

Report from the SMHI monitoring cruise with R/V Aranda



Survey period: 2018-09-20 - 2018-09-24
Principal: Swedish Meteorological and Hydrological Institute (SMHI),
Swedish Agency for Marine and Water Management (SwAM).
Cooperation partners: Finnish Environment Institute (SYKE)

SUMMARY

The cruise, which is part of the Swedish national marine monitoring programme visited stations in the Skagerrak, the Kattegat, the Sound, the Baltic Proper and the Gulf of Finland.

The cruise was initially delayed for some hours, and there were some problems with the generators resulting in inability to maintain full speed of the vessel during the cruise. Shortly before arriving Lysekil, information was given stating that other bookings of R/V Aranda had priority, and the remaining stations were cancelled. Due to this, large parts of the Baltic Proper were not sampled during the cruise, which was SMHI's first on board R/V Aranda since July 2017.

The sea surface temperature in the areas monitored was normal or below normal for the season. At most stations the temperature was between 14 and 16°C. At the coastal station Ref M1V1 in the southern part of Kalmarsund the temperature was only slightly above 11°C. The salinity in the surface water was normal for the season in the Skagerrak and at BY29 in the Northern Gotland Basin, but above normal at all other stations. In the Western Gotland Basin also the salinity in the deep water was above normal levels.

Anoxic conditions, when hydrogen sulphide can form, were found in the Western Gotland Basin from about 70-80 meters depth. In the Bight of Hanö hydrogen sulphide was found from 70 meters depth. In the Arkona Basin, no hydrogen sulphide was found, but at the station BY2 the oxygen concentration at the bottom was almost zero.

Nutrients in the form of dissolved inorganic nitrogen, DIN, in the sea surface were below reporting limit at most stations in the Baltic Proper and the Kattegat. Concentrations of dissolved inorganic phosphorus, DIP, in the surface water were normal for the season at almost all stations. Silicate concentrations in the Baltic Proper were slightly above normal for the season at most stations, in the Kattegat concentrations were normal and in the Skagerrak concentrations were normal or below normal for the season at sea. At Släggö the concentrations were above normal for the season.

The next cruise was conducted the 14th to the 21st of October.

RESULTS

The cruise in September was conducted aboard the Finnish research vessel Aranda and it started in Helsinki the 20th of September and ended in Lysekil the 24th. The winds at the beginning of the cruise were fresh to strong coming from south to west. To avoid the winds in the southern parts of the Baltic Proper stations in the Western Gotland Basin were sampled going south from Helsinki. During the last part of the cruise, the winds were fresh from northwest.

The plan was a regular cruise, but it was called off prematurely. The cruise was the first by SMHI using R/V Aranda, and the second since she left the docks in Rauma. During the previous cruise, conducted by SYKE, some problems were discovered and due to this a test run in the Gulf of Finland was conducted before the SMHI cruise could start. A few hours before the planned port stop in Lysekil it came out that R/V Aranda was booked for a minister meeting in Helsinki. There were no time to sample stations on the way back to Helsinki, and for this reason the cruise was cancelled in Lysekil, with just over half the stations sampled.

No stations in the Eastern Gotland Basin, the south eastern Baltic Proper, the Bornholm Basin or the Sound were sampled.

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 centre's webpage, normally within a week after the cruise.

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

The Skagerrak

In the Skagerrak the station P2 was never sampled due to the shortened expedition. At the other stations the temperature was normal for the season close to the coast and slightly below normal further out. At open sea the temperature was 14-15°C, and at Släggö it was just over 15.6°C. Deeper down in the water column the temperature was in general normal, except at Å17 where the temperature from 100 meters and deeper were slightly below normal. The salinity was normal for the season in the surface water at all stations and was at open sea 31.4-32.9 psu and 26.5 psu at

Släggö. Deeper down in the water column the salinity was in general normal. For the stations to the west the stratification was clear and thermocline and halocline was present at about 40 meters depth.

Concentrations of nutrients in the form of DIN (the sum of nitrate, nitrite and ammonia) in the surface water were above normal for the season at Å13 and Släggö, 0.65 and 1.5 $\mu\text{mol/l}$ respectively. At Å17 and Å15 the concentrations in the surface were below reporting limit. Deeper down in the water column concentrations were generally normal for the season. Concentrations of dissolved inorganic phosphorus, DIP (only in the form of phosphate) in the surface water were above normal for the season at Å13 and normal at the other stations. Concentrations in the surface were about 0.05 $\mu\text{mol/l}$ at Å17 and Å15, 0.16 $\mu\text{mol/l}$ at Å13 and 0.10 $\mu\text{mol/l}$ at Släggö. Deeper down in the water column concentrations were normal or below normal at all stations.

The silicate concentrations in the surface increased from open sea towards the coast and went from below normal for the season at sea to normal at the coast. The concentrations at both Å17 and Å15 were in general constant down to 50 meters, about 0.7 $\mu\text{mol/l}$, and below increasing concentrations which were normal at Å15 and below normal at Å17. At Å13 the concentrations were generally normal down to 50 meters depth and deeper down below normal. In the surface the concentrations were about 1.5 $\mu\text{mol/l}$. At Släggö the concentrations were above normal in the surface, normal at 10-20 meters depth and below normal from 30 meter but increased in the deepest sample.

No peaks in fluorescence were found, and this indicates low phytoplankton activity. At Släggö some increased activity in surface down to 5 meters was found.

The oxygen concentrations were good at all stations and levels were normal for the season. The lowest concentration, 3.9 ml/l, was from the bottom at Släggö.

The Kattegat

Only two stations were sampled in the Kattegat and none in the Sound. The sea surface temperature was 15.4°C and this was below normal for the season. The salinity in the surface was about 31 psu at Fladen and just above 25 psu at Anholt E. This was above normal for both stations. At Anholt E the water from the surface down to 15 meter was well mixed and from 35 meter down to the bottom the salinity was stable. The stratification was less clear at Fladen.

The surface concentrations of DIN were below reporting limit. From 15-20 meter and deeper the concentrations increased and were normal or below normal for the season. The DIP concentrations were slightly above normal, 0.16 $\mu\text{mol/l}$ at Fladen and 0.11 $\mu\text{mol/l}$ at Anholt E. From about 30 meters depth the concentrations were below normal at Fladen, but normal at Anholt E. The silicate concentrations in the surface were about 1.5 $\mu\text{mol/l}$ and this is normal for the season. From about 25 meters and below, the concentrations were generally below normal at both stations.

Fluorescence measurements by the CTD show some phytoplankton activity from the surface down to 15-20 meters depth.

The oxygen concentrations in the Kattegat were normal or slightly above normal for the season. At the bottom of Anholt E and Fladen it was 3 ml/l and 4.2 ml/l respectively.

The Baltic Proper

In the Baltic Proper the south eastern parts and the Eastern Gotland Basin were not sampled. Nor was the Arkona Basin sampled. In the salinity and oxygen transects in the figure below, large parts are missing due to this.

At the coastal station Ref M1V1 the temperature was constant from the surface down to 12 meters and at BY1 the temperature was almost the same from the surface down to the bottom. At the other stations, the thermocline was found at a depth of 20-30 meters. The surface temperature was 14.5-16.9°C for the stations at sea, highest in the Bight of Hanö. This was normal for the season except at BY29 in the Northern Gotland Basin where it was above normal. At the coastal station Ref M1V1 the temperature was just over 11°C which was slightly below normal for the season. The salinity in the surface was above normal at all stations except at BY29 where it was normal. The surface salinity increased from 5.9 psu in the Gulf of Finland to 8.2 psu at BY1 in the Arkona Basin. The halocline was found at about 50-60 meters depth in the Western Gotland Basin, and from about 80-90 meters both the temperature and the salinity was above normal. At BY1 the salinity from 30 meters and deeper was above normal for the season.

Nutrients in the form of DIN were consumed down to about 20 meters and concentrations were below reporting limit, which is normal for the season, at all stations except BY1 where the concentrations were above normal in the surface, slightly above 0.5 µmol/l. Deeper down in the water column concentrations rose. At BY38 the concentrations were above normal from 60 meters, and at the Bight of Hanö almost all samples from 30 meter and below were above normal for the season. The concentrations of DIP in the surface were normal for the season at all stations. In the Western Gotland Basin it was 0.09-0.13 µmol/l, in the Bight of Hanö 0.18 µmol/l and in the Arkona Basin 0.24-0.29 µmol/l. At Ref M1V1 the surface concentration was 0.44 µmol/l. In the Bight of Hanö and at BY32 most samples from 50 meters and deeper were above normal levels for the season. At the other stations concentrations were generally normal from the surface to the bottom.

The silicate concentrations in the surface were generally above or just above normal levels for the season. In the Western Gotland Basin the surface concentrations were 5.7-10.7 µmol/l. In the Bight of Hanö it was 12.8 µmol/l and in the Arkona Basin 13.7-14.6 µmol/l. At the coastal station Ref M1V1 the concentration in the surface was 16.7 µmol/l. In the Arkona Basin and the Bight of Hanö all samples in the water column had generally above normal concentrations for the season. In the deep water of the Western Gotland Basin the concentrations were normal or slightly above normal for the season.

Anoxic conditions, when hydrogen sulphide can form, were found from 70 meters depth at BY38 and from 80 meters at BY32 in the Western Gotland Basin. In the Bight of Hanö hydrogen sulphide was found from 70 meters.

Acute hypoxia (< 2ml/l) was found at BY38 in the Western Gotland Basin and at the Bight of Hanö at 60 meters depth. At BY2 in the Arkona Basin the oxygen concentration was 0.12 ml/l at the bottom at 45 meters depth and just above 2 ml/l at 40 meter. At BY23 in the Gulf of Finland acute hypoxia was found from 80 meters depth.

Fluorescence measurements by the CTD show some phytoplankton activity in the Bight of Hanö and the Arkona Basin from the surface down to 20-25 meters depth, but no distinct peaks. Low activity at the other stations.

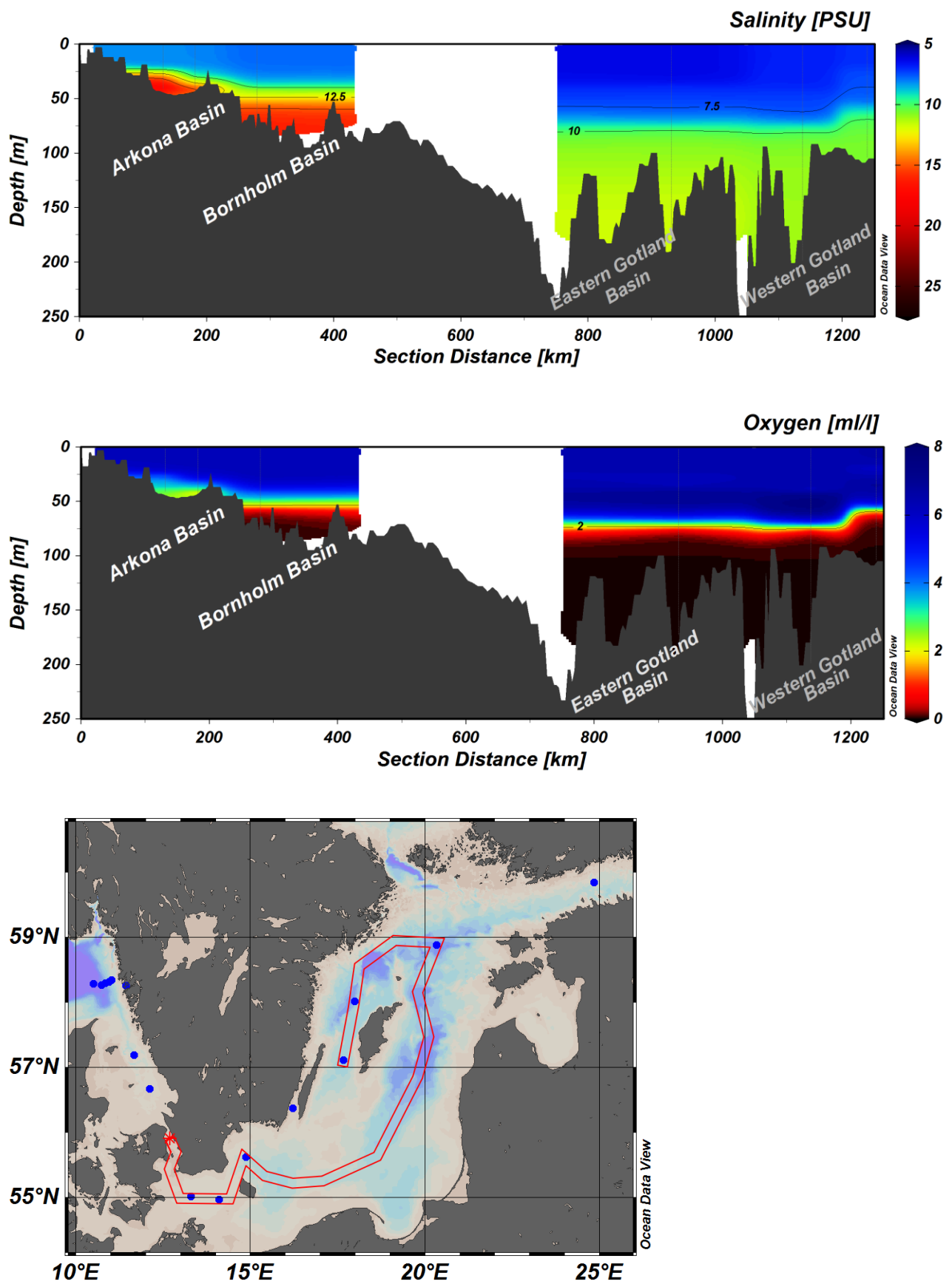


Figure 1. Transect showing dissolved oxygen and salinity from the Sound, through the Baltic Proper, to the Western Gotland Basin.

PARTICIPANTS

Name

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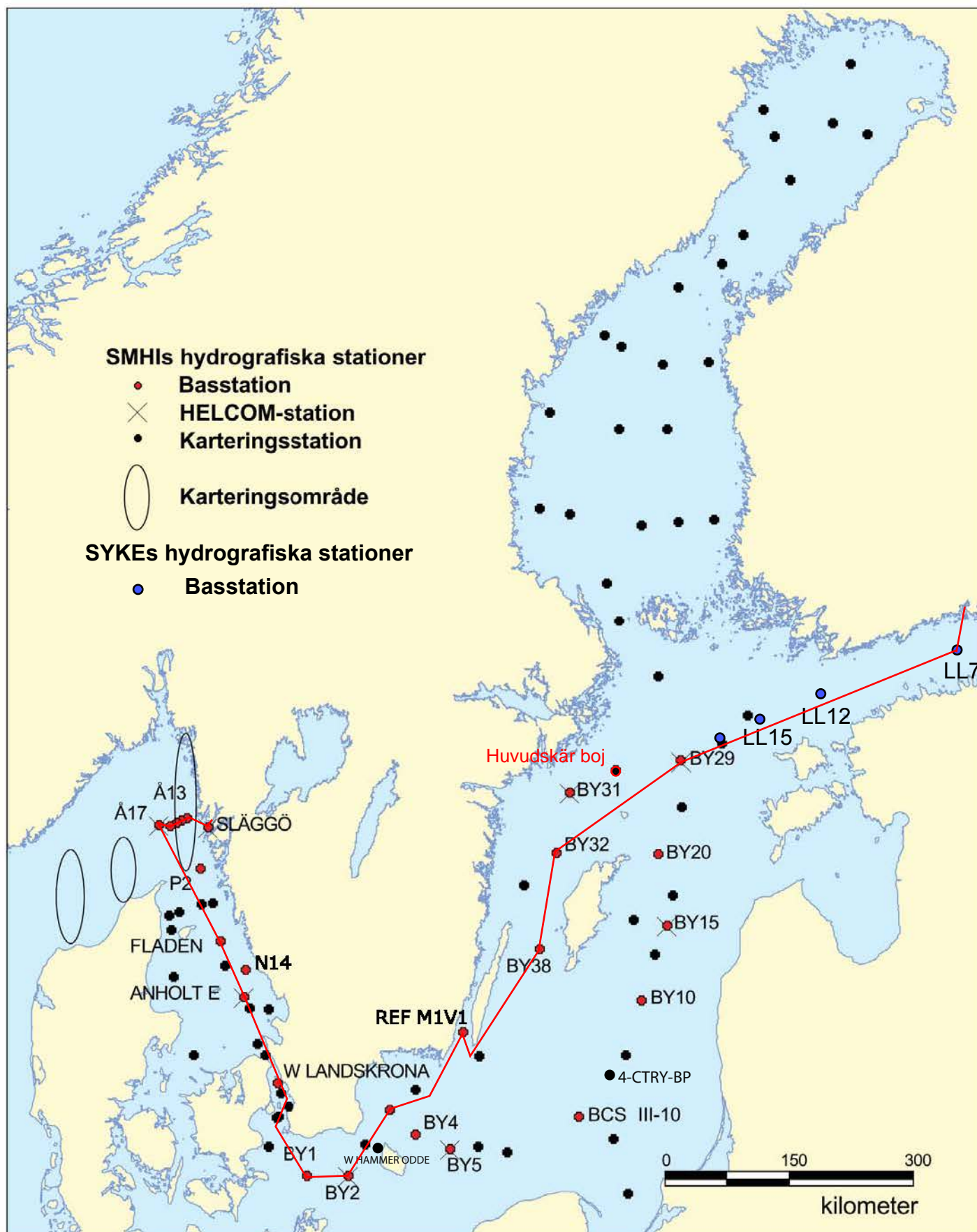
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APPENDICES

- 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

TRACKCHART	
Country:	Sweden
Ship:	R/V Aranda
Date:	20180920-20180924
Series:	0034-0049



