

Rapport från SMHIs utsjöexpedition med R/V Aranda



Expeditionens varaktighet:

2016-11-14 - 2016-11-21

Uppdragsgivare:

Sveriges Meteorologiska och Hydrologiska Institut,
Havs- och Vattenmyndigheten.

SAMMANFATTNING

Under expeditionen, som ingår i det svenska pelagiala övervakningsprogrammet, besöktes Skagerrak, Kattegatt, Öresund, Egentliga Östersjön och Finska Viken i samarbete med Finlands Miljöcentral.

Temperaturen i ytvattnet var normal till något lägre än normalt för årstiden. Salthalten uppvisade också normala värden utom i östra Skagerrak, Öresund och BY15 Gotlandsdjupet där de var över det normala.

Närsalterna var lägre än normalt i Kattegatt och Öresund på grund av en högre planktonaktivitet i området. I övriga delar av området var närsaltskoncentrationerna normala till något över det normala. Silikathalten i hela Egentliga Östersjön var fortsatt mycket över det normala.

I Egentliga Östersjön och Finska viken noterades akut syrebrist redan från 60-70 meters djup. Helt syrefria förhållanden uppmättes i Finska viken, Västra och Norra Gotlandsbassängen från djup överstigande 80-90 meter och i Östra Gotlandsbassängen vid bottnen från 225 meter.

Nästa ordinarie expedition planeras starta 7:e december.

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RESULTAT

Expeditionen genomfördes ombord det finska forskningsfartyget Aranda och startade i Helsingfors den 14:e november och avslutades i samma hamn den 21:e. Vindarna var svaga till måttliga från varierande riktning under expeditionen utom i Skagerrak där det blåste hård kuling från SSW.

Under expeditionen utfördes, på uppdrag av Umeå universitet, extra zooplanktonprovtagning på stationerna BY2, BY5 och BY15. Dessa prover ingår i ett forskningsprojekt för analys av kvicksilver.

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

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

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

Skagerrak

Temperaturen i ytvattnet var normal till något under normal för årstiden och låg omkring 8-9°C. Ytsalthalten var högre än normalt i de östra och södra delarna av Skagerrak, i övrigt normalt. De lägsta salthalterna i ytvattnet uppmättes vid Å17 på ca 32 psu och som högst ca 34 psu vid P2 och Å13. Haloklinen och termoklin sammanföll i de yttre delarna vid ca 25 meter medan det inte fanns någon skiktning i de östra delarna.

Fosfat- och kvävehalterna i ytlagret var normala medan silikathalterna var lägre än normalt för årstiden. Koncentrationen av fosfat låg omkring 0,15 – 0,34 µmol/l och koncentrationen av nitrat+ nitrit varierade mellan 0,59 till 3,70 µmol/l. Silikatkoncentration varierade mellan 0,5 och 2,1 µmol/l.

Vid samtliga stationer var fluorescensen låg men viss planktonaktivitet kunde ses i ytlagret.

Bottenvattnet var väl syresatt, även vid Släggö i Gullmarsfjordens mynning.

Kattegatt och Öresund

Temperaturen i ytvattnet var något lägre än normalt för årstiden och varierade kring 6,5°C. Ytsalthalten var normal i Kattegatt och över normalt i Öresund och varierade mellan 19 och 24 psu i Kattegatt och ca 15 psu i Öresund. Haloklinen sammanföll med termoklinen och återfanns på 10-15 meters djup.

Samtliga närsalter i ytvattnet uppvisade halter som är lägre än normalt för årstiden utom i Öresund där de var normala. Fosfatkoncentrationerna varierade mellan 0,09 och 0,14 µmol/l förutom i Öresund där koncentrationen var 0,30 µmol/l. Summan av oorganiskt kväve, nitrat+nitrit, var under

detektionsgränsen 0,10 $\mu\text{mol/l}$ i Kattegatt och i Öresund observerades halter på 1,40 $\mu\text{mol/l}$. Silikat varierade mellan 1,9 och 0,2 $\mu\text{mol/l}$ i Kattegatt, i Öresund 6,7 $\mu\text{mol/l}$.

Syrgashalterna var åter normala i hela Kattegatts djupvatten och Öresund.

Fluorescensmätningar visade på aktivitet runt 10 meter i hela området

Egentliga Östersjön

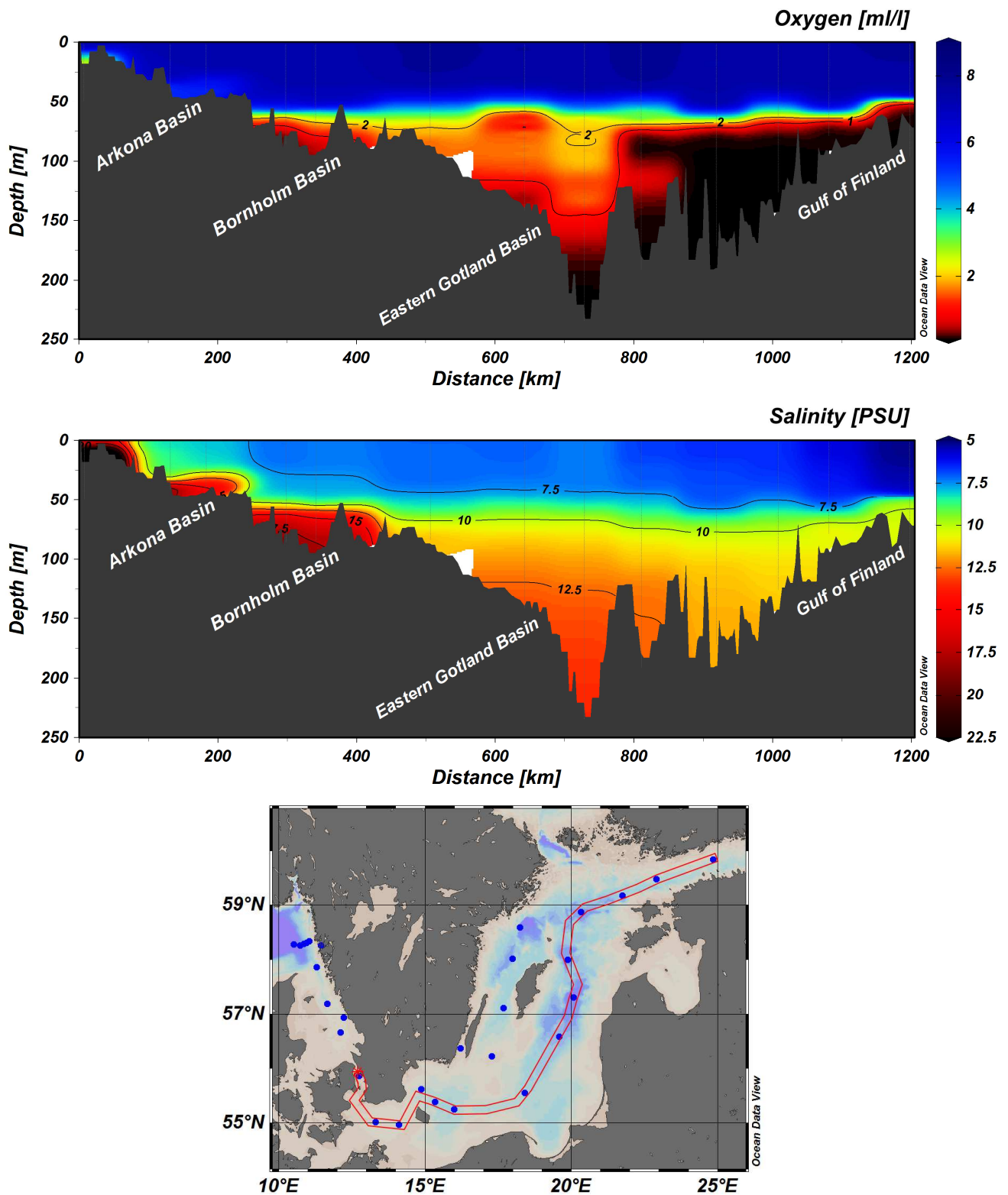
Temperaturen i ytvattnet var normal för årstiden i hela området och varierade mellan 6 och 9°C, högst i Arkonabassängen i sydväst och lägst i Finska viken. Salthalten var normal i hela det undersökta området utom på BY15 Gotlandsdjupet där den var över det normala. Salthalten var lägst i Finska vikens ytvatten 5 psu och högst i sydväst, med dryga 8 psu. Haloklin och termoklin sammanföll och låg på omkring 25-35 meters djup i Arkonabassängen och på 40-60 meters djup i resten av området.

Fosfathalterna var normala i hela området förutom i Östra Gotlandsbassängen där de var något högre än normalt. Halterna varierade mellan 0,35 och 0,78 $\mu\text{mol/l}$. Halterna av oorganiskt kväve var något över det normala i hela det undersökta området och varierade mellan 1,84 och 5,20 $\mu\text{mol/l}$. Silikatkoncentrationerna var över eller mycket över det normala i hela området och halterna varierade mellan 10,9 och 16,6 $\mu\text{mol/l}$.

I Västra Gotlandsbassängen var syresituationen fortsatt allvarlig. Helt syrefria förhållanden uppmättes redan vid djup överstigande 80-100 meter. Även i Östra Gotlandsbassängen påträffades nu helt syrefria förhållanden vid botten från 225 meter på BY15 Gotlandsdjupet medan det i Norra Gotlandsbassängen och i Finska viken påträffades syrefria förhållanden från 60-80 meter. Akut syrebrist, <2ml/l, noterades från 60-80 meters djup i hela Egentliga Östersjön.

Eftersom den nuvarande situationen på BY15 påminner om hur det var före inflödet återupptogs den här månaden den extraserie som förut har tagits på BY15. Syftet med extraserien är att med en noggrannhet av 5 m ringa in det djup där svavelväte börjar. Efter inflödet 2014 har BY15 varit syresatt eller så har det varit intermediära skikt av svavelväte som har varit mycket variabla och därför har inte extraserien tagits på flera månader.

Fluorescensmätningarna visade att planktonaktiviteten var låg i hela området.



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

DELTAGARE

**Namn**

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Daniel Bergman Sjöstrand
Johan Håkansson
Sara Johansson
Daniel Simonsson
Sari Sipilä
Ann-Turi Skjevik

Expeditionsledare

Från

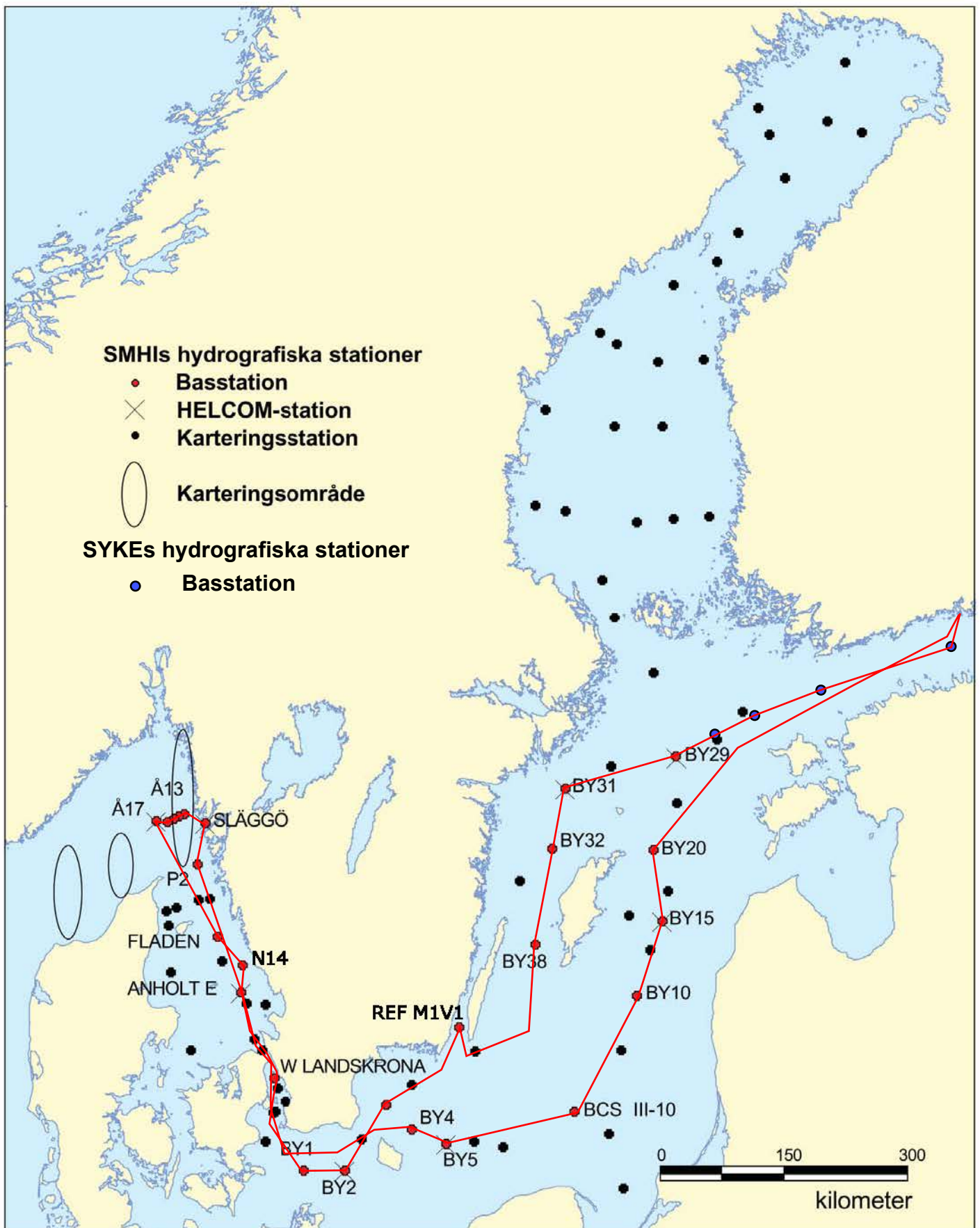
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BILAGOR

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

TRACKCHART

Country: Sweden
 Ship: R/V ARANDA
 Date: 20161114-20161121
 Series: 0571-0601



Time: 15:24

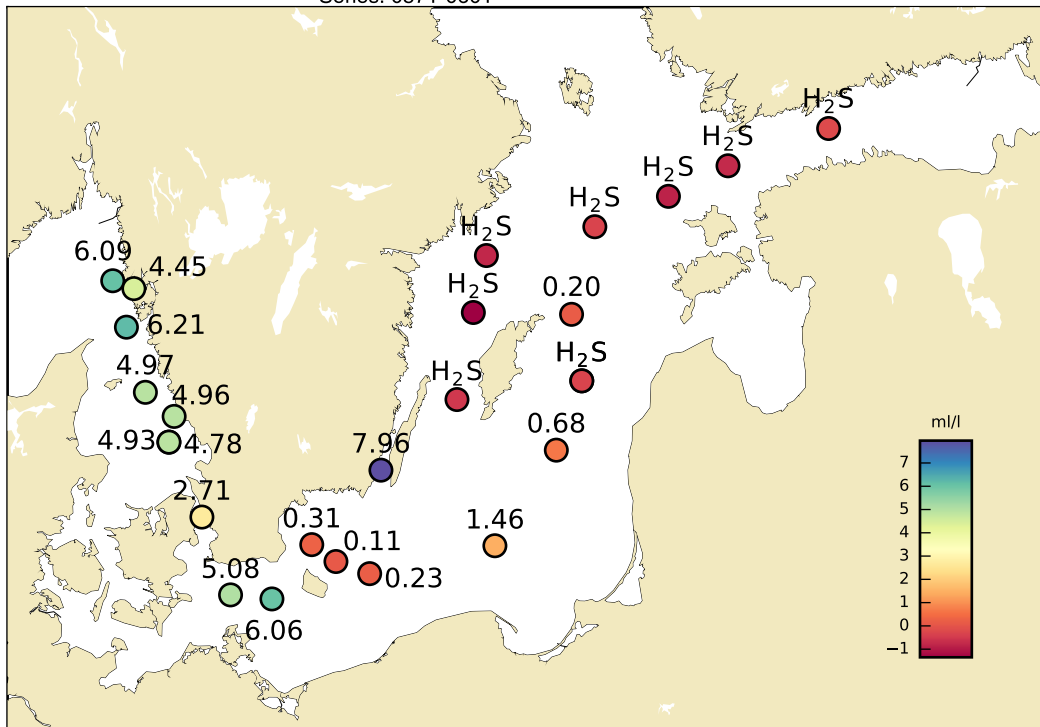
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Country: Finland

Ship: Aranda

Date: 20161114-20161120

Series: 0571-0601



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

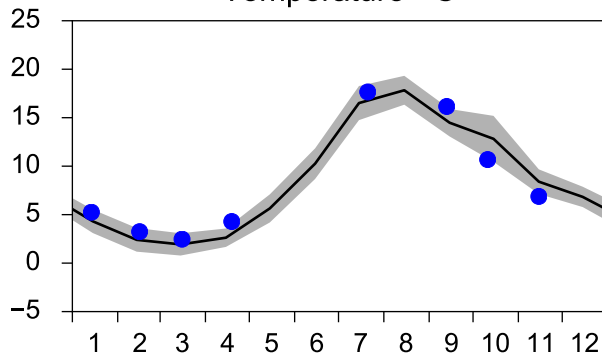
Annual Cycles

— Mean 2001-2015

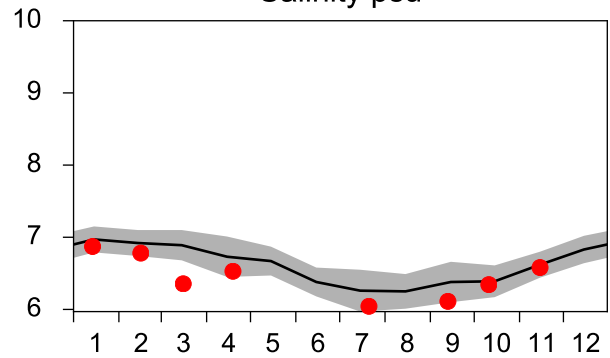
■ St.Dev.

● 2016

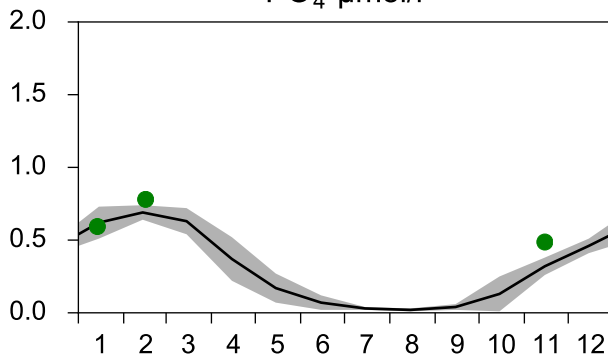
Temperature °C



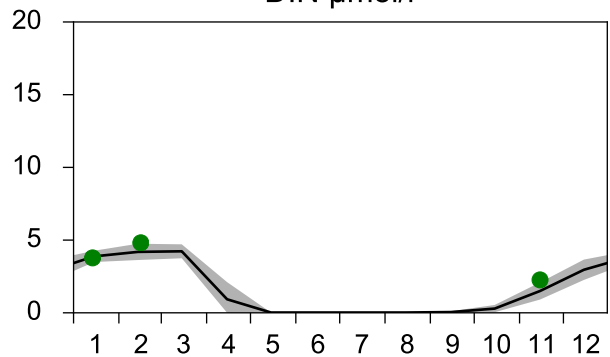
Salinity psu



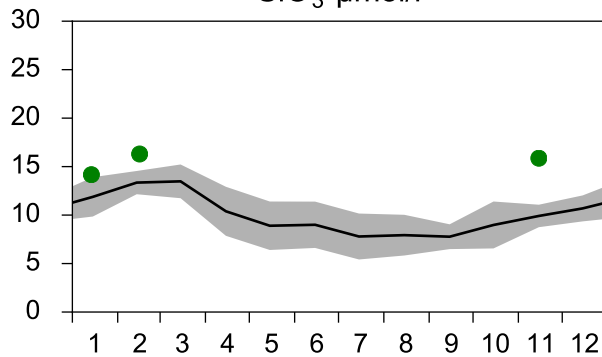
PO₄ µmol/l



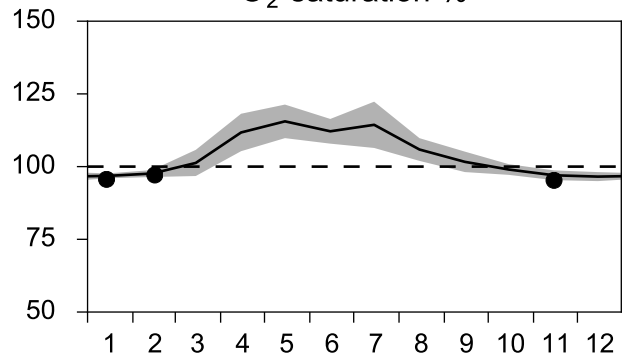
DIN µmol/l



SiO₃ µmol/l

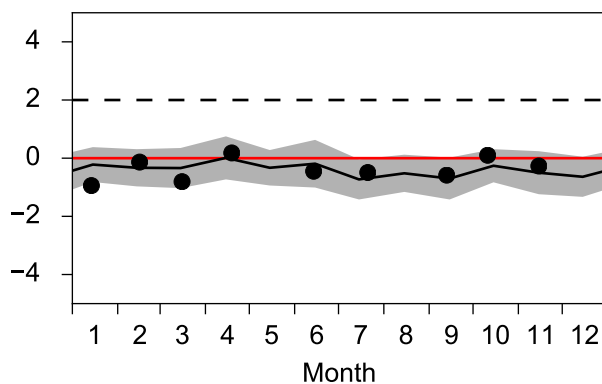


O₂ saturation %

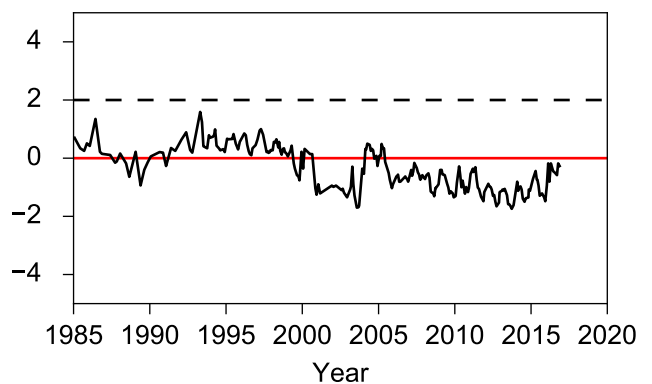


OXYGEN IN BOTTOM WATER (depth >= 150 m)

O₂ ml/l

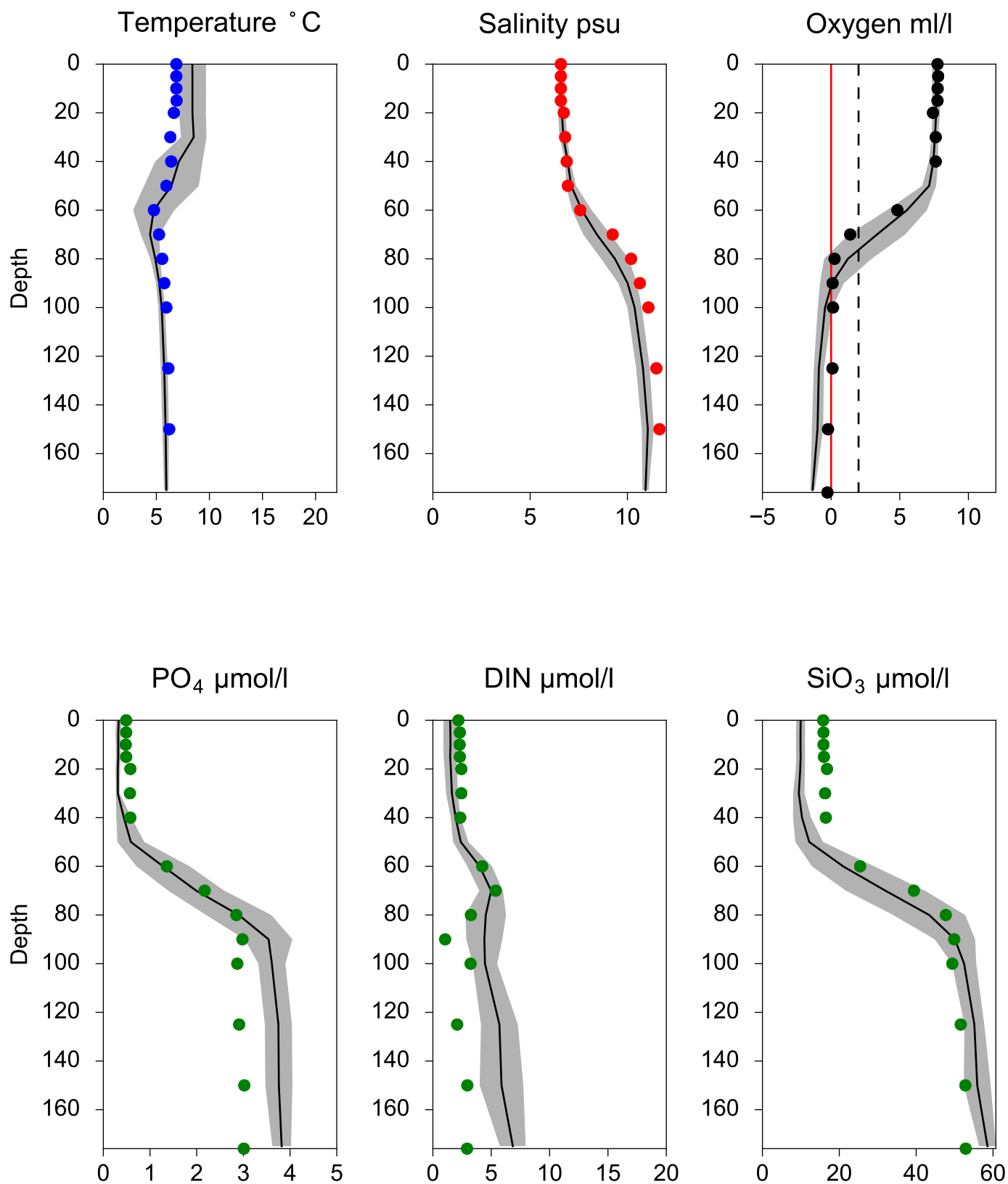


O₂ ml/l



Vertical profiles BY29 / LL19 November

— Mean 2001-2015 St.Dev. • 2016-11-15



STATION BY31 LANDSORTSDJ SURFACE WATER (0-10m)

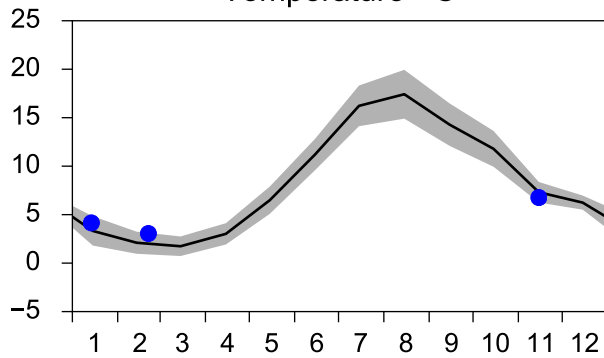
Annual Cycles

— Mean 2001-2015

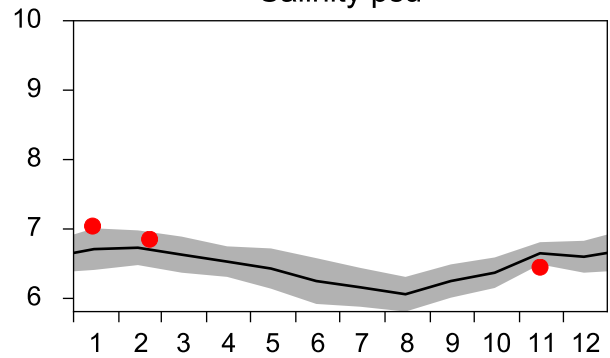
■ St.Dev.

