

Rapport från SMHIs utsjöexpedition med R/V Aranda



Expeditionens varaktighet: 2016-05-16 - 2016-05-23
Undersökningsområde: Skagerrak, Kattegatt, Öresund och Egentliga Östersjön
Uppdragsgivare: SMHI samt Havs- och Vattenmyndigheten

SAMMANFATTNING

Under expeditionen, vilken ingick i det svenska havsövervakningsprogrammet, besöktes Skagerrak, Kattegatt, Öresund och Egentliga Östersjön. Denna rapport är baserad på preliminära, endast delvis kvalitetskontrollerade data.

I Västerhavet var samtliga närsaltskoncentrationer mycket låga i ytvattnet. Kring 15-20 meter observerades dock fluorescenstoppar, hög syremättnad och även högre närsaltskoncentrationer. I Egentliga Östersjön var det oorganiska kvävet (nitrit+nitrat) slut ner till 40 meter, dock fanns det fortfarande fosfat kvar. Koncentrationen av silikat var fortfarande högre än normalt i hela Egentliga Östersjön

Akut syrebrist (< 2 ml/l) uppmättes från 70-80 meters djup i Östra och Västra Gotlandsbassängerna samt från 70 m i Hanöbukten och från 80 meter i Bornholmsbassängen. Svavelväte uppmättes endast vid 125-150 m på Fårödjupet samt från 90 meters djup i Västra Gotlandsbassängen. Gotlandsdjupet (BY15) var fortfarande helt syresatt.

Nästa ordinarie expedition är planerad att starta 13:e juni.

PRELIMINÄRA RESULTAT

Expeditionen genomfördes ombord det finska forskningsfartyget Aranda och startade i Helsingfors den 16:e maj samt avslutades i samma hamn den 23:e. Vindarna under expeditionen var i huvudsak svaga (1,6 – 10,0 m/s) och varierade i sydostlig till nordvästlig riktning. Lufttemperaturen varierade mellan +7,6 och +13,5°C med de lägsta temperaturerna i Östersjön.

I slutet av expeditionen besöktes havsbojen vid Huvudskär för en referensmätning samt en visuell inspektion.

Under expeditionen deltog även en forskare från Tartus universitet i Estland som jämförde analysmetoder för pH.

Tyvärr kunde inget ammonium analyseras under den här expeditionen på grund av instrumentfel. De ytvattenfigurer som visar DIN består därför enbart av nitrit+nitrat. I vertikalplottarna har DIN helt tagits bort.

Skagerrak

Temperaturen i ytvattnet var normal för årstiden och varierade mellan 10,8 och 12,8 °C.

Ytsalthalten i yttre Skagerrak var normal för årstiden och något högre än normalt i södra delen samt närmast kusten och låg mellan 25,6 och 29,1 psu. Skiktningen, både när det gäller temperatur och salthalt sammanföll mellan 5 och 15 m förutom i yttersta delen där skiktningen låg djupare, mellan 10-30 m.

Samtliga närsaltskoncentrationer var mycket låga i ytlagret i hela området, vilket också är normalt för säsongen. Koncentrationen av fosfat varierade mellan 0,03-0,04 µmol/l, koncentrationen av nitrit+nitrat låg kring detektionsgränsen (<0,01 µmol/l) och silikat varierade mellan 0,3-0,4 µmol/l. Vid samtliga stationer sågs en fluorescenstopp kring 15-20 m. Vid dessa toppar var också vattnet övermättat med syre vilket indikerar högre planktonaktivitet, närsaltshalterna var också högre i detta skikt. Bottenvattnet var väl syresatt, även vid Släggö i Gullmarsfjordens mynning.

För mer detaljer rörande algsituationen se separat rapport; AlgAware.

Kattegatt och Öresund

Temperaturen i ytvattnet var normal för årstiden och varierade mellan 9,9 och 11,7°C. Salthalten i ytlagret var normal för årstiden förutom närmast kusten där den var något högre, variationerna var mellan 18,1 – 20,7. I området låg salt- och temperaturskiktningen på djup mellan 10 och 15 meter. I Öresund var salthalten 18,2 psu vilket är högre än normalt och skiktningen återfanns vid 15-25 meters djup.

Samtliga närsalter i ytvattnet var mycket låga vilket är normalt för årstiden. Fosfatkoncentrationerna varierade mellan 0,03-0,11 µmol/l, summa nitrit+nitrat var under detektionsgränsen (<0,1 µmol/l) och silikat varierade mellan 0,3 och 1,9 µmol/l. Högsta närsaltskoncentrationerna återfanns i Öresund. Syreförhållandena i djupvattnet var goda och lägsta koncentrationen uppmättes i Öresund, 4,49 ml/l. Vid samtliga stationer sågs en fluorescenstopp kring 15-20 m, högst vid Anholt. Vid dessa toppar var också vattnet övermättat med syre vilket indikerar högre planktonaktivitet, närsaltshalterna var också högre vid detta skikt. För mer detaljer rörande algsituationen se separat rapport; AlgAware.

Egentliga Östersjön

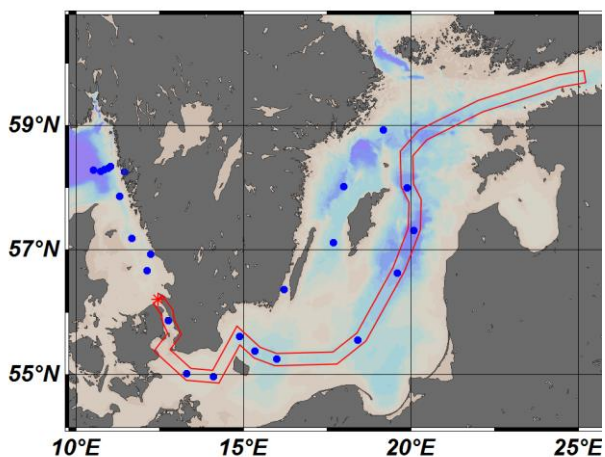
Temperaturen i ytvattnet var generellt något högre än normalt i hela området och varierade från 7,9°C till 12,3°C. Ysalthalten var generellt normal för årstiden förutom i Bornholmsbassängen där den var något högre och i Östra Gotlandsbassängen där den var mycket lägre. Salthaltsvariationerna i ytvattnet låg mellan 6,8 i den nordvästra delen till 8,3 i den sydvästra. Haloklin och termoklin sammanföll och återfanns på 50-80 meters djup i området. Kring 15 m hade även en sommartermoklin börjat etableras.

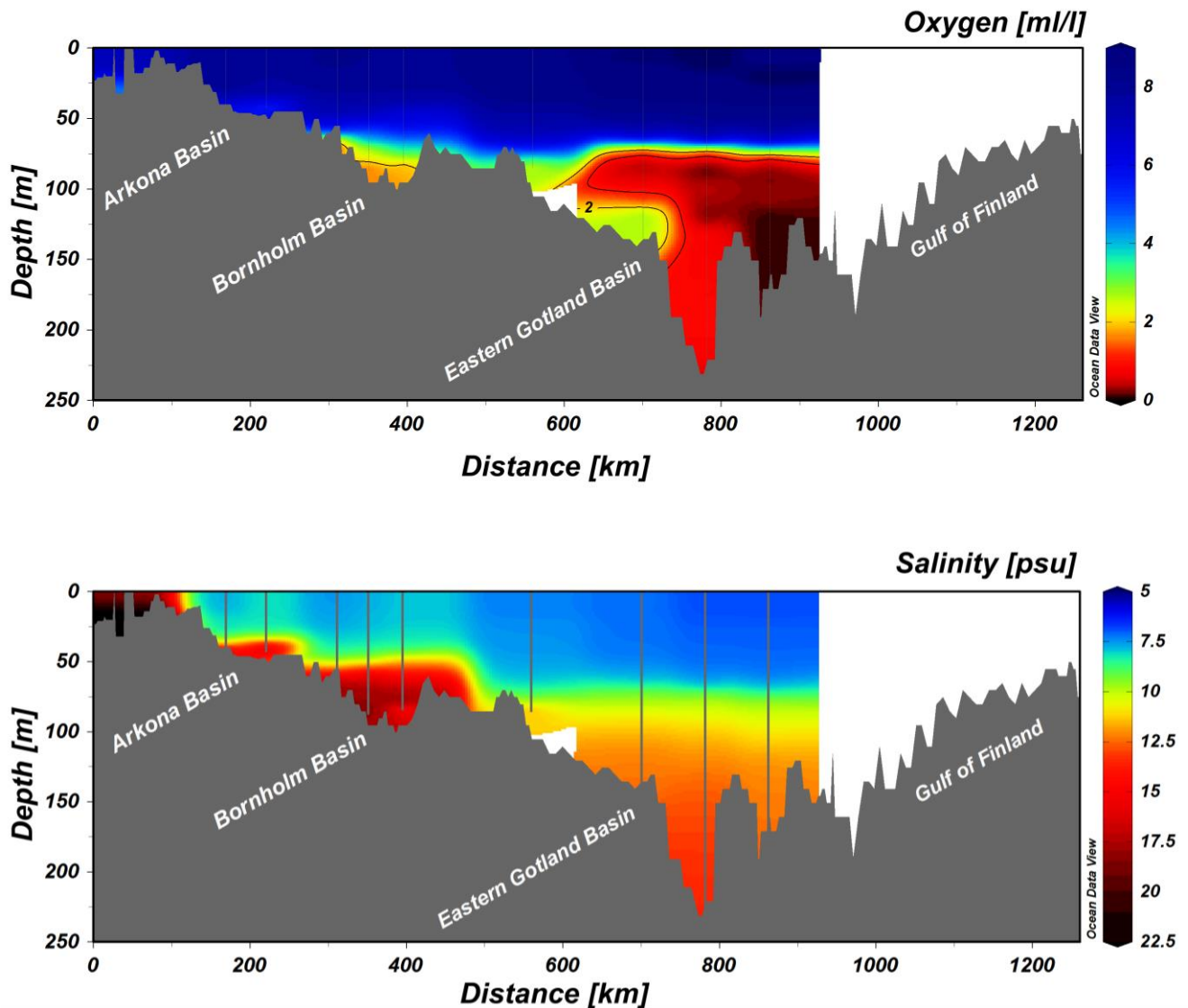
Halterna av nitrit+nitrat låg under detektionsgränsen ($<0,1 \mu\text{mol/l}$) ner till 40 m i hela Egentliga Östersjön, vilket är normalt för årstiden. Fosfathalterna i ytvattnet var också normala för årstiden förutom i Västra Gotlandsbassängen där de var något lägre samt i Hanöbukten där de var högre. Variationerna låg mellan 0,1-0,44 $\mu\text{mol/l}$ med lägst koncentrationer i nordvästra delen och högst i sydvästra delen. Koncentrationen av silikat var över eller mycket över det normala i hela området och varierade mellan 10,7 och 15,5 $\mu\text{mol/l}$.

I norra delen av Västra Gotlandsbassängen var det en snabb övergång från syresatt vatten till det anoxiska skiktet vid 90 meter, i södra delen (BY38) uppmättes akut syrebrist ($< 2 \text{ ml/l}$) från 70 meter och svavelväte från 90 meter. I norra delen av Östra Gotlandsbassängen (BY20) rådde akut syrebrist från 80 meter men svavelväte uppmättes endast vid 125 och 150 meter. Vid Gotlandsdjupet var fortfarande hela vattenkolumnen syresatt, det var dock mycket låga syrgashalter i bottenskiktet och akut syrebrist rådde från 80 meter.

Akut syrebrist observerades även i Hanöbukten från 70 meter och i Bornholmsbassängen från 80 meter, vilket är en försämring sedan SMHI's förra mätning i april.

Fluorescensmätningarna visade biologisk aktivitet i ytlagret i hela Egentliga Östersjön och fluorescenstoppar observerades kring 15 meter. För mer detaljer rörande algsituationen se separat rapport; AlgAware.





Figur 1. Snitt som visar syre- och salthalt genom Egentliga Östersjön från Öresund till Finska viken.

DELTAGARE

Namn

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Silvie Lainela

Expeditionsledare
Helsingfors-Lysekil
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Från

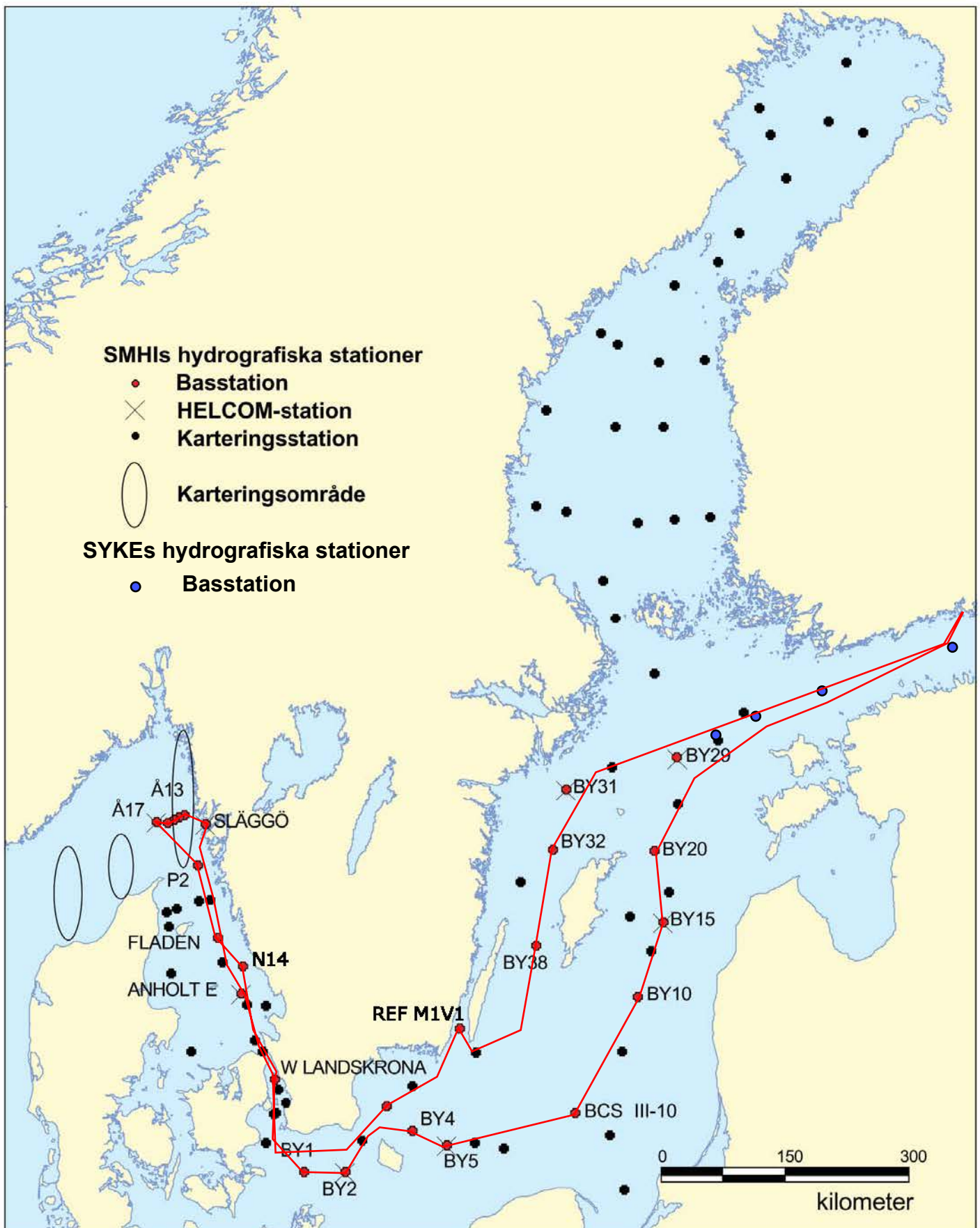
SMHI
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Tartus universitet

BILAGOR

- Färdkarta
- Tabell över stationer, antal parametrar och provtagningsdjup
- Karta över syrehalter i bottenvattnet
- Vertikalprofiler för basstationer
- Månadsmedelvärdesplottar för ytvatten

TRACKCHART

Country: Sweden
 Ship: R/V ARANDA
 Date: 20160516-20160523
 Series: 0258-0282



Date: 2016-05-22
Time: 16:37

Ser no	Stat code	P r o j	Station-----	Lat-----	Lon-----	Date yyyymmdd	Time hhmm utc	Bottom depth m	Secchi depth m	Wind di ve	Air temp C	Air pres hPa	WCSI elec aoae tu hd	C PPCPZT Hrhhoo ml Cilyooa motPBw PrP l	No de	T S e m a l p i n	P O h x y S P P N N N N A 3 u n s i	H 2 o o o o h o l i u i o m g n c m	L P T C O O C C m
0258	BPEX26BAS	BY20	FÅRÖDJ	N5800	E1953	20160517	0300	196		13 7	7.6	1002	2730	x --x----	17	x	x - x x x x x x - x - x - - - - -	-	- x
0259	BPEX21BAS	BY15	GOTLANDSDJ	N5720	E2003	20160517	0725	239	6	13 5	7.8	1003	2730	x -xxxx--	19	x	- x x - x x x x - x x x - - - - -	-	-
0260	BPEX13BAS	BY10		N5638	E1935	20160517	1300	147	6	30 5	9.0	1006	1630	x --x----	15	x	- x - x x x x - x - x - - - - -	-	-
0261	BPSE11BAS	BCS III-10		N5533.3	E1824	20160517	2030	90		23 5	8.7	1009	9999	x --x----	12	x	- x - x x x x - x - x - - - - -	-	-
0262	BPSB07BAS	BY5	BORNHOLMSDJ	N5515	E1559	20160518	0410	90	6.5	27 4	9.2	1010	1220	x -xxxx--	12	x	x x x - x x x x - x x x - - - - -	-	-
0263	BPSB06BAS	BY4	CHRISTIANSÖ	N5523	E1520	20160518	0745	92	6	25 5	9.2	1010	2820	x -----	12	x	- x - x x x x - x - x - - - - -	-	-
0264	BPSA01BAS	BY2	ARKONA	N5500	E1405	20160518	1330	47	7	18 4	10.4	1010	1630	x -xxxx--	8	x	- x - x x x x - x - x - - - - -	-	-
0265	BPSA02BAS	BY1		N5500	E1318	20160518	1705	46	5.5	12 5	10.6	1009	0020	x --x----	8	x	x - x - x x x x - x - x - - - - -	-	- x
0266	SOCX39BAS	W LANDSKRONA		N5552.0	E1245.0	20160518	2250	51		12 5	9.4	1008	9999	x --x----	9	x	- x - x x x x - x - x - - - - -	-	-
0267	KAEX29BAS	ANHOLT E		N5640.0	E1207.0	20160519	0350	63		15 6	10.3	1008	1430	x -xxxx--	10	x	x x - x x x x - x x x - - - - -	-	- x
0268	KANX50BAS	N14	FALKENBERG	N5656.40	E1212.70	20160519	0640	31	8.5	16 7	9.8	1009	1330	x -xxx---	7	x	x x x - x x x x - x x x - - - - -	-	- x
0269	KANX25BAS	FLADEN		N5711.5	E1140	20160519	0945	86	9	18 4	11.4	1010	1630	x --x----	12	x	- x - x x x x - x - x - - - - -	-	-
0270	SKEK23BAS	P2		N5752	E1118	20160519	1400	94	8	20 2	13.5	1000	1220	x --x----	10	x	- x - x x x x - x - x - - - - -	-	-
0271	SKEK18BAS	Å17		N5816.5	E1030.8	20160519	1800	349	7.5	22 6	10.1	1010	1130	x -xxxx--	14	x	- x x - x x x x - x x x - - - - -	-	-
0272	SKEK17BAS	Å16		N5816	E1043.5	20160519	2000	201		20 5	11.8	1010	1630	x -----	13	-	- - - - - - - - - - - - - - - -	-	-
0273	SKEK16BAS	Å15		N5817.7	E1051	20160519	2130	136		19 4	11.8	1011	9990	x --x----	12	x	- x - x x x x - x - x - - - - -	-	-
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0277	KAEX29BAS	ANHOLT E		N5640.0	E1207.0	20160520	1601	64	7	23 10	12.6	1011	1530	x --xxxx--	10	x	x x x - x x x x - x - x - - - - -	-	-
0278	BPSH05BAS	HANÖBUKTEN		N5537	E1452	20160521	0740	81	6	22 4	10.4	1016	4920	x --x----	11	x	x x x - x x x x - x - x - - - - -	-	-
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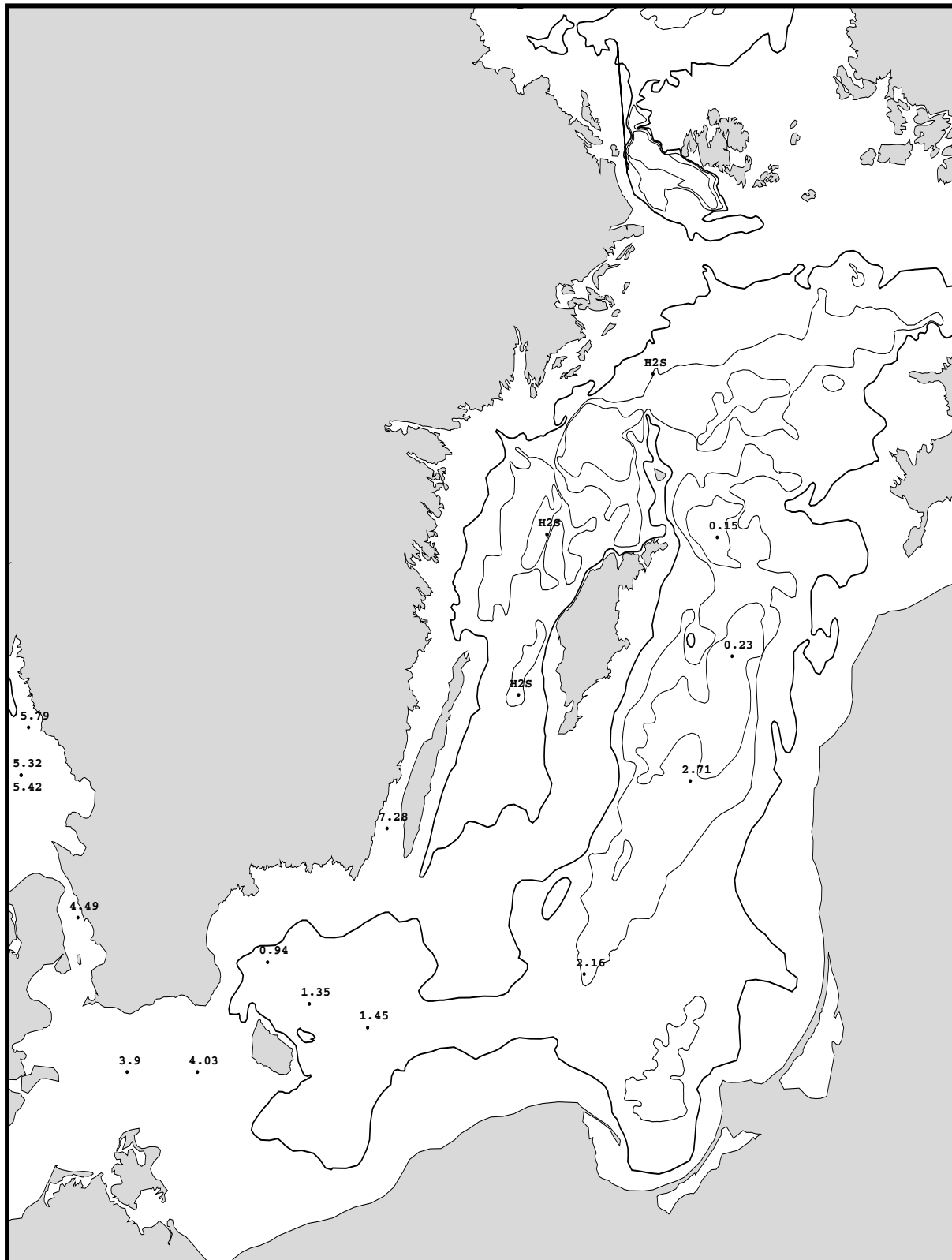
Bottom water oxygen concentration (ml/l)

Country: Finland

Ship : Aranda

Date : 20160517-20160522

Series : 0258-0282



STATION P2 SURFACE WATER (0-10m)

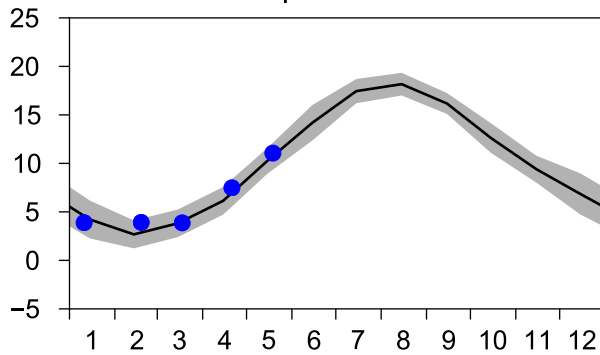
Annual Cycles

— Mean 2001-2015

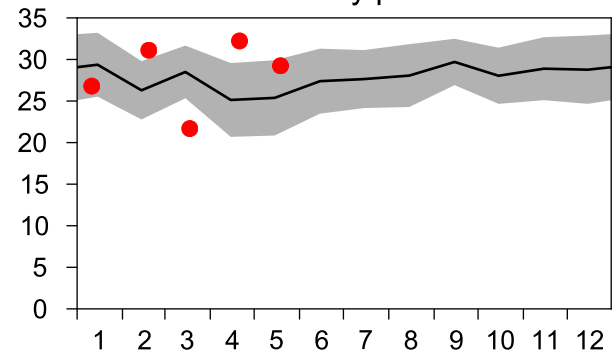
■ St.Dev.

