

Rapport från SMHIs utsjöexpedition med R/V Aranda



Expeditionens varaktighet: 2016-12-07 - 2016-12-14
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, dock påträffades inga höga koncentrationer av svavelväte förutom i västra Gotlandsbassängen där svavelväte påträffades från djup överstigande 80 meter. Akut syrebrist, < 2 ml/l, noterades från 60-70 meters djup i hela Egentliga Östersjön.

I Kattegatt och Skagerrak uppvisade samtliga närsalter halter som var lägre eller mycket lägre än normalt i hela vattenkolumnen. I Egentliga Östersjön var däremot halterna av närsalter generellt över eller mycket över det normala.

Temperaturen i ytvattnet var lägre än normalt i västra, norra och östra Gotlandsbassängen och salthalten var högre än normalt i östra Gotlandsbassängen, men i övriga områden normal.

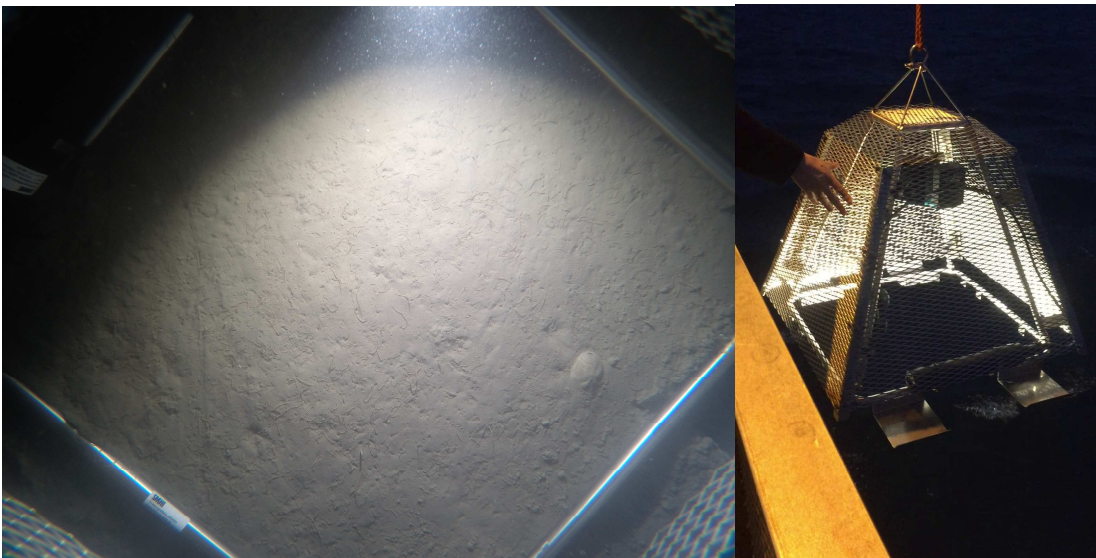
Nästa ordinarie expedition planeras starta 7:e januari, då utförs bland annat vinterkartering av närsalter i Kattegatt.

RESULTAT

Expeditionen genomfördes ombord på det finska forskningsfartyget Aranda och startade i Helsingfors den 7:e december och avslutades i samma hamn den 14:e. Vinden var mestadels västlig med varierande styrka. I början av expeditionen i Finska viken rådde kuling, i västra Gotlandsbassängen avtog vinden och det blåste i omkring 10 m/s, i Hanöbukten och Arkona tilltog vinden igen. På västkusten var vindarna svaga till måttliga. I östra Gotlandsbassängen ökade vinden igen till kuling nu från nordöst.

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

På uppdrag från HaV utfördes fotografering och videofilmning av botten vid ett antal stationer under expeditionen. Bilder och videofilmer skall användas för naturtypsbestämning av botten vid de miljöövervakningsstationer som SMHI provtar under utsjöexpeditionerna.



Figur 1. SMHIs drop-video rigg är utrustad med strålkastare samt två Go-pro kameror som filmar och tar bilder av botten. Bilden visar botten vid stationen P2 i Skagerrak.

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>

Temperaturen i ytvattnet var normal för årstiden och låg strax över 7°C. Ytsalthalten, varierade kring 31-33 psu, något högre än normalt närmast kusten och i de södra delarna, i övrigt normal. Haloklinen och termoklinen var välutvecklade i yttre Skagerrak och sammanföll på omkring 20 meters djup. I de östra och södra delarna var ytskiktet välblandat ner till 70-80 meters djup.

Samtliga närsalter visade generellt lägre halter än normalt i hela vattenkolumnen, förutom närmast kusten där halterna var normala. Koncentrationen av fosfat låg omkring 0,3 µmol/l och koncentrationen av oorganiskt kväve (nitrat+ nitrit+ammonium) varierade mellan 3,1 till 3,4 µmol/l. Silikatkoncentration varierade mellan 1,7 och 2,0 µmol/l. Vid Släggö var halterna högre, fosfat 0,5 µmol/l, silikat 5,3 µmol/l och oorganiskt kväve 5,1 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

Ytvattentemperaturen var normal för årstiden och varierade mellan 5,9 och 6,7°C, lägst i Öresund och högst i de norra delarna. Ytsalthalten var mycket över det normala i hela området och varierade mellan 27 och 30 psu i Kattegatt och 23 psu i Öresund. Haloklinen sammanföll med termoklinen och återfanns på 5-25 meters djup.

Närsalterna uppvisade samma förhållanden som i Skagerrak, d.v.s. samtliga närsalter uppvisade halter som är lägre eller mycket lägre än normalt i hela vattenkolumnen. Fosfatkoncentrationerna varierade mellan 0,2 och 0,3 µmol/l. Summan av oorganiskt kväve var 1,7 - 2,7 µmol/l i Kattegatt och Öresund. Silikat varierade mellan 1,1 och 2,2 µmol/l i Kattegatt, i Öresund 4,2 µmol/l.

Djupvattnet var väl syresatt i hela Kattegatts och Öresund vilket är normalt för årstiden. Halterna närmast botten varierade omkring 5 ml/l.

Fluorescensmätningar visade på viss planktonaktivitet ner till 20 meters djup i hela området.

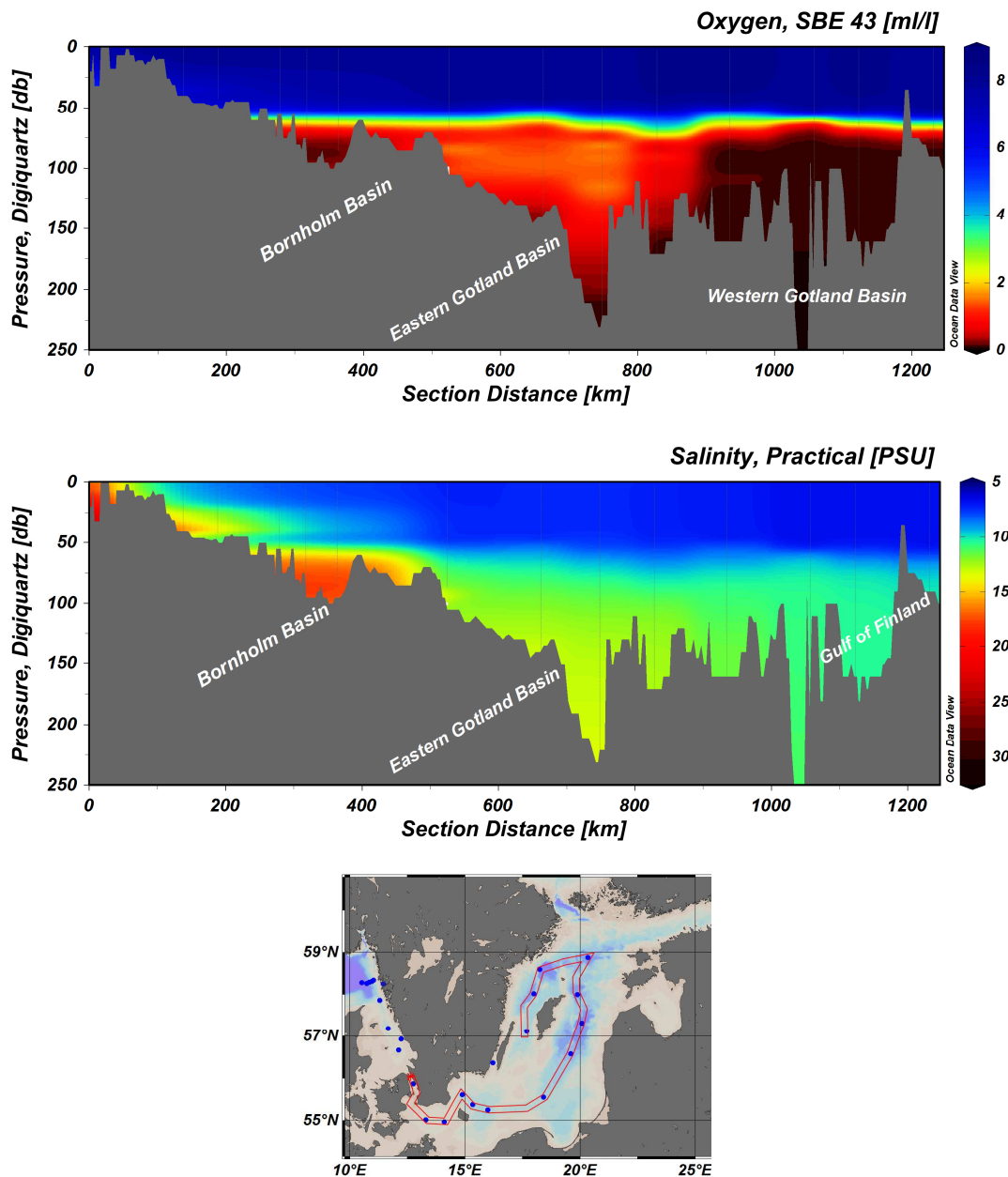
Egentliga Östersjön

Temperaturen i ytvattnet var lägre än normal i västra, norra och östra Gotlandsbassängen och varierade mellan 5,7°C i de norra delarna till 7,7°C, i sydväst. Salthalten var högre än normal i östra Gotlandsbassängen, men i övriga områden normal. Salthalten var lägst i västra Gotlandsbassängen med 6,8 psu och högst i Arkonabassängen, med dryga 8 psu. Haloklinen och termoklinen sammanföll och låg på omkring 40-55 meters djup i hela området. I Arkonabassängen var skiktningen svagt utvecklad och återfanns grundare på omkring 20-25 meters djup.

Fosfathalterna var mycket förhöjda i hela området förutom i Arkona- och Bornholmsbassängen där de var normala för årstiden. Halterna varierade mellan 0,5 och 0,7 µmol/l. Halterna av oorganiskt kväve var över eller mycket över det normala i hela det undersökta området och varierade mellan 2,4 och 4,3 µmol/l. Silikatkoncentrationerna var fortsatt mycket över det normala i hela området och halterna varierade mellan 12 och 18 µmol/l.

I stora delar av Egentliga Östersjöns djupvatten påträffades syrgashalter nära noll, dock påträffades inga höga koncentrationer av svavelväte förutom i västra Gotlandsbassängen där svavelväte påträffades från djup överstigande 80 meter. I östra Gotlandsbassängen påträffades helt syrefria förhållanden närmast botten vid 235 meter vid BY15 Gotlandsdjupet medan det norra därom vid BY20 Fårödjupet inte påträffades någon svavelväte medan syrehalterna var mycket nära noll. Akut syrebrist, < 2 ml/l, noterades från 60-70 meters djup i hela Egentliga Östersjön.

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 västra Gotlandsbassängen.

DELTAGARE

**Namn**

Karin Wesslander

Sari Sipilä

Johan Kronsell

Martin Hansson

Daniel Bergman Sjöstrand

Johanna Linders

Kristin Andreasson

Johan Håkansson

Expeditionsledare Helsingfors-Lysekil

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Helsingfors-Lysekil

Expeditionsledare Lysekil-Helsingfors

Lysekil-Helsingfors

Lysekil-Helsingfors

Från

SMHI

SMHI

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SMHI

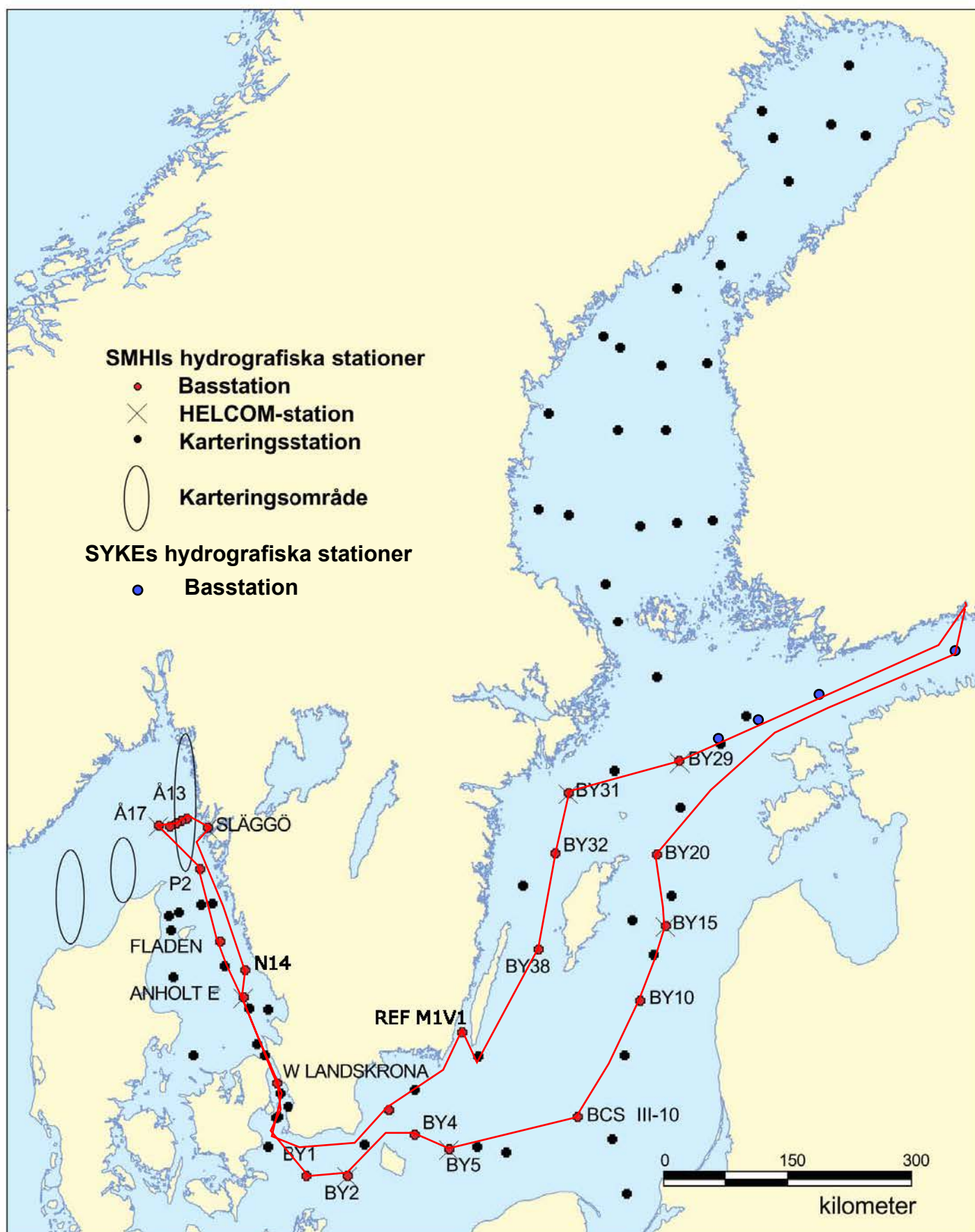
SMHI

SMHI

SMHI

BILAGOR

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



Time: 23:17

[illegible]

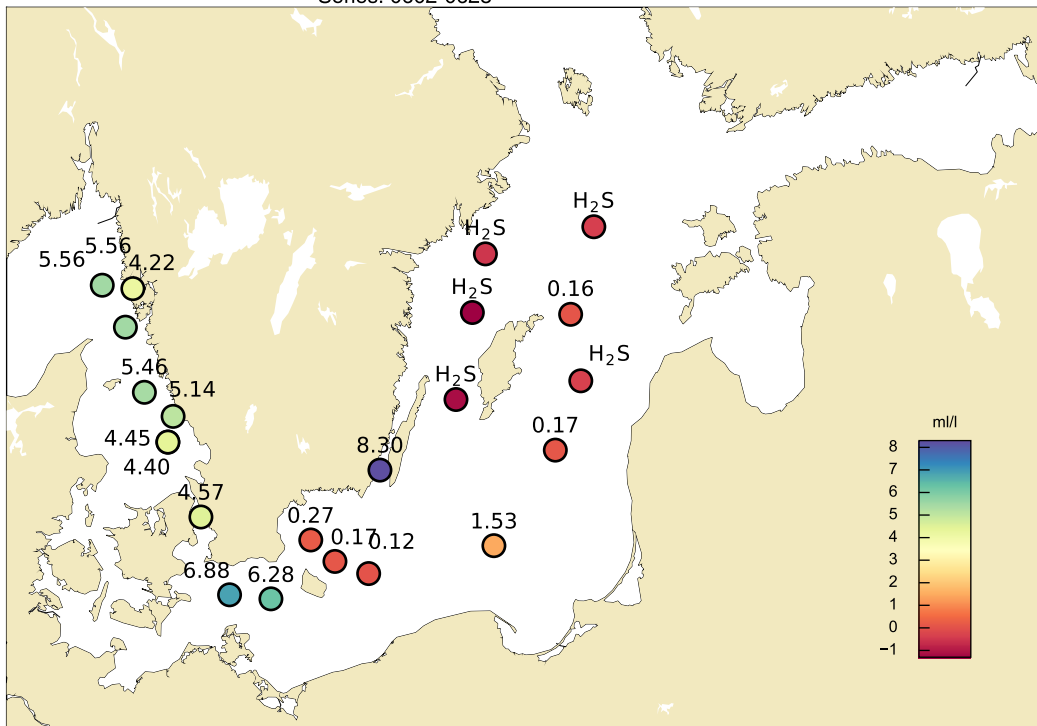
Bottom water oxygen concentration (ml/l)

Country: Finland

Ship: Aranda

Date: 20161207-20161214

Series: 0602-0628



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

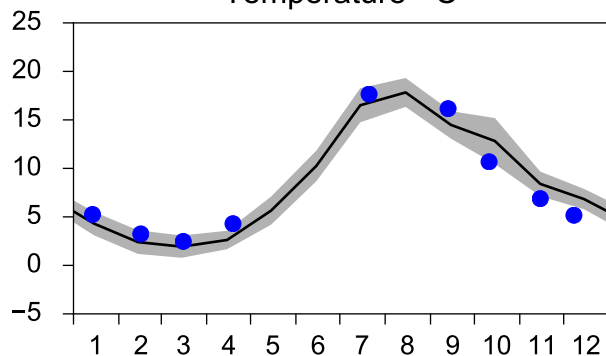
Annual Cycles

— Mean 2001-2015

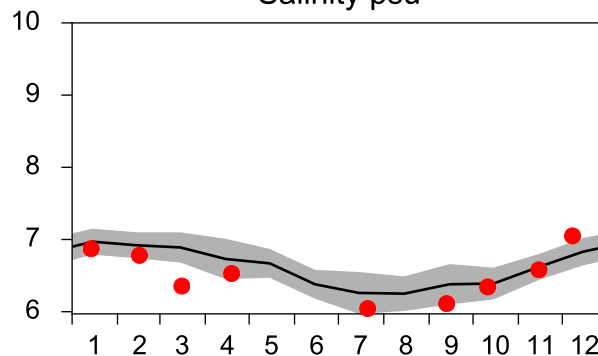
■ St.Dev.