● 2016

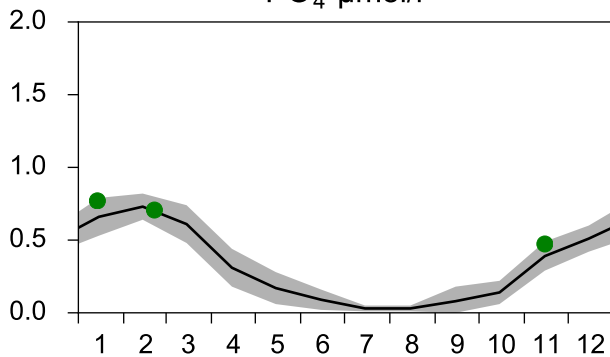
Temperature °C



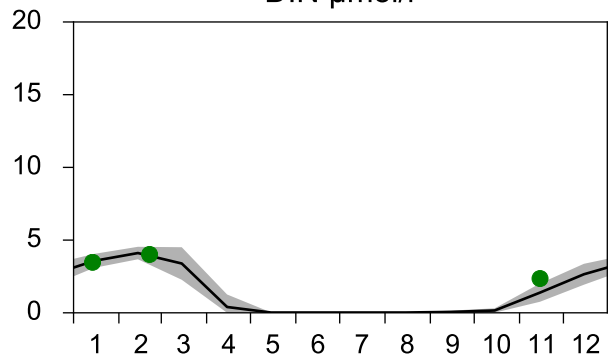
Salinity psu



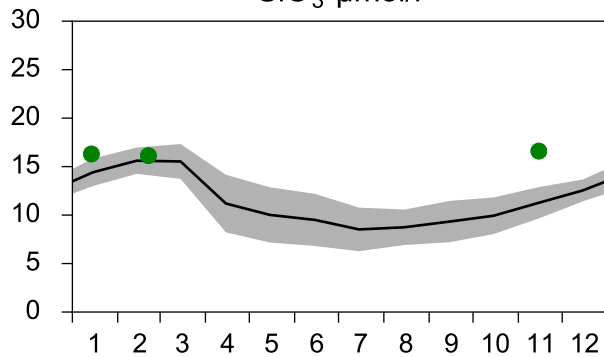
PO₄ µmol/l



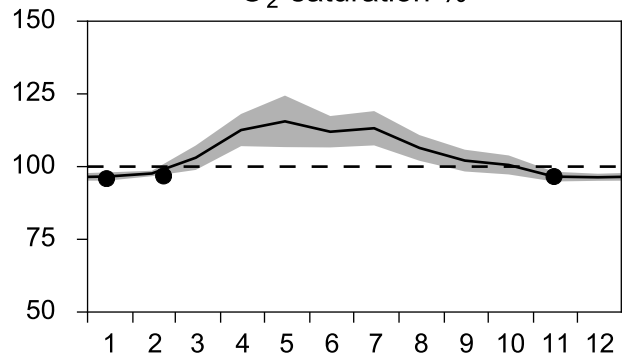
DIN µmol/l



SiO₃ µmol/l

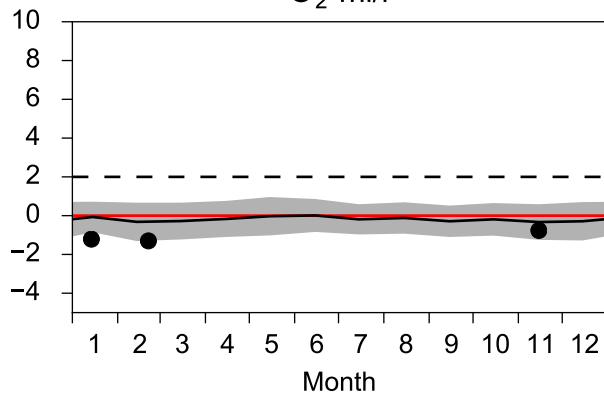


O₂ saturation %

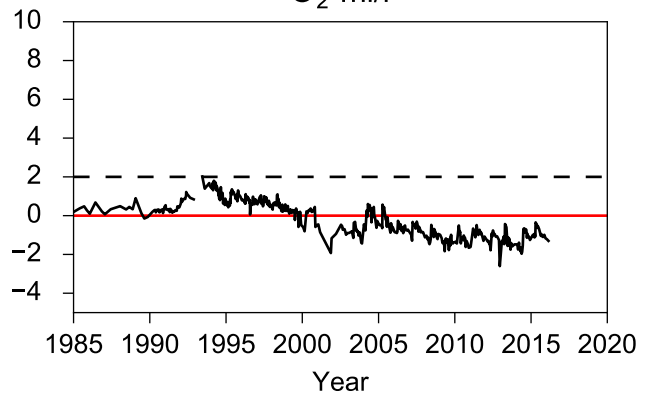


OXYGEN IN BOTTOM WATER (depth >= 425 m)

O₂ ml/l

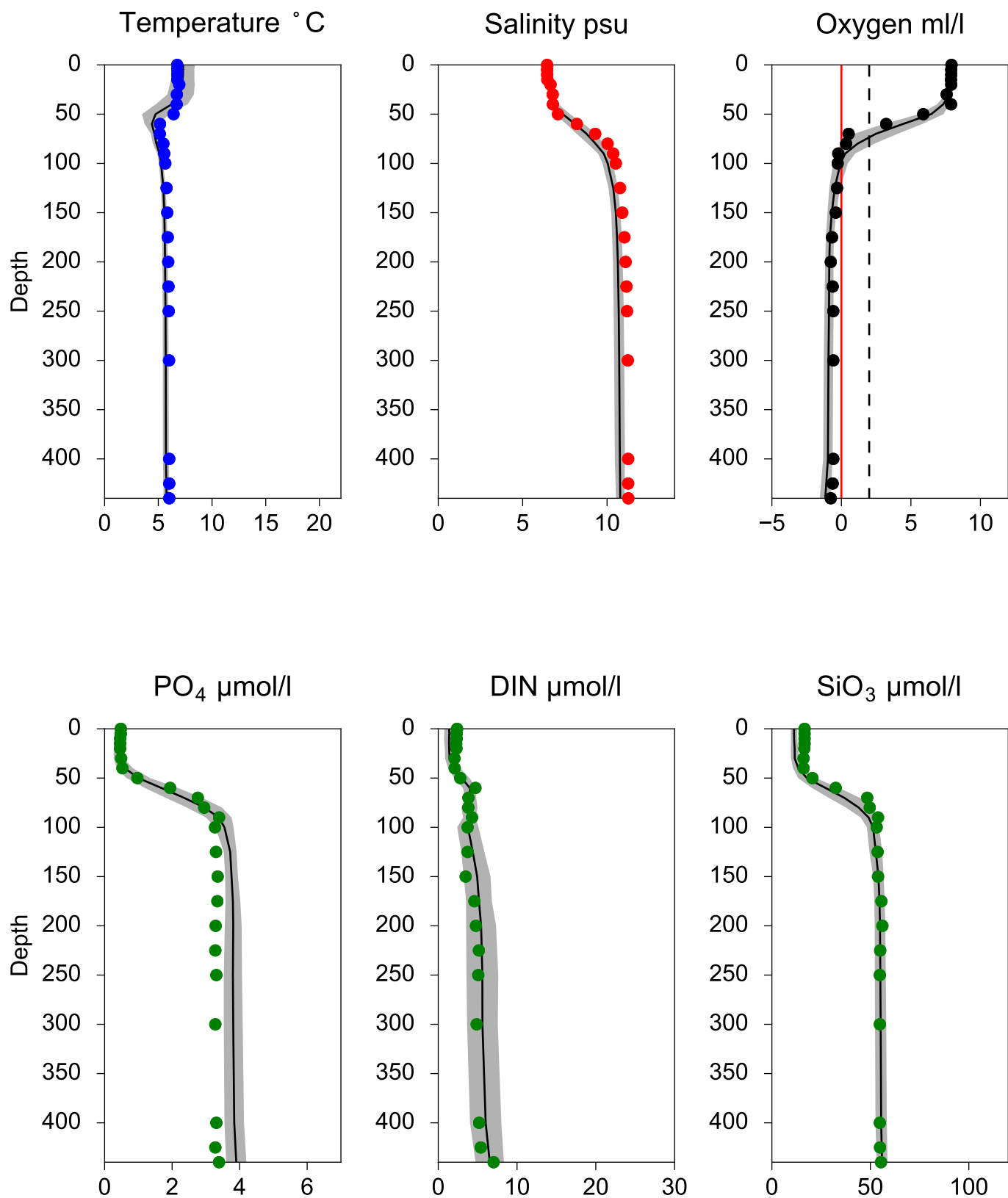


O₂ ml/l



Vertical profiles BY31 LANDSORTSDJ November

— Mean 2001-2015 ■ St.Dev. ● 2016-11-15



STATION BY32 NORRKÖPINGSDJ SURFACE WATER (0-10m)

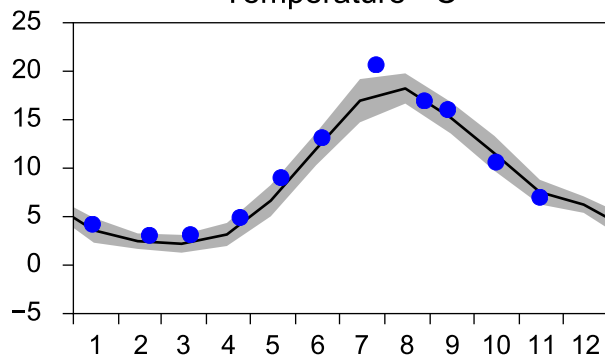
Annual Cycles

— Mean 2001-2015

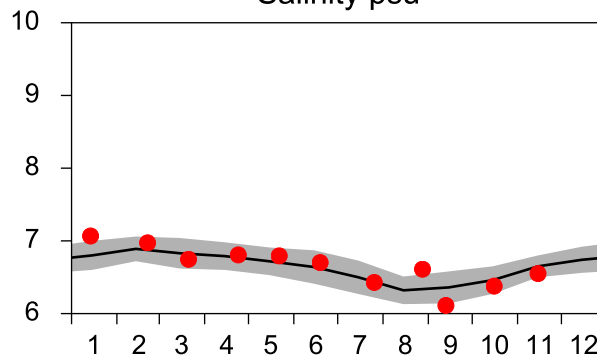
■ St.Dev.

● 2016

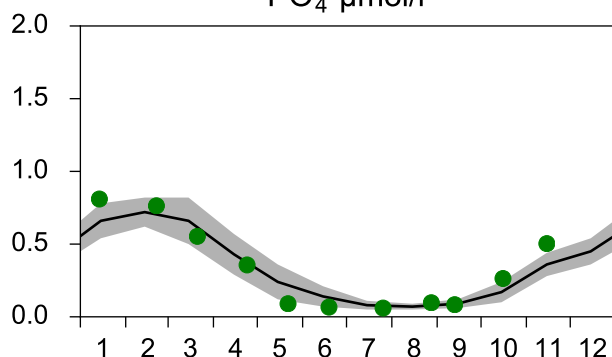
Temperature °C



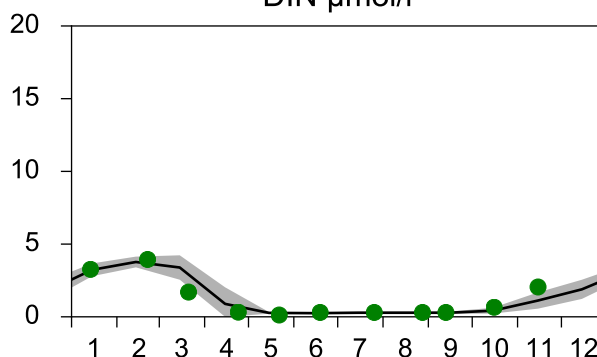
Salinity psu



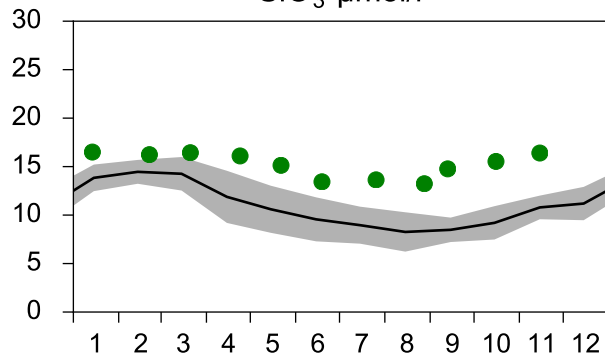
PO₄ µmol/l



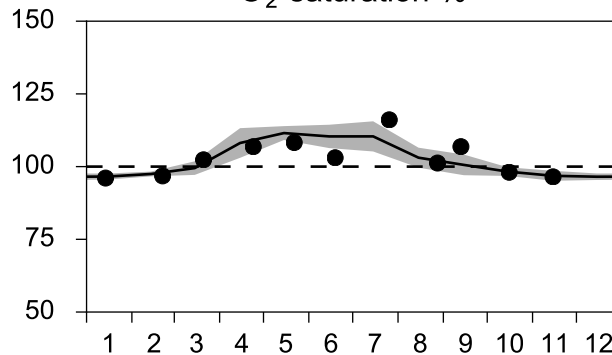
DIN µmol/l



SiO₃ µmol/l

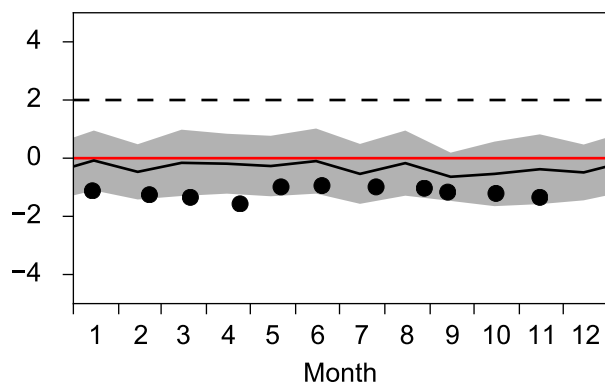


O₂ saturation %

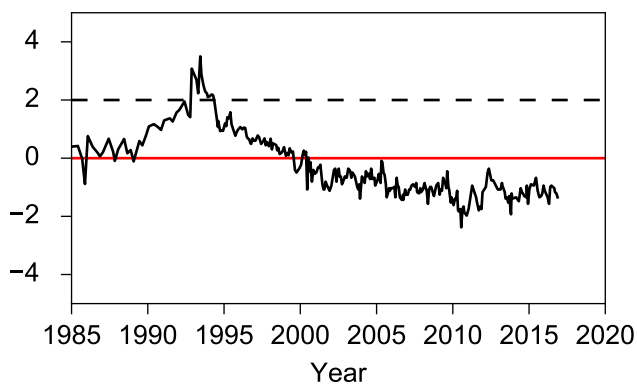


OXYGEN IN BOTTOM WATER (depth >= 175 m)

O₂ ml/l

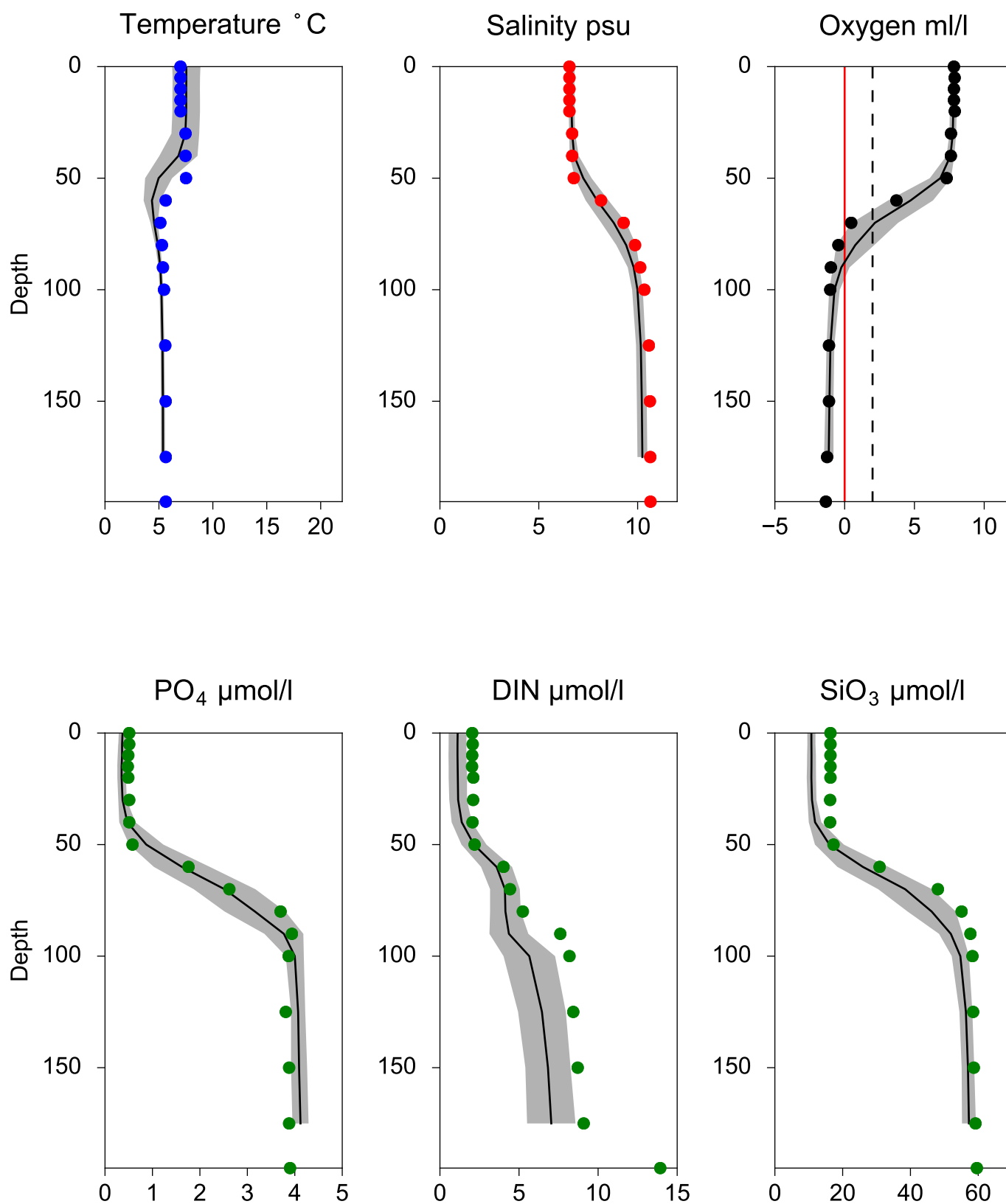


O₂ ml/l



Vertical profiles BY32 NORRKÖPINGSDJ November

— Mean 2001-2015 St.Dev. • 2016-11-15



STATION BY38 KARLSÖDJ SURFACE WATER (0-10m)

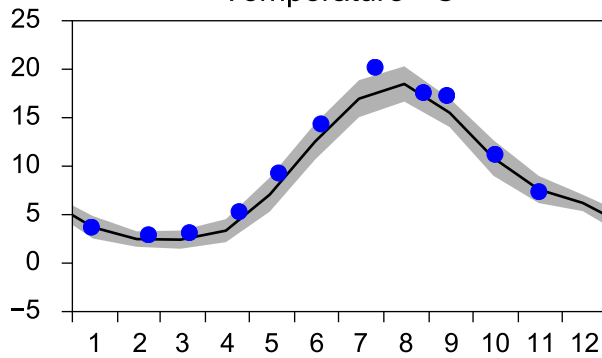
Annual Cycles

— Mean 2001-2015

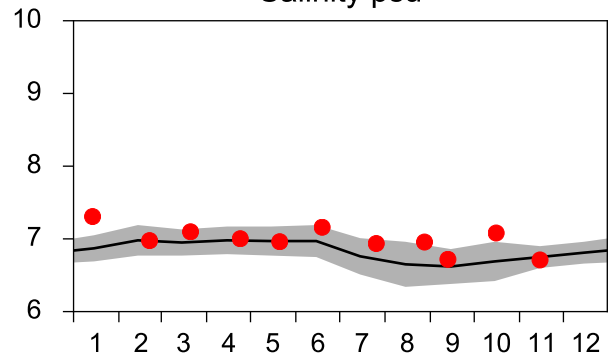
■ St.Dev.

● 2016

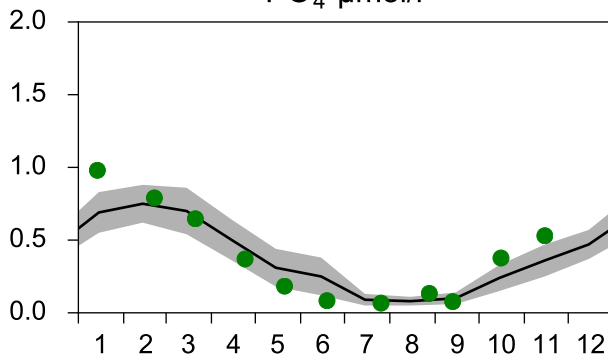
Temperature °C



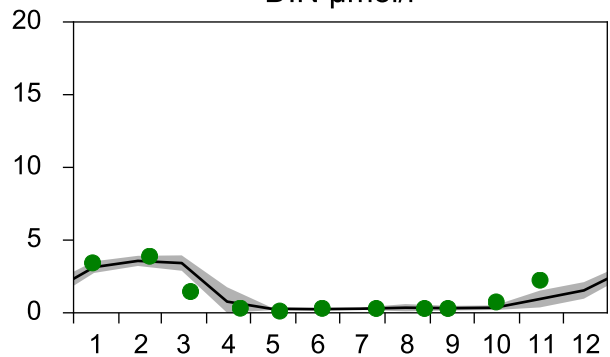
Salinity psu



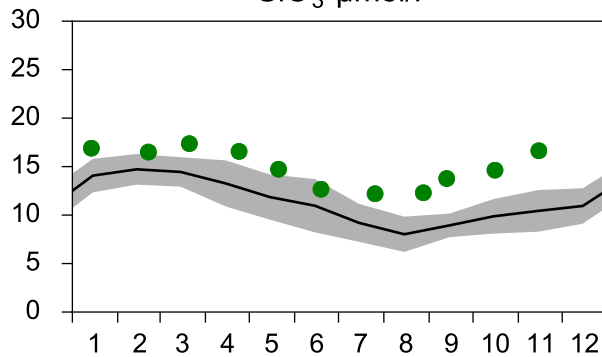
PO₄ µmol/l



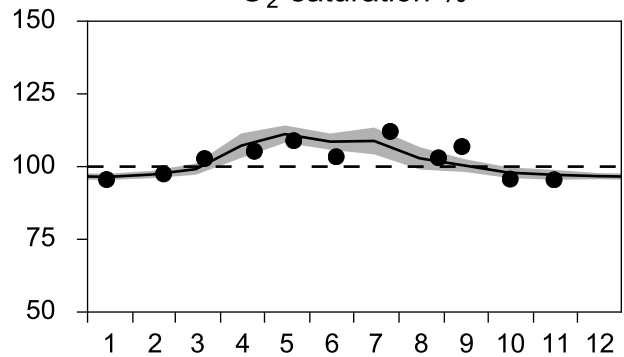
DIN µmol/l



SiO₃ µmol/l

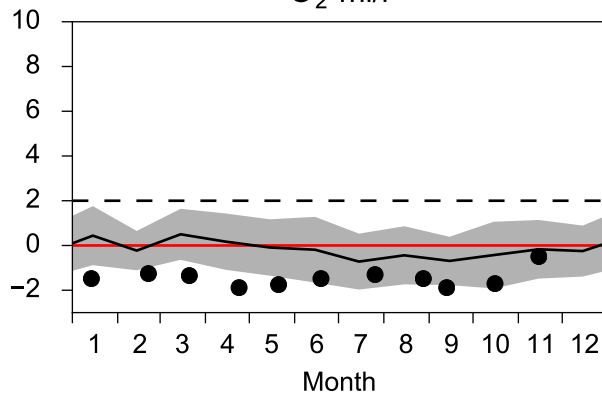


O₂ saturation %

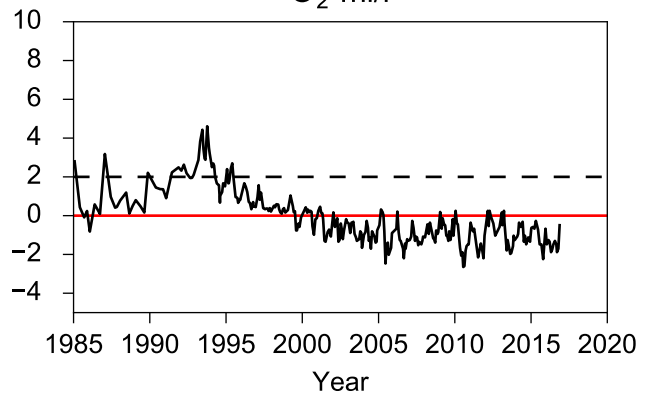


OXYGEN IN BOTTOM WATER (depth >= 100 m)

O₂ ml/l

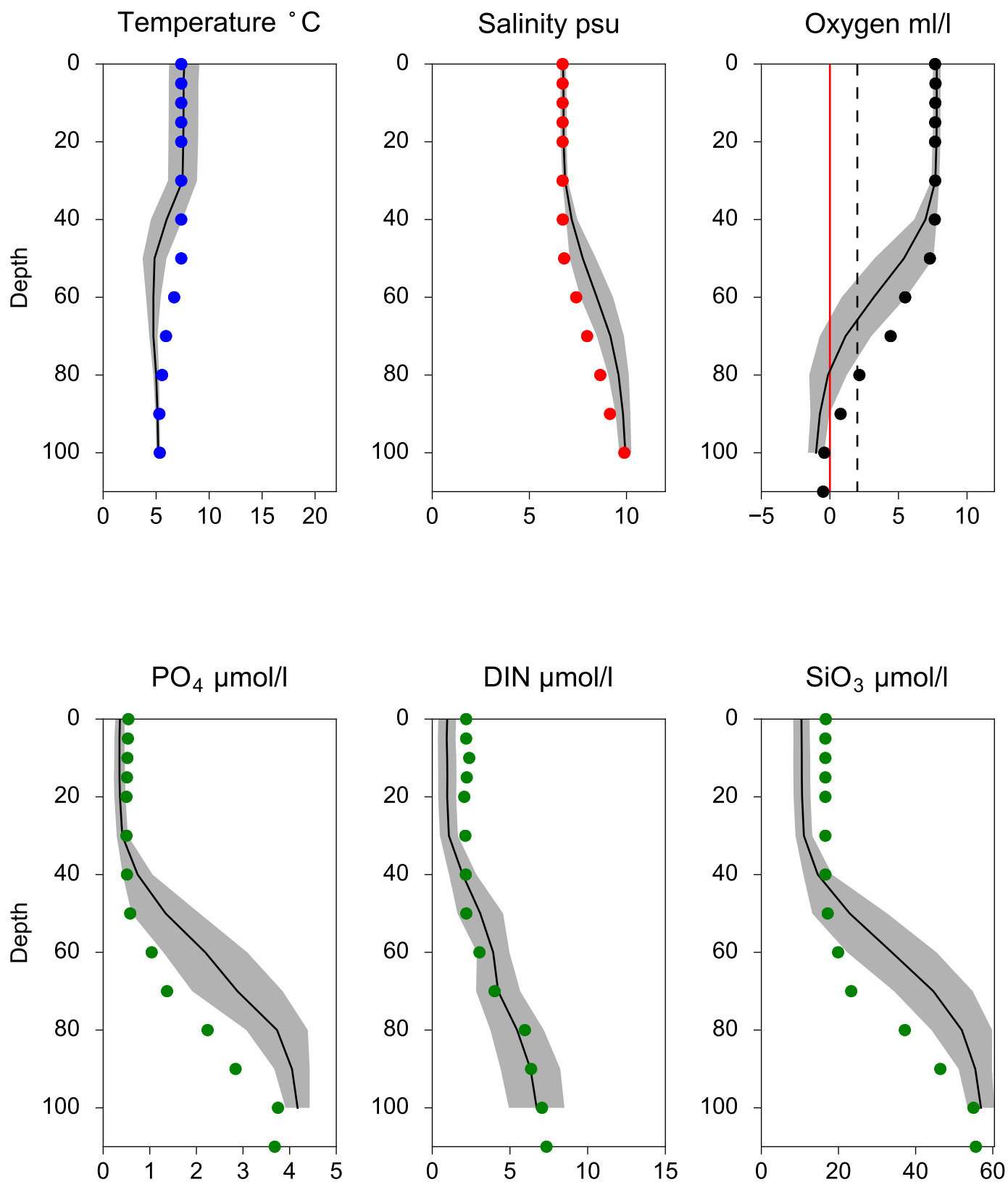


O₂ ml/l



Vertical profiles BY38 KARLSÖDJ November

— Mean 2001-2015 ■ St.Dev. ● 2016-11-15



STATION REF M1V1 SURFACE WATER (0-10m)

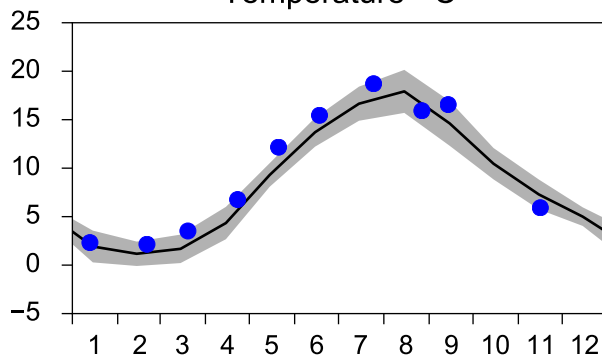
Annual Cycles

— Mean 2001-2015

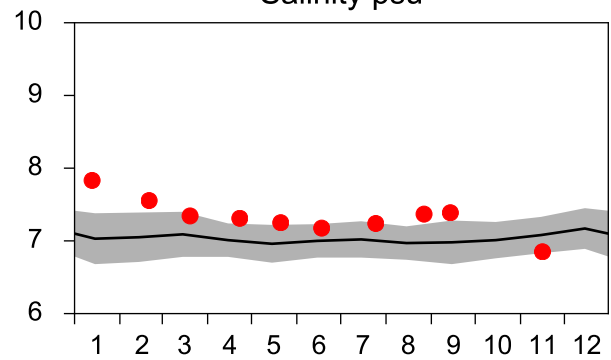
■ St.Dev.

● 2016

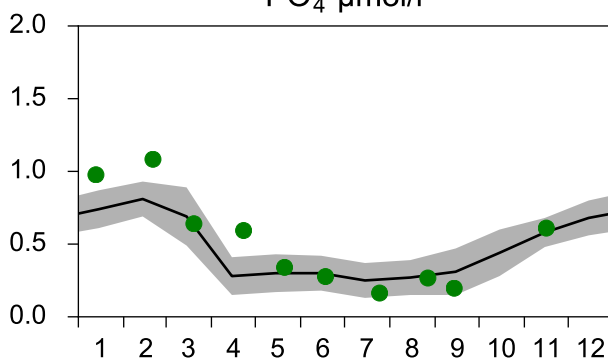
Temperature °C



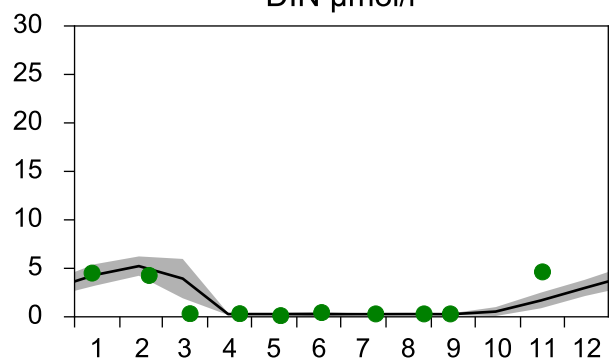
Salinity psu



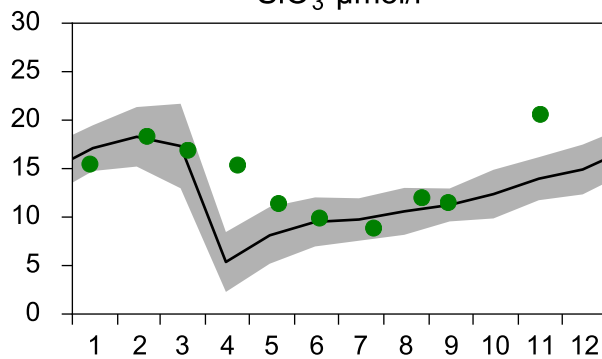
PO₄ µmol/l



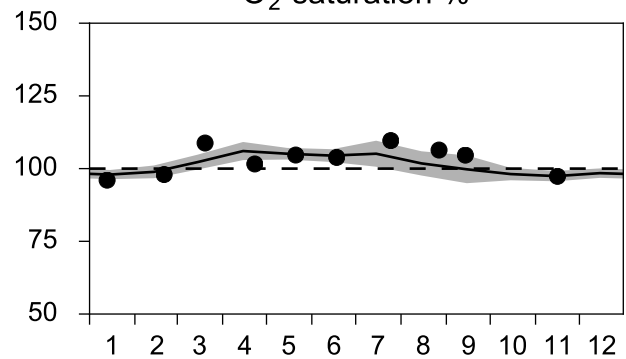
DIN µmol/l



SiO₃ µmol/l

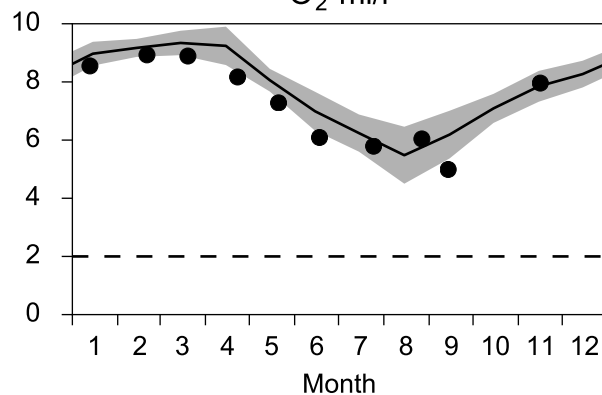


O₂ saturation %

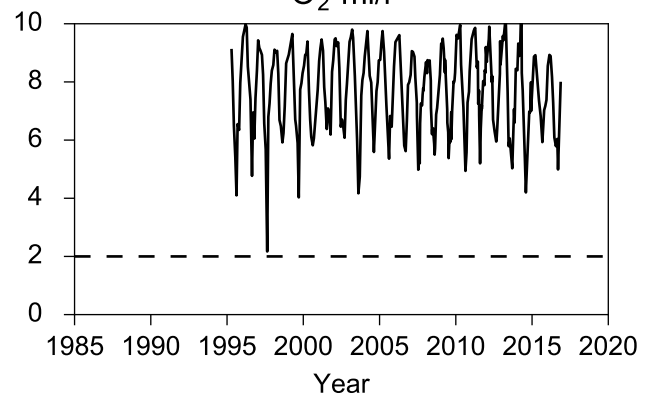


OXYGEN IN BOTTOM WATER (depth >= 17 m)

O₂ ml/l

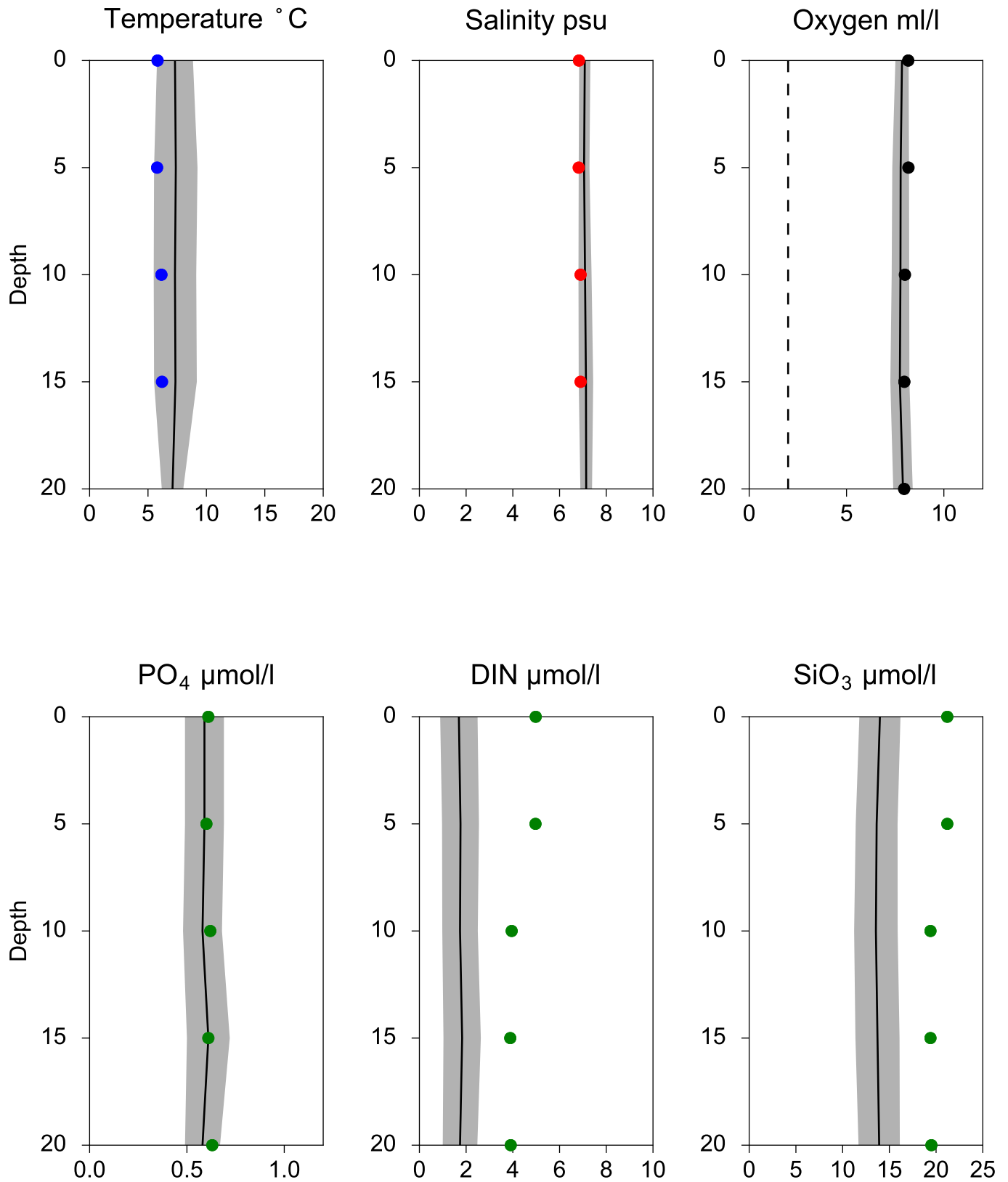


O₂ ml/l



Vertical profiles REF M1V1 November

— Mean 2001-2015 St.Dev. • 2016-11-16



STATION HANÖBUKTEN SURFACE WATER (0-10m)

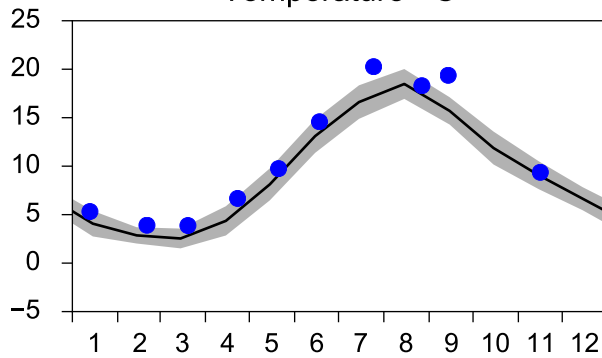
Annual Cycles

— Mean 2001-2015

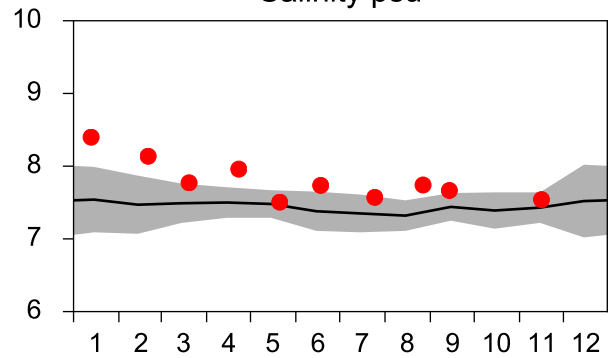
■ St.Dev.

