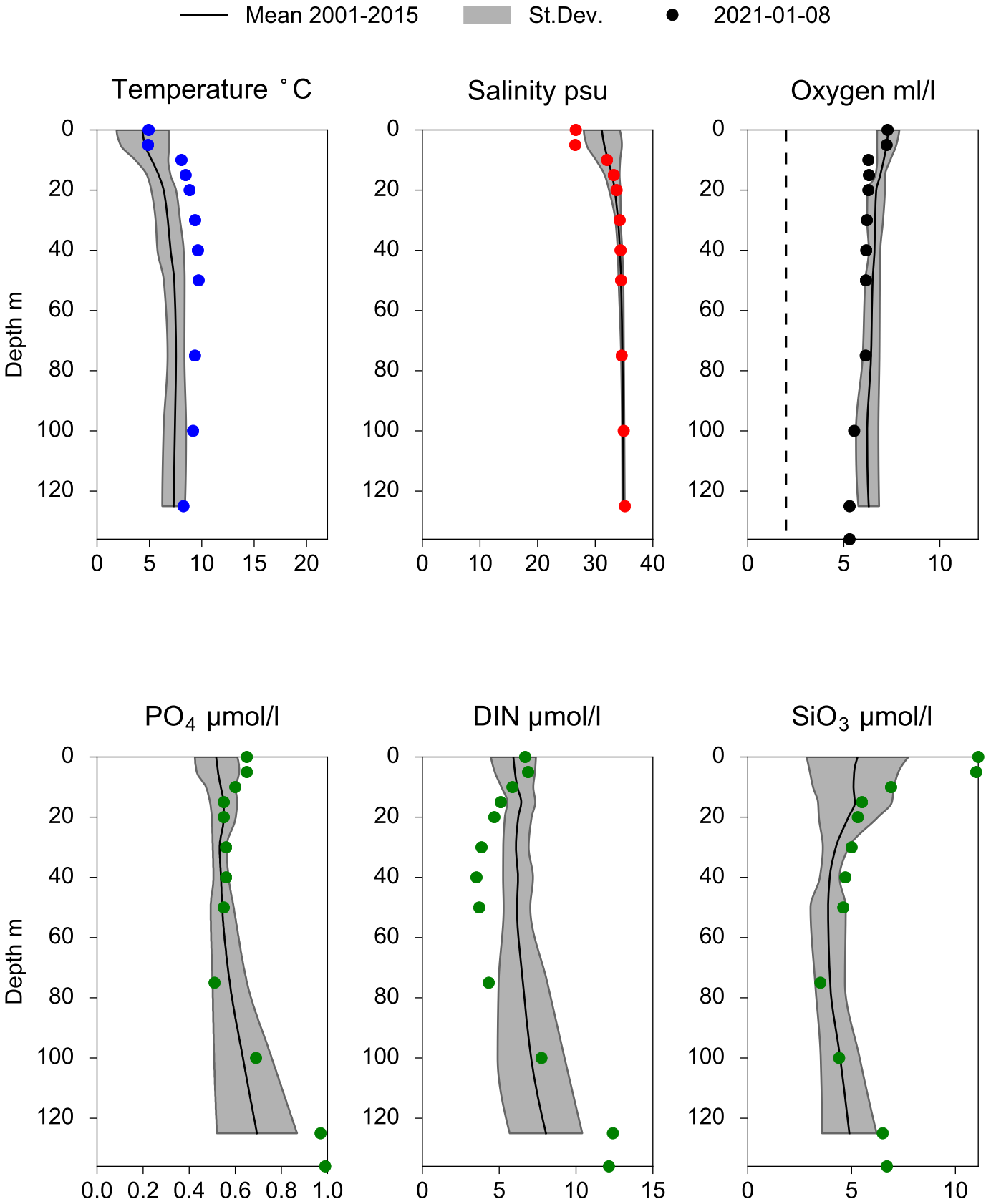
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 125 m)



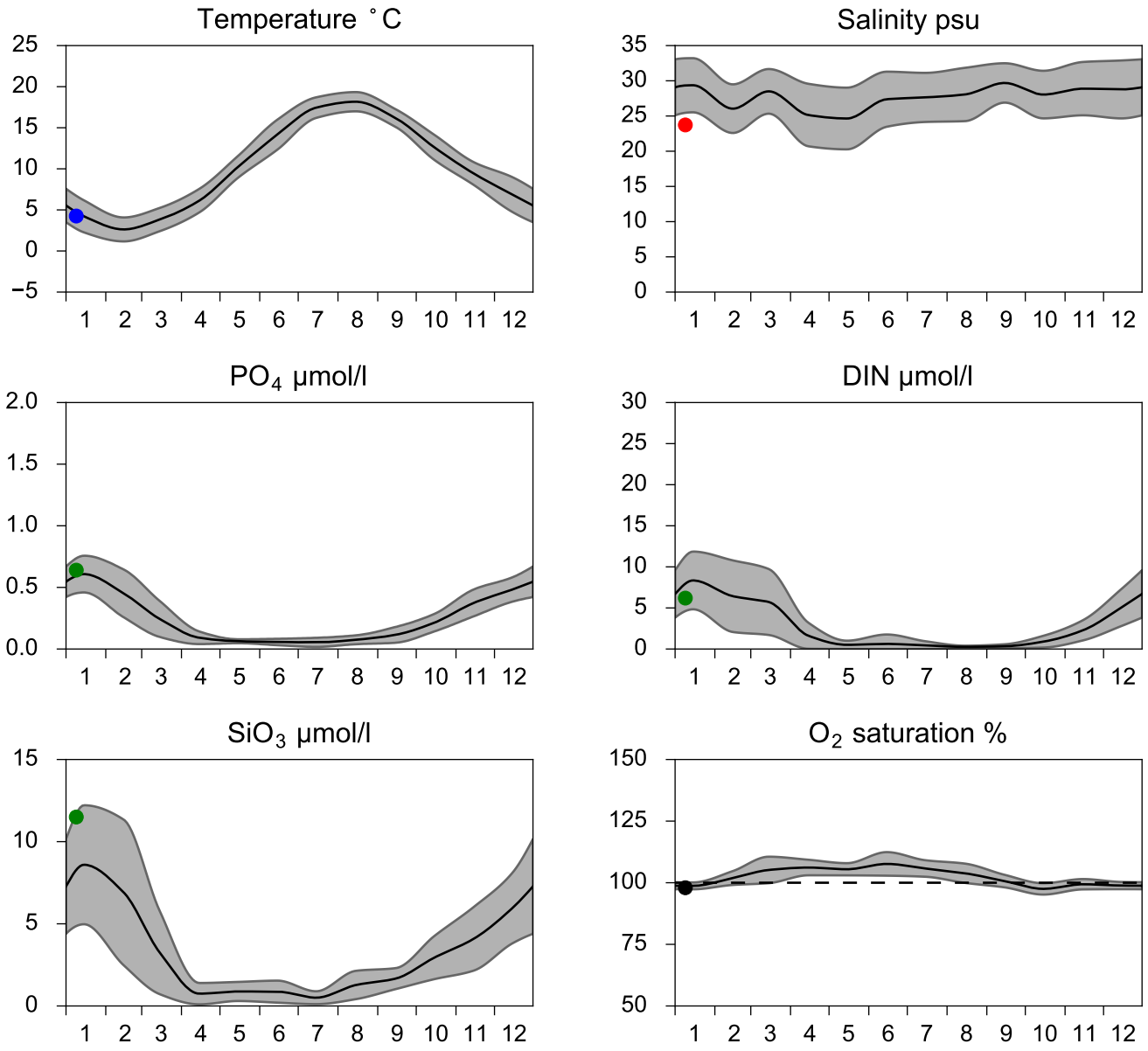
Vertical profiles Å15
January



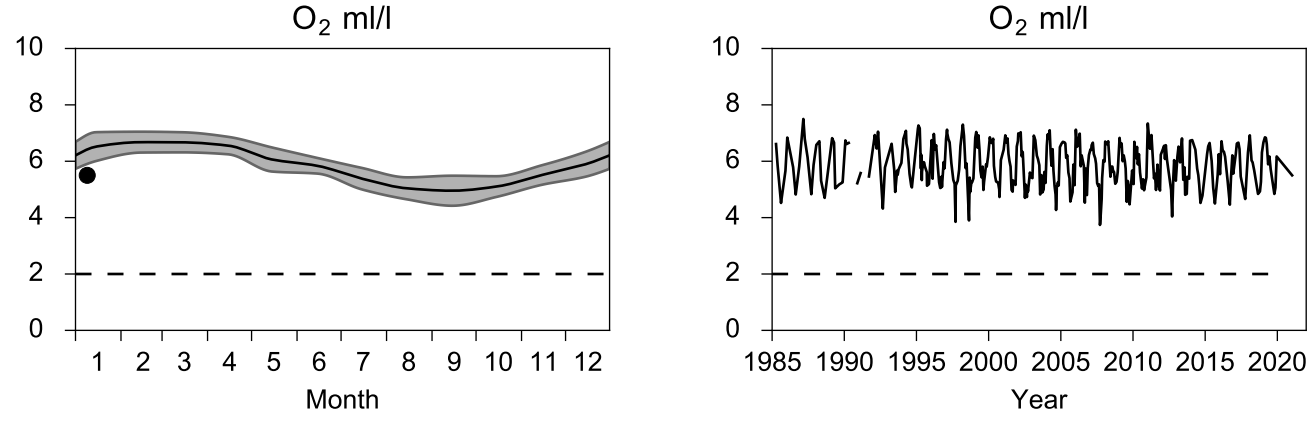
STATION P2 SURFACE WATER (0-10 m)

Annual Cycles

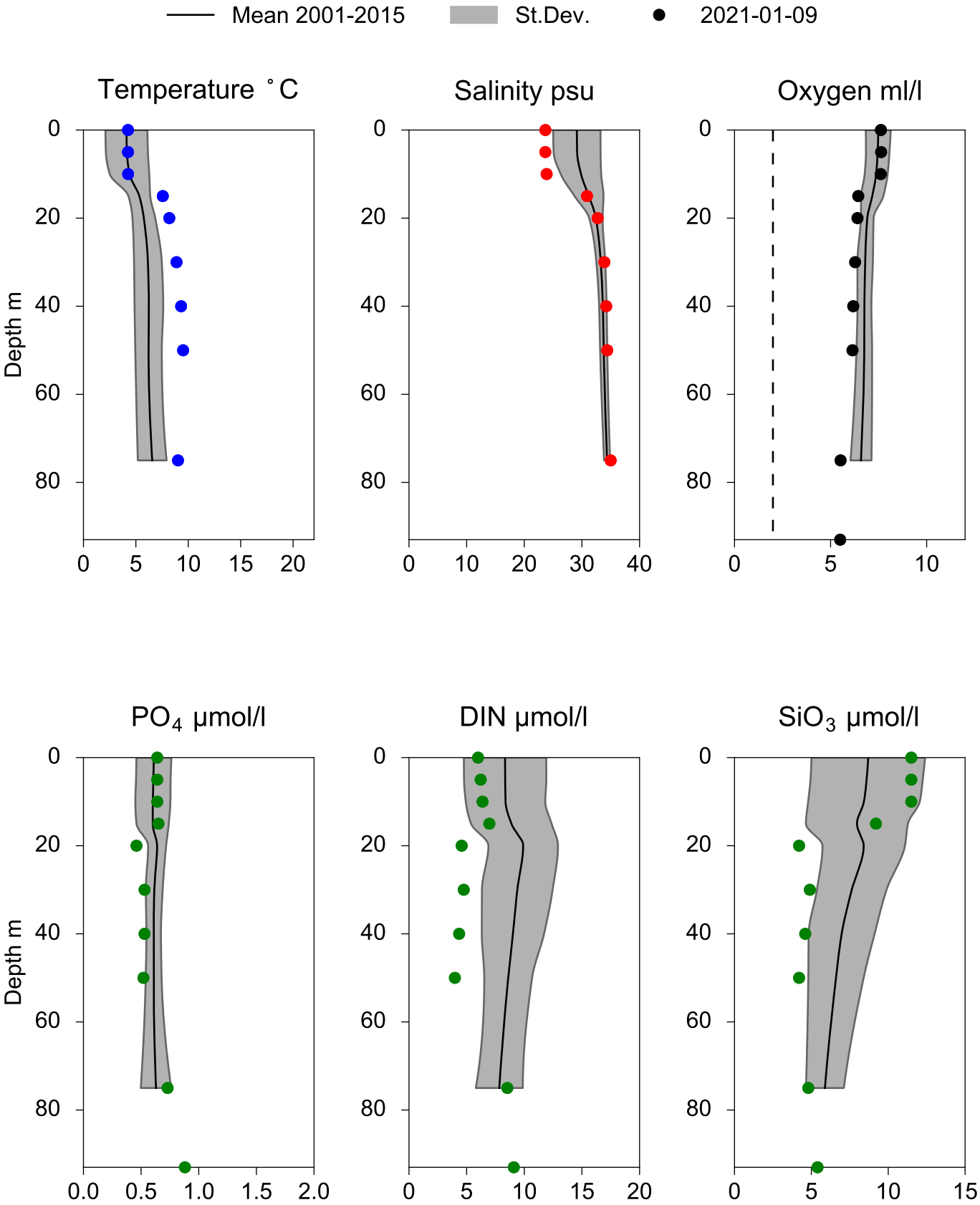
Mean 2001-2015 St.Dev. 2021



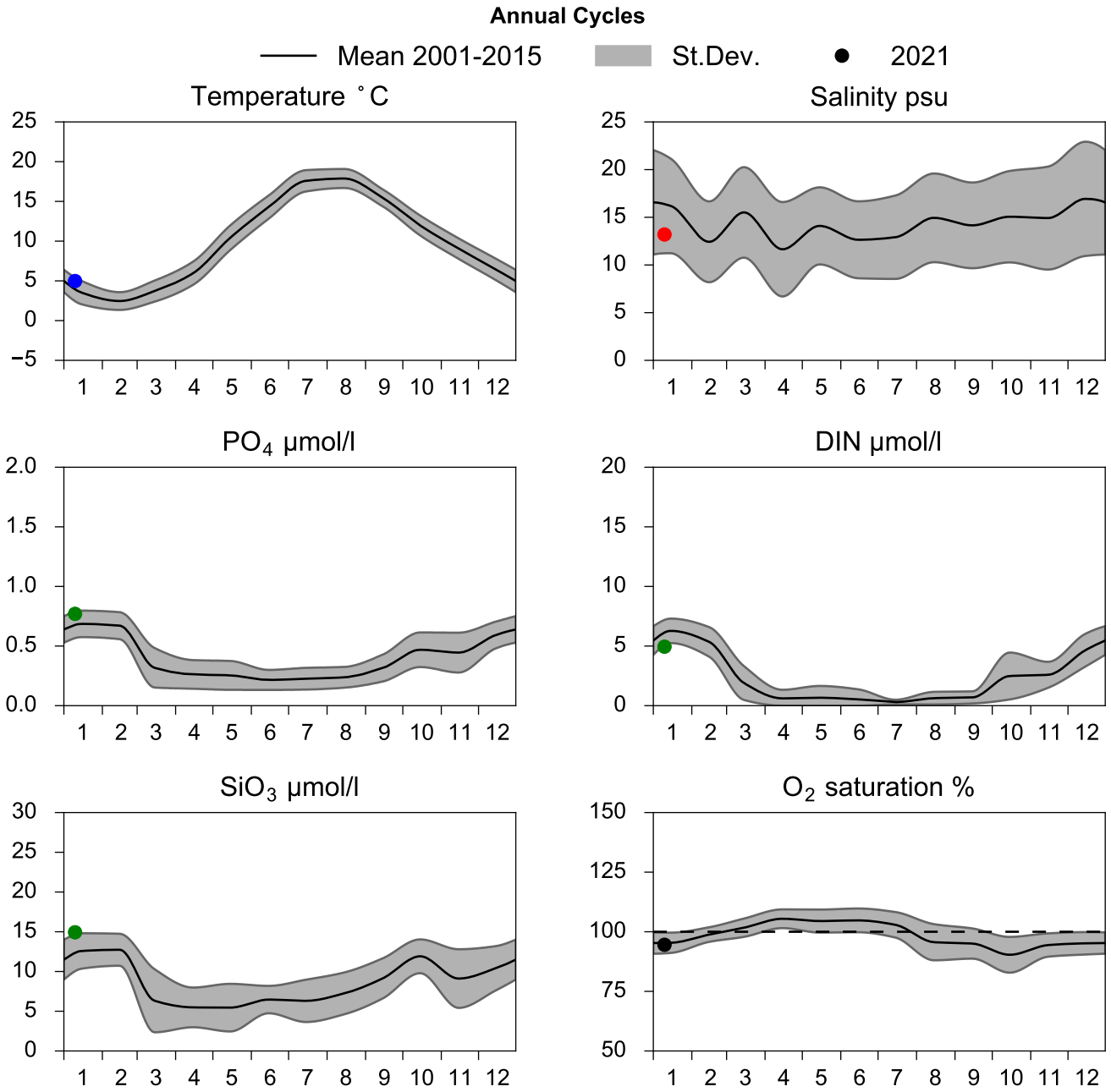
OXYGEN IN BOTTOM WATER (depth >= 75 m)



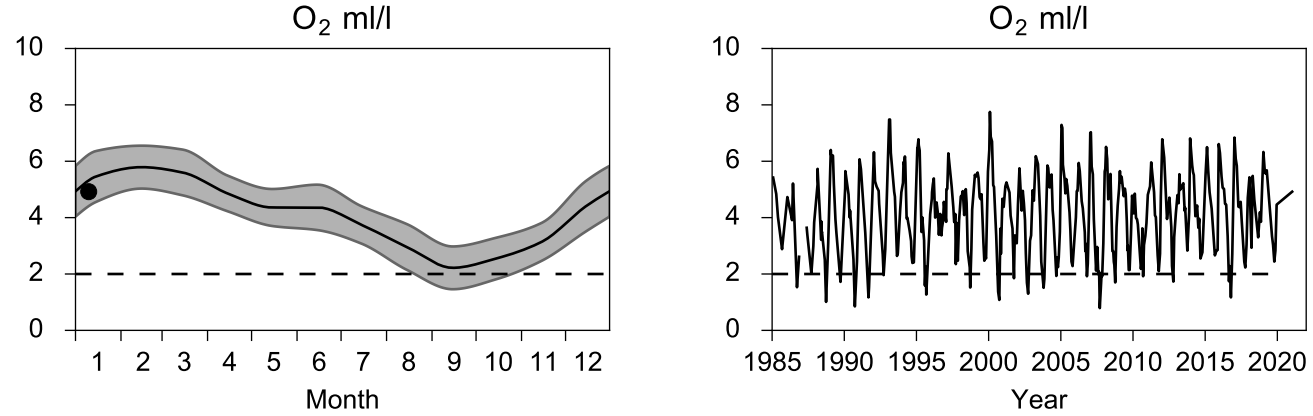
Vertical profiles P2
January



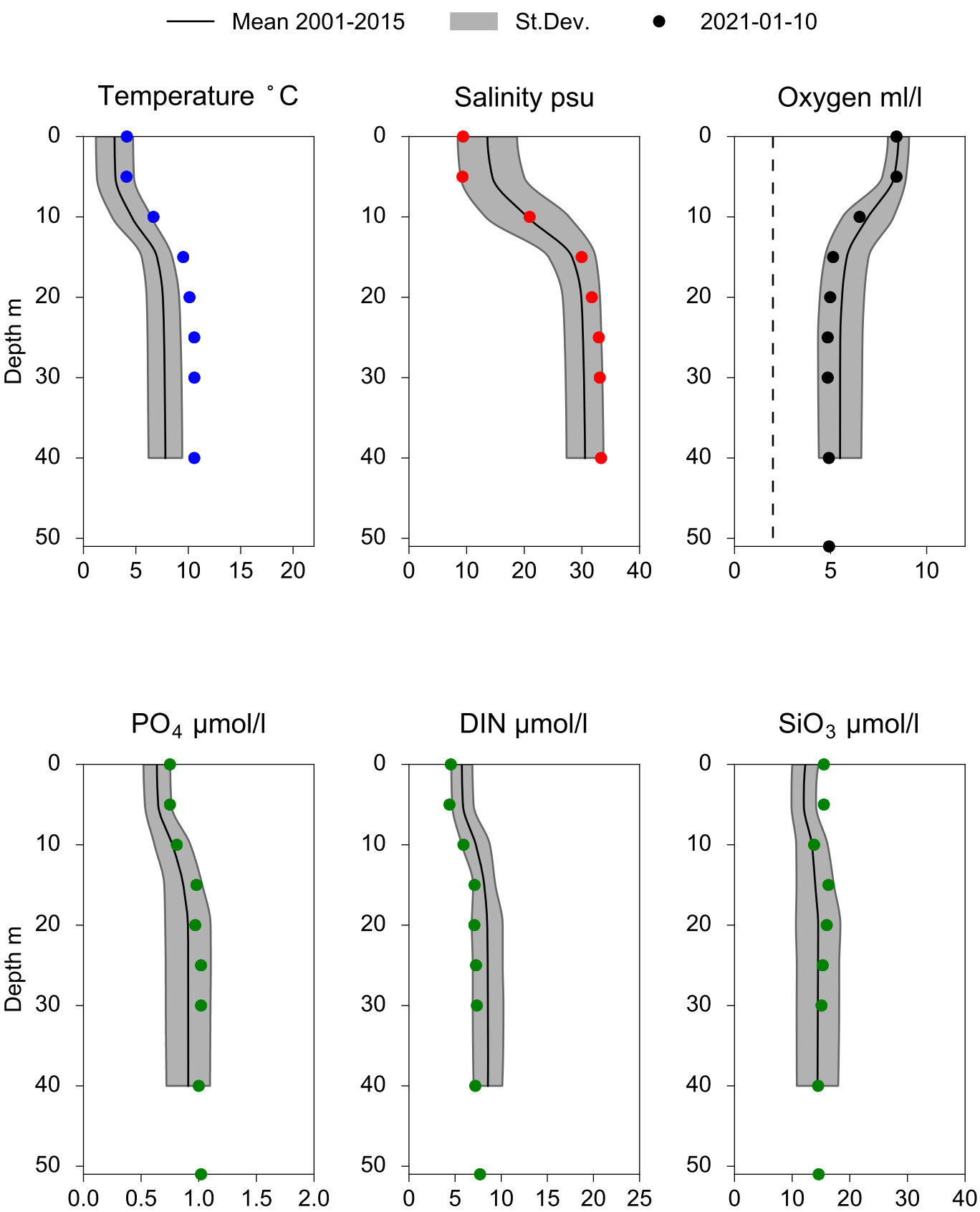
STATION W LANDSKRONA SURFACE WATER (0-10 m)



