

Rapport från SMHIs utsjöexpedition med M/V Meri



Foto: Panu Hänninen

Expeditionens varaktighet: 2017-09-12 - 2017-09-18
Uppdragsgivare: Sveriges Meteorologiska och Hydrologiska Institut,
 Havs- och Vattenmyndigheten.
Samarbetspartner: Finlands miljöcentral (SYKE).

SAMMANFATTNING

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

I stora delar av Egentliga Östersjöns djupvatten påträffades syrgashalter nära noll. Helt syrefria förhållanden, då svavelväte bildas, uppmättes i västra Gotlandsbassängen från ca 70 meters djup, i östra Gotlandsbassängen intermediärt på 80 meter och närmast botten vid BY20 samt vid BY15 Gotlandsdjupet från 225 meter. Det var fortfarande syresatt närmast botten vid 4-CTRY-BP men mellan 70 och 95 meter var det akut syrebrist (< 2ml/l). Akut syrebrist påträffades också i Bornholmsbassängen vid 65 meter, i östra och västra Gotlandsbassängerna vid 60-70 meter. I Arkonabassängen var hela vattenkolumnen väl syresatt förutom vid BY1 där det var akut syrebrist från 40 meter.

Närsalterna oorganiskt kväve och fosfat var generellt förbrukade i ytvattnet vilket är normalt för säsongen. I sydvästra Egentliga Östersjön uppmättes lite tillgängligt fosfat. Silikatkoncentrationerna i det undersökta området var fortsatt högre än normalt.

Ytvattentemperaturen i undersökningsområdet var normal till något lägre än normalt för årstiden. Salthalten i ytan var normal förutom i Skagerrak, BY1 och BY29, där den var högre än normalt. Generellt visade fluorescensmätaren på CTDn högre fluorescensnivåer i den övre delen av vattenmassan.

Nästa ordinarie expedition planeras starta i mitten av oktober.

RESULTAT

Septemberexpeditionen genomfördes ombord på det finska fartyget Meri och startade i Åbo den 12:e september och avslutades i Göteborg den 18:e. Vindarna under expeditionen var kraftiga från väst i början till svaga från öst i slutet. Starkast var vinden i östra Gotlandsbassängen där det blåste upp till 21 m/s.

Under expeditionen gjordes håvdrag av maneter vid Anholt och Släggö för att bidra till metodutvecklingen av manetövervakning. Håvprovet fotograferades och kommer senare genomgå bildanalys.

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

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

Skagerrak

Ytvattnet i Skagerrak var normalt för årstiden och varierade mellan 15,2-15,9 °C. Salthalten i ytan var något högre än normalt för årstiden utom i den södra delen där den var lägre än normalt och varierade mellan 26 psu och 35 psu. Termoklin och haloklin återfanns på djup mellan 5 och 70 meter i området.

Koncentrationer av närsalter i ytvattnet var mycket låga vilket är normalt för årstiden, utom i södra delen där silikathalterna var högre än normalt. Halterna av oorganiskt kväve (summan av nitrat+nitrit+ammonium,) låg runt 0,3 µmol/l och fosfatkoncentrationerna varierade mellan 0,03 och 0,13 µmol/l. Silikatkoncentrationerna låg mellan 0,8 och 3,9 µmol/l.

Syrgashalten i hela vattenkolumnen var normal vid samtliga besökta stationer.

Generellt visade fluorescensmätaren på CTDn högre fluorescensnivåer i den övre delen av vattenmassan.

Kattegatt och Öresund

I Kattegatts samt Öresunds ytvatten var temperaturen normal för årstiden och varierade mellan 14,8-16,1°C, varmast närmast Kattegattkusten vid N14 Falkenberg. Salthalten låg även den inom det normala spannet med 17,8 psu i Öresund och 21,2 psu vid N14 Falkenberg. Pyknoklinen återfanns på djup mellan 15 och 20 meter. Vid W Landskrona och Fladen syntes också en haloklin på 7-11 meters djup.

Samtliga närsalter var normala för årstiden i hela Kattegatt och Öresund utom silikathalterna som var något förhöjda. I Kattegatt var det lösta oorganiska kvävet förbrukat i ytan och fosfathalterna låg runt 0,1 µmol/l. Koncentrationen av kisel i ytvattnet varierade kring 3,1-3,3 µmol/l. I Öresunds ytvatten var halten av fosfat 0,2 µmol/l, kisel ca 10,3 µmol/l och det lösta oorganiska kvävet 1,4 µmol/l.

Syrgashalter vid botten i området låg på normala värden mellan 3,7 och 4,4 ml/l i Kattegatt och 2,4 ml/l i Öresund.

Generellt visade fluorescensmätaren på CTDn högre fluorescensnivåer i den övre delen av vattenmassan.

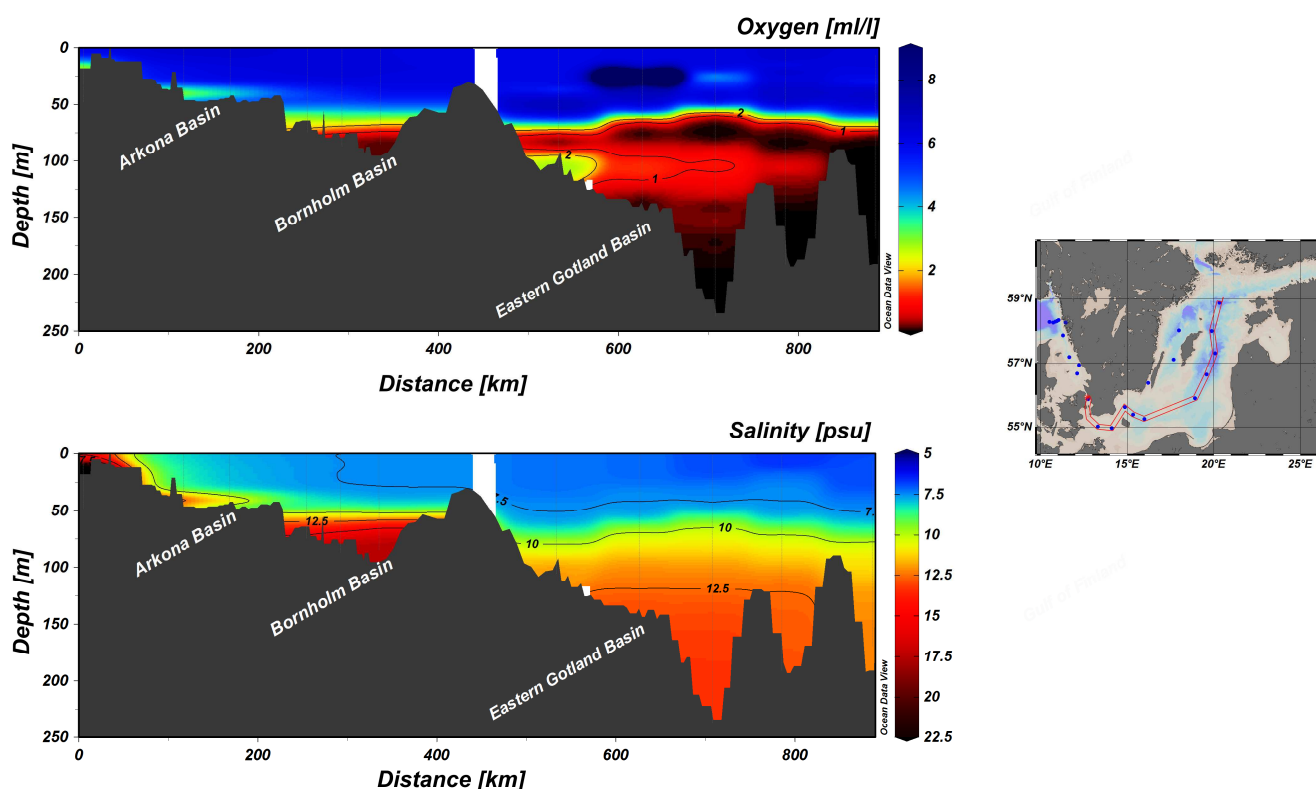
Egentliga Östersjön

Temperaturen i Egentliga Östersjöns ytvatten var normala till något lägre än normala och varierade mellan 13,1-16,0°C. Salthalten i ytvattnet var normal utom vid de västligaste och nordligaste mätpunkterna där den var något över det normala, och låg mellan 6,5 och 8,3 psu. En tydlig termoklin låg kring 10-35 meter i området. Det fanns även en pyknoklin mellan 50 och 70 meter, i Arkonabassängen grundare, runt 30 meter.

Det lösta oorganiska kvävet var helt förbrukat i ytvattnet. Fosfathalterna i ytvattnet låg mellan 0,06 och 0,38 $\mu\text{mol/l}$, högst i Arkona- och Bornholmsbassängerna. Ytkoncentrationen av kisel var fortsatt högre än normalt i hela Egentliga Östersjön och varierade mellan som lägst 11,4 $\mu\text{mol/l}$ i västra Gotlandsbassängen till som högst 16,0 $\mu\text{mol/l}$ i Hanöbukten.

I stora delar av Egentliga Östersjöns djupvatten påträffades syrgashalter nära noll. Helt syrefria förhållanden, då svavelväte bildas, uppmättes i Västra Gotlandsbassängen från ca 70 meters djup, i Östra Gotlandsbassängen intermediärt på 80 meter och närmast botten vid BY20 samt vid BY15 Gotlandsdjupet från 225 meter. Det var fortfarande syresatt närmast botten vid 4-CTRY-BP men mellan 70 och 95 meter var det akut syrebrist (< 2ml/l). Akut syrebrist påträffades också i Bornholmsbassängen vid 65 meter, i östra och västra Gotlandsbassängerna vid 60-70 meter. I Arkonabassängen var hela vattenkolumnen väl syresatt förutom vid BY1 där det var akut syrebrist från 40 meter.

Fluorescensmätningarna från CTDn visade på viss växtplanktonaktivitet ovanför termoklinen.



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

DELTAGARE

Namn

Anna-Kerstin Thell Expeditionsledare
Martin Hansson
Johan Håkansson
Sara Johansson
Johan Kronsell
Panu Hänninen

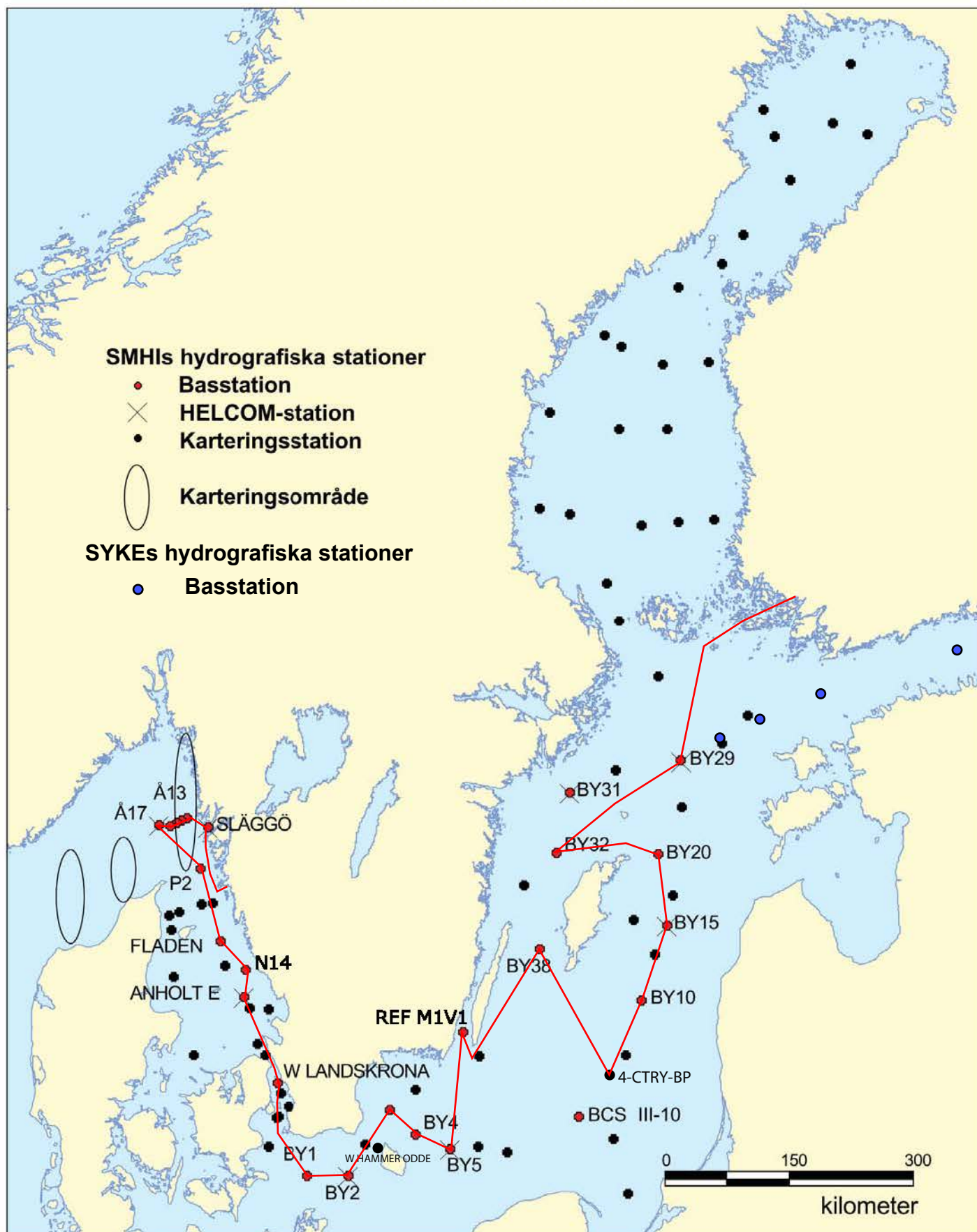
Från

SMHI
SMHI
SMHI
SMHI
SMHI
SYKE

BILAGOR

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

TRACKCHART
Country: Sweden
Ship: M/V MERI
Date: 20170912-20170918
Series: 0001-0024



Ship: 02
Year: 2017

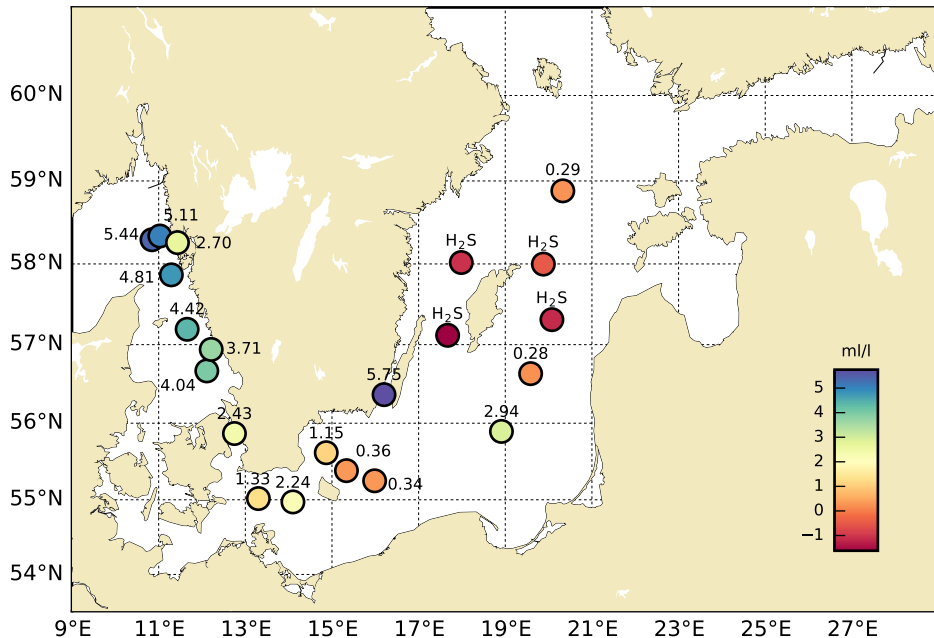
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0001	1	BPNX35	BAS...	BY29 / LL19	5852.92	02019.69	20170913	0530	178	5	23 10	15.3	997	2530	x-x-	16	16	x x - x - x x x x x x x x x x - x - - x						
0002	1	BPWX38	BAS...	BY32 NORRKÖPINGS	5801.02	01759.07	20170913	1600	205		18 10	11.1	991	6840	x---	17	17	x x - x - x x x x x x x x x x - x - - x						
0003	1	BPEX26	BAS...	BY20 FÄRÖDJ	5759.88	01952.74	20170913	2320	203		15 9	13.8	984	9990	x---	17	17	x x - x - x x x x x x x x x x - x - - x						
0004	1	BPEX21	BAS...	BY15 GOTLANDS	5718.75	02004.59	20170914	0530	249		26 11	13.4	982	2850	x-xx	19	19	x x - x x x x x x x x x x x x x x x						
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0014	1	SOCX39	BAS...	W LANDSKRONA	5552.00	01244.93	20170917	0000	50		12 5	10.8	1013	9990	x---	9	9	x x x x - x x - x x x x x x x x - x - x						
0015	1	KAEX29	BAS...	ANHOLT E	5640.10	01206.66	20170917	0600	62	11	13 4	15.9	1014	1220	xxxx	10	10	x x x x x x x - x x x x x x x x x x x x						
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0024	1	FIBG27	BAS...	SLÄGGÖ	5815.58	01126.03	20170918	0600	74	3	09 4	11.4	1013	1120	xxx-	9	9	x x x x - x x - x x x x x x x x - x - -						

Bottom water oxygen concentration (ml/l)

Ship: Meri

Date: 20170912-20170918

Series: 0001-0024



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

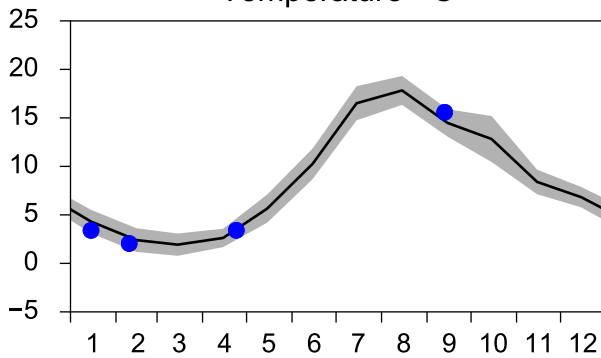
Annual Cycles

— Mean 2001-2015

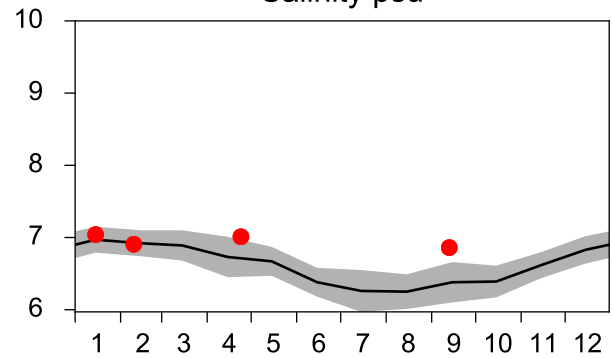
■ St.Dev.

● 2017

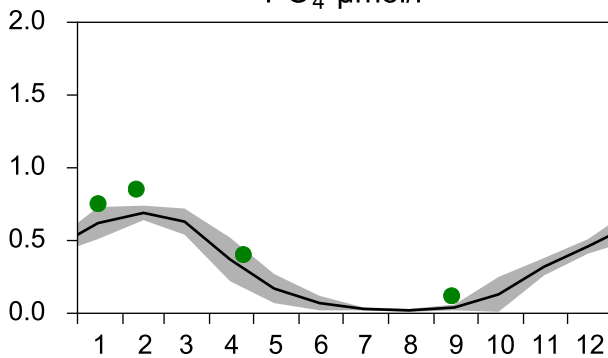
Temperature °C



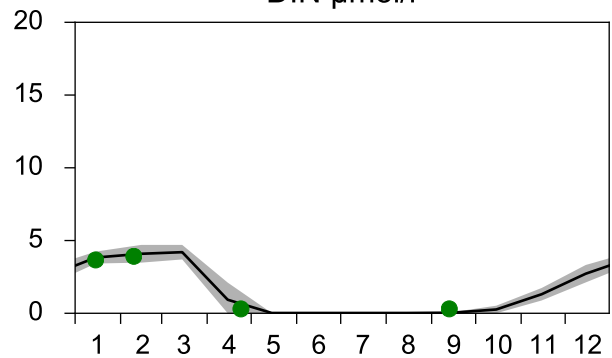
Salinity psu



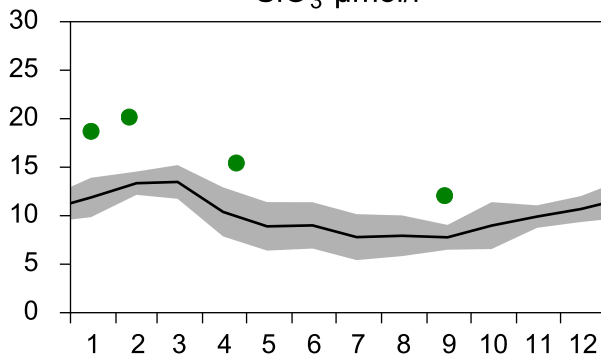
PO₄ µmol/l



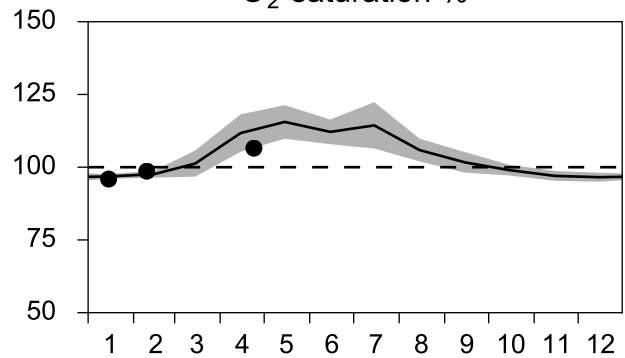
DIN µmol/l



SiO₃ µmol/l

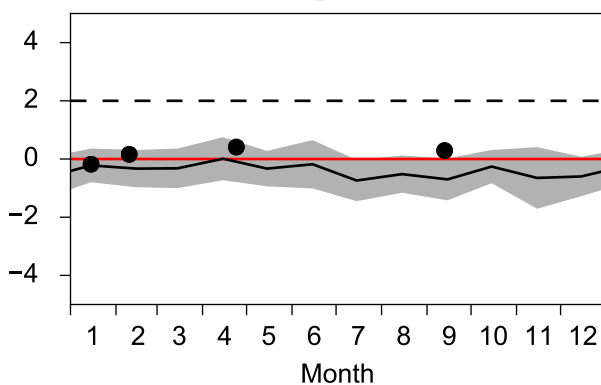


O₂ saturation %

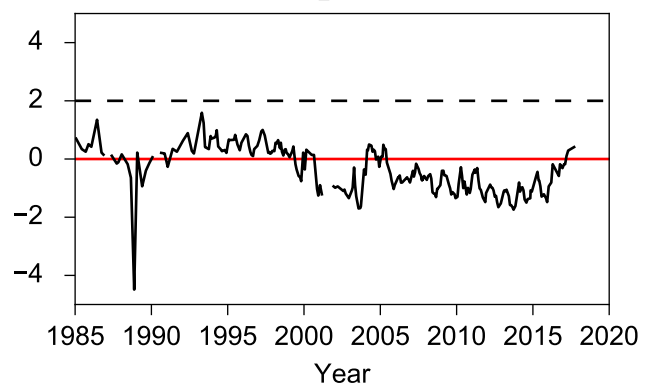


OXYGEN IN BOTTOM WATER (depth >= 150 m)

O₂ ml/l

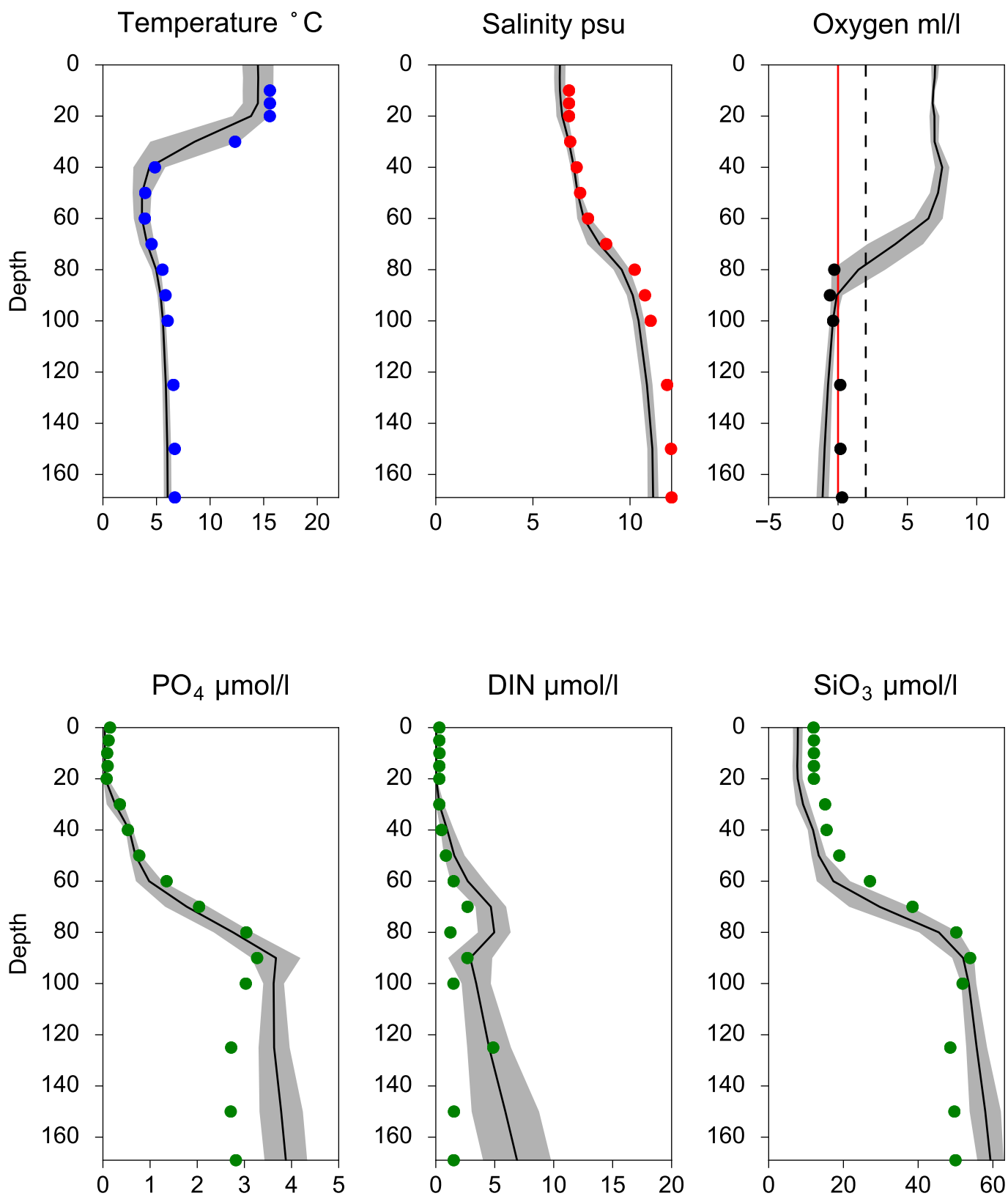


O₂ ml/l



Vertical profiles BY29 / LL19 September

— Mean 2001-2015 St.Dev. • 2017-09-13



STATION BY32 NORRKÖPINGSDJ SURFACE WATER (0-10 m)

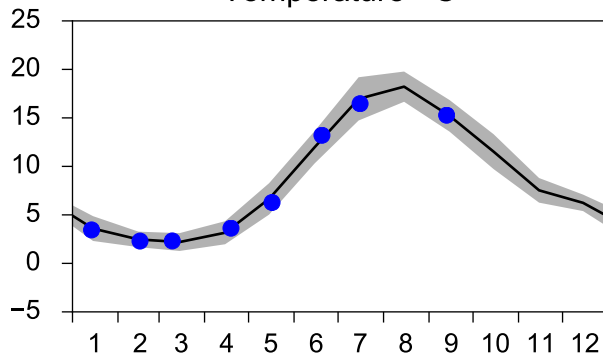
Annual Cycles

— Mean 2001-2015

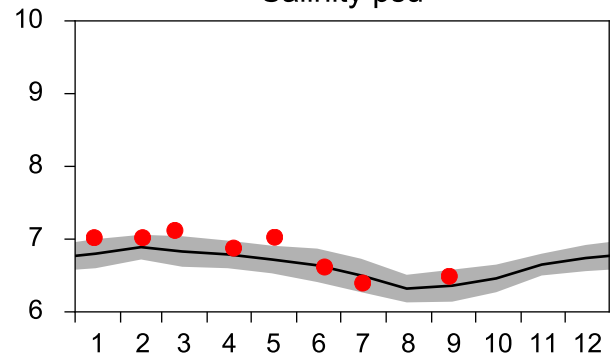
■ St.Dev.

