

Rapport från SMHIs utsjöexpedition med R/V Aranda



Expeditionens varaktighet: 2017-04-18 - 2017-04-25
Uppdragsgivare: Sveriges Meteorologiska och Hydrologiska Institut,
Havs- och Vattenmyndigheten.

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 uppmättes noterades i Västra Gotlandsbassängen från 90 meters djup och i Östra Gotlandsbassängen, men då enbart vid Gotlandsdjupet BY15 närmast botten (235 meters djup). Vid övriga stationer i Östra Gotlandsbassängen var syrehalterna mycket nära noll, men svavelväte påträffades inte. Akut syrebrist ($< 2\text{ml/l}$) påträffades i alla bassänger vid djup överstigande 65-80 meter.

Silikalthalterna i alla områden var över eller mycket över det normala för årstiden utom i Skagerrak där den var normal. Halterna av fosfat och oorganiskt kväve i ytvattnet var normal för årstiden i hela det undersökta området.

Temperaturen i ytvattnet var normal för årstiden medan salthalten i ytvattnet var något högre än normalt i Skagerrak, Kattegatt och Östra Gotlandsbassängen. Vårblomningen pågick för fullt i större delen av området.

Nästa ordinarie expedition planeras starta 16:e maj.

RESULTAT

Expeditionen genomfördes ombord på det finska forskningsfartyget Aranda och startade i Åbo den 18:e april och avslutades i Helsingfors den 25:e. Vid expeditionens start var vindarna svaga för att sedan öka till kuling från väst på västkusten och därefter svaga igen i Östersjön. Expeditionen avslutades med vindar upp till 19 m/s från sydost i Finska viken.

Vid N Midsjöbanken byttes hydrofoner ut för Totalförsvarets forskningsinstitut (FOI). Hydrofonerna har mätt marint buller samt registrerat klickljud från tumlare sedan april 2016.

Naturhistoriska riksmuseet har fått i uppdrag att övervaka den relativa tätheten av den akut utrotningshotade Östersjöpopulationen av tumlare i Östersjön med hjälp av akustiska tumlarklickdetektorer och det placerades ut 3 st runt N Midsjöbanken.

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

Ytvattentemperaturen i Skagerrak var normal för årstiden och varierade mellan 6,7 och 7,0°C. Salthalten i ytan var något förhöjd och varierade mellan 26,7 psu i den södra delen till 32,0 psu i yttre Skagerrak. Termoklin och haloklin sammanföll och återfanns på 10-20 meters djup.

Halten av oorganiskt kväve (summan av nitrat+nitrit+ammonium) var generellt lägre än normalt i ytvattnet och uppvisade halter mellan 0,30 – 0,45 µmol/l. Fosfat- och silikathalten i ytvattnet var normala för årstiden utom i södra delen där silikathalterna var högre än normalt. I ytan varierade fosfathalterna mellan 0,07 -0,09 µmol/l och silikathalten mellan 0,4 – 2,5 µmol/l.

Vårblomningen pågick fortfarande i Skagerrak, intensivast närmast kusten.

Syrgashalten i hela vattenkolumnen var normal vid samtliga besökta stationer.

Kattegatt och Öresund

Ytvattentemperaturen var normal i hela området och varierade mellan 6,3 och 6,9°C, lägst i Öresund. Salthalten var normal till något över det normala och varierade mellan 21,4 och 23,6 psu, högst i de norra delarna. I Öresund var salthalten något lägre än normalt i ytan 9,0 psu. Skiktningen återfanns på 15-25 meters djup.

Fosfat- och kvävehalterna i Kattegatt uppvisade normala halter för årstiden medan silikathalterna var över det normala. Koncentrationen av oorganiskt kväve varierade kring 0,3 µmol/l och halten av

fosfat var mellan 0,06 till 0,16 $\mu\text{mol/l}$, högst i Öresund. Silikathalten varierade från 4,0 $\mu\text{mol/l}$ i Kattegatt till 7,8 $\mu\text{mol/l}$ i Öresund.

Bottenvattnet i området var väl syresatt, vid botten noterades syrgashalter mellan 4,4 och 6,1 ml/l. Vårblomningen pågick även i detta område och hög fluorescens noterades från ytan ner till 15 meters djup.

Egentliga Östersjön

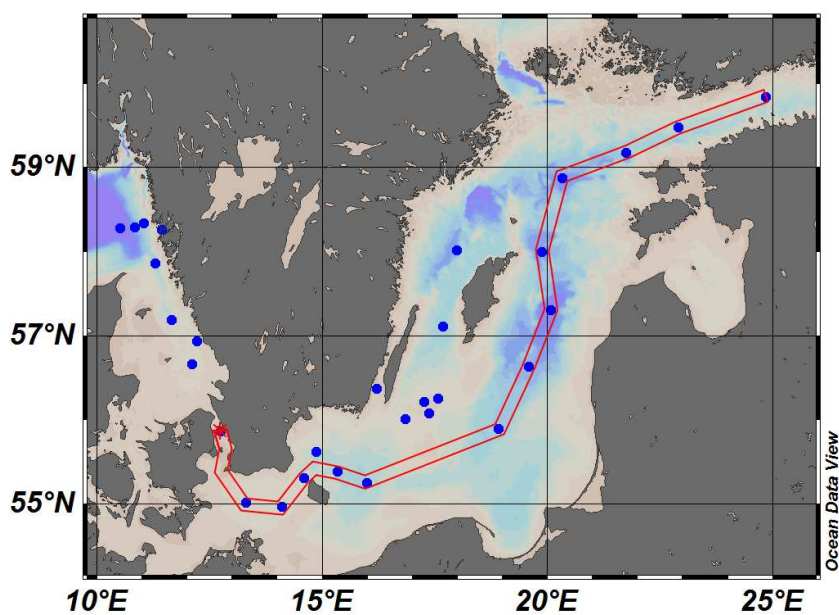
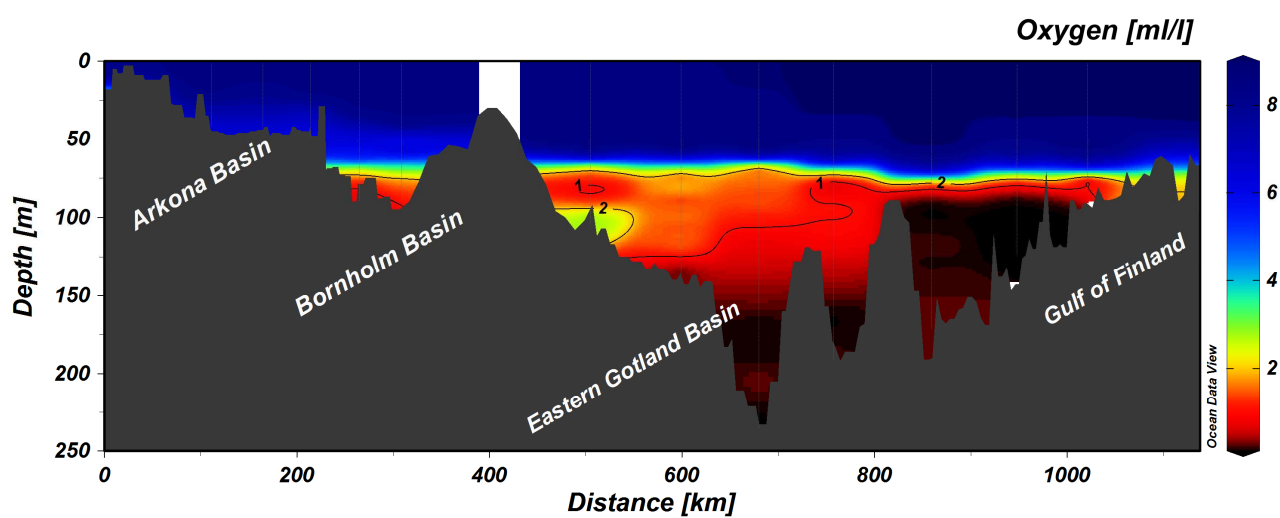
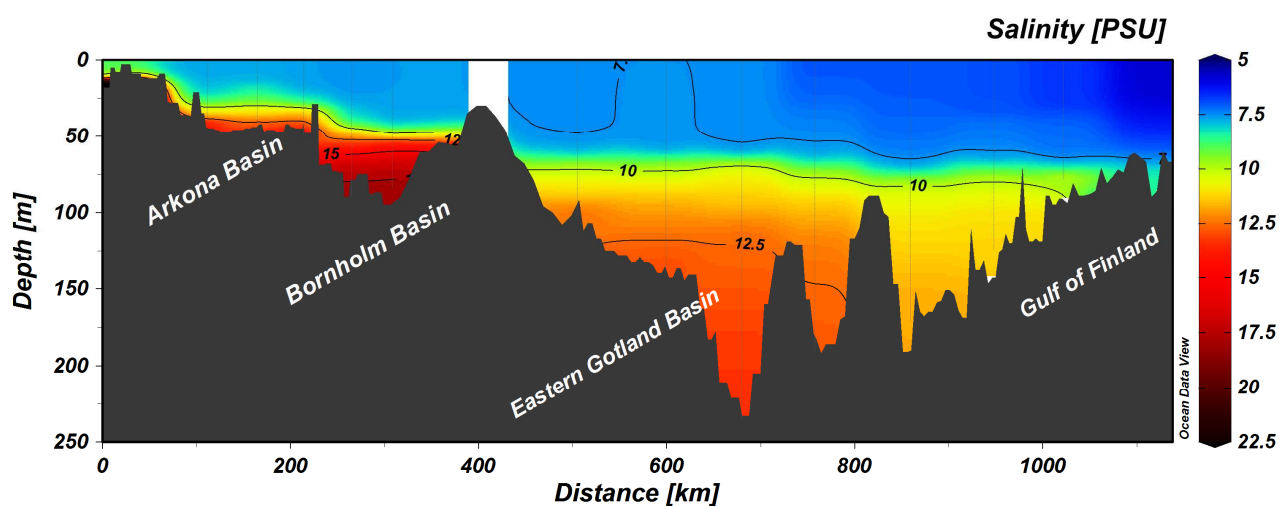
Temperaturen i ytvattnet var normal för årstiden och varierade mellan 2,5 till 5,5 °C, lägst i de norra och högst i sydvästra delarna. Salthalten var något högre än normalt i Östra Gotlandsbassängen, ca 7,5 psu, medan den var normal i resten av det undersökta området och varierade mellan 6,9 och 7,8 psu. Ytlagret var väl omblandat ner till pyknoklinen som återfanns på 50-70 meters djup, förutom i Arkona- och Bornholmsbassängen där den låg grundare på omkring 40 meters djup.

Halten av oorganiskt kväve i ytvattnet var normal i hela området och låg på 0,3 $\mu\text{mol/l}$. Fosfathalten i ytvattnet var normal för årstiden med halter mellan 0,30 och 0,57 $\mu\text{mol/l}$. Silikatkoncentrationerna i hela Egentliga Östersjön var högre än normalt och låg mellan 13,8 och 19,1 $\mu\text{mol/l}$.

I stora delar av Egentliga Östersjöns djupvatten påträffades syrgashalter nära noll. Helt syrefria förhållanden, då svavelväte, uppmättes noterades i Västra Gotlandsbassängen från 90 meters djup och i Östra Gotlandsbassängen men då enbart vid Gotlandsdjupet BY15 närmast botten (235 meters djup). Vid övriga stationer i Östra Gotlandsbassängen var syrehalterna mycket nära noll, men svavelväte påträffades inte.

Akut syrebrist (< 2ml/l) påträffades i alla bassänger vid djup överstigande 65-80 meter. I Arkonabassängen var dock hela vattenkolumnen väl syresatt.

Fluorescensmätningarna från CTD:n visade att vårblomningen var igång i större delen av området.



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

DELTAGARE

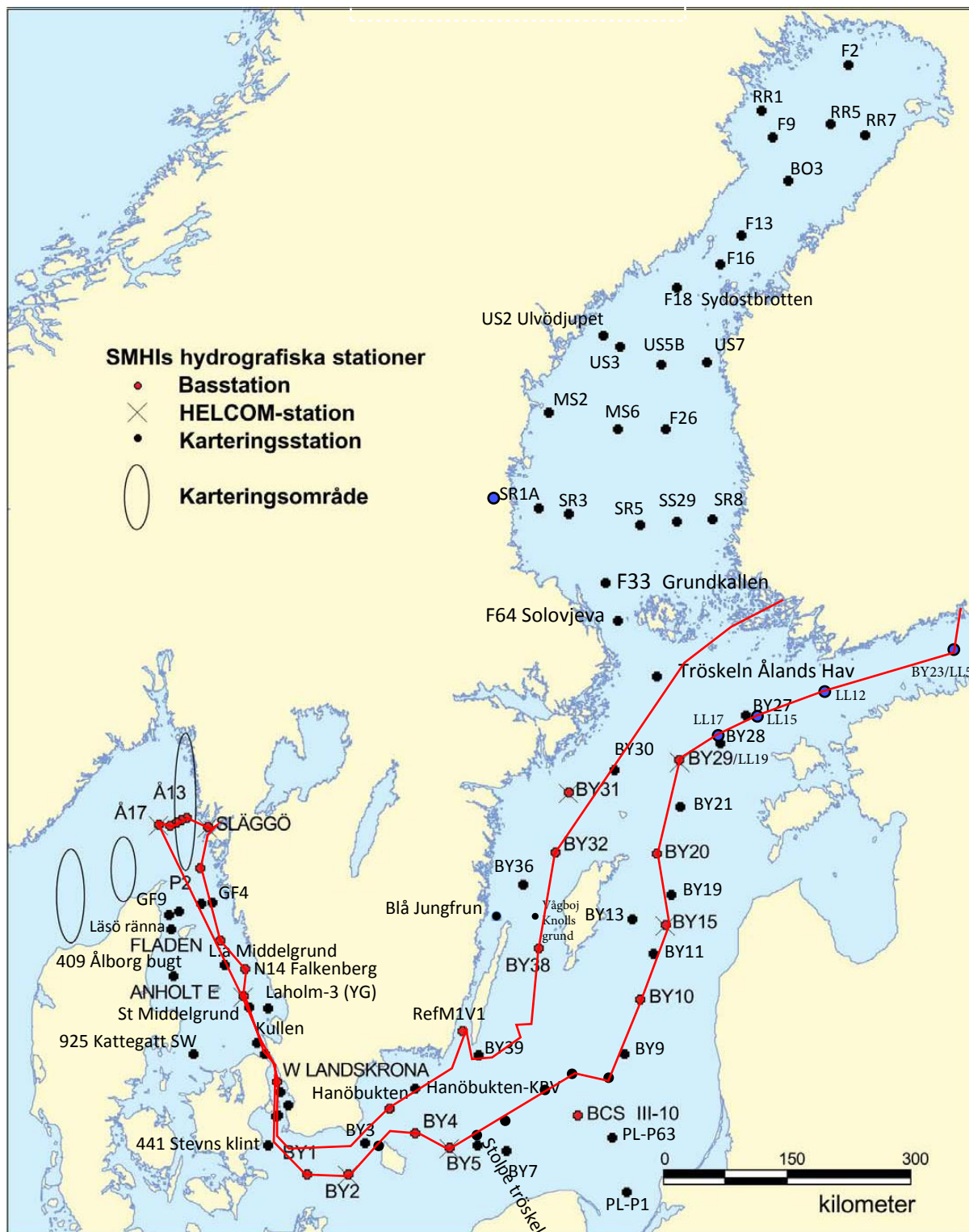
Namn		Från
Anna-Kerstin Thell	Expeditionsledare	SMHI
Carl Johan Andersson		SMHI
Kristin Andreason		SMHI
Johanna Linders		SMHI
Jenny Lycken		SMHI
Sari Sipilä		SMHI
Mathias Andersson	Åbo – Lysekil	FOI
Julia Carlström	Åbo – Lysekil	NRM

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: R/V ARANDA
 Date: 20170418-20170425
 Series: 0173-0204



Time: 12:24

Ship: AR
Year: 2017

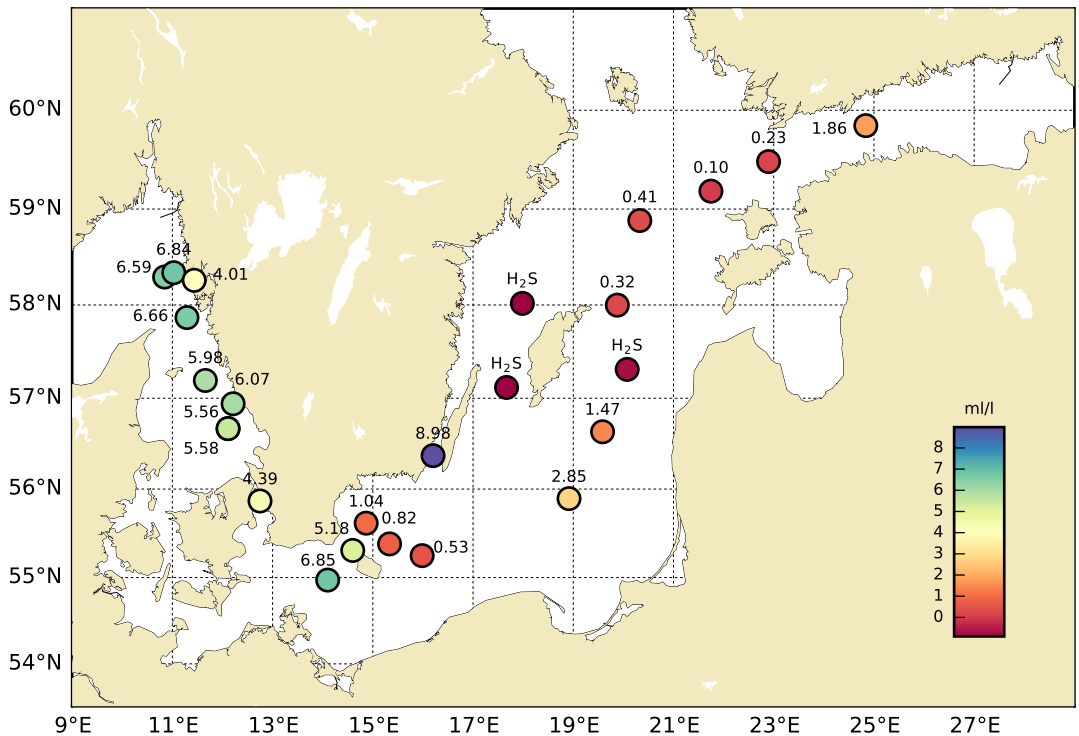
[illegible]

Bottom water oxygen concentration (ml/l)

Ship: Aranda

Date: 20170419-20170425

Series: 0173-0204



STATION BY32 NORRKÖPINGSDJ SURFACE WATER (0-10 m)

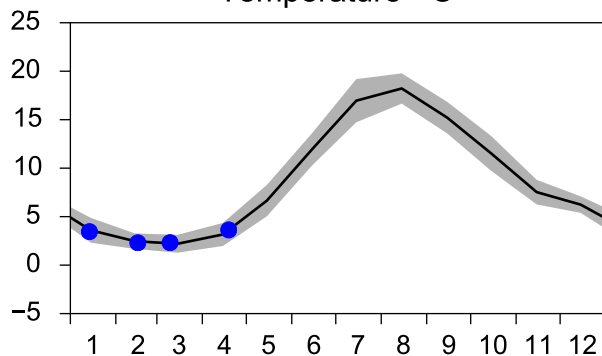
Annual Cycles

— Mean 2001-2015

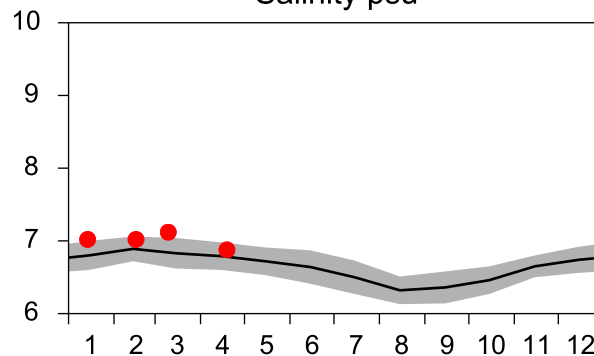
■ St.Dev.

● 2017

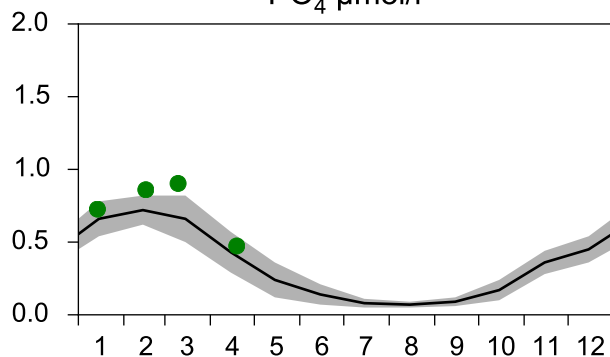
Temperature °C



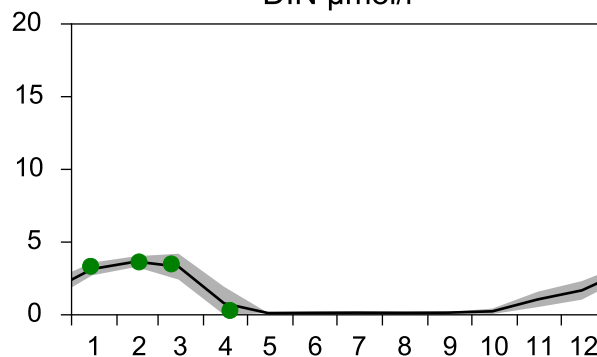
Salinity psu



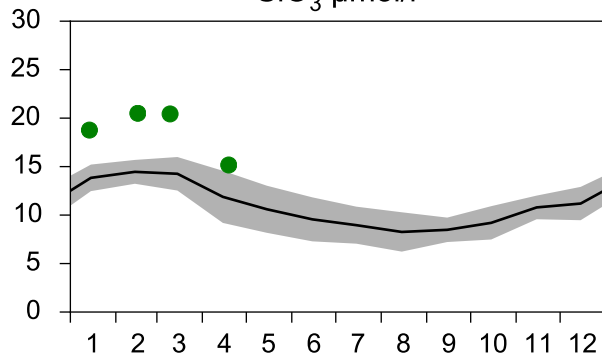
PO₄ µmol/l



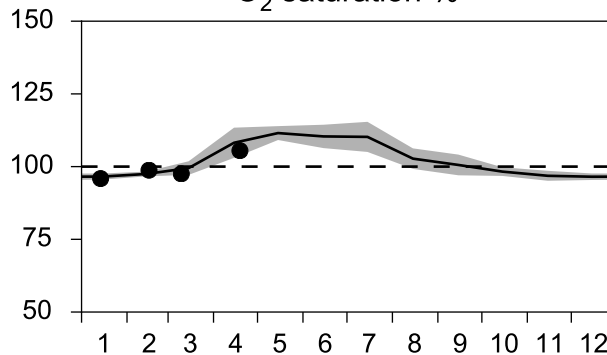
DIN µmol/l



SiO₃ µmol/l

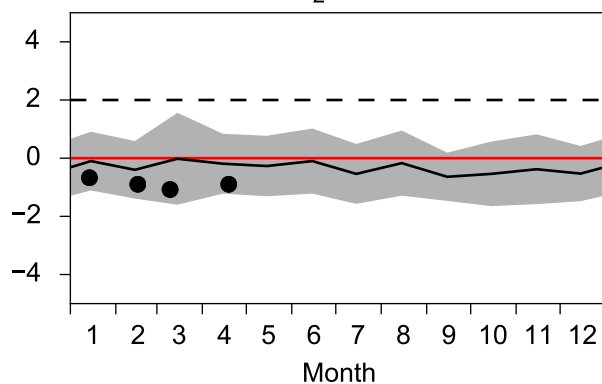


O₂ saturation %

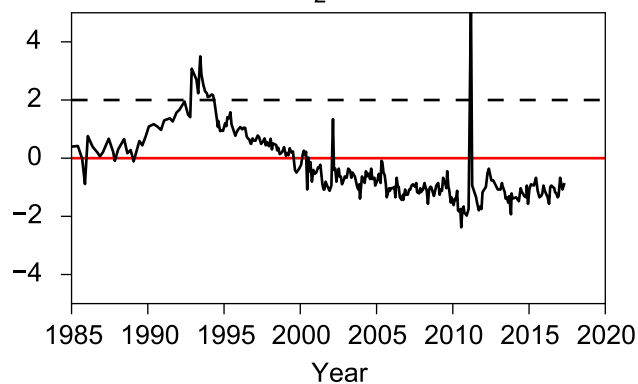


OXYGEN IN BOTTOM WATER (depth >= 175 m)

O₂ ml/l

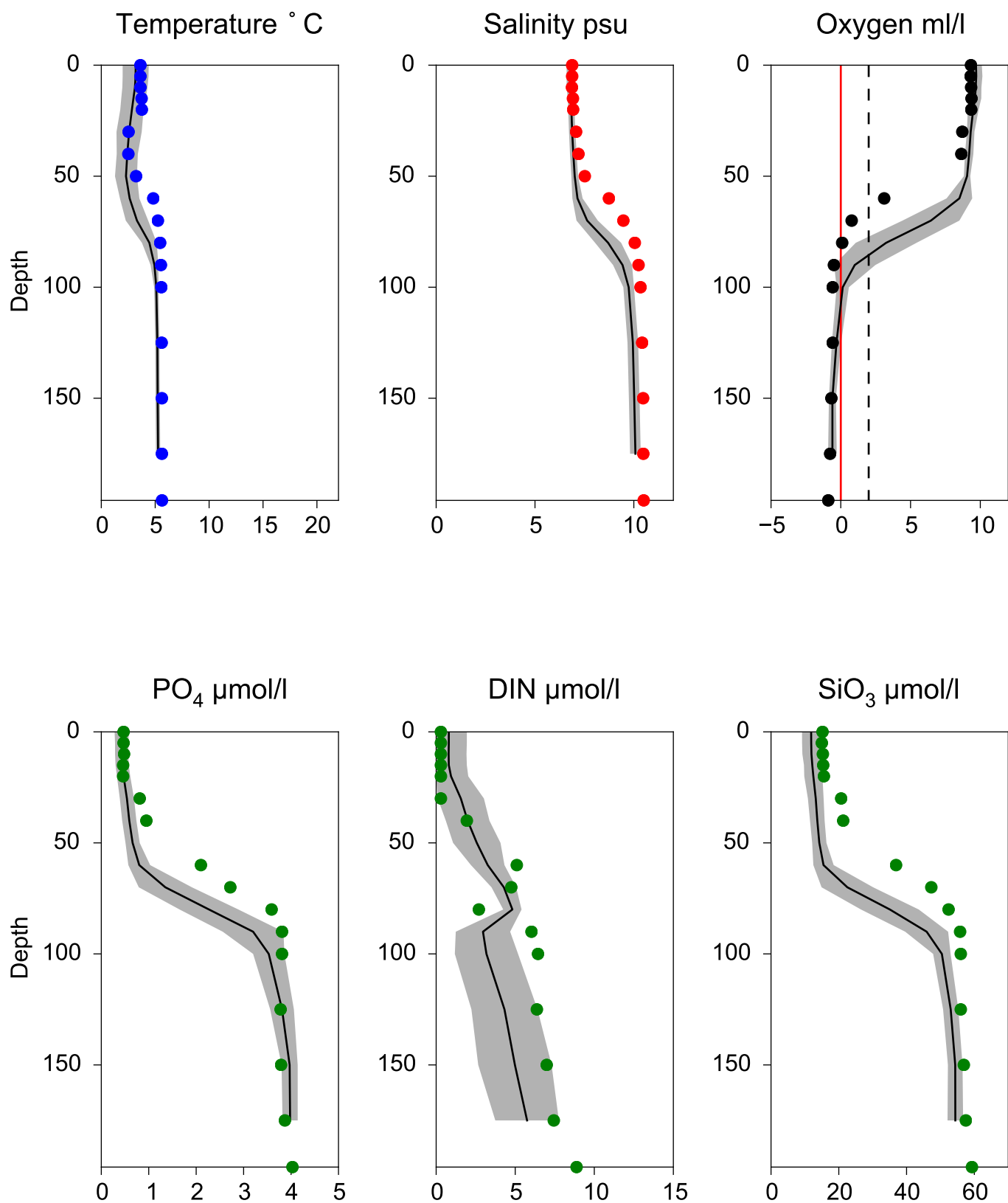


O₂ ml/l



Vertical profiles BY32 NORRKÖPINGSDJ April

— Mean 2001-2015 St.Dev. • 2017-04-19



STATION BY38 KARLSÖDJ SURFACE WATER (0-10 m)

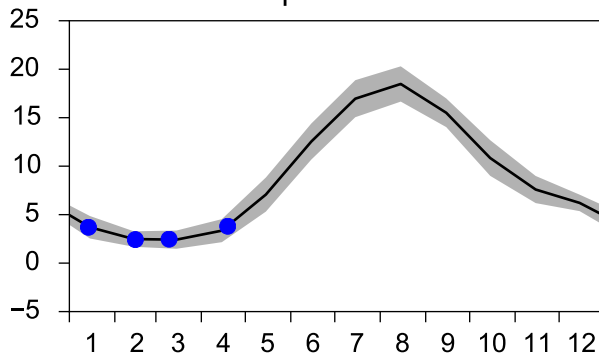
Annual Cycles

— Mean 2001-2015

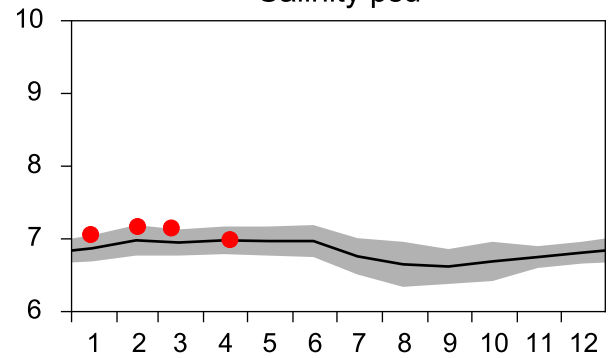
■ St.Dev.

