

Report from the SMHI monitoring cruise with M/V Meri



Survey period: 2018-01-24 - 2018-02-04
Principal: Swedish Meteorological and Hydrological Institute (SMHI),
Swedish Agency for Marine and Water Management (SwAM)
Cooperation partners: Finnish Environment Institute (SYKE), VG-Shipping

SUMMARY

During the cruise, which is part of the Swedish national marine monitoring programme, stations in the Skagerrak, the Kattegat, the Sound, the Baltic Proper and the Sea of Åland were visited. In the Kattegat, the Sound and the Baltic Proper the winter pool of nutrients was mapped.

In large areas of the Baltic Proper, the oxygen concentration in the deep water was close to zero. Anoxic conditions, when hydrogen sulfide can form, were found in the Western Gotland Basin from 80 meters depth and from 90-125 meters in the northern parts. In the Eastern Gotland Basin low levels of hydrogen sulfide were found, but only close to the bottom. Acute hypoxia (oxygen < 2ml/l) was found in the Bornholm Basin, and in the Bight of Hanö at about 40-50 meters depth, in southeastern Baltic Proper at 60 meters, and in Eastern and Western Gotland Basin at 70 meters depth. In the Arkona Basin the oxygen concentration closest to the bottom was about 3.5 ml/l.

The surface concentration of dissolved inorganic nitrogen (DIN) and dissolved inorganic phosphorus (DIP) was in general on normal levels for all of the areas monitored. The silicate concentration in all of the Baltic Proper was still above normal.

The next cruise is planned to start in the middle of March.

RESULTS

The planned January and February cruise were combined into a somewhat longer cruise. It was conducted aboard the Finnish vessel Meri, and it started in Gothenburg on the 24th of January and ended in the same port the 4th of February.

The winds were mostly fresh from southwest during the cruise, but changed to strong northerly winds in the Skagerrak at the end of the cruise. The temperature was somewhat above 0 °C for most of the cruise, but dropped below 0 °C in the Kattegat and the Skagerrak.

No primary production was measured during the cruise due to problems with water temperature in the incubator.

This report is based on data that have passed a first quality control. When data are published at the National Oceanographic Data Centre some values might have changed after further quality controls have been performed. Data from this cruise will be published as soon as possible on the data center's webpage, normally within a week after the cruise.

Download data here: <http://www.smhi.se/klimatdata/oceanografi/havsmiljodata> (only available in Swedish).

The Skagerrak

The surface water temperature was for the season normal, and varied between 3-5.2 °C. Below the cooled surface water, temperatures were, for the season, above normal at the offshore stations. The salinity was normal, around 24 psu in the surface close to the coast and up to 31 psu at Å17. Thermocline and halocline coincided at all stations, and was found at 7-12 meters depth.

Nutrients in the form of dissolved inorganic nitrogen, DIN (the sum of nitrate, nitrite and ammonia), were on normal levels for the season in the surface water. Values varied between 10-11 µmol/l, except at Å17, where the concentration was 6.3 µmol/l. Concentrations below normal was in general found in the water mass below the stratification. Concentrations of dissolved inorganic phosphorus, DIP, in the water column were also on normal levels, between 0.6-0.7 µmol/l. Silicate concentrations were higher than normal for the season in the surface water at the stations P2, Å13 and Å15, and varied between 13-14.5 µmol/l. Otherwise concentrations were normal.

No large peaks in fluorescence were found, and this indicates low phytoplankton activity.

Oxygen conditions were good at all visited stations with normal concentrations for the season.

The Kattegat and the Sound

The water temperature was for the season normal. It was about 3.5 °C in the surface, somewhat higher, 4-5.5 °C in northwestern part of the Kattegat and about 4 °C in the southern Sound. Temperature increased with depth, and was slightly above 7 °C in the bottom water of the Kattegat, and just over 8 °C in the Sound. The salinity was for the season normal. It varied between 15 and 30 psu in the surface water of the Kattegat – highest in northwest, and lowest in the southwest. In the Sound the salinity was 12-15 psu in the surface and up to 32 psu at the bottom. Thermocline and halocline coincided at all stations, it was found at 10-20 meters depth at most stations, but somewhat more shallow in the Sound and at the western stations of the Kattegat.

Concentrations of DIN were for the season normal. The levels had increased since last measurements in December and varied between 5-6 $\mu\text{mol/l}$, with an exception for the station GF9 in the northwest, with 9 $\mu\text{mol/l}$. The DIP concentration in the surface water was 0.60-0.65 $\mu\text{mol/l}$, and a little higher, 0.7-0.8 $\mu\text{mol/l}$ in the Sound. The concentration of both DIN and DIP increased somewhat with depth. DIN concentrations above normal were found at about 30 meters depth at Fladen. Silicate concentrations were above normal in the surface water, most obvious in the southeastern parts of the Kattegat, with concentrations of about 15 $\mu\text{mol/l}$ and in the Sound with concentrations of about 17 $\mu\text{mol/l}$. The concentration in the surface water at the sampling points in the northwestern Kattegat was about 12 $\mu\text{mol/l}$.

Fluorescence measurements from the CTD showed low levels, which indicate low phytoplankton concentrations.

The deep water was well oxygenated in the whole area which is normal for the season. The oxygen concentrations near the bottom were generally above 6 ml/l. In the Sound it was just above 5 ml/l.

The Baltic Proper and the Sea of Åland

The surface water temperature was slightly above normal in the Baltic Proper. At the coastal station Ref M1V1 it was about 2.5 °C, and at the other stations the surface temperature was 4-4.5 °C. In the Sea of Åland the upper part of the water column was about 3 °C. Surface salinity in the Arkona Basin varied between 7.5-8.0 psu, and 7.0-7.5 psu in the other parts of the Baltic Proper. This is somewhat above normal for the Western Gotland Basin and normal of the rest of the Baltic Proper. In the Sea of Åland the surface salinity was slightly above 5.6 psu and at the station Tröskeln Ålands Hav it was 6.0 psu

The surface was cooled down and well mixed with a distinct surface layer – both thermocline and halocline coincided at stations in the Baltic Proper. In the Arkona basin the surface layer extended down to 40 meters, in the Bornholm Basin down to 45 meters, in the southeastern part of the Baltic Proper and in the Western Gotland Basin down to 60 meter and in the Eastern Gotland Basin down to between 70 and 80 meter. In the Sea of Åland there was a weak stratification at around 50 meters depth.

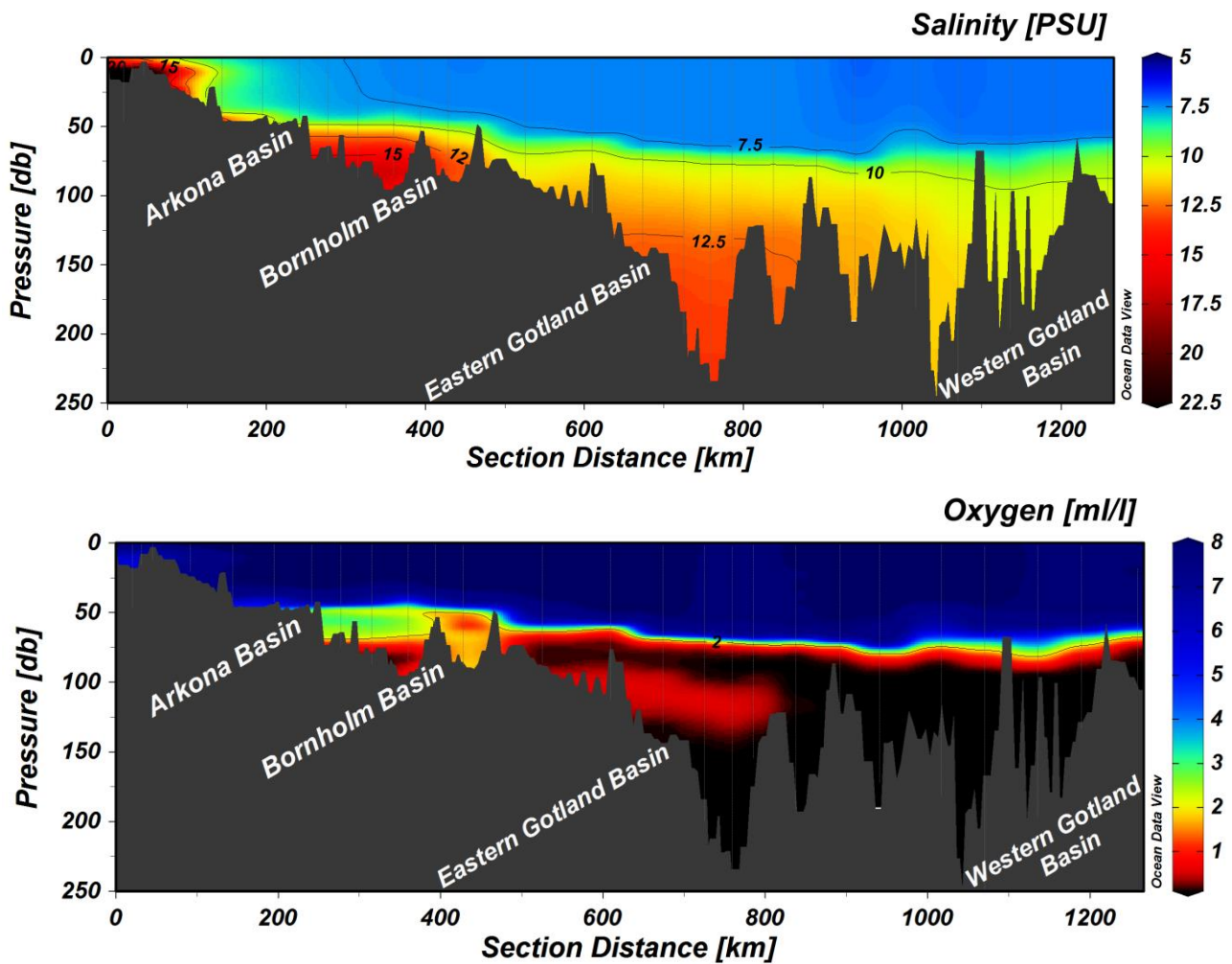
Nutrient concentrations of DIN and DIP in the surface layer were overall normal, but slightly above in southeastern part of the Baltic Proper and in the northern part of the Eastern Gotland Basin. Concentrations of DIN were between 2.5-4 $\mu\text{mol/l}$, except in the southeastern and northeastern part, where it was about 5-6.5 $\mu\text{mol/l}$. Concentration of DIP was around 0.5 $\mu\text{mol/l}$ in the Sea of Åland, and between 0.65-0.90 $\mu\text{mol/l}$ in the Baltic Proper. Highest concentrations were found in an around the Bight of Hanö. In the deep water, the concentrations of DIP were normal, or slightly below. Concentrations of DIN were normal, except for the Western Gotland Basin, where concentrations close to the bottom were higher, especially at BY38 where the concentration was 20 $\mu\text{mol/l}$ in the samples closest to the bottom.

The silicate concentration in all of the Baltic Proper was still above normal down to the halocline. This was most obvious in the southern parts. The concentrations varied between 16-20 $\mu\text{mol/l}$, slightly higher at the coastal station Ref M1V1 and in the Sea of Åland.

Large parts of the deep water of the Baltic Proper had oxygen concentrations close to zero. Anoxic conditions, when hydrogen sulfide can form, were found in the Western Gotland Basin from 80 meters depth, and from 90-125 meters depth in the Northern Gotland Basin. In the Eastern Gotland Basin hydrogen sulfide were measured close to the bottom, but levels were low. Water with acute

hypoxia (oxygen < 2ml/l) was found in the Bornholm Basin and in the Bight of Hanö at about 40-45 meters depth, in the south eastern part of the Baltic Proper at 60 meters and in the Eastern and Western Gotland Basin at about 70 meters. In the Arkona Basin the oxygen concentration closest to the bottom was about 3.5 ml/l.

Fluorescence measurements from the CTD showed low levels of phytoplankton activity, and no larger peaks were present at any station



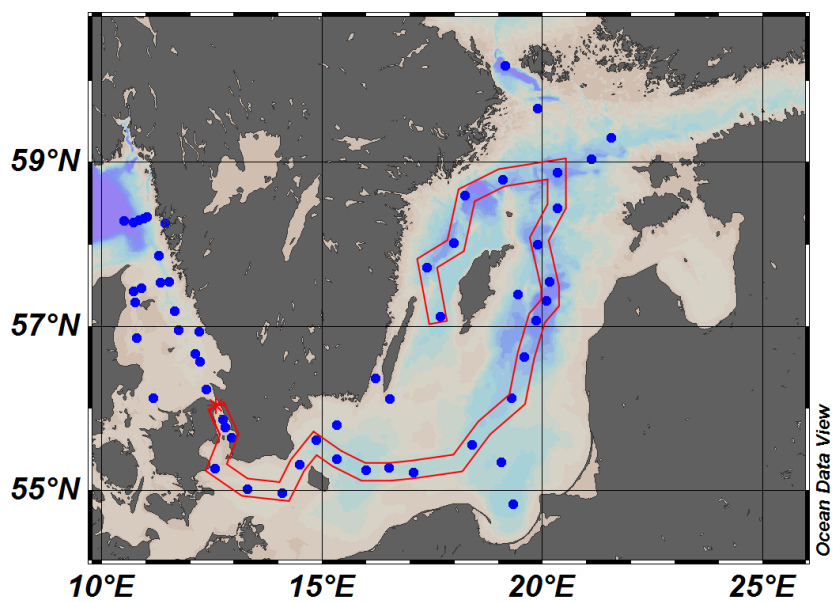


Figure 1. Transect showing dissolved oxygen and salinity from the Sound, through the Baltic Proper, to the Western Gotland Basin.

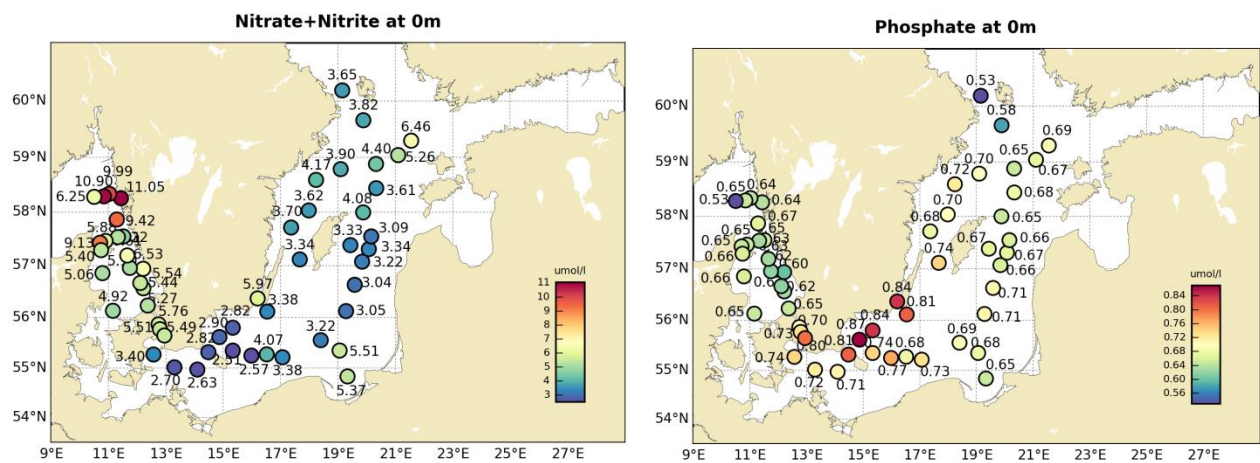


Figure 2. Map showing surface values of nitrate+nitrite (left) and phosphate (right) in $\mu\text{mol/l}$.

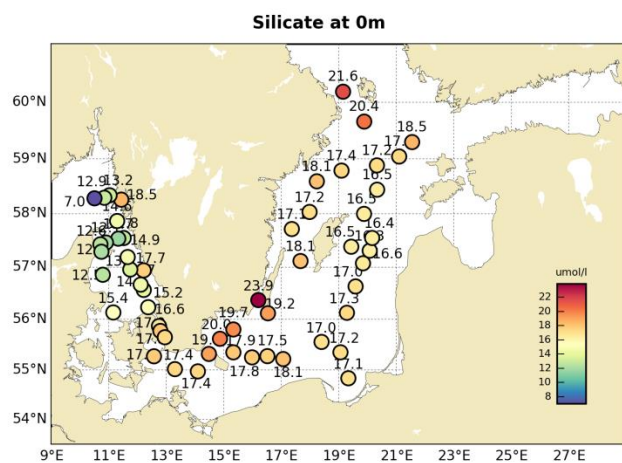


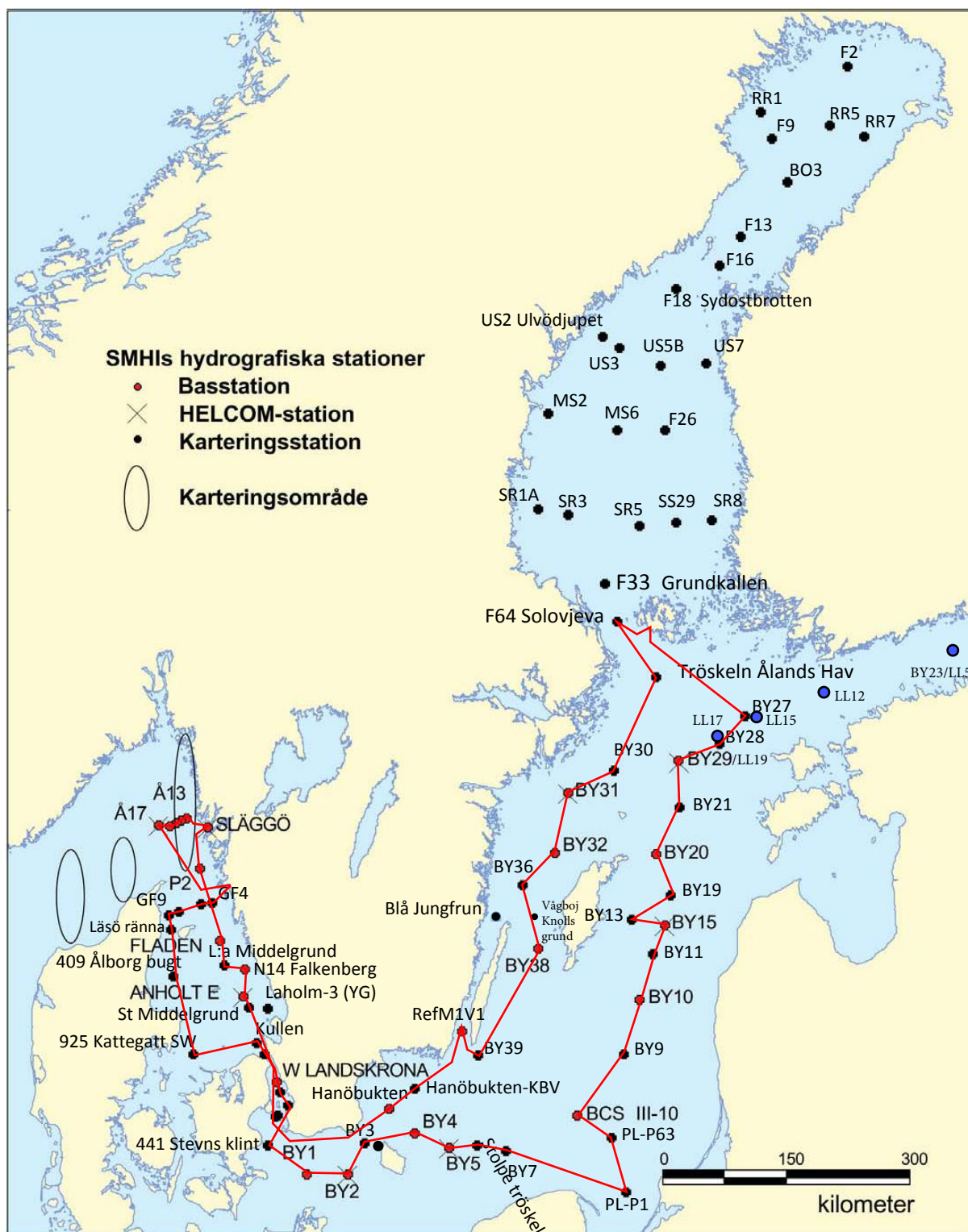
Figure 3. Map showing surface values of silicate in $\mu\text{mol/l}$.

PARTICIPANTS

Name		From
Johan Kronsell	Chief Scientist	SMHI
Kristin Andreasson		SMHI
Johan Håkansson		SMHI
Sari Sipilä		SMHI
Lena Viktorsson		SMHI

APPENDICES

- Track chart
- Table over stations, sampled parameters and number of sampling depths
- Map showing bottom oxygen concentrations
- Vertical profiles for regular monitoring stations
- Monthly average surface water plots for regular monitoring stations



Time: 11:51

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 aove hdsb	CZPP hohp loy apt o	No de btl	T e m m	T e m m	S a h l l	P h o o	D h o o	H 2 h t	P t t t	N n t t	N n t t	A n t t	A n t t	S h t t	C h o o	C o o	
0001	1	KANX02	BAS...	SW VINGA GF4	5732.98	01131.12	20180124	1620	79		12 17	6.4	993	9990	x---	12 12	x x x x	- x x	- x x x	x x x x	x x x x	- x x	- x x	-							
0002	1	KANX04	BAS...	GF6	5732.27	01119.78	20180124	1850	46		23 16	6.8	994	9990	x---	9 9	x x x x	- x x	- x x x	x x x x	x x x x	- x x	- x x	-							
0003	1	KANX06	BAS...	GF8	5727.92	01054.06	20180124	2120	40		21 17	6.5	994	9990	x---	8 8	x x x x	- x x	- x x x	x x x x	x x x x	- x x	- x x	-							
0004	1	KANX07	BAS...	GF9	5725.91	01042.53	20180124	2335	26		24 19	7.4	994	9990	x---	6 6	x x x x	- x x	- x x x	x x x x	x x x x	- x x	- x x	-							
0005	1	KANX09	BAS...	LÄSÖ RÄNNA	5717.58	01044.65	20180125	0125	45		24 17	6.0	996	9990	x---	9 9	x x x x	- x x	- x x x	x x x x	x x x x	- x x	- x x	-							
0006	1	KAWA11	BAS...	409 ÅLBORG BUGT	5651.40	01047.50	20180125	0510	15		23 13	6.1	1000	9990	x---	4 4	x x x x	- x x	- x x x	x x x x	x x x x	- x x	- x x	-							
0007	1	KAWX14	BAS...	925 KATTEGAT SW	5607.92	01109.45	20180125	1030	45		21 17	5.5	1006	1730	x---	9 9	x x x x	- x x	- x x x	x x x x	x x x x	- x x	- x x	-							
0008	1	KAEX33	BAS...	KULLEN	5614.02	01222.22	20180125	1550	23		21 8	5.3	1009	1440	x---	6 6	x x x x	- x x	- x x x	x x x x	x x x x	- x x	- x x	-							
0009	1	SOCX39	BAS...	W LANDSKRONA	5551.99	01244.86	20180125	1900	50		19 10	5.1	1011	9990	x---	9 9	x x x x	- x x	- x x x	x x x x	x x x x	- x x	- x x	-							
0010	1	SOCX41	BAS...	ÖRESUND-7	5546.29	01247.69	20180125	2120	20		21 9	5.1	1012	9990	x---	5 5	x x x x	- x x	- x x x	x x x x	x x x x	- x x	- x x	-							
0011	1	SOCX44	BAS...	ÖRESUND-4	5538.84	01257.00	20180126	0015	16		21 5	5.1	1012	9990	x---	4 4	x x x x	- x x	- x x x	x x x x	x x x x	- x x	- x x	-							
0012	1	BPSA01	BAS...	441 STEVNS KLINT	5516.29	01234.34	20180126	0126	26		22 7	5.4	1013	9990	x---	6 6	x x x x	- x x	- x x x	x x x x	x x x x	- x x	- x x	-							
0013	1	BPSA02	BAS...	BY1	5500.96	01318.03	20180126	0730	47	11	20 2	5.1	1015	1720	x---	8 8	x x x x	- x x	- x x x	x x x x	x x x x	- x x	- x x	-							
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0016	1	BPSB06	BAS...	BY4 CHRISTIANSÖ	5520.99	01520.01	20180126	1940	94		26 3	5.1	1020	9990	x---	12 12	x x x x	- x x	- x x x	x x x x	x x x x	- x x	- x x	-							
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Ship: 347V

Year: 2018

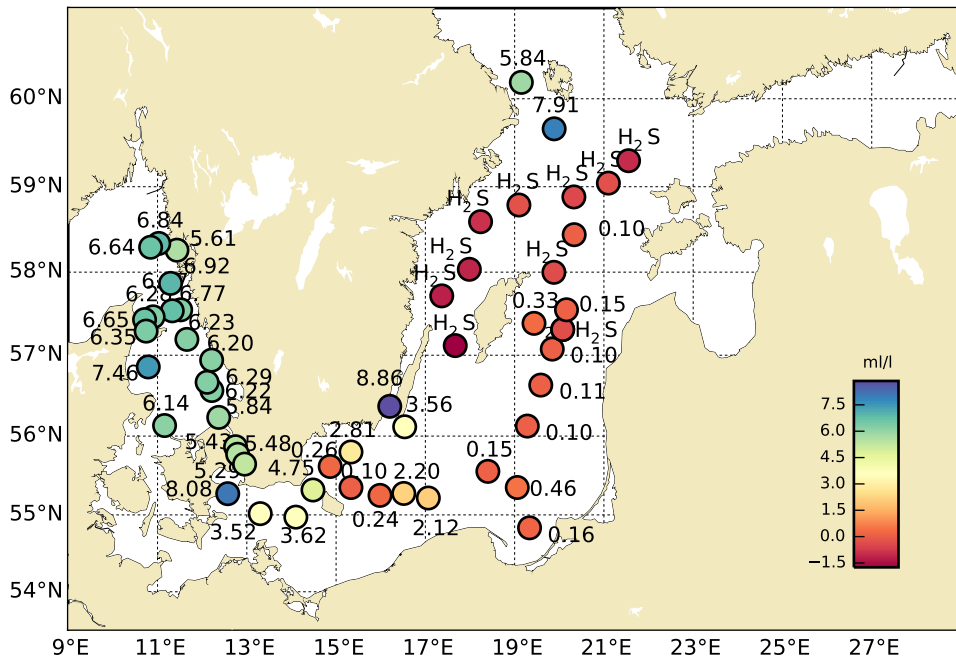
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Bottom water oxygen concentration (ml/l)

Ship: Meri

Date: 20180124-20180204

Series: 0001-0057



STATION W LANDSKRONA SURFACE WATER (0-10 m)

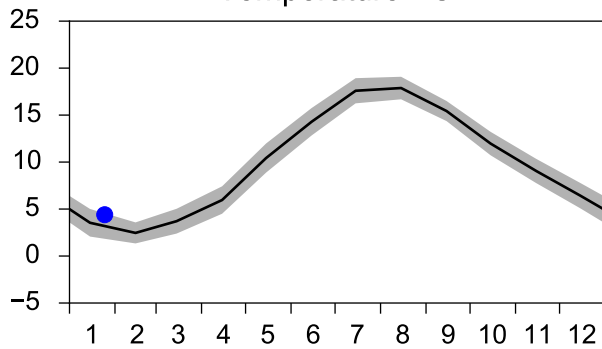
Annual Cycles

— Mean 2001-2015

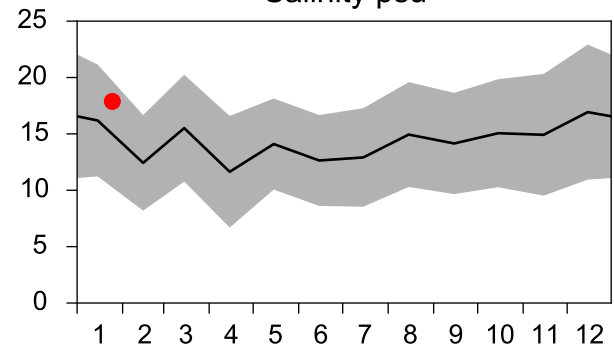
■ St.Dev.