● 2016

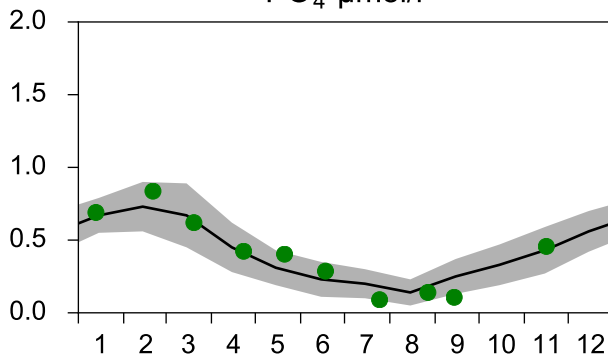
Temperature °C



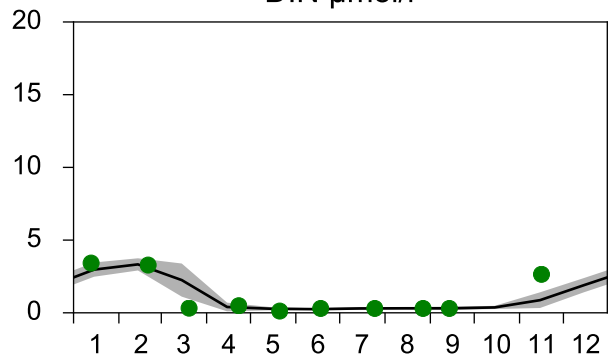
Salinity psu



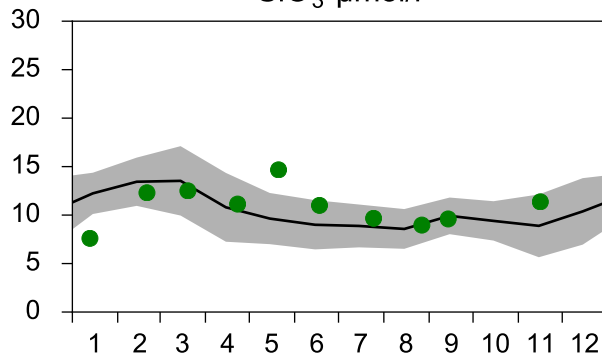
PO₄ µmol/l



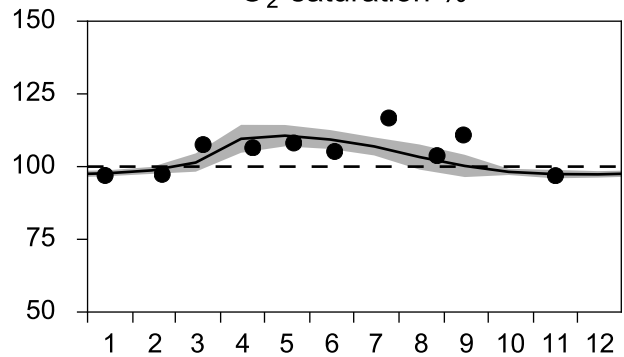
DIN µmol/l



SiO₃ µmol/l

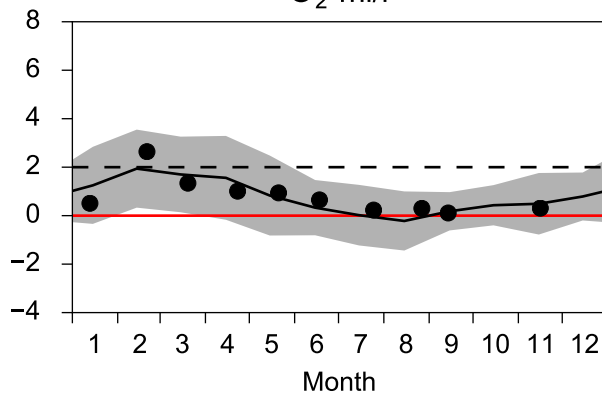


O₂ saturation %

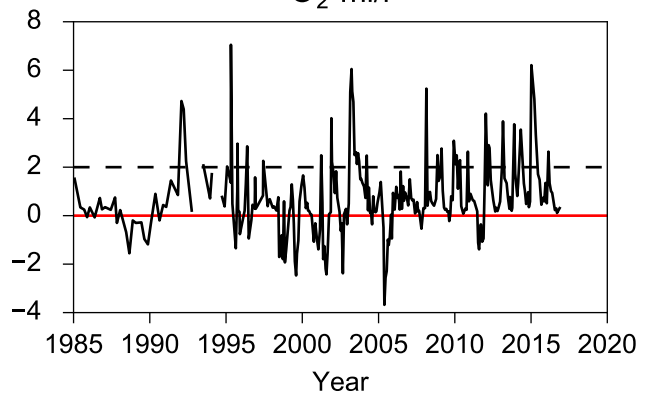


OXYGEN IN BOTTOM WATER (depth >= 70 m)

O₂ ml/l

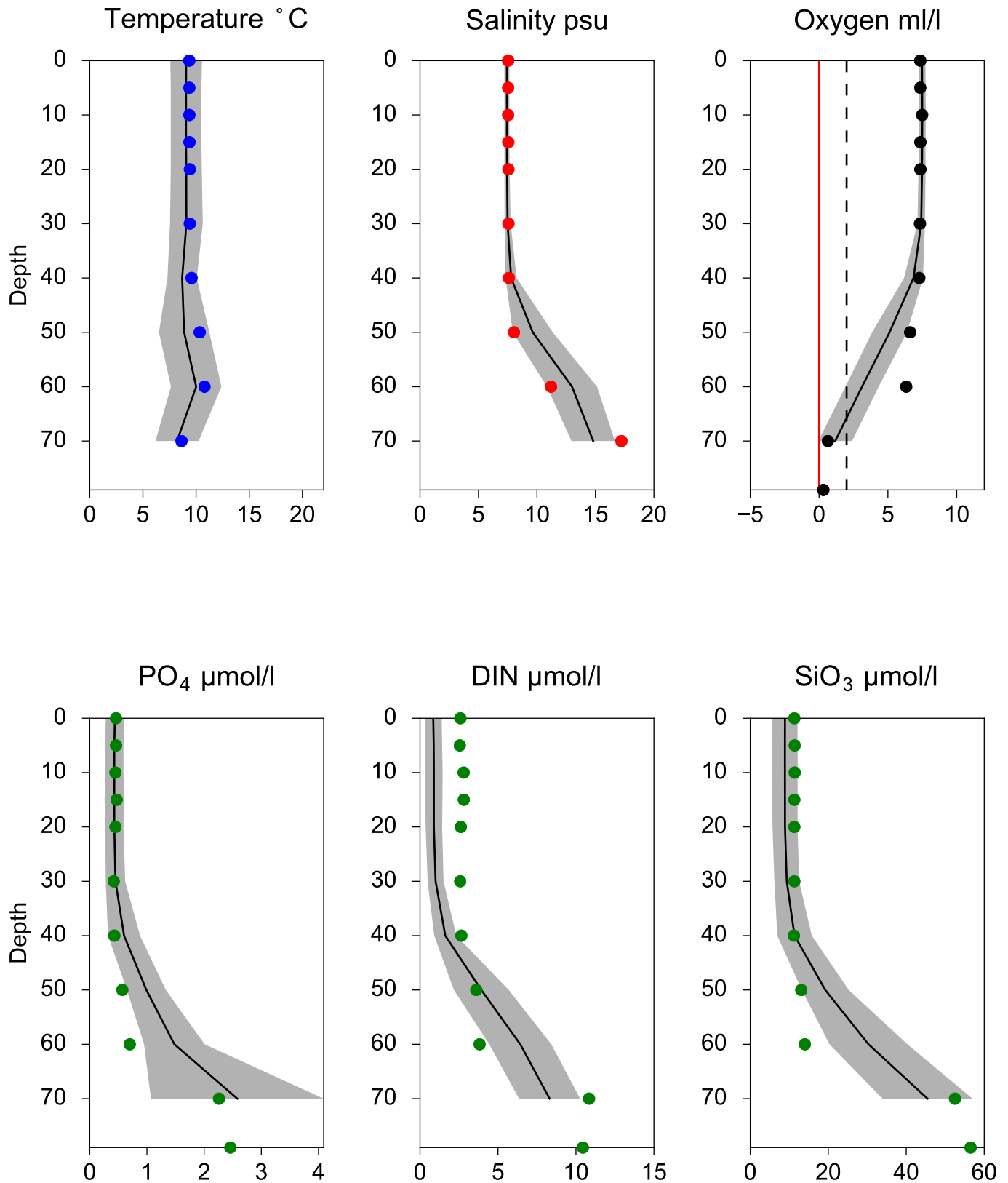


O₂ ml/l



Vertical profiles HANÖBUKTEN November

— Mean 2001-2015 St.Dev. • 2016-11-16



STATION BY2 ARKONA SURFACE WATER (0-10m)

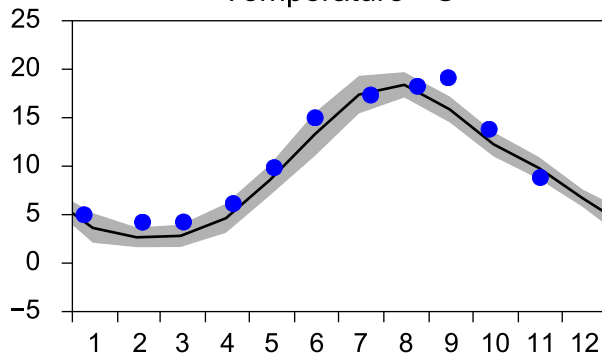
Annual Cycles

— Mean 2001-2015

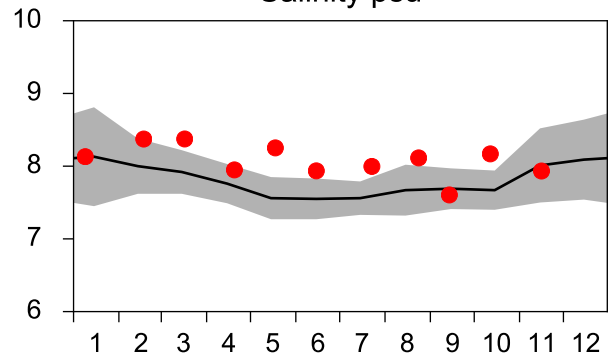
■ St.Dev.

● 2016

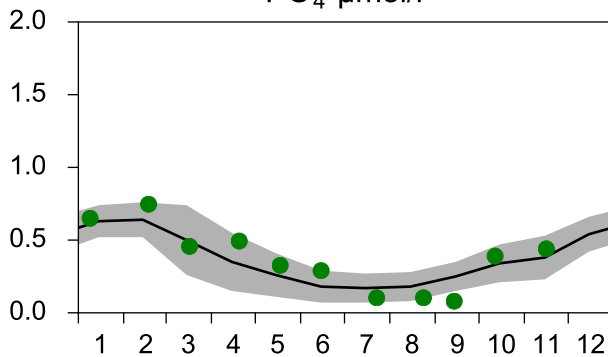
Temperature °C



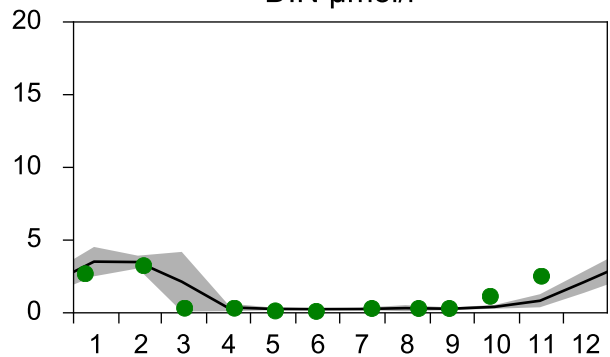
Salinity psu



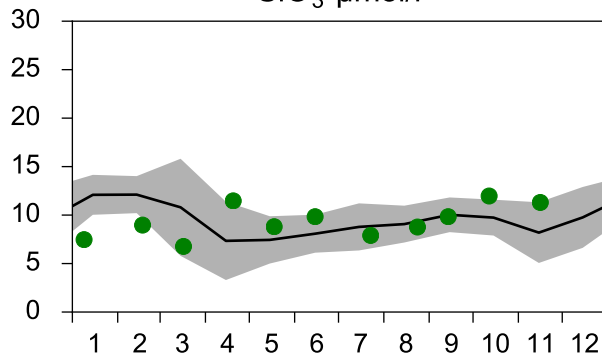
PO₄ µmol/l



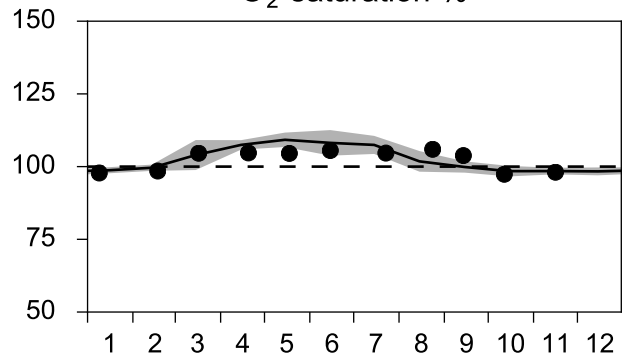
DIN µmol/l



SiO₃ µmol/l

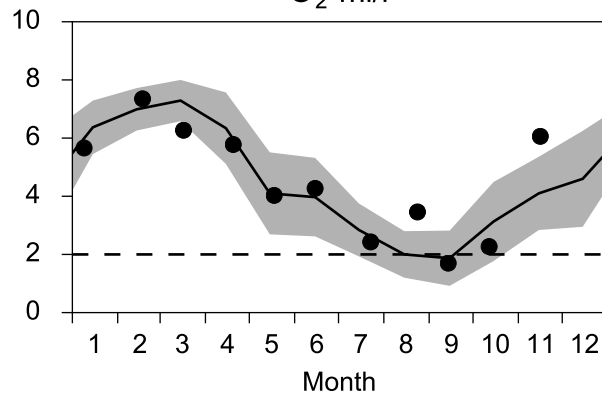


O₂ saturation %

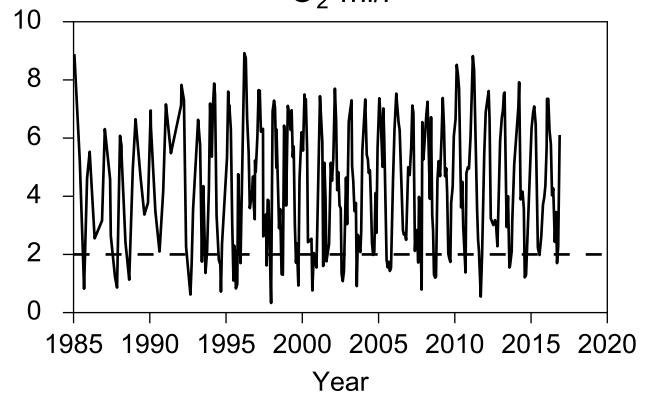


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

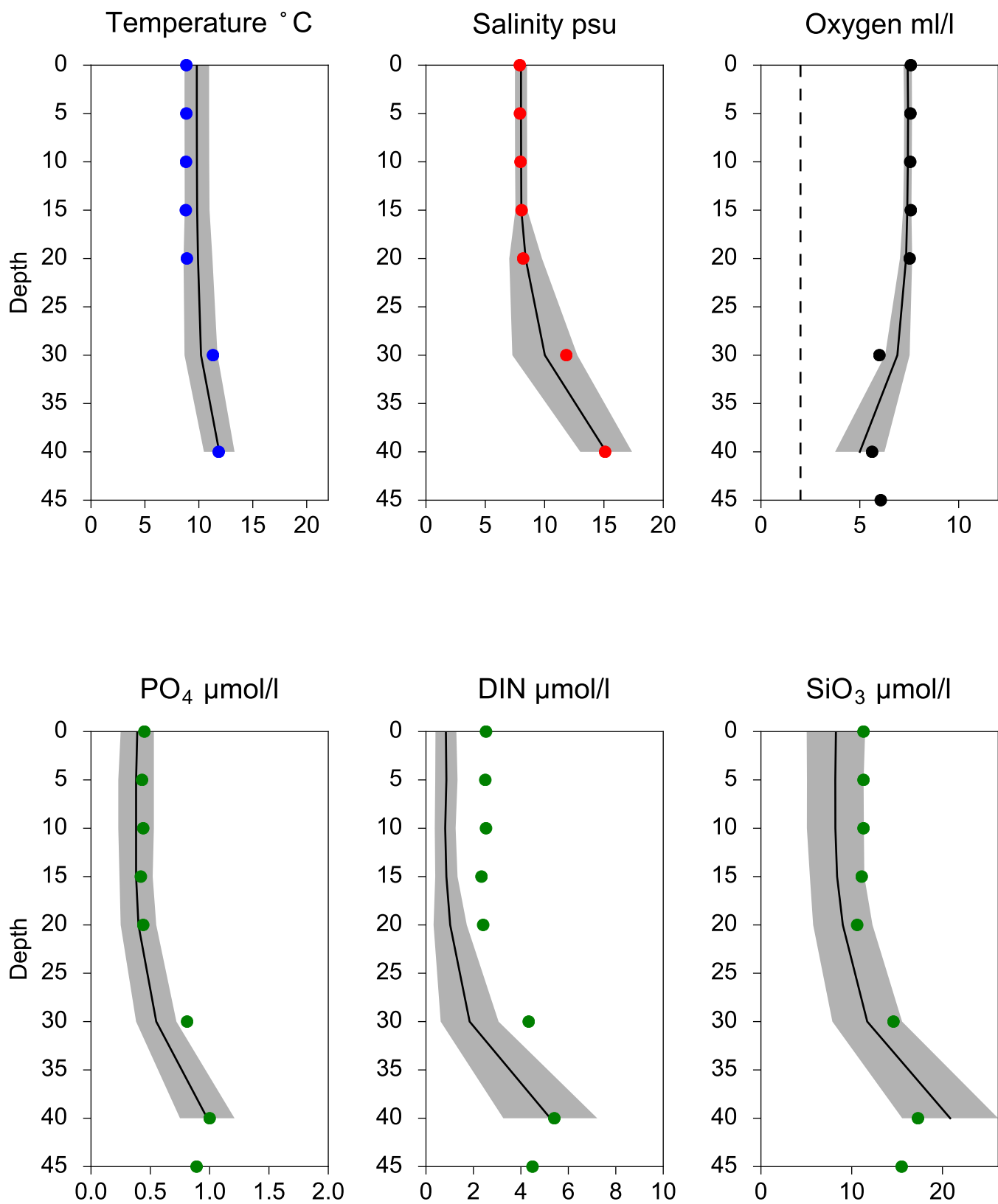


O₂ ml/l



Vertical profiles BY2 ARKONA November

— Mean 2001-2015 ■ St.Dev. ● 2016-11-16



STATION BY1 SURFACE WATER (0-10m)

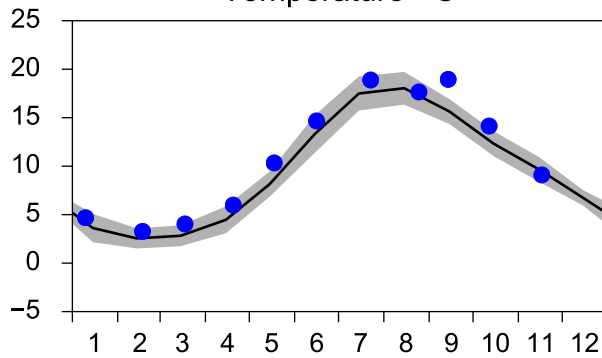
Annual Cycles

— Mean 2001-2015

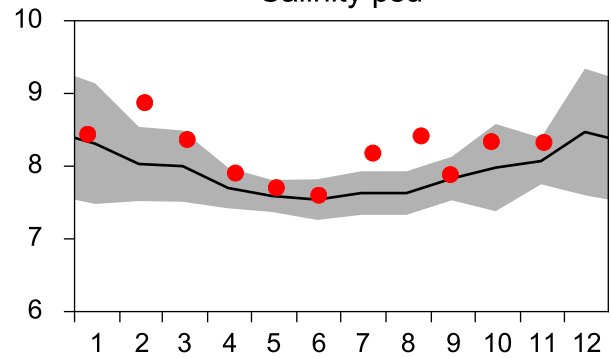
■ St.Dev.

● 2016

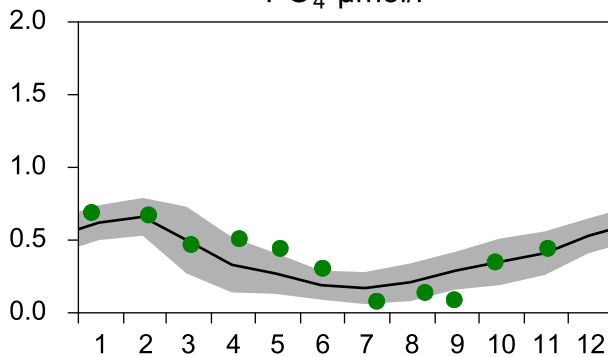
Temperature °C



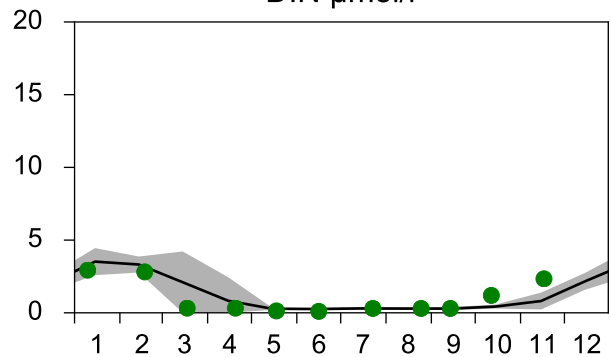
Salinity psu



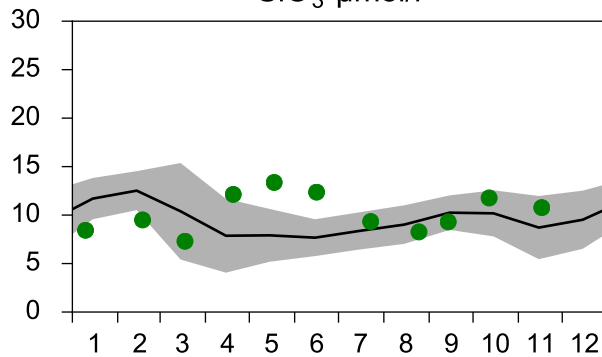
PO₄ µmol/l



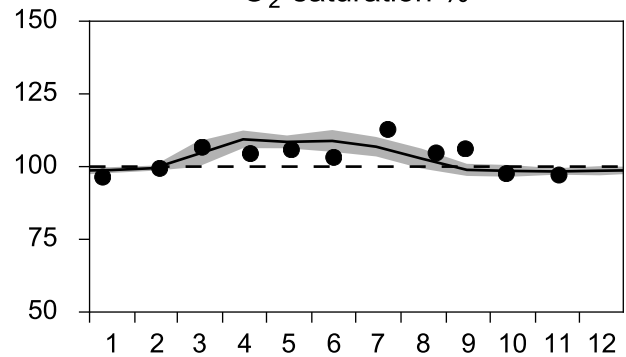
DIN µmol/l



SiO₃ µmol/l

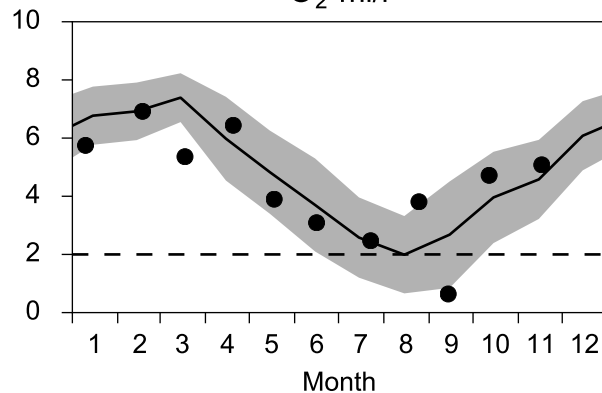


O₂ saturation %

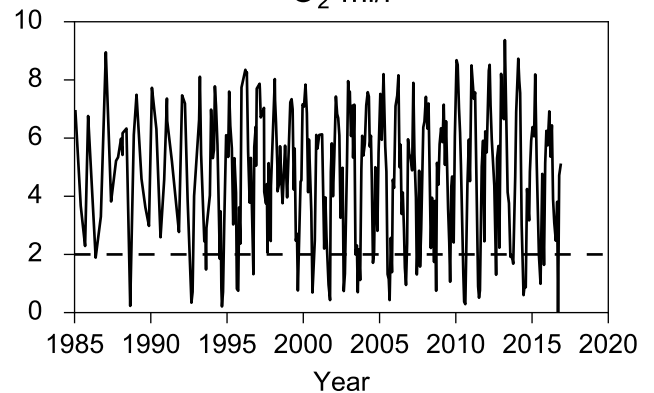


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

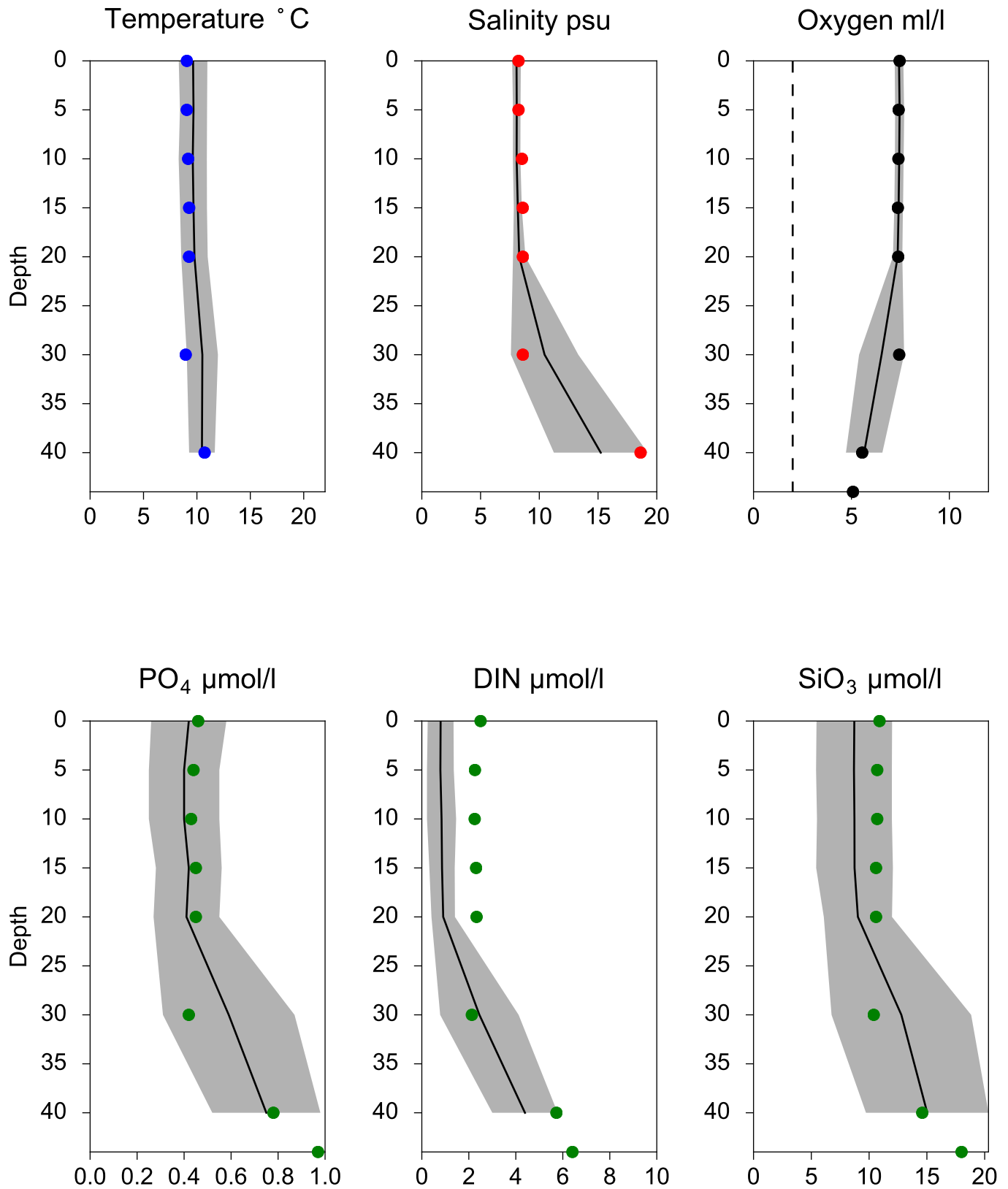


O₂ ml/l



Vertical profiles BY1 November

— Mean 2001-2015 ■ St.Dev. ● 2016-11-17



STATION W LANDSKRONA SURFACE WATER (0-10m)

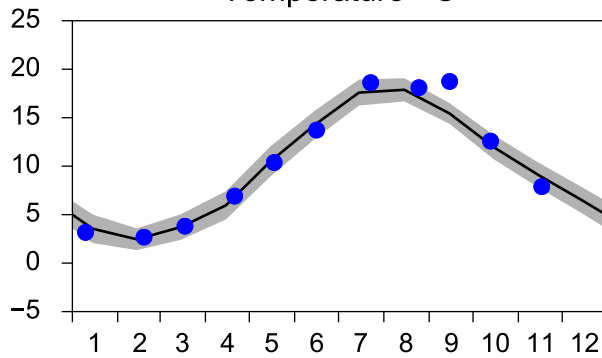
Annual Cycles

— Mean 2001-2015

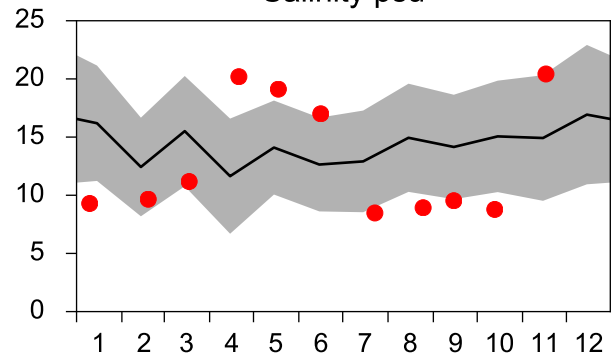
■ St.Dev.