● 2017

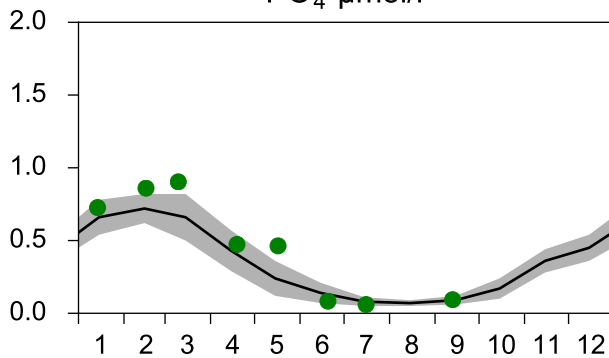
Temperature °C



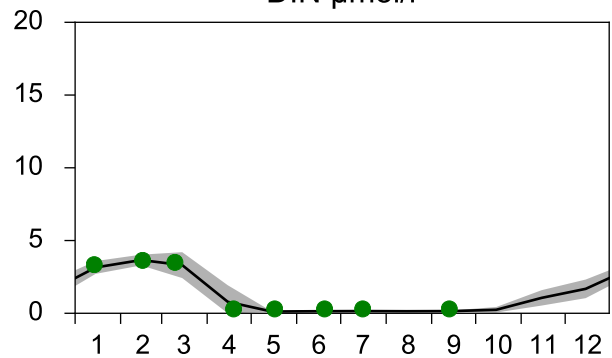
Salinity psu



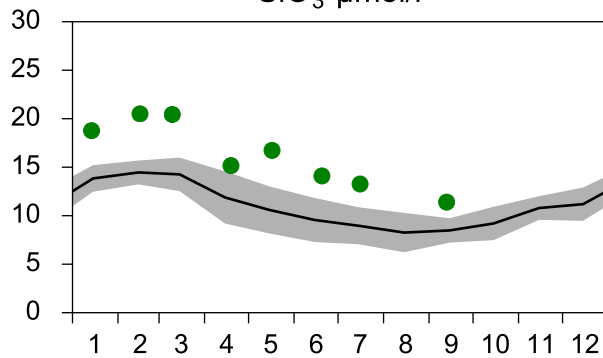
PO₄ µmol/l



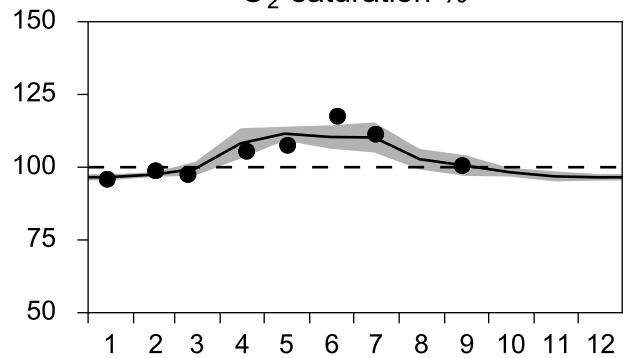
DIN µmol/l



SiO₃ µmol/l

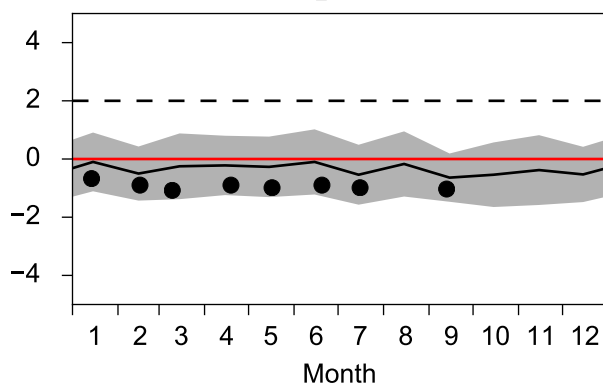


O₂ saturation %

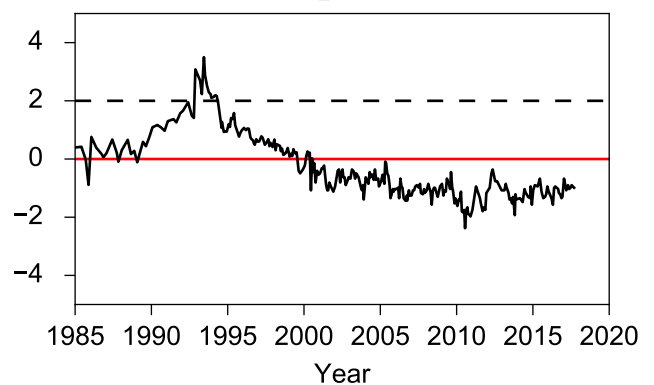


OXYGEN IN BOTTOM WATER (depth >= 175 m)

O₂ ml/l

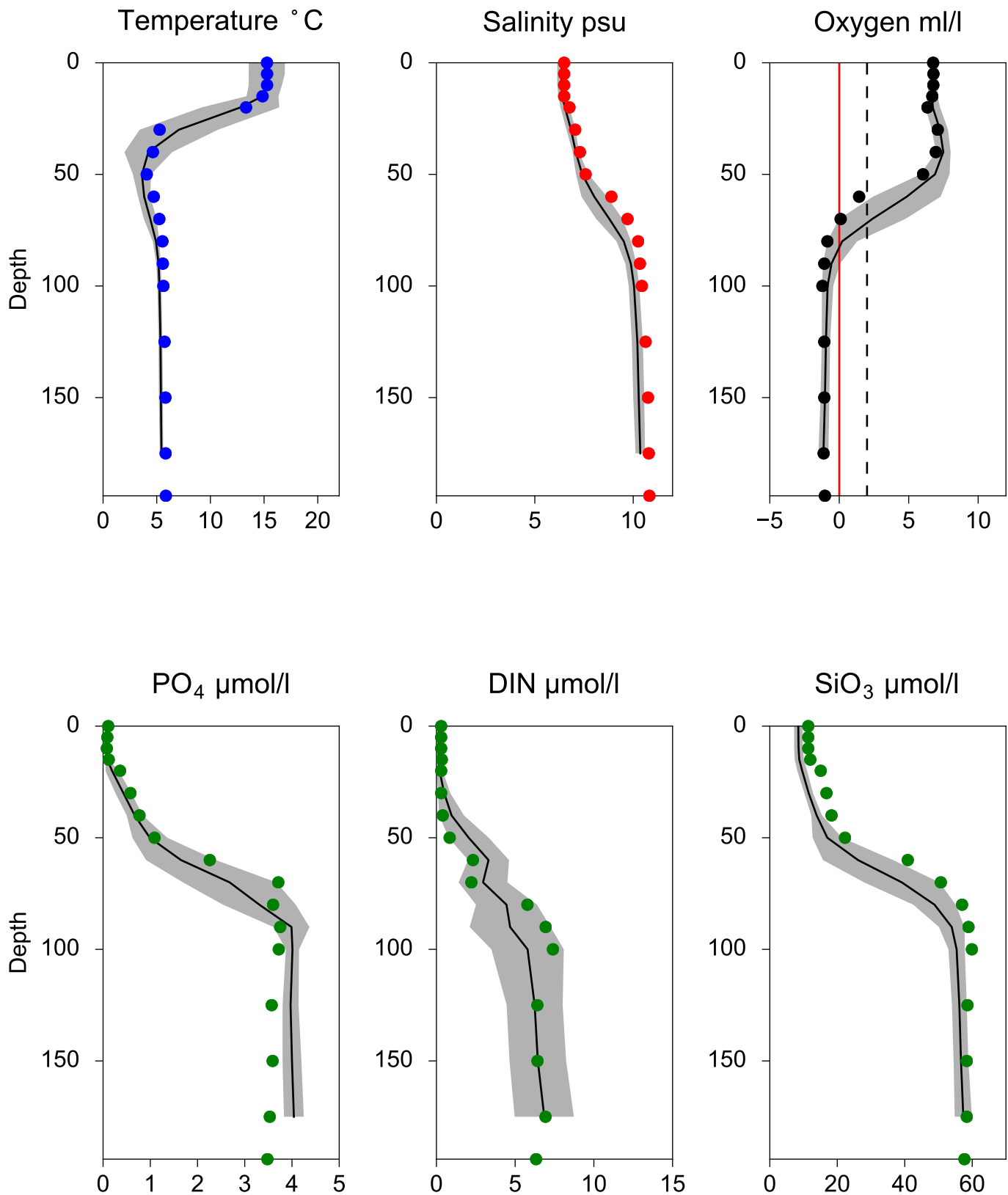


O₂ ml/l



Vertical profiles BY32 NORRKÖPINGSDJ September

— Mean 2001-2015 St.Dev. • 2017-09-13



STATION BY20 FÅRÖDJ SURFACE WATER (0-10 m)

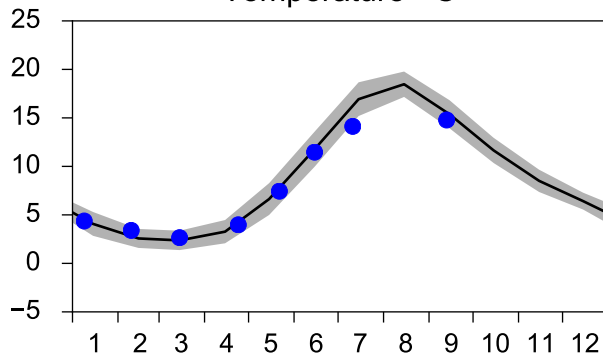
Annual Cycles

— Mean 2001-2015

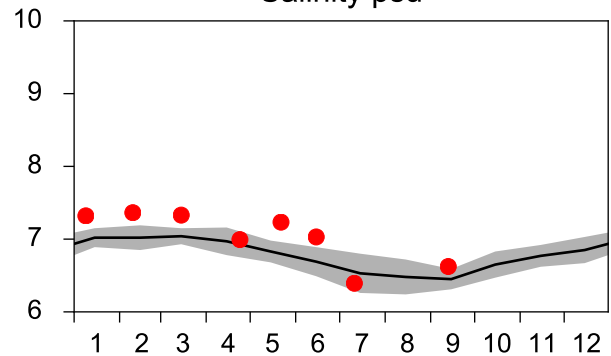
■ St.Dev.

● 2017

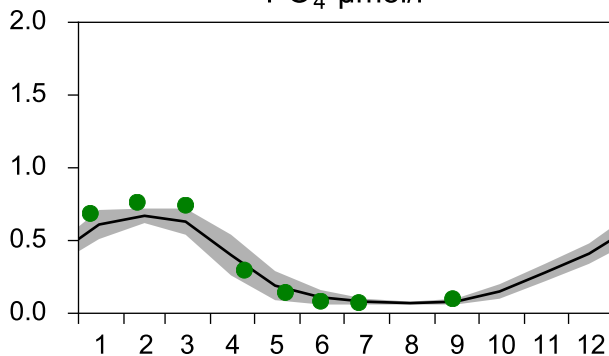
Temperature °C



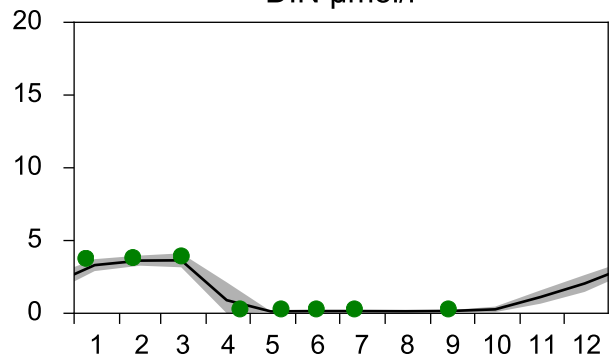
Salinity psu



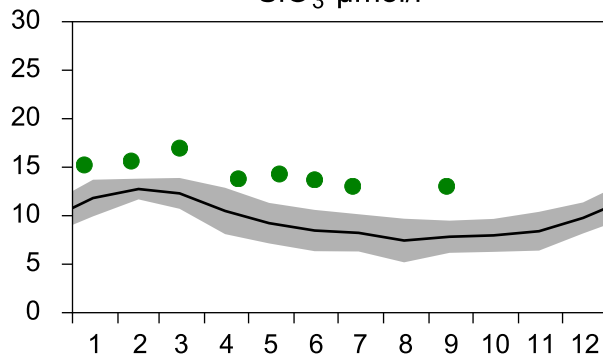
PO₄ µmol/l



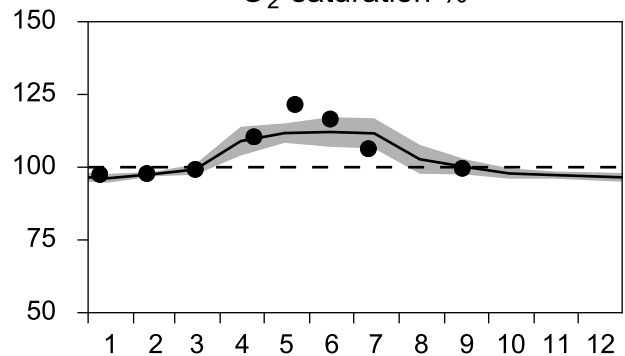
DIN µmol/l



SiO₃ µmol/l

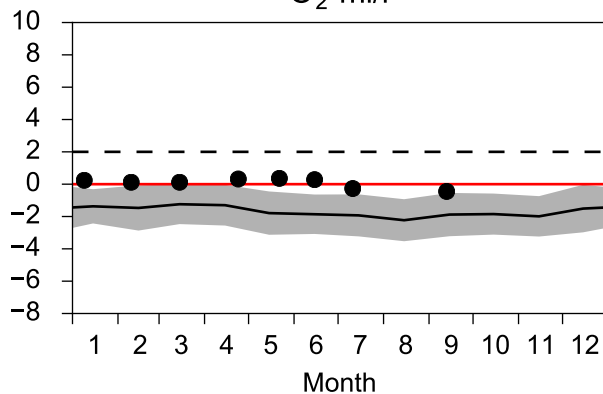


O₂ saturation %

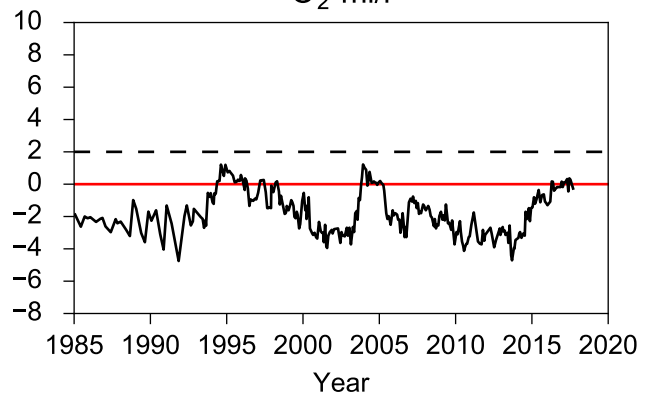


OXYGEN IN BOTTOM WATER (depth >= 175 m)

O₂ ml/l

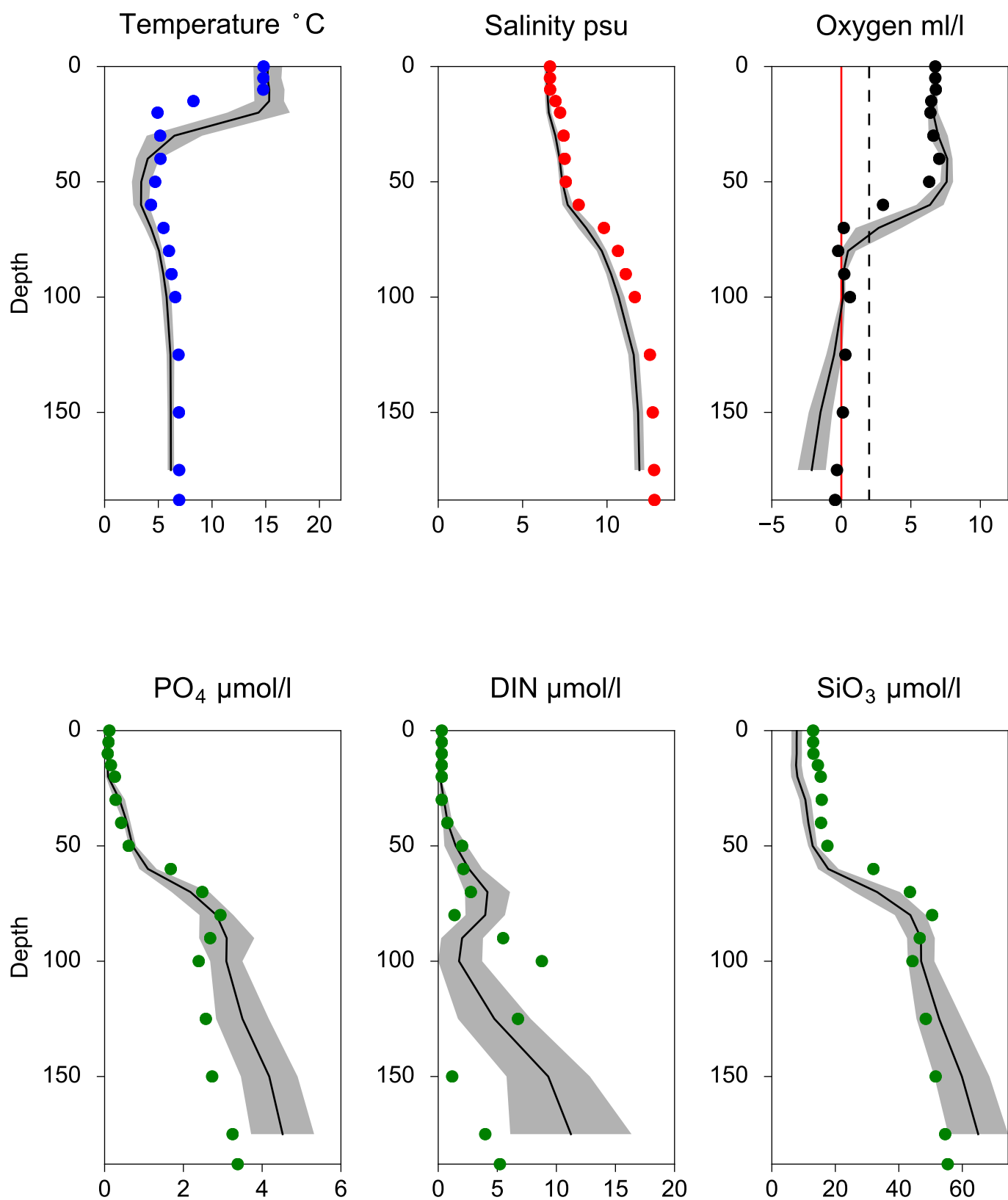


O₂ ml/l



Vertical profiles BY20 FÅRÖDJ September

— Mean 2001-2015 St.Dev. • 2017-09-13



STATION BY15 GOTLANDSDJ SURFACE WATER (0-10 m)

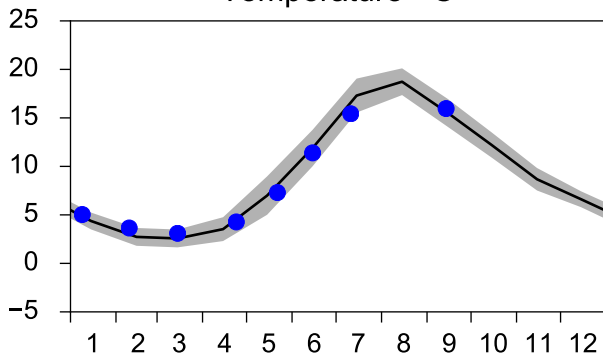
Annual Cycles

— Mean 2001-2015

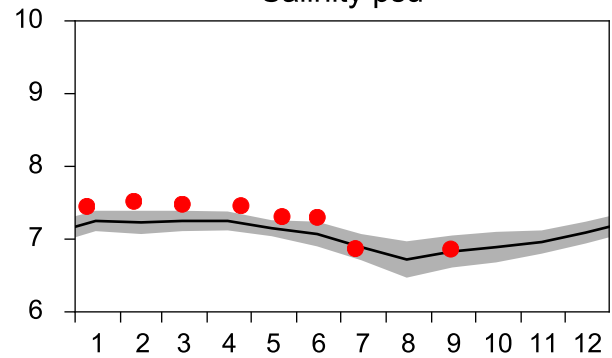
■ St.Dev.

● 2017

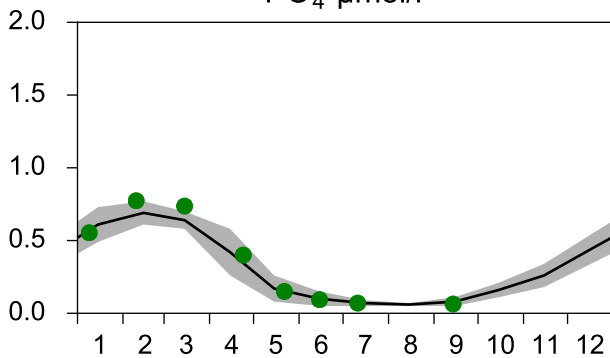
Temperature °C



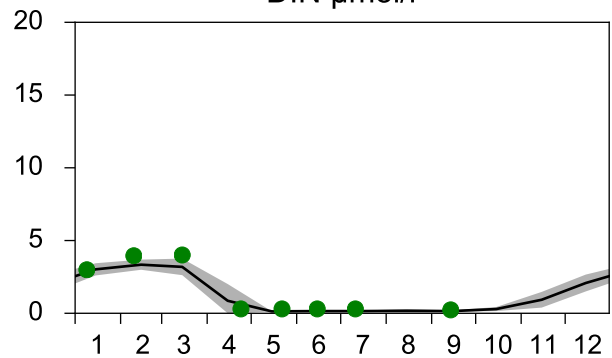
Salinity psu



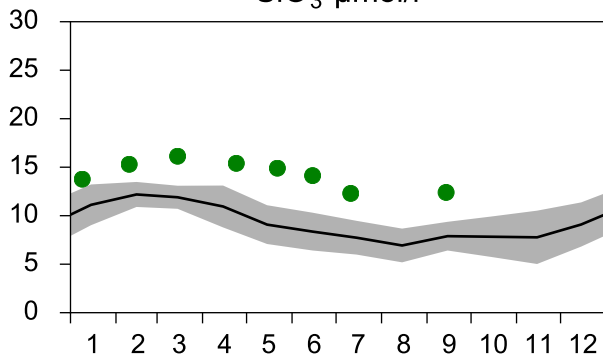
PO₄ µmol/l



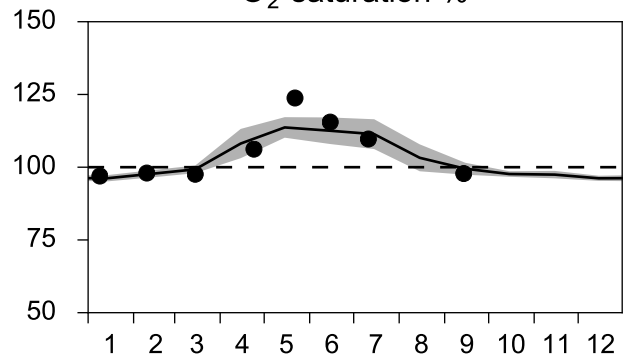
DIN µmol/l



SiO₃ µmol/l

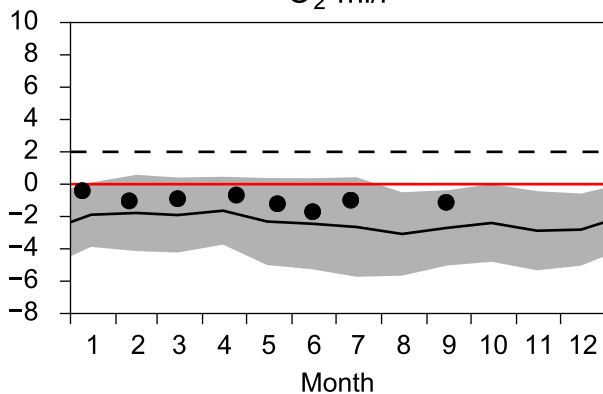


O₂ saturation %

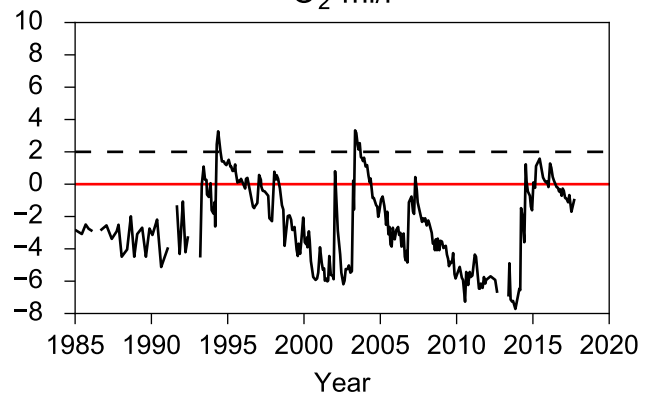


OXYGEN IN BOTTOM WATER (depth >= 225 m)

O₂ ml/l

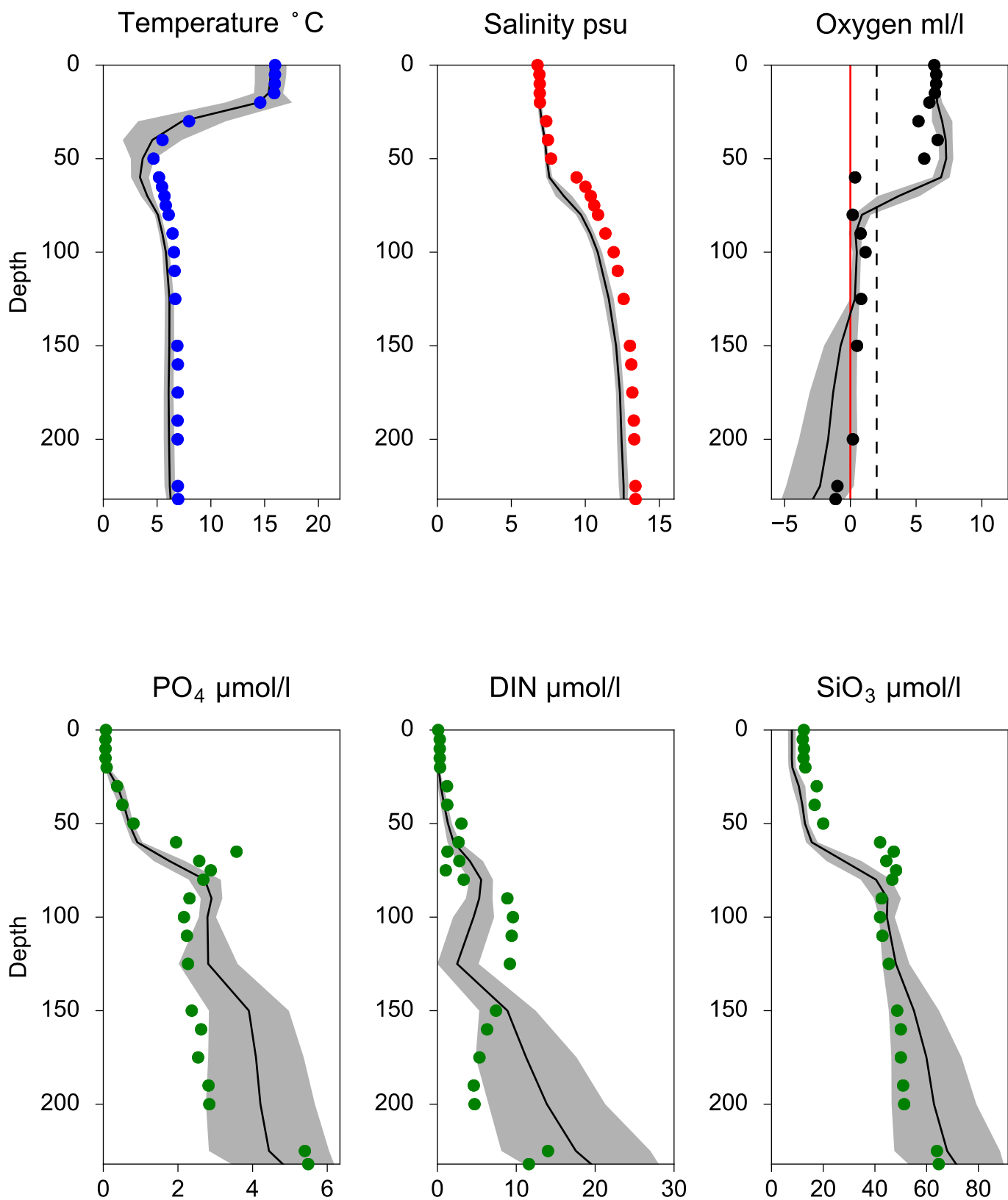


O₂ ml/l



Vertical profiles BY15 GOTLANDSDJ September

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STATION BY10 SURFACE WATER (0-10 m)

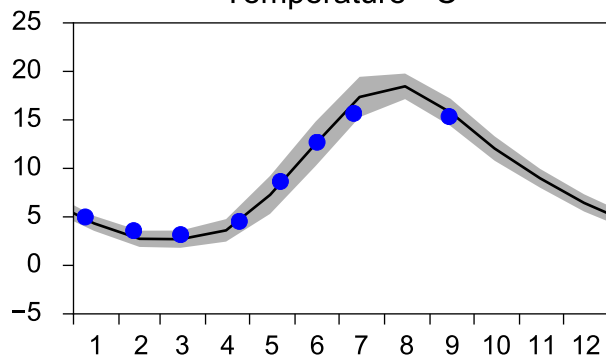
Annual Cycles

— Mean 2001-2015

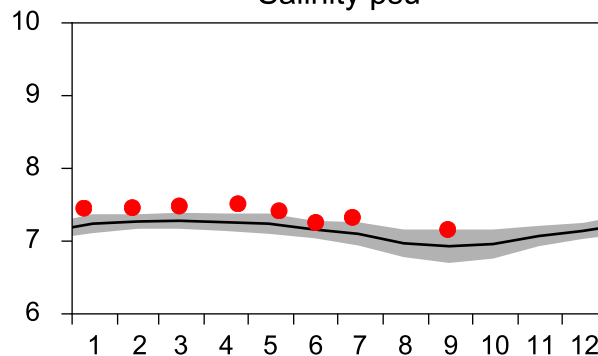
■ St.Dev.