● 2016

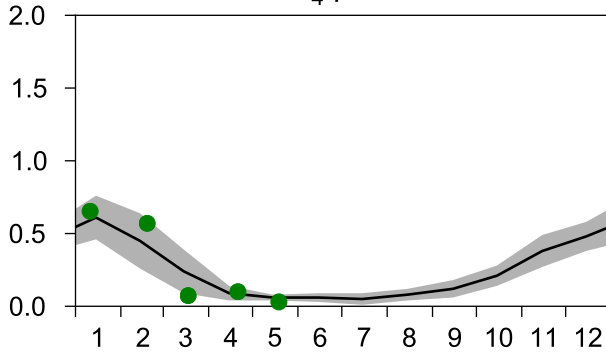
Temperature °C



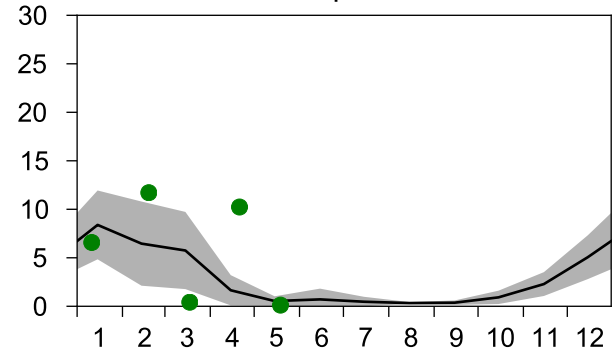
Salinity psu



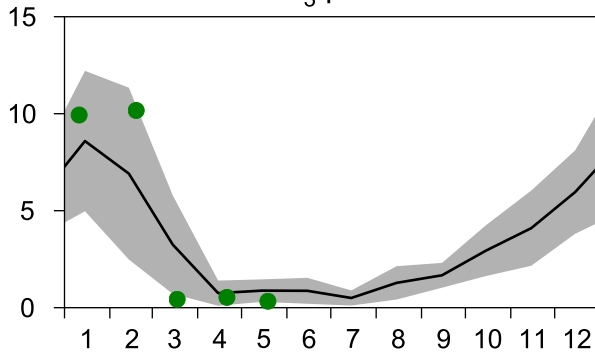
PO₄ µmol/l



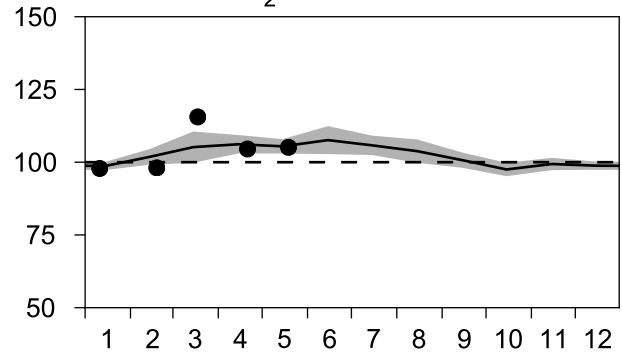
DIN µmol/l



SiO₃ µmol/l

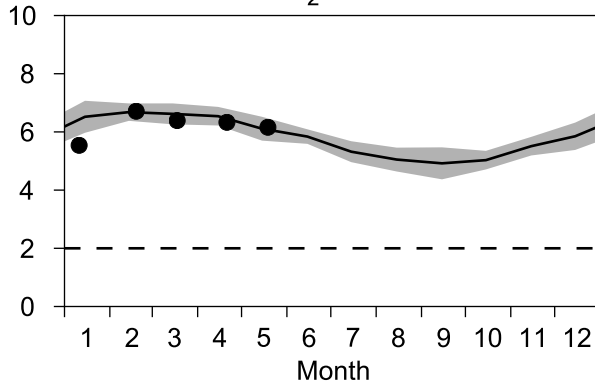


O₂ saturation %

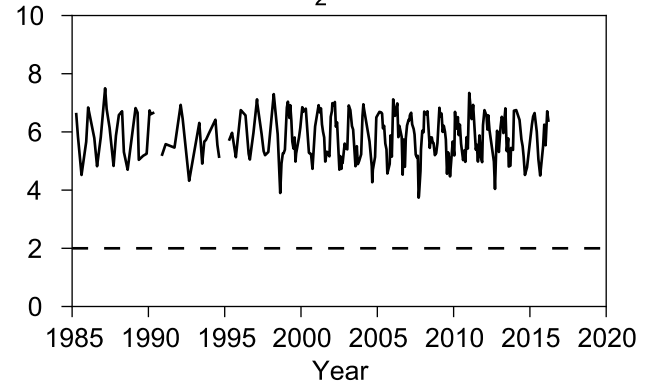


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

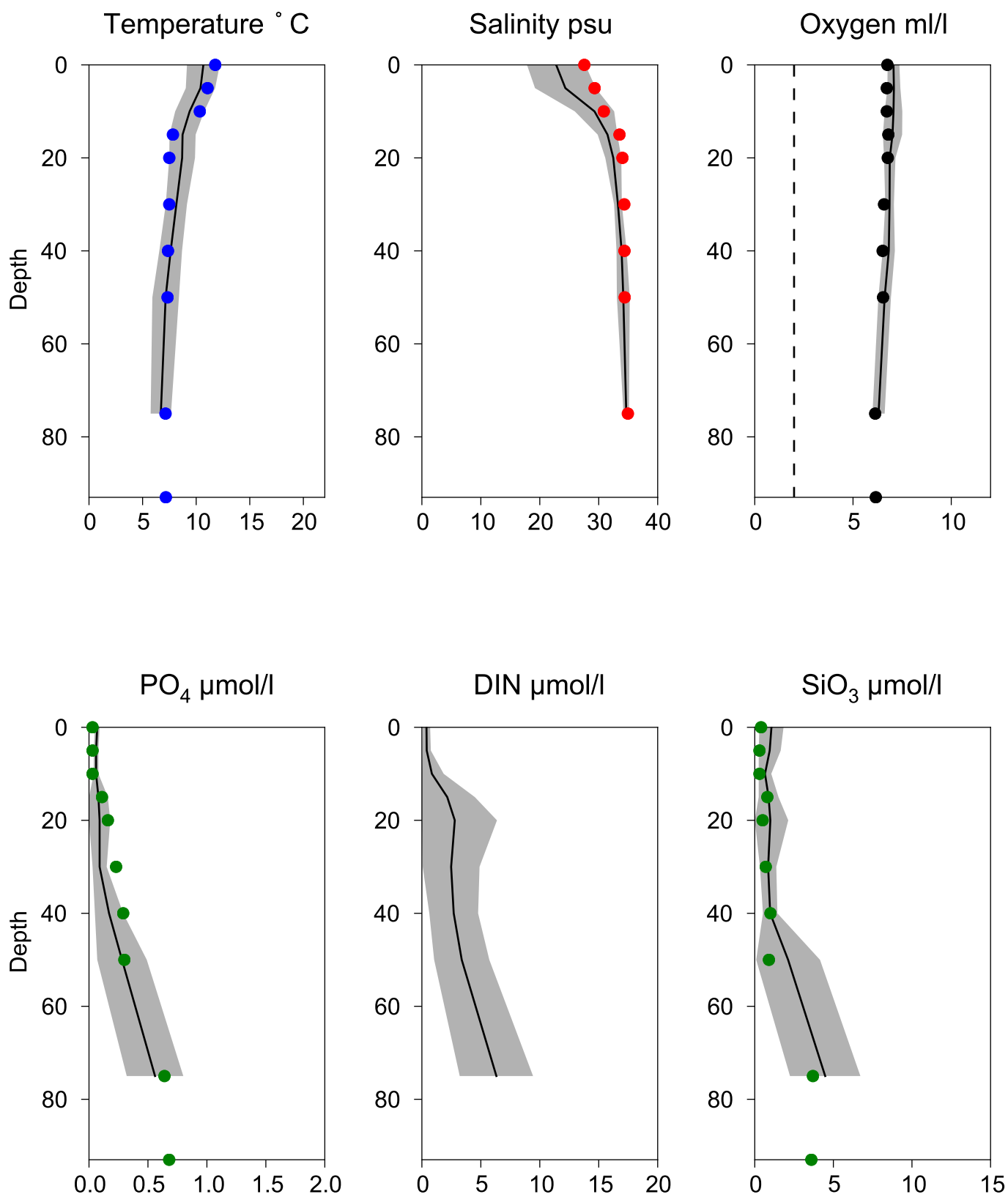


O₂ ml/l



Vertical profiles P2 May

— Mean 2001-2015 St.Dev. • 2016-5-19



STATION Å13 SURFACE WATER (0-10m)

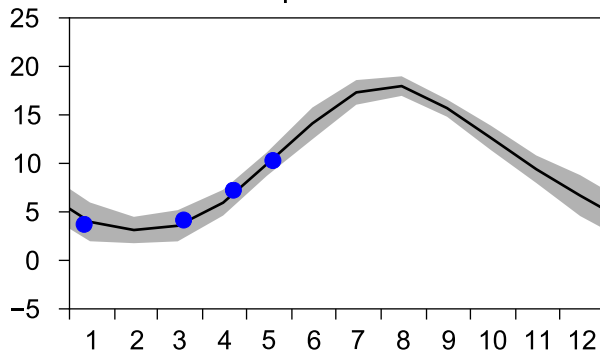
Annual Cycles

— Mean 2001-2015

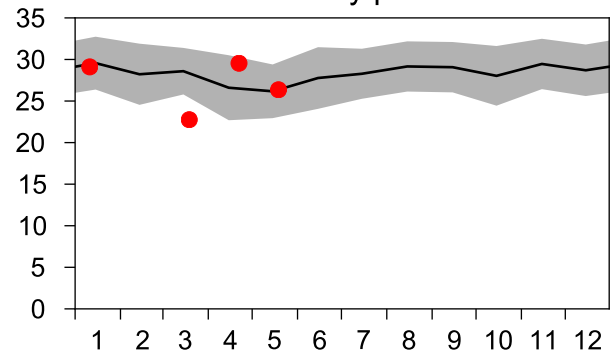
■ St.Dev.

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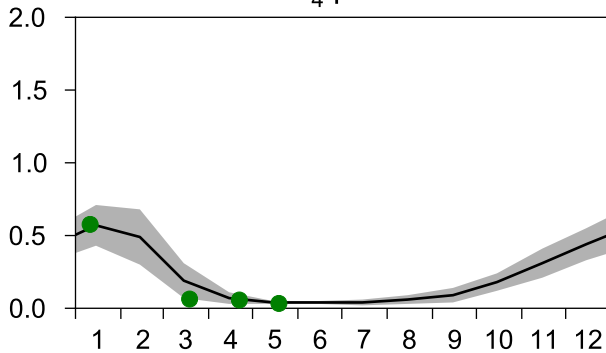
Temperature °C



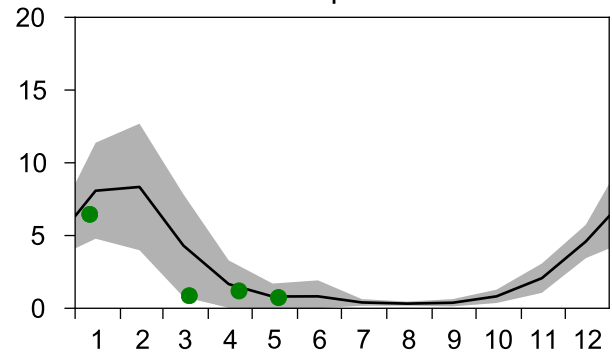
Salinity psu



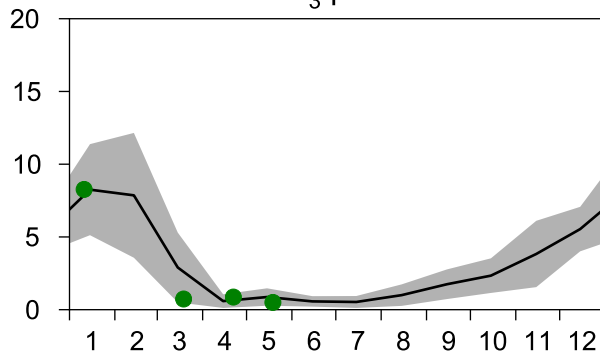
PO₄ µmol/l



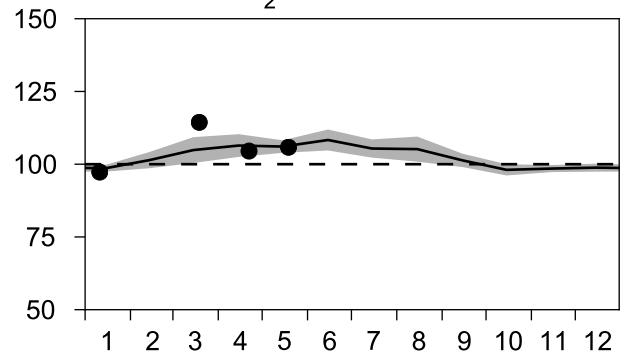
DIN µmol/l



SiO₃ µmol/l

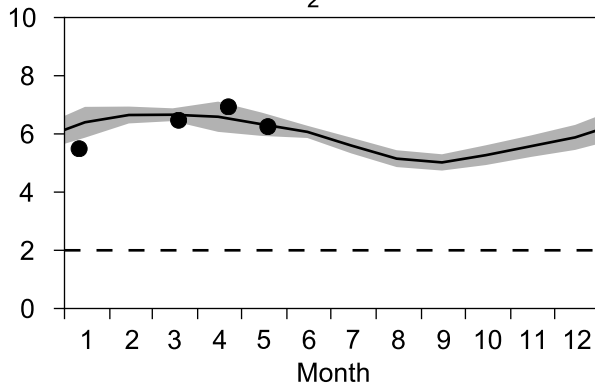


O₂ saturation %

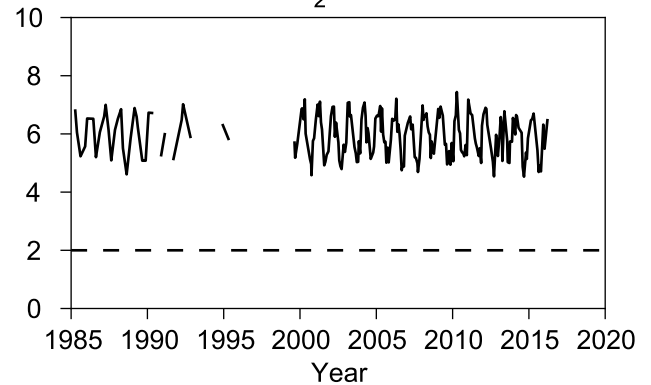


OXYGEN IN BOTTOM WATER (depth >= 75 m)

O₂ ml/l

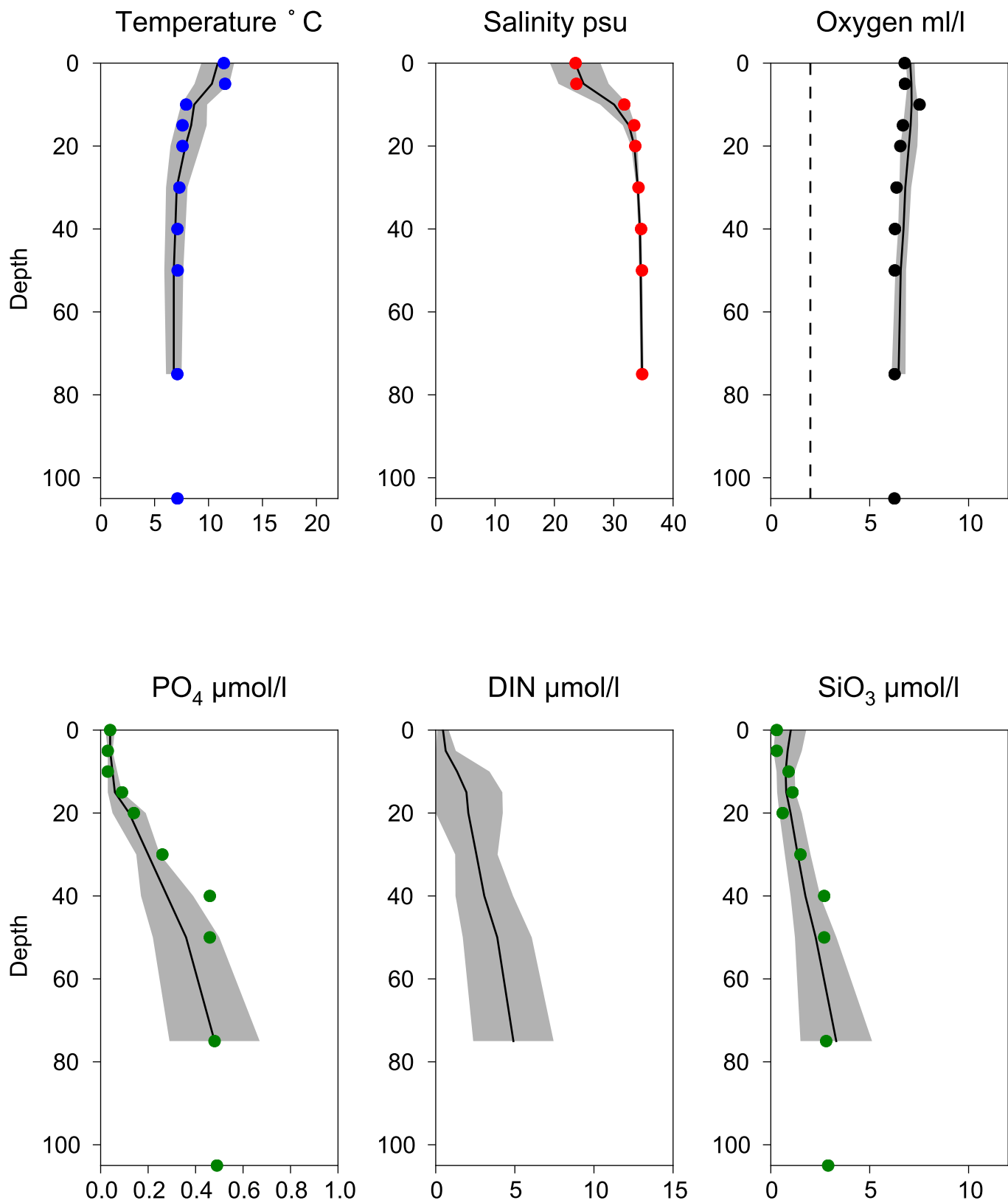


O₂ ml/l



Vertical profiles Å13 May

— Mean 2001-2015 St.Dev. • 2016-5-19



STATION Å15 SURFACE WATER (0-10m)

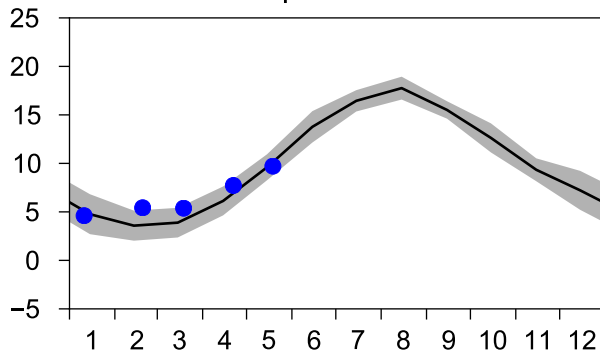
Annual Cycles

— Mean 2001-2015

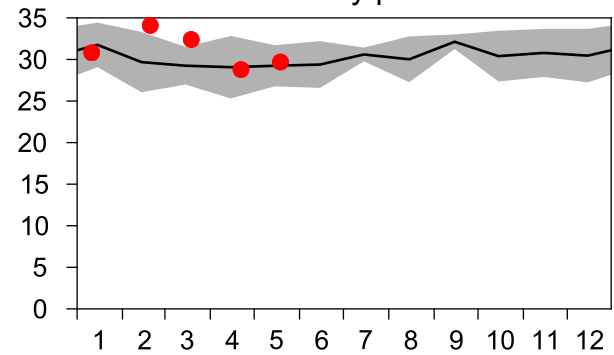
■ St.Dev.

● 2016

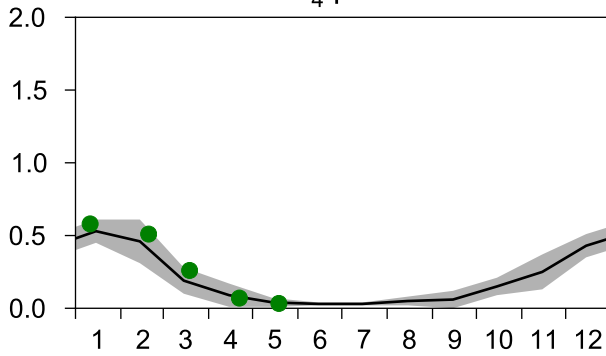
Temperature °C



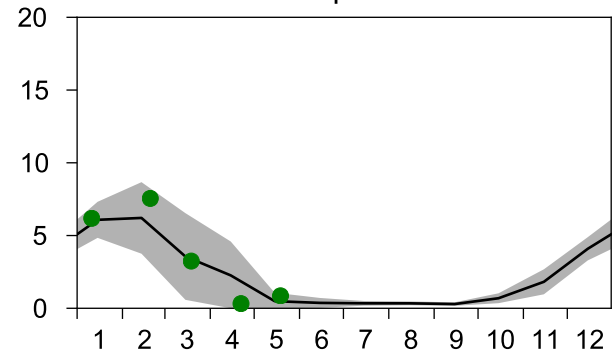
Salinity psu



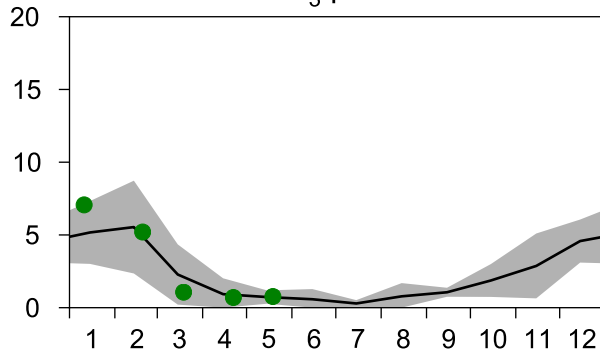
PO₄ µmol/l



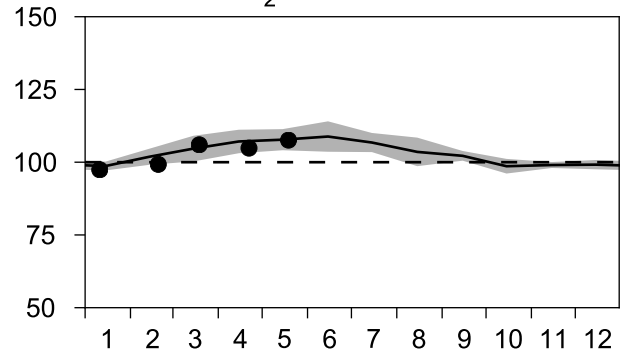
DIN µmol/l



SiO₃ µmol/l

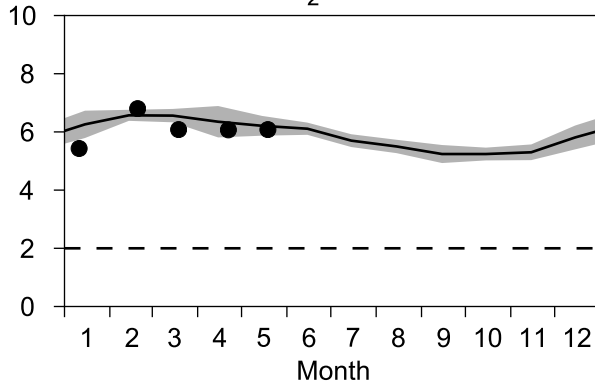


O₂ saturation %

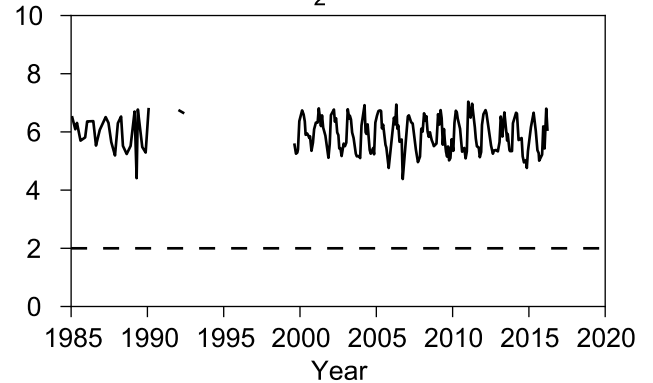


OXYGEN IN BOTTOM WATER (depth >= 125 m)

O₂ ml/l

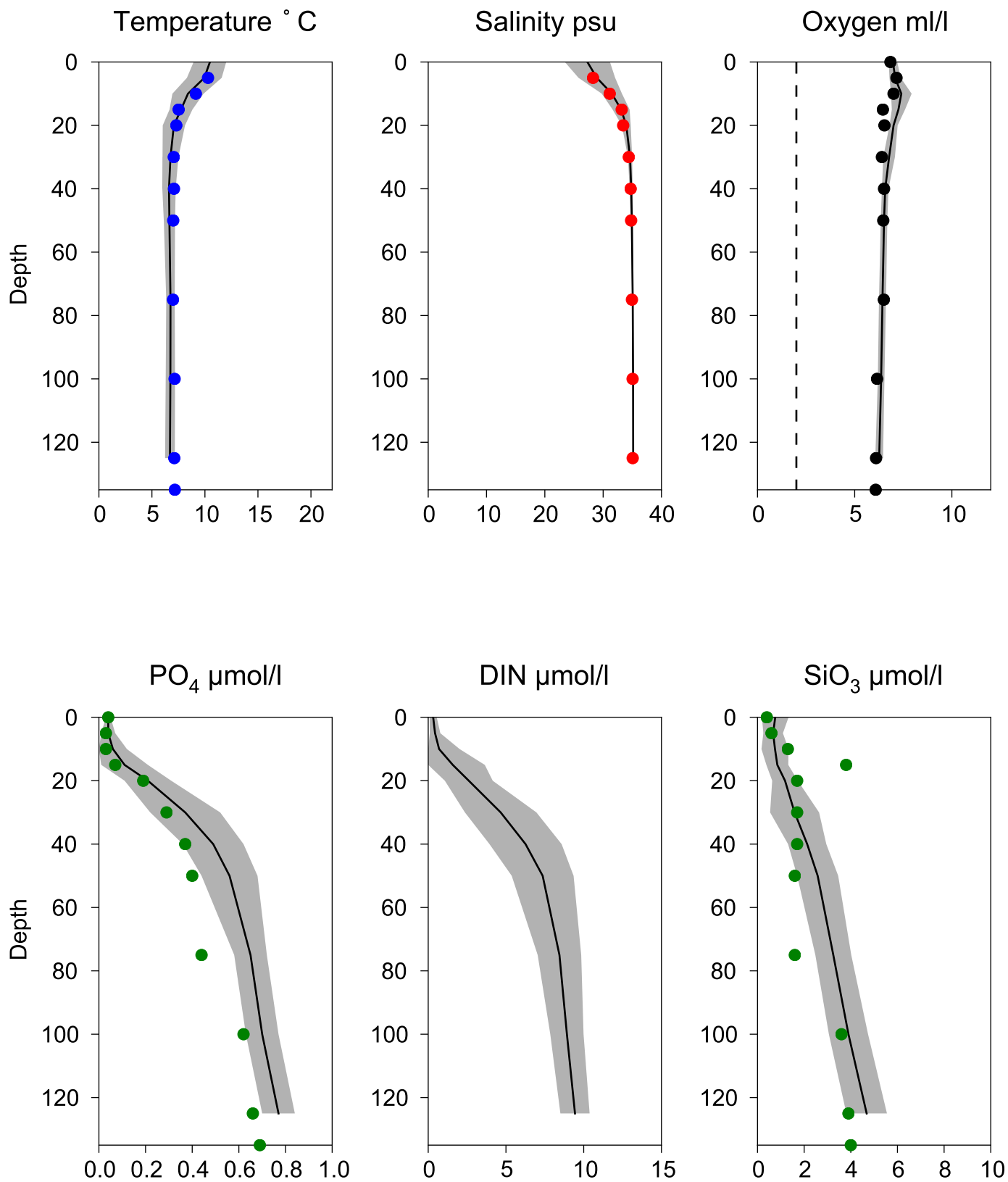


O₂ ml/l



Vertical profiles Å15 May

— Mean 2001-2015 St.Dev. • 2016-5-19



STATION Å17 SURFACE WATER (0-10m)

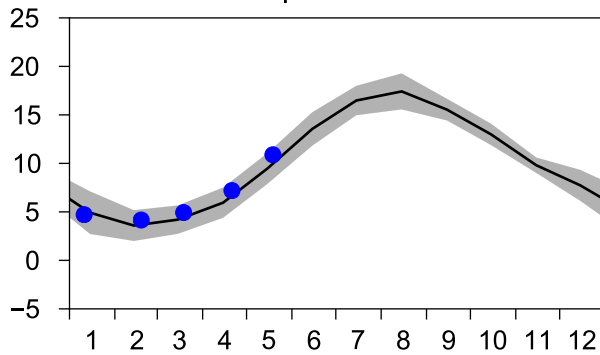
Annual Cycles

— Mean 2001-2015

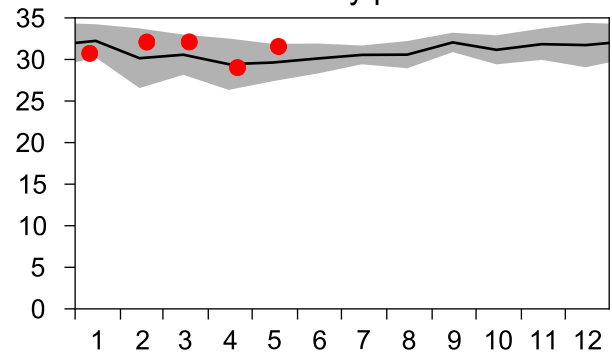
■ St.Dev.