Time: 16:19

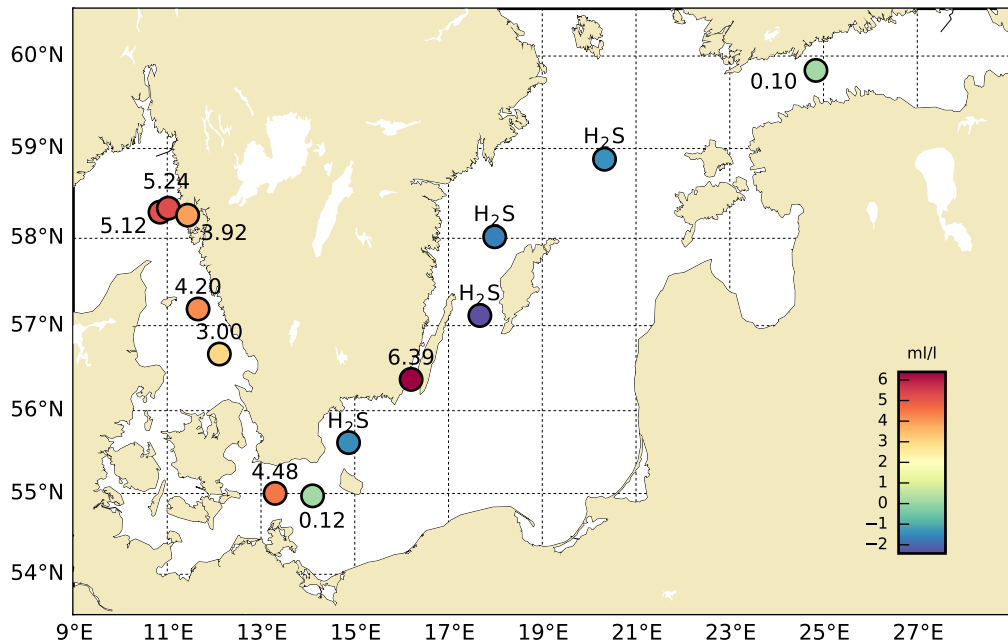
Ser no	Cru no	Stat code	Proj	Stat name	Lat	Lon	Start date yyyymmdd	Start time hhmm	Bottom depth m	Secchi depth m	Wind dir vel	Air temp C	Air pres hPa	WCW elac aove hdsb	CZPP loy apt o	No de	T e m p t u o	S a l i n e y	P h o s p h o r u s z	D H P o o r r o c k t y	N N A N A S H C O
0034	2	GFXX29	SYK	BY23 / LL7	5950.78	02450.26	20180920	1530	103		25 12.5	16.1		1340	----	13	x x x x - x x x - - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
0035	2	BPNX35	SVK	BY29 / LL19	5852.91	02019.67	20180921	0540	179		18 10.4	16.4		2640	----	16	x x x x - x x x - - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
0036	2	BPWX38	BAS... BY32 NORRKÖPINGSDJ	5801.03	01759.1	20180921	1435	200			19 16	19.3		2750	x---	17	x x - x - x x x x x x x x x x - x - - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
0037	2	BPWX45	BAS... BY38 KARLSÖDJ	5707.03	01740.11	20180921	2130	111			22 16.3	13.4		9999	x---	14	x x x x - x x x x x x x x x x - x x - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
0038	2	BPWK01	BAS... REF MIV1	5622.25	01612.11	20180922	0715	20	6		25 14	11.8		2730	xx--	5	x x x x x x x - x x x x x x x x x x - x	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
0039	2	BPSH05	BAS... HANÖBUKTEN	5537.04	01452.06	20180922	1430	79			24 15	13.0		1640	x---	11	x x x x x x x x x x x x x x x x x x - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
0040	2	BPSA03	BAS... BY2 ARKONA	5458.27	01405.99	20180922	2115	46			26 16	13.8		9990	x---	8	x x x x - x x - x x x x x x x - x x x -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
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0042	2	KAEX29	BAS... ANHOLT E	5640.12	01206.68	20180923	1450	64			30 12	13.1		1340	xx--	10	x x x x x x x x - x x x x x x x x x x - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
0043	2	KANX25	BAS... FLADEN	5711.55	01139.47	20180923	1900	84			28 10	13.3		9990	x---	12	x x x x - x x - x x x x x x x x - x - - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
0044	2	SKEX18	BAS... Å17	5817.06	01030.25	20180924	0250	352			33 13	10.9		9999	xx--	15	x x - x x x x - x x x x x x x x x x - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
0045	2	SKEX17	BAS... Å16	5816.03	01043.45	20180924	0445	203			35 13	10.9		1140	----	14	- x - x - - x - - - - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
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0047	2	SKEX15	BAS... Å14	5818.84	01056.41	20180924	0650	108			34 11	11		1340	----	11	- x - x - - x - - - - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
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0049	2	FIBG27	BAS... SLÄGGÖ	5815.58	01126.07	20180924	0940	67	5		32 5	11.7		1220	xxxx-	9	x x x x - x x - x x x x x x x x - x - - x	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -

Bottom water oxygen concentration (ml/l)

Ship: Aranda

Date: 20180920-20180924

Series: 0034-0049



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

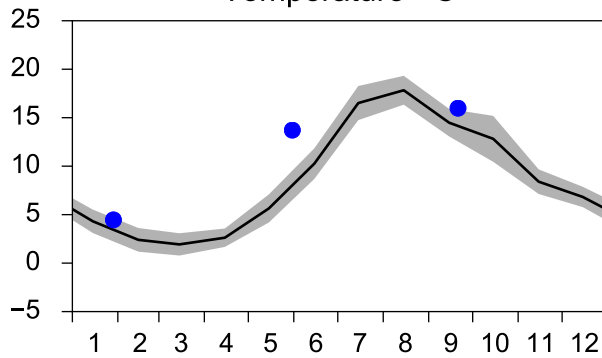
Annual Cycles

— Mean 2001-2015

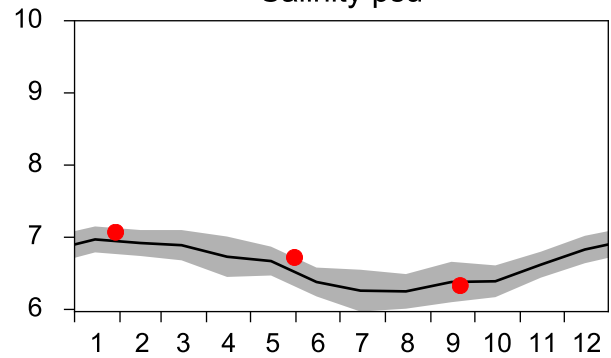
■ St.Dev.

● 2018

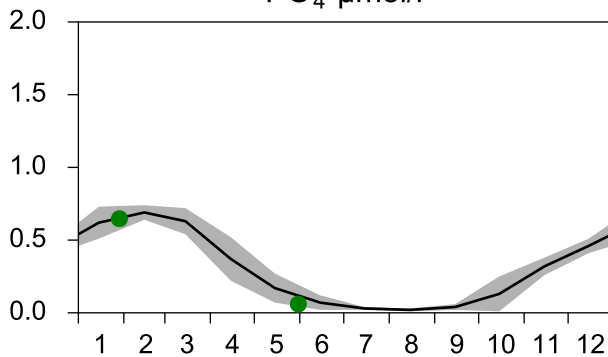
Temperature °C



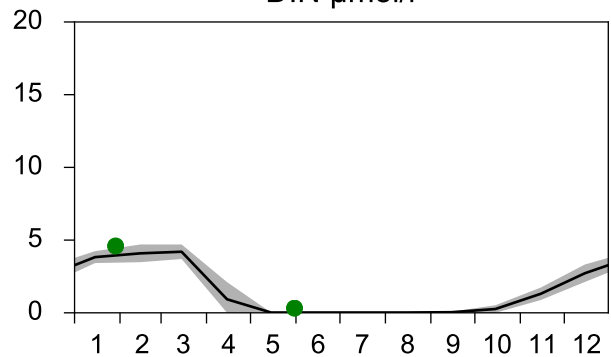
Salinity psu



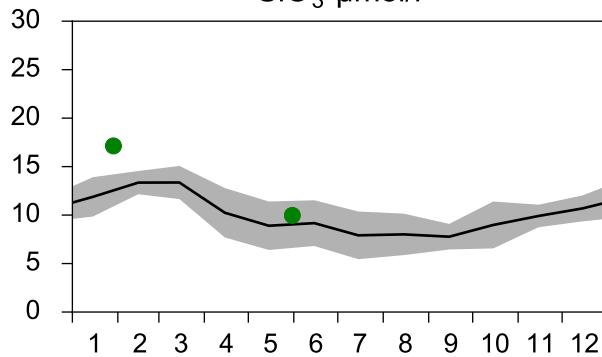
PO₄ µmol/l



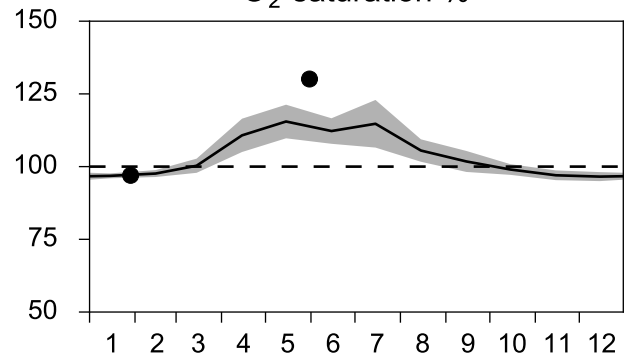
DIN µmol/l



SiO₃ µmol/l

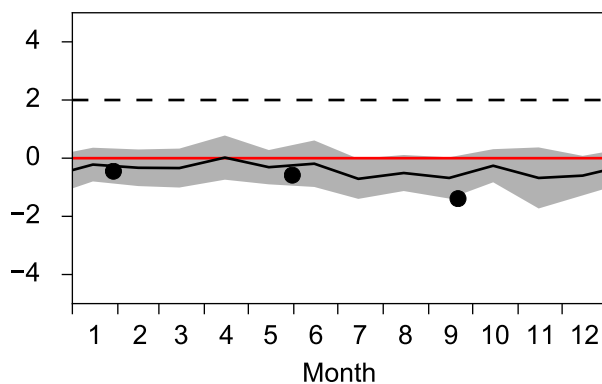


O₂ saturation %

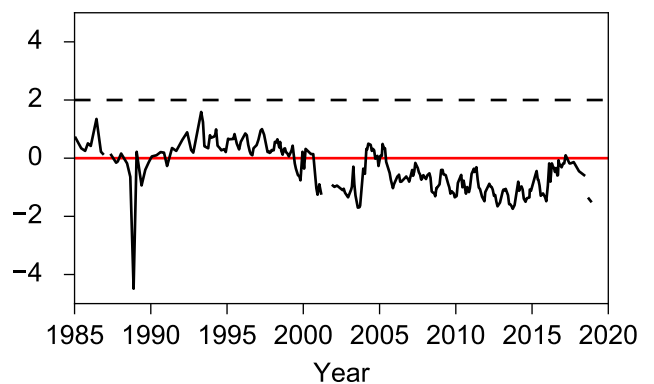


OXYGEN IN BOTTOM WATER (depth >= 150 m)

O₂ ml/l

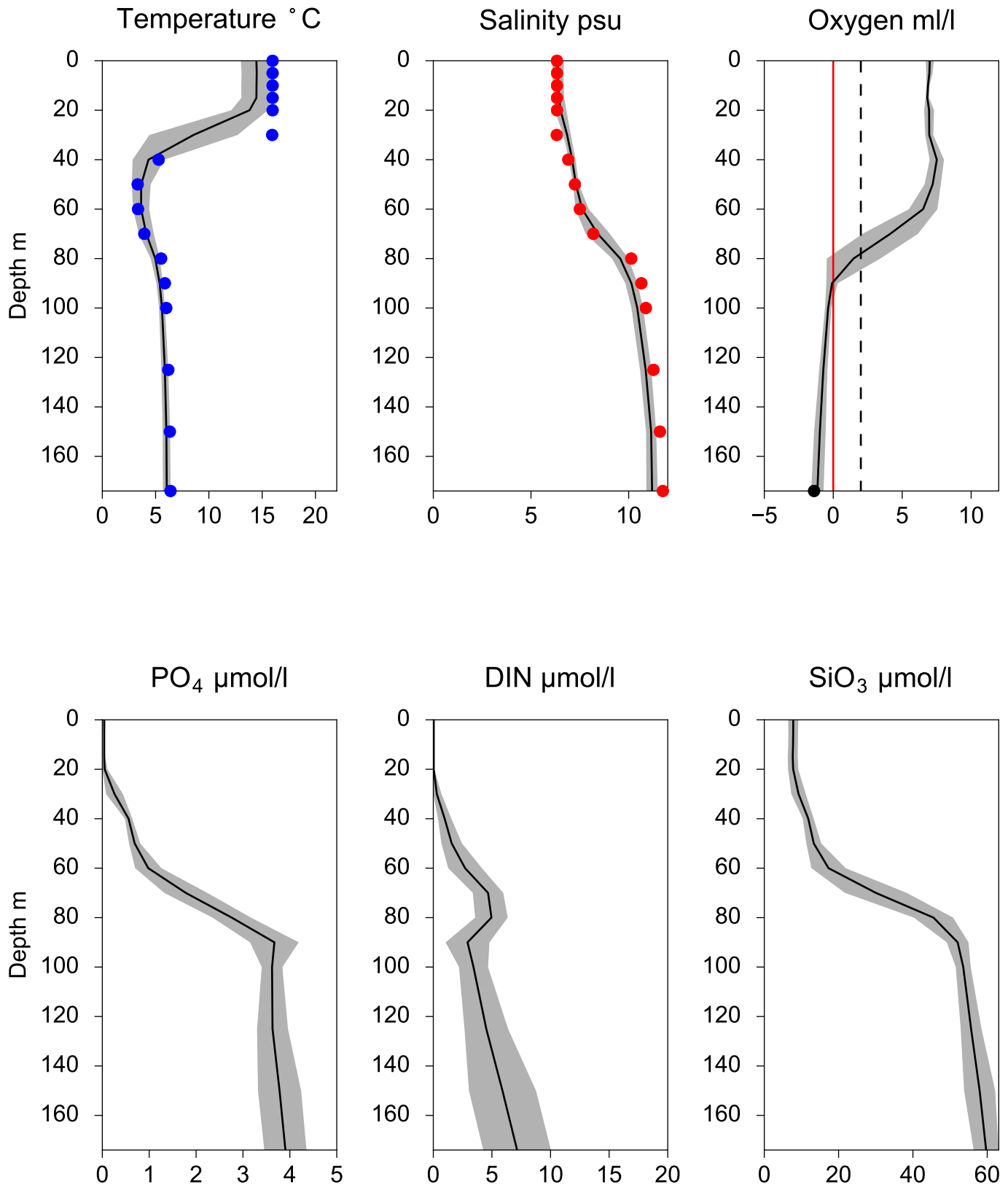


O₂ ml/l



Vertical profiles BY29 / LL19 September

— Mean 2001-2015 ■ St.Dev. ● 2018-09-21



STATION BY32 NORRKÖPINGSDJ SURFACE WATER (0-10 m)

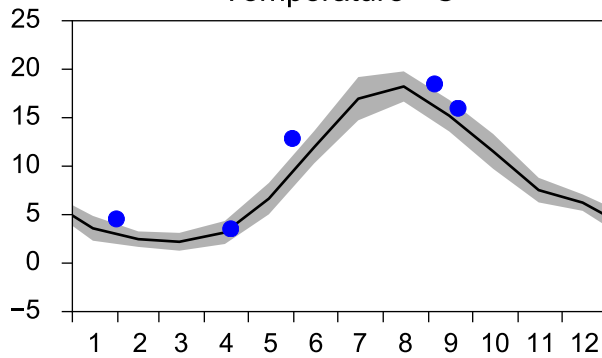
Annual Cycles

— Mean 2001-2015

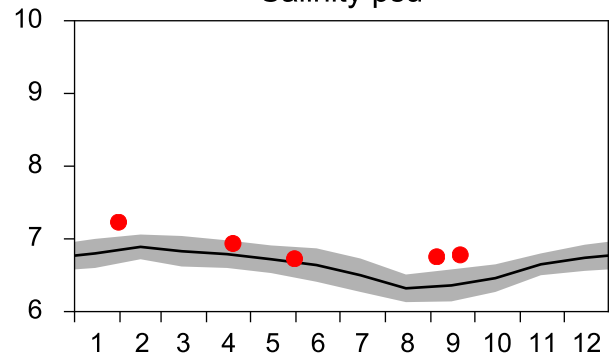
■ St.Dev.

● 2018

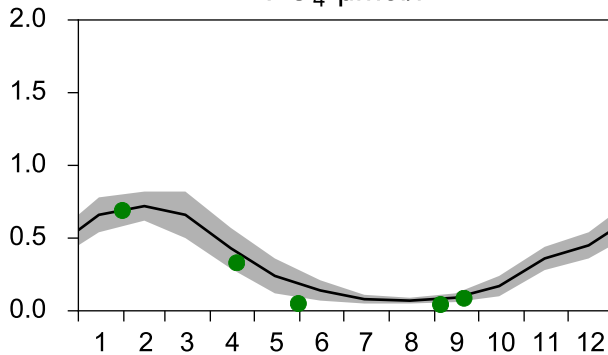
Temperature °C



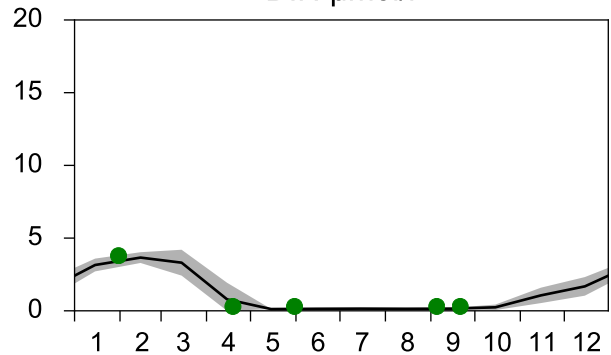
Salinity psu



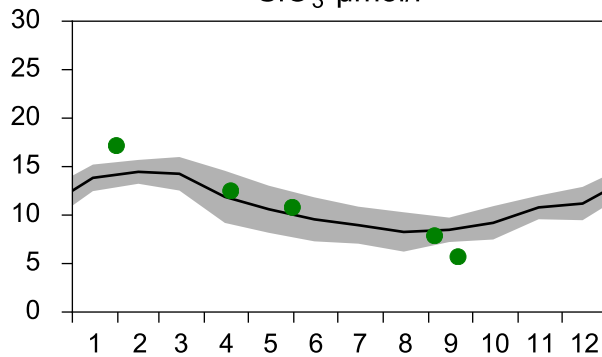
PO₄ µmol/l



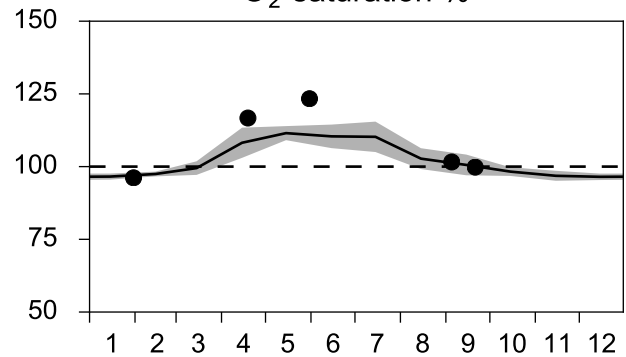
DIN µmol/l



SiO₃ µmol/l

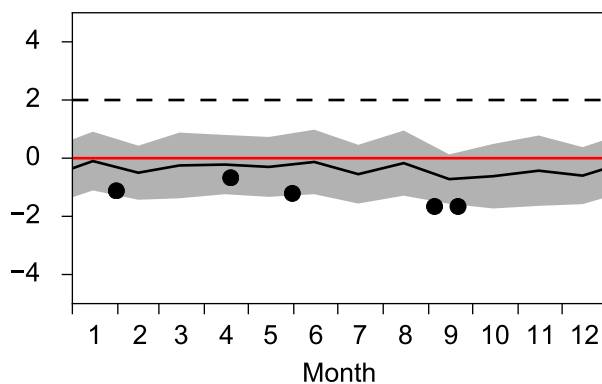


O₂ saturation %

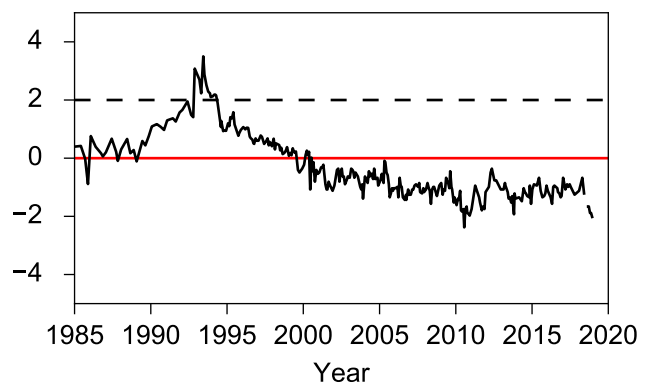


OXYGEN IN BOTTOM WATER (depth >= 175 m)