● 2016

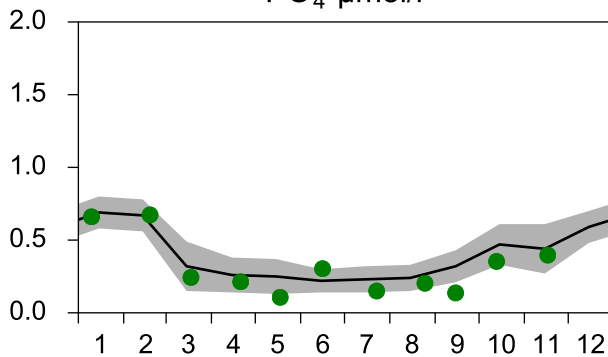
Temperature °C



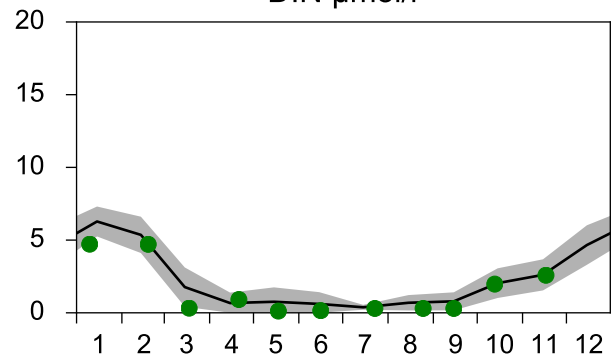
Salinity psu



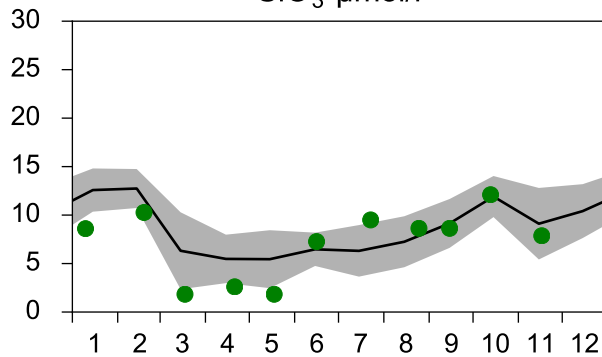
PO₄ µmol/l



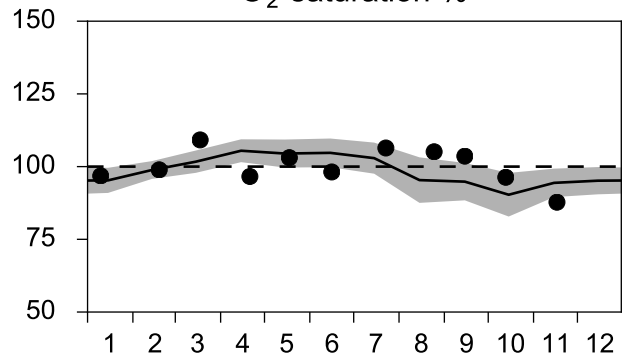
DIN µmol/l



SiO₃ µmol/l

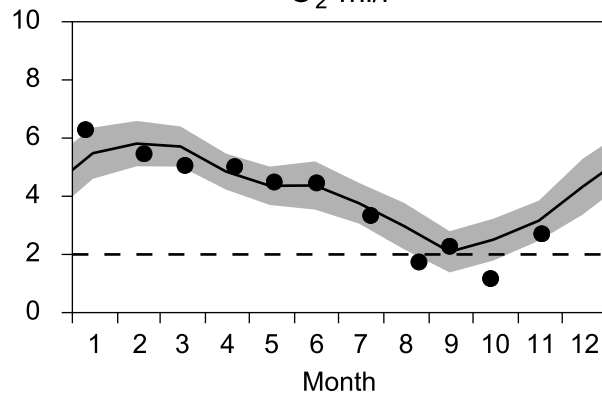


O₂ saturation %

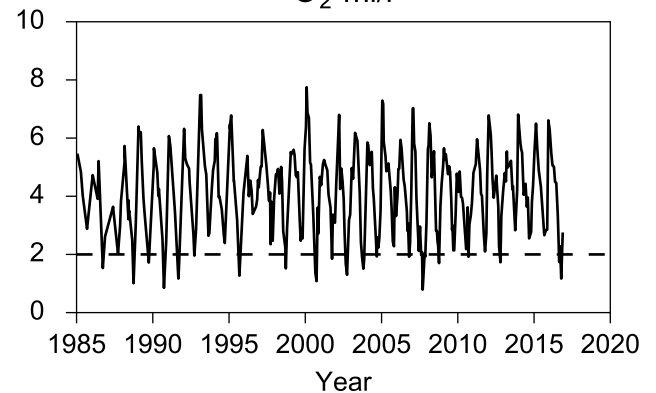


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

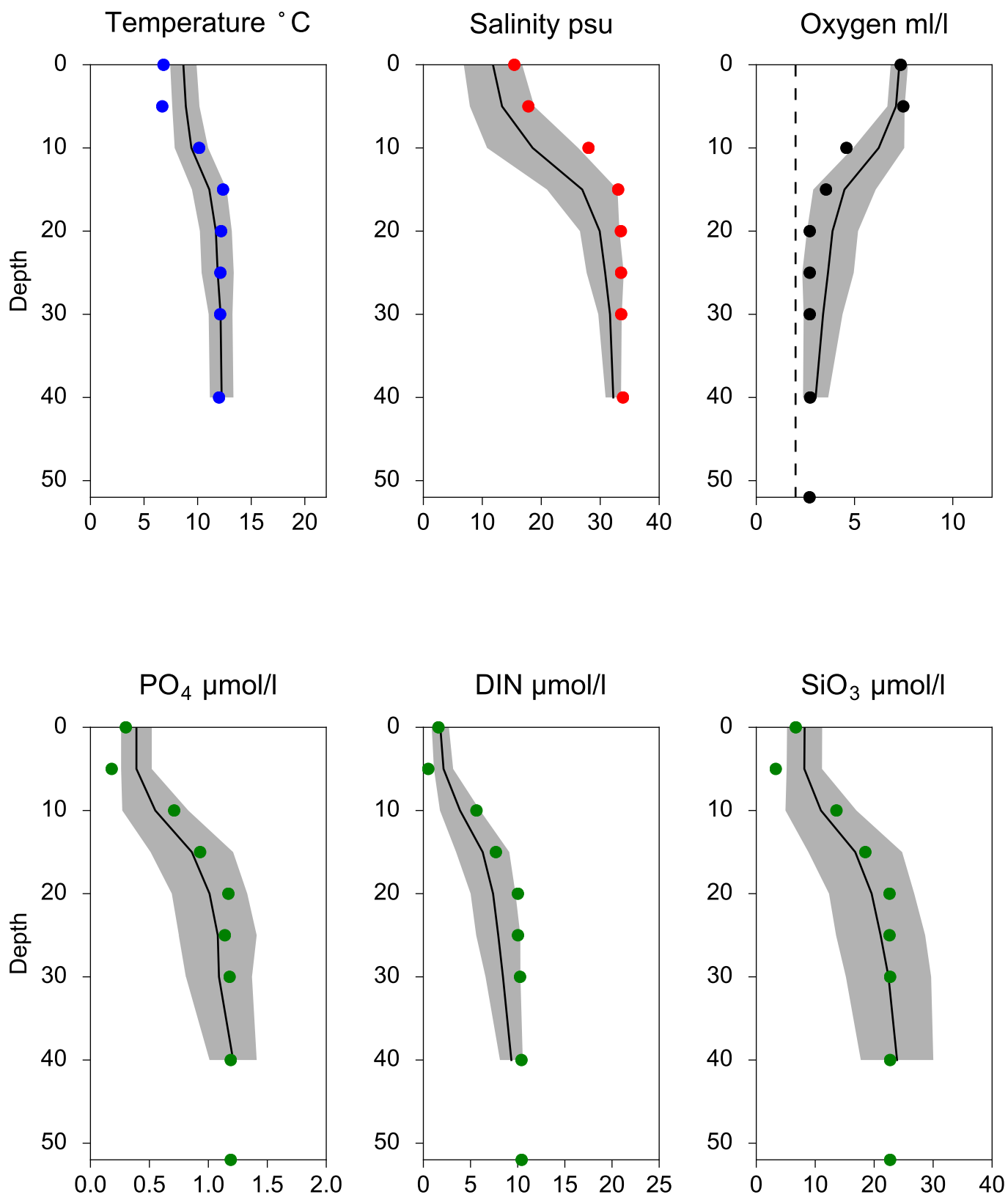


O₂ ml/l



Vertical profiles W LANDSKRONA November

— Mean 2001-2015 ■ St.Dev. ● 2016-11-17



STATION ANHOLT E SURFACE WATER (0-10m)

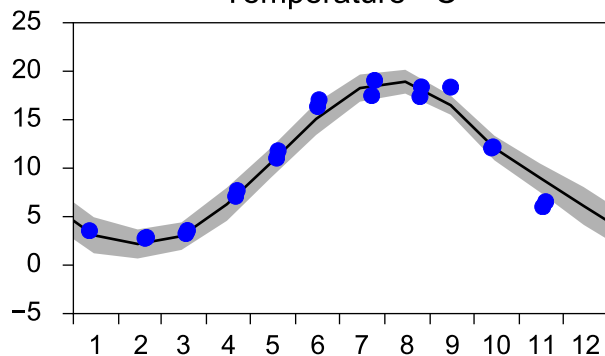
Annual Cycles

— Mean 2001-2015

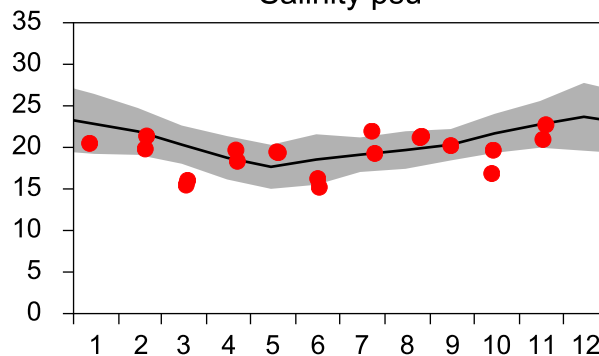
■ St.Dev.

● 2016

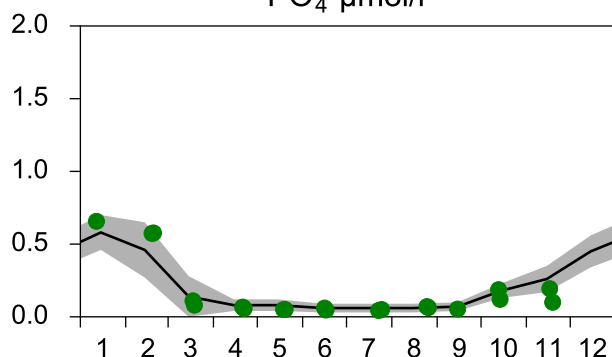
Temperature °C



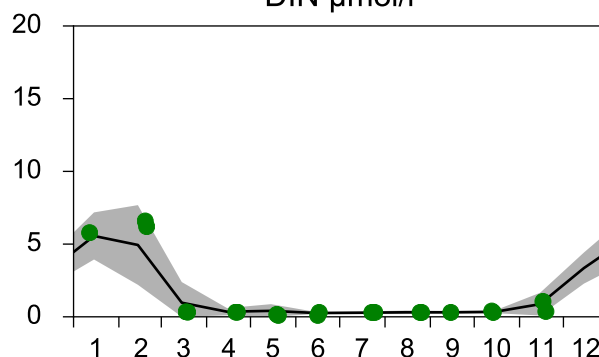
Salinity psu



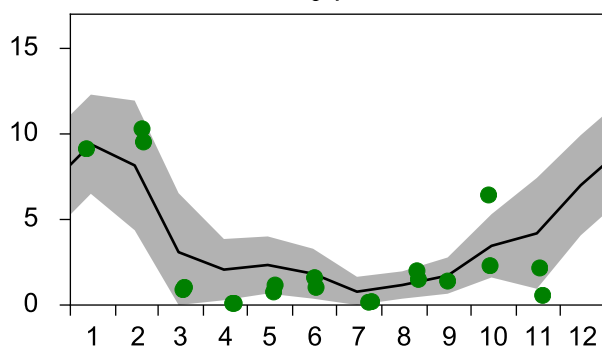
PO₄ µmol/l



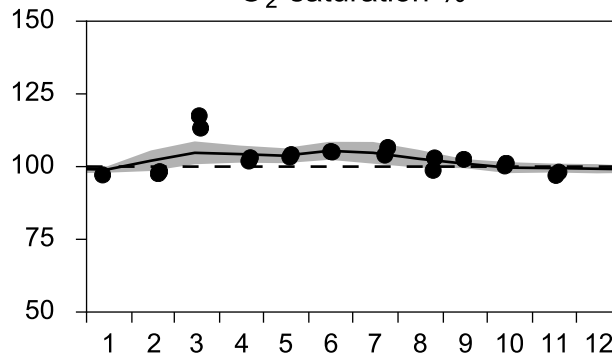
DIN µmol/l



SiO₃ µmol/l

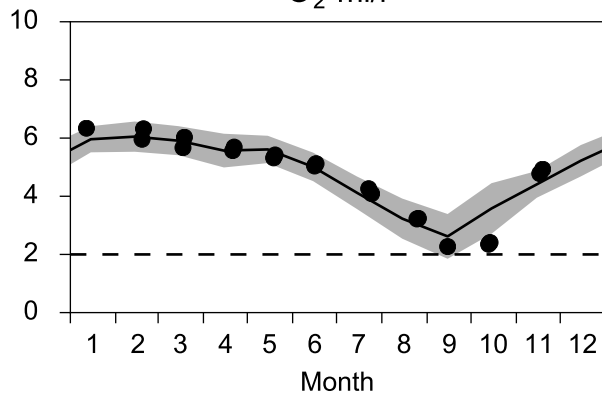


O₂ saturation %

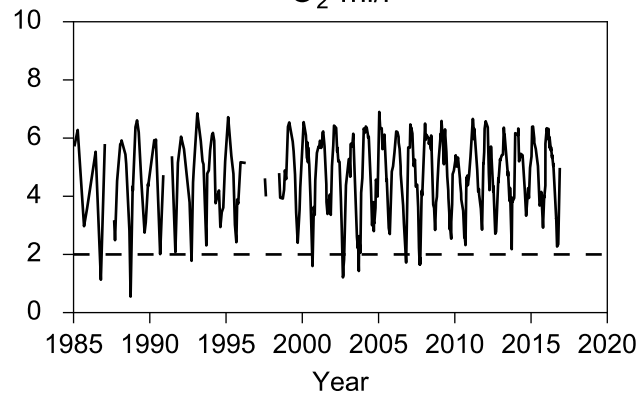


OXYGEN IN BOTTOM WATER (depth >= 52 m)

O₂ ml/l

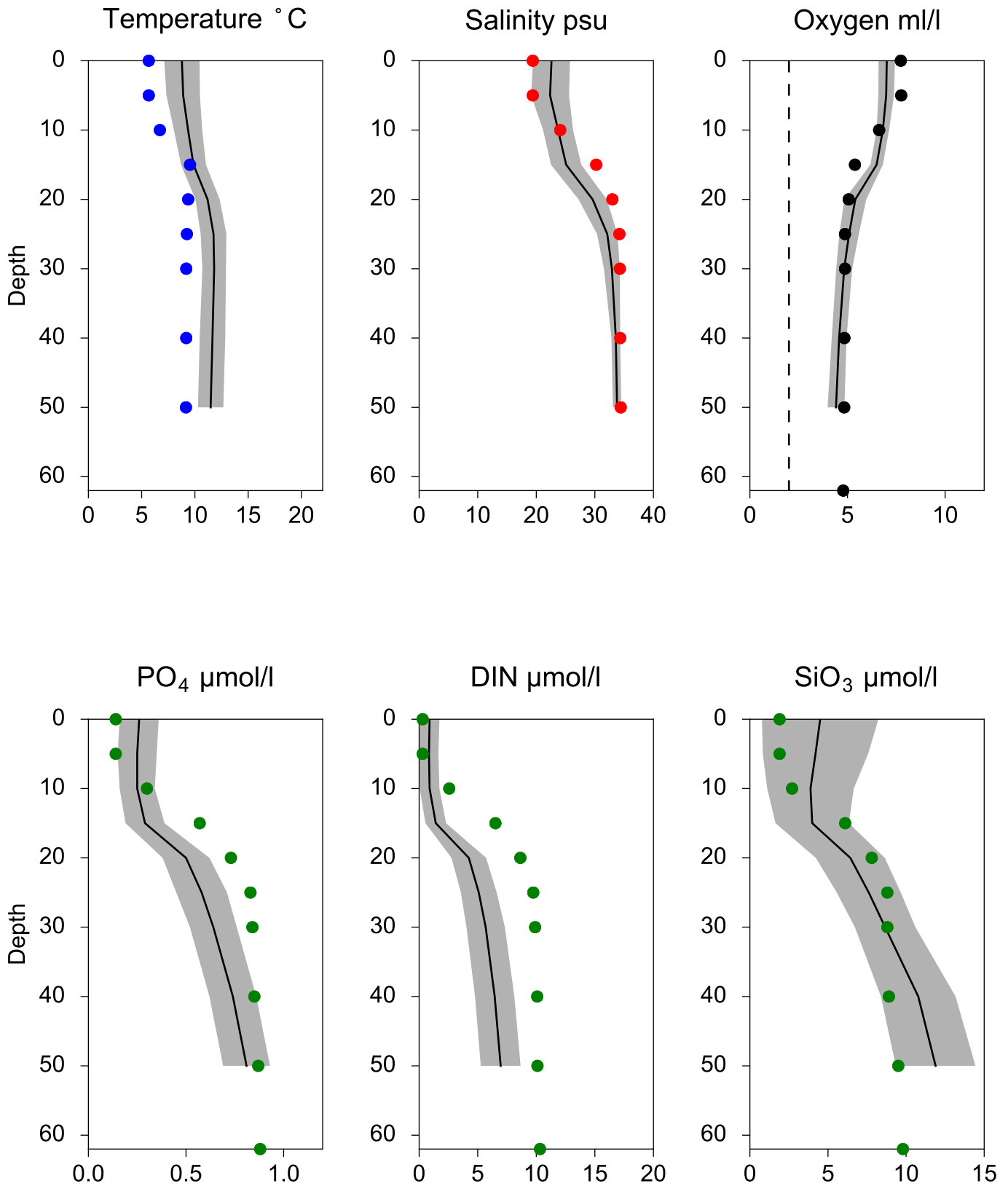


O₂ ml/l



Vertical profiles ANHOLT E November

— Mean 2001-2015 St.Dev. • 2016-11-17



STATION N14 FALKENBERG SURFACE WATER (0-10m)

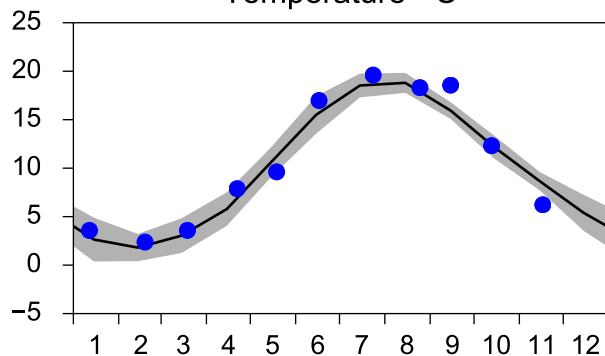
Annual Cycles

— Mean 2001-2015

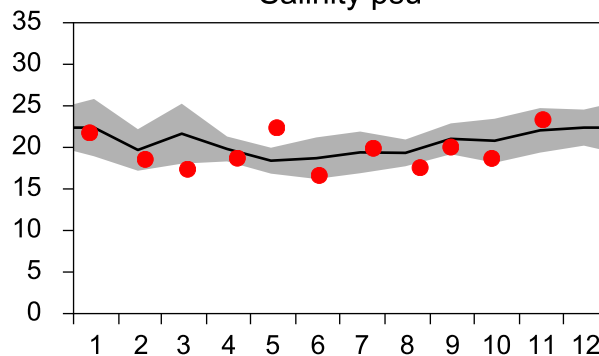
■ St.Dev.

● 2016

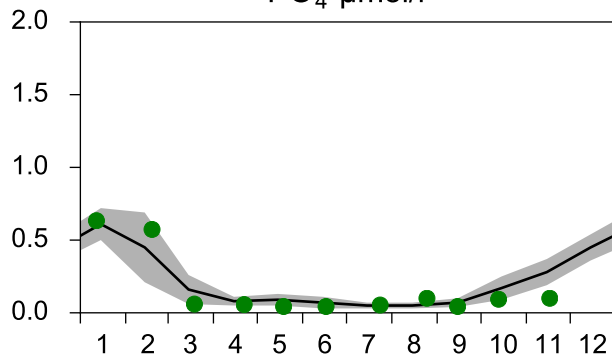
Temperature °C



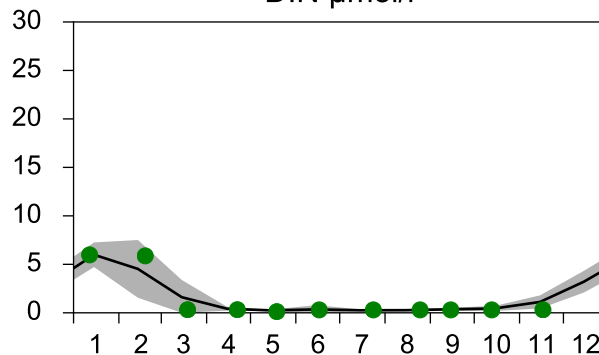
Salinity psu



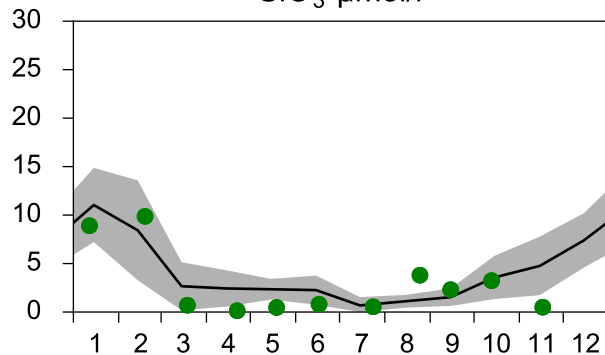
PO₄ µmol/l



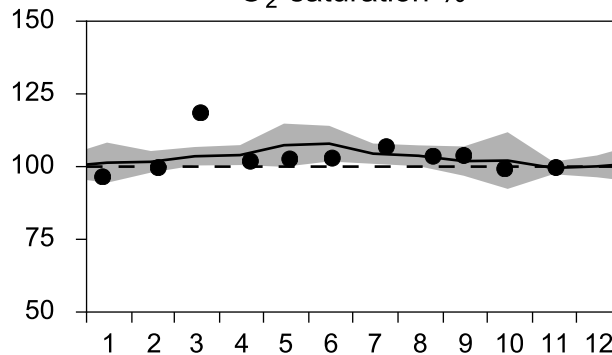
DIN µmol/l



SiO₃ µmol/l

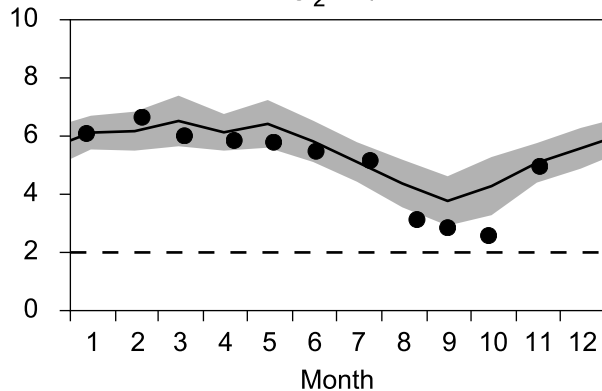


O₂ saturation %

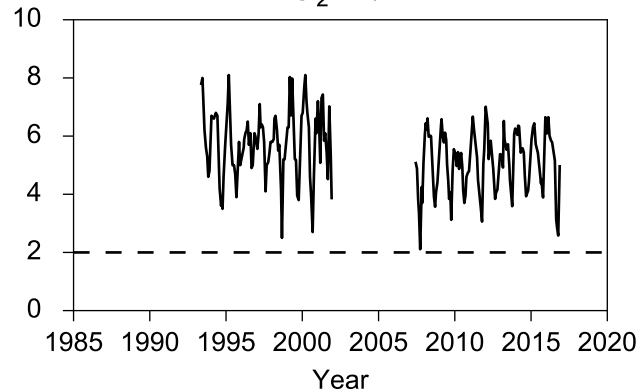


OXYGEN IN BOTTOM WATER (depth >= 25 m)

O₂ ml/l

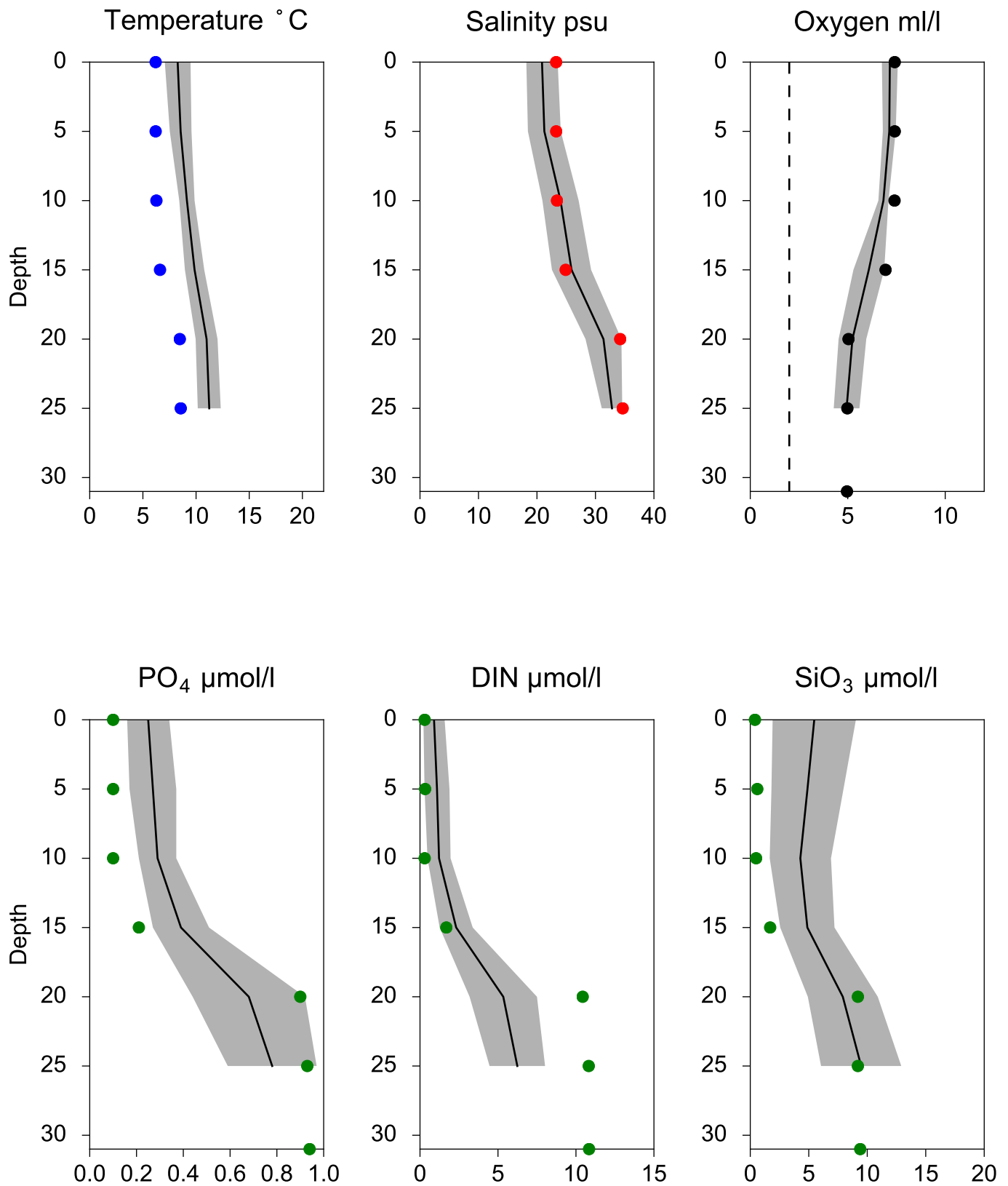


O₂ ml/l



Vertical profiles N14 FALKENBERG November

— Mean 2001-2015 St.Dev. • 2016-11-17



STATION FLADEN SURFACE WATER (0-10m)

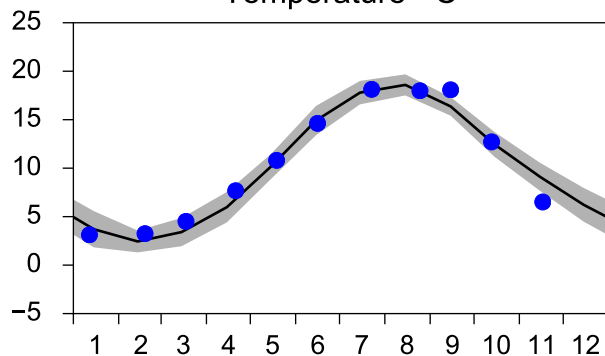
Annual Cycles

— Mean 2001-2015

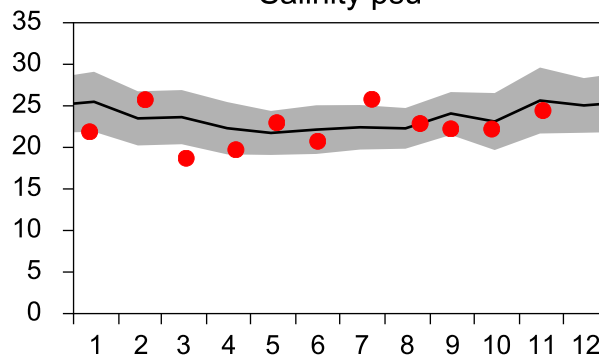
■ St.Dev.