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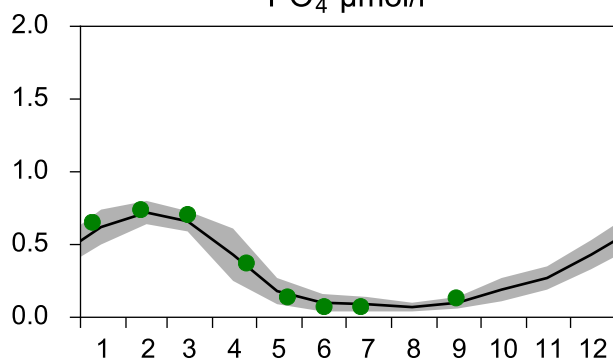
Temperature °C



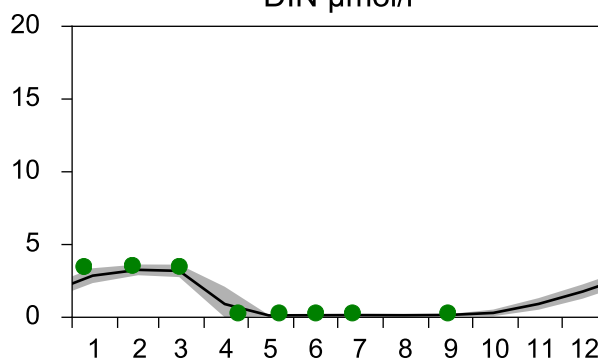
Salinity psu



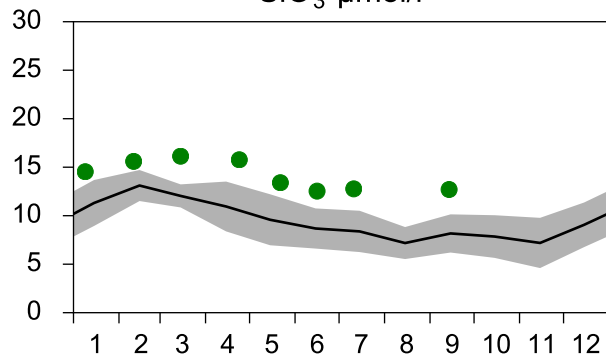
PO₄ µmol/l



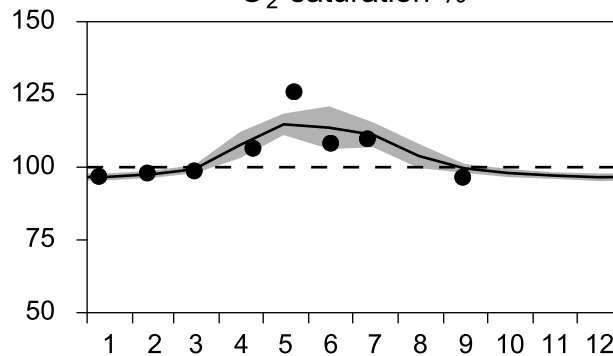
DIN µmol/l



SiO₃ µmol/l

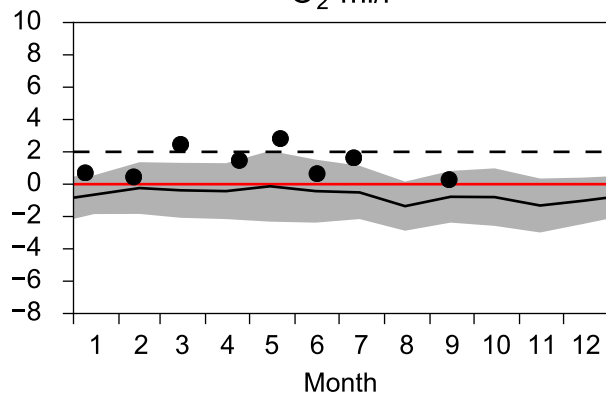


O₂ saturation %

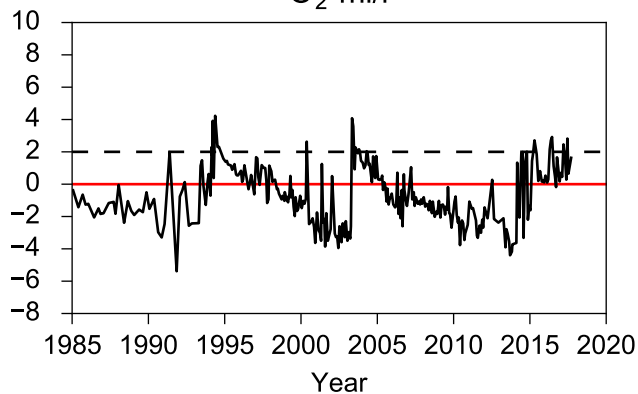


OXYGEN IN BOTTOM WATER (depth >= 125 m)

O₂ ml/l

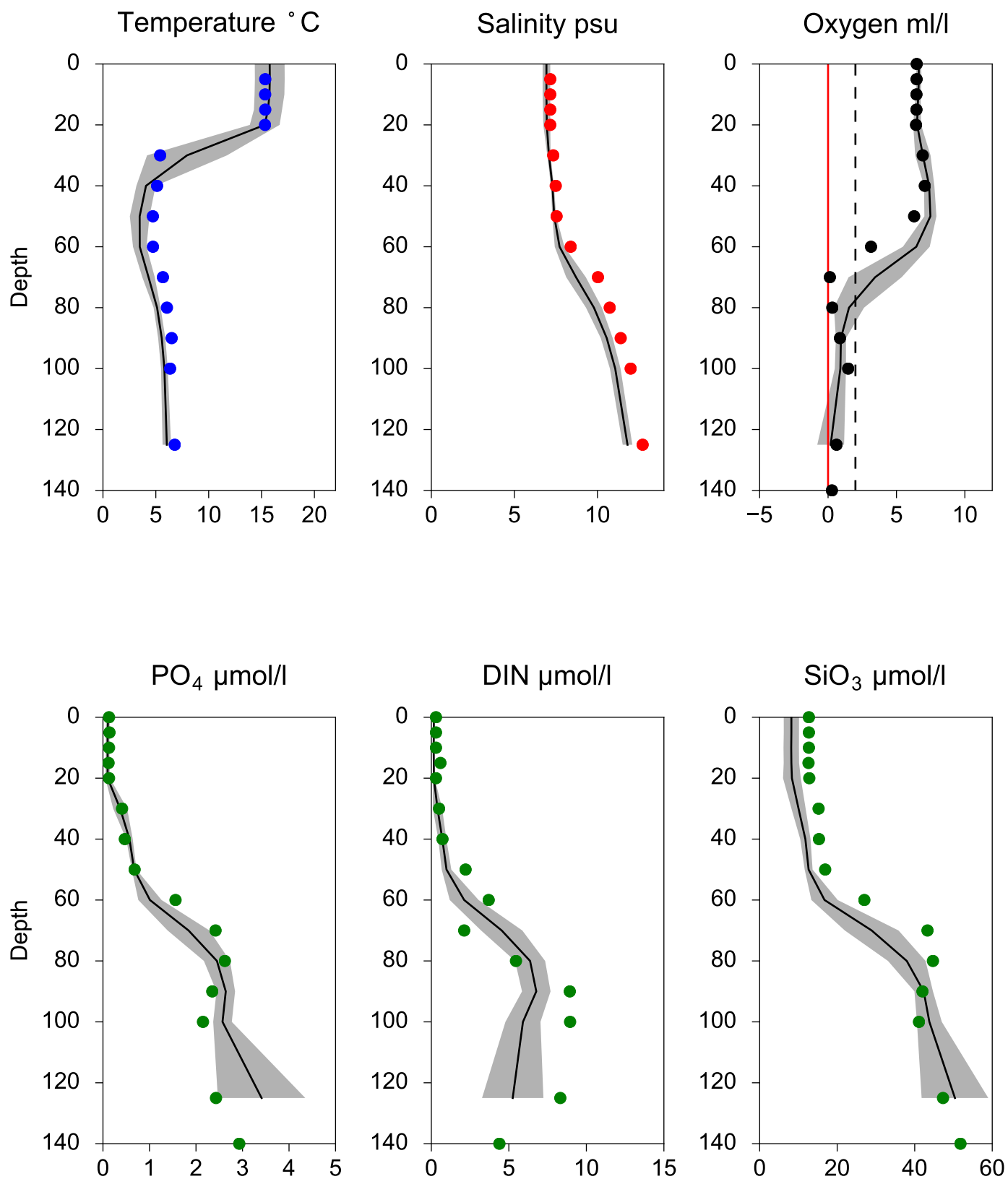


O₂ ml/l



Vertical profiles BY10 September

— Mean 2001-2015 ■ St.Dev. ● 2017-09-14



STATION BY38 KARLSÖDJ SURFACE WATER (0-10 m)

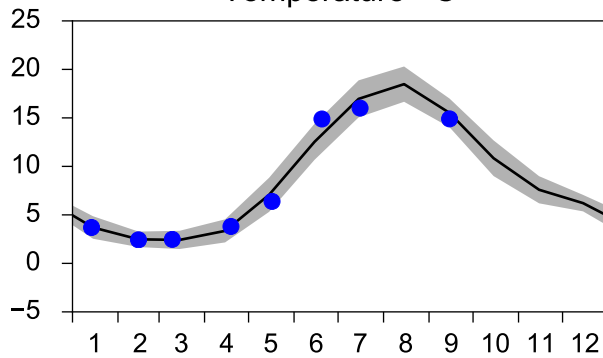
Annual Cycles

— Mean 2001-2015

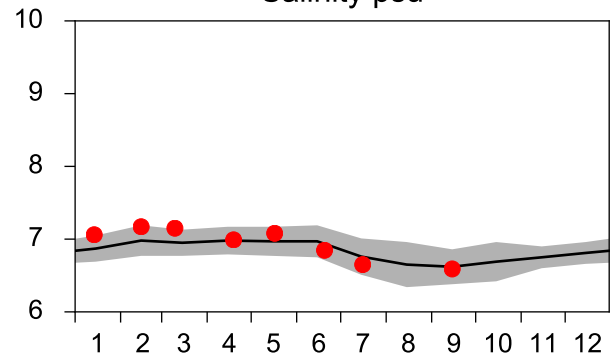
■ St.Dev.

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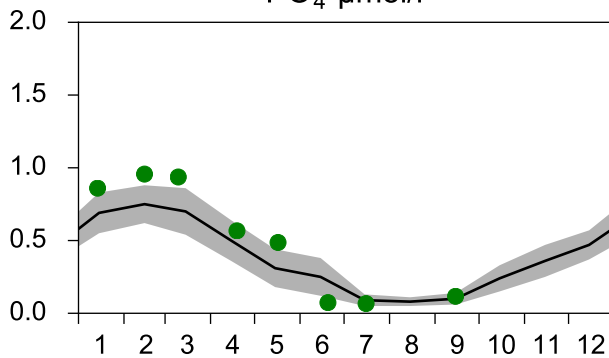
Temperature °C



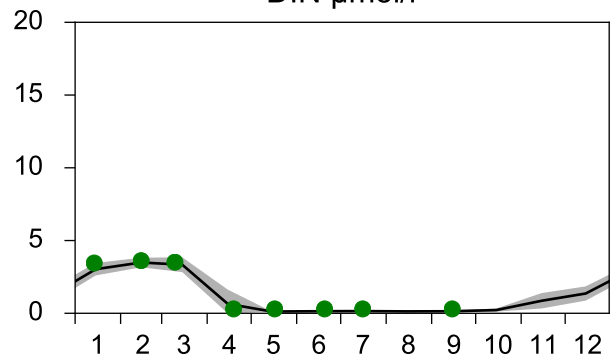
Salinity psu



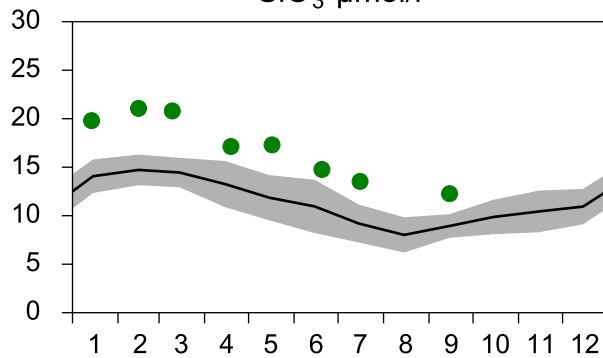
PO₄ µmol/l



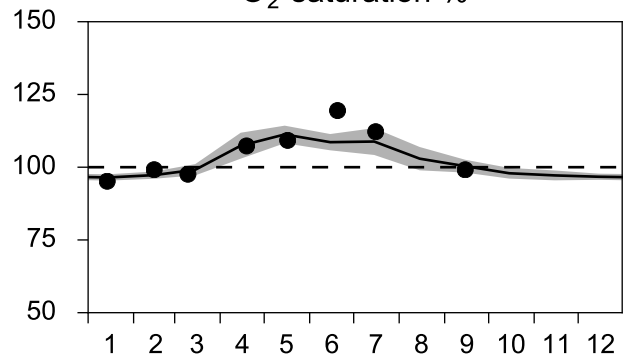
DIN µmol/l



SiO₃ µmol/l

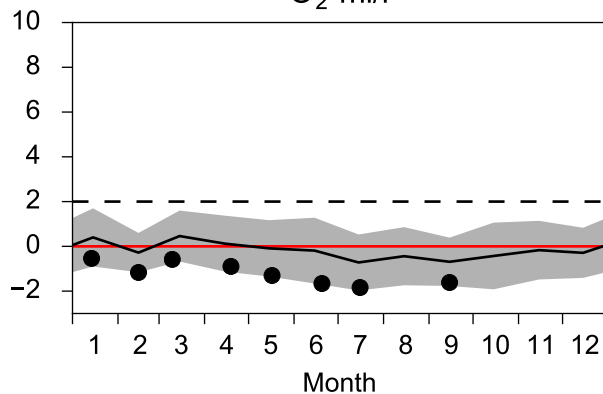


O₂ saturation %

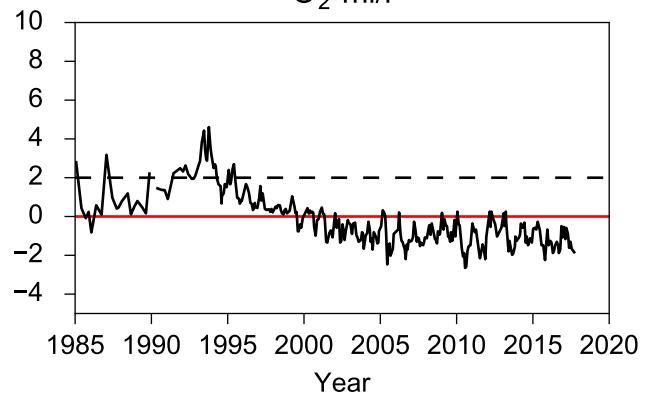


OXYGEN IN BOTTOM WATER (depth >= 100 m)

O₂ ml/l

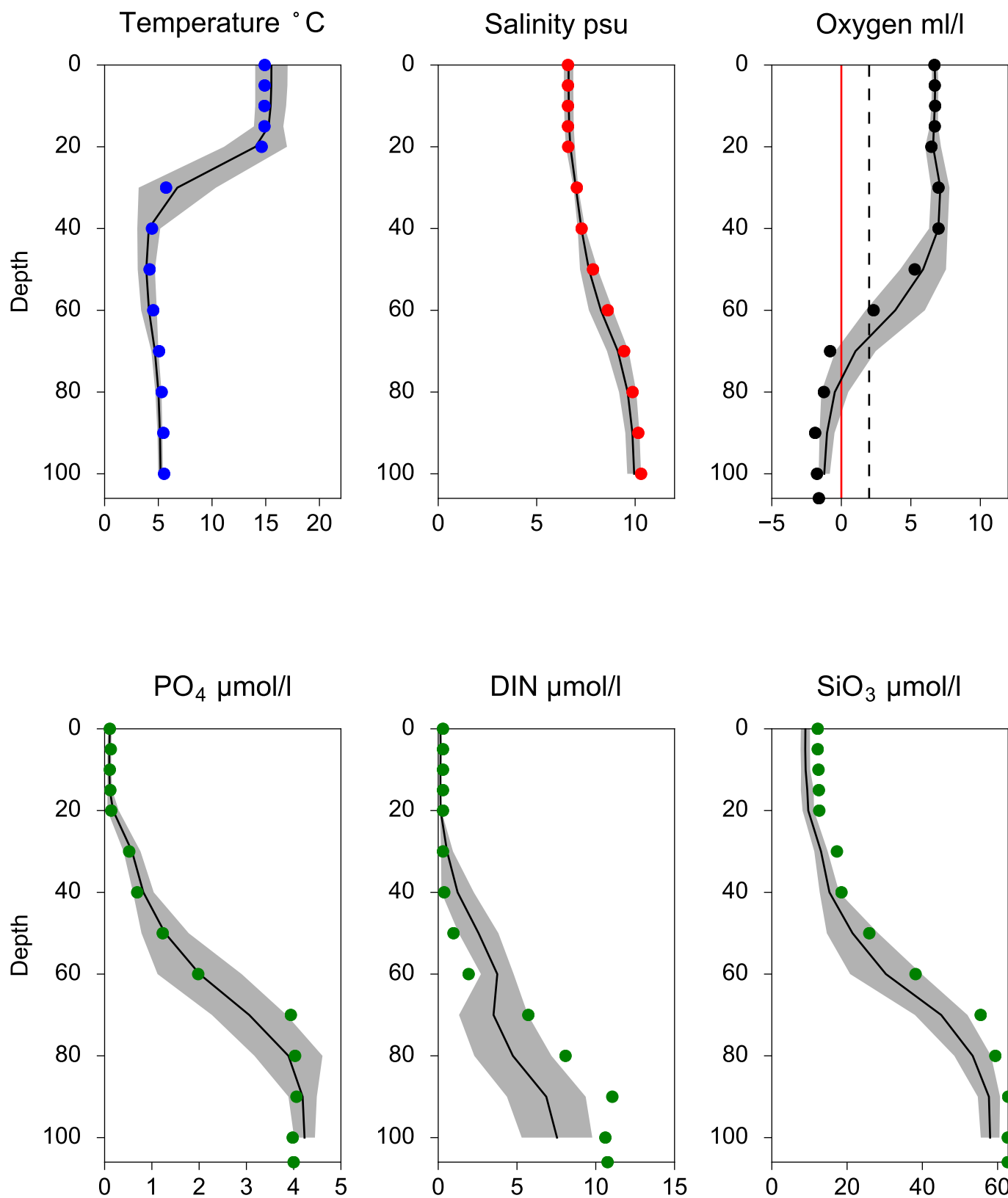


O₂ ml/l



Vertical profiles BY38 KARLSÖDJ September

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STATION REF M1V1 SURFACE WATER (0-10 m)

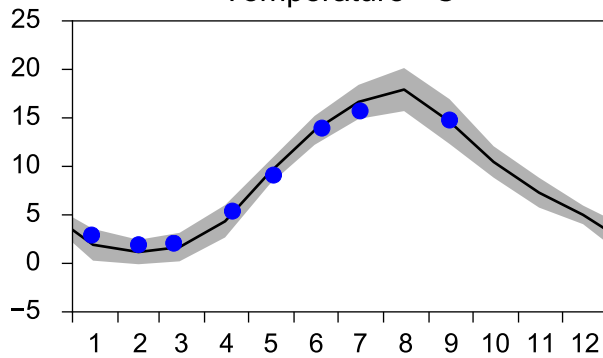
Annual Cycles

— Mean 2001-2015

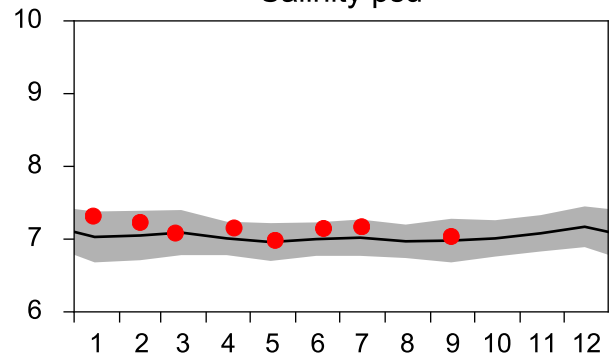
■ St.Dev.

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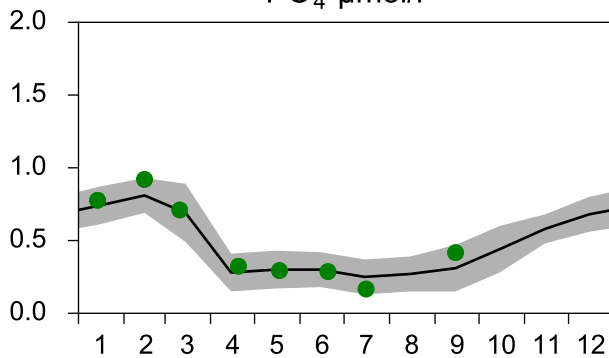
Temperature °C



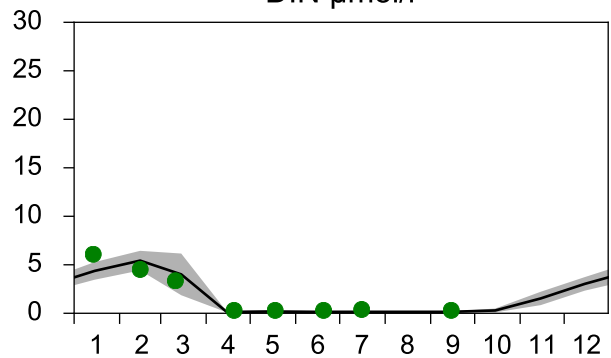
Salinity psu



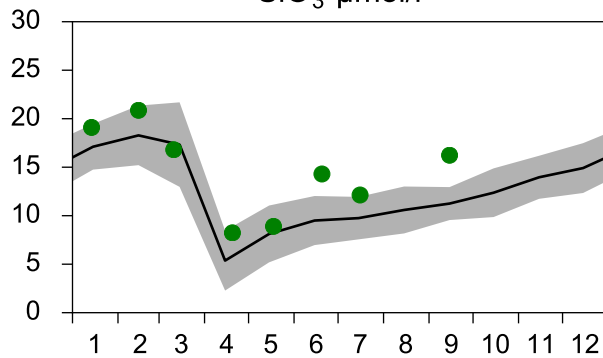
PO₄ µmol/l



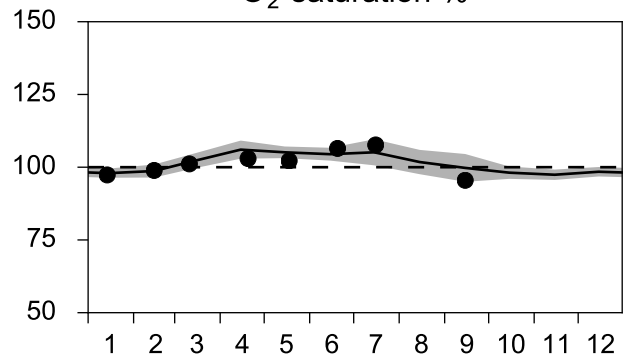
DIN µmol/l



SiO₃ µmol/l

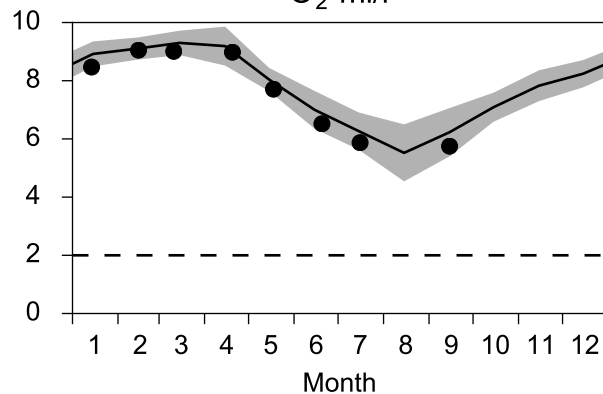


O₂ saturation %

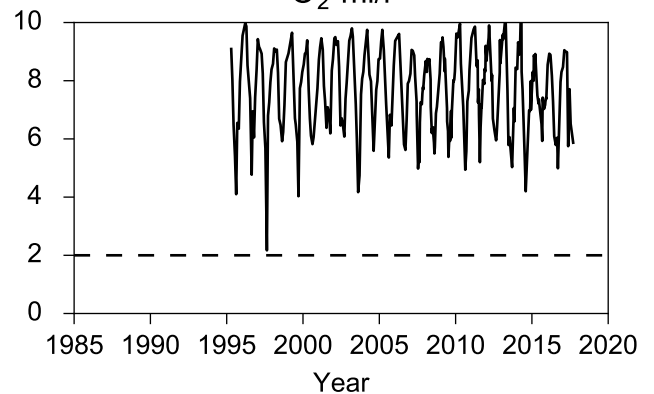


OXYGEN IN BOTTOM WATER (depth >= 17 m)