● 2018

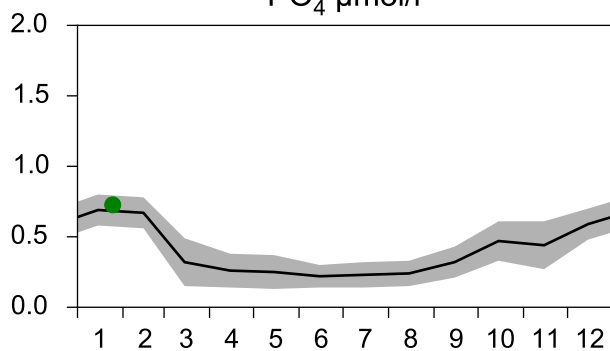
Temperature °C



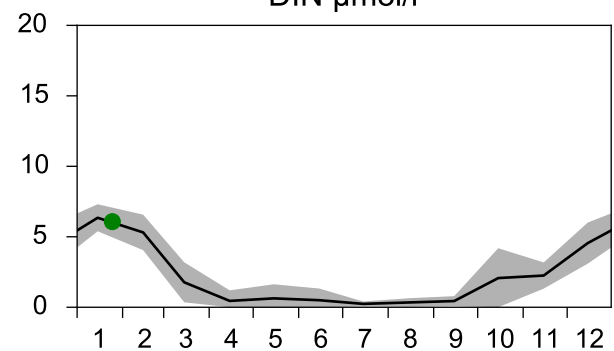
Salinity psu



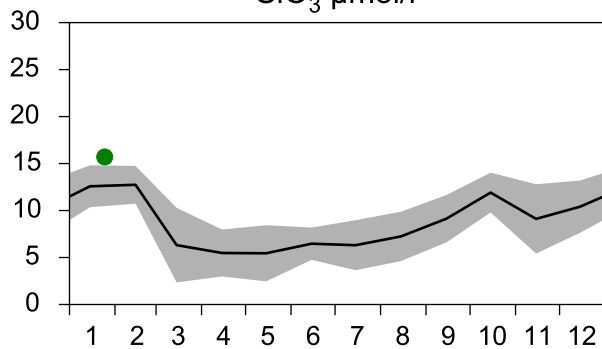
PO₄ µmol/l



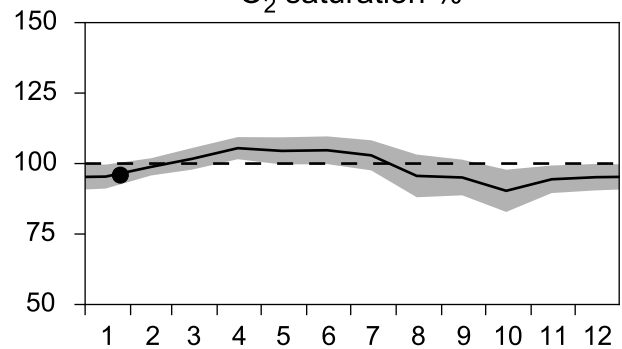
DIN µmol/l



SiO₃ µmol/l

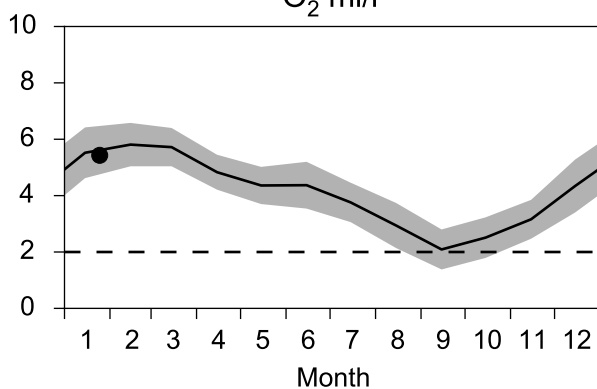


O₂ saturation %

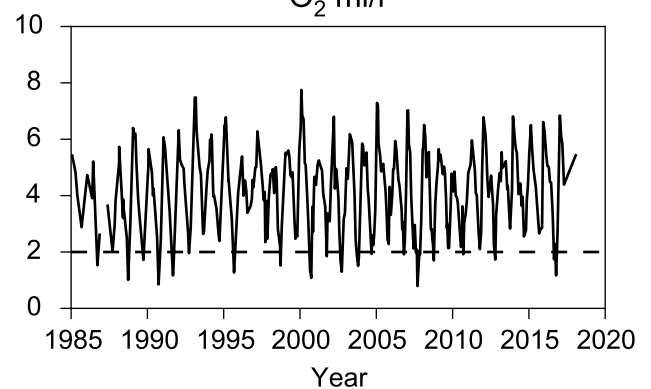


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

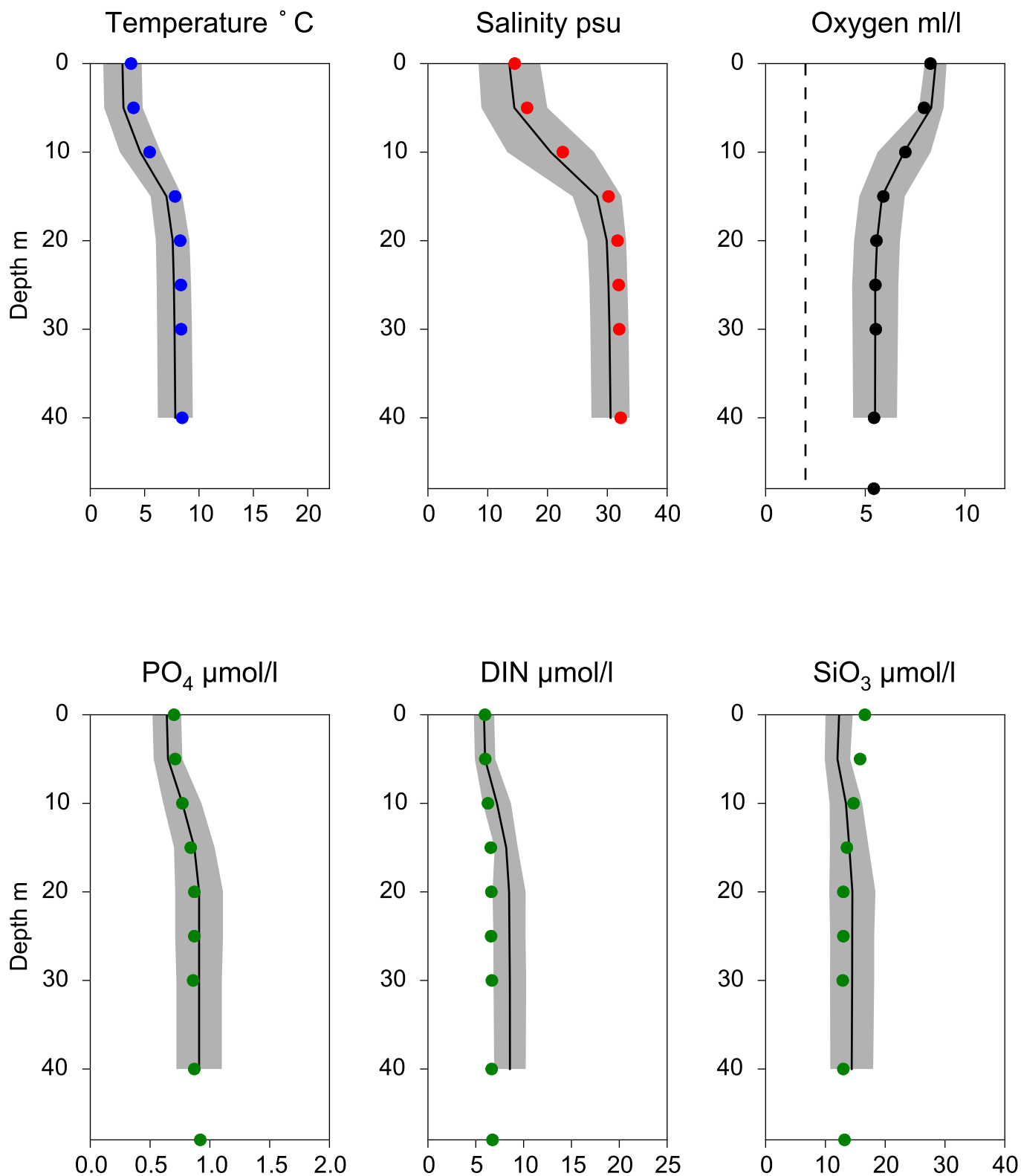


O₂ ml/l



Vertical profiles W LANDSKRONA January

— Mean 2001-2015 St.Dev. ● 2018-01-25



STATION BY1 SURFACE WATER (0-10 m)

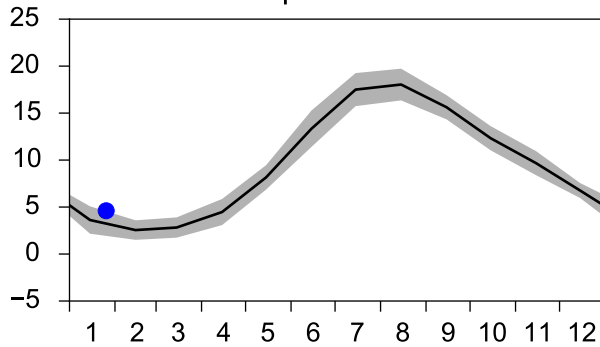
Annual Cycles

— Mean 2001-2015

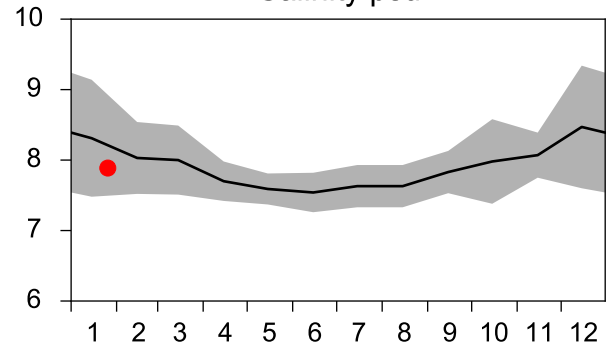
■ St.Dev.

● 2018

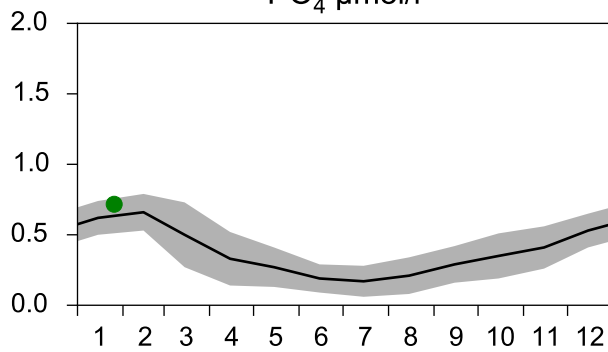
Temperature °C



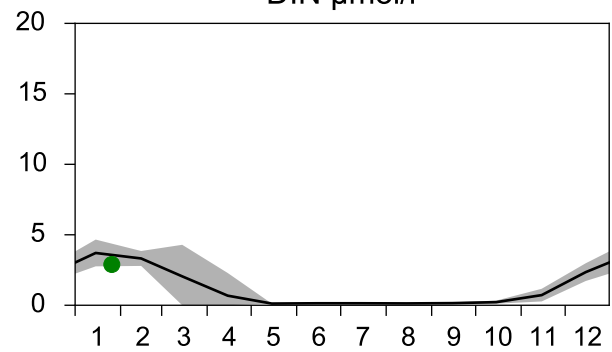
Salinity psu



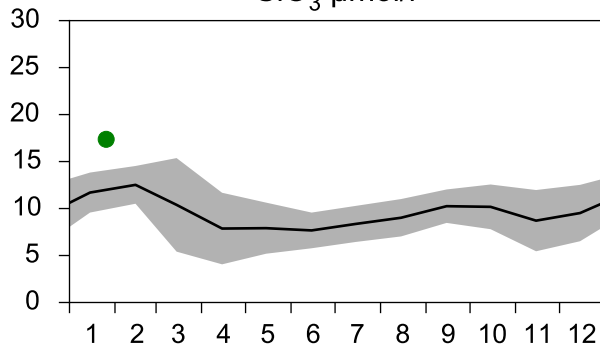
PO₄ µmol/l



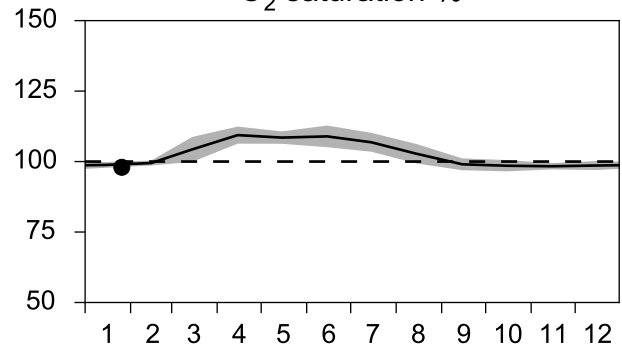
DIN µmol/l



SiO₃ µmol/l

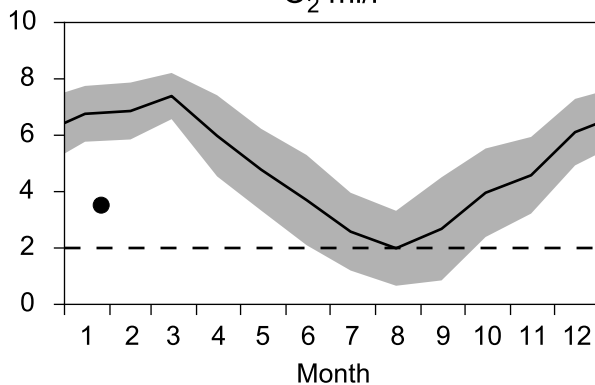


O₂ saturation %

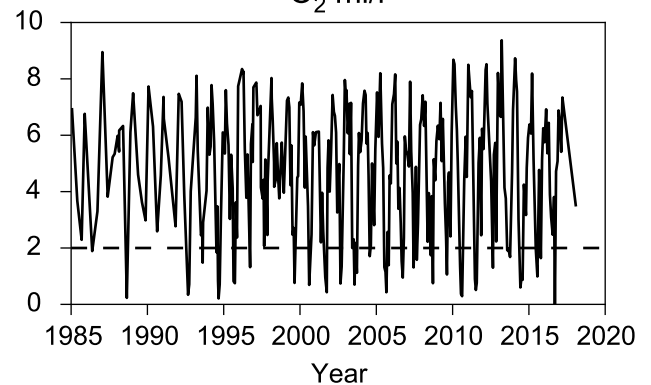


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

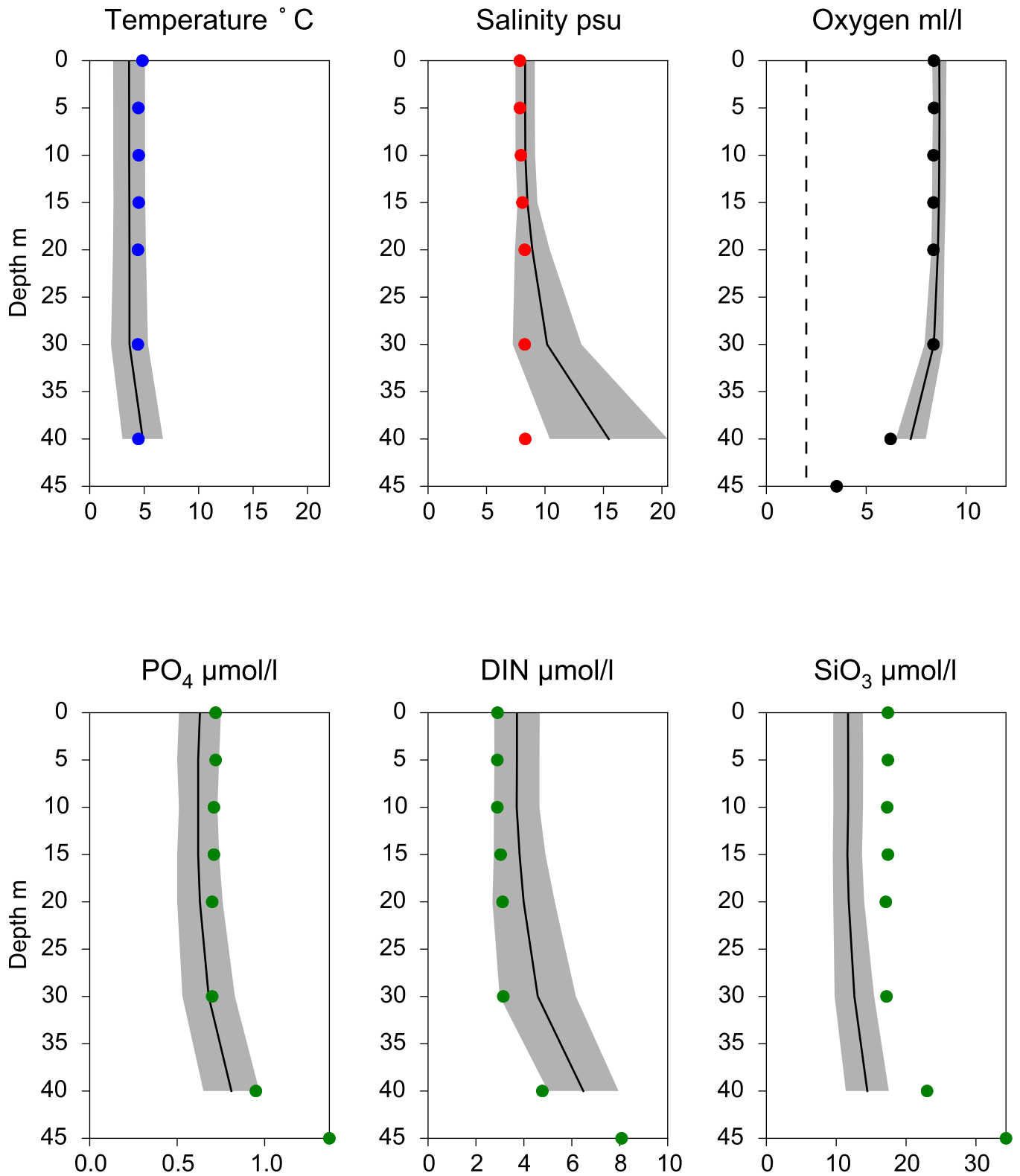


O₂ ml/l



Vertical profiles BY1 January

— Mean 2001-2015 ■ St.Dev. ● 2018-01-26



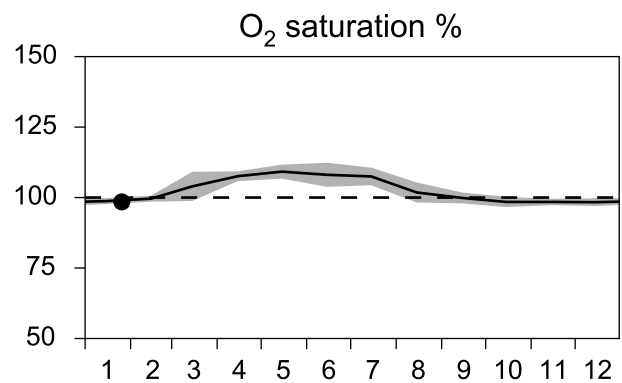
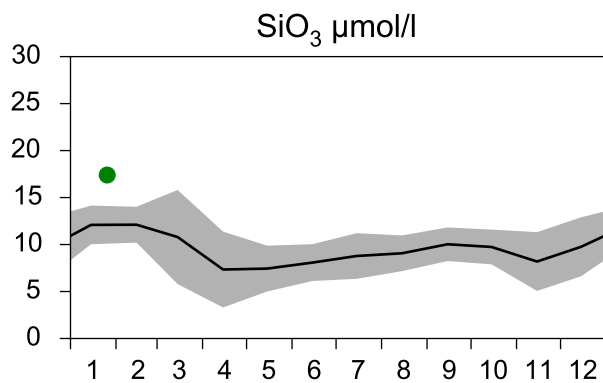
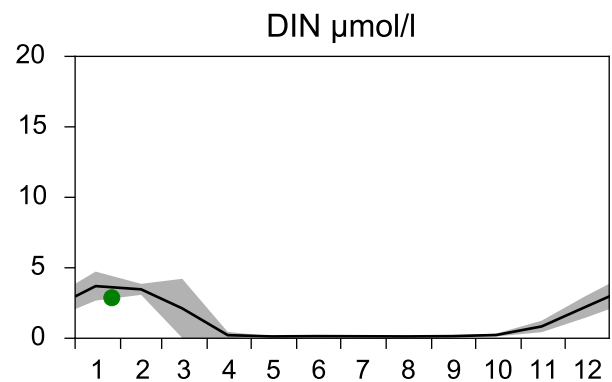
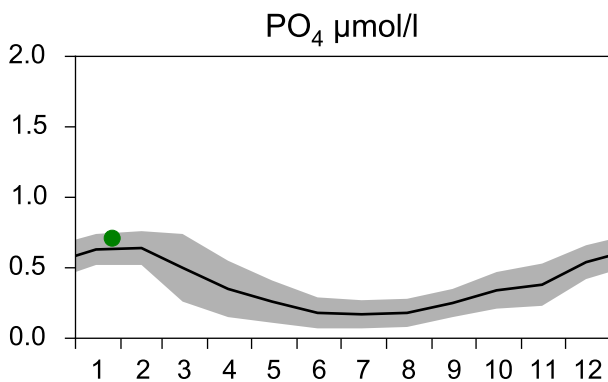
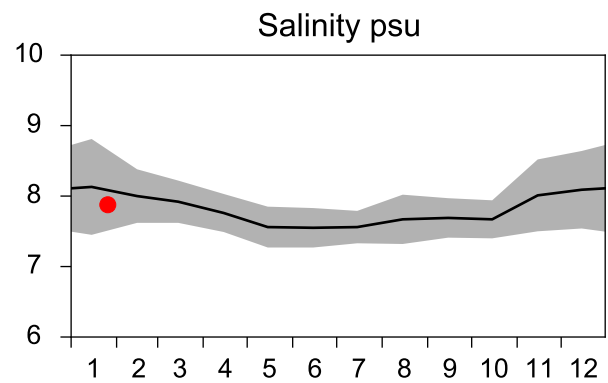
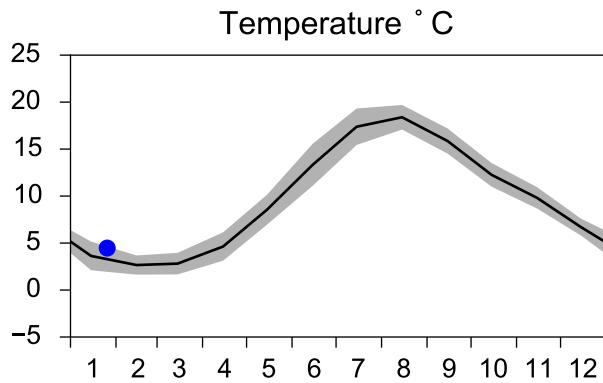
STATION BY2 ARKONA SURFACE WATER (0-10 m)

Annual Cycles

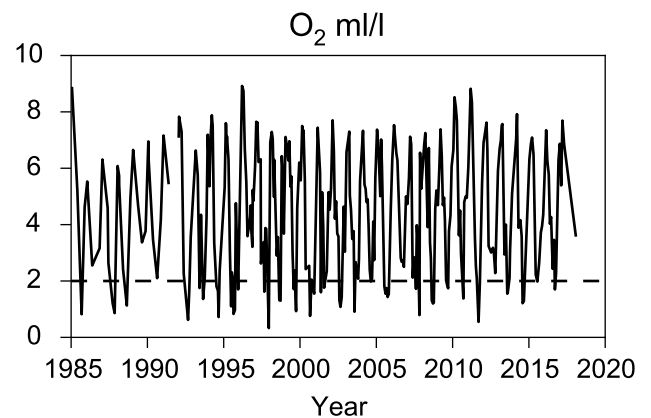
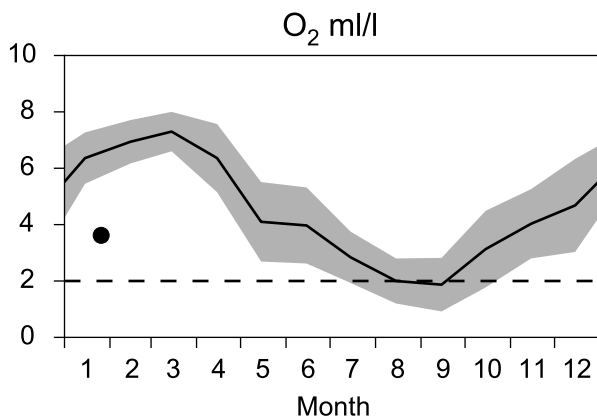
— Mean 2001-2015

■ St.Dev.

● 2018

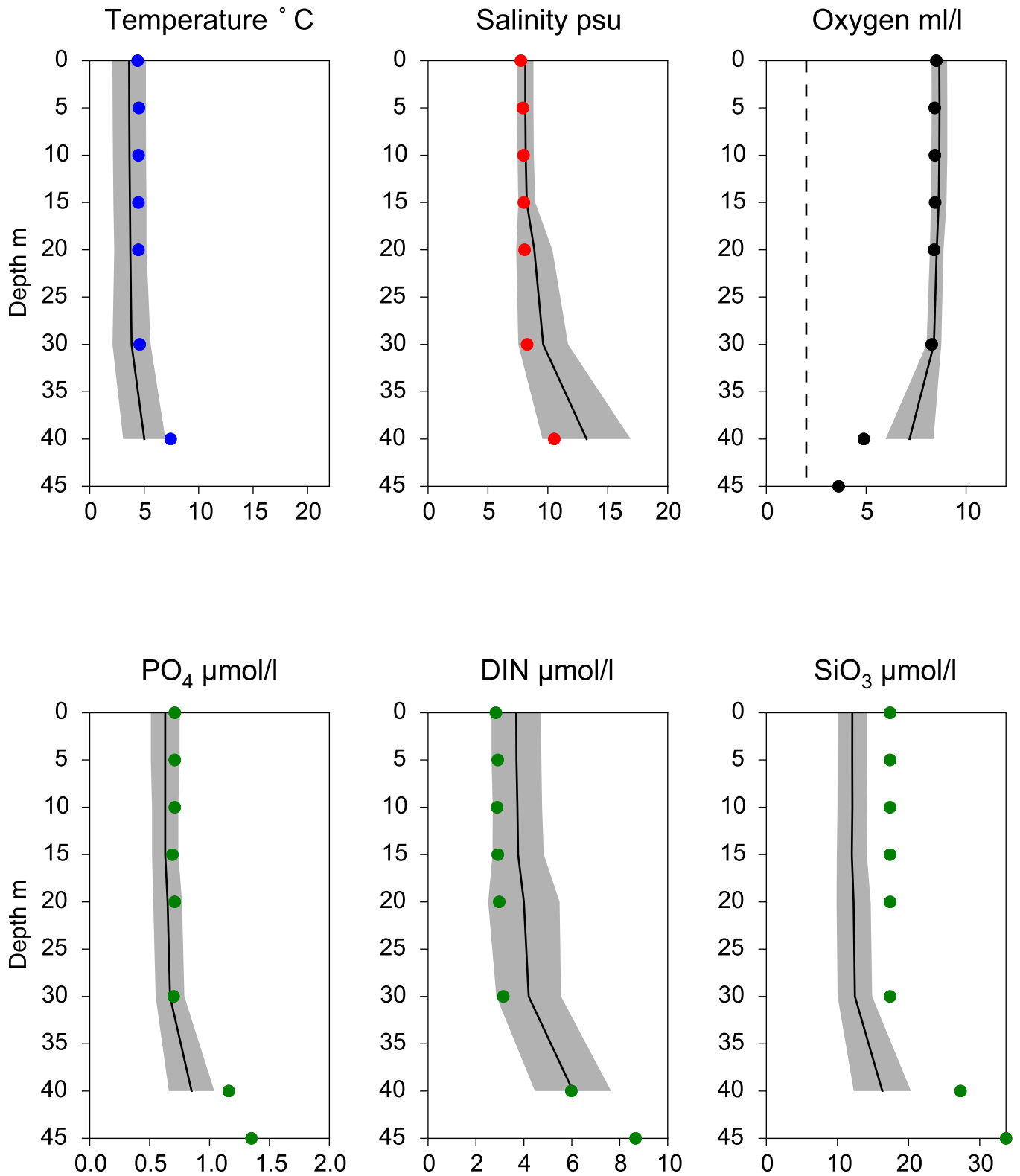


OXYGEN IN BOTTOM WATER (depth >= 40 m)



Vertical profiles BY2 ARKONA January

— Mean 2001-2015 St.Dev. • 2018-01-26



STATION BY4 CHRISTIANSÖ SURFACE WATER (0-10 m)

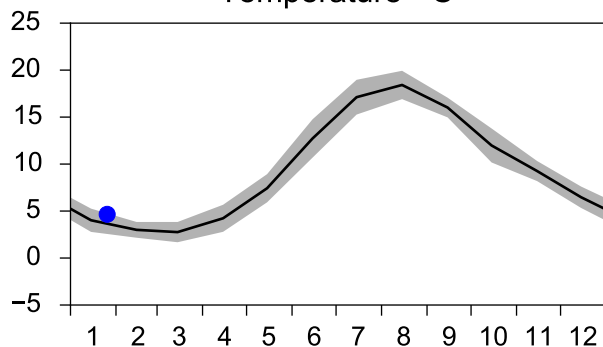
Annual Cycles

— Mean 2001-2015

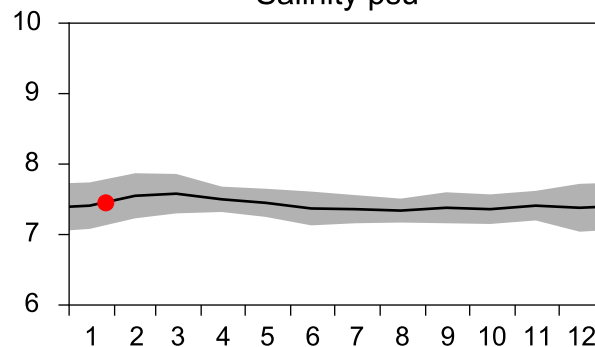
■ St.Dev.

● 2018

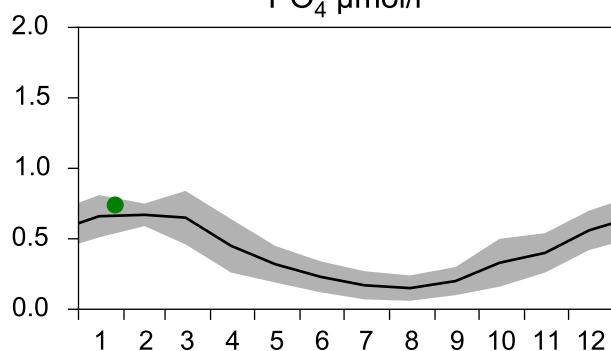
Temperature °C



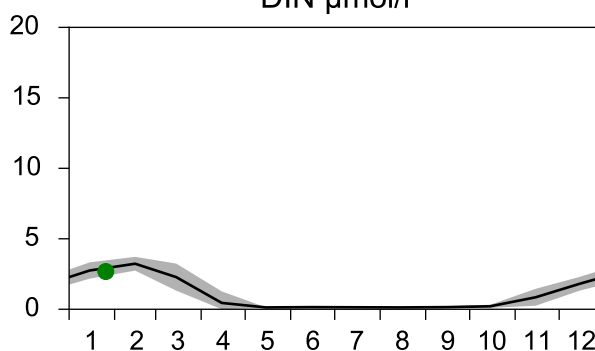
Salinity psu



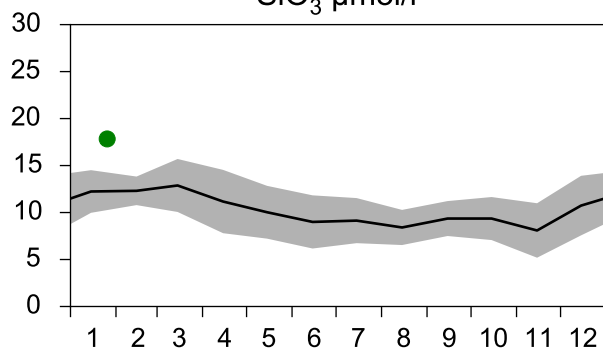
PO₄ µmol/l



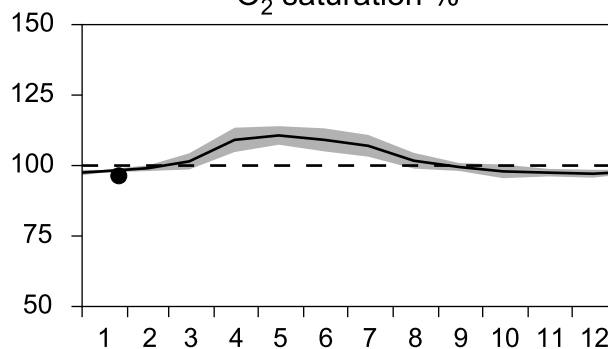
DIN µmol/l



SiO₃ µmol/l

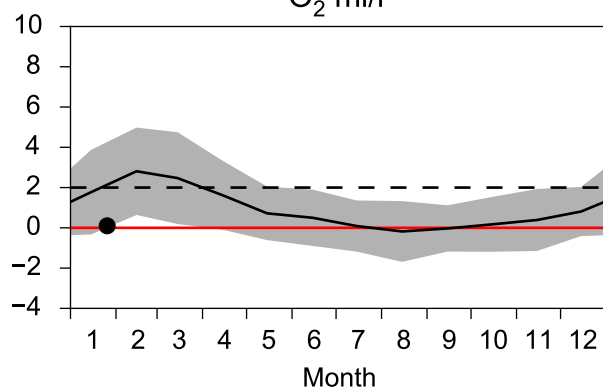


O₂ saturation %

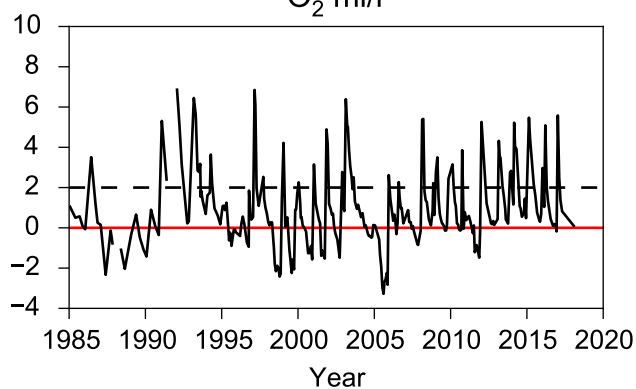


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

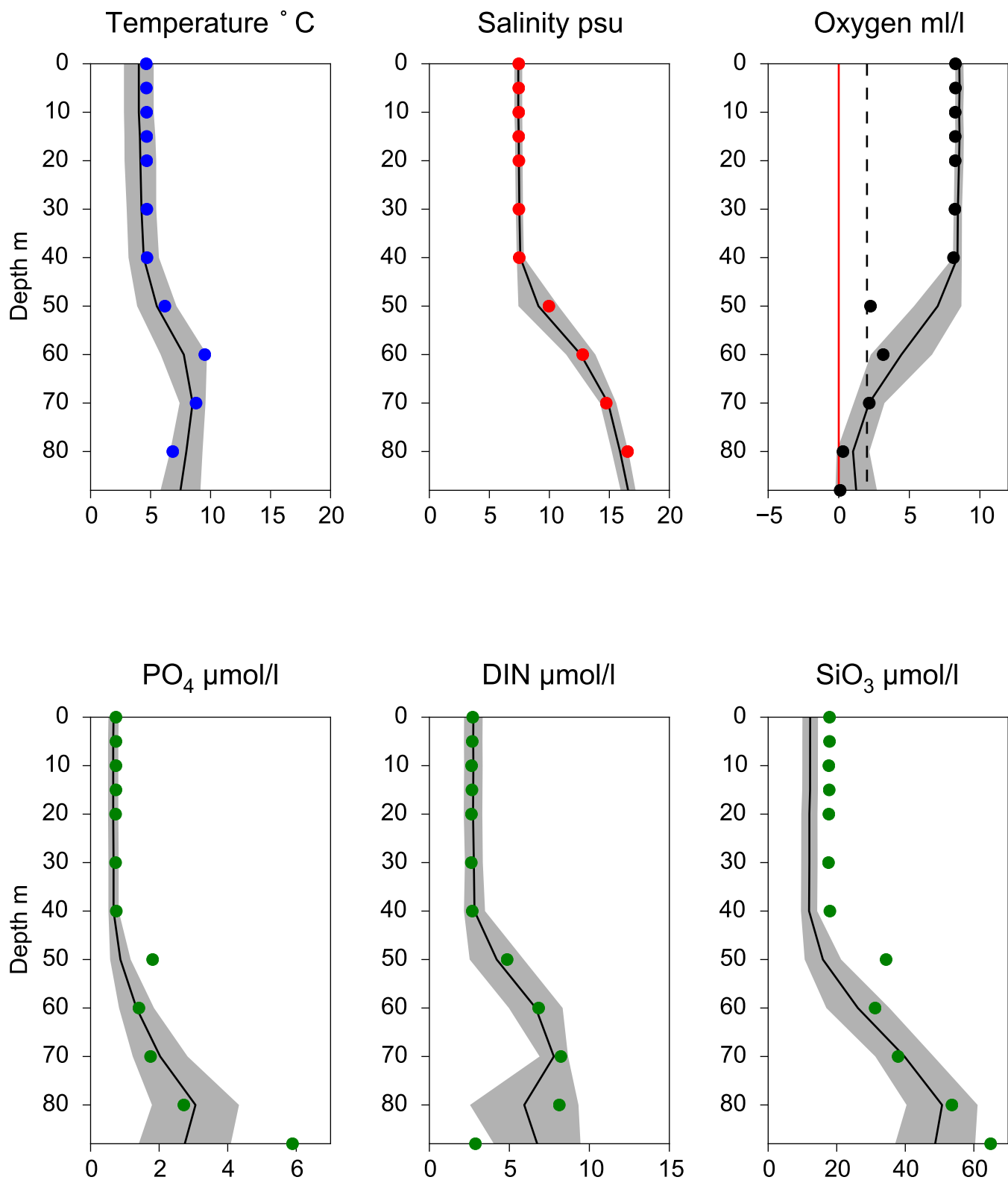


O₂ ml/l



Vertical profiles BY4 CHRISTIANSÖ January

— Mean 2001-2015 St.Dev. • 2018-01-26



STATION BY5 BORNHOLMSDJ SURFACE WATER (0-10 m)

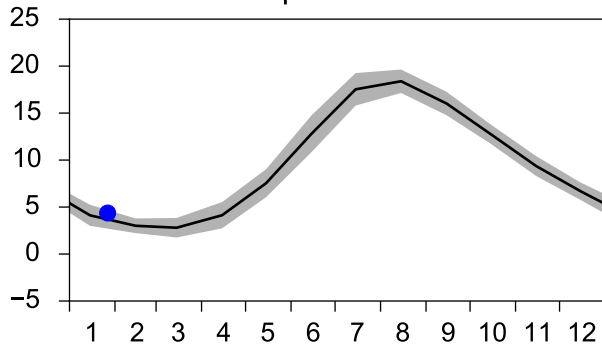
Annual Cycles

— Mean 2001-2015

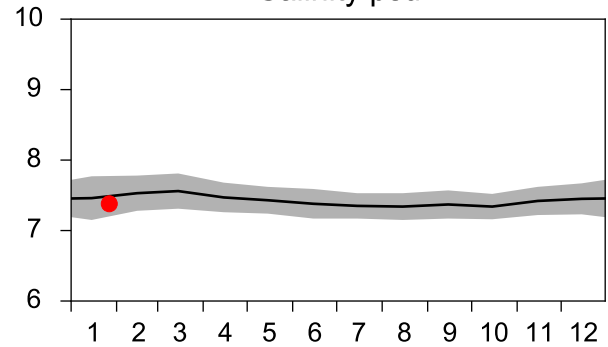
■ St.Dev.