● 2016

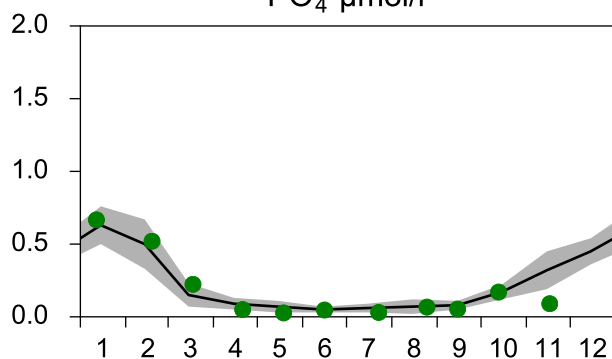
Temperature °C



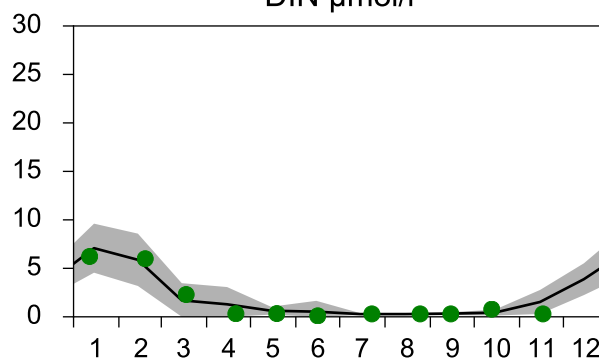
Salinity psu



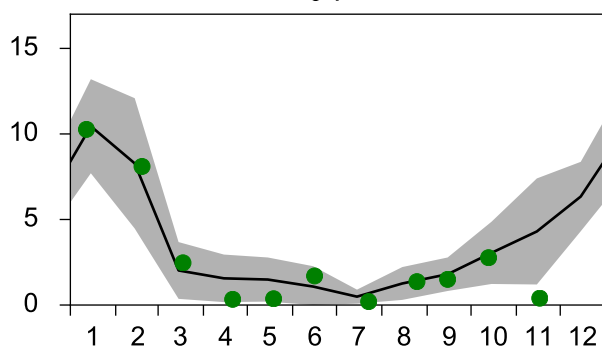
PO₄ µmol/l



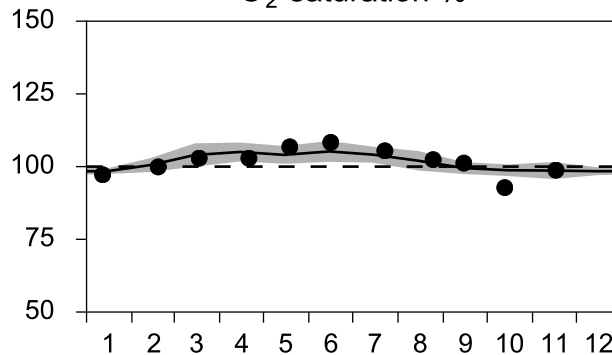
DIN µmol/l



SiO₃ µmol/l

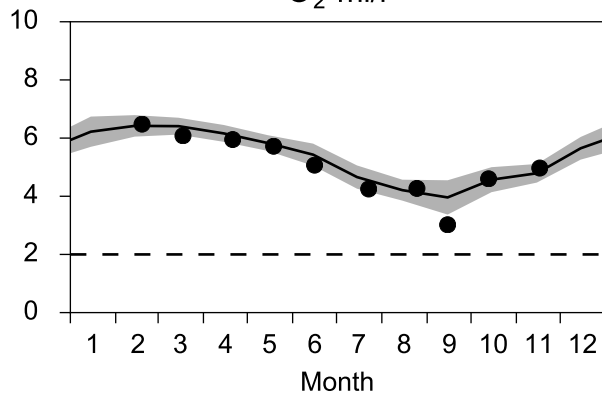


O₂ saturation %

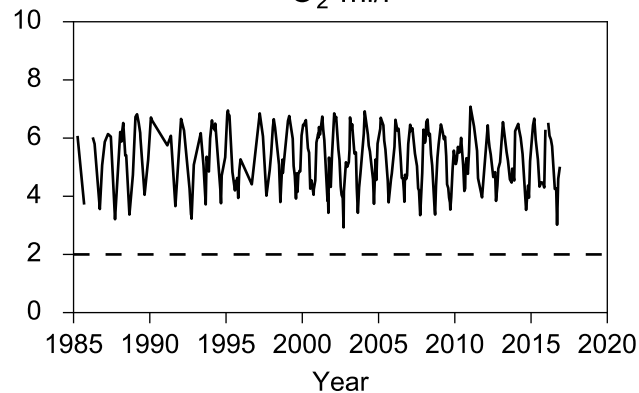


OXYGEN IN BOTTOM WATER (depth >= 74 m)

O₂ ml/l

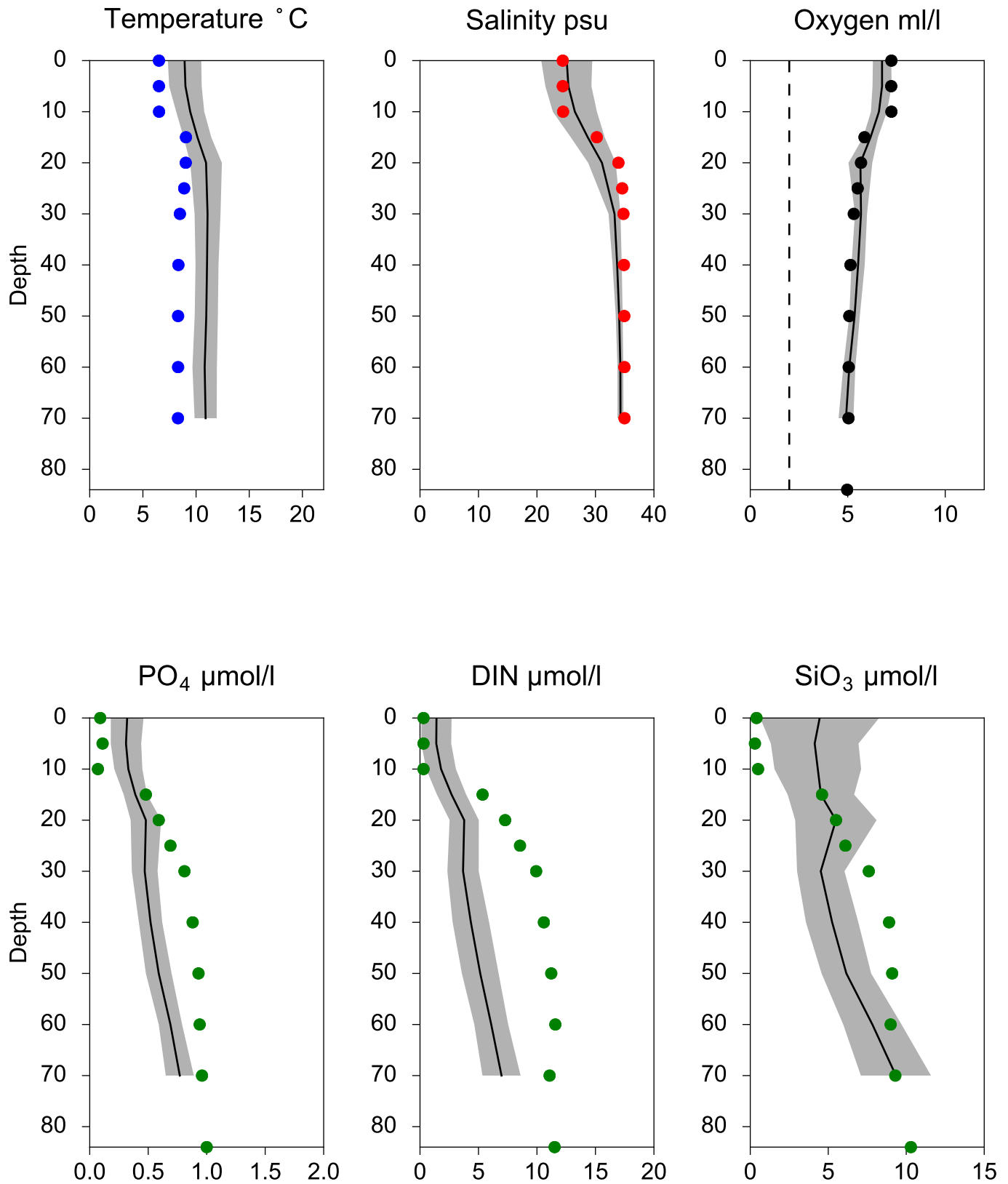


O₂ ml/l



Vertical profiles FLADEN November

— Mean 2001-2015 St.Dev. • 2016-11-17



STATION Å17 SURFACE WATER (0-10m)

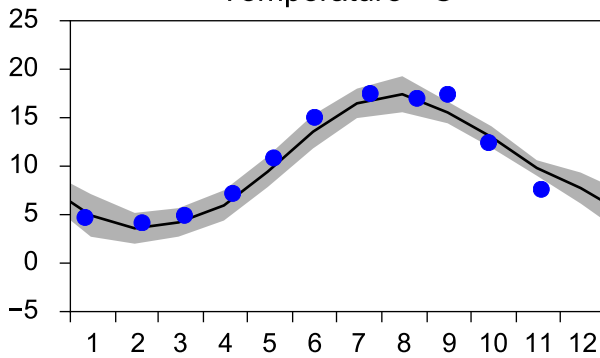
Annual Cycles

— Mean 2001-2015

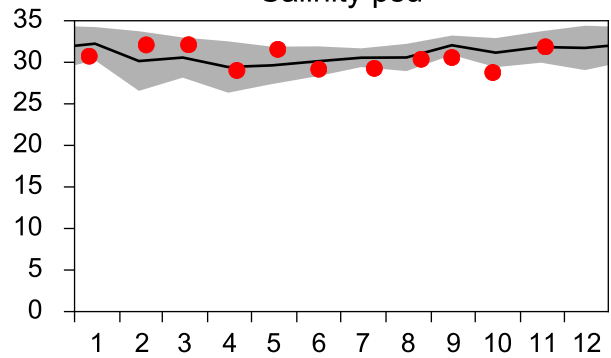
■ St.Dev.

● 2016

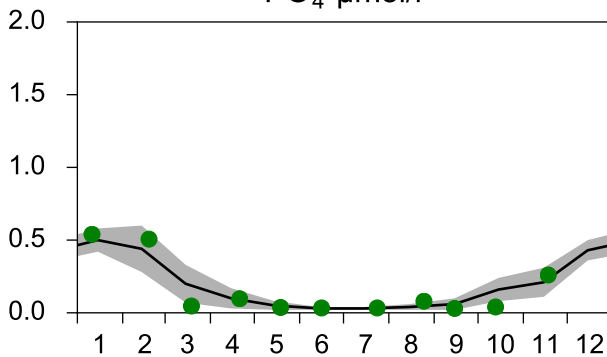
Temperature °C



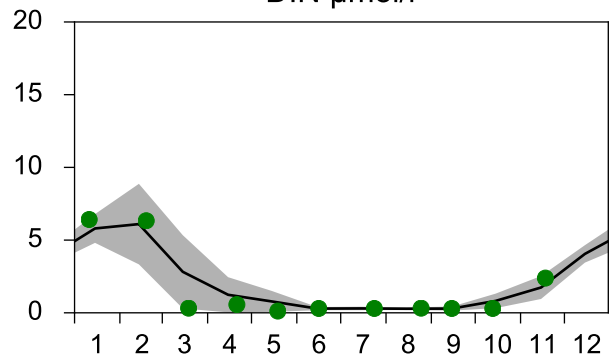
Salinity psu



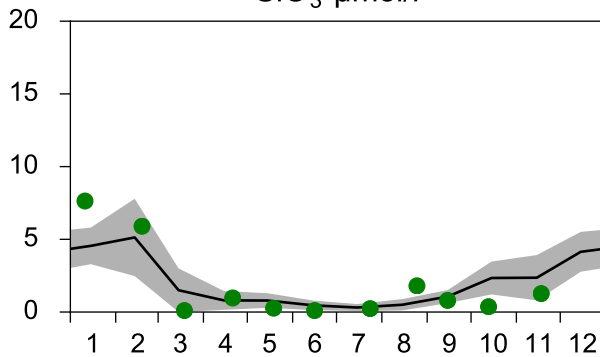
PO₄ µmol/l



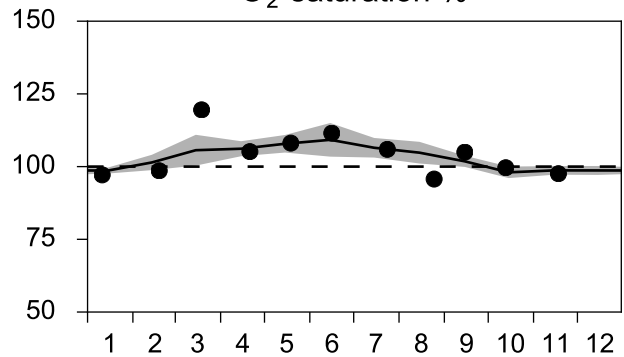
DIN µmol/l



SiO₃ µmol/l

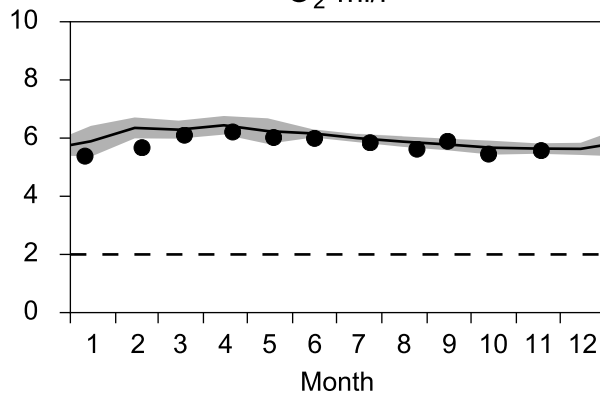


O₂ saturation %

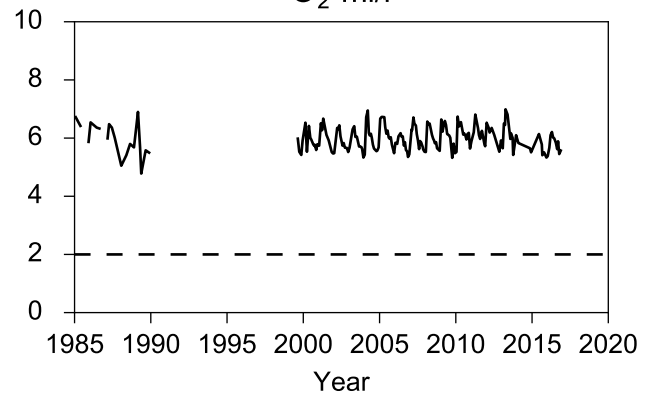


OXYGEN IN BOTTOM WATER (depth >= 300 m)

O₂ ml/l

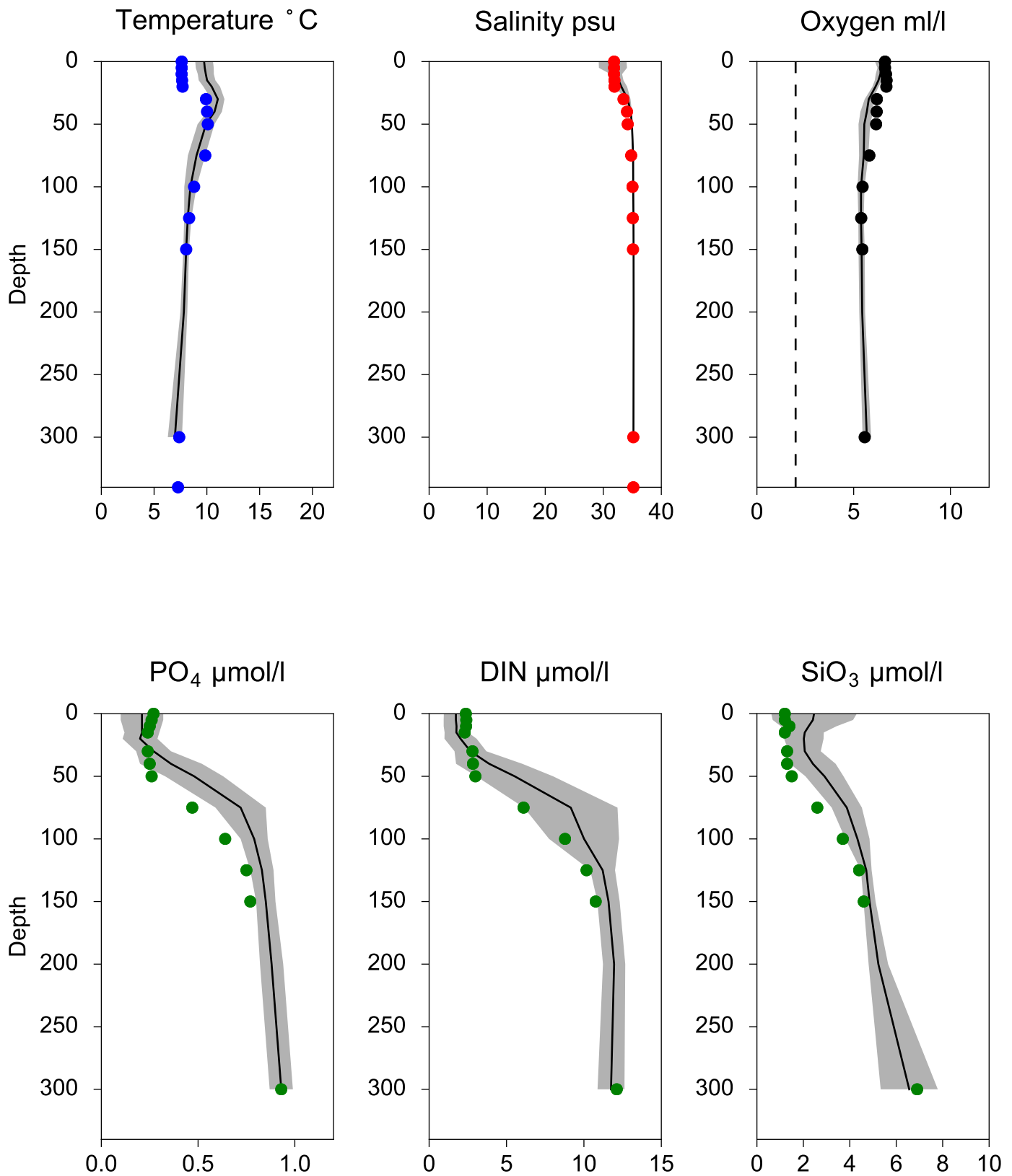


O₂ ml/l



Vertical profiles Å17 November

— Mean 2001-2015 ■ St.Dev. ● 2016-11-18



STATION Å15 SURFACE WATER (0-10m)

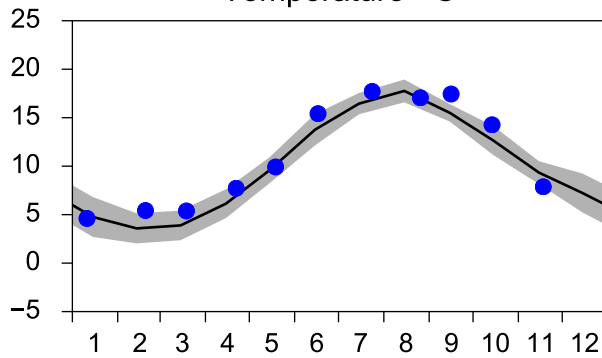
Annual Cycles

— Mean 2001-2015

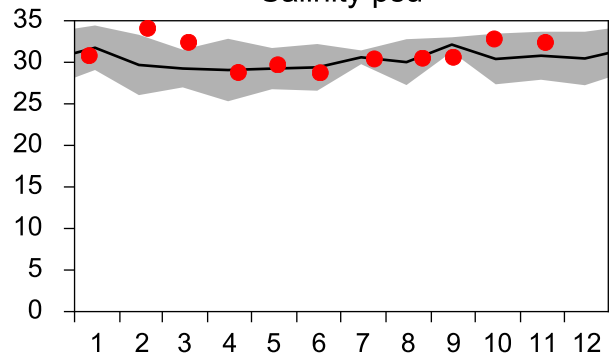
■ St.Dev.

● 2016

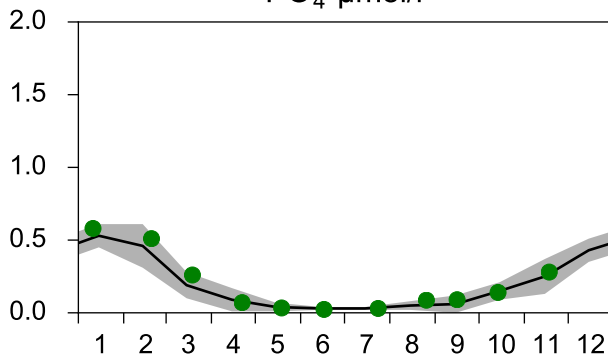
Temperature °C



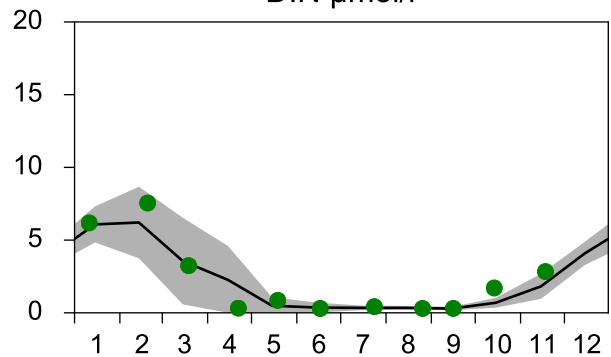
Salinity psu



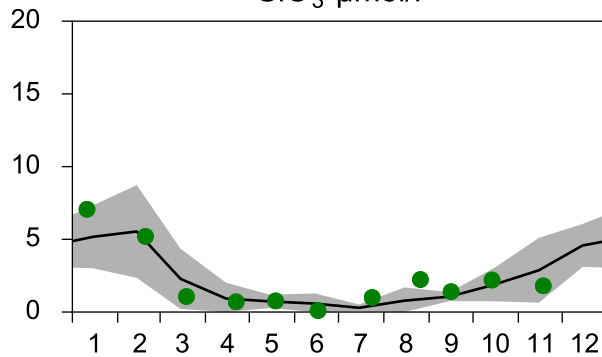
PO₄ µmol/l



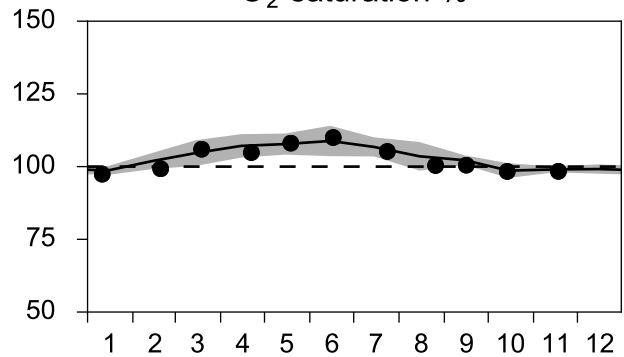
DIN µmol/l



SiO₃ µmol/l

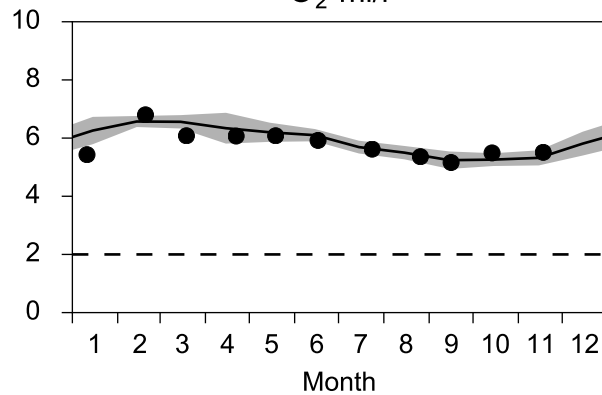


O₂ saturation %

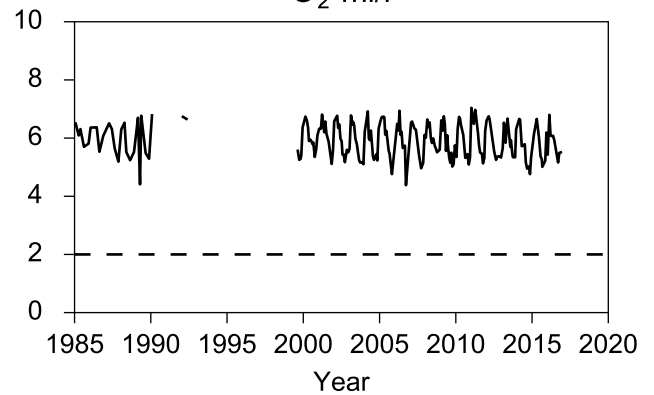


OXYGEN IN BOTTOM WATER (depth >= 125 m)

O₂ ml/l

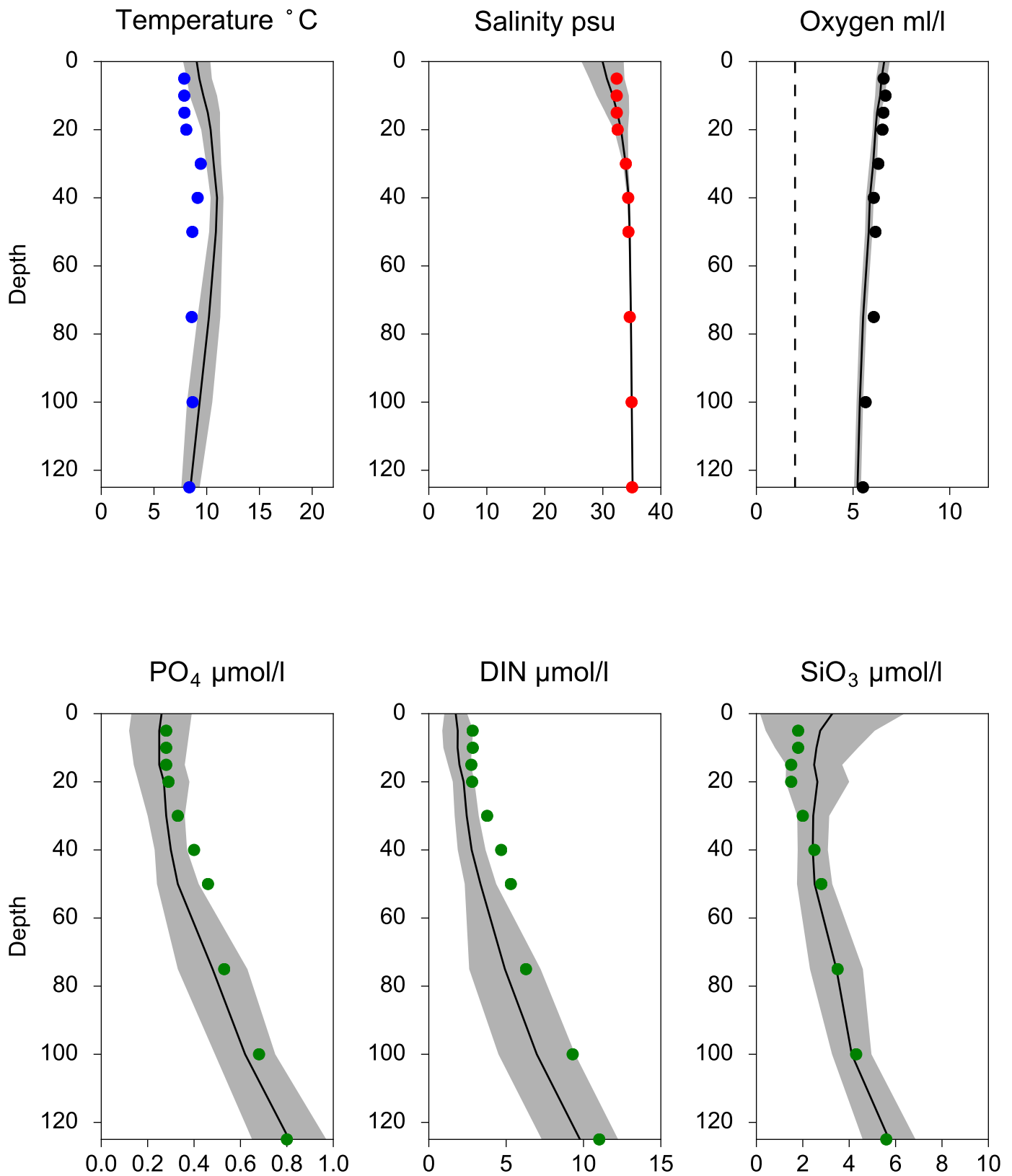


O₂ ml/l



Vertical profiles Å15 November

— Mean 2001-2015 St.Dev. • 2016-11-18



STATION Å13 SURFACE WATER (0-10m)

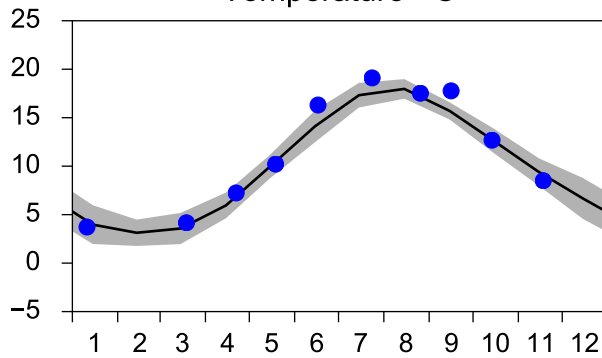
Annual Cycles

— Mean 2001-2015

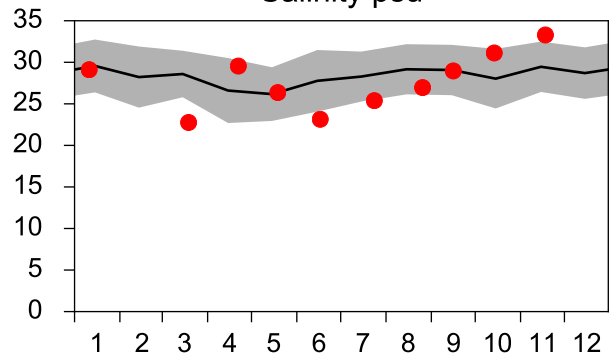
■ St.Dev.