O₂ ml/l

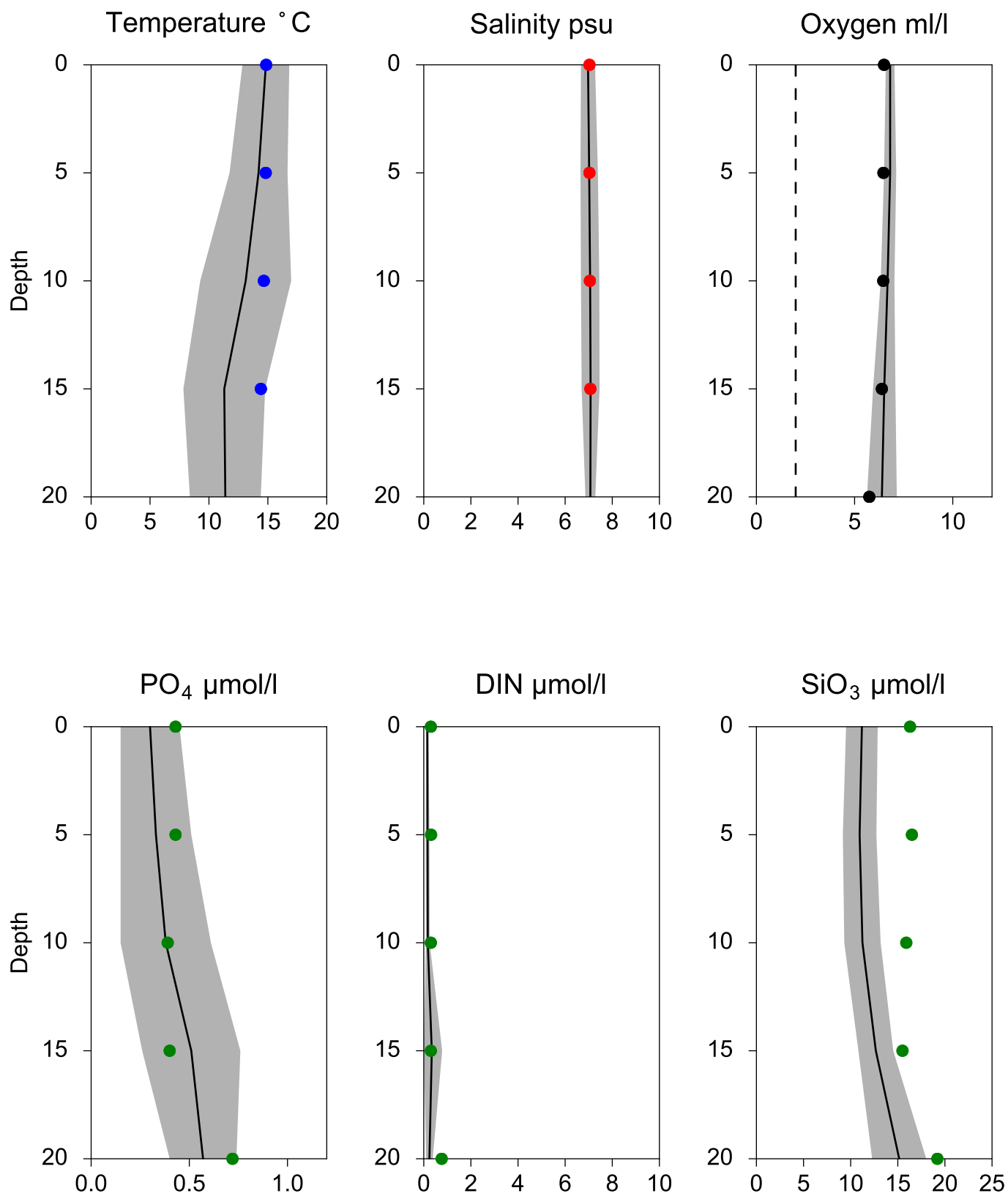


O₂ ml/l



Vertical profiles REF M1V1 September

— Mean 2001-2015 ■ St.Dev. ● 2017-09-15



STATION BY5 BORNHOLMSDJ SURFACE WATER (0-10 m)

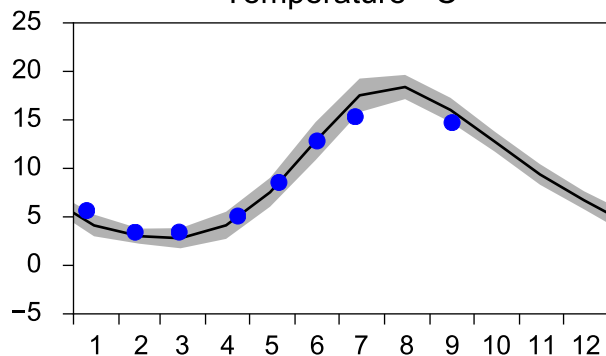
Annual Cycles

— Mean 2001-2015

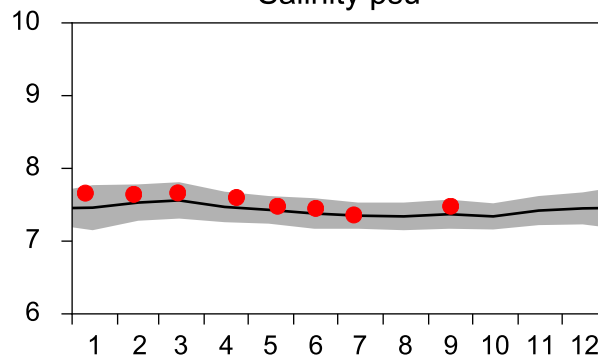
■ St.Dev.

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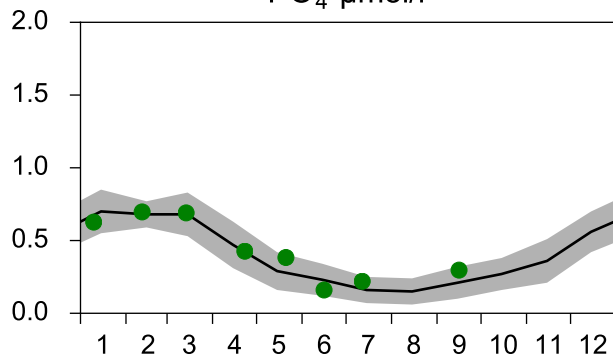
Temperature °C



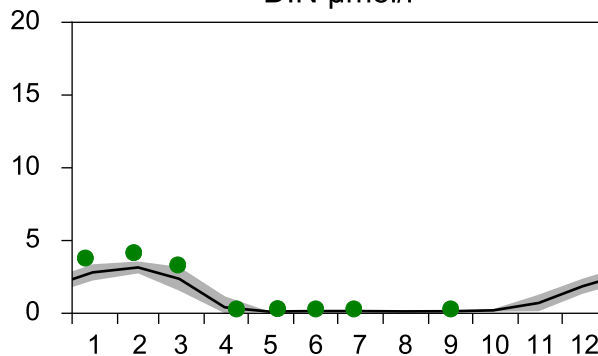
Salinity psu



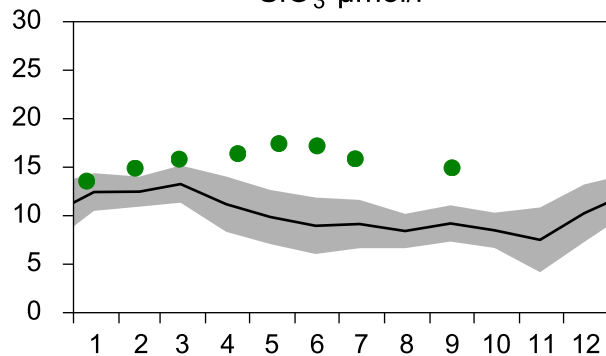
PO₄ µmol/l



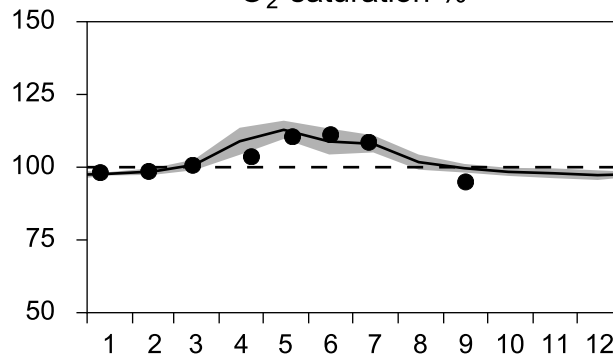
DIN µmol/l



SiO₃ µmol/l

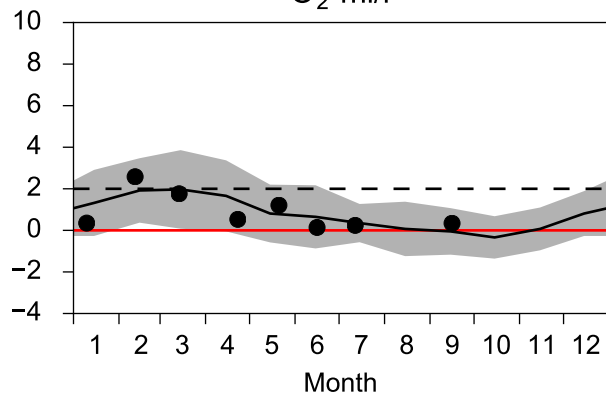


O₂ saturation %

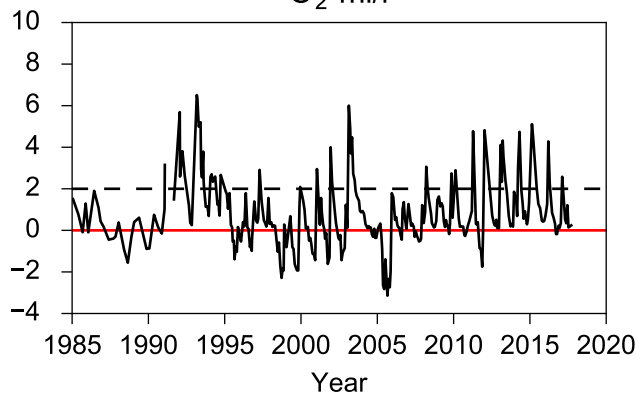


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

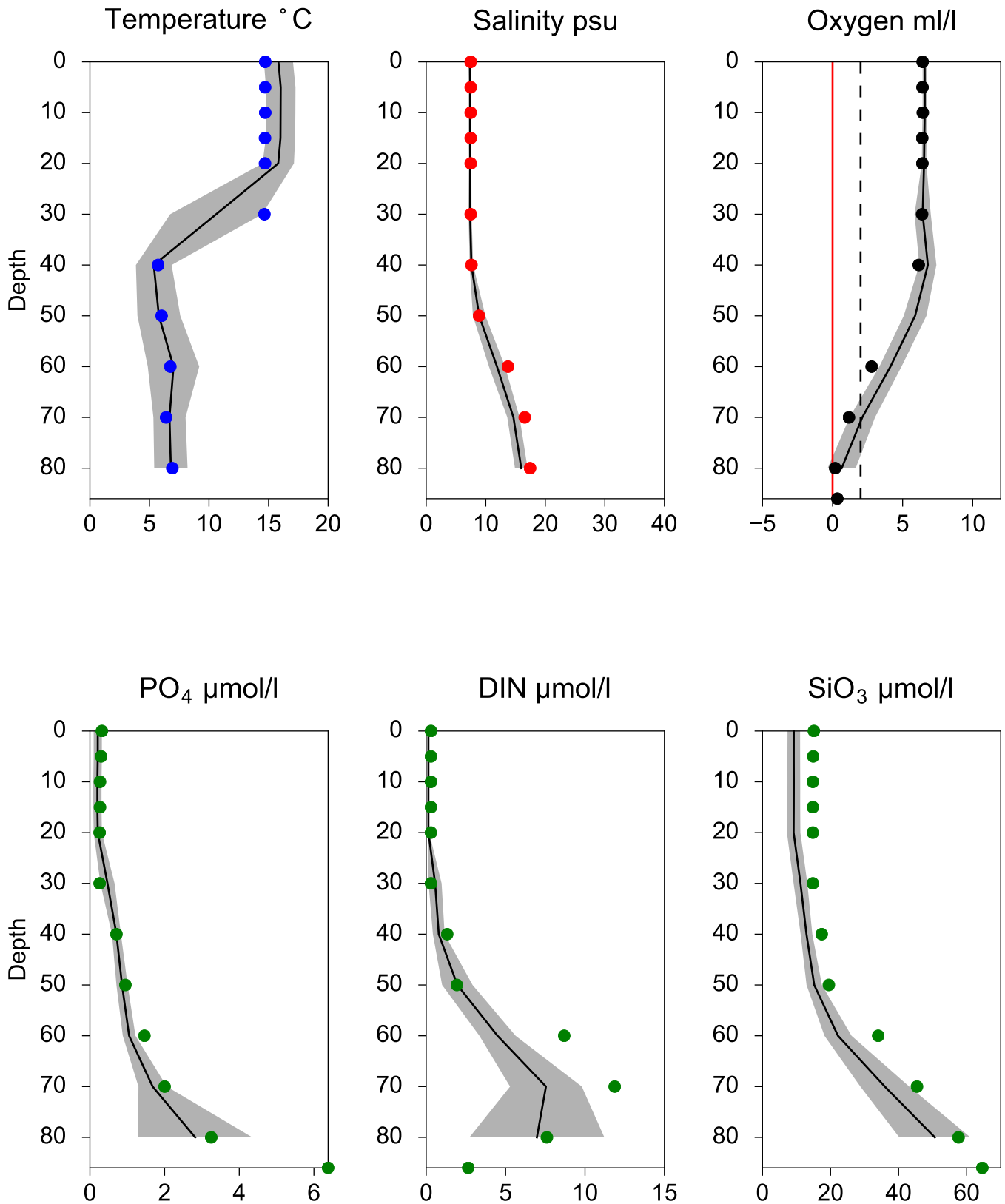


O₂ ml/l



Vertical profiles BY5 BORNHOLMSDJ September

— Mean 2001-2015 ■ St.Dev. ● 2017-09-16



STATION BY4 CHRISTIANSÖ SURFACE WATER (0-10 m)

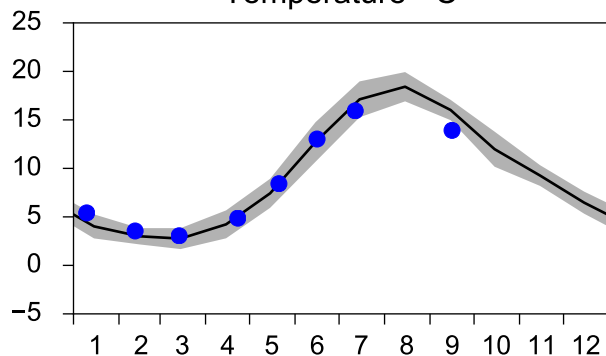
Annual Cycles

— Mean 2001-2015

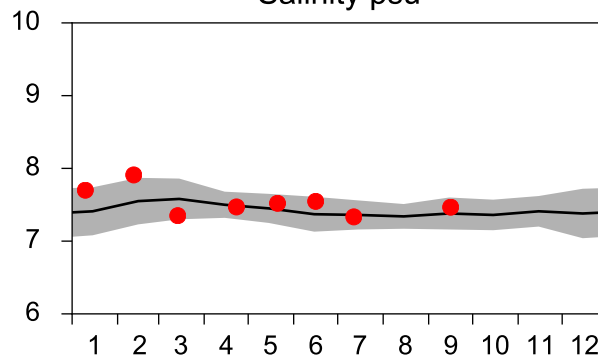
■ St.Dev.

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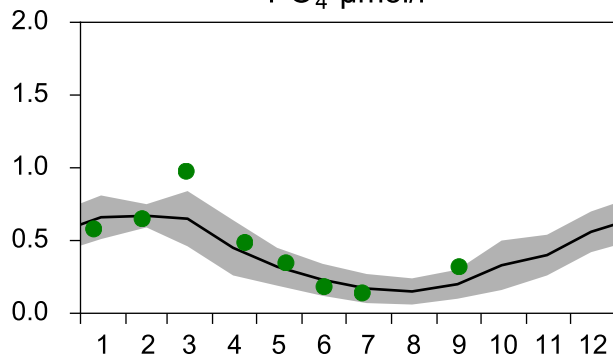
Temperature °C



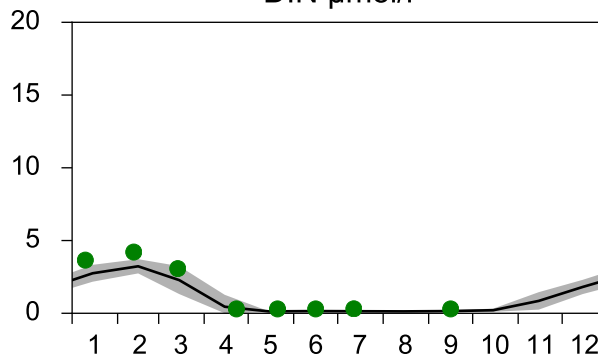
Salinity psu



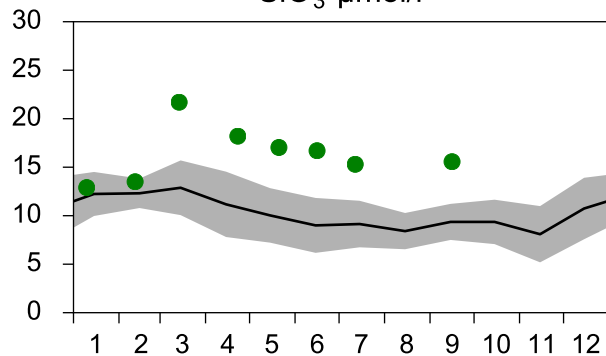
PO₄ µmol/l



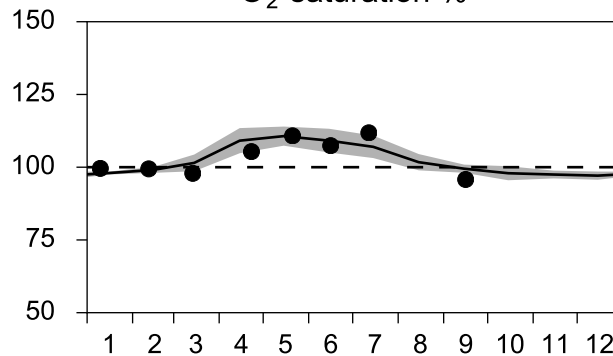
DIN µmol/l



SiO₃ µmol/l

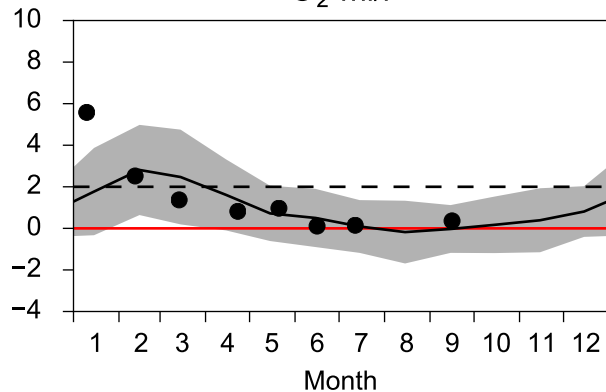


O₂ saturation %

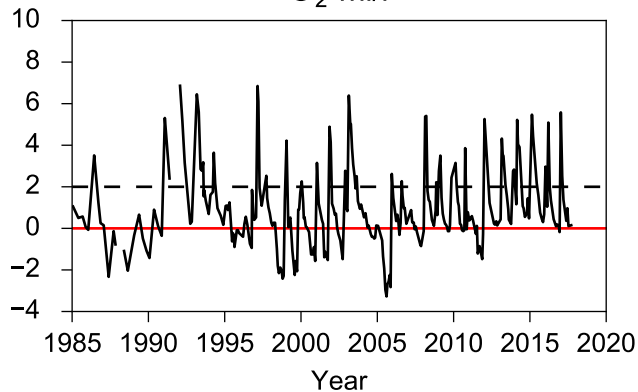


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

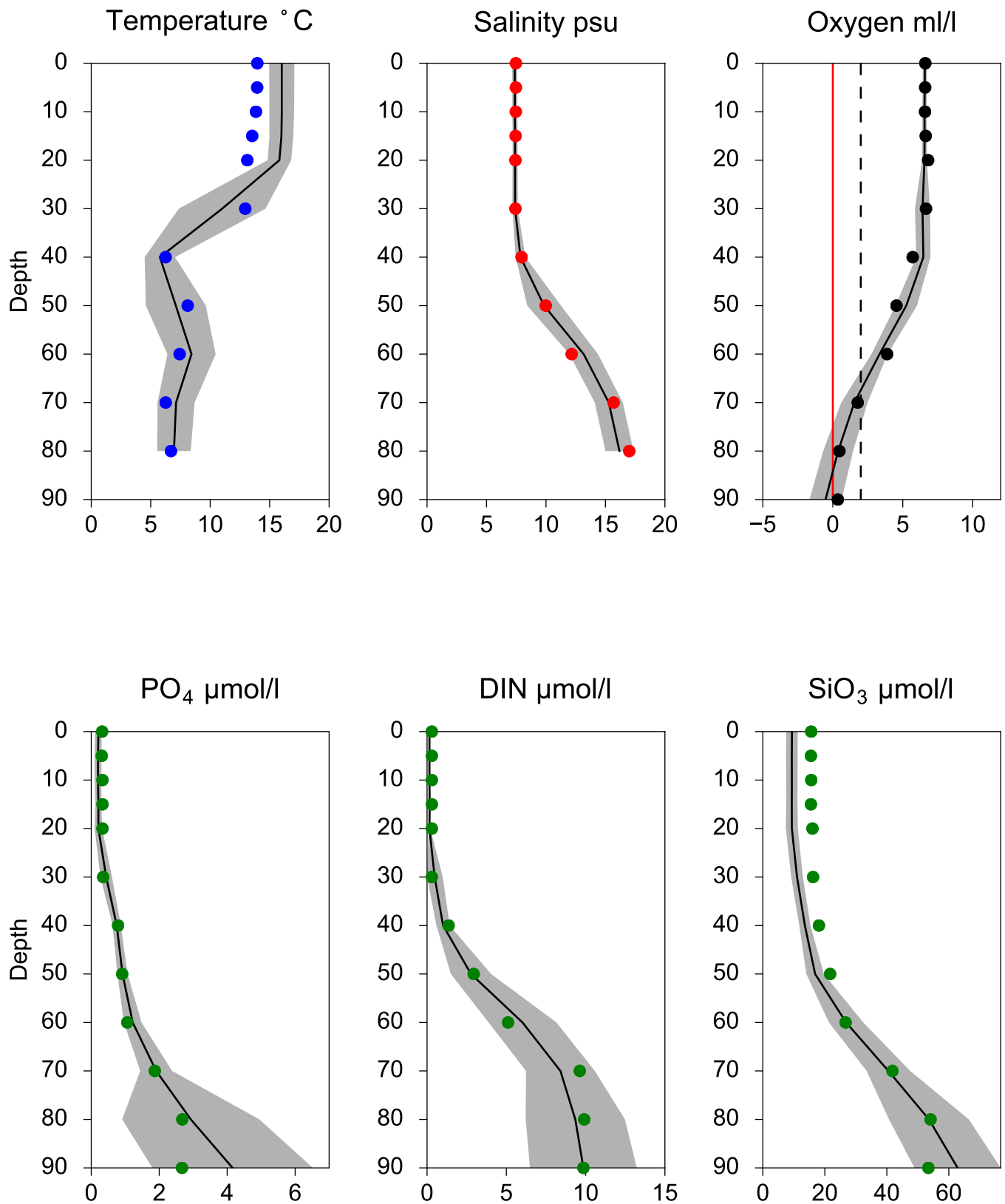


O₂ ml/l



Vertical profiles BY4 CHRISTIANSÖ September

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STATION HANÖBUKTEN SURFACE WATER (0-10 m)

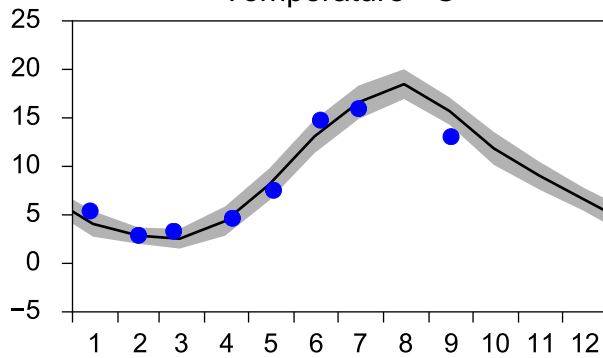
Annual Cycles

— Mean 2001-2015

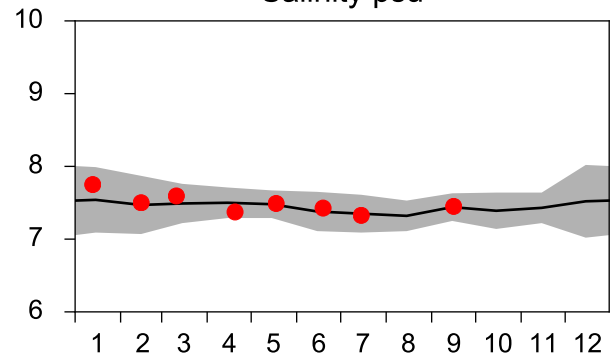
■ St.Dev.