OXYGEN IN BOTTOM WATER (depth >= 40 m)



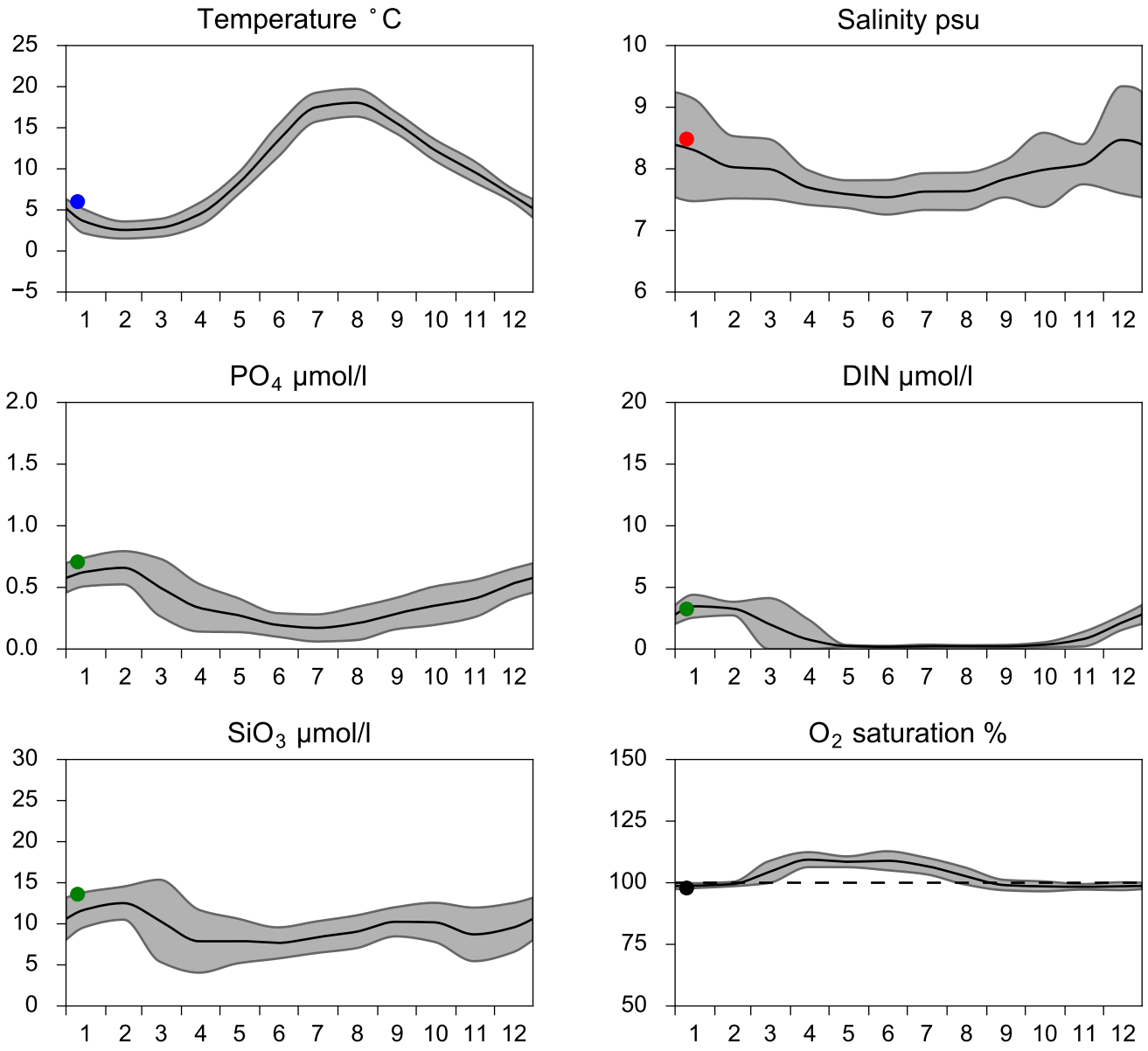
Vertical profiles W LANDSKRONA
January



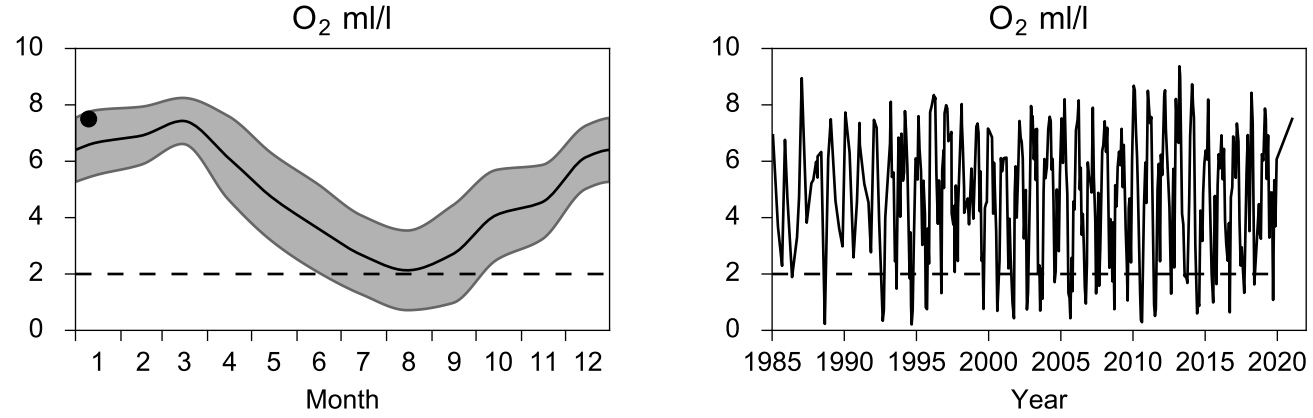
STATION BY1 SURFACE WATER (0-10 m)

Annual Cycles

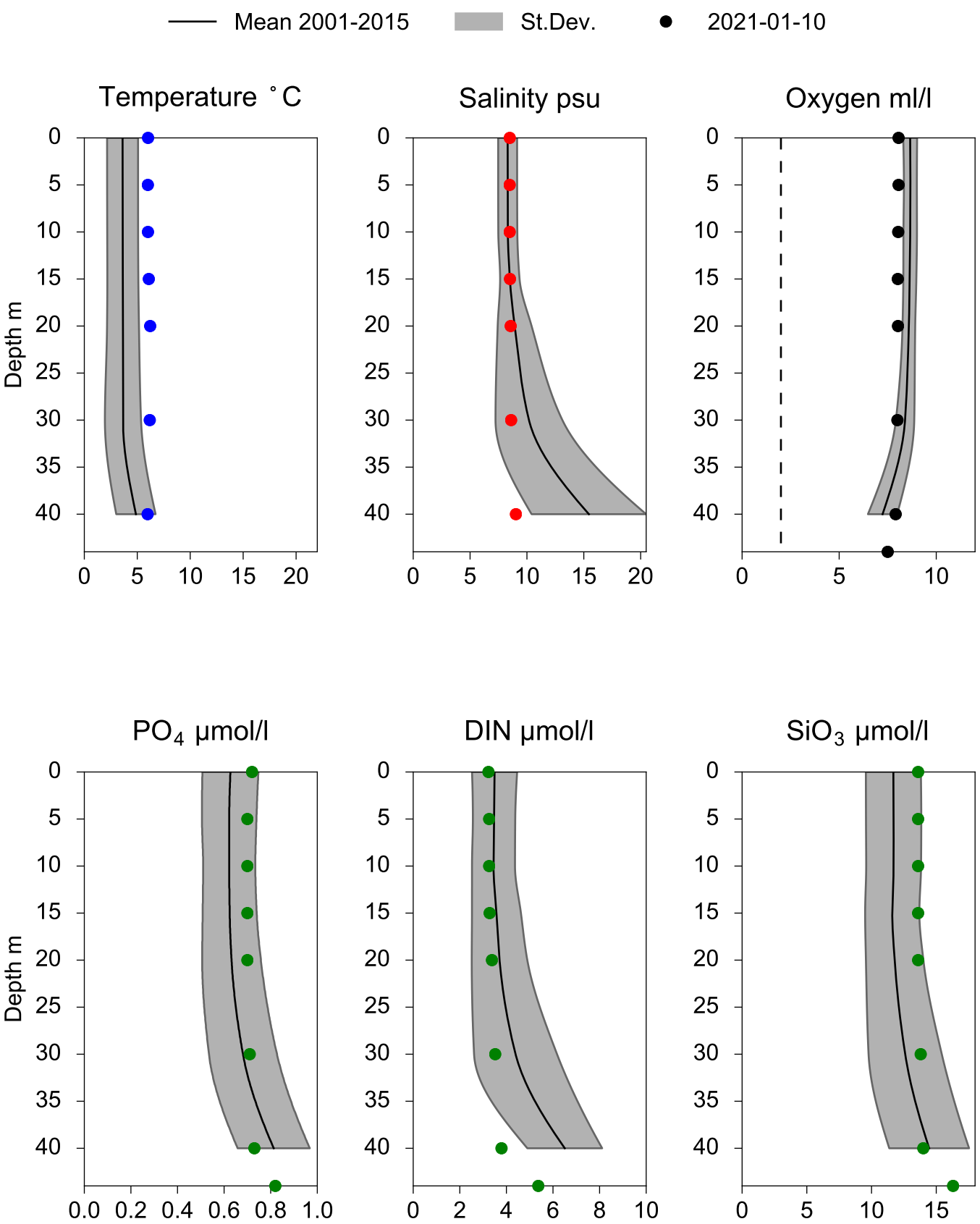
Mean 2001-2015 St.Dev. 2021



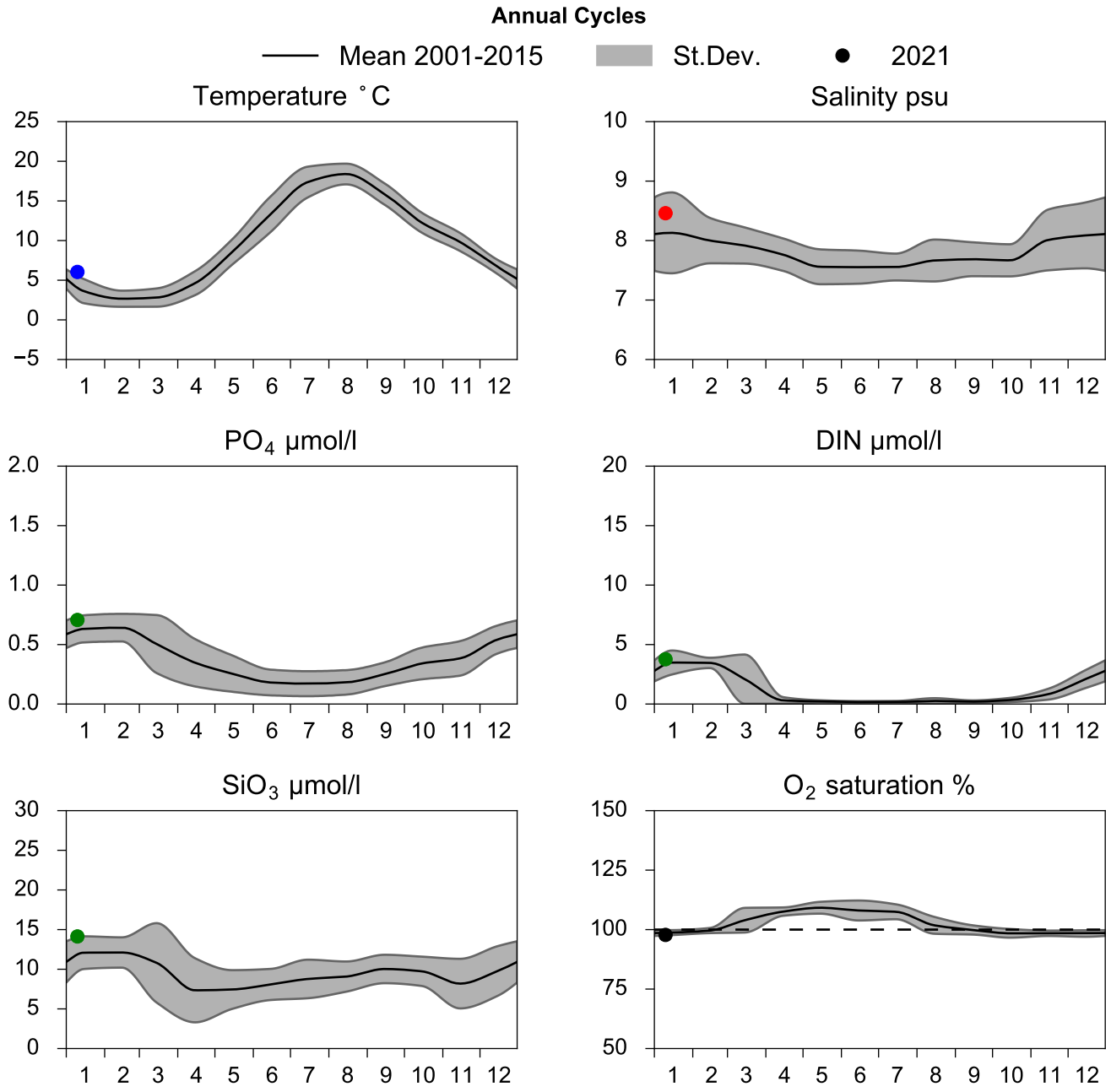
OXYGEN IN BOTTOM WATER (depth >= 40 m)



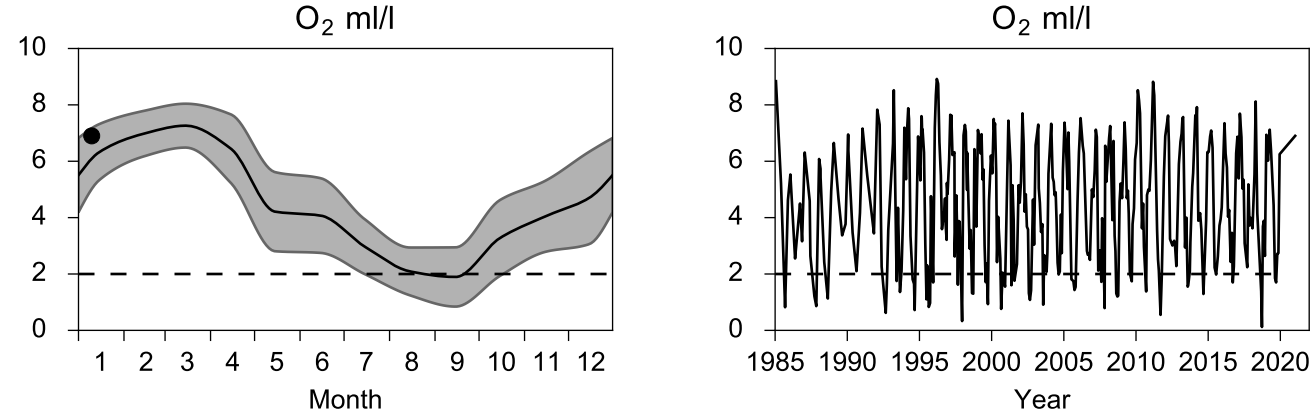
Vertical profiles BY1
January



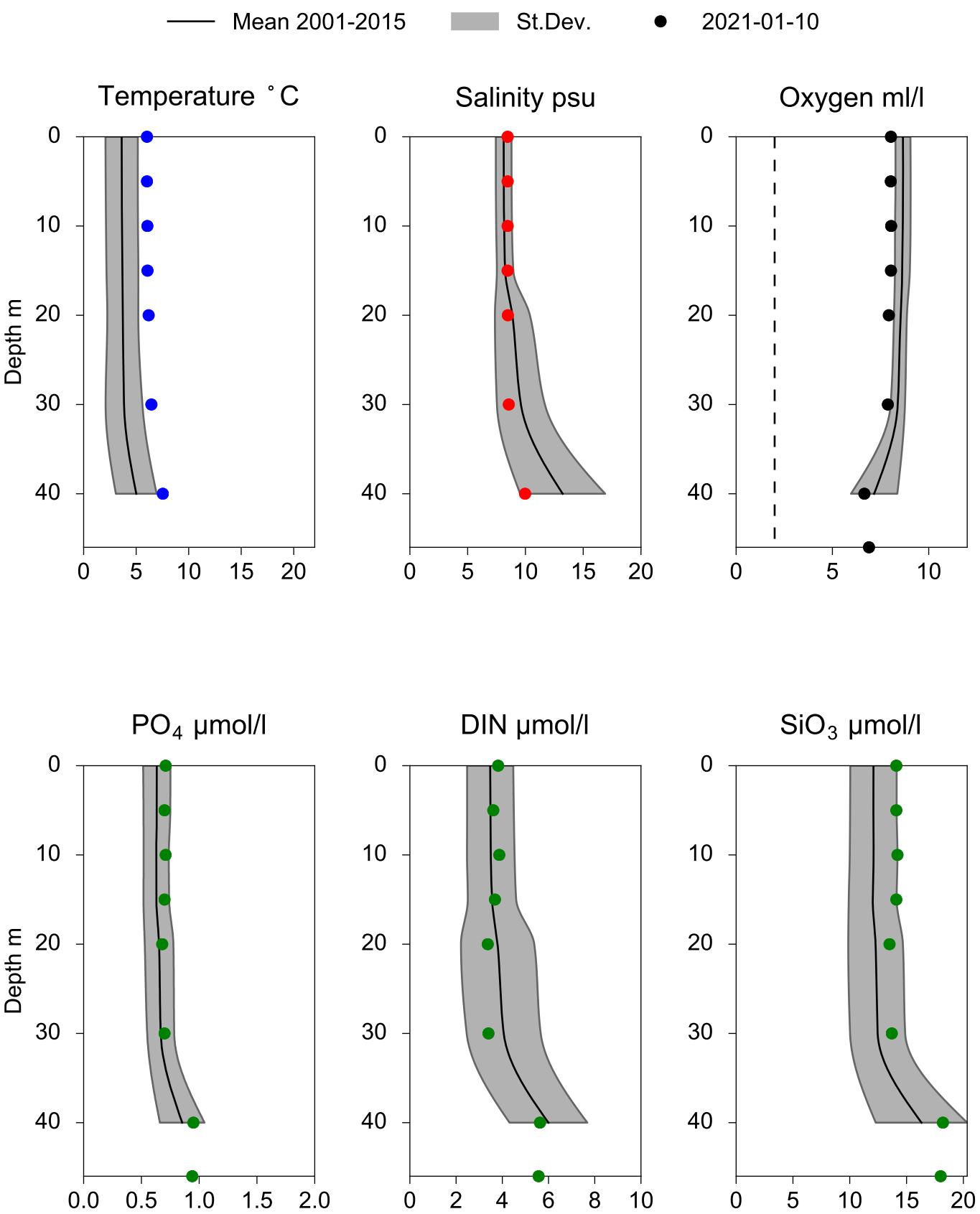
STATION BY2 ARKONA SURFACE WATER (0-10 m)