● 2017

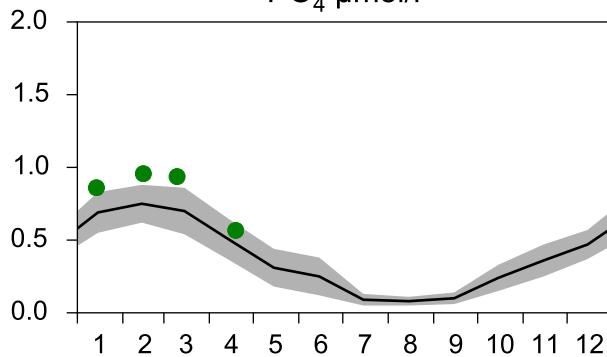
Temperature °C



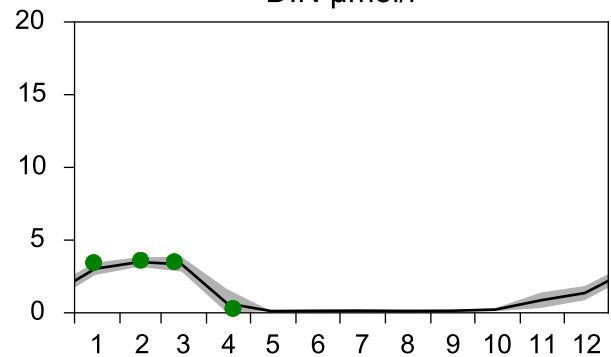
Salinity psu



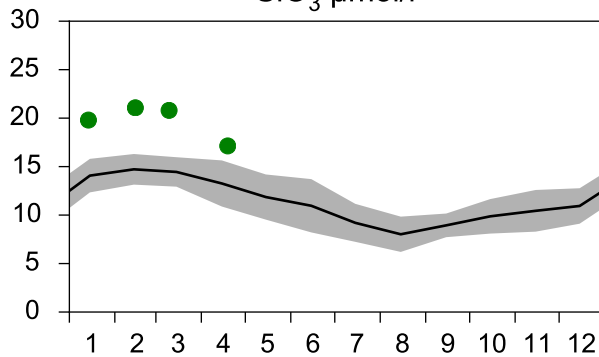
PO₄ µmol/l



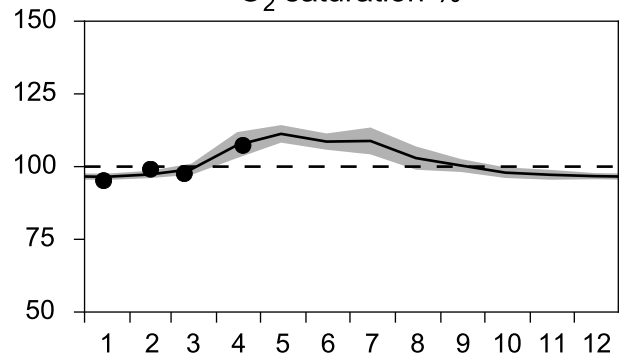
DIN µmol/l



SiO₃ µmol/l

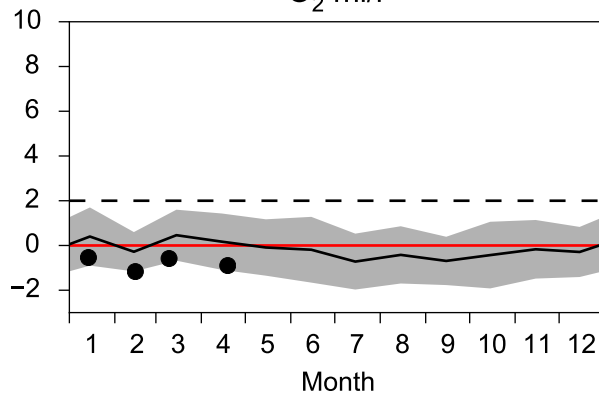


O₂ saturation %

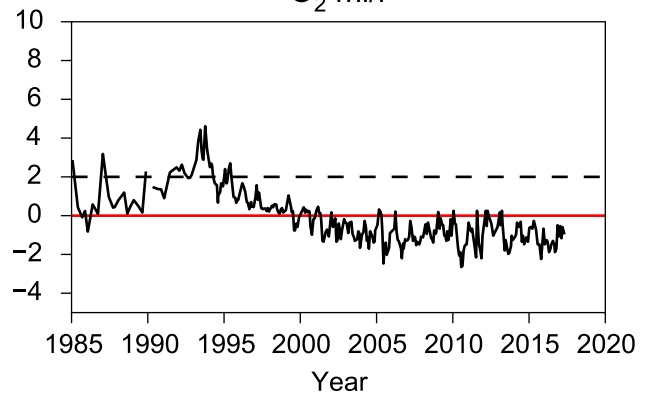


OXYGEN IN BOTTOM WATER (depth >= 100 m)

O₂ ml/l

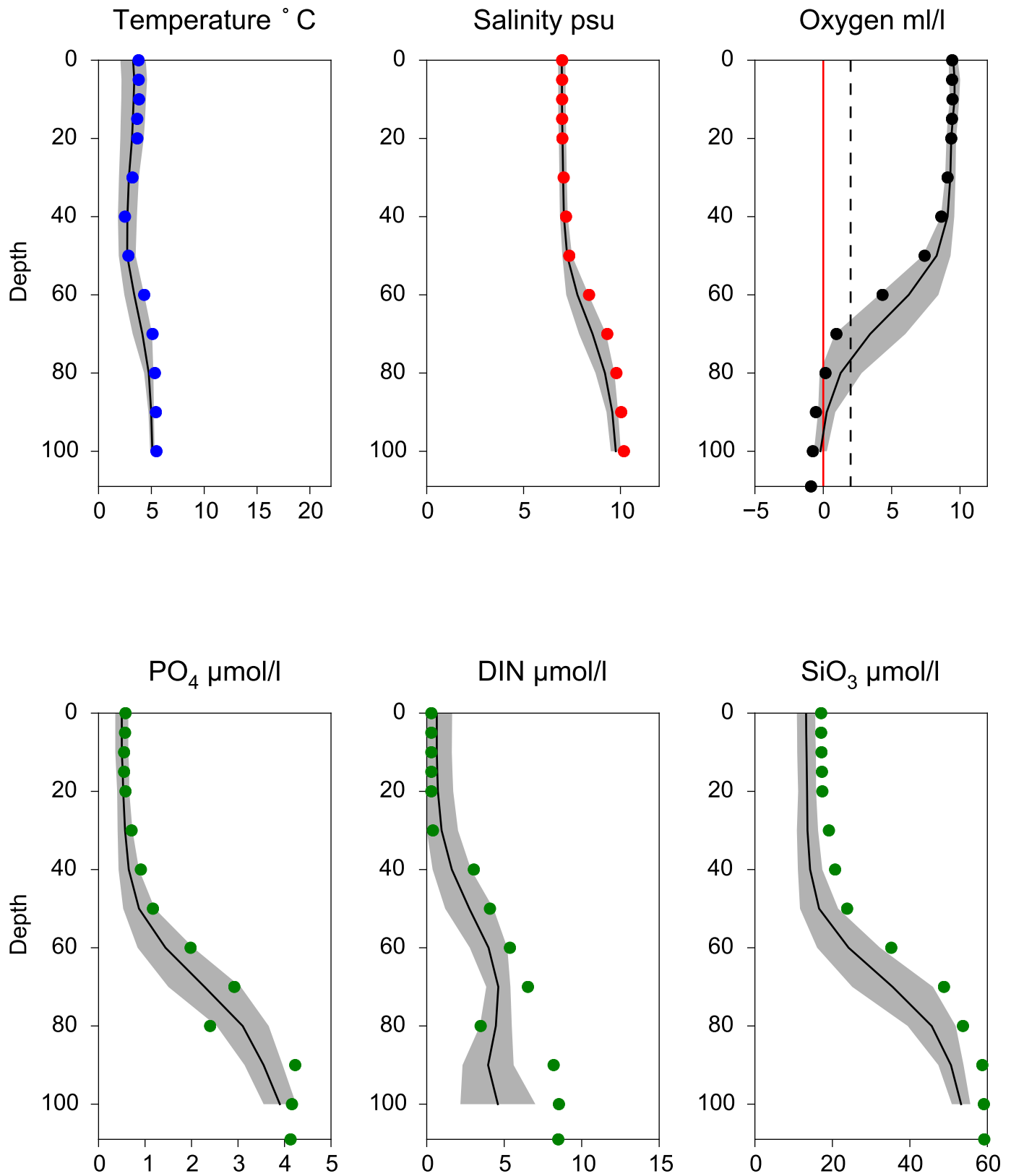


O₂ ml/l



Vertical profiles BY38 KARLSÖDJ April

— Mean 2001-2015 ■ St.Dev. ● 2017-04-19



STATION REF M1V1 SURFACE WATER (0-10 m)

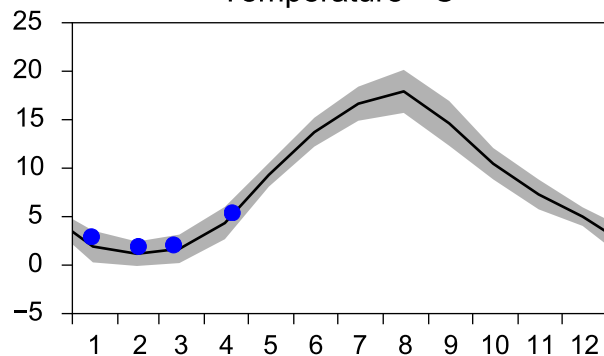
Annual Cycles

— Mean 2001-2015

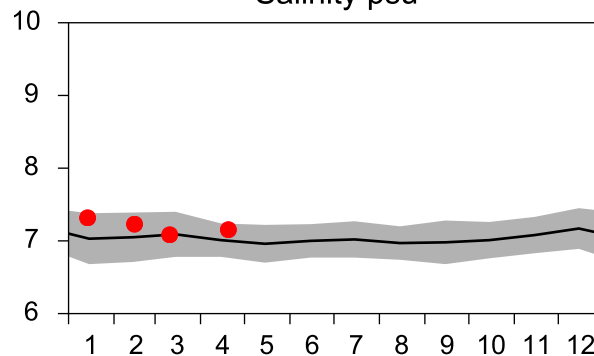
■ St.Dev.

● 2017

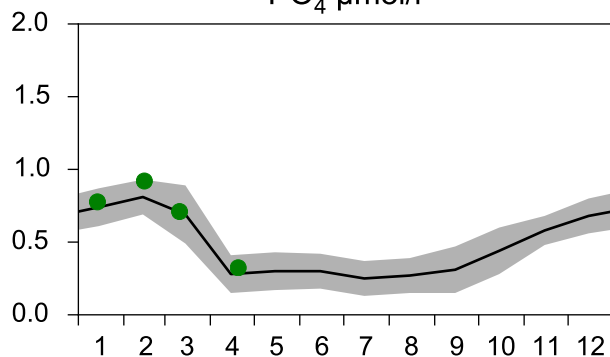
Temperature °C



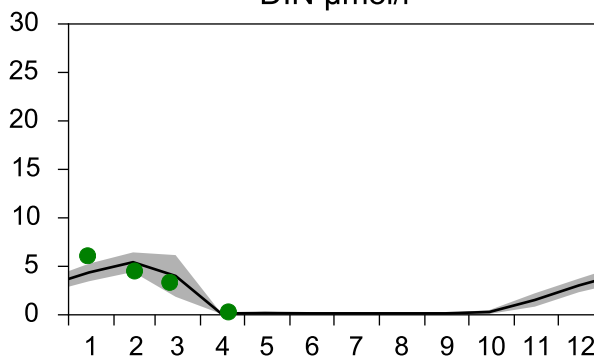
Salinity psu



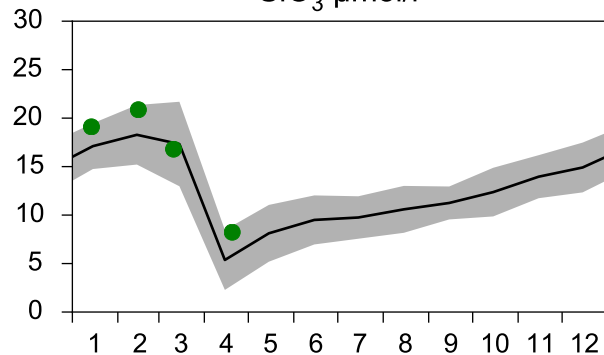
PO₄ µmol/l



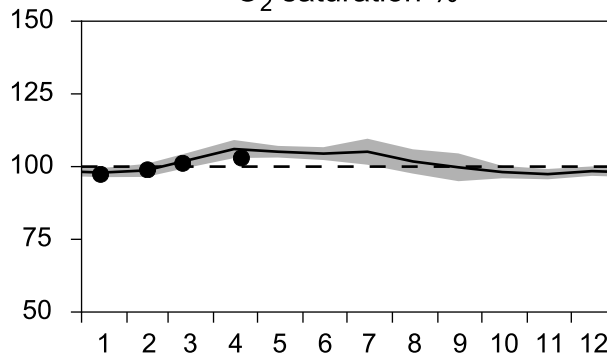
DIN µmol/l



SiO₃ µmol/l

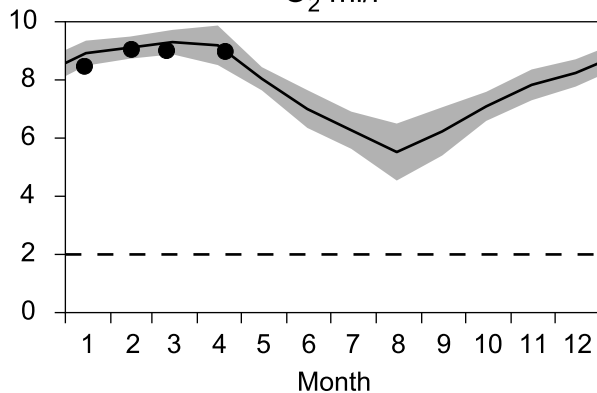


O₂ saturation %

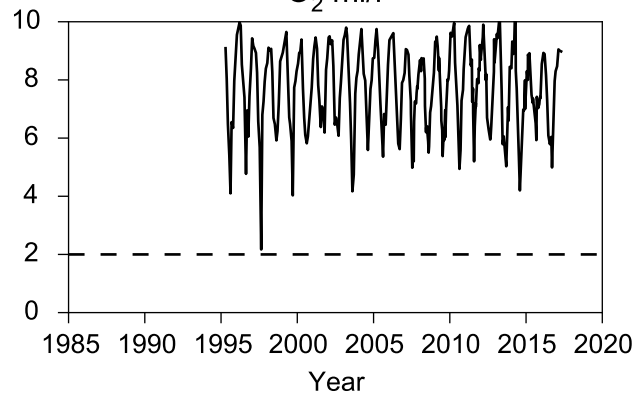


OXYGEN IN BOTTOM WATER (depth >= 17 m)

O₂ ml/l

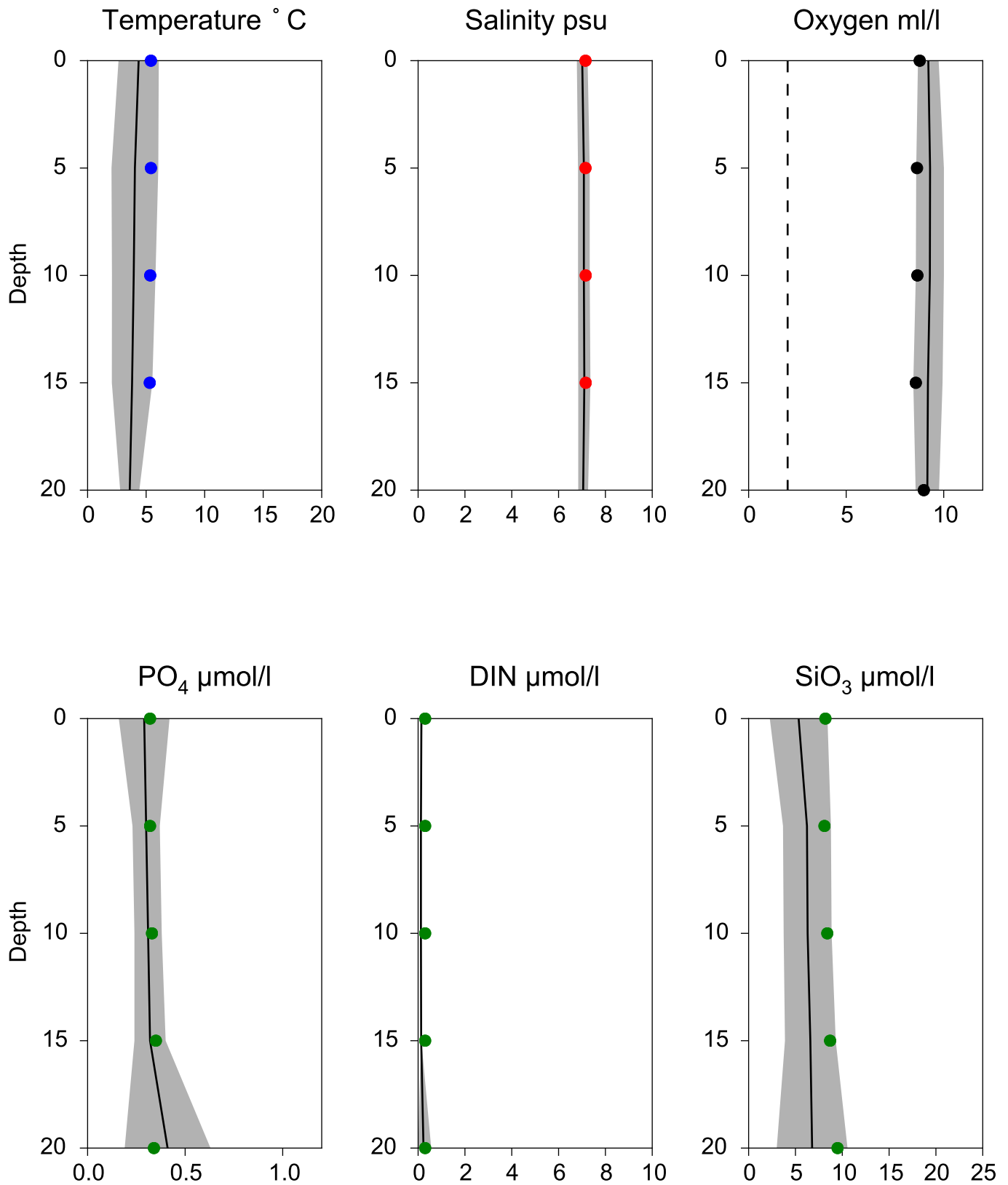


O₂ ml/l



Vertical profiles REF M1V1 April

— Mean 2001-2015 ■ St.Dev. ● 2017-04-20



STATION HANÖBUKTEN SURFACE WATER (0-10 m)

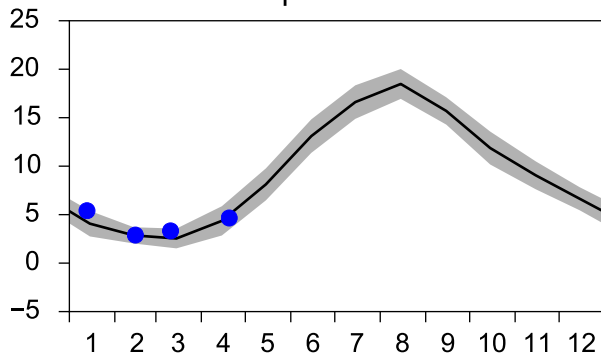
Annual Cycles

— Mean 2001-2015

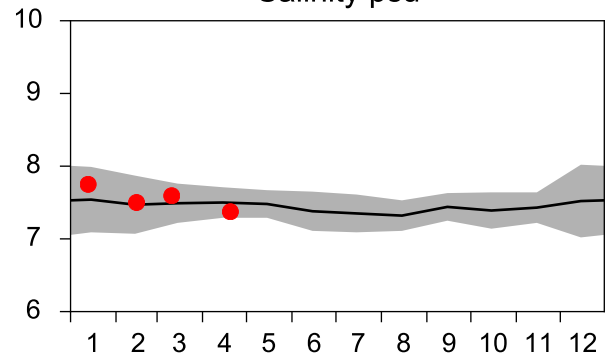
■ St.Dev.

● 2017

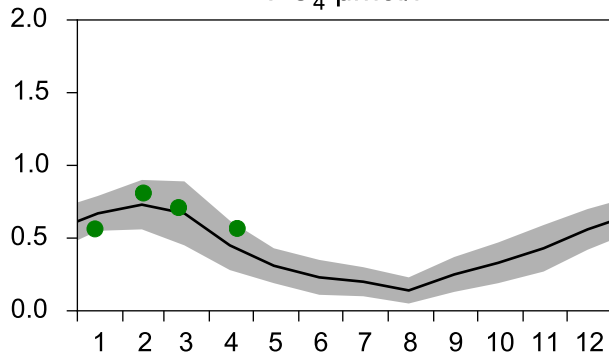
Temperature °C



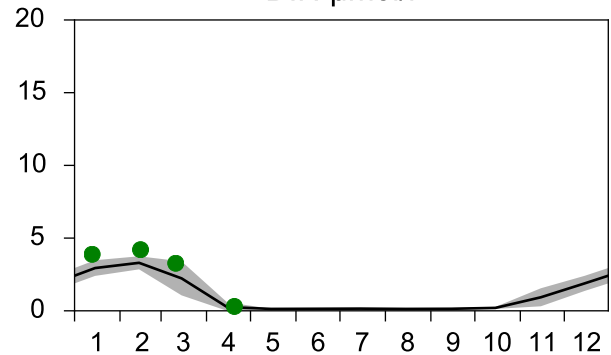
Salinity psu



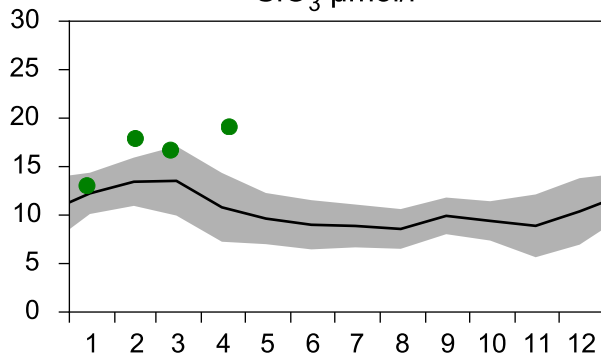
PO₄ µmol/l



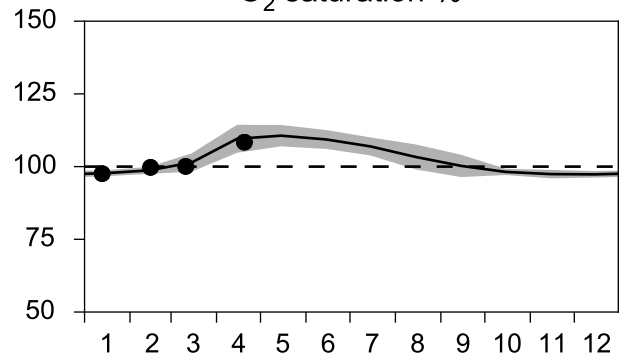
DIN µmol/l



SiO₃ µmol/l

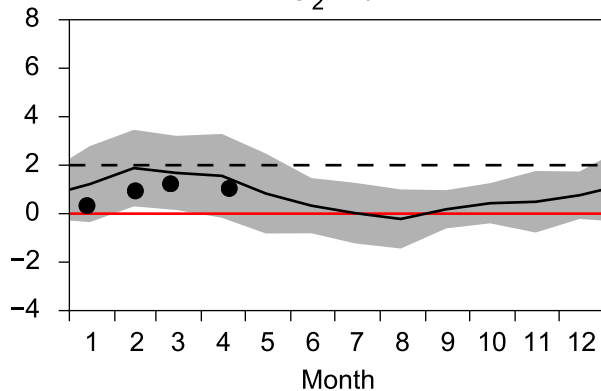


O₂ saturation %

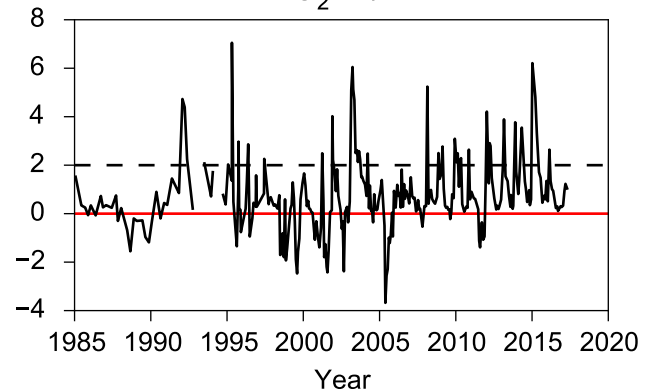


OXYGEN IN BOTTOM WATER (depth >= 70 m)

O₂ ml/l

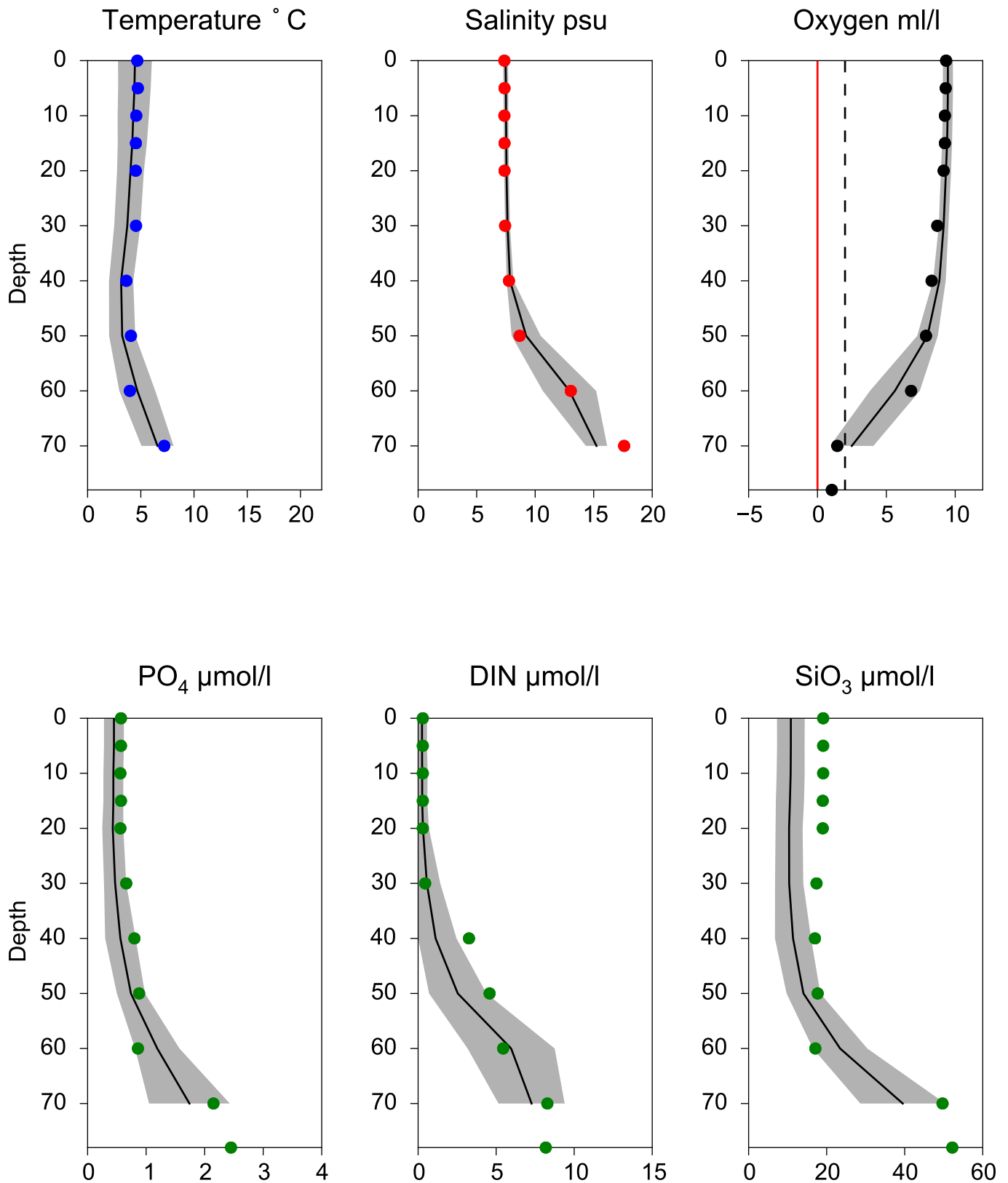


O₂ ml/l



Vertical profiles HANÖBUKTEN April

— Mean 2001-2015 St.Dev. • 2017-04-20



STATION W LANDSKRONA SURFACE WATER (0-10 m)

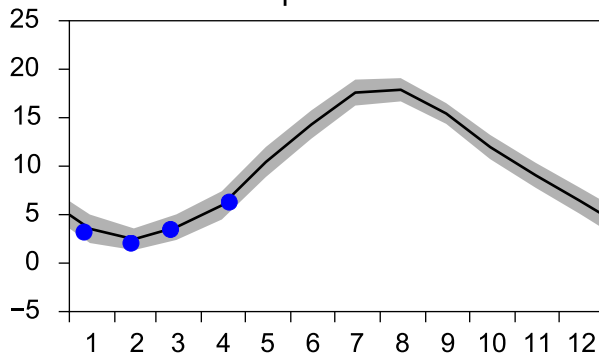
Annual Cycles

— Mean 2001-2015

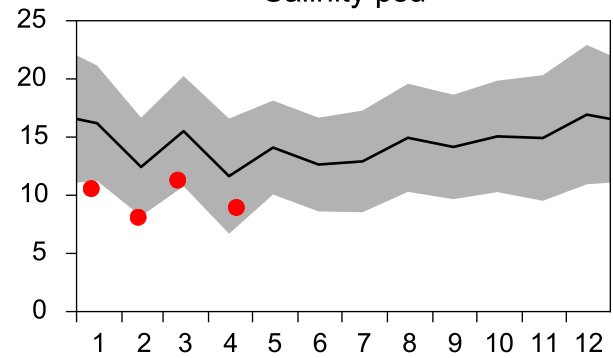
■ St.Dev.