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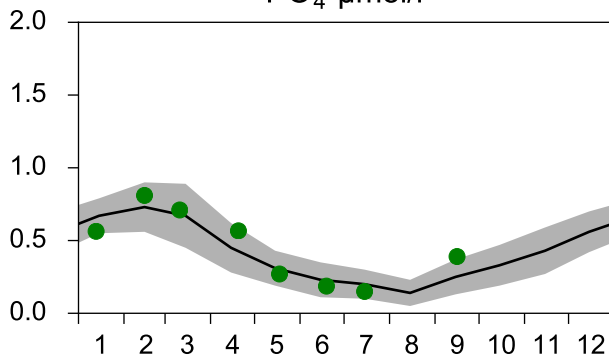
Temperature °C



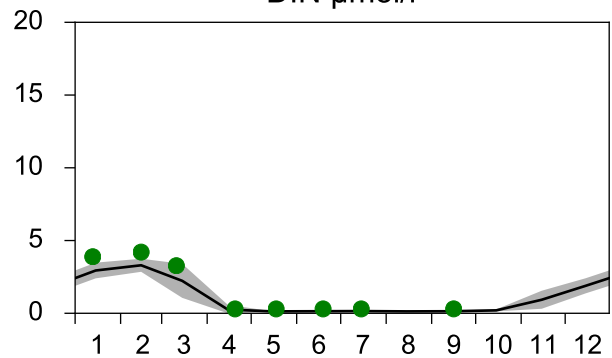
Salinity psu



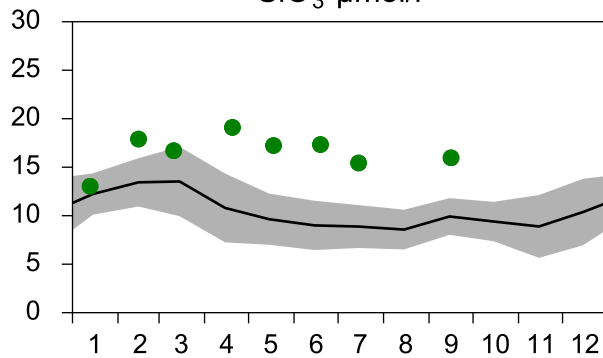
PO₄ µmol/l



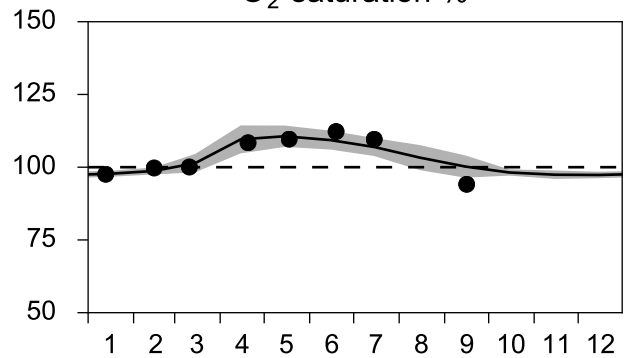
DIN µmol/l



SiO₃ µmol/l

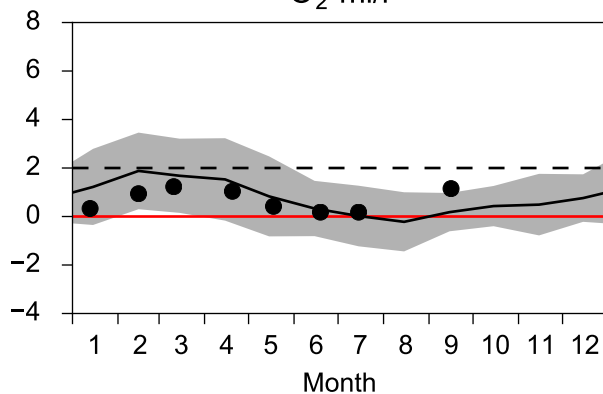


O₂ saturation %

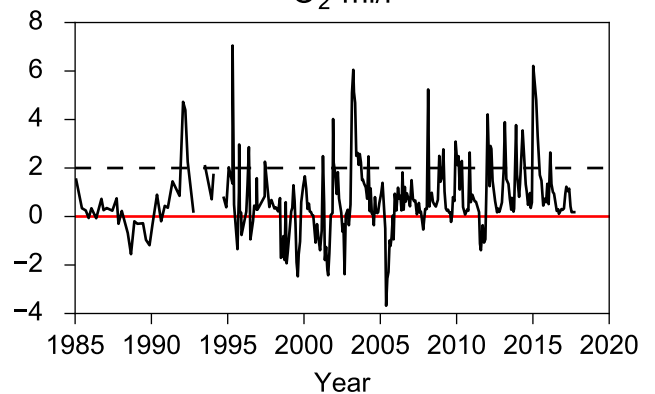


OXYGEN IN BOTTOM WATER (depth >= 70 m)

O₂ ml/l

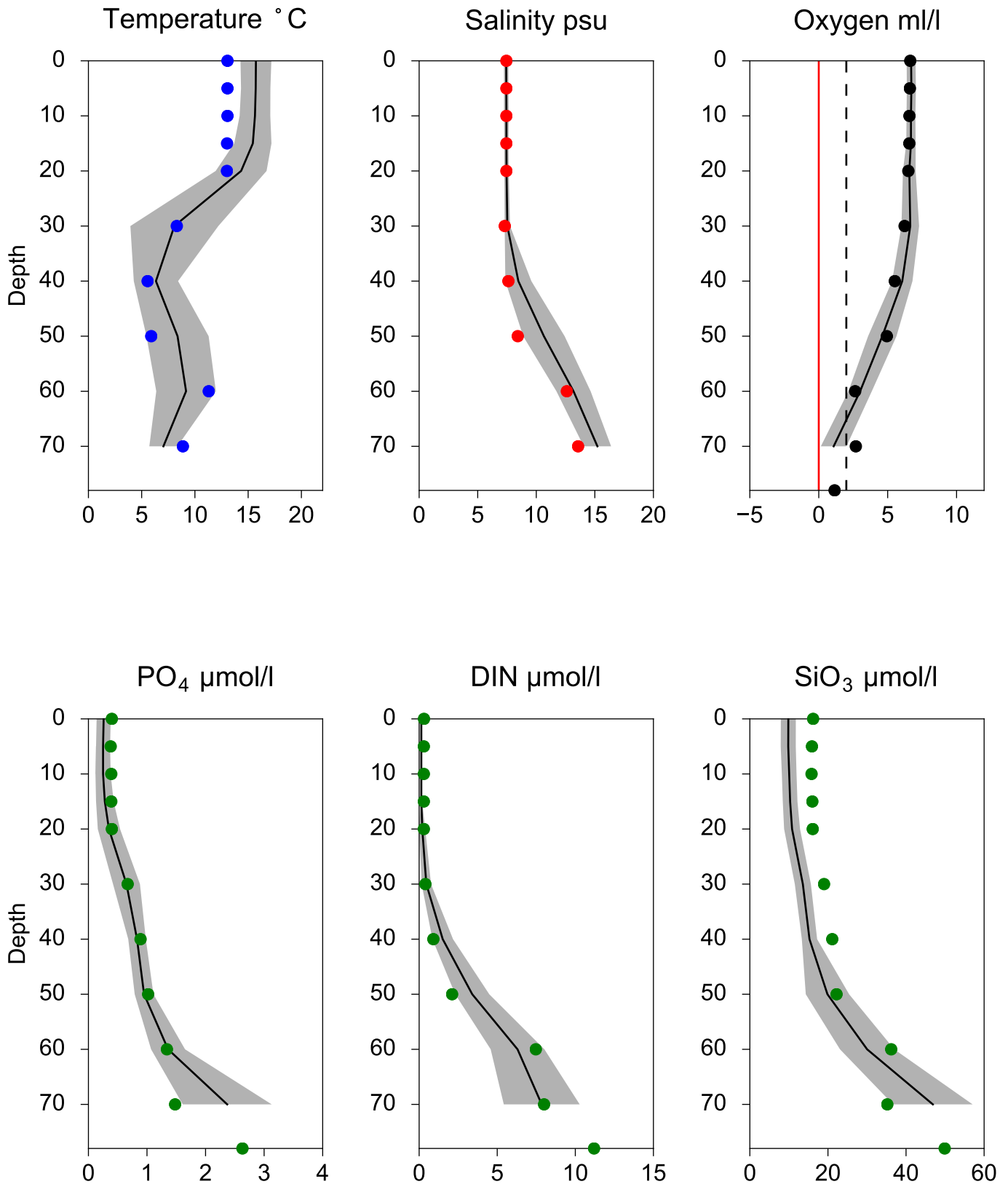


O₂ ml/l



Vertical profiles HANÖBUKTEN September

— Mean 2001-2015 ■ St.Dev. ● 2017-09-16



STATION BY2 ARKONA SURFACE WATER (0-10 m)

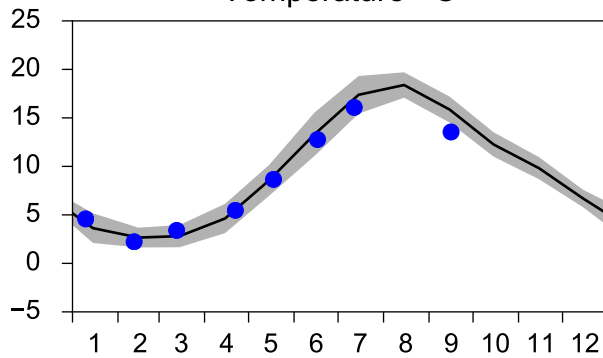
Annual Cycles

— Mean 2001-2015

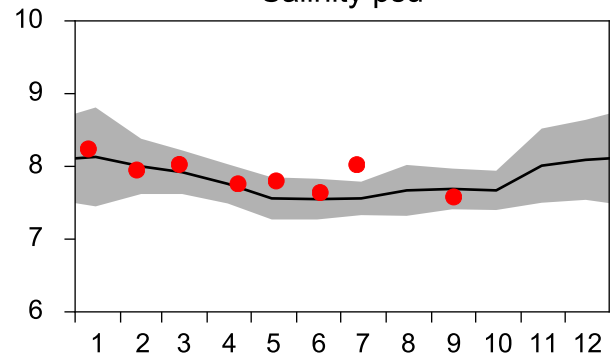
■ St.Dev.

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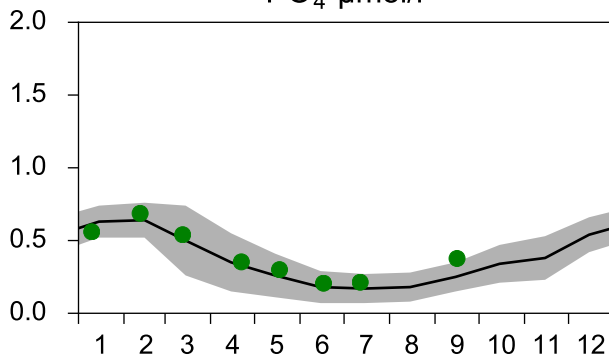
Temperature °C



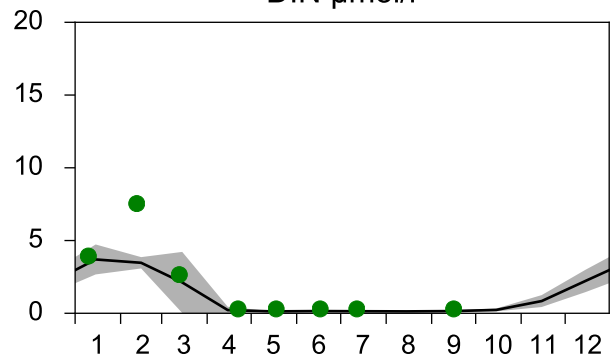
Salinity psu



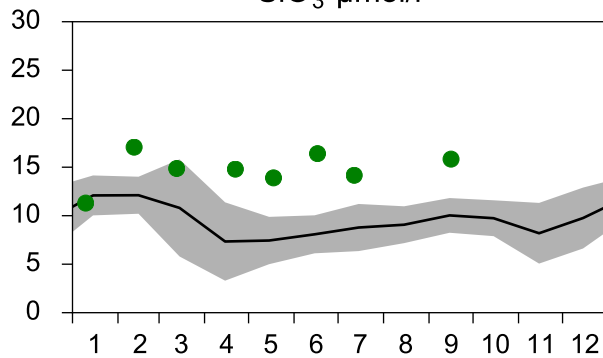
PO₄ µmol/l



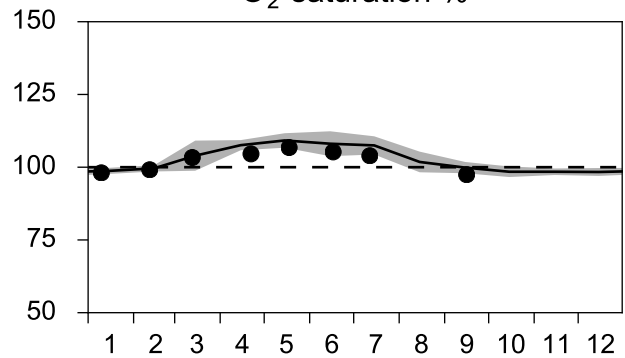
DIN µmol/l



SiO₃ µmol/l

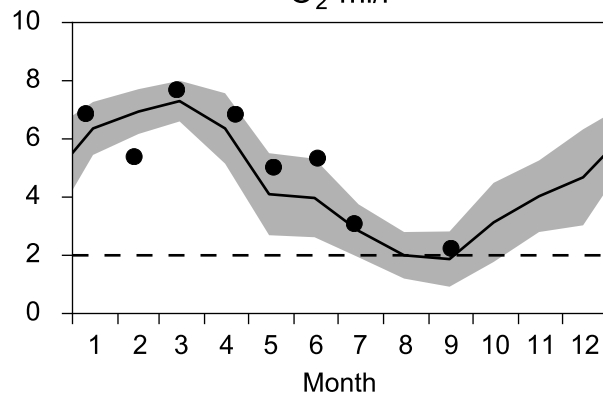


O₂ saturation %

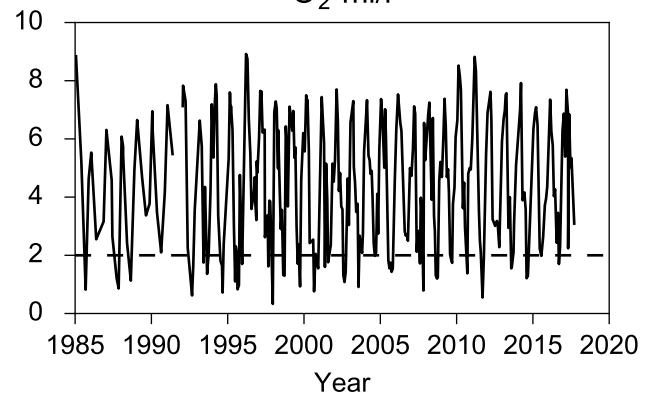


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

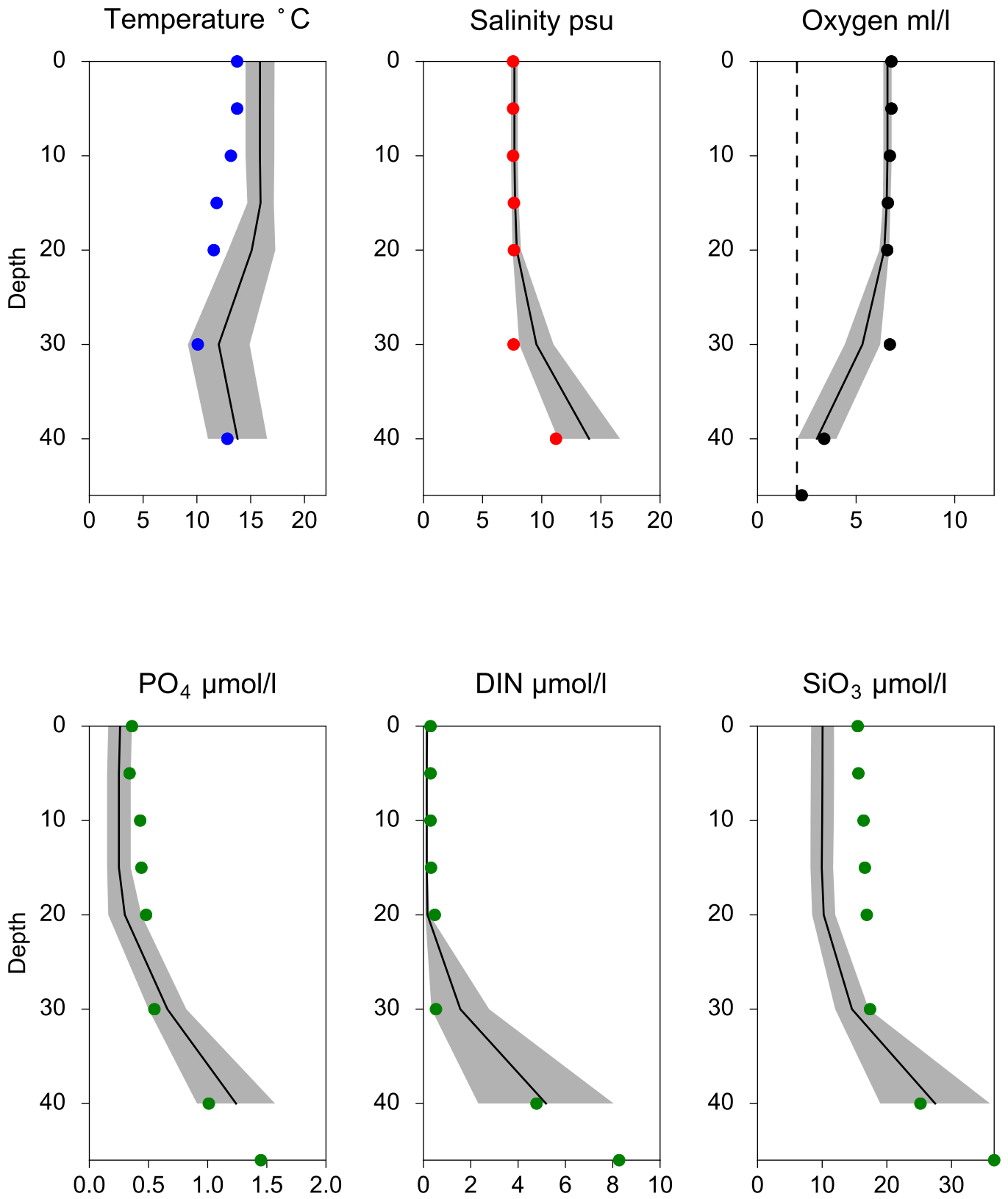


O₂ ml/l



Vertical profiles BY2 ARKONA September

— Mean 2001-2015 ■ St.Dev. ● 2017-09-16



STATION BY1 SURFACE WATER (0-10 m)

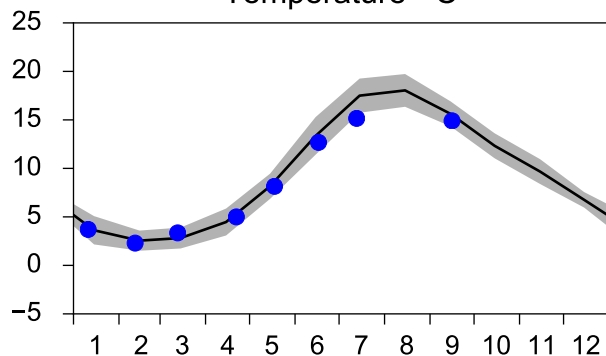
Annual Cycles

— Mean 2001-2015

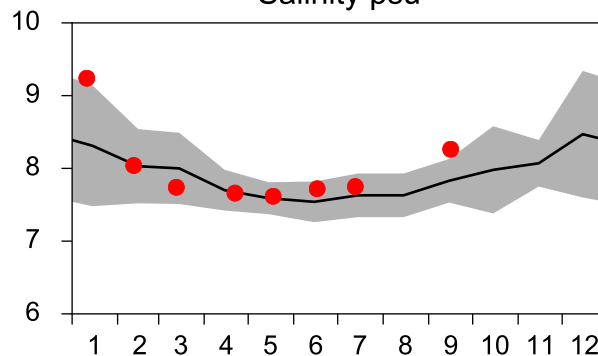
■ St.Dev.

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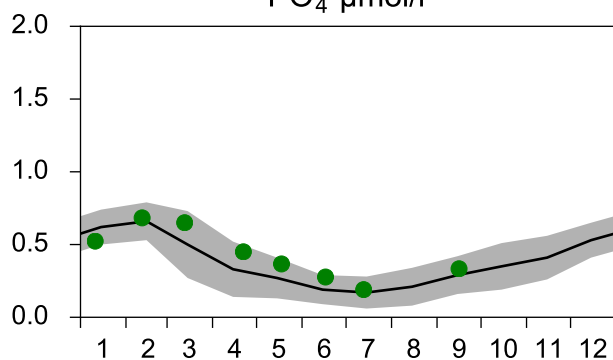
Temperature °C



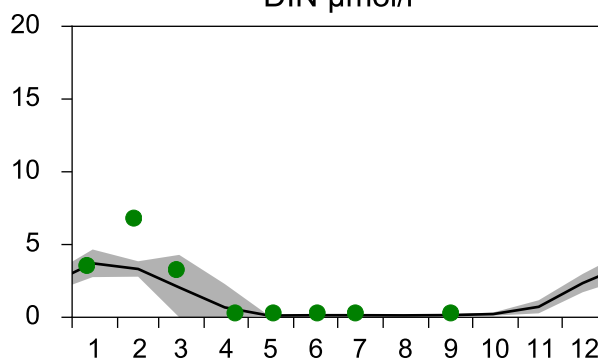
Salinity psu



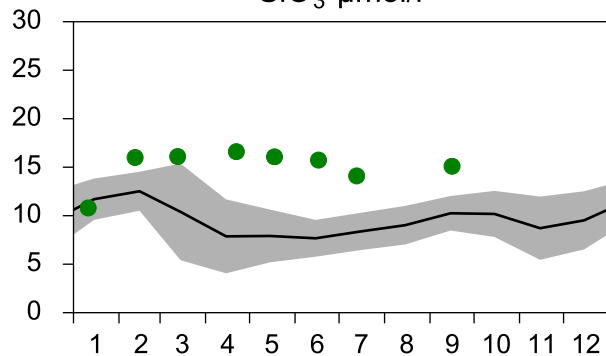
PO₄ µmol/l



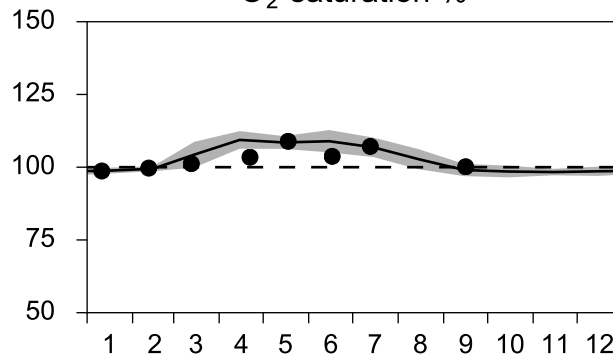
DIN µmol/l



SiO₃ µmol/l

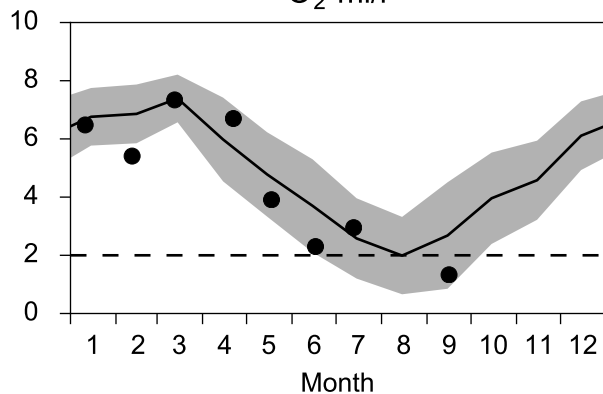


O₂ saturation %

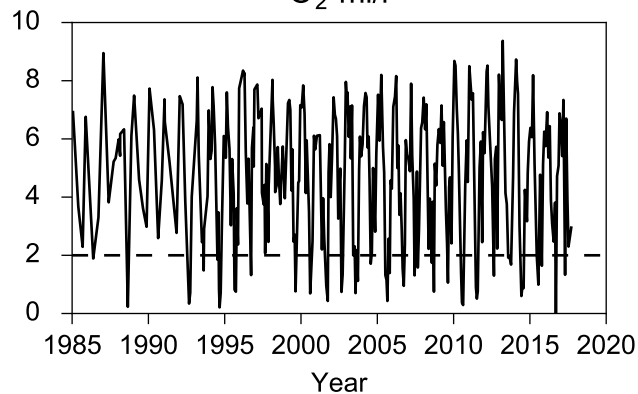


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

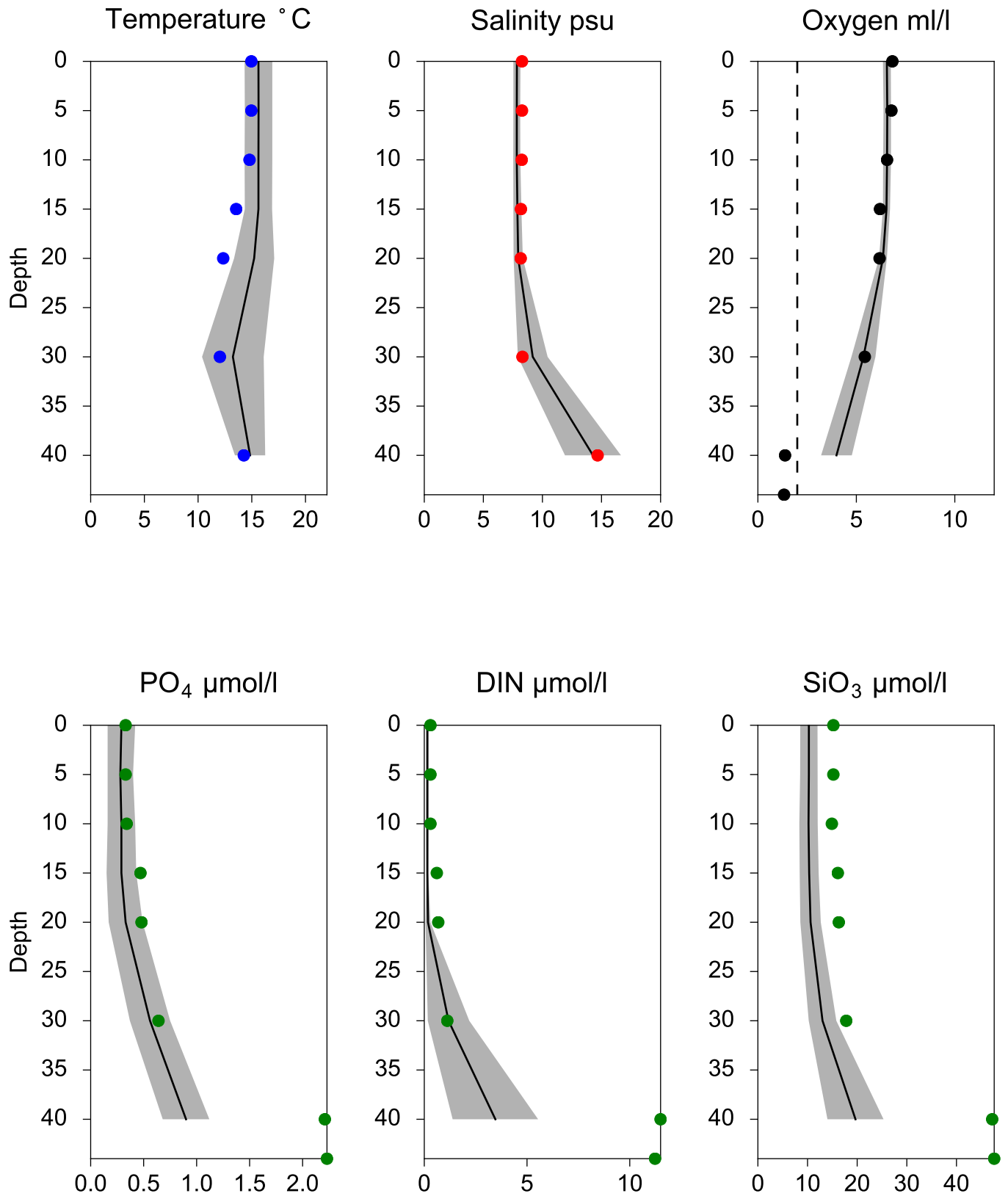


O₂ ml/l



Vertical profiles BY1 September

— Mean 2001-2015 ■ St.Dev. ● 2017-09-16



STATION W LANDSKRONA SURFACE WATER (0-10 m)

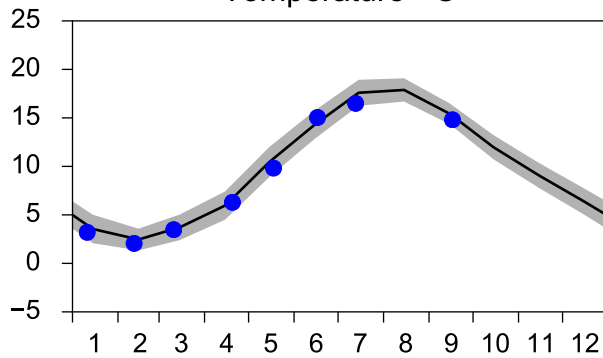
Annual Cycles

— Mean 2001-2015

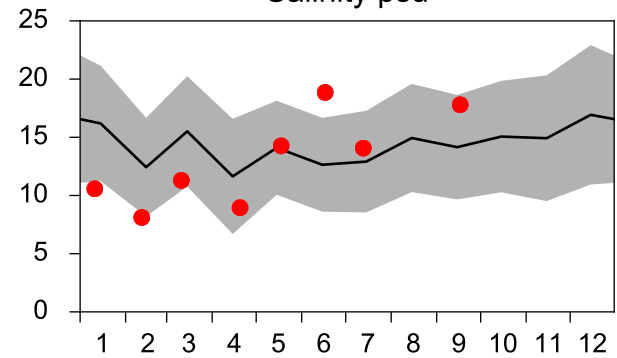
■ St.Dev.