● 2016

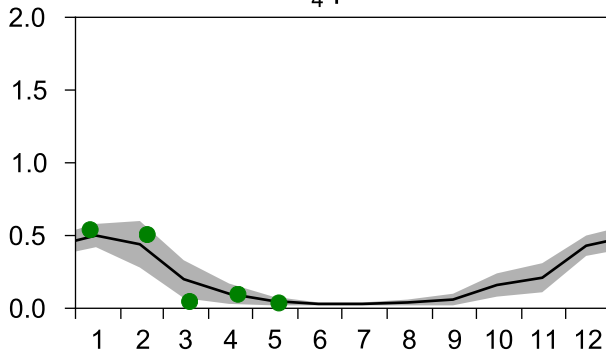
Temperature °C



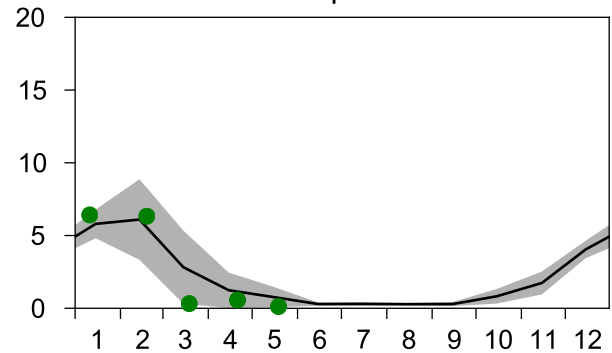
Salinity psu



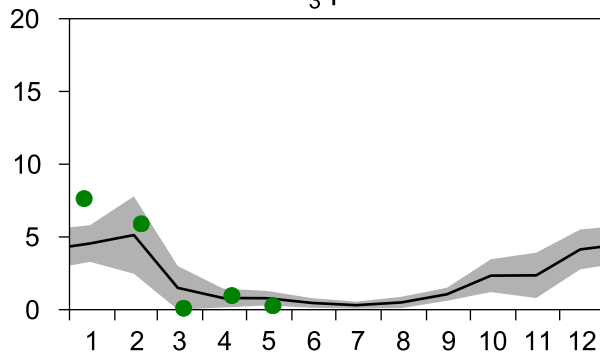
PO₄ µmol/l



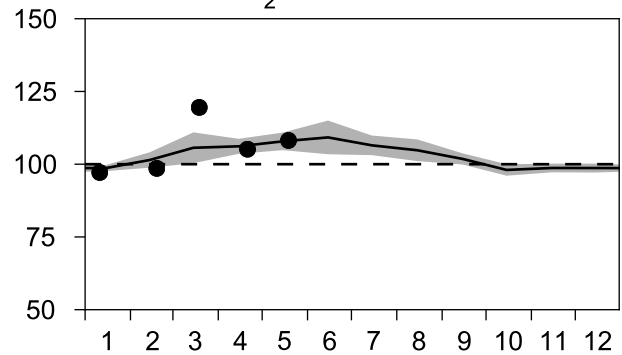
DIN µmol/l



SiO₃ µmol/l

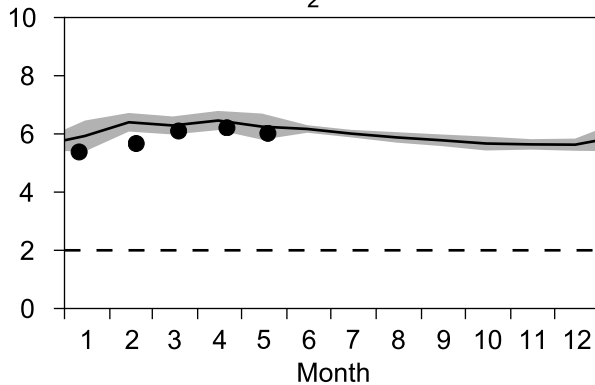


O₂ saturation %

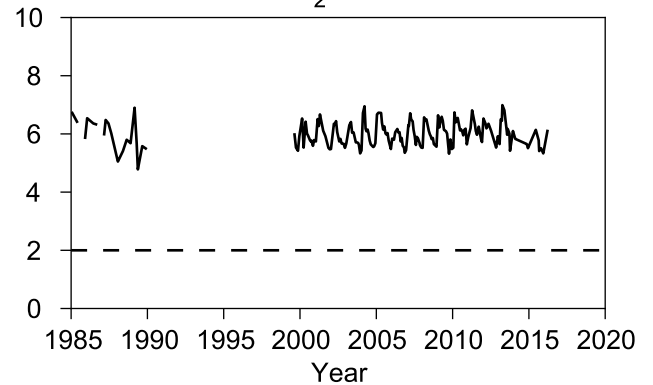


OXYGEN IN BOTTOM WATER (depth >= 300 m)

O₂ ml/l

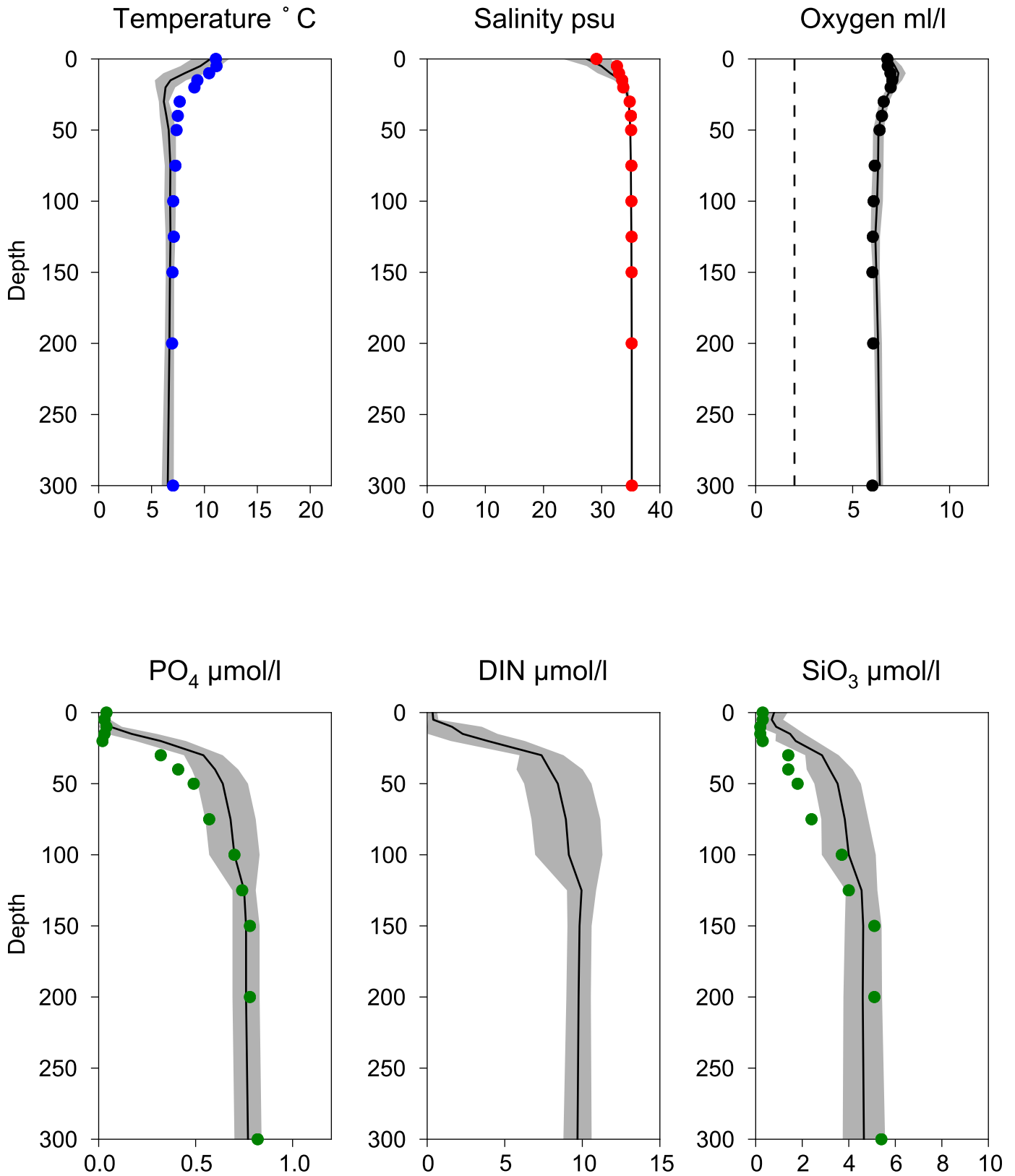


O₂ ml/l



Vertical profiles Å17 May

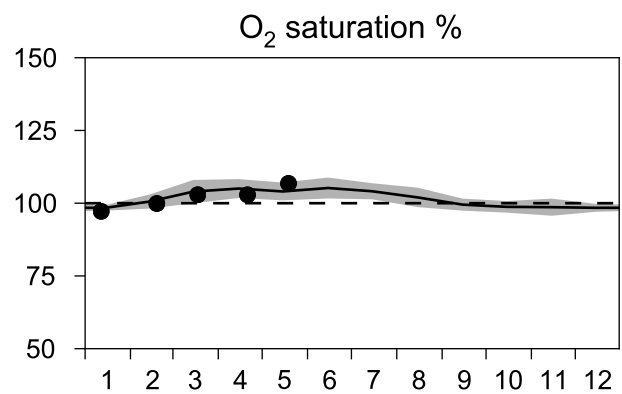
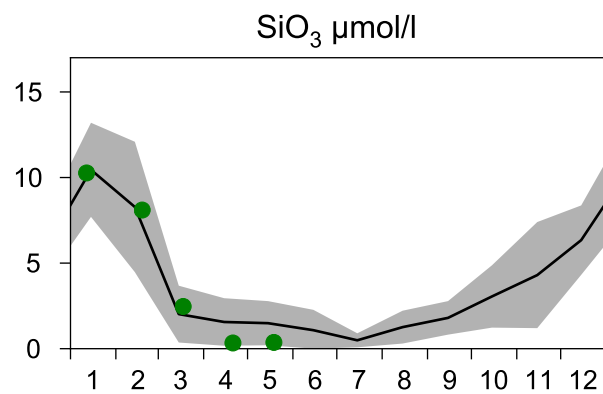
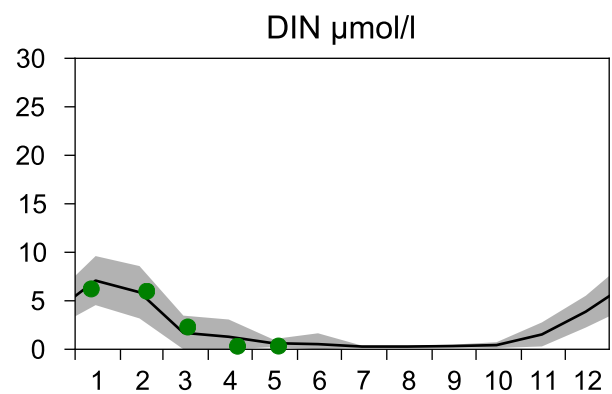
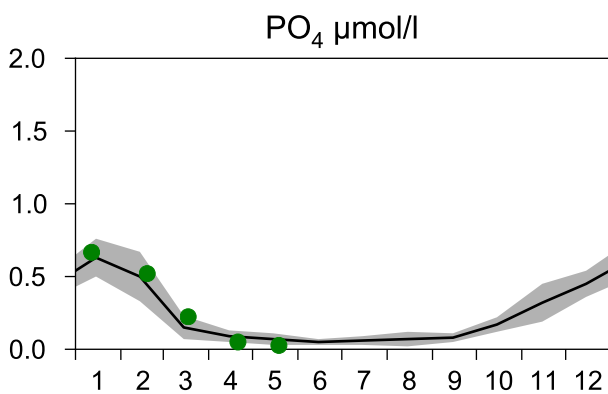
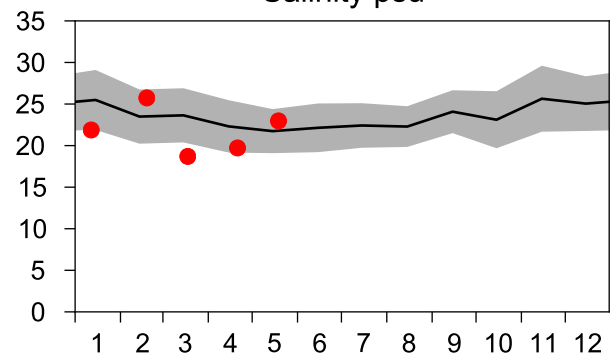
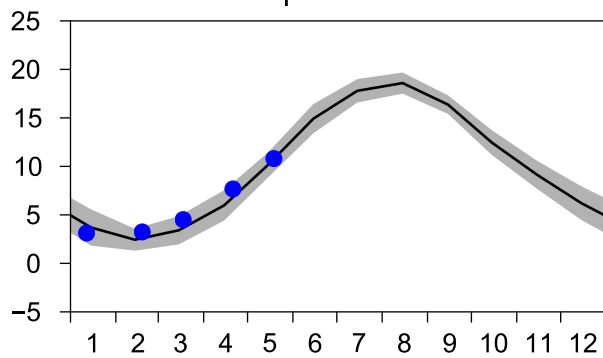
— Mean 2001-2015 ■ St.Dev. ● 2016-5-19



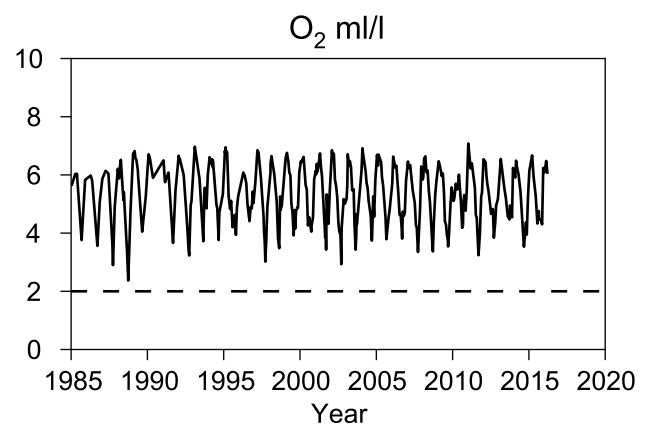
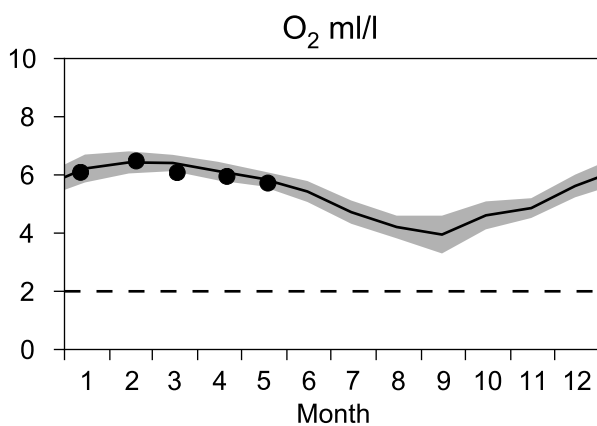
STATION FLADEN SURFACE WATER (0-10m)

Annual Cycles

— Mean 2001-2015 St.Dev. • 2016

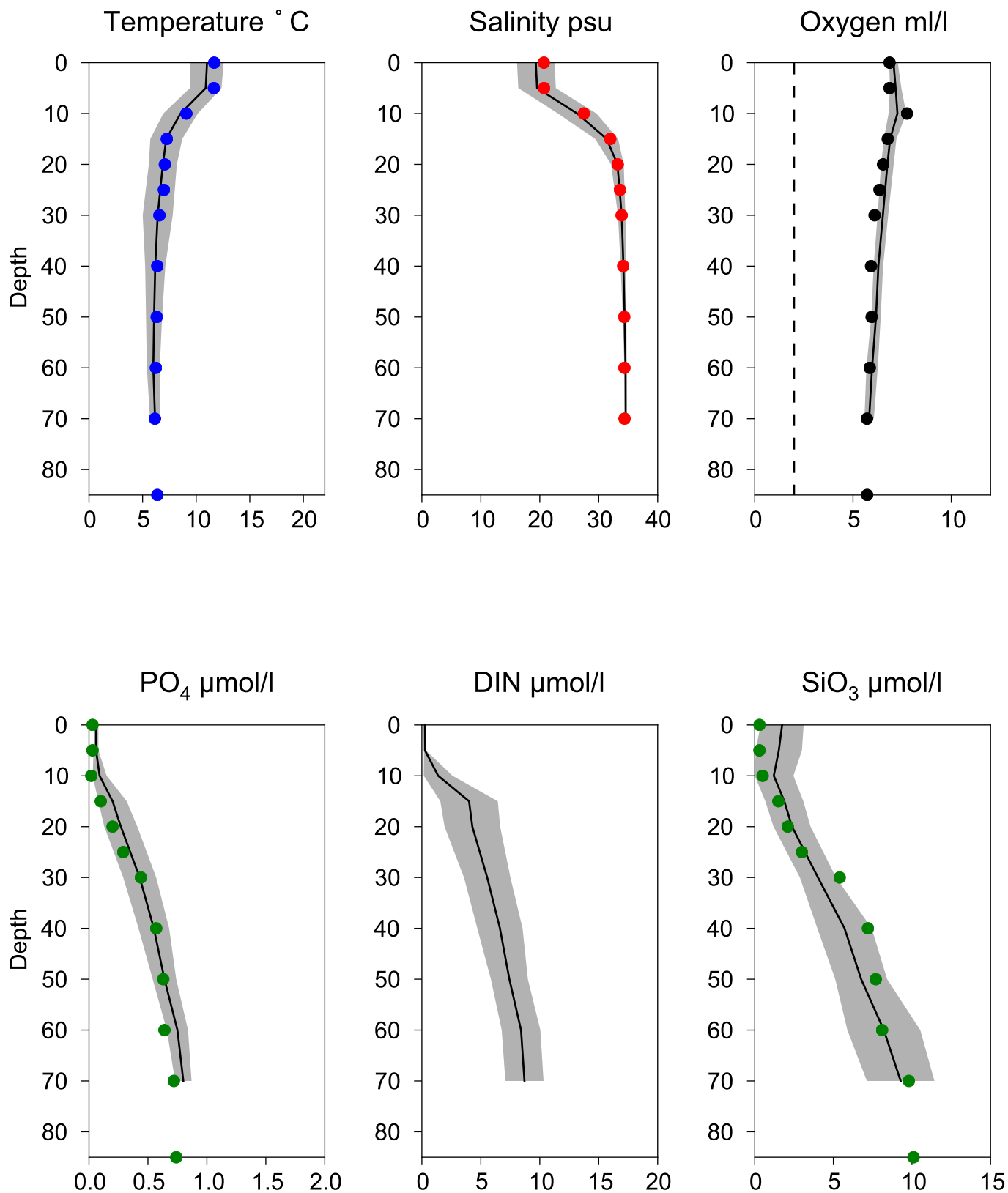


OXYGEN IN BOTTOM WATER (depth >= 65 m)



Vertical profiles FLADEN May

— Mean 2001-2015 St.Dev. • 2016-5-19



STATION ANHOLT E SURFACE WATER (0-10m)

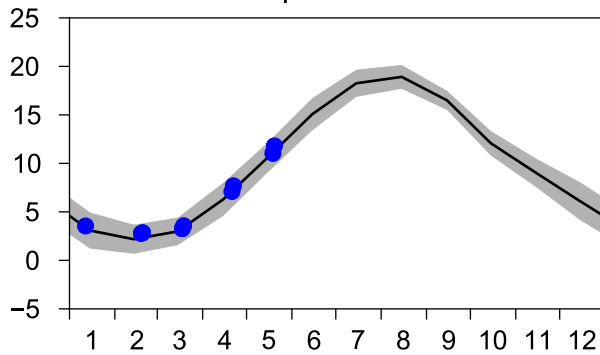
Annual Cycles

— Mean 2001-2015

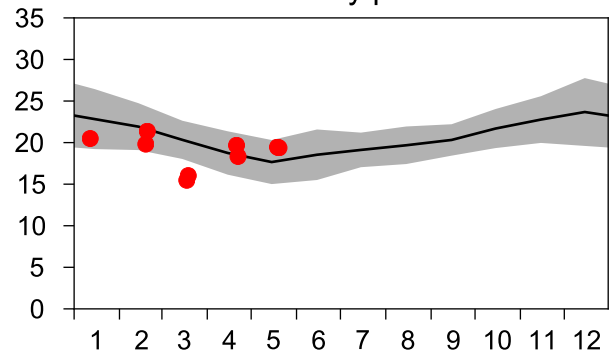
■ St.Dev.

● 2016

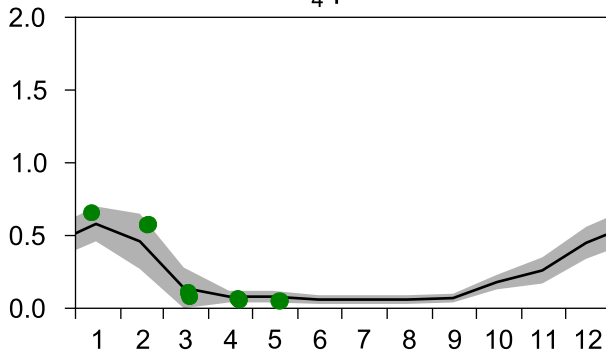
Temperature °C



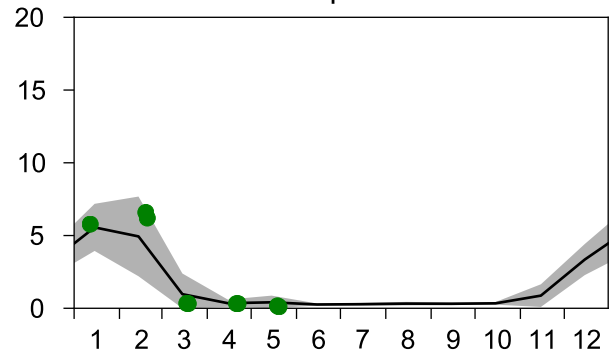
Salinity psu



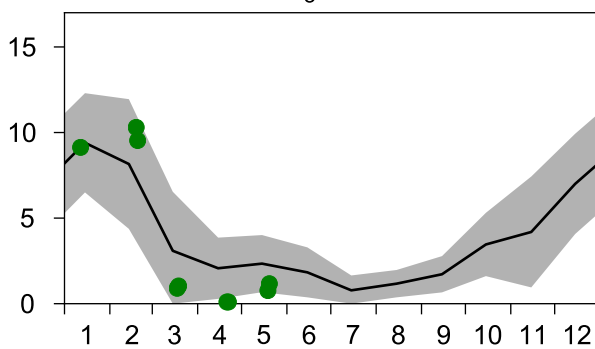
PO₄ µmol/l



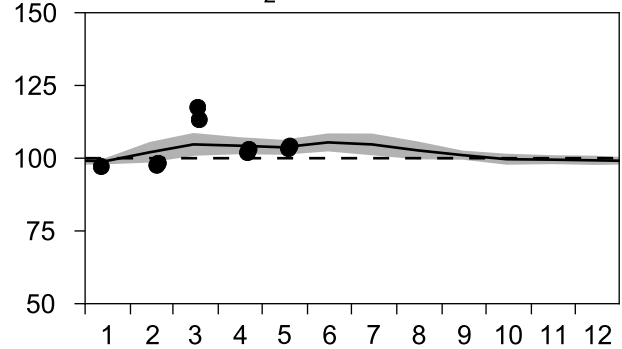
DIN µmol/l



SiO₃ µmol/l

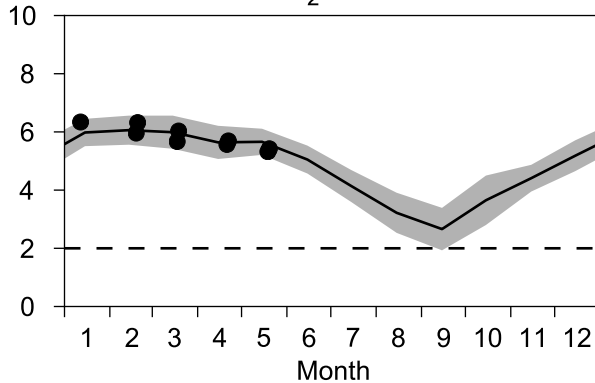


O₂ saturation %

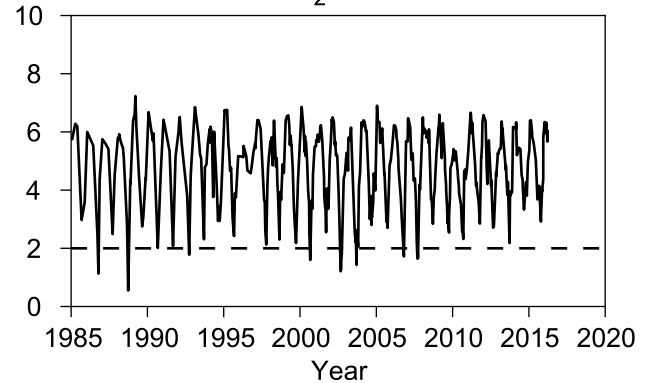


OXYGEN IN BOTTOM WATER (depth >= 45 m)

O₂ ml/l

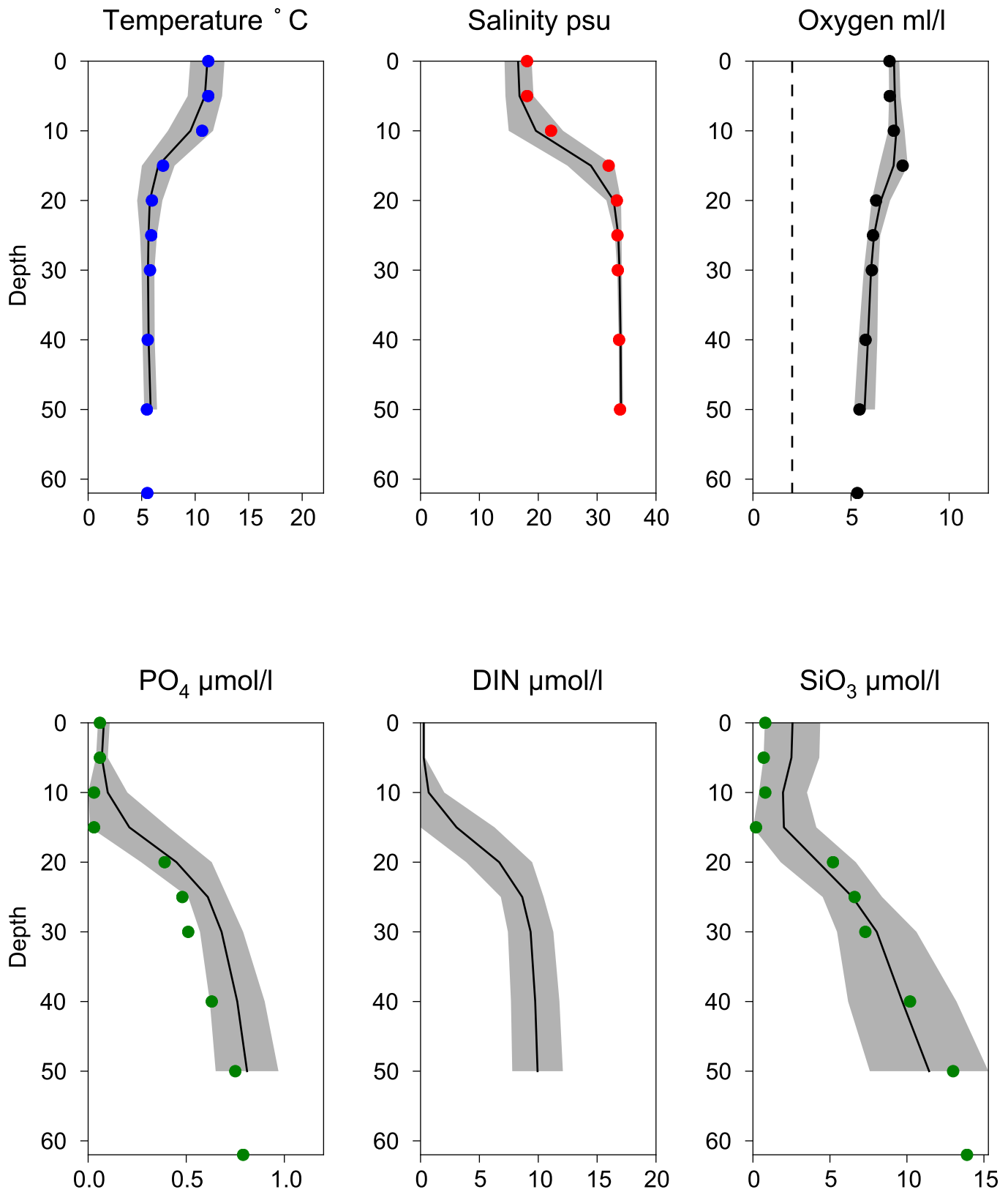


O₂ ml/l



Vertical profiles ANHOLT E May

— Mean 2001-2015 St.Dev. • 2016-5-19



STATION W LANDSKRONA SURFACE WATER (0-10m)

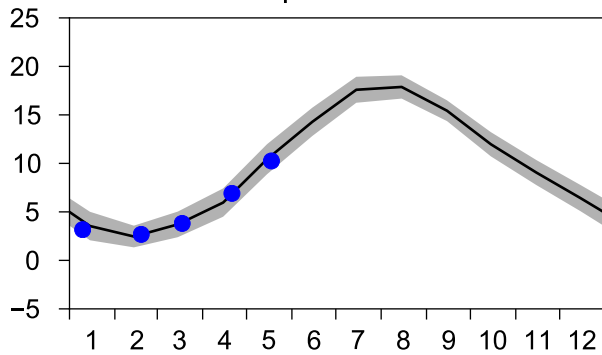
Annual Cycles

— Mean 2001-2015

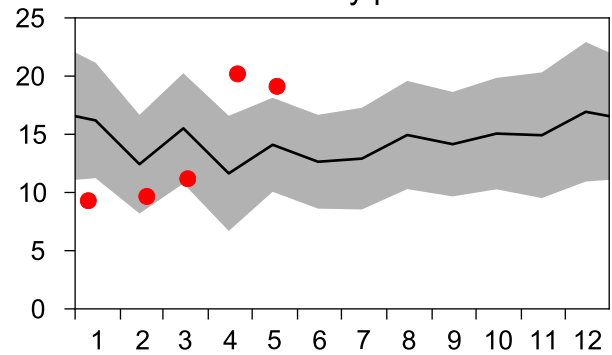
■ St.Dev.