● 2017

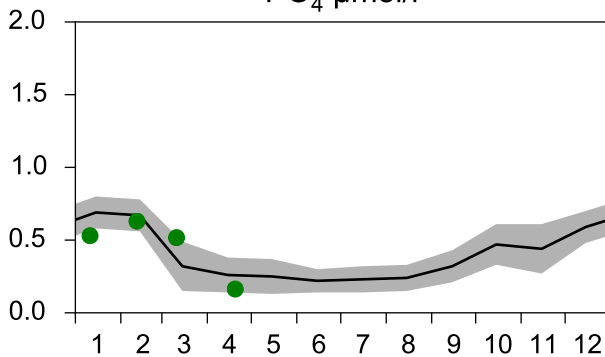
Temperature °C



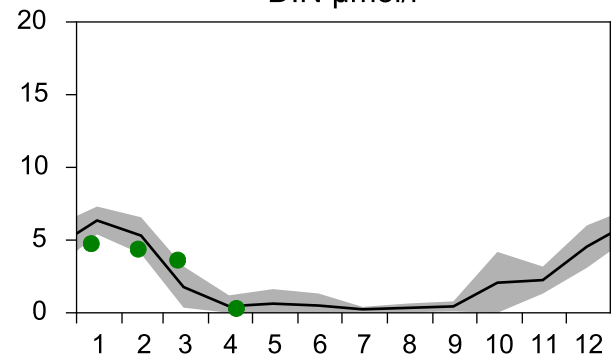
Salinity psu



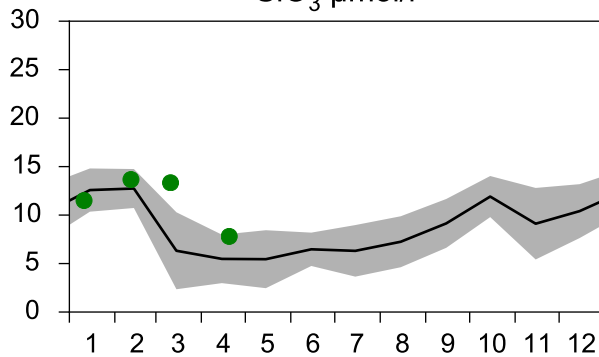
PO₄ µmol/l



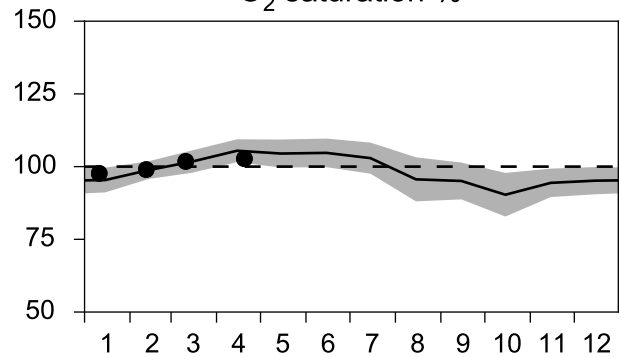
DIN µmol/l



SiO₃ µmol/l

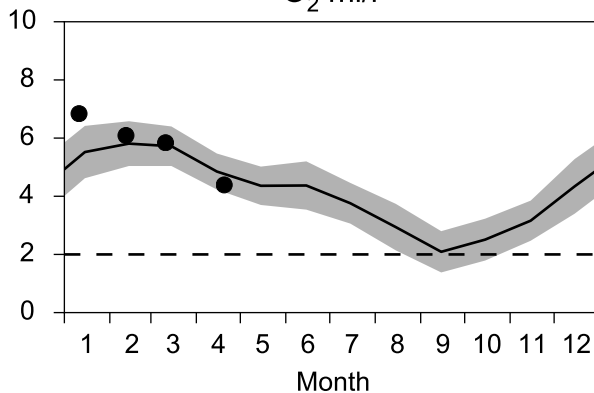


O₂ saturation %

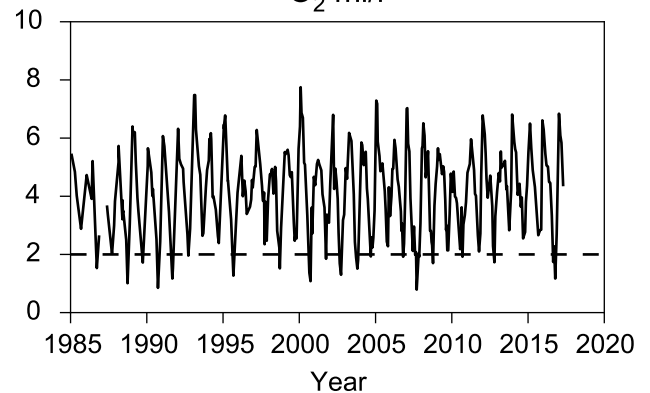


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

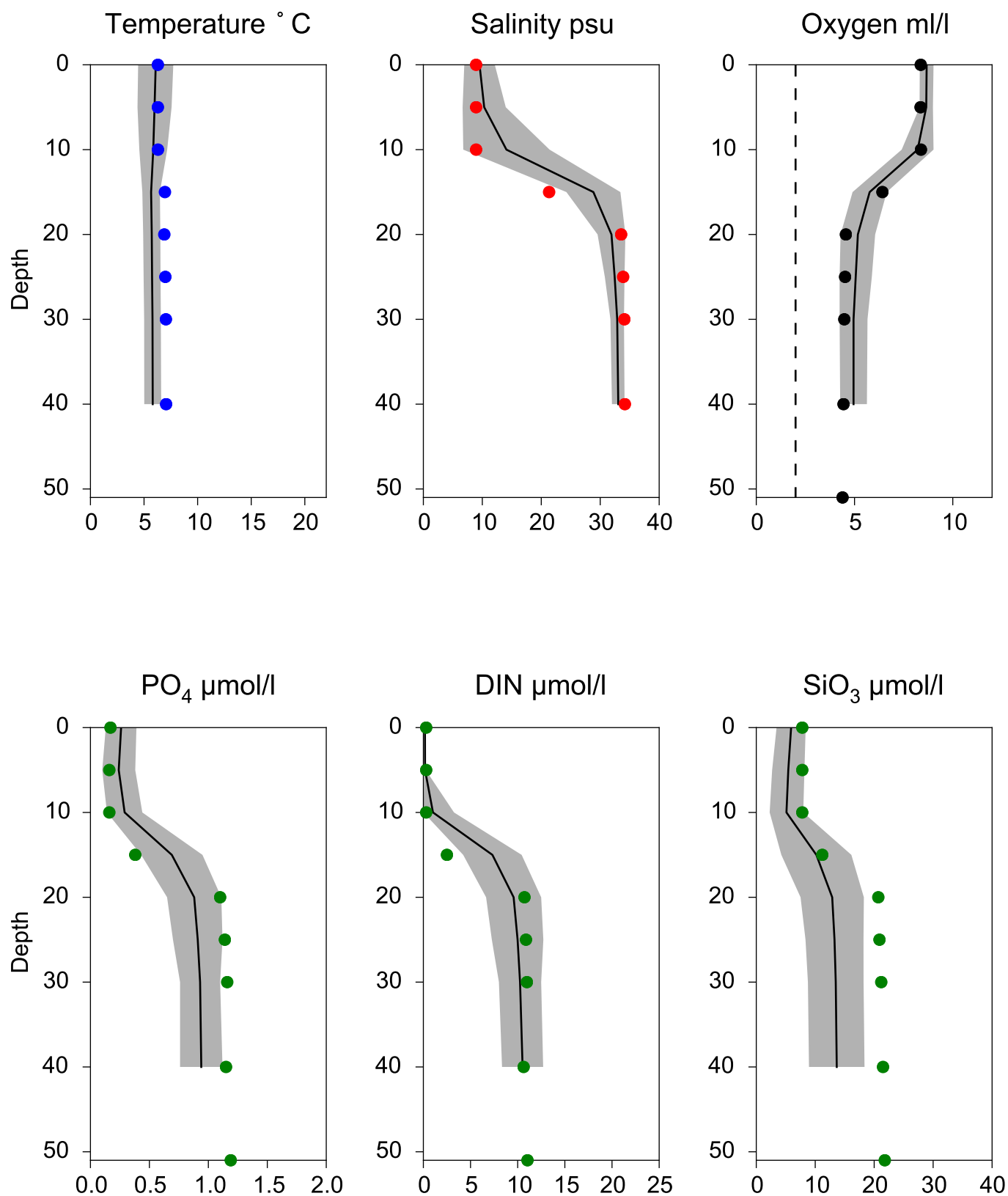


O₂ ml/l



Vertical profiles W LANDSKRONA April

— Mean 2001-2015 St.Dev. • 2017-04-20



STATION ANHOLT E SURFACE WATER (0-10 m)

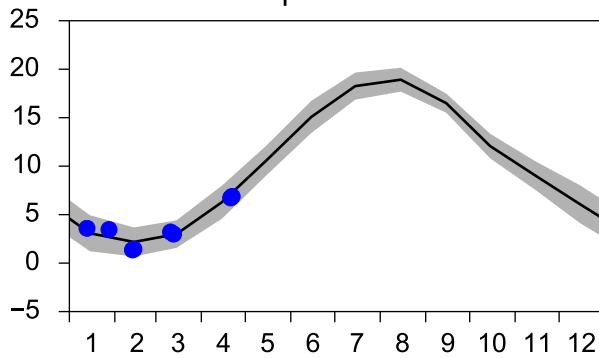
Annual Cycles

— Mean 2001-2015

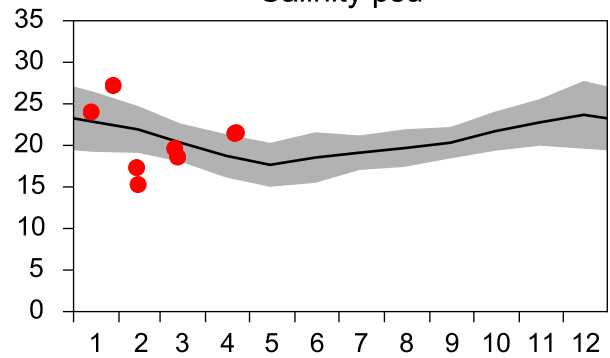
■ St.Dev.

● 2017

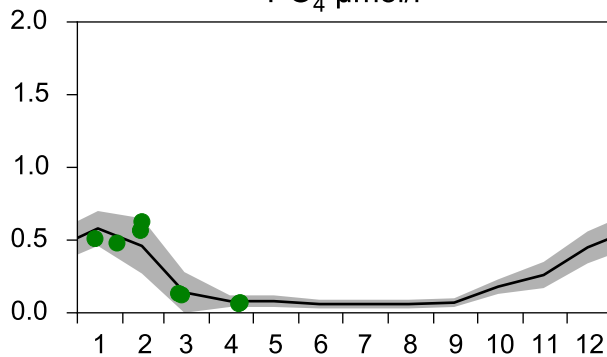
Temperature °C



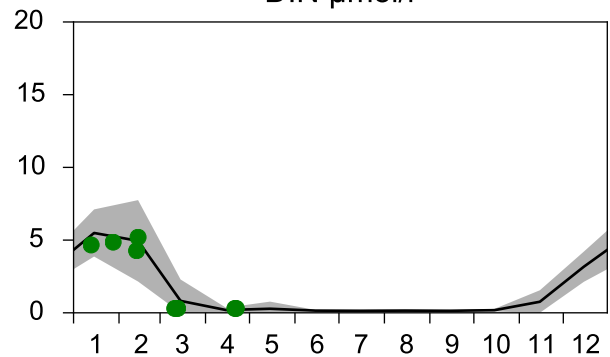
Salinity psu



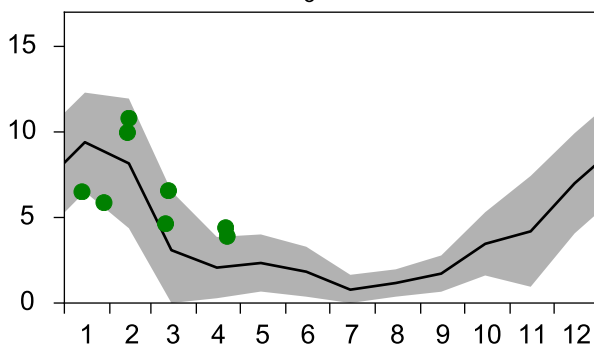
PO₄ µmol/l



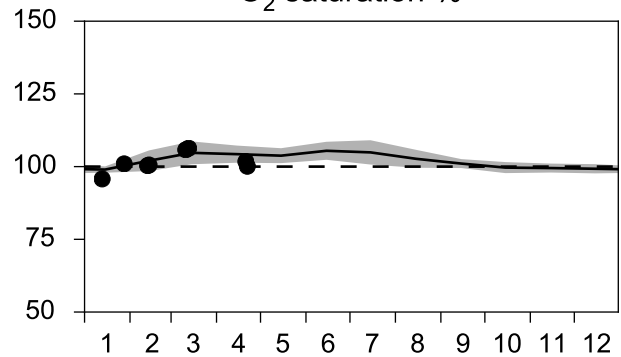
DIN µmol/l



SiO₃ µmol/l

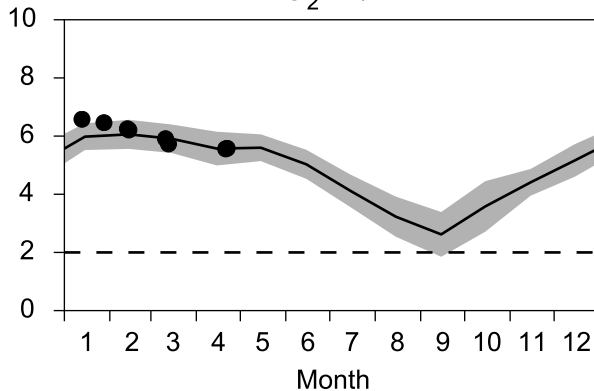


O₂ saturation %

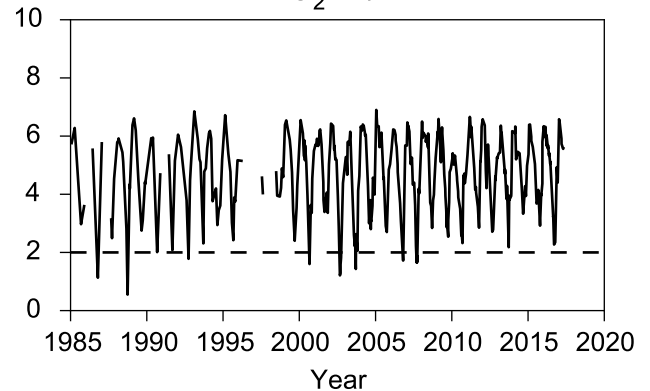


OXYGEN IN BOTTOM WATER (depth >= 52 m)

O₂ ml/l

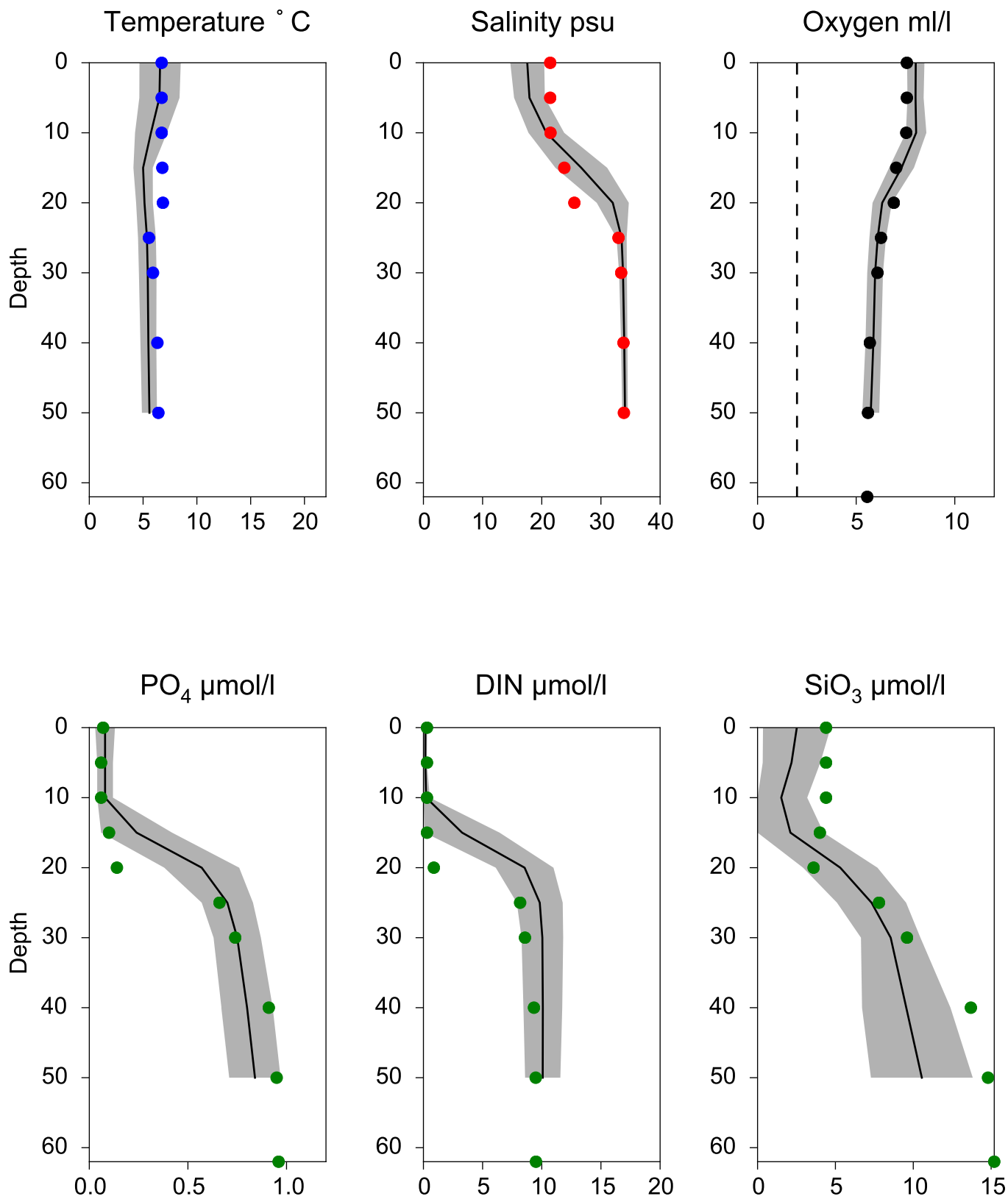


O₂ ml/l



Vertical profiles ANHOLT E April

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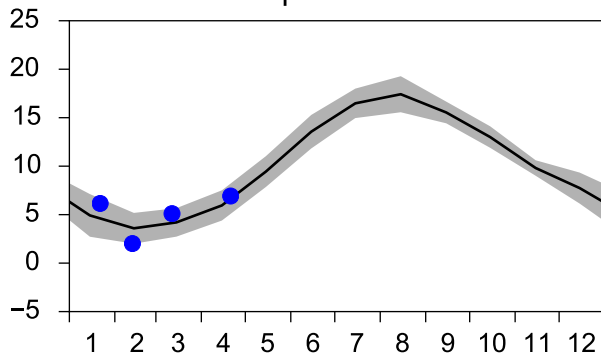


STATION Å17 SURFACE WATER (0-10 m)

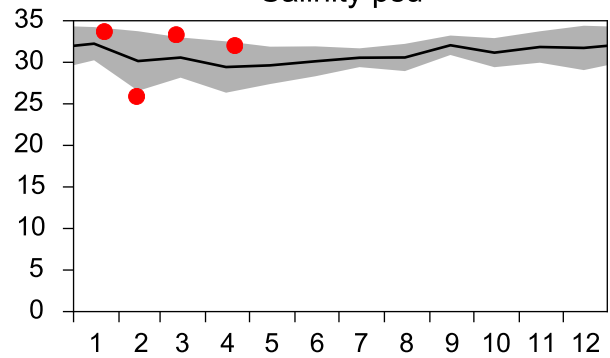
Annual Cycles

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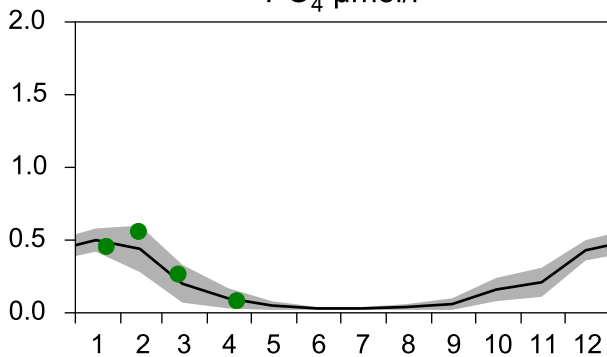
Temperature °C



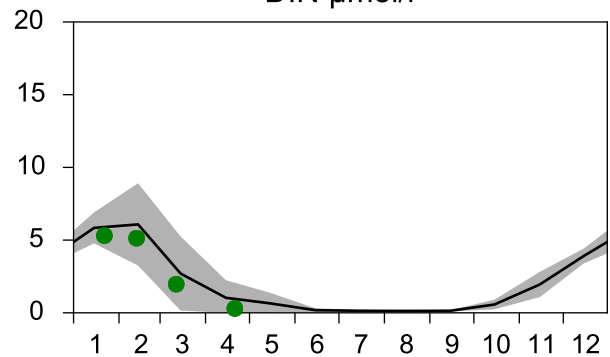
Salinity psu



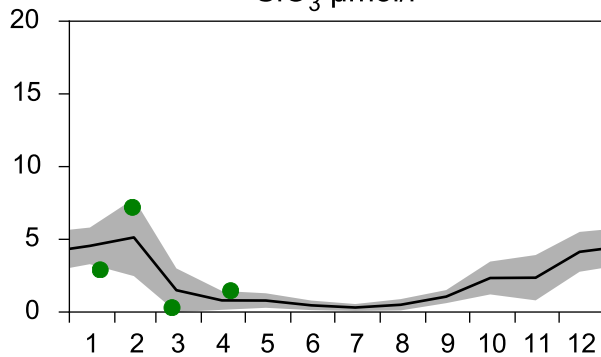
PO₄ µmol/l



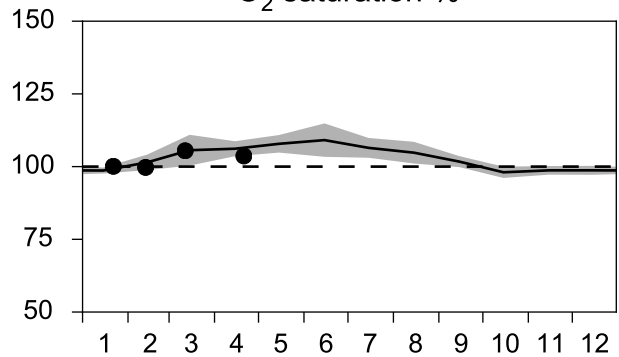
DIN µmol/l



SiO₃ µmol/l

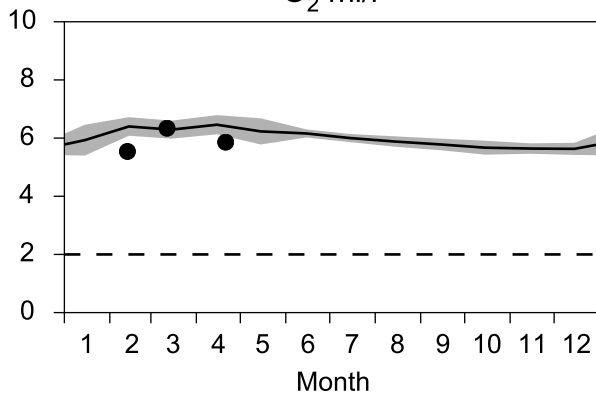


O₂ saturation %

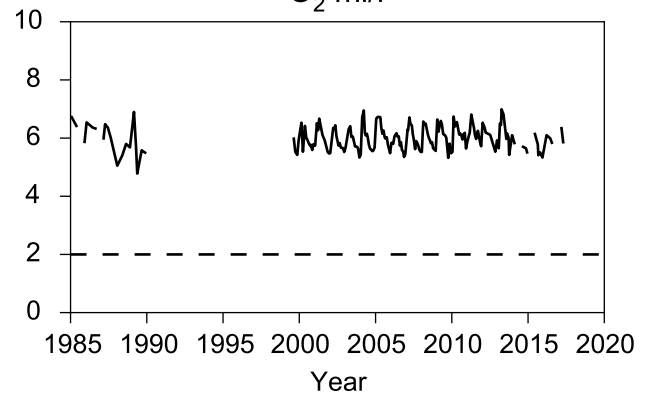


OXYGEN IN BOTTOM WATER (depth >= 300 m)

O₂ ml/l

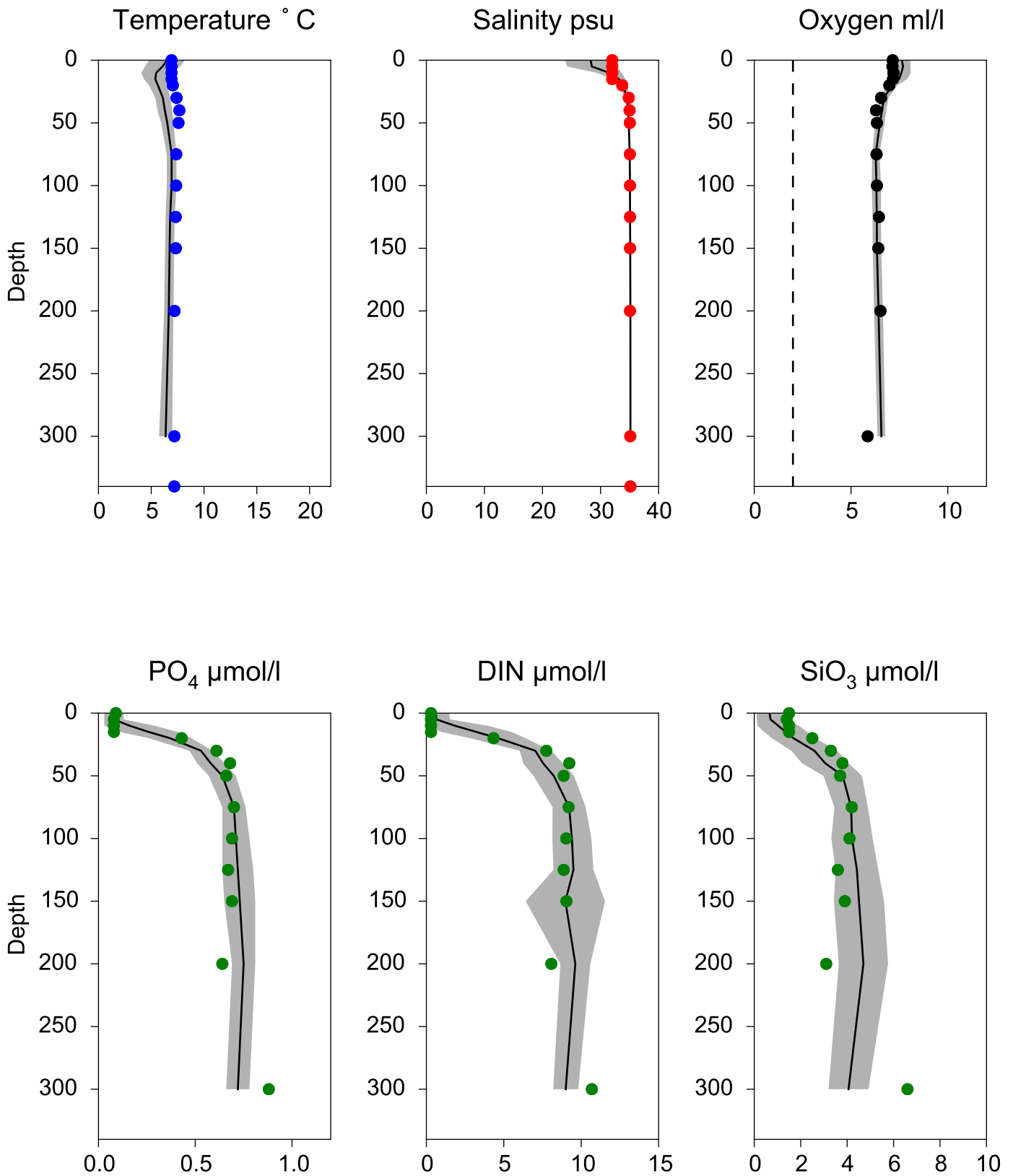


O₂ ml/l



Vertical profiles Å17 April

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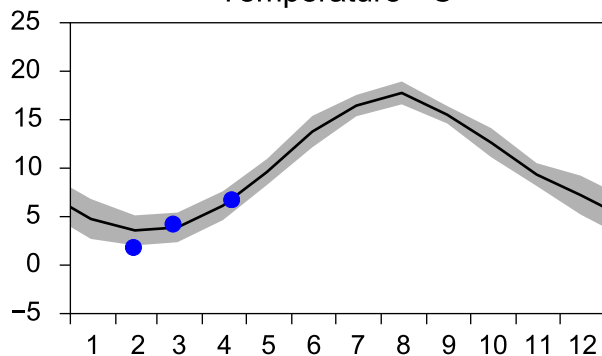


STATION Å15 SURFACE WATER (0-10 m)

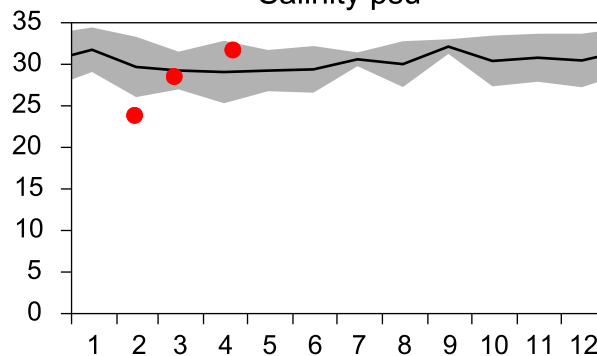
Annual Cycles

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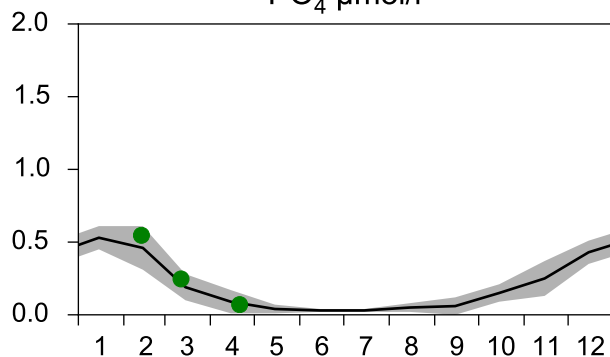
Temperature °C