● 2017

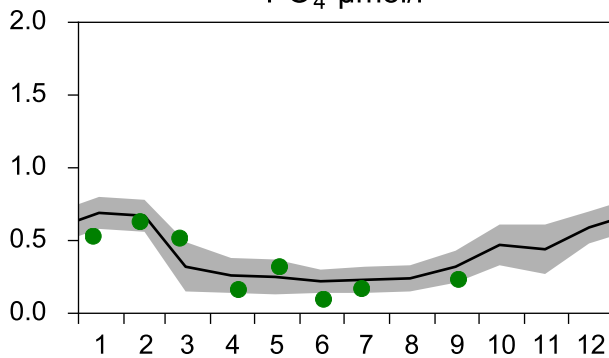
Temperature °C



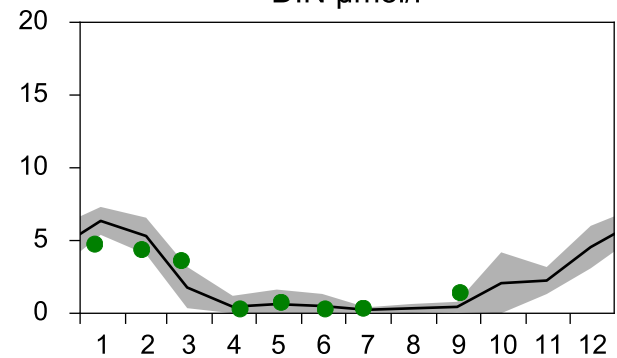
Salinity psu



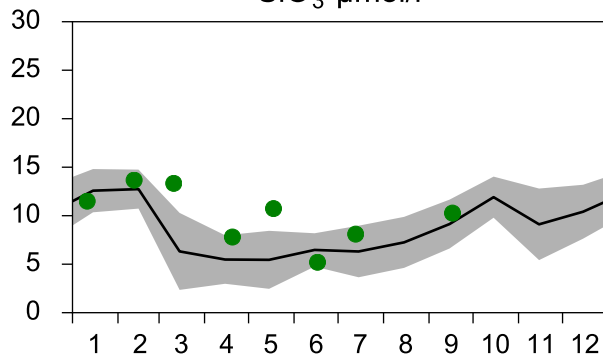
PO₄ µmol/l



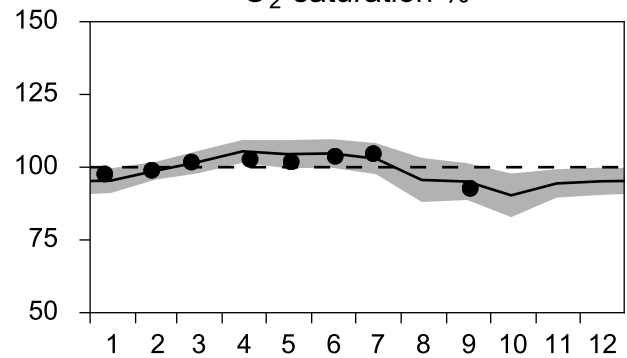
DIN µmol/l



SiO₃ µmol/l

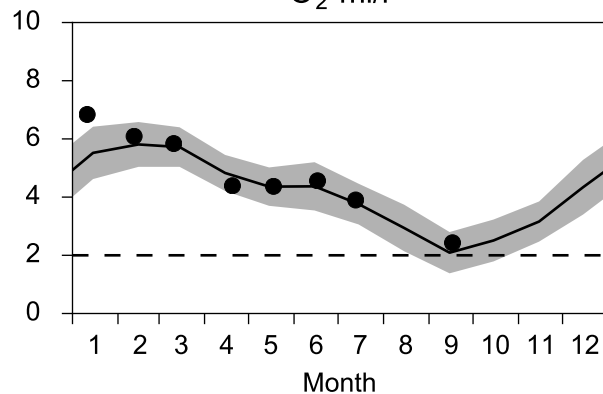


O₂ saturation %

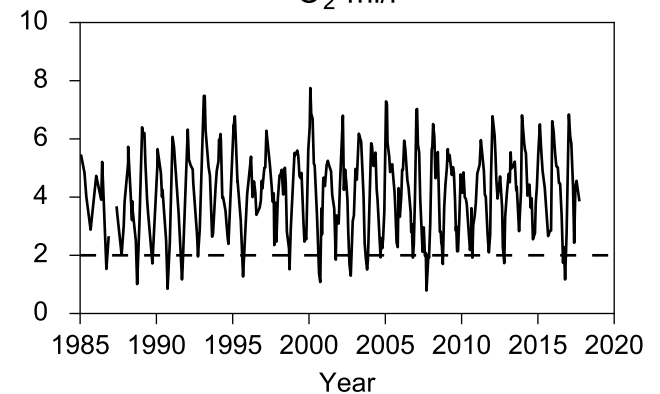


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

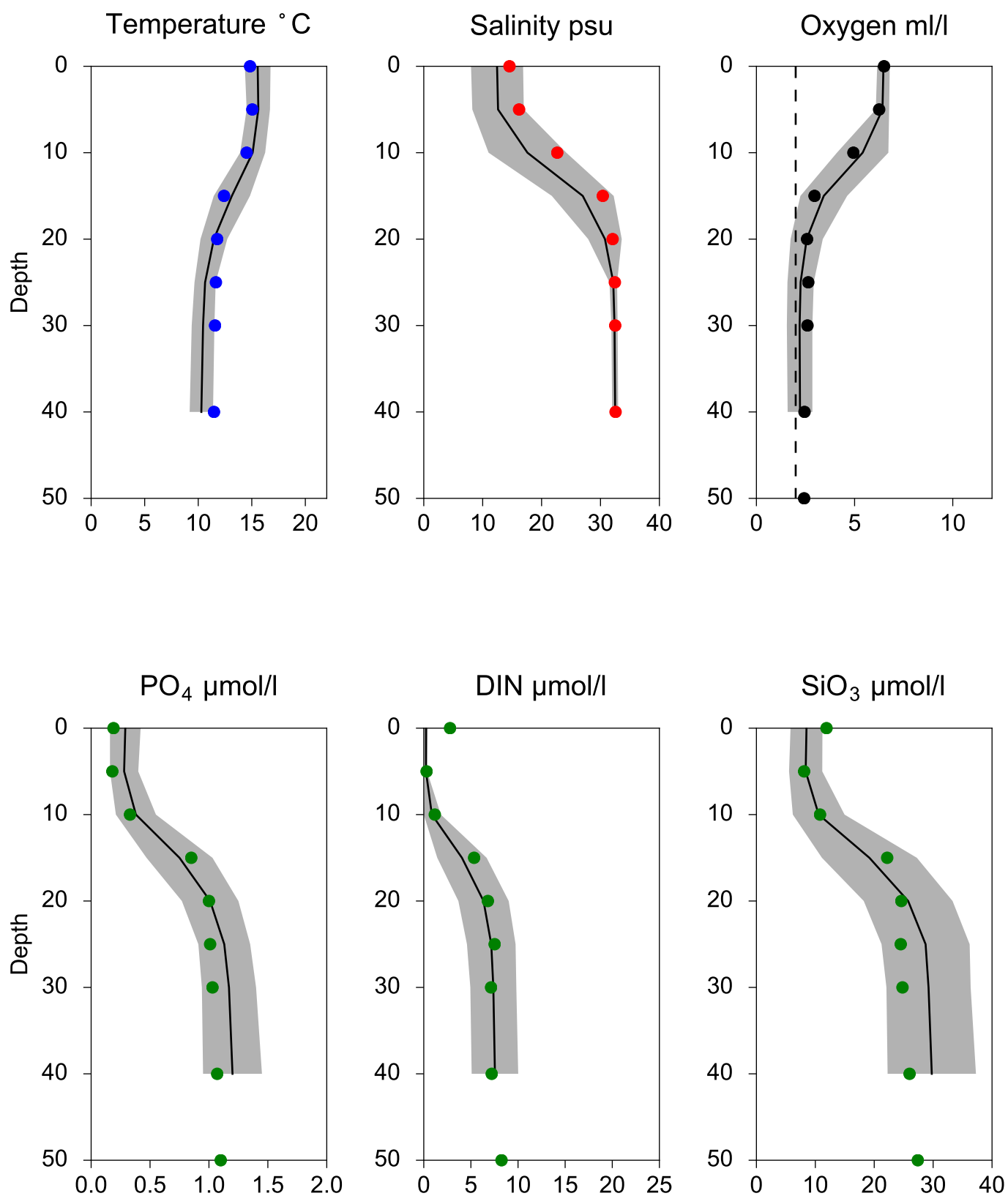


O₂ ml/l



Vertical profiles W LANDSKRONA September

— Mean 2001-2015 St.Dev. • 2017-09-17



STATION ANHOLT E SURFACE WATER (0-10 m)

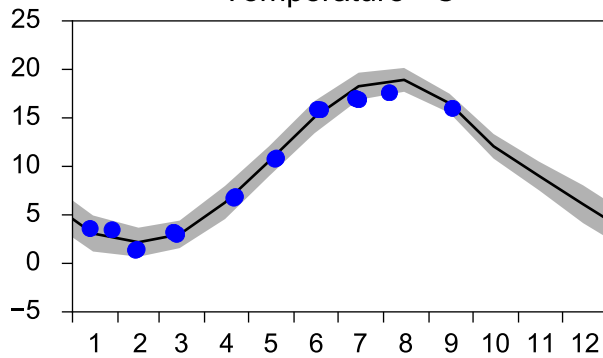
Annual Cycles

— Mean 2001-2015

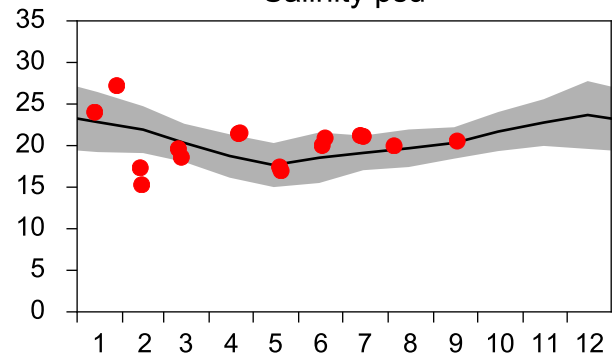
■ St.Dev.

● 2017

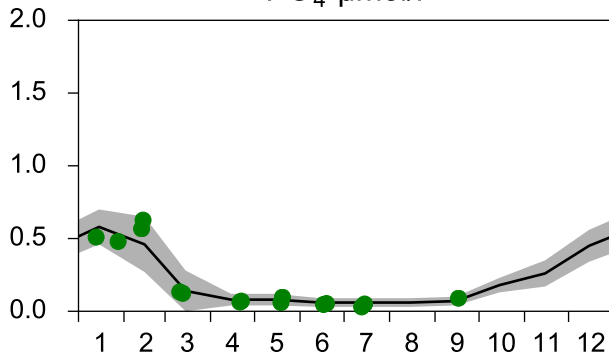
Temperature °C



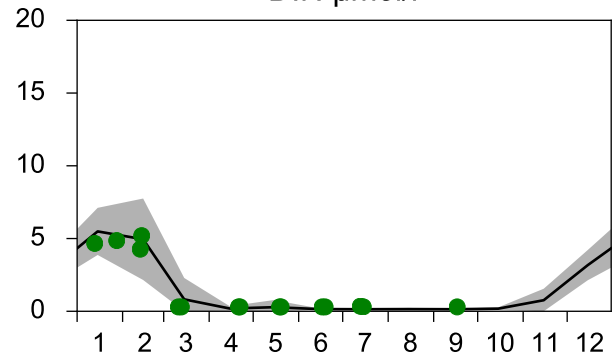
Salinity psu



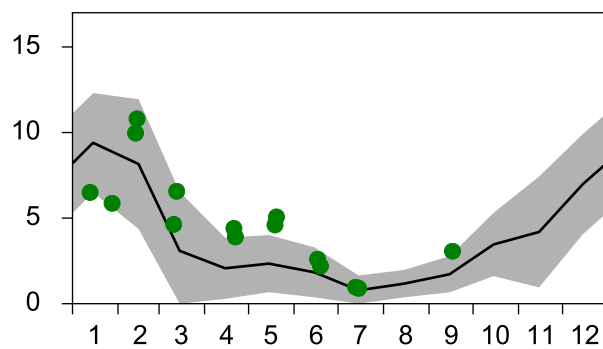
PO₄ µmol/l



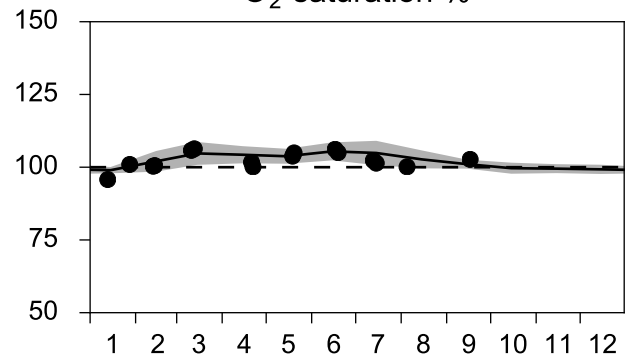
DIN µmol/l



SiO₃ µmol/l

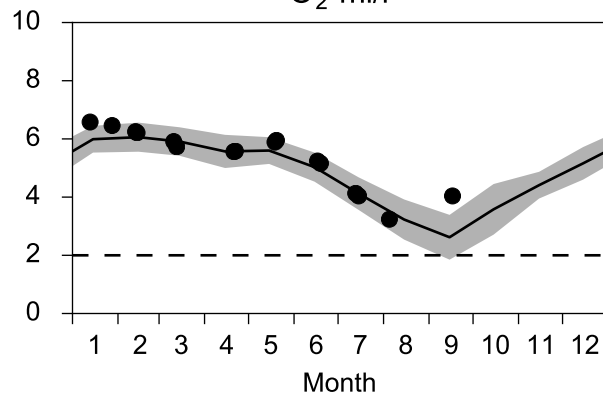


O₂ saturation %

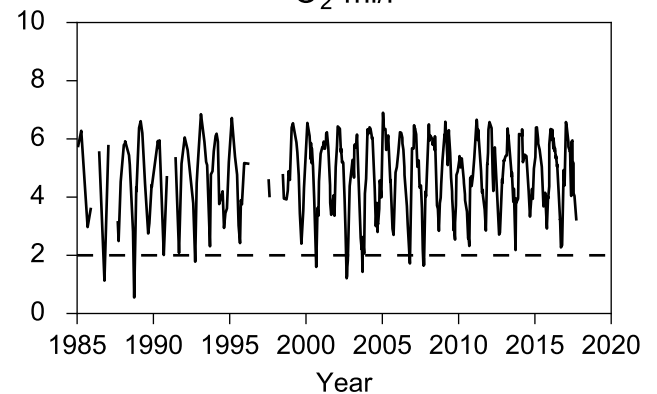


OXYGEN IN BOTTOM WATER (depth >= 52 m)

O₂ ml/l

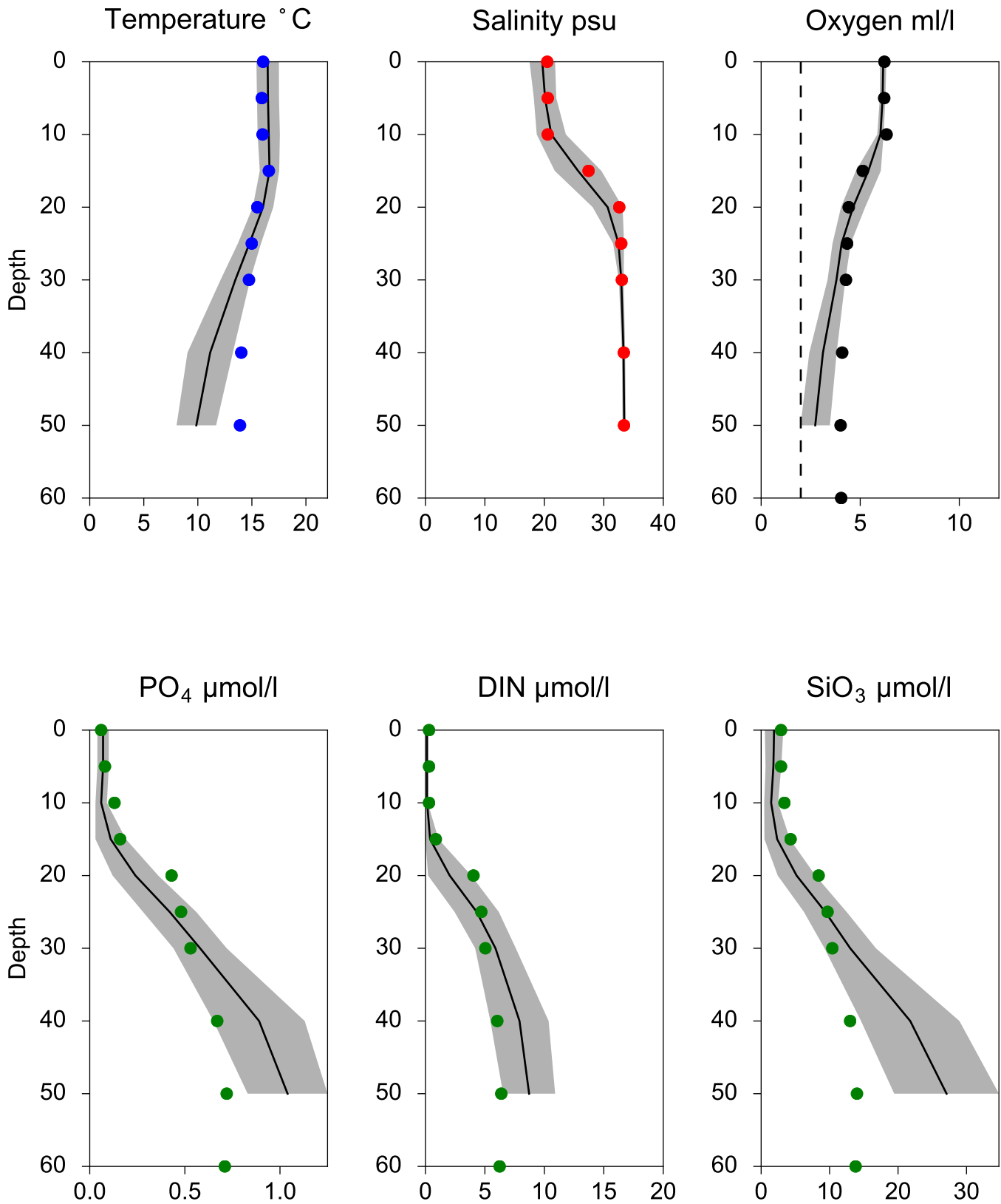


O₂ ml/l



Vertical profiles ANHOLT E September

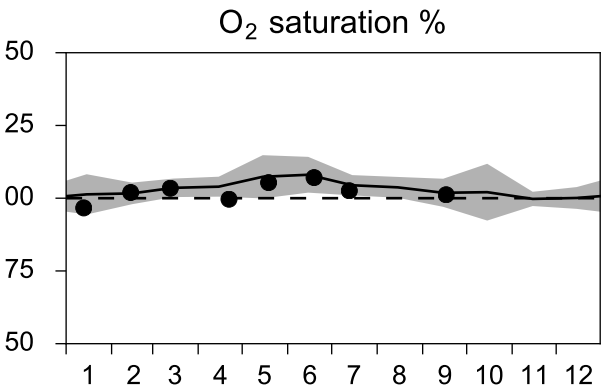
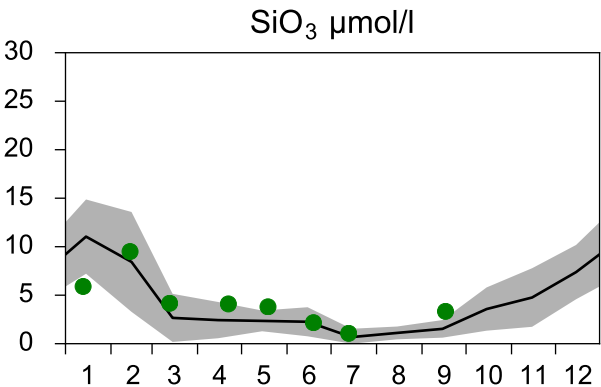
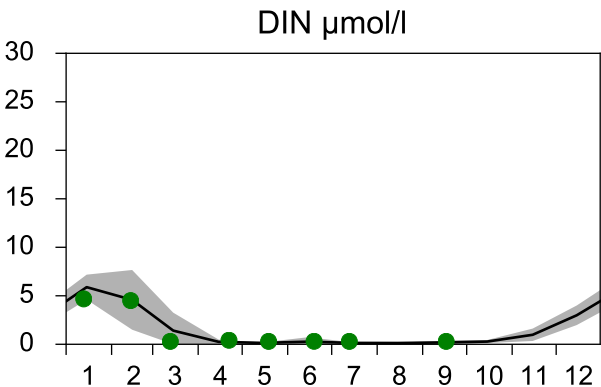
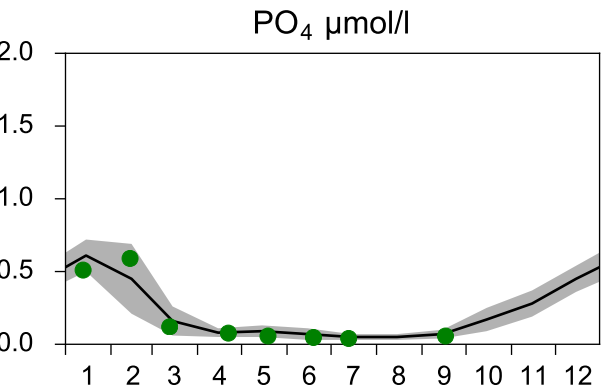
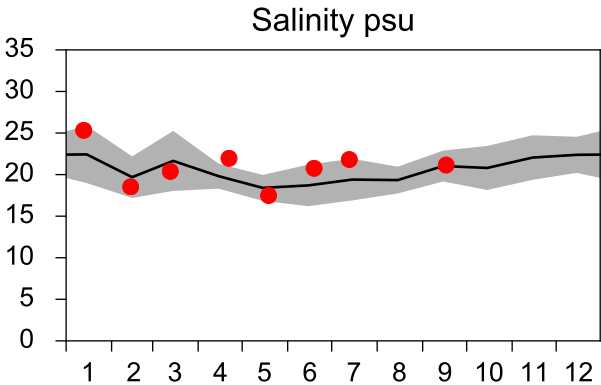
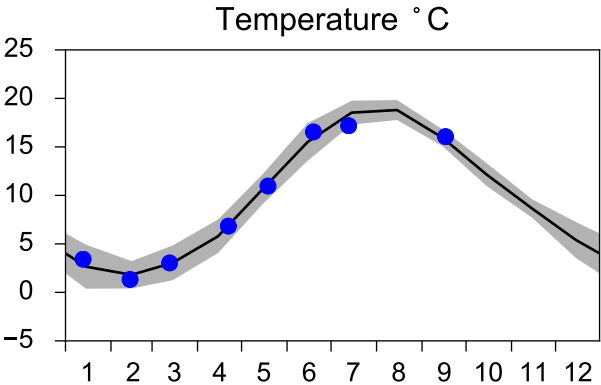
— Mean 2001-2015 ■ St.Dev. ● 2017-09-17



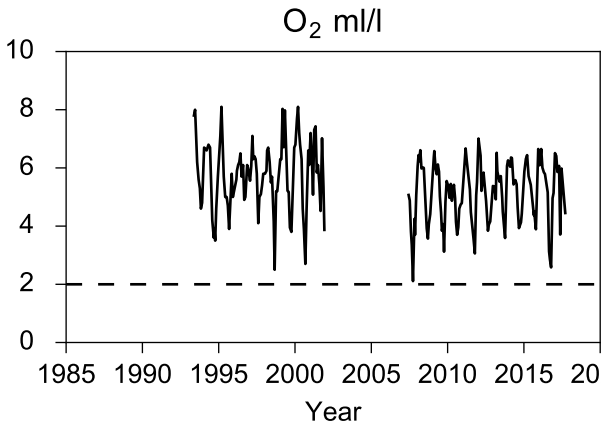
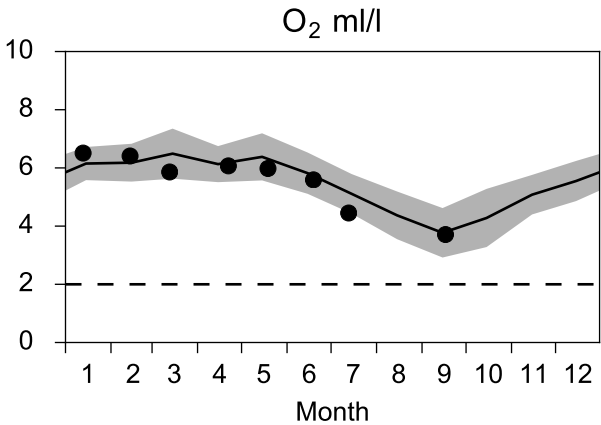
STATION N14 FALKENBERG SURFACE WATER (0-10 m)

Annual Cycles

— Mean 2001-2015 St.Dev. • 2017

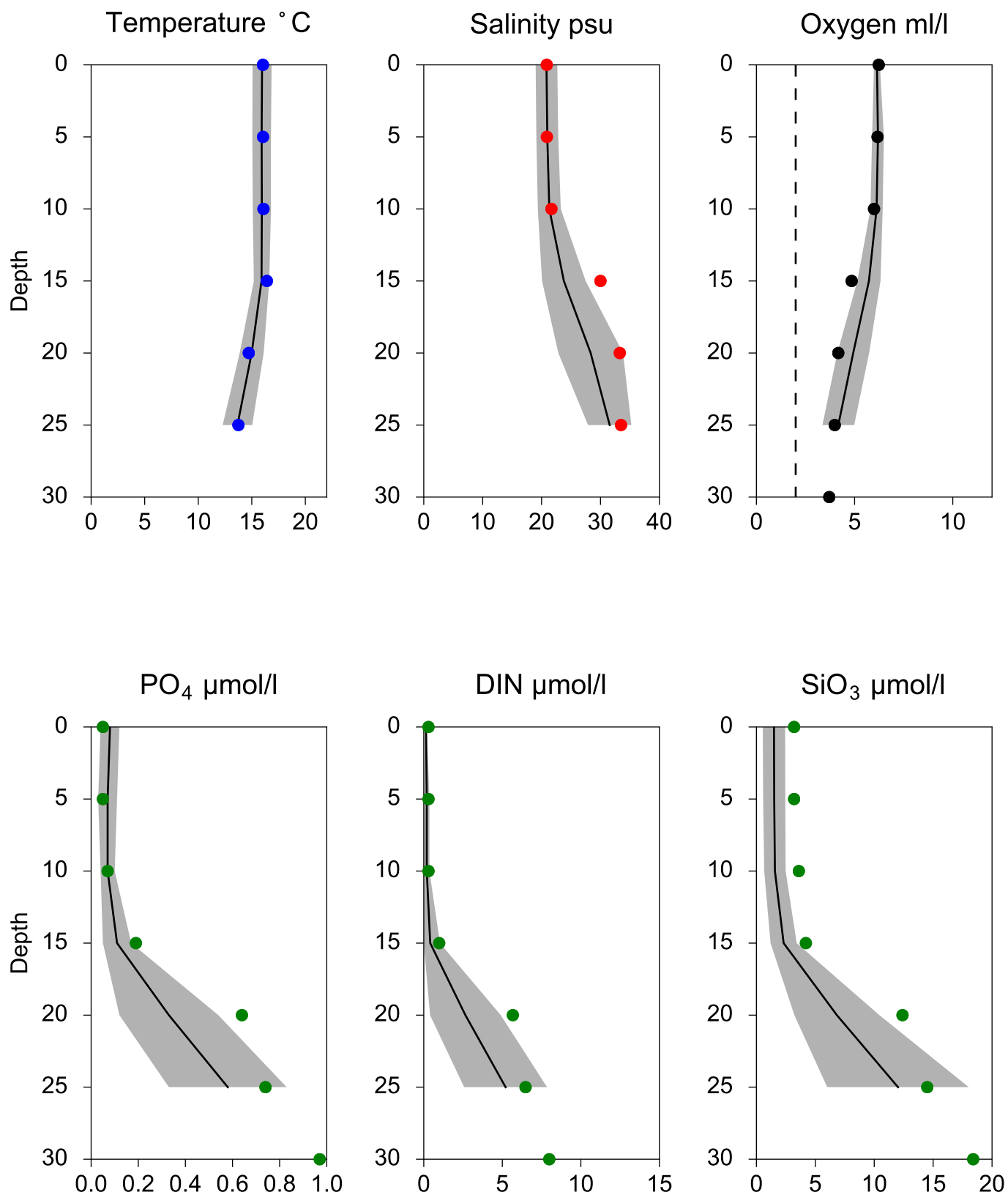


OXYGEN IN BOTTOM WATER (depth >= 25 m)



Vertical profiles N14 FALKENBERG September

— Mean 2001-2015 St.Dev. • 2017-09-17



STATION FLADEN SURFACE WATER (0-10 m)

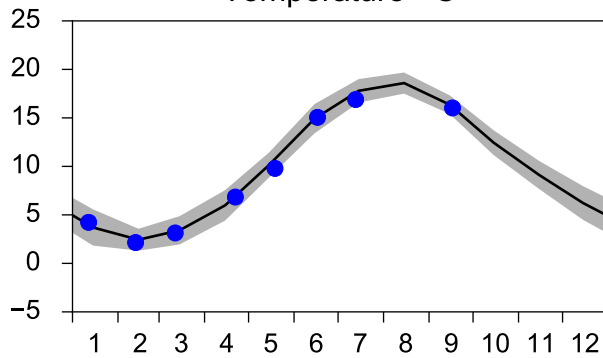
Annual Cycles

— Mean 2001-2015

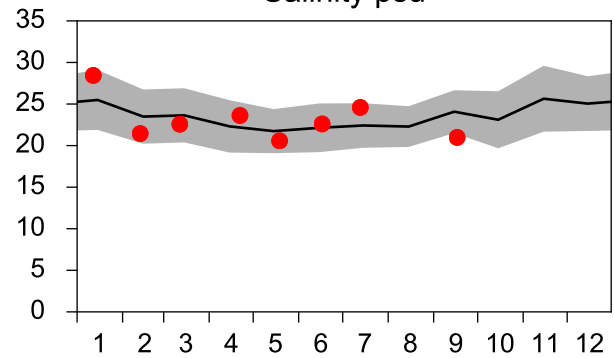
■ St.Dev.