● 2016

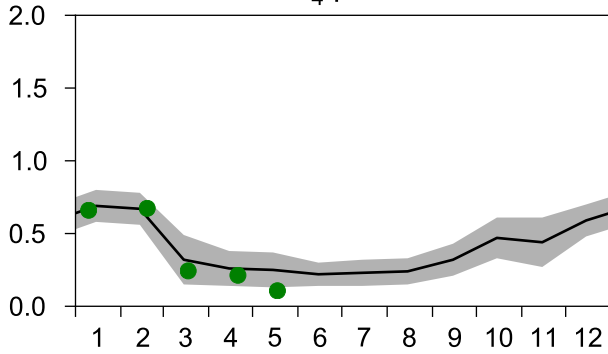
Temperature °C



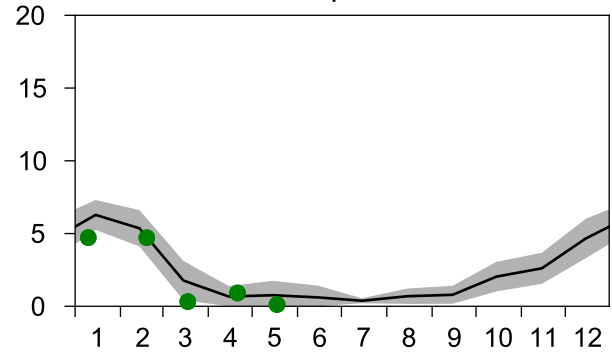
Salinity psu



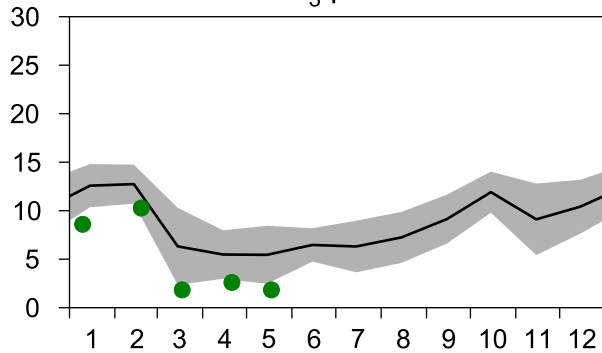
PO₄ µmol/l



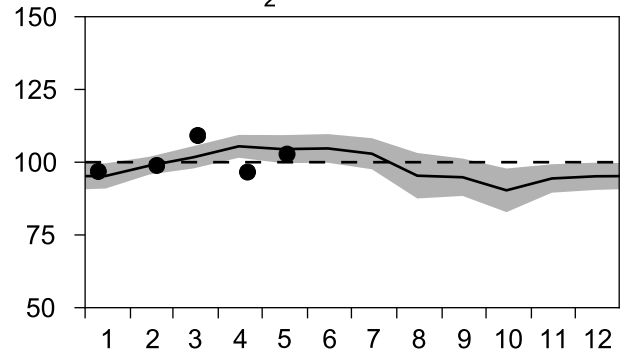
DIN µmol/l



SiO₃ µmol/l

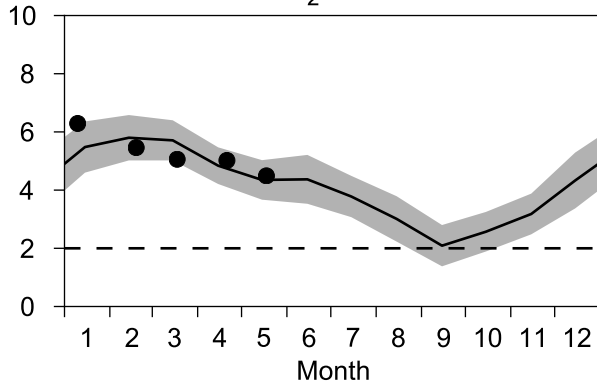


O₂ saturation %

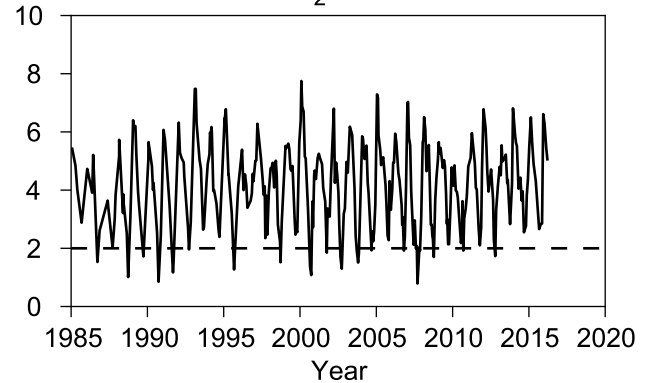


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

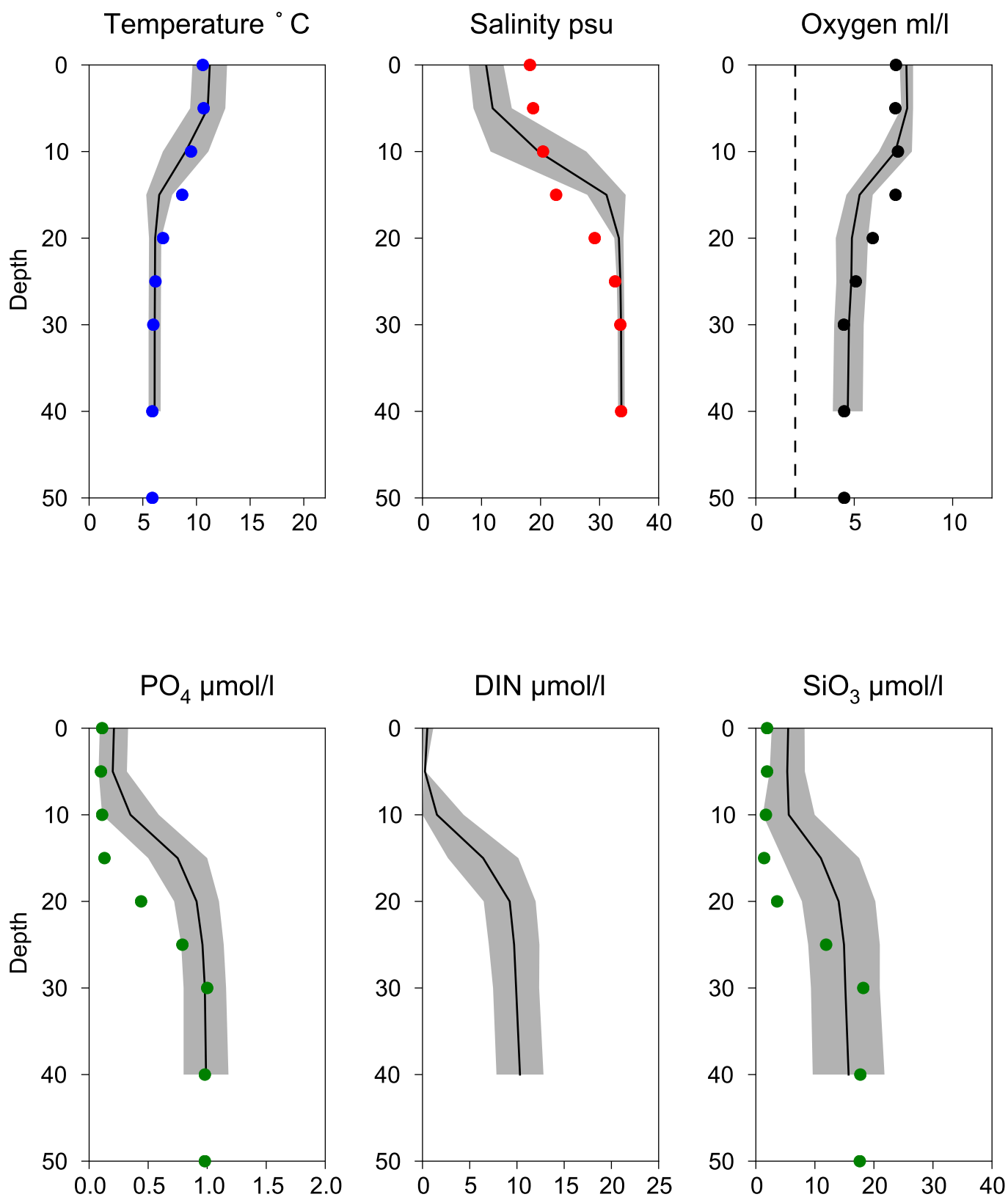


O₂ ml/l



Vertical profiles W LANDSKRONA May

— Mean 2001-2015 St.Dev. • 2016-5-18

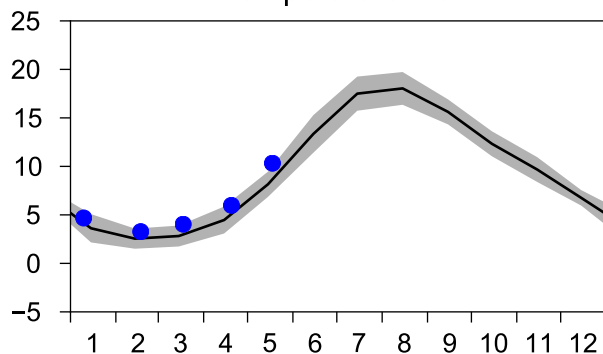


STATION BY1 SURFACE WATER (0-10m)

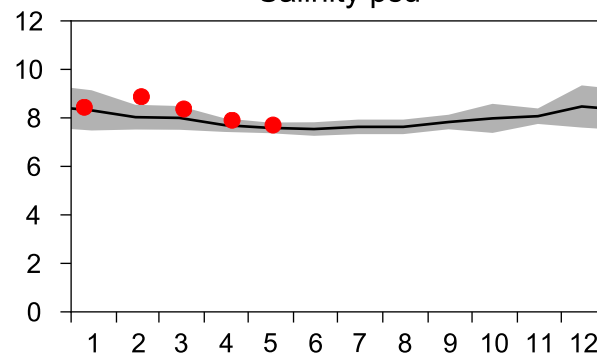
Annual Cycles

— Mean 2001-2015 St.Dev. • 2016

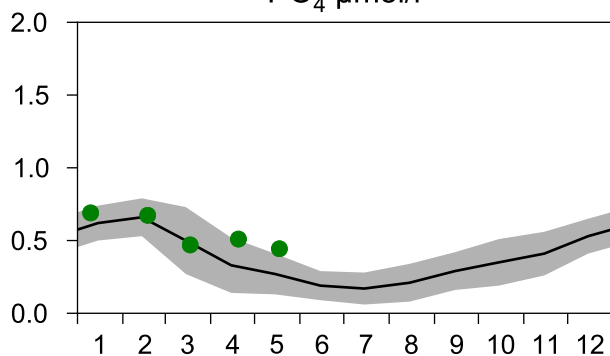
Temperature °C



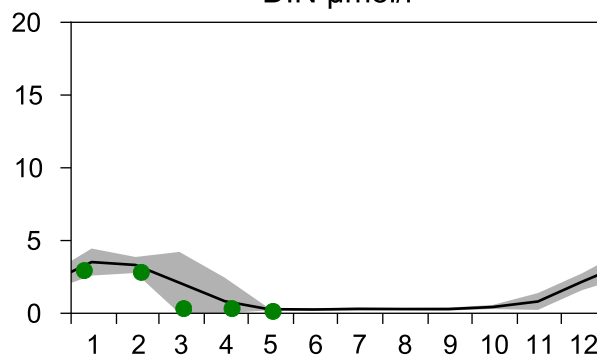
Salinity psu



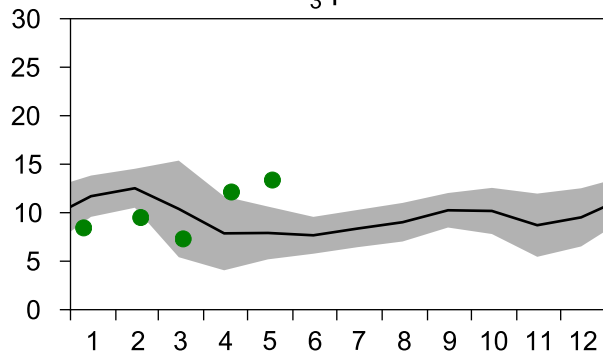
PO₄ µmol/l



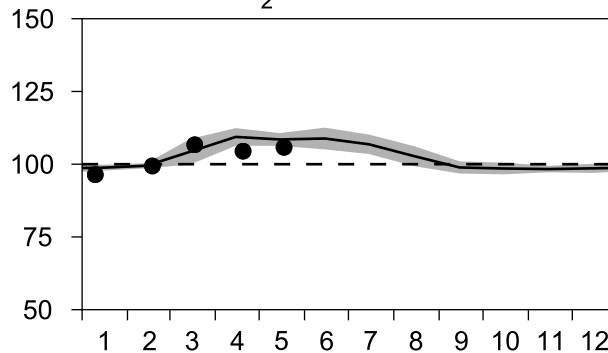
DIN µmol/l



SiO₃ µmol/l

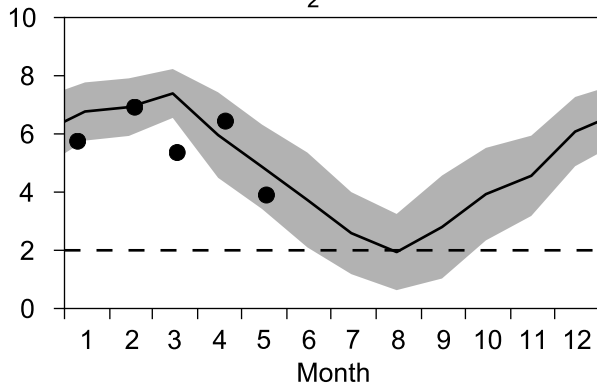


O₂ saturation %

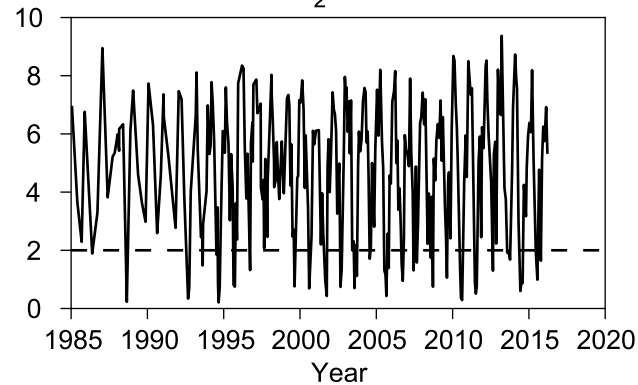


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

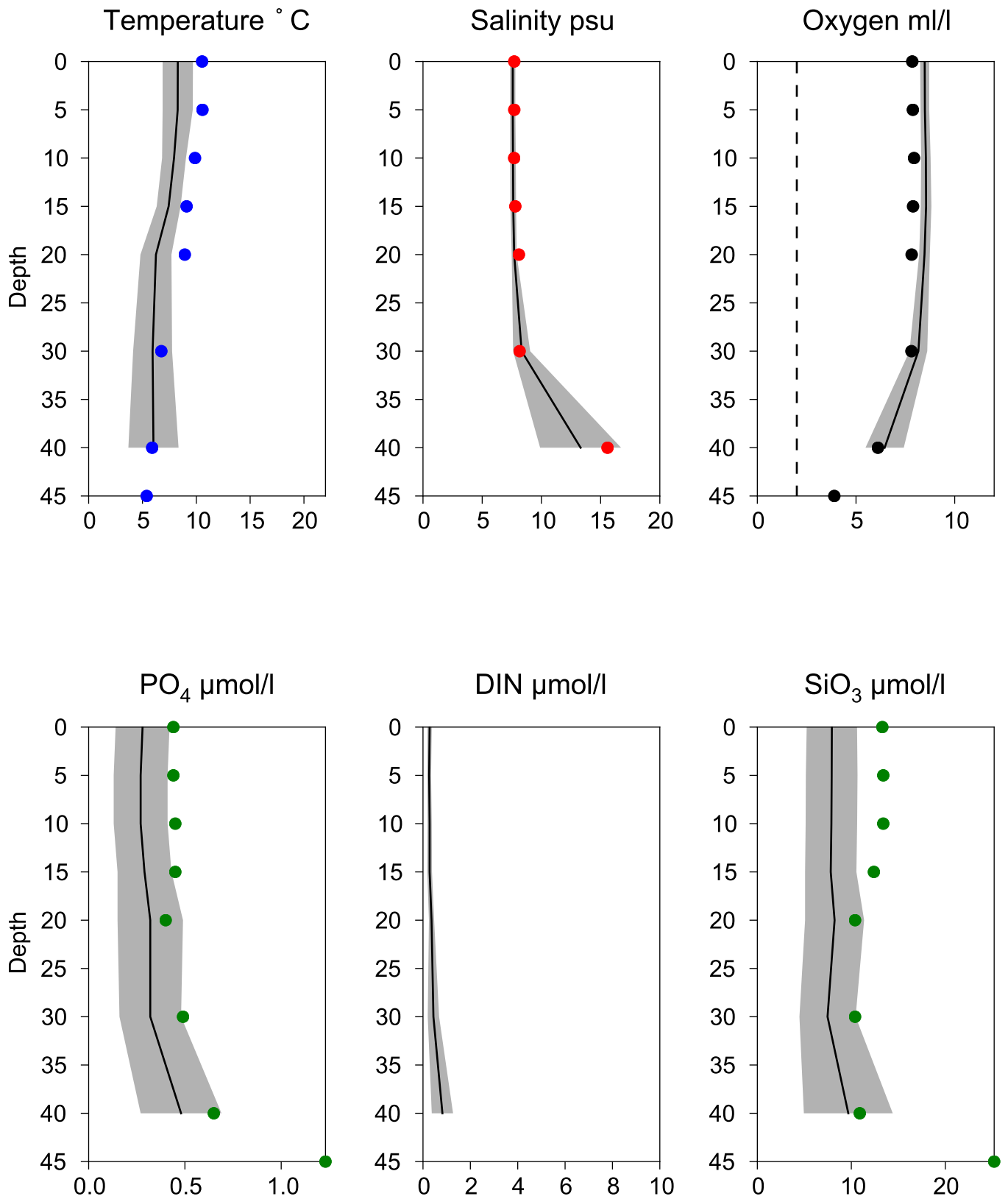


O₂ ml/l



Vertical profiles BY1 May

— Mean 2001-2015 St.Dev. • 2016-5-18



STATION BY2 ARKONA SURFACE WATER (0-10m)

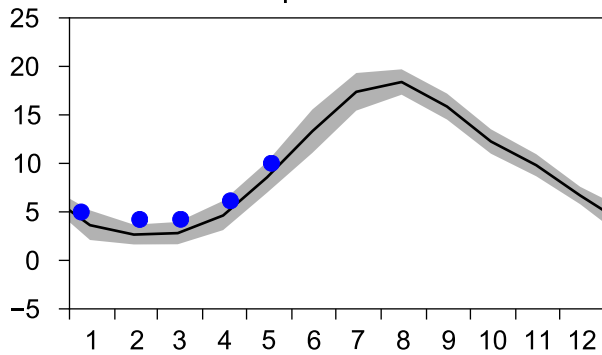
Annual Cycles

— Mean 2001-2015

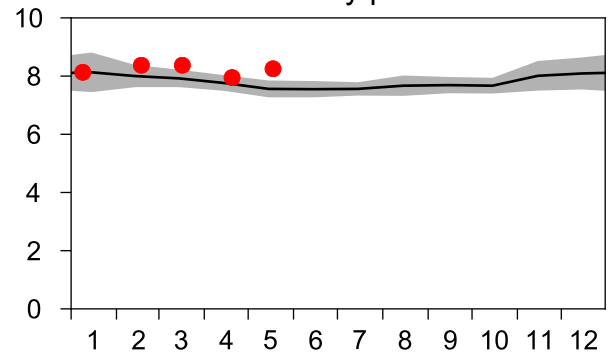
■ St.Dev.

● 2016

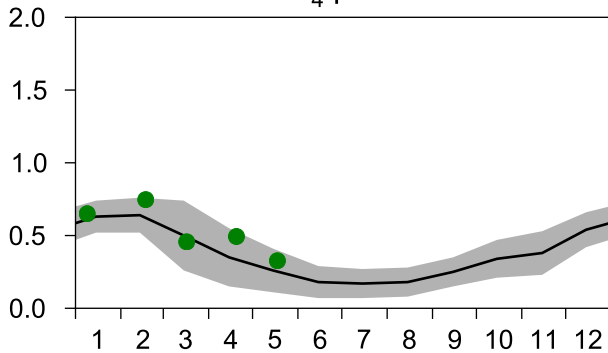
Temperature °C



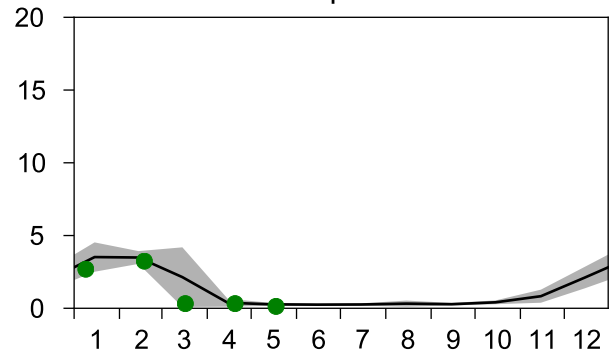
Salinity psu



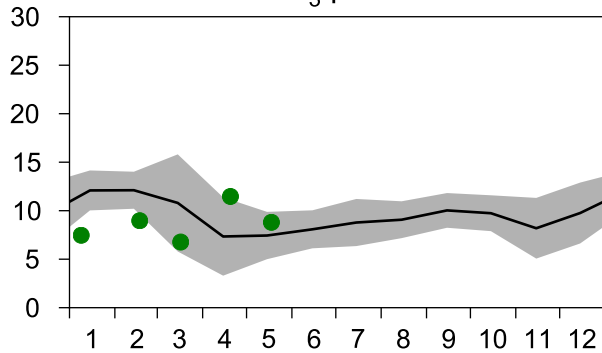
PO₄ µmol/l



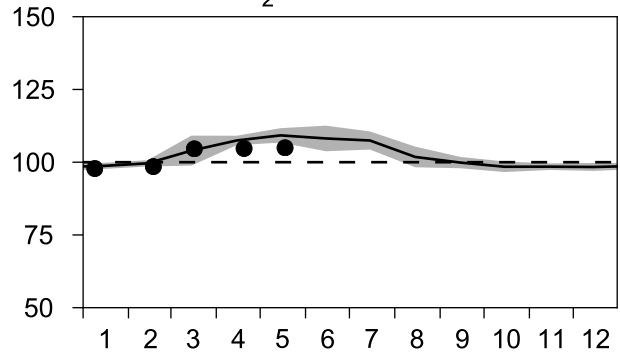
DIN µmol/l



SiO₃ µmol/l

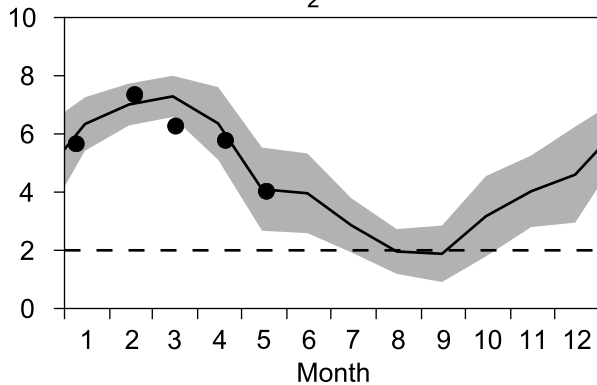


O₂ saturation %

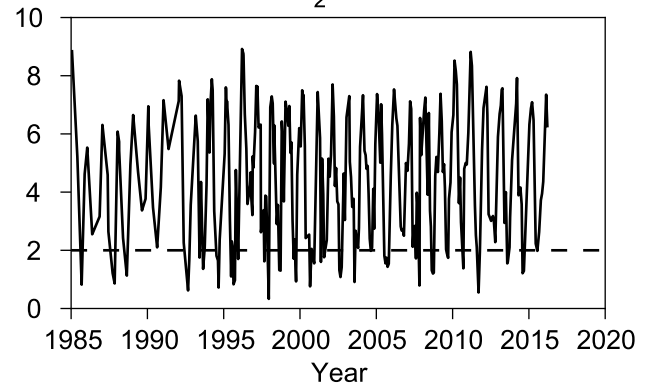


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

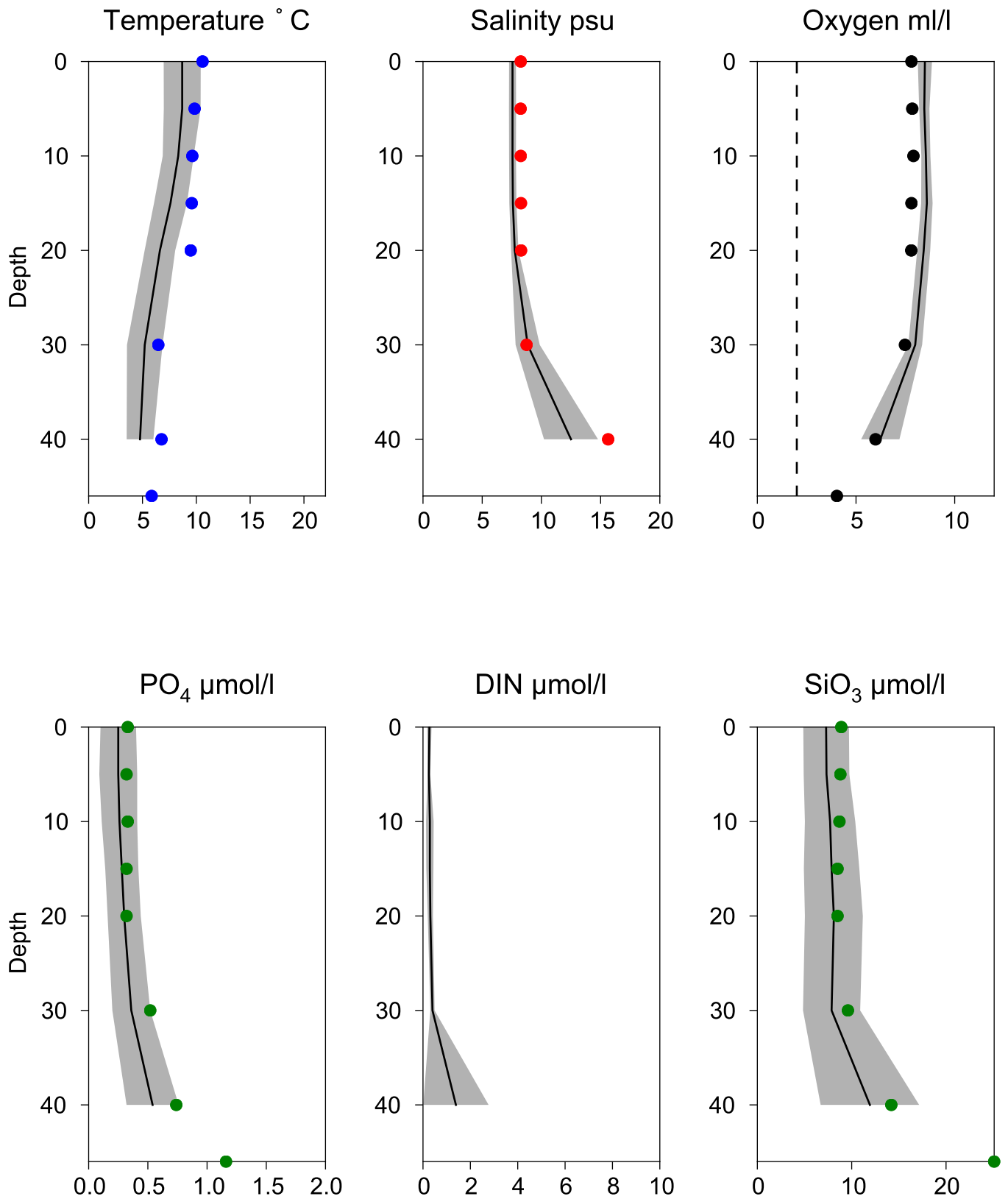


O₂ ml/l



Vertical profiles BY2 ARKONA May

— Mean 2001-2015 St.Dev. • 2016-5-18



STATION HANÖBUKTEN SURFACE WATER (0-10m)

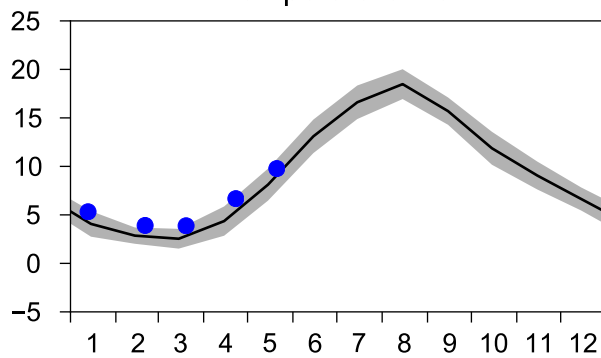
Annual Cycles

— Mean 2001-2015

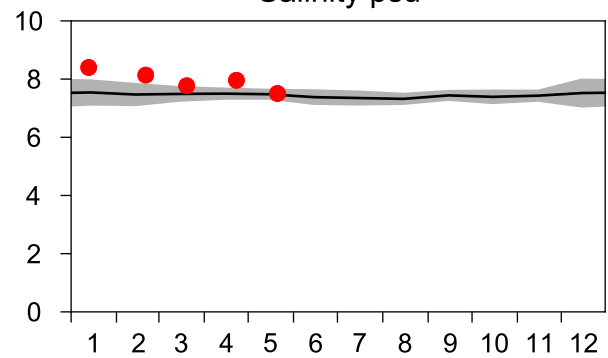
■ St.Dev.