O₂ ml/l

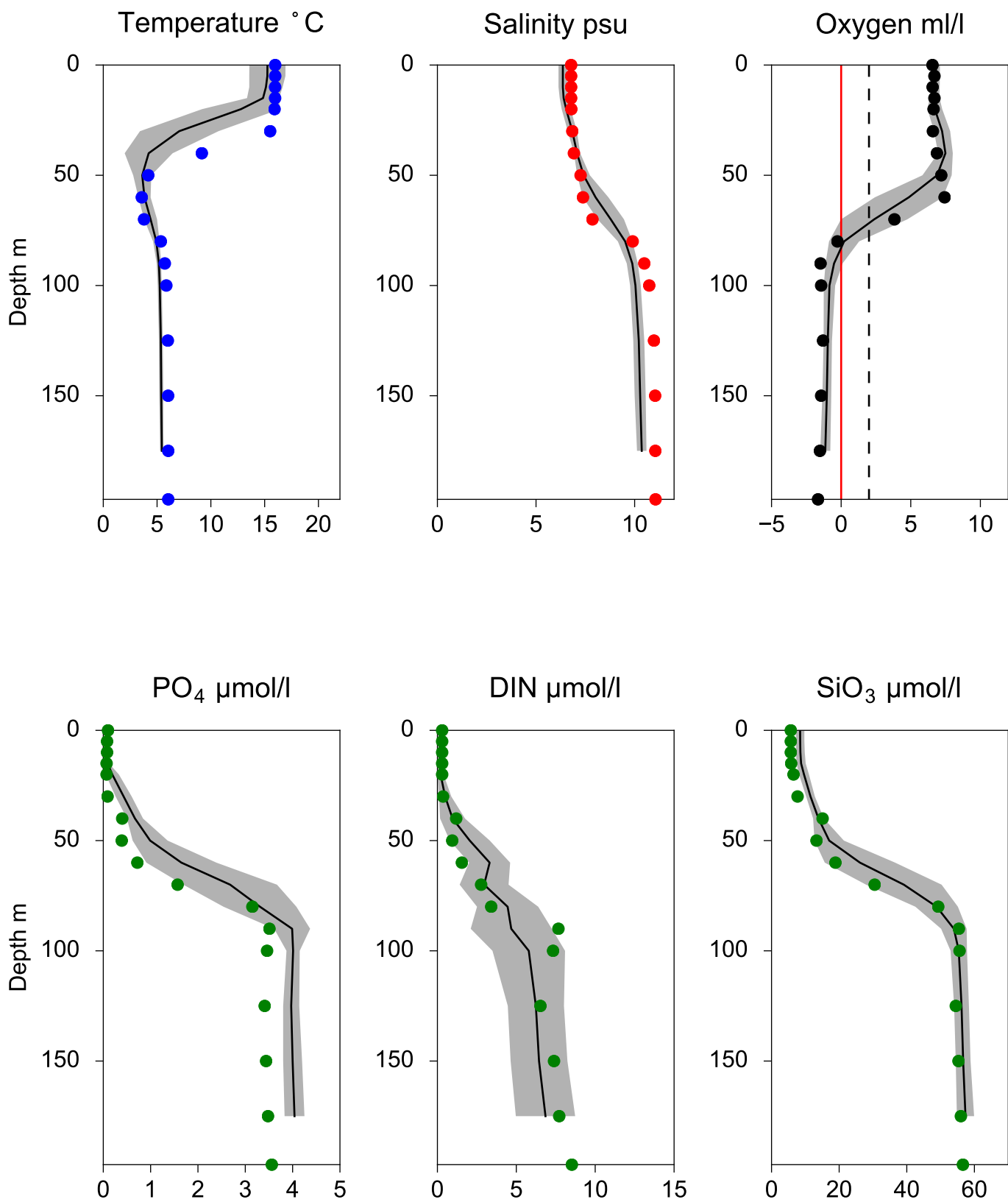


O₂ ml/l



Vertical profiles BY32 NORRKÖPINGSDJ September

— Mean 2001-2015 St.Dev. • 2018-09-21



STATION BY38 KARLSÖDJ SURFACE WATER (0-10 m)

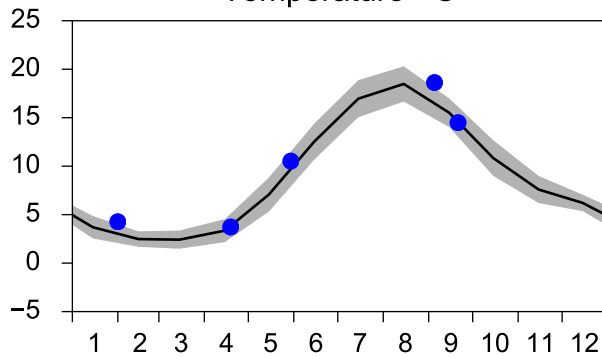
Annual Cycles

— Mean 2001-2015

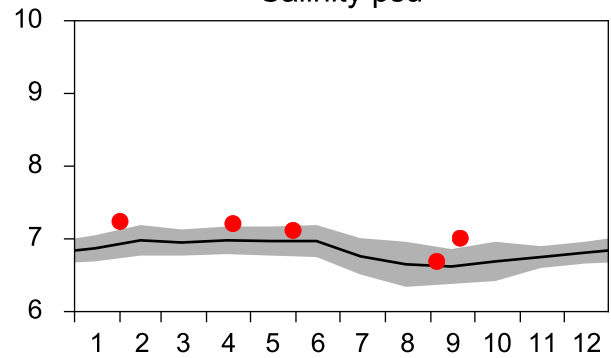
■ St.Dev.

● 2018

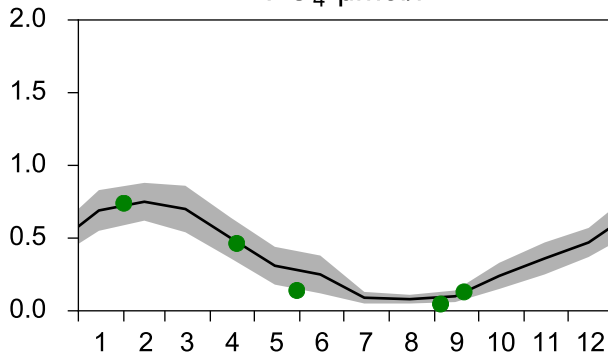
Temperature °C



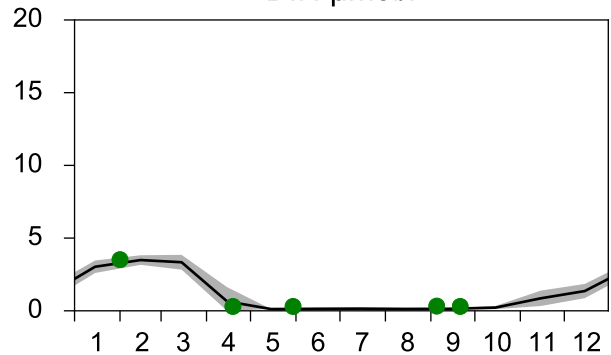
Salinity psu



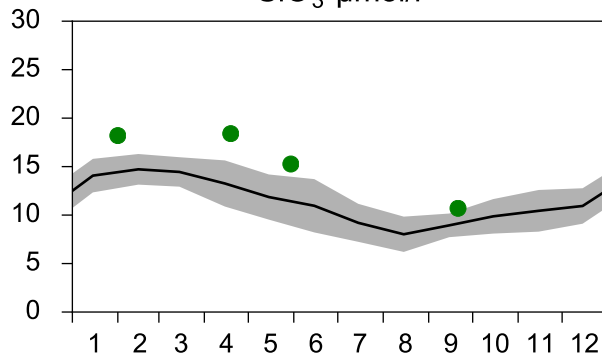
PO₄ µmol/l



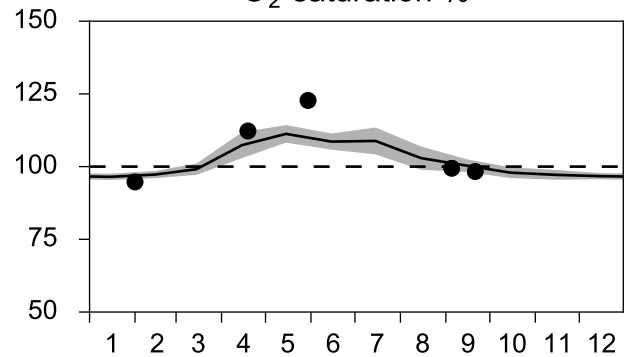
DIN µmol/l



SiO₃ µmol/l

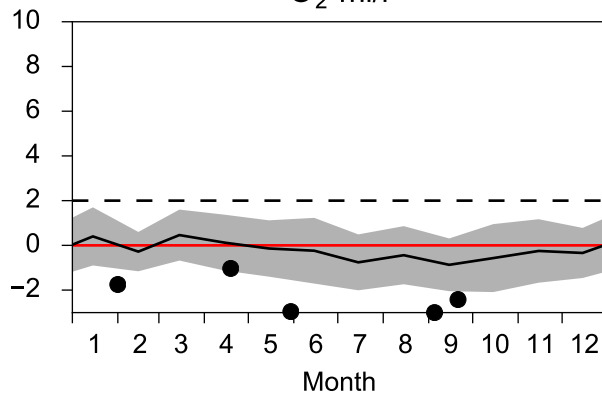


O₂ saturation %

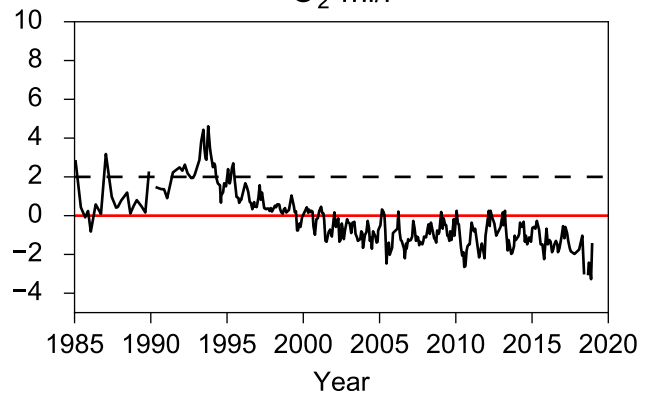


OXYGEN IN BOTTOM WATER (depth >= 100 m)

O₂ ml/l

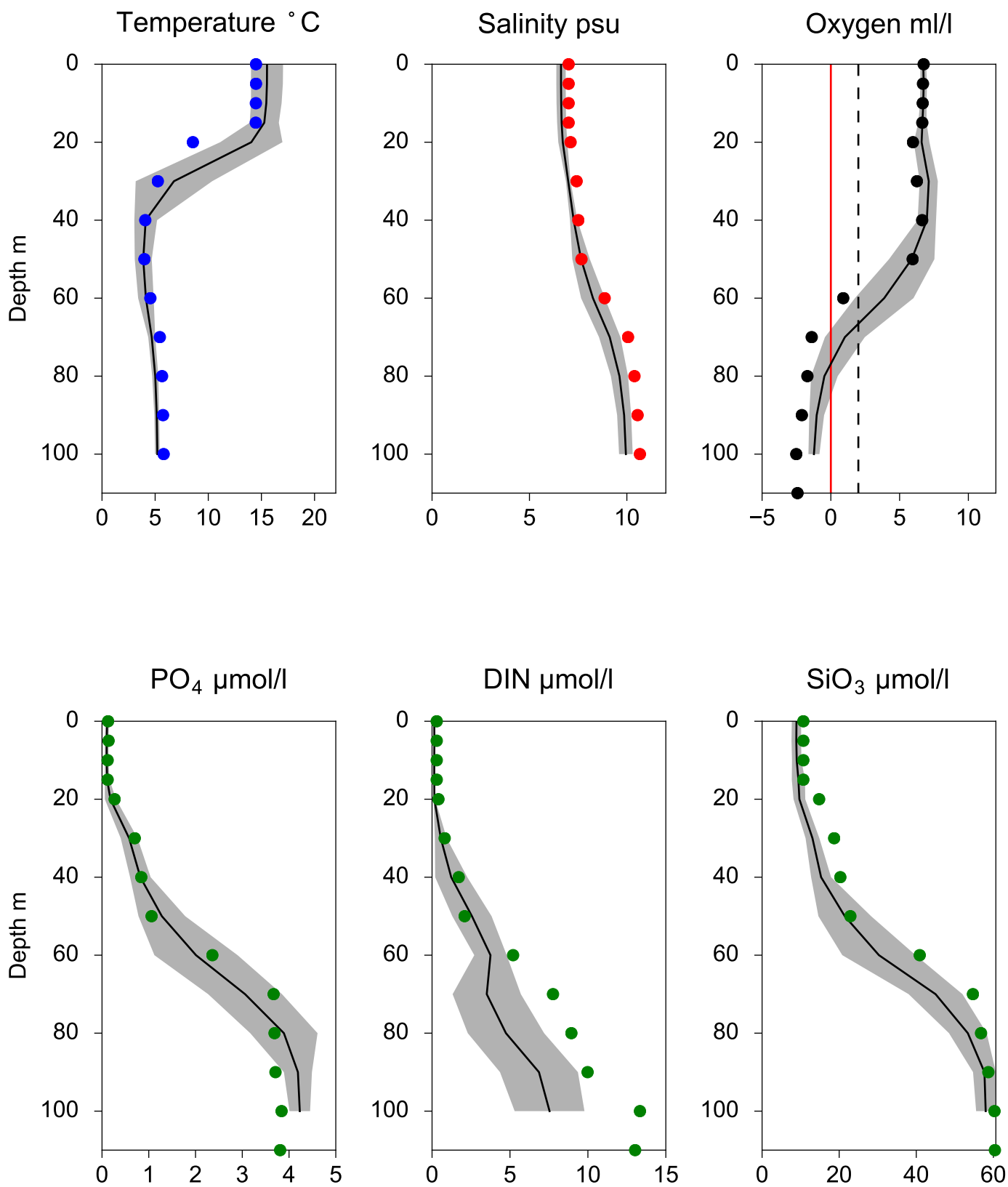


O₂ ml/l



Vertical profiles BY38 KARLSÖDJ September

— Mean 2001-2015 ■ St.Dev. ● 2018-09-21



STATION REF M1V1 SURFACE WATER (0-10 m)

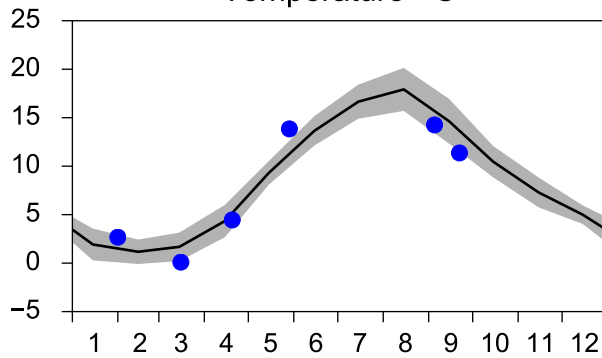
Annual Cycles

— Mean 2001-2015

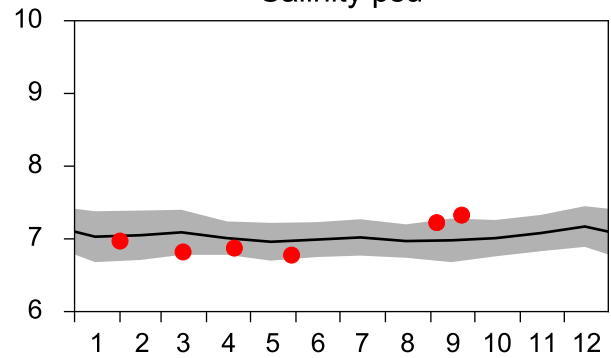
■ St.Dev.