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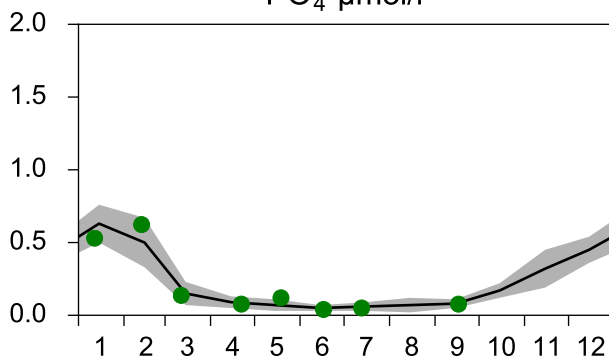
Temperature °C



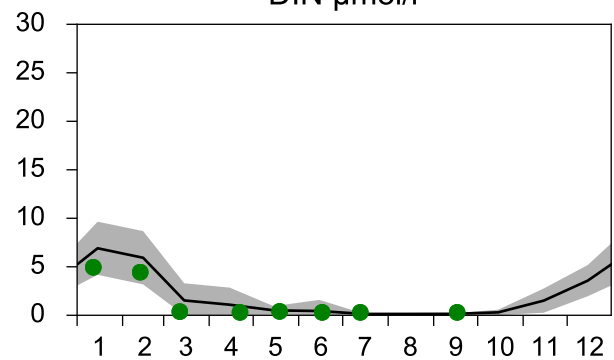
Salinity psu



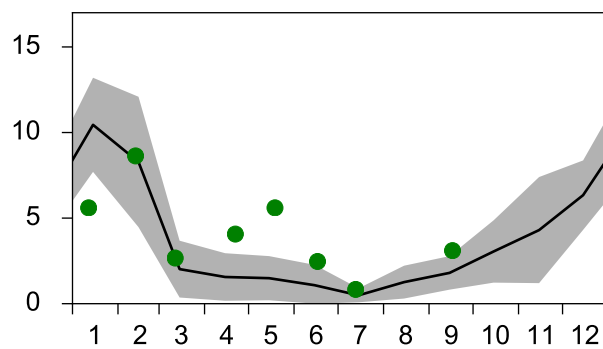
PO₄ µmol/l



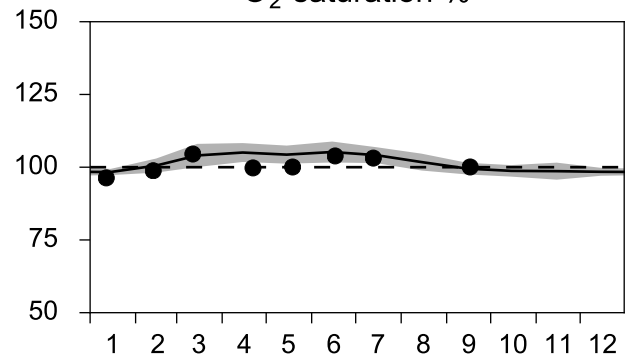
DIN µmol/l



SiO₃ µmol/l

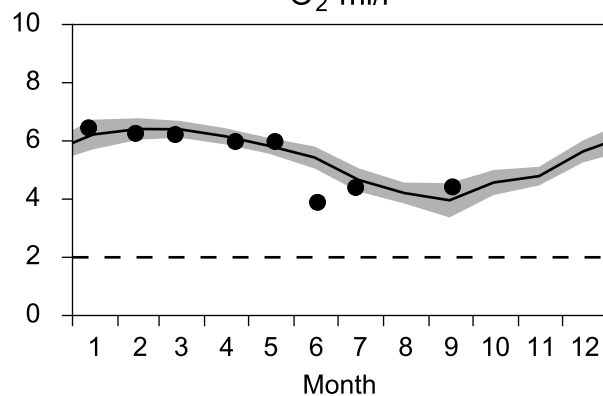


O₂ saturation %

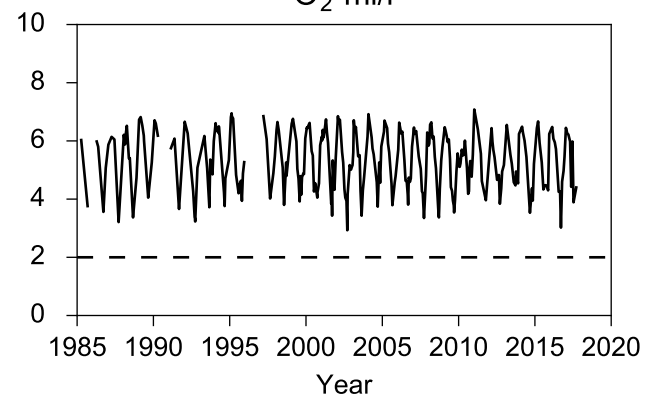


OXYGEN IN BOTTOM WATER (depth >= 74 m)

O₂ ml/l

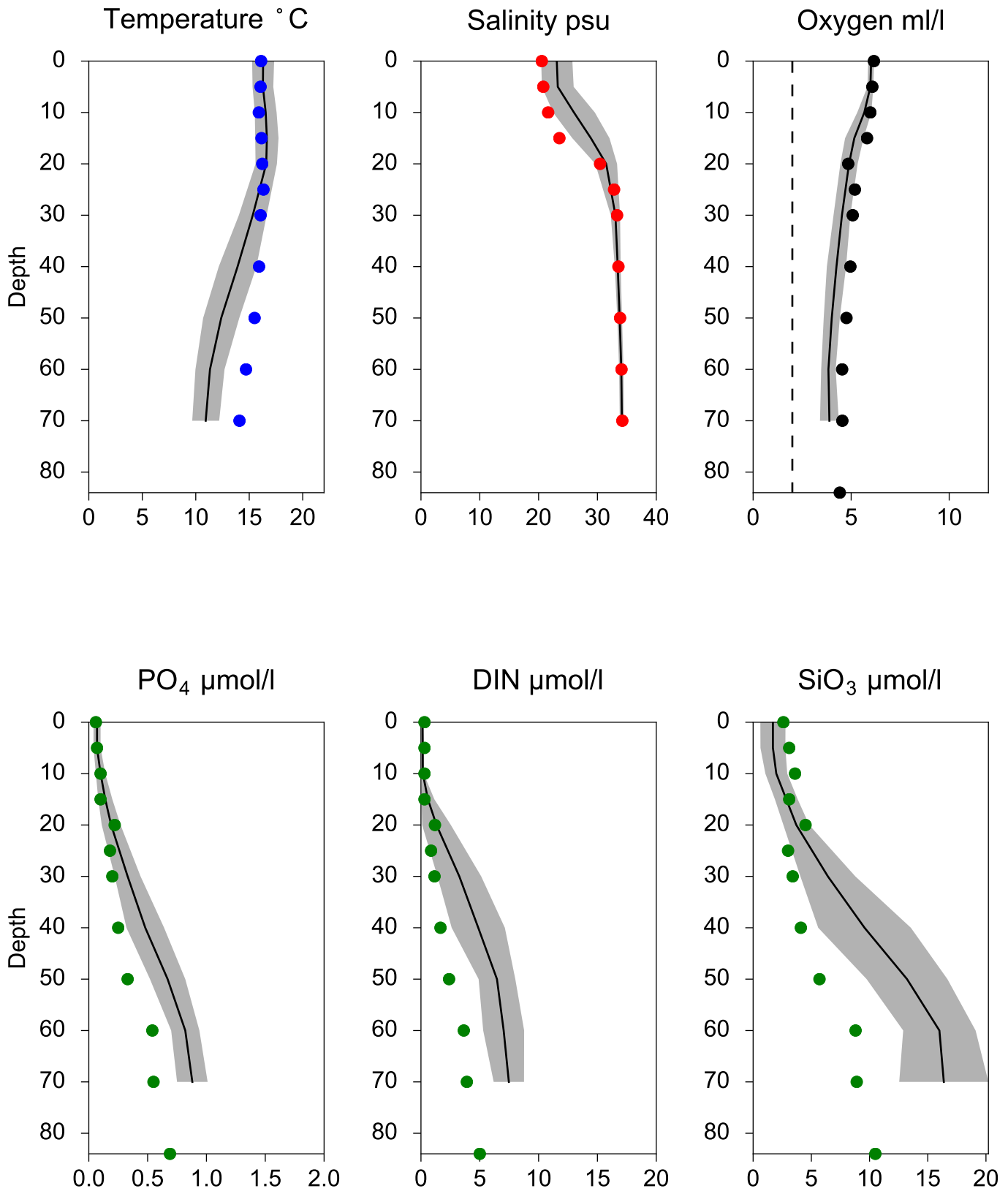


O₂ ml/l



Vertical profiles FLADEN September

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STATION P2 SURFACE WATER (0-10 m)

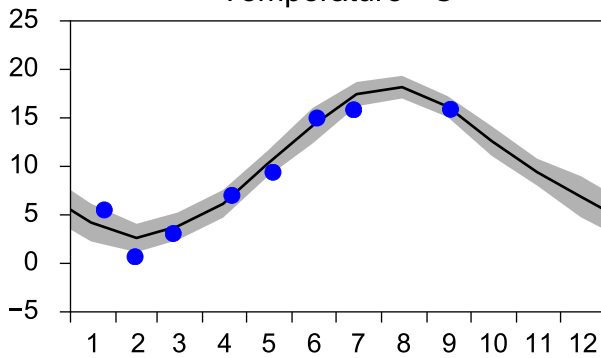
Annual Cycles

— Mean 2001-2015

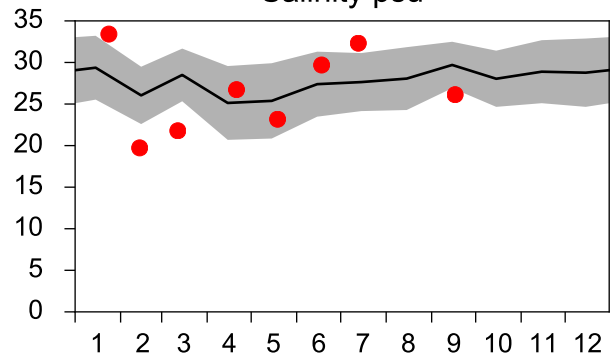
■ St.Dev.

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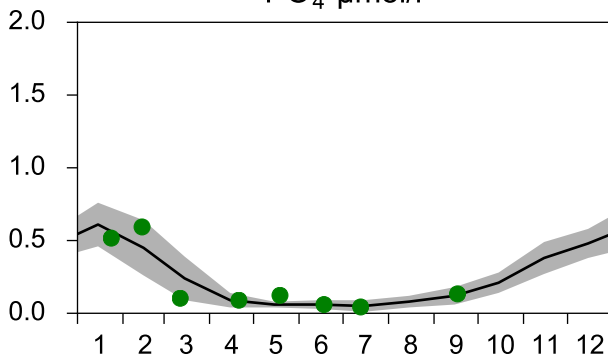
Temperature °C



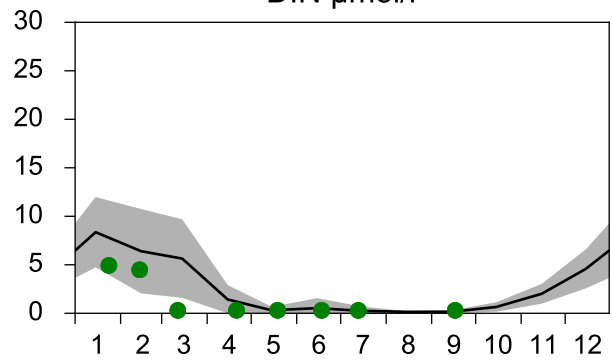
Salinity psu



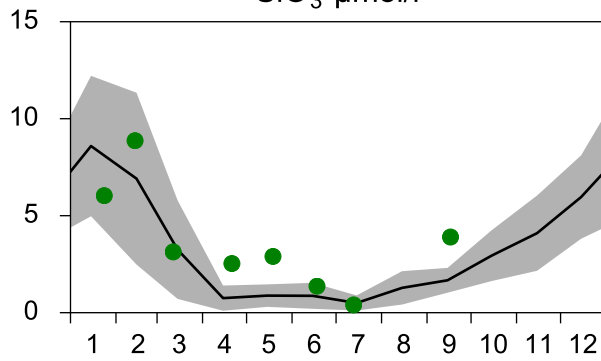
PO₄ μmol/l



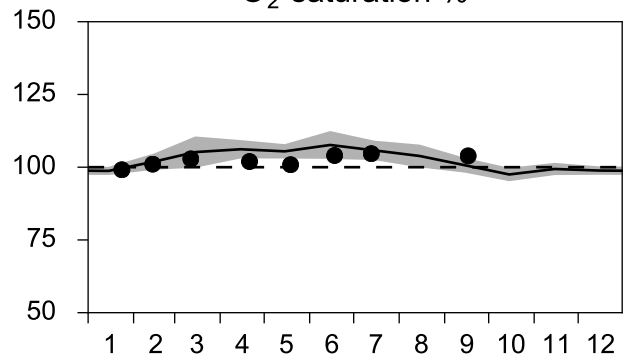
DIN μmol/l



SiO₃ μmol/l

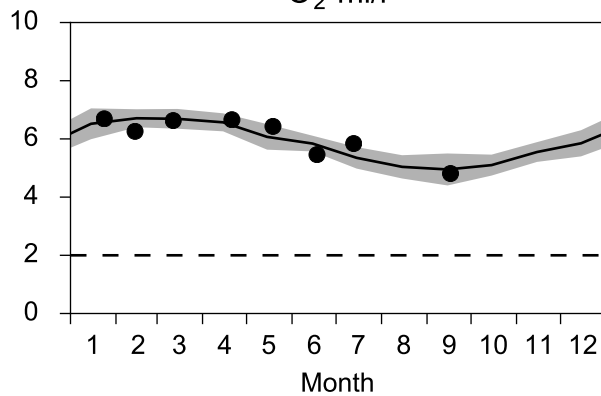


O₂ saturation %

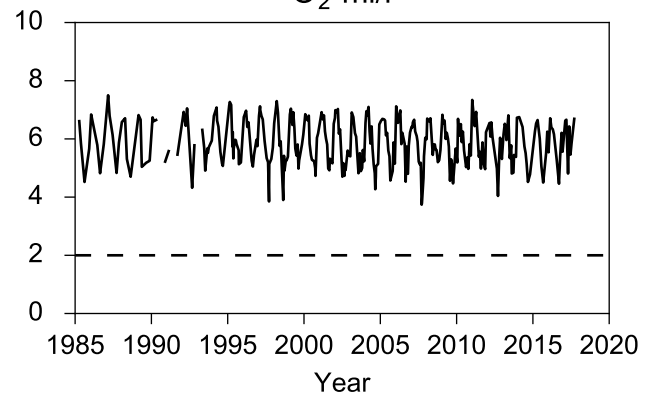


OXYGEN IN BOTTOM WATER (depth >= 75 m)

O₂ ml/l

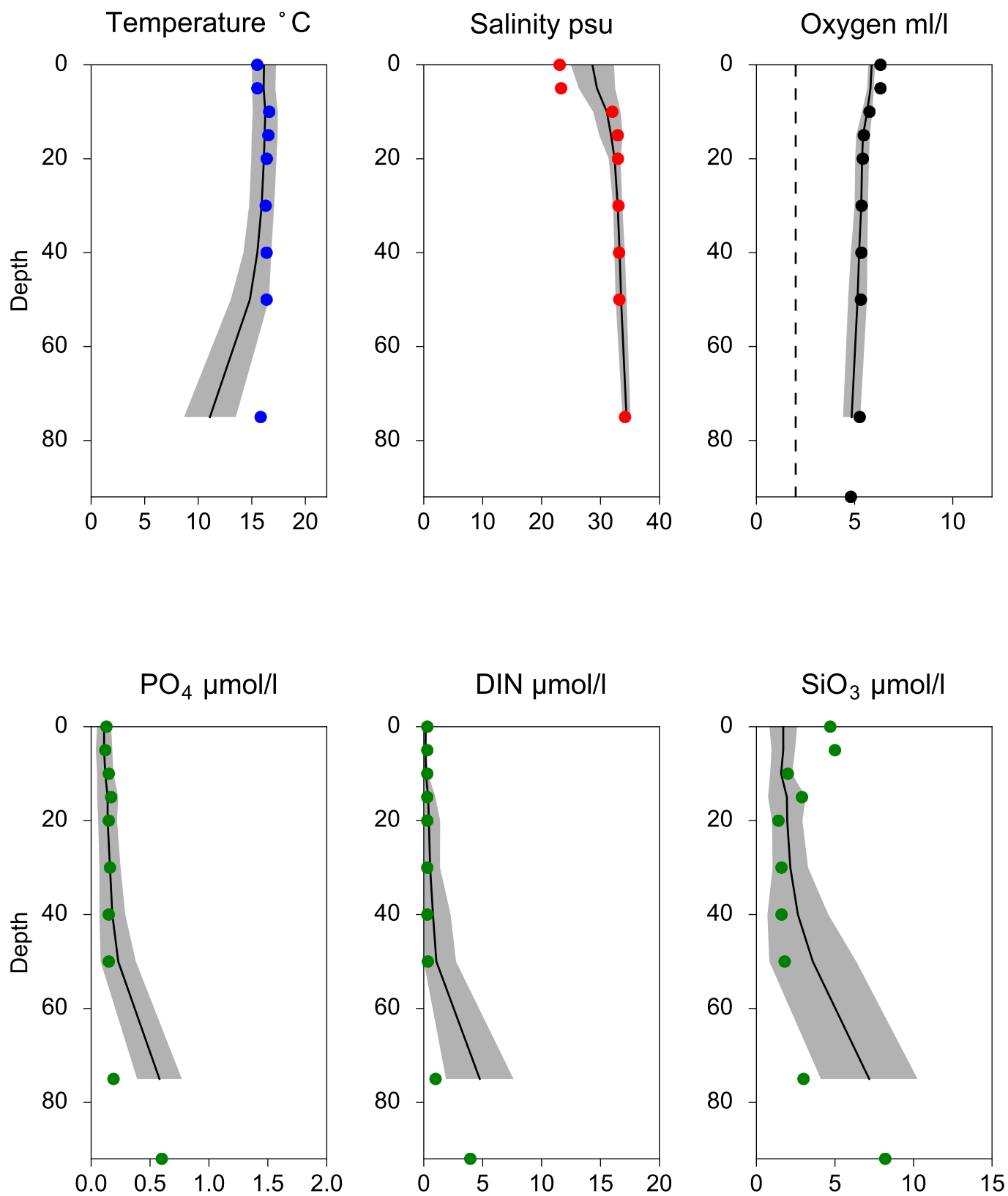


O₂ ml/l



Vertical profiles P2 September

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STATION Å17 SURFACE WATER (0-10 m)

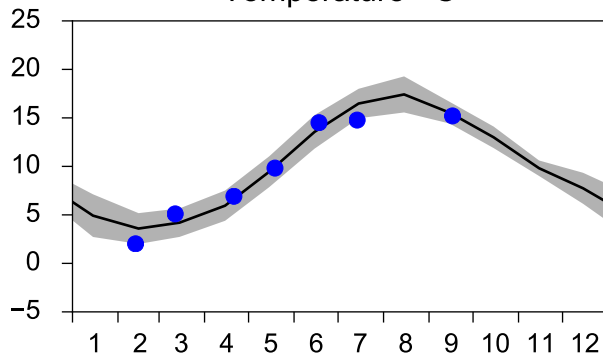
Annual Cycles

— Mean 2001-2015

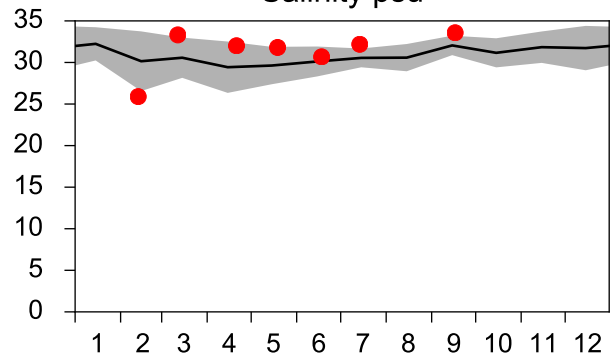
■ St.Dev.

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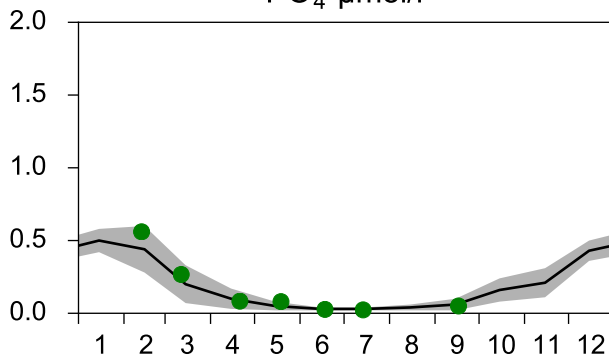
Temperature °C



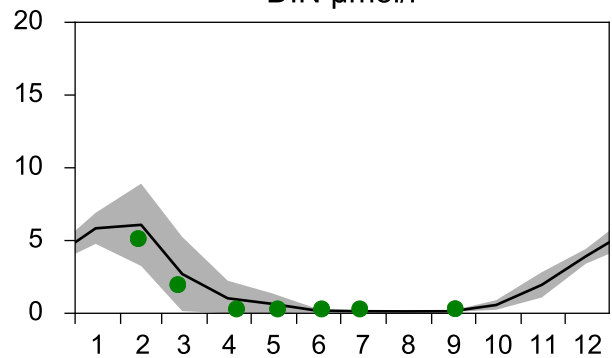
Salinity psu



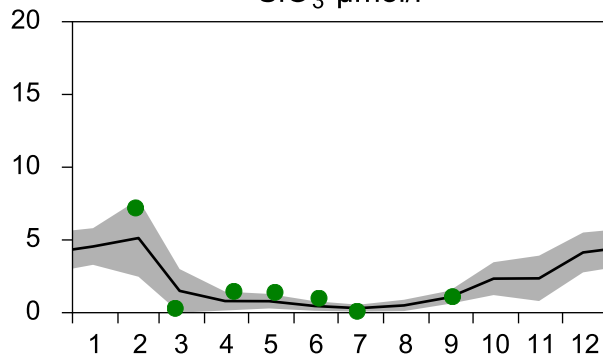
PO₄ μmol/l



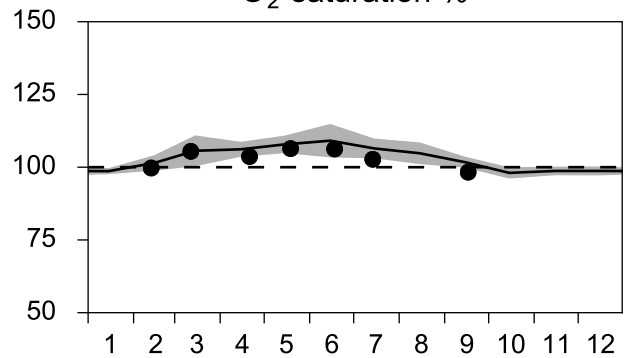
DIN μmol/l



SiO₃ μmol/l

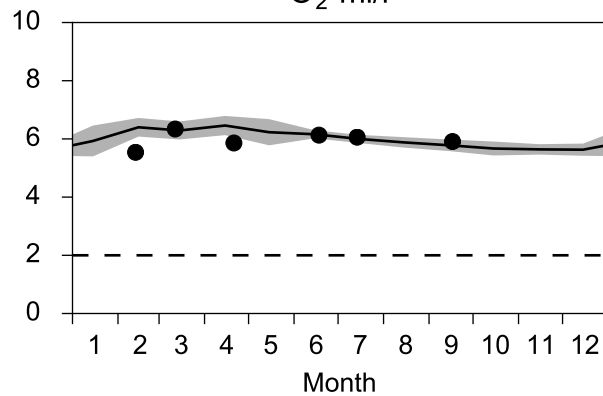


O₂ saturation %

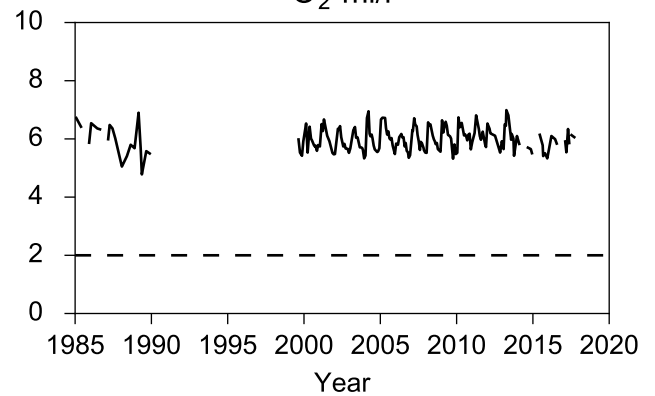


OXYGEN IN BOTTOM WATER (depth >= 300 m)

O₂ ml/l

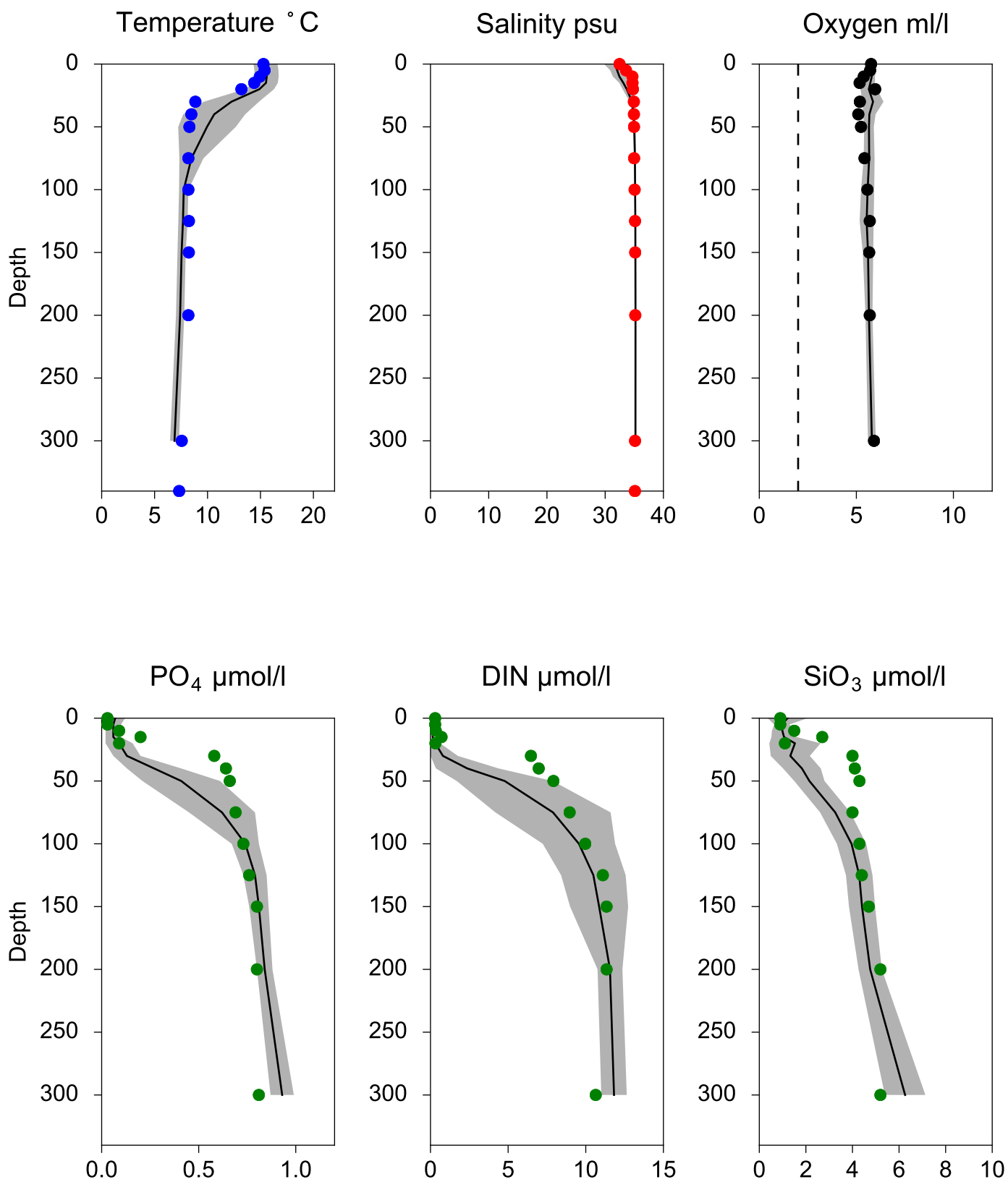


O₂ ml/l



Vertical profiles Å17 September

— Mean 2001-2015 St.Dev. • 2017-09-17



STATION Å15 SURFACE WATER (0-10 m)

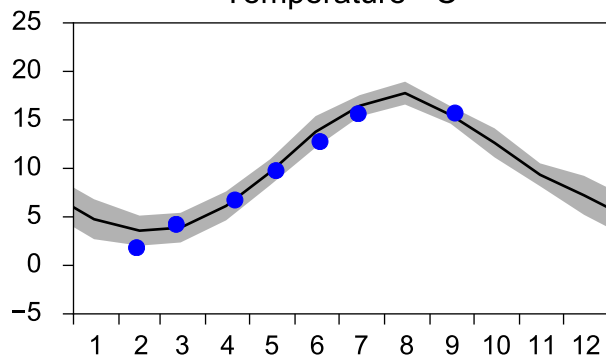
Annual Cycles

— Mean 2001-2015

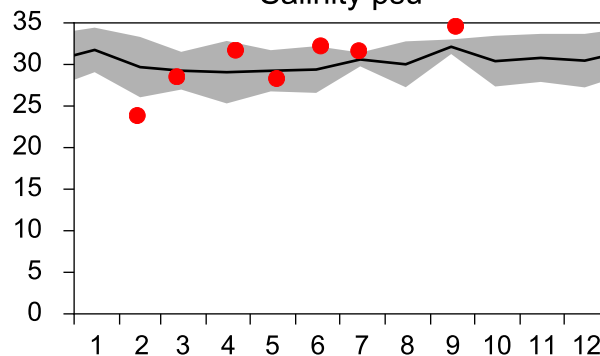
■ St.Dev.