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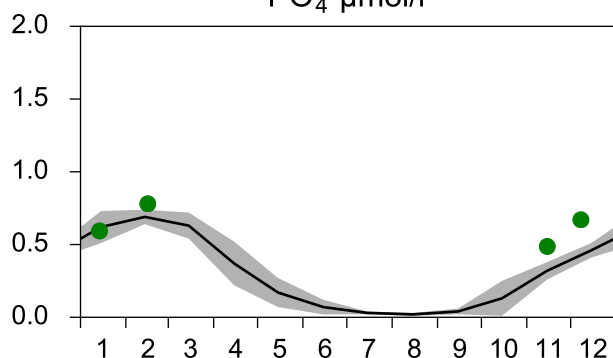
Temperature °C



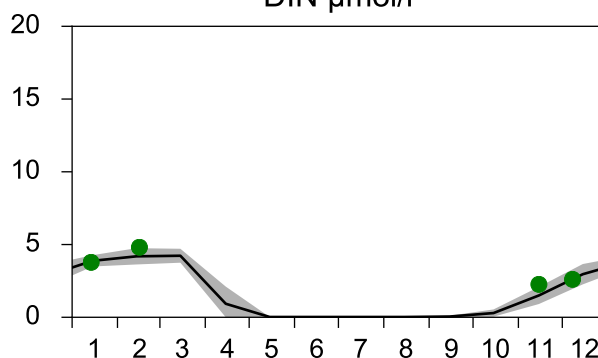
Salinity psu



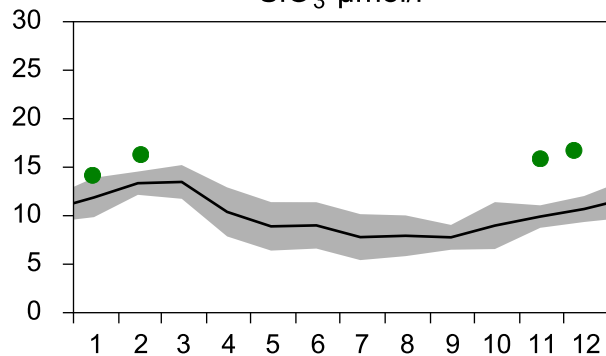
PO₄ µmol/l



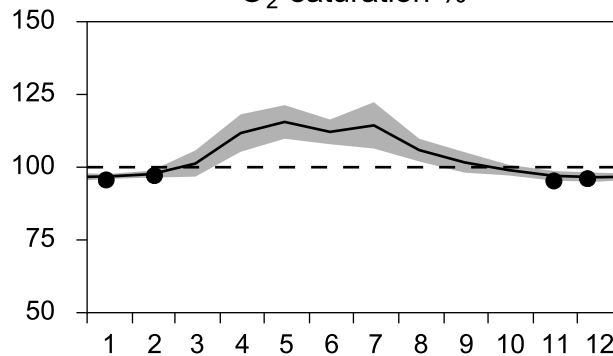
DIN µmol/l



SiO₃ µmol/l

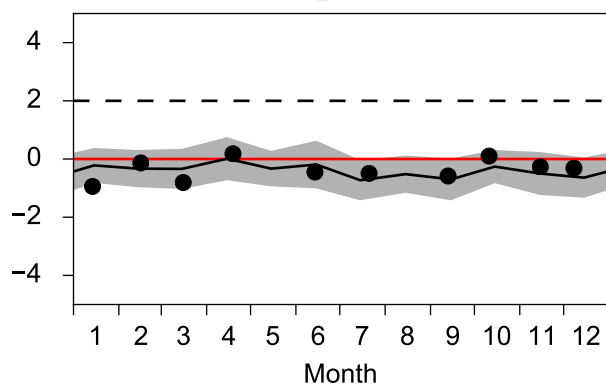


O₂ saturation %

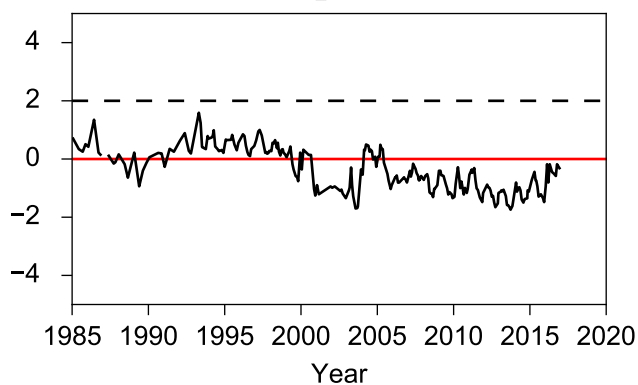


OXYGEN IN BOTTOM WATER (depth >= 150 m)

O₂ ml/l

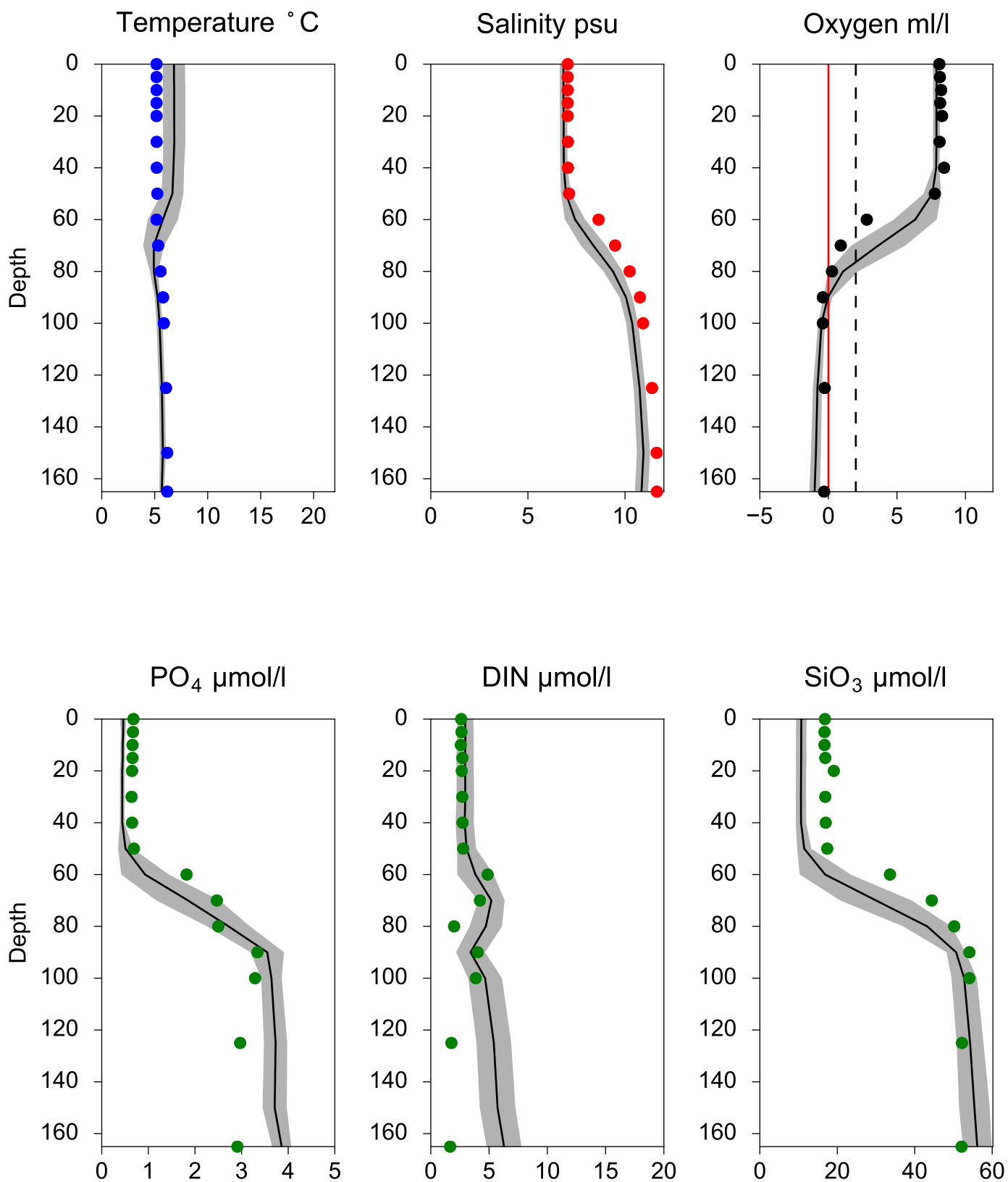


O₂ ml/l



Vertical profiles BY29 / LL19 December

— Mean 2001-2015 St.Dev. • 2016-12-08



STATION BY31 LANDSORTSDJ SURFACE WATER (0-10m)

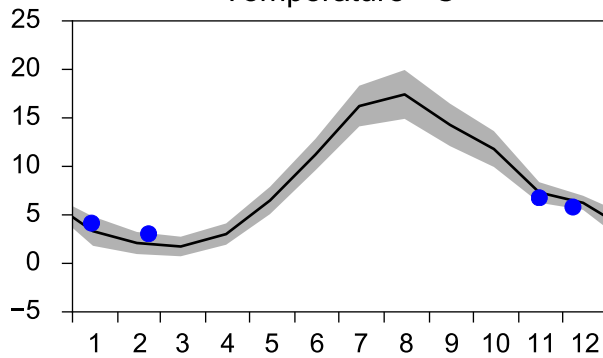
Annual Cycles

— Mean 2001-2015

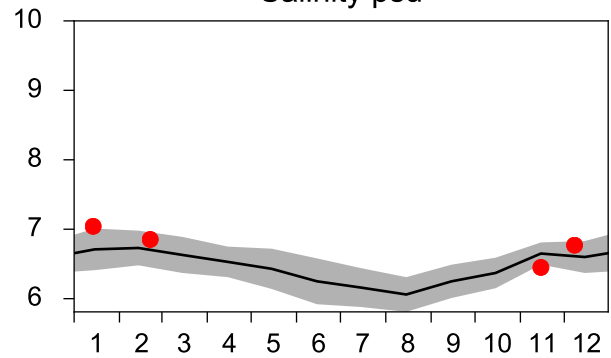
■ St.Dev.

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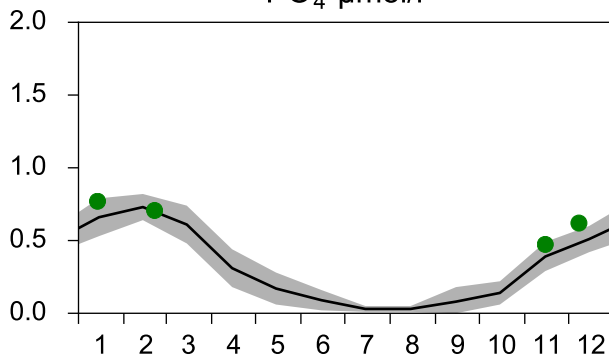
Temperature °C



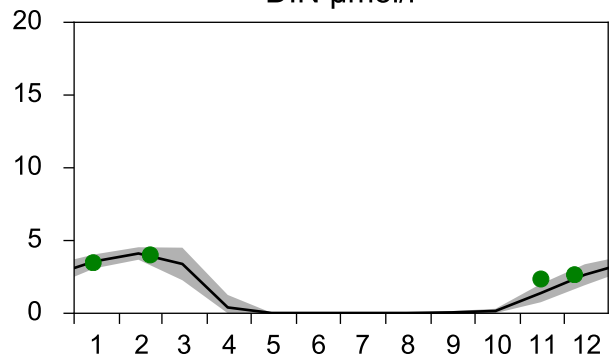
Salinity psu



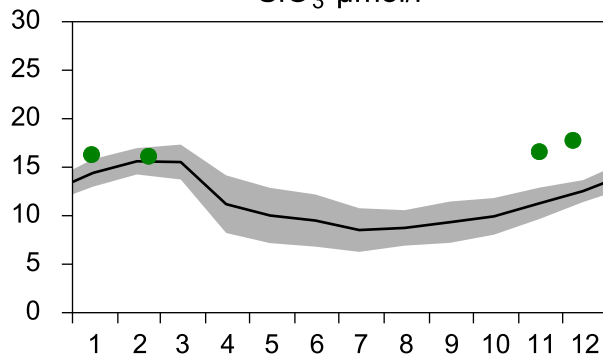
PO₄ µmol/l



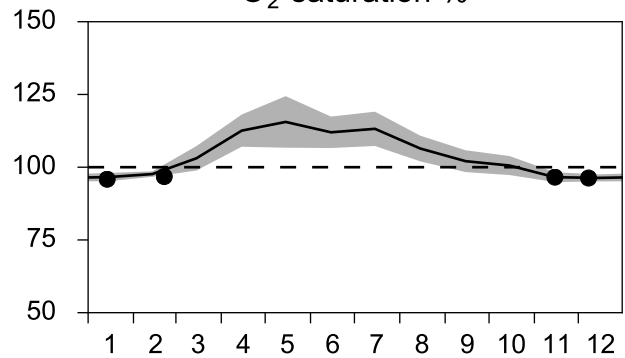
DIN µmol/l



SiO₃ µmol/l

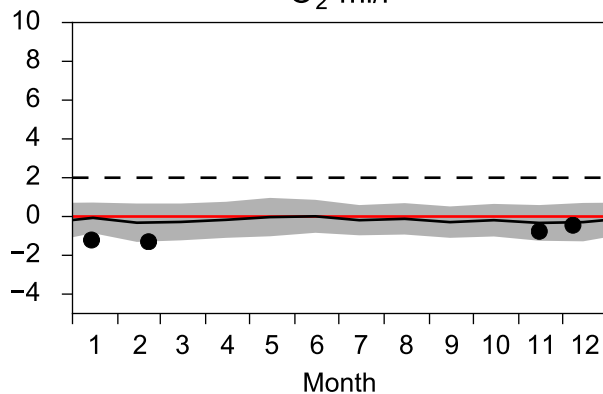


O₂ saturation %

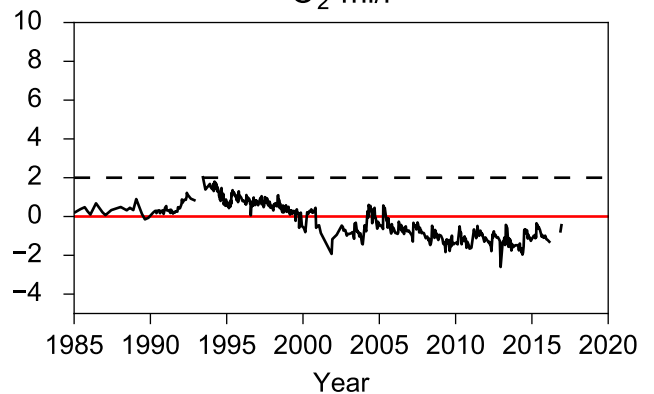


OXYGEN IN BOTTOM WATER (depth >= 425 m)

O₂ ml/l

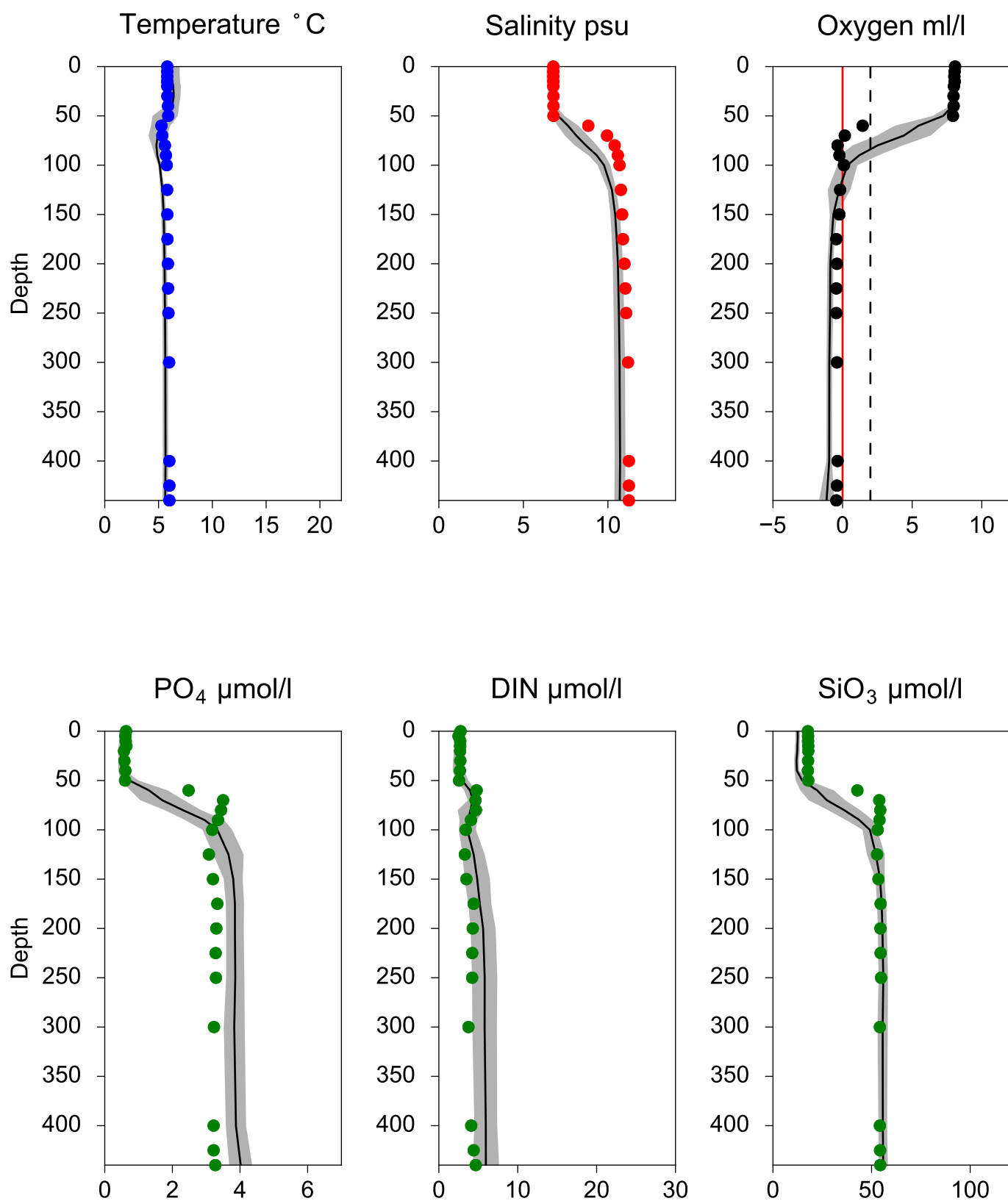


O₂ ml/l



Vertical profiles BY31 LANDSORTSDJ December

— Mean 2001-2015 ■ St.Dev. ● 2016-12-08



STATION BY32 NORRKÖPINGSDJ SURFACE WATER (0-10m)

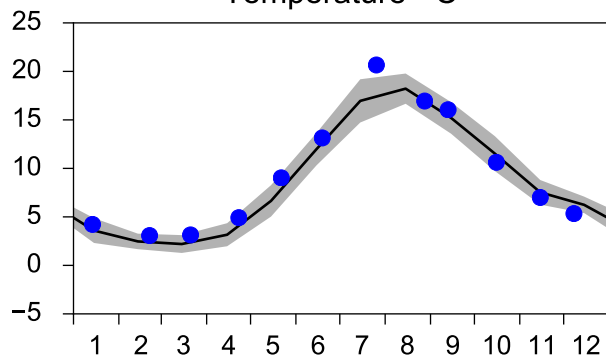
Annual Cycles

— Mean 2001-2015

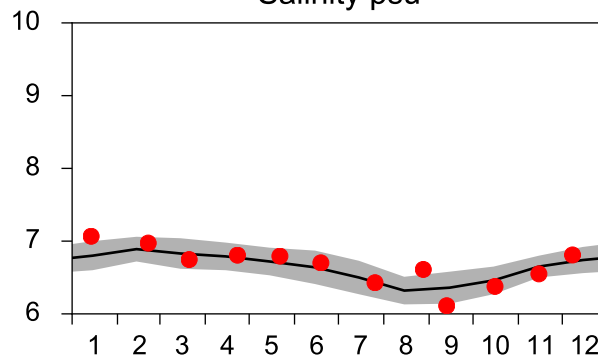
■ St.Dev.