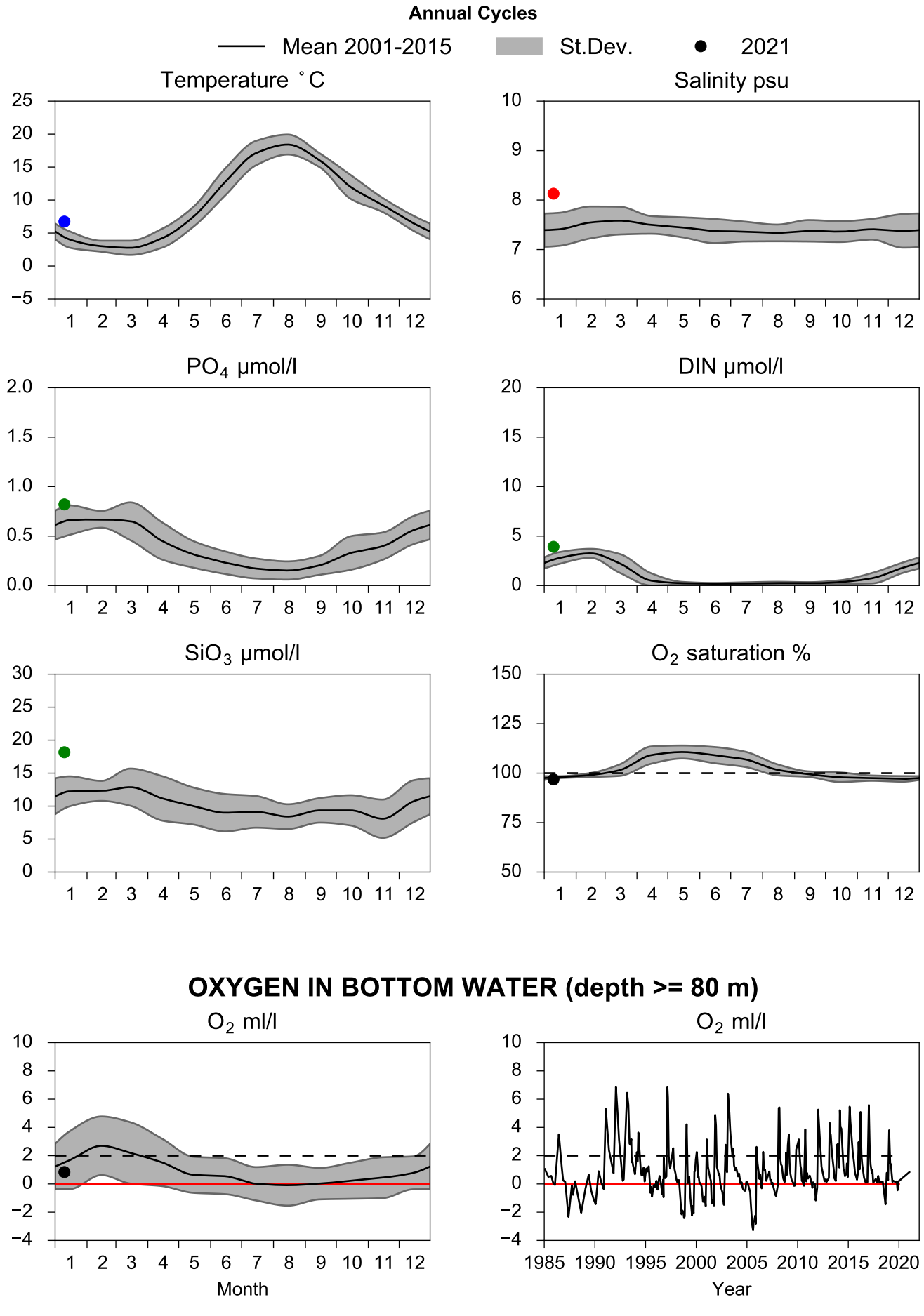
OXYGEN IN BOTTOM WATER (depth >= 40 m)



Vertical profiles BY2 ARKONA
January

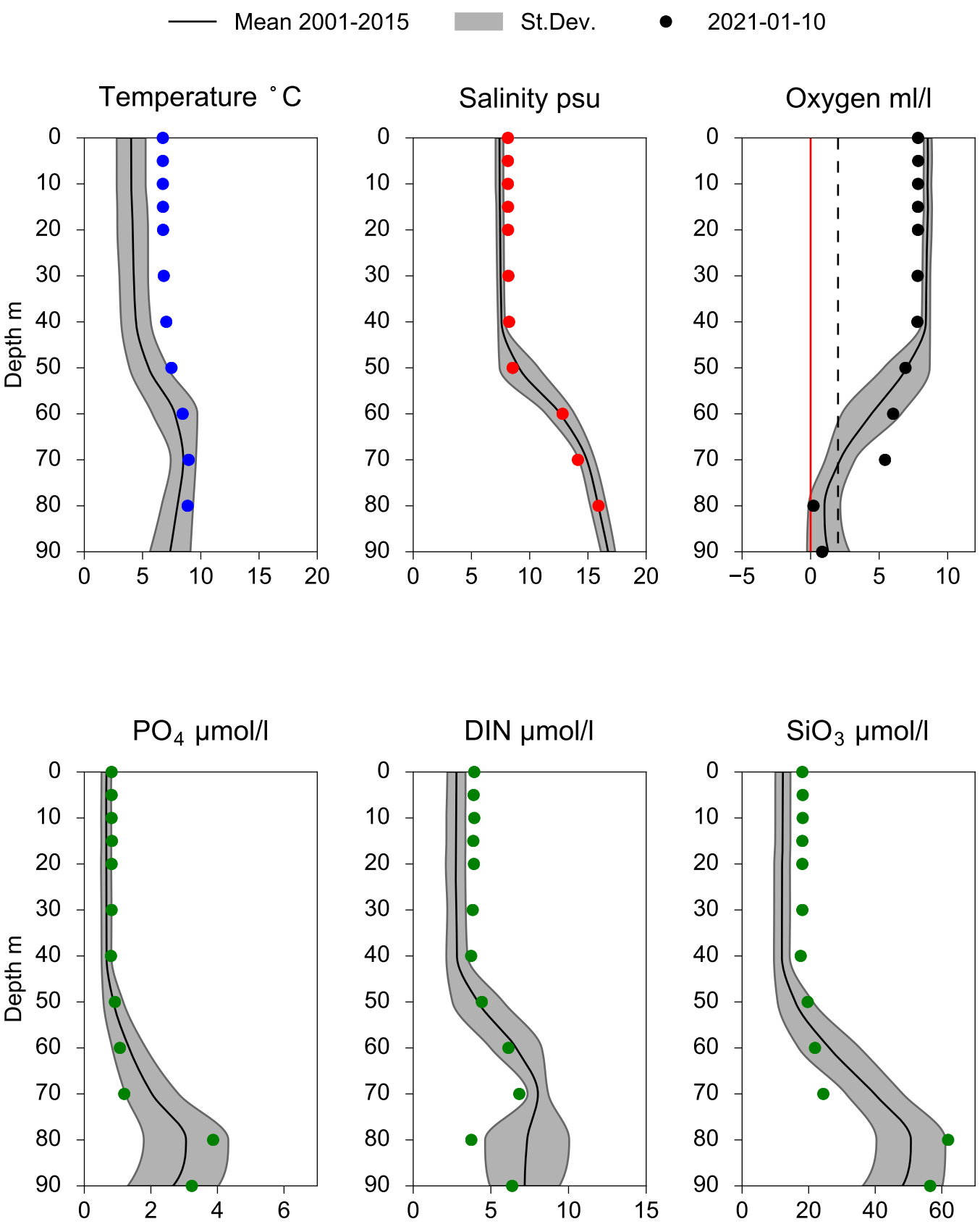


STATION BY4 CHRISTIANSÖ SURFACE WATER (0-10 m)

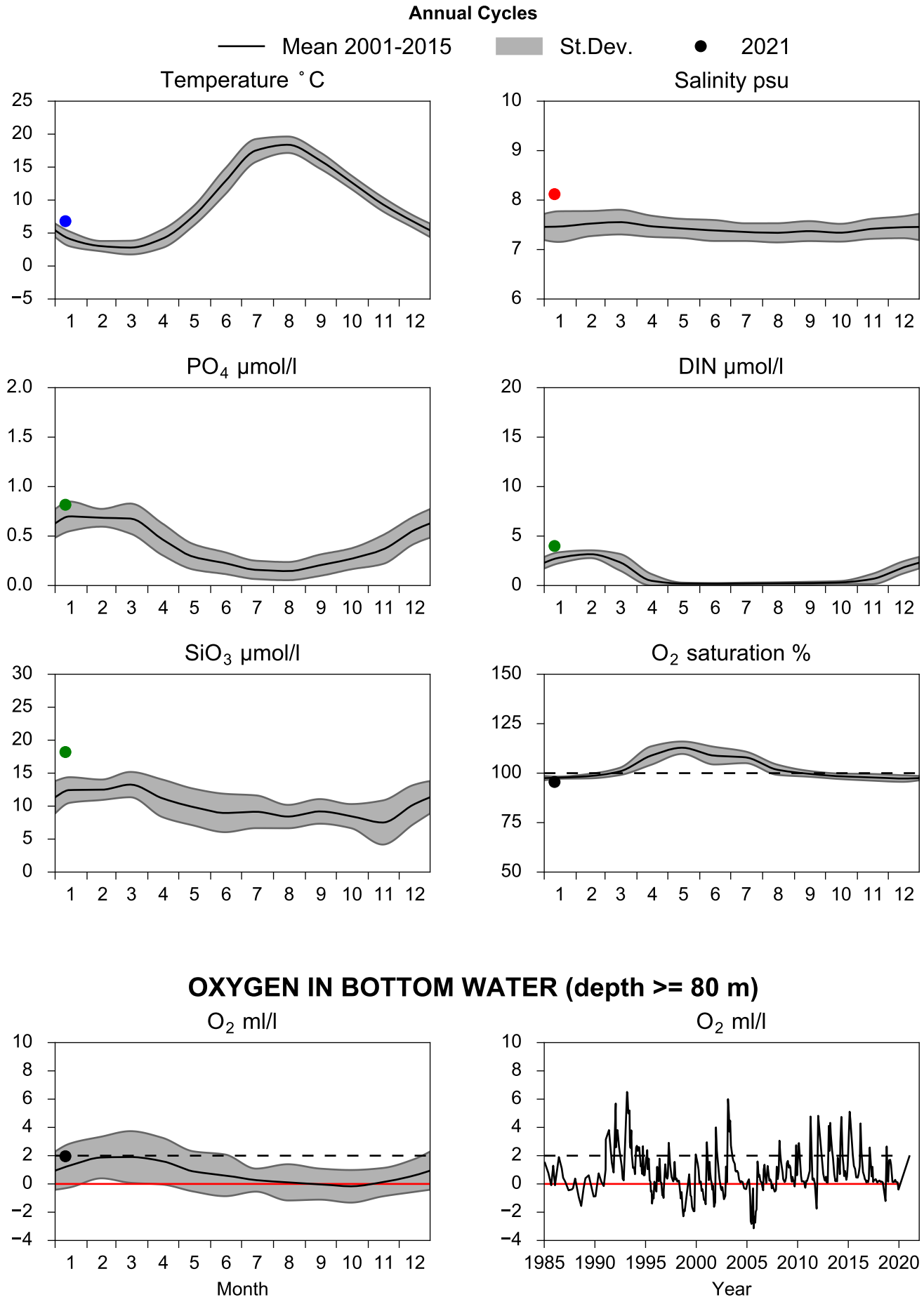


OXYGEN IN BOTTOM WATER (depth >= 80 m)

Vertical profiles BY4 CHRISTIANSÖ
January

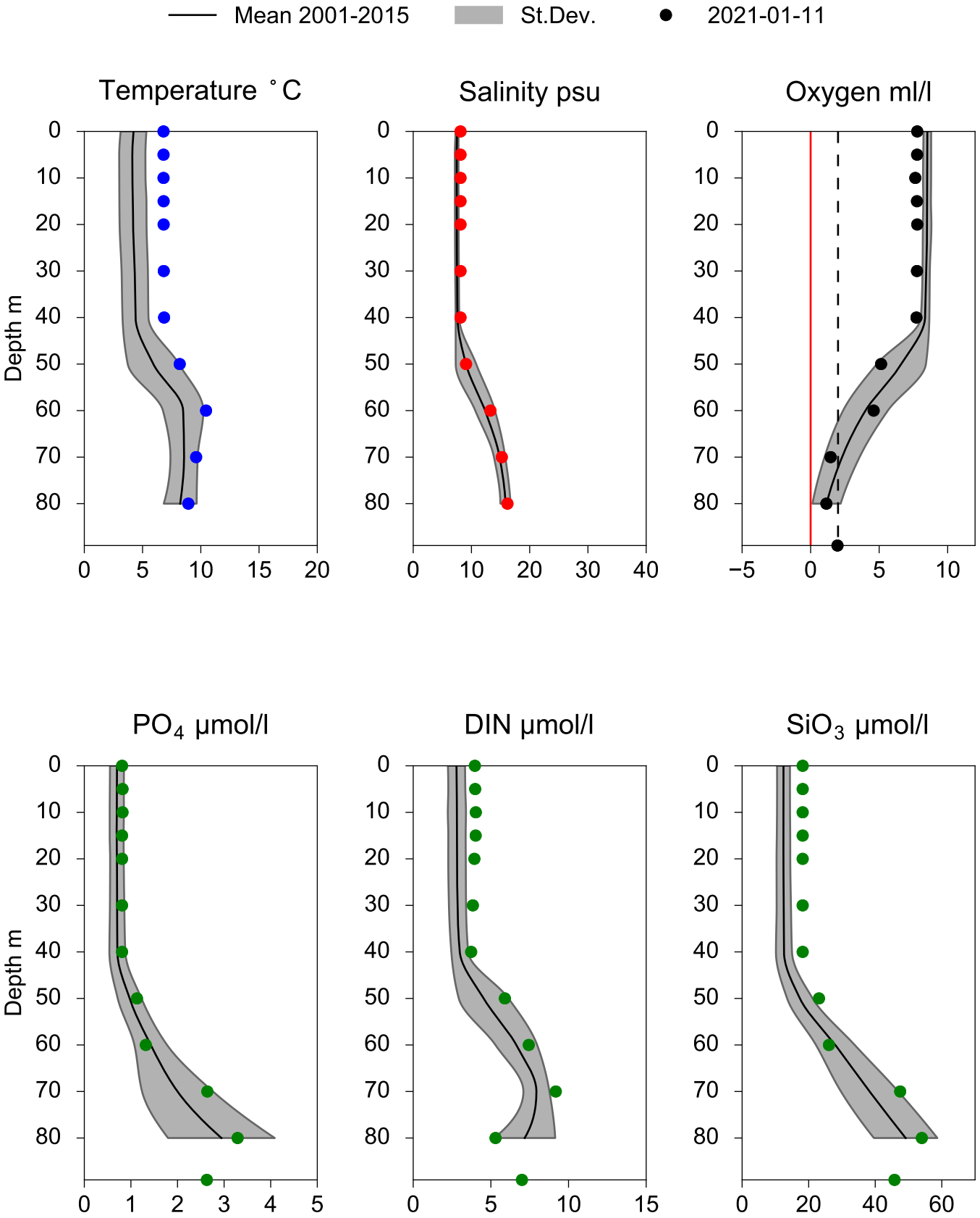


STATION BY5 BORNHOLMSDJ SURFACE WATER (0-10 m)



OXYGEN IN BOTTOM WATER (depth >= 80 m)

Vertical profiles BY5 BORNHOLMSDJ
January

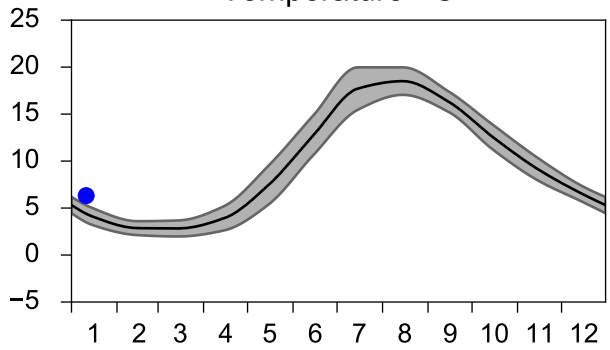


STATION BCS III-10 SURFACE WATER (0-10 m)

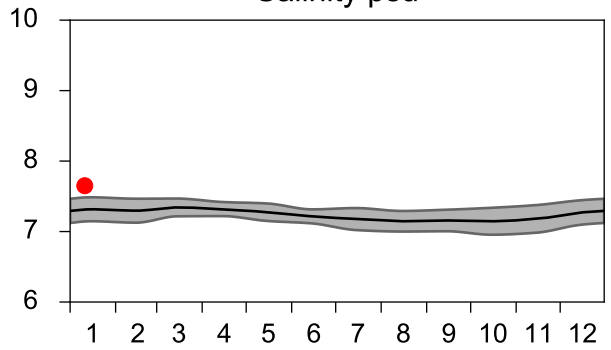
Annual Cycles

Mean 2001-2015 St.Dev. 2021

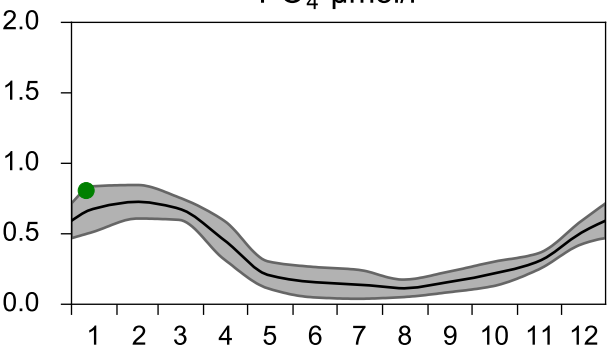
Temperature ˚C



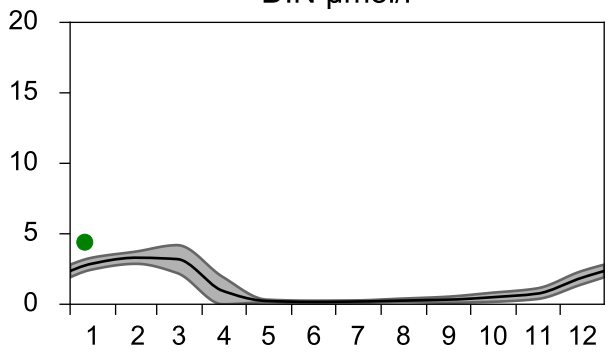
Salinity psu



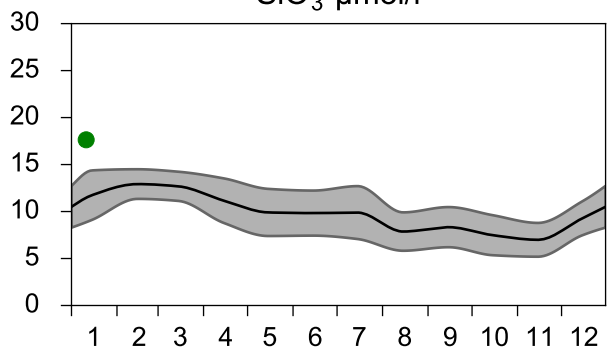
PO_4 µmol/l



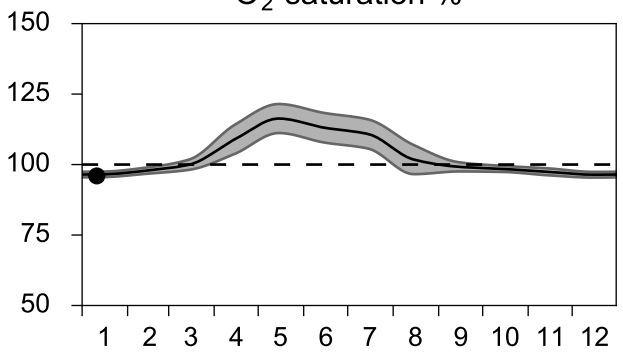
DIN µmol/l



SiO_3 µmol/l

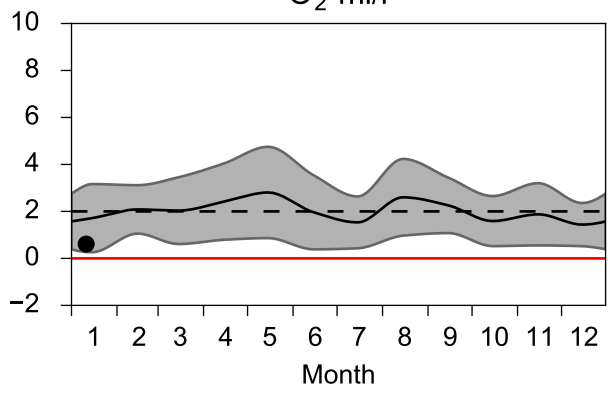


O_2 saturation %

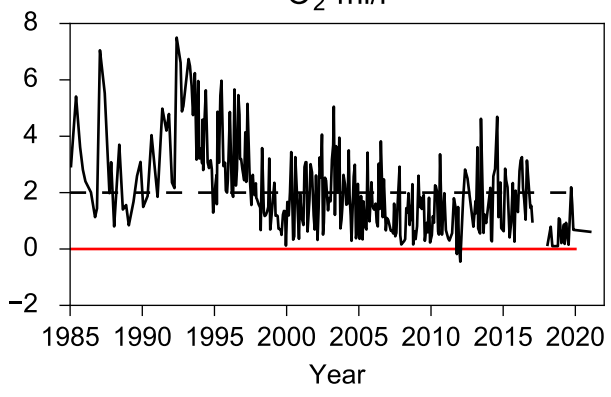


OXYGEN IN BOTTOM WATER (depth >= 80 m)