● 2016

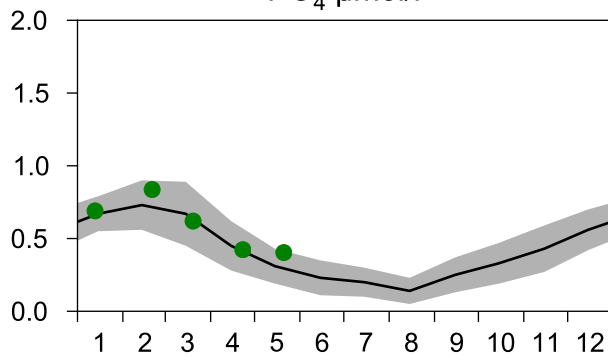
Temperature °C



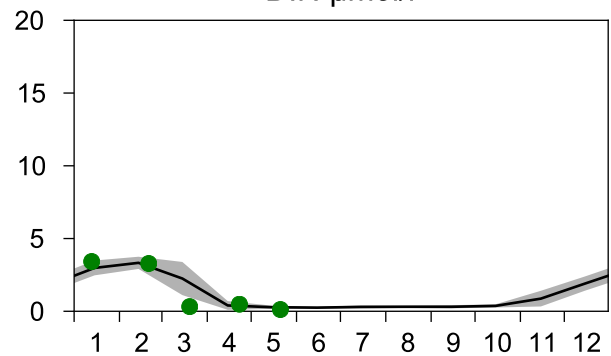
Salinity psu



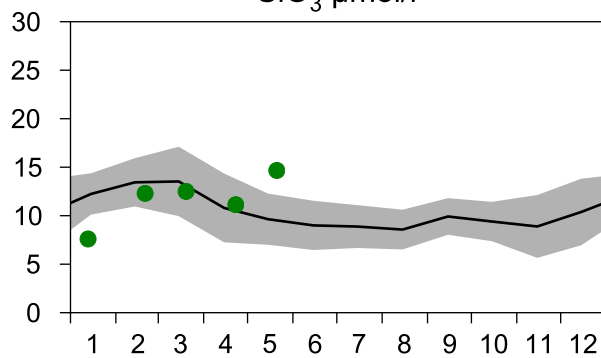
PO₄ µmol/l



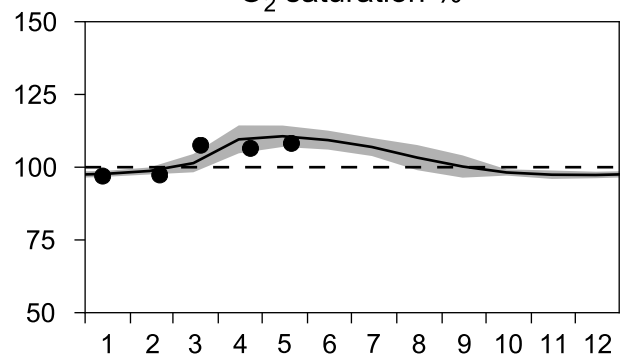
DIN µmol/l



SiO₃ µmol/l

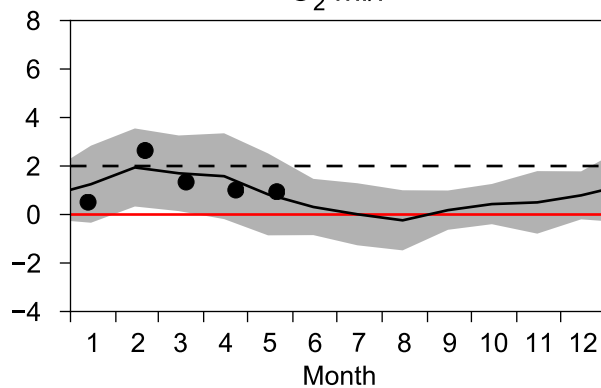


O₂ saturation %

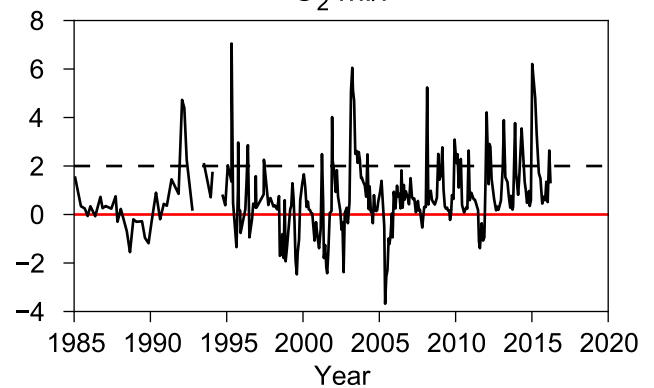


OXYGEN IN BOTTOM WATER (depth >= 70 m)

O₂ ml/l



O₂ ml/l



STATION HANÖBUKTEN SURFACE WATER (0-10m)

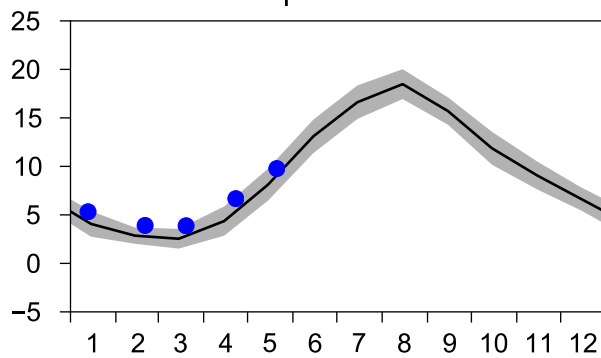
Annual Cycles

— Mean 2001-2015

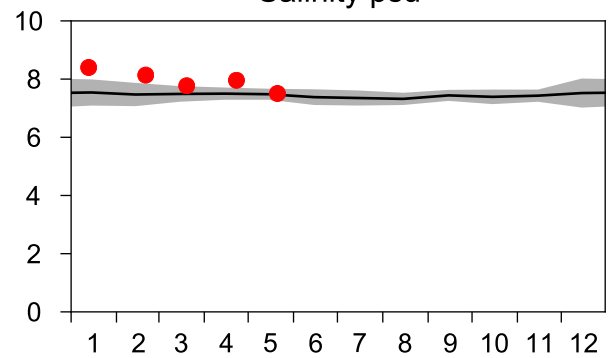
■ St.Dev.

● 2016

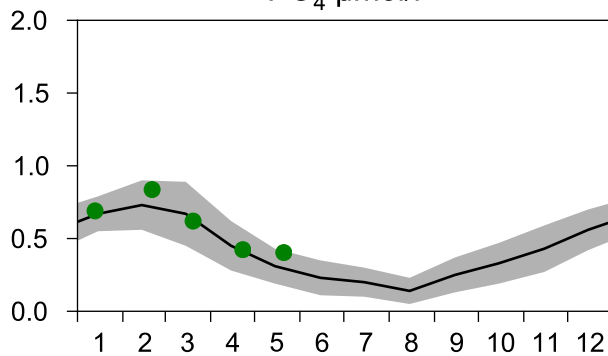
Temperature °C



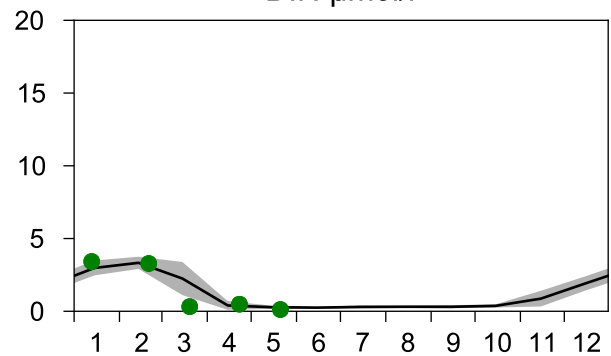
Salinity psu



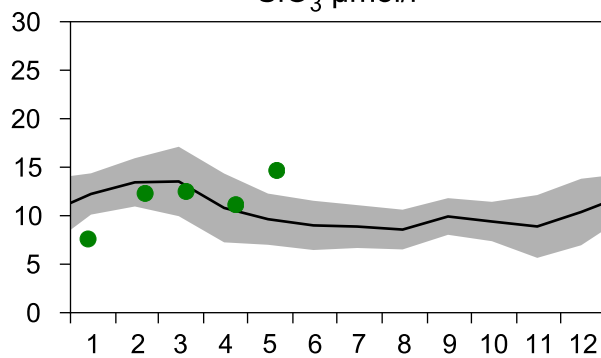
PO₄ µmol/l



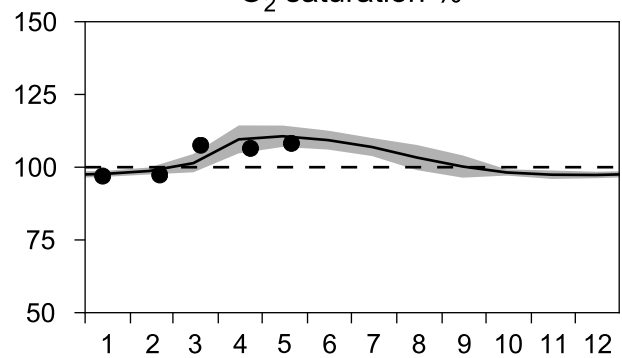
DIN µmol/l



SiO₃ µmol/l

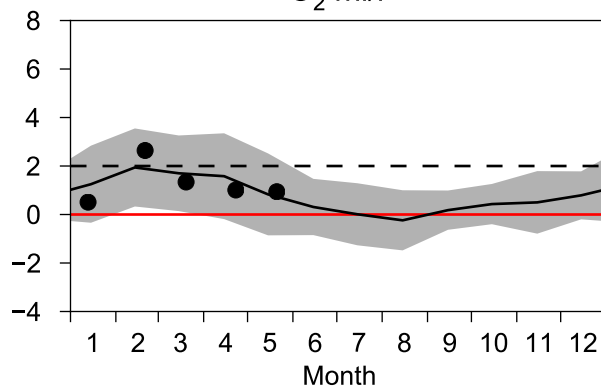


O₂ saturation %

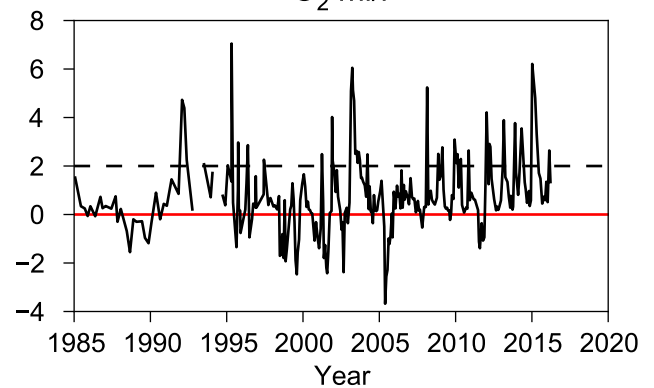


OXYGEN IN BOTTOM WATER (depth >= 70 m)

O₂ ml/l



O₂ ml/l



STATION BY4 CHRISTIANSÖ SURFACE WATER (0-10m)

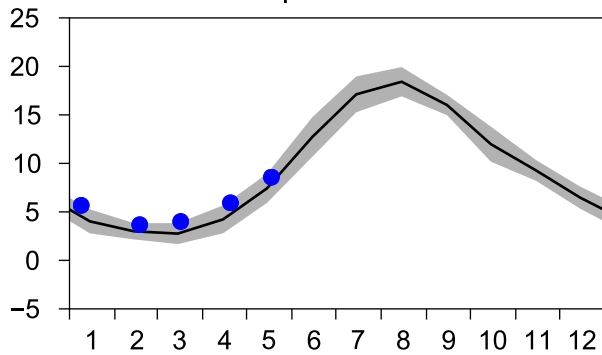
Annual Cycles

— Mean 2001-2015

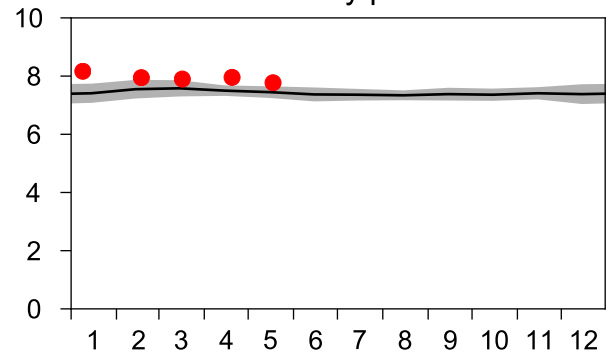
■ St.Dev.

● 2016

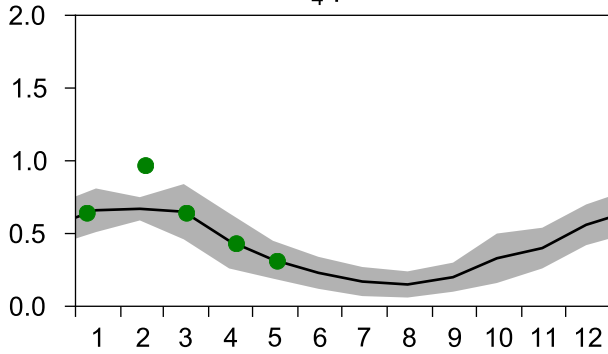
Temperature °C



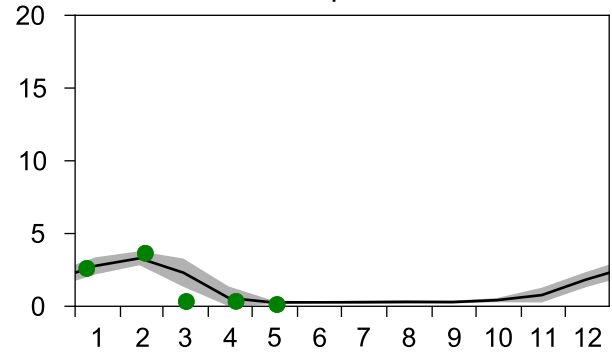
Salinity psu



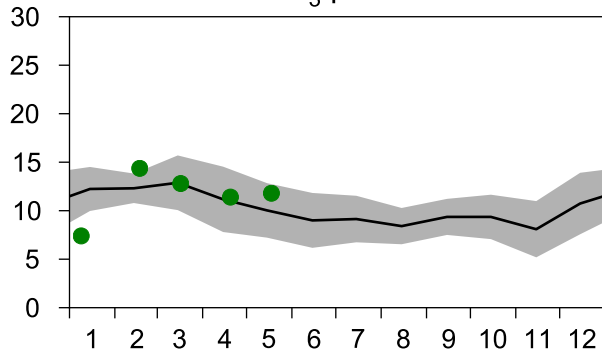
PO₄ µmol/l



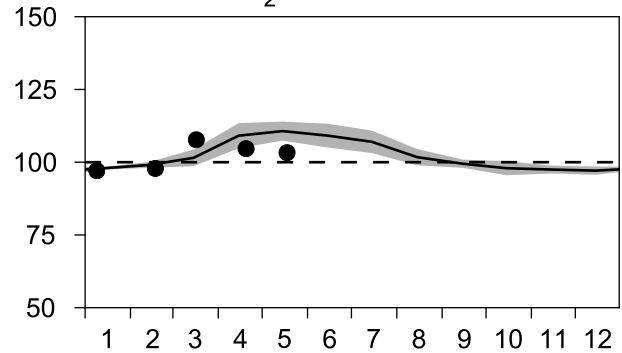
DIN µmol/l



SiO₃ µmol/l

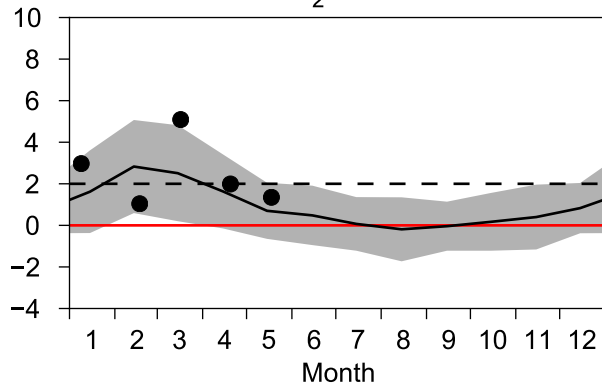


O₂ saturation %

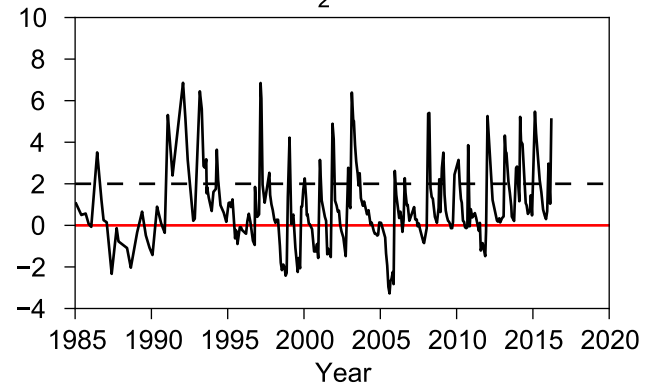


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

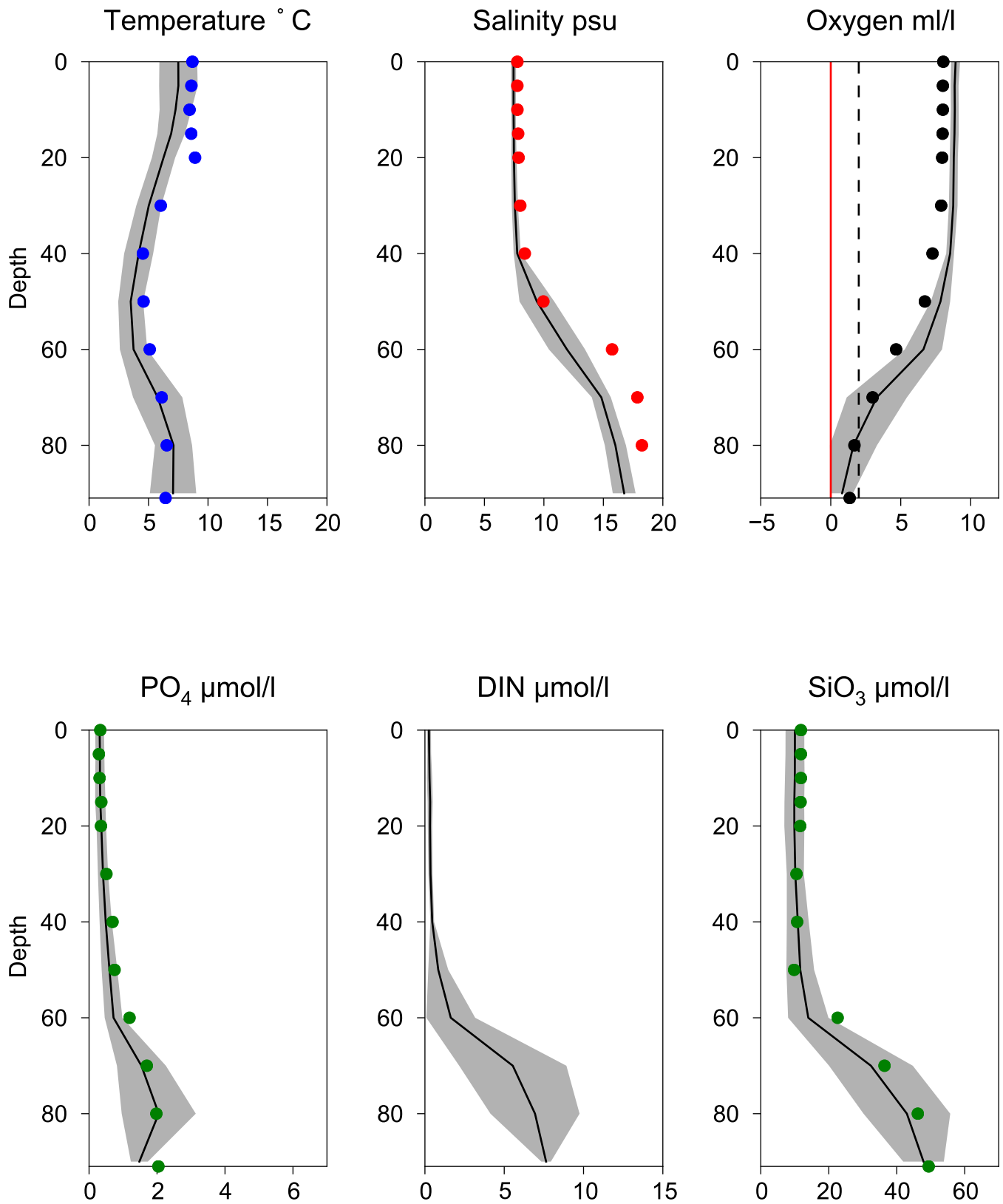


O₂ ml/l



Vertical profiles BY4 CHRISTIANSÖ May

— Mean 2001-2015 St.Dev. • 2016-5-18



STATION BY5 BORNHOLMSDJ SURFACE WATER (0-10m)

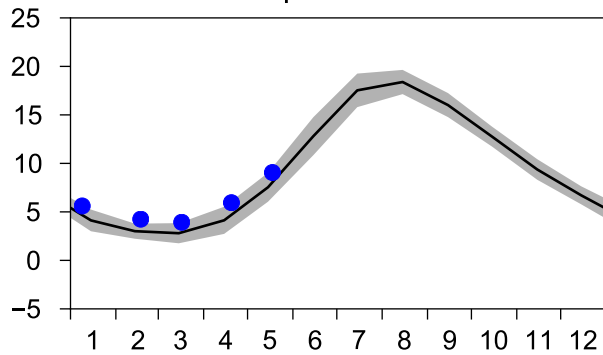
Annual Cycles

— Mean 2001-2015

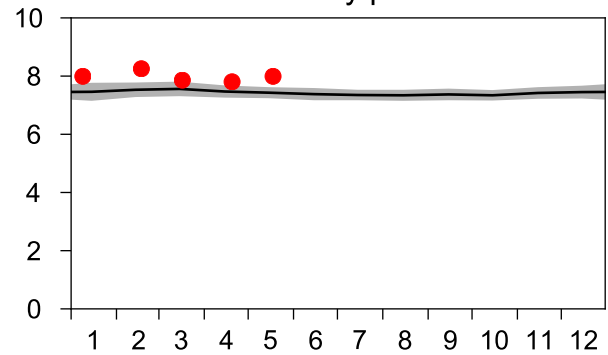
■ St.Dev.

● 2016

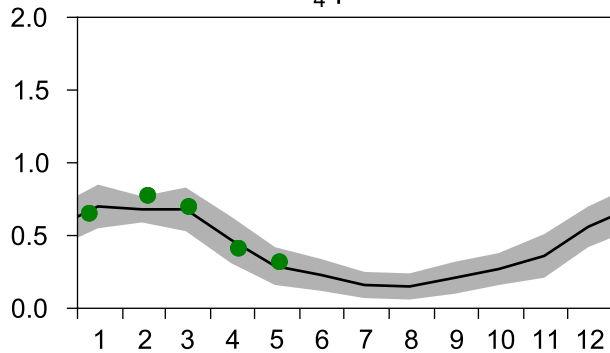
Temperature °C



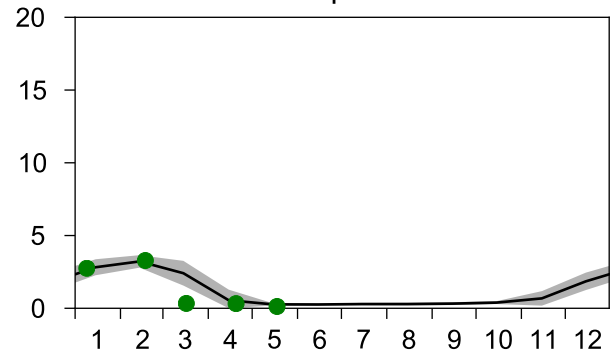
Salinity psu



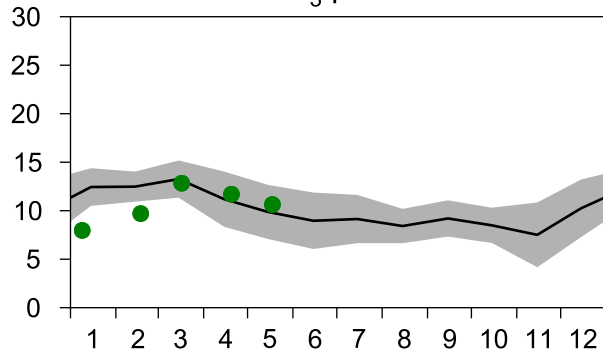
PO₄ µmol/l



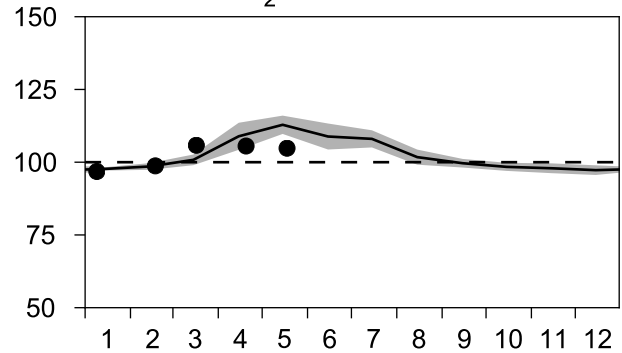
DIN µmol/l



SiO₃ µmol/l

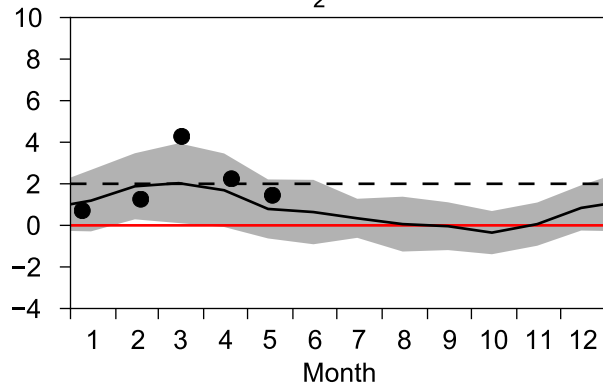


O₂ saturation %

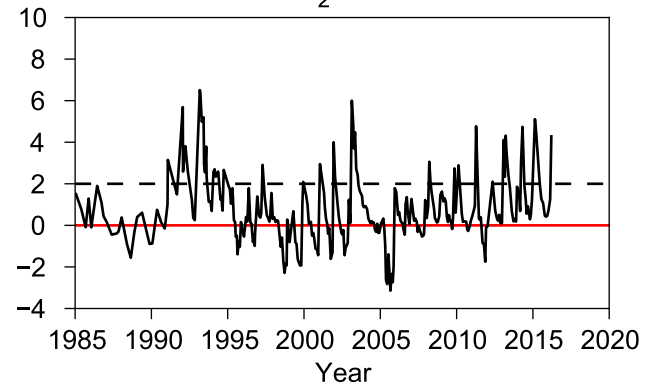


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

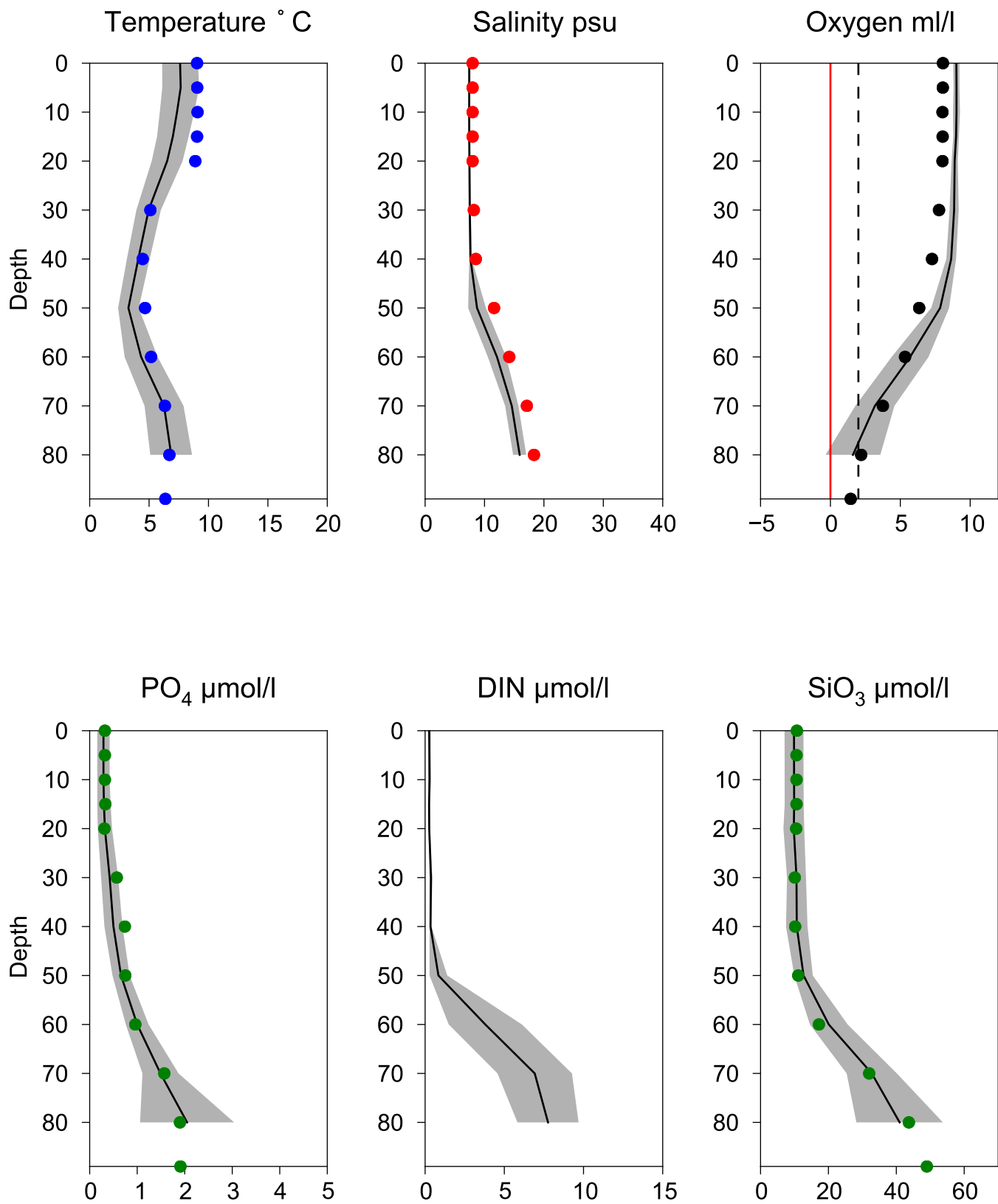


O₂ ml/l



Vertical profiles BY5 BORNHOLMSDJ May

— Mean 2001-2015 ■ St.Dev. ● 2016-5-18



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

Annual Cycles

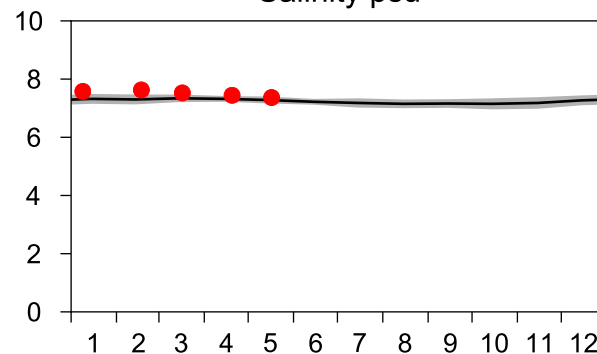
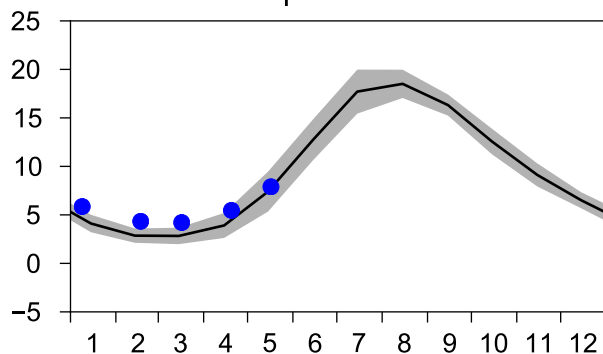
— Mean 2001-2015

■ St.Dev.