● 2016

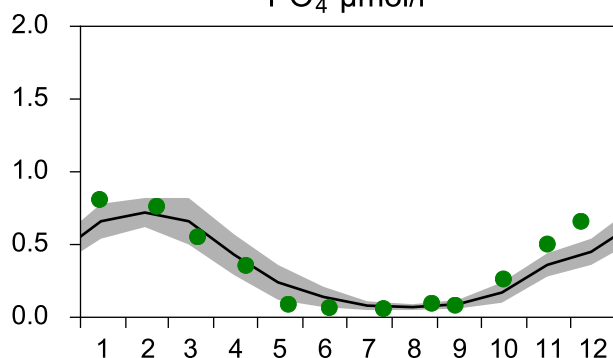
Temperature °C



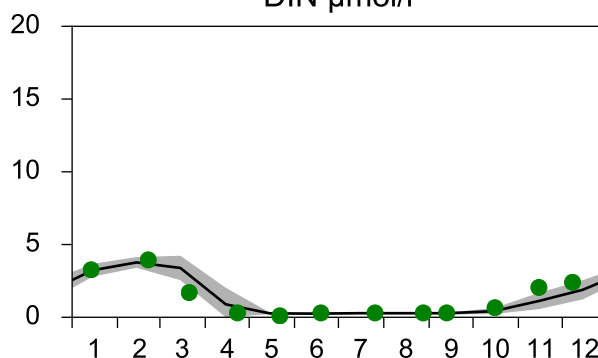
Salinity psu



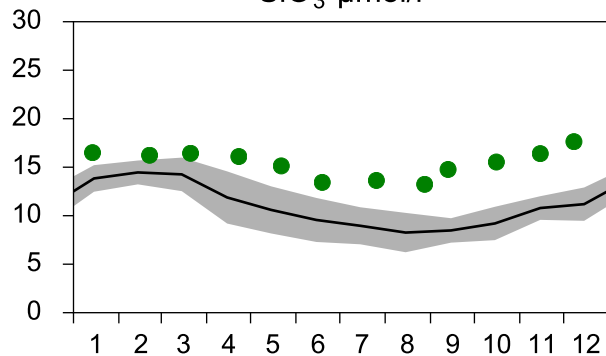
PO₄ µmol/l



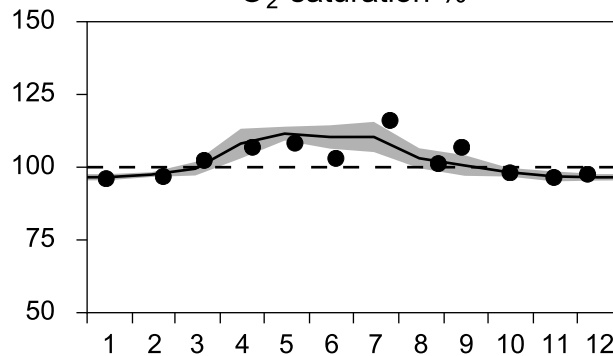
DIN µmol/l



SiO₃ µmol/l

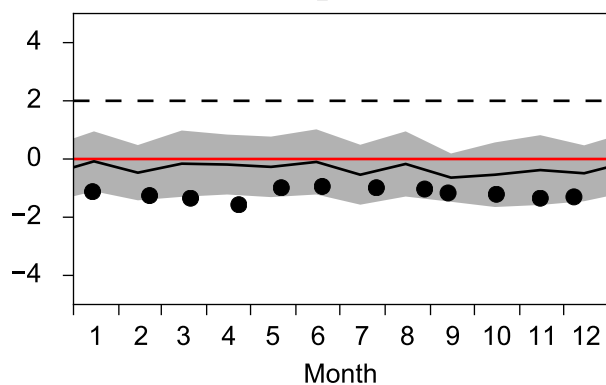


O₂ saturation %

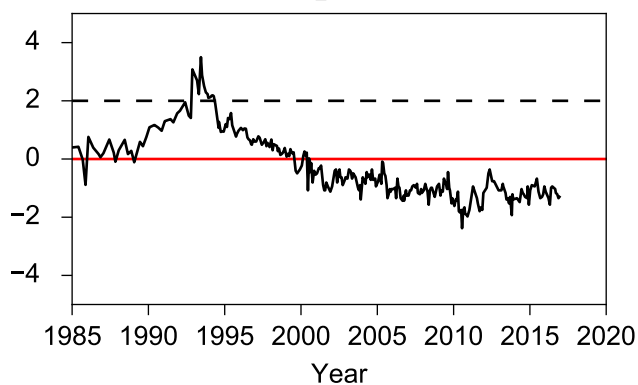


OXYGEN IN BOTTOM WATER (depth >= 175 m)

O₂ ml/l

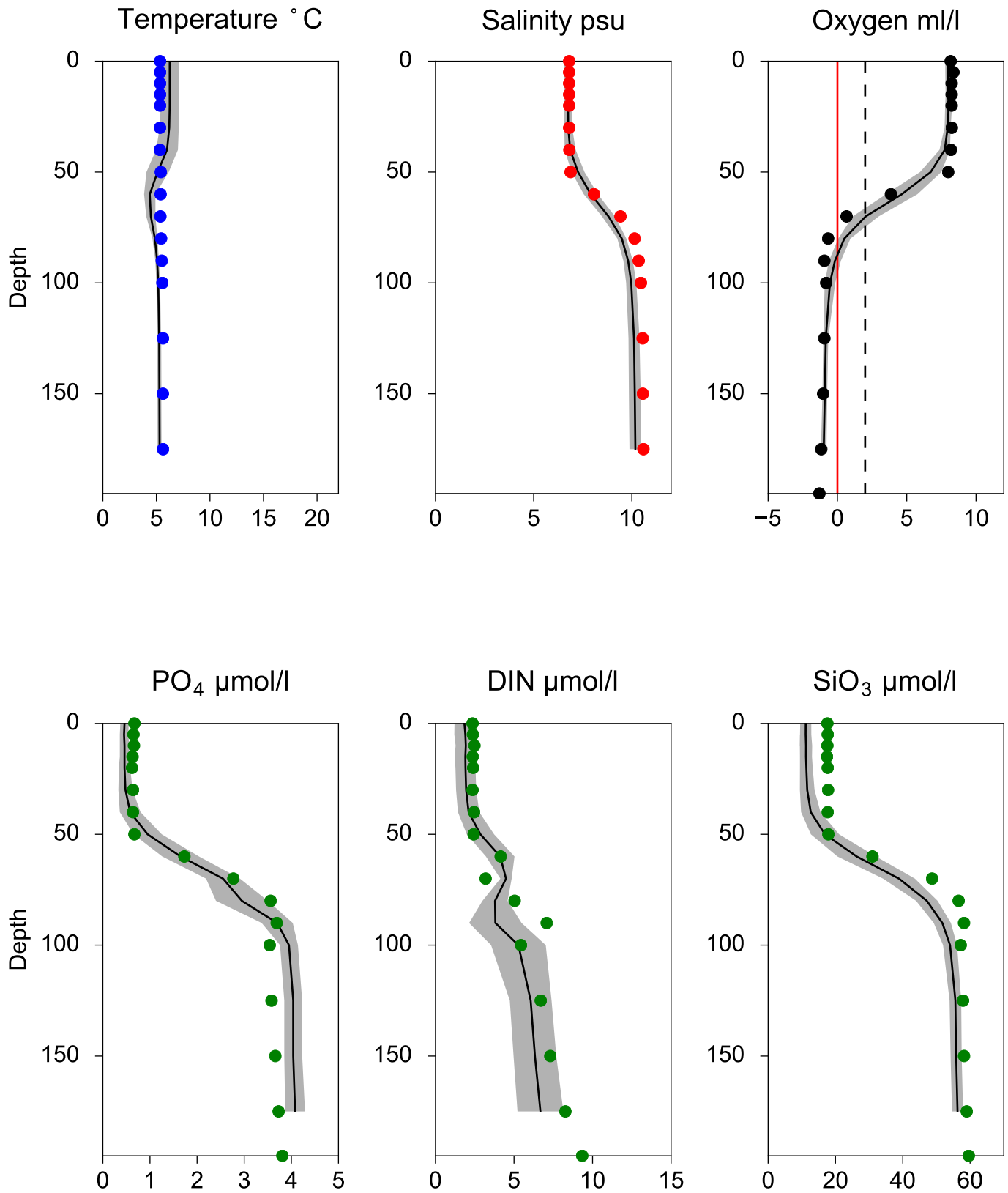


O₂ ml/l



Vertical profiles BY32 NORRKÖPINGSDJ December

— Mean 2001-2015 St.Dev. • 2016-12-08



STATION BY38 KARLSÖDJ SURFACE WATER (0-10m)

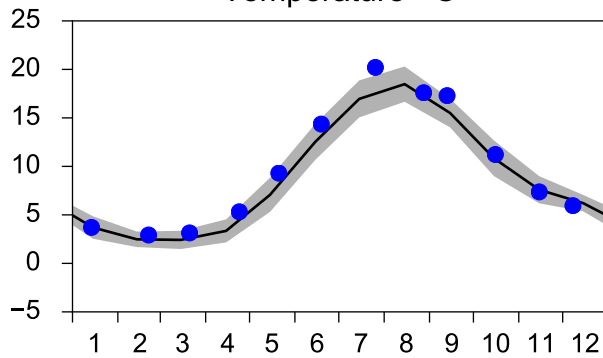
Annual Cycles

— Mean 2001-2015

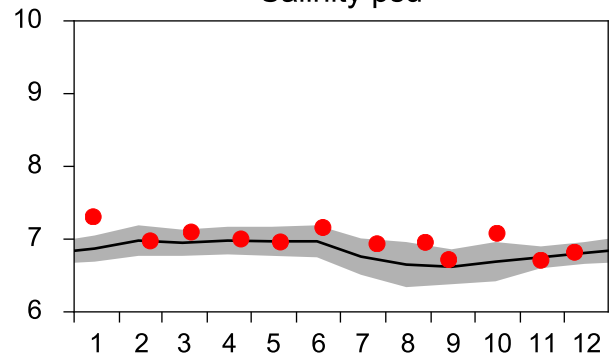
■ St.Dev.

● 2016

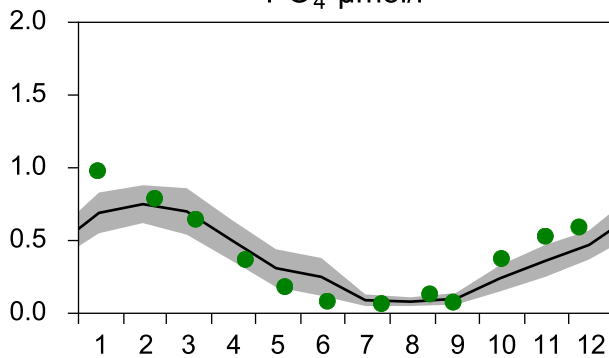
Temperature °C



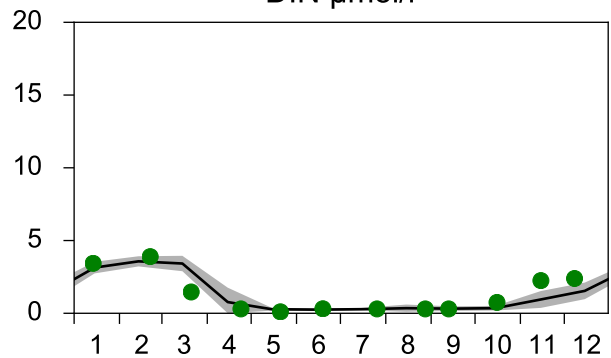
Salinity psu



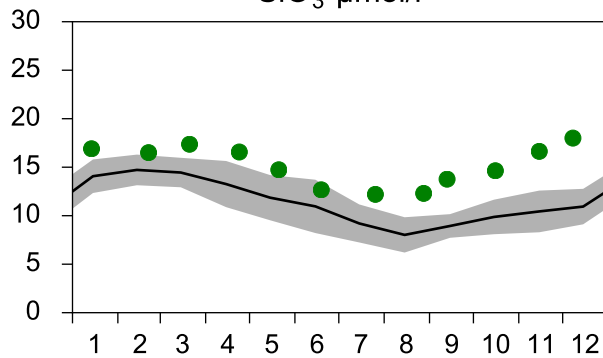
PO₄ µmol/l



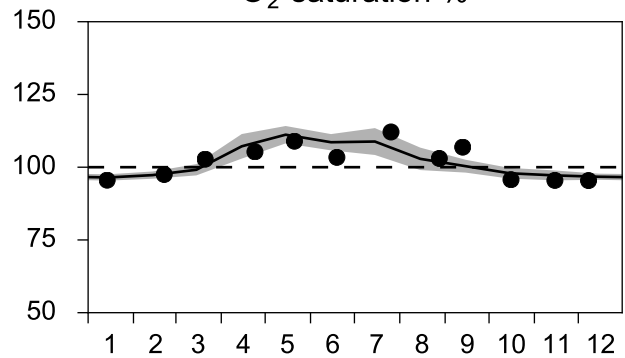
DIN µmol/l



SiO₃ µmol/l

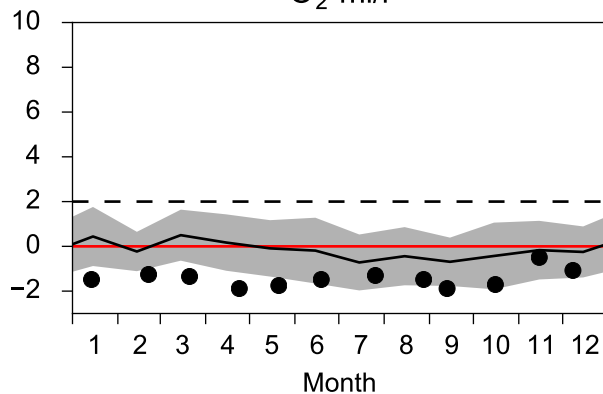


O₂ saturation %

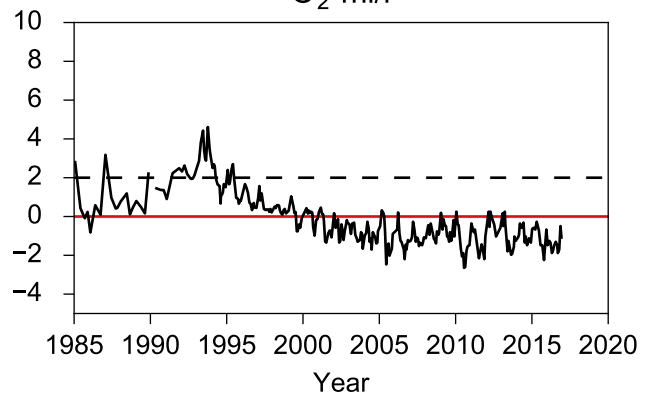


OXYGEN IN BOTTOM WATER (depth >= 100 m)

O₂ ml/l

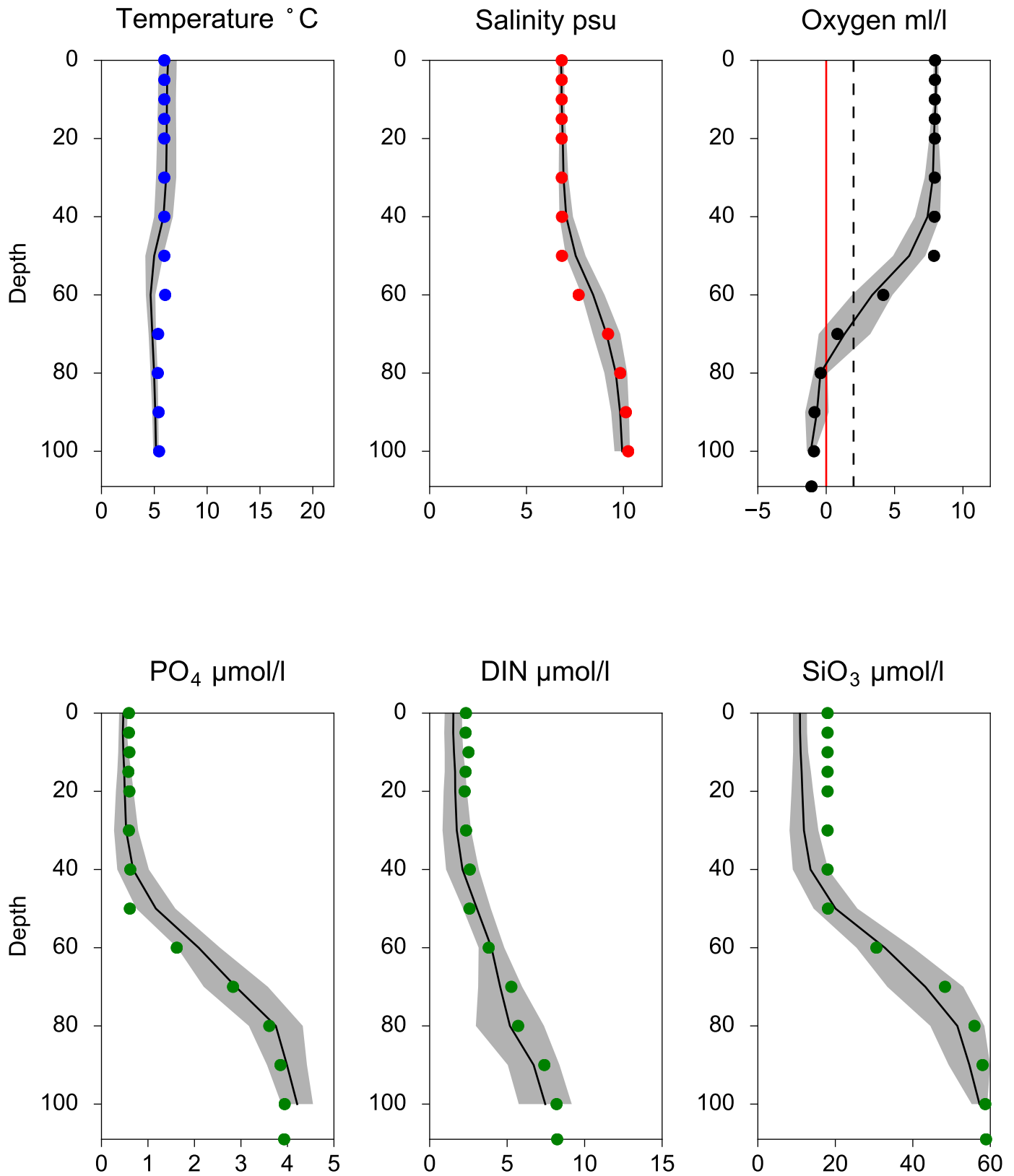


O₂ ml/l



Vertical profiles BY38 KARLSÖDJ December

— Mean 2001-2015 ■ St.Dev. ● 2016-12-08



STATION REF M1V1 SURFACE WATER (0-10m)

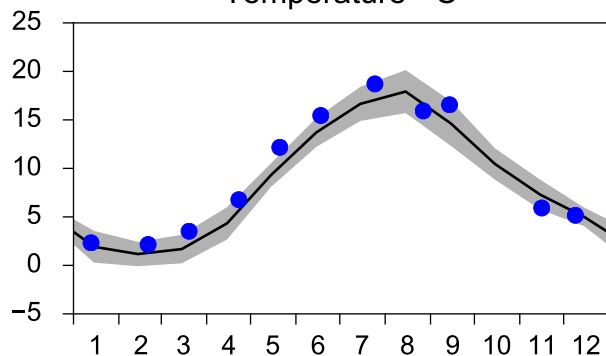
Annual Cycles

— Mean 2001-2015

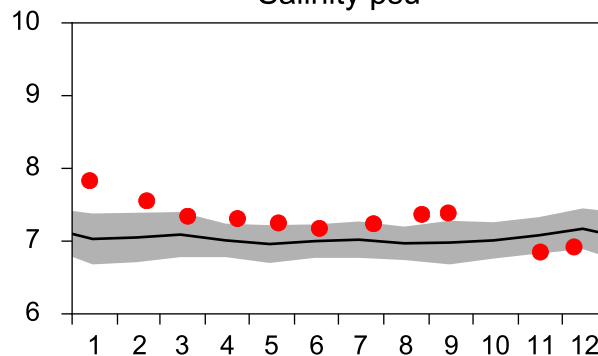
■ St.Dev.