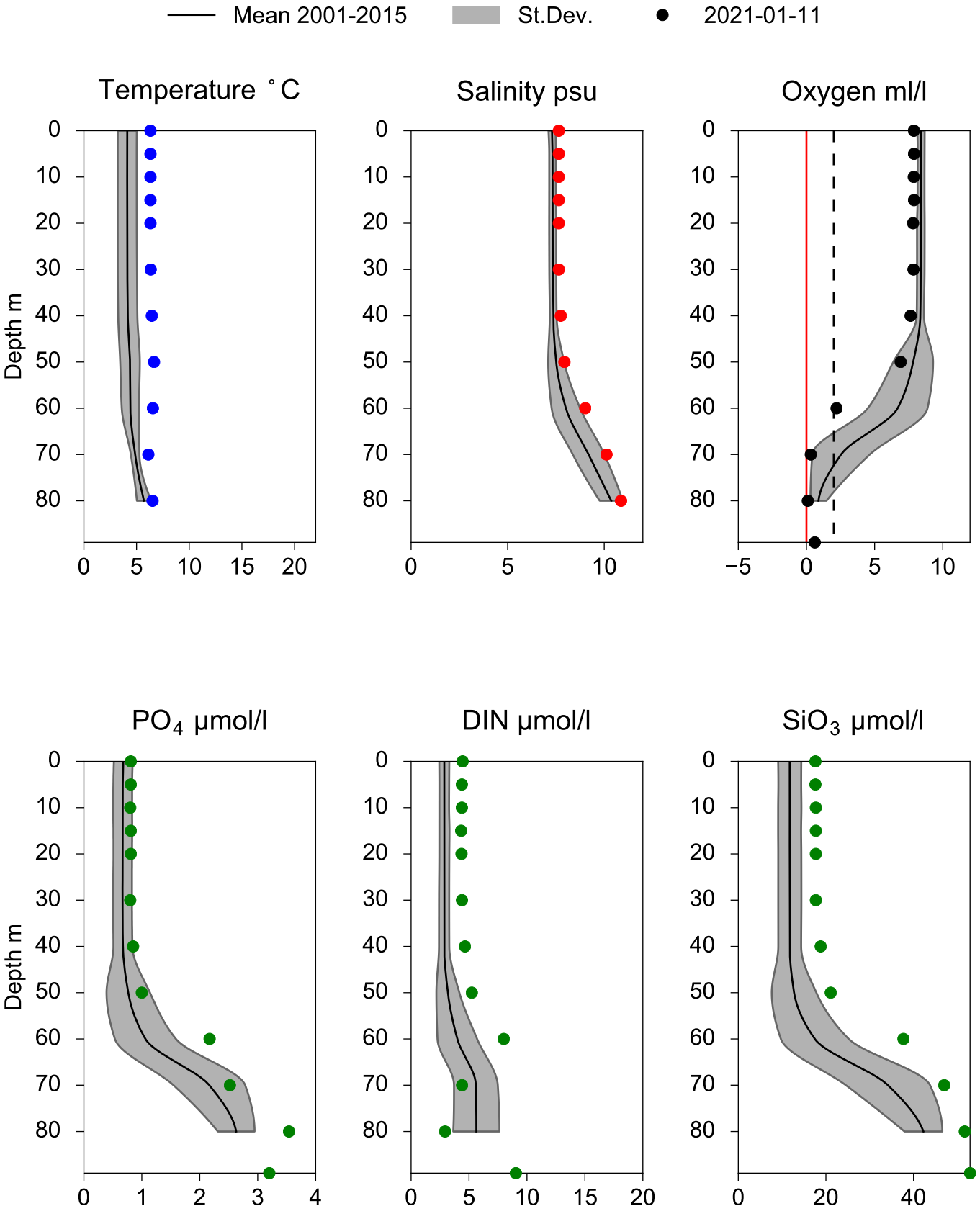
O_2 ml/l



O_2 ml/l

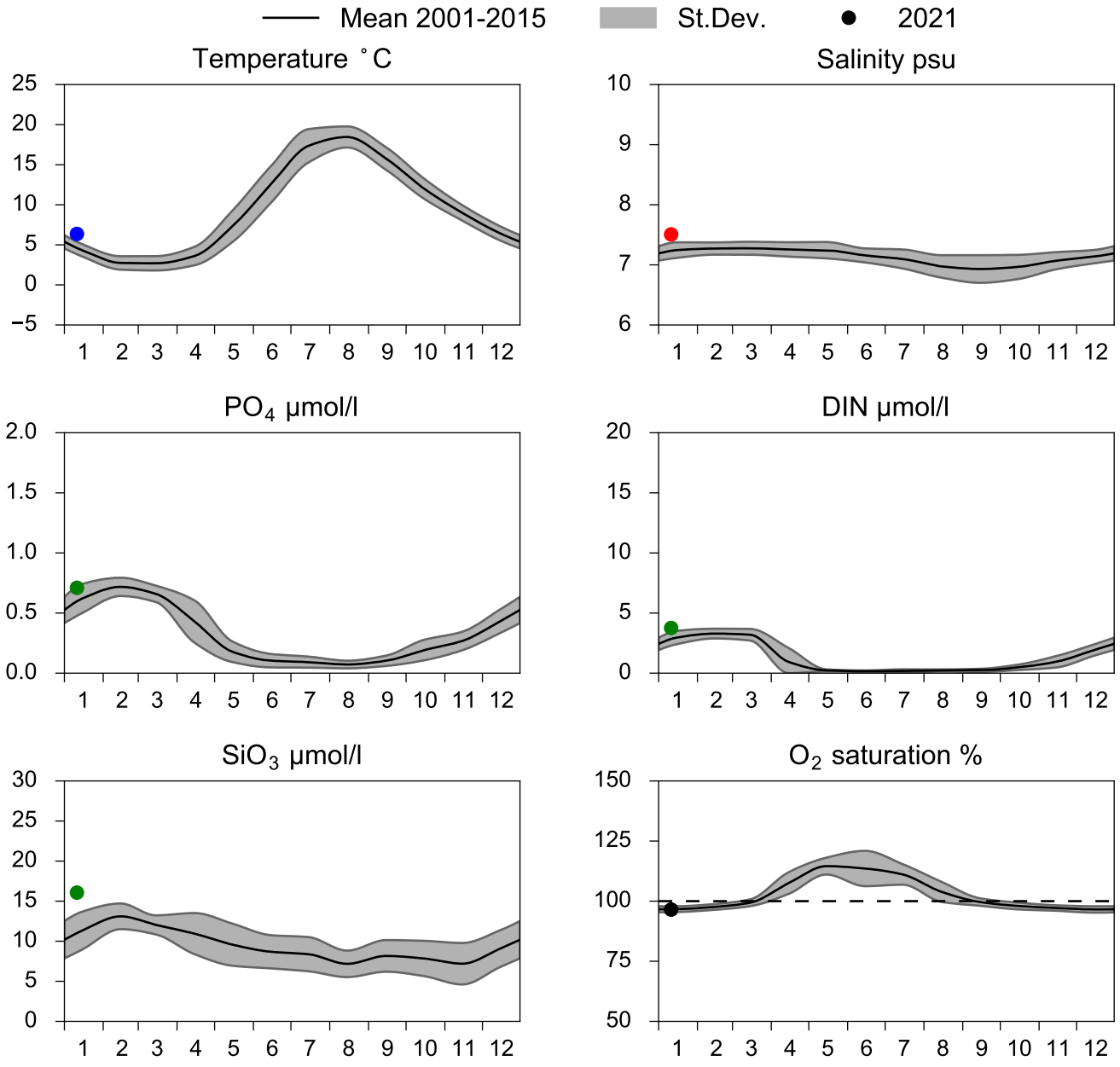


Vertical profiles BCS III-10
January

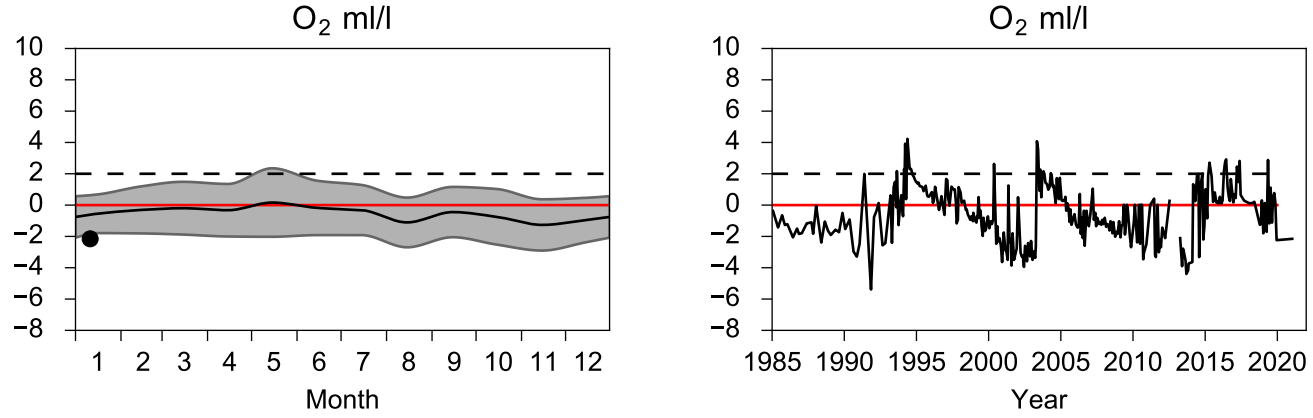


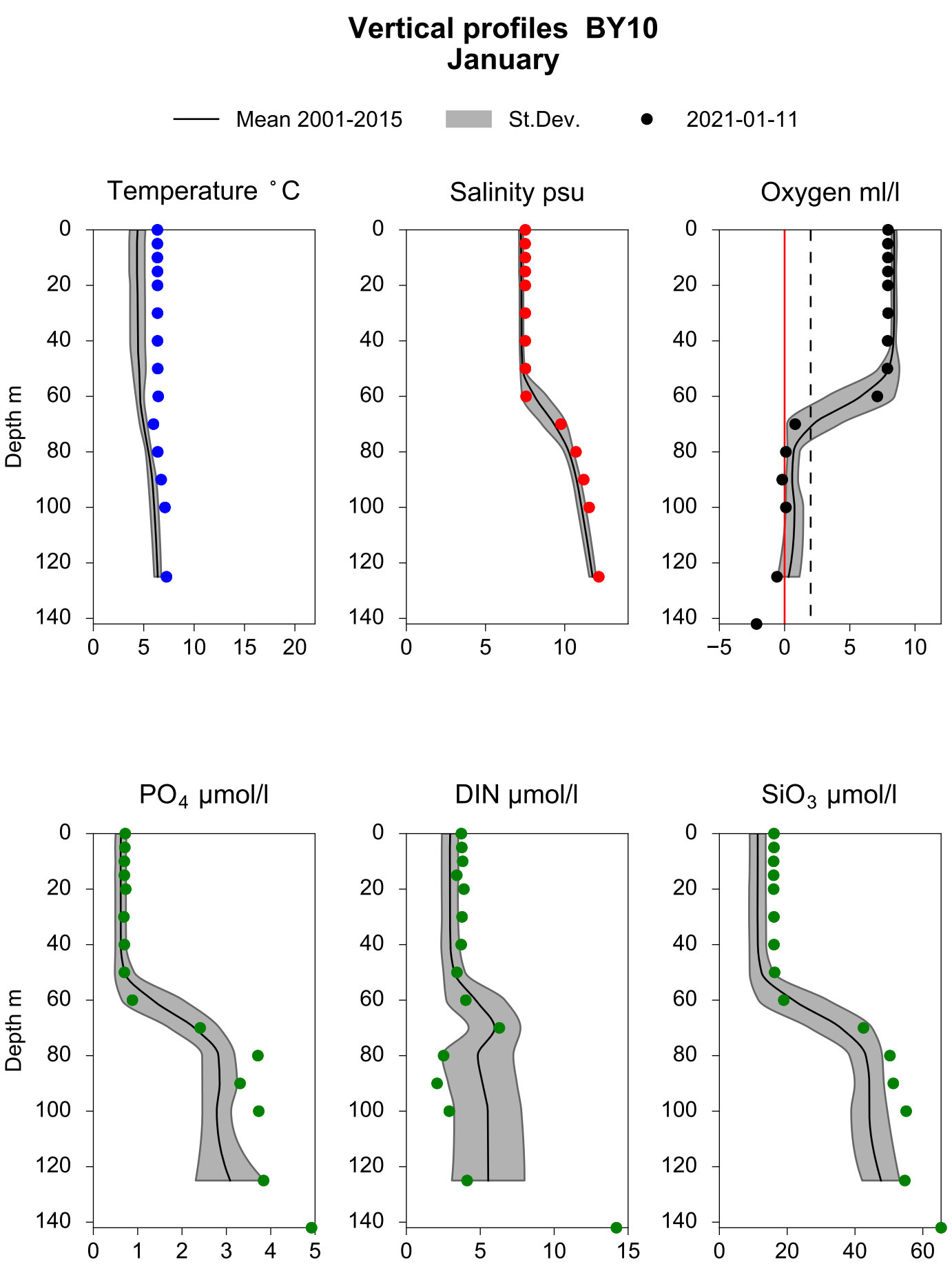
STATION BY10 SURFACE WATER (0-10 m)

Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 125 m)



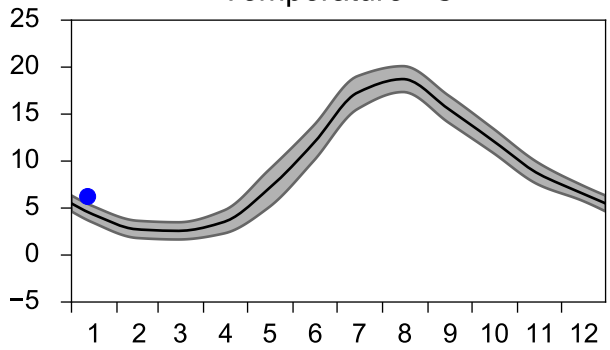

Vertical profiles BY10
January
Mean 2001-2015
St.Dev.
2021-01-11
Temperature ˚C
Salinity psu
Oxygen ml/l
PO4 µmol/l
DIN µmol/l
SiO3 µmol/l
Depth m

STATION BY15 GOTLANDSDJ SURFACE WATER (0-10 m)

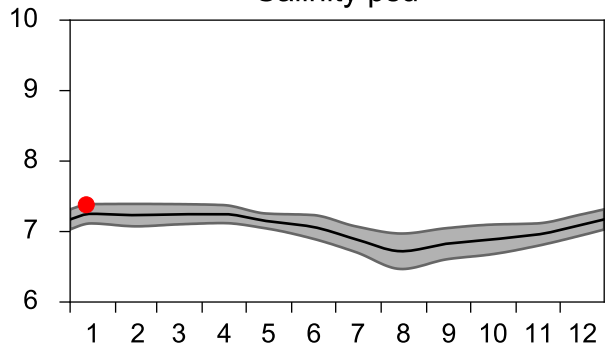
Annual Cycles

Mean 2001-2015 St.Dev. 2021

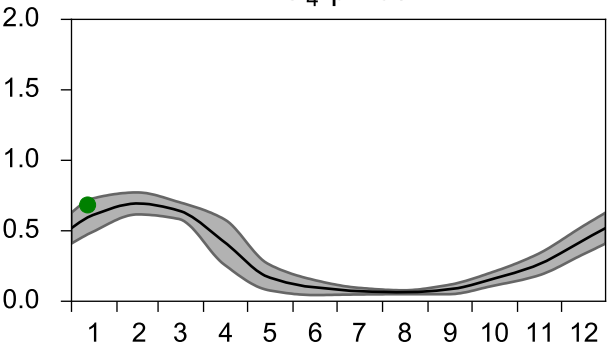
Temperature ˚C



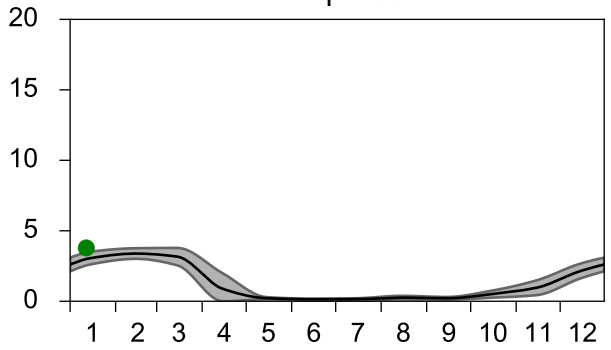
Salinity psu



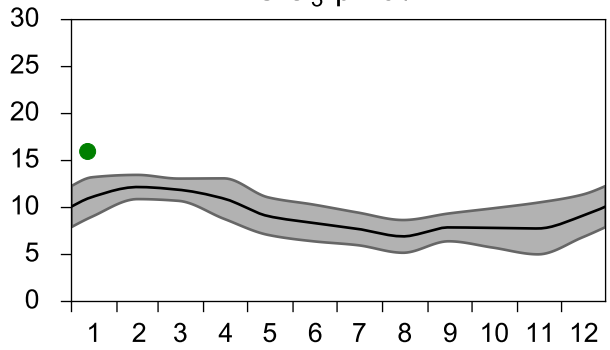
PO_4 µmol/l



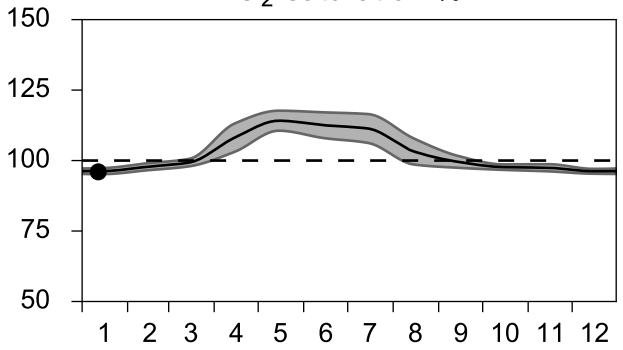
DIN µmol/l



SiO_3 µmol/l

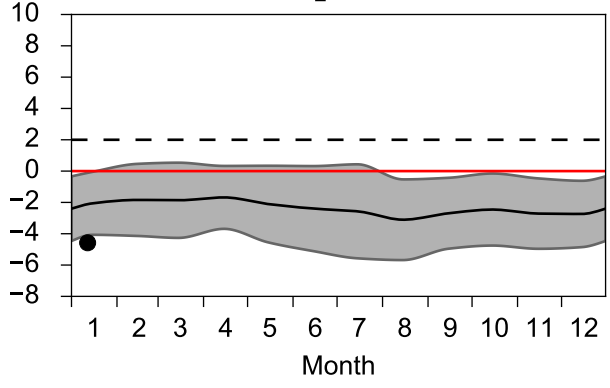


O_2 saturation %

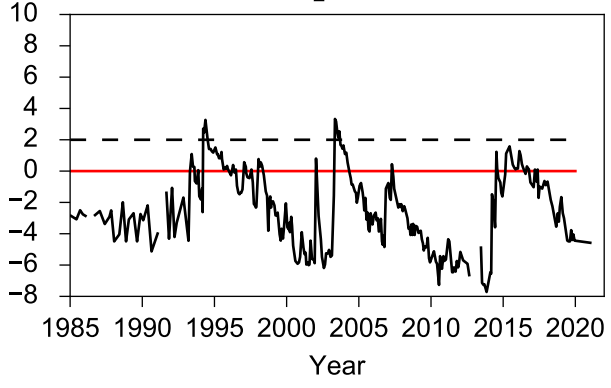


OXYGEN IN BOTTOM WATER (depth >= 225 m)

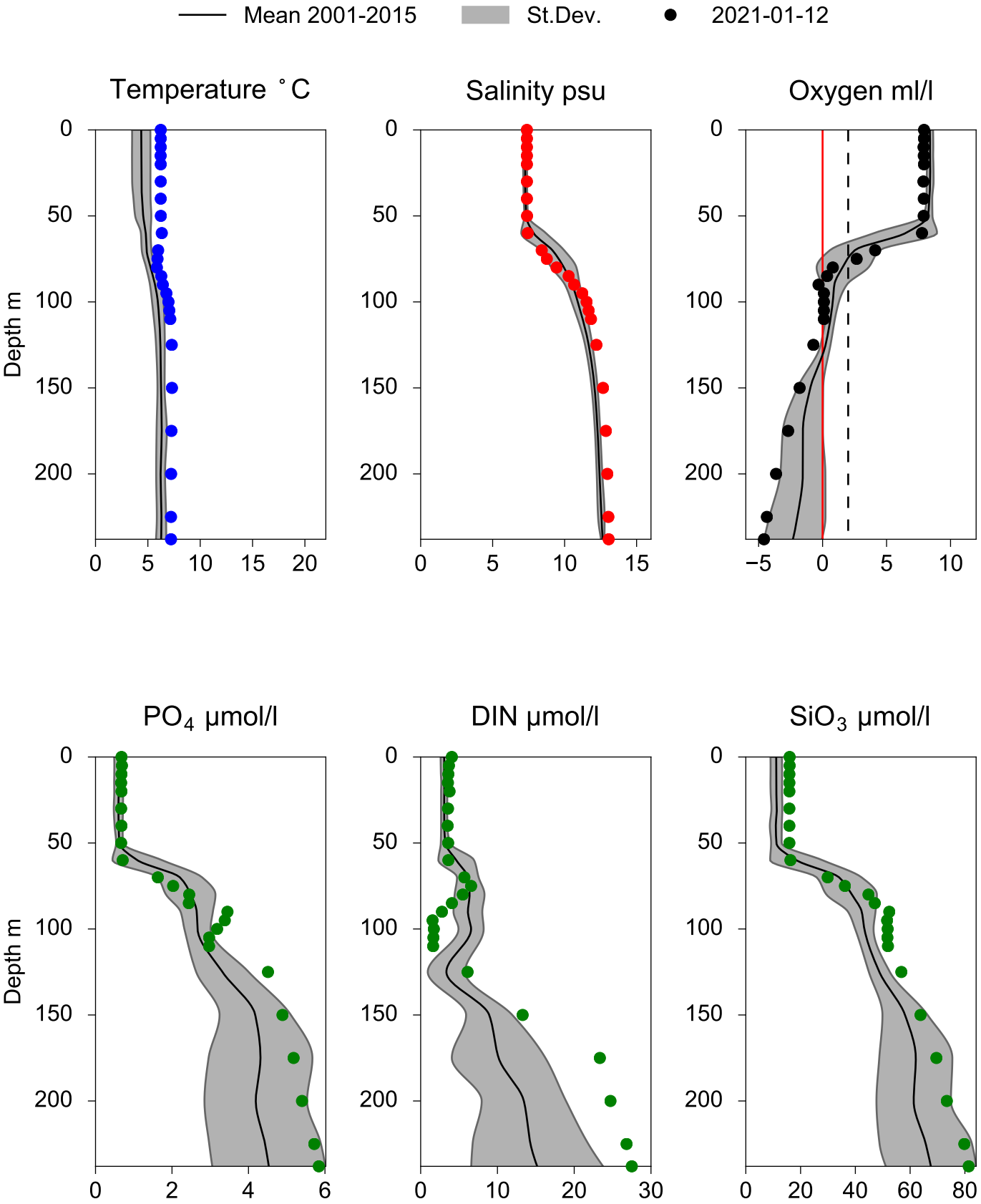
O_2 ml/l



O_2 ml/l



Vertical profiles BY15 GOTLANDSDJ
January

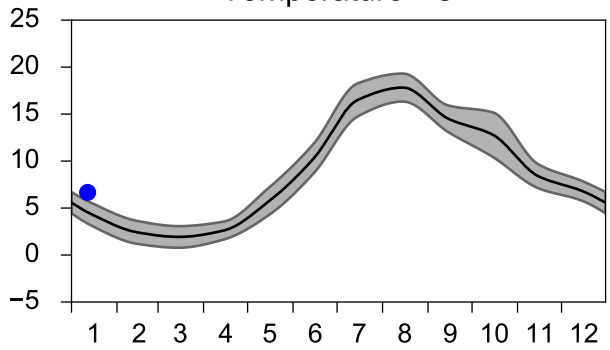


STATION BY29 / LL19 SURFACE WATER (0-10 m)