● 2018

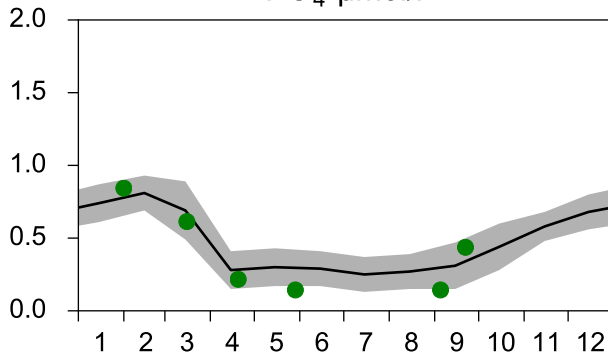
Temperature °C



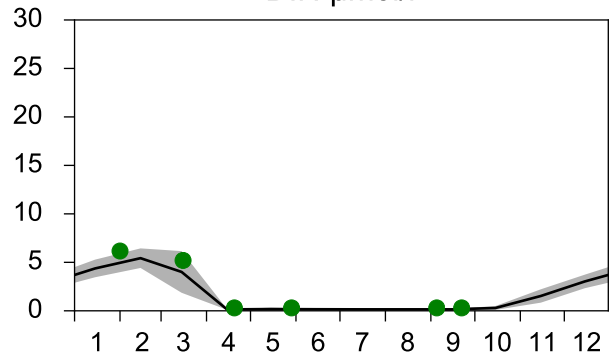
Salinity psu



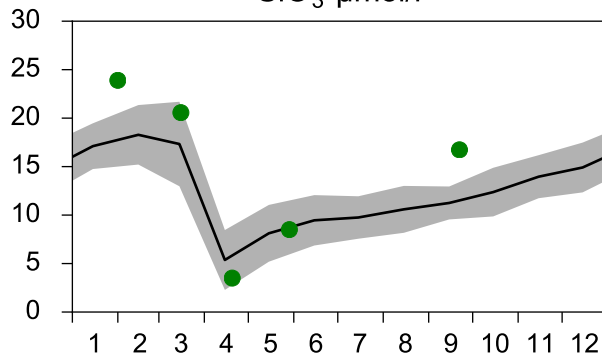
PO₄ µmol/l



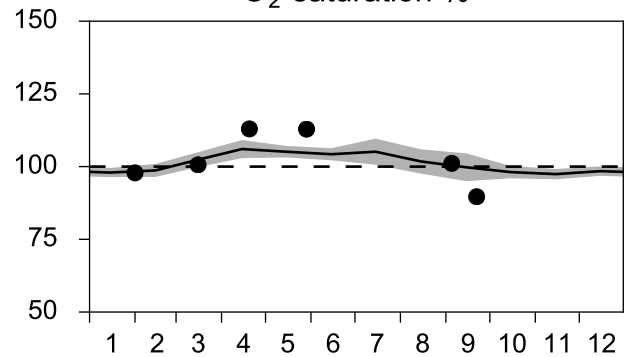
DIN µmol/l



SiO₃ µmol/l

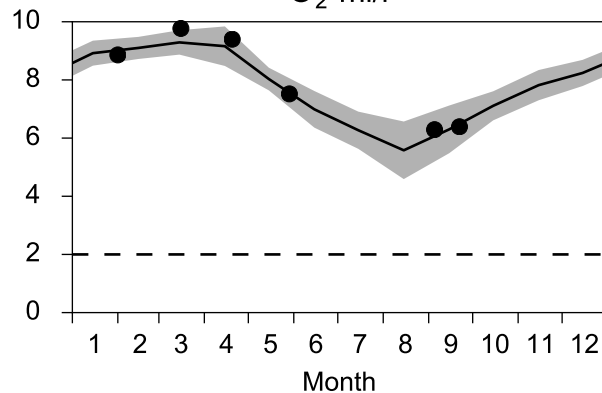


O₂ saturation %

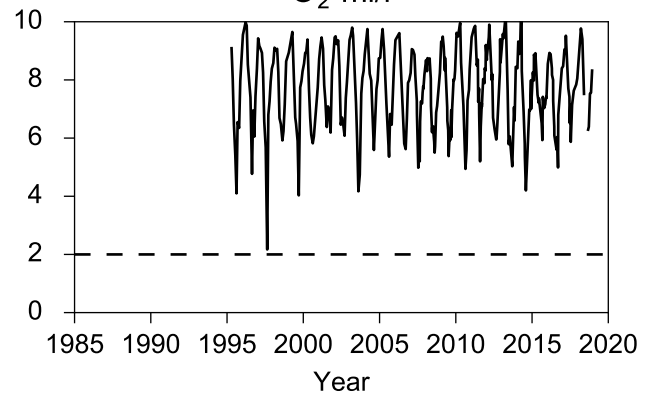


OXYGEN IN BOTTOM WATER (depth >= 17 m)

O₂ ml/l

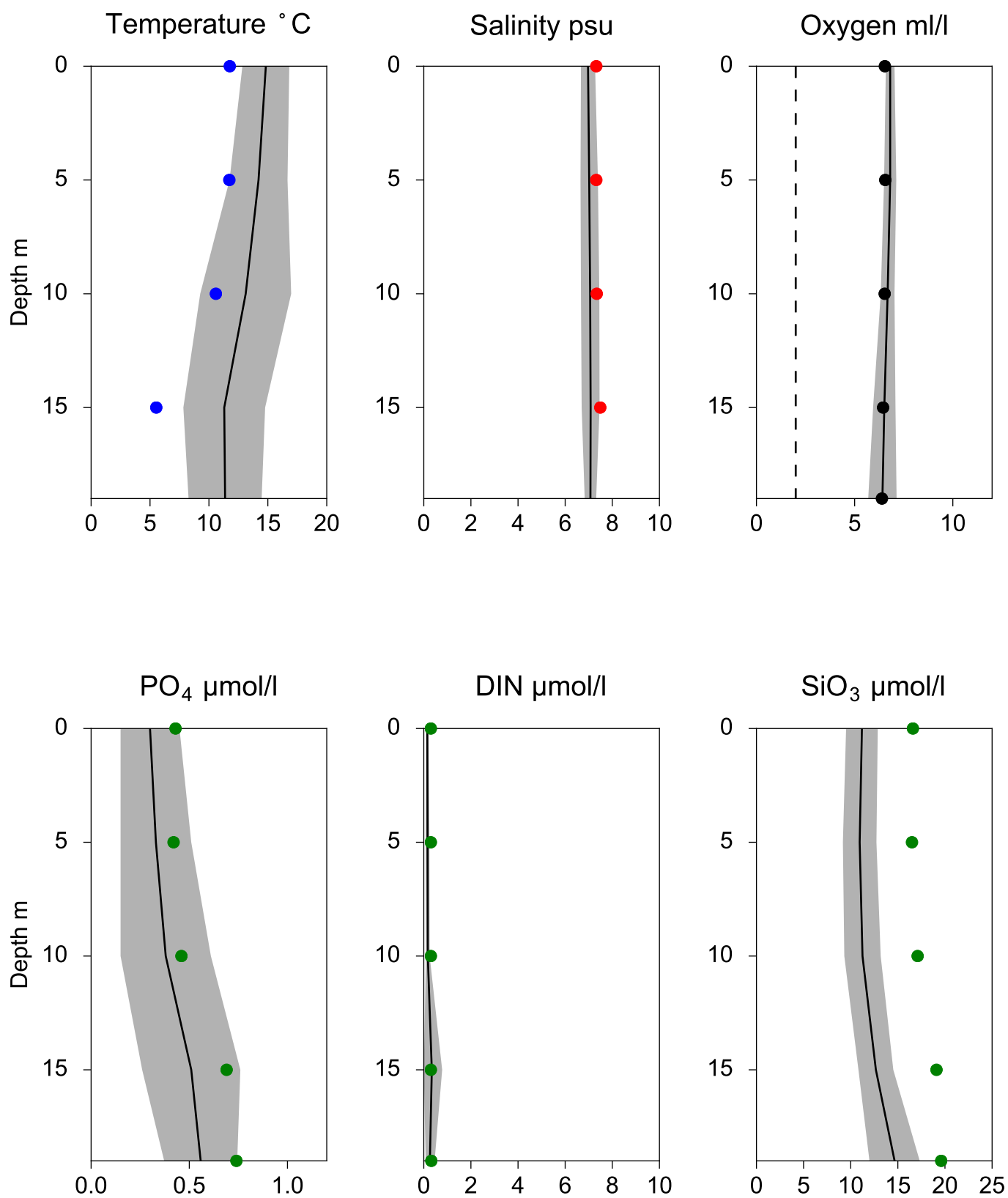


O₂ ml/l



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STATION HANÖBUKTEN SURFACE WATER (0-10 m)

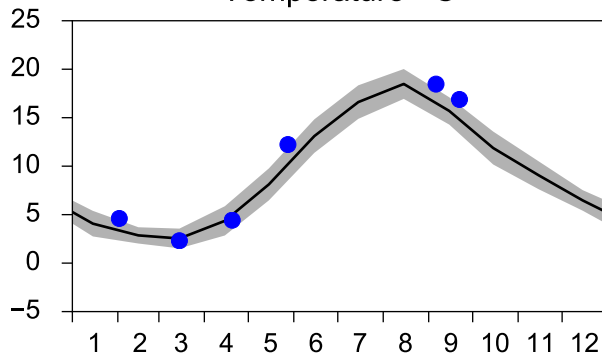
Annual Cycles

— Mean 2001-2015

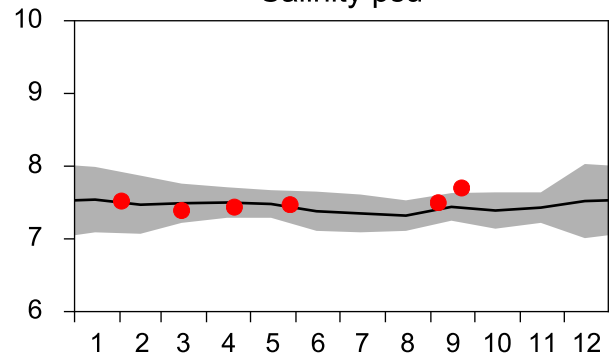
■ St.Dev.

● 2018

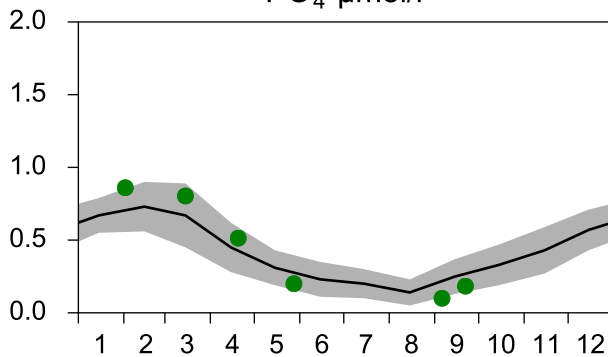
Temperature °C



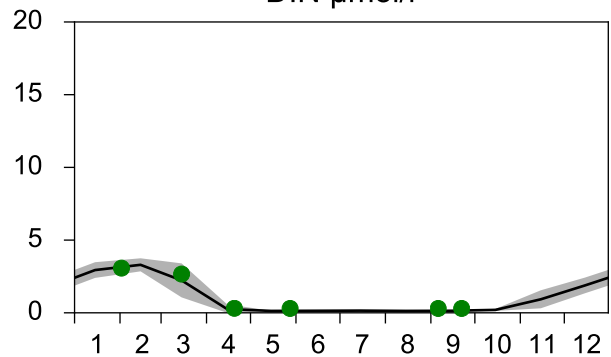
Salinity psu



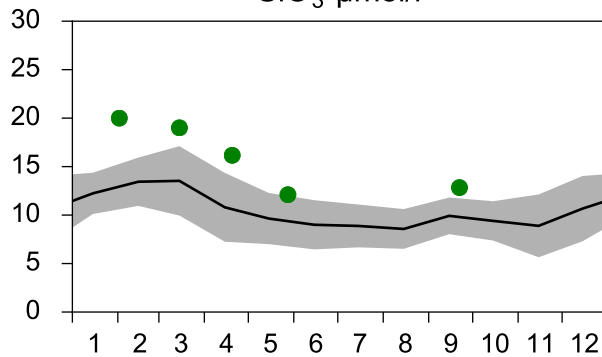
PO₄ µmol/l



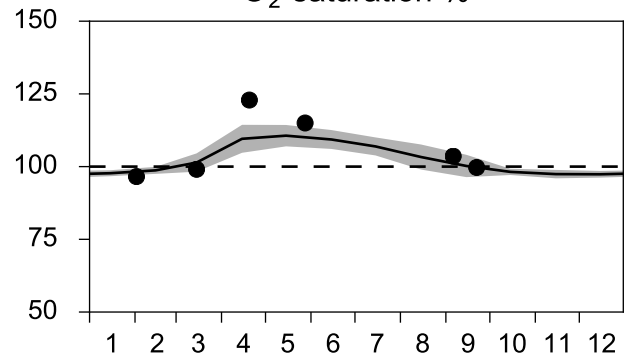
DIN µmol/l



SiO₃ µmol/l

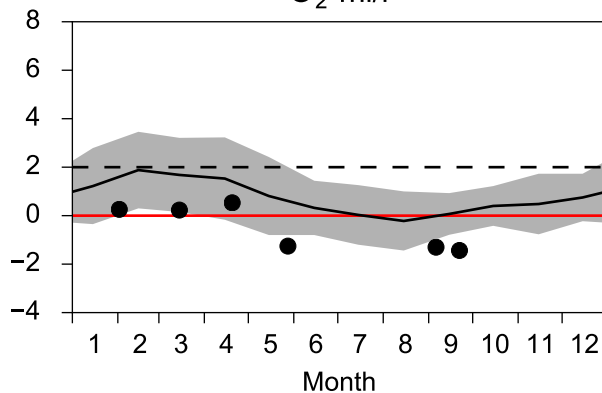


O₂ saturation %

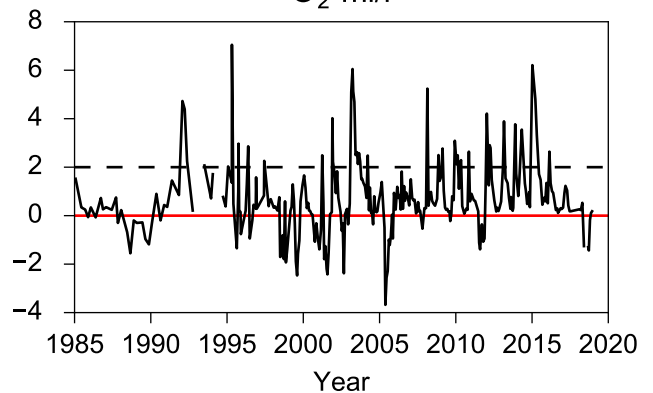


OXYGEN IN BOTTOM WATER (depth >= 70 m)

O₂ ml/l

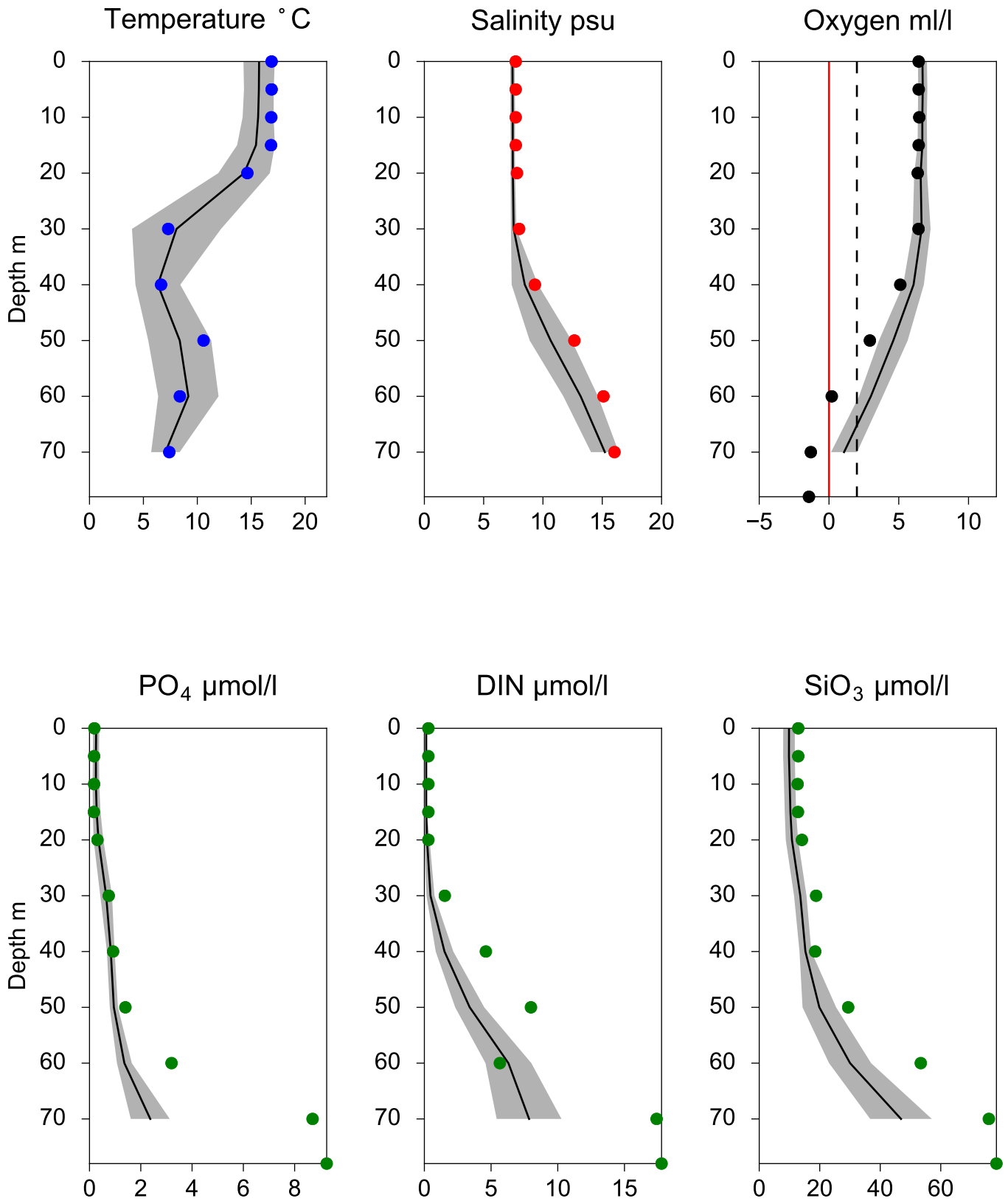


O₂ ml/l



Vertical profiles HANÖBUKTEN September

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STATION BY2 ARKONA SURFACE WATER (0-10 m)

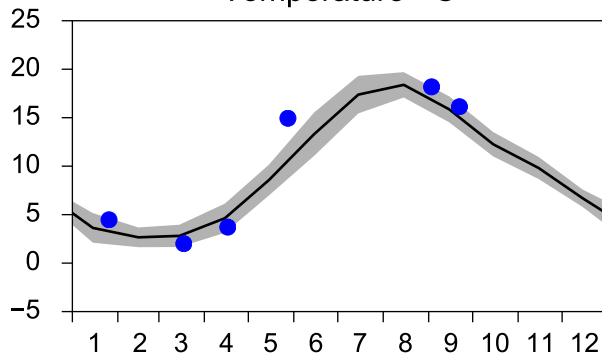
Annual Cycles

— Mean 2001-2015

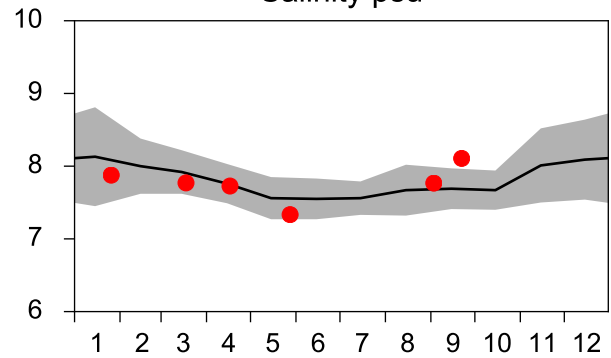
■ St.Dev.