● 2016

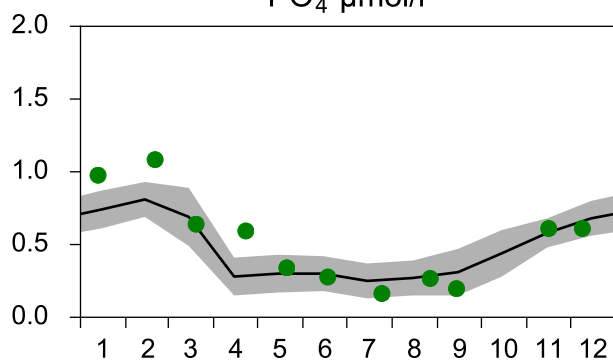
Temperature °C



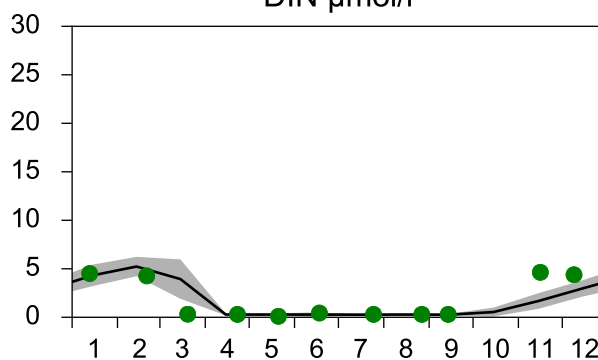
Salinity psu



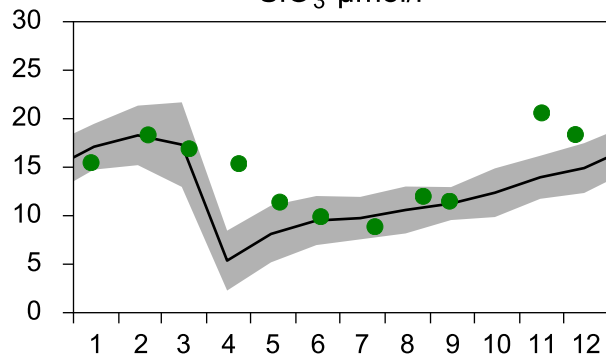
PO₄ µmol/l



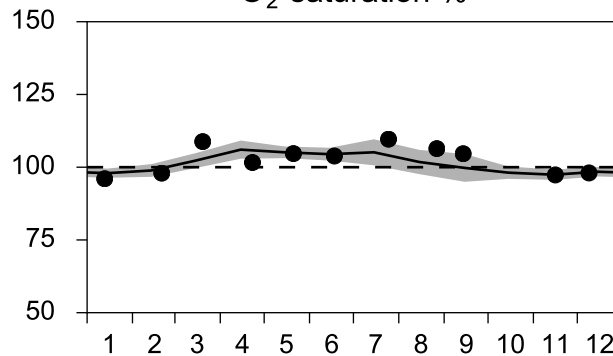
DIN µmol/l



SiO₃ µmol/l

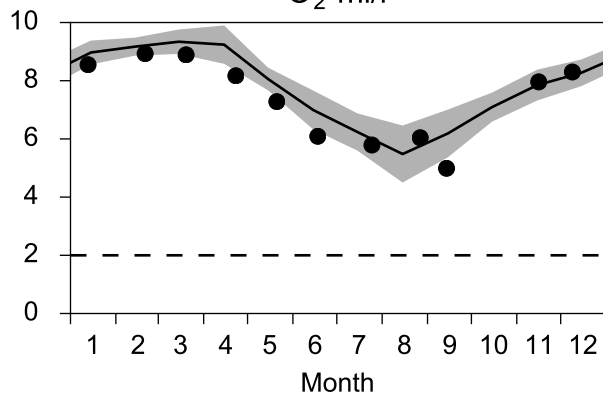


O₂ saturation %

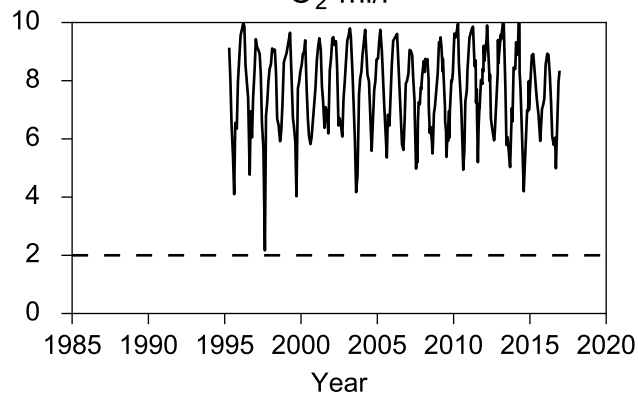


OXYGEN IN BOTTOM WATER (depth >= 17 m)

O₂ ml/l

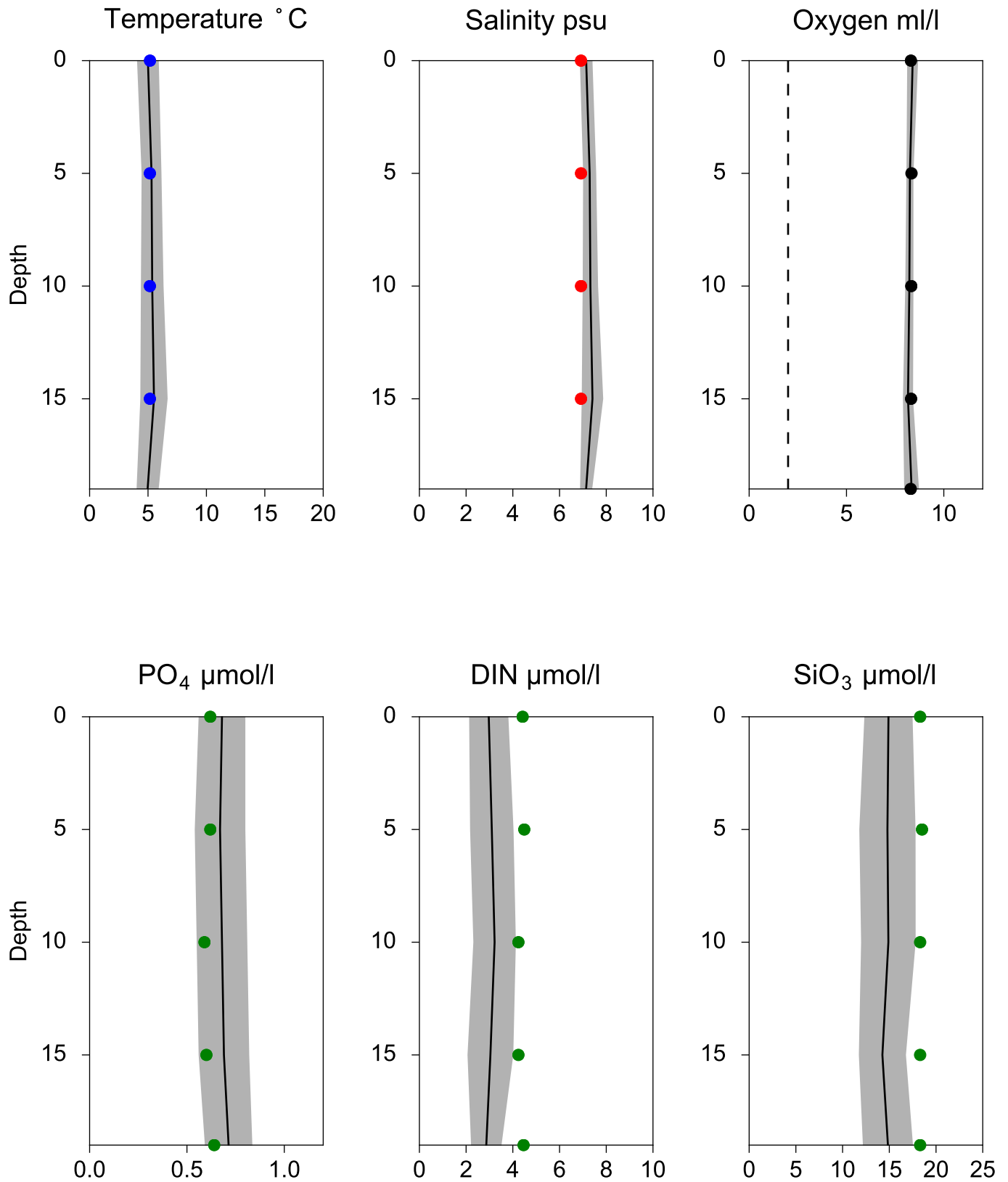


O₂ ml/l



Vertical profiles REF M1V1 December

— Mean 2001-2015 St.Dev. • 2016-12-09



STATION HANÖBUKTEN SURFACE WATER (0-10m)

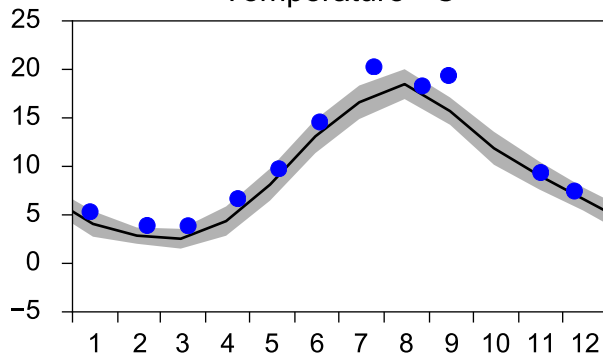
Annual Cycles

— Mean 2001-2015

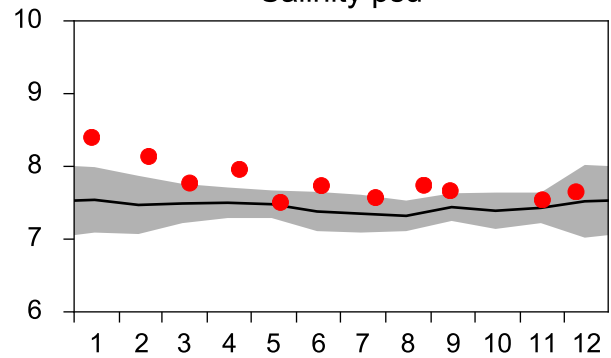
■ St.Dev.

● 2016

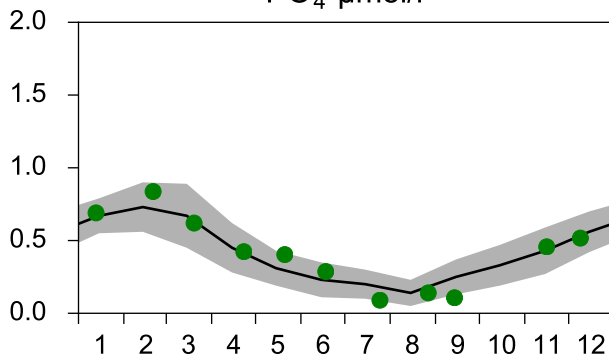
Temperature °C



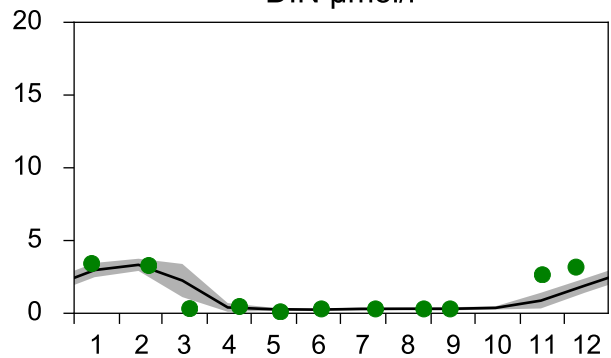
Salinity psu



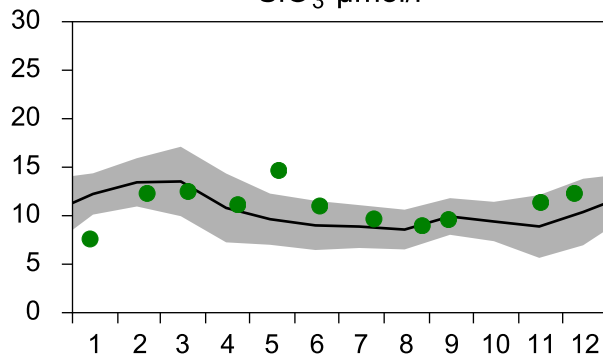
PO₄ µmol/l



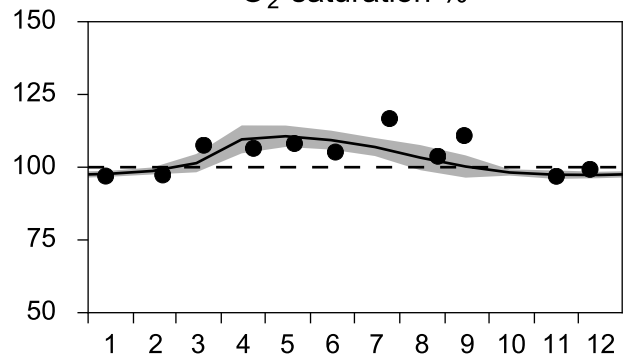
DIN µmol/l



SiO₃ µmol/l

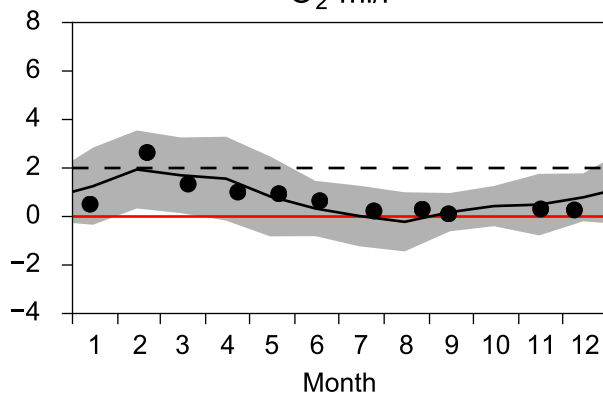


O₂ saturation %

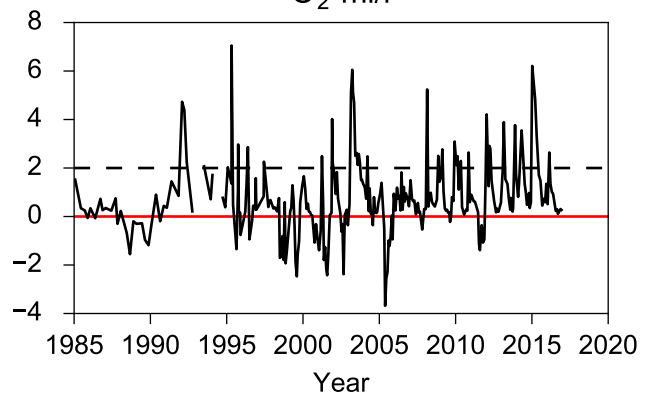


OXYGEN IN BOTTOM WATER (depth >= 70 m)

O₂ ml/l



O₂ ml/l

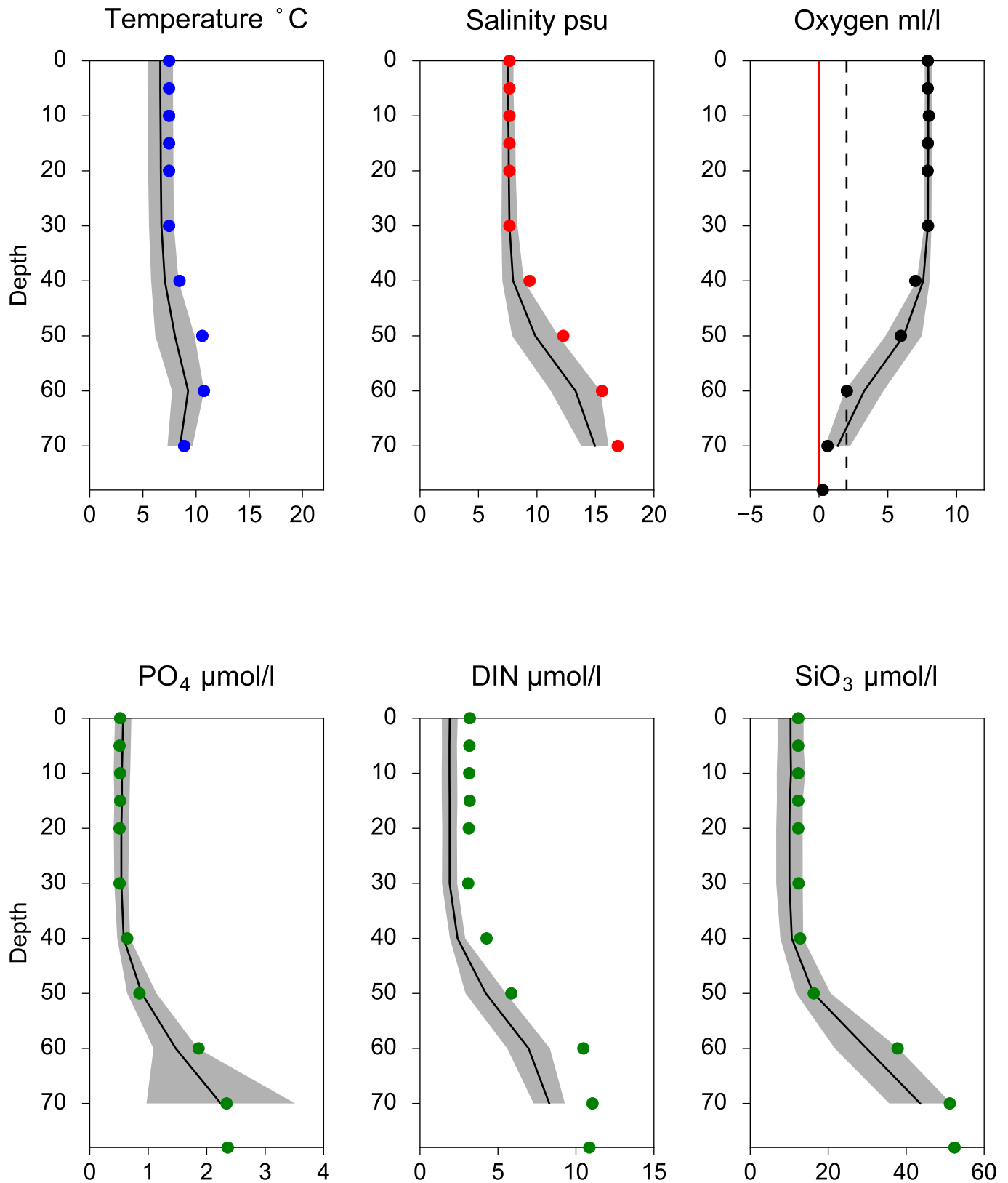


Vertical profiles HANÖBUKTEN December

— Mean 2001-2015

■ St.Dev.

● 2016-12-09



STATION BY2 ARKONA SURFACE WATER (0-10m)

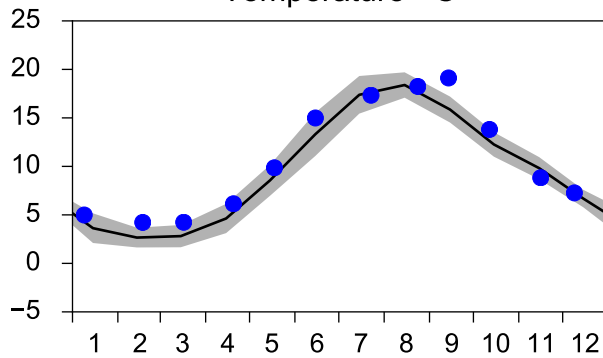
Annual Cycles

— Mean 2001-2015

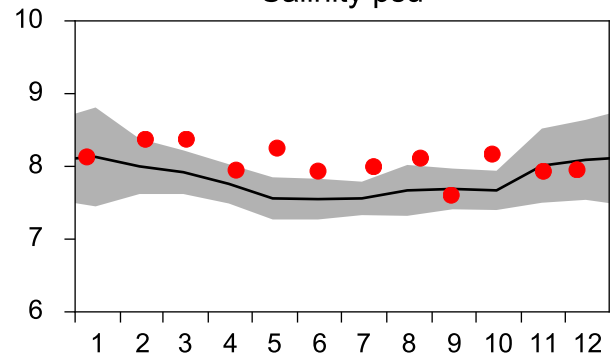
■ St.Dev.