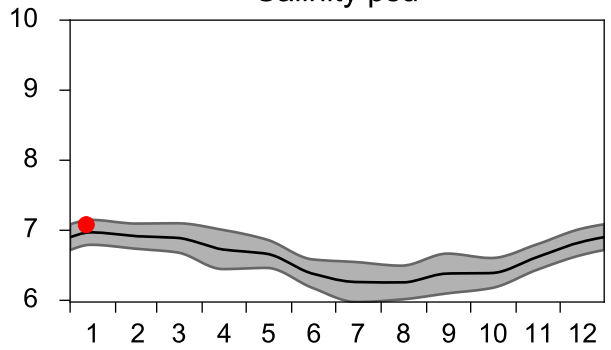
Annual Cycles

Mean 2001-2015 St.Dev. 2021

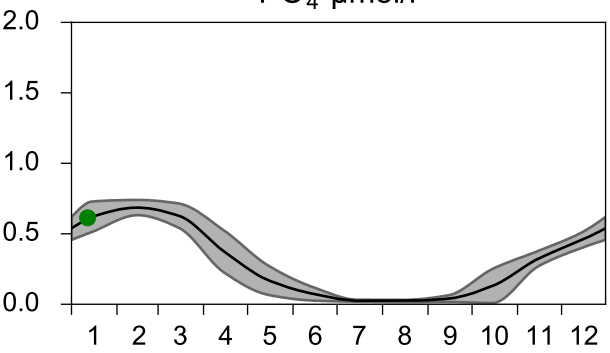
Temperature ˚C



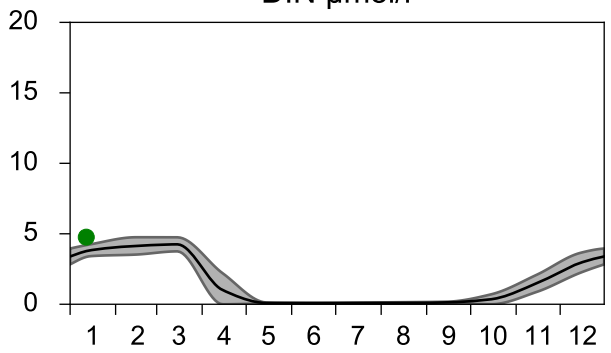
Salinity psu



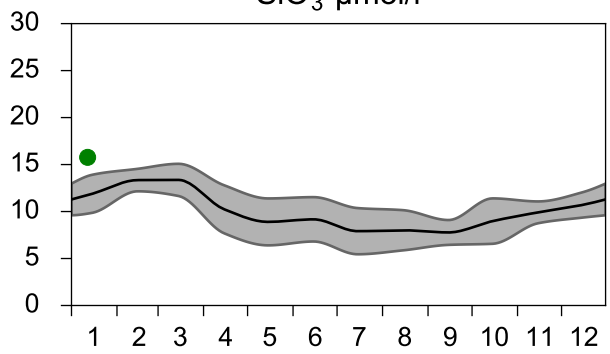
PO_4 µmol/l



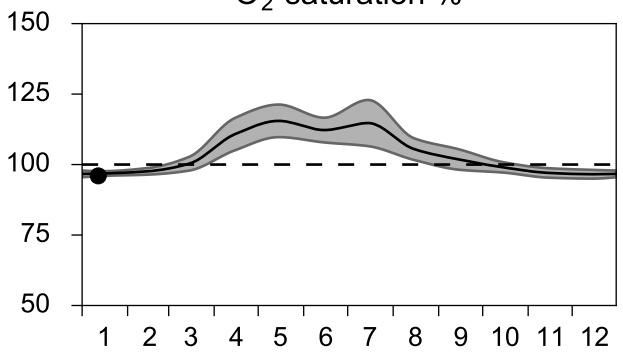
DIN µmol/l



SiO_3 µmol/l

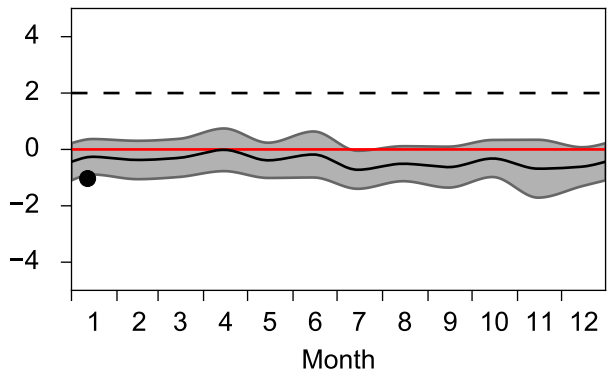


O_2 saturation %

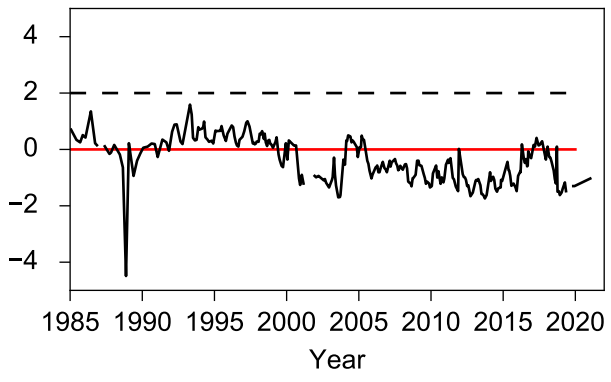


OXYGEN IN BOTTOM WATER (depth >= 150 m)

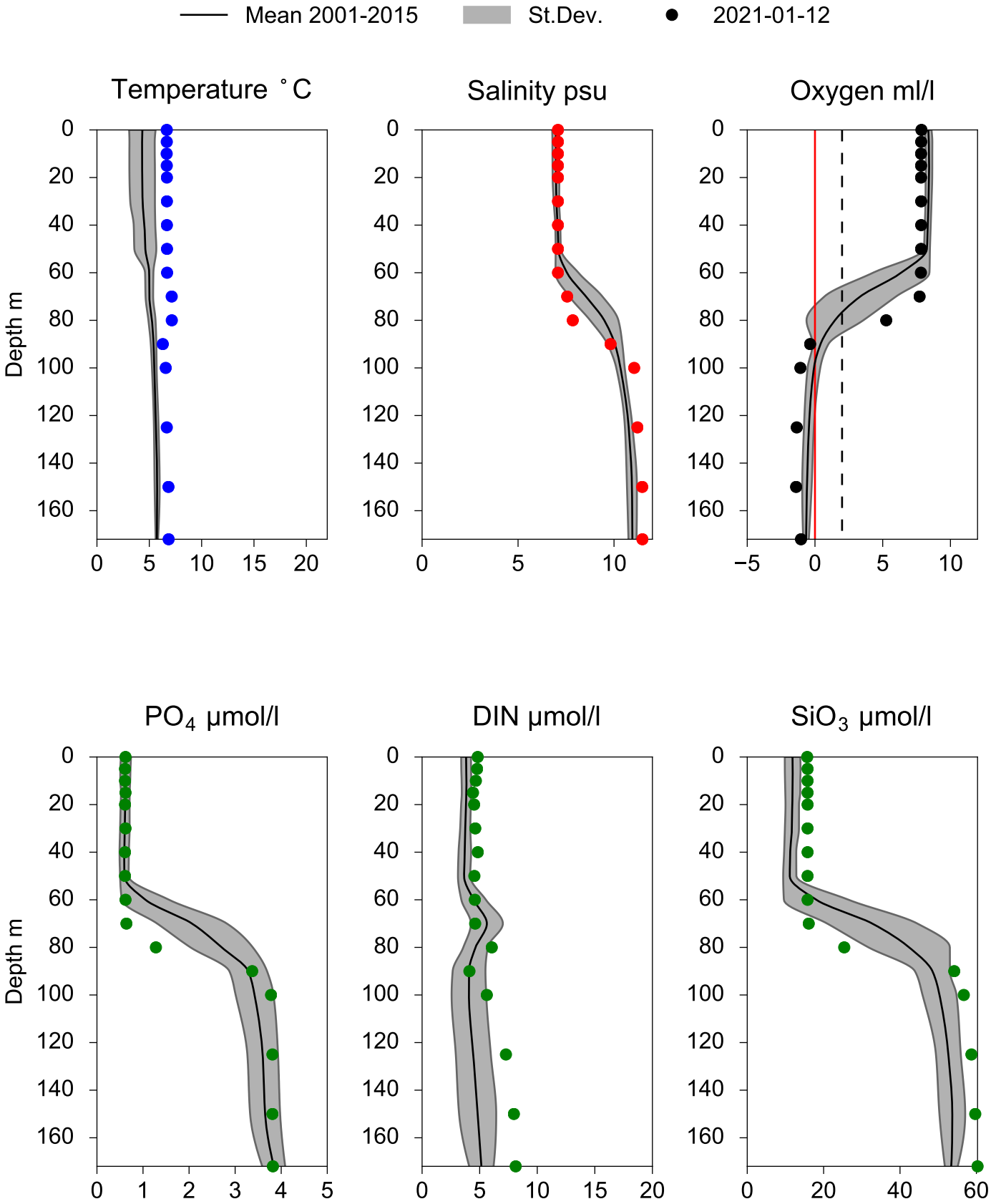
O_2 ml/l



O_2 ml/l



Vertical profiles BY29 / LL19
January

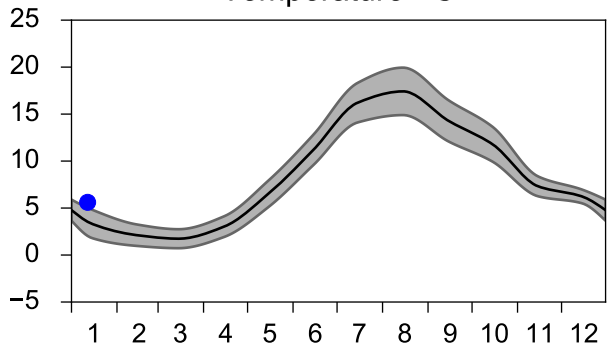


STATION BY31 LANDSORTSDJ SURFACE WATER (0-10 m)

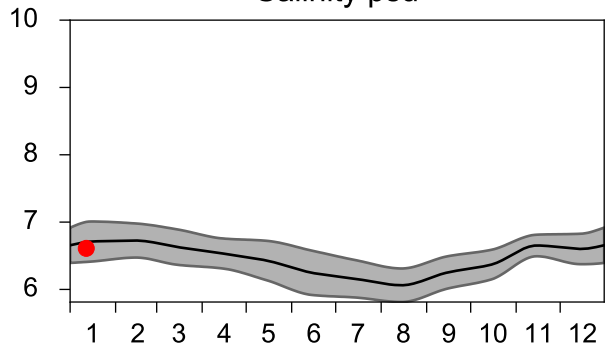
Annual Cycles

Mean 2001-2015 St.Dev. 2021

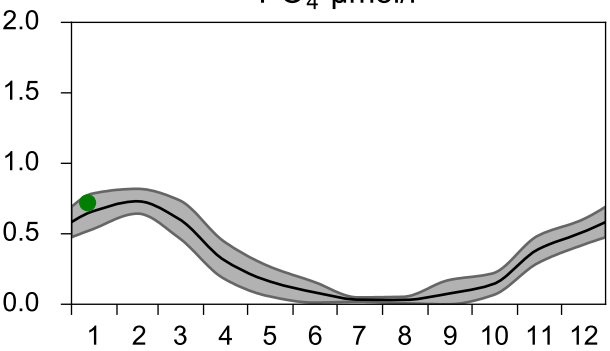
Temperature ˚C



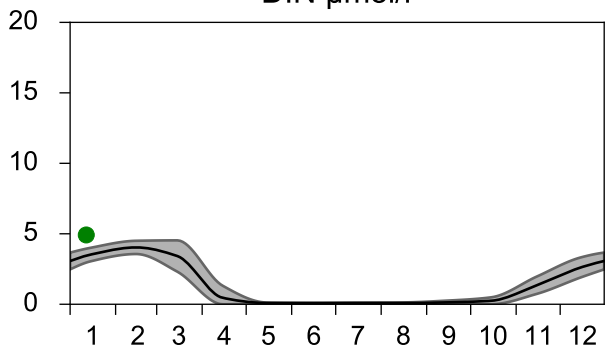
Salinity psu



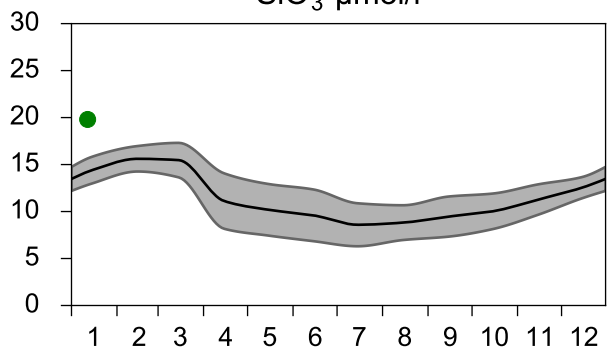
PO_4 µmol/l



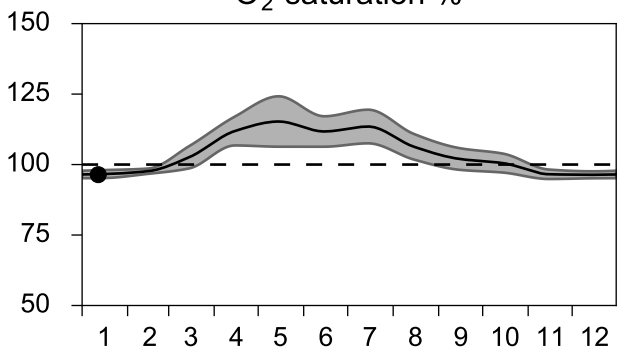
DIN µmol/l



SiO_3 µmol/l

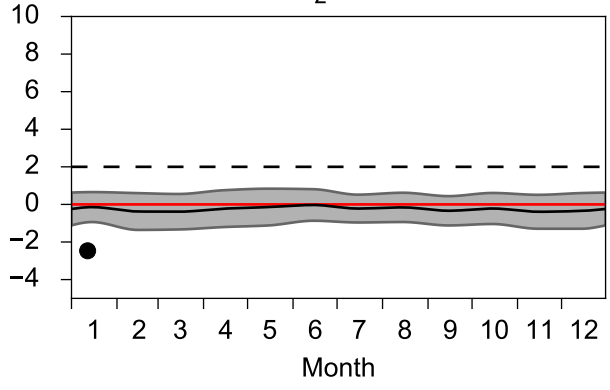


O_2 saturation %

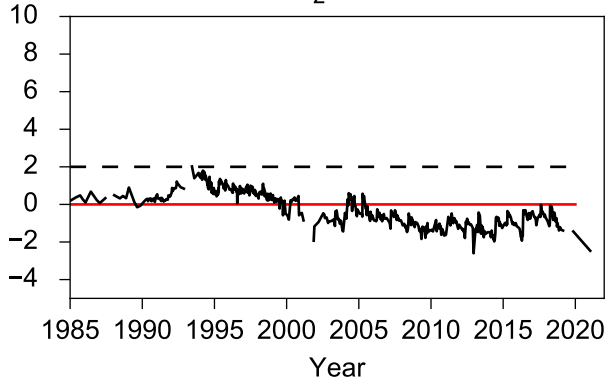


OXYGEN IN BOTTOM WATER (depth >= 419 m)

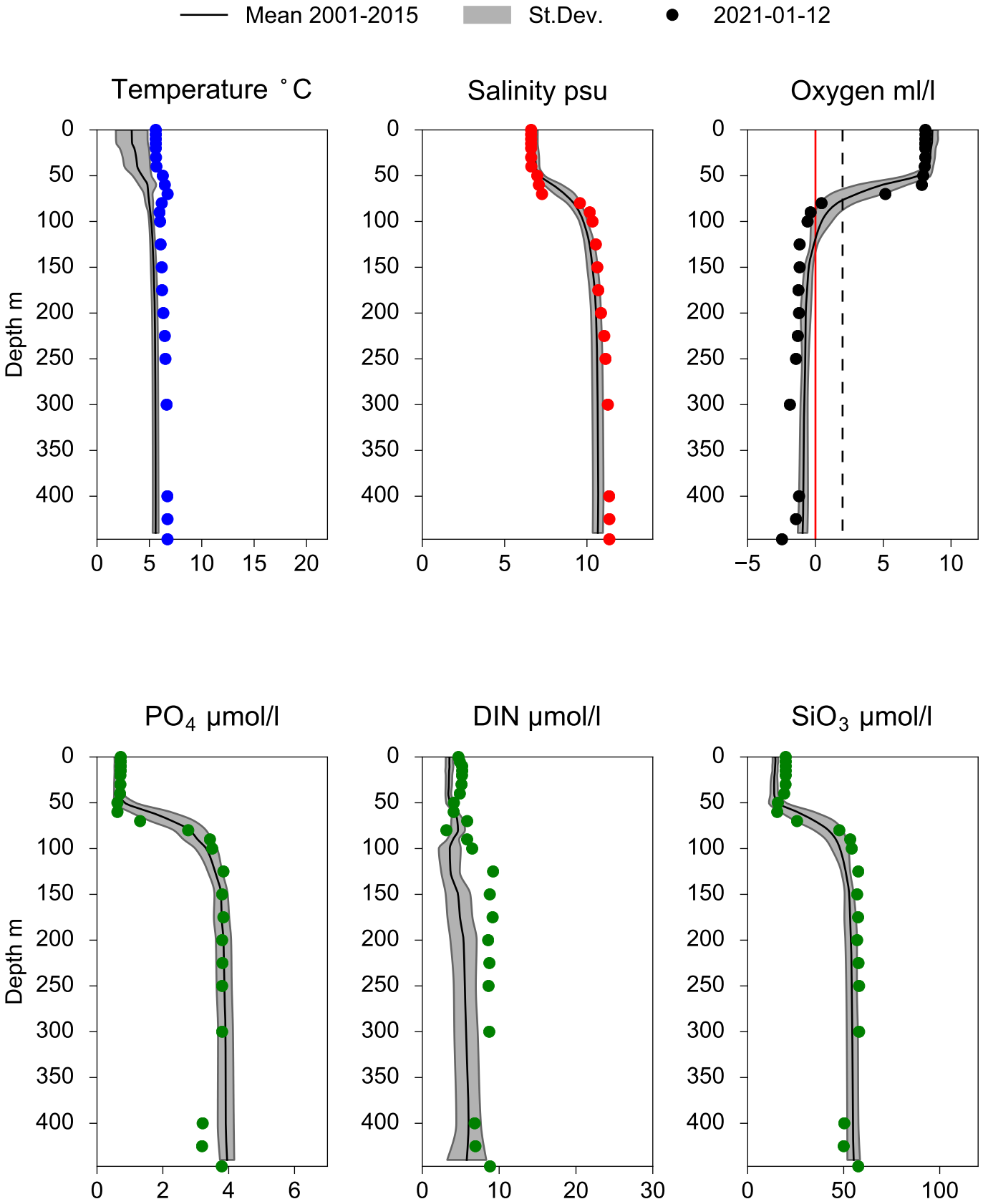
O_2 ml/l



O_2 ml/l



Vertical profiles BY31 LANDSORTSDJ
January

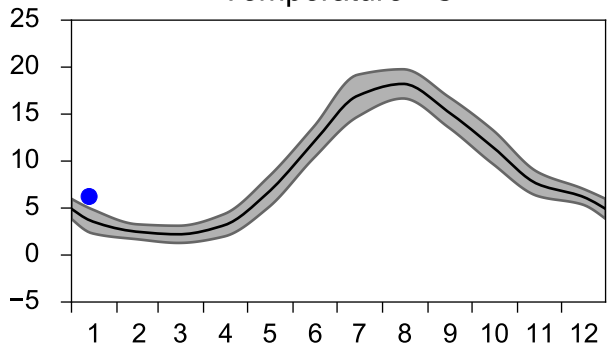


STATION BY32 NORRKÖPINGSDJ SURFACE WATER (0-10 m)