● 2016

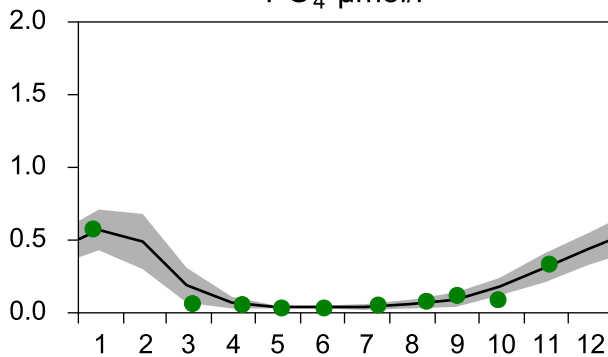
Temperature °C



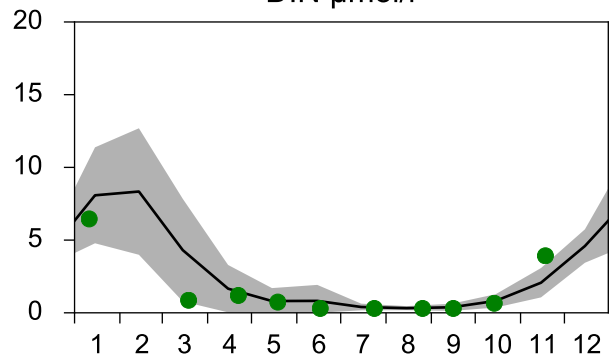
Salinity psu



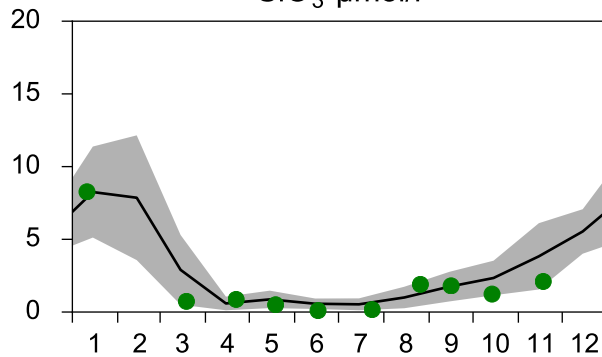
PO₄ µmol/l



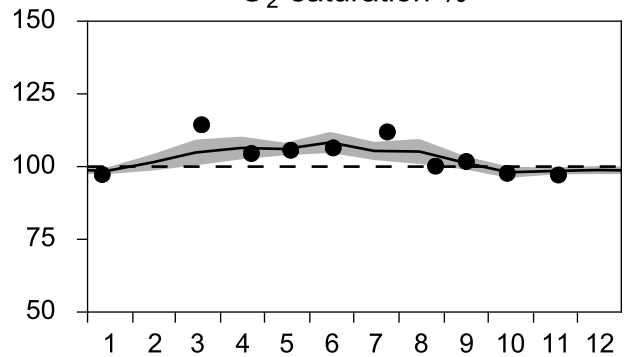
DIN µmol/l



SiO₃ µmol/l

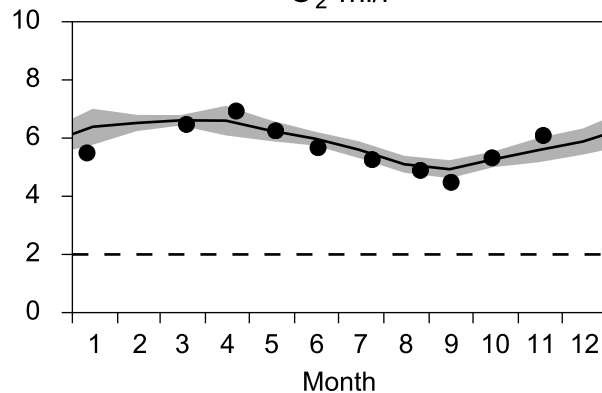


O₂ saturation %

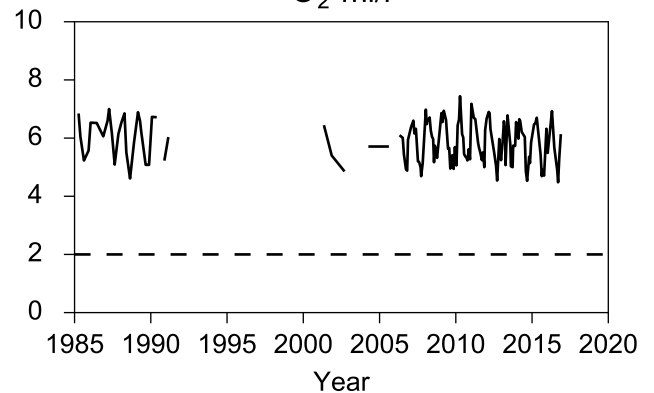


OXYGEN IN BOTTOM WATER (depth >= 82 m)

O₂ ml/l

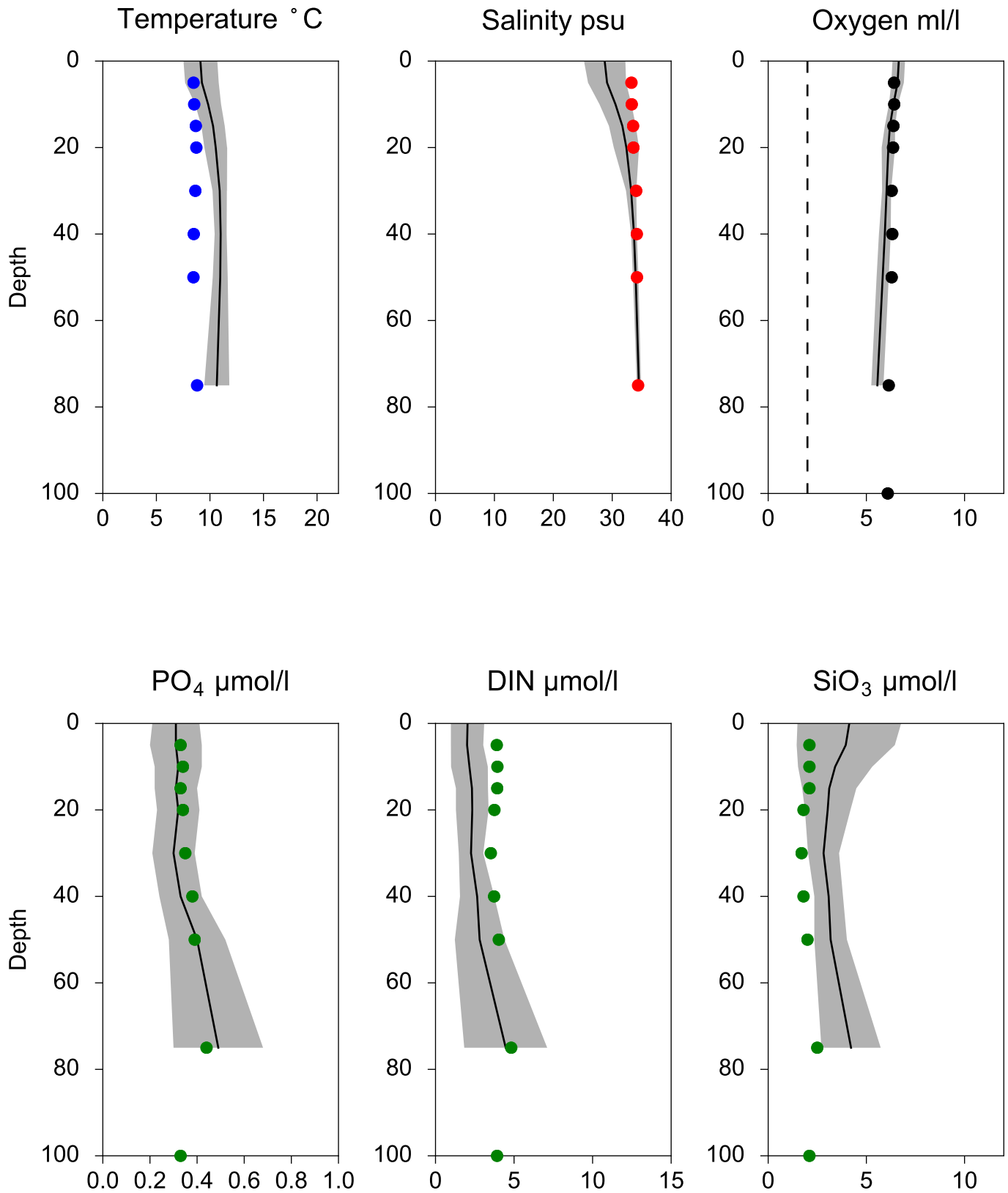


O₂ ml/l



Vertical profiles Å13 November

— Mean 2001-2015 St.Dev. • 2016-11-18



STATION SLÄGGÖ SURFACE WATER (0-10m)

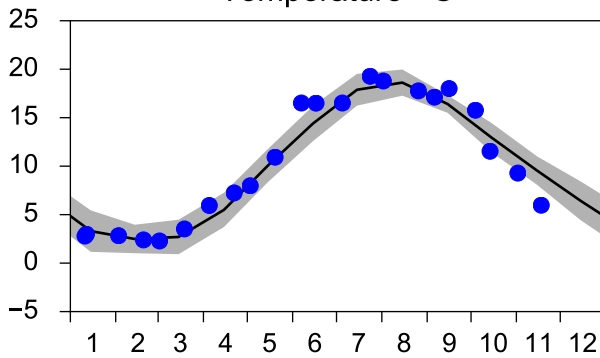
Annual Cycles

— Mean 2001-2015

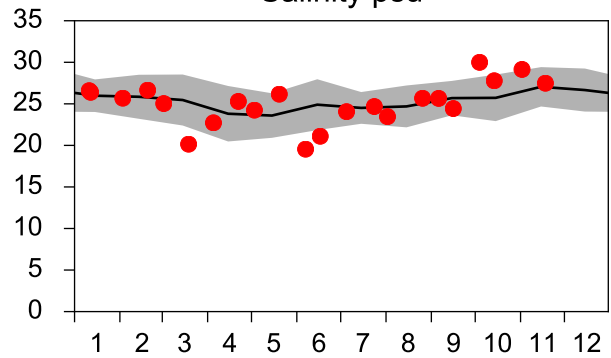
■ St.Dev.

● 2016

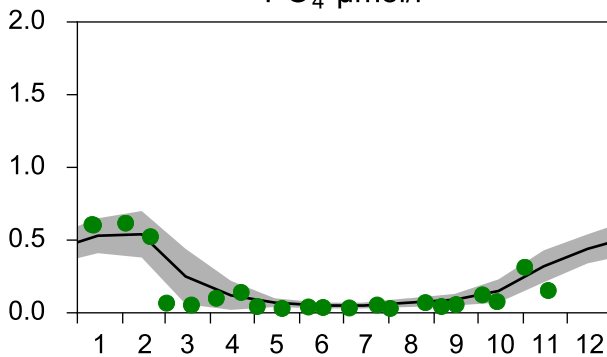
Temperature °C



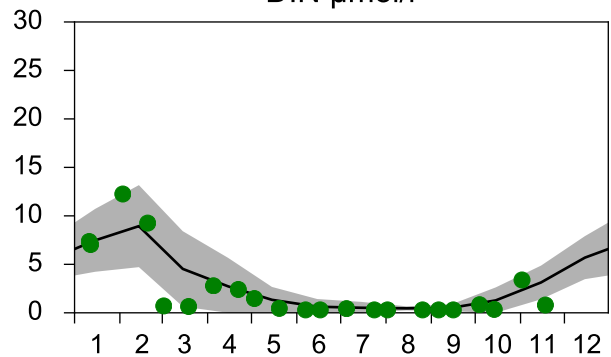
Salinity psu



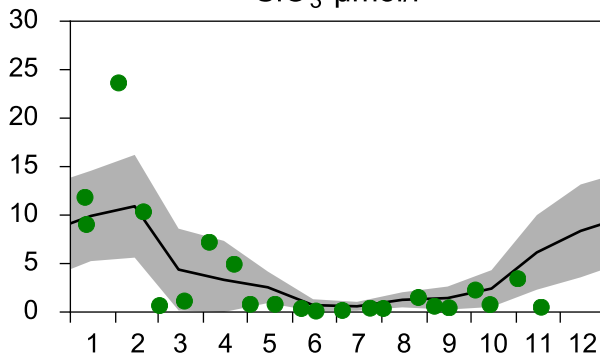
PO₄ µmol/l



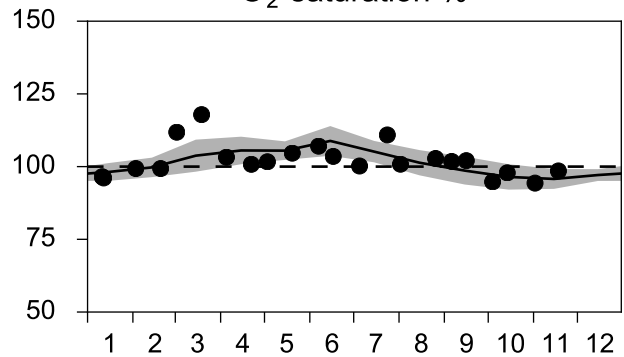
DIN µmol/l



SiO₃ µmol/l

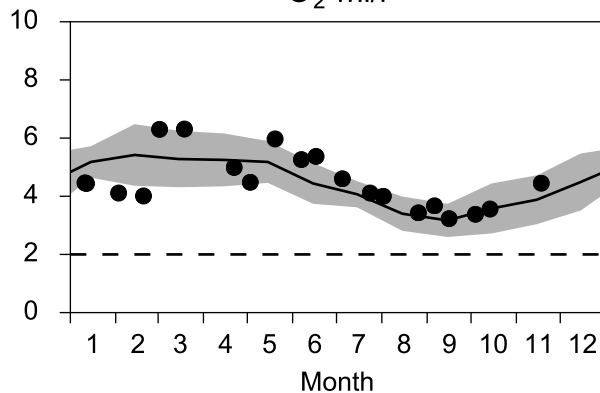


O₂ saturation %

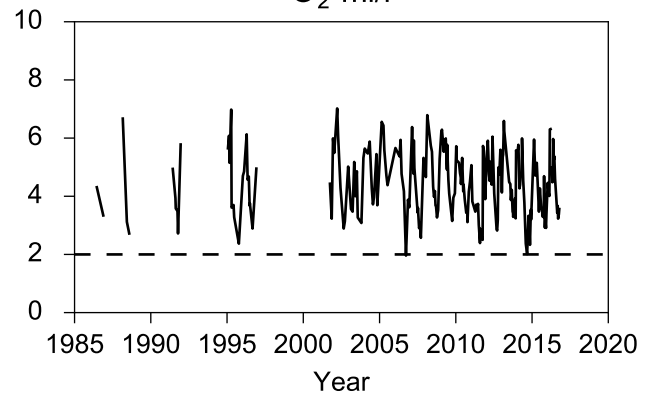


OXYGEN IN BOTTOM WATER (depth >= 64 m)

O₂ ml/l

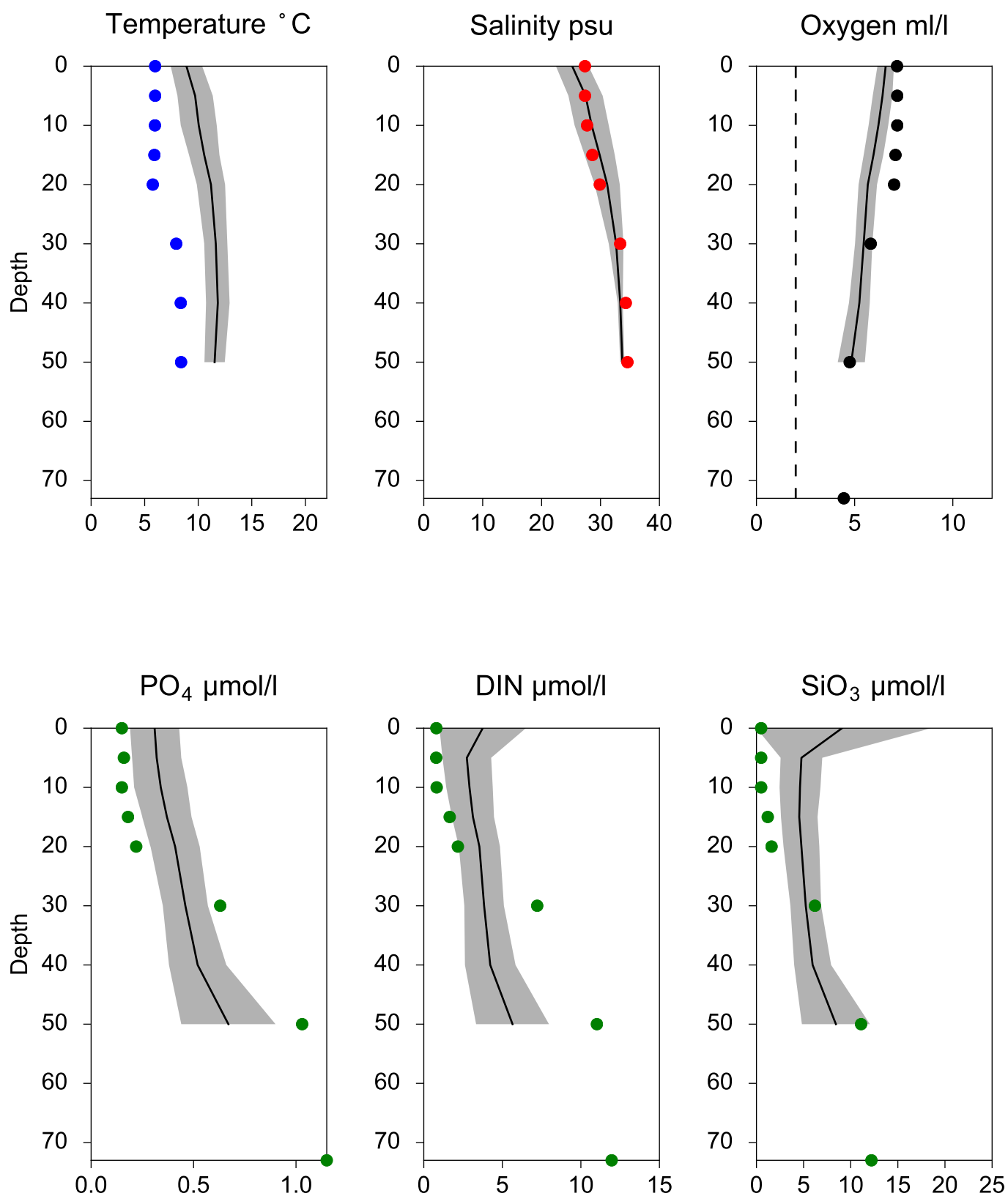


O₂ ml/l



Vertical profiles SLÄGGÖ November

— Mean 2001-2015 St.Dev. • 2016-11-18



STATION P2 SURFACE WATER (0-10m)

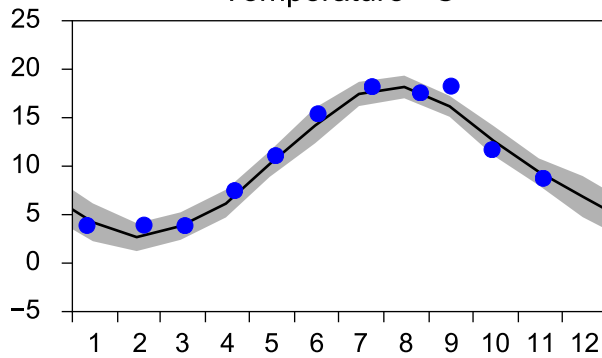
Annual Cycles

— Mean 2001-2015

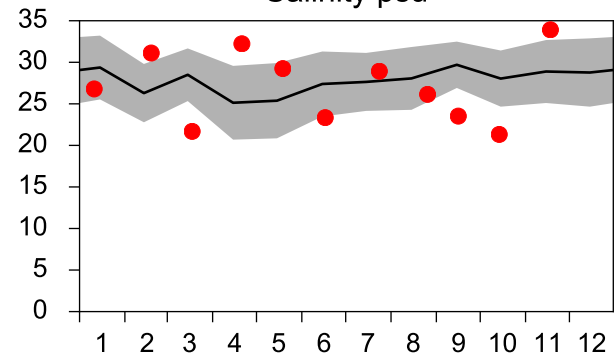
■ St.Dev.

● 2016

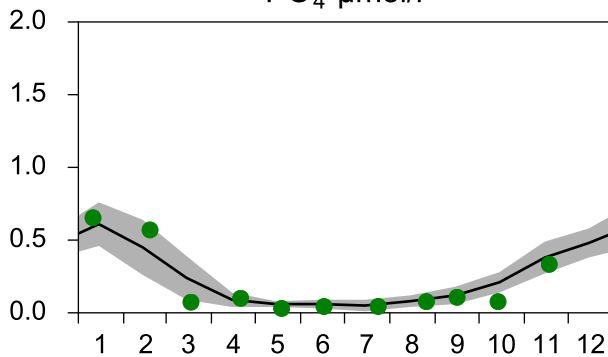
Temperature °C



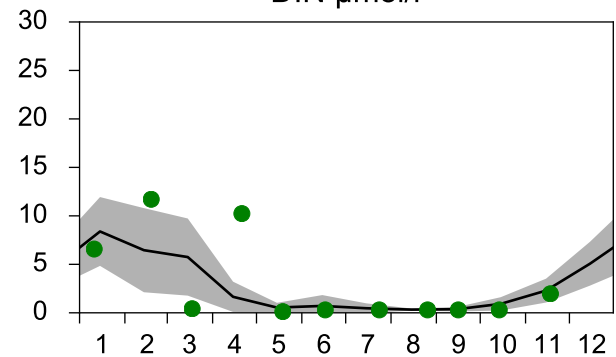
Salinity psu



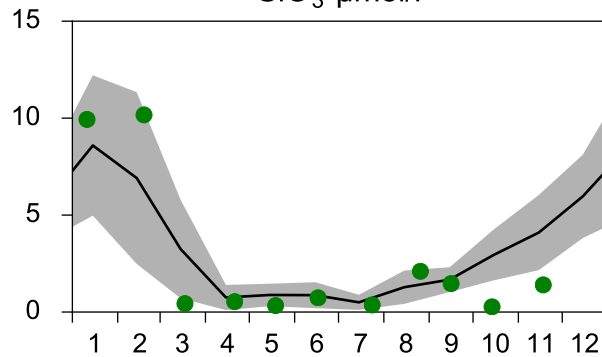
PO₄ µmol/l



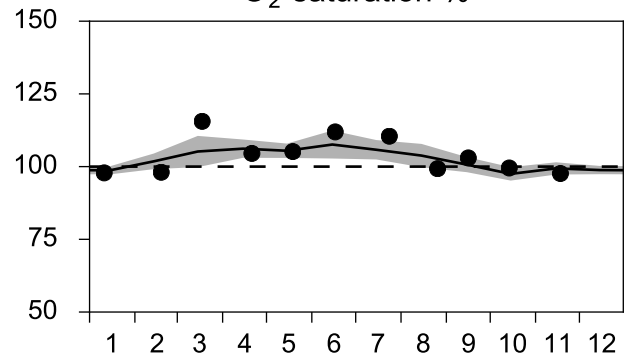
DIN µmol/l



SiO₃ µmol/l

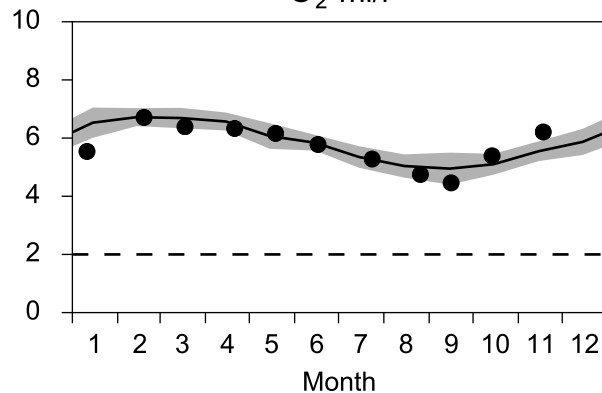


O₂ saturation %

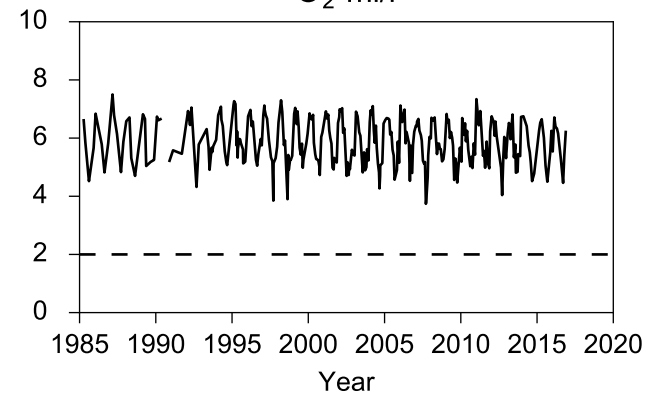


OXYGEN IN BOTTOM WATER (depth >= 75 m)

O₂ ml/l

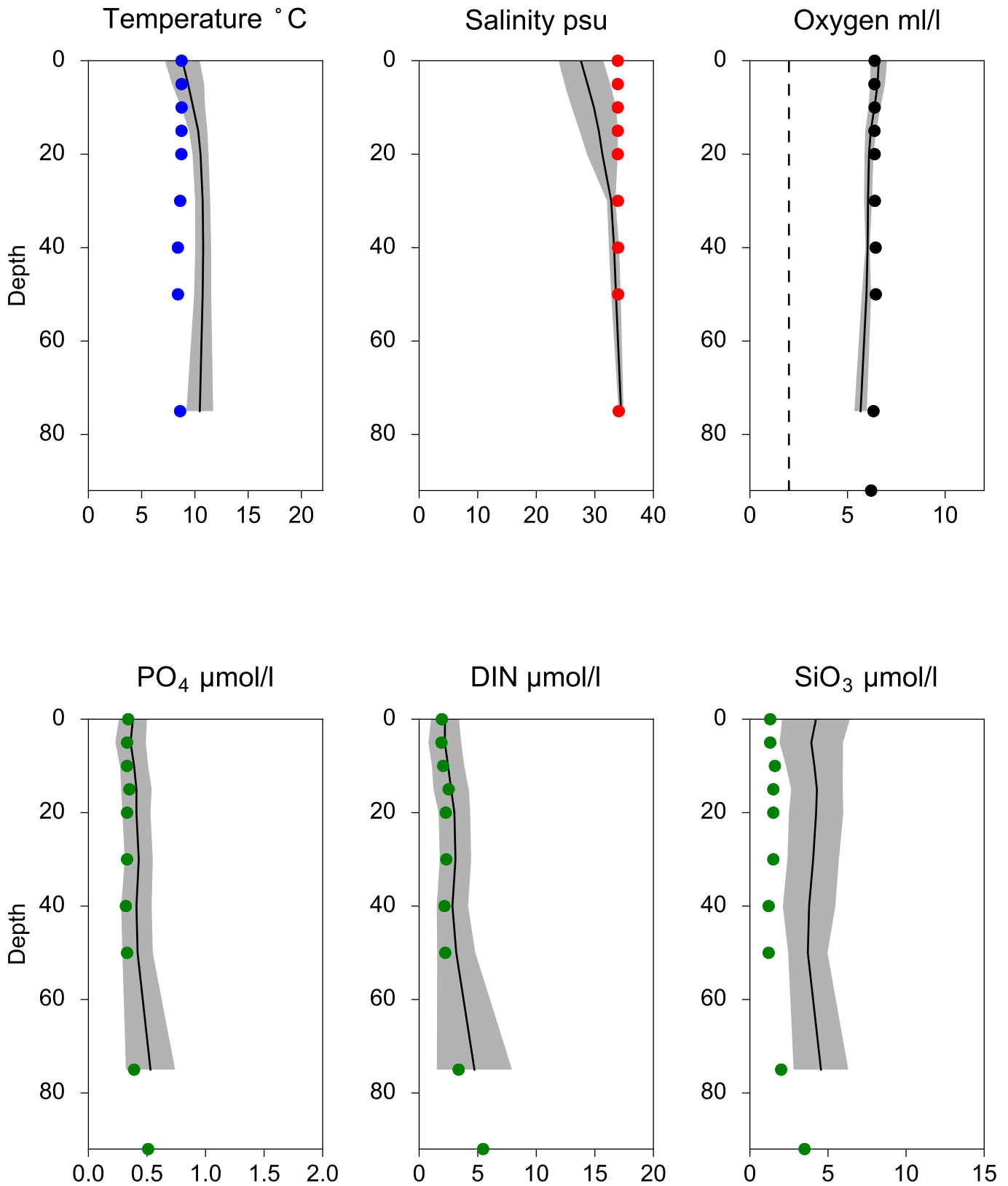


O₂ ml/l



Vertical profiles P2 November

— Mean 2001-2015 St.Dev. • 2016-11-18



STATION ANHOLT E SURFACE WATER (0-10m)

Annual Cycles

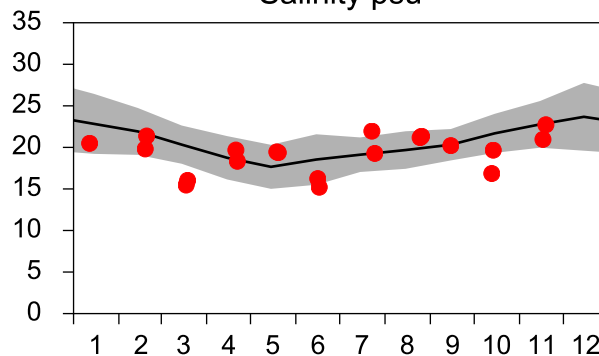
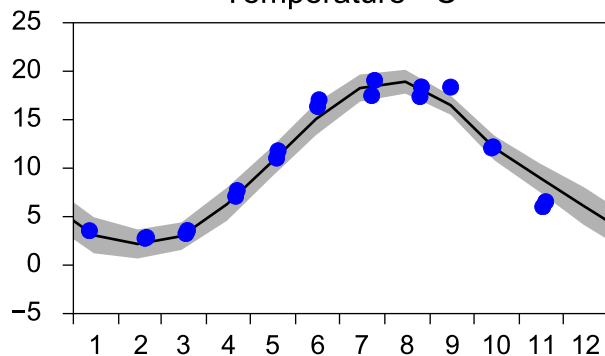
— Mean 2001-2015

■ St.Dev.