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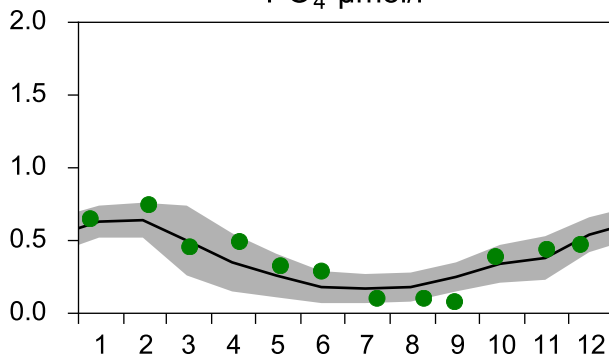
Temperature °C



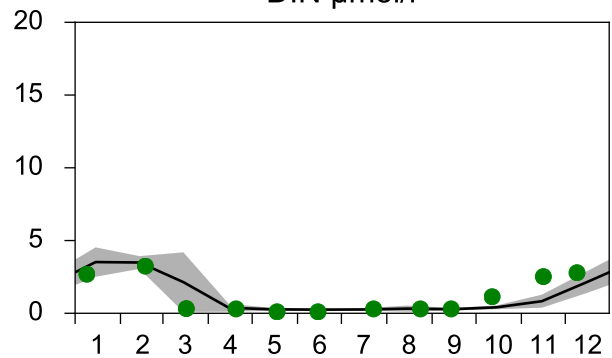
Salinity psu



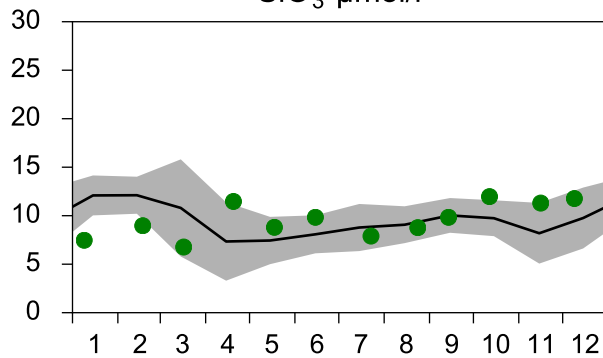
PO₄ µmol/l



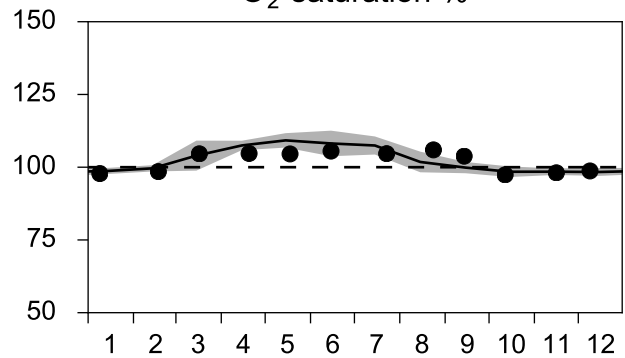
DIN µmol/l



SiO₃ µmol/l

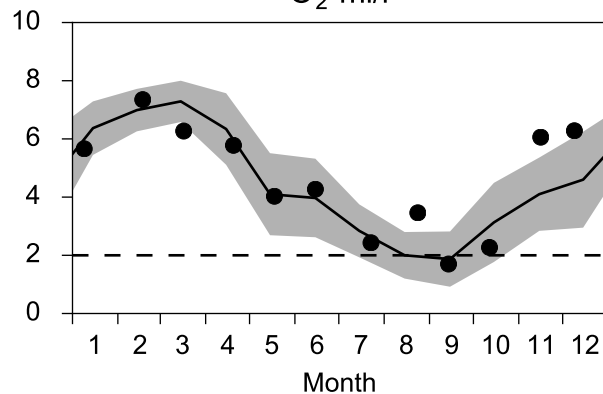


O₂ saturation %

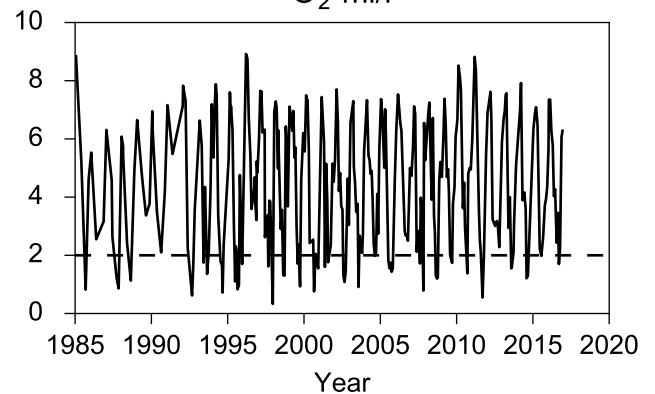


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

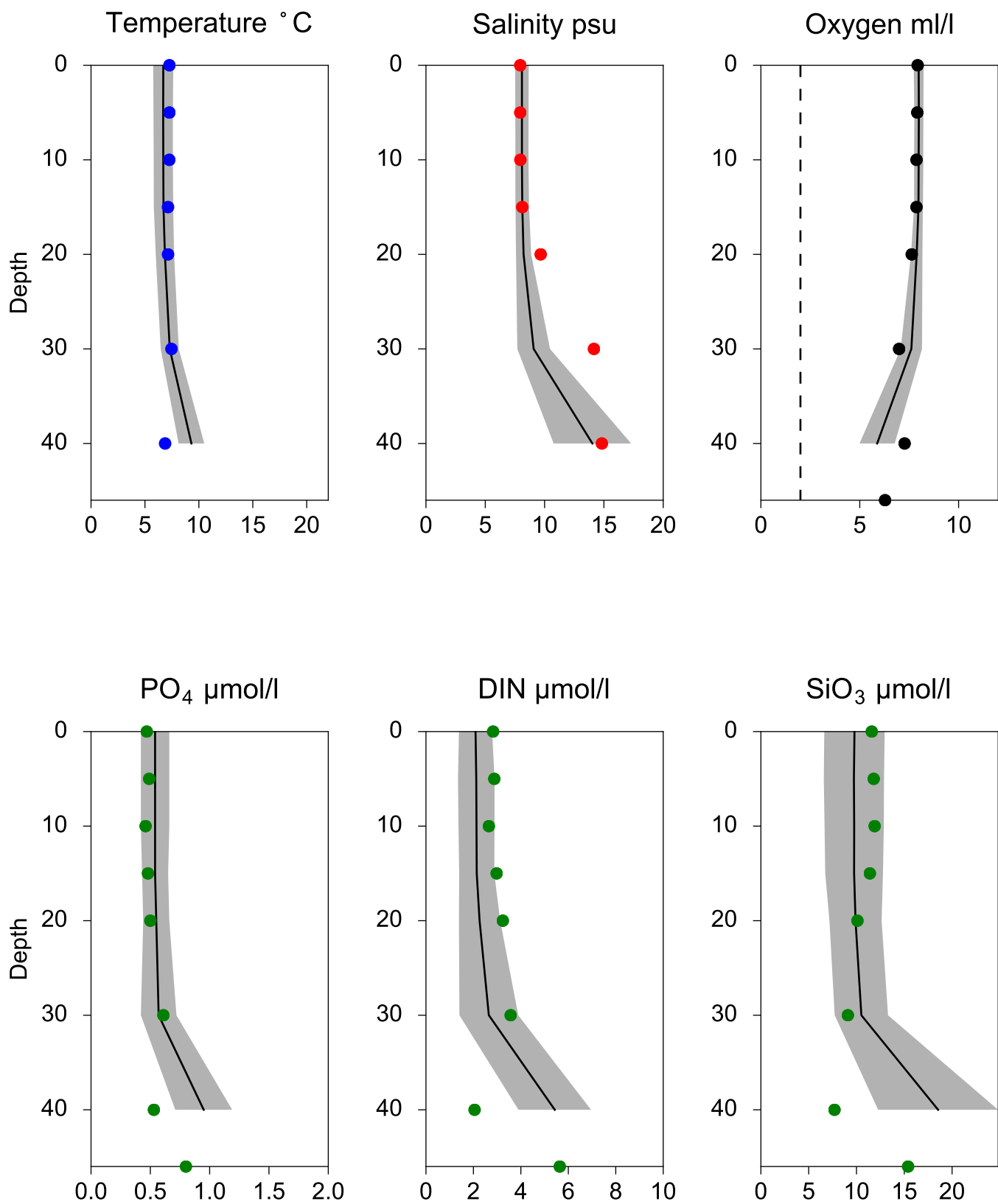


O₂ ml/l



Vertical profiles BY2 ARKONA December

— Mean 2001-2015 ■ St.Dev. ● 2016-12-09



STATION BY1 SURFACE WATER (0-10m)

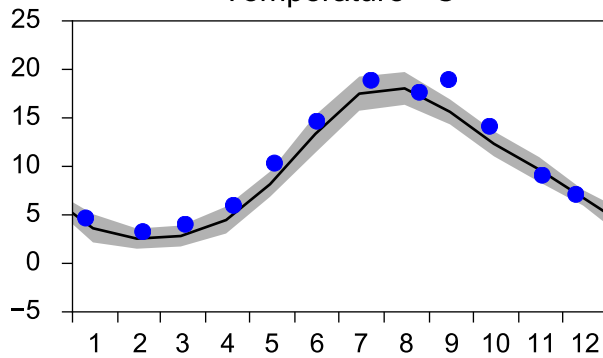
Annual Cycles

— Mean 2001-2015

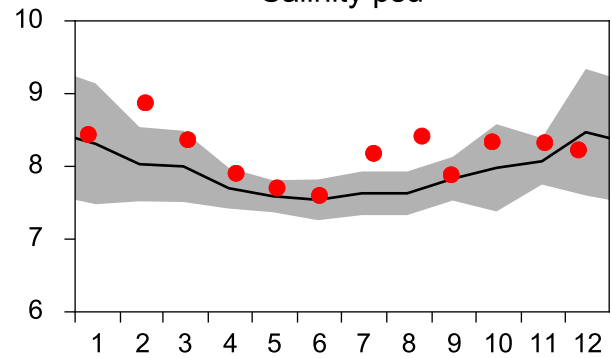
■ St.Dev.

● 2016

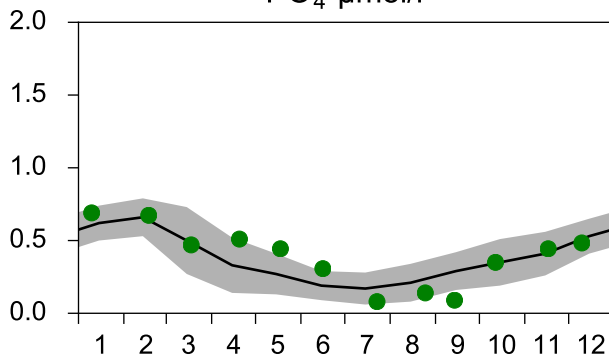
Temperature °C



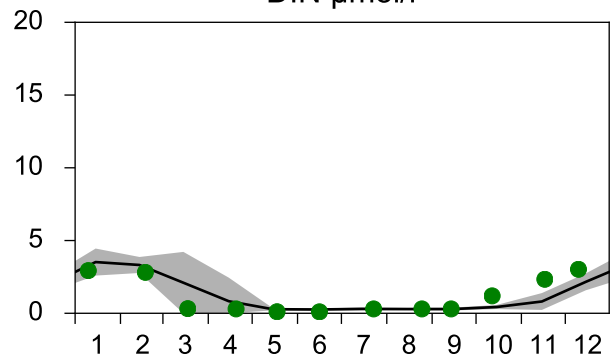
Salinity psu



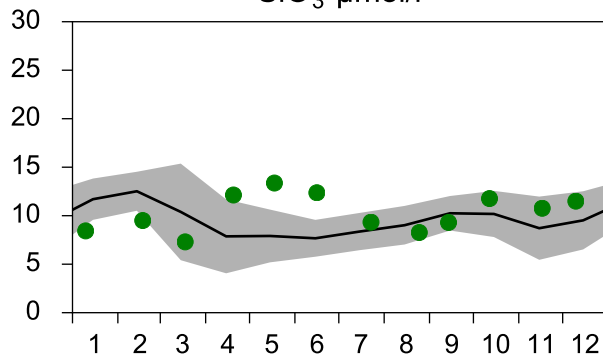
PO₄ µmol/l



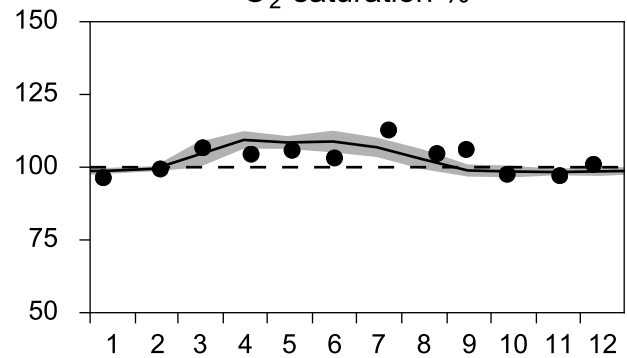
DIN µmol/l



SiO₃ µmol/l

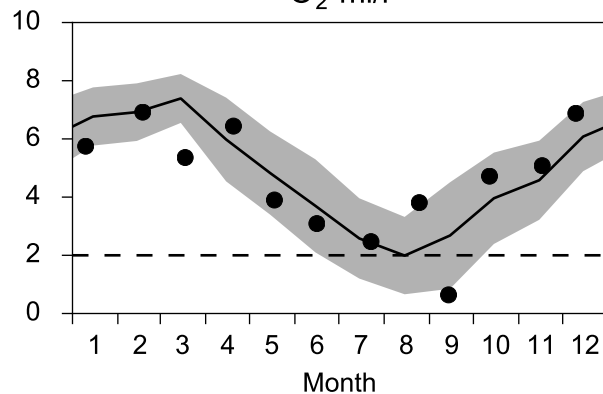


O₂ saturation %

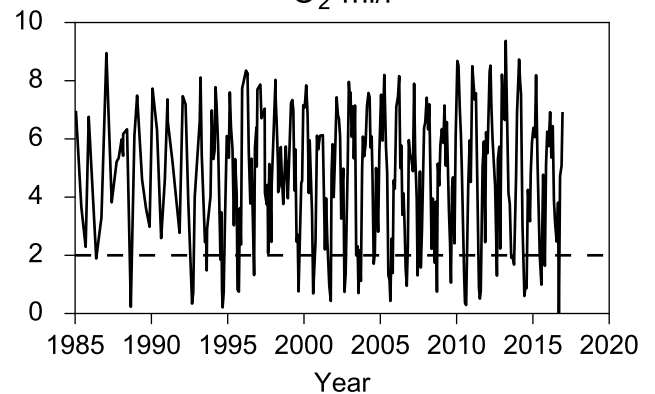


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

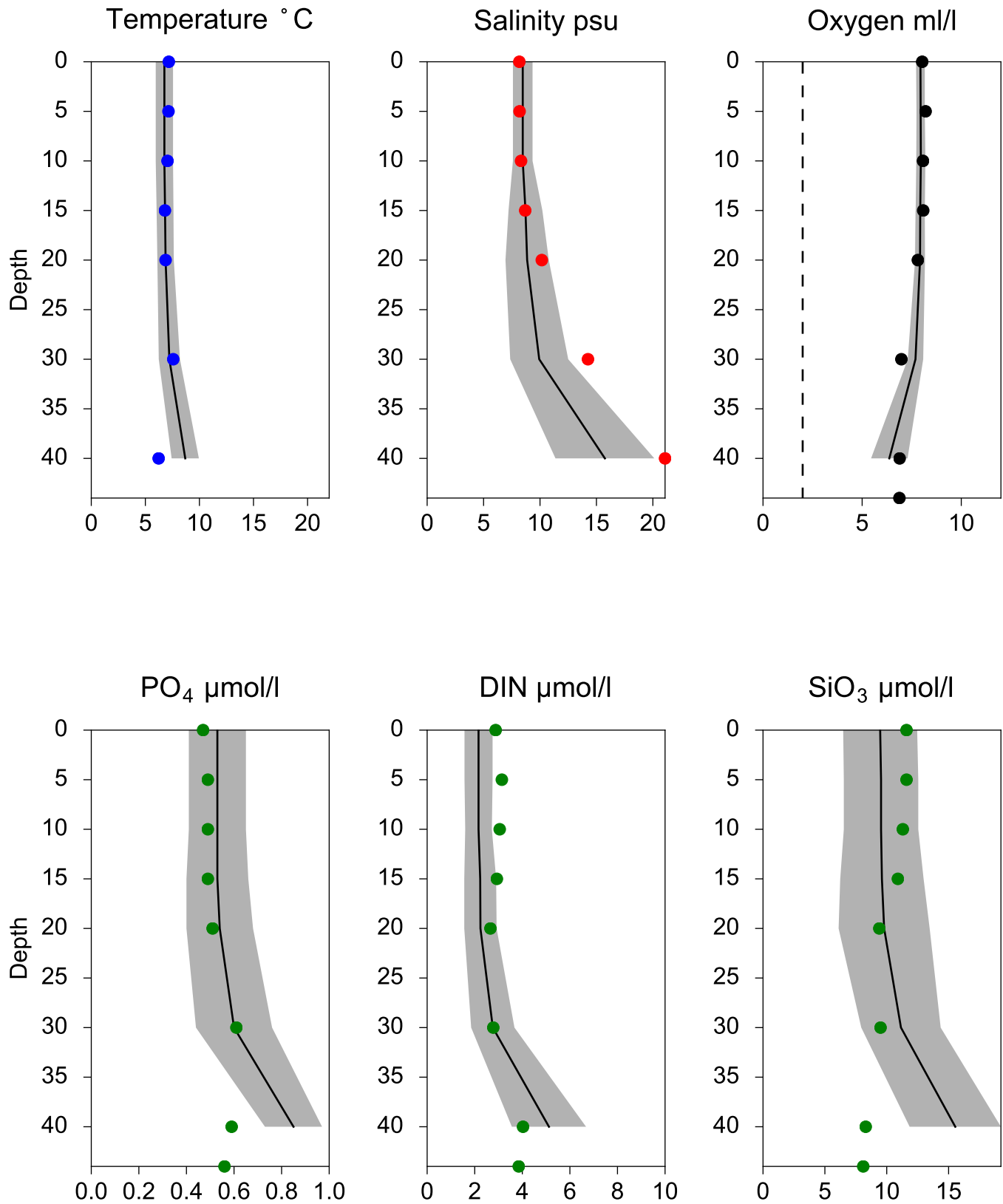


O₂ ml/l



Vertical profiles BY1 December

— Mean 2001-2015 ■ St.Dev. ● 2016-12-10



STATION W LANDSKRONA SURFACE WATER (0-10m)

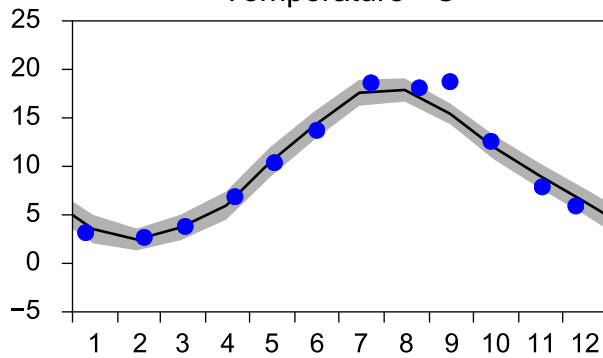
Annual Cycles

— Mean 2001-2015

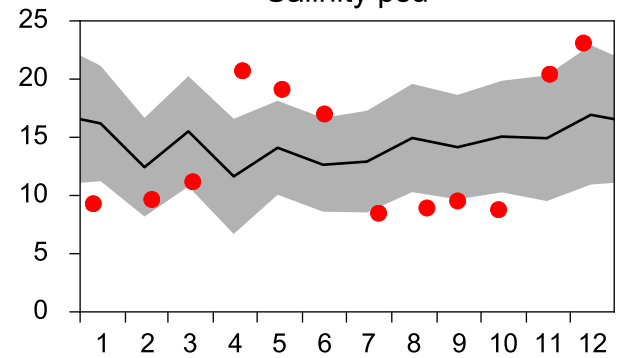
■ St.Dev.