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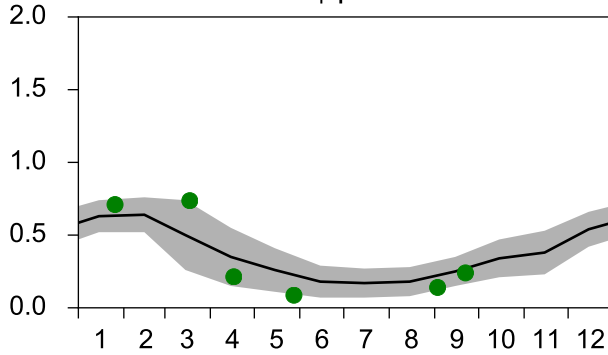
Temperature °C



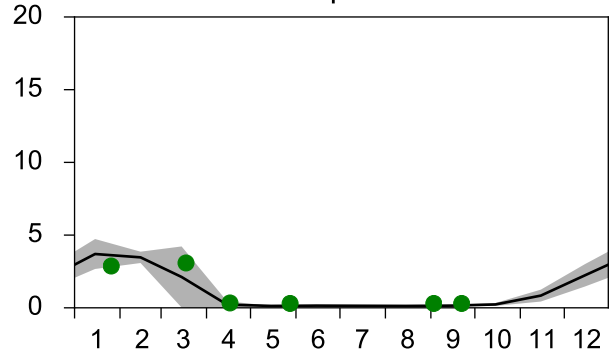
Salinity psu



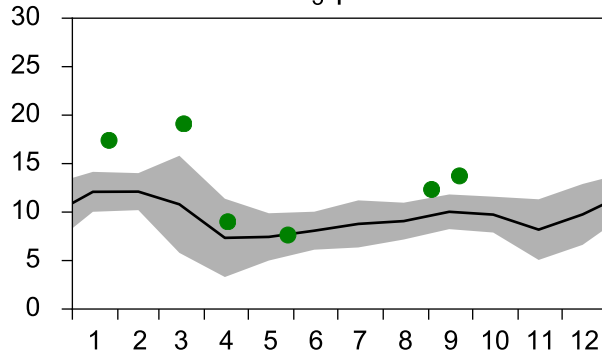
PO₄ µmol/l



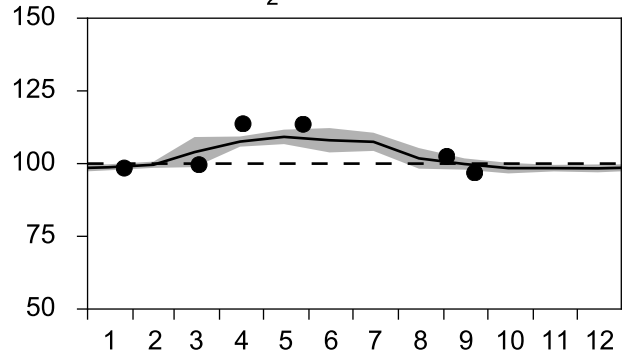
DIN µmol/l



SiO₃ µmol/l

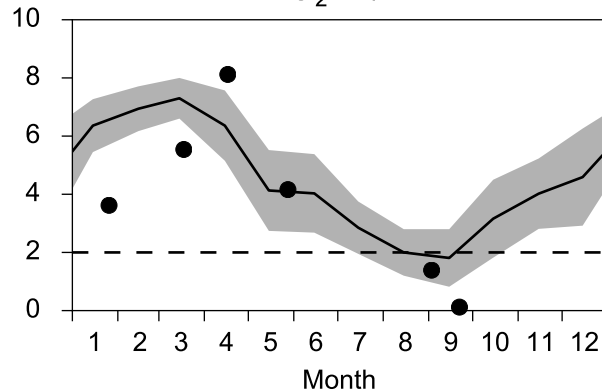


O₂ saturation %

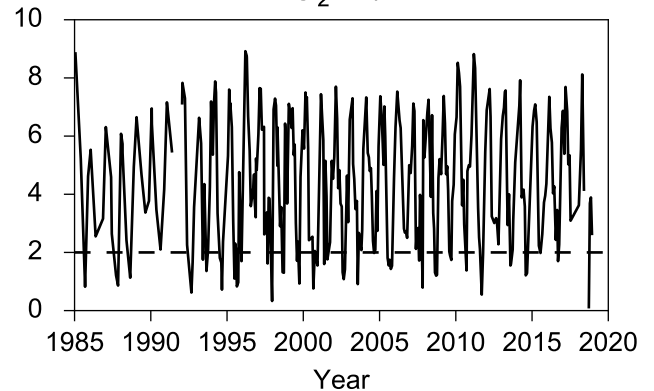


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

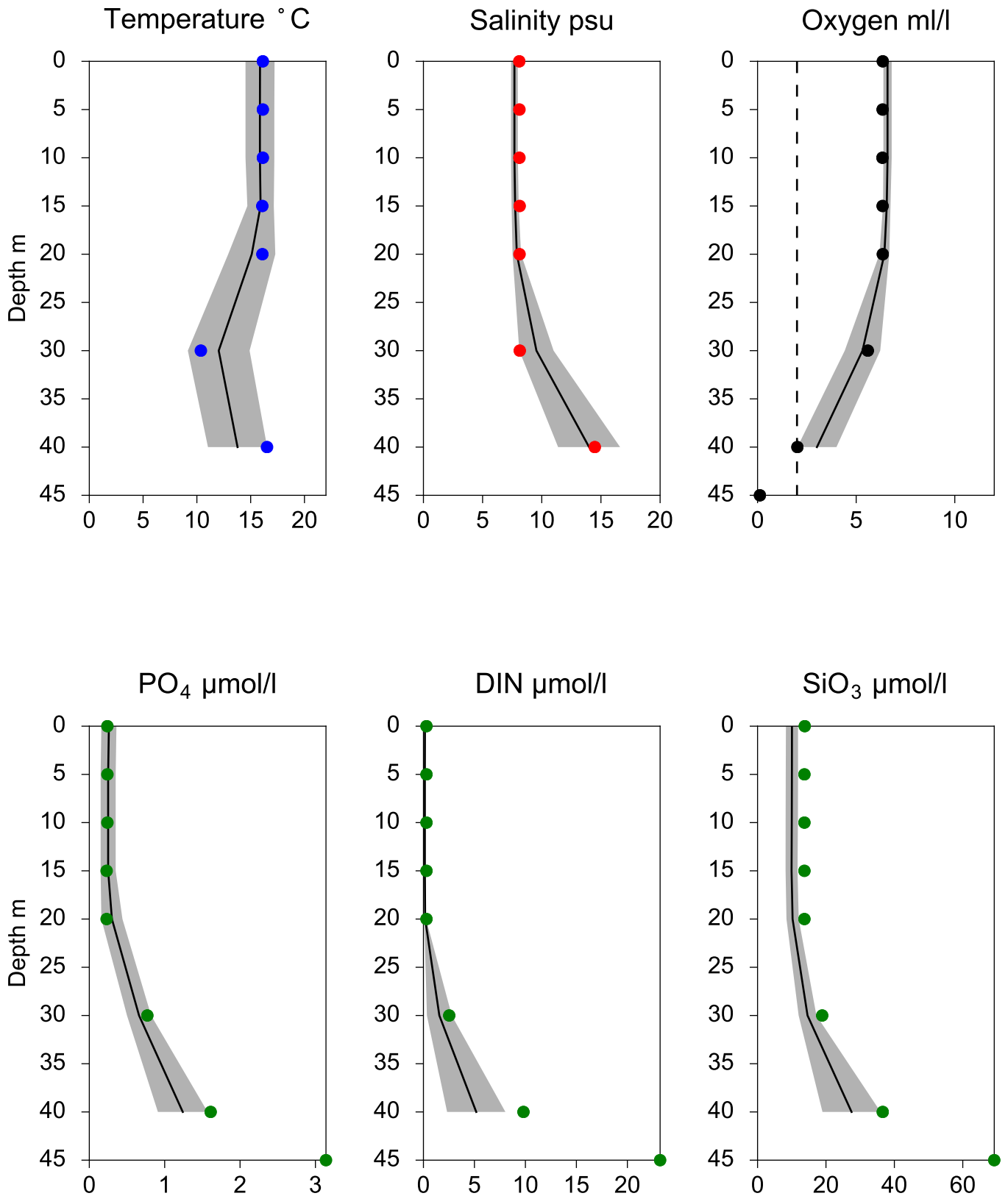


O₂ ml/l



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STATION BY1 SURFACE WATER (0-10 m)

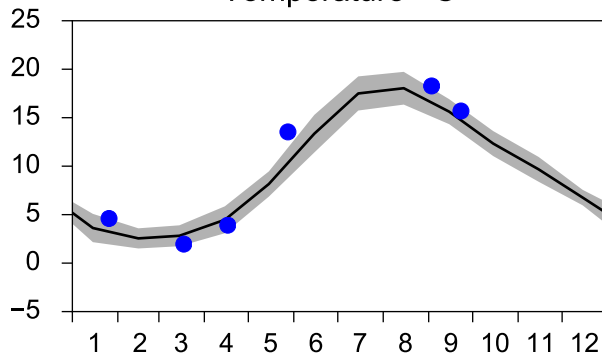
Annual Cycles

— Mean 2001-2015

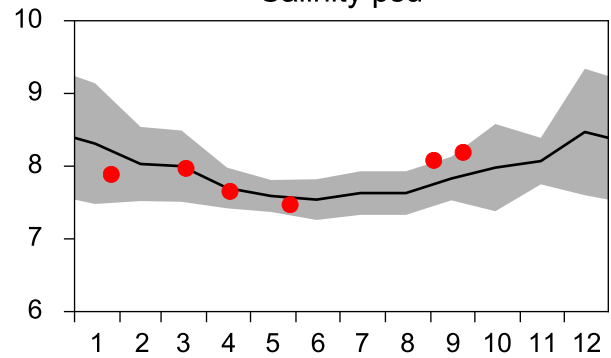
■ St.Dev.

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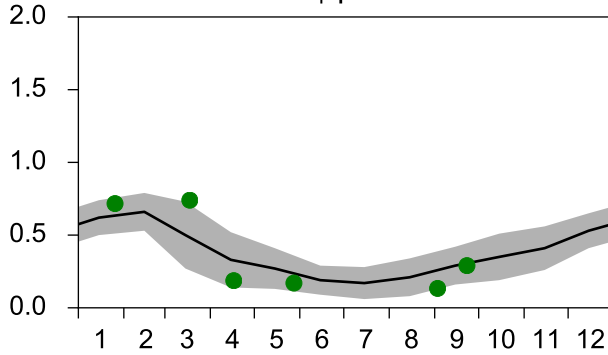
Temperature °C



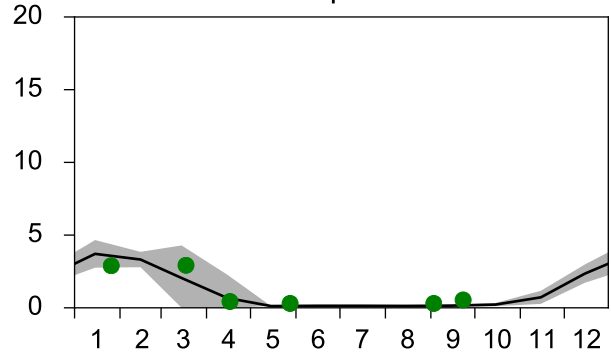
Salinity psu



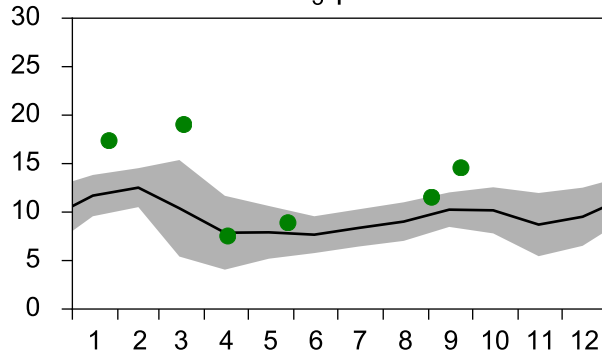
PO₄ µmol/l



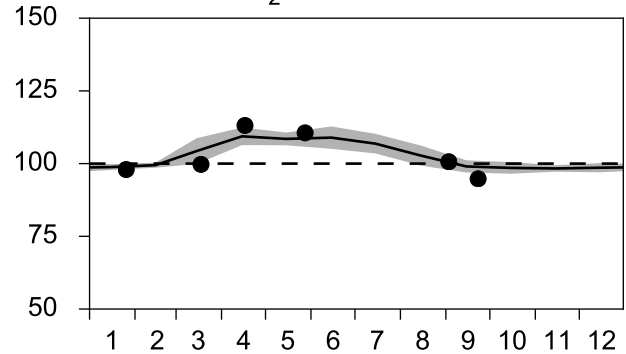
DIN µmol/l



SiO₃ µmol/l

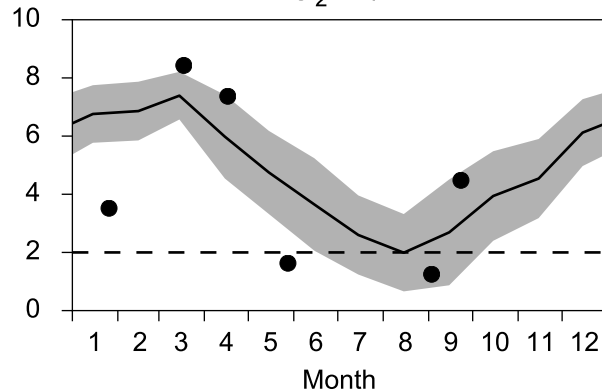


O₂ saturation %

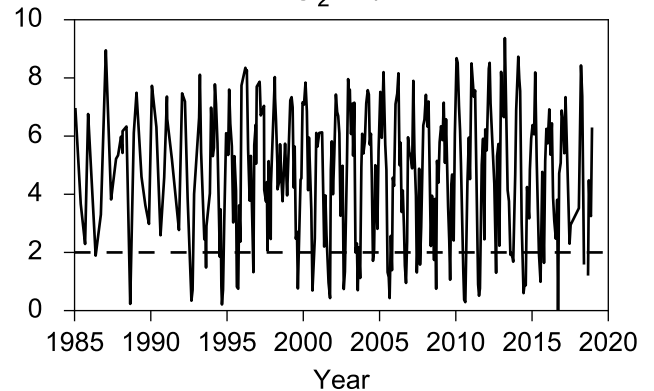


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

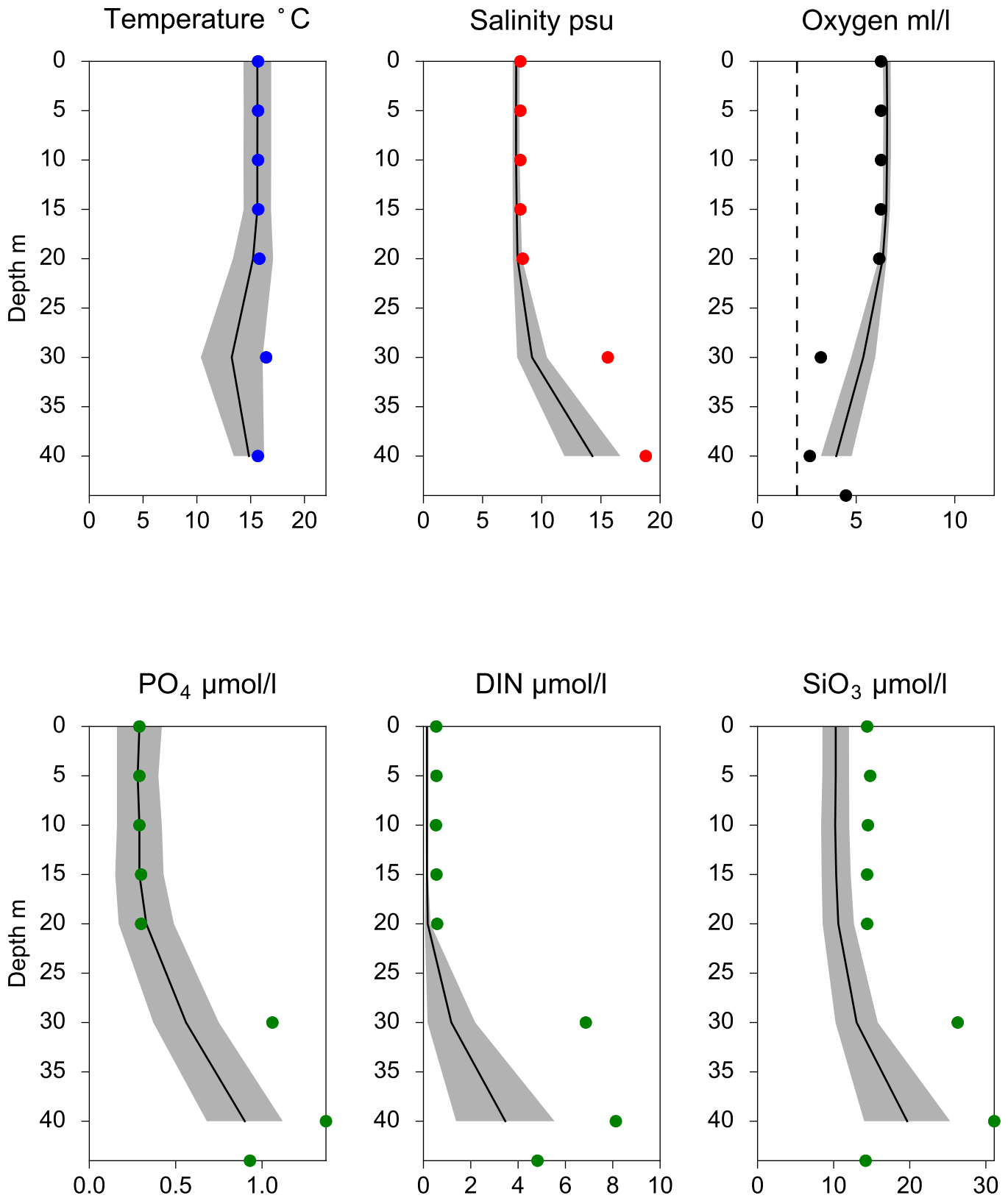


O₂ ml/l



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STATION ANHOLT E SURFACE WATER (0-10 m)

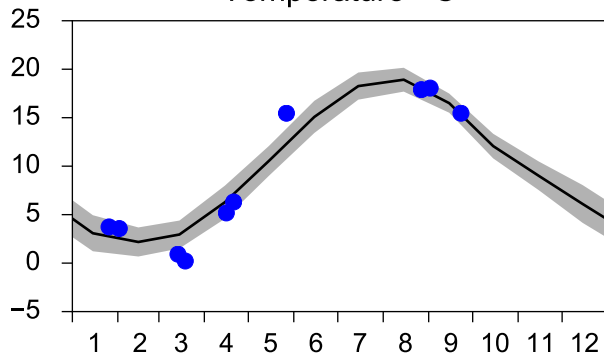
Annual Cycles

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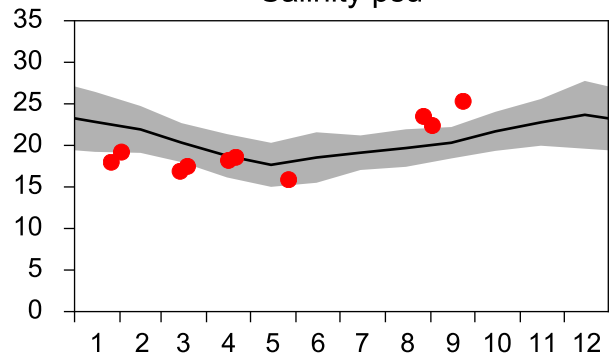
■ St.Dev.