● 2018

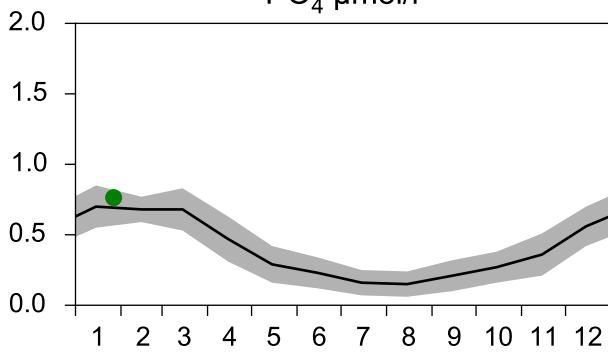
Temperature °C



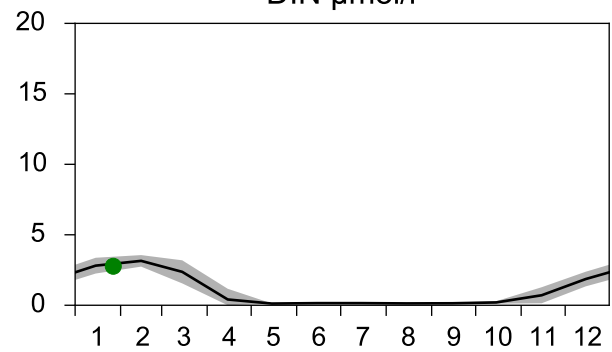
Salinity psu



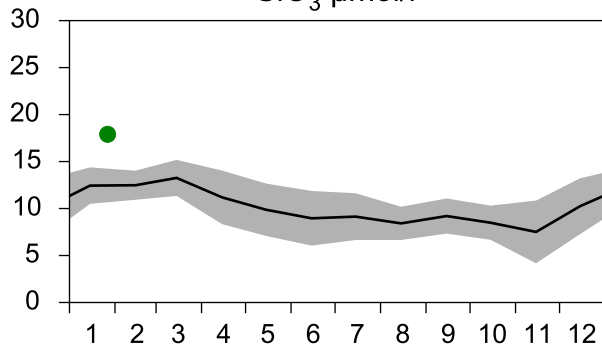
PO₄ µmol/l



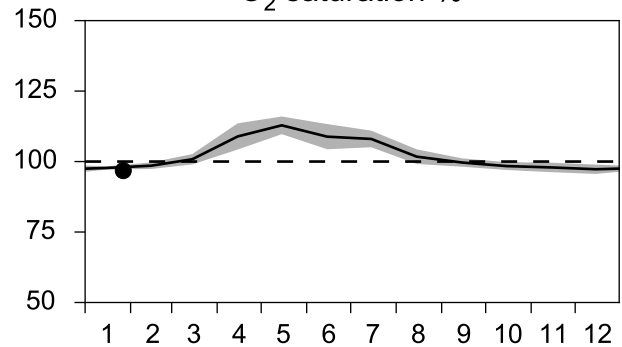
DIN µmol/l



SiO₃ µmol/l

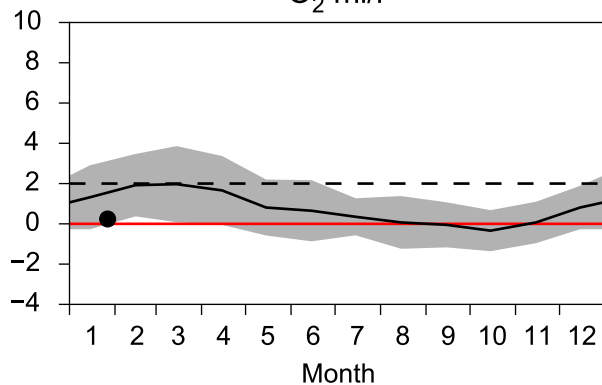


O₂ saturation %

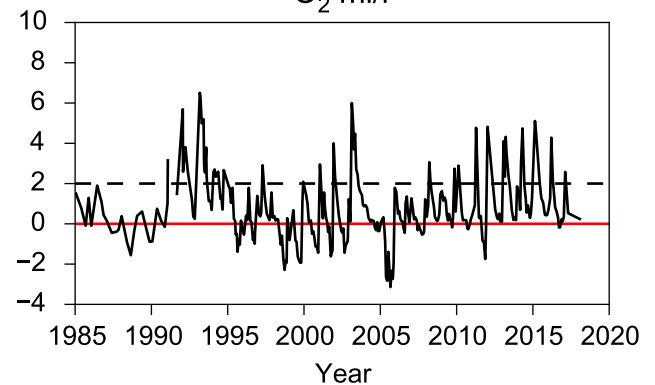


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

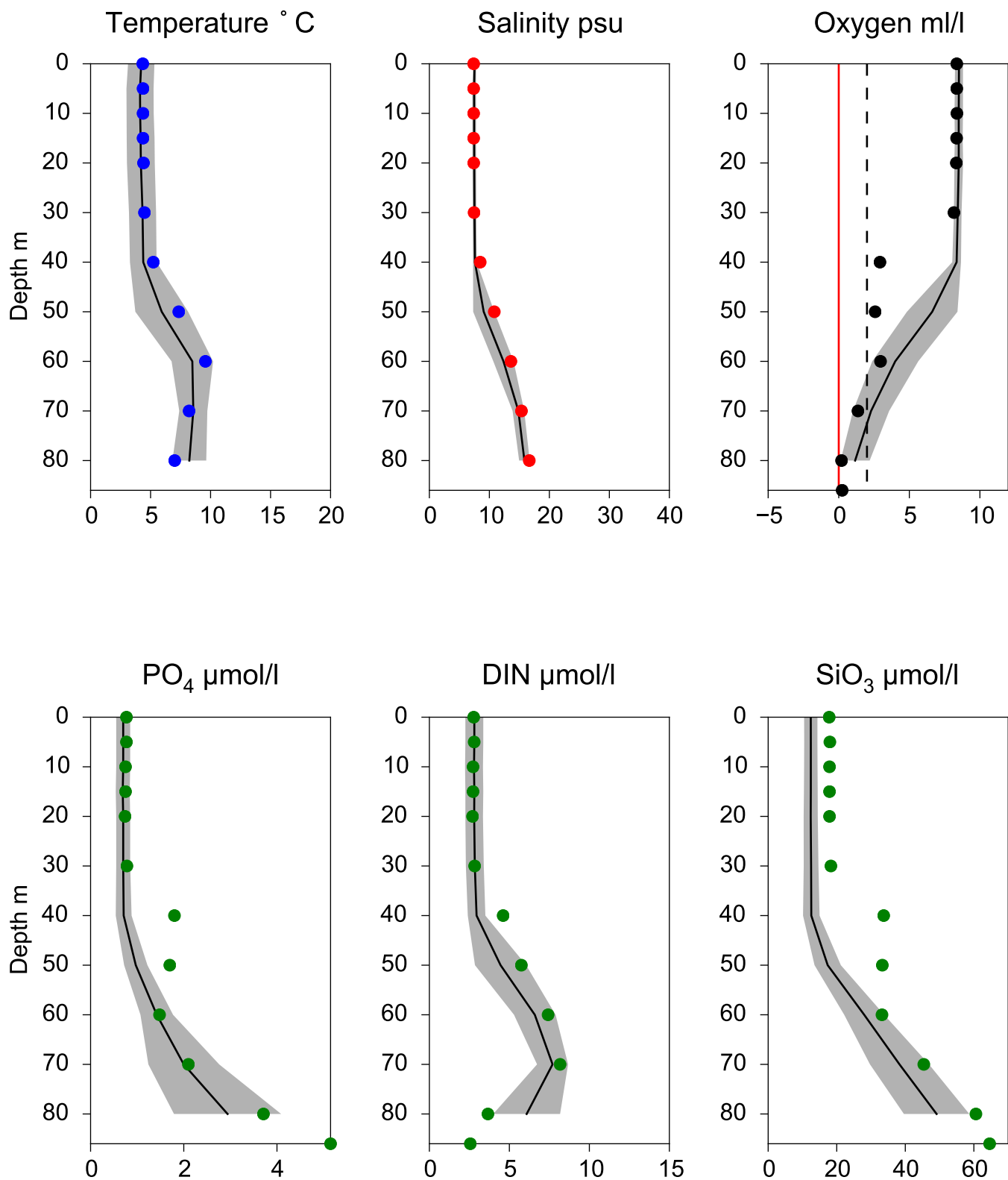


O₂ ml/l



Vertical profiles BY5 BORNHOLMSDJ January

— Mean 2001-2015 St.Dev. • 2018-01-27



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

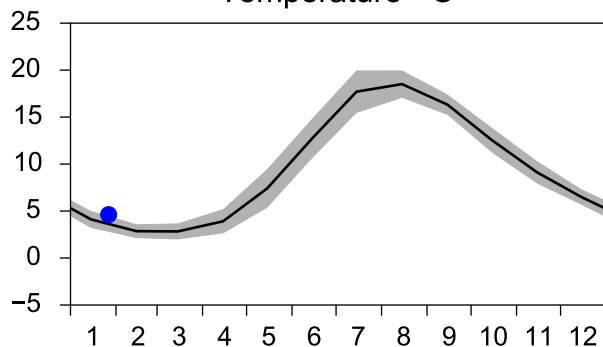
Annual Cycles

— Mean 2001-2015

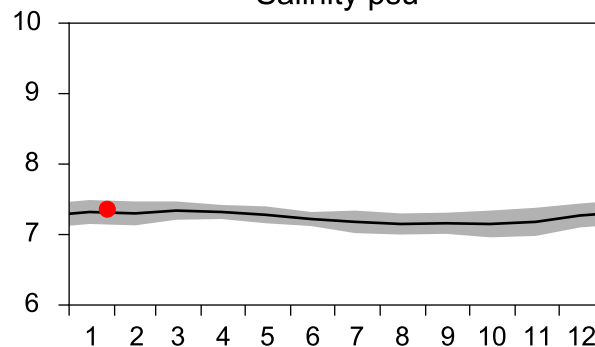
■ St.Dev.

● 2018

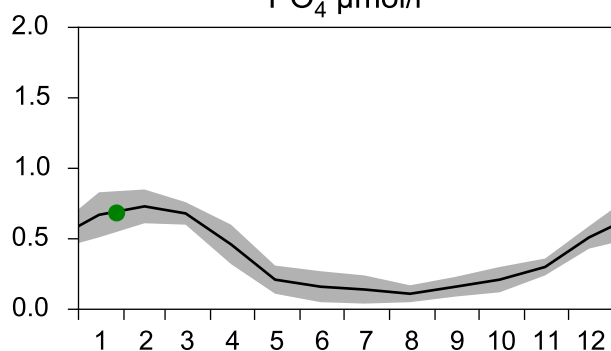
Temperature °C



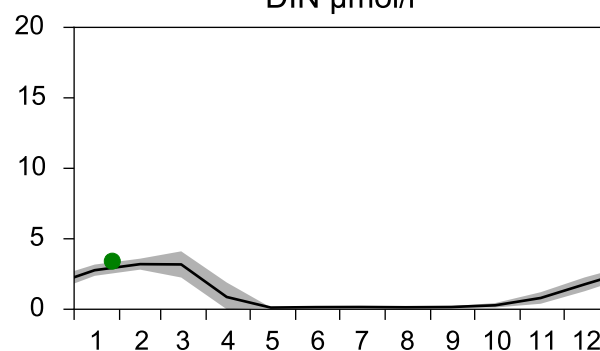
Salinity psu



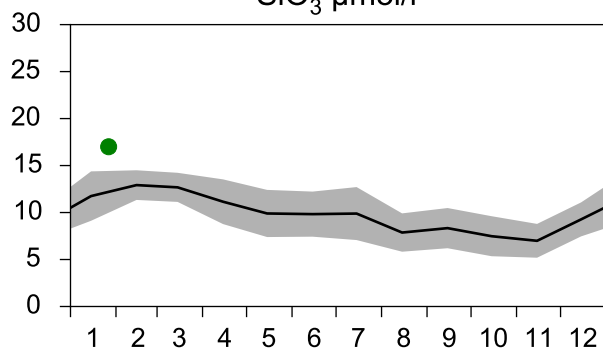
PO₄ µmol/l



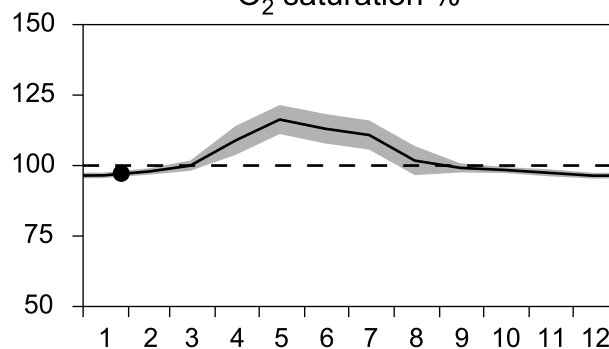
DIN µmol/l



SiO₃ µmol/l

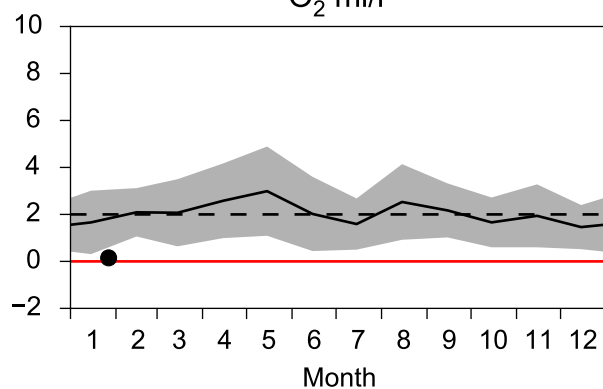


O₂ saturation %

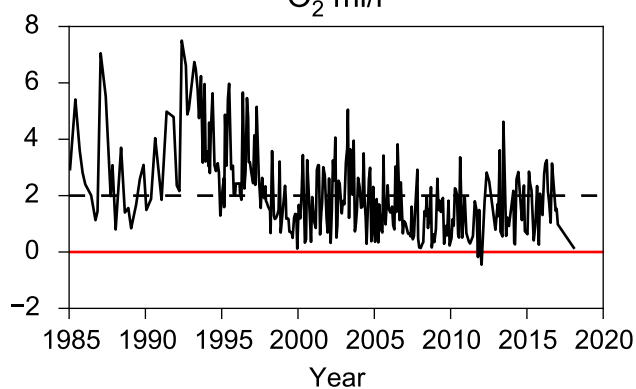


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

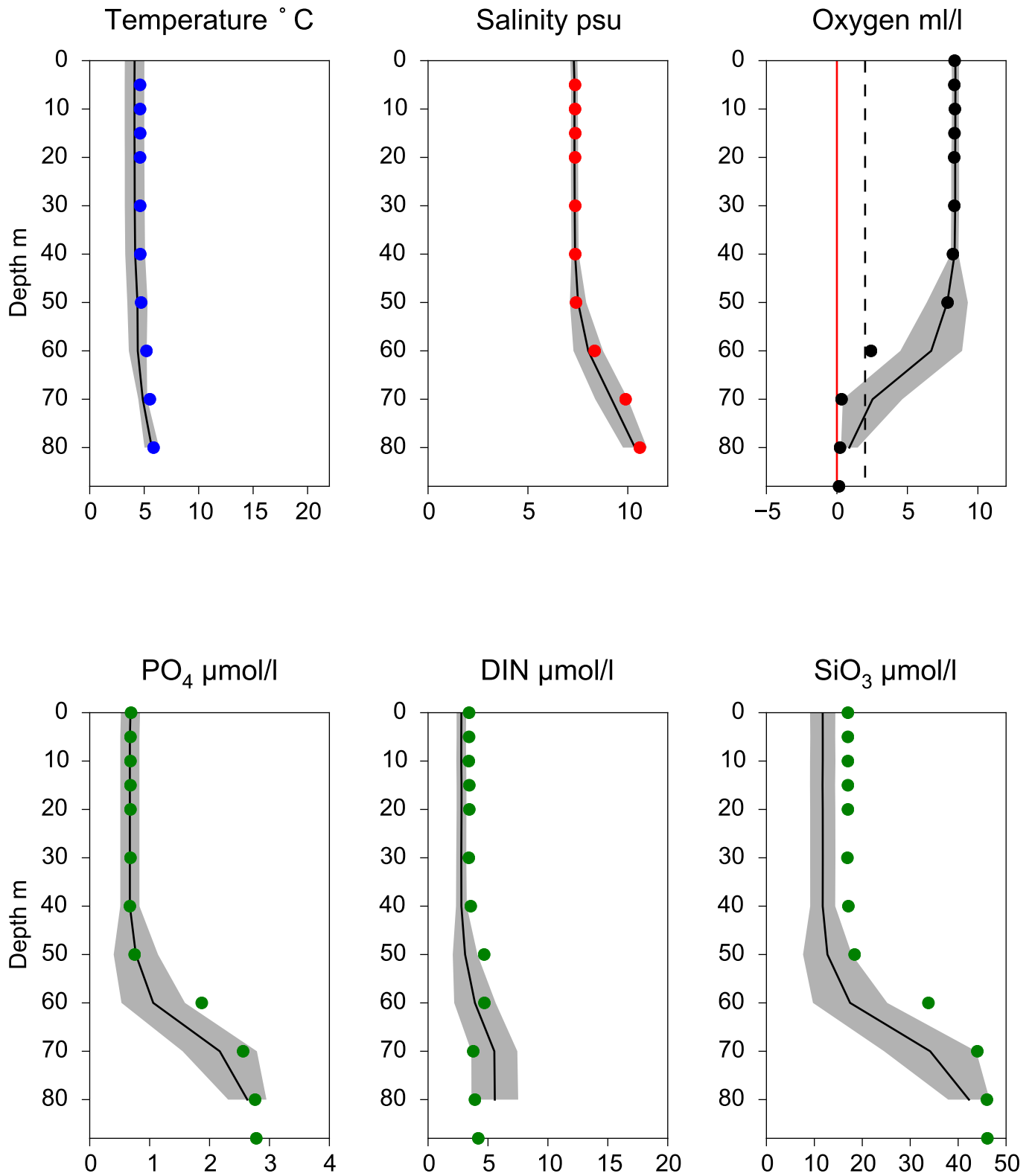


O₂ ml/l



Vertical profiles BCS III-10 January

— Mean 2001-2015 St.Dev. • 2018-01-27



STATION BY10 SURFACE WATER (0-10 m)

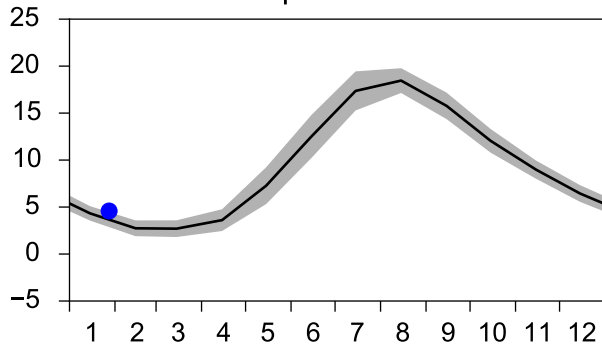
Annual Cycles

— Mean 2001-2015

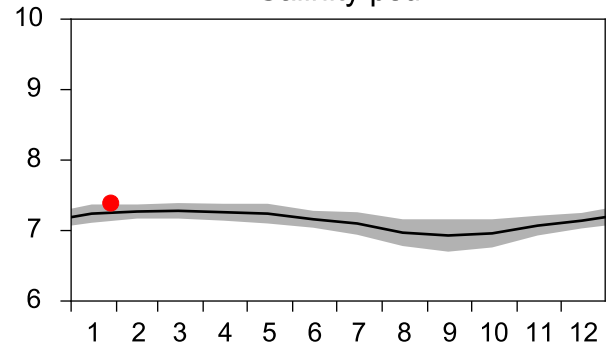
■ St.Dev.

● 2018

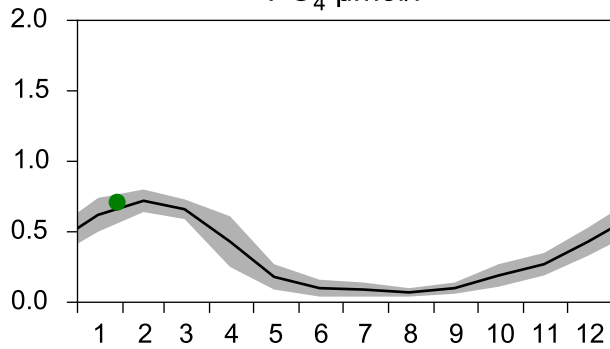
Temperature °C



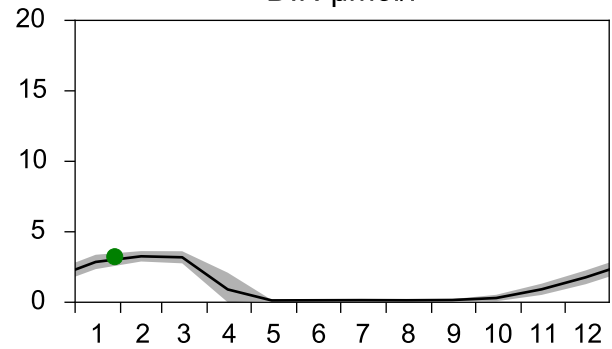
Salinity psu



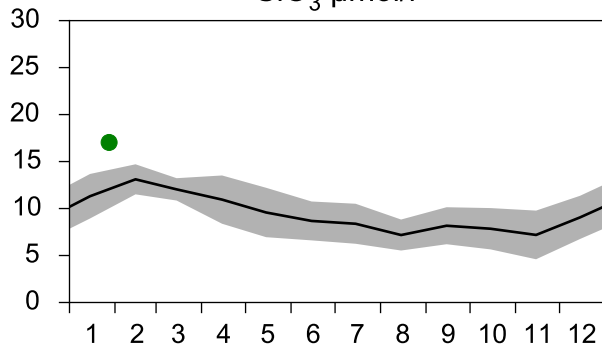
PO₄ µmol/l



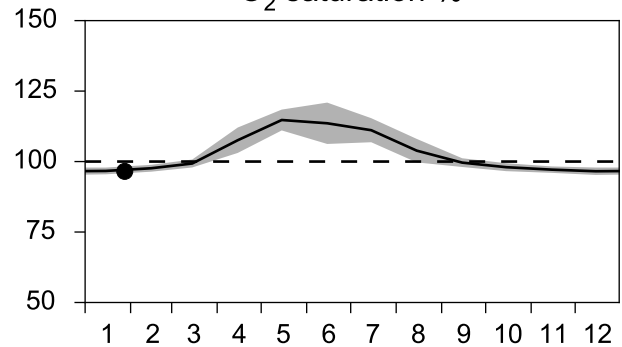
DIN µmol/l



SiO₃ µmol/l

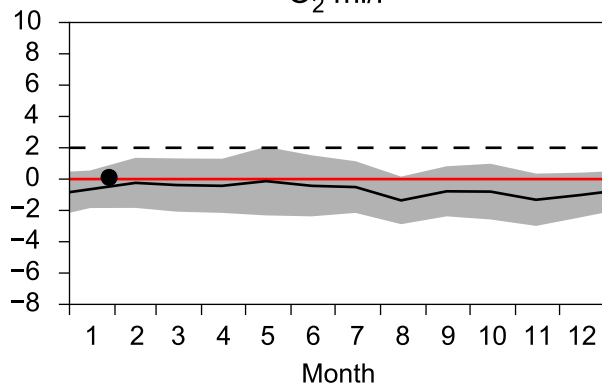


O₂ saturation %

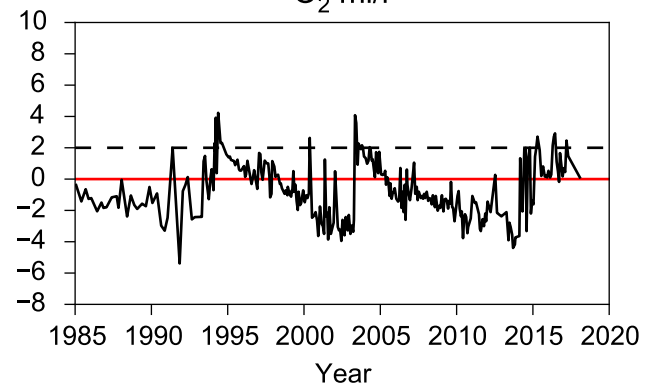


OXYGEN IN BOTTOM WATER (depth >= 125 m)

O₂ ml/l

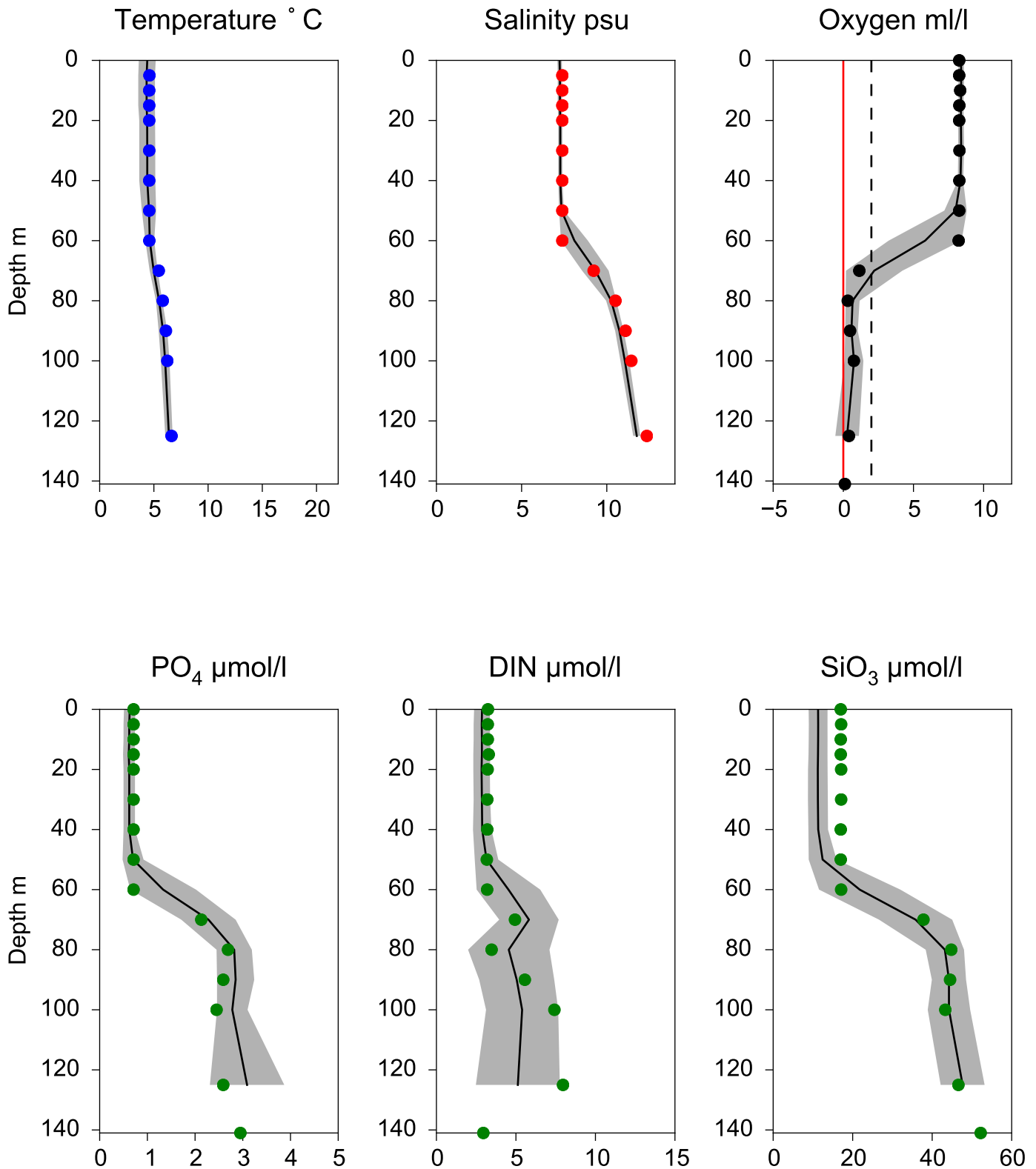


O₂ ml/l



Vertical profiles BY10 January

— Mean 2001-2015 ■ St.Dev. ● 2018-01-28



STATION BY15 GOTLANDSDJ SURFACE WATER (0-10 m)

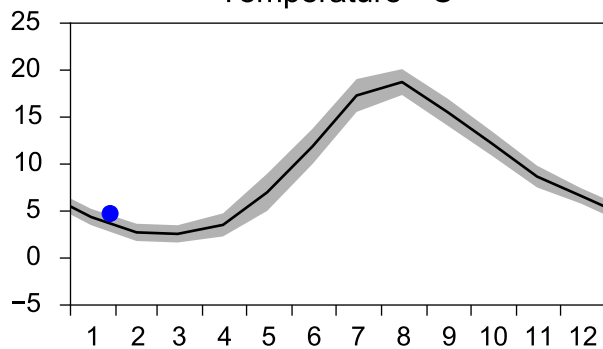
Annual Cycles

— Mean 2001-2015

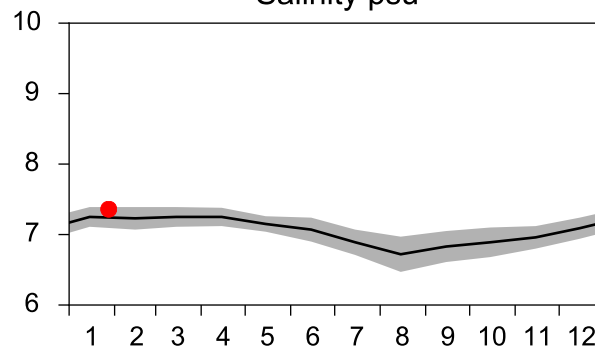
■ St.Dev.