● 2016

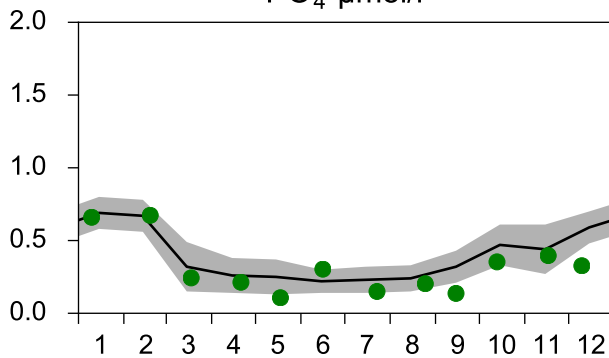
Temperature °C



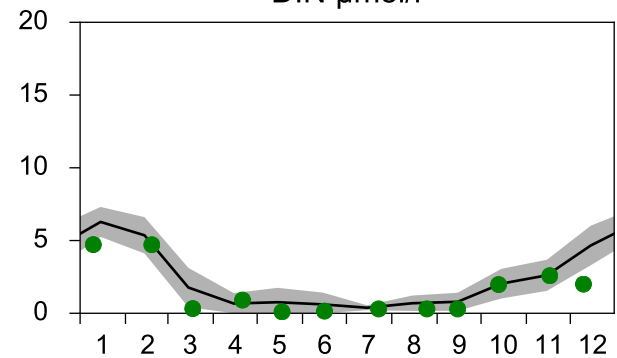
Salinity psu



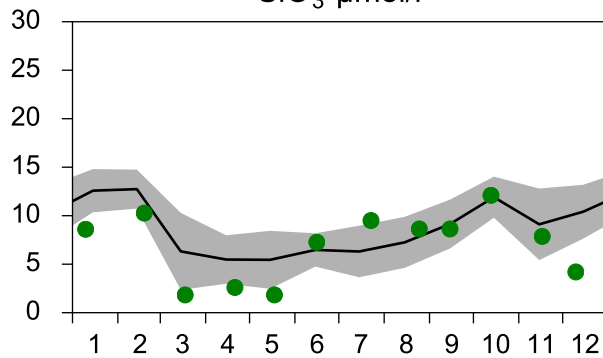
PO₄ µmol/l



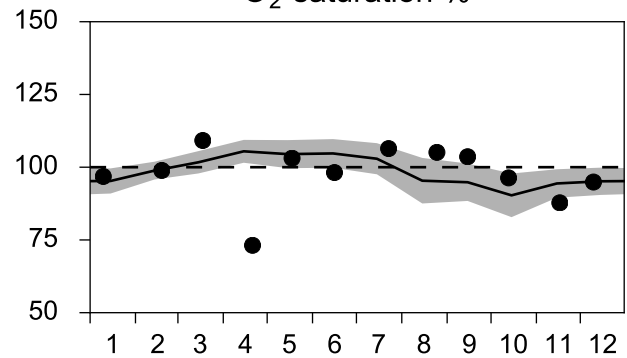
DIN µmol/l



SiO₃ µmol/l

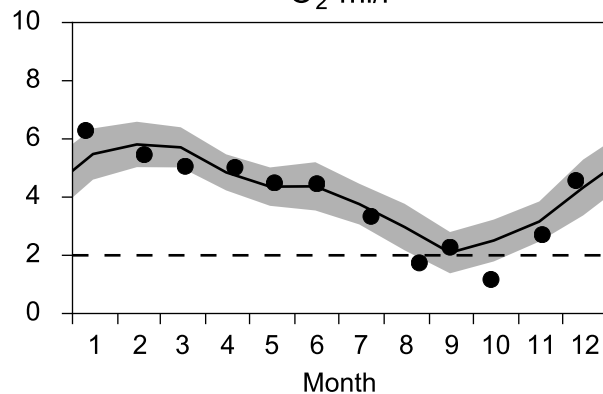


O₂ saturation %

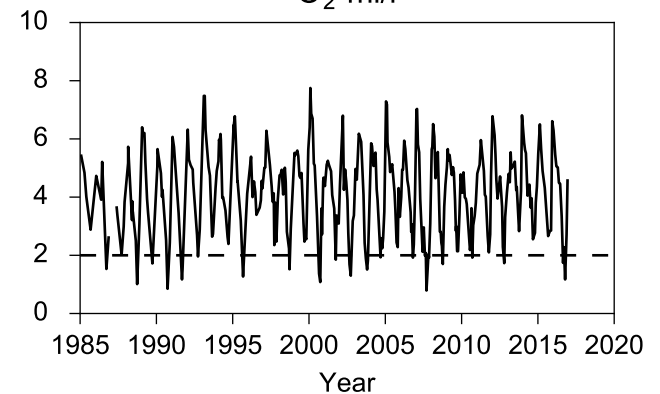


OXYGEN IN BOTTOM WATER (depth >= 40 m)

O₂ ml/l

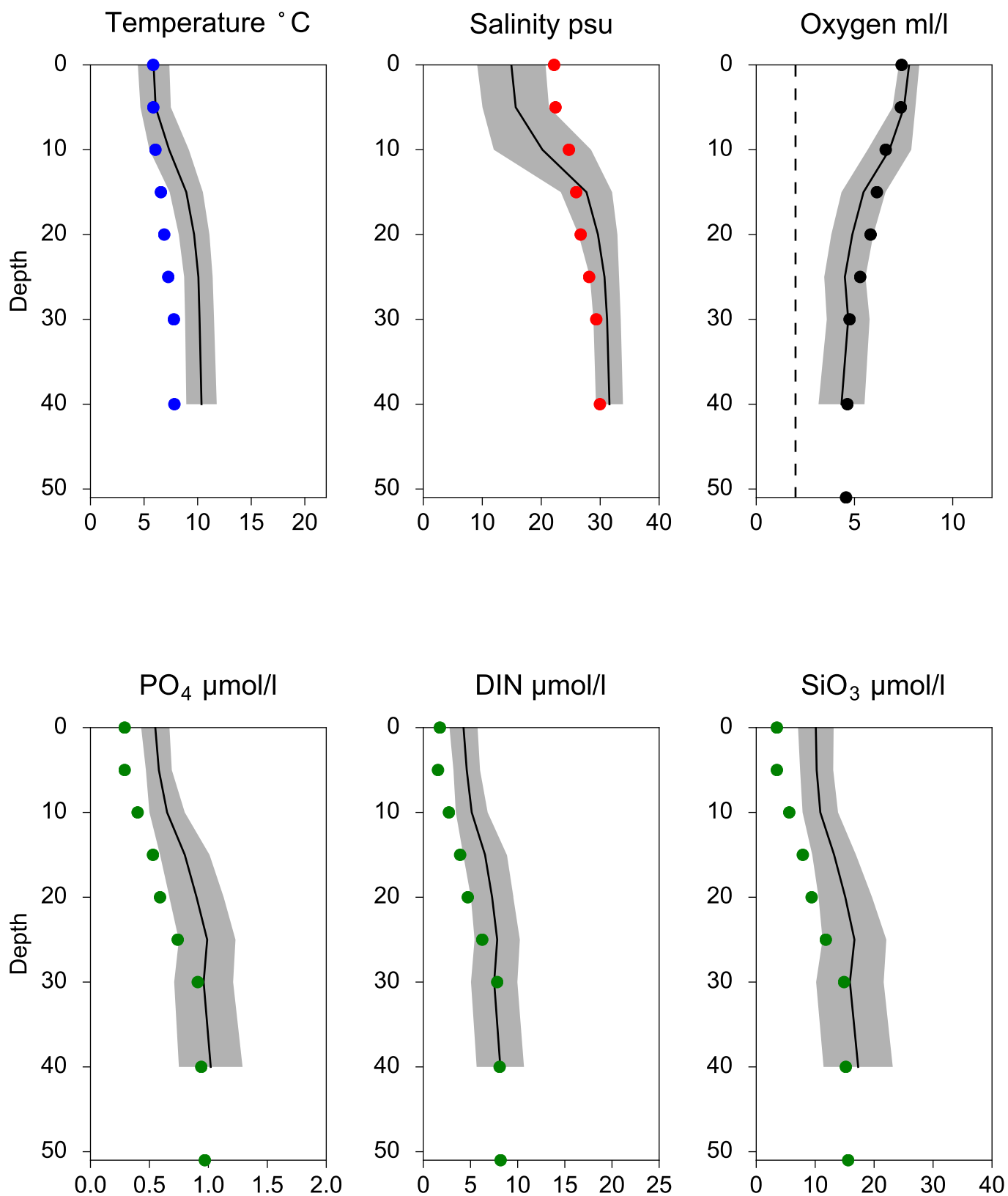


O₂ ml/l



Vertical profiles W LANDSKRONA December

— Mean 2001-2015 St.Dev. • 2016-12-10



STATION ANHOLT E SURFACE WATER (0-10m)

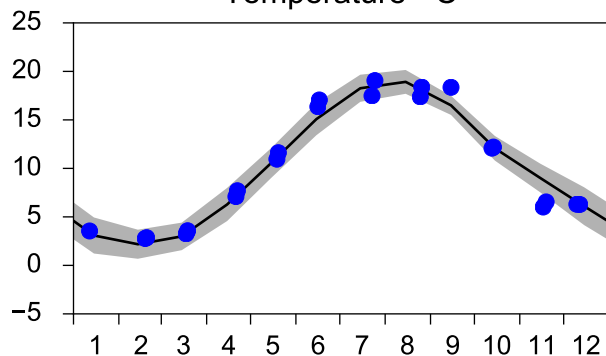
Annual Cycles

— Mean 2001-2015

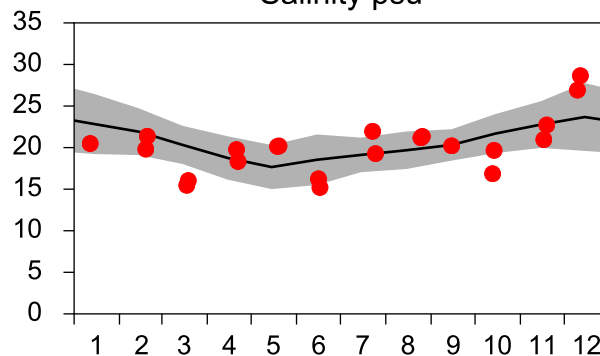
■ St.Dev.

● 2016

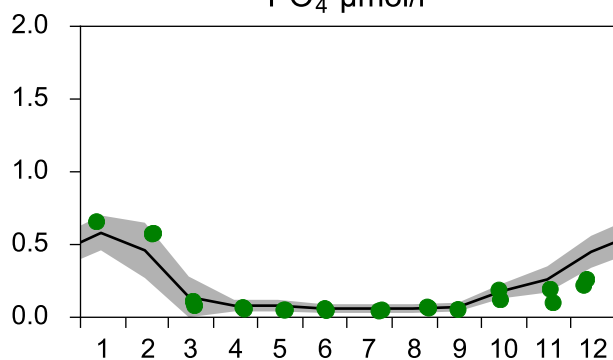
Temperature °C



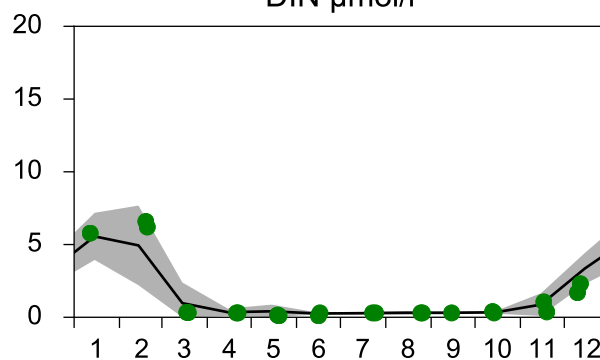
Salinity psu



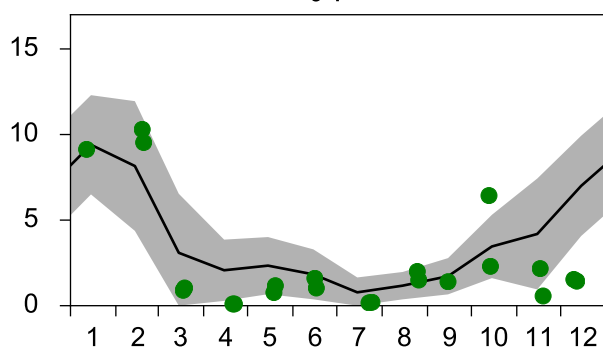
PO₄ μmol/l



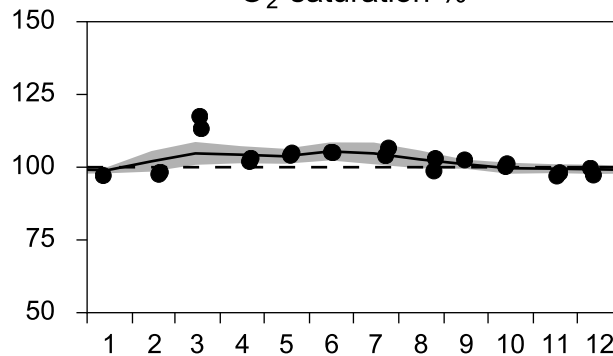
DIN μmol/l



SiO₃ μmol/l

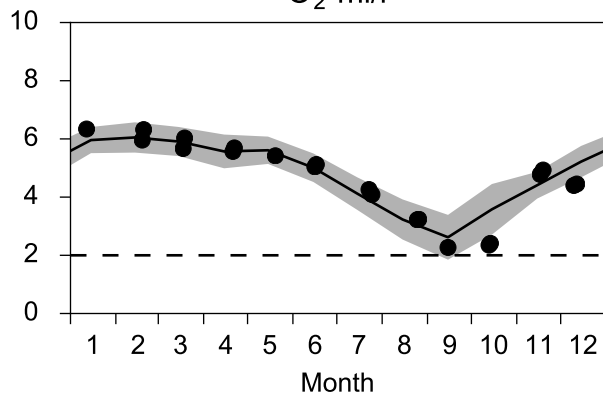


O₂ saturation %

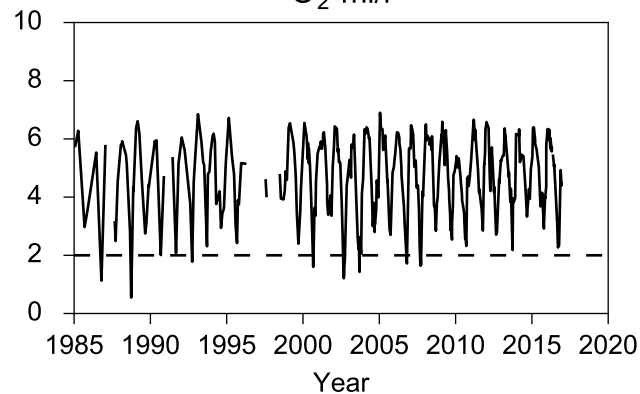


OXYGEN IN BOTTOM WATER (depth >= 52 m)

O₂ ml/l

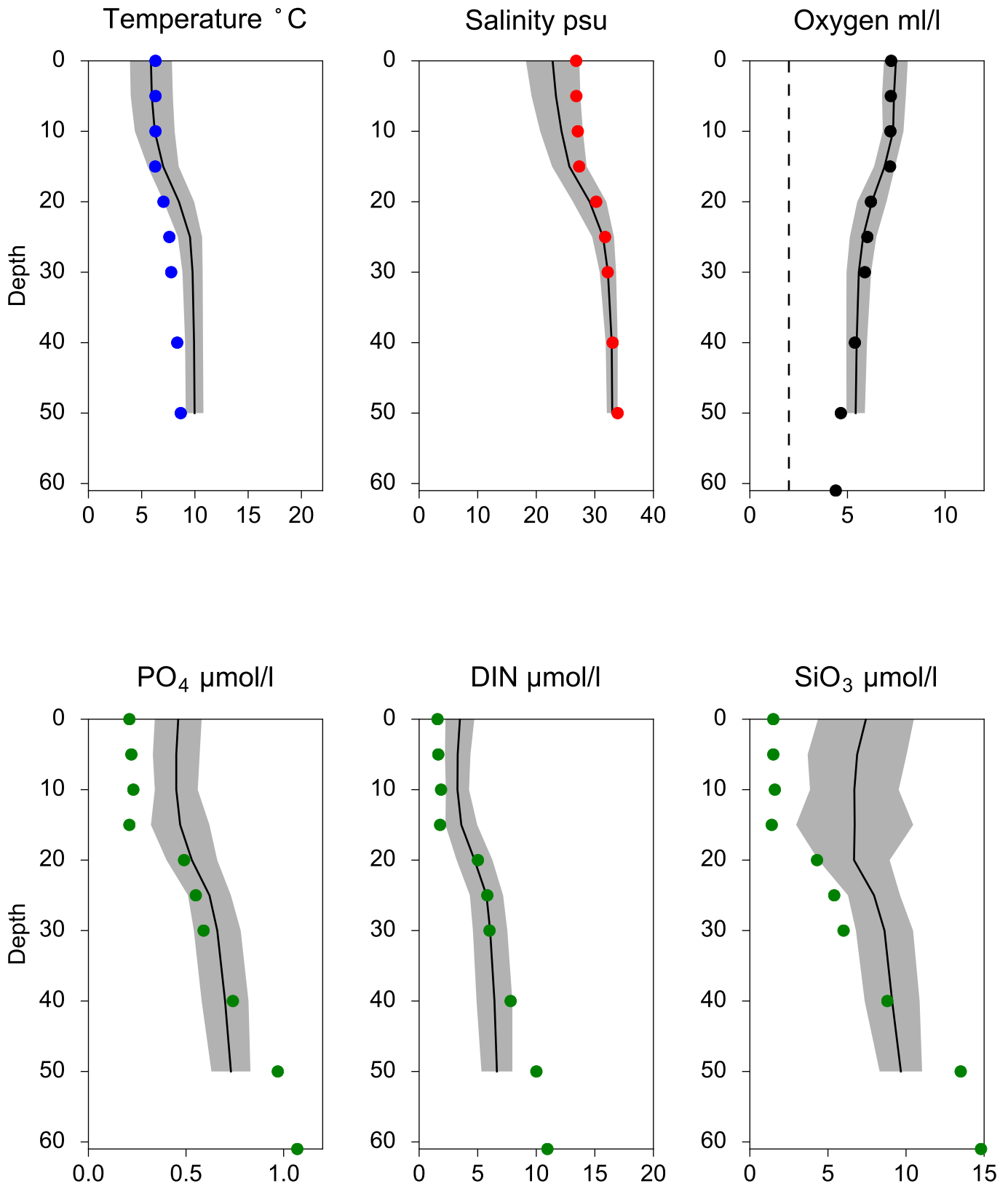


O₂ ml/l



Vertical profiles ANHOLT E December

— Mean 2001-2015 St.Dev. • 2016-12-10



STATION FLADEN SURFACE WATER (0-10m)

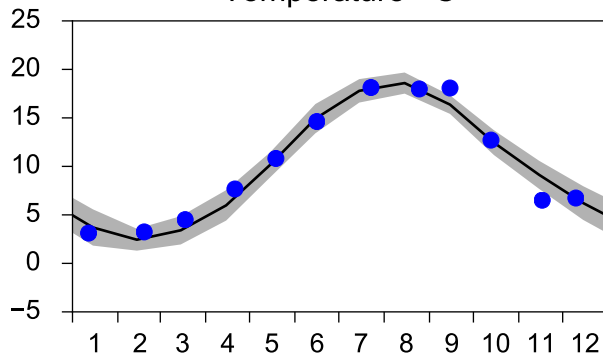
Annual Cycles

— Mean 2001-2015

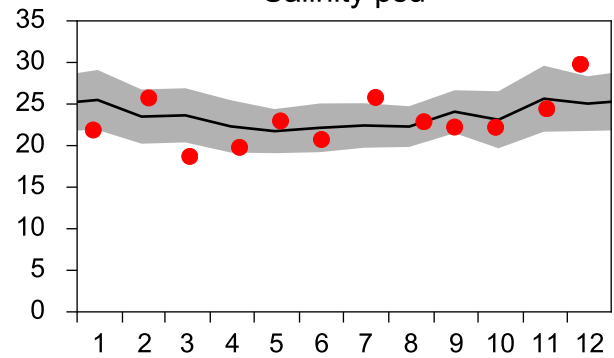
■ St.Dev.