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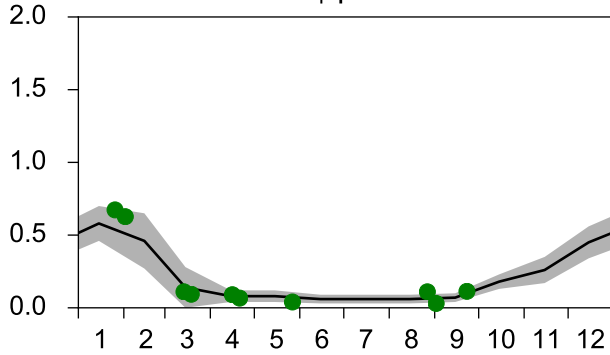
Temperature °C



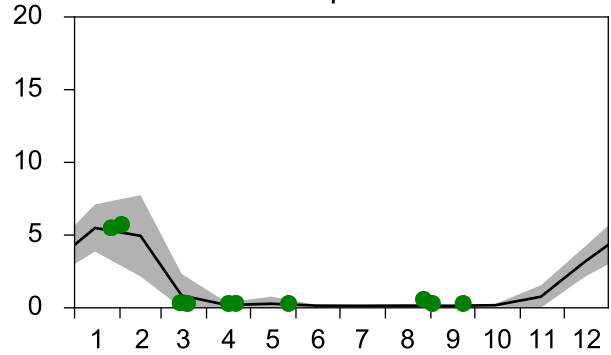
Salinity psu



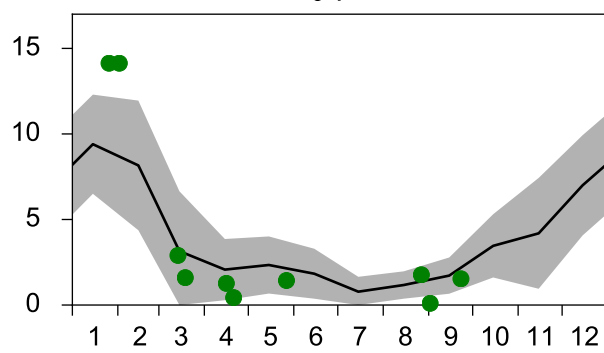
PO₄ µmol/l



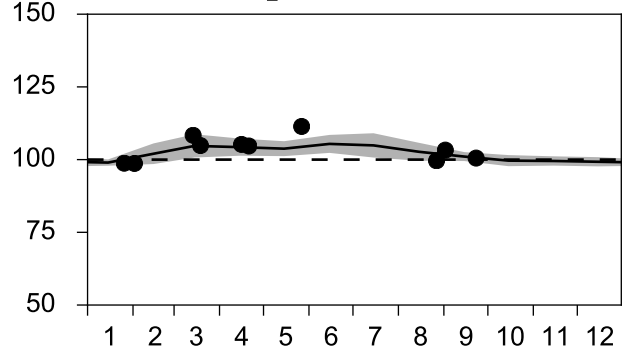
DIN µmol/l



SiO₃ µmol/l

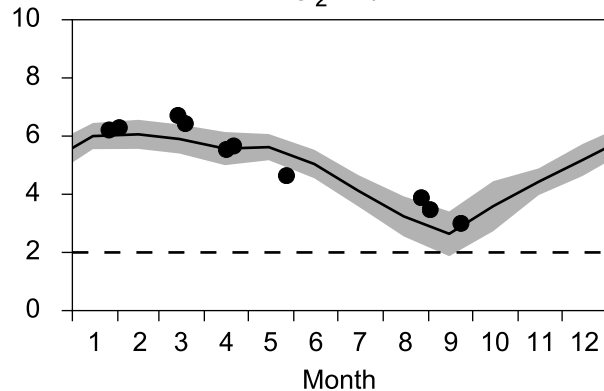


O₂ saturation %

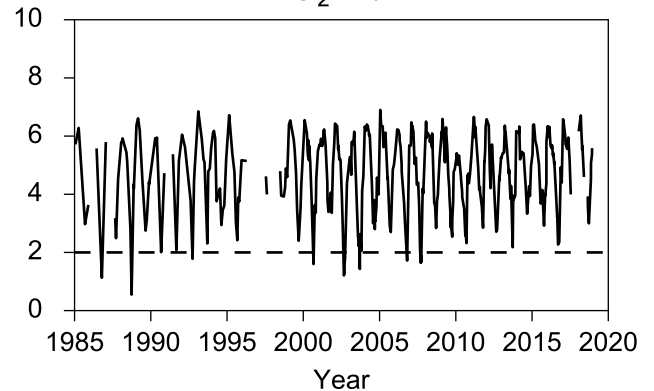


OXYGEN IN BOTTOM WATER (depth >= 52 m)

O₂ ml/l

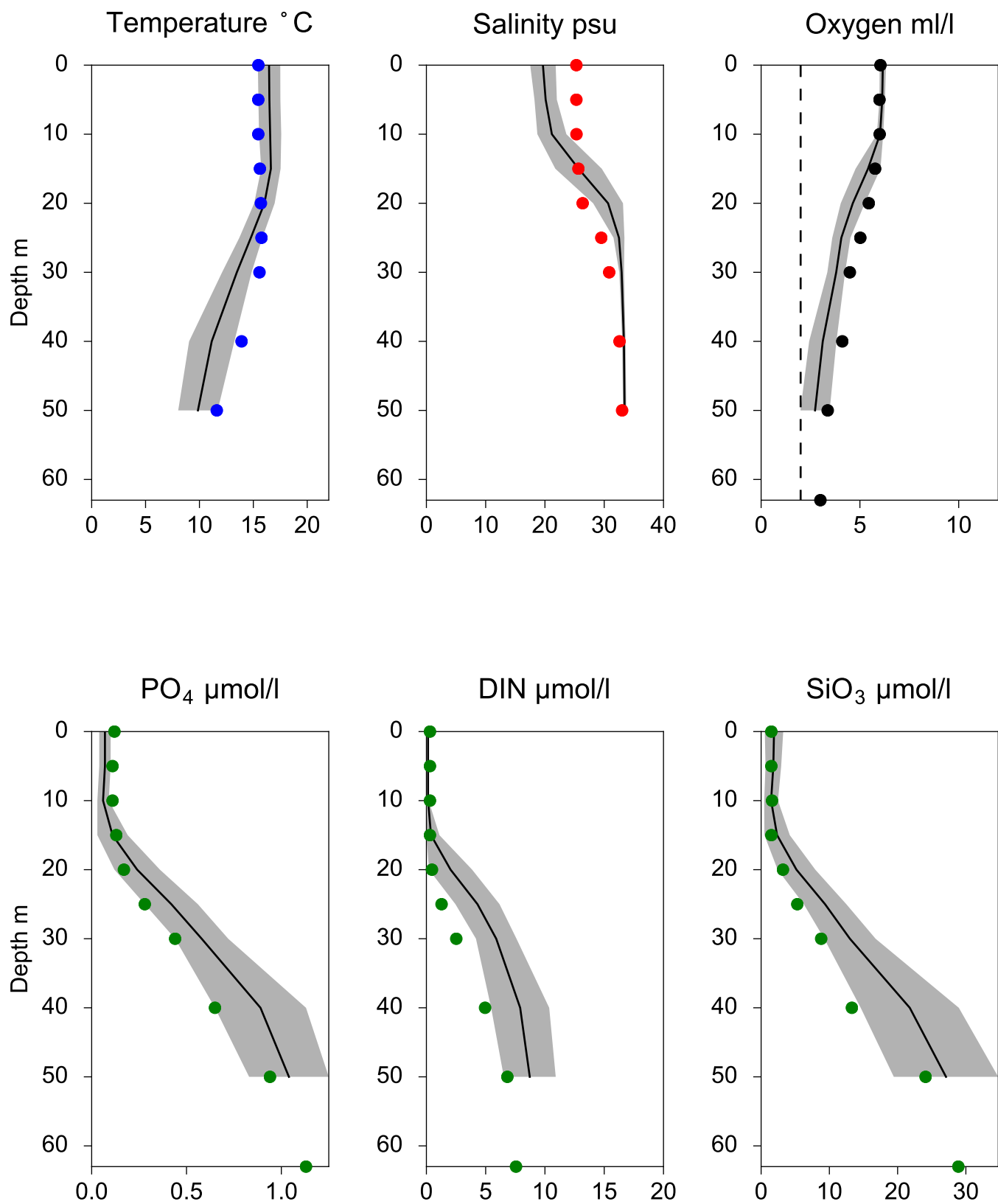


O₂ ml/l



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STATION FLADEN SURFACE WATER (0-10 m)

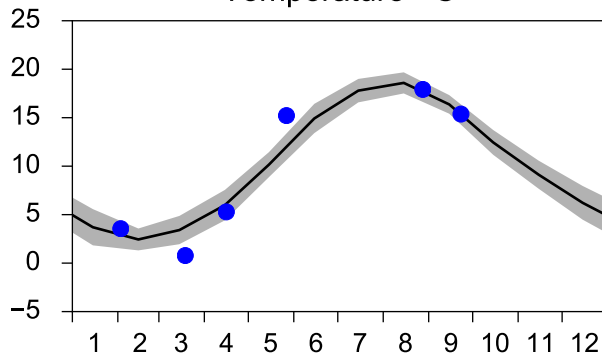
Annual Cycles

— Mean 2001-2015

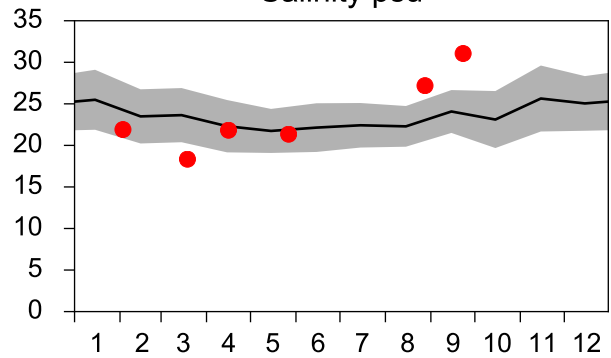
■ St.Dev.

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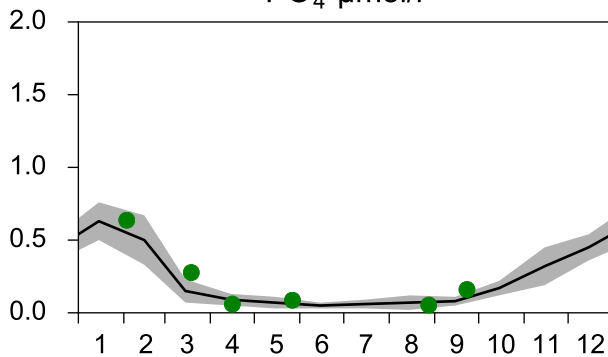
Temperature °C



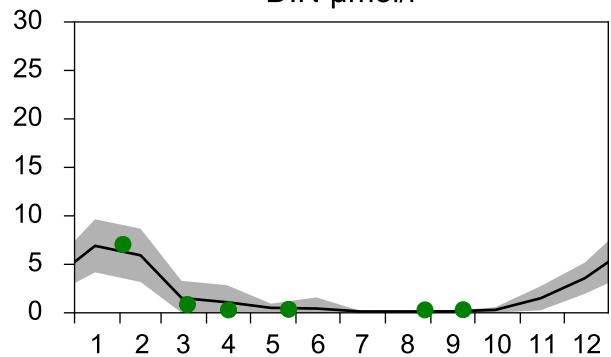
Salinity psu



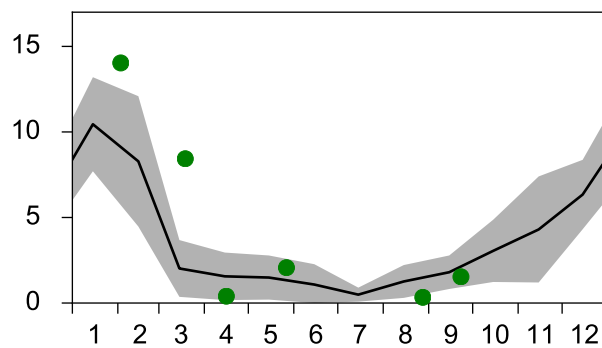
PO₄ µmol/l



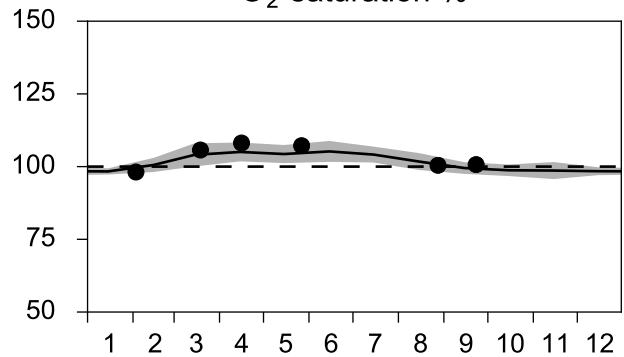
DIN µmol/l



SiO₃ µmol/l

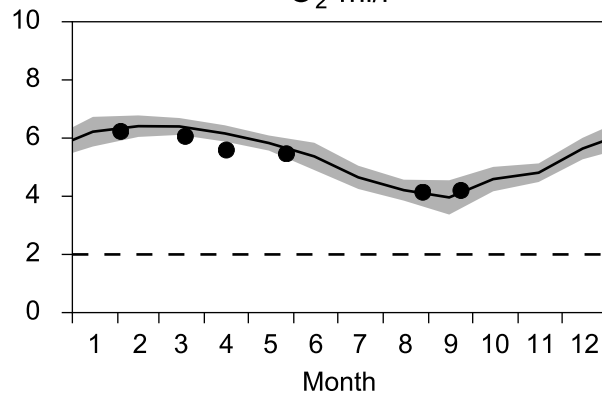


O₂ saturation %

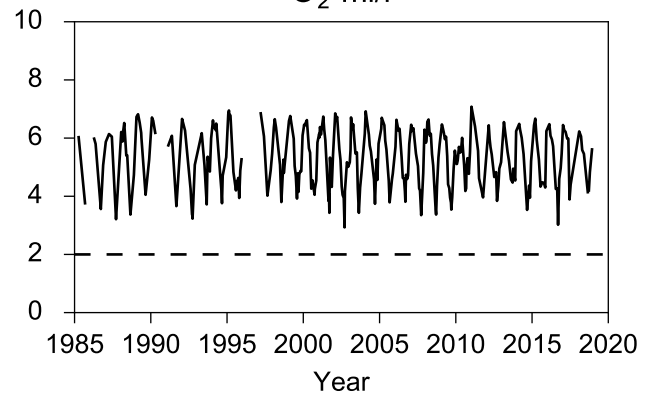


OXYGEN IN BOTTOM WATER (depth >= 74 m)

O₂ ml/l

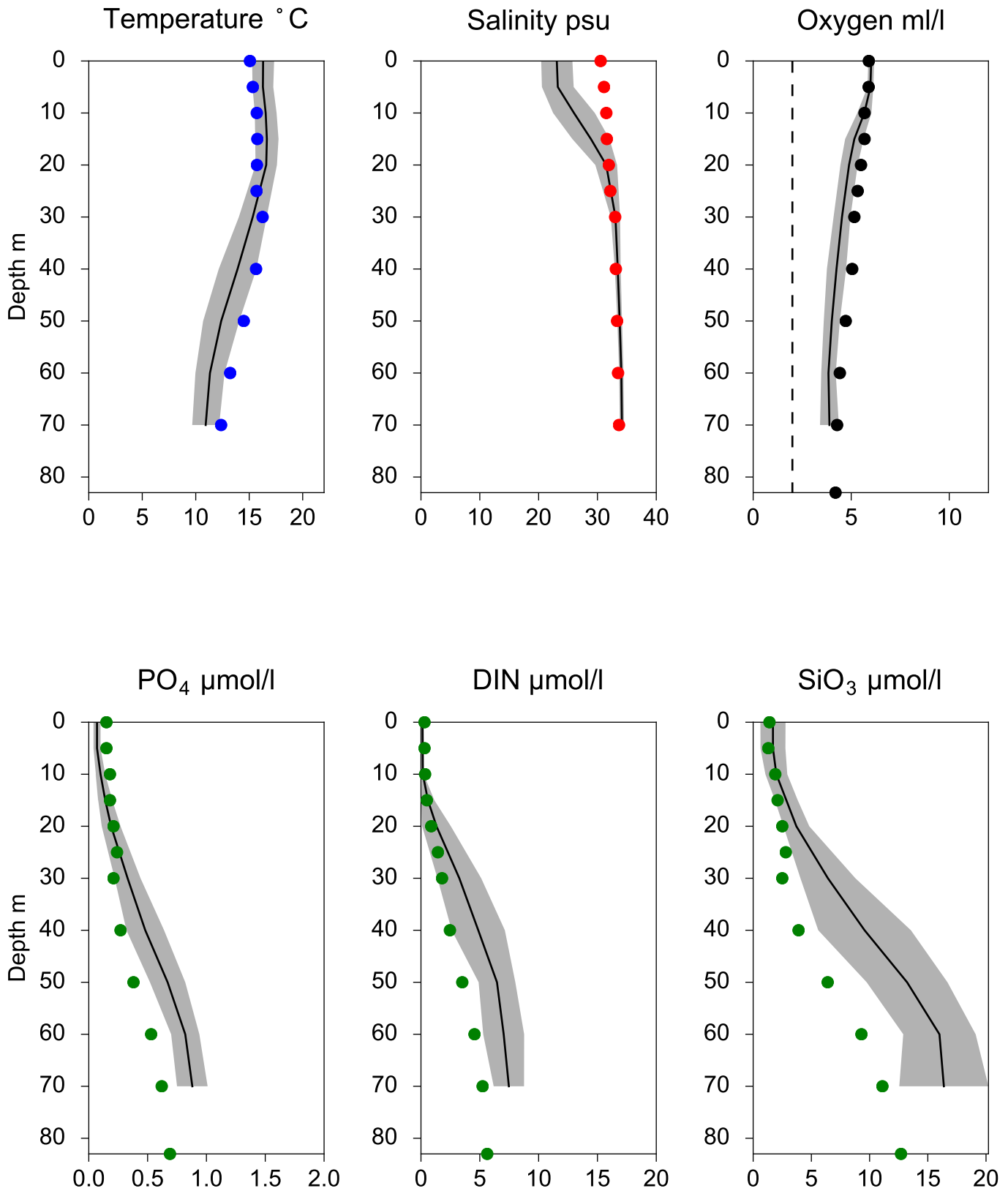


O₂ ml/l



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STATION Å17 SURFACE WATER (0-10 m)

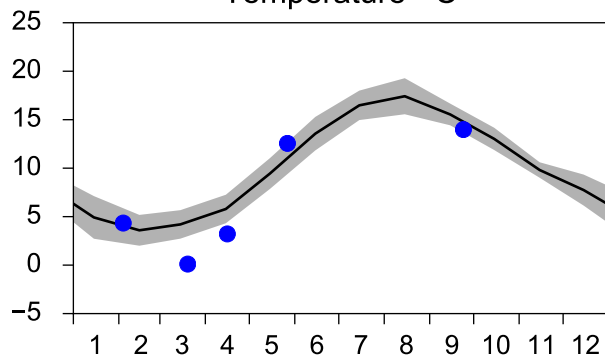
Annual Cycles

— Mean 2001-2015

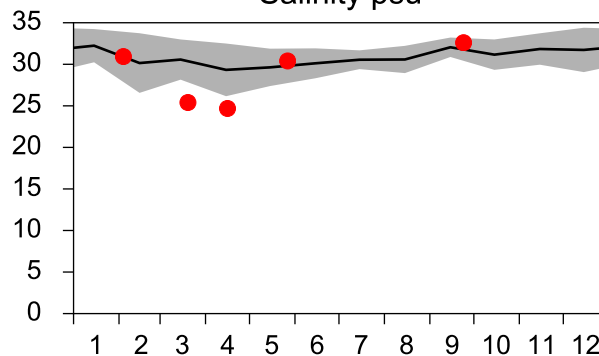
■ St.Dev.