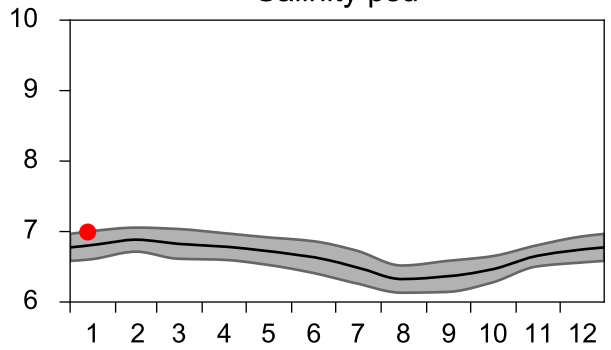
Annual Cycles

Mean 2001-2015 St.Dev. 2021

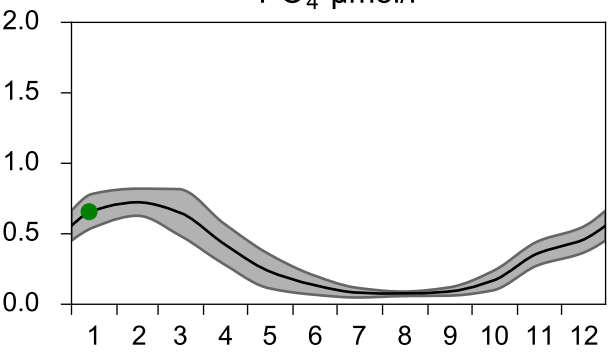
Temperature ˚C



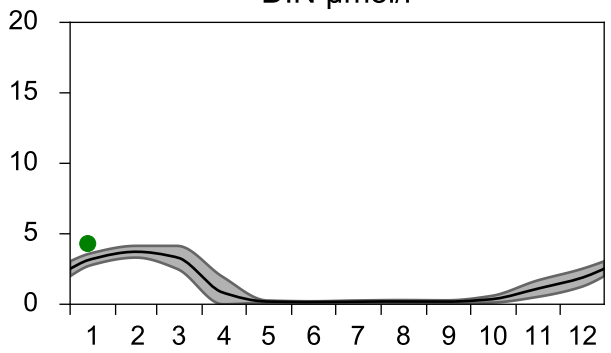
Salinity psu



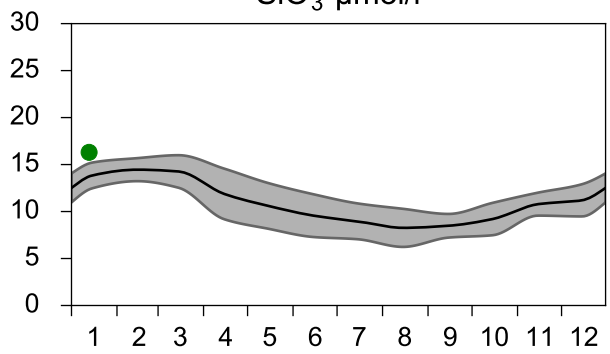
PO_4 µmol/l



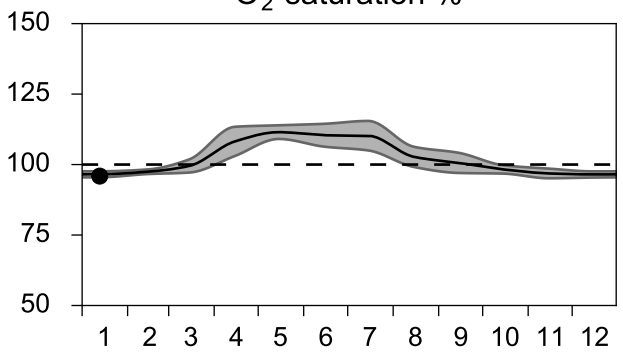
DIN µmol/l



SiO_3 µmol/l

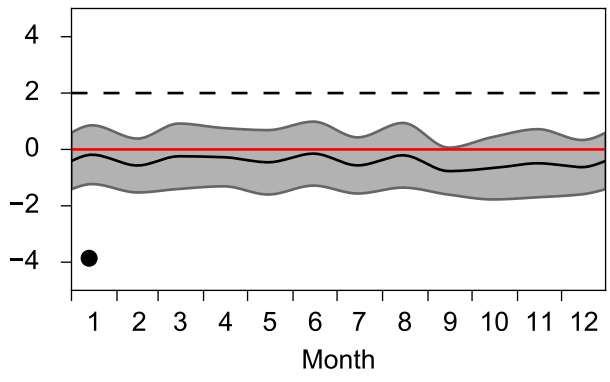


O_2 saturation %

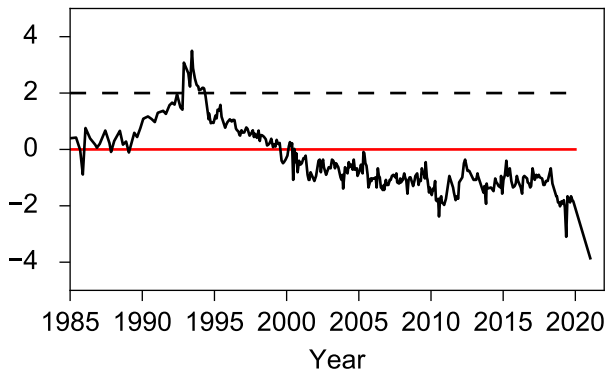


OXYGEN IN BOTTOM WATER (depth >= 175 m)

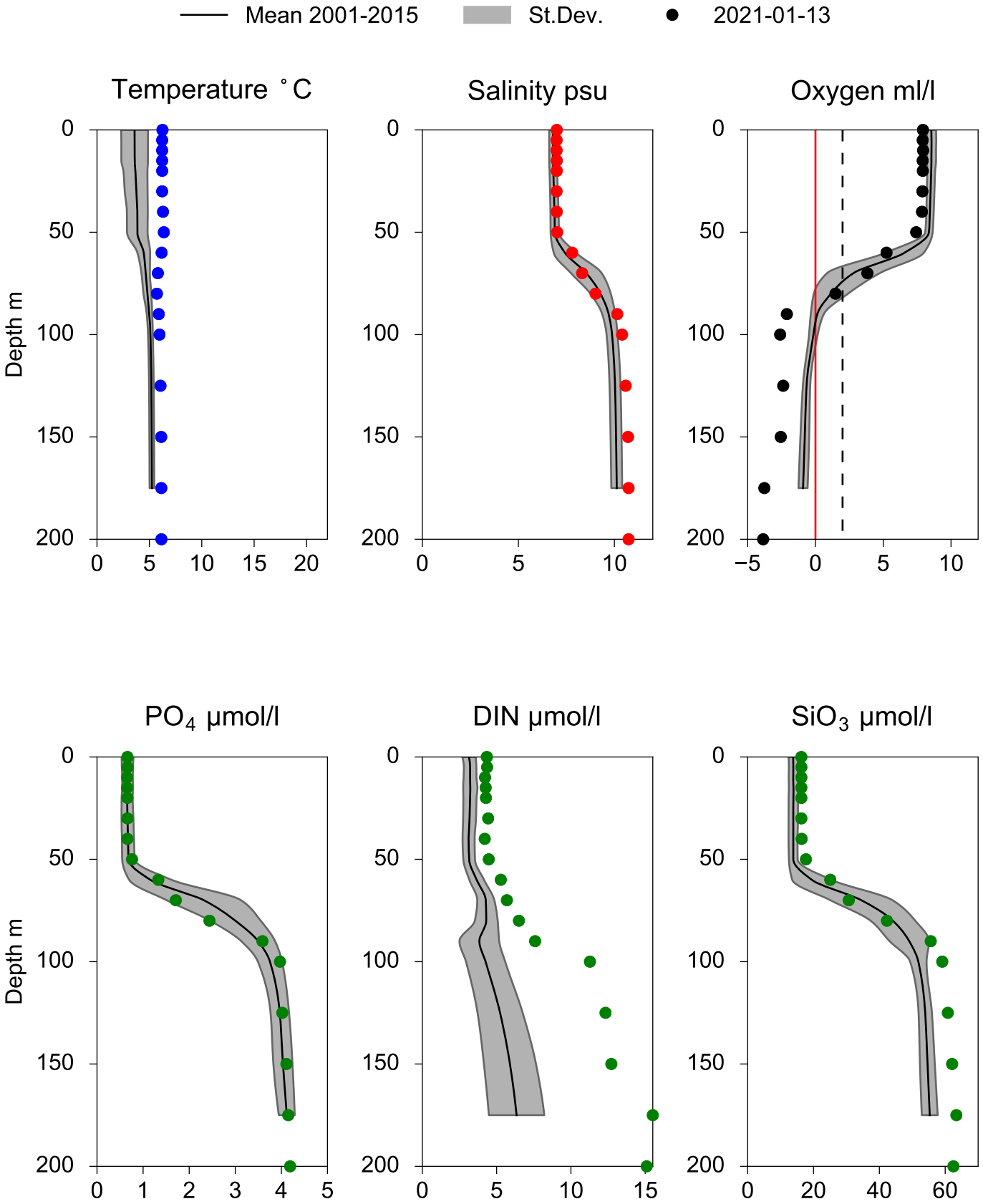
O_2 ml/l



O_2 ml/l



Vertical profiles BY32 NORRKÖPINGSDJ
January

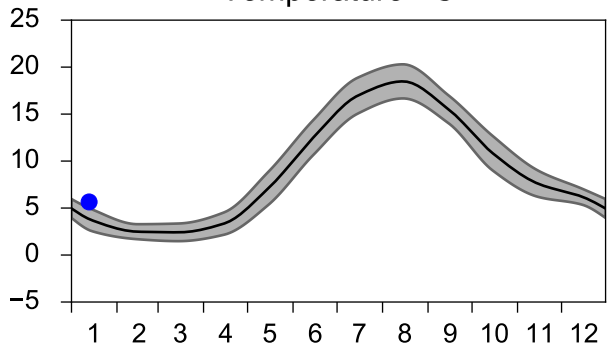


STATION BY38 KARLSÖDJ SURFACE WATER (0-10 m)

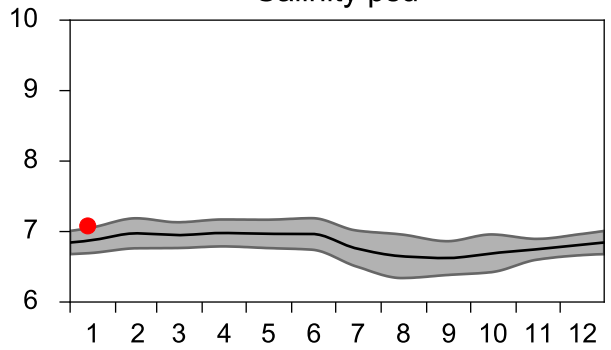
Annual Cycles

Mean 2001-2015 St.Dev. 2021

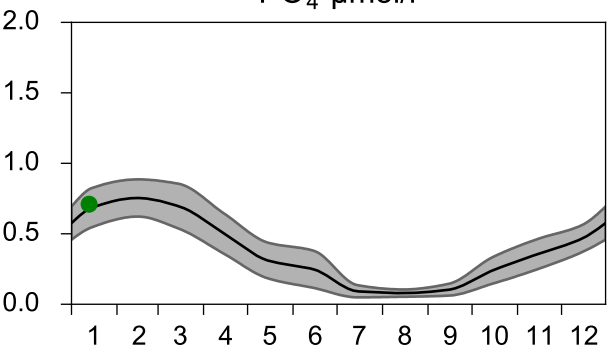
Temperature ˚C



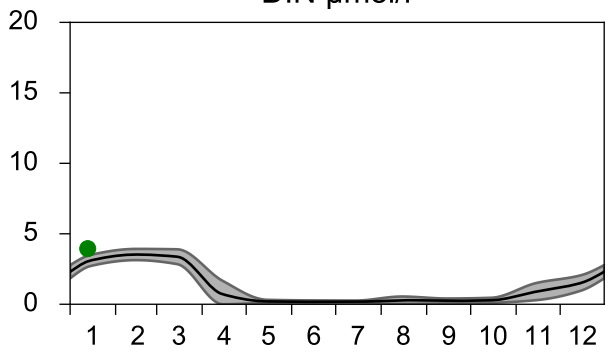
Salinity psu



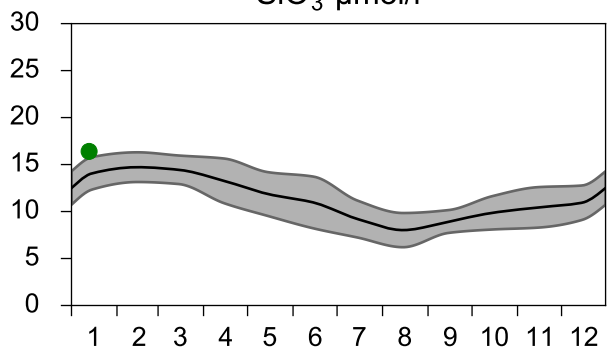
PO_4 µmol/l



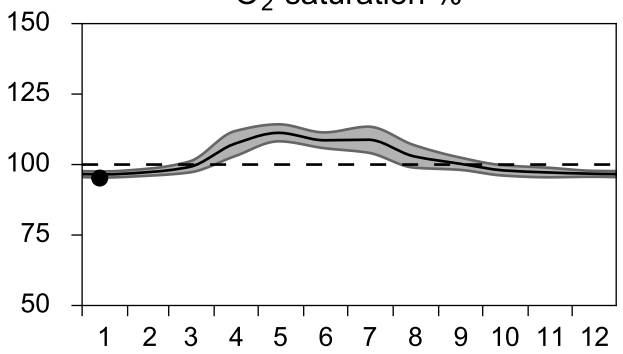
DIN µmol/l



SiO_3 µmol/l

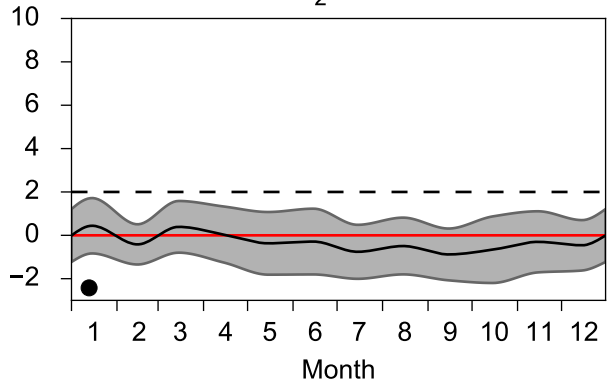


O_2 saturation %

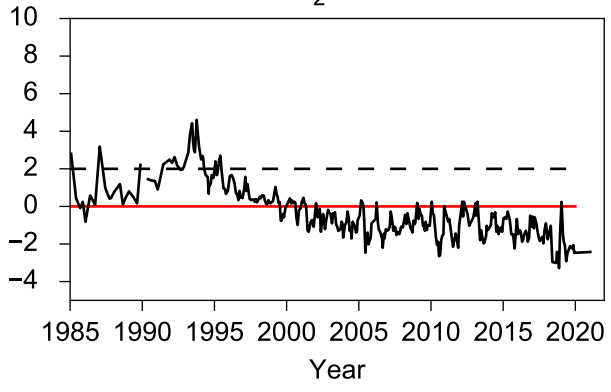


OXYGEN IN BOTTOM WATER (depth >= 100 m)

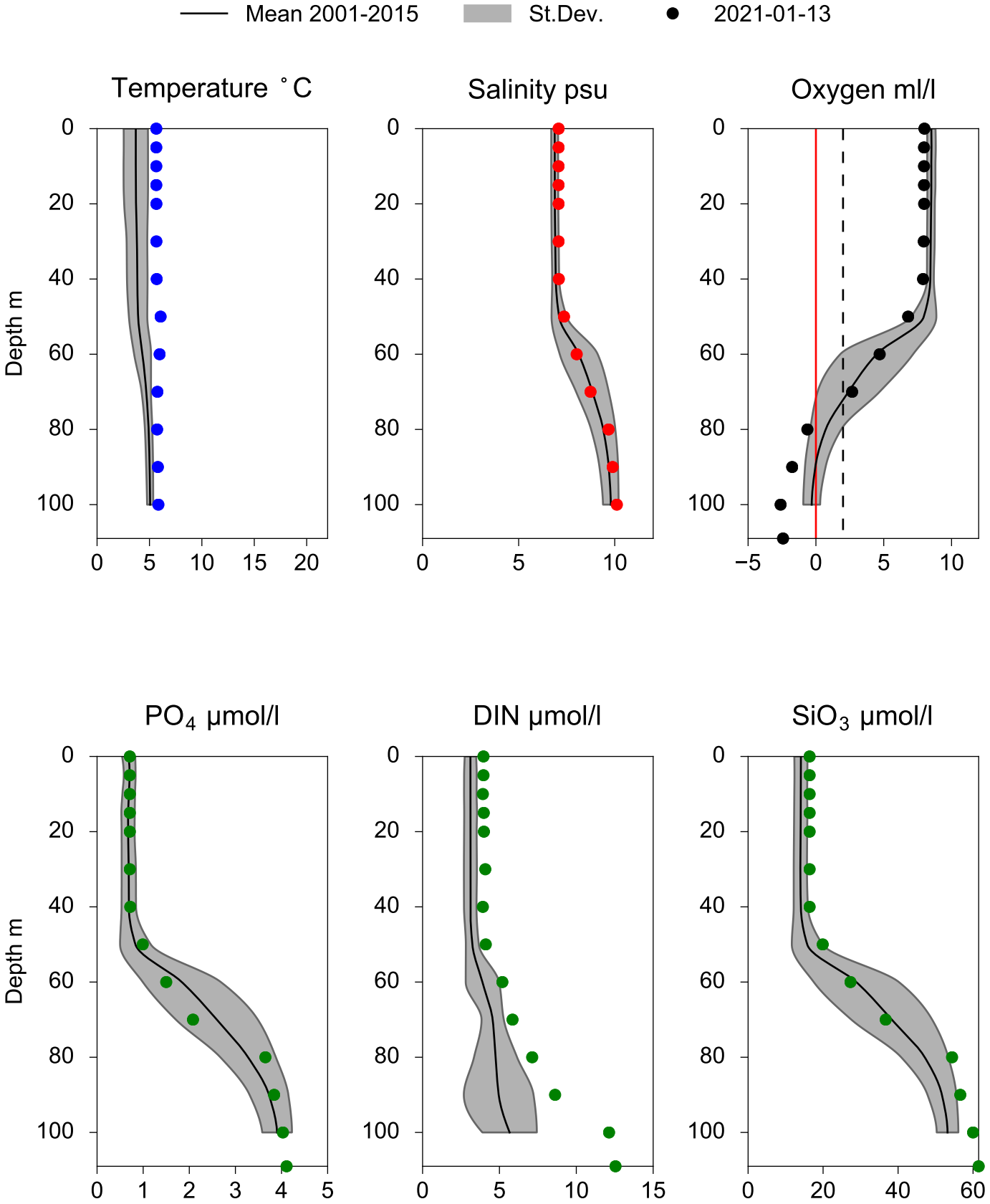
O_2 ml/l



O_2 ml/l



Vertical profiles BY38 KARLSÖDJ
January

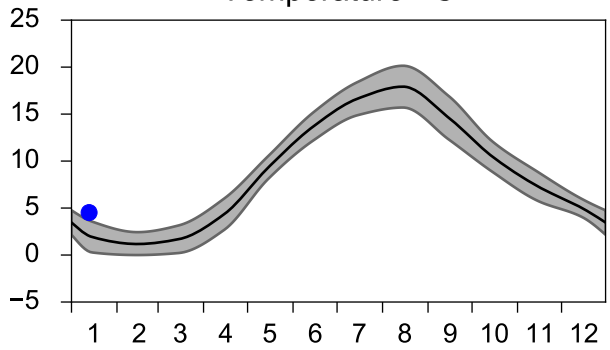


STATION REF M1V1 SURFACE WATER (0-10 m)