● 2018

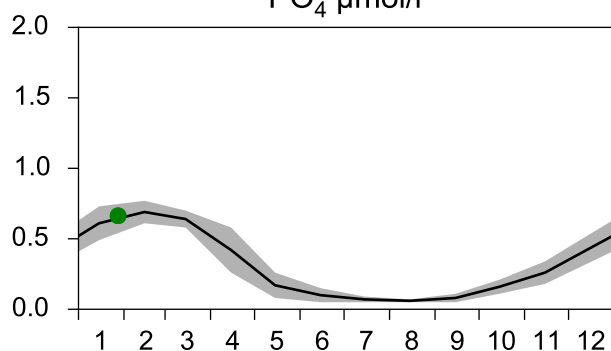
Temperature °C



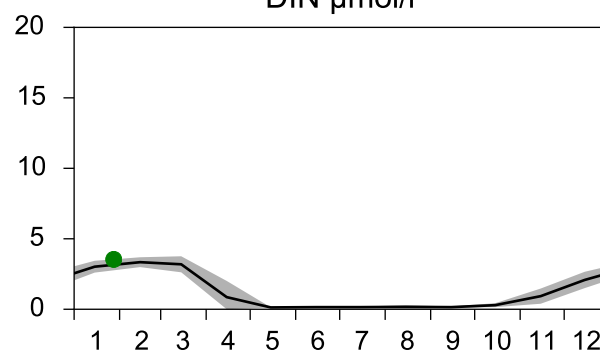
Salinity psu



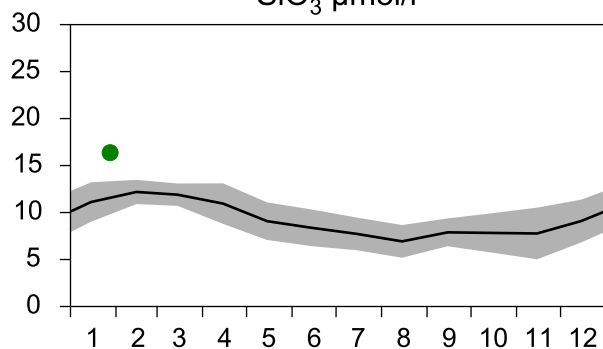
PO₄ µmol/l



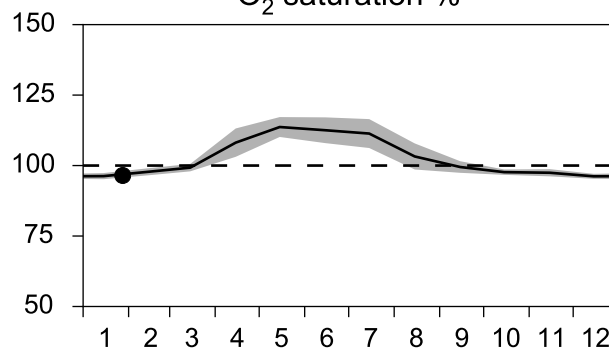
DIN µmol/l



SiO₃ µmol/l

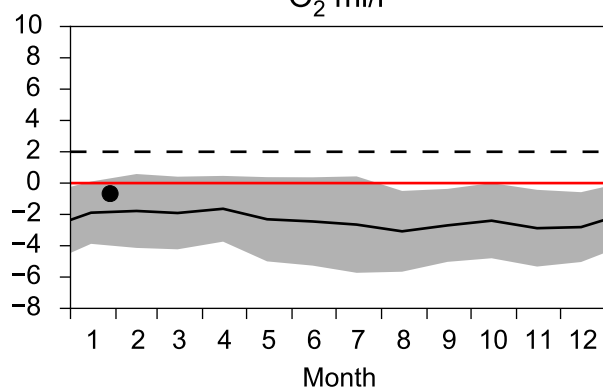


O₂ saturation %

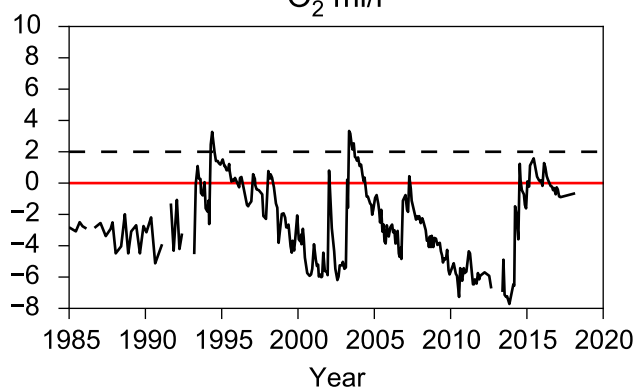


OXYGEN IN BOTTOM WATER (depth >= 225 m)

O₂ ml/l

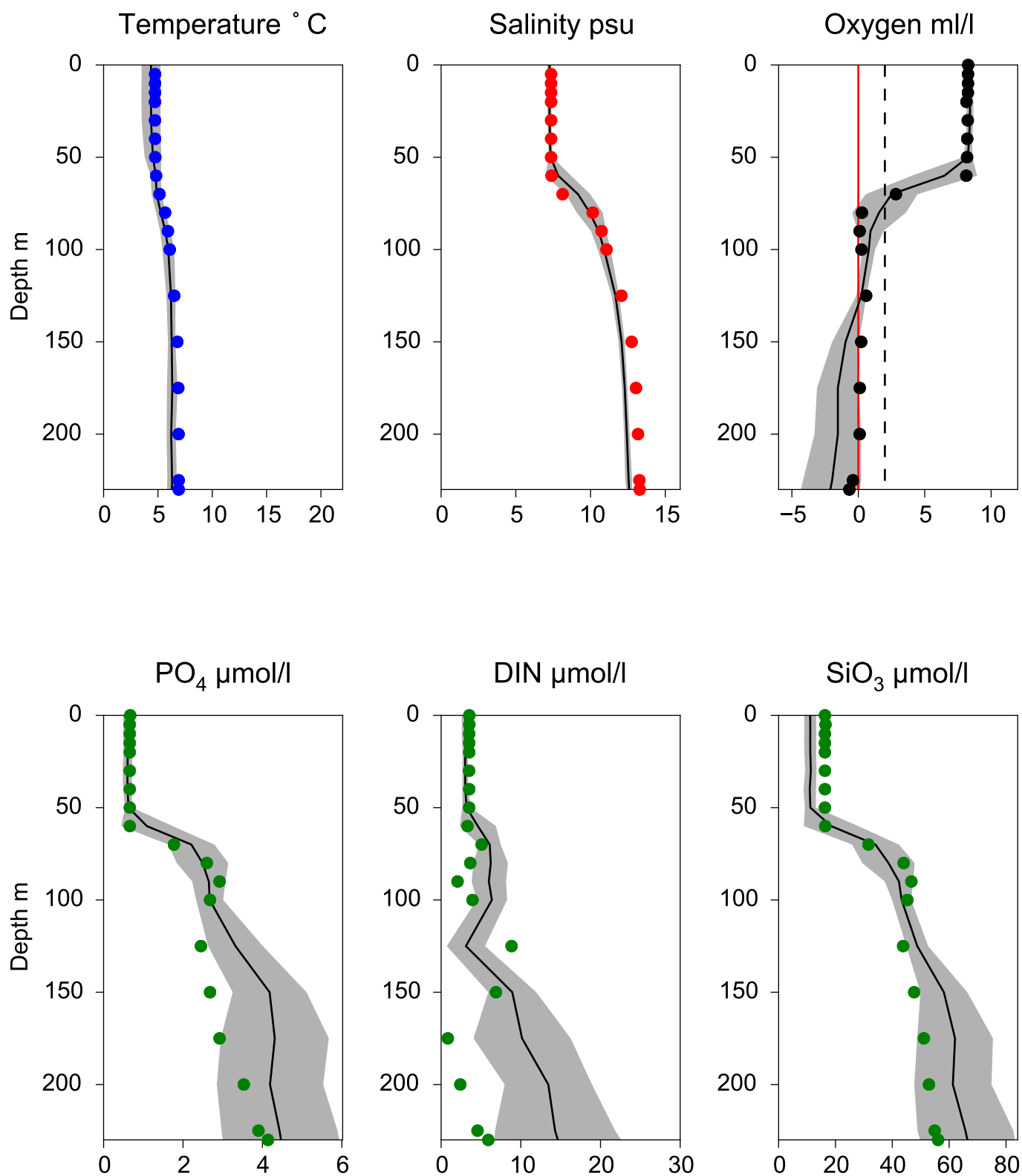


O₂ ml/l



Vertical profiles BY15 GOTLANDSDJ January

— Mean 2001-2015 St.Dev. • 2018-01-28



STATION BY20 FÅRÖDJ SURFACE WATER (0-10 m)

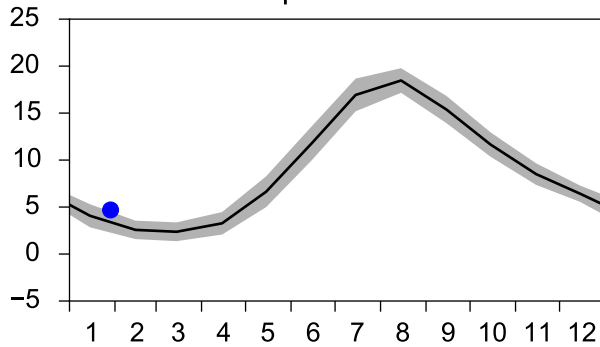
Annual Cycles

— Mean 2001-2015

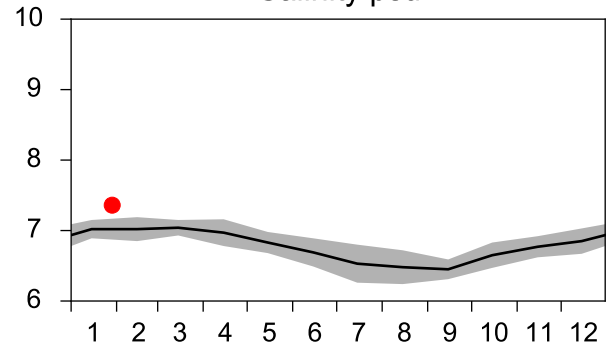
■ St.Dev.

● 2018

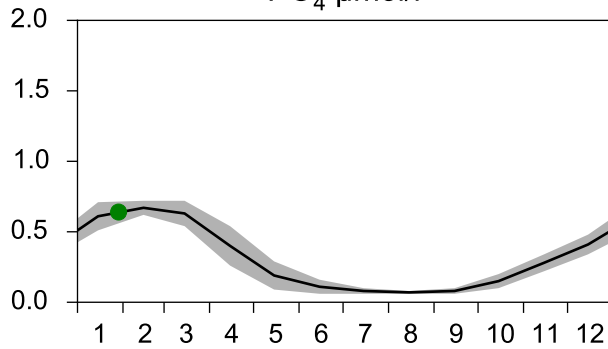
Temperature °C



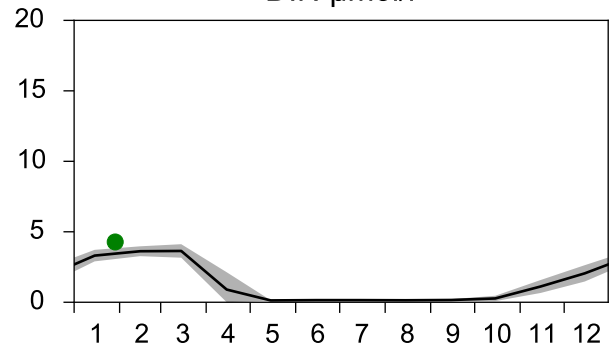
Salinity psu



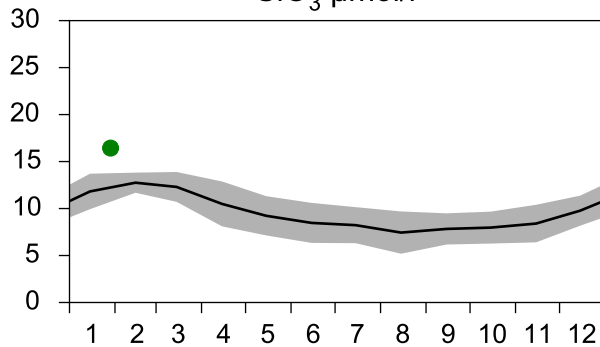
PO₄ µmol/l



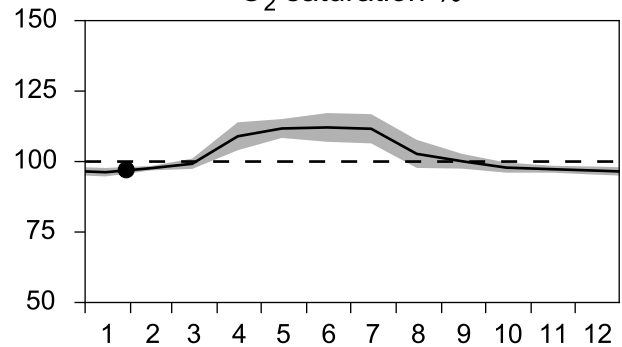
DIN µmol/l



SiO₃ µmol/l

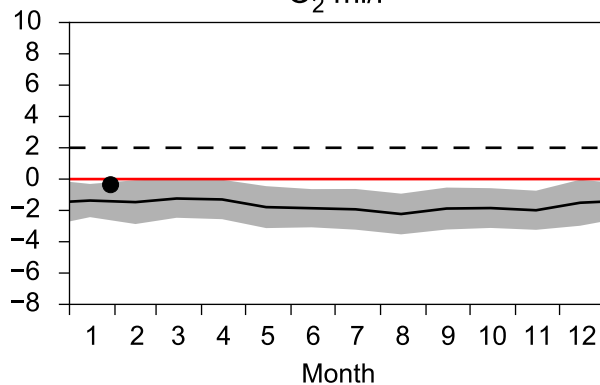


O₂ saturation %

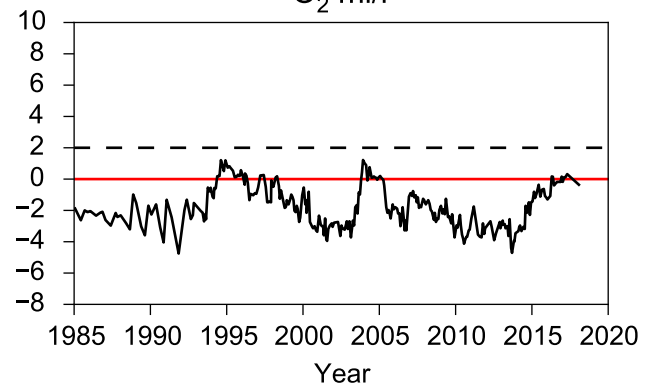


OXYGEN IN BOTTOM WATER (depth >= 175 m)

O₂ ml/l

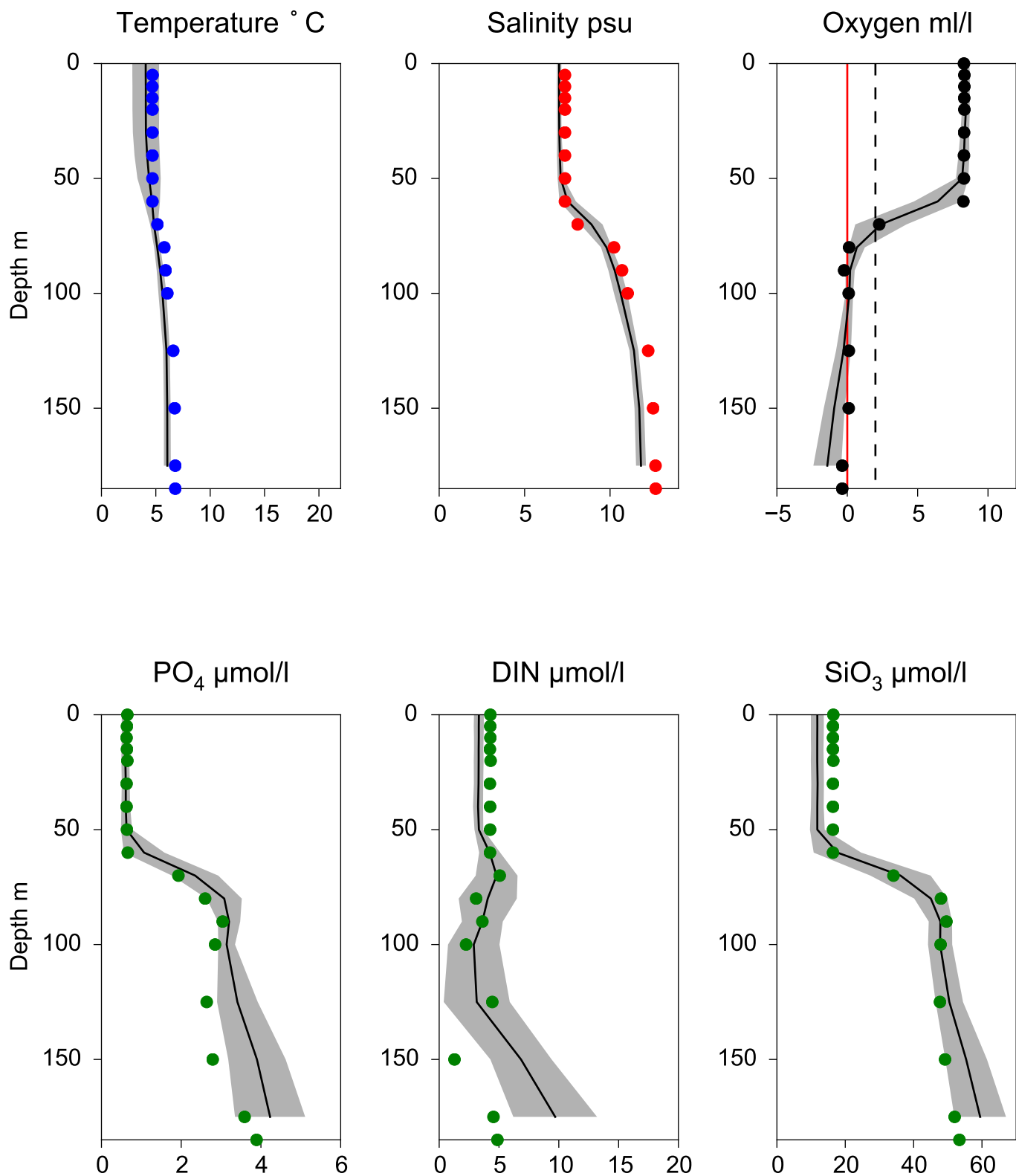


O₂ ml/l



Vertical profiles BY20 FÅRÖDJ January

— Mean 2001-2015 St.Dev. • 2018-01-29



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

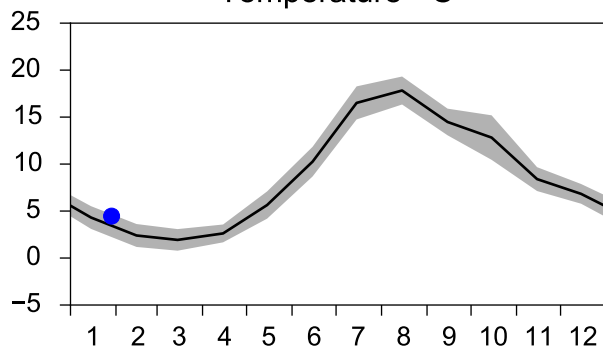
Annual Cycles

— Mean 2001-2015

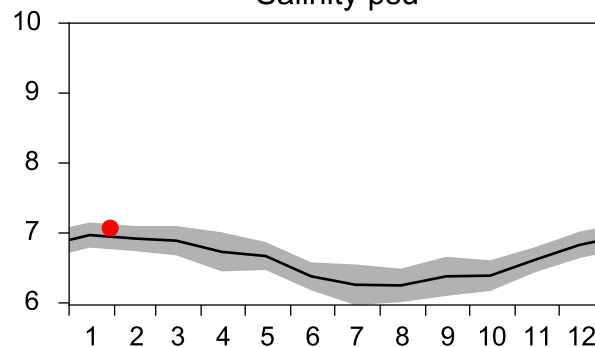
■ St.Dev.

● 2018

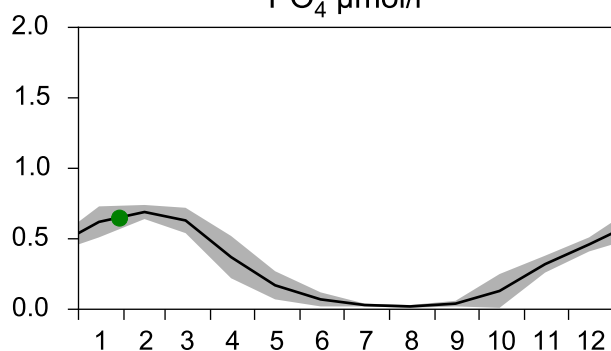
Temperature °C



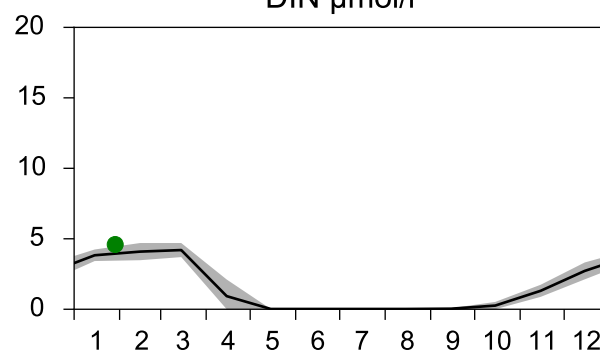
Salinity psu



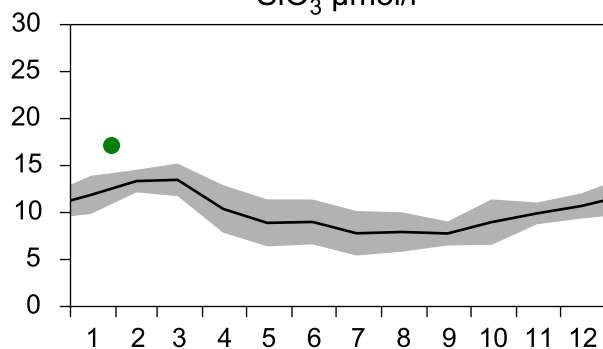
PO₄ µmol/l



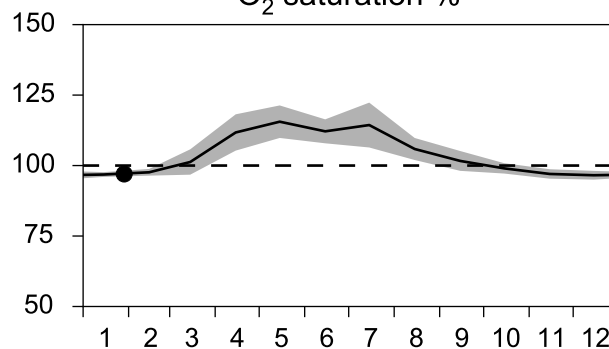
DIN µmol/l



SiO₃ µmol/l

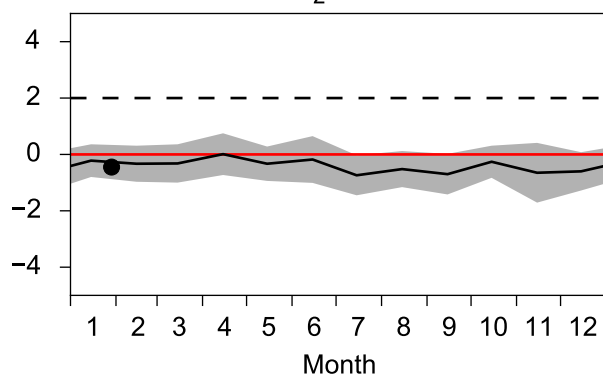


O₂ saturation %

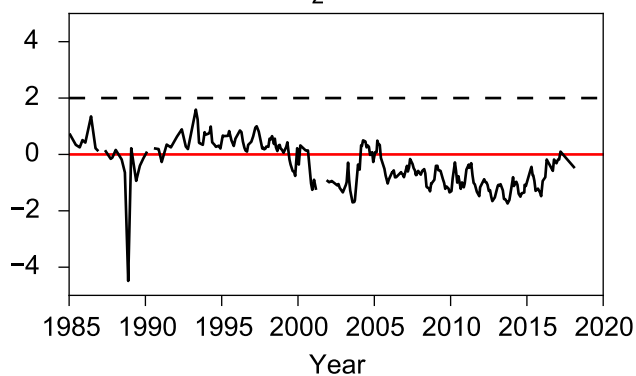


OXYGEN IN BOTTOM WATER (depth >= 150 m)

O₂ ml/l

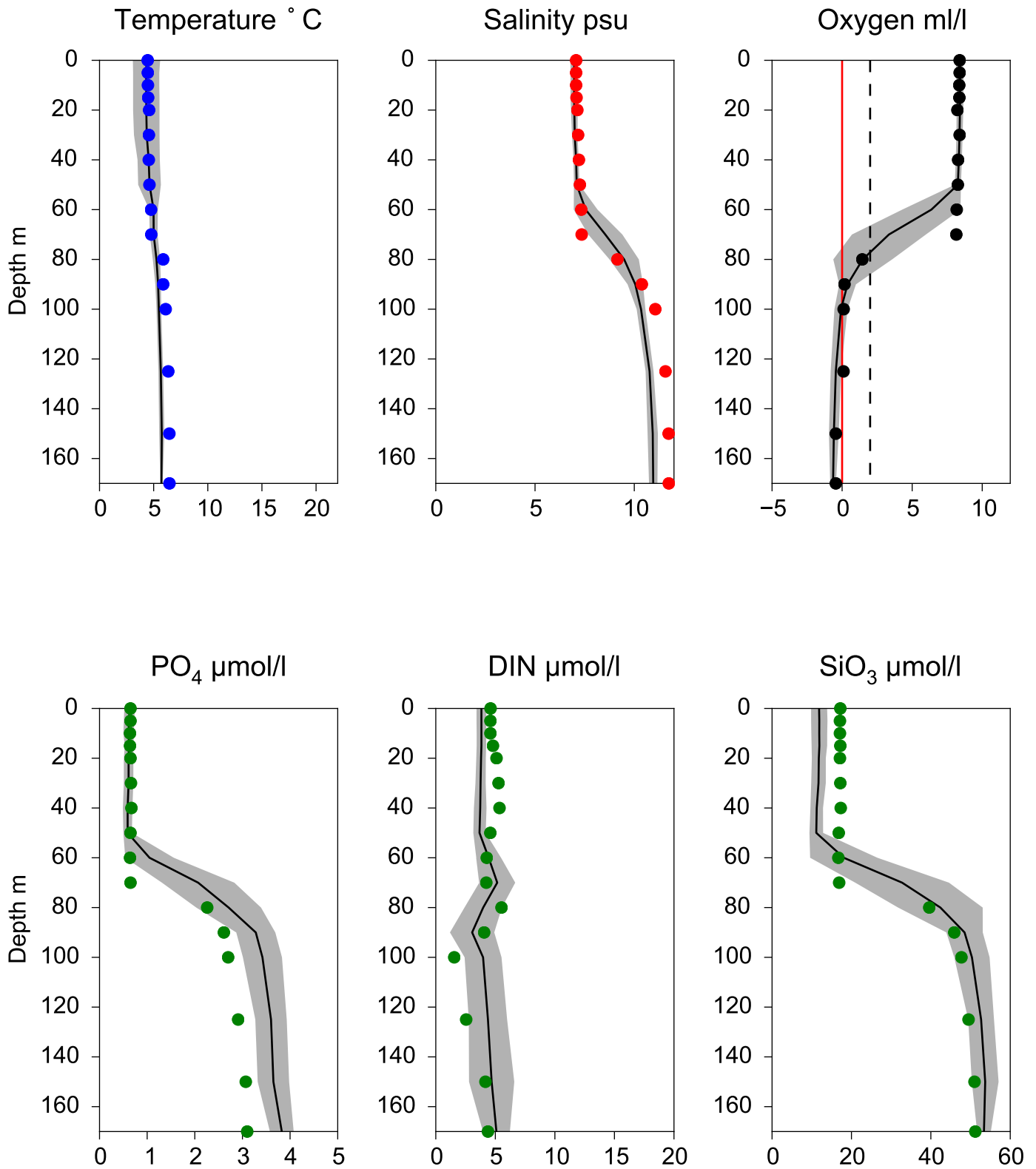


O₂ ml/l



Vertical profiles BY29 / LL19 January

— Mean 2001-2015 St.Dev. • 2018-01-29



STATION BY31 LANDSORTSDJ SURFACE WATER (0-10 m)

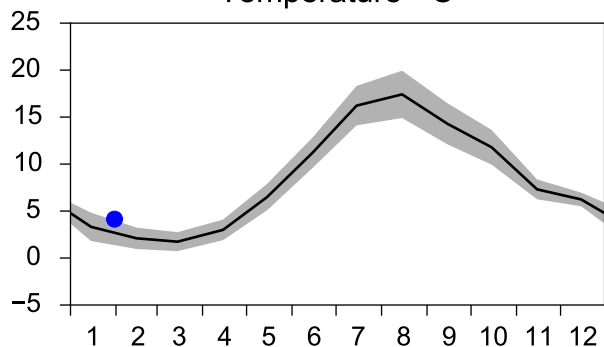
Annual Cycles

— Mean 2001-2015

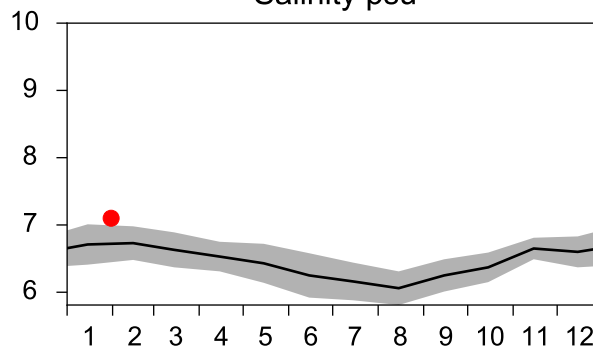
■ St.Dev.