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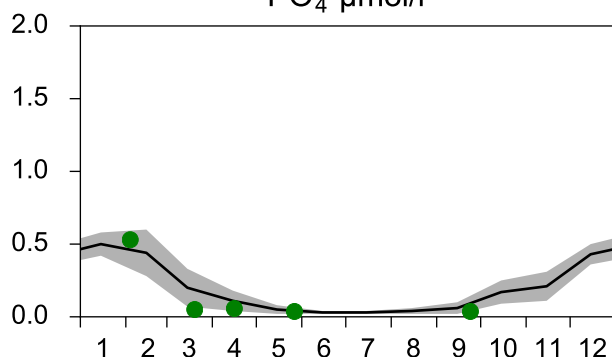
Temperature °C



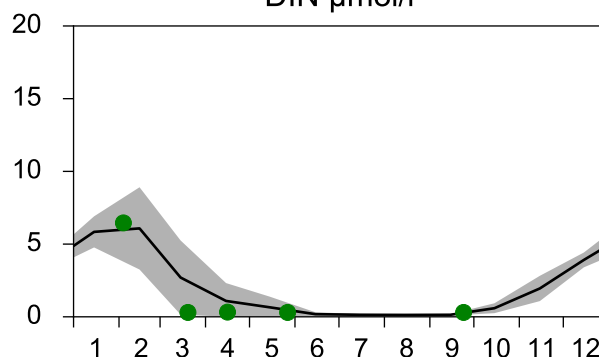
Salinity psu



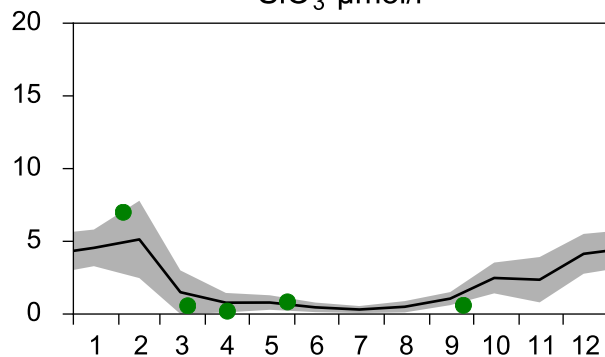
PO₄ µmol/l



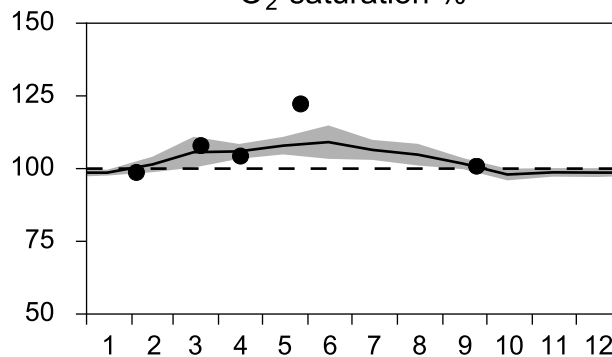
DIN µmol/l



SiO₃ µmol/l

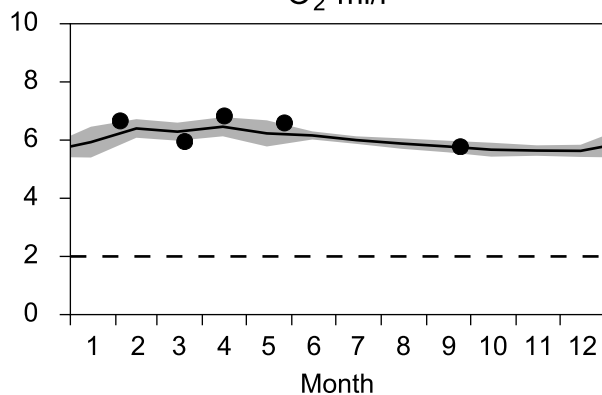


O₂ saturation %

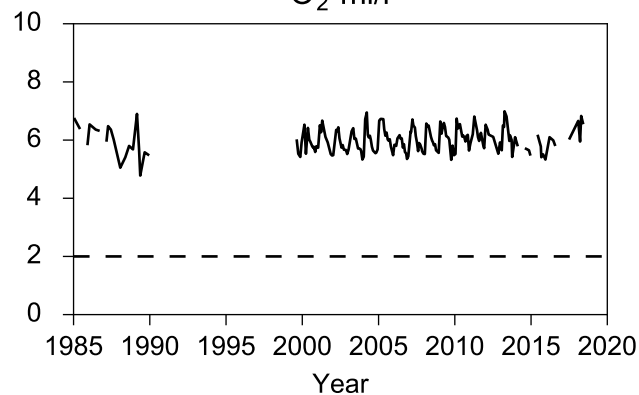


OXYGEN IN BOTTOM WATER (depth >= 300 m)

O₂ ml/l

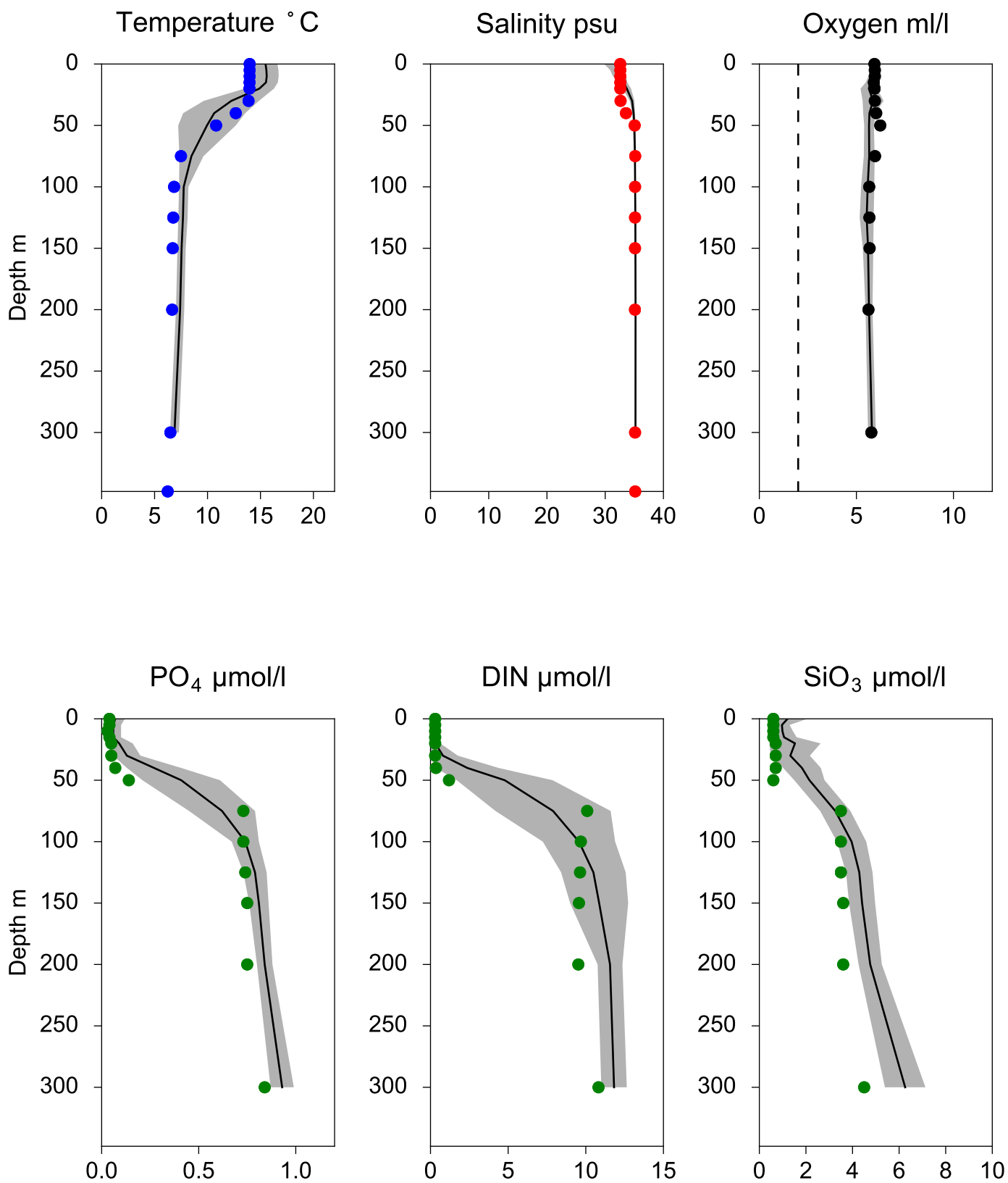


O₂ ml/l



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STATION Å15 SURFACE WATER (0-10 m)

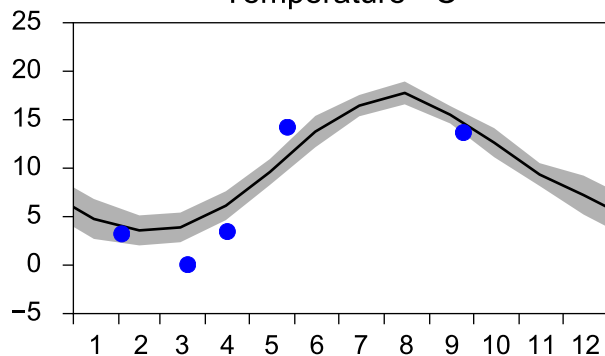
Annual Cycles

— Mean 2001-2015

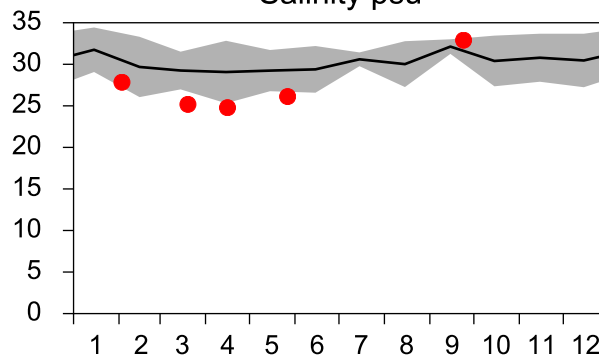
■ St.Dev.

● 2018

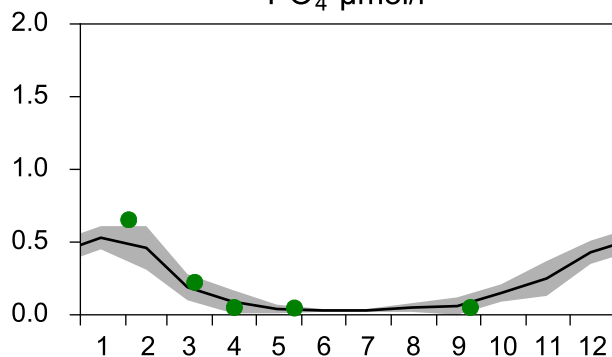
Temperature °C



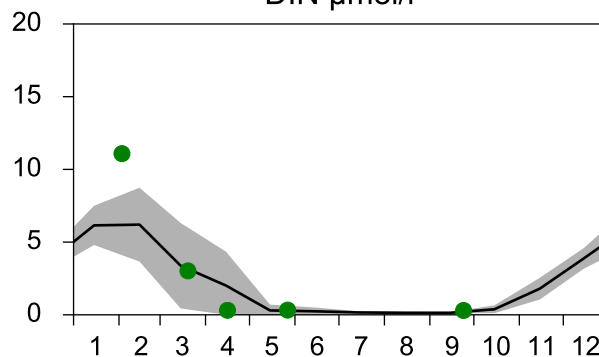
Salinity psu



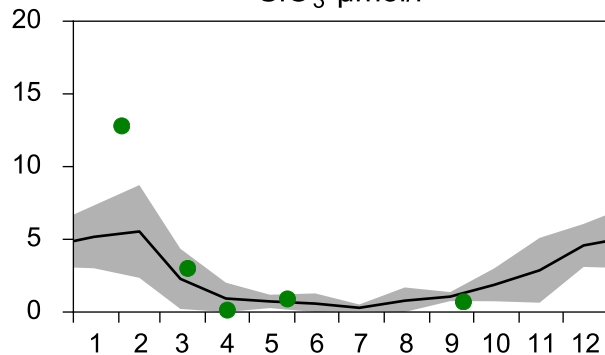
PO₄ µmol/l



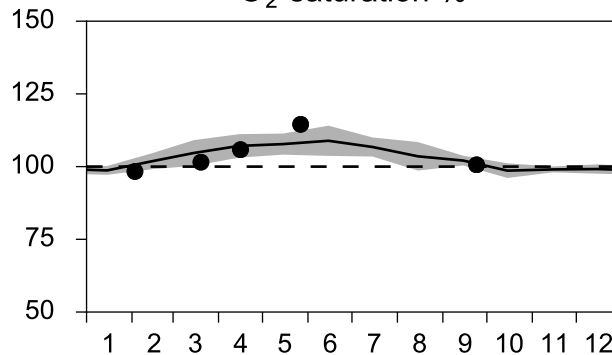
DIN µmol/l



SiO₃ µmol/l

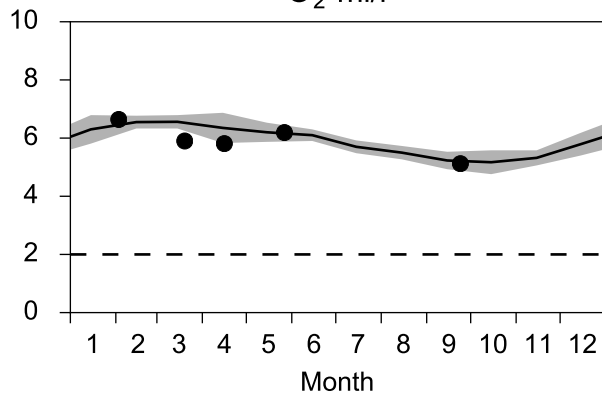


O₂ saturation %

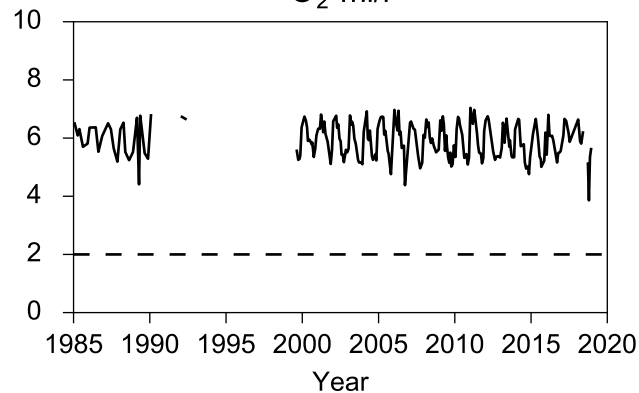


OXYGEN IN BOTTOM WATER (depth >= 125 m)