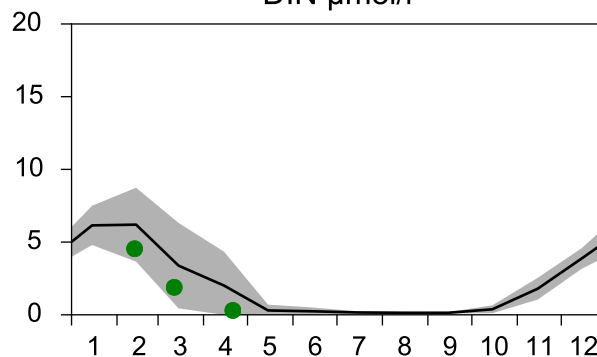
Salinity psu



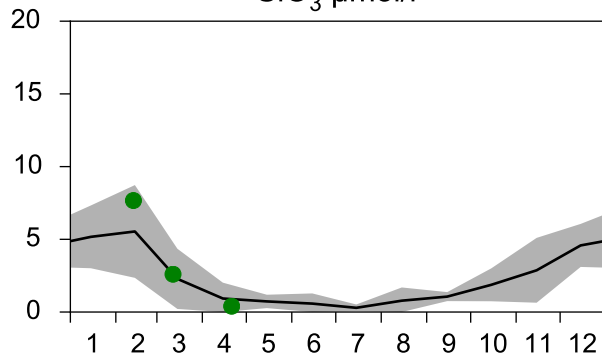
PO₄ µmol/l



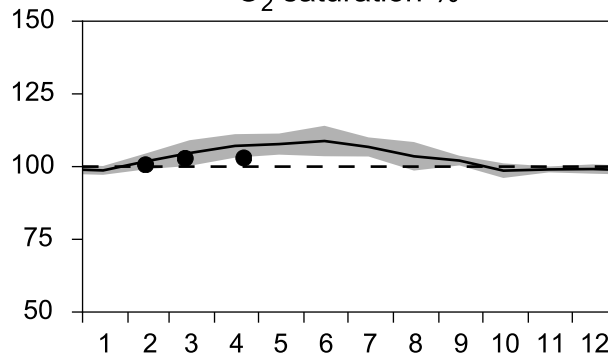
DIN µmol/l



SiO₃ µmol/l

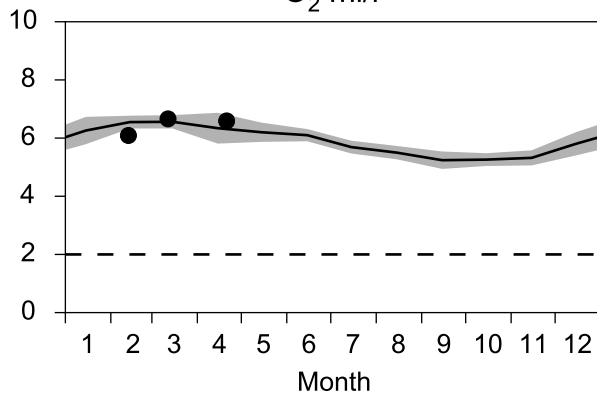


O₂ saturation %

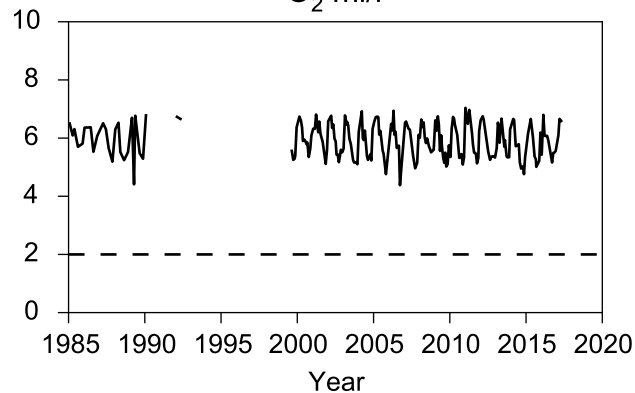


OXYGEN IN BOTTOM WATER (depth >= 125 m)

O₂ ml/l

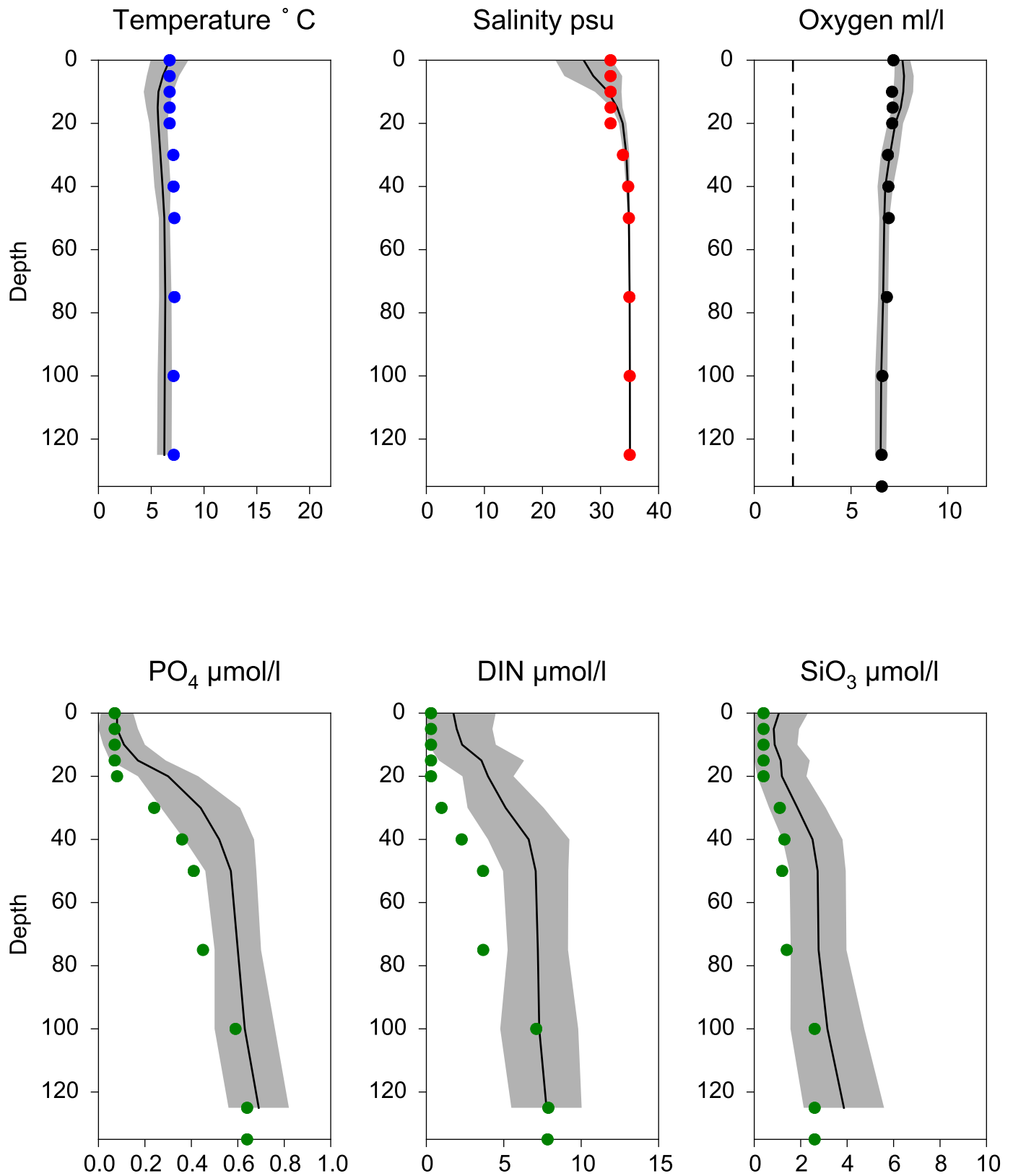


O₂ ml/l



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STATION Å13 SURFACE WATER (0-10 m)

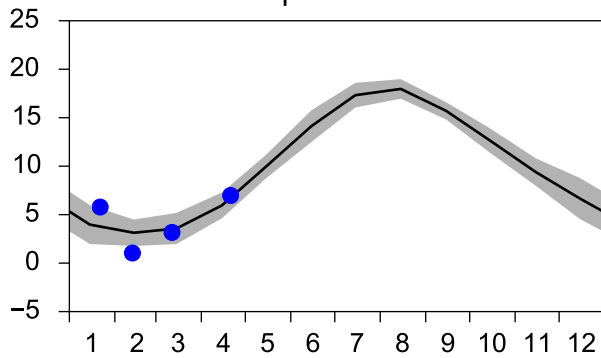
Annual Cycles

— Mean 2001-2015

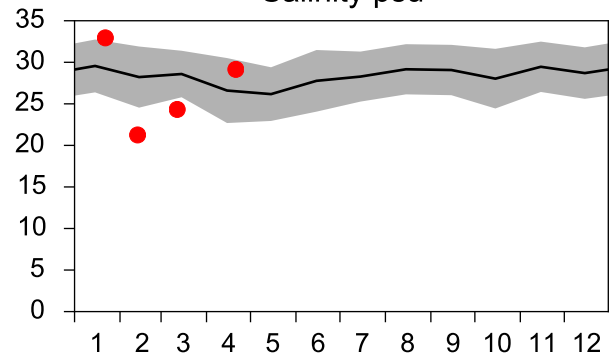
■ St.Dev.

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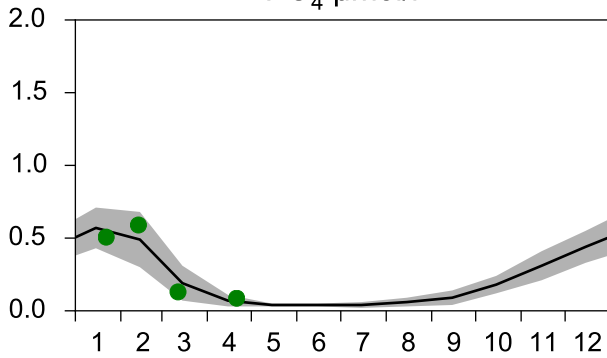
Temperature °C



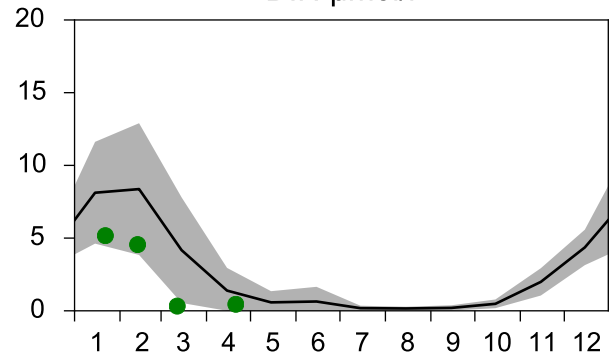
Salinity psu



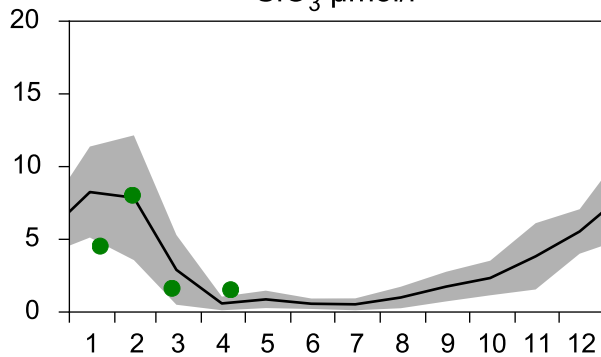
PO₄ µmol/l



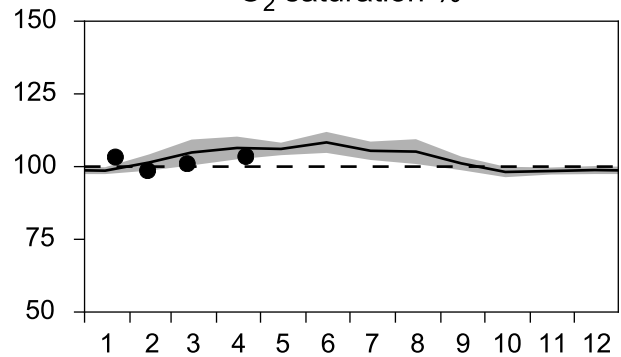
DIN µmol/l



SiO₃ µmol/l

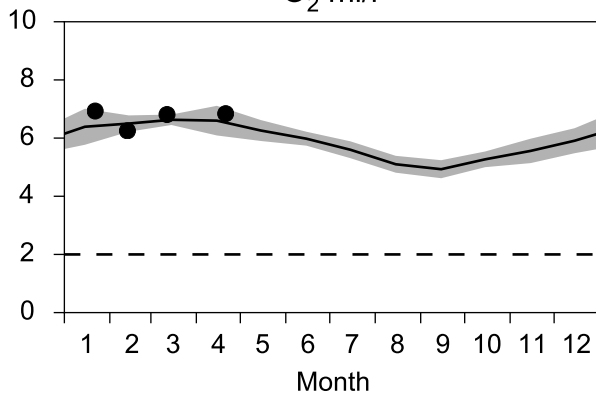


O₂ saturation %

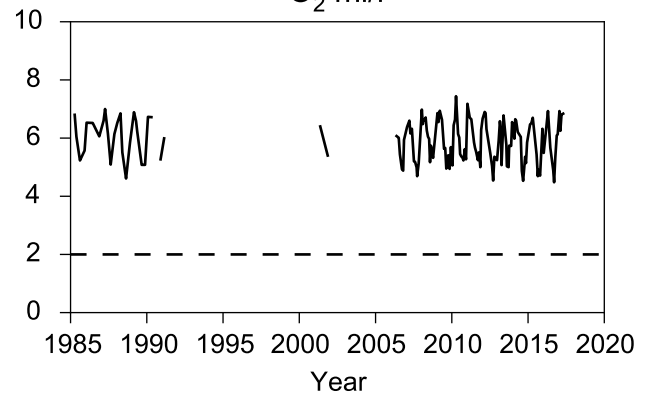


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

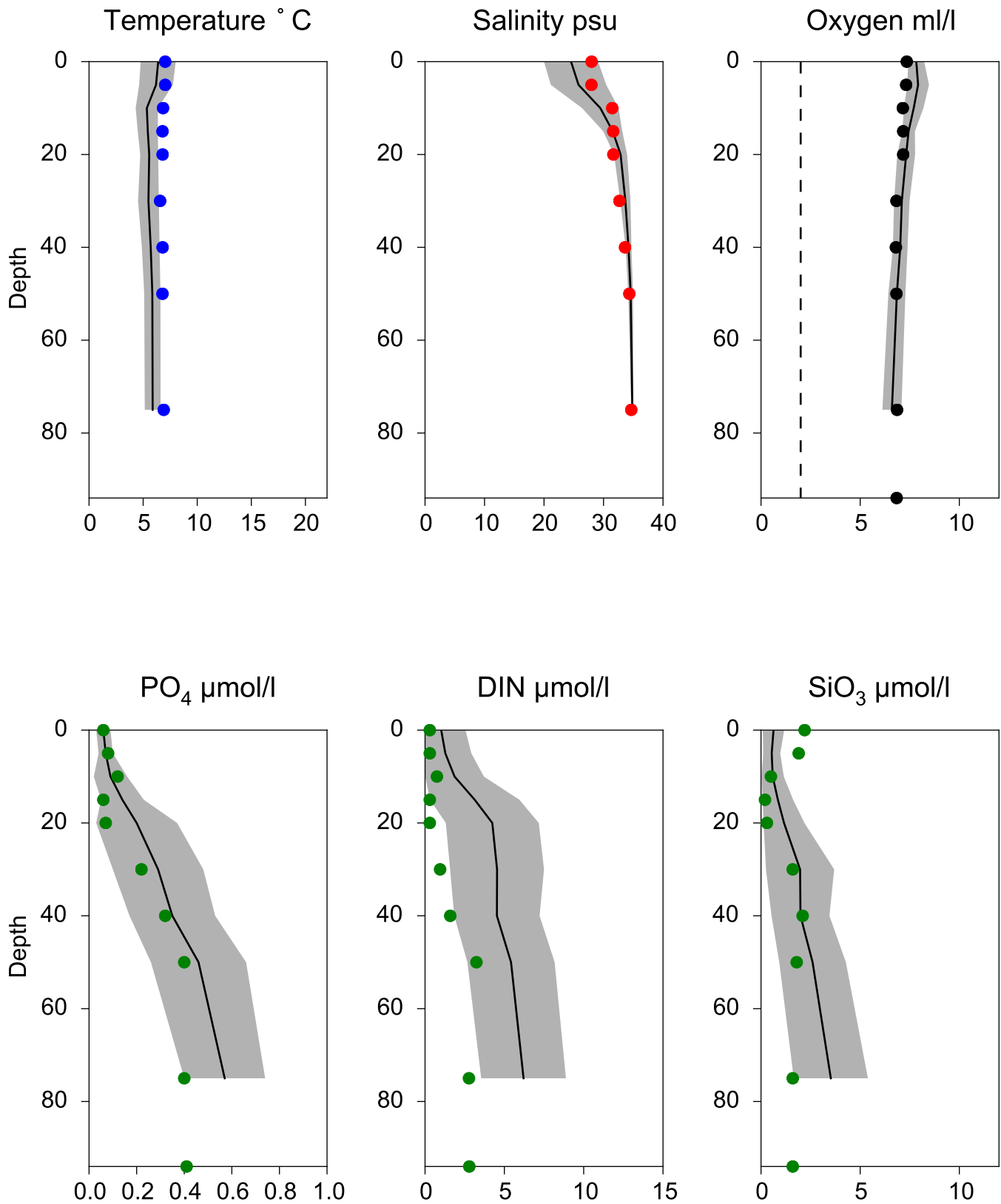


O₂ ml/l



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STATION SLÄGGÖ SURFACE WATER (0-10 m)

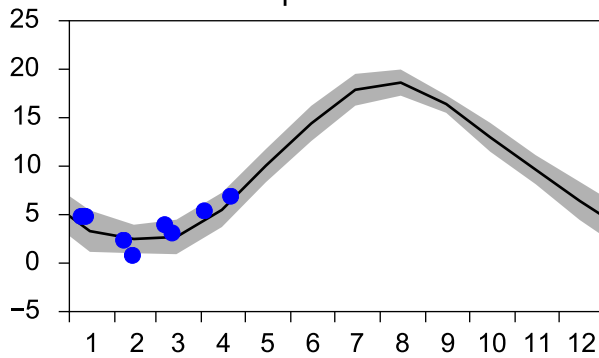
Annual Cycles

— Mean 2001-2015

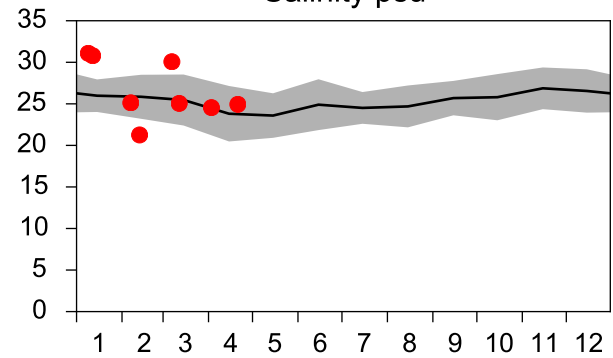
■ St.Dev.

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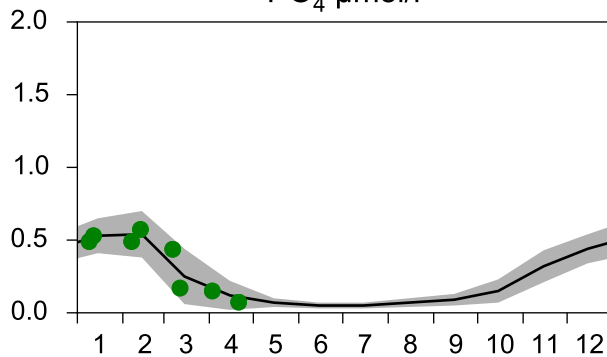
Temperature °C



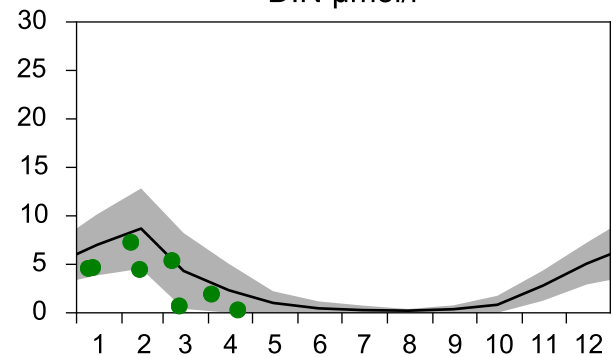
Salinity psu



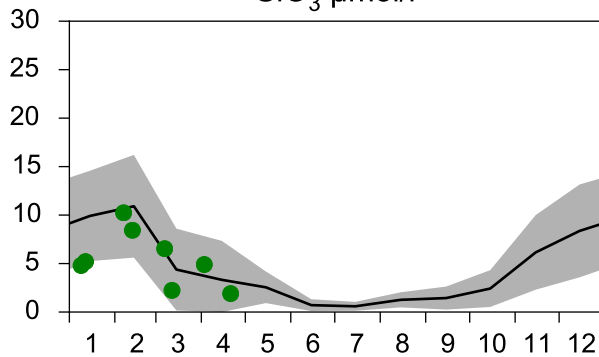
PO₄ µmol/l



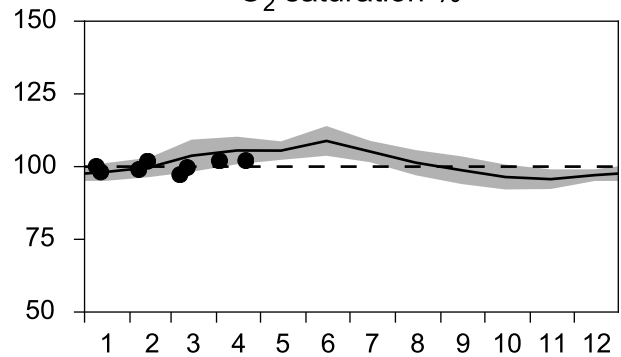
DIN µmol/l



SiO₃ µmol/l

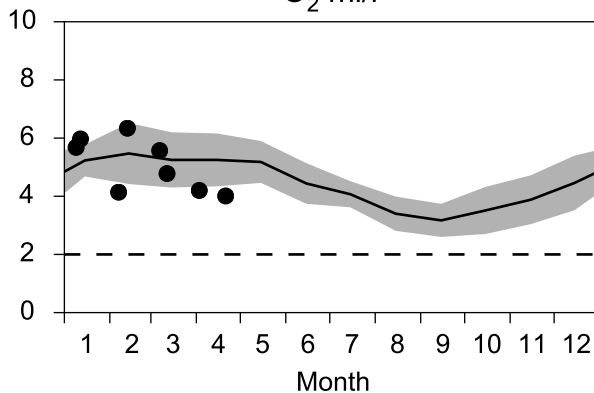


O₂ saturation %

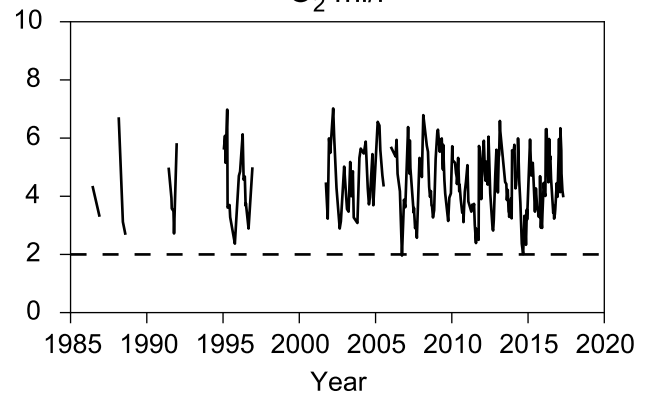


OXYGEN IN BOTTOM WATER (depth >= 64 m)

O₂ ml/l



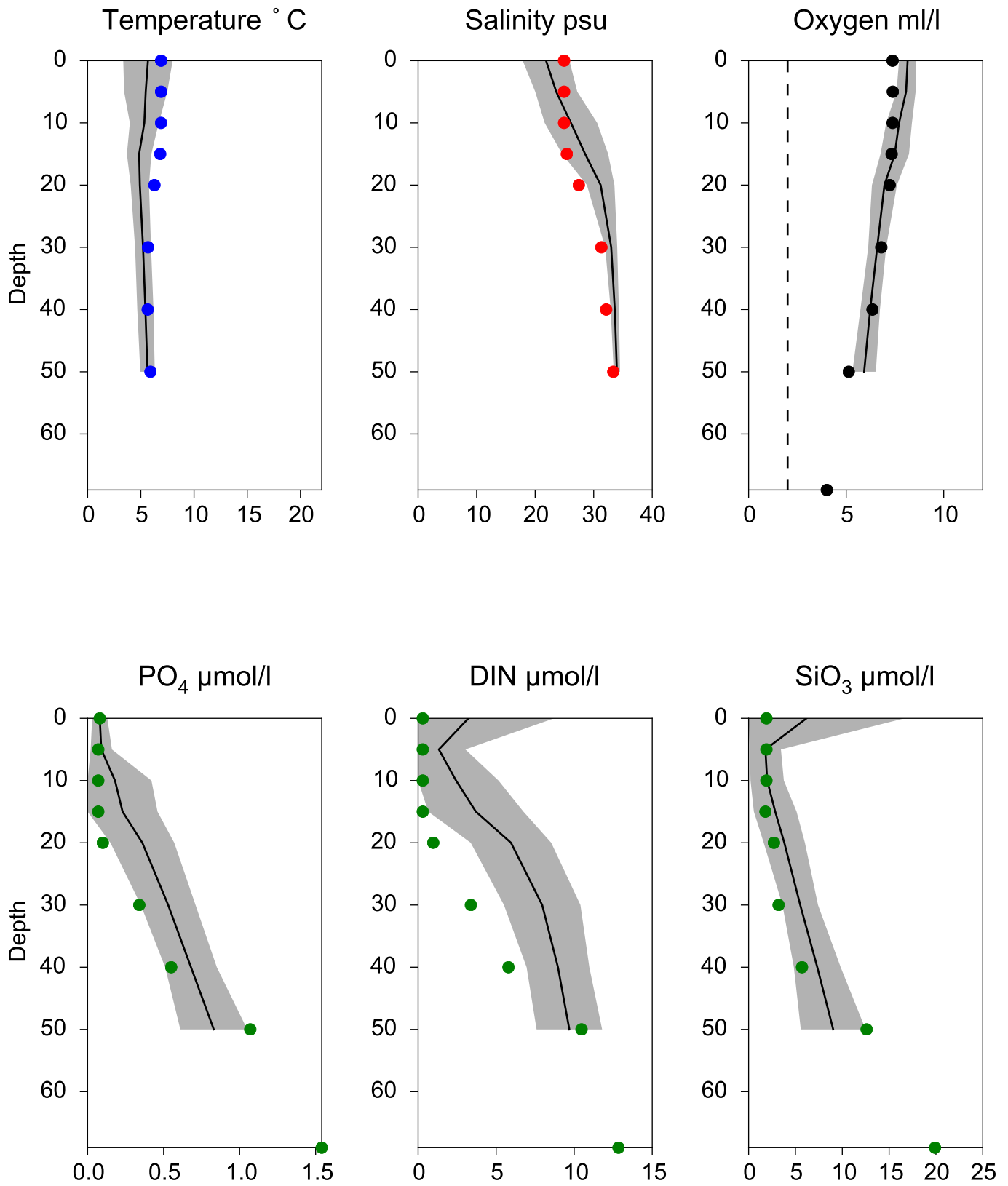
O₂ ml/l



Vertical profiles SLÄGGÖ

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STATION P2 SURFACE WATER (0-10 m)

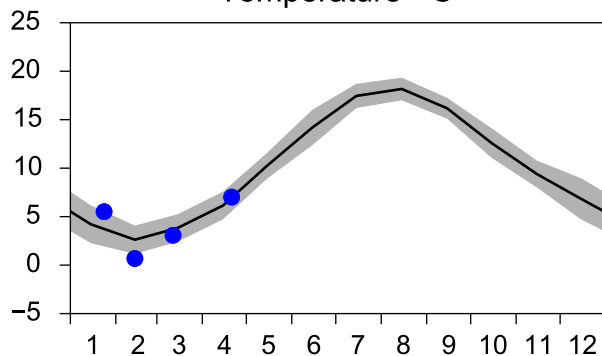
Annual Cycles

— Mean 2001-2015

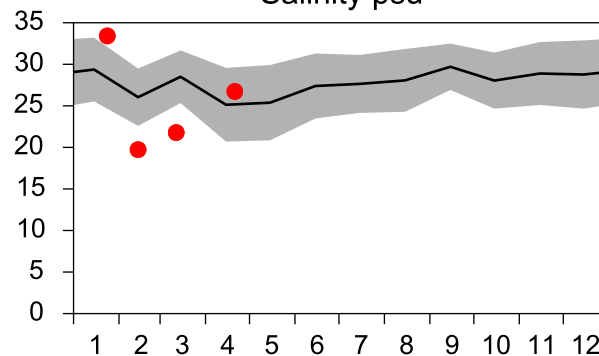
■ St.Dev.