● 2017

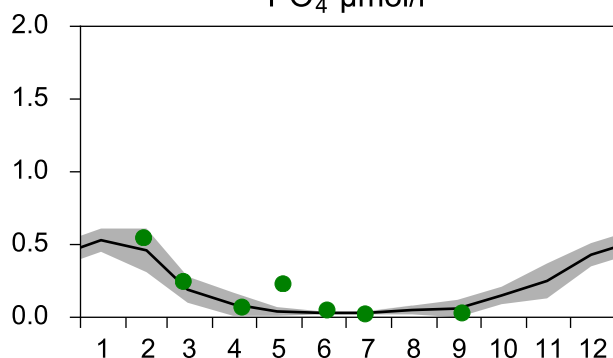
Temperature °C



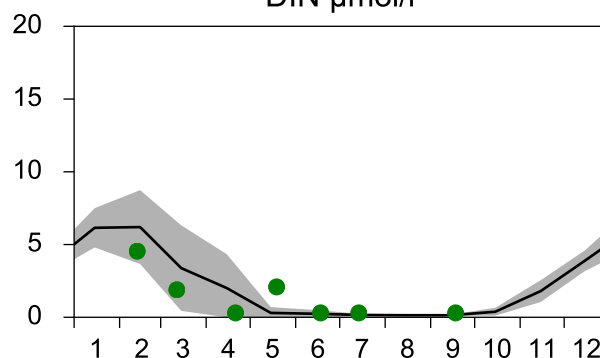
Salinity psu



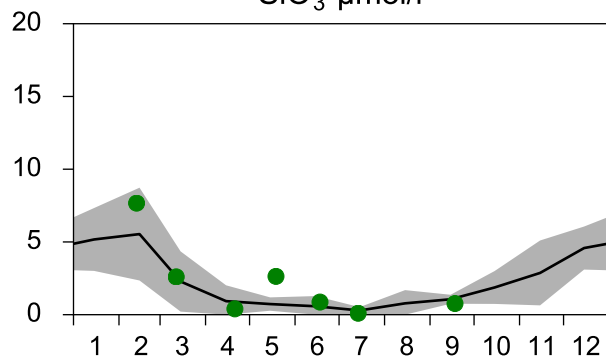
PO₄ μmol/l



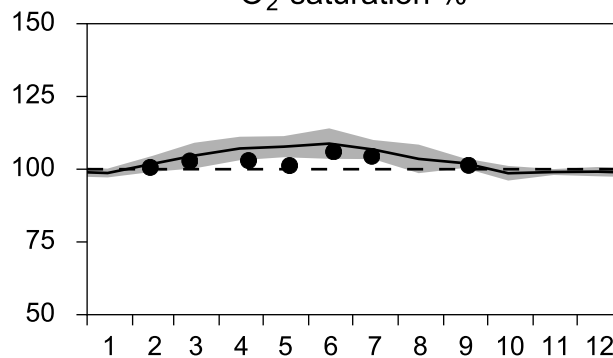
DIN μmol/l



SiO₃ μmol/l

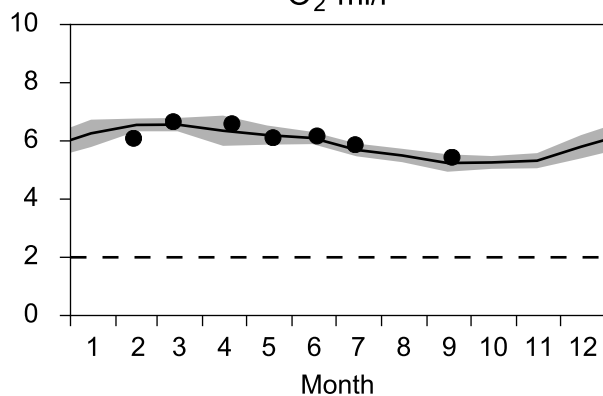


O₂ saturation %

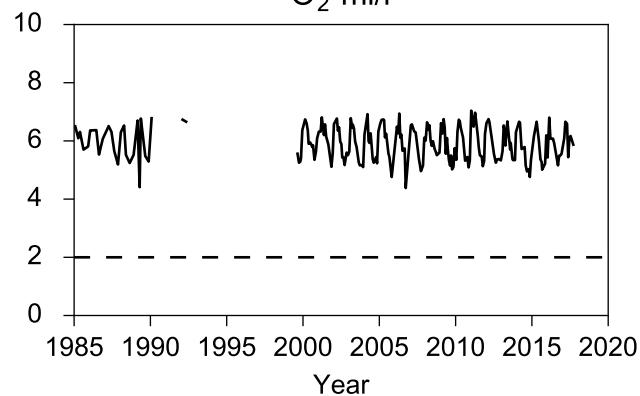


OXYGEN IN BOTTOM WATER (depth >= 125 m)

O₂ ml/l

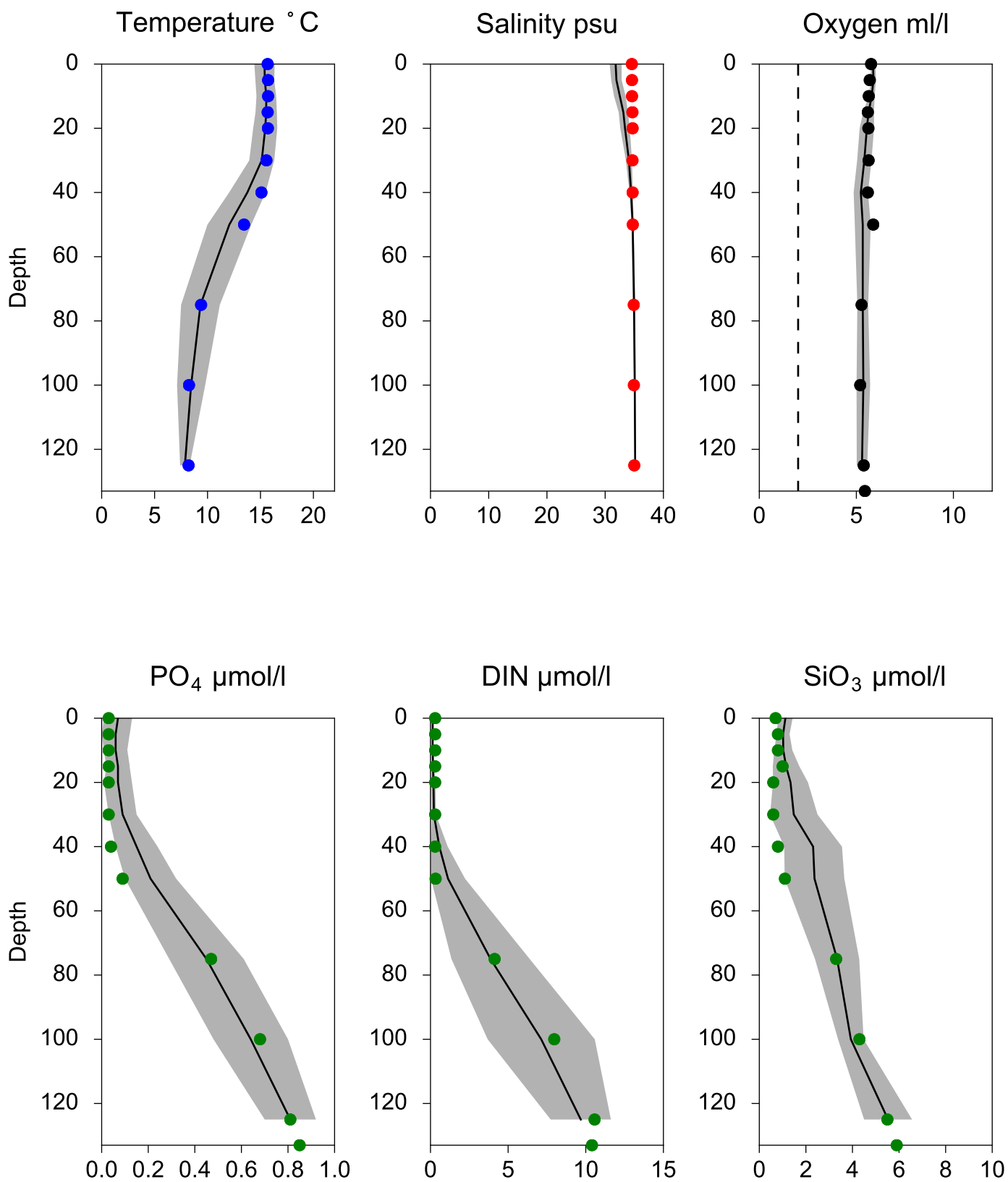


O₂ ml/l



Vertical profiles Å15 September

— Mean 2001-2015 ■ St.Dev. ● 2017-09-18



STATION Å13 SURFACE WATER (0-10 m)

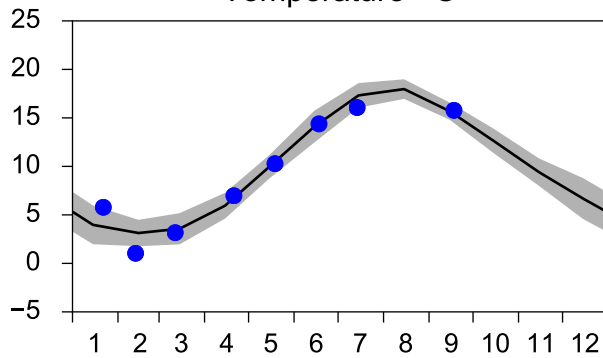
Annual Cycles

— Mean 2001-2015

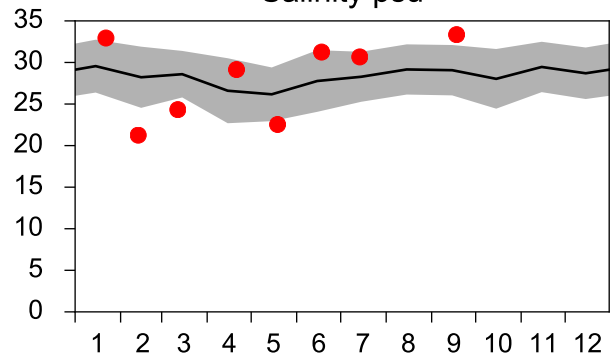
■ St.Dev.

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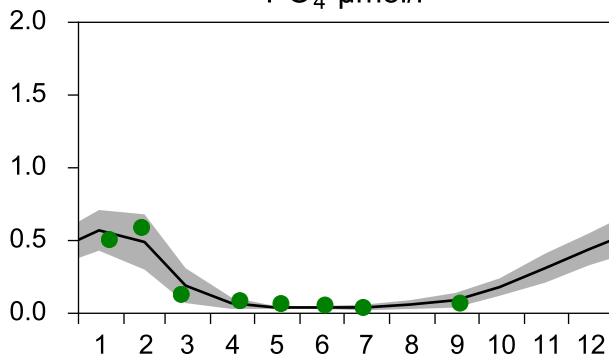
Temperature °C



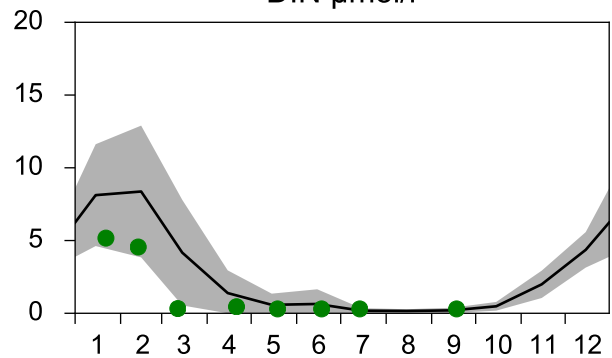
Salinity psu



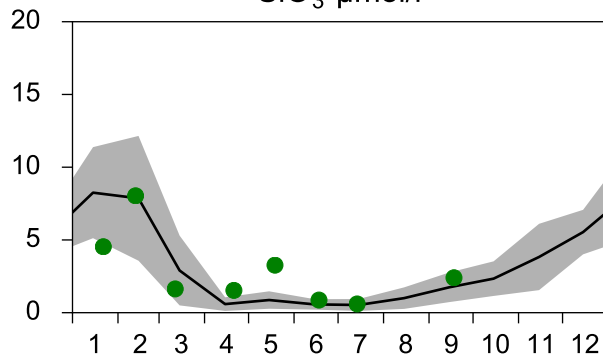
PO₄ µmol/l



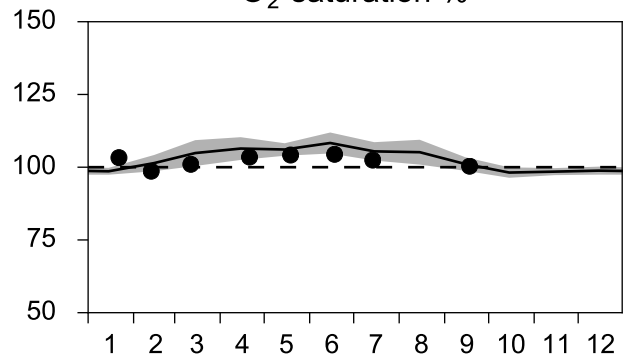
DIN µmol/l



SiO₃ µmol/l

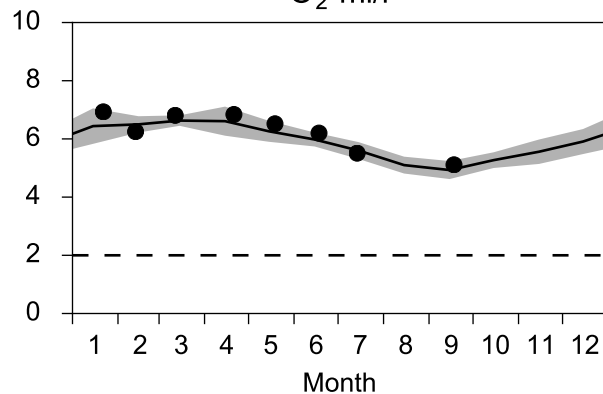


O₂ saturation %

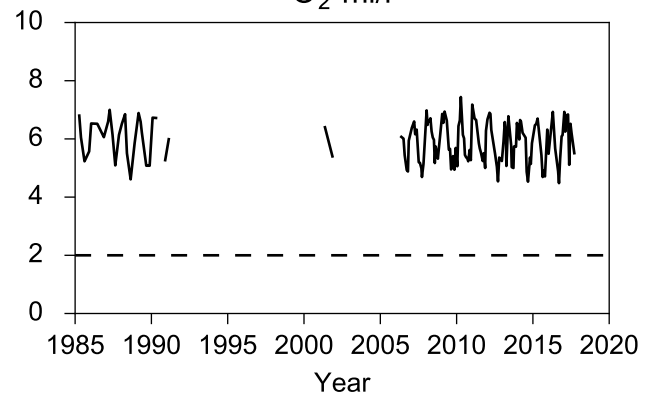


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

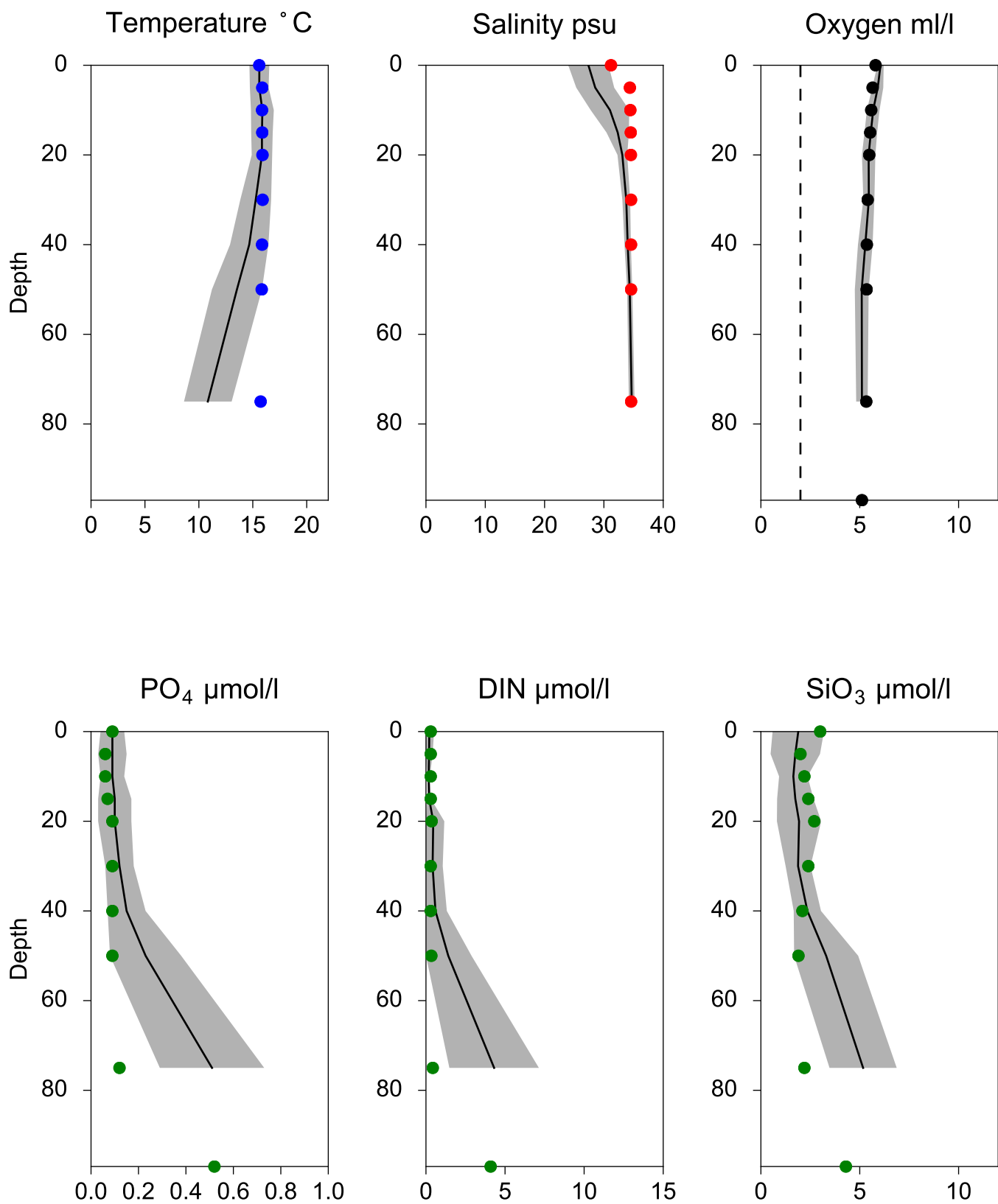


O₂ ml/l



Vertical profiles Å13 September

— Mean 2001-2015 St.Dev. • 2017-09-18



STATION SLÄGGÖ SURFACE WATER (0-10 m)

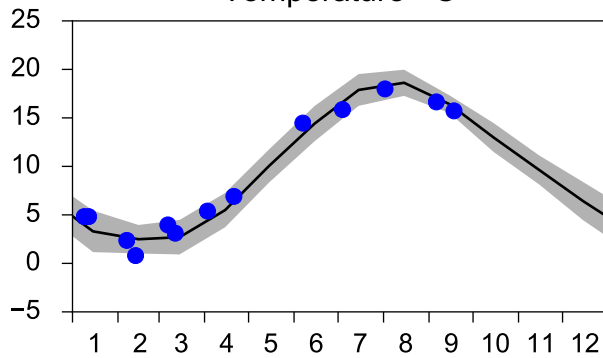
Annual Cycles

— Mean 2001-2015

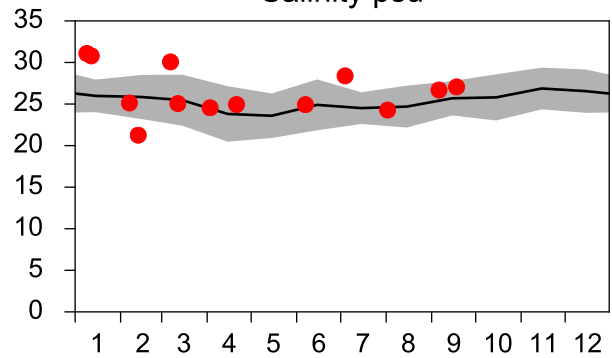
■ St.Dev.

● 2017

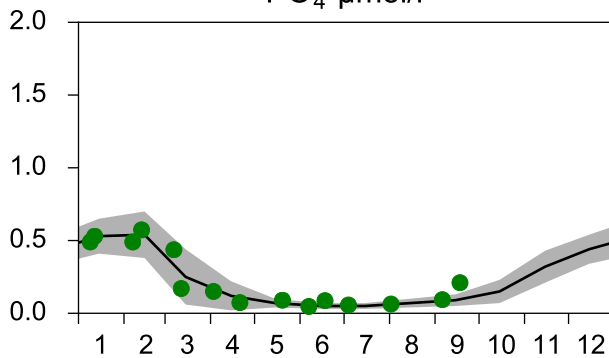
Temperature °C



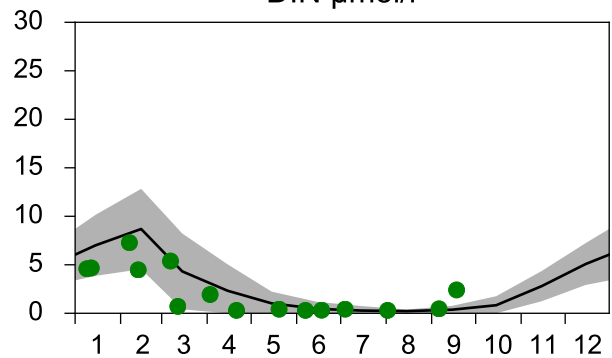
Salinity psu



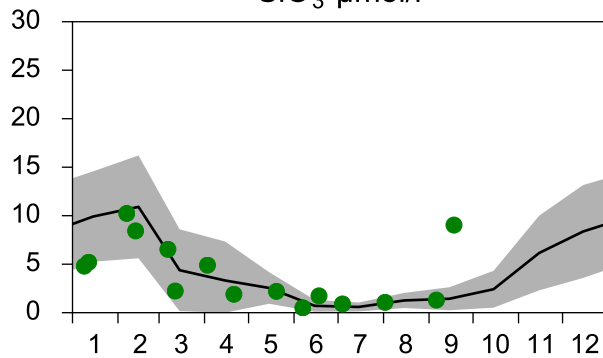
PO₄ µmol/l



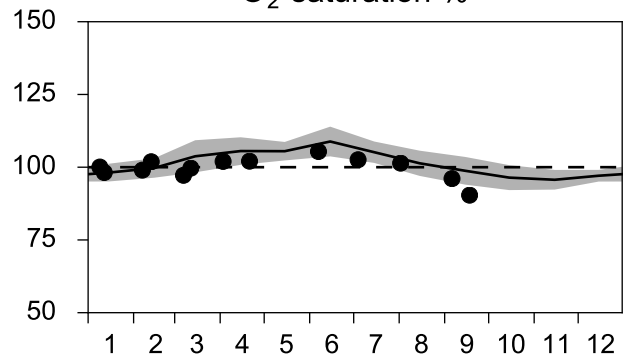
DIN µmol/l



SiO₃ µmol/l

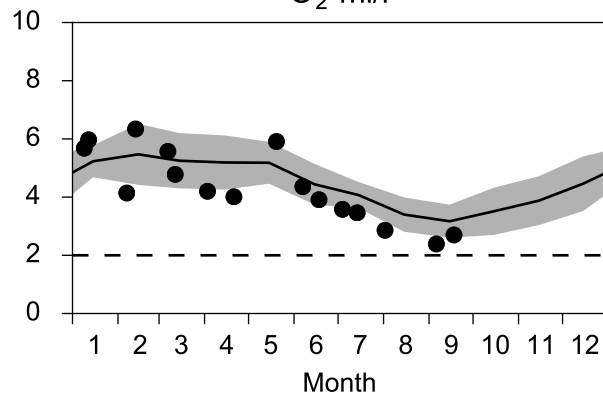


O₂ saturation %

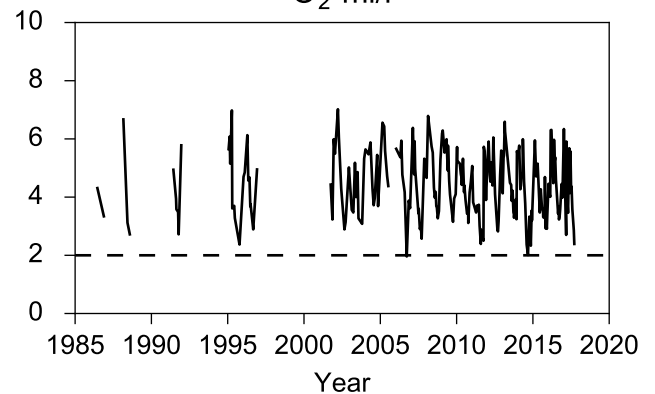


OXYGEN IN BOTTOM WATER (depth >= 64 m)

O₂ ml/l



O₂ ml/l



Vertical profiles SLÄGGÖ September

— Mean 2001-2015

■ St.Dev.

● 2017-09-18