● 2016

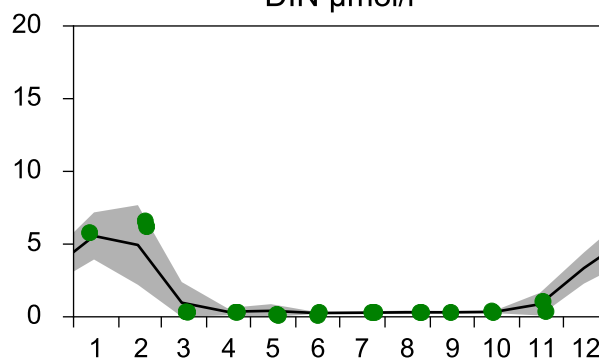
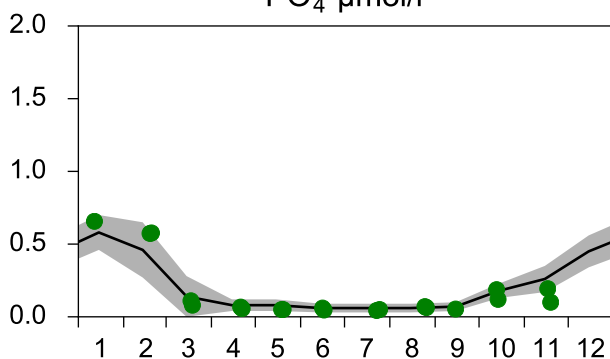
Temperature °C

Salinity psu



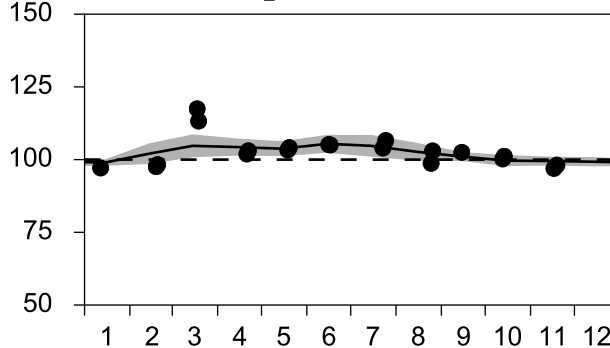
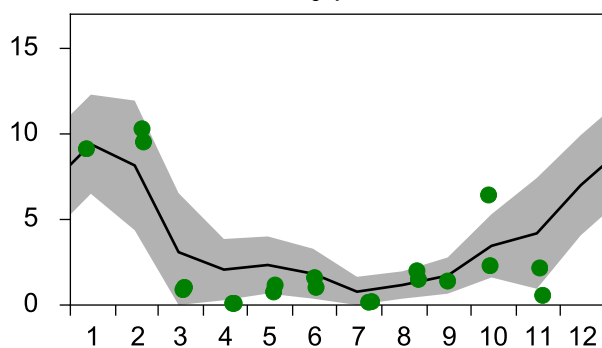
PO₄ µmol/l

DIN µmol/l



SiO₃ µmol/l

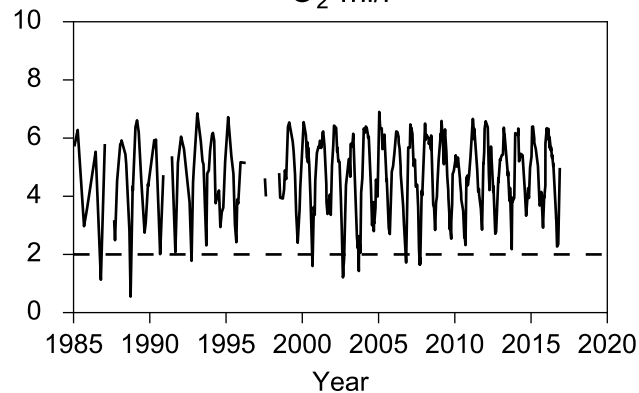
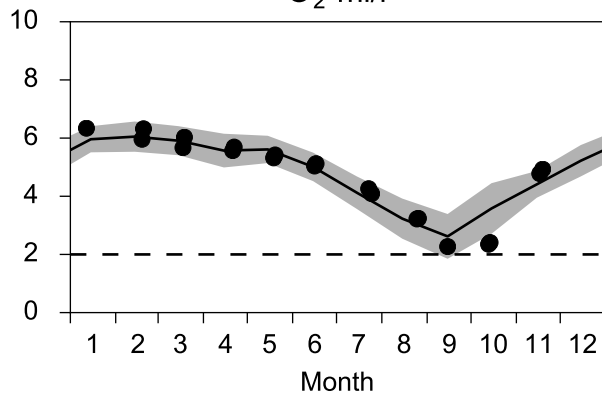
O₂ saturation %



OXYGEN IN BOTTOM WATER (depth >= 52 m)

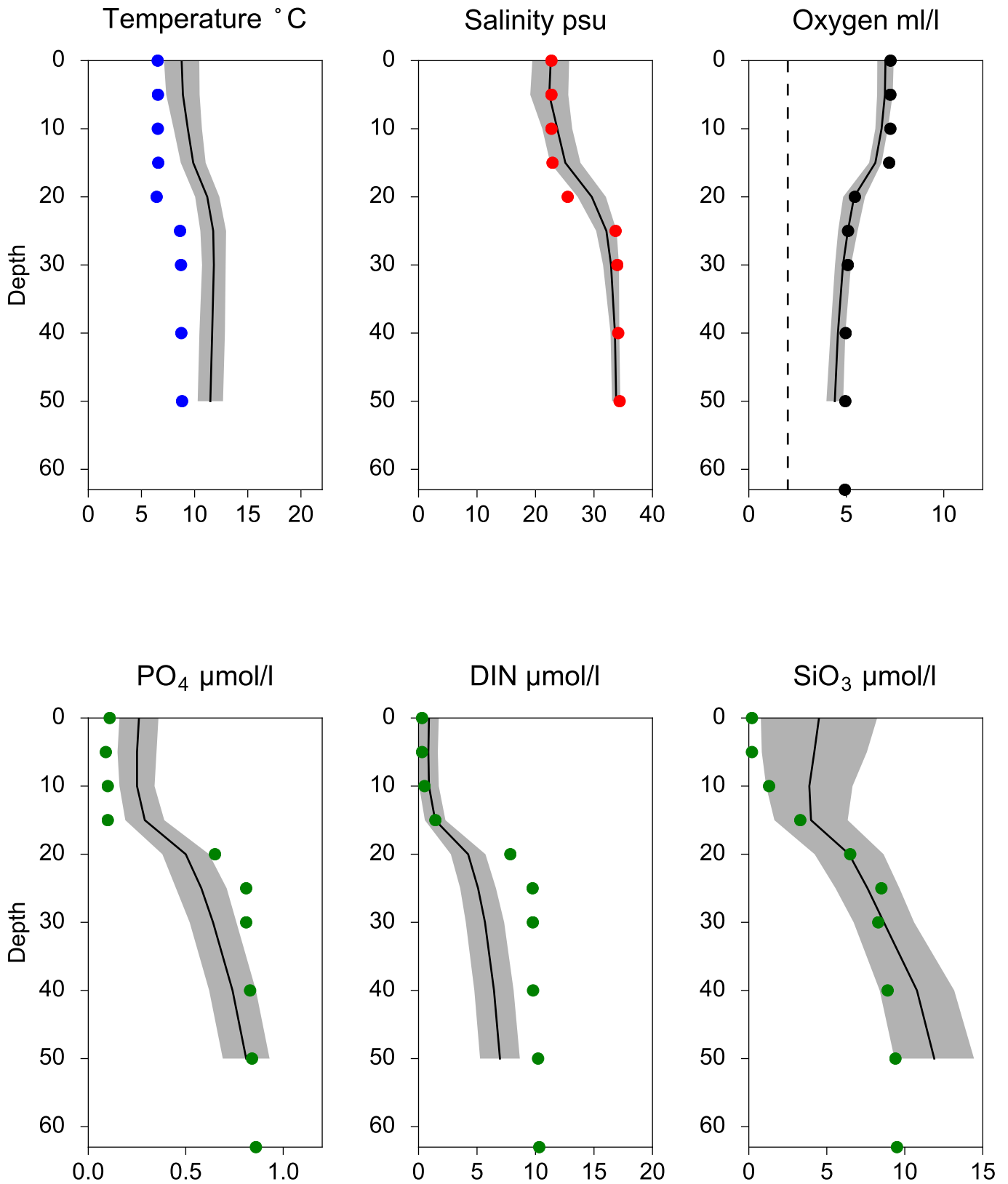
O₂ ml/l

O₂ ml/l



Vertical profiles ANHOLT E November

— Mean 2001-2015 St.Dev. • 2016-11-19



STATION BY4 CHRISTIANSÖ SURFACE WATER (0-10m)

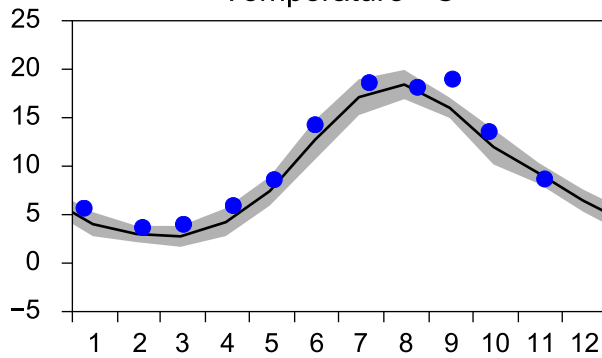
Annual Cycles

— Mean 2001-2015

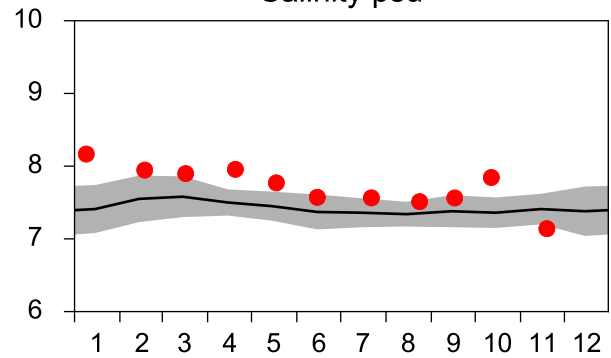
■ St.Dev.

● 2016

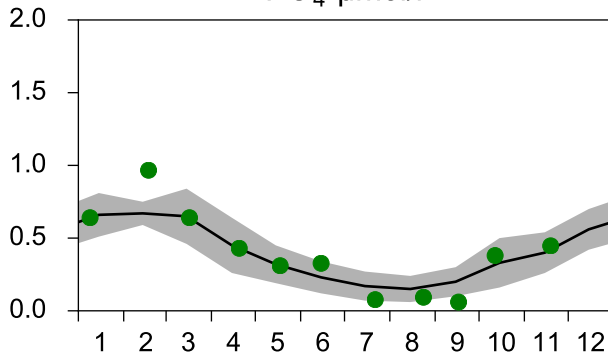
Temperature °C



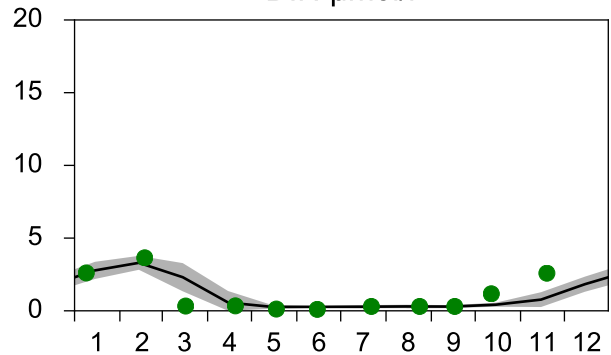
Salinity psu



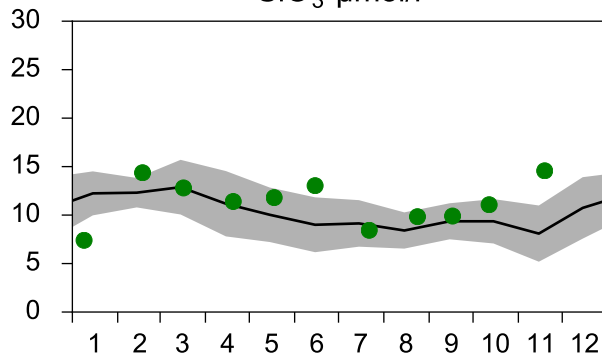
PO₄ µmol/l



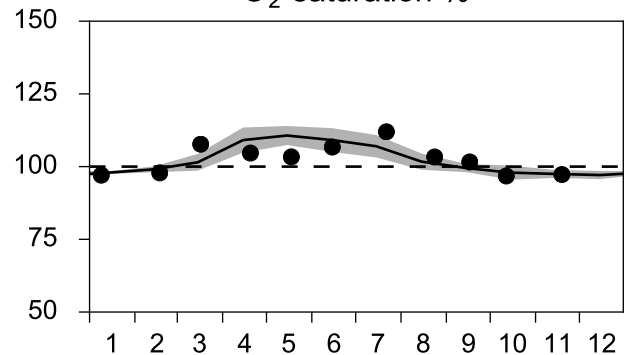
DIN µmol/l



SiO₃ µmol/l

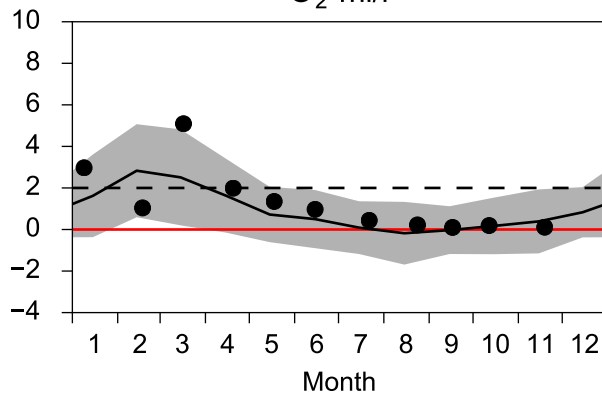


O₂ saturation %

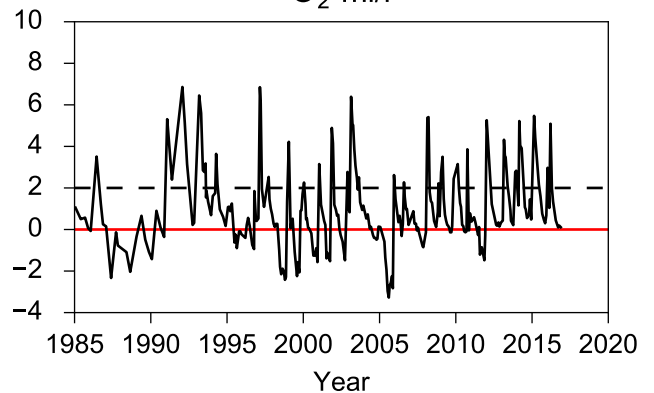


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

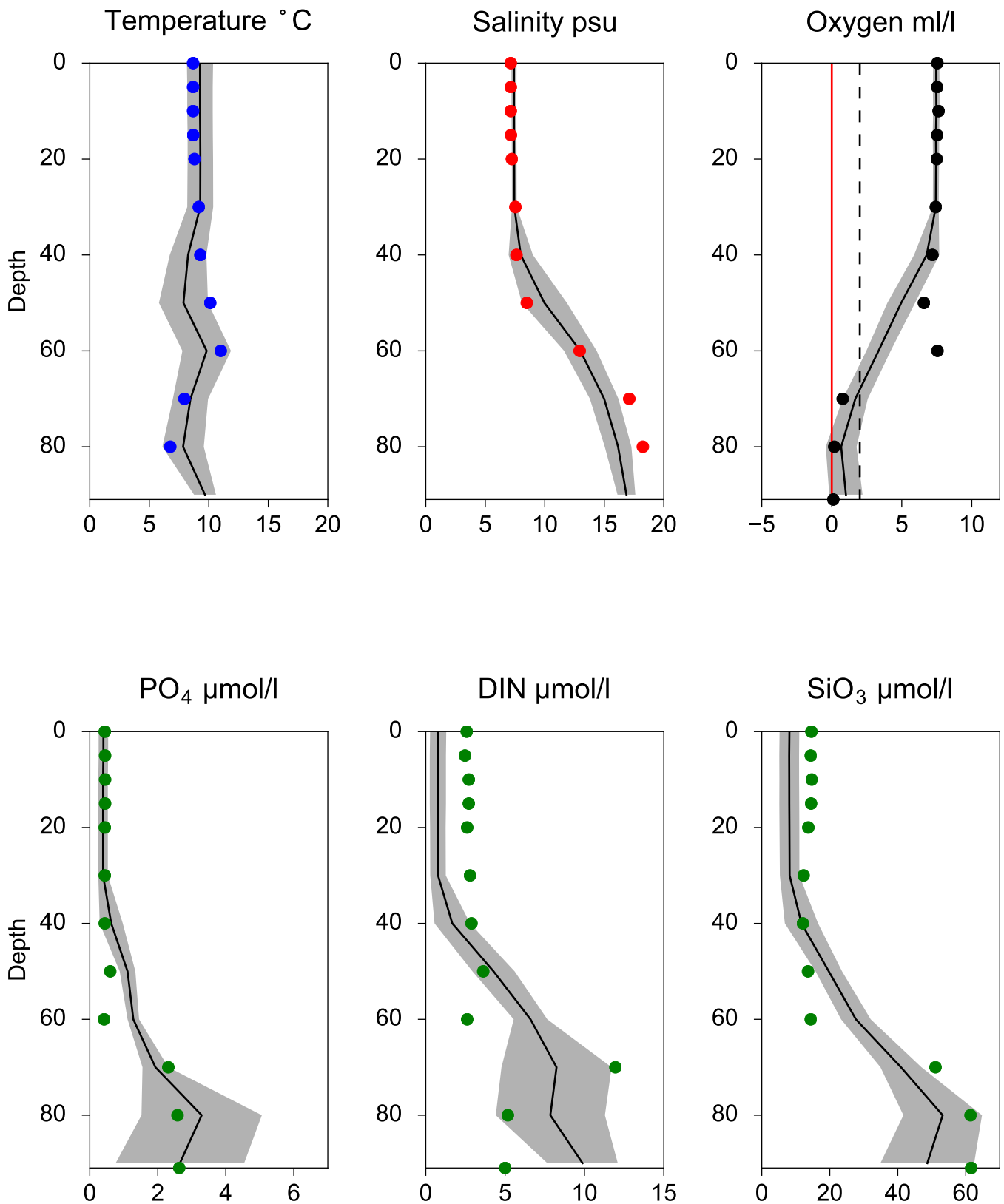


O₂ ml/l



Vertical profiles BY4 CHRISTIANSÖ November

— Mean 2001-2015 ■ St.Dev. ● 2016-11-19



STATION BY5 BORNHOLMSDJ SURFACE WATER (0-10m)

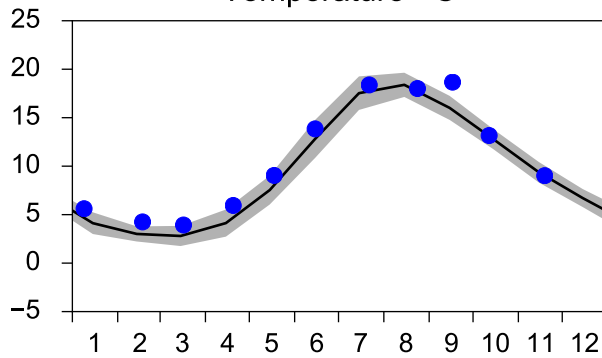
Annual Cycles

— Mean 2001-2015

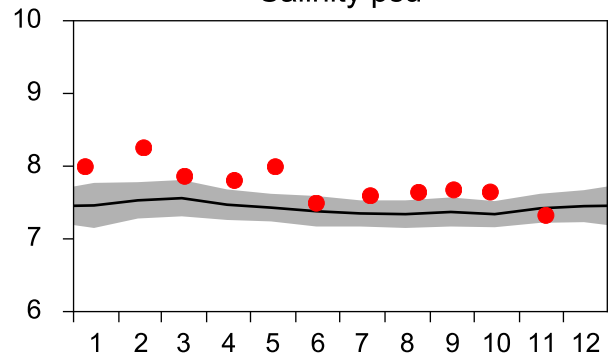
■ St.Dev.

● 2016

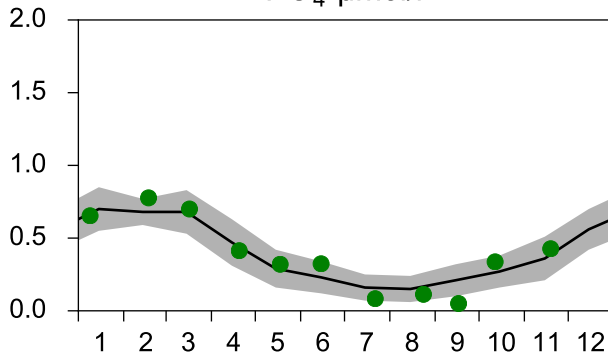
Temperature °C



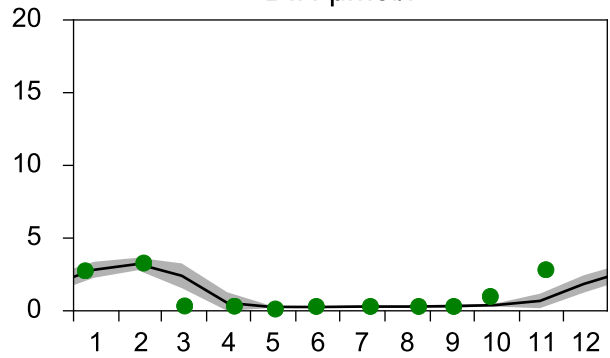
Salinity psu



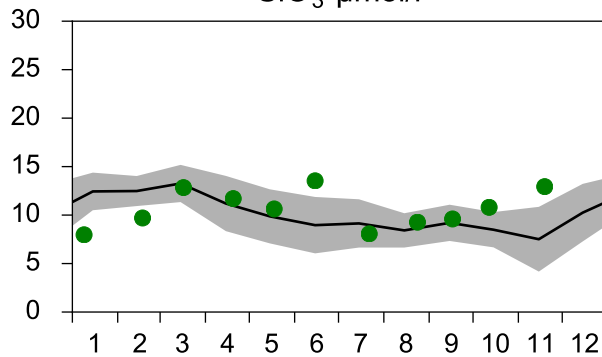
PO₄ µmol/l



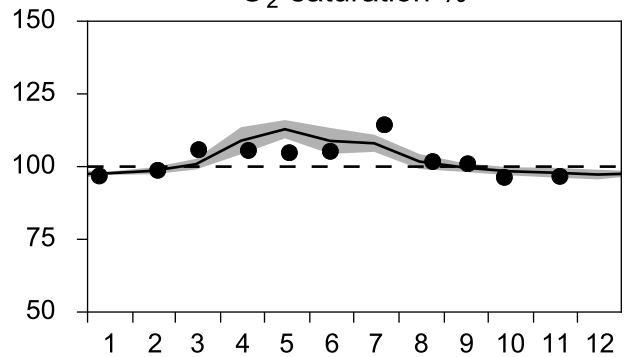
DIN µmol/l



SiO₃ µmol/l

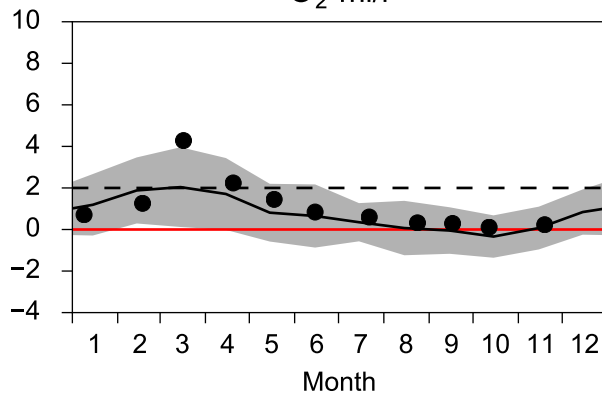


O₂ saturation %

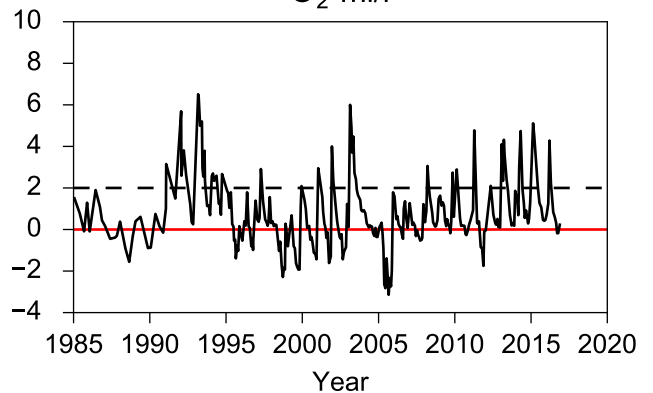


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

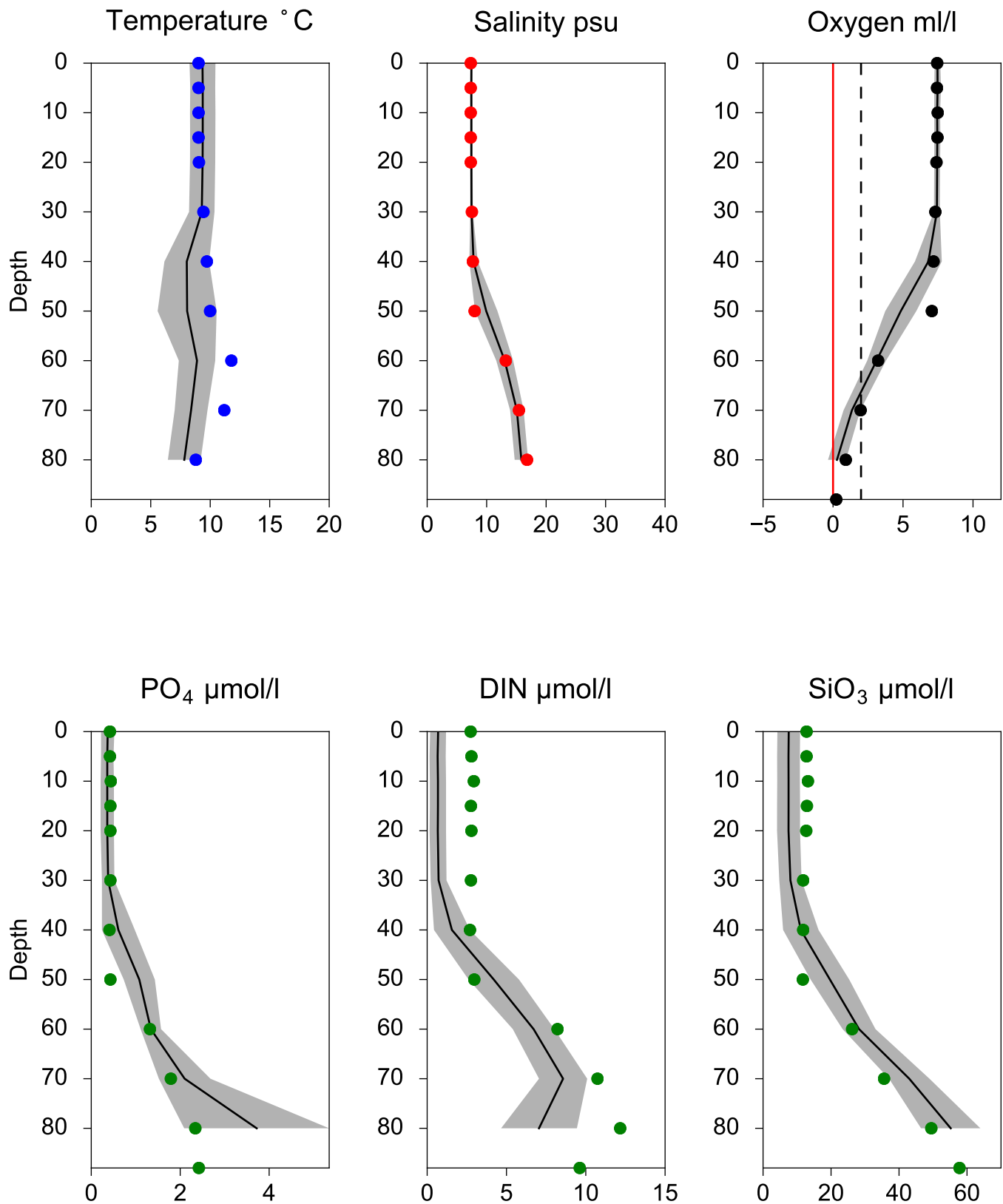


O₂ ml/l



Vertical profiles BY5 BORNHOLMSDJ November

— Mean 2001-2015 ■ St.Dev. ● 2016-11-19



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

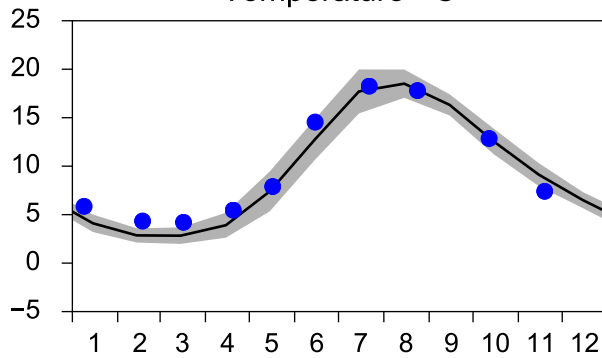
Annual Cycles

— Mean 2001-2015

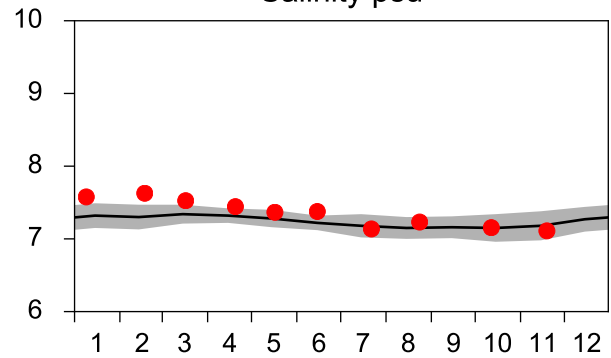
■ St.Dev.