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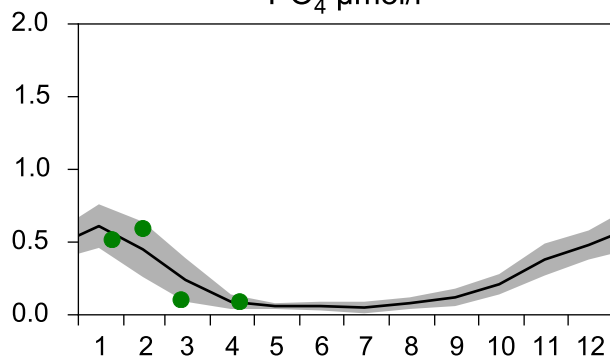
Temperature °C



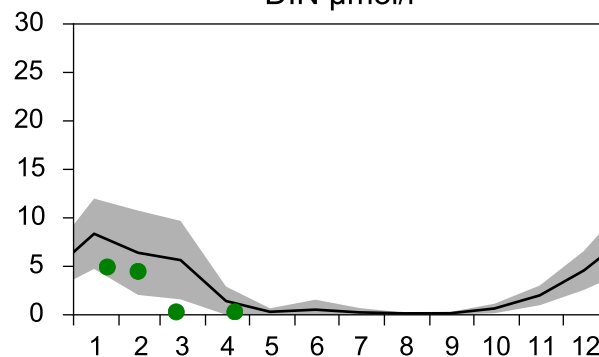
Salinity psu



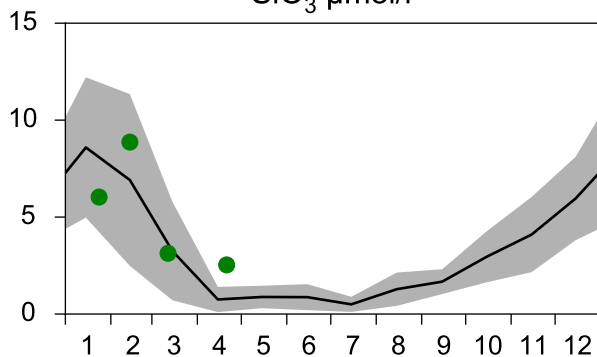
PO₄ µmol/l



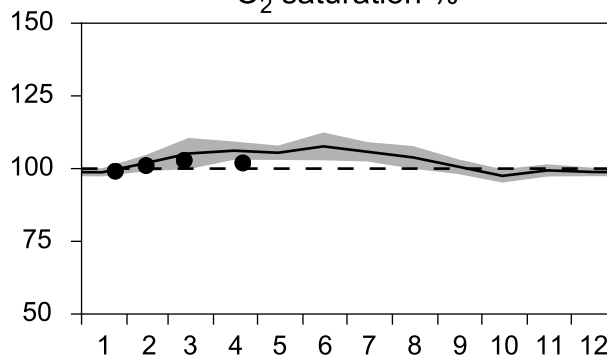
DIN µmol/l



SiO₃ µmol/l

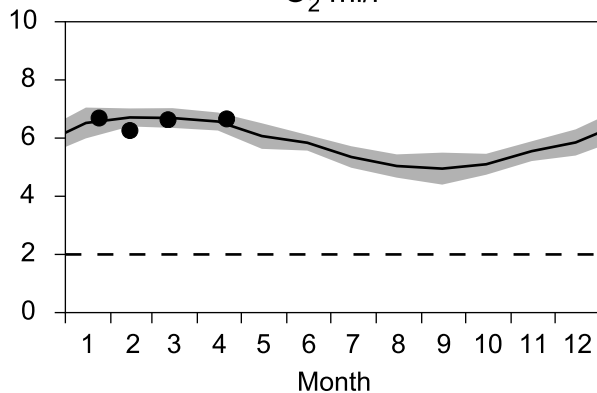


O₂ saturation %

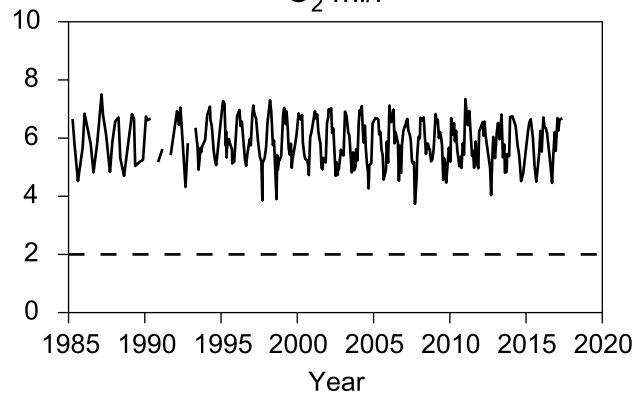


OXYGEN IN BOTTOM WATER (depth >= 75 m)

O₂ ml/l

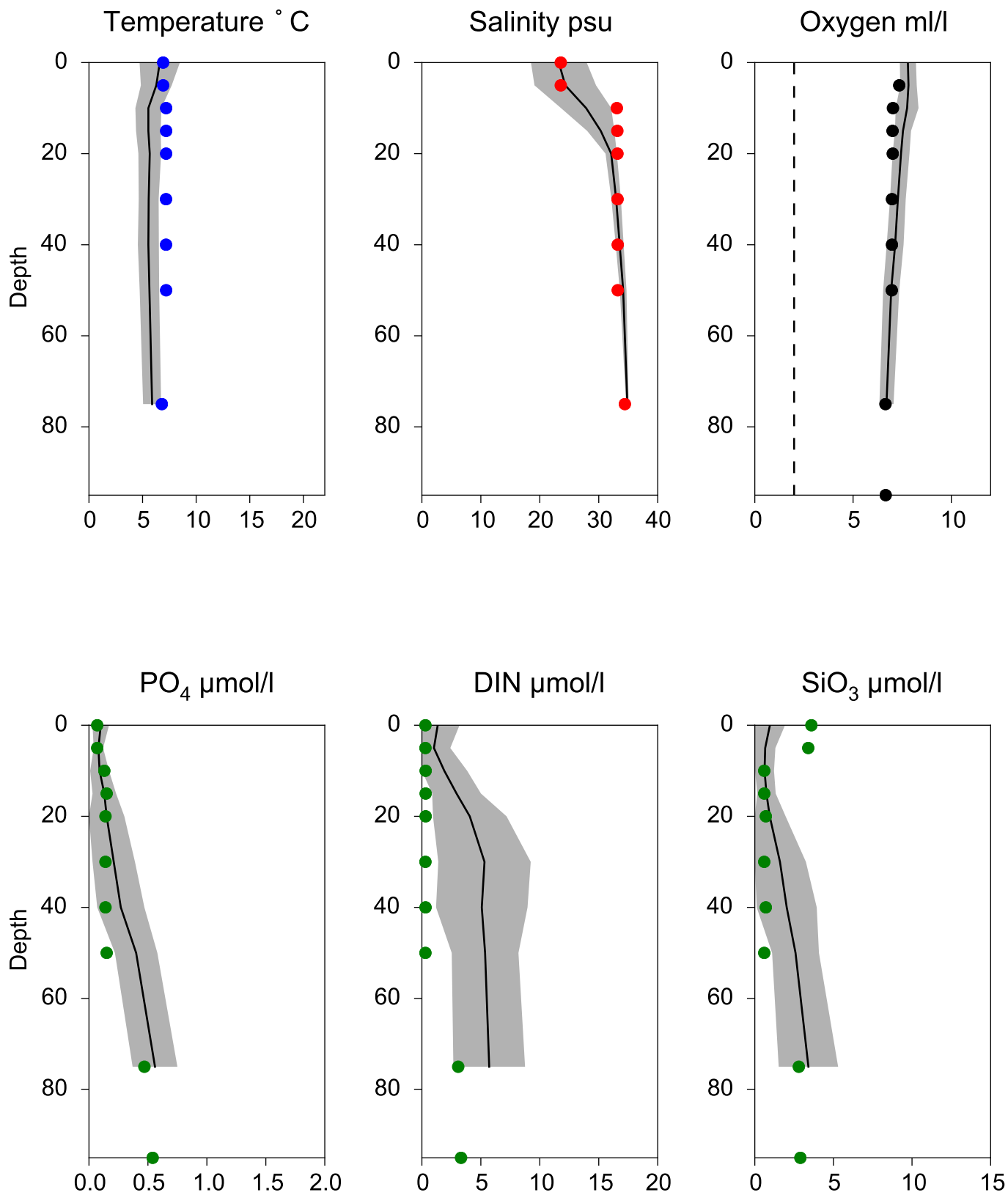


O₂ ml/l



Vertical profiles P2 April

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STATION FLADEN SURFACE WATER (0-10 m)

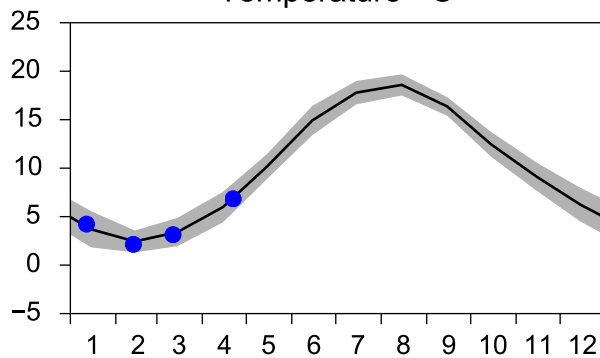
Annual Cycles

— Mean 2001-2015

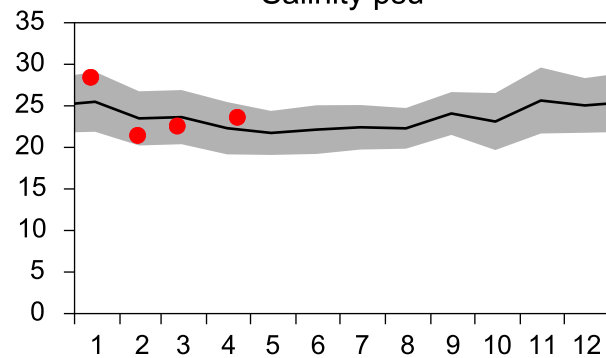
■ St.Dev.

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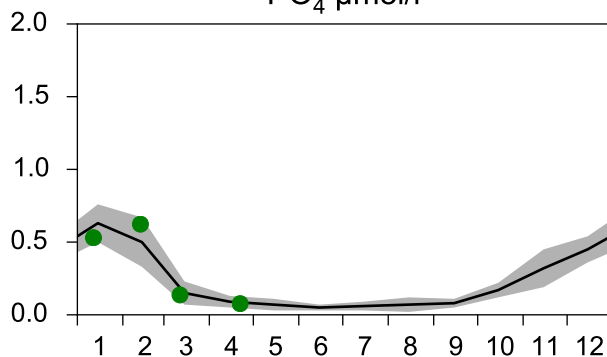
Temperature °C



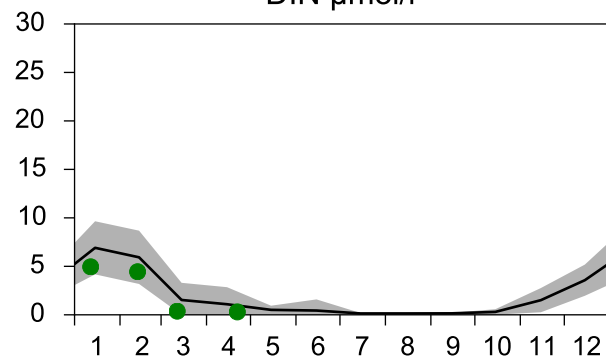
Salinity psu



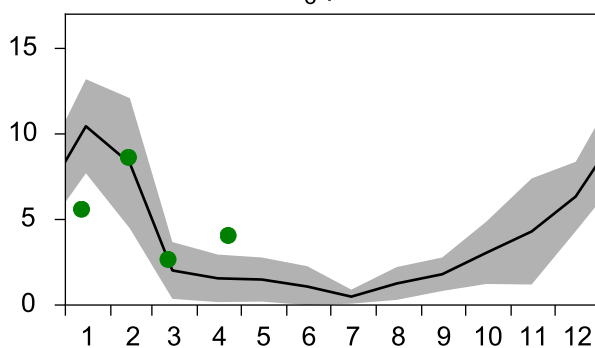
PO₄ µmol/l



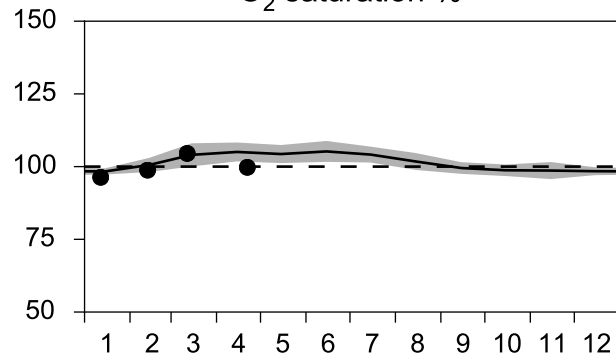
DIN µmol/l



SiO₃ µmol/l

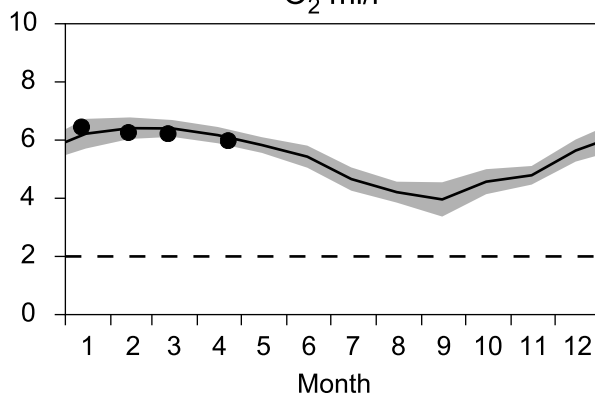


O₂ saturation %

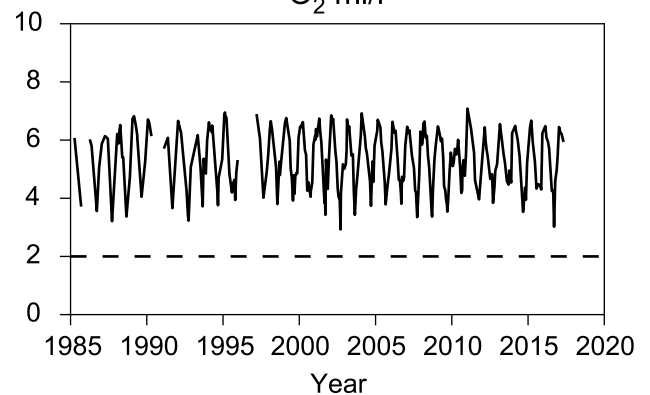


OXYGEN IN BOTTOM WATER (depth >= 74 m)

O₂ ml/l

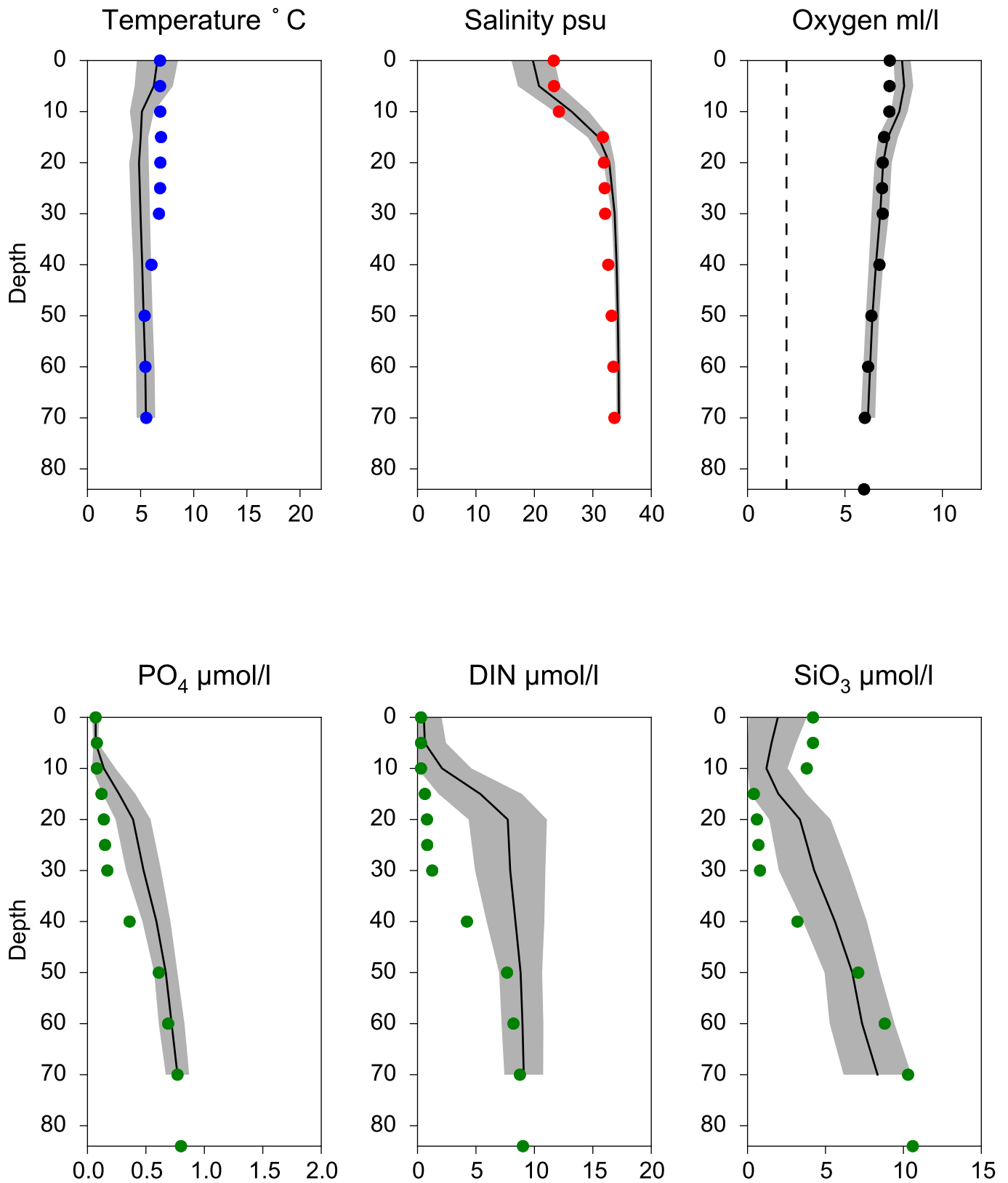


O₂ ml/l



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STATION N14 FALKENBERG SURFACE WATER (0-10 m)

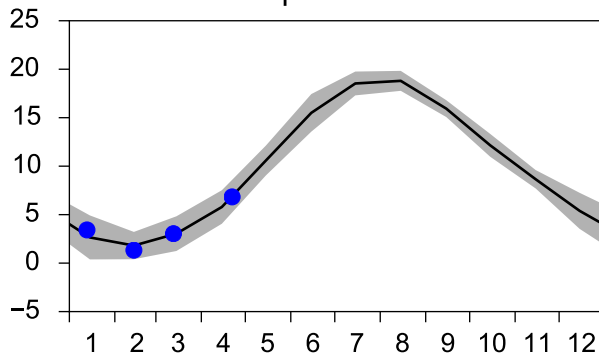
Annual Cycles

— Mean 2001-2015

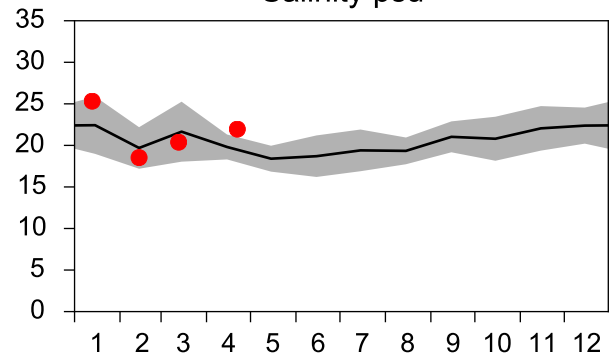
■ St.Dev.

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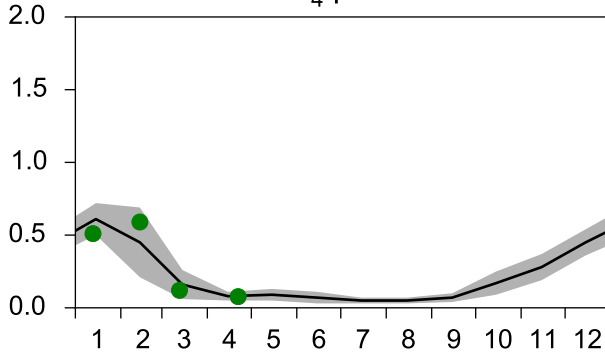
Temperature °C



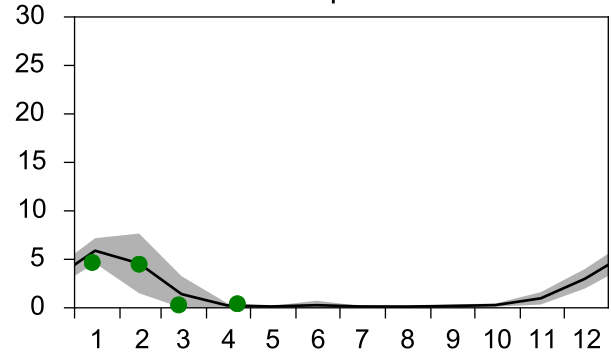
Salinity psu



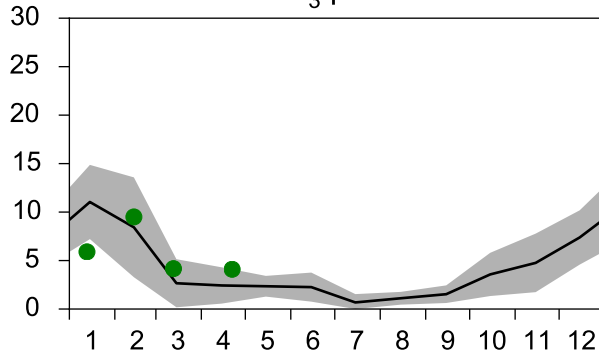
PO₄ µmol/l



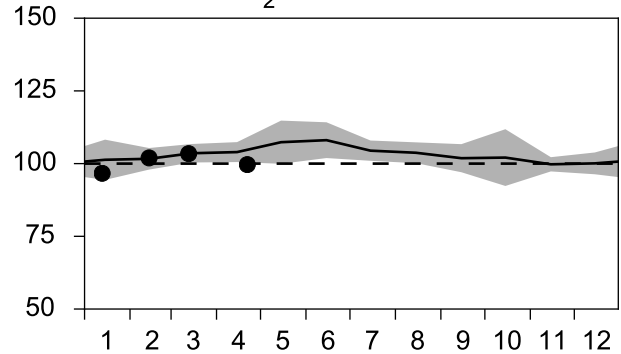
DIN µmol/l



SiO₃ µmol/l

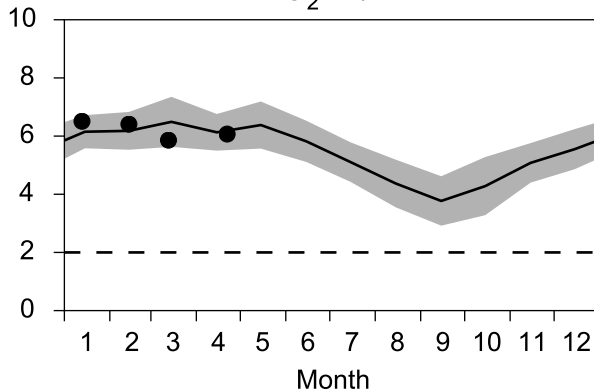


O₂ saturation %

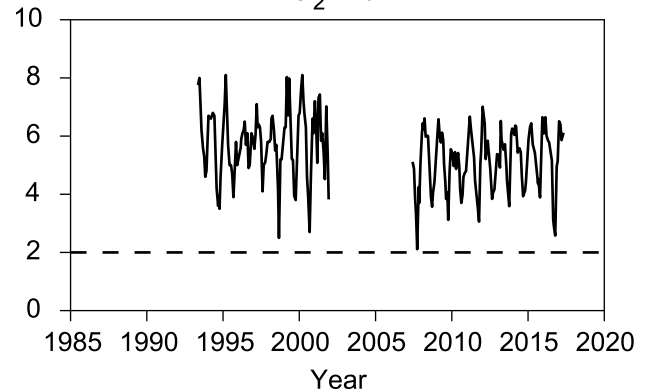


OXYGEN IN BOTTOM WATER (depth >= 25 m)

O₂ ml/l

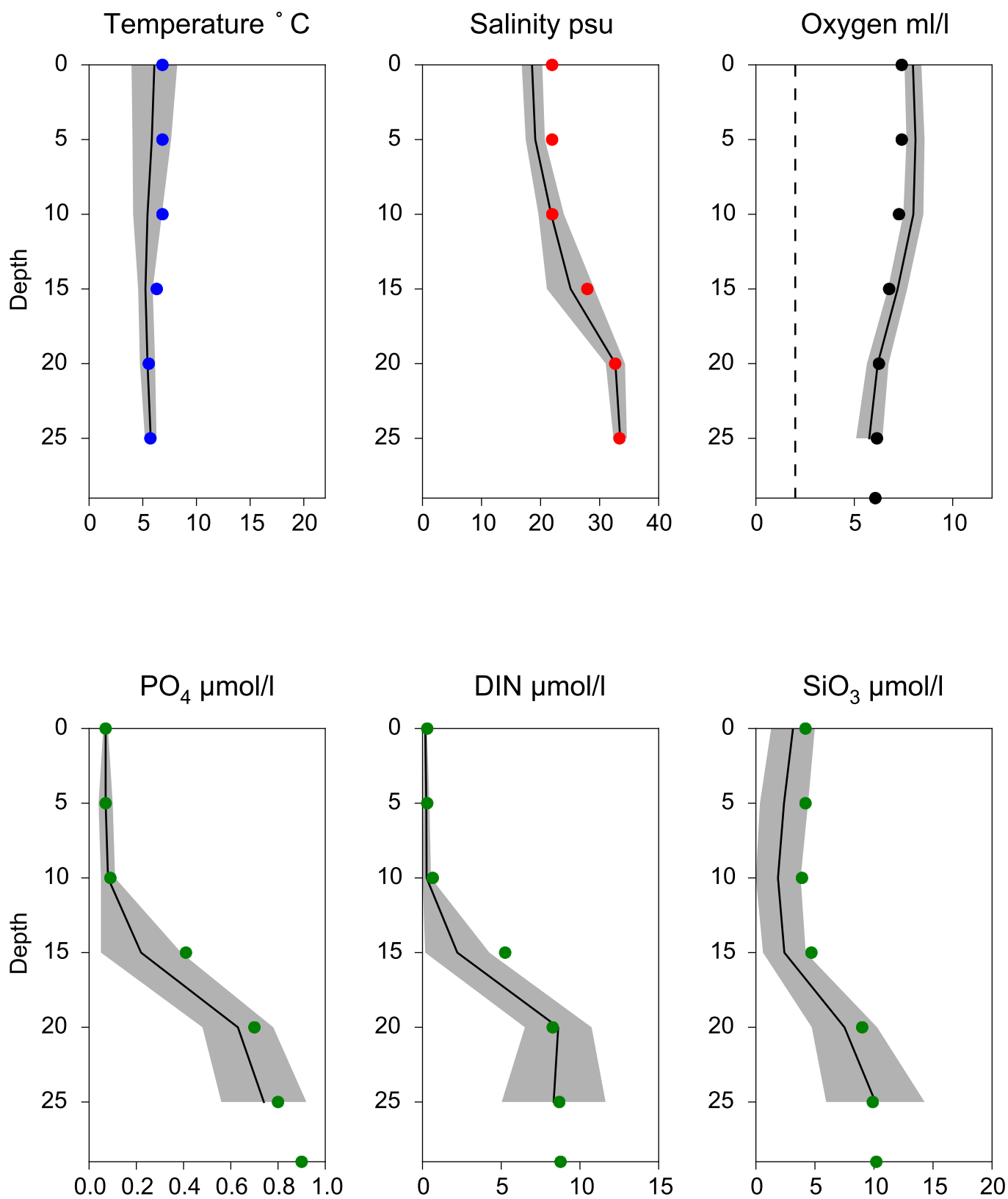


O₂ ml/l



Vertical profiles N14 FALKENBERG April

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STATION ANHOLT E SURFACE WATER (0-10 m)

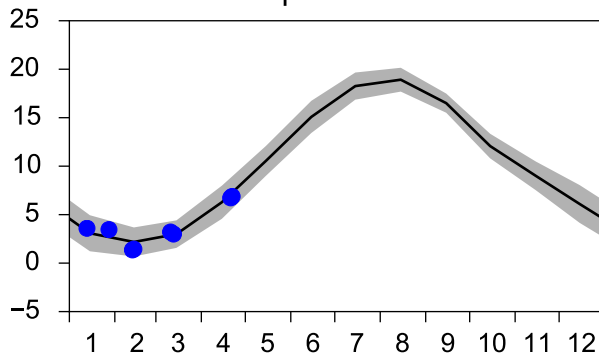
Annual Cycles

— Mean 2001-2015

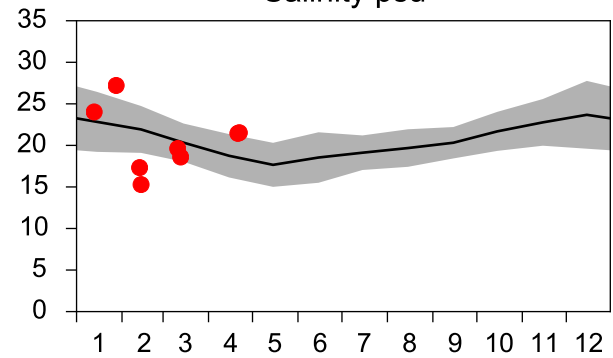
■ St.Dev.