● 2016

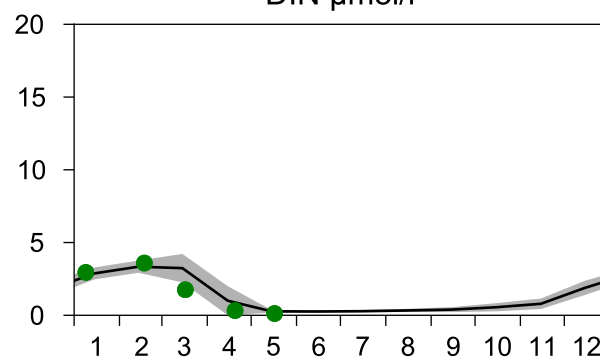
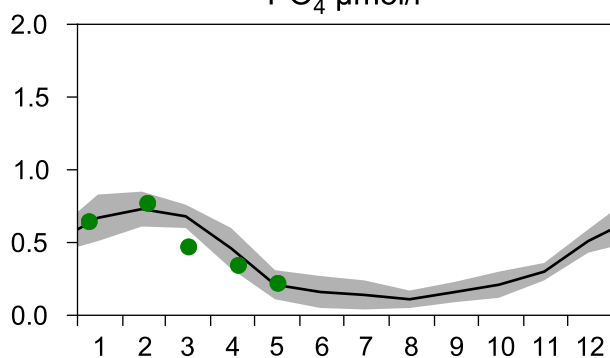
Temperature °C

Salinity psu



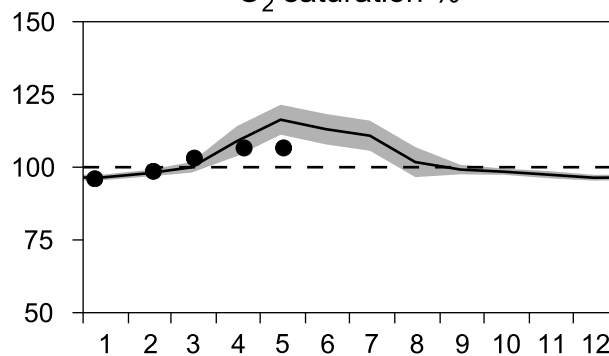
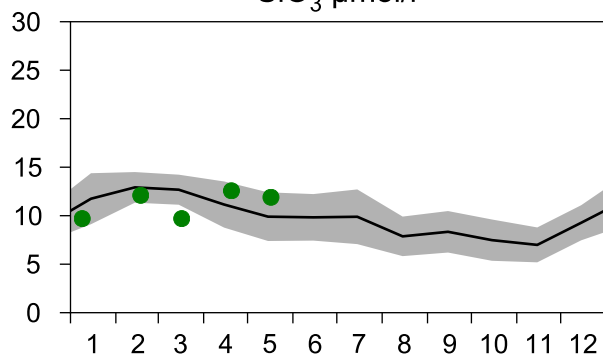
PO₄ µmol/l

DIN µmol/l



SiO₃ µmol/l

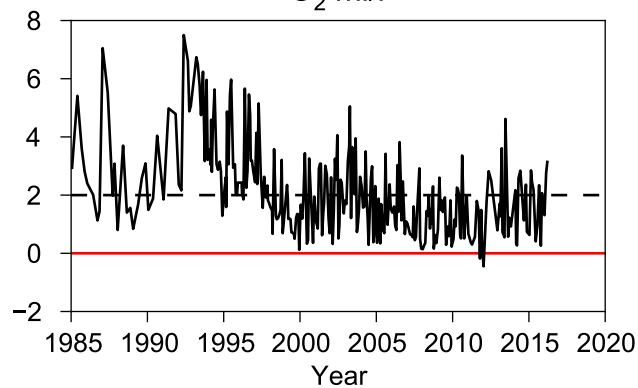
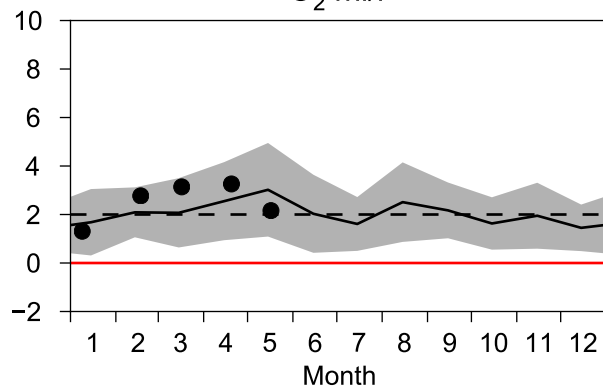
O₂ saturation %



OXYGEN IN BOTTOM WATER (depth >= 80 m)

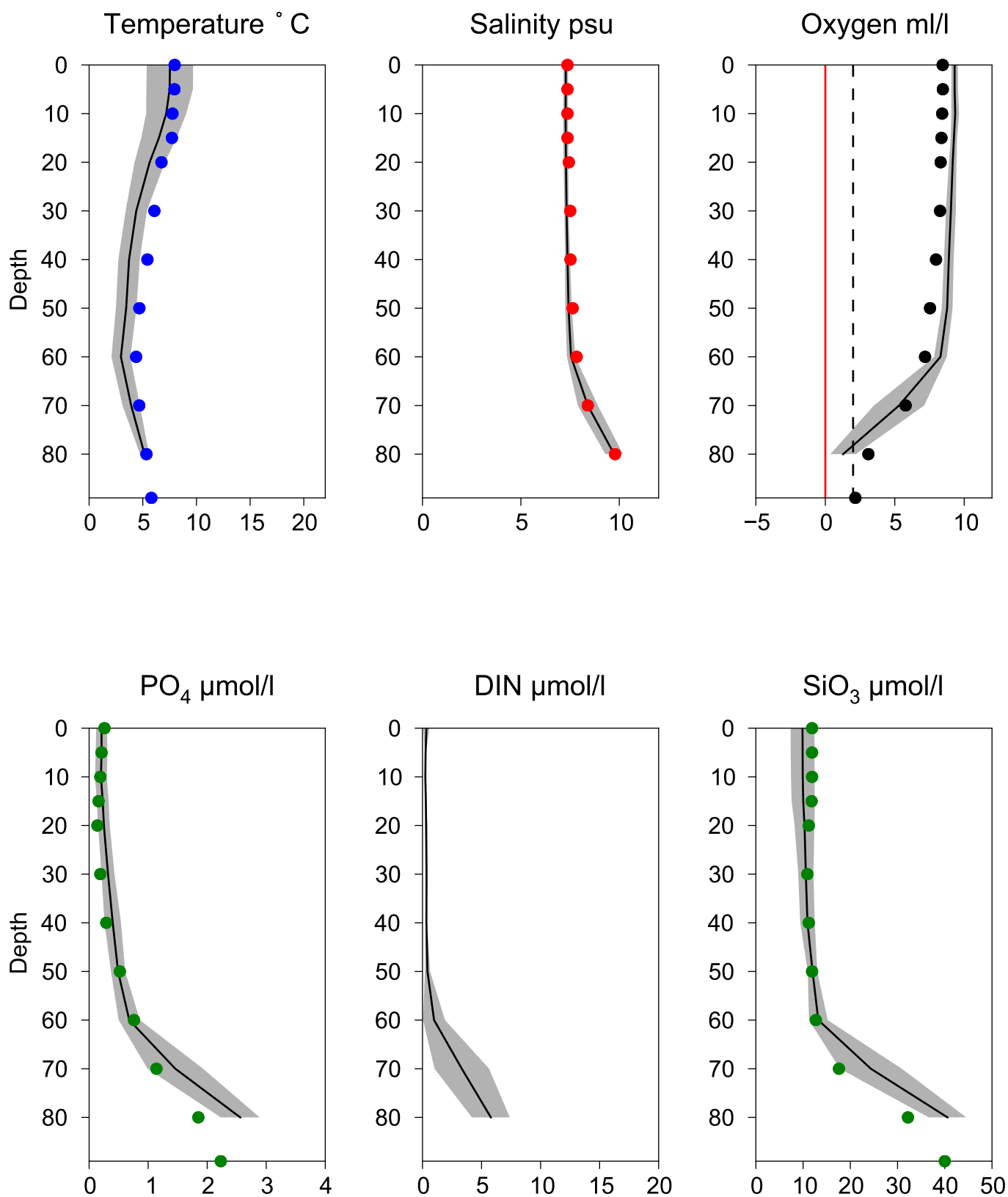
O₂ ml/l

O₂ ml/l



Vertical profiles BCS III-10 May

— Mean 2001-2015 ■ St.Dev. ● 2016-5-17

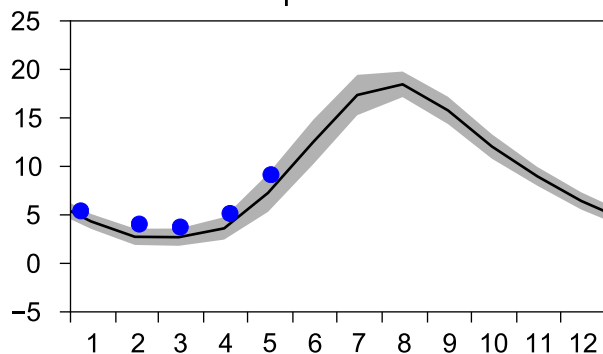


STATION BY10 SURFACE WATER (0-10m)

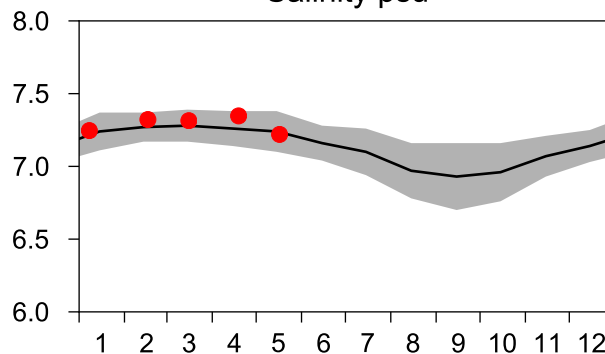
Annual Cycles

— Mean 2001-2015 St.Dev. • 2016

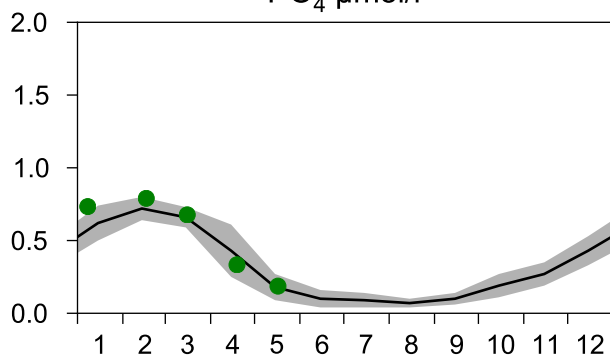
Temperature °C



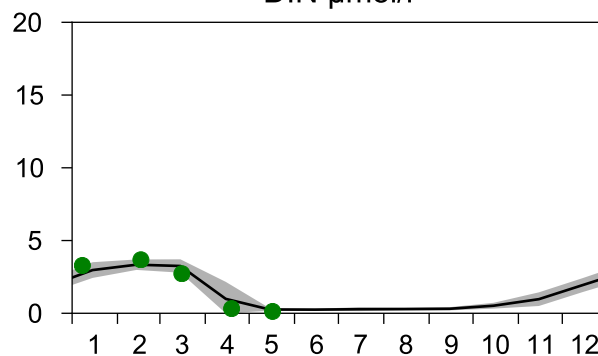
Salinity psu



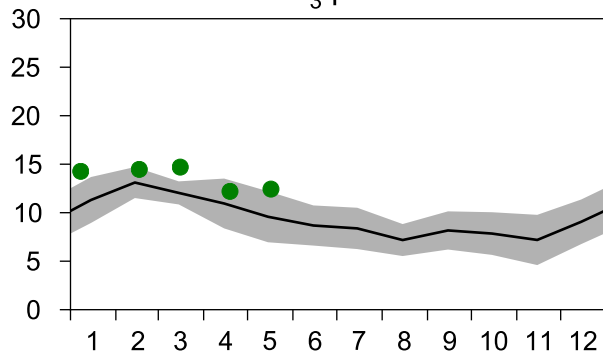
PO₄ µmol/l



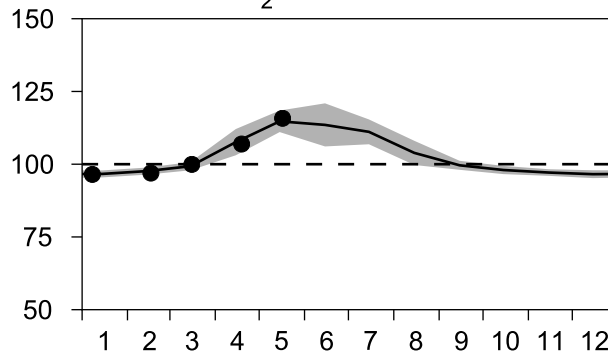
DIN µmol/l



SiO₃ µmol/l

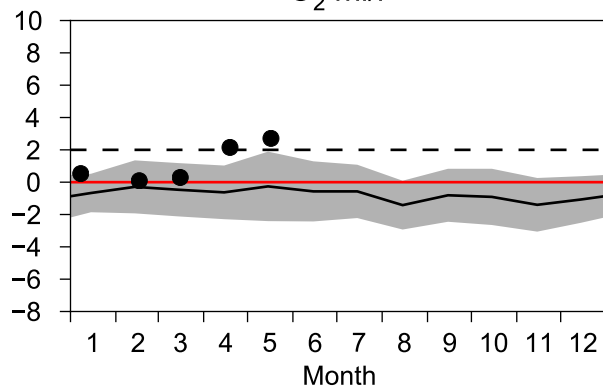


O₂ saturation %

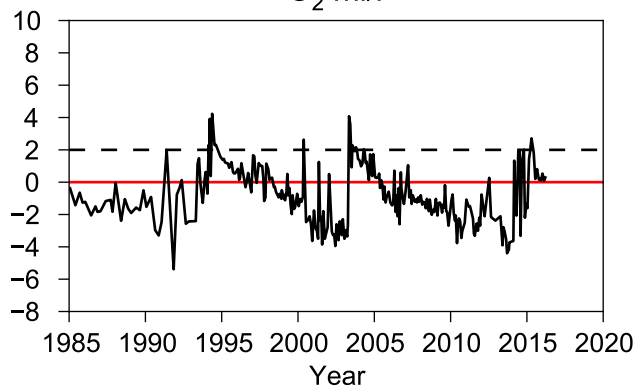


OXYGEN IN BOTTOM WATER (depth >= 125 m)

O₂ ml/l

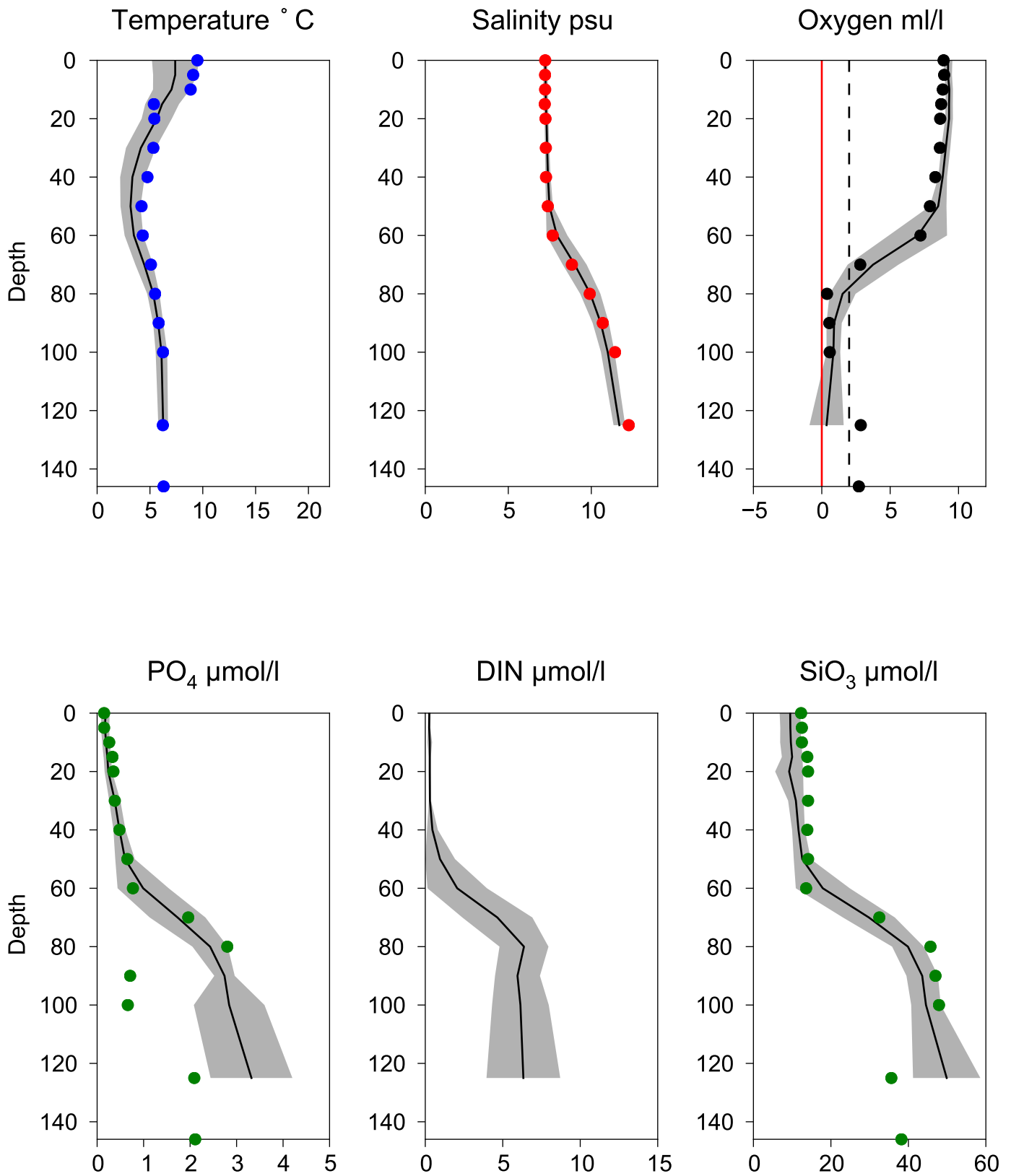


O₂ ml/l



Vertical profiles BY10 May

— Mean 2001-2015 St.Dev. • 2016-5-17



STATION BY15 GOTLANDSDJ SURFACE WATER (0-10m)

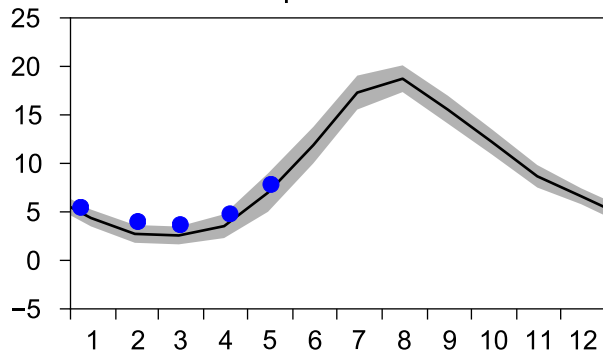
Annual Cycles

— Mean 2001-2015

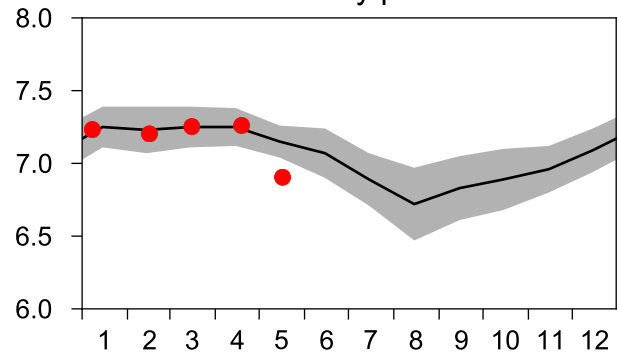
■ St.Dev.

● 2016

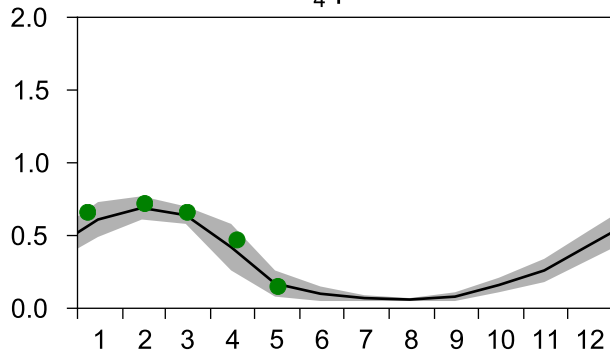
Temperature °C



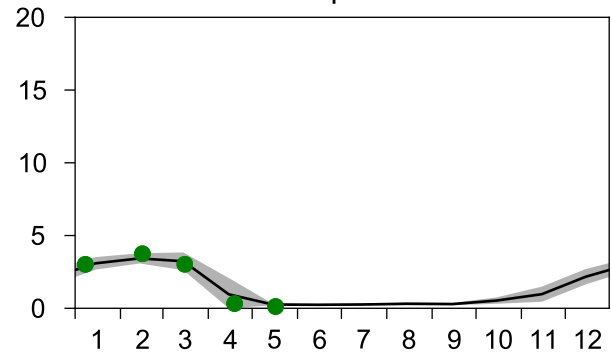
Salinity psu



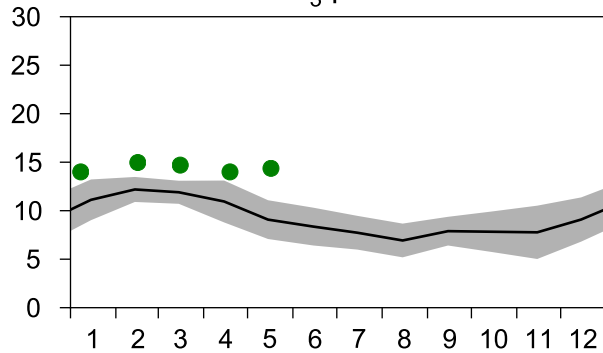
PO₄ µmol/l



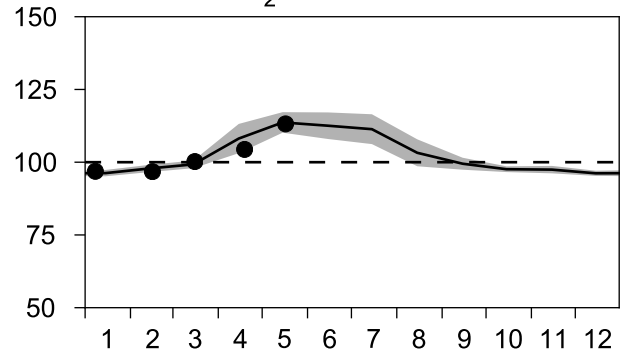
DIN µmol/l



SiO₃ µmol/l

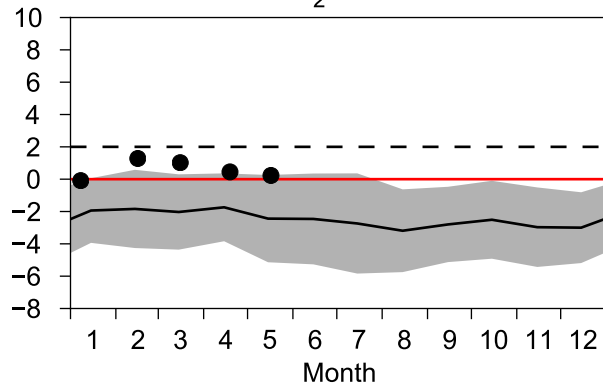


O₂ saturation %

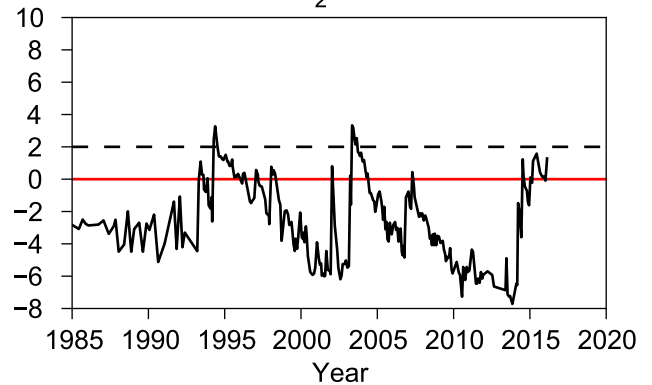


OXYGEN IN BOTTOM WATER (depth >= 225 m)

O₂ ml/l

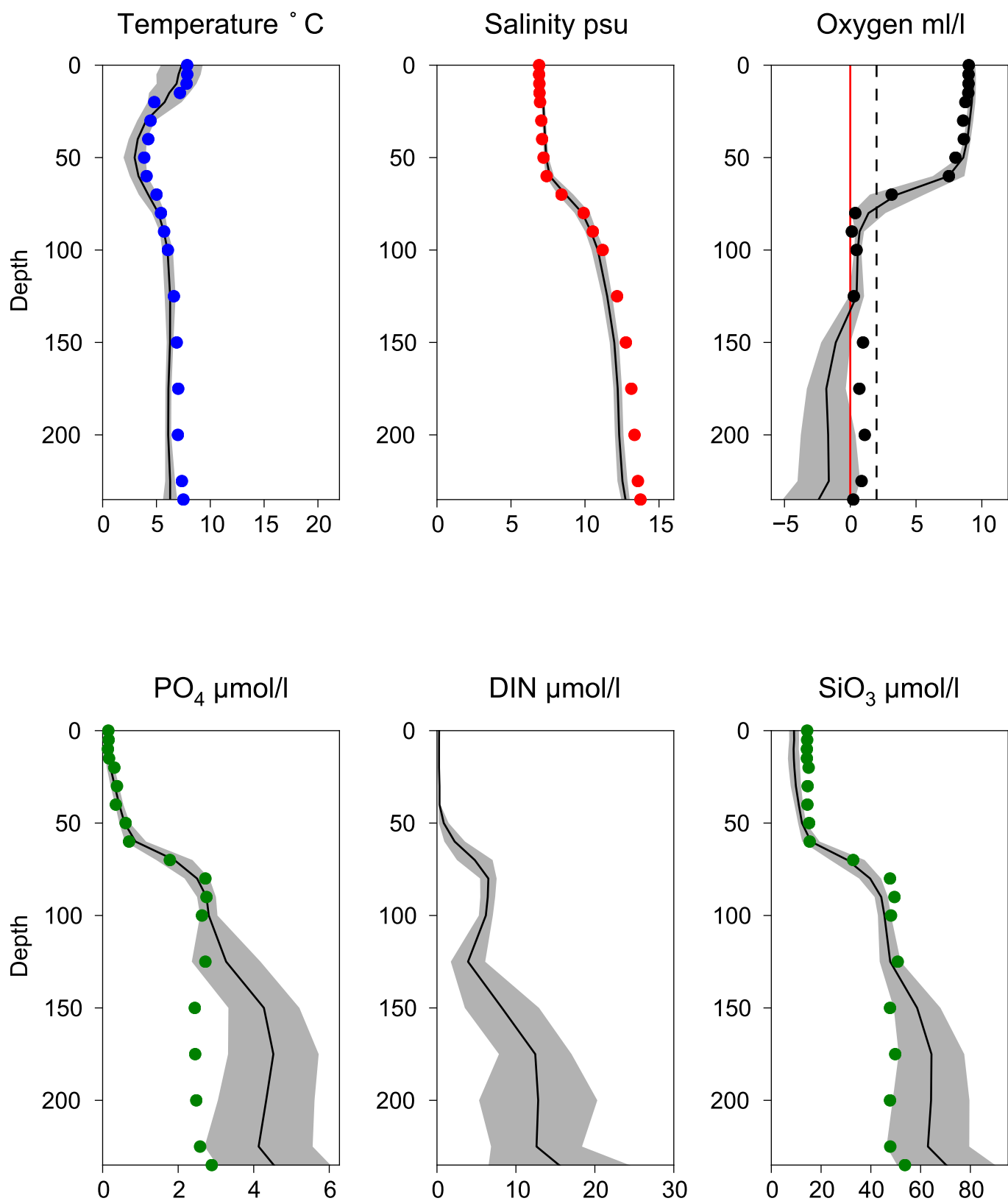


O₂ ml/l



Vertical profiles BY15 GOTLANDSDJ May

— Mean 2001-2015 St.Dev. • 2016-5-17



STATION BY20 FÅRÖDJ SURFACE WATER (0-10m)

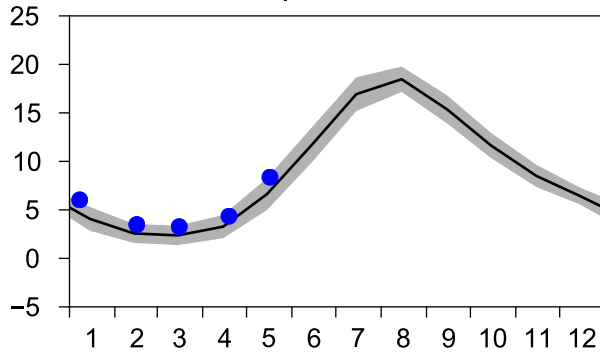
Annual Cycles

— Mean 2001-2015

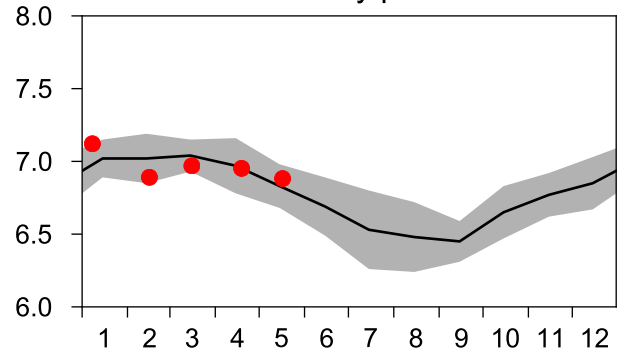
■ St.Dev.