● 2018

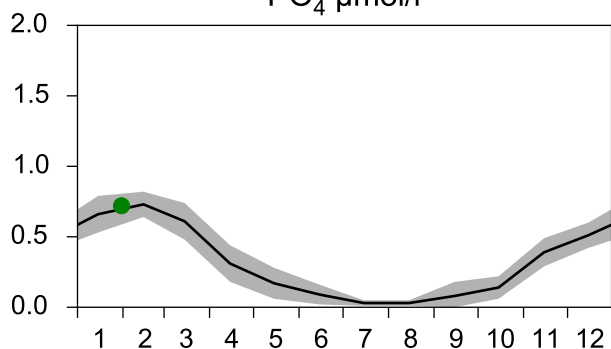
Temperature °C



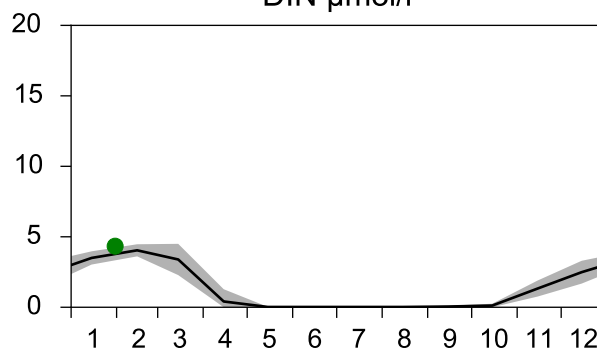
Salinity psu



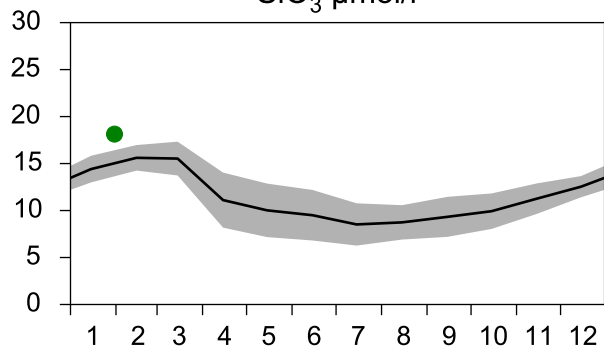
PO₄ µmol/l



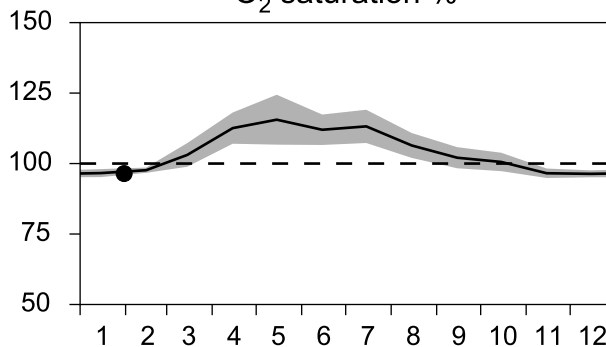
DIN µmol/l



SiO₃ µmol/l

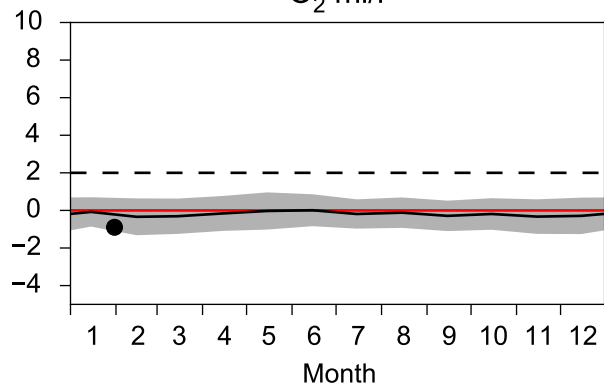


O₂ saturation %

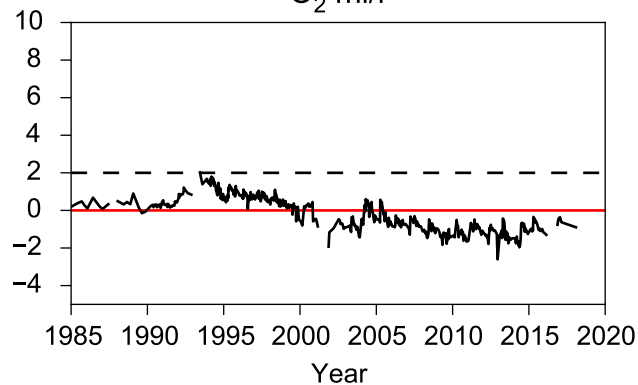


OXYGEN IN BOTTOM WATER (depth >= 425 m)

O₂ ml/l

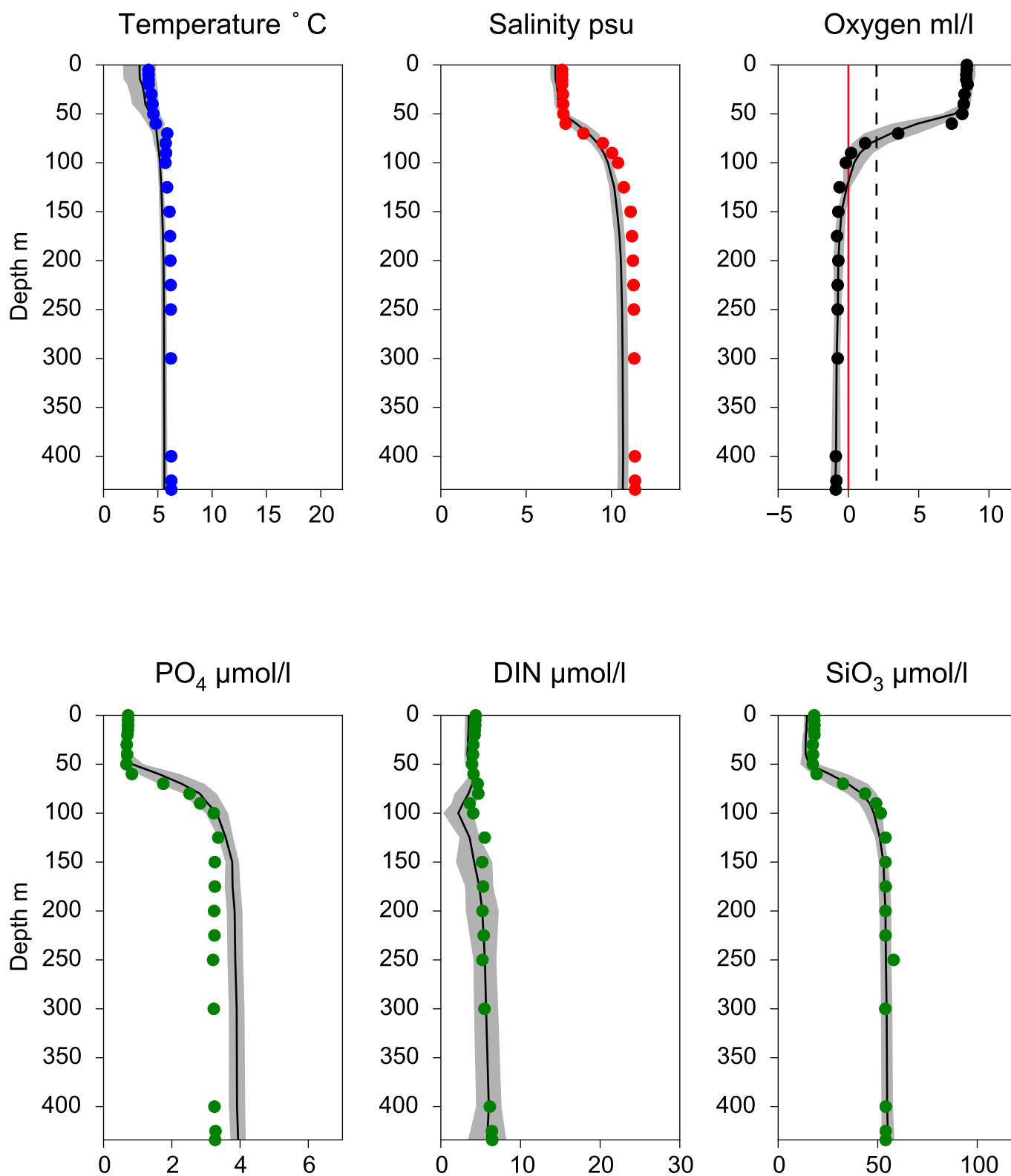


O₂ ml/l



Vertical profiles BY31 LANDSORTSDJ January

— Mean 2001-2015 ■ St.Dev. ● 2018-01-31



STATION BY32 NORRKÖPINGSDJ SURFACE WATER (0-10 m)

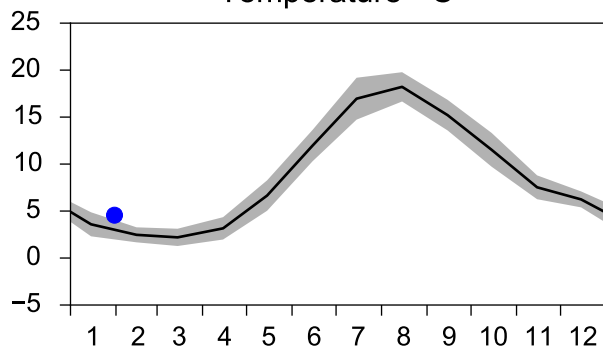
Annual Cycles

— Mean 2001-2015

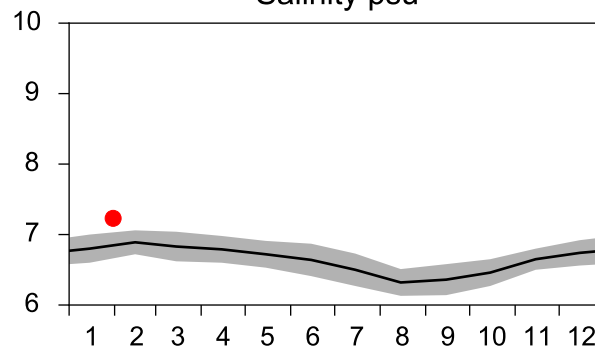
■ St.Dev.

● 2018

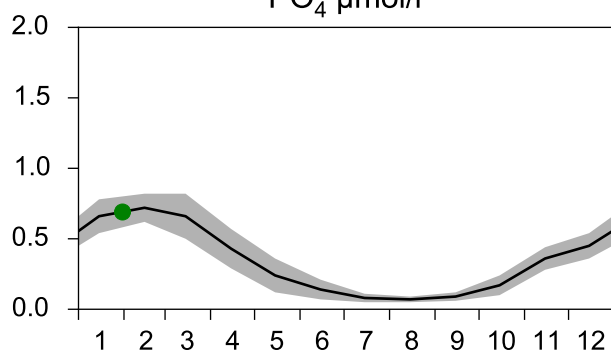
Temperature °C



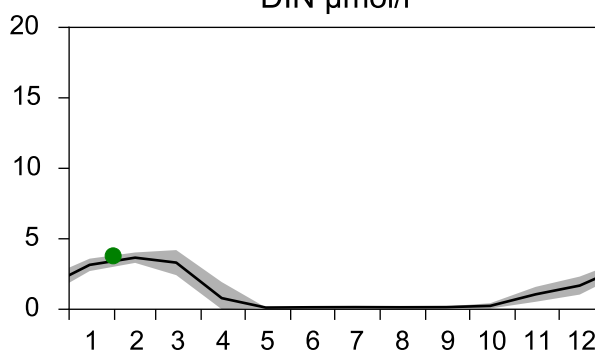
Salinity psu



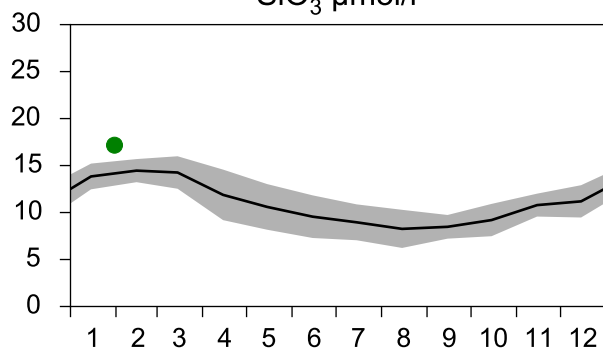
PO₄ µmol/l



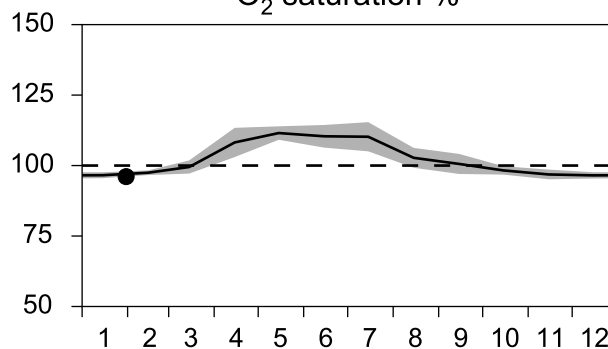
DIN µmol/l



SiO₃ µmol/l

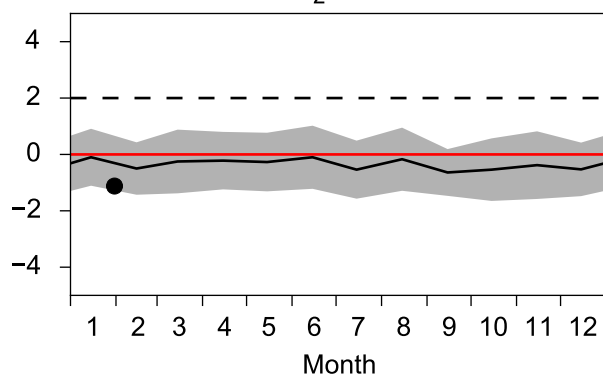


O₂ saturation %

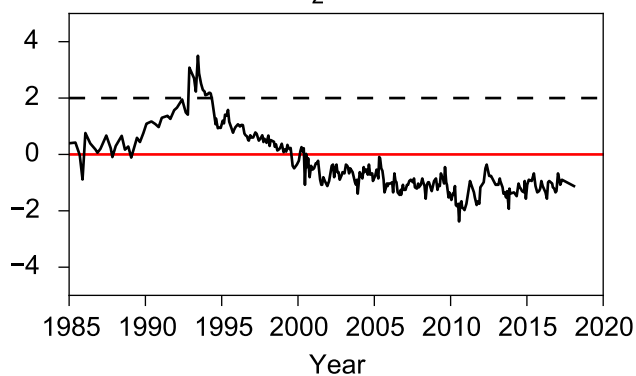


OXYGEN IN BOTTOM WATER (depth >= 175 m)

O₂ ml/l

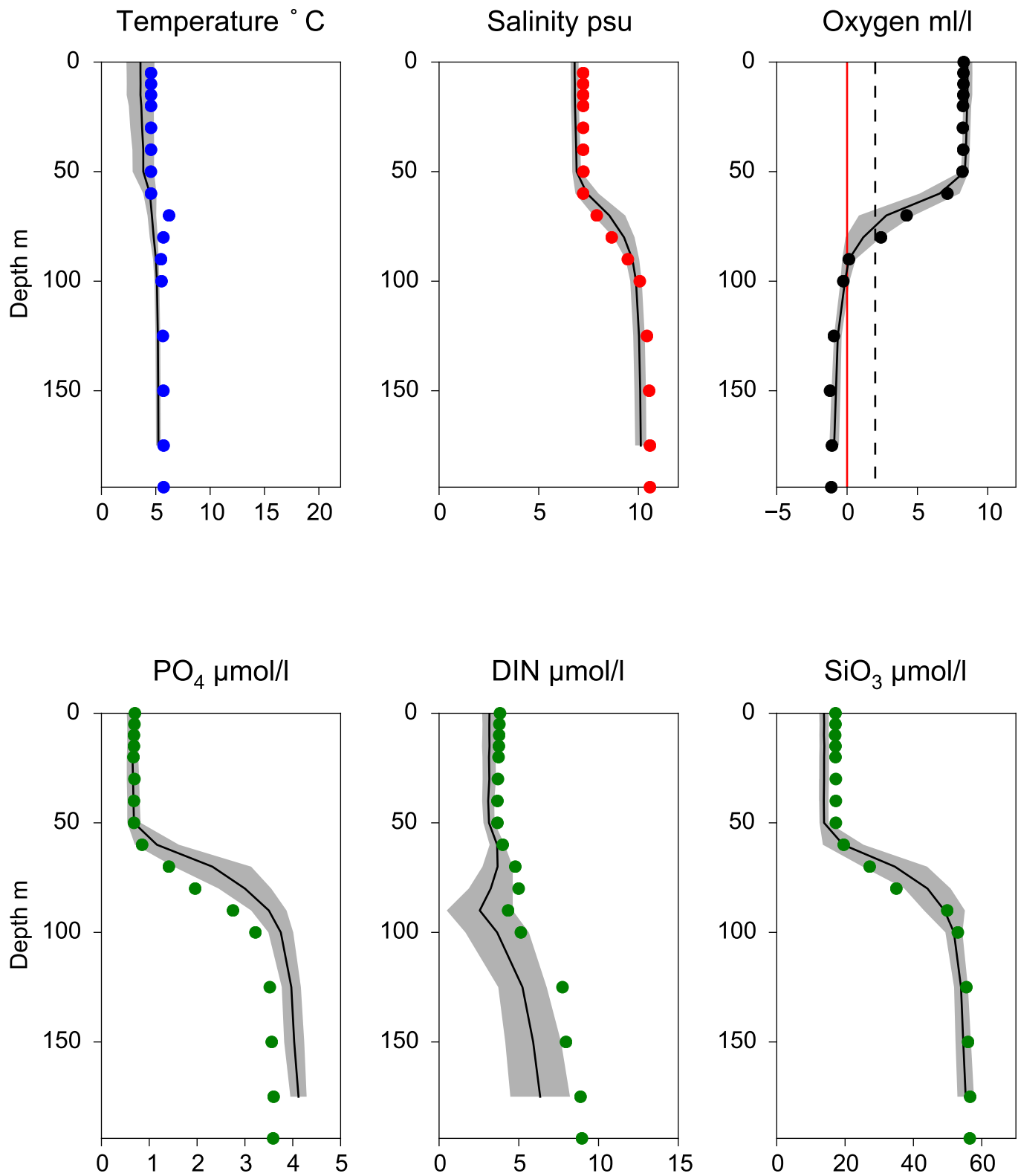


O₂ ml/l



Vertical profiles BY32 NORRKÖPINGSDJ January

— Mean 2001-2015 St.Dev. ● 2018-01-31



STATION BY38 KARLSÖDJ SURFACE WATER (0-10 m)

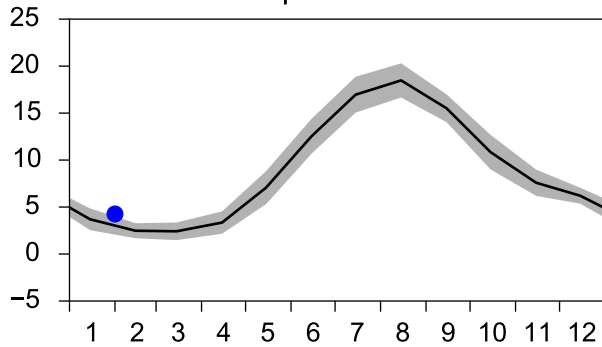
Annual Cycles

— Mean 2001-2015

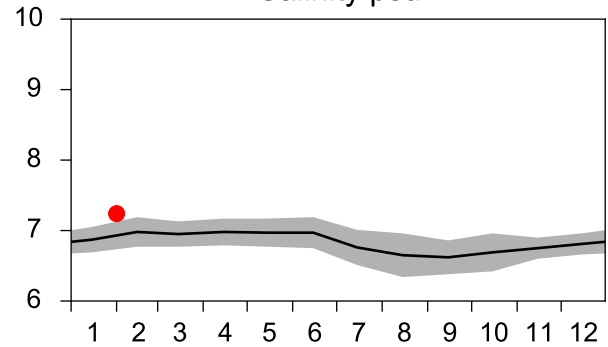
■ St.Dev.

● 2018

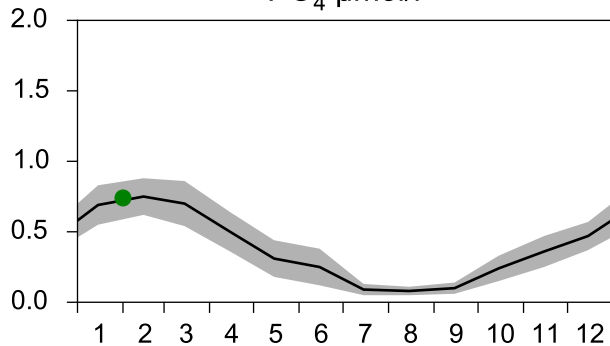
Temperature °C



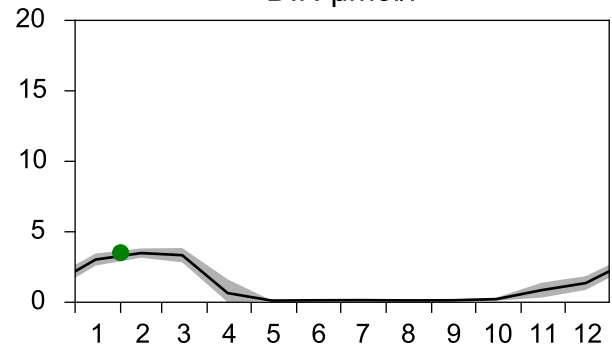
Salinity psu



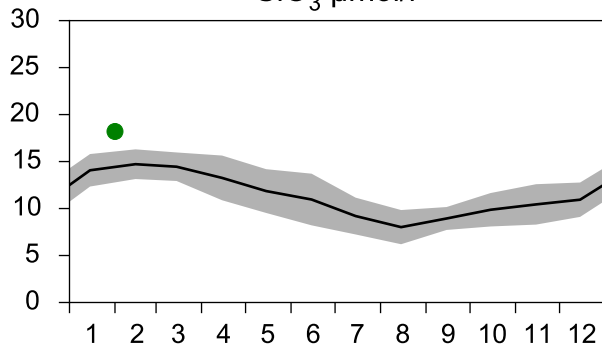
PO₄ µmol/l



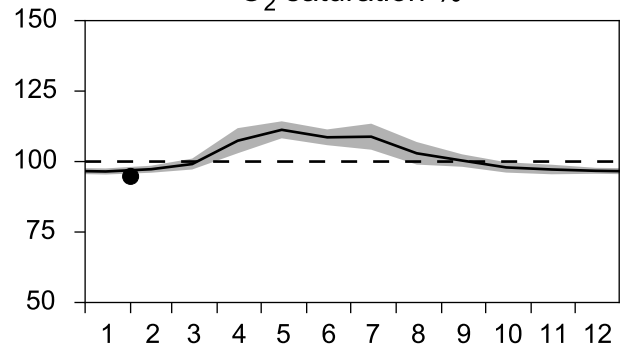
DIN µmol/l



SiO₃ µmol/l

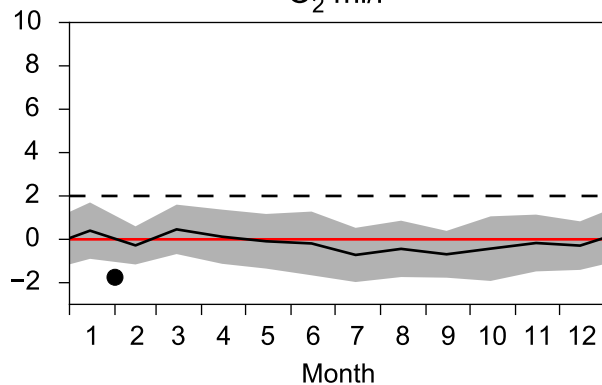


O₂ saturation %

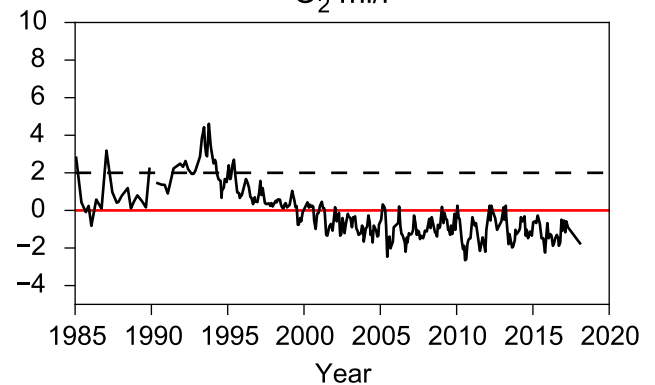


OXYGEN IN BOTTOM WATER (depth >= 100 m)

O₂ ml/l

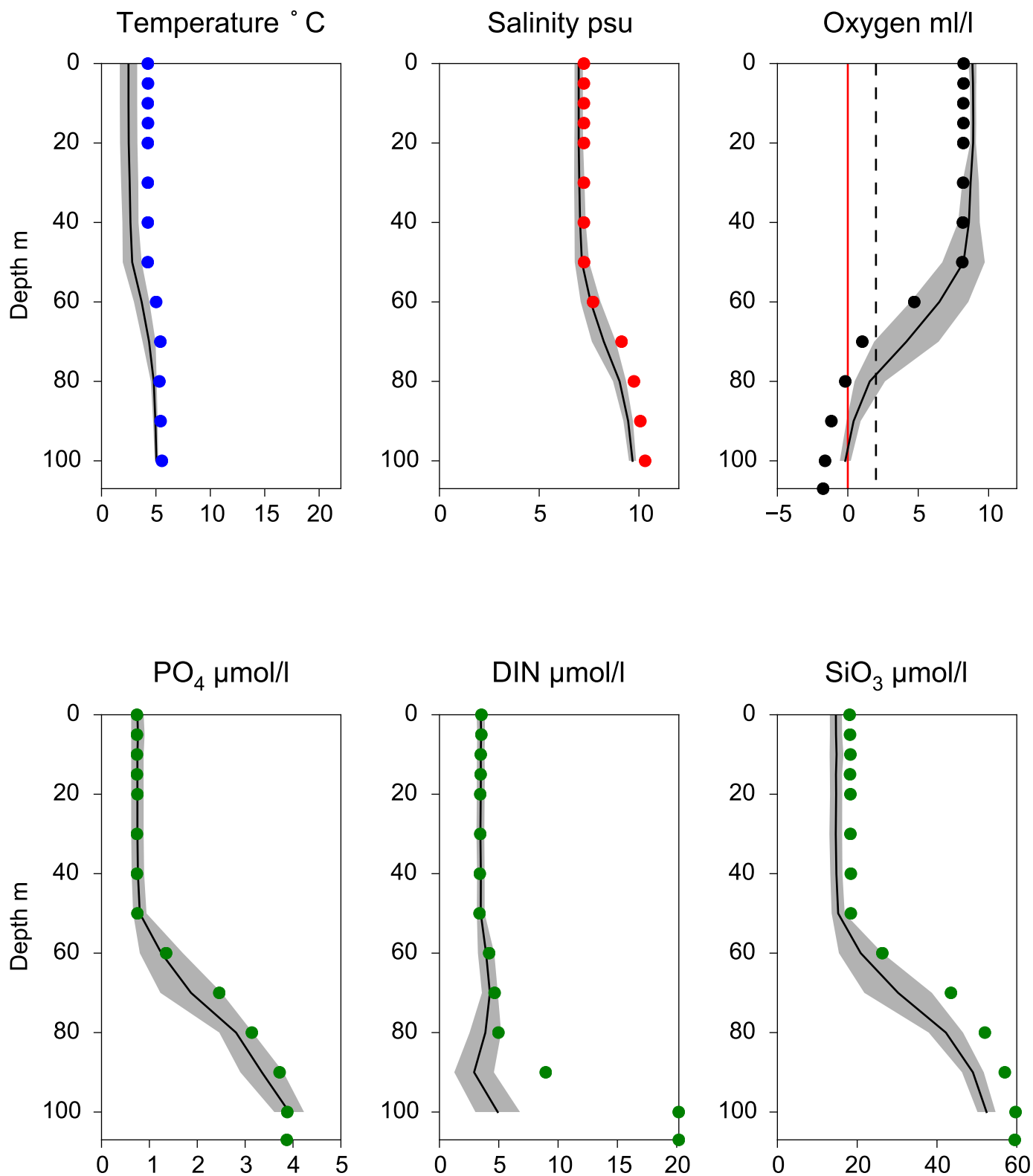


O₂ ml/l



Vertical profiles BY38 KARLSÖDJ February

— Mean 2001-2015 St.Dev. ● 2018-02-01



STATION REF M1V1 SURFACE WATER (0-10 m)

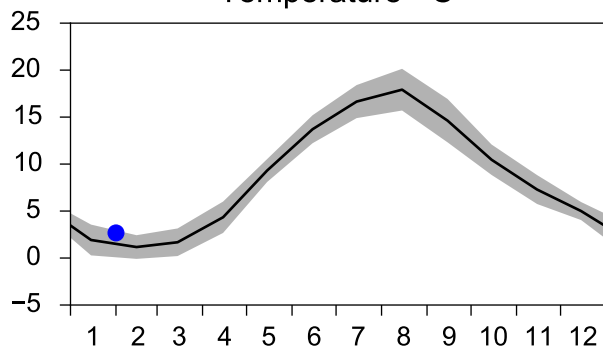
Annual Cycles

— Mean 2001-2015

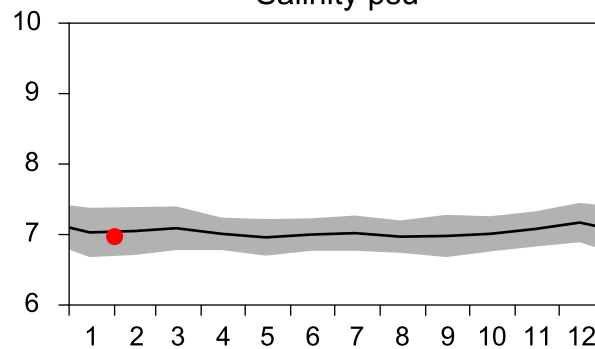
■ St.Dev.

● 2018

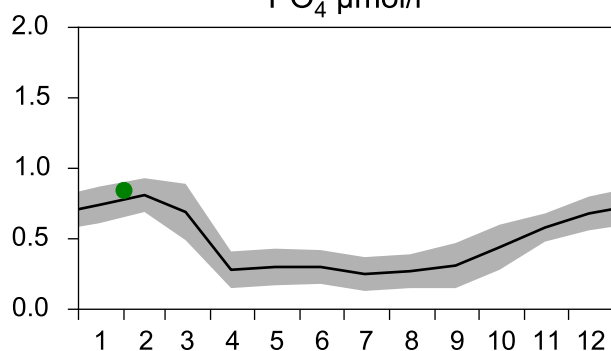
Temperature °C



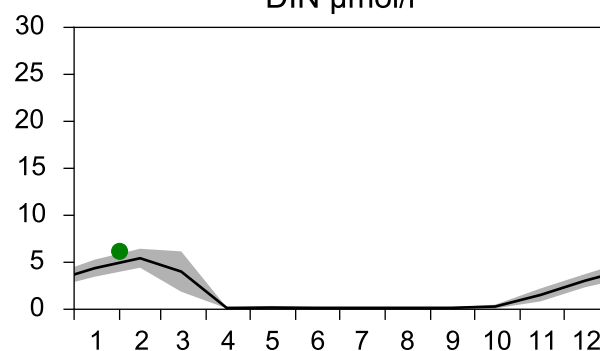
Salinity psu



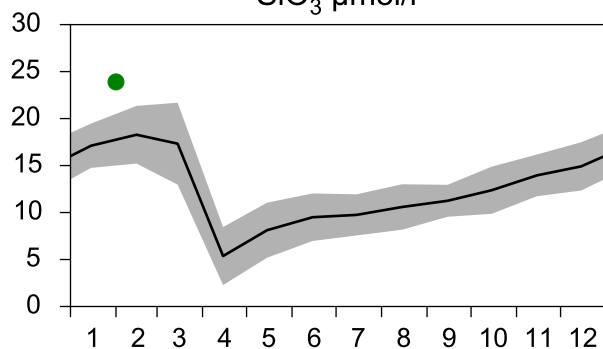
PO₄ µmol/l



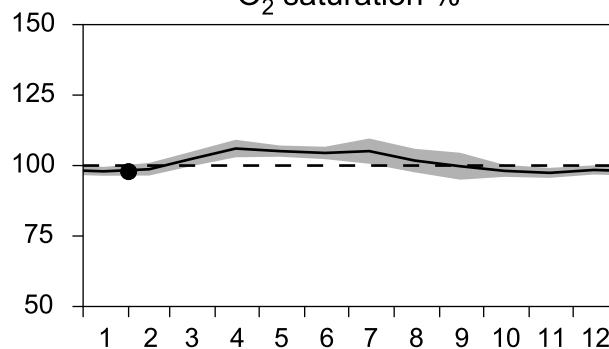
DIN µmol/l



SiO₃ µmol/l

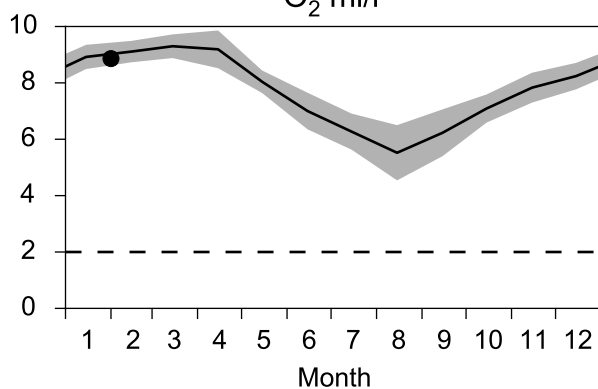


O₂ saturation %

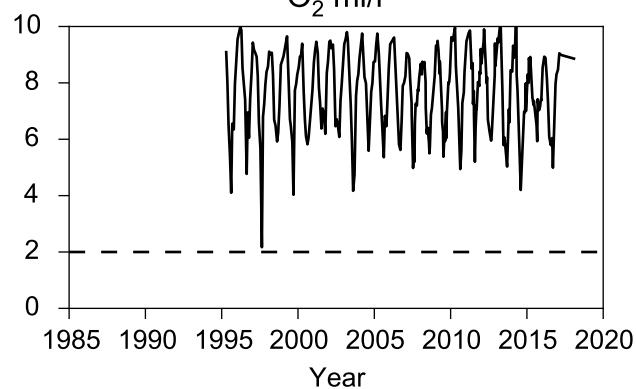


OXYGEN IN BOTTOM WATER (depth >= 17 m)

O₂ ml/l

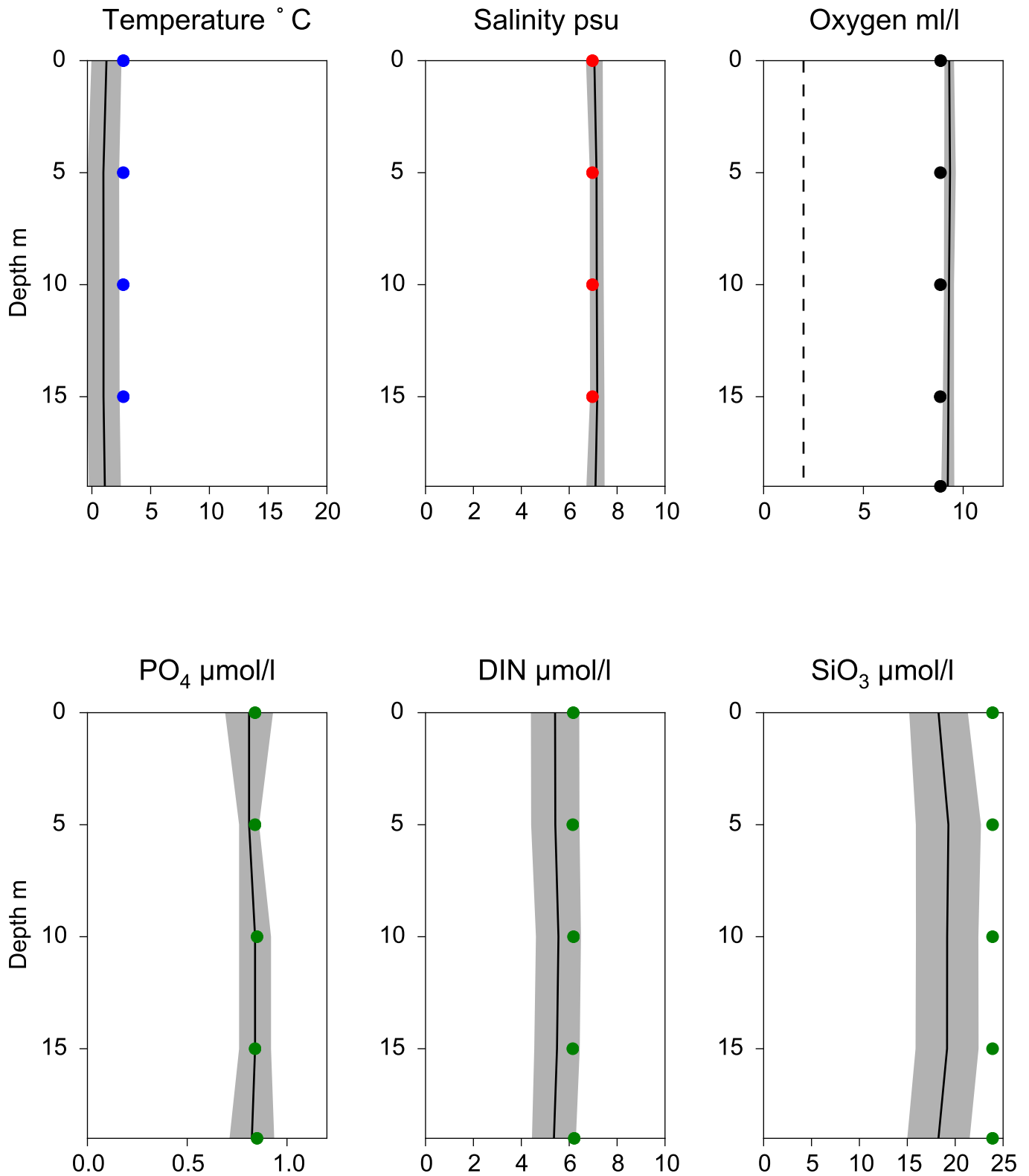


O₂ ml/l



Vertical profiles REF M1V1 February

— Mean 2001-2015 St.Dev. • 2018-02-01



STATION HANÖBUKTEN SURFACE WATER (0-10 m)

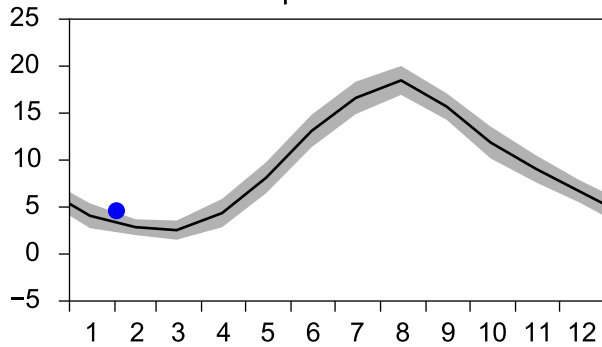
Annual Cycles

— Mean 2001-2015

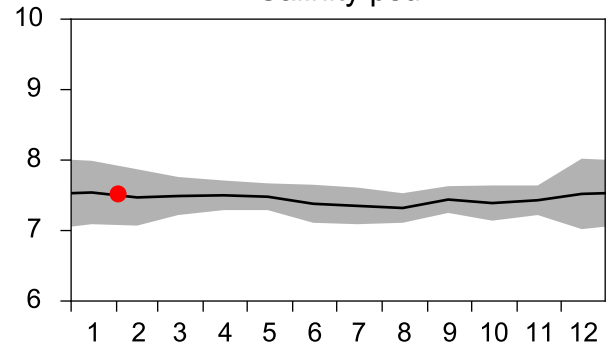
■ St.Dev.