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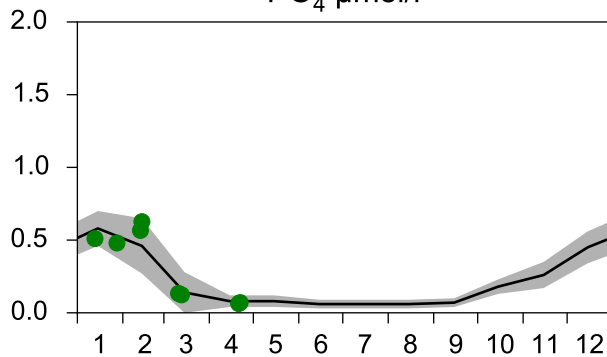
Temperature °C



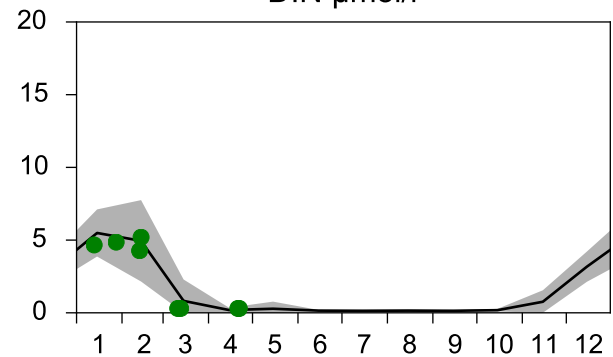
Salinity psu



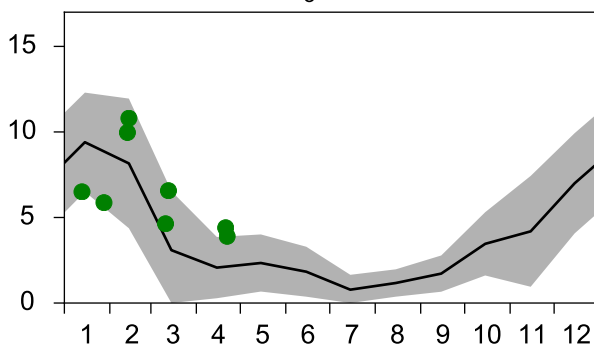
PO₄ µmol/l



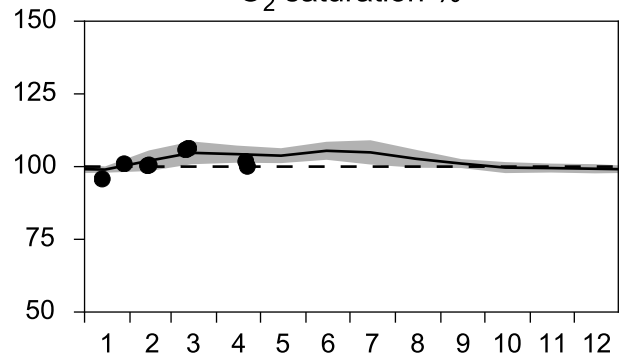
DIN µmol/l



SiO₃ µmol/l

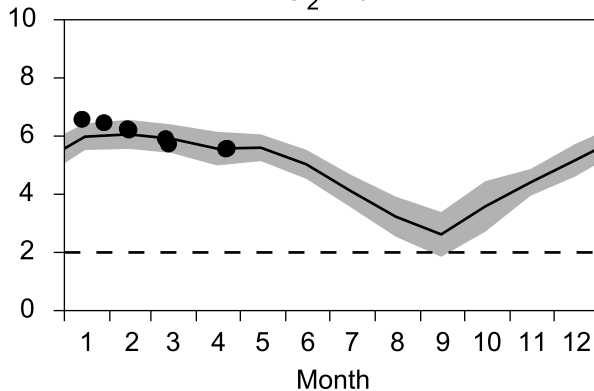


O₂ saturation %

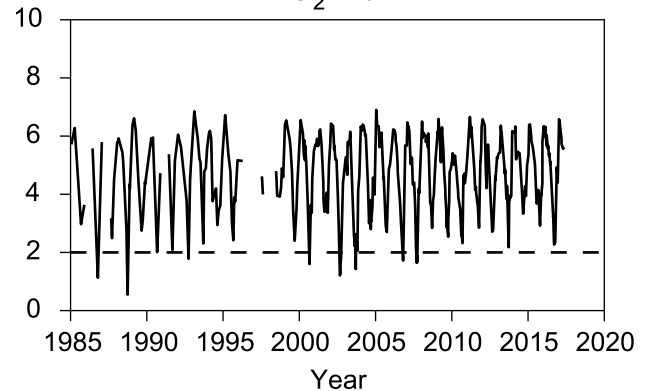


OXYGEN IN BOTTOM WATER (depth >= 52 m)

O₂ ml/l

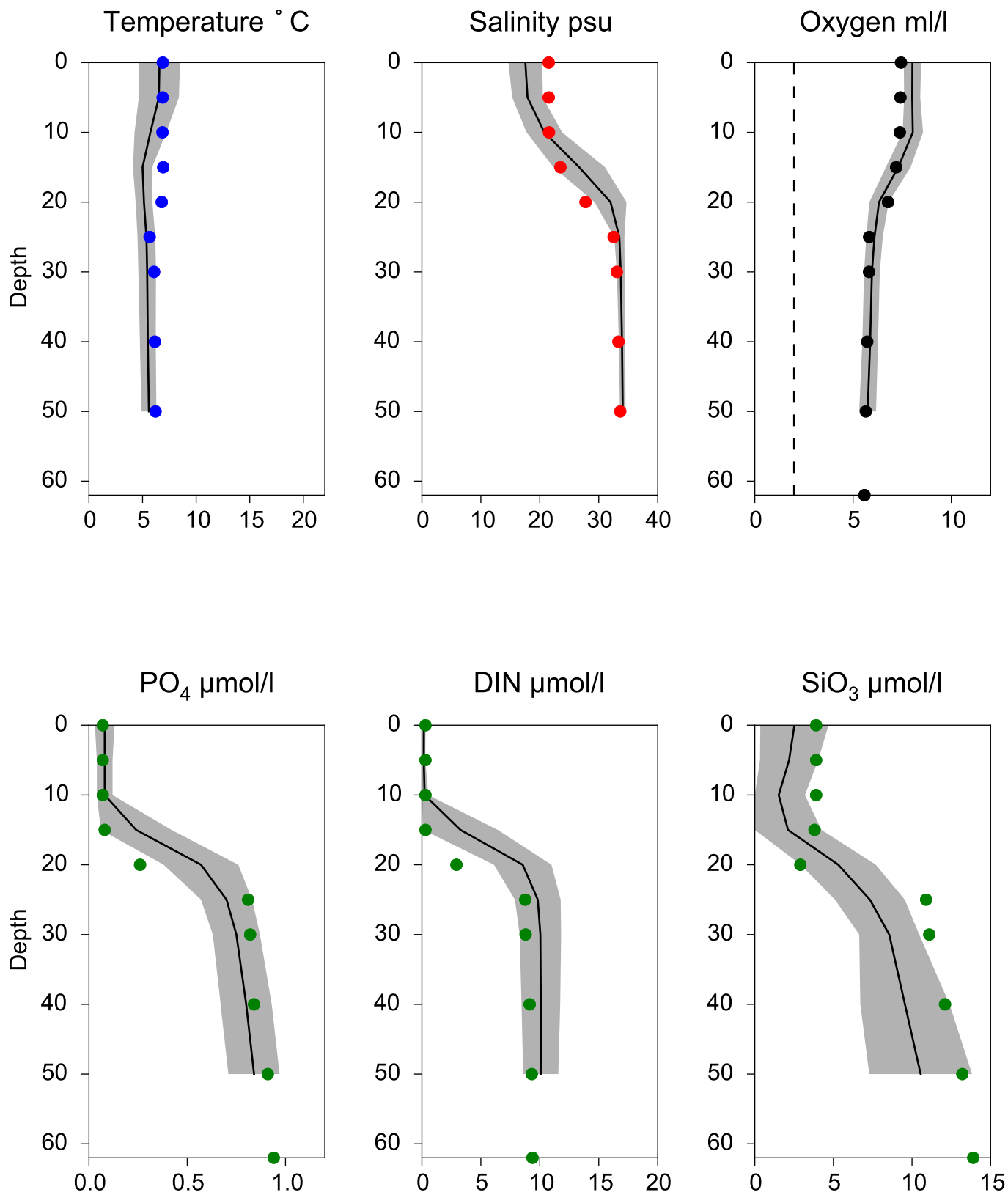


O₂ ml/l



Vertical profiles ANHOLT E April

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STATION BY1 SURFACE WATER (0-10 m)

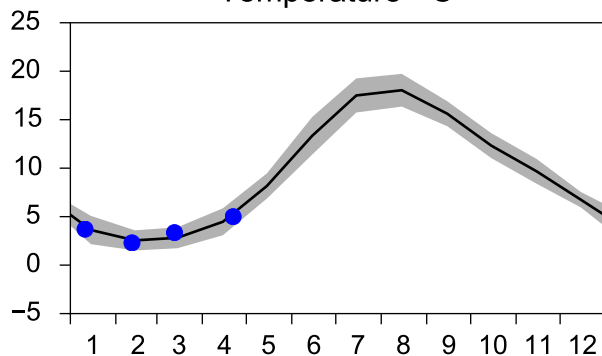
Annual Cycles

— Mean 2001-2015

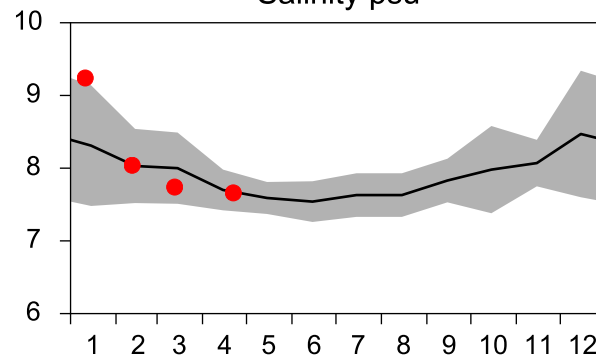
■ St.Dev.

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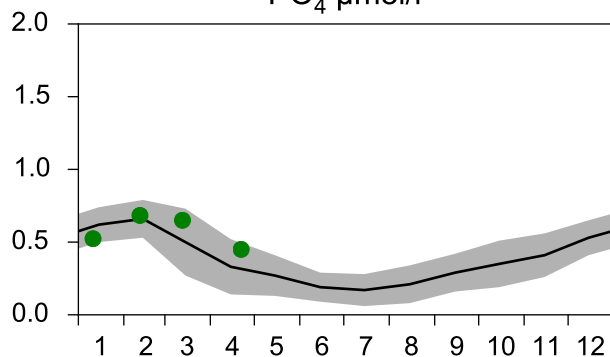
Temperature °C



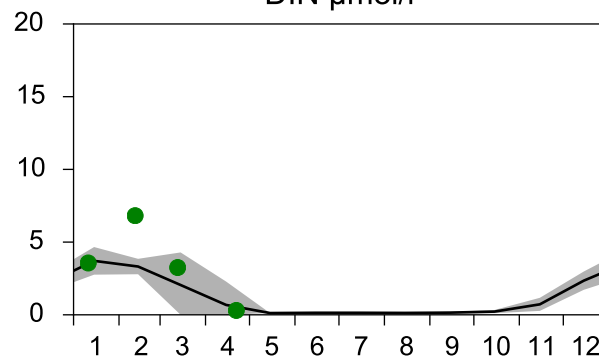
Salinity psu



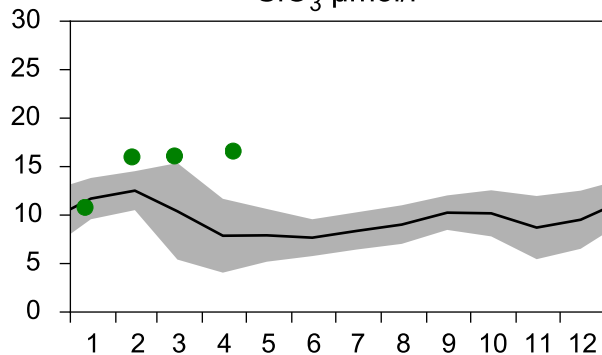
PO₄ µmol/l



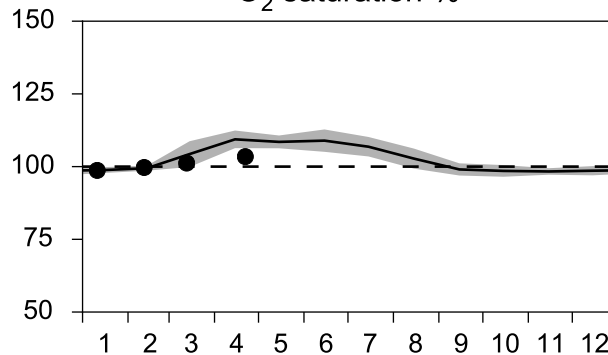
DIN µmol/l



SiO₃ µmol/l

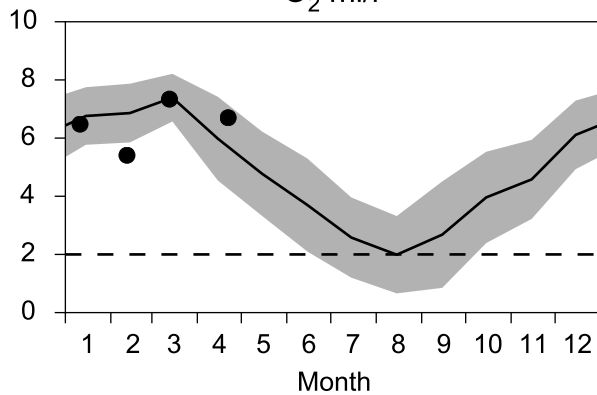


O₂ saturation %

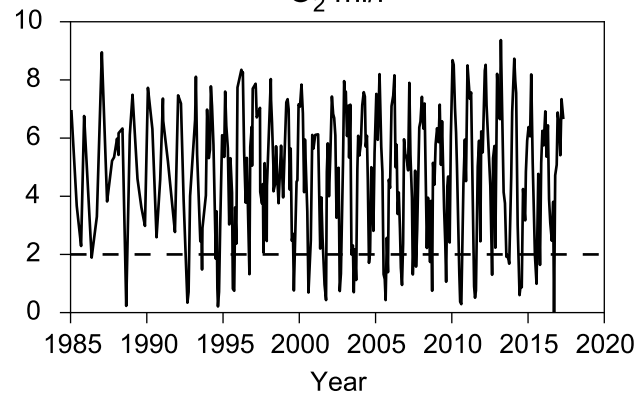


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

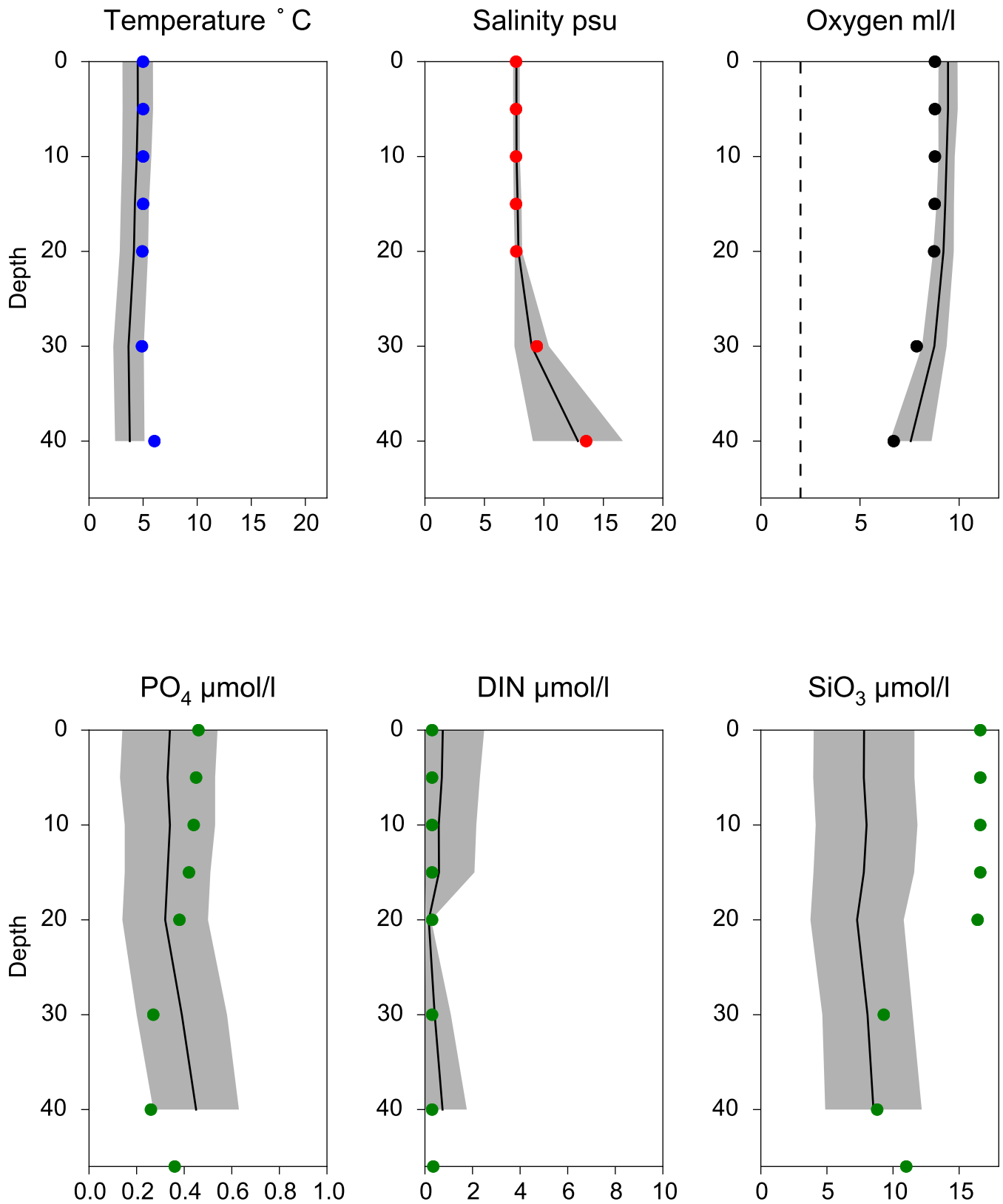


O₂ ml/l



Vertical profiles BY1 April

— Mean 2001-2015 St.Dev. • 2017-04-22



STATION BY2 ARKONA SURFACE WATER (0-10 m)

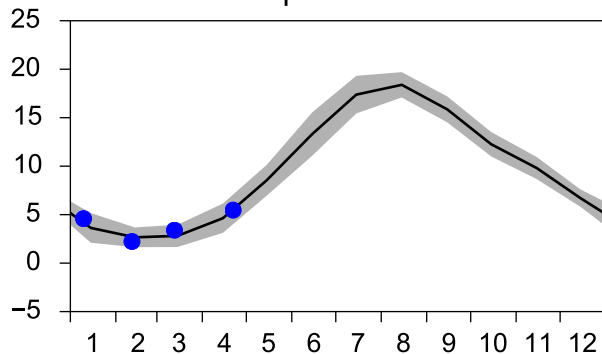
Annual Cycles

— Mean 2001-2015

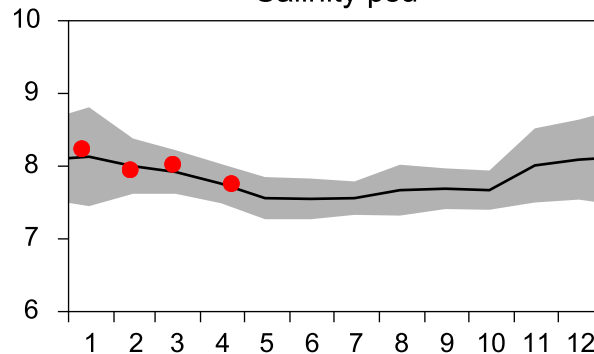
■ St.Dev.

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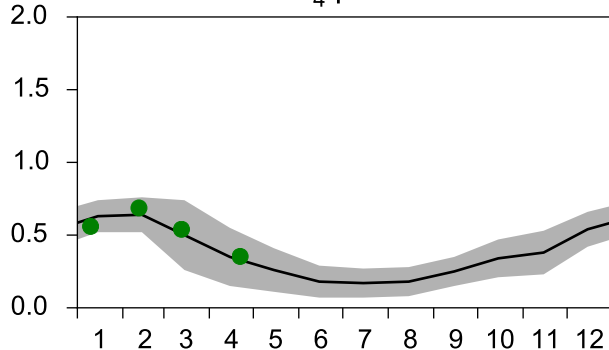
Temperature °C



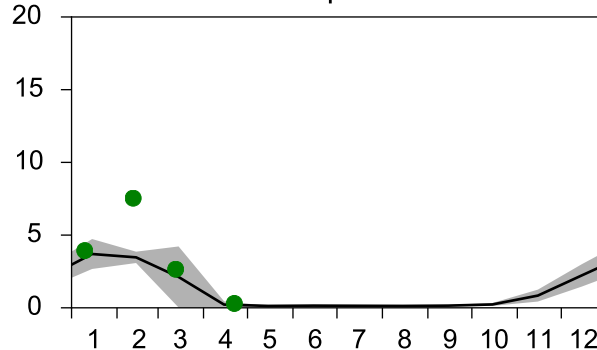
Salinity psu



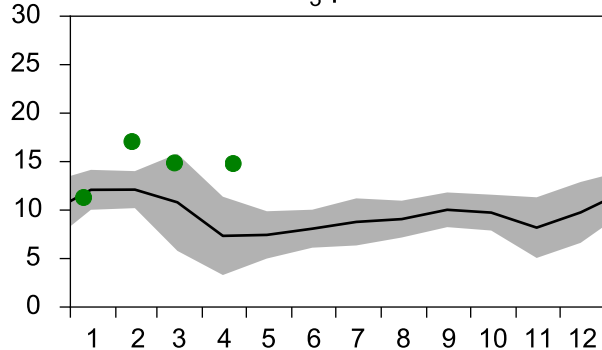
PO₄ µmol/l



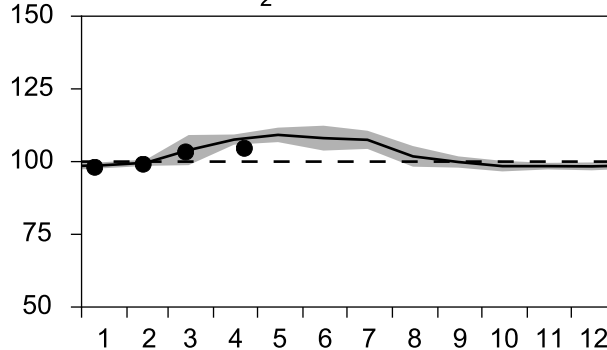
DIN µmol/l



SiO₃ µmol/l

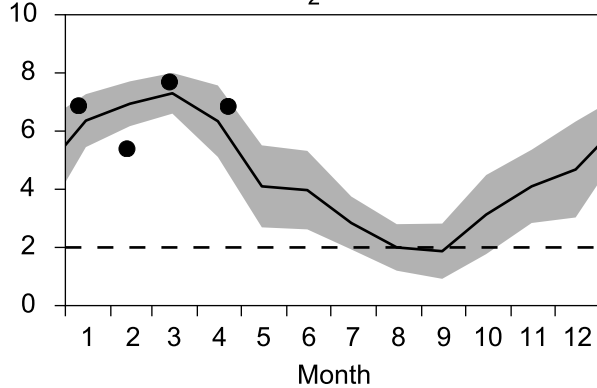


O₂ saturation %

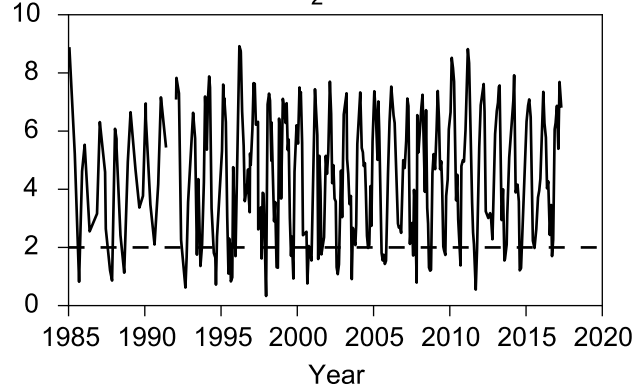


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

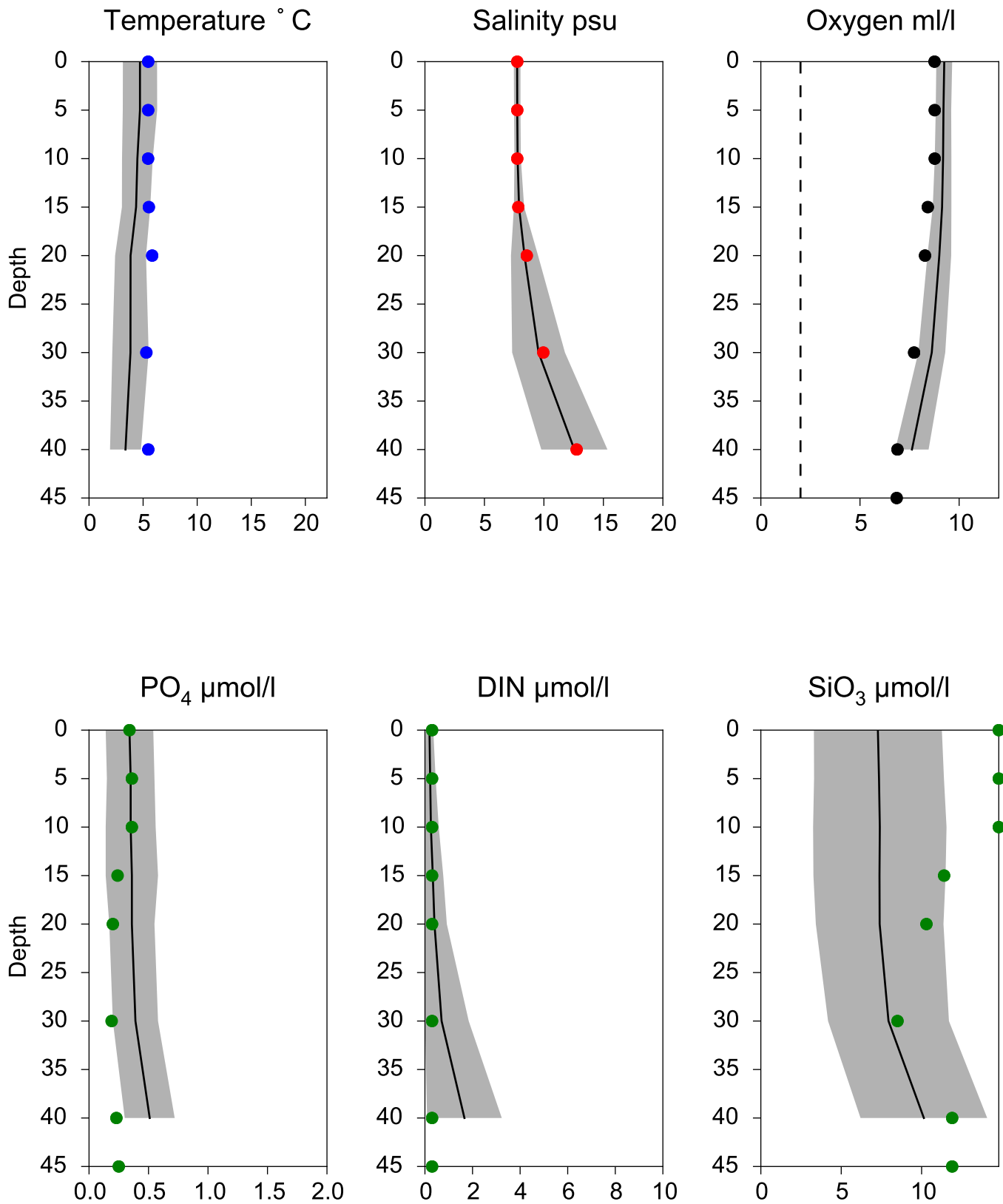


O₂ ml/l



Vertical profiles BY2 ARKONA April

— Mean 2001-2015 St.Dev. • 2017-04-22



STATION BY4 CHRISTIANSÖ SURFACE WATER (0-10 m)

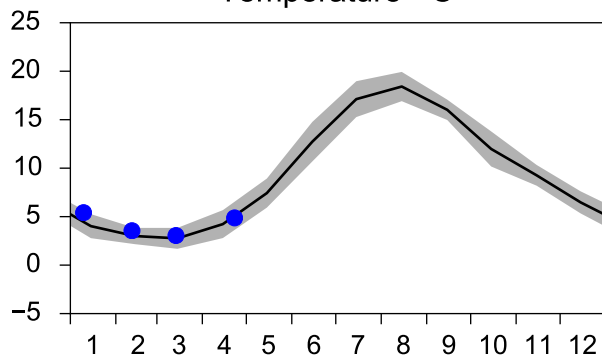
Annual Cycles

— Mean 2001-2015

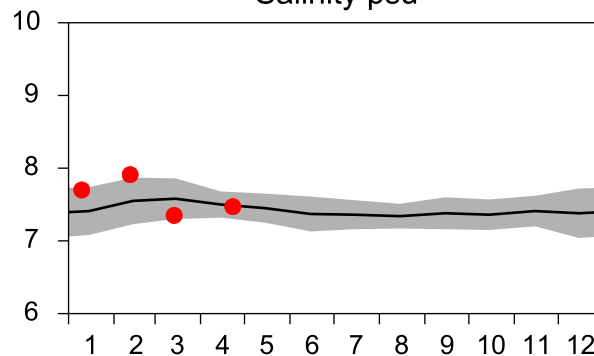
■ St.Dev.