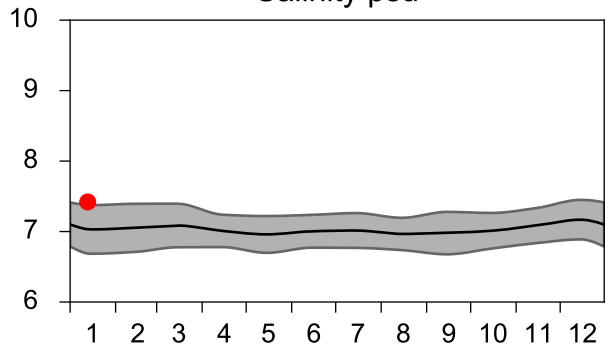
Annual Cycles

Mean 2001-2015 St.Dev. 2021

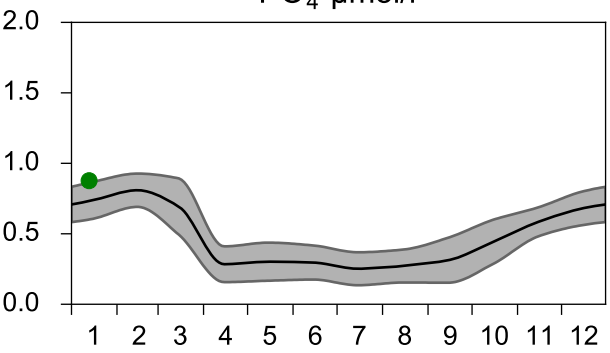
Temperature ˚C



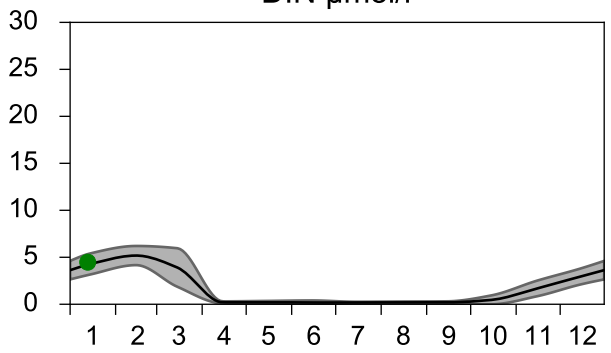
Salinity psu



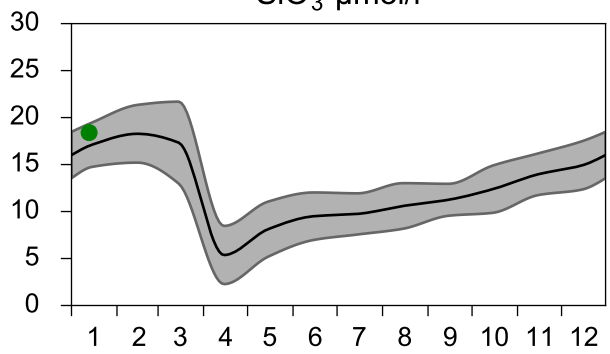
PO_4 µmol/l



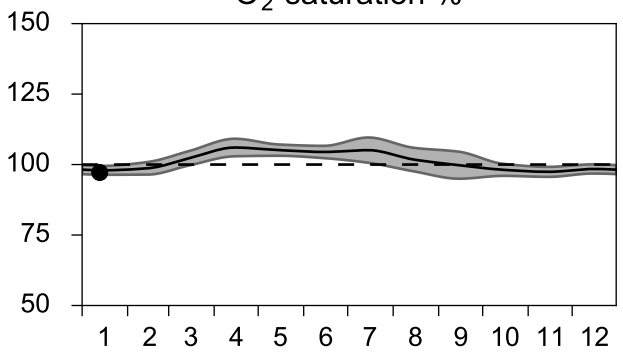
DIN µmol/l



SiO_3 µmol/l

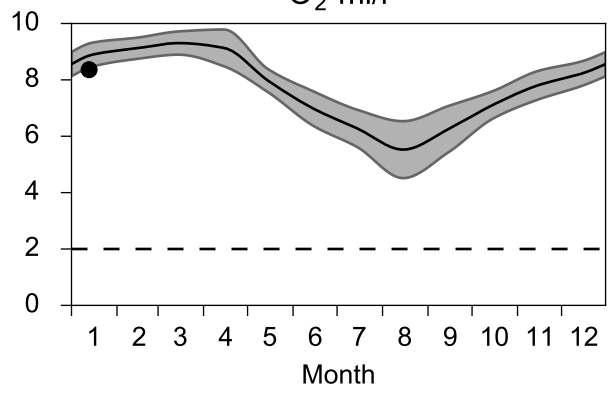


O_2 saturation %

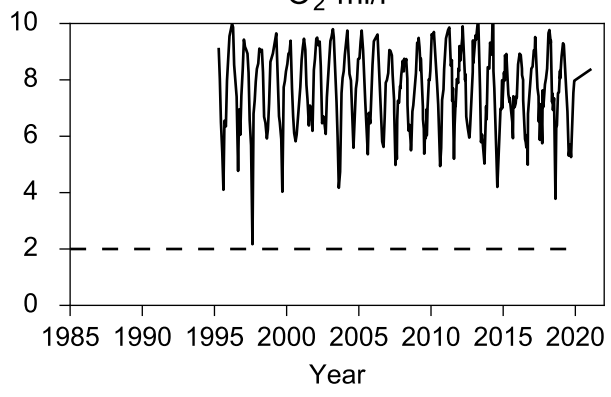


OXYGEN IN BOTTOM WATER (depth >= 15 m)

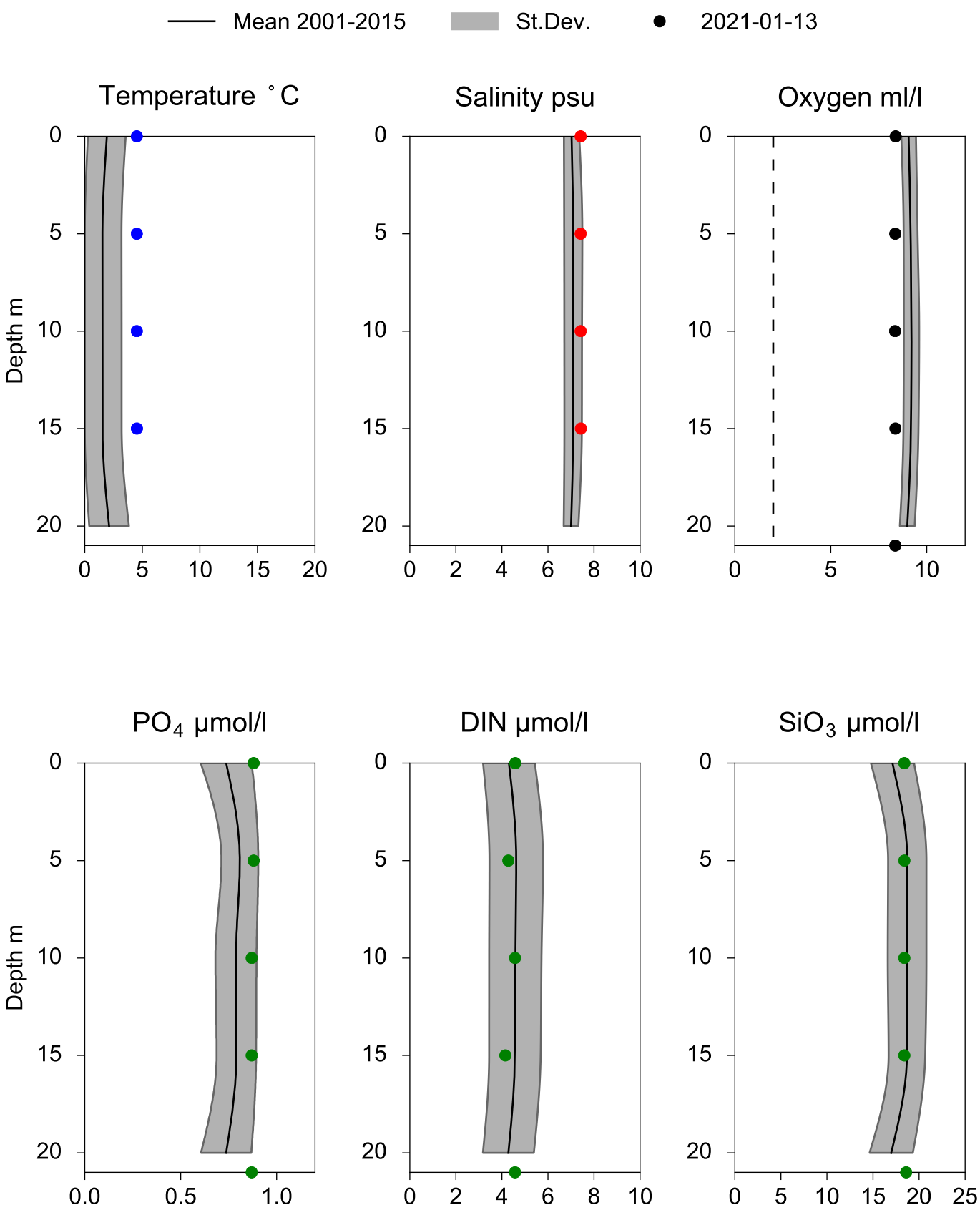
O_2 ml/l



O_2 ml/l



Vertical profiles REF M1V1
January

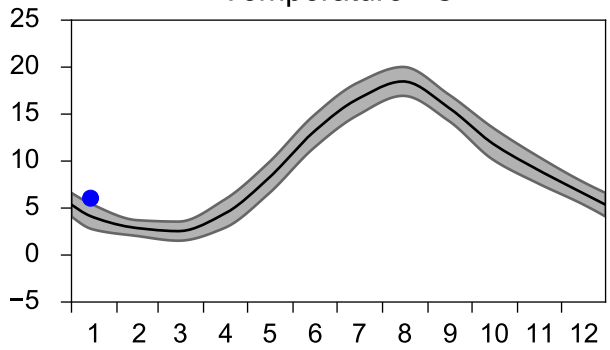


STATION HANÖBUKTEN SURFACE WATER (0-10 m)

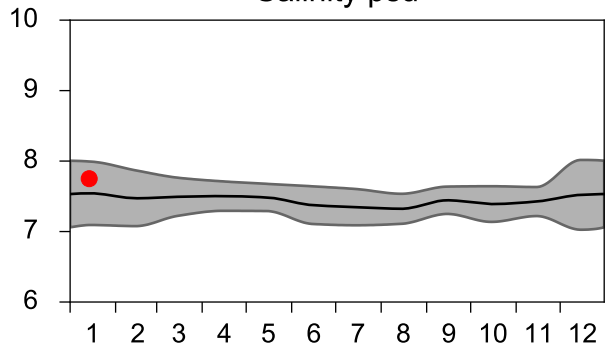
Annual Cycles

Mean 2001-2015 St.Dev. 2021

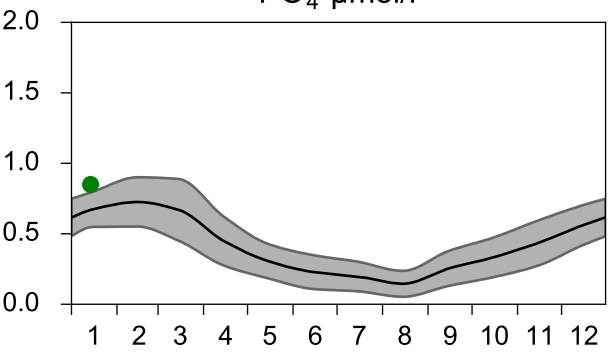
Temperature ˚C



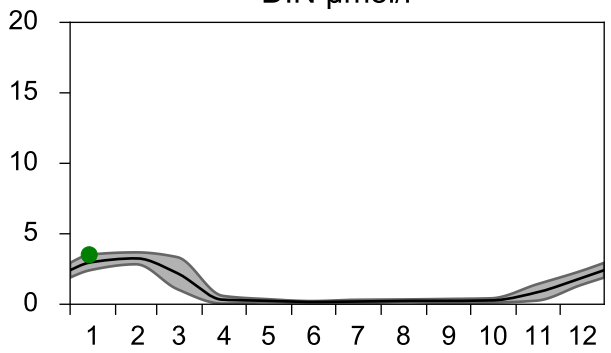
Salinity psu



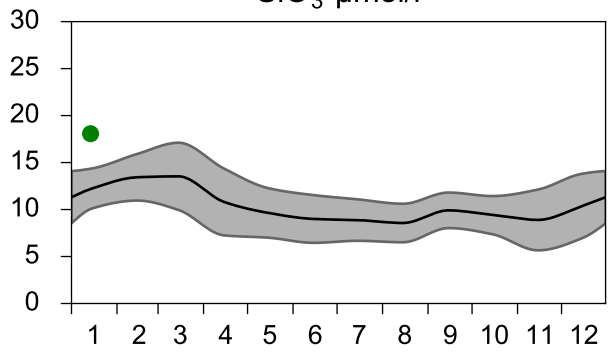
PO_4 µmol/l



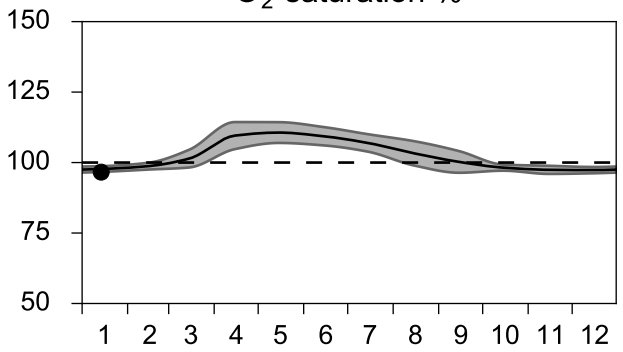
DIN µmol/l



SiO_3 µmol/l

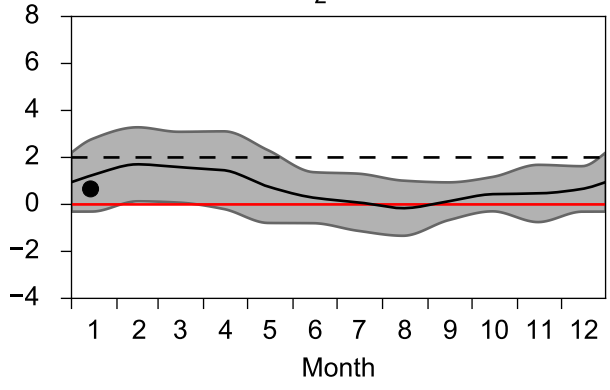


O_2 saturation %

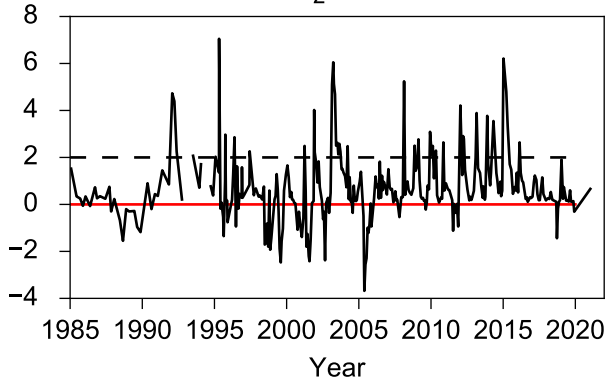


OXYGEN IN BOTTOM WATER (depth >= 70 m)

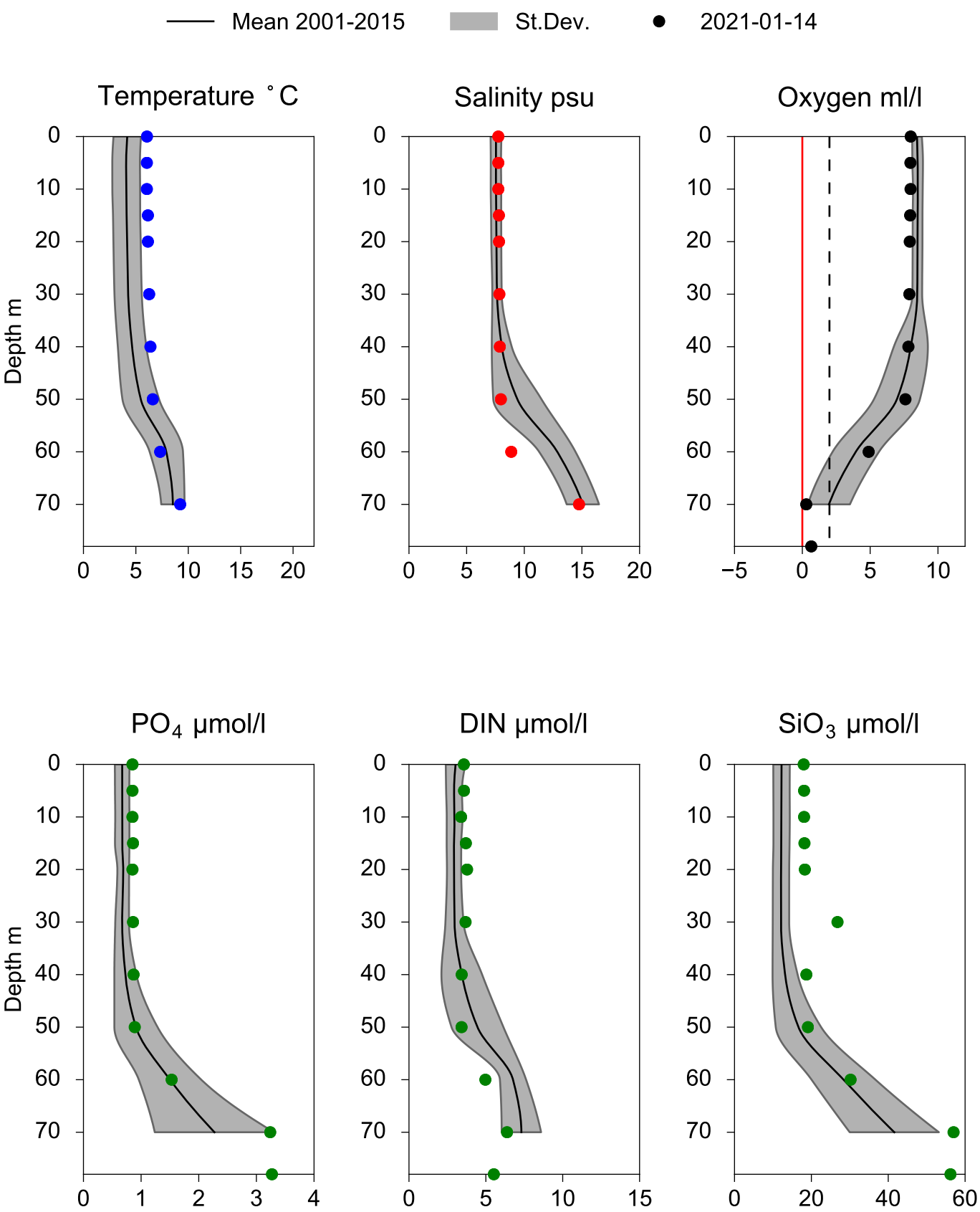
O_2 ml/l



O_2 ml/l



Vertical profiles HANÖBUKTEN
January

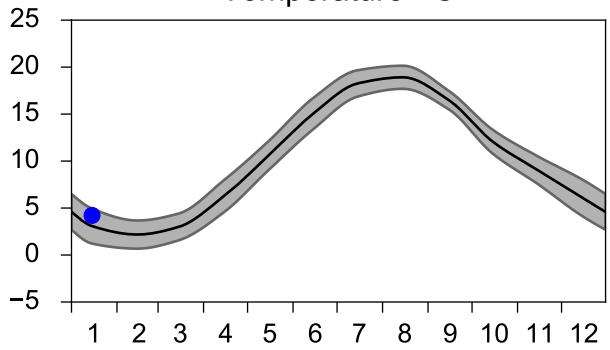


STATION ANHOLT E SURFACE WATER (0-10 m)

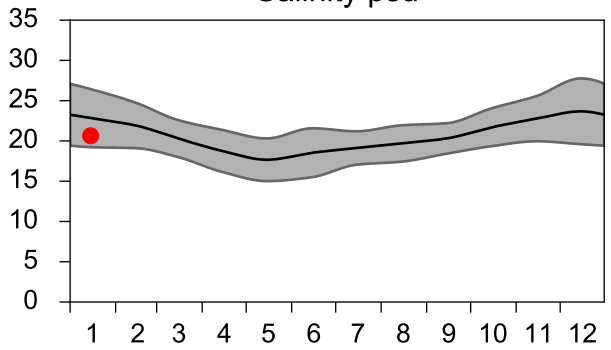
Annual Cycles

Mean 2001-2015 St.Dev. 2021

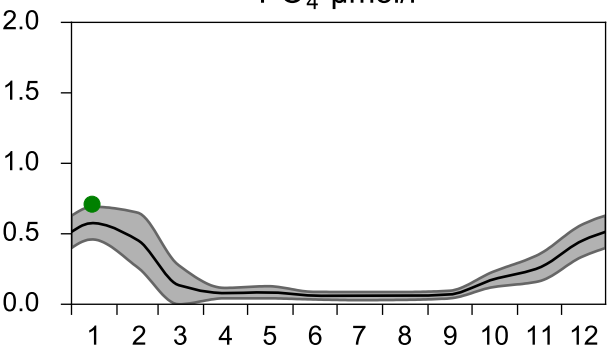
Temperature ˚C



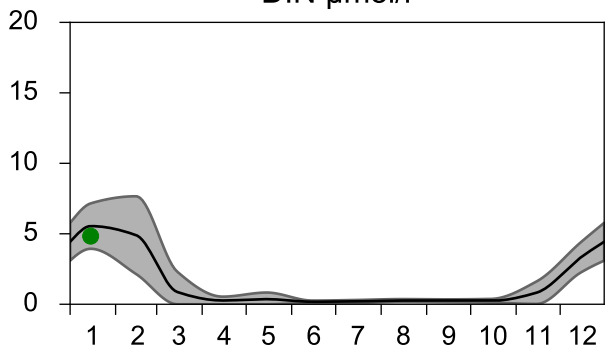
Salinity psu



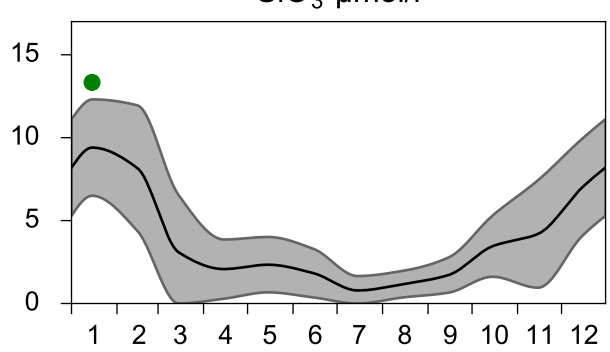
PO_4 µmol/l



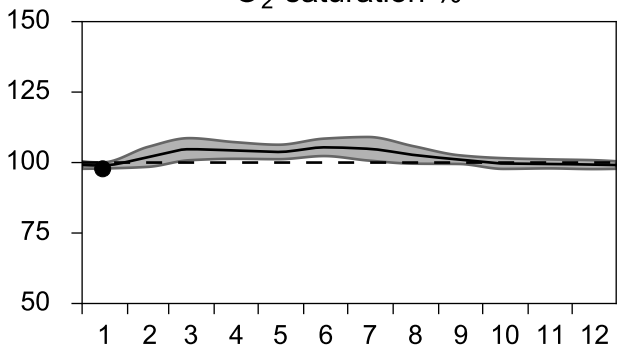
DIN µmol/l



SiO_3 µmol/l

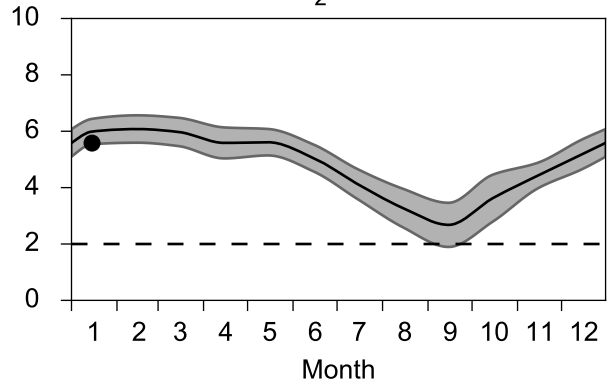


O_2 saturation %

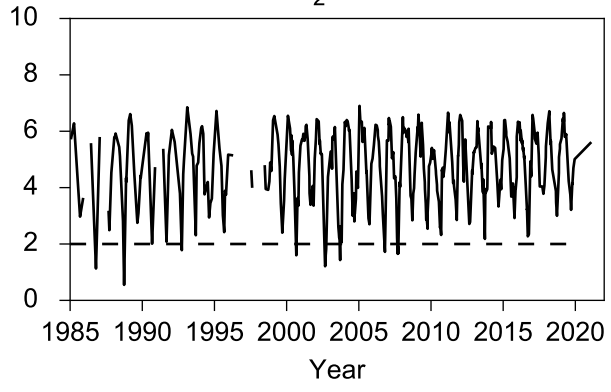


OXYGEN IN BOTTOM WATER (depth >= 52 m)