● 2016

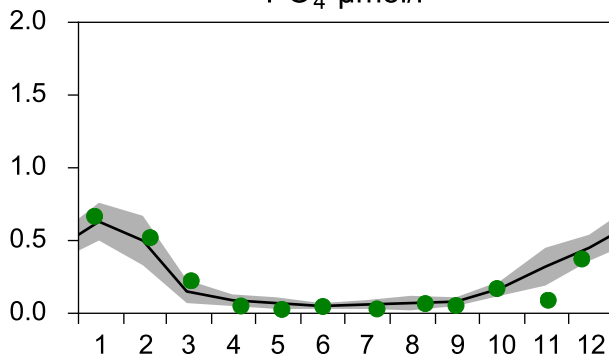
Temperature °C



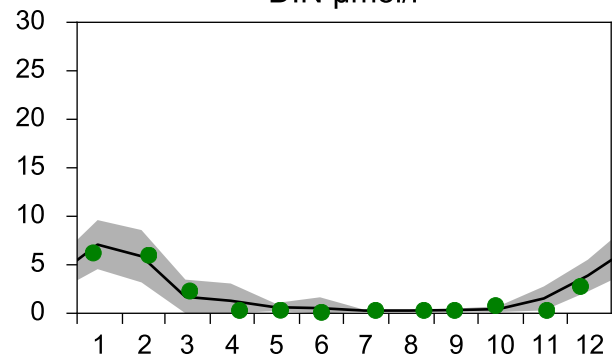
Salinity psu



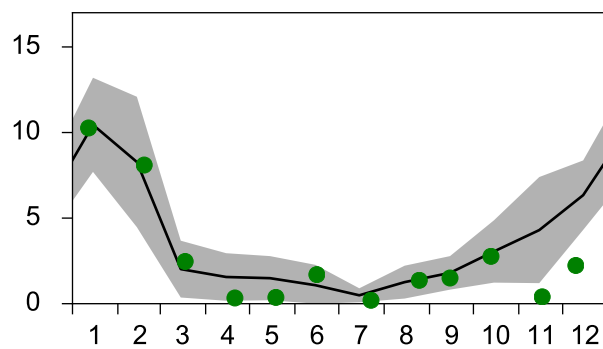
PO₄ µmol/l



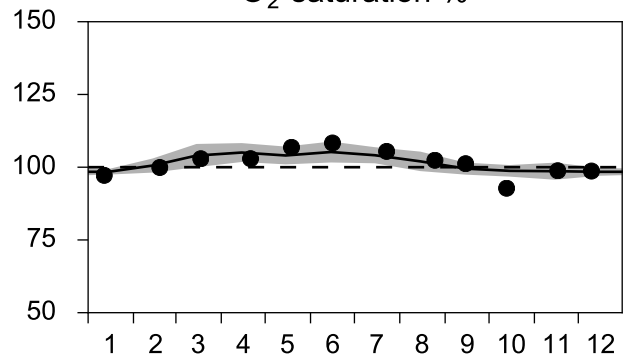
DIN µmol/l



SiO₃ µmol/l

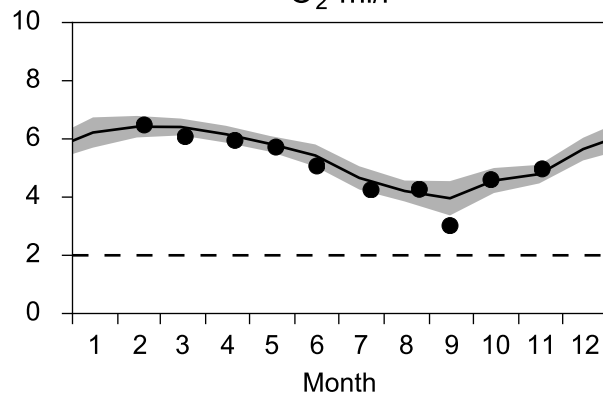


O₂ saturation %

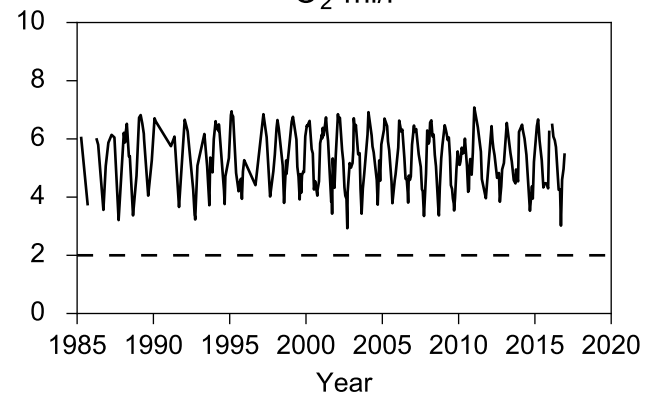


OXYGEN IN BOTTOM WATER (depth >= 74 m)

O₂ ml/l

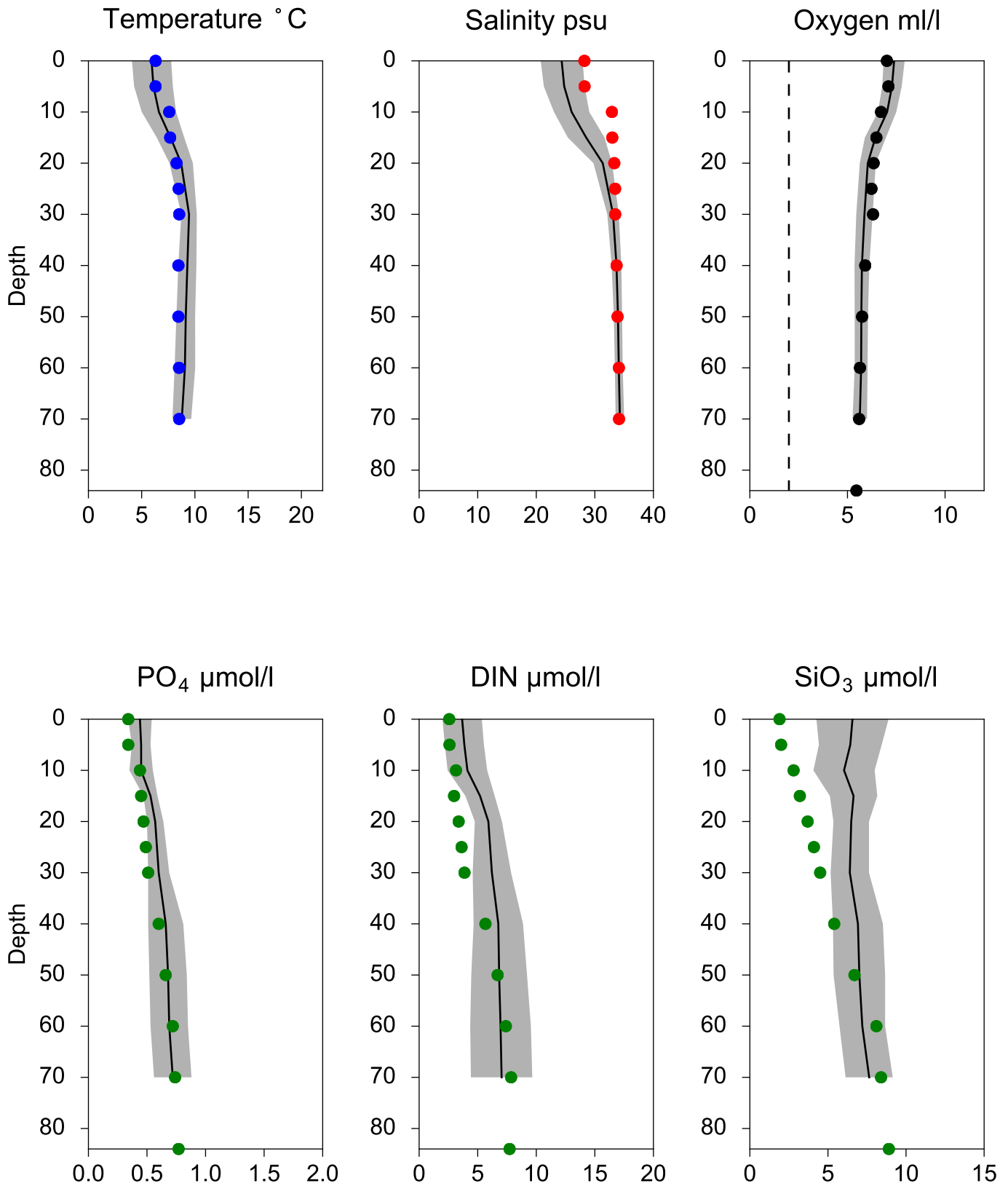


O₂ ml/l



Vertical profiles FLADEN December

— Mean 2001-2015 St.Dev. • 2016-12-10



STATION Å17 SURFACE WATER (0-10m)

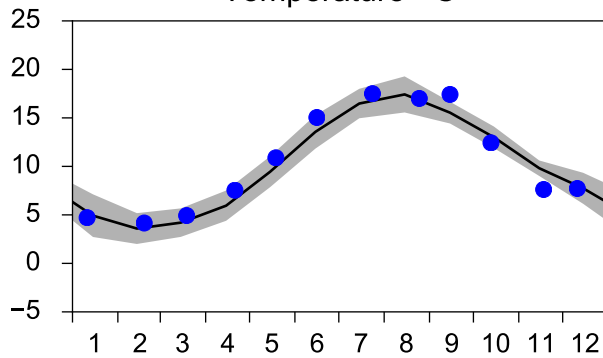
Annual Cycles

— Mean 2001-2015

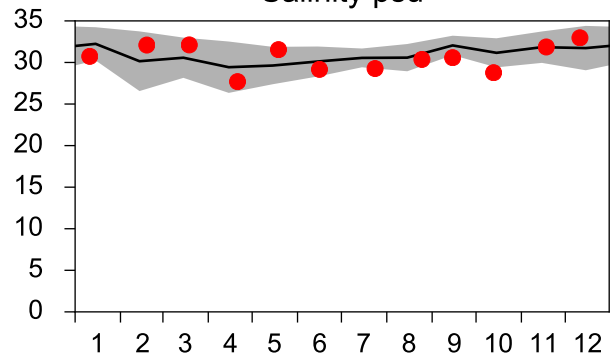
■ St.Dev.

● 2016

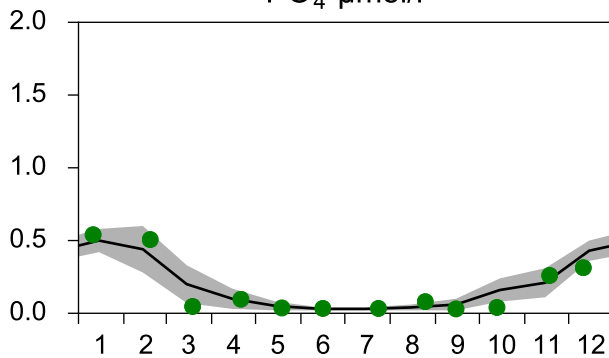
Temperature °C



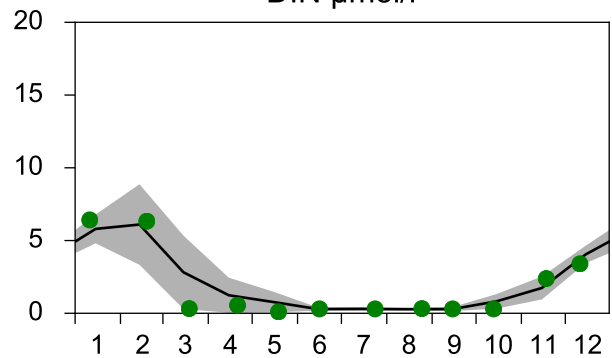
Salinity psu



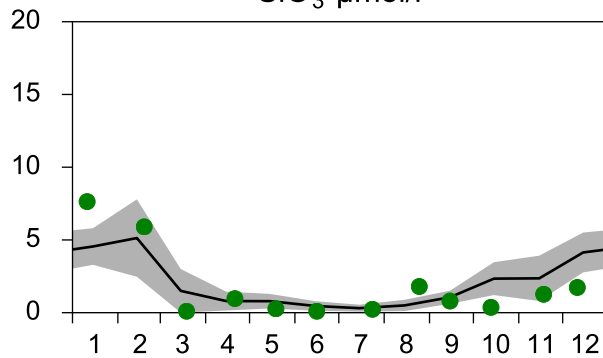
PO₄ µmol/l



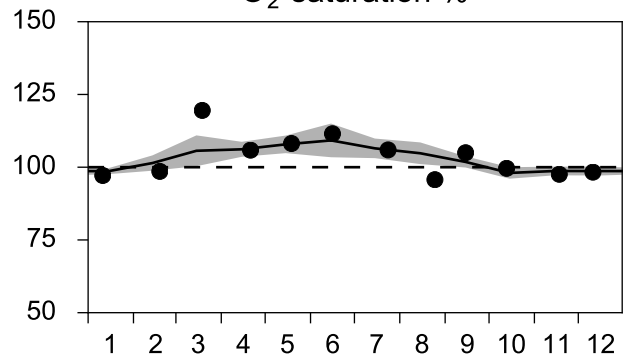
DIN µmol/l



SiO₃ µmol/l

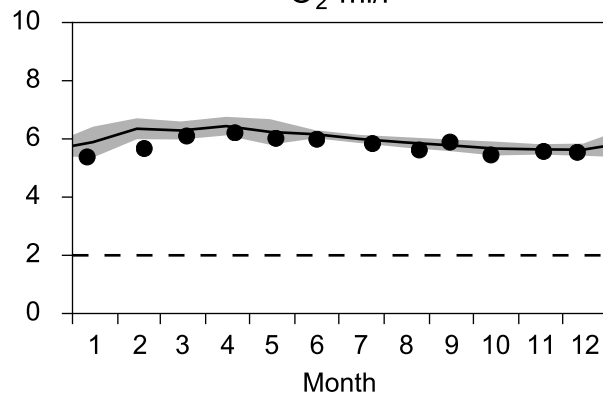


O₂ saturation %

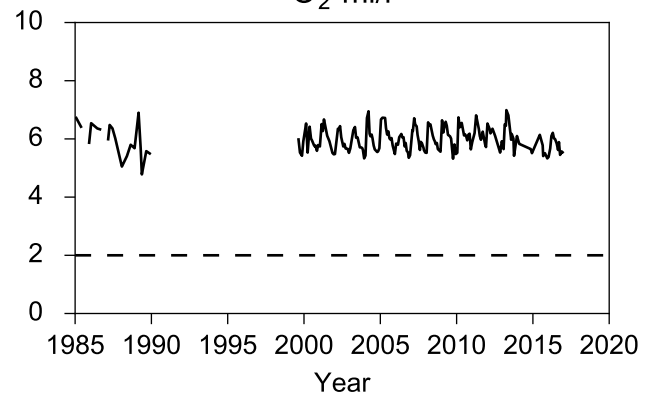


OXYGEN IN BOTTOM WATER (depth >= 300 m)

O₂ ml/l

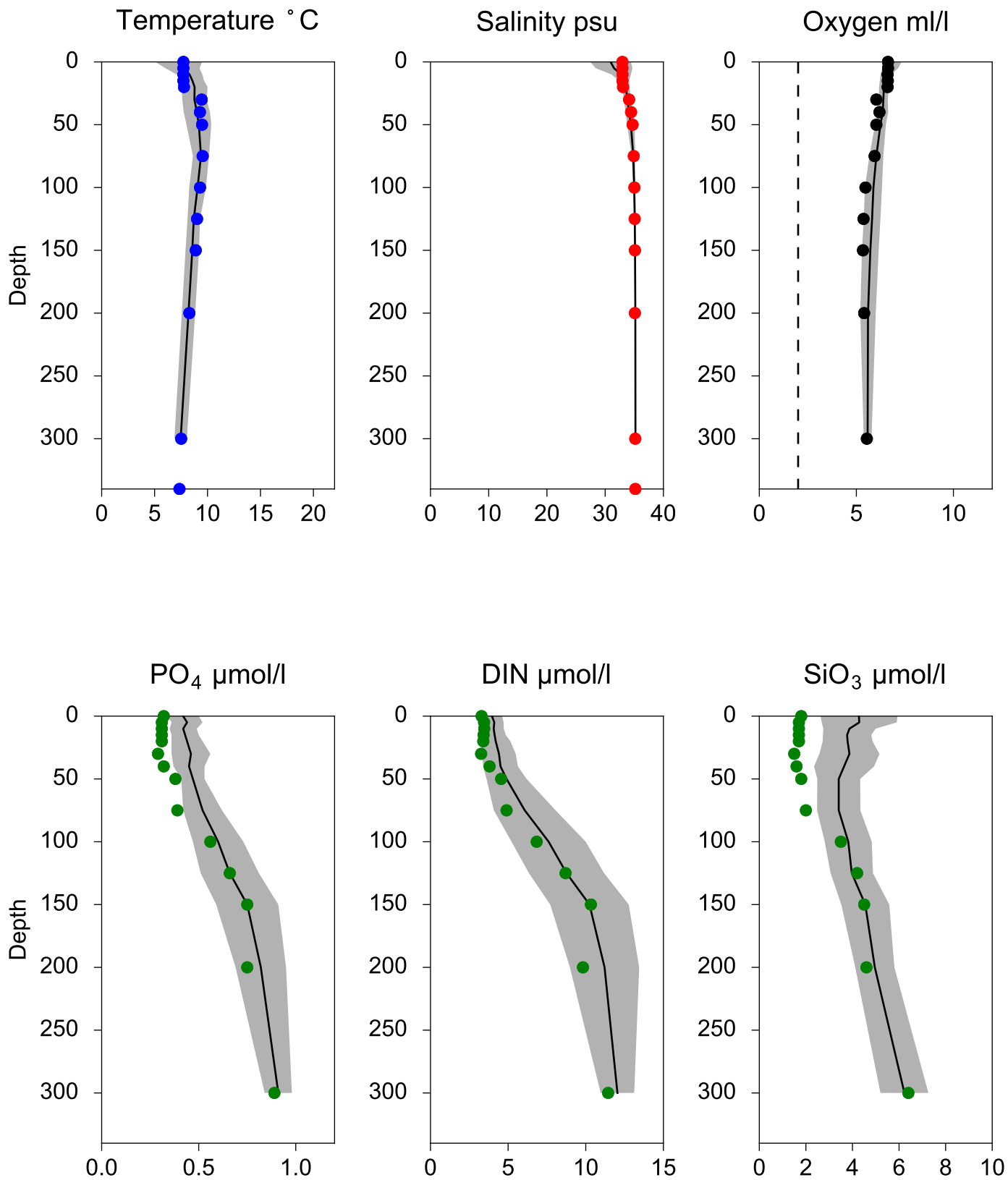


O₂ ml/l



Vertical profiles Å17 December

— Mean 2001-2015 ■ St.Dev. ● 2016-12-11



STATION Å15 SURFACE WATER (0-10m)

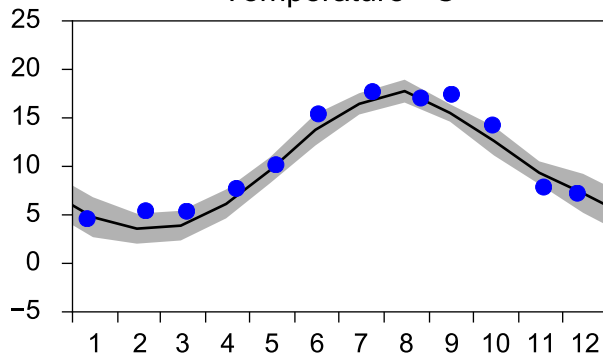
Annual Cycles

— Mean 2001-2015

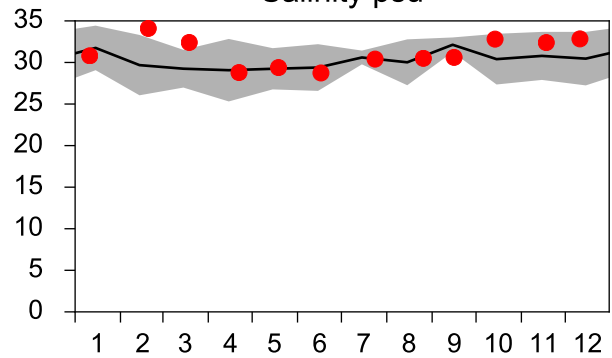
■ St.Dev.

● 2016

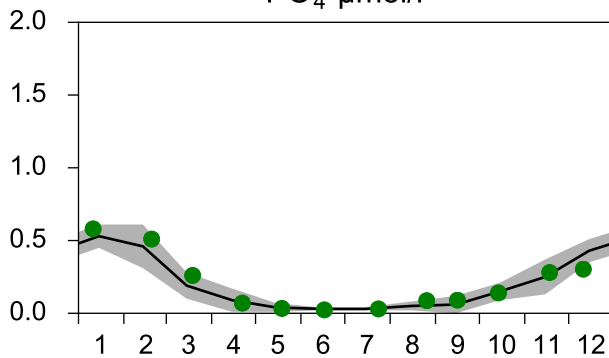
Temperature °C



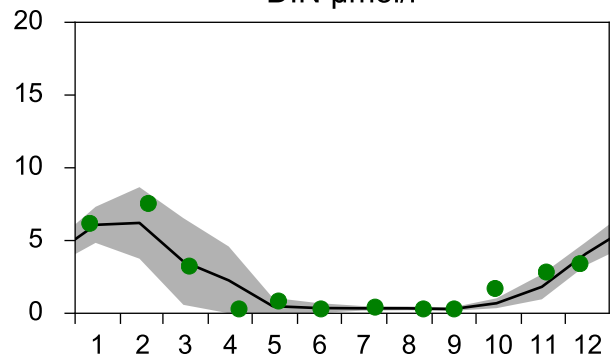
Salinity psu



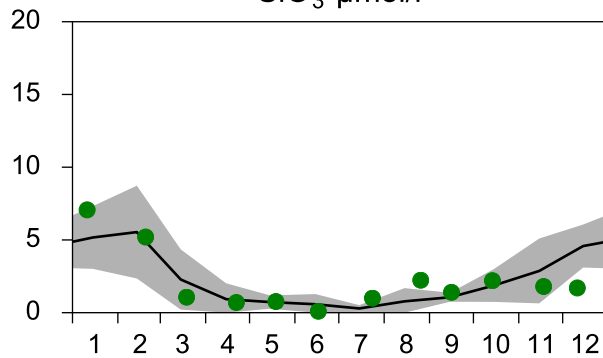
PO₄ µmol/l



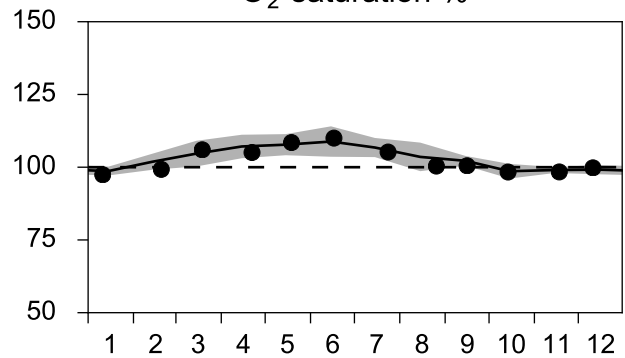
DIN µmol/l



SiO₃ µmol/l

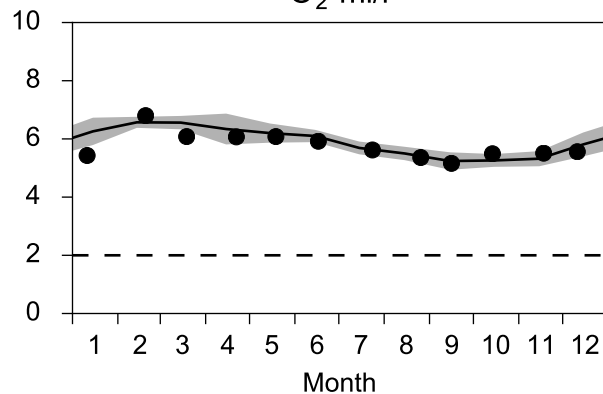


O₂ saturation %

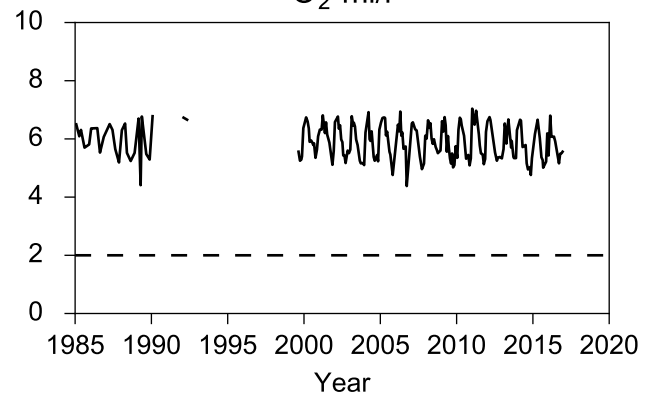


OXYGEN IN BOTTOM WATER (depth >= 125 m)