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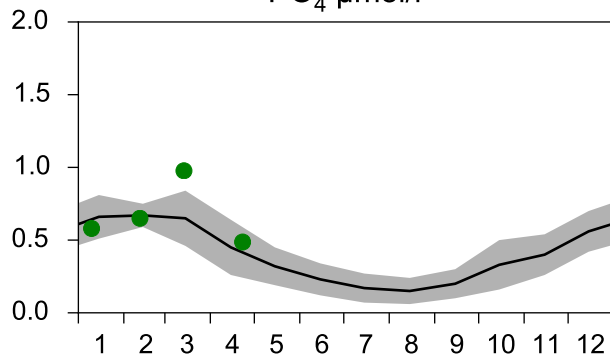
Temperature °C



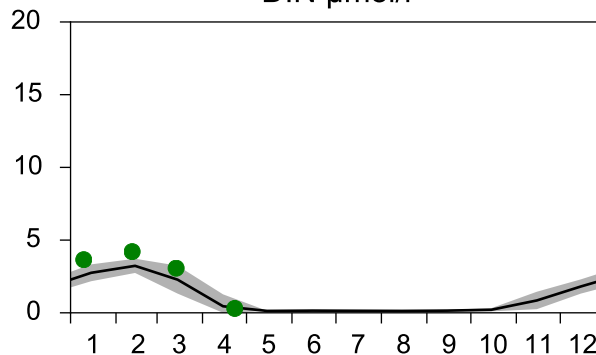
Salinity psu



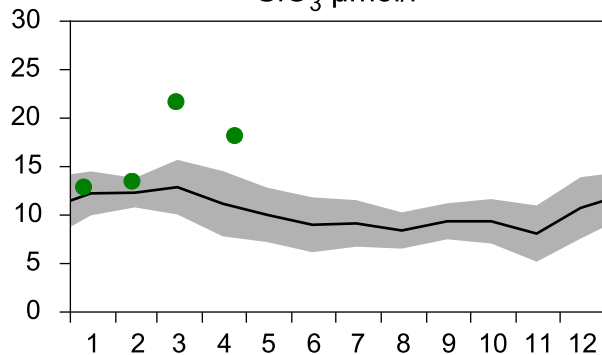
PO₄ µmol/l



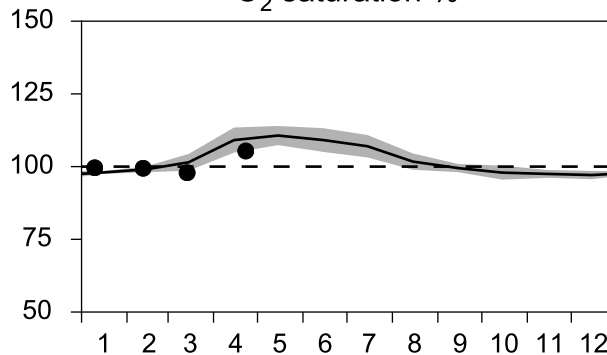
DIN µmol/l



SiO₃ µmol/l

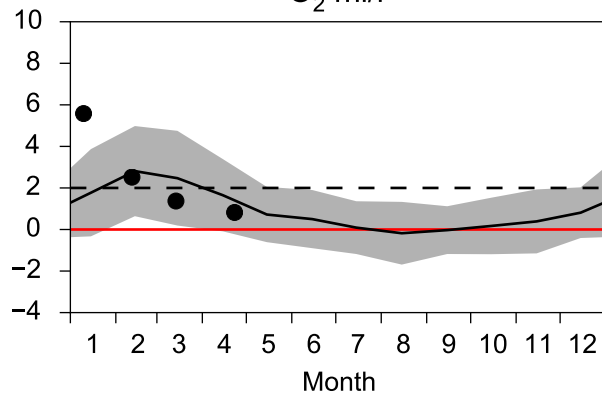


O₂ saturation %

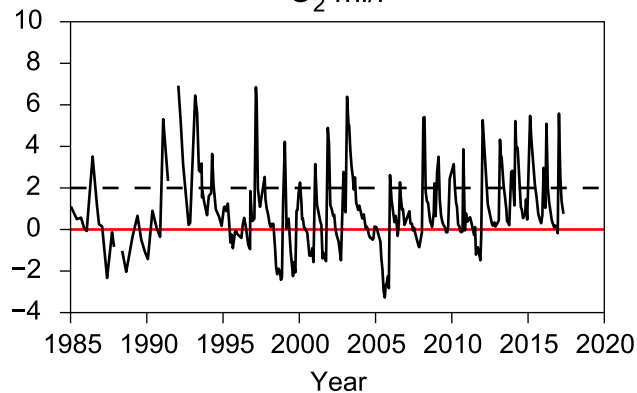


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

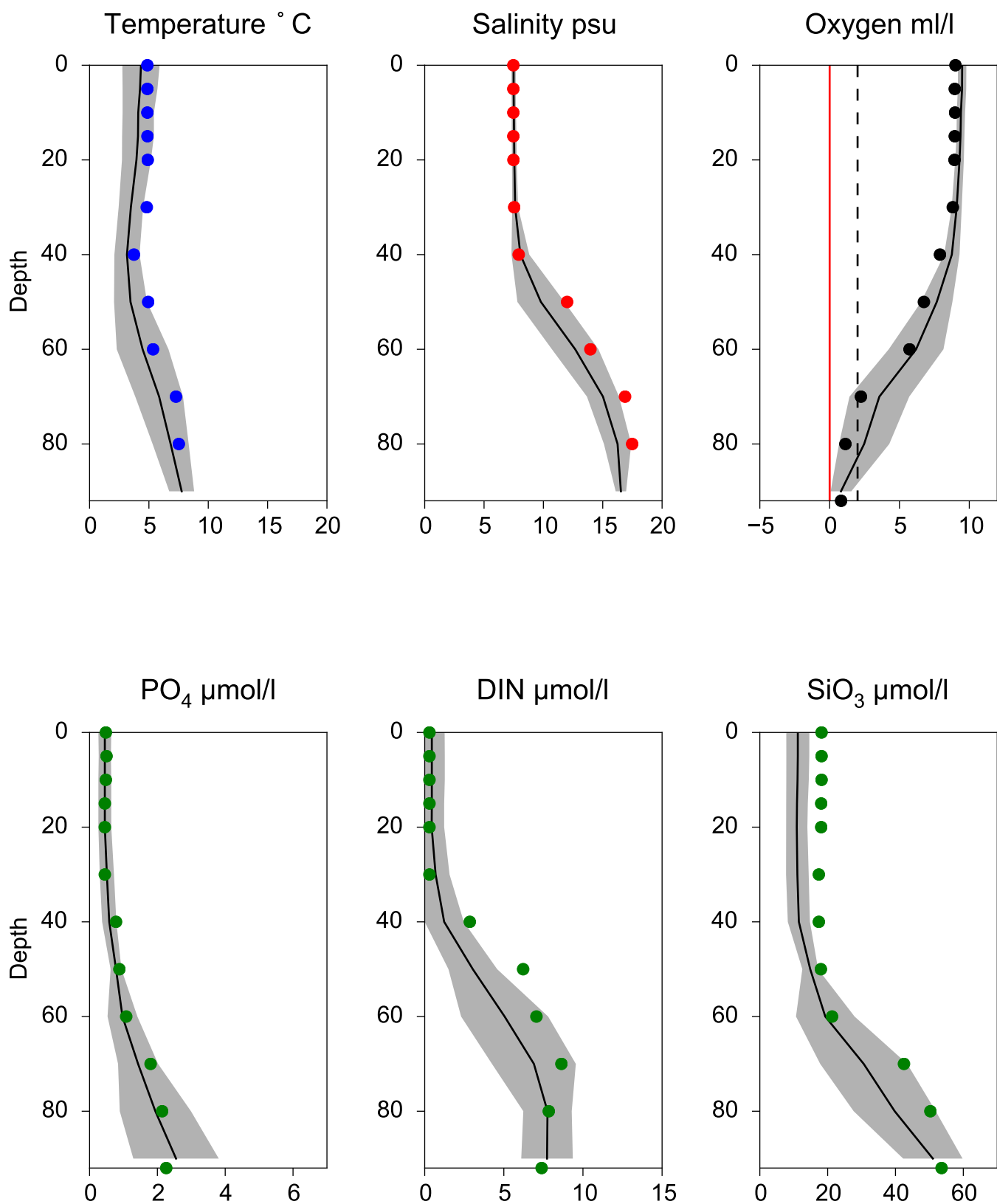


O₂ ml/l



Vertical profiles BY4 CHRISTIANSÖ April

— Mean 2001-2015 ■ St.Dev. ● 2017-04-23



STATION BY5 BORNHOLMSDJ SURFACE WATER (0-10 m)

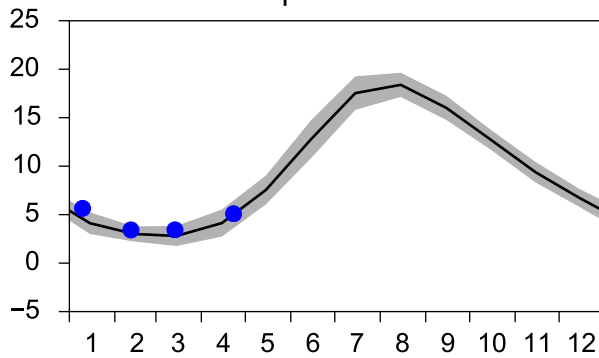
Annual Cycles

— Mean 2001-2015

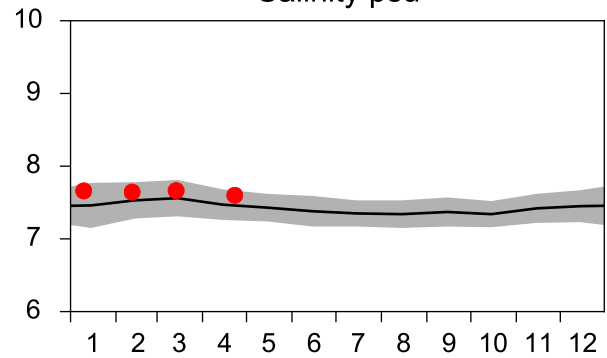
■ St.Dev.

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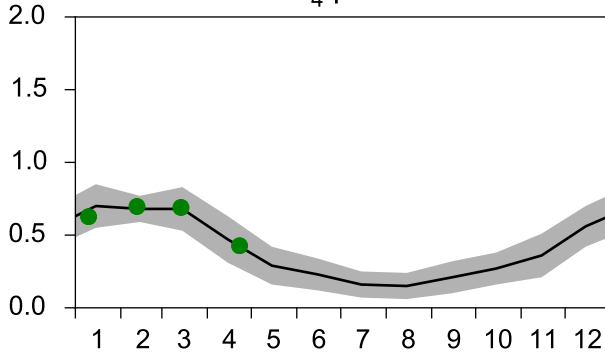
Temperature °C



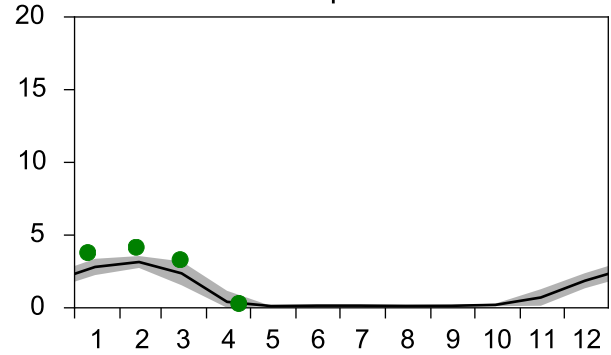
Salinity psu



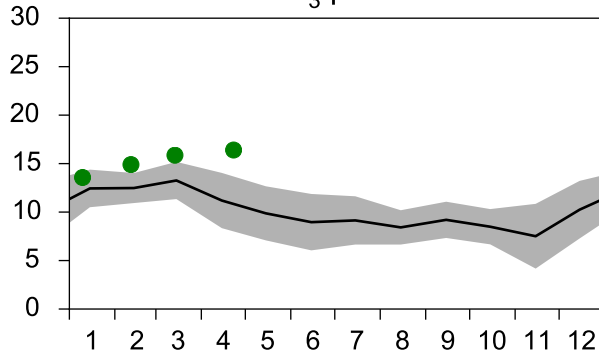
PO₄ µmol/l



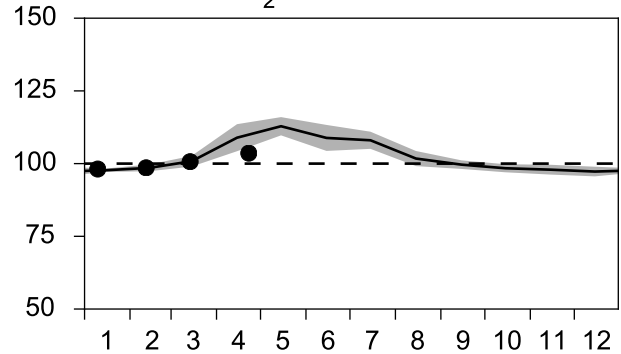
DIN µmol/l



SiO₃ µmol/l

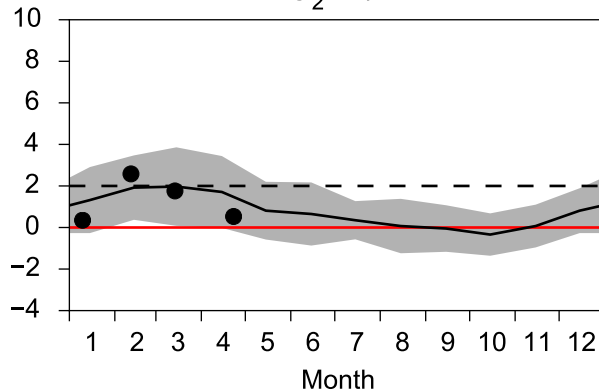


O₂ saturation %

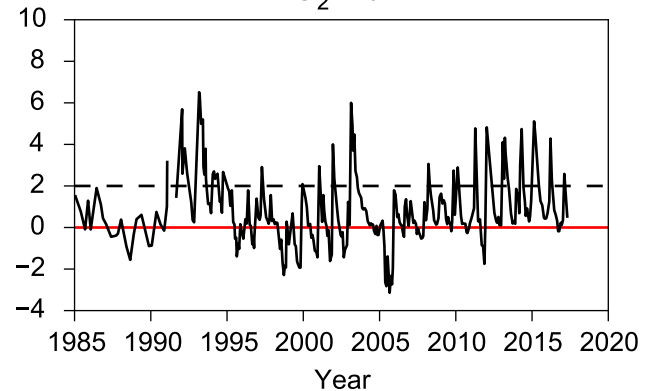


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

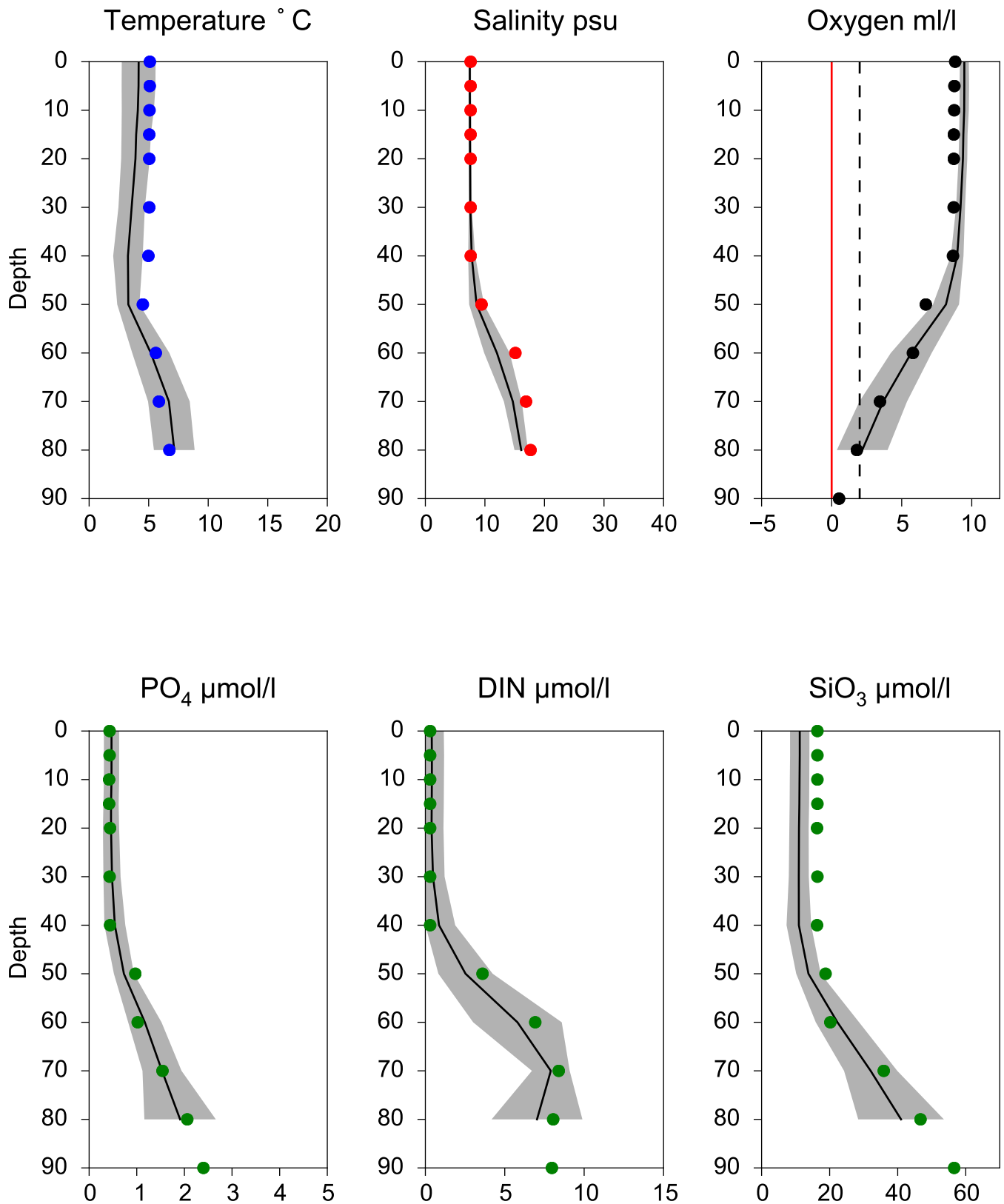


O₂ ml/l



Vertical profiles BY5 BORNHOLMSDJ April

— Mean 2001-2015 ■ St.Dev. ● 2017-04-23



STATION BY10 SURFACE WATER (0-10 m)

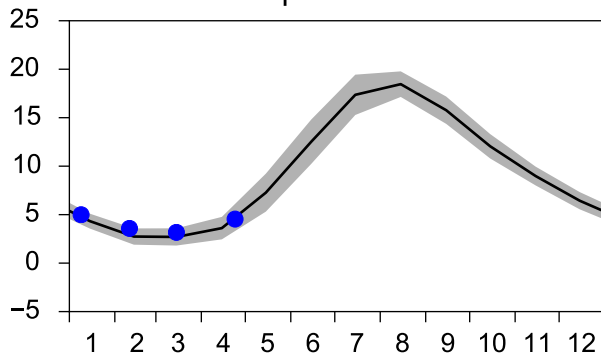
Annual Cycles

— Mean 2001-2015

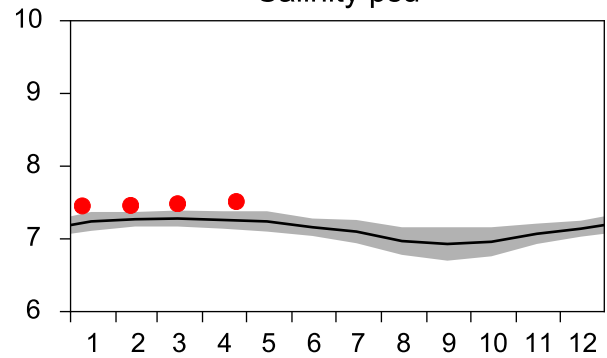
■ St.Dev.

● 2017

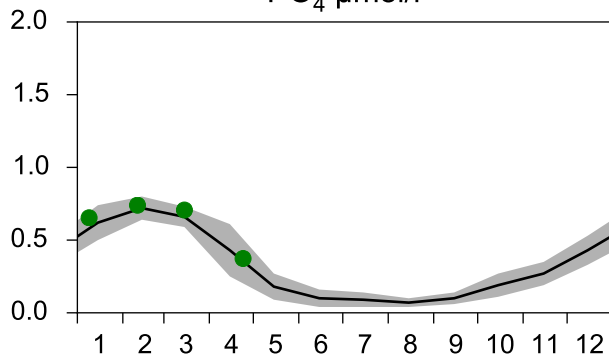
Temperature °C



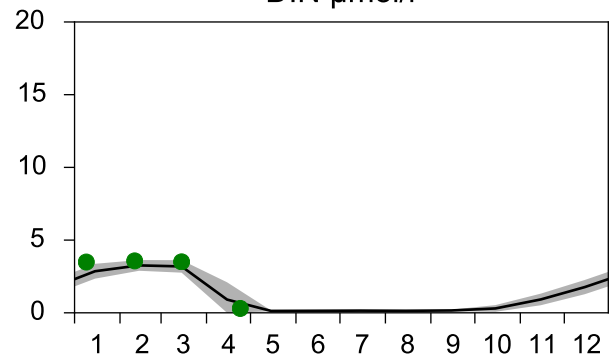
Salinity psu



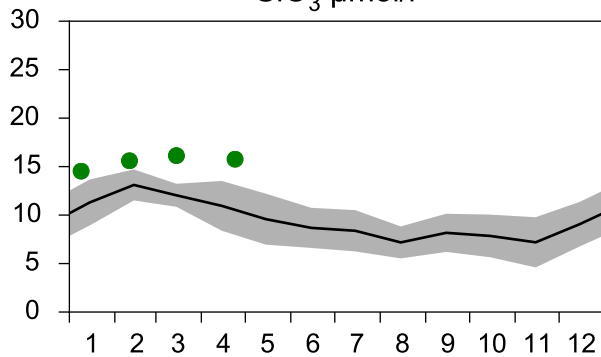
PO₄ µmol/l



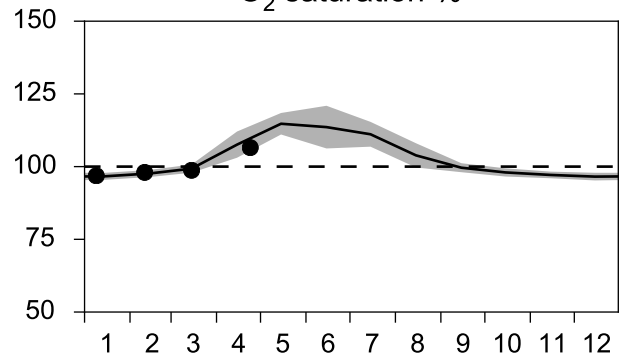
DIN µmol/l



SiO₃ µmol/l

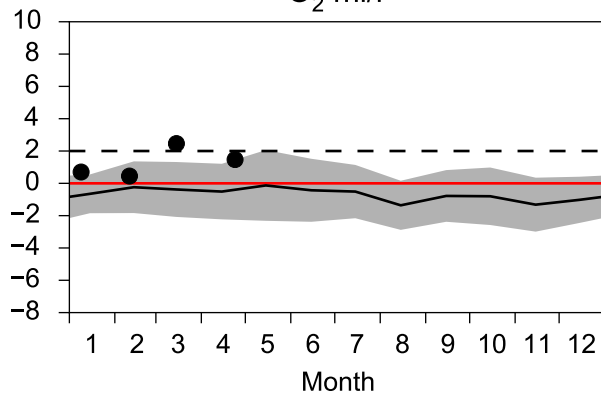


O₂ saturation %

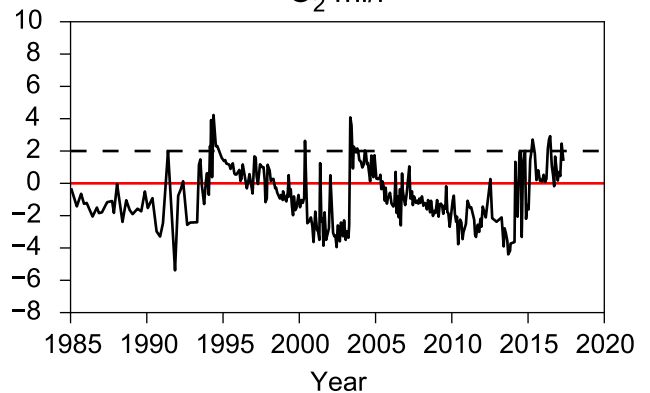


OXYGEN IN BOTTOM WATER (depth >= 125 m)

O₂ ml/l

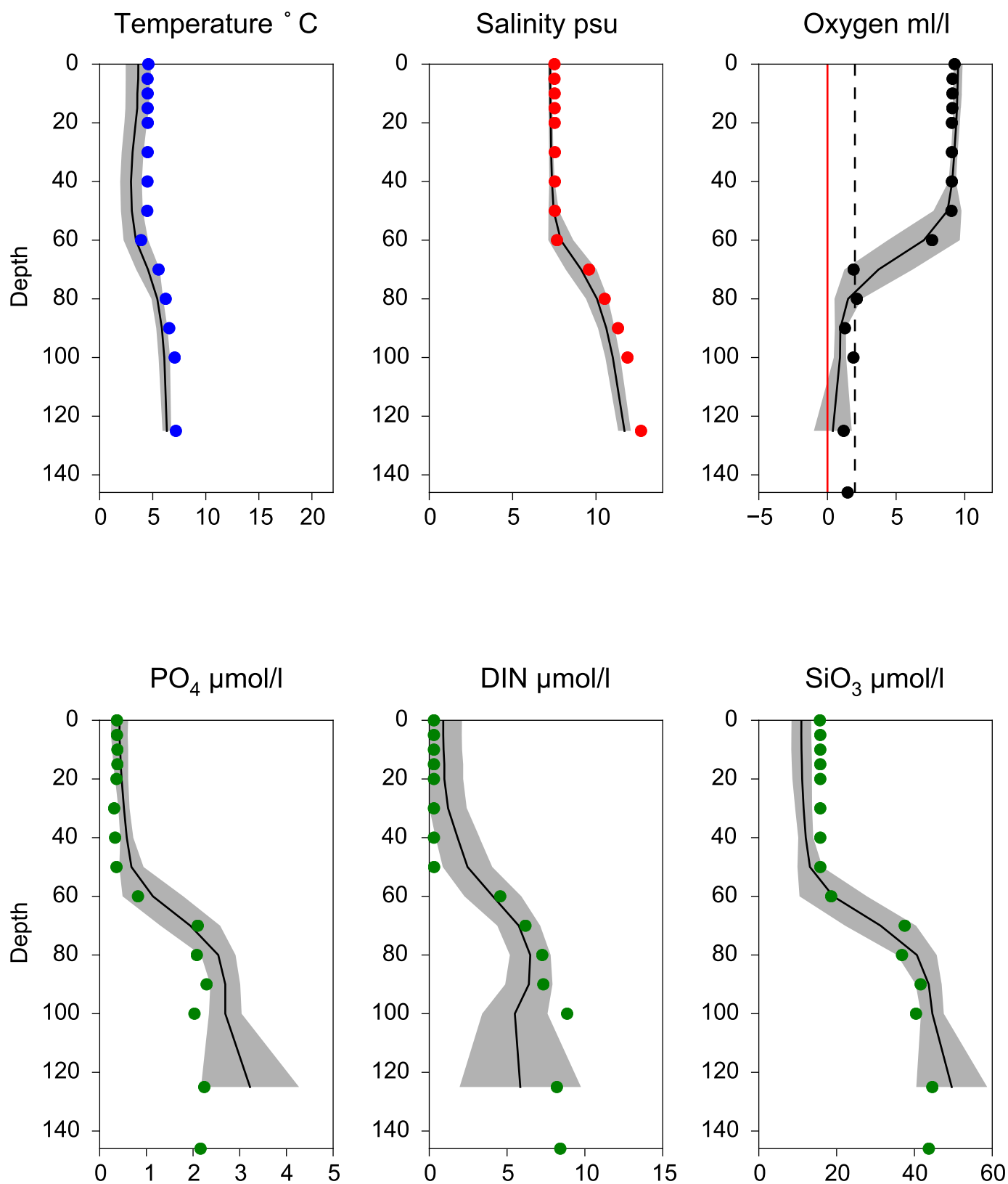


O₂ ml/l



Vertical profiles BY10 April

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STATION BY15 GOTLANDSDJ SURFACE WATER (0-10 m)

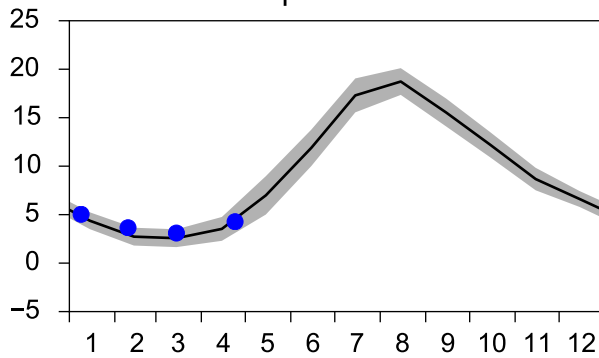
Annual Cycles

— Mean 2001-2015

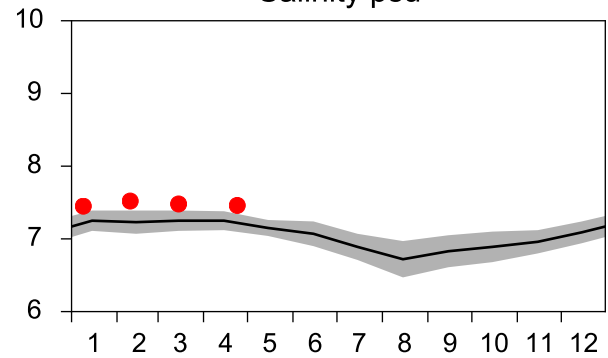
■ St.Dev.