● 2016

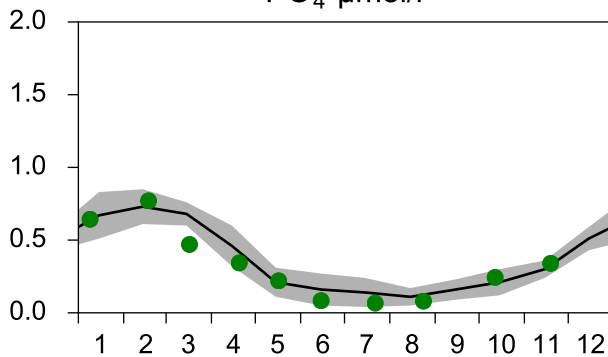
Temperature °C



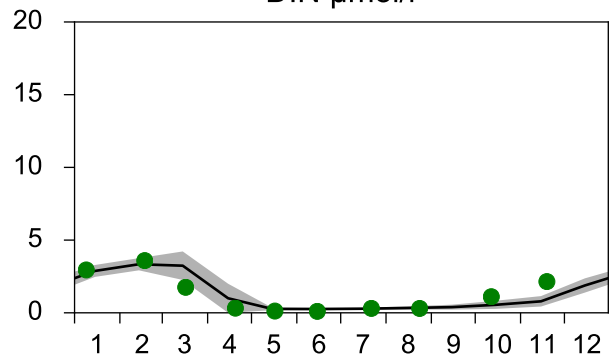
Salinity psu



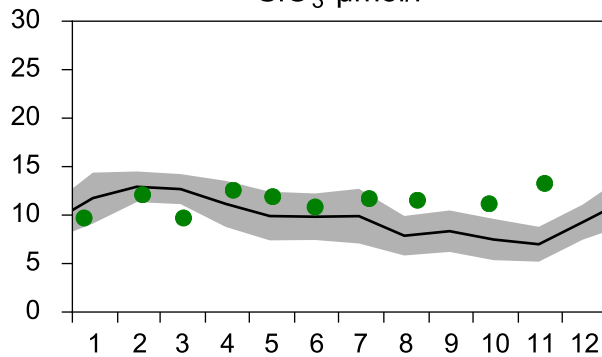
PO₄ μmol/l



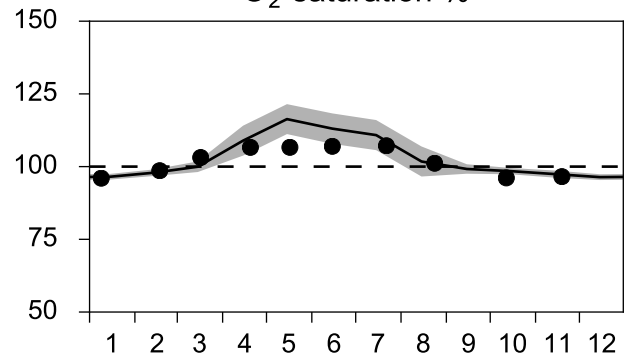
DIN μmol/l



SiO₃ μmol/l

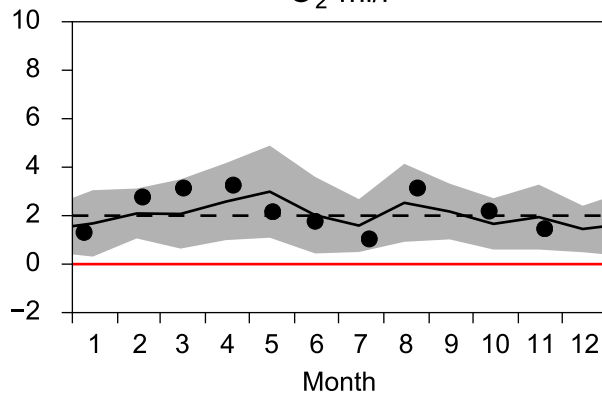


O₂ saturation %

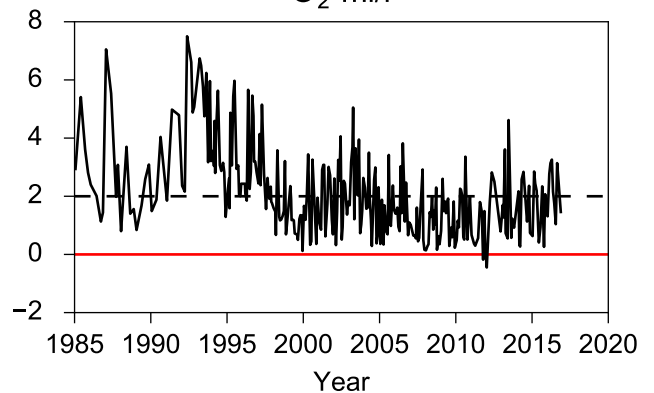


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

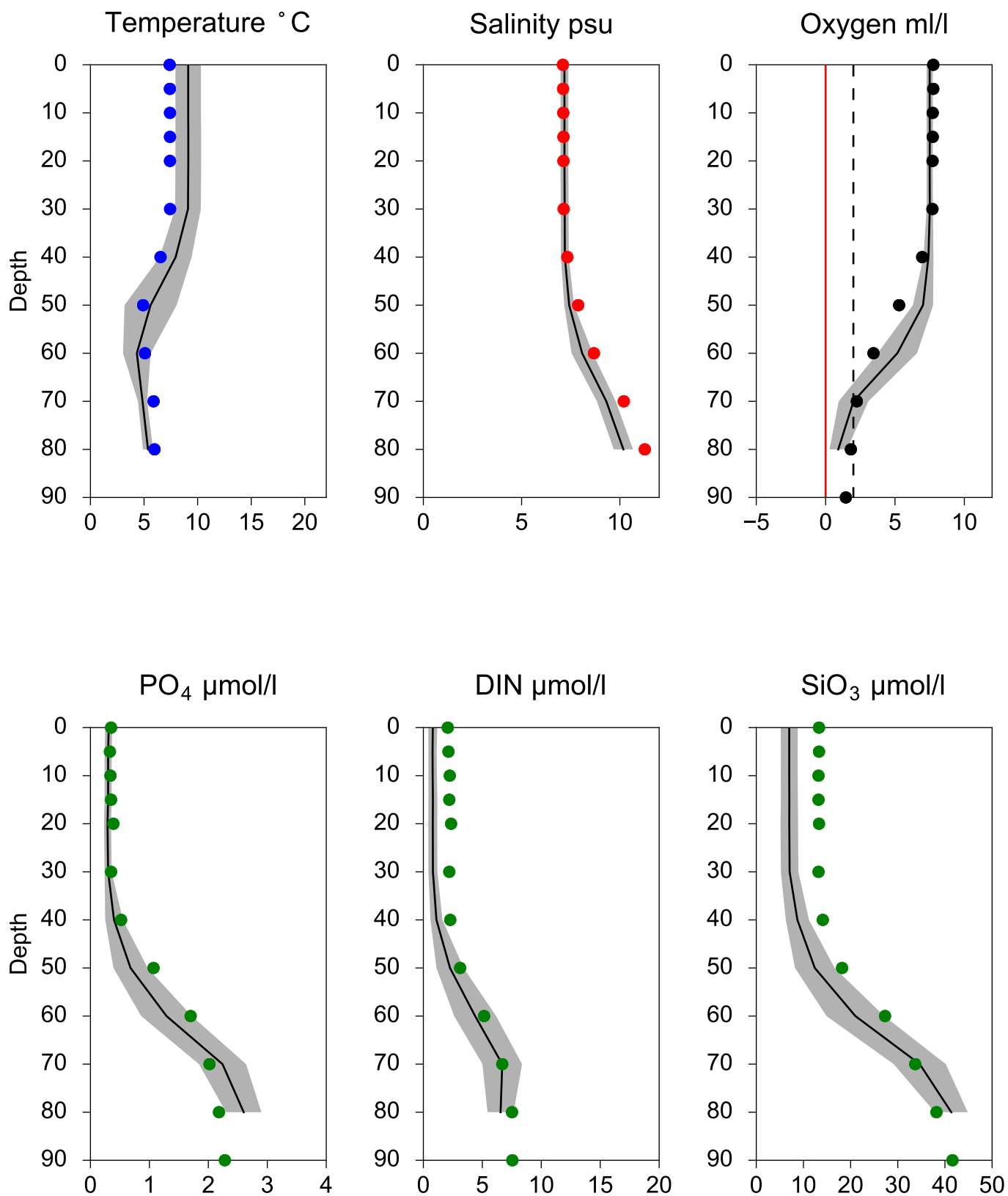


O₂ ml/l



Vertical profiles BCS III-10 November

— Mean 2001-2015 St.Dev. • 2016-11-19



STATION BY10 SURFACE WATER (0-10m)

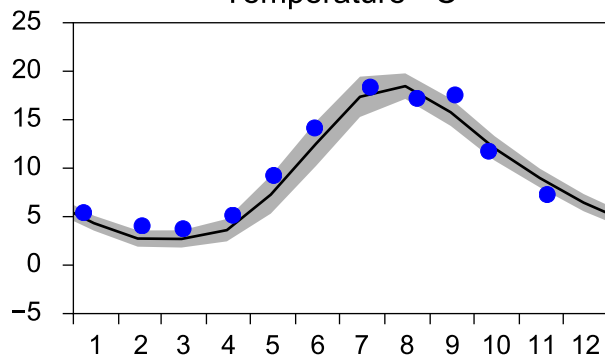
Annual Cycles

— Mean 2001-2015

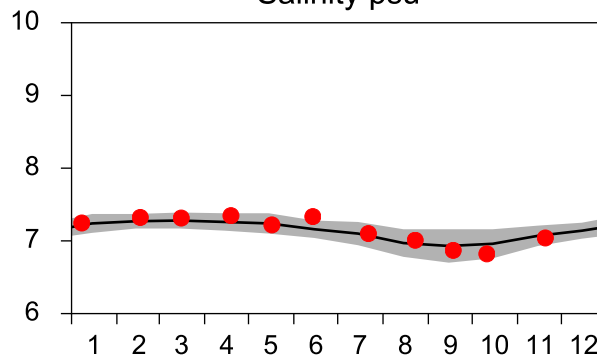
■ St.Dev.

● 2016

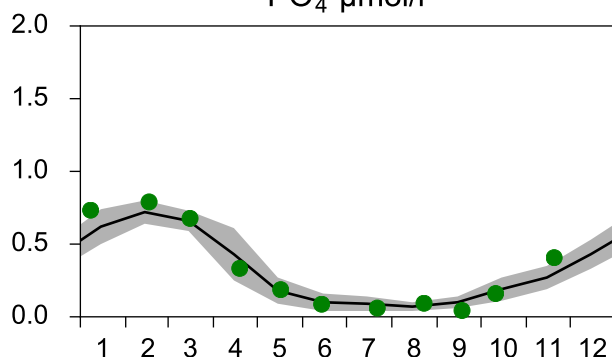
Temperature °C



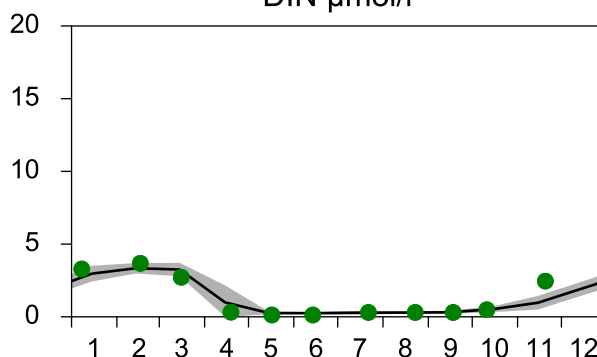
Salinity psu



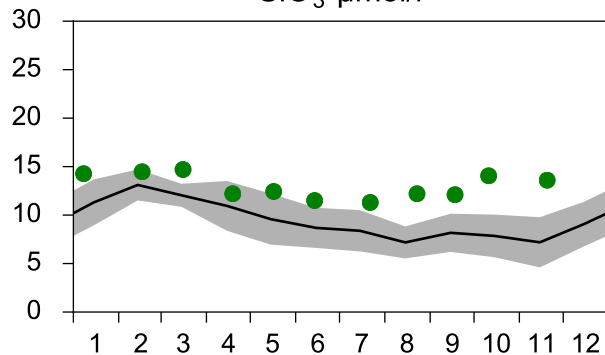
PO₄ µmol/l



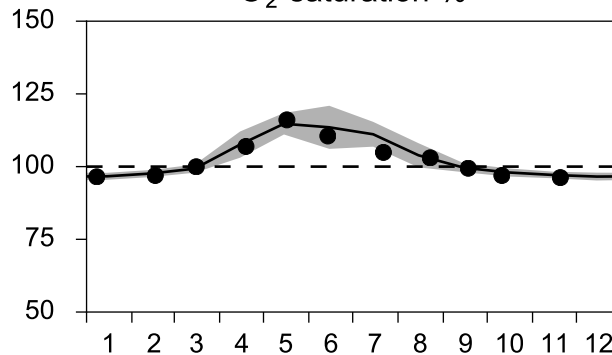
DIN µmol/l



SiO₃ µmol/l

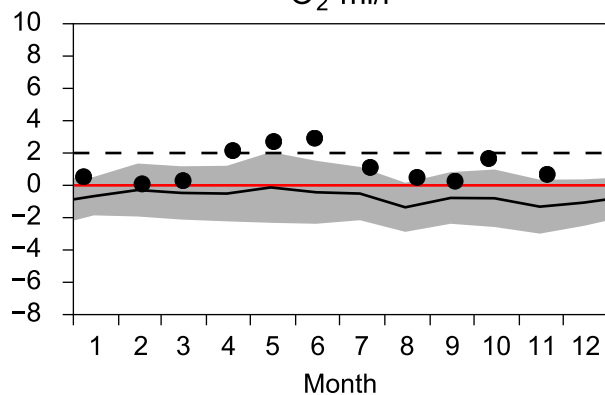


O₂ saturation %

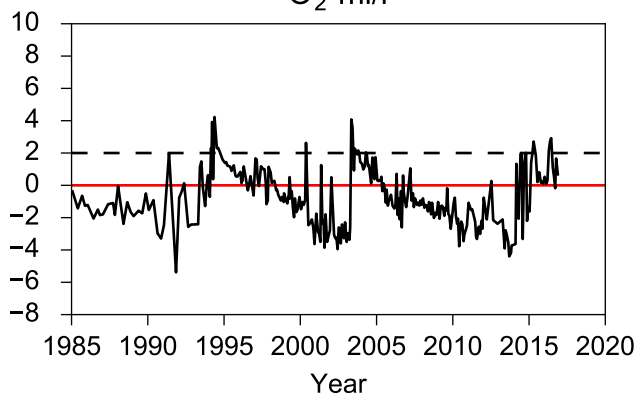


OXYGEN IN BOTTOM WATER (depth >= 125 m)

O₂ ml/l

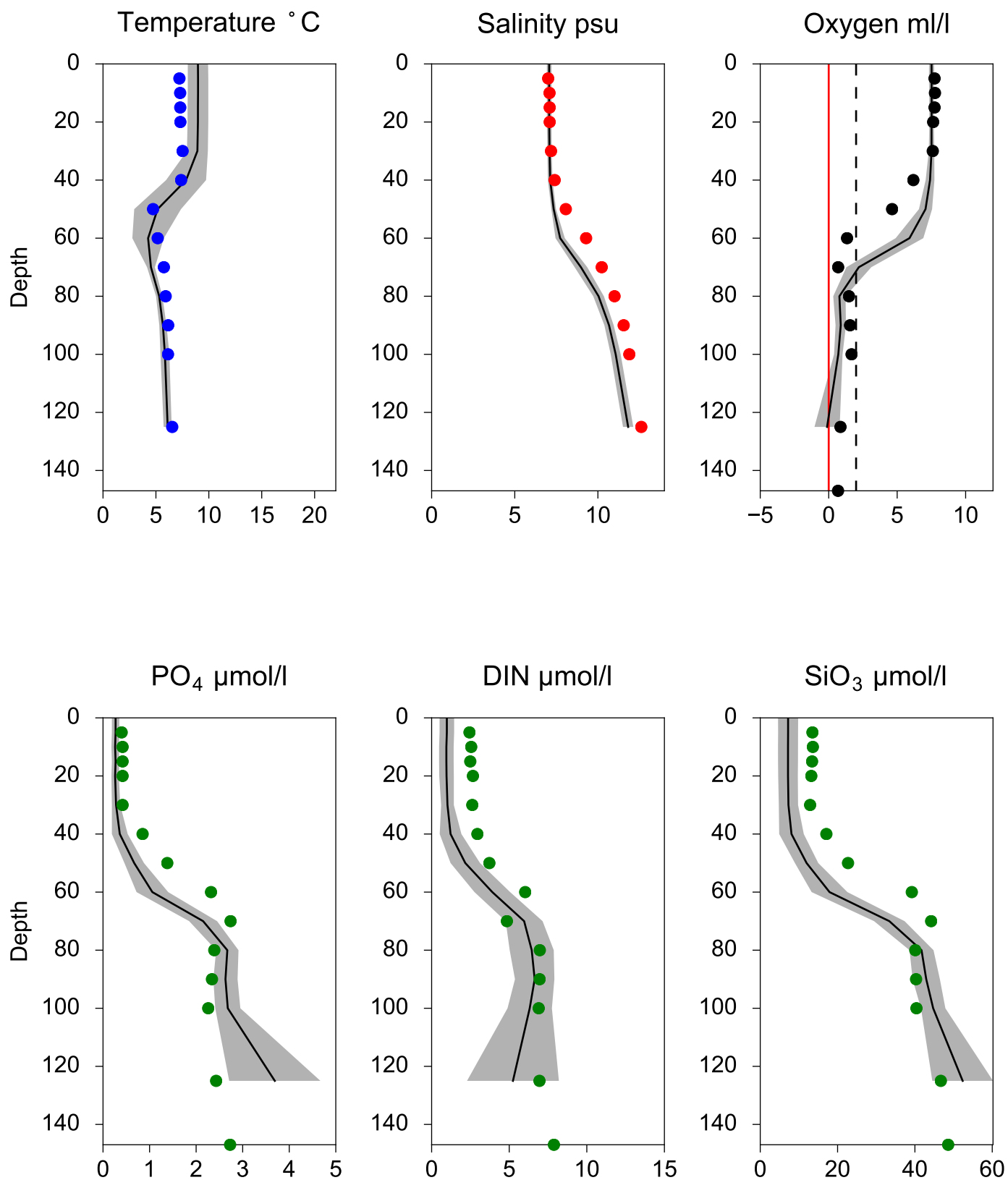


O₂ ml/l



Vertical profiles BY10 November

— Mean 2001-2015 ■ St.Dev. ● 2016-11-20



STATION BY15 GOTLANDSDJ SURFACE WATER (0-10m)

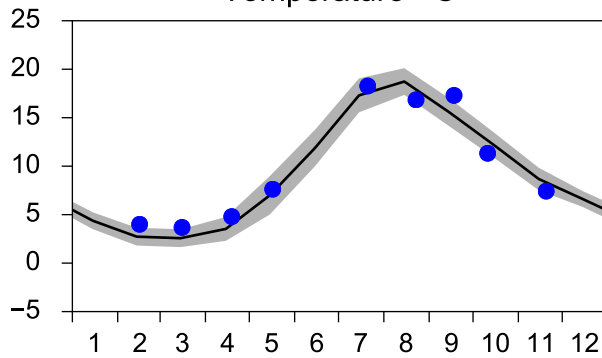
Annual Cycles

— Mean 2001-2015

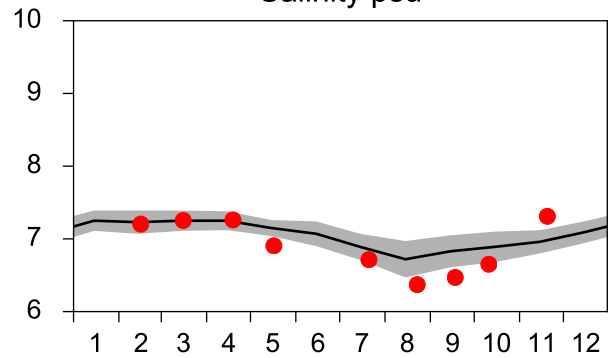
■ St.Dev.

● 2016

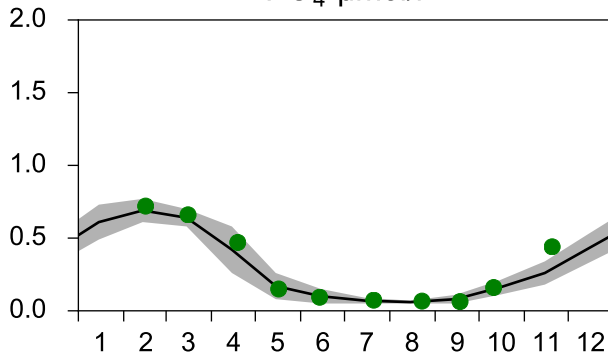
Temperature °C



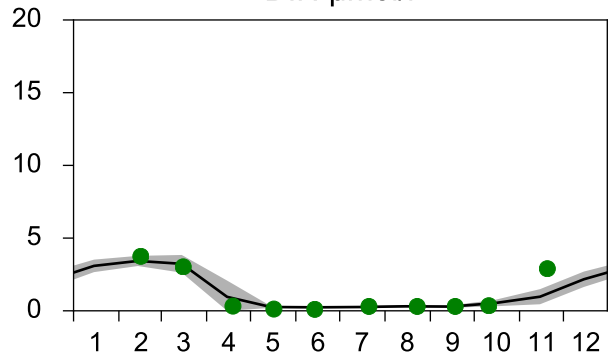
Salinity psu



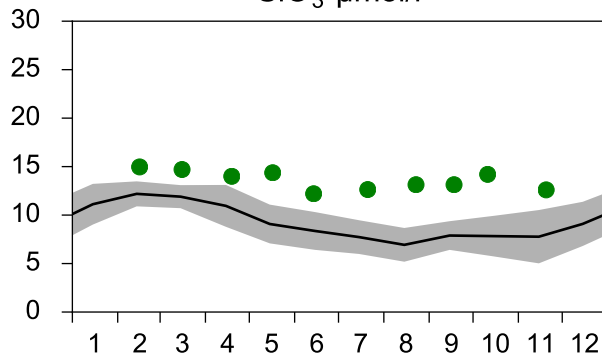
PO₄ µmol/l



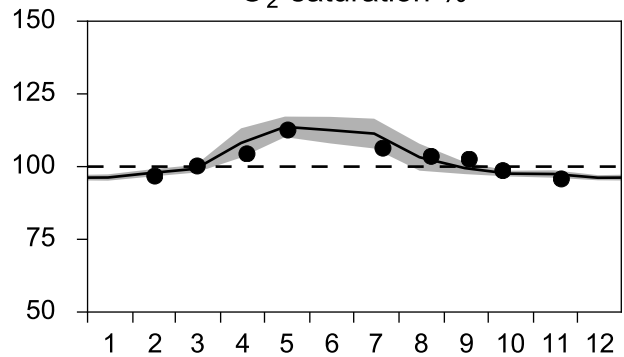
DIN µmol/l



SiO₃ µmol/l

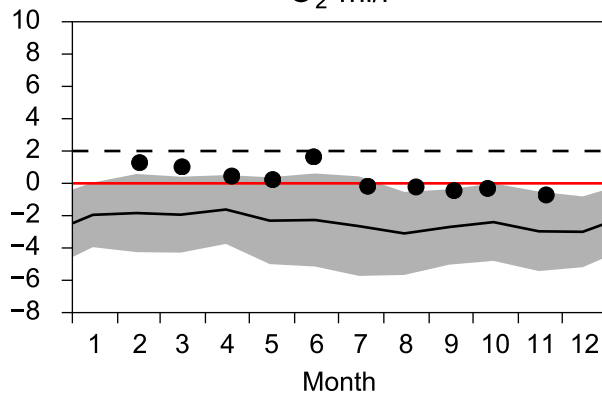


O₂ saturation %

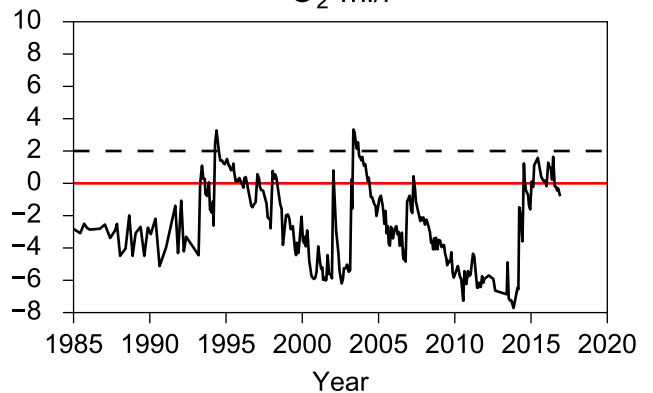


OXYGEN IN BOTTOM WATER (depth >= 225 m)

O₂ ml/l

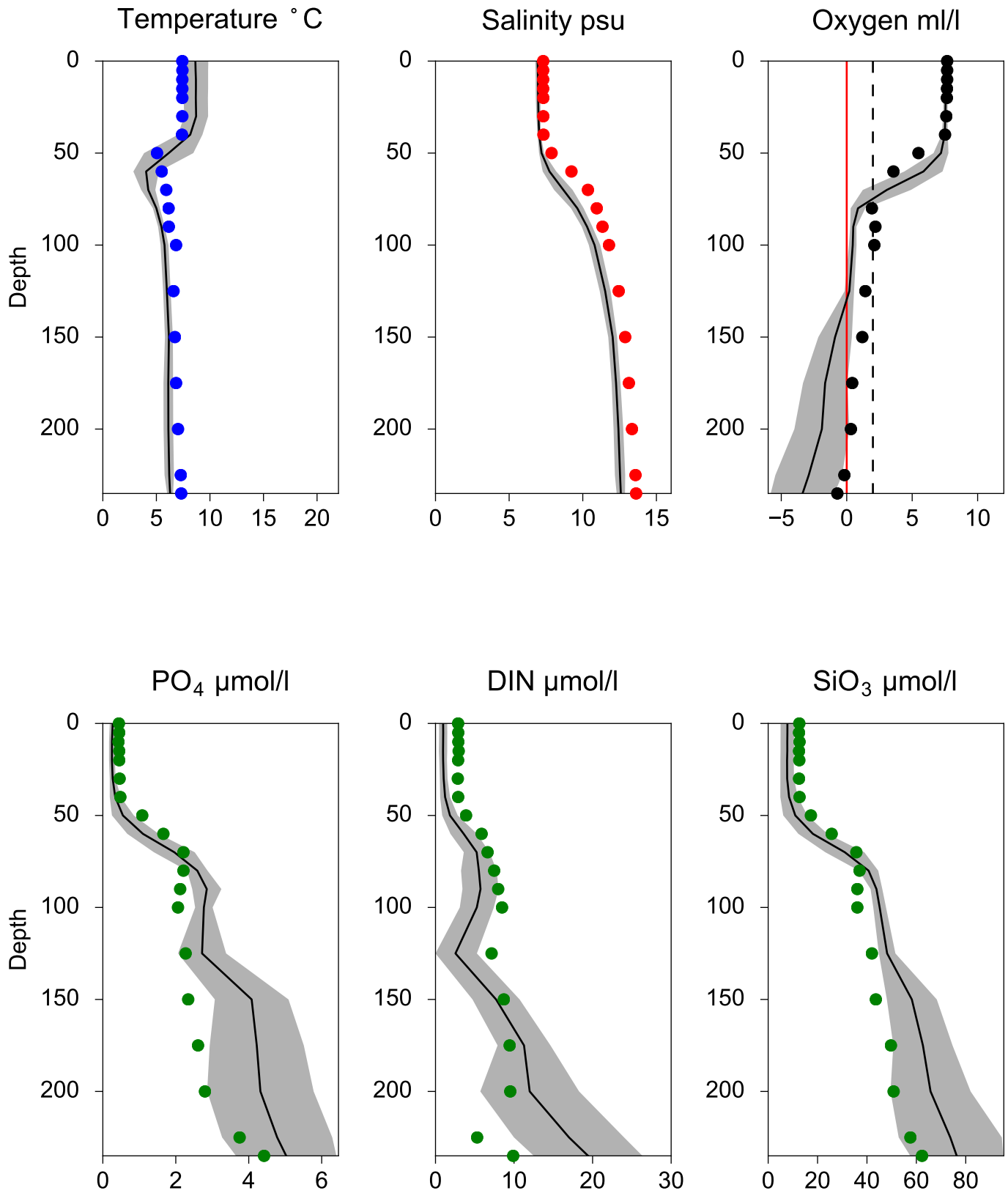


O₂ ml/l



Vertical profiles BY15 GOTLANDSDJ November

— Mean 2001-2015 ■ St.Dev. ● 2016-11-20



STATION BY20 FÅRÖDJ SURFACE WATER (0-10m)

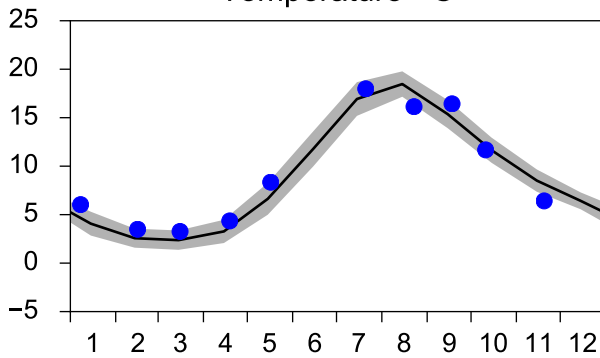
Annual Cycles

— Mean 2001-2015

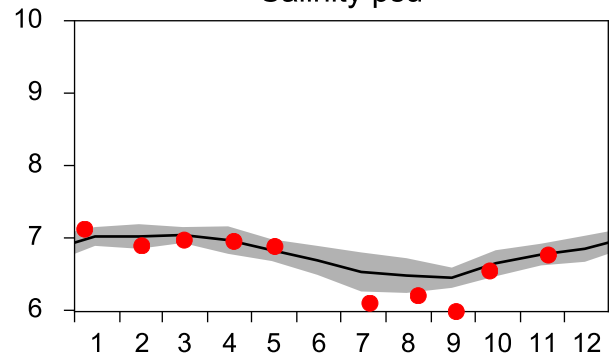
■ St.Dev.

● 2016

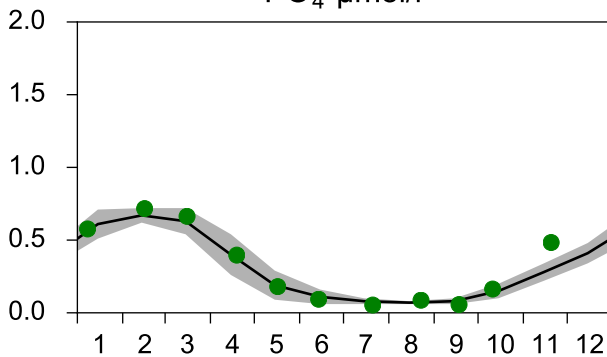
Temperature °C



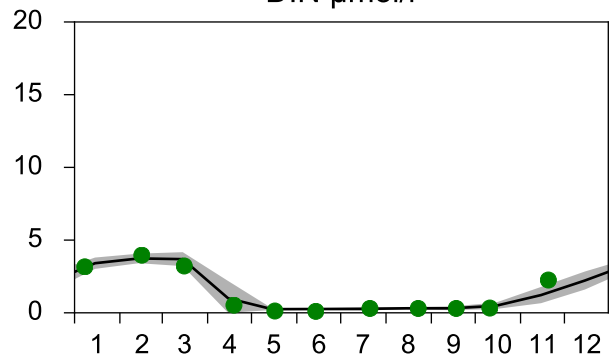
Salinity psu



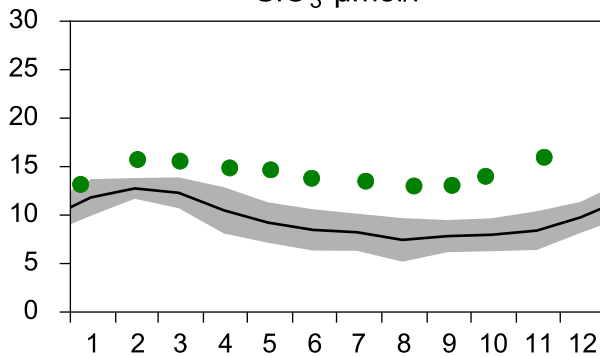
PO₄ µmol/l



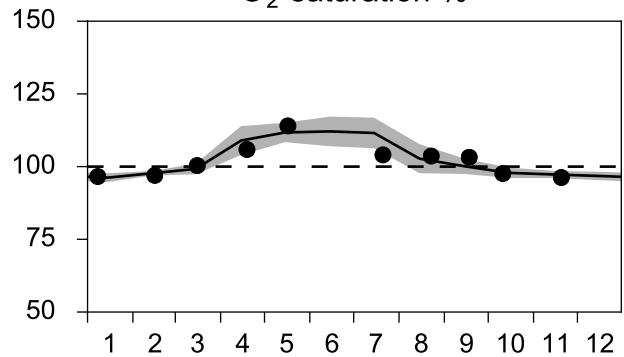
DIN µmol/l



SiO₃ µmol/l

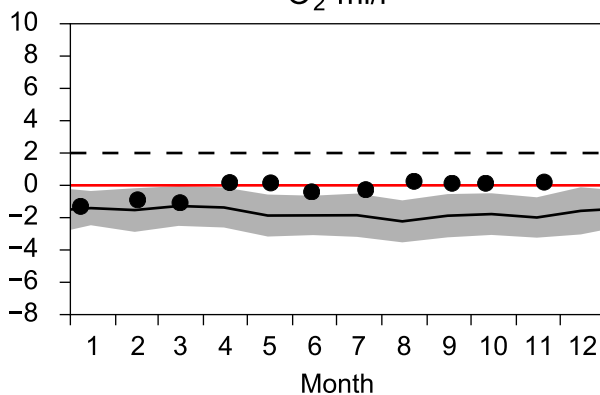


O₂ saturation %

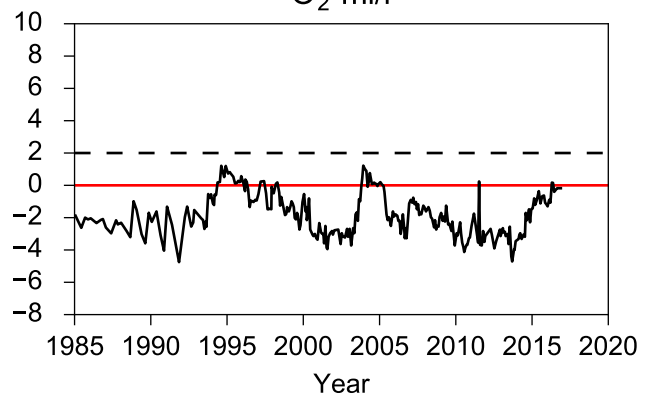


OXYGEN IN BOTTOM WATER (depth >= 175 m)

O₂ ml/l



O₂ ml/l



Vertical profiles BY20 FÅRÖDJ November

— Mean 2001-2015 St.Dev. • 2016-11-20