● 2018

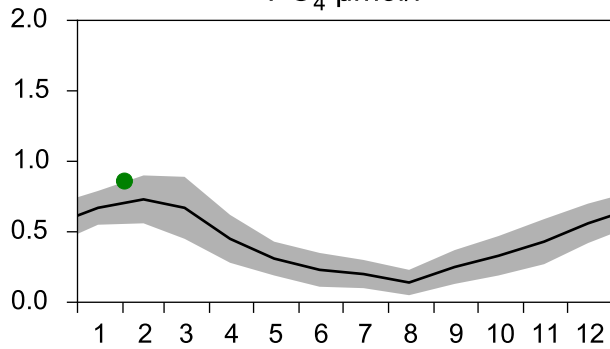
Temperature °C



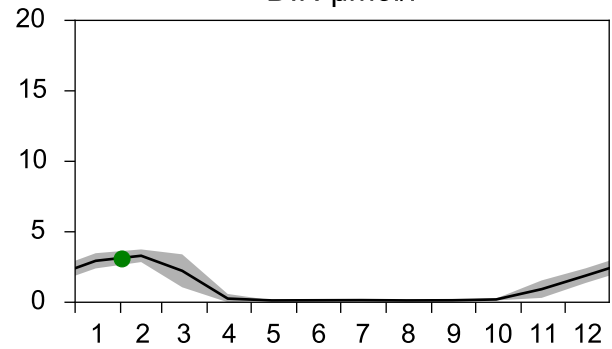
Salinity psu



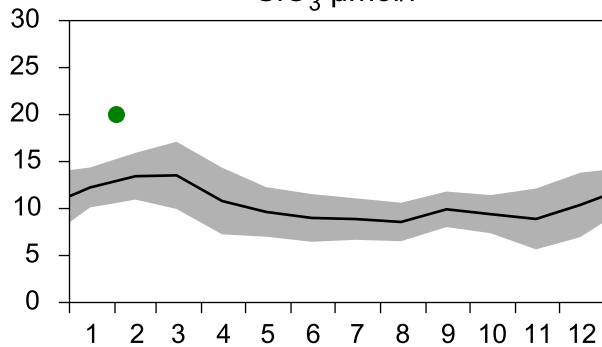
PO₄ µmol/l



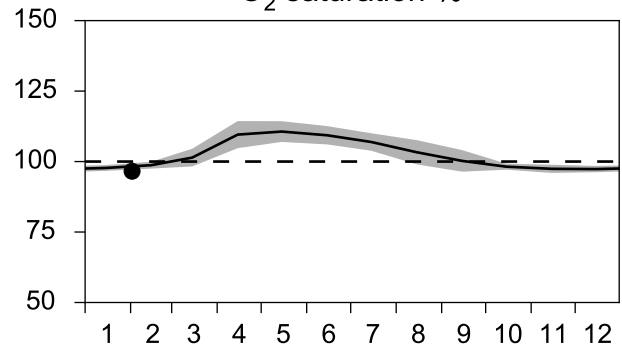
DIN µmol/l



SiO₃ µmol/l

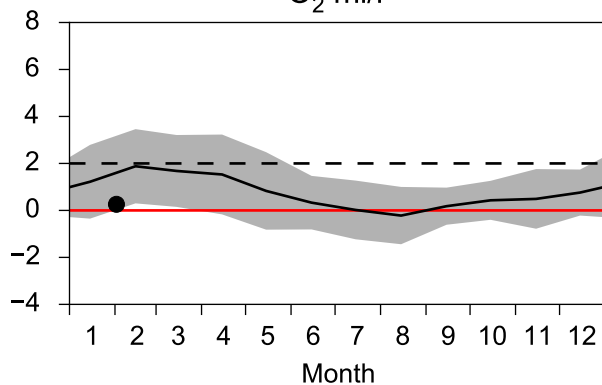


O₂ saturation %

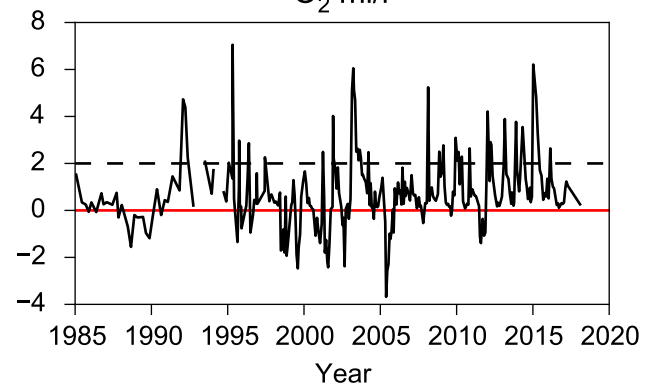


OXYGEN IN BOTTOM WATER (depth >= 70 m)

O₂ ml/l

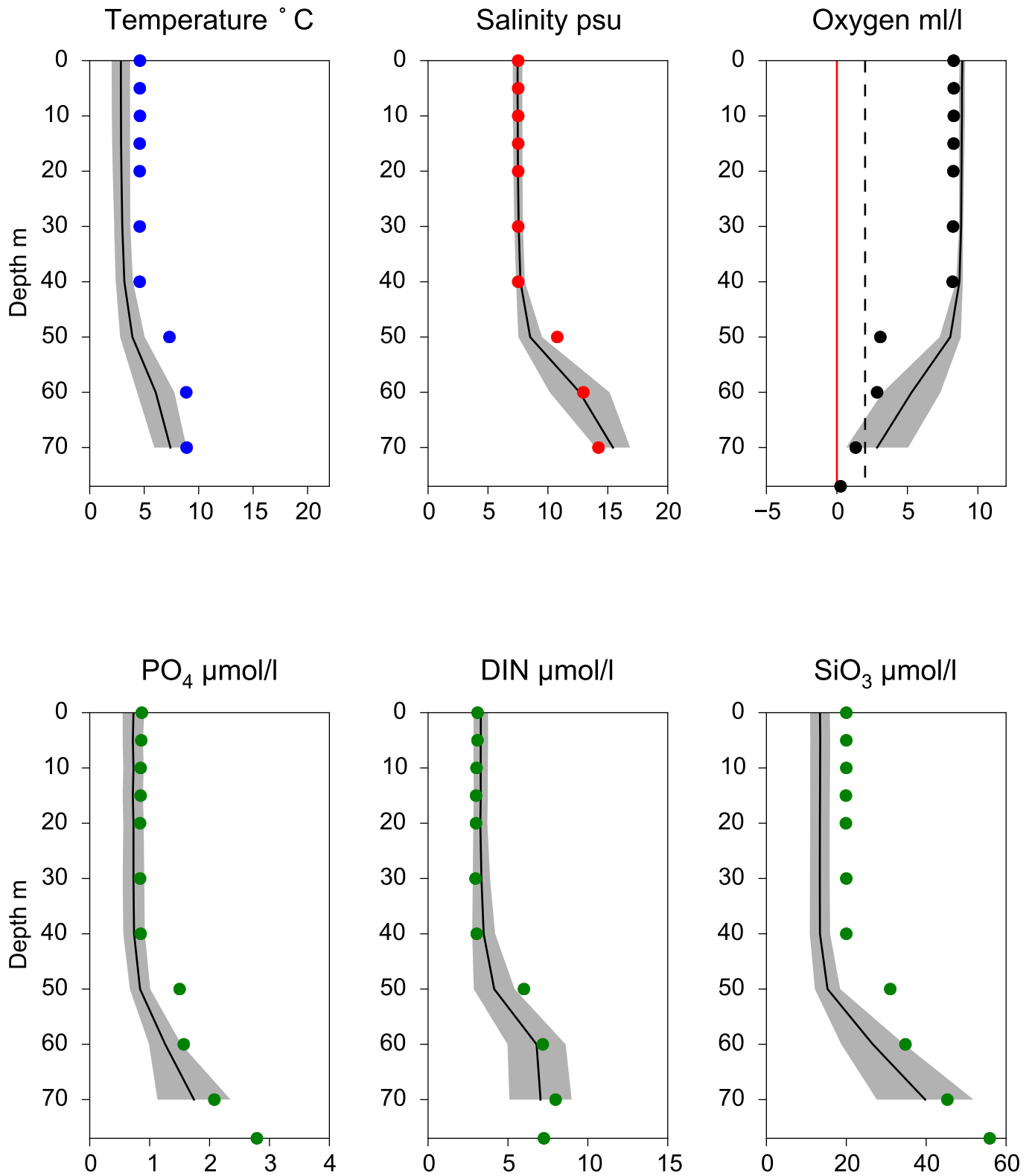


O₂ ml/l



Vertical profiles HANÖBUKTEN February

— Mean 2001-2015 St.Dev. • 2018-02-02



STATION ANHOLT E SURFACE WATER (0-10 m)

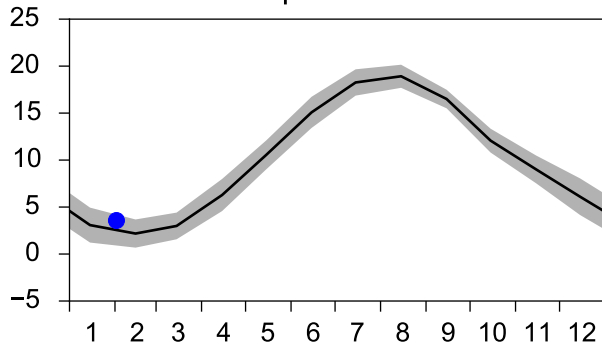
Annual Cycles

— Mean 2001-2015

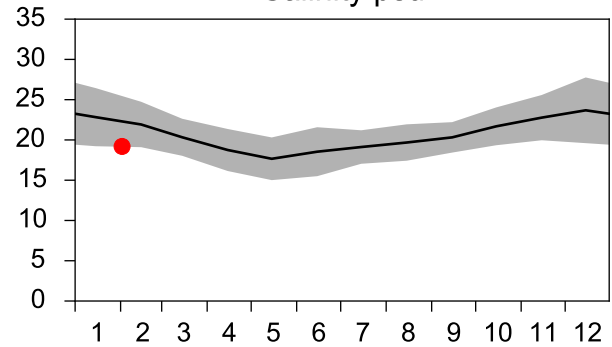
■ St.Dev.

● 2018

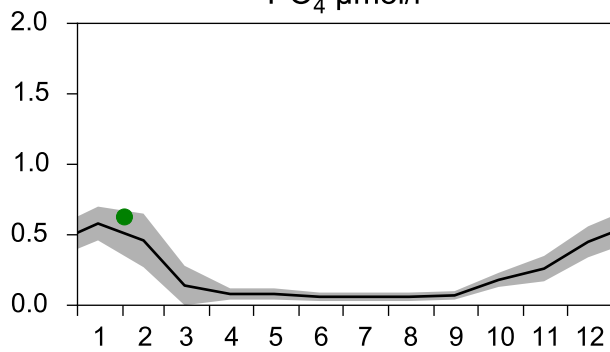
Temperature °C



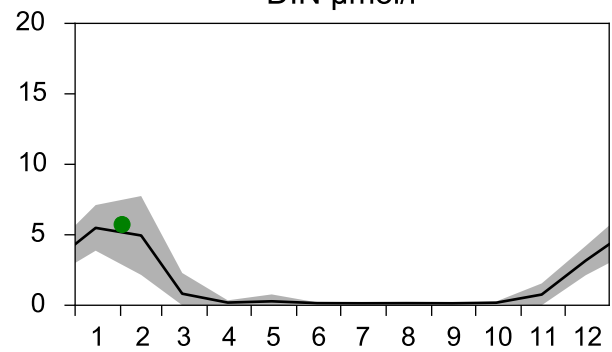
Salinity psu



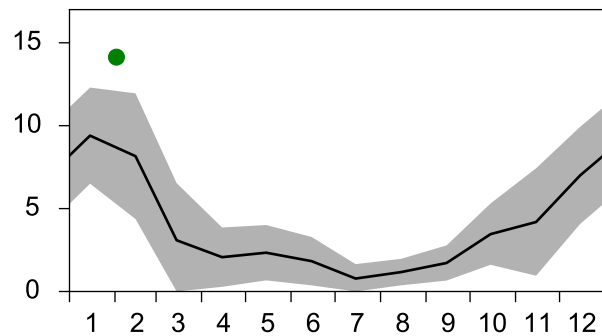
PO₄ µmol/l



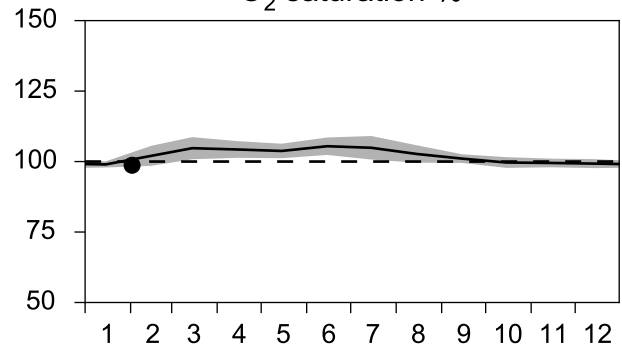
DIN µmol/l



SiO₃ µmol/l

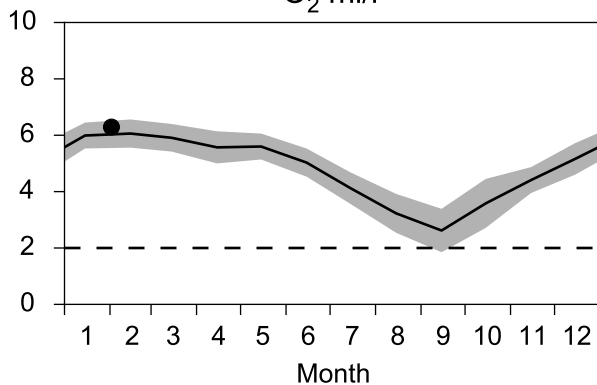


O₂ saturation %

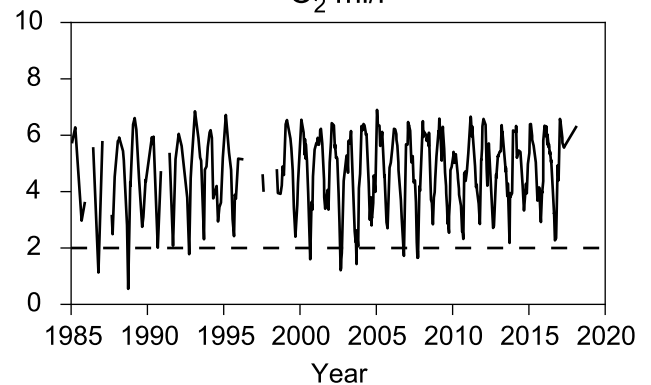


OXYGEN IN BOTTOM WATER (depth >= 52 m)

O₂ ml/l

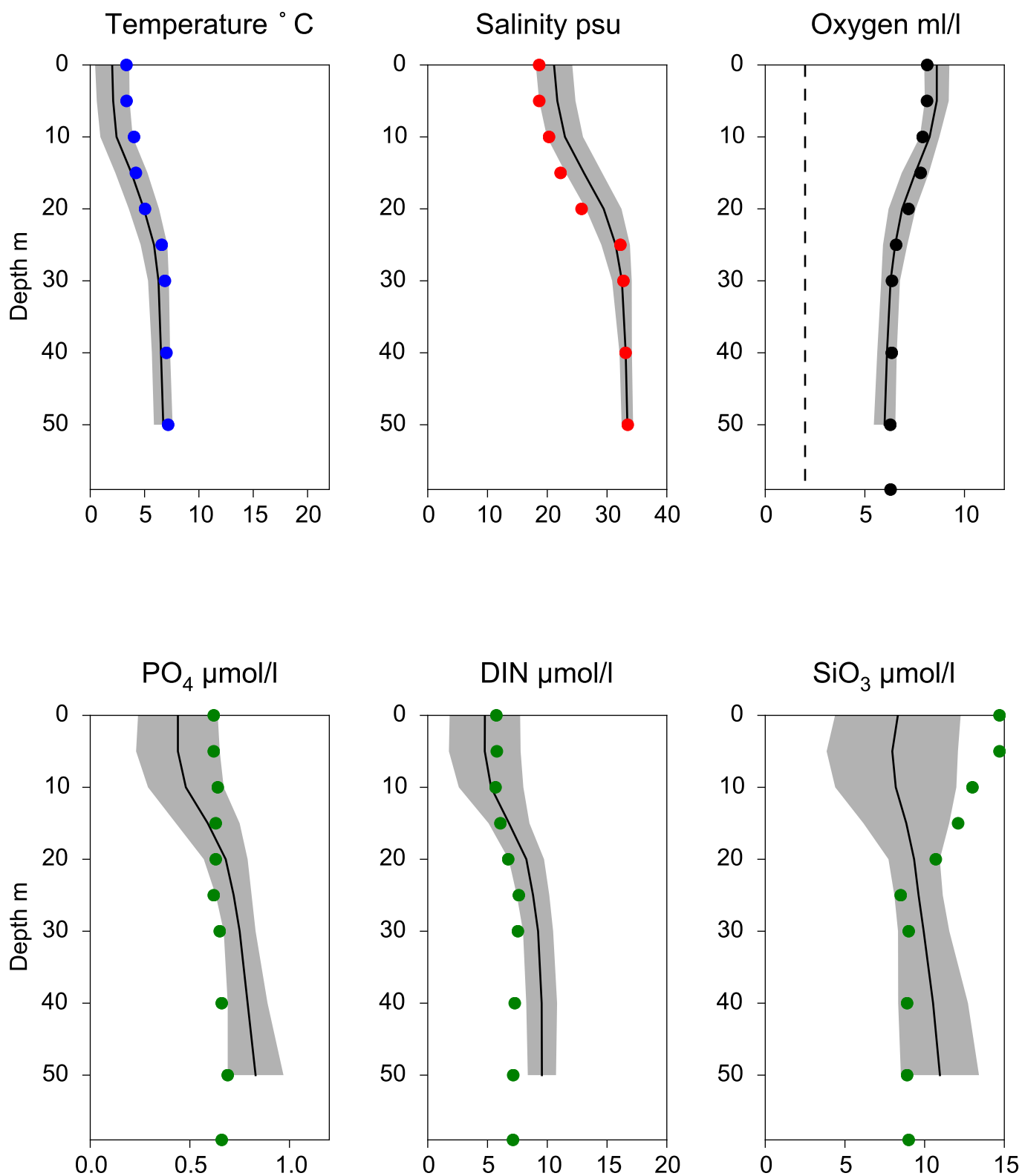


O₂ ml/l



Vertical profiles ANHOLT E February

— Mean 2001-2015 St.Dev. • 2018-02-02



STATION N14 FALKENBERG SURFACE WATER (0-10 m)

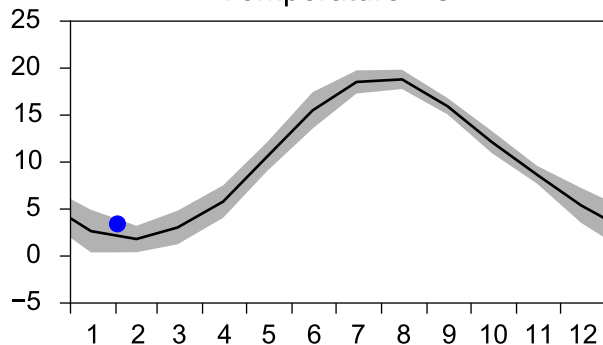
Annual Cycles

— Mean 2001-2015

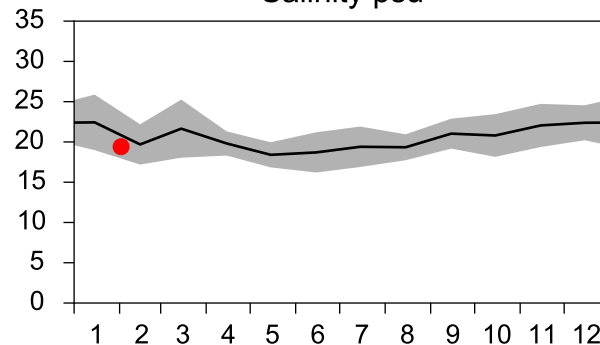
■ St.Dev.

● 2018

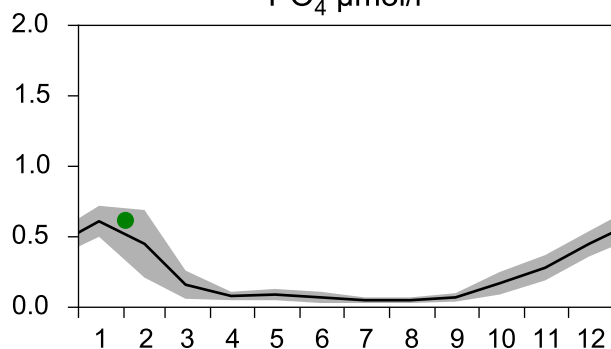
Temperature °C



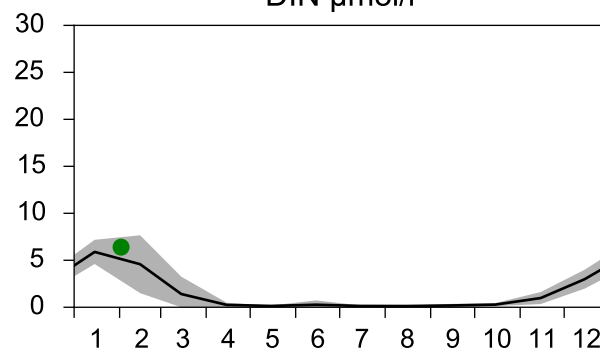
Salinity psu



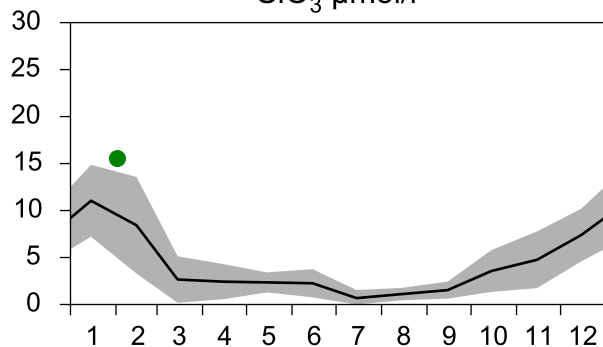
PO₄ µmol/l



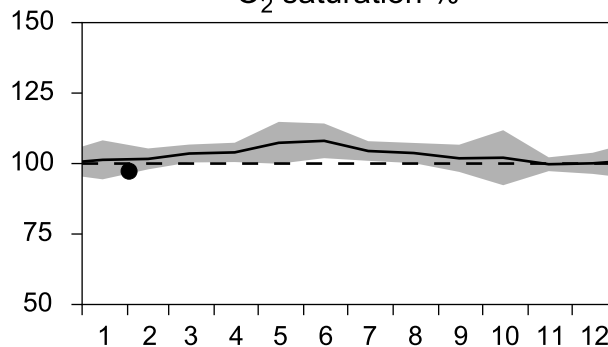
DIN µmol/l



SiO₃ µmol/l

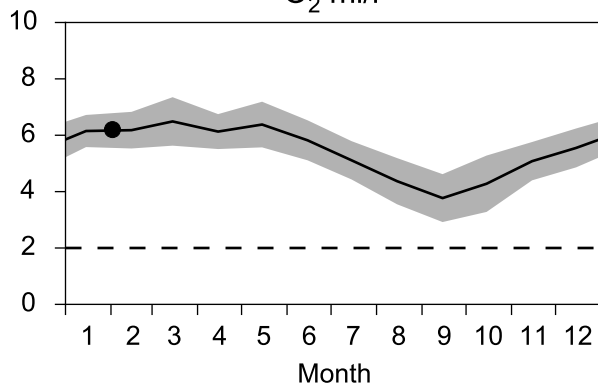


O₂ saturation %

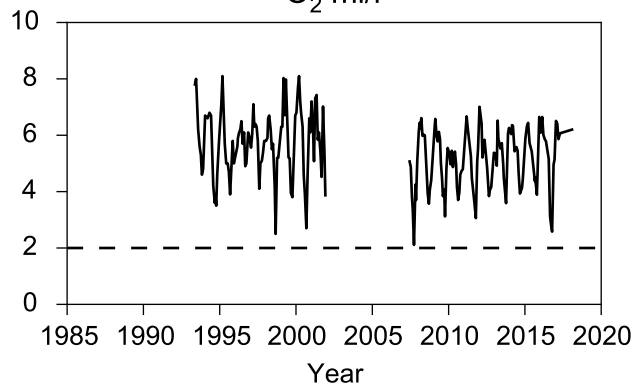


OXYGEN IN BOTTOM WATER (depth >= 25 m)

O₂ ml/l

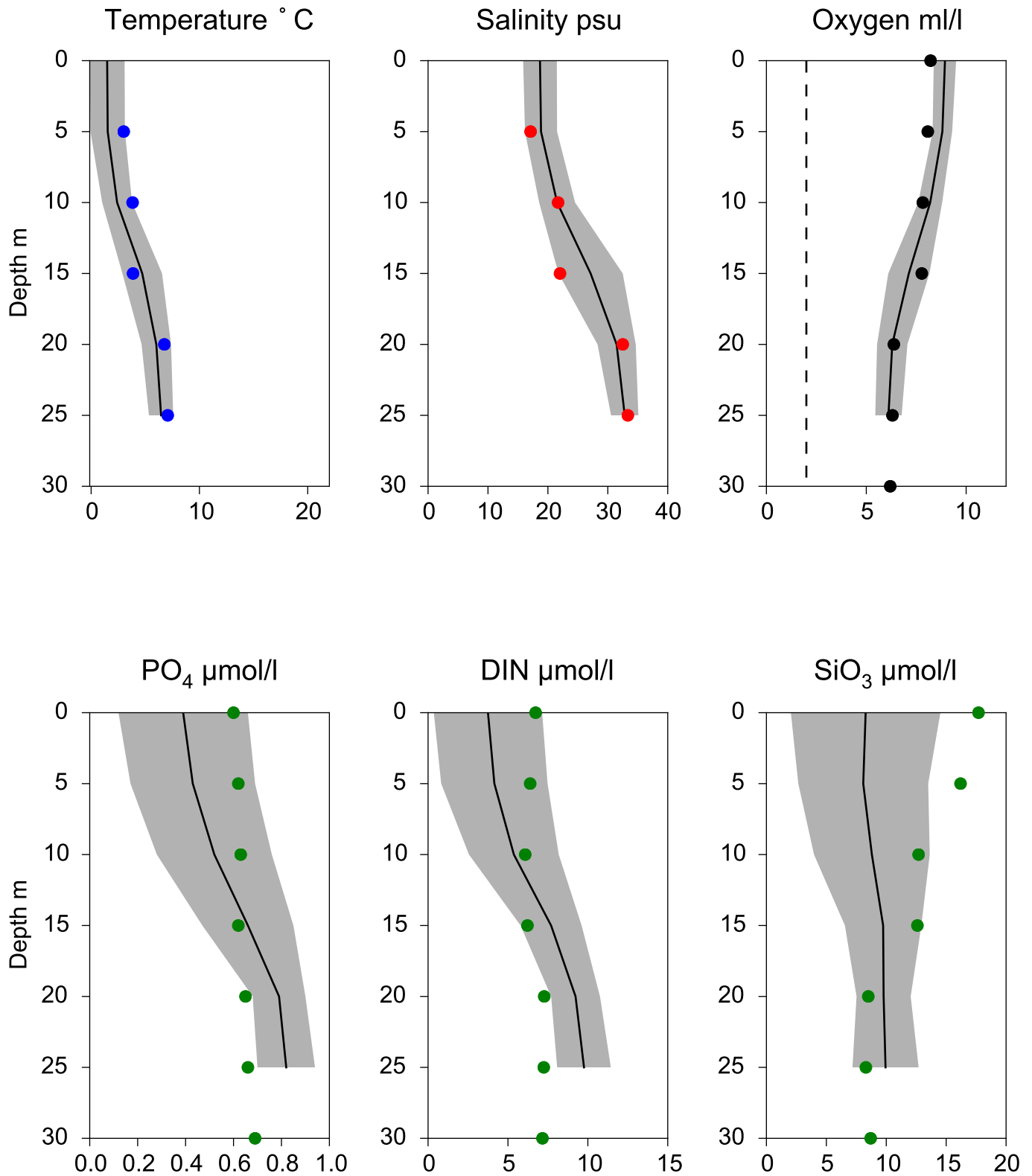


O₂ ml/l



Vertical profiles N14 FALKENBERG February

— Mean 2001-2015 St.Dev. • 2018-02-02



STATION FLADEN SURFACE WATER (0-10 m)

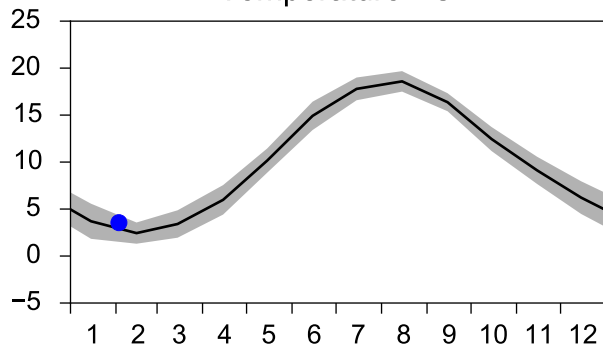
Annual Cycles

— Mean 2001-2015

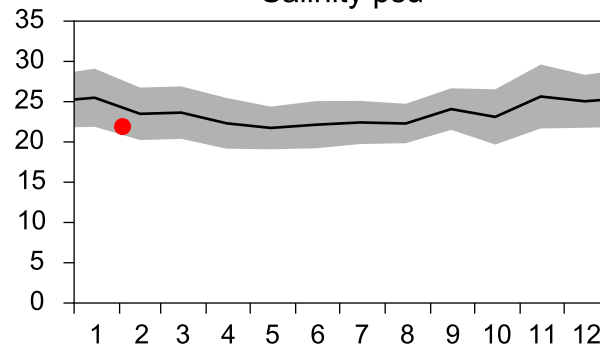
■ St.Dev.