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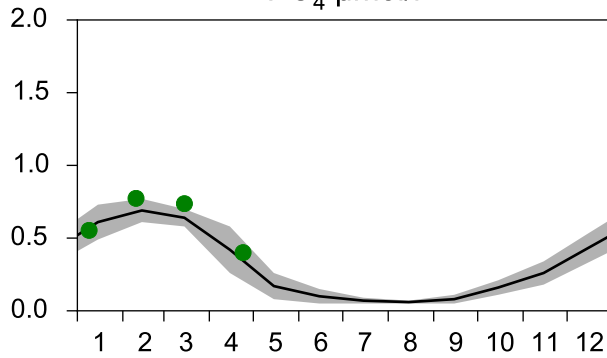
Temperature °C



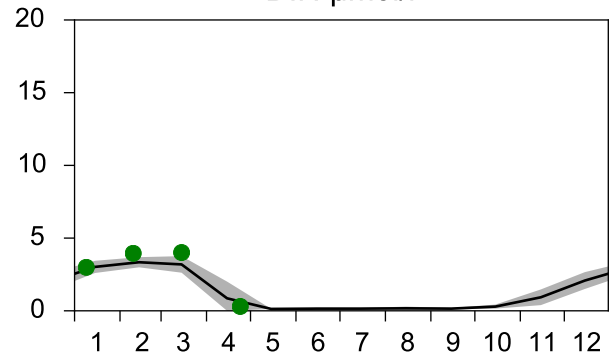
Salinity psu



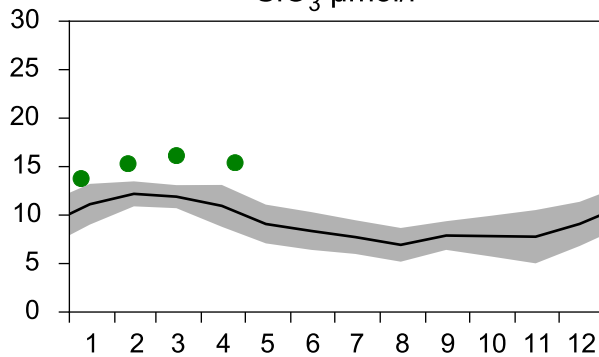
PO₄ µmol/l



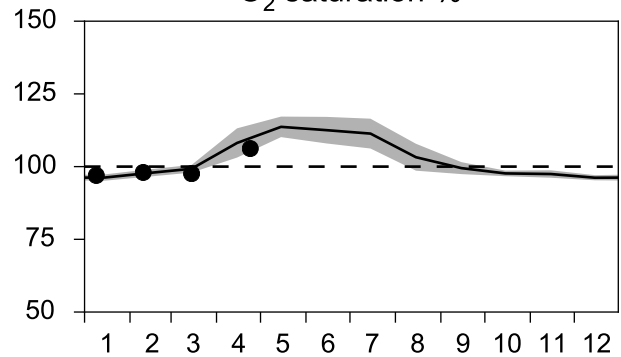
DIN µmol/l



SiO₃ µmol/l

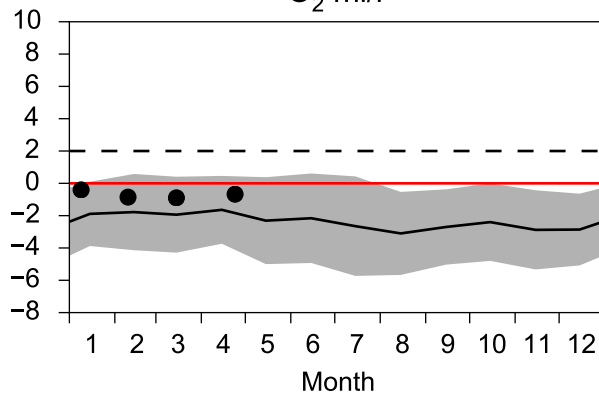


O₂ saturation %

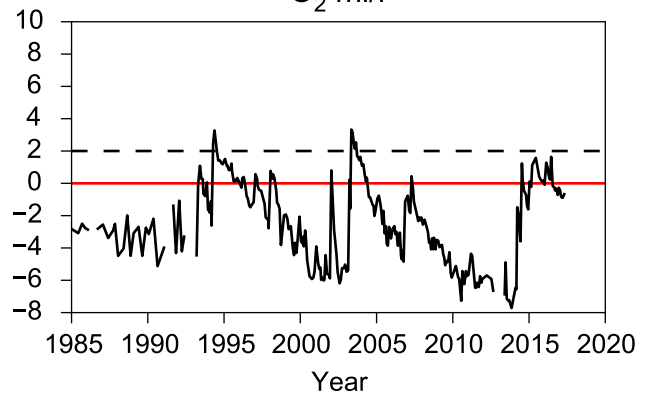


OXYGEN IN BOTTOM WATER (depth >= 225 m)

O₂ ml/l

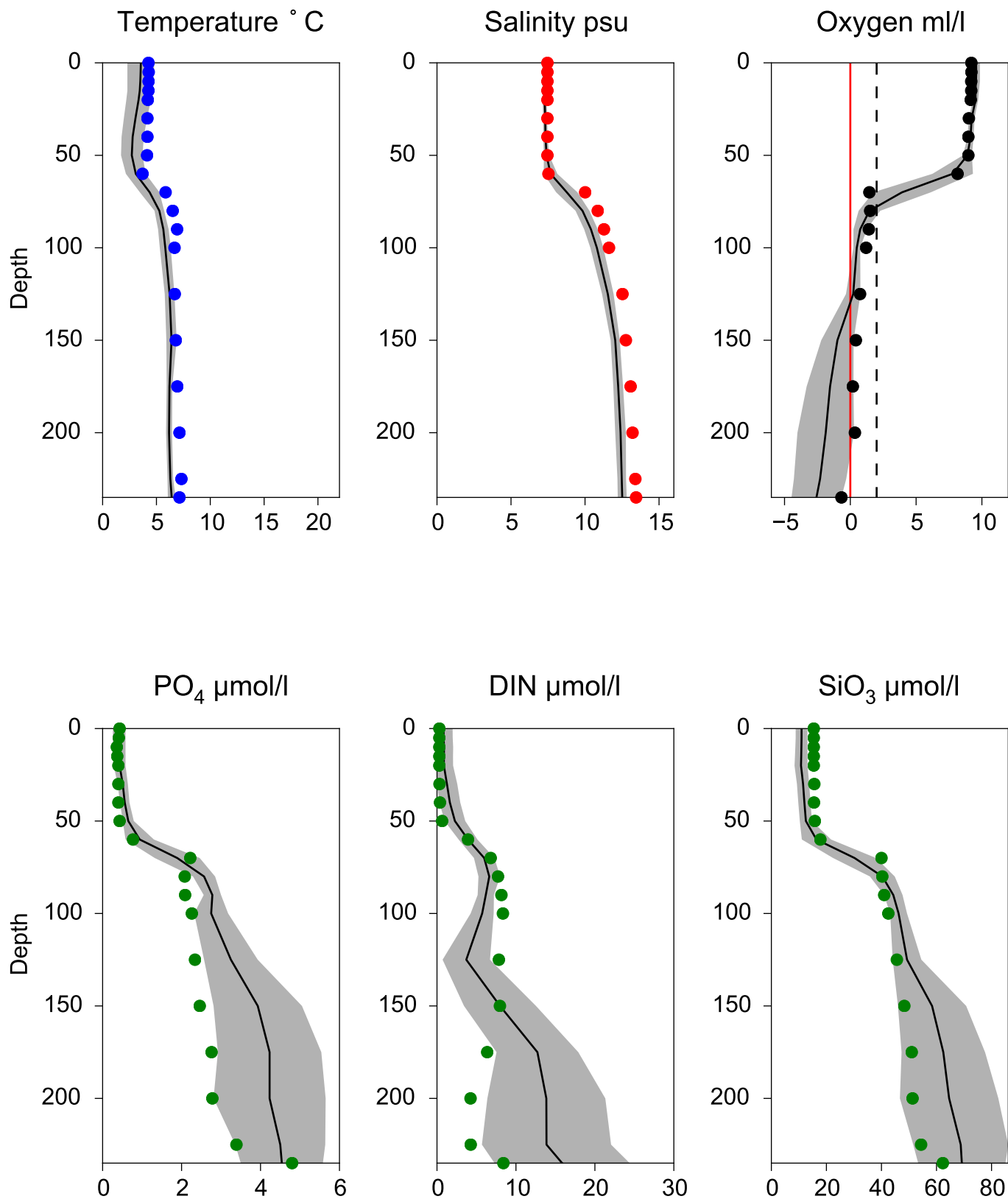


O₂ ml/l



Vertical profiles BY15 GOTLANDSDJ April

— Mean 2001-2015 St.Dev. • 2017-04-24



STATION BY20 FÅRÖDJ SURFACE WATER (0-10 m)

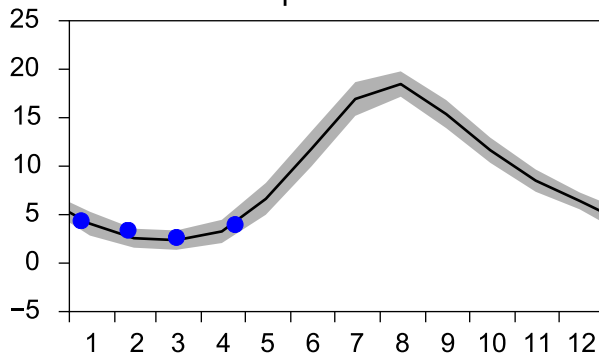
Annual Cycles

— Mean 2001-2015

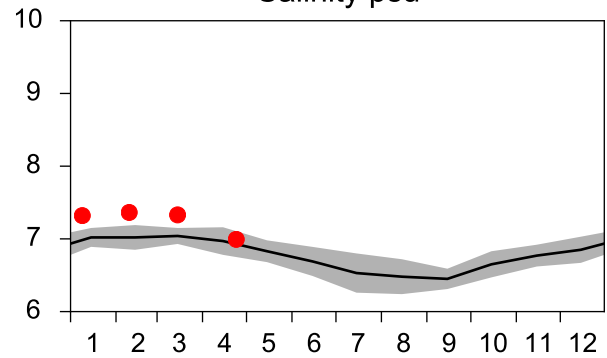
■ St.Dev.

● 2017

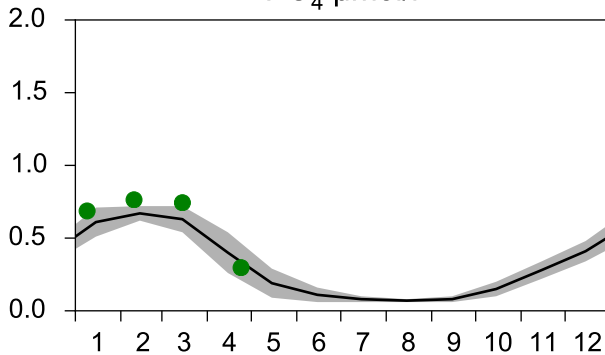
Temperature °C



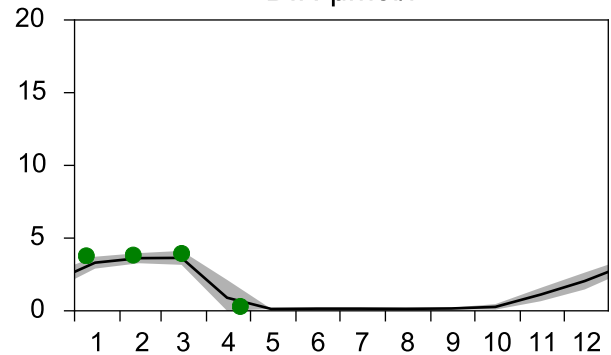
Salinity psu



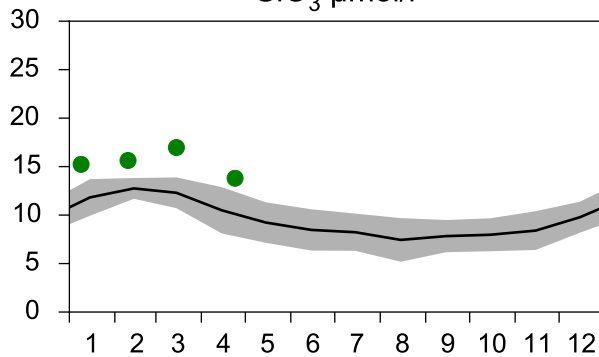
PO₄ µmol/l



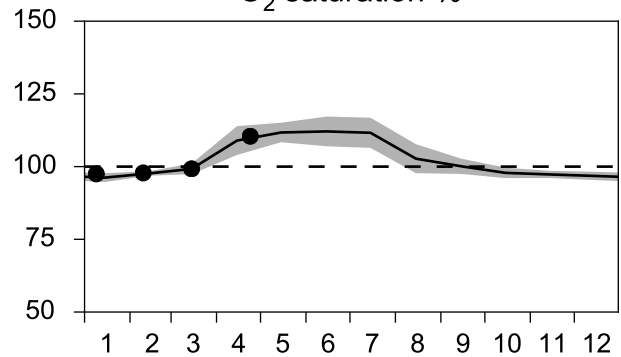
DIN µmol/l



SiO₃ µmol/l

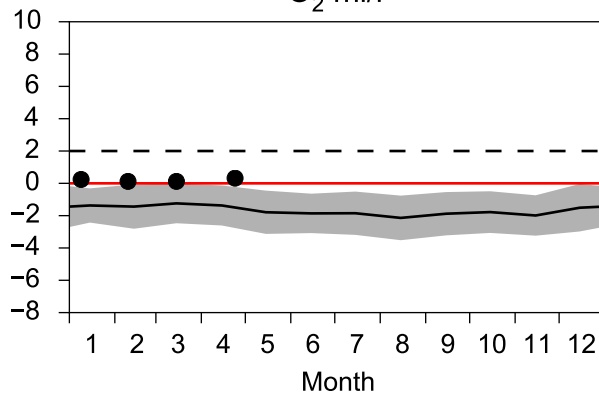


O₂ saturation %

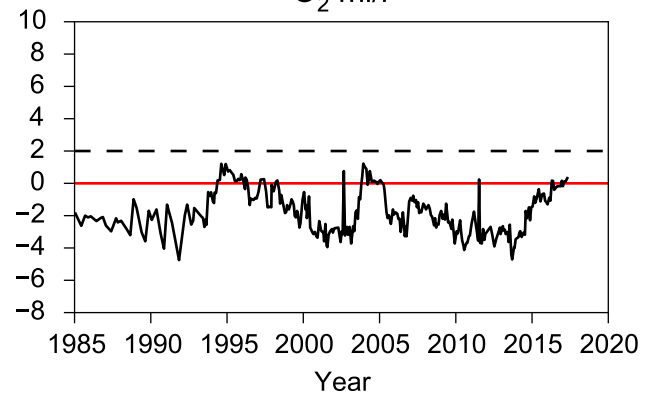


OXYGEN IN BOTTOM WATER (depth >= 175 m)

O₂ ml/l

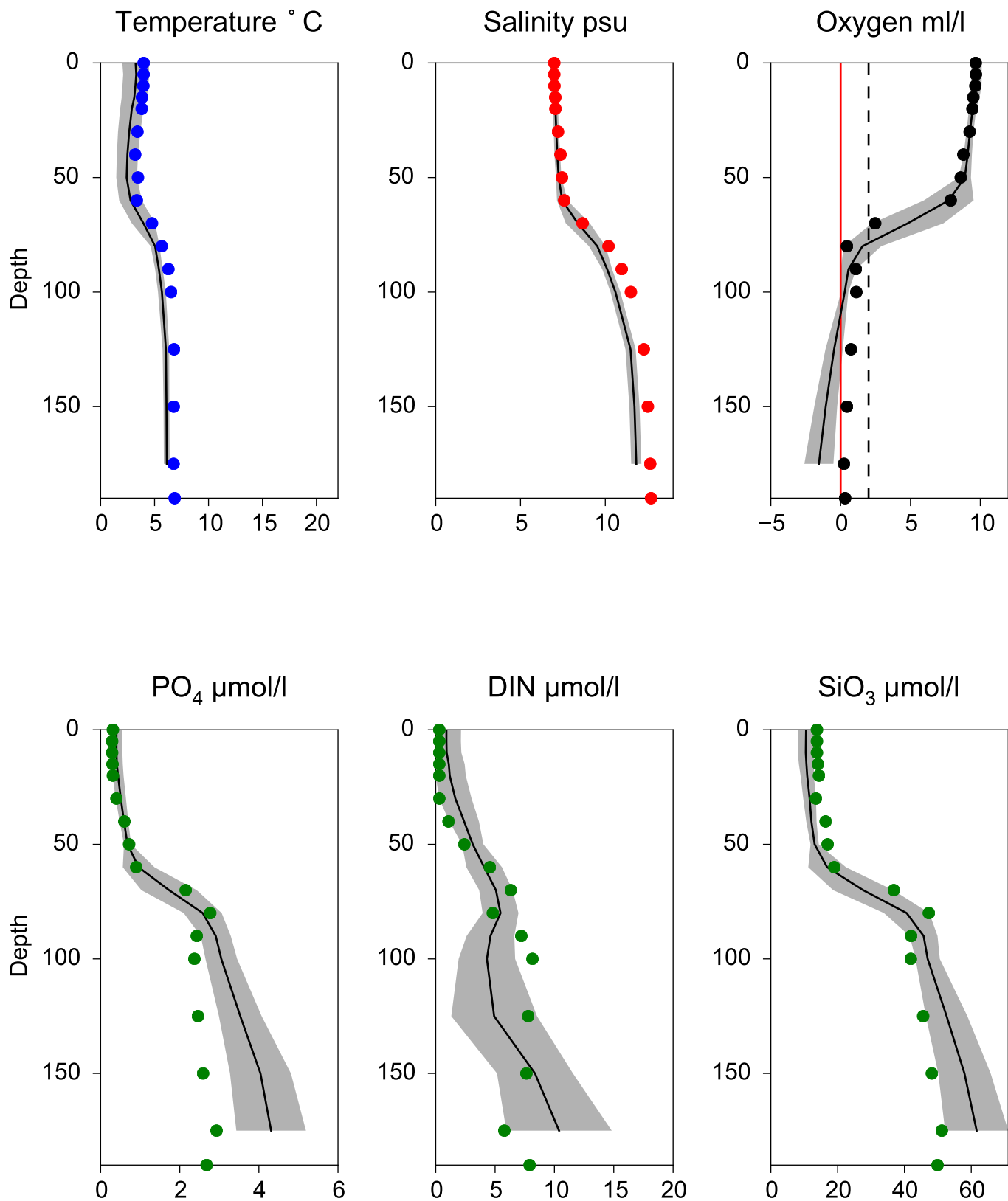


O₂ ml/l



Vertical profiles BY20 FÅRÖDJ April

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

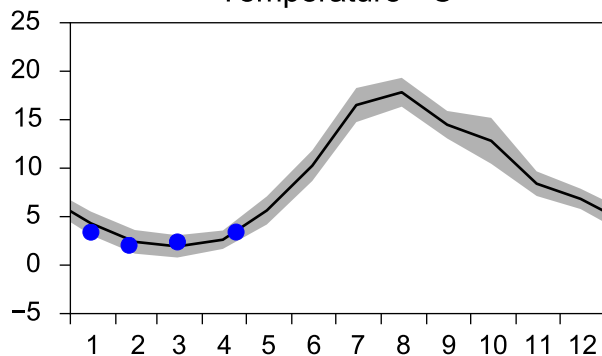
Annual Cycles

— Mean 2001-2015

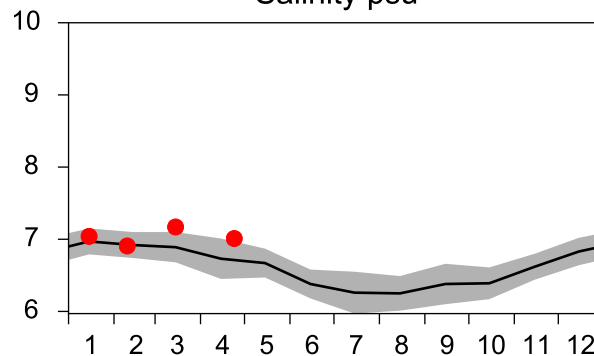
■ St.Dev.

● 2017

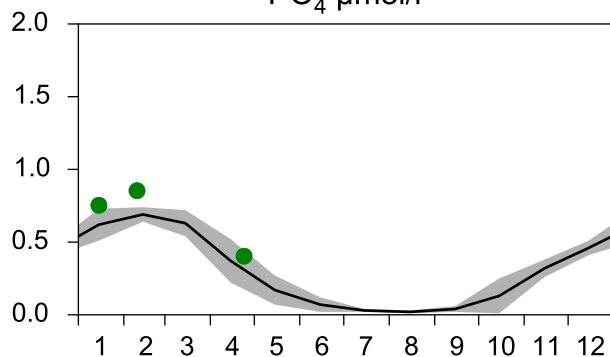
Temperature °C



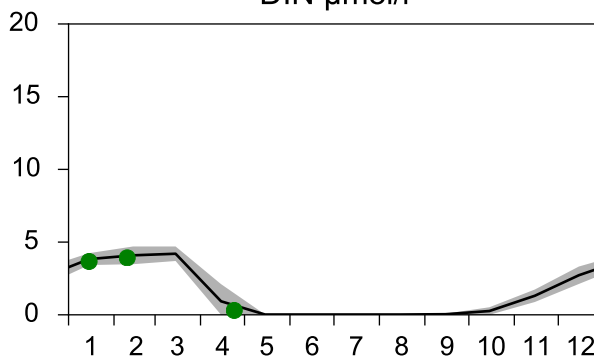
Salinity psu



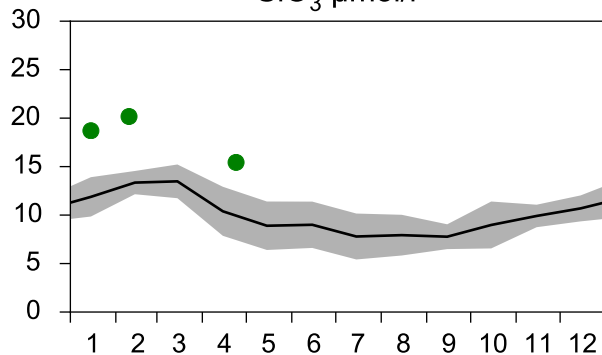
PO₄ µmol/l



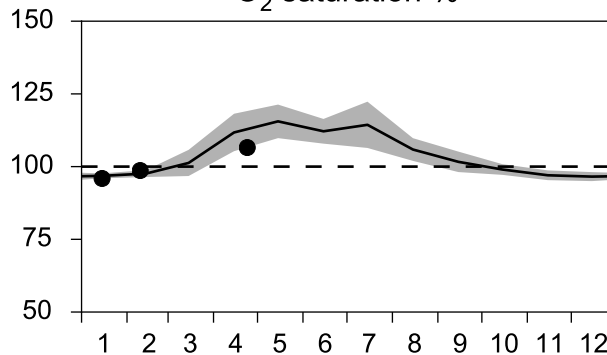
DIN µmol/l



SiO₃ µmol/l

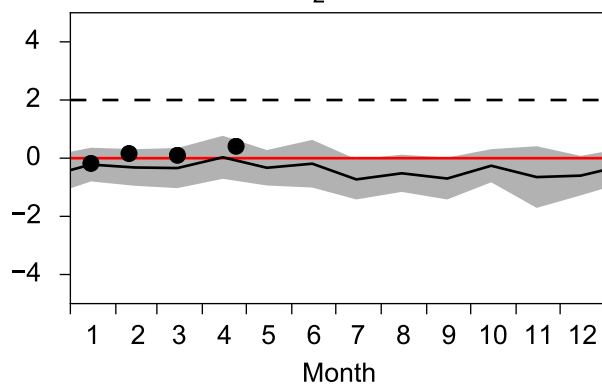


O₂ saturation %

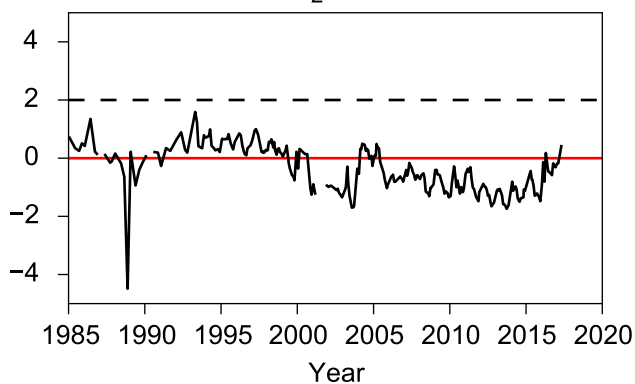


OXYGEN IN BOTTOM WATER (depth >= 150 m)

O₂ ml/l



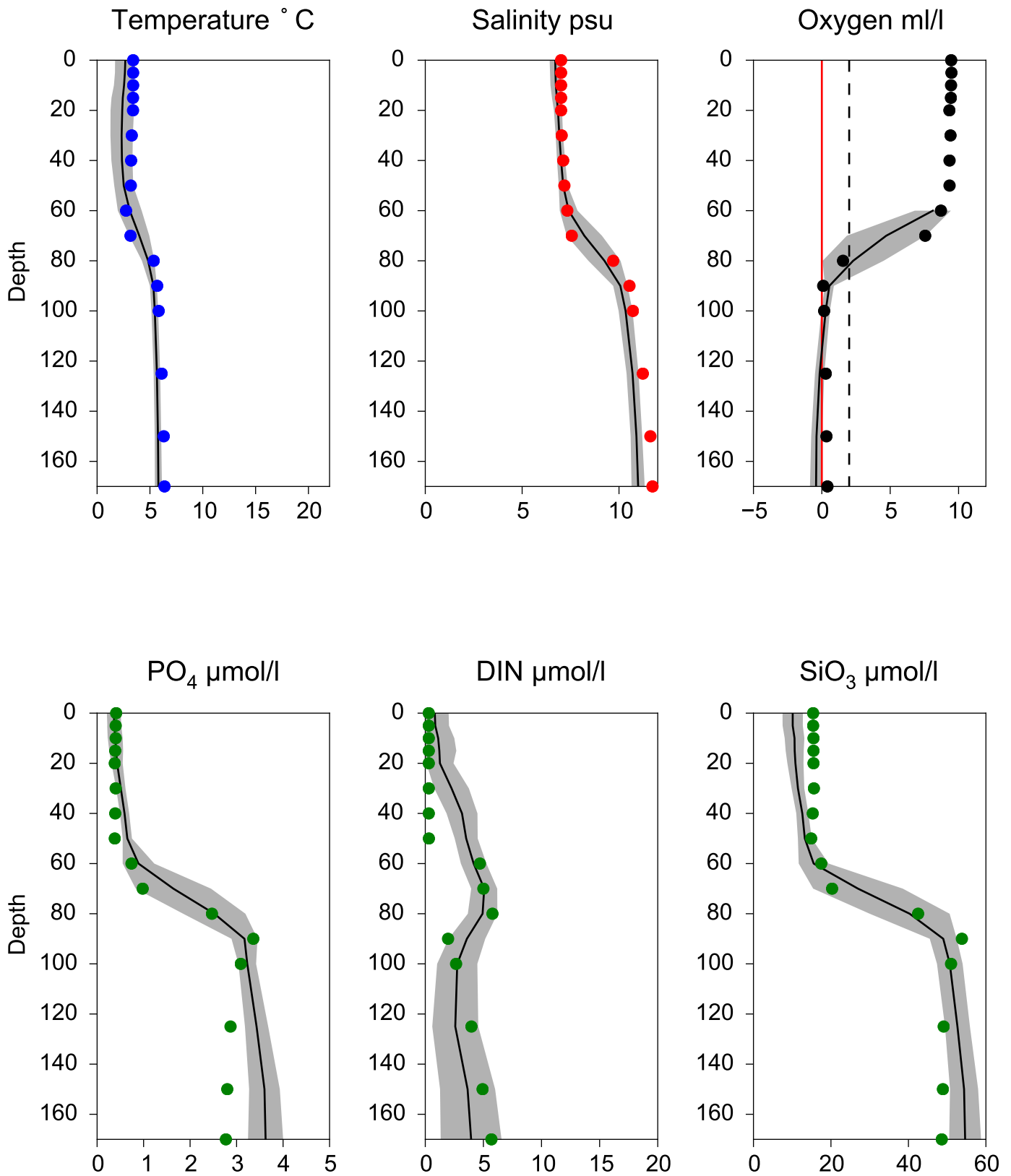
O₂ ml/l



Vertical profiles BY29 / LL19

April

— Mean 2001-2015 ■ St.Dev. ● 2017-04-24



STATION SLÄGGÖ SURFACE WATER (0-10 m)

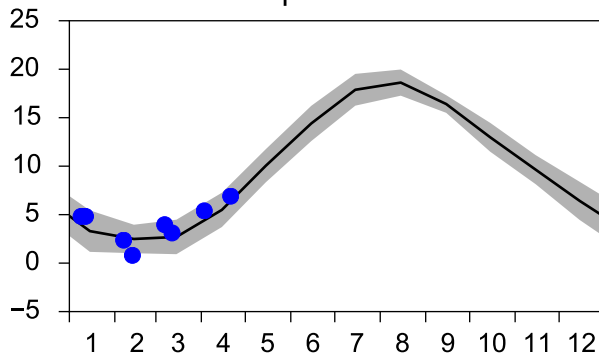
Annual Cycles

— Mean 2001-2015

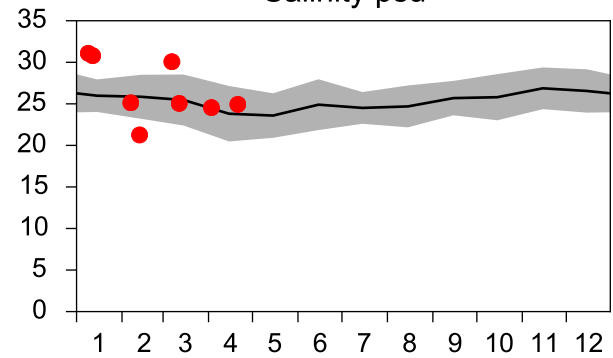
■ St.Dev.

● 2017

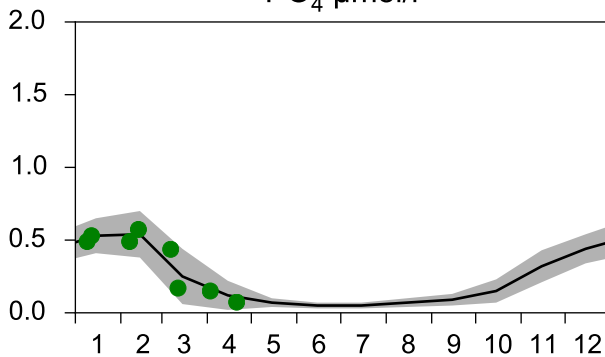
Temperature °C



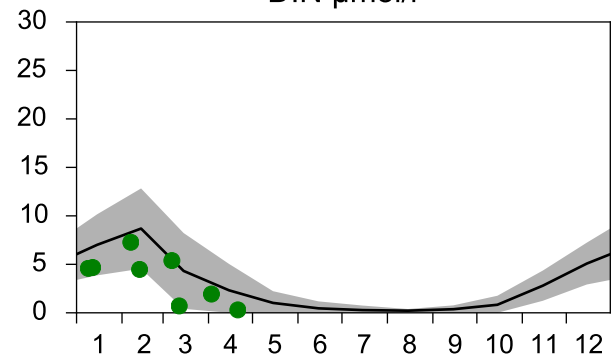
Salinity psu



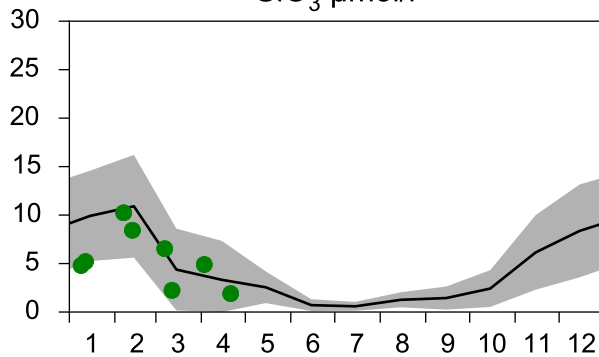
PO₄ µmol/l



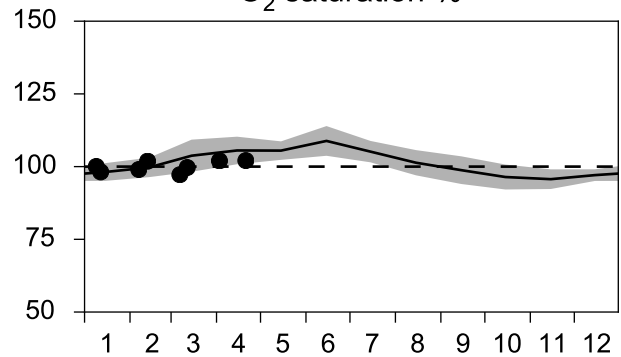
DIN µmol/l



SiO₃ µmol/l

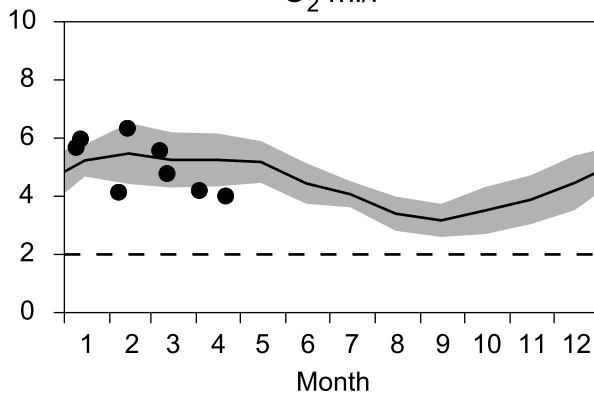


O₂ saturation %

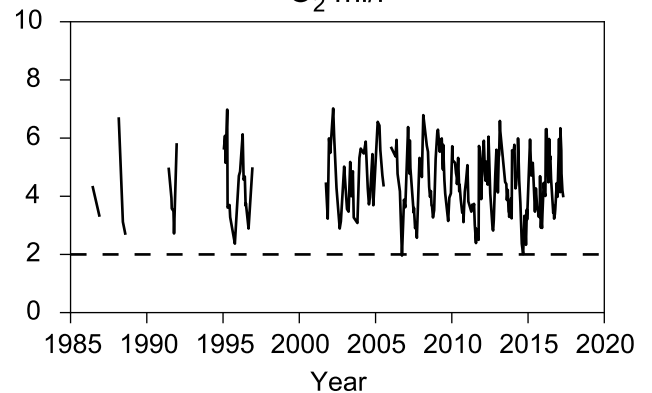


OXYGEN IN BOTTOM WATER (depth >= 64 m)

O₂ ml/l



O₂ ml/l



Vertical profiles SLÄGGÖ

April

— Mean 2001-2015 St.Dev. • 2017-04-03