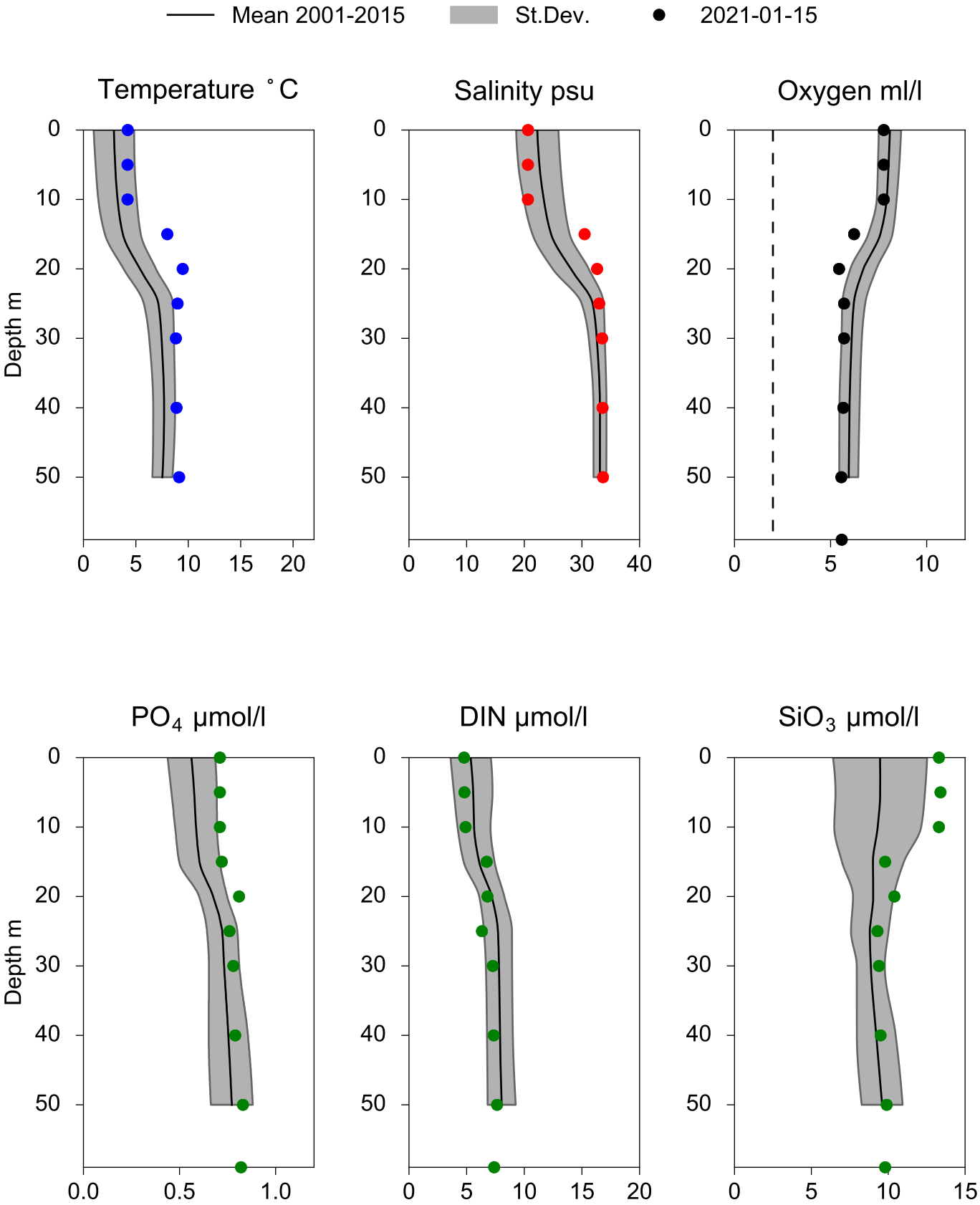
O_2 ml/l



O_2 ml/l



Vertical profiles ANHOLT E
January

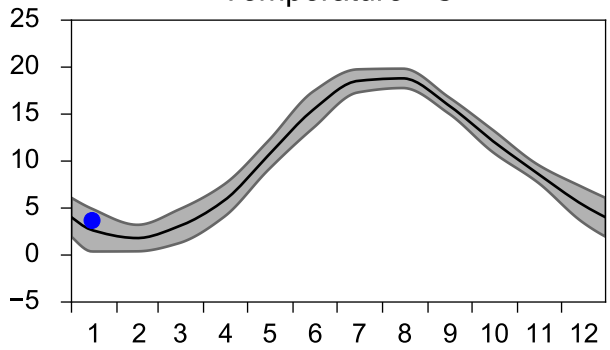


STATION N14 FALKENBERG SURFACE WATER (0-10 m)

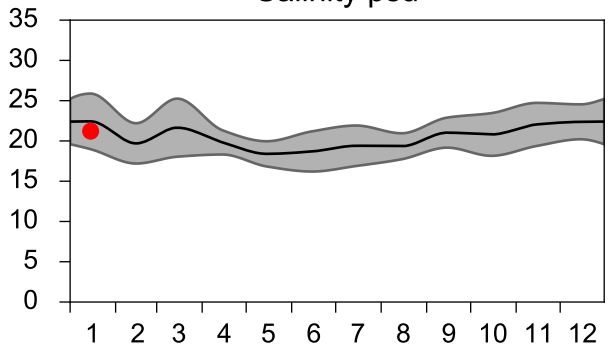
Annual Cycles

Mean 2001-2015 St.Dev. 2021

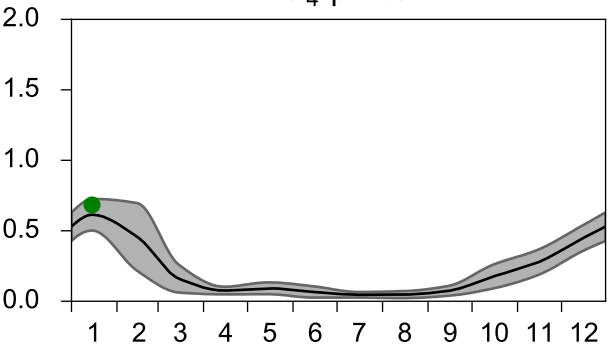
Temperature ˚C



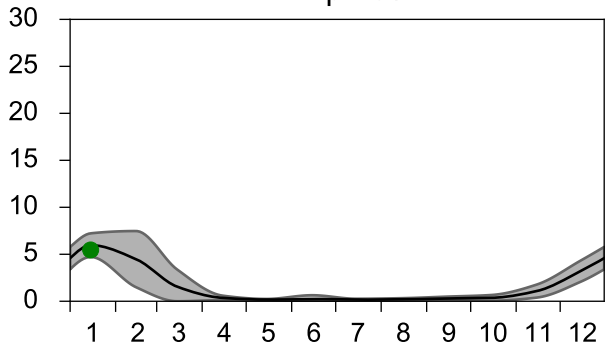
Salinity psu



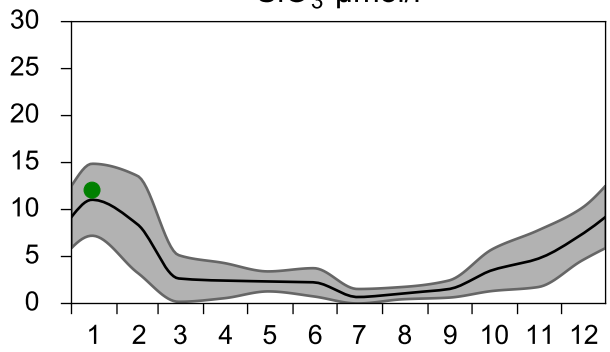
PO_4 µmol/l



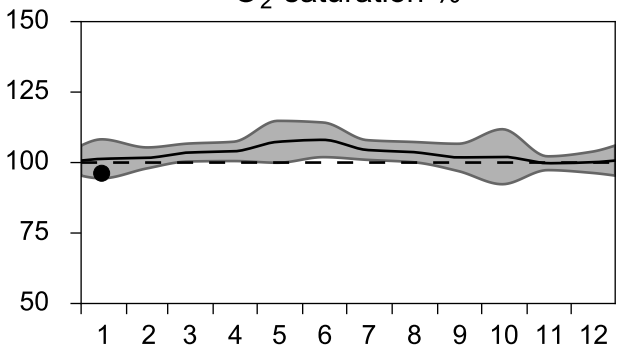
DIN µmol/l



SiO_3 µmol/l

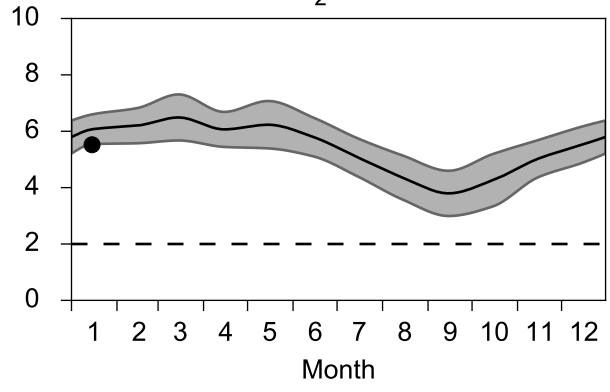


O_2 saturation %

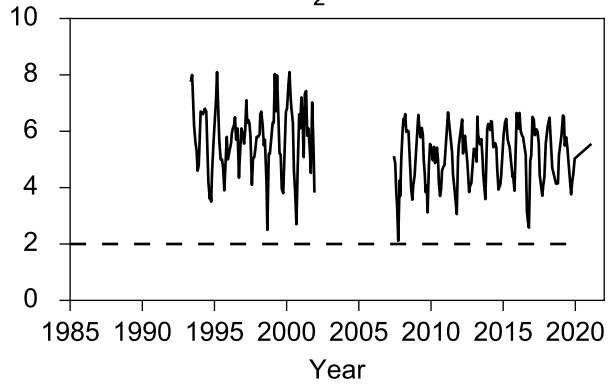


OXYGEN IN BOTTOM WATER (depth >= 20 m)

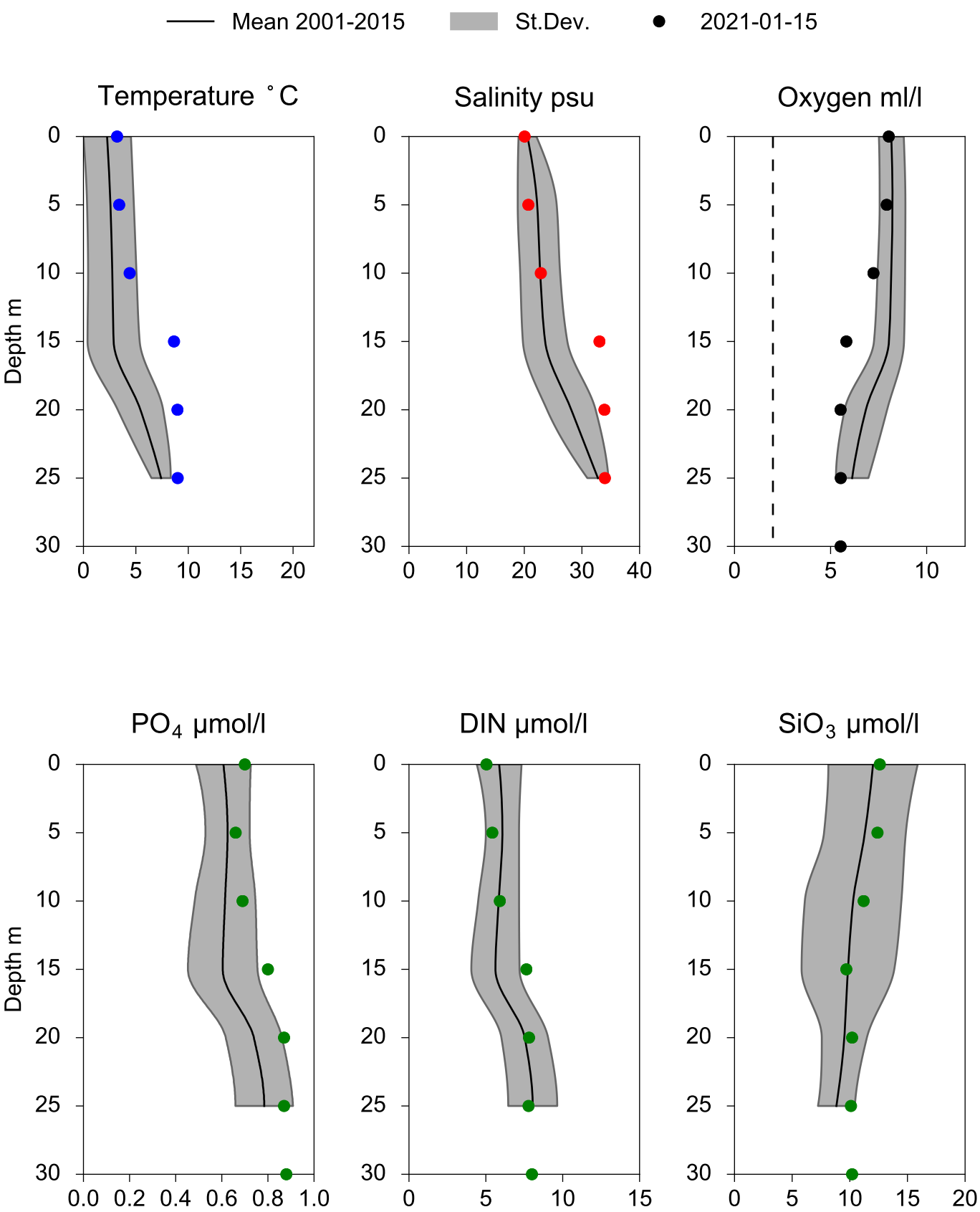
O_2 ml/l



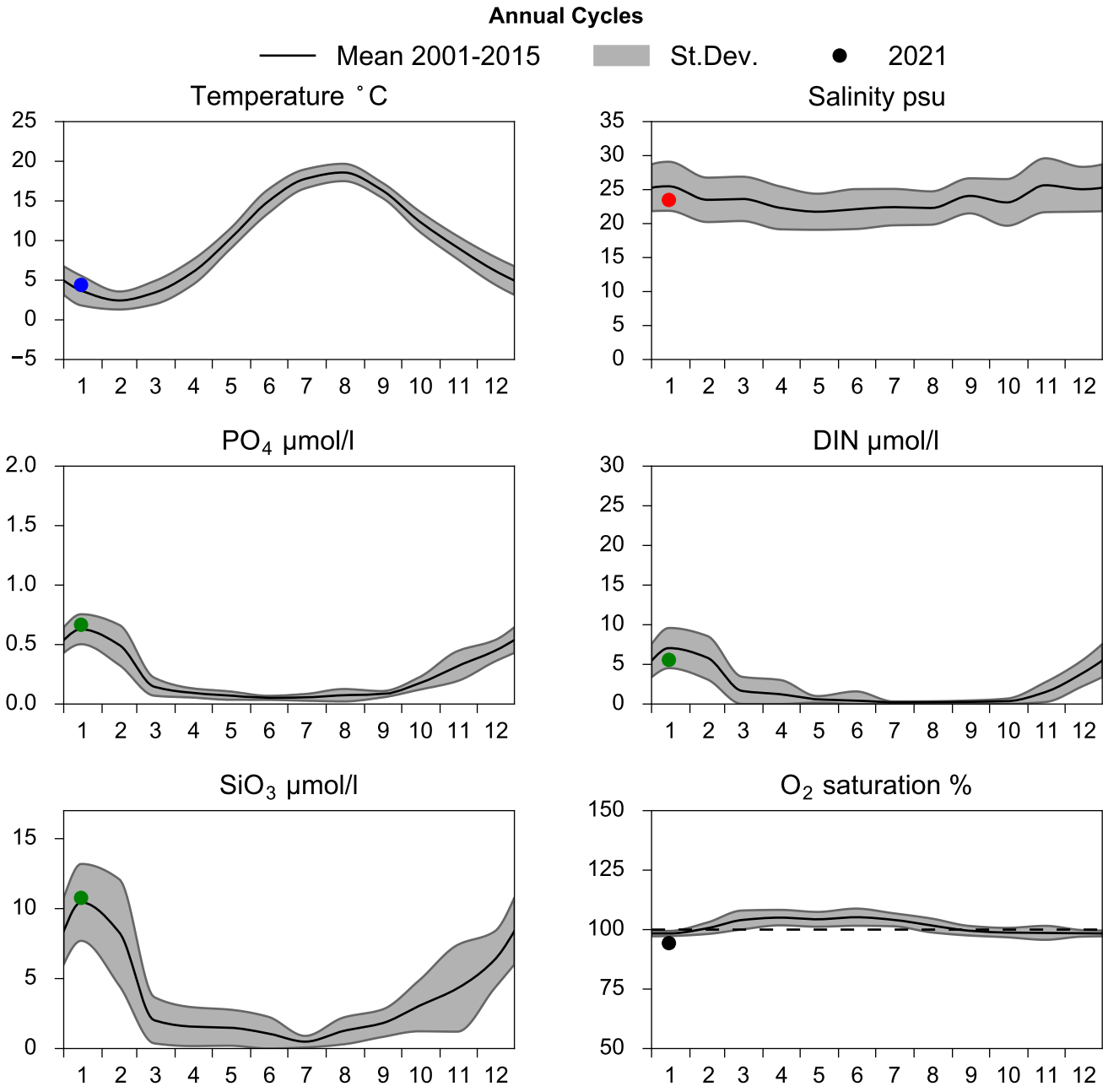
O_2 ml/l



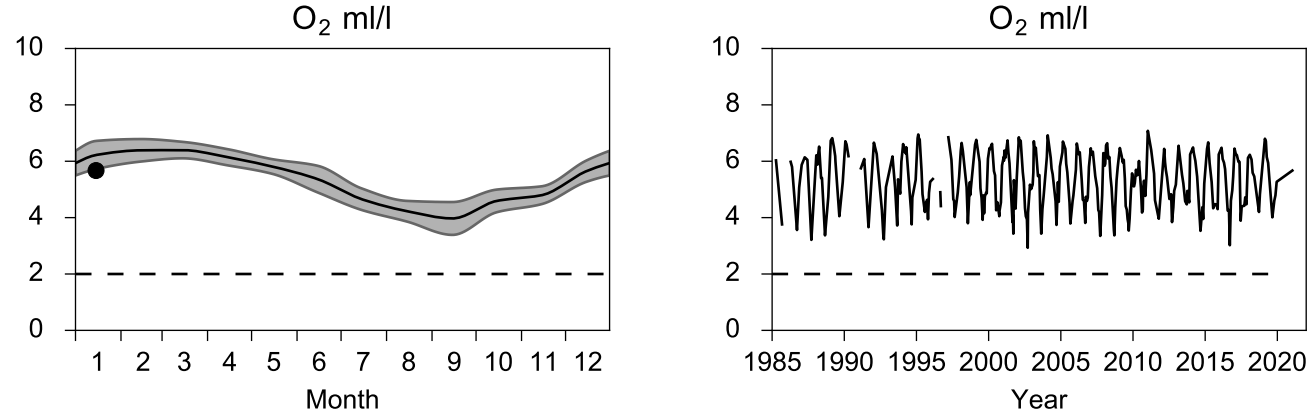
Vertical profiles N14 FALKENBERG
January



STATION FLADEN SURFACE WATER (0-10 m)



OXYGEN IN BOTTOM WATER (depth >= 74 m)



Vertical profiles FLADEN
January