● 2016

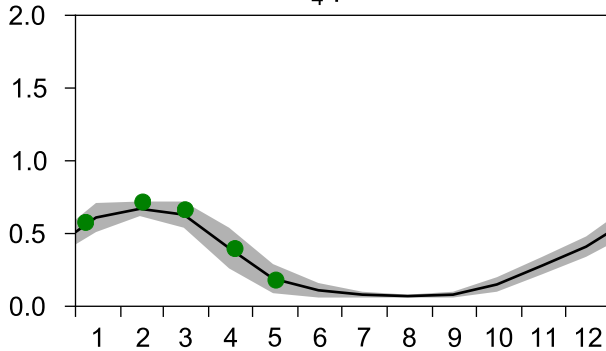
Temperature °C



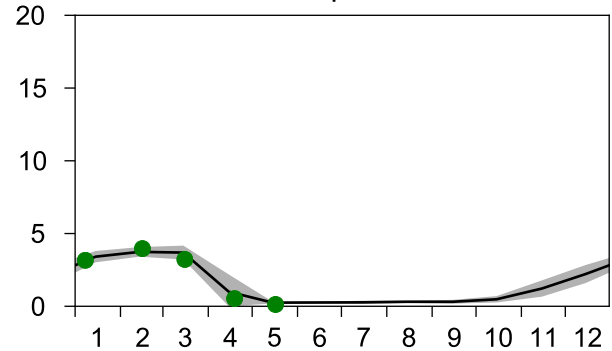
Salinity psu



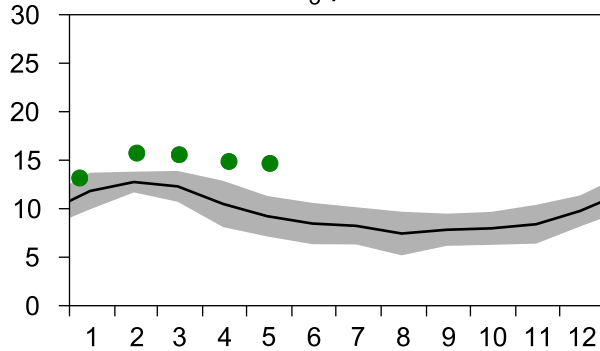
PO₄ µmol/l



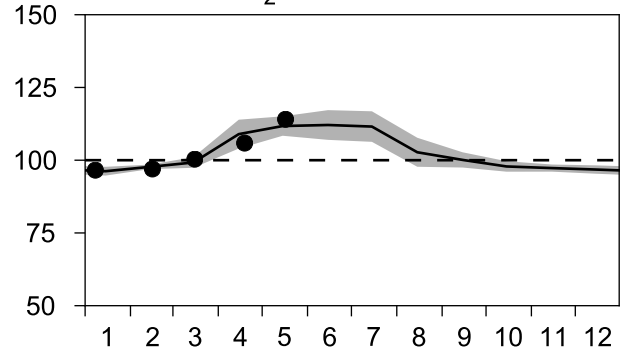
DIN µmol/l



SiO₃ µmol/l

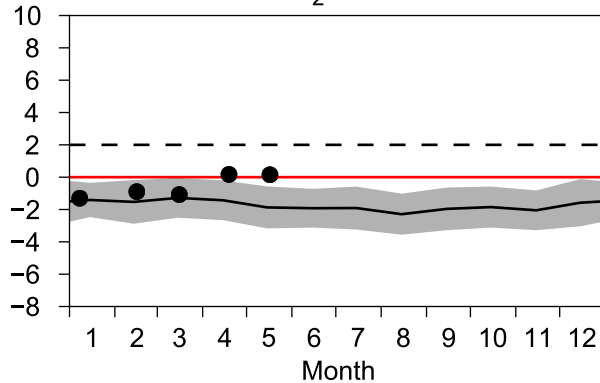


O₂ saturation %

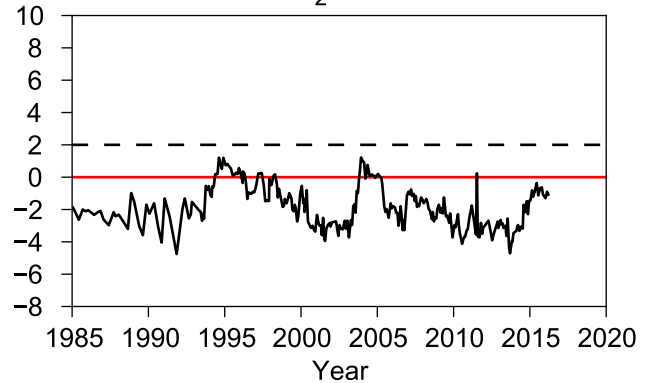


OXYGEN IN BOTTOM WATER (depth >= 175 m)

O₂ ml/l

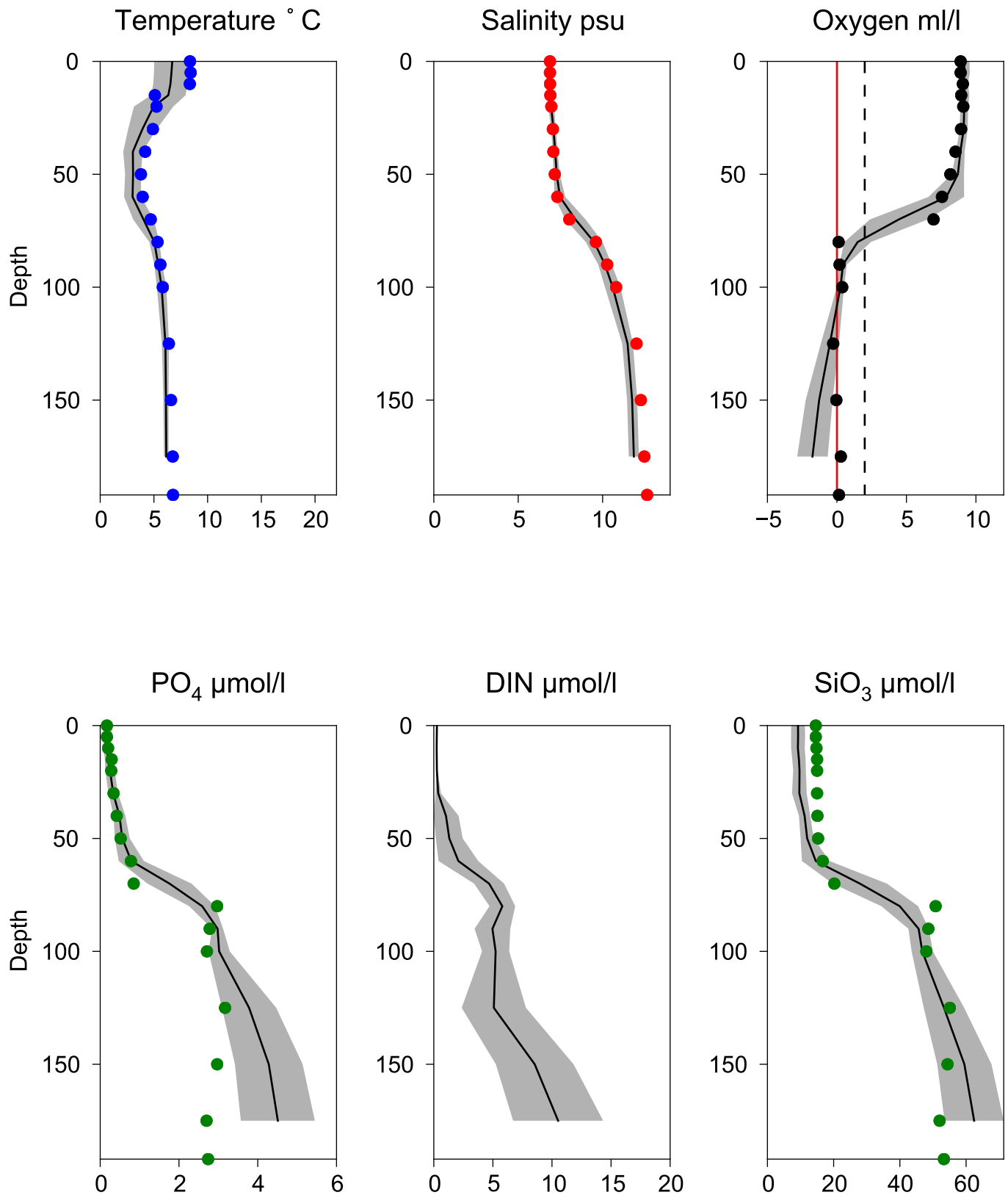


O₂ ml/l



Vertical profiles BY20 FÅRÖDJ May

— Mean 2001-2015 St.Dev. • 2016-5-17



STATION BY32 NORRKÖPINGSDJ SURFACE WATER (0-10m)

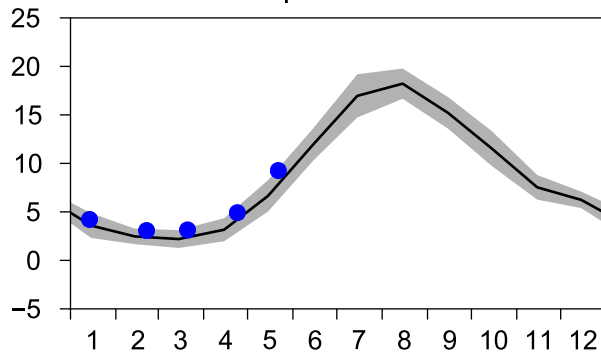
Annual Cycles

— Mean 2001-2015

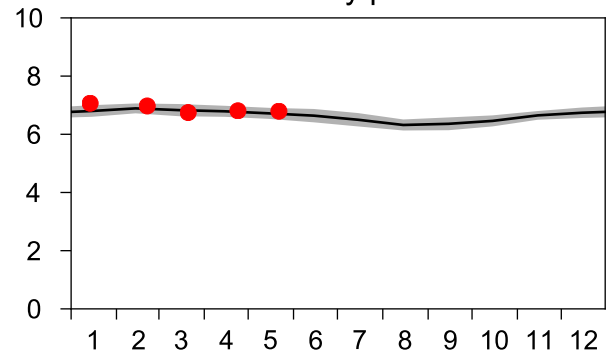
■ St.Dev.

● 2016

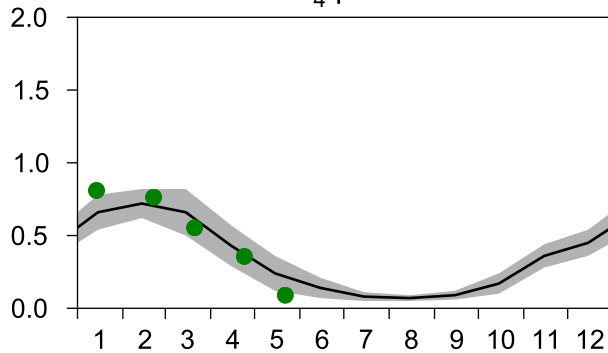
Temperature °C



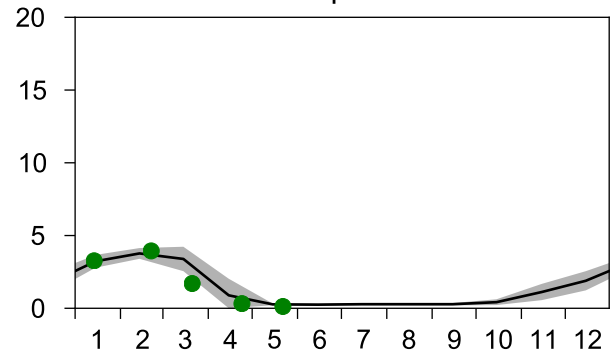
Salinity psu



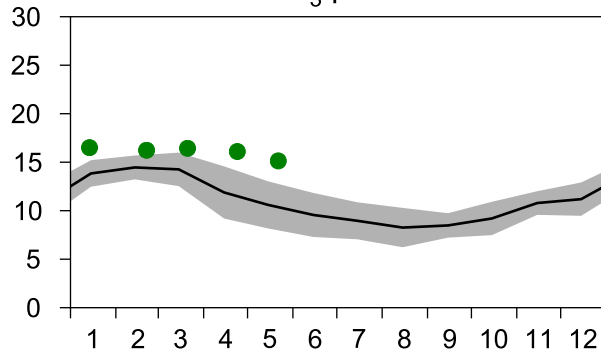
PO₄ µmol/l



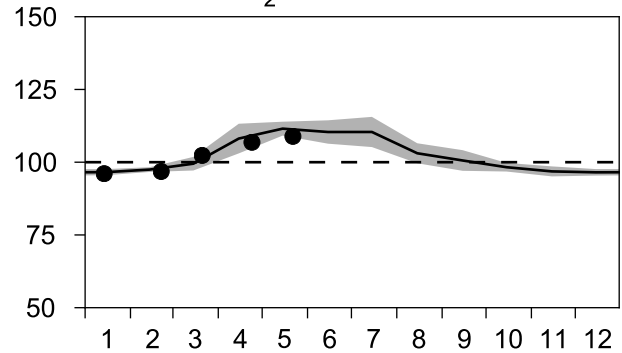
DIN µmol/l



SiO₃ µmol/l

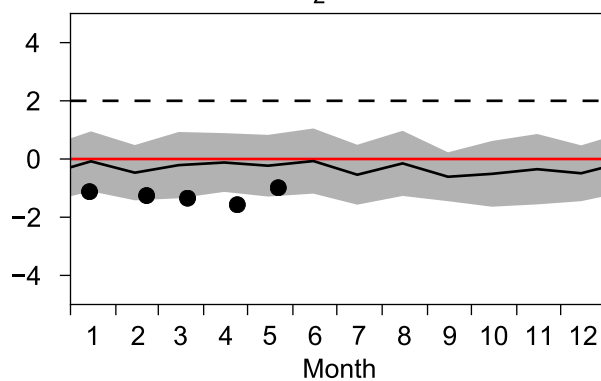


O₂ saturation %

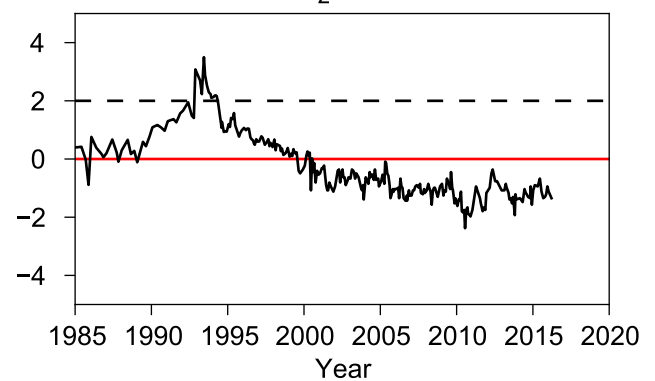


OXYGEN IN BOTTOM WATER (depth >= 175 m)

O₂ ml/l

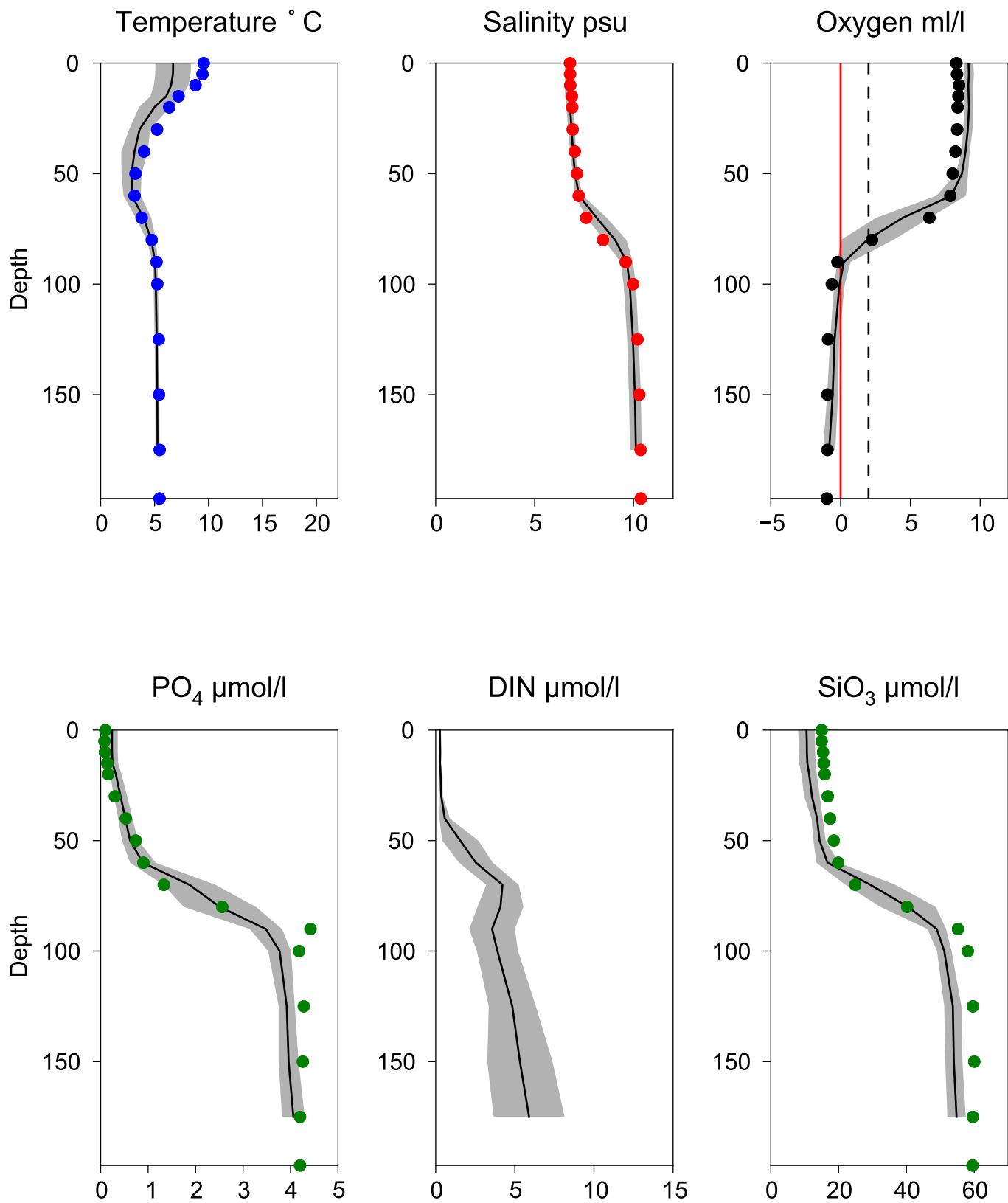


O₂ ml/l



Vertical profiles BY32 NORRKÖPINGS DJ May

— Mean 2001-2015 St.Dev. • 2016-5-22



STATION BY38 KARLSÖDJ SURFACE WATER (0-10m)

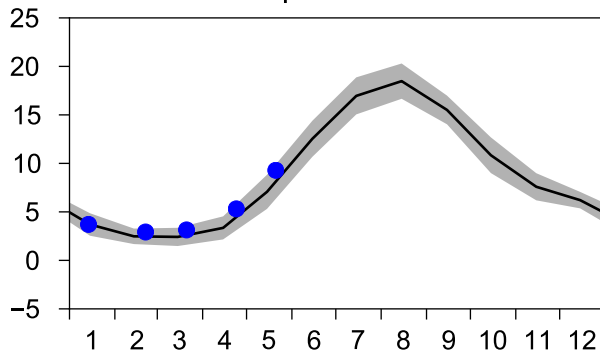
Annual Cycles

— Mean 2001-2015

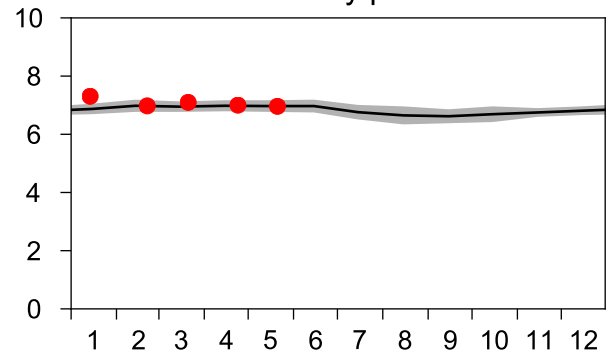
■ St.Dev.

● 2016

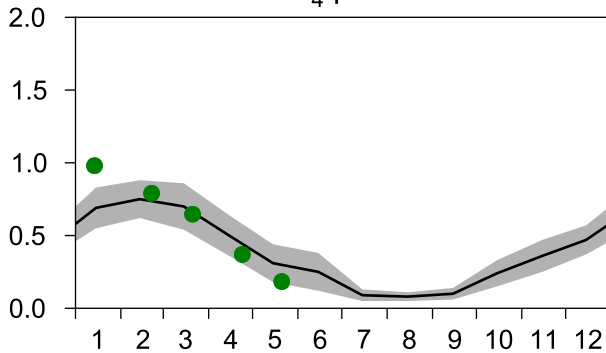
Temperature °C



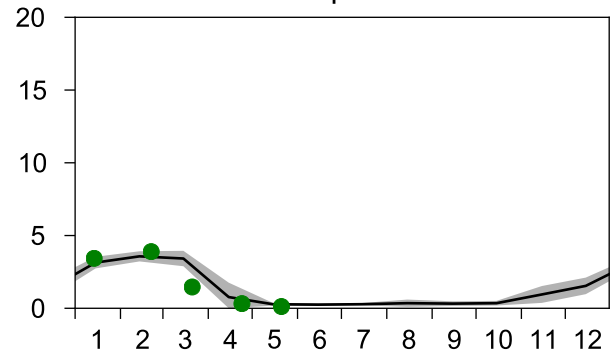
Salinity psu



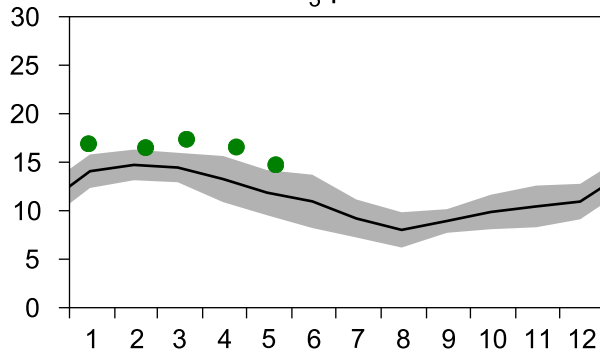
PO₄ µmol/l



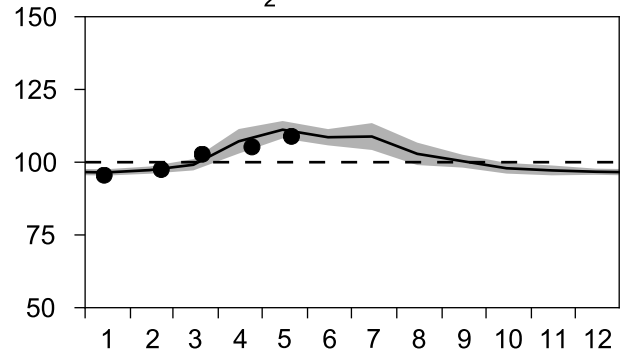
DIN µmol/l



SiO₃ µmol/l

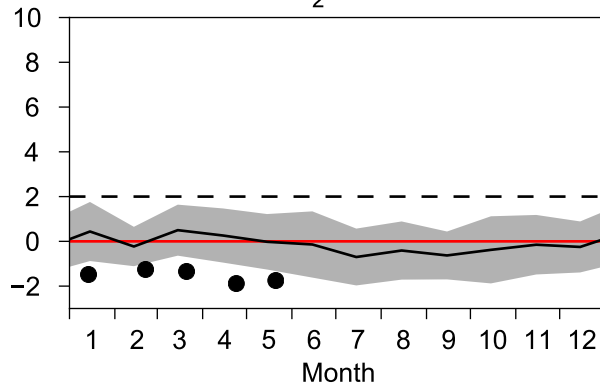


O₂ saturation %

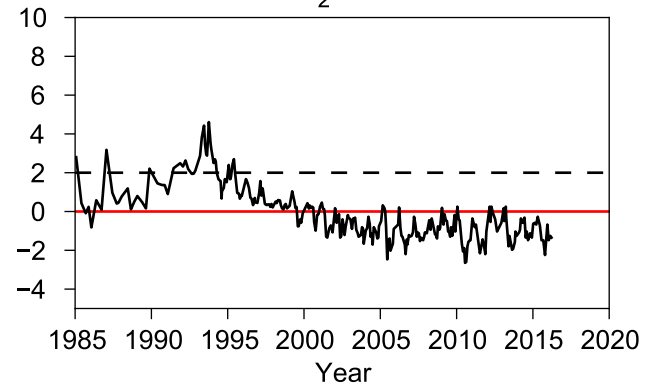


OXYGEN IN BOTTOM WATER (depth >= 100 m)