● 2018

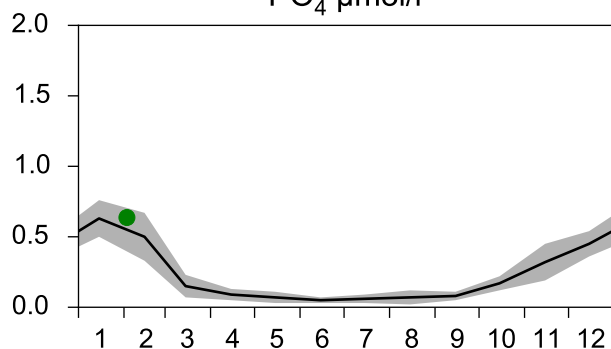
Temperature °C



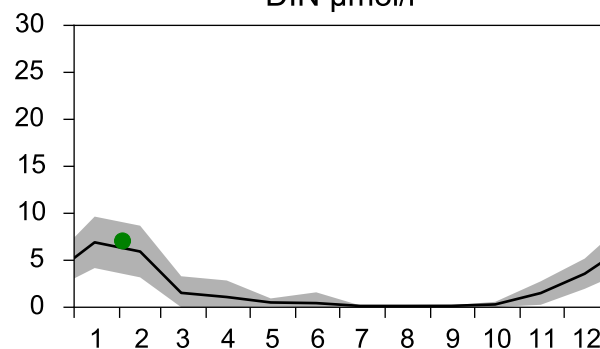
Salinity psu



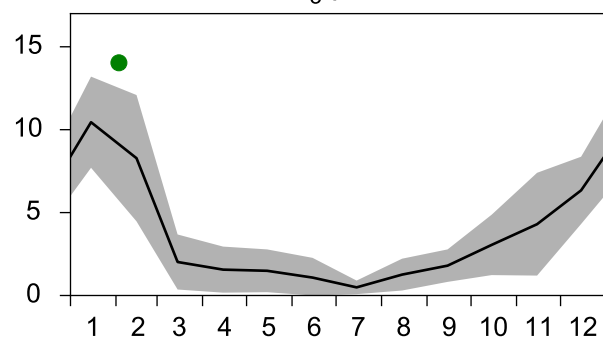
PO₄ µmol/l



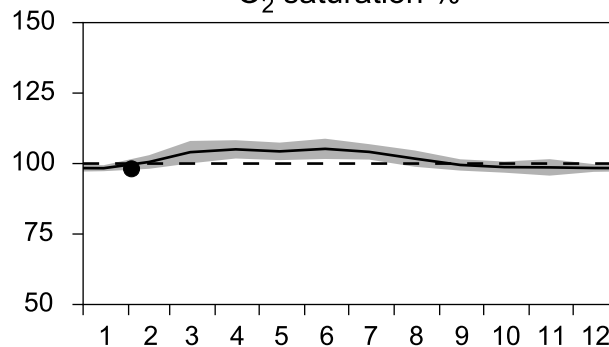
DIN µmol/l



SiO₃ µmol/l

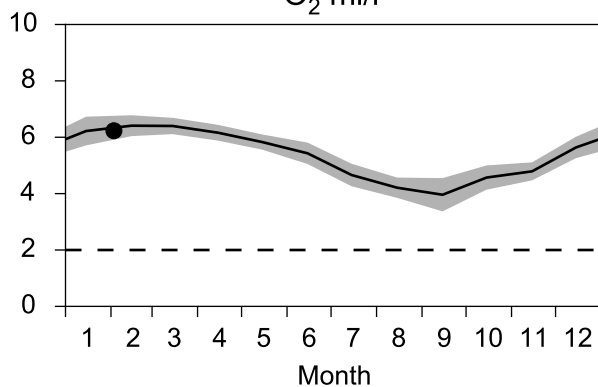


O₂ saturation %

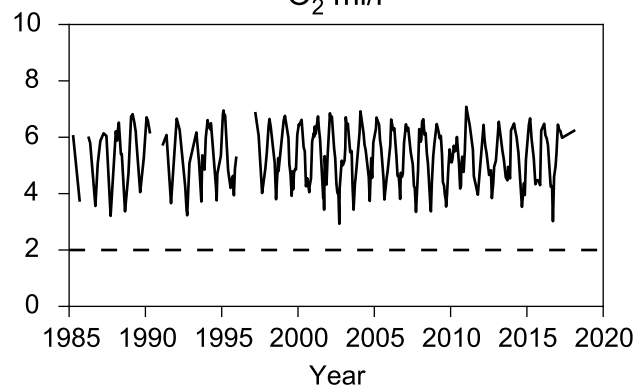


OXYGEN IN BOTTOM WATER (depth >= 74 m)

O₂ ml/l

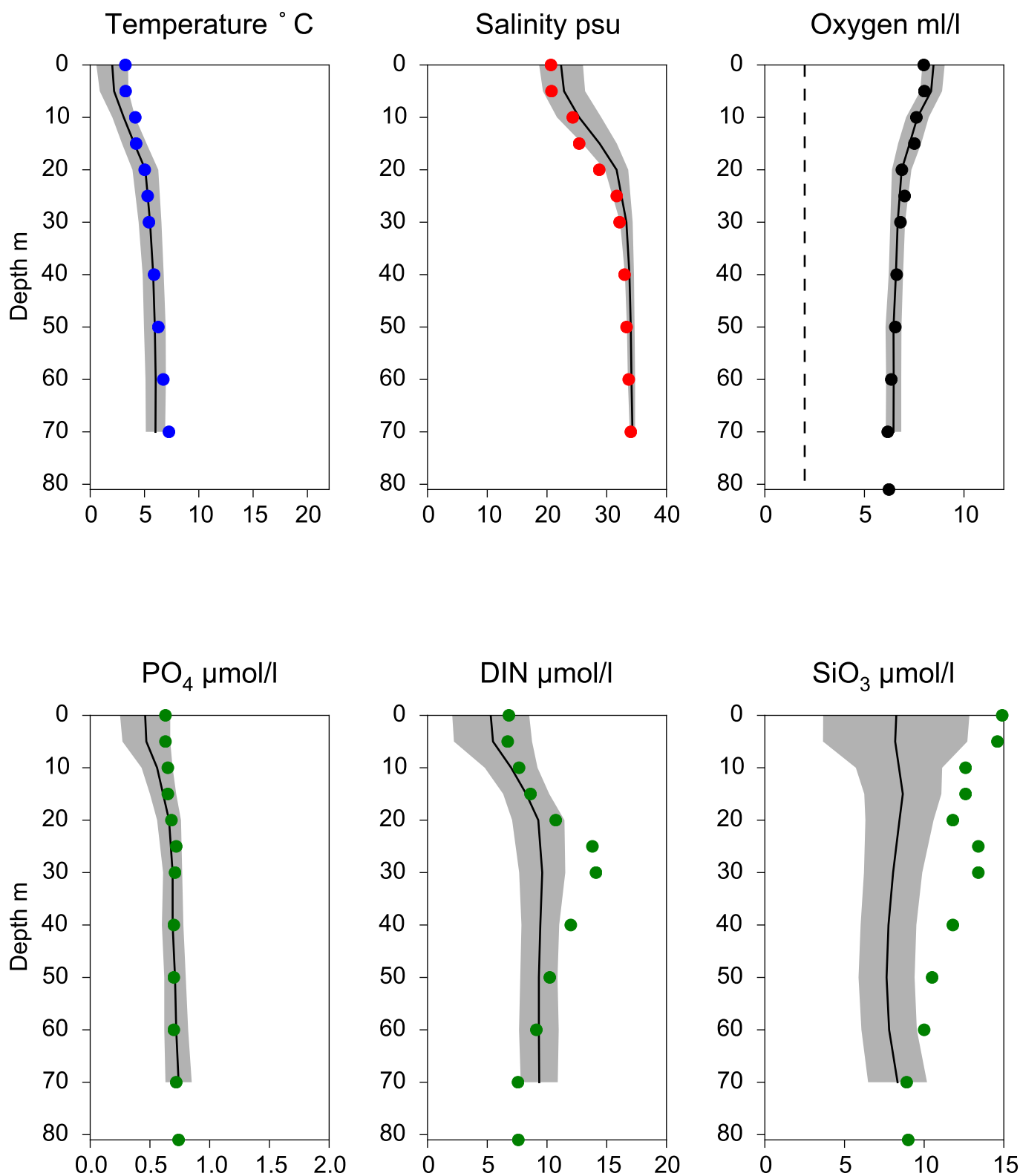


O₂ ml/l



Vertical profiles FLADEN February

— Mean 2001-2015 St.Dev. • 2018-02-03



STATION P2 SURFACE WATER (0-10 m)

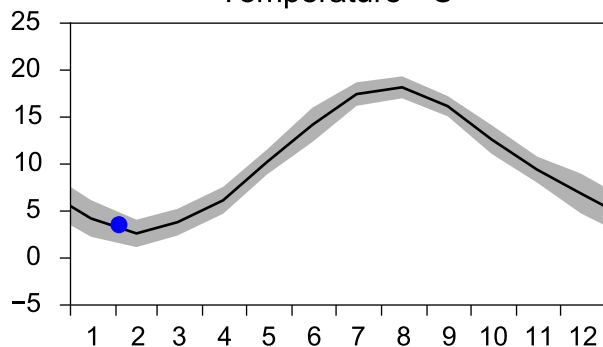
Annual Cycles

— Mean 2001-2015

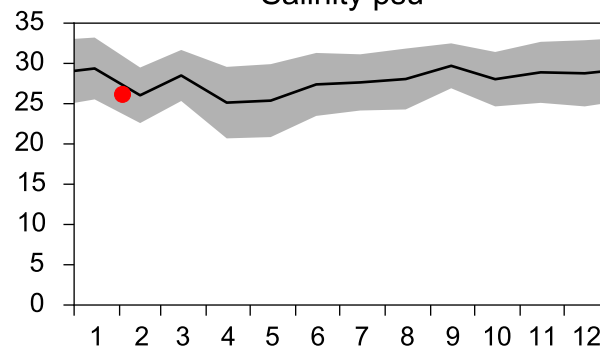
■ St.Dev.

● 2018

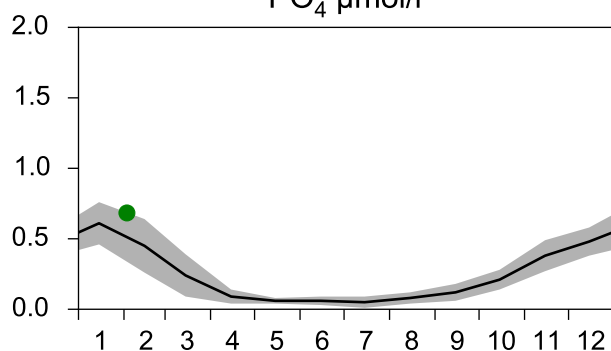
Temperature °C



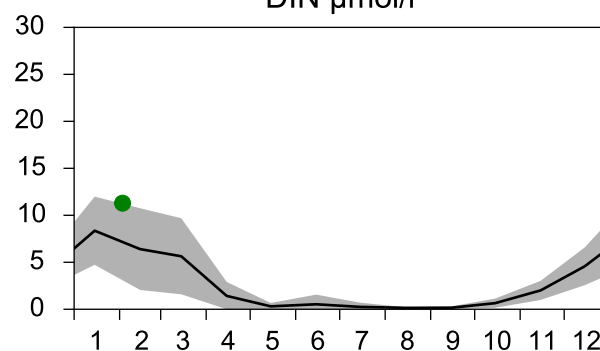
Salinity psu



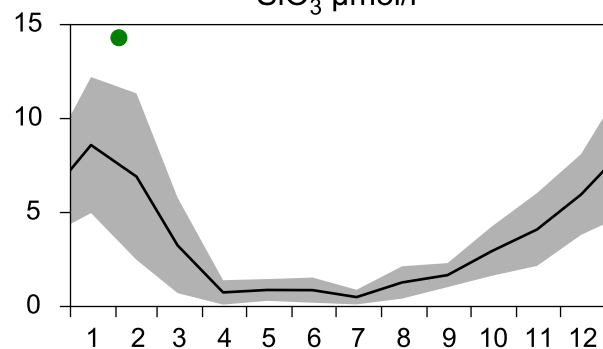
PO₄ µmol/l



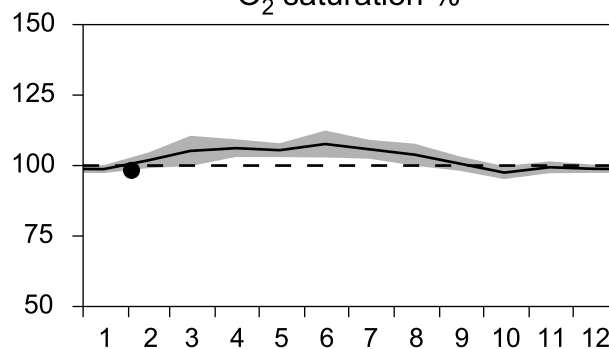
DIN µmol/l



SiO₃ µmol/l

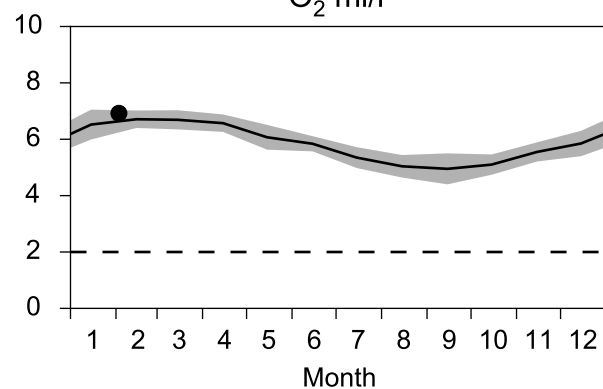


O₂ saturation %

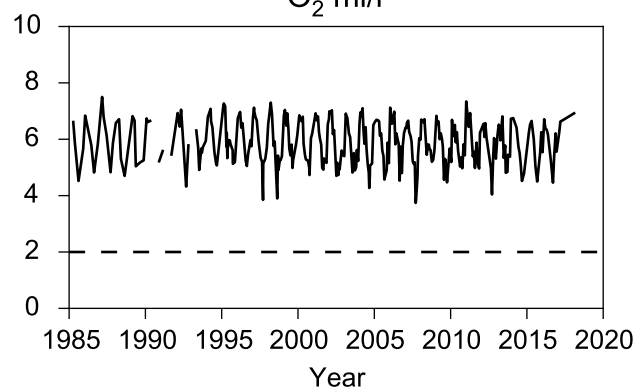


OXYGEN IN BOTTOM WATER (depth >= 75 m)

O₂ ml/l

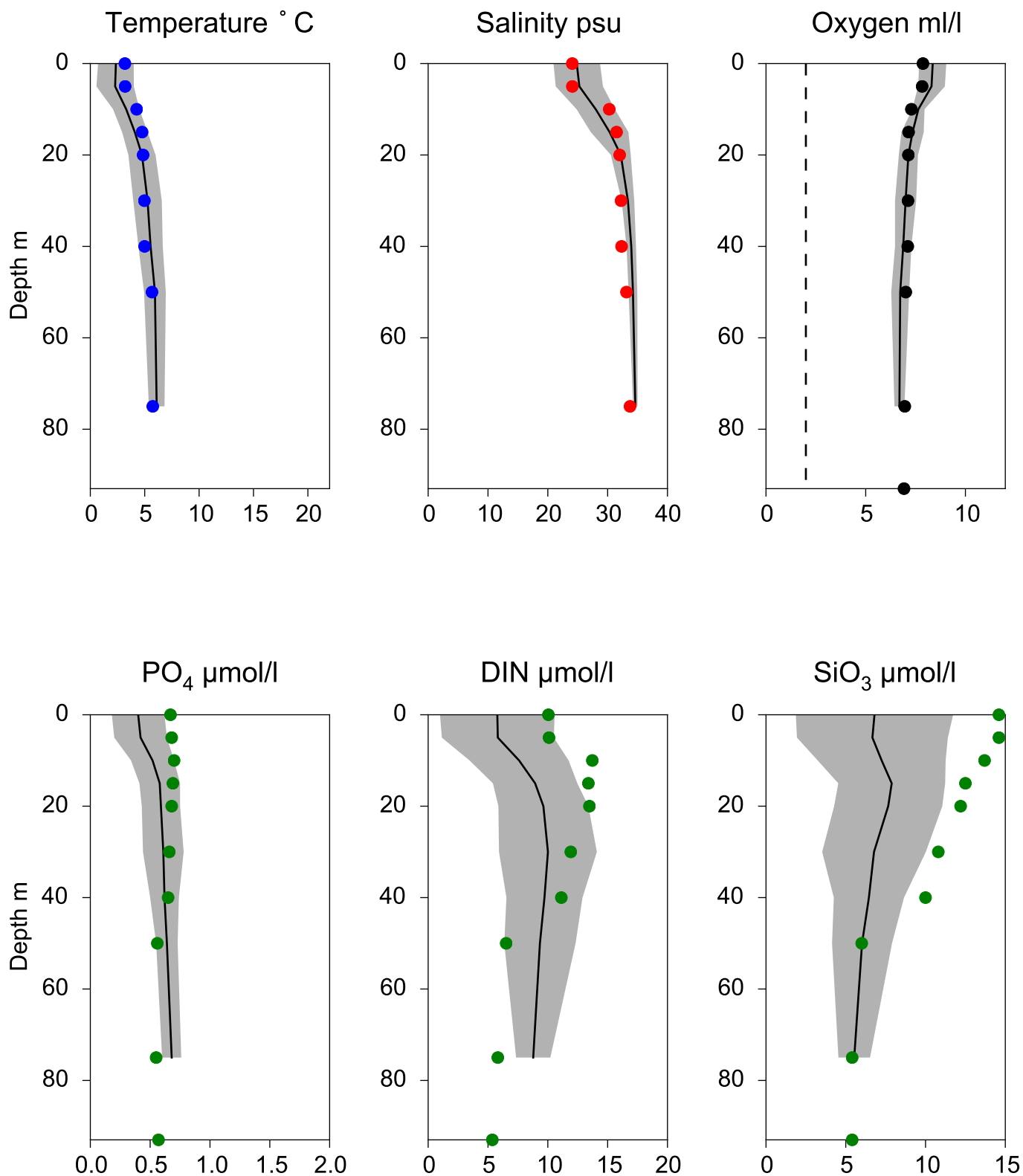


O₂ ml/l



Vertical profiles P2 February

— Mean 2001-2015 St.Dev. • 2018-02-03



STATION SLÄGGÖ SURFACE WATER (0-10 m)

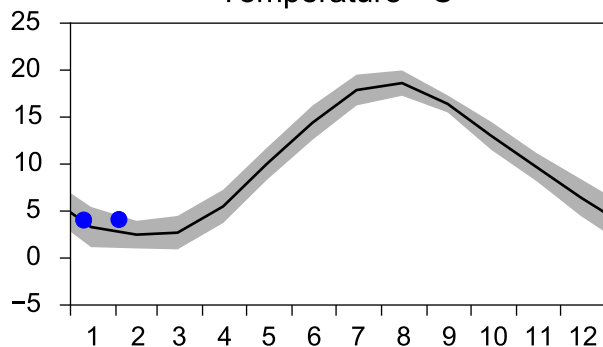
Annual Cycles

— Mean 2001-2015

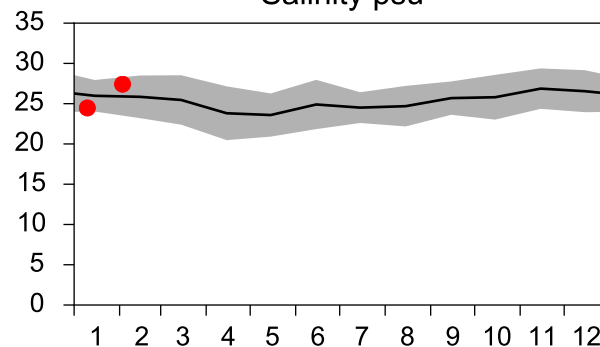
■ St.Dev.

● 2018

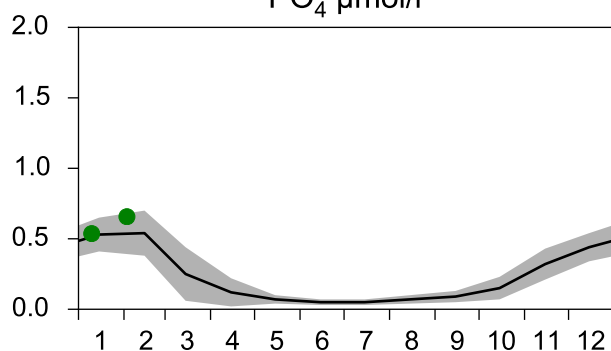
Temperature °C



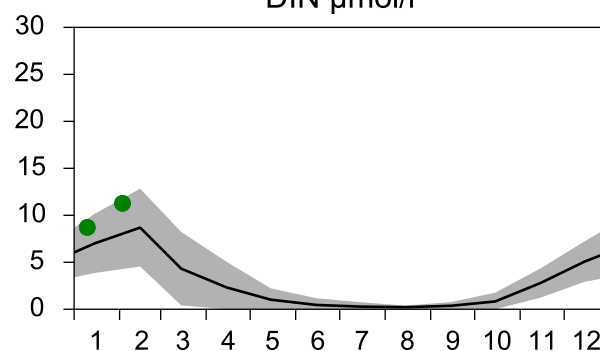
Salinity psu



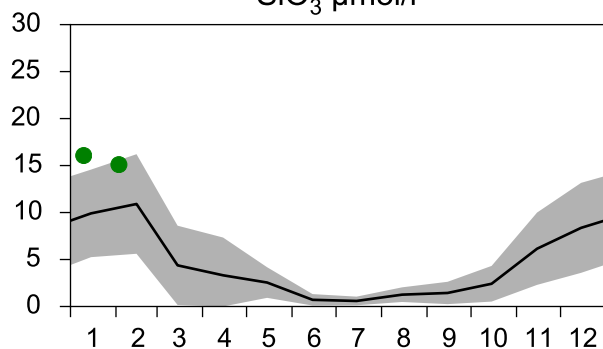
PO₄ µmol/l



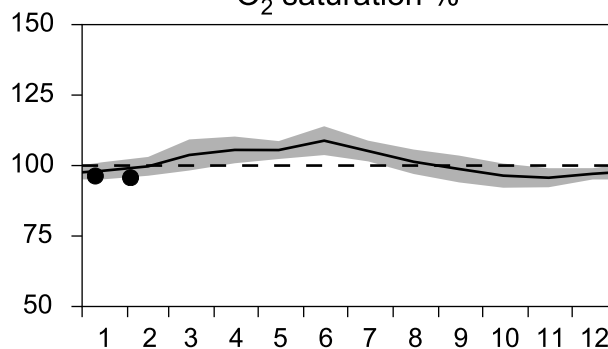
DIN µmol/l



SiO₃ µmol/l

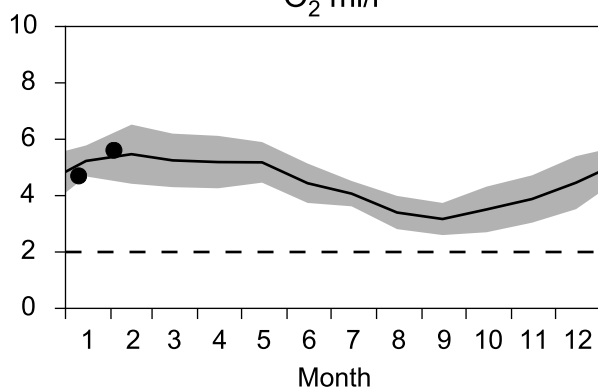


O₂ saturation %

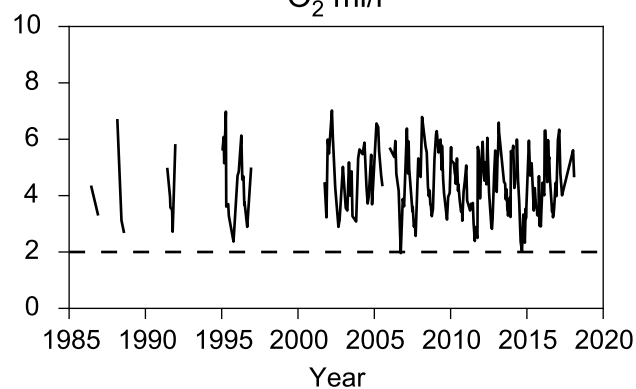


OXYGEN IN BOTTOM WATER (depth >= 64 m)

O₂ ml/l

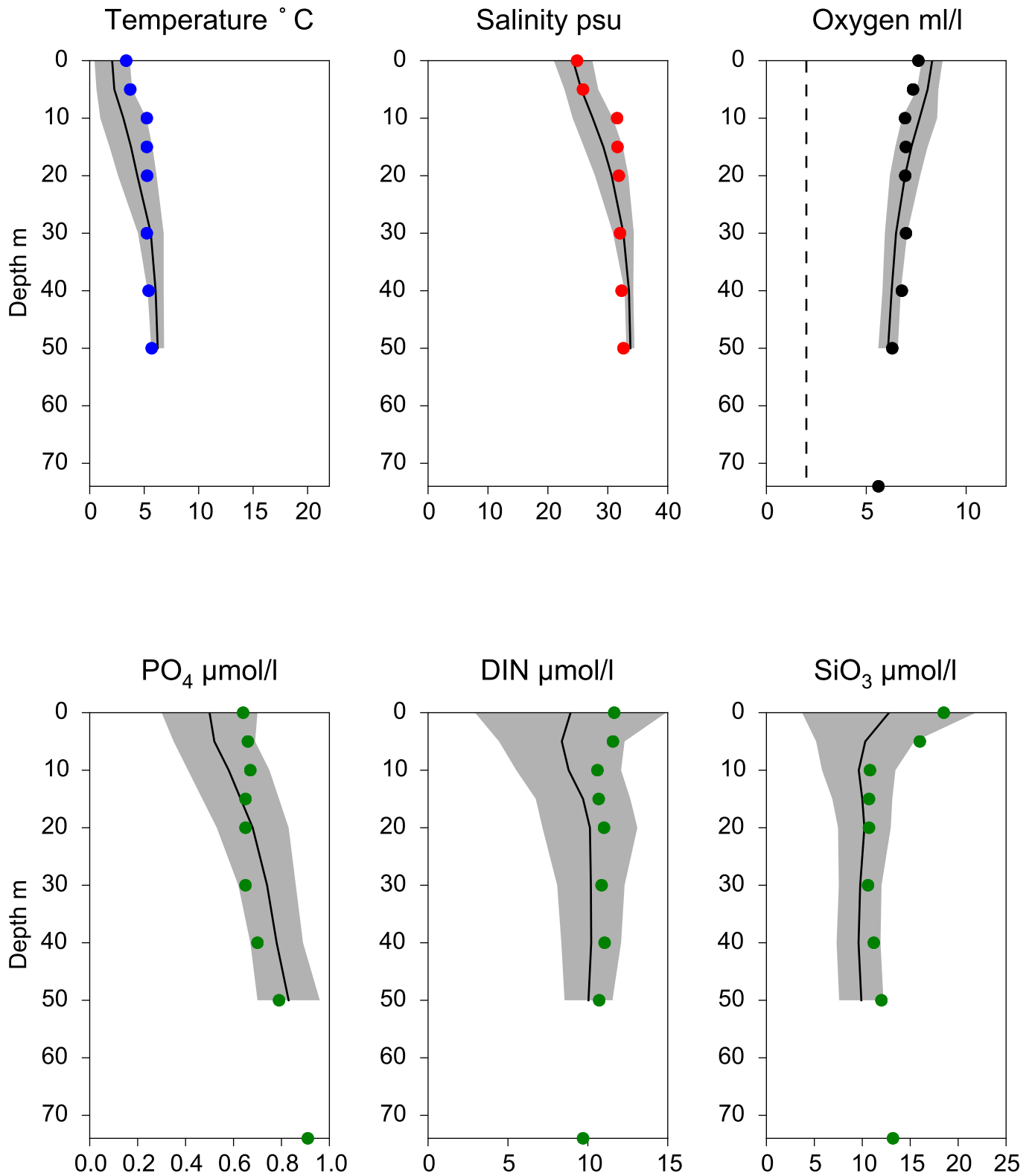


O₂ ml/l



Vertical profiles SLÄGGÖ February

— Mean 2001-2015 ■ St.Dev. ● 2018-02-03



STATION Å13 SURFACE WATER (0-10 m)

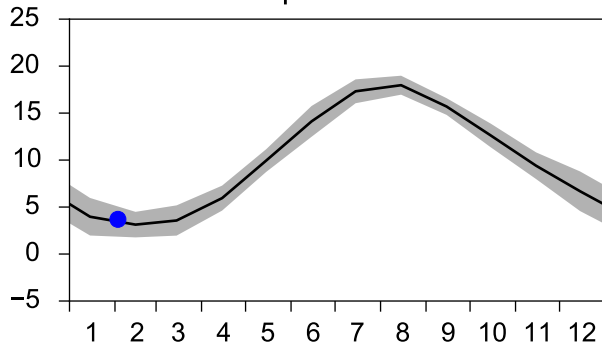
Annual Cycles

— Mean 2001-2015

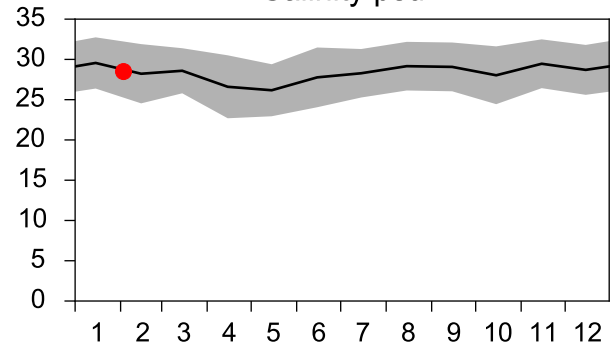
■ St.Dev.