O₂ ml/l

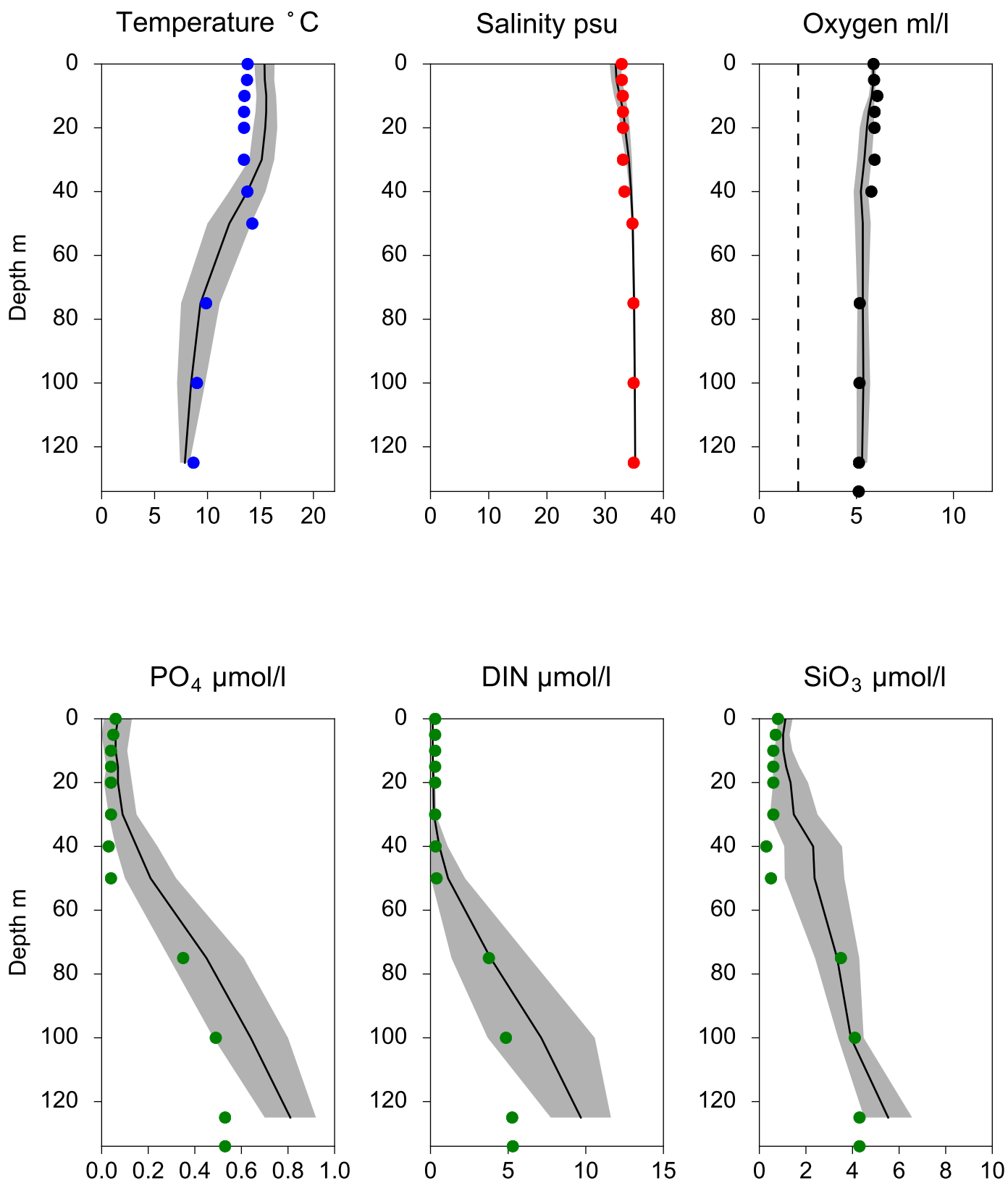


O₂ ml/l



Vertical profiles Å15 September

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STATION Å13 SURFACE WATER (0-10 m)

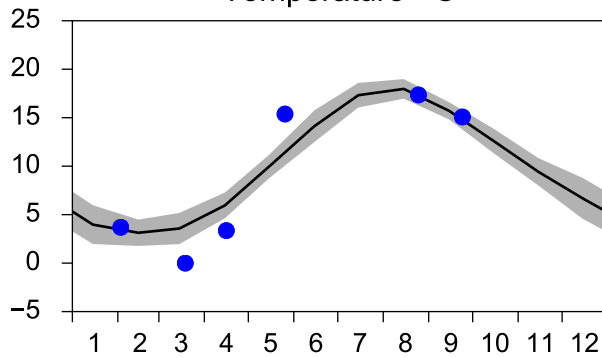
Annual Cycles

— Mean 2001-2015

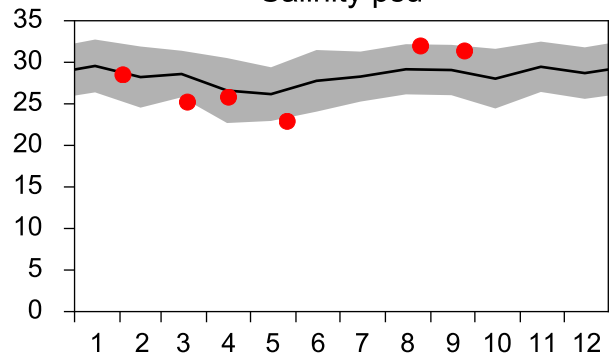
■ St.Dev.

● 2018

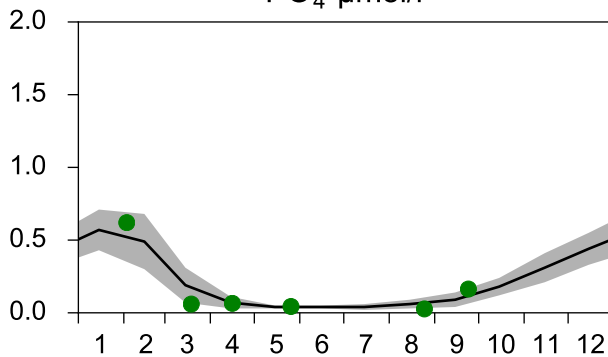
Temperature °C



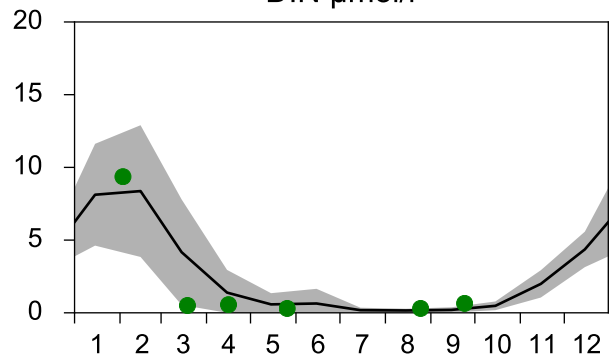
Salinity psu



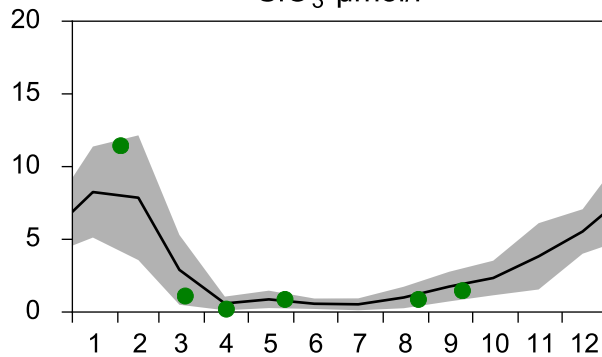
PO₄ µmol/l



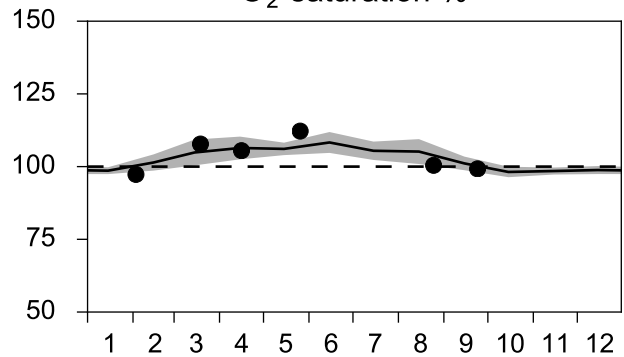
DIN µmol/l



SiO₃ µmol/l

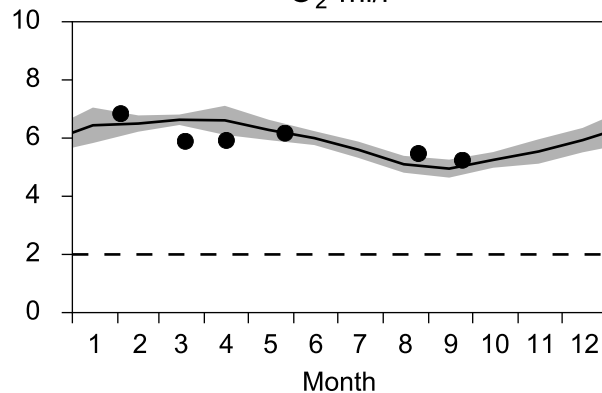


O₂ saturation %

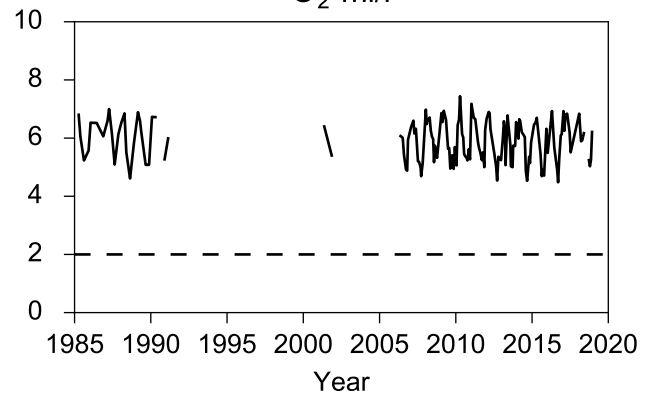


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

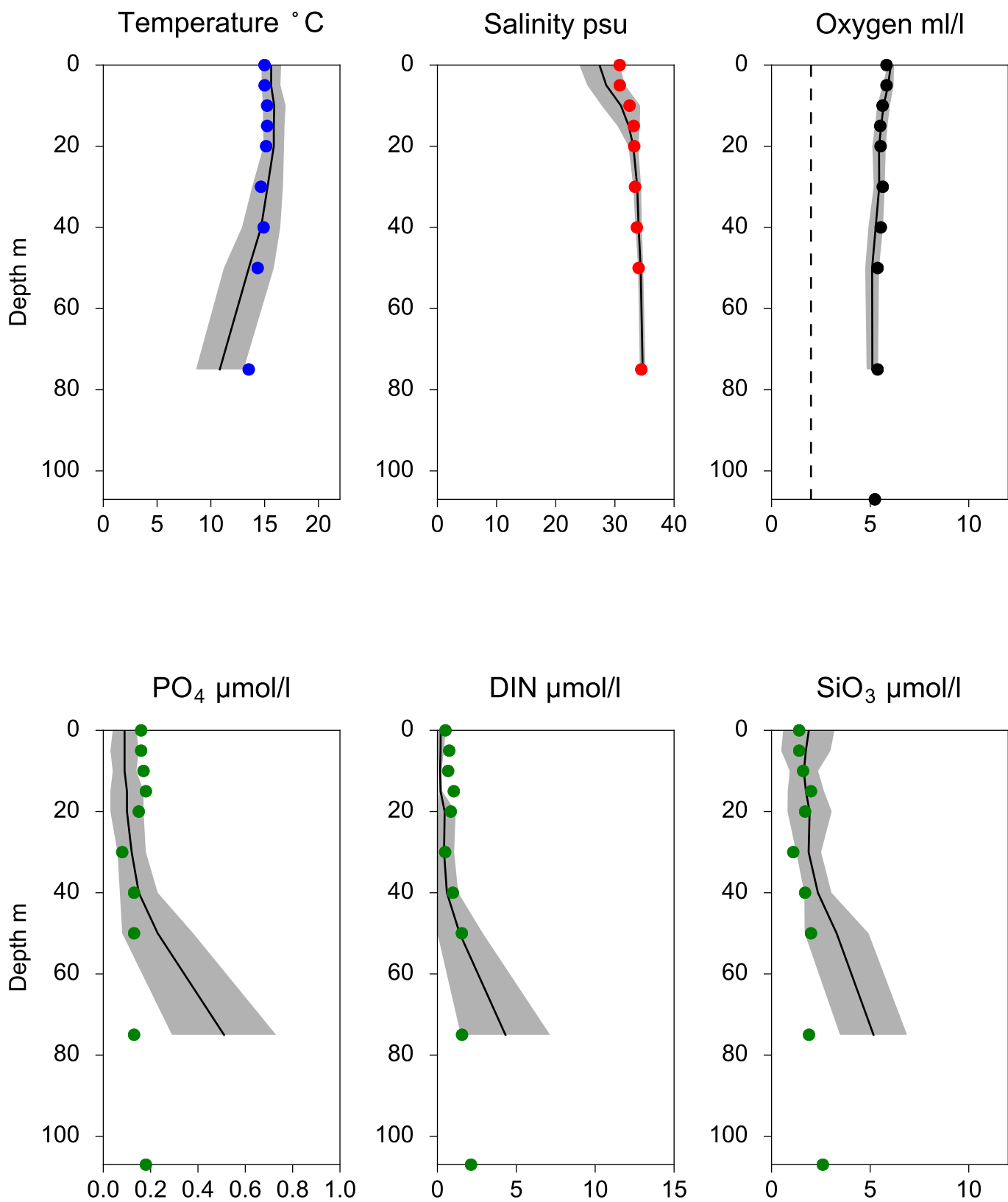


O₂ ml/l



Vertical profiles Å13 September

— Mean 2001-2015 ■ St.Dev. ● 2018-09-24



STATION SLÄGGÖ SURFACE WATER (0-10 m)

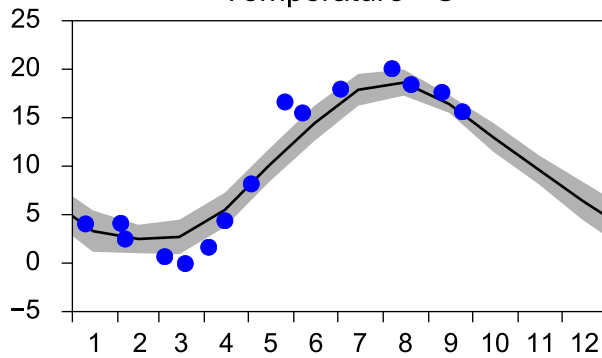
Annual Cycles

— Mean 2001-2015

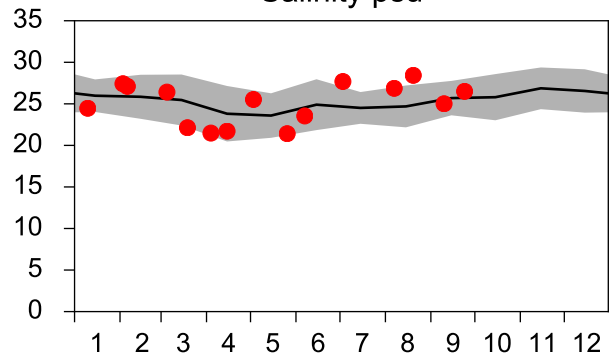
■ St.Dev.

● 2018

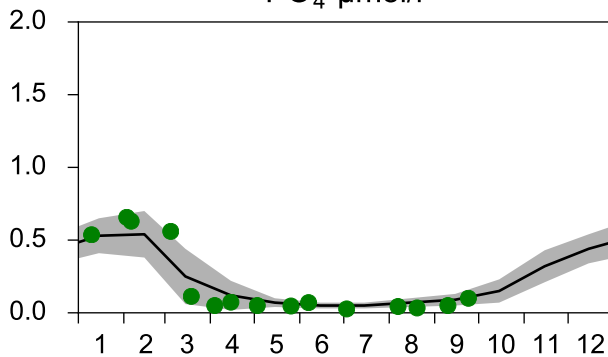
Temperature °C



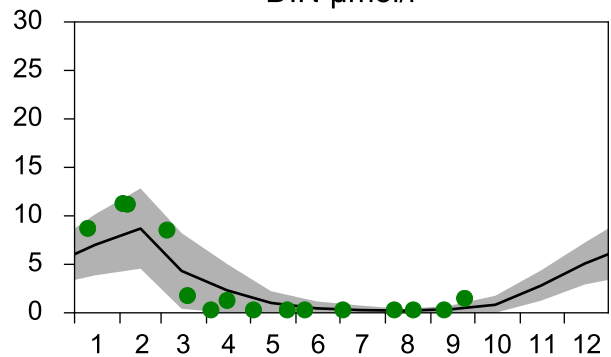
Salinity psu



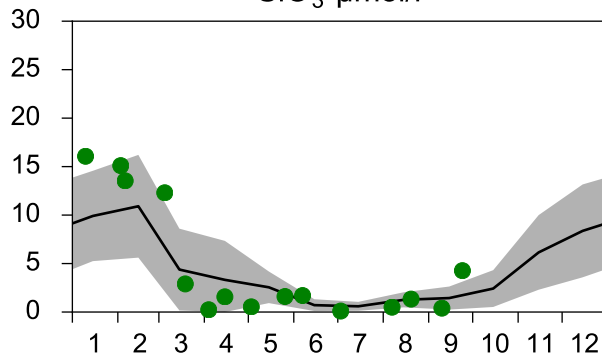
PO₄ µmol/l



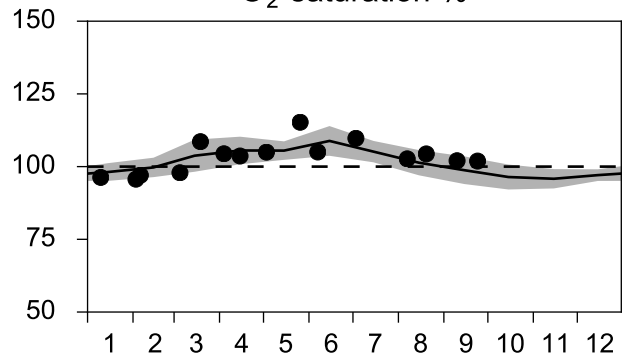
DIN µmol/l



SiO₃ µmol/l

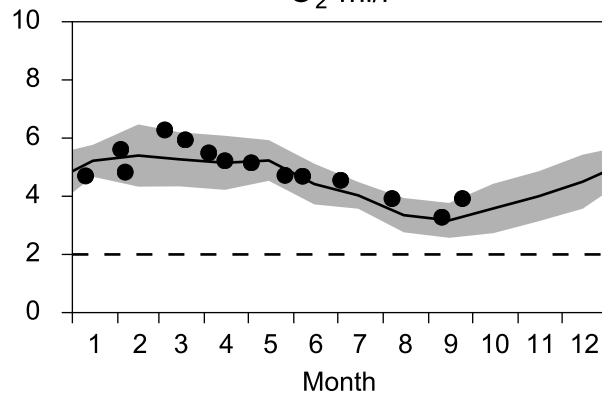


O₂ saturation %

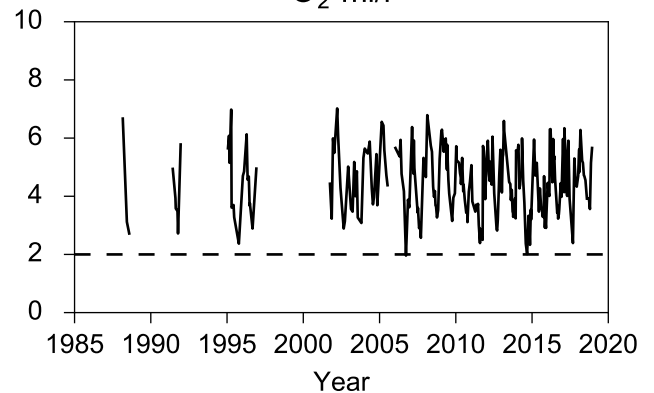


OXYGEN IN BOTTOM WATER (depth >= 64 m)

O₂ ml/l



O₂ ml/l



Vertical profiles SLÄGGÖ September

— Mean 2001-2015 ■ St.Dev. ● 2018-09-24