O₂ ml/l

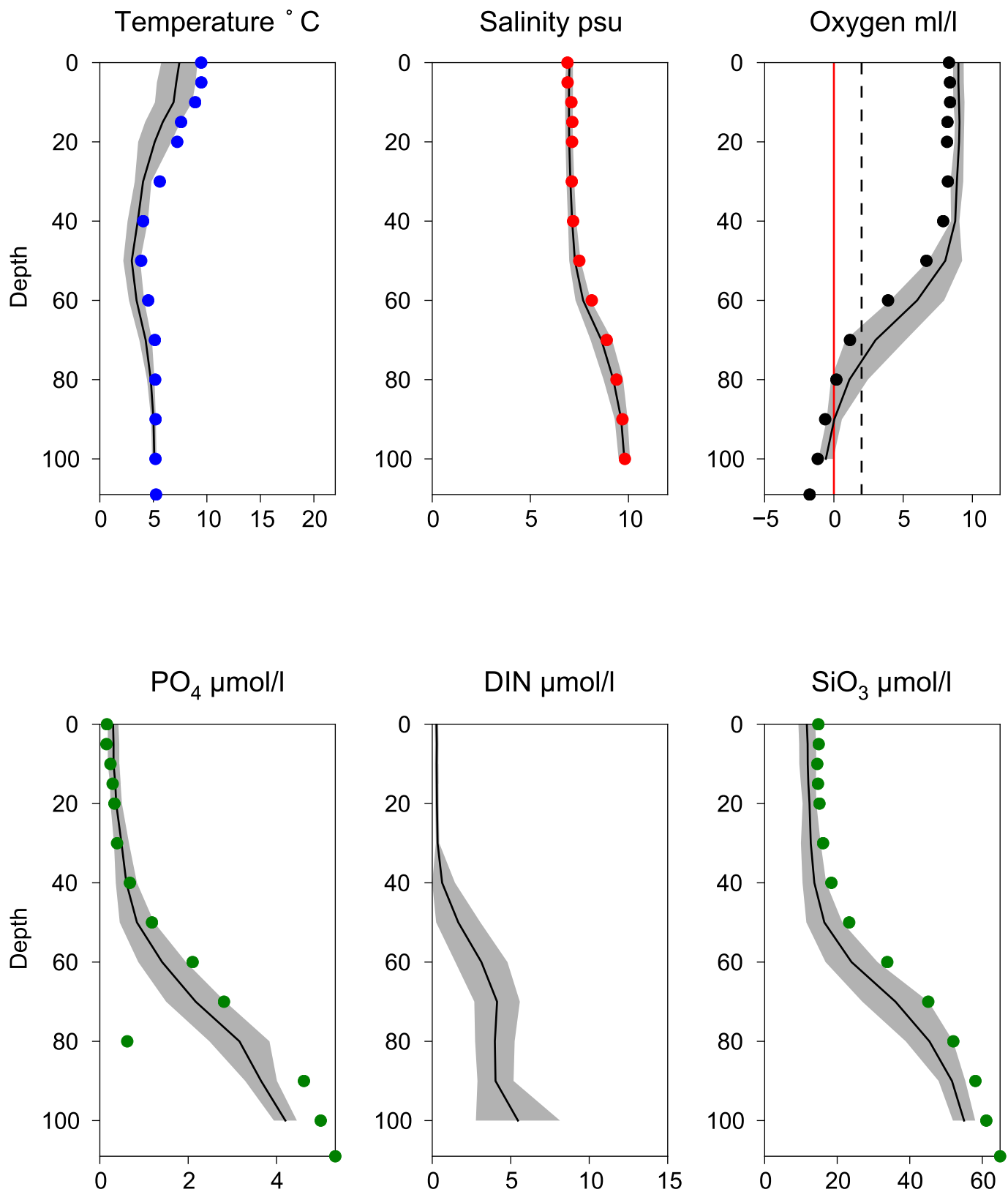


O₂ ml/l



Vertical profiles BY38 KARLSÖDJ May

— Mean 2001-2015 ■ St.Dev. ● 2016-5-21



STATION SLÄGGÖ SURFACE WATER (0-10m)

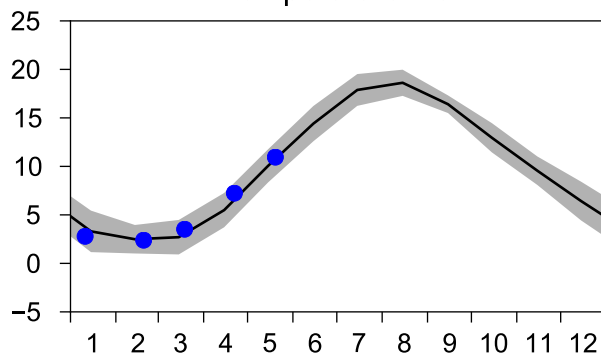
Annual Cycles

— Mean 2001-2015

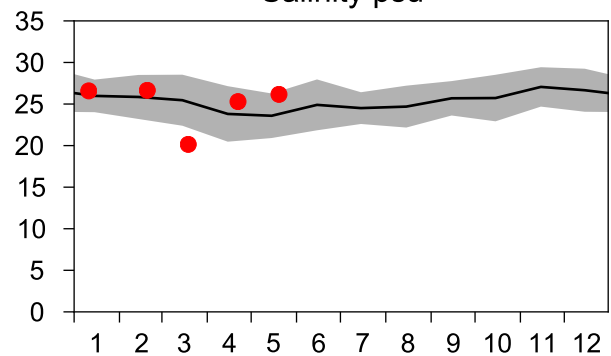
■ St.Dev.

● 2016

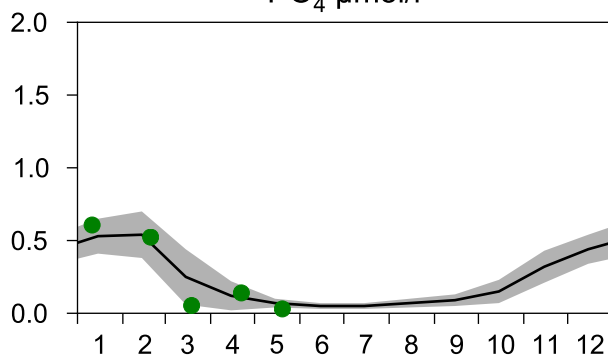
Temperature °C



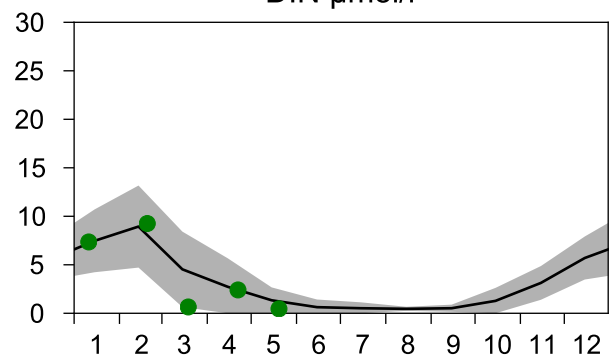
Salinity psu



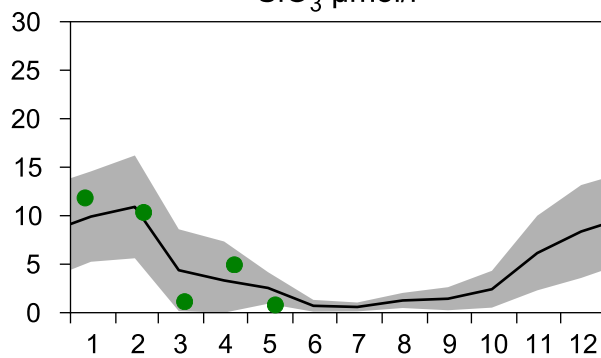
PO₄ µmol/l



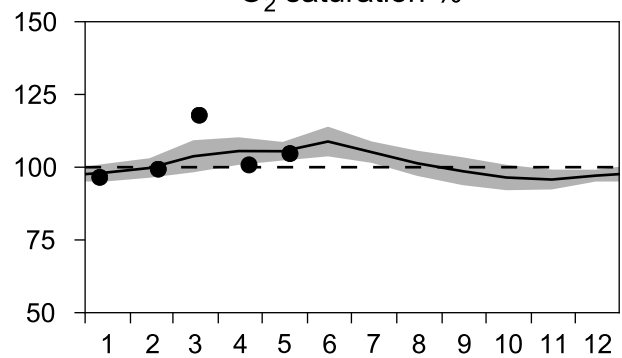
DIN µmol/l



SiO₃ µmol/l

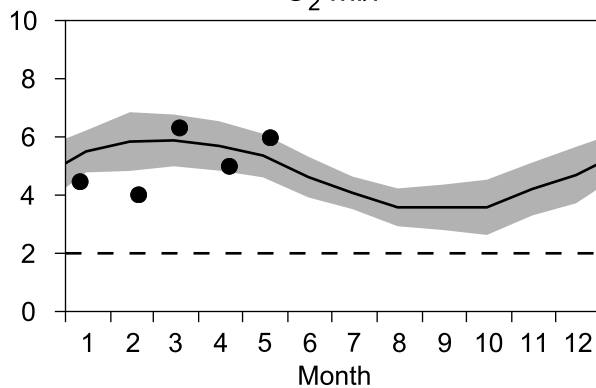


O₂ saturation %

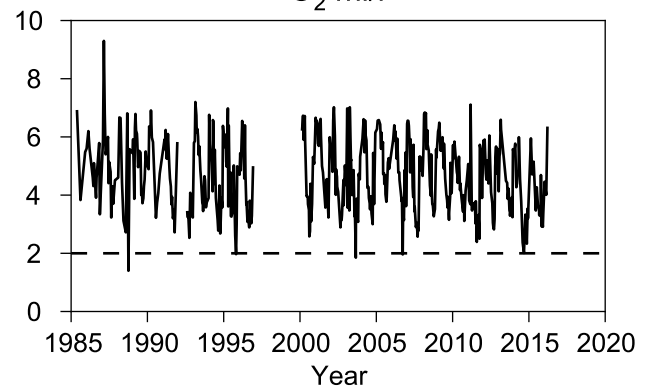


OXYGEN IN BOTTOM WATER (depth >= 50 m)

O₂ ml/l

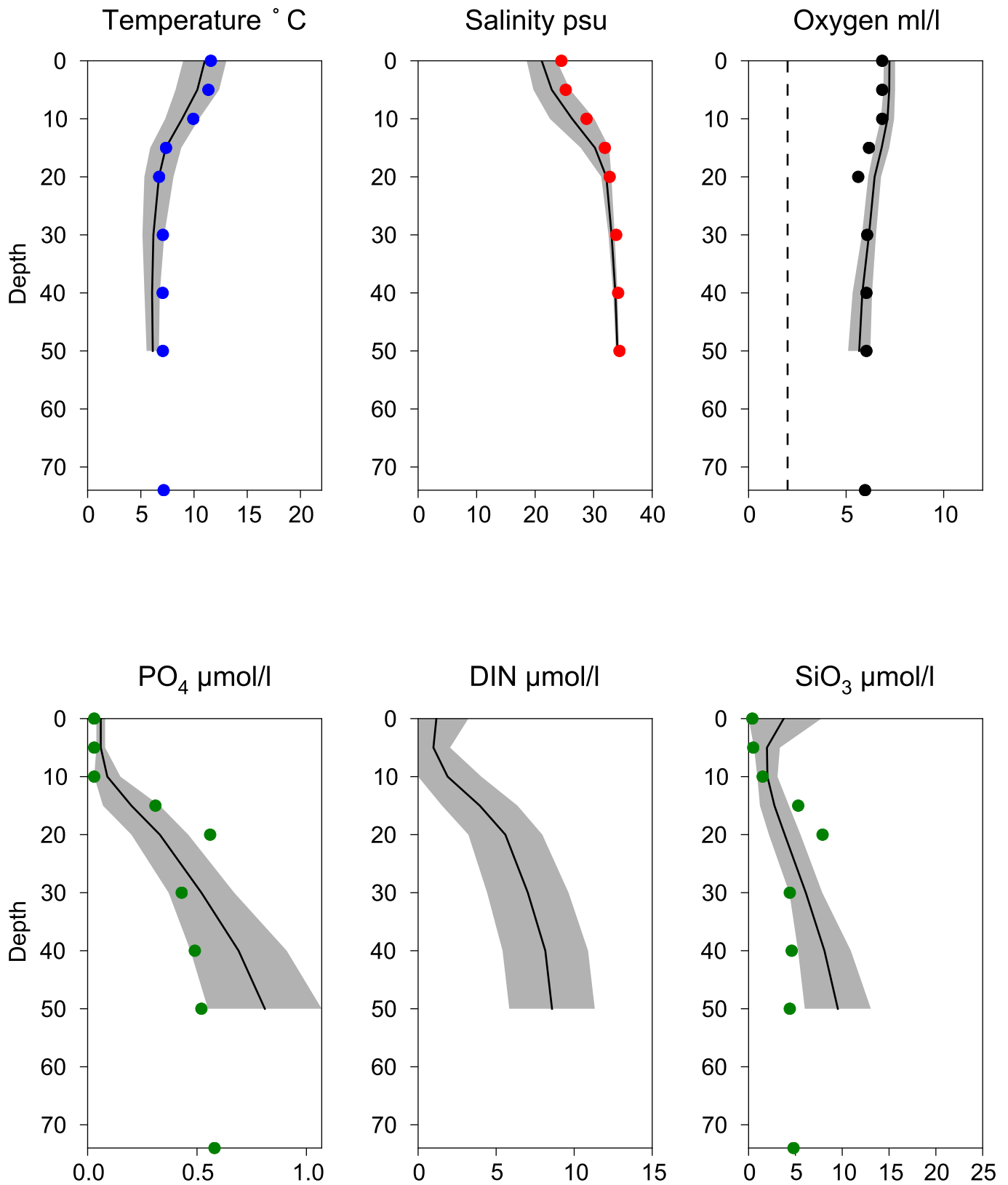


O₂ ml/l



Vertical profiles SLÄGGÖ May

— Mean 2001-2015 St.Dev. • 2016-5-20



STATION N14 FALKENBERG SURFACE WATER (0-10m)

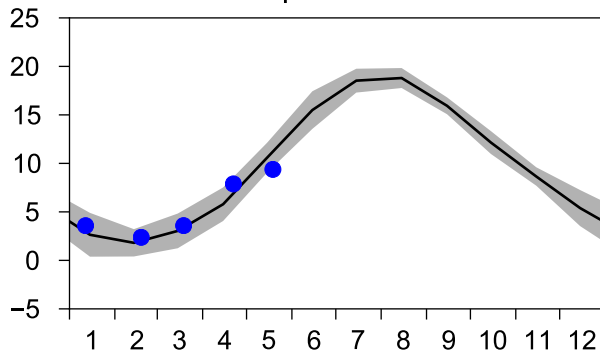
Annual Cycles

— Mean 2001-2015

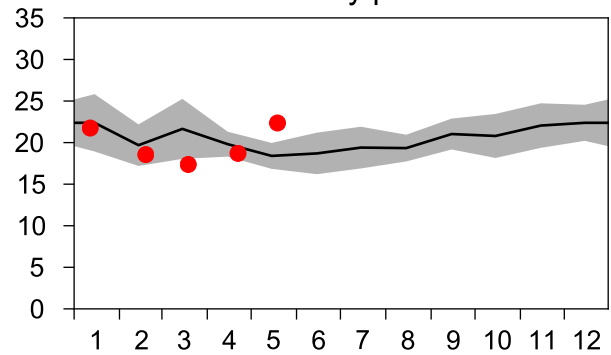
■ St.Dev.

● 2016

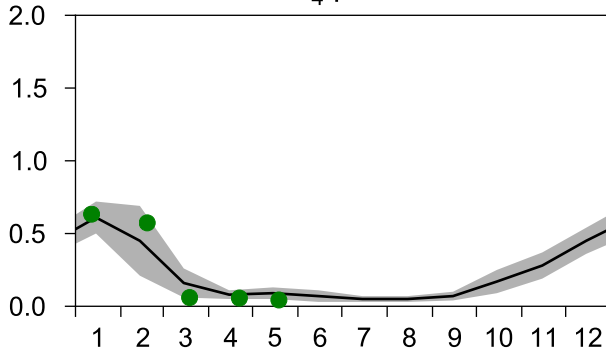
Temperature °C



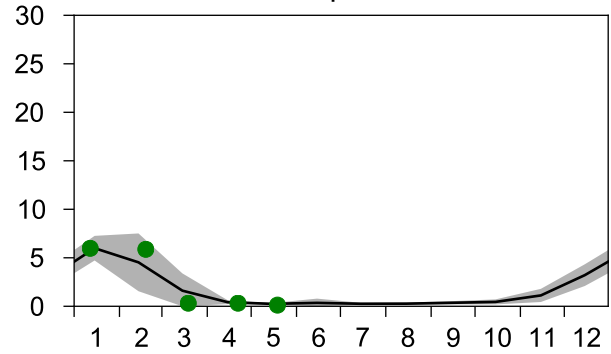
Salinity psu



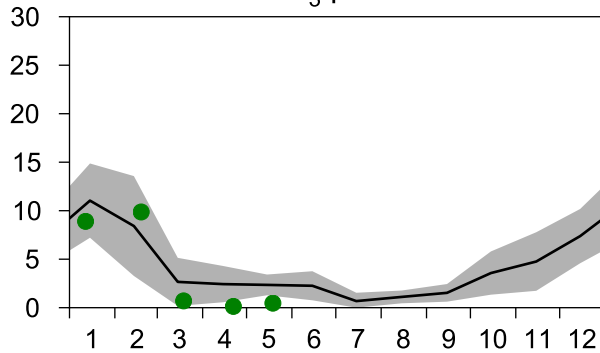
PO₄ µmol/l



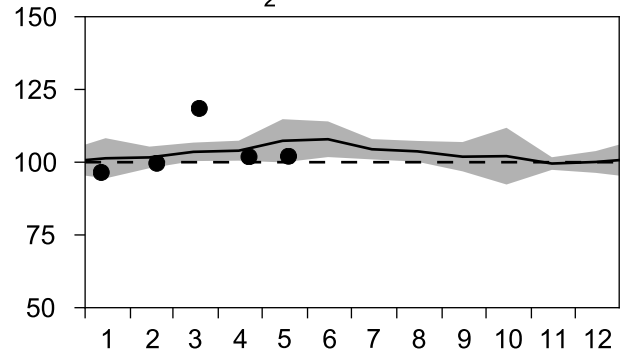
DIN µmol/l



SiO₃ µmol/l

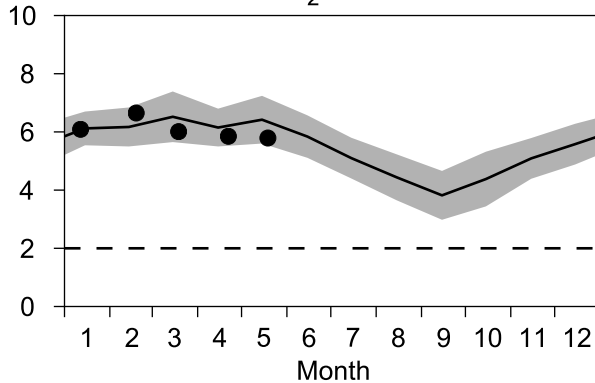


O₂ saturation %

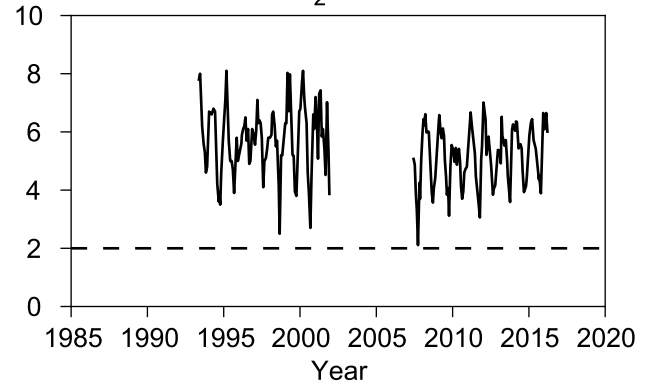


OXYGEN IN BOTTOM WATER (depth >= 25 m)

O₂ ml/l

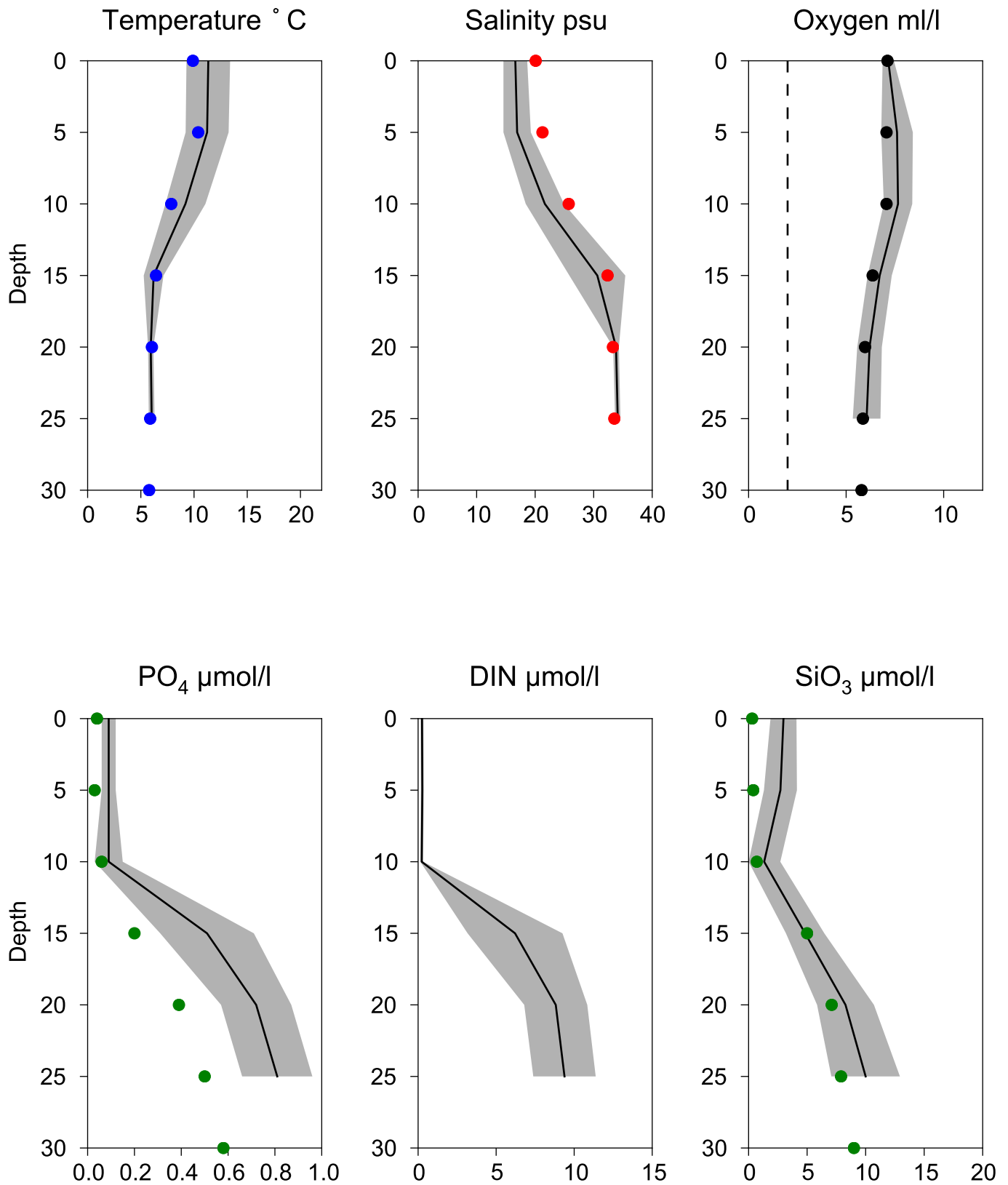


O₂ ml/l



Vertical profiles N14 FALKENBERG May

— Mean 2001-2015 St.Dev. • 2016-5-19



STATION REF M1V1 SURFACE WATER (0-10m)

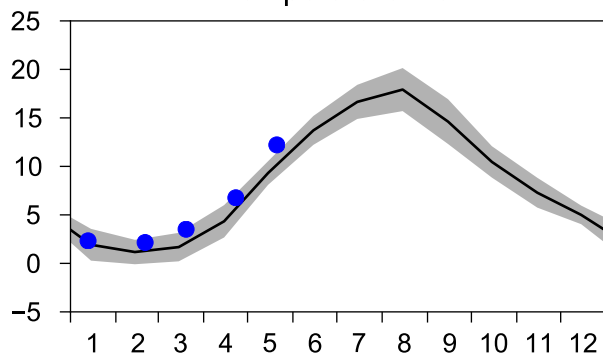
Annual Cycles

— Mean 2001-2015

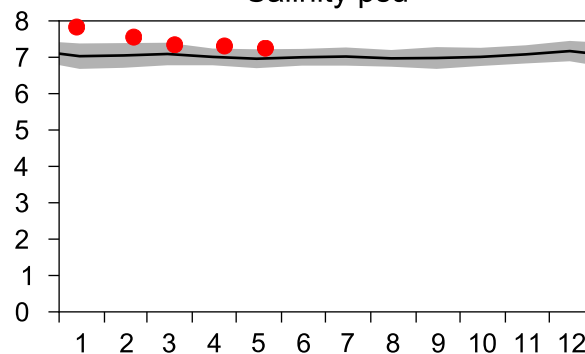
■ St.Dev.

● 2016

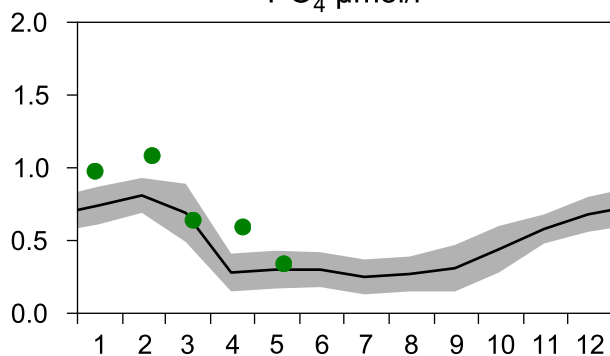
Temperature °C



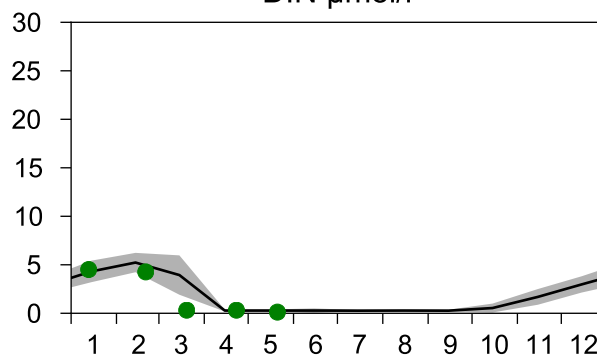
Salinity psu



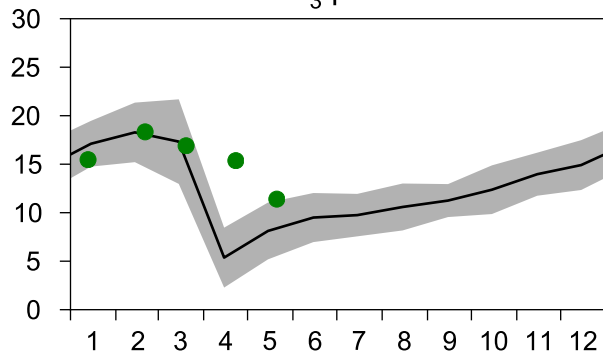
PO₄ µmol/l



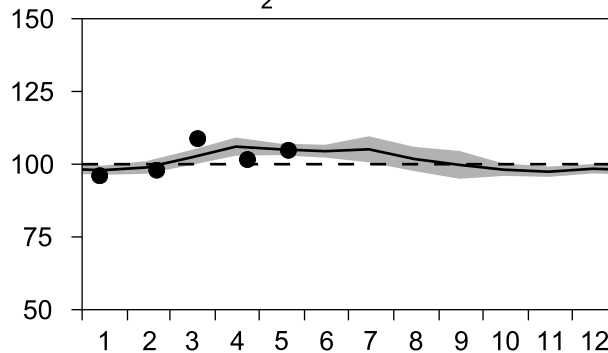
DIN µmol/l



SiO₃ µmol/l

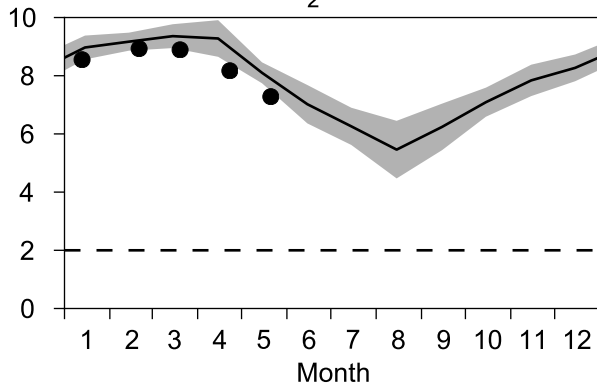


O₂ saturation %

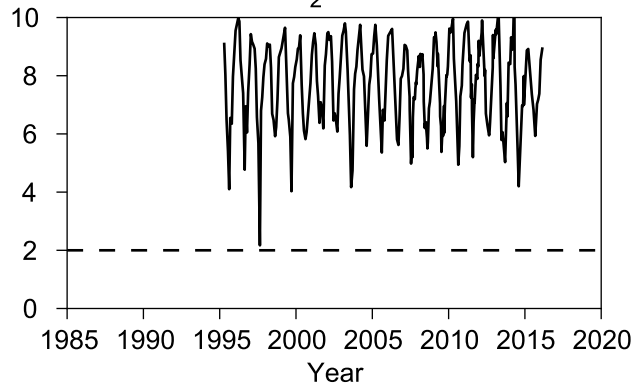


OXYGEN IN BOTTOM WATER (depth >= 17 m)

O₂ ml/l



O₂ ml/l



Vertical profiles REF M1V1 May

— Mean 2001-2015 ■ St.Dev. ● 2016-5-21