● 2018

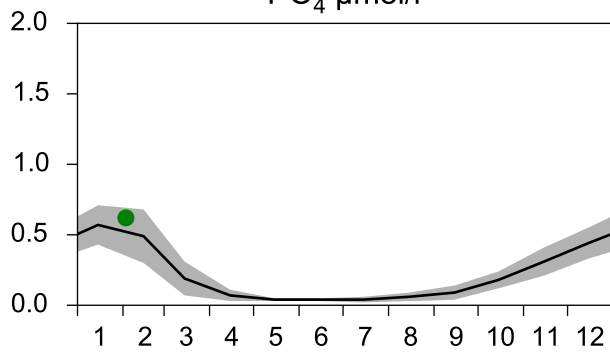
Temperature °C



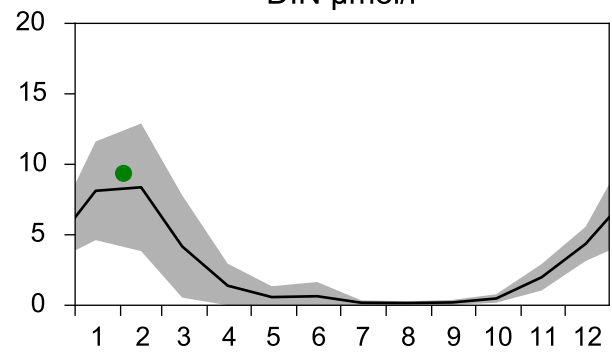
Salinity psu



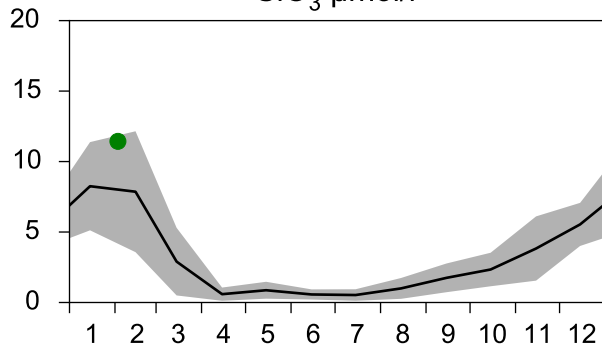
PO₄ µmol/l



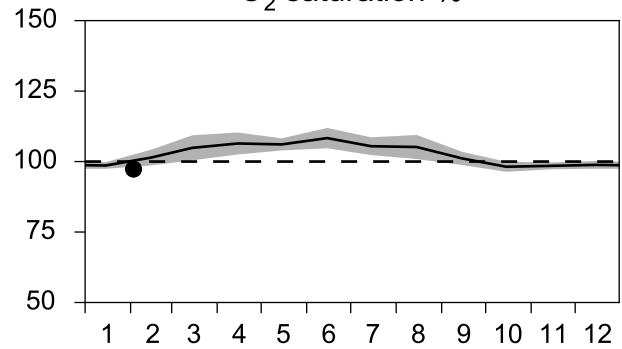
DIN µmol/l



SiO₃ µmol/l

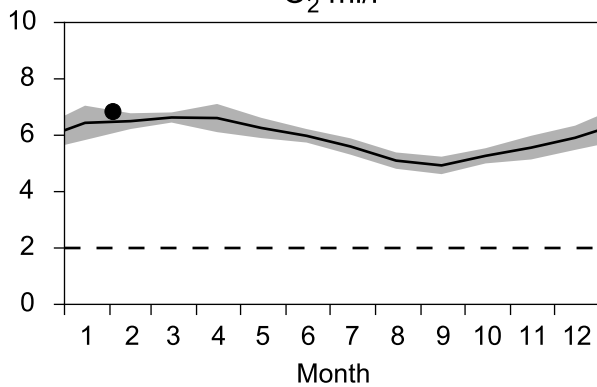


O₂ saturation %

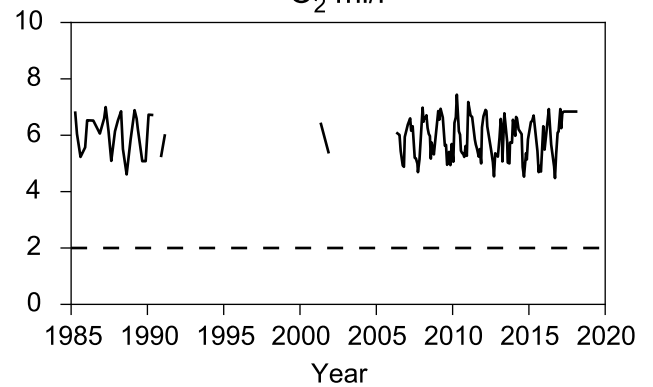


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

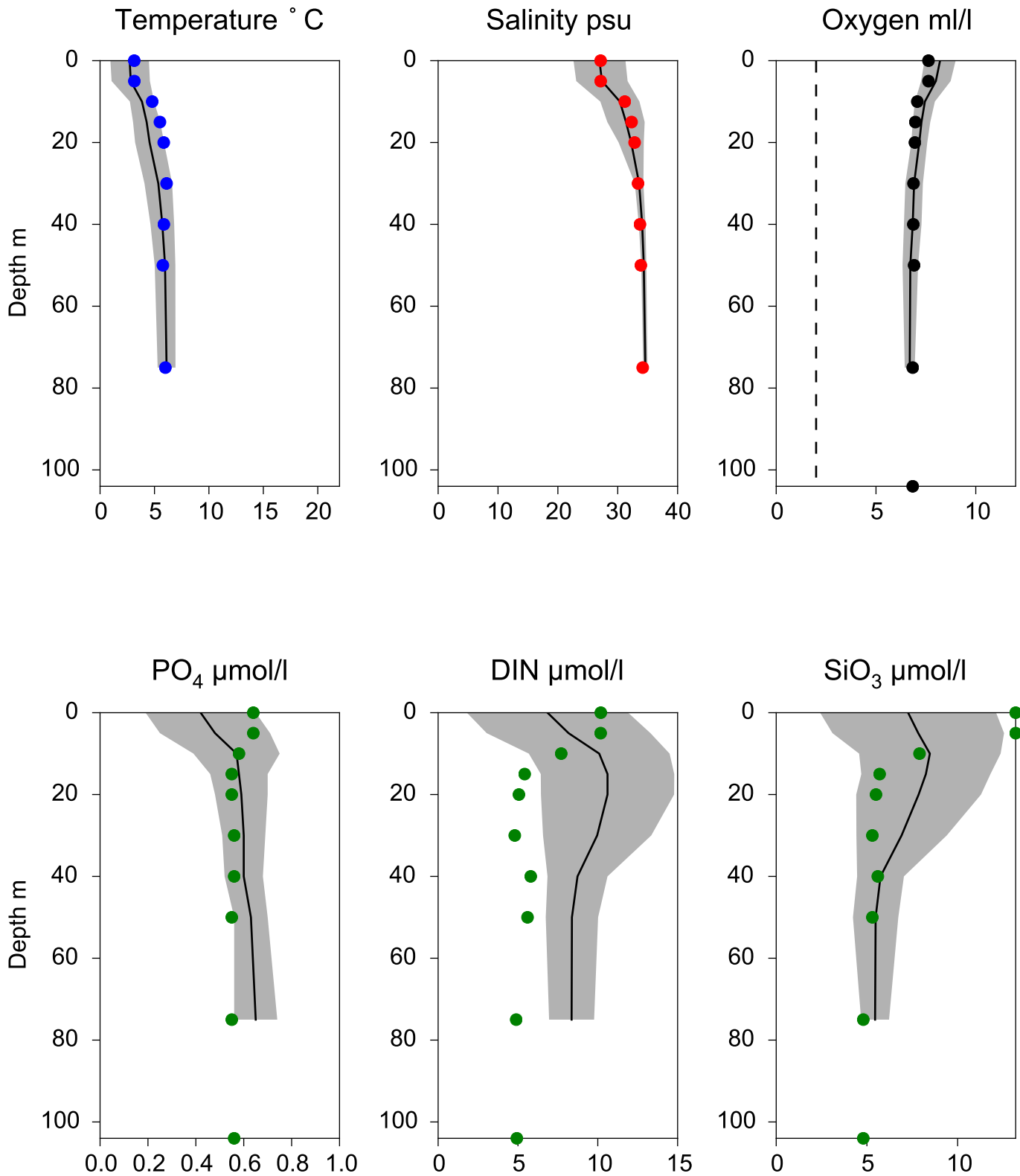


O₂ ml/l



Vertical profiles Å13 February

— Mean 2001-2015 St.Dev. • 2018-02-03



STATION Å15 SURFACE WATER (0-10 m)

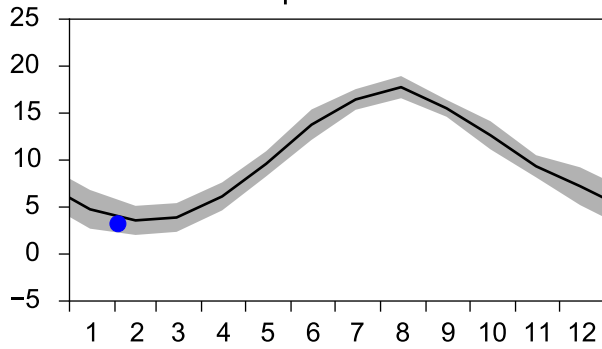
Annual Cycles

— Mean 2001-2015

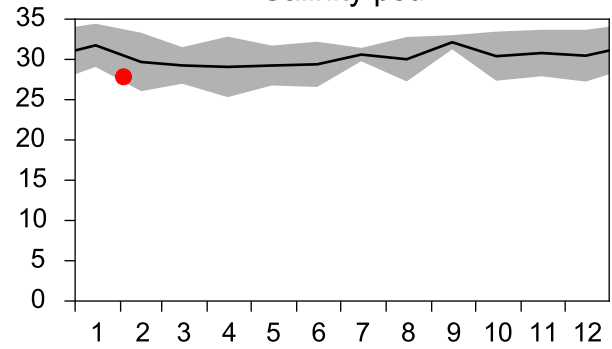
■ St.Dev.

● 2018

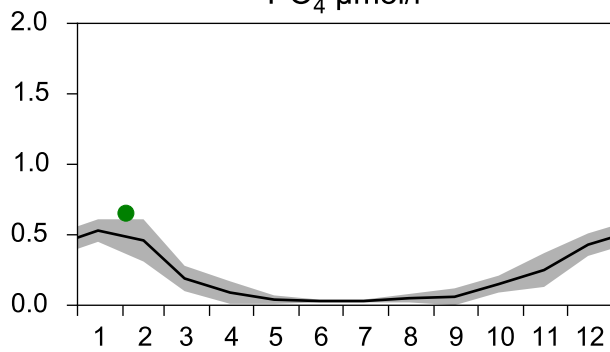
Temperature °C



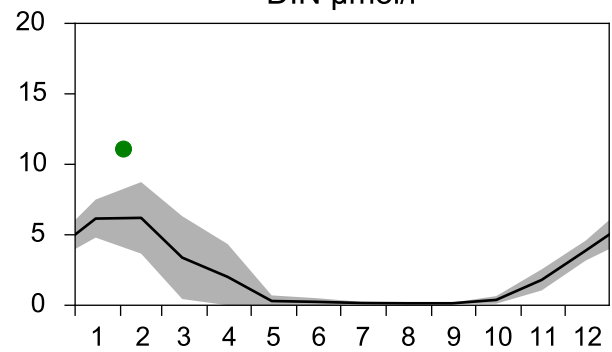
Salinity psu



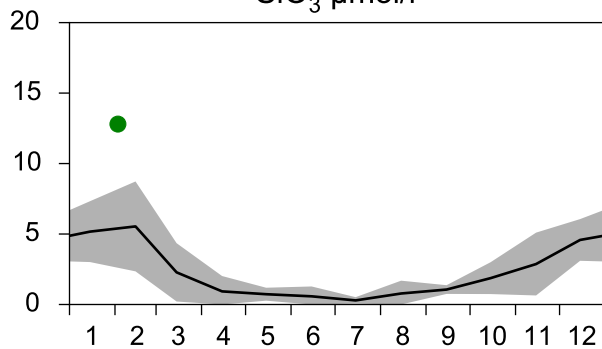
PO₄ µmol/l



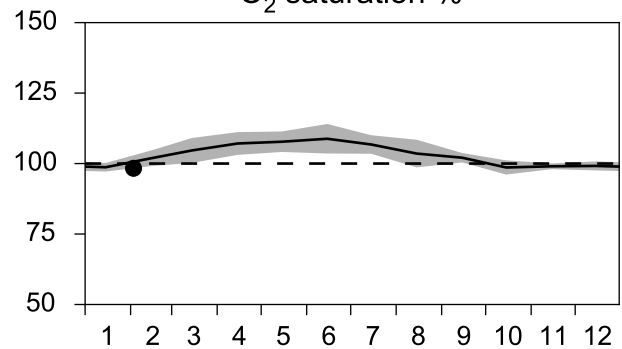
DIN µmol/l



SiO₃ µmol/l

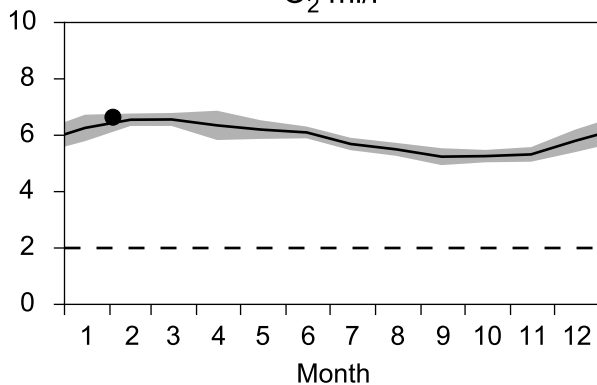


O₂ saturation %

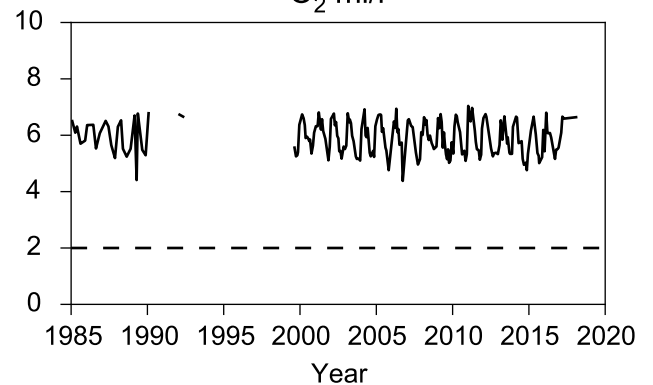


OXYGEN IN BOTTOM WATER (depth >= 125 m)

O₂ ml/l

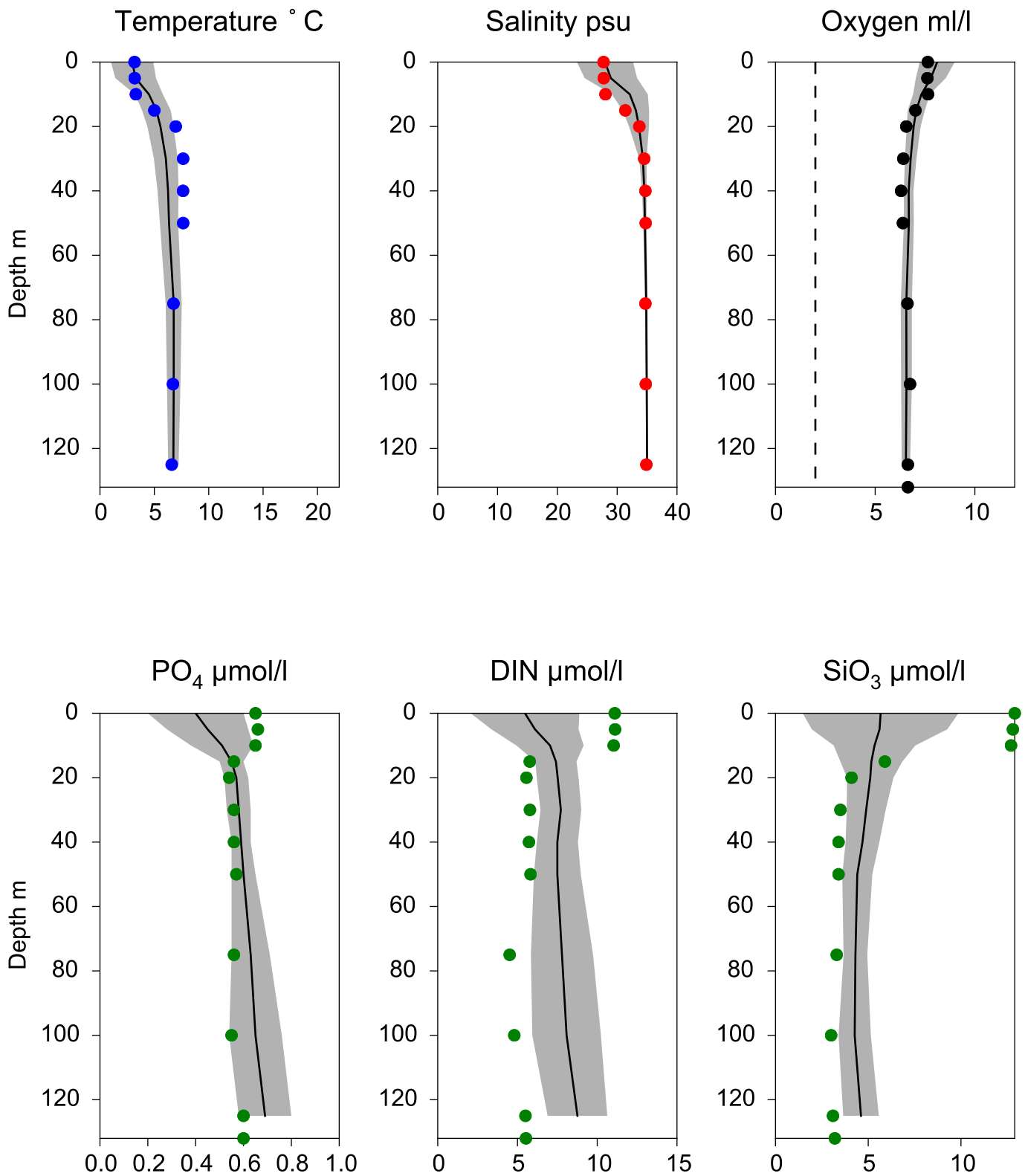


O₂ ml/l



Vertical profiles Å15 February

— Mean 2001-2015 ■ St.Dev. ● 2018-02-03



STATION Å17 SURFACE WATER (0-10 m)

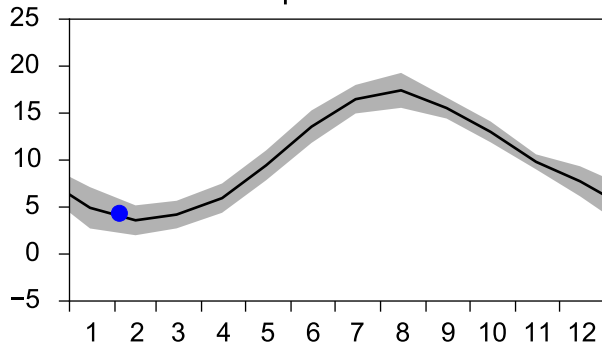
Annual Cycles

— Mean 2001-2015

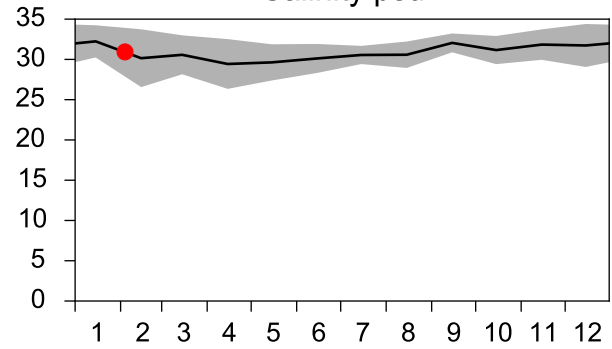
■ St.Dev.

● 2018

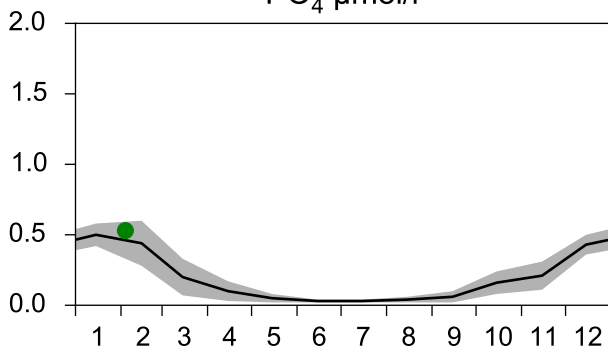
Temperature °C



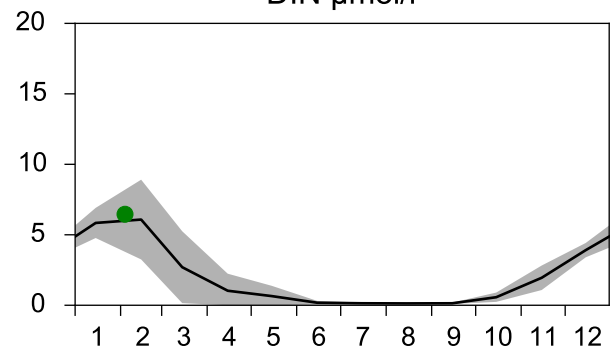
Salinity psu



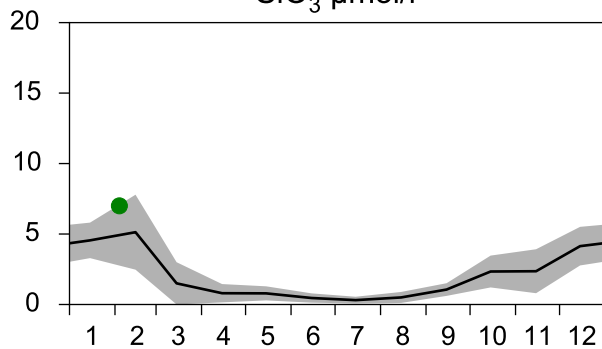
PO₄ µmol/l



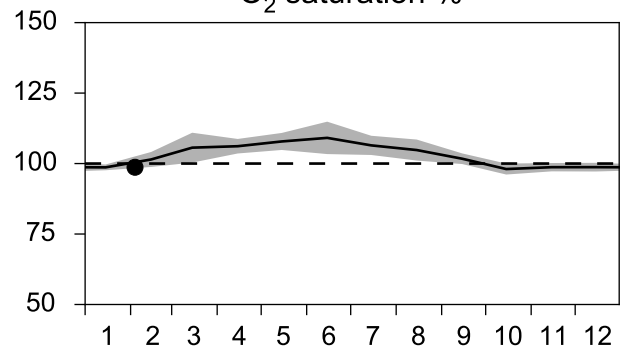
DIN µmol/l



SiO₃ µmol/l

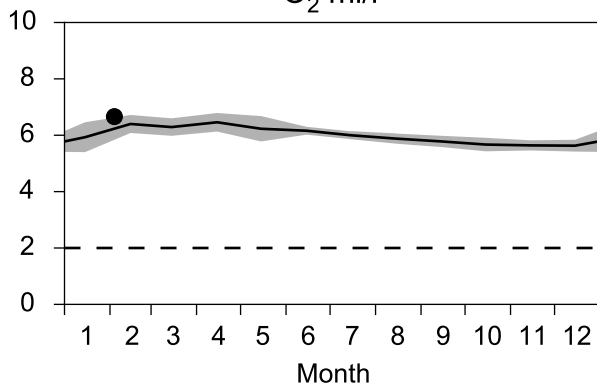


O₂ saturation %

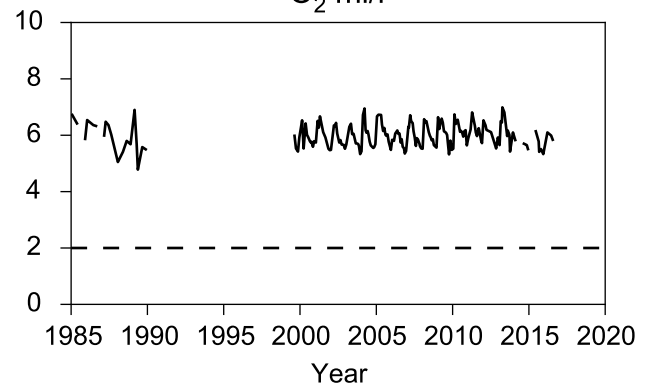


OXYGEN IN BOTTOM WATER (depth >= 300 m)

O₂ ml/l

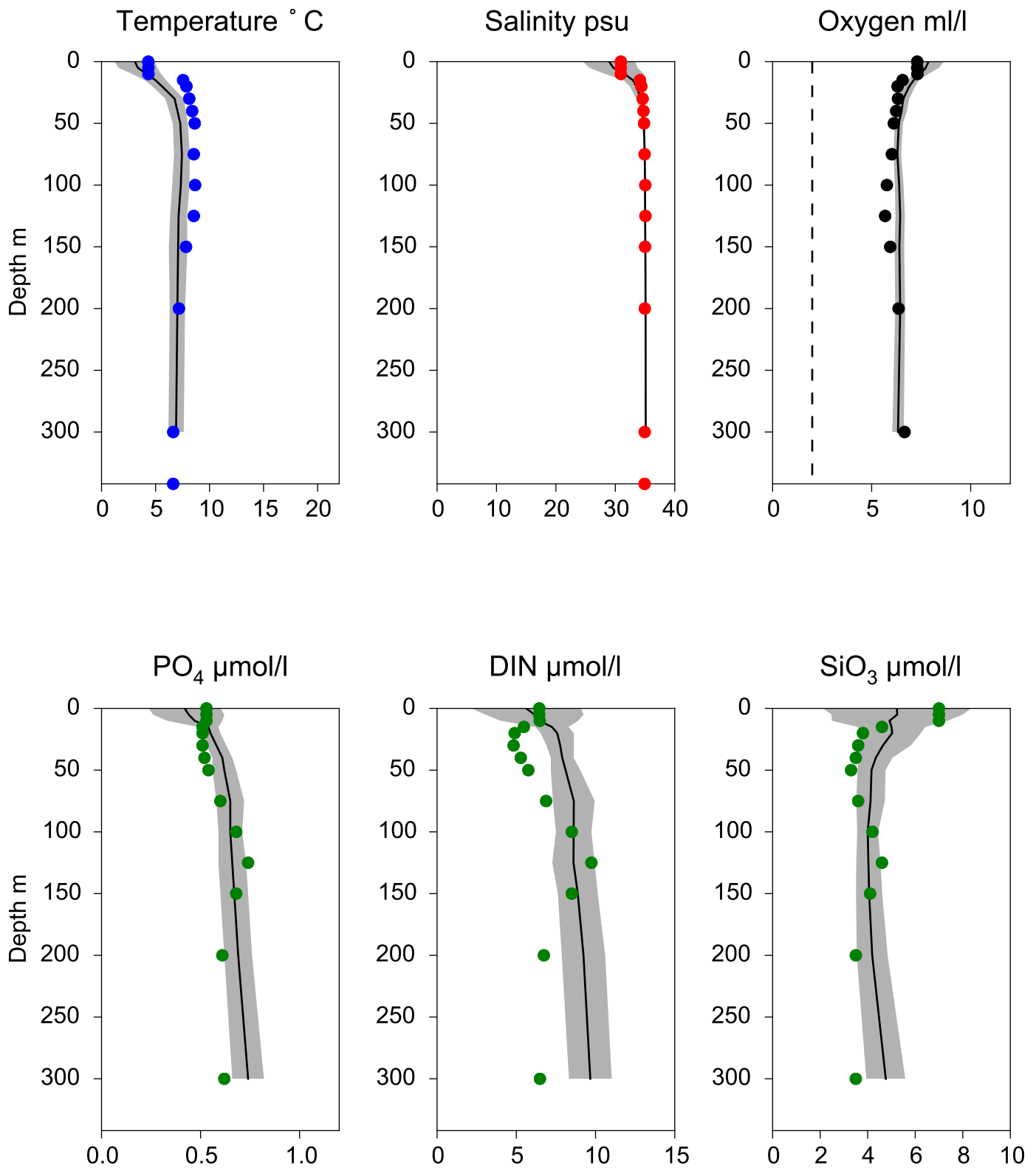


O₂ ml/l



Vertical profiles Å17 February

— Mean 2001-2015 ■ St.Dev. ● 2018-02-04



STATION SLÄGGÖ SURFACE WATER (0-10 m)

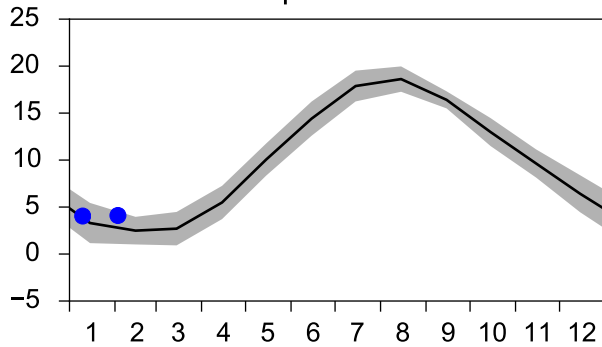
Annual Cycles

— Mean 2001-2015

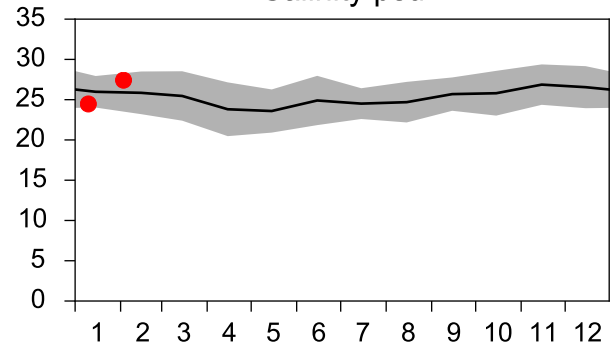
■ St.Dev.

● 2018

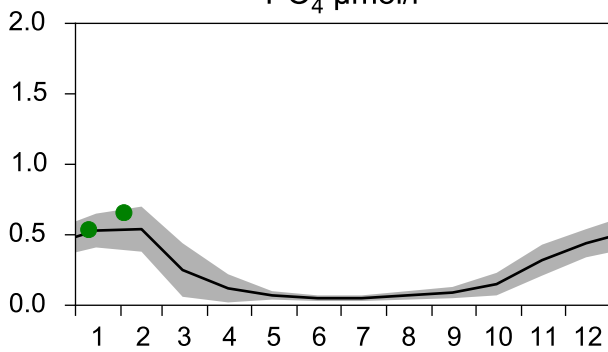
Temperature °C



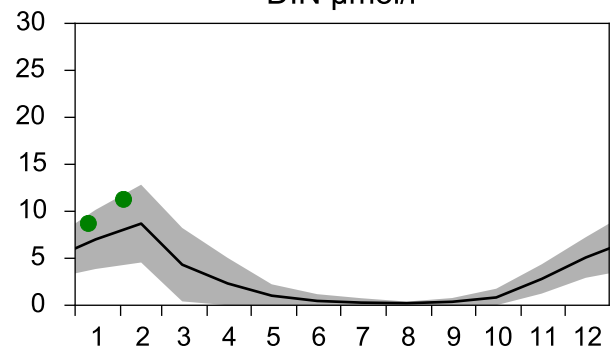
Salinity psu



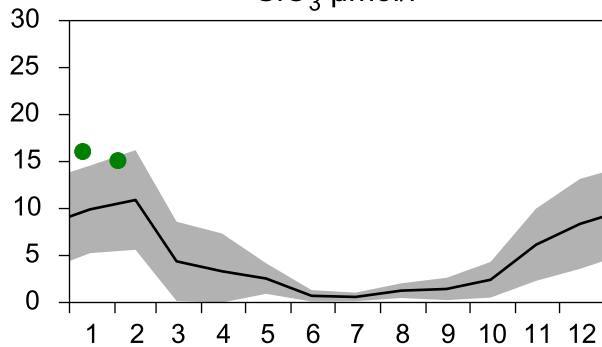
PO₄ µmol/l



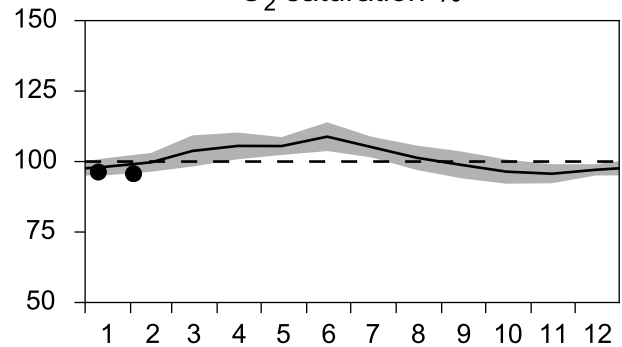
DIN µmol/l



SiO₃ µmol/l

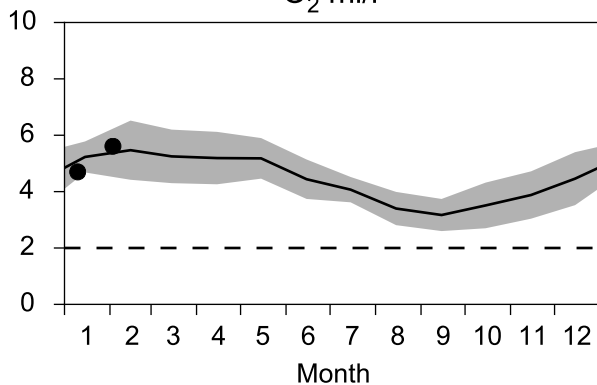


O₂ saturation %

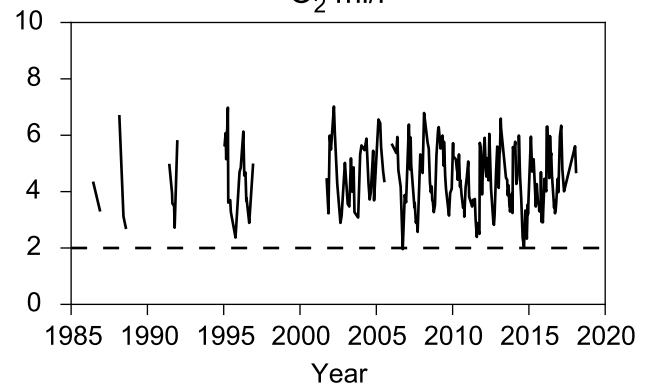


OXYGEN IN BOTTOM WATER (depth >= 64 m)

O₂ ml/l



O₂ ml/l



Vertical profiles SLÄGGÖ January

— Mean 2001-2015 St.Dev. • 2018-01-10