O₂ ml/l



O₂ ml/l

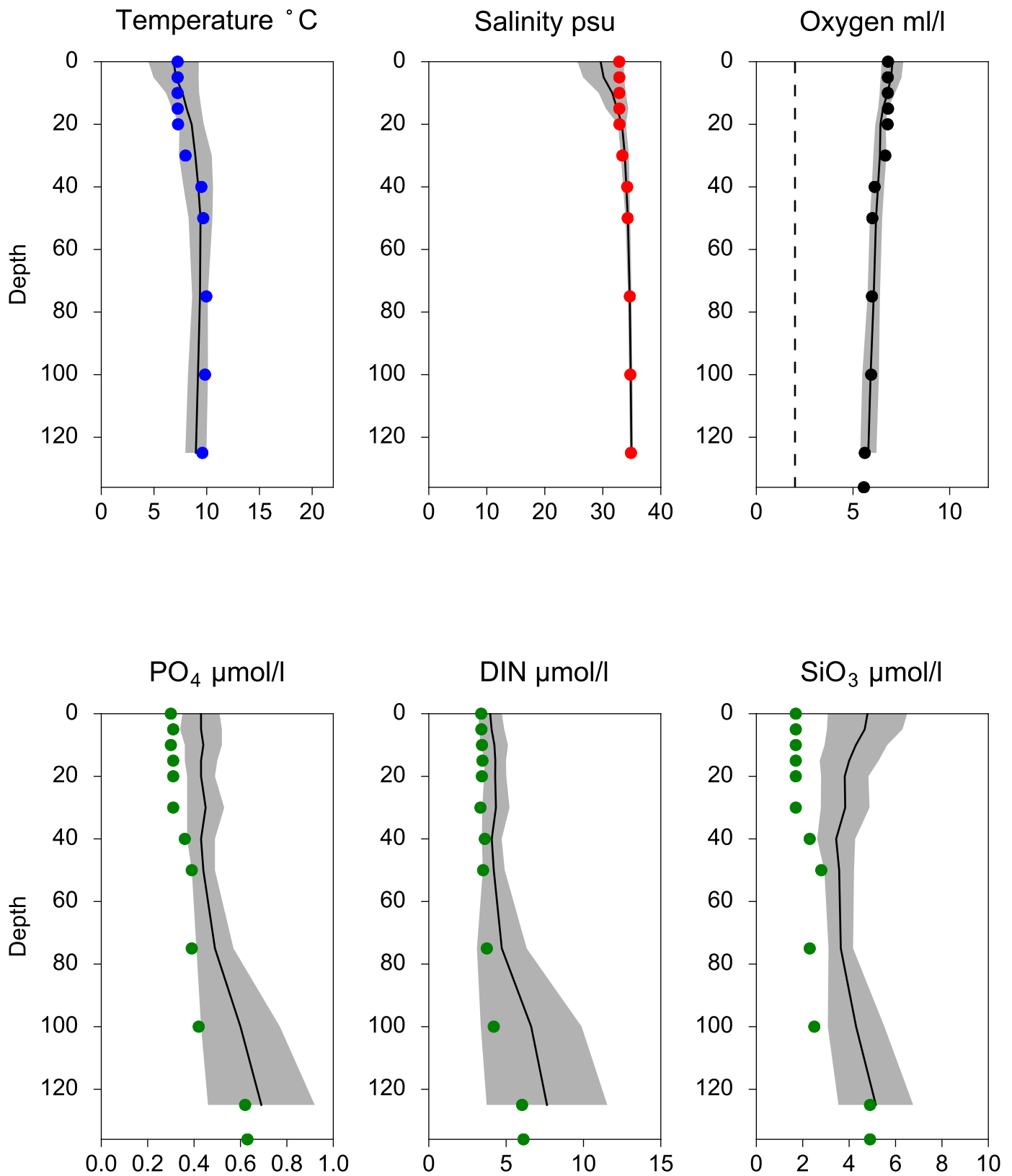


Vertical profiles Å15 December

— Mean 2001-2015

■ St.Dev.

● 2016-12-11



STATION Å13 SURFACE WATER (0-10m)

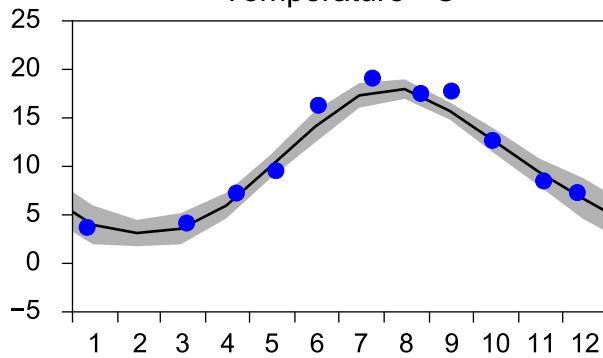
Annual Cycles

— Mean 2001-2015

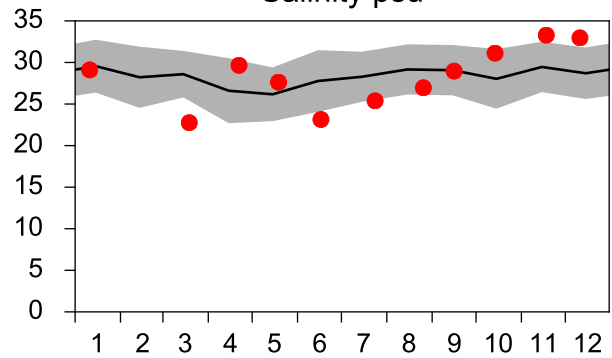
■ St.Dev.

● 2016

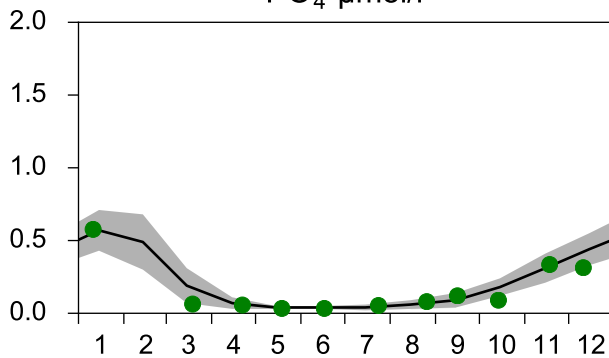
Temperature °C



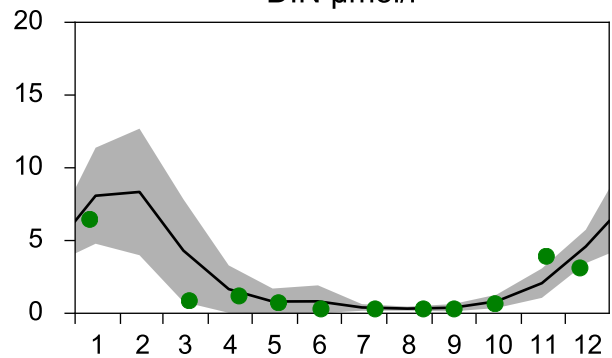
Salinity psu



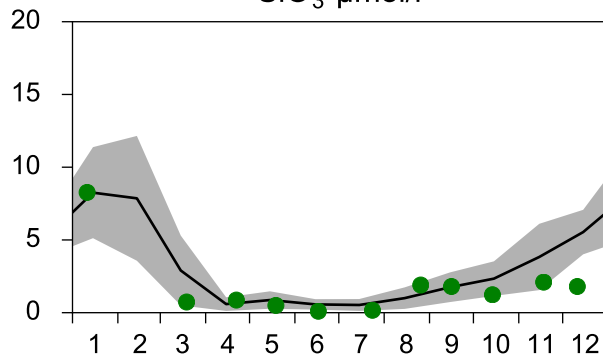
PO₄ µmol/l



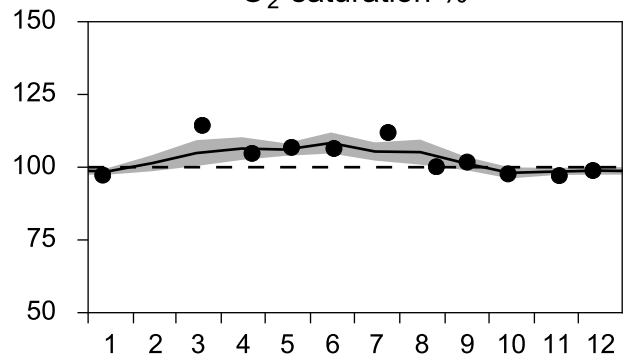
DIN µmol/l



SiO₃ µmol/l

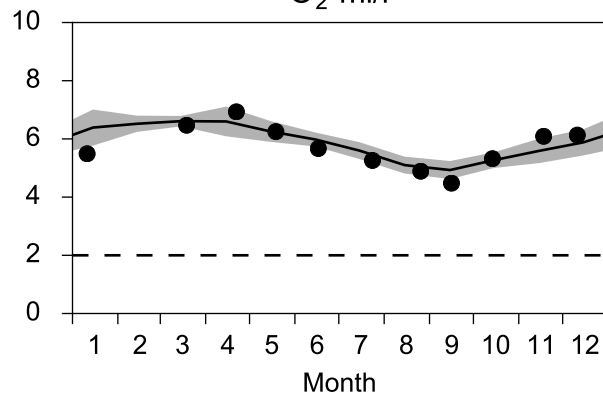


O₂ saturation %

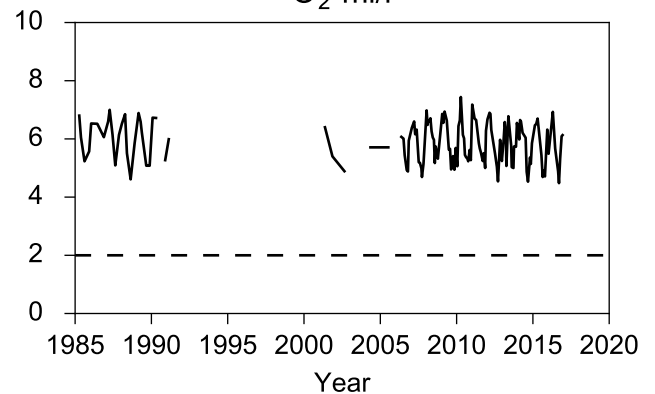


OXYGEN IN BOTTOM WATER (depth >= 82 m)

O₂ ml/l



O₂ ml/l

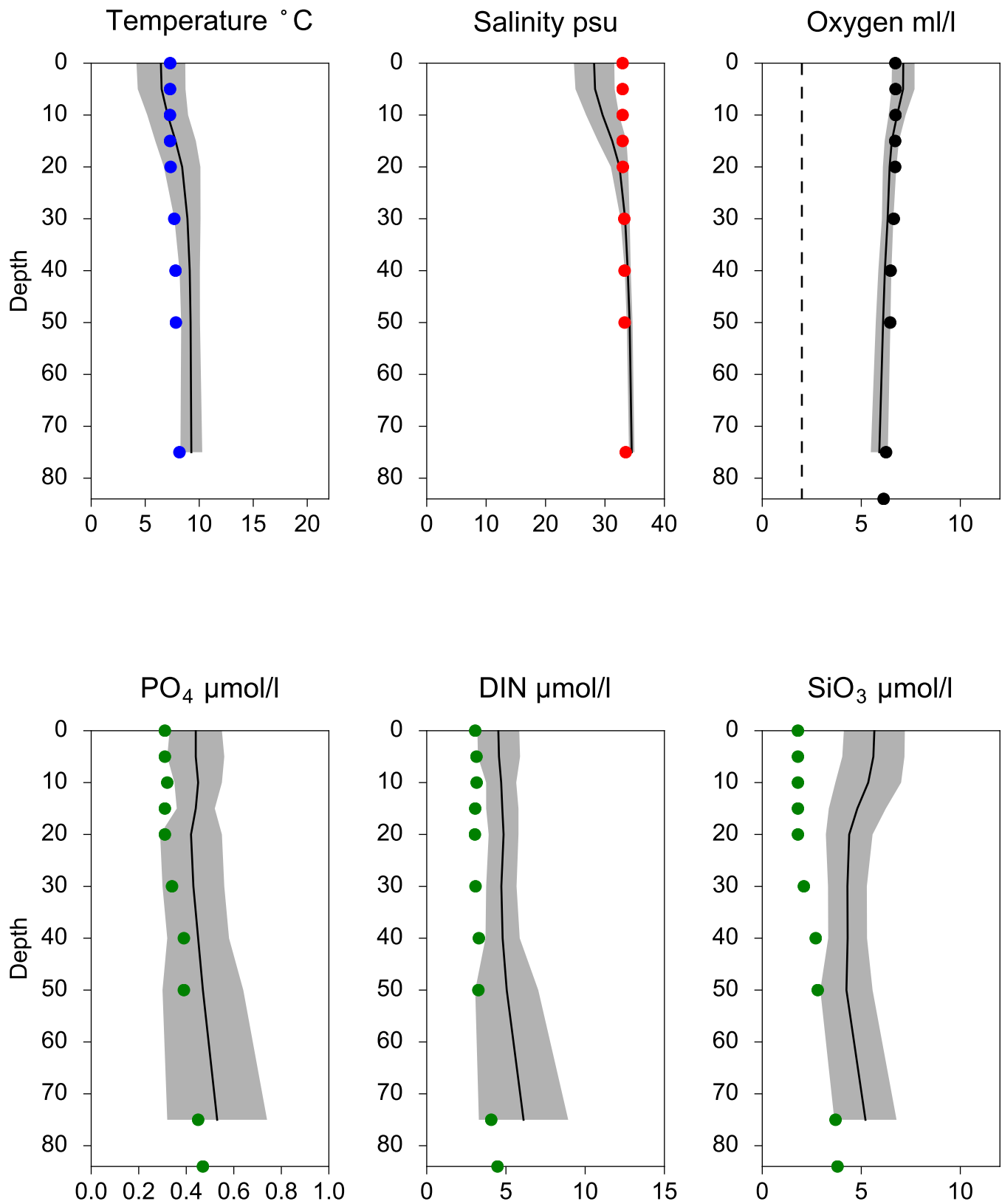


Vertical profiles Å13 December

— Mean 2001-2015

■ St.Dev.

● 2016-12-11



STATION SLÄGGÖ SURFACE WATER (0-10m)

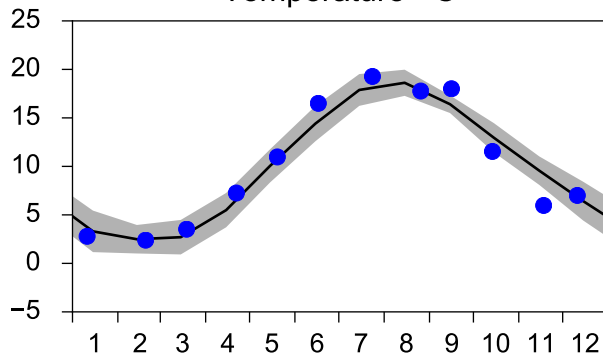
Annual Cycles

— Mean 2001-2015

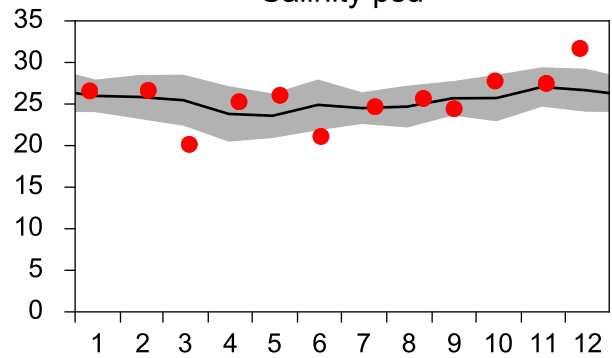
■ St.Dev.

● 2016

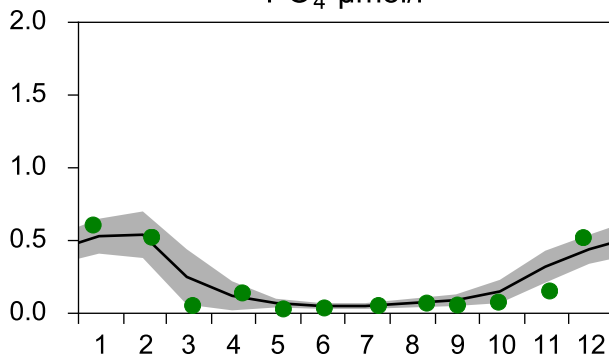
Temperature °C



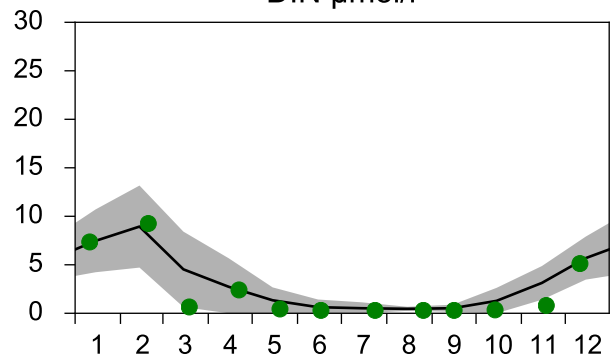
Salinity psu



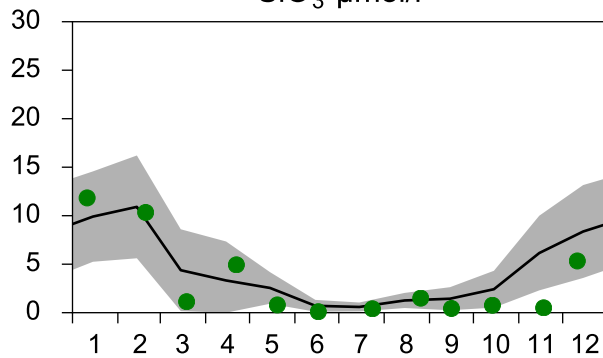
PO₄ µmol/l



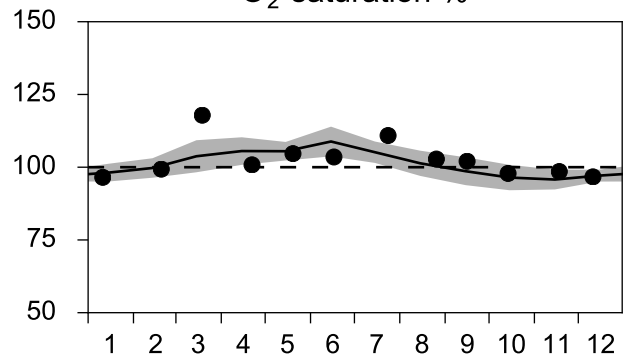
DIN µmol/l



SiO₃ µmol/l

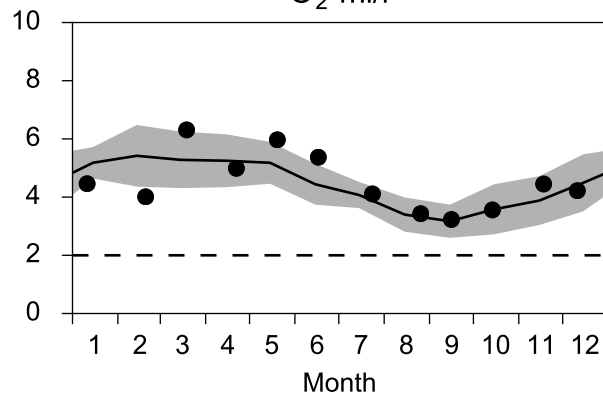


O₂ saturation %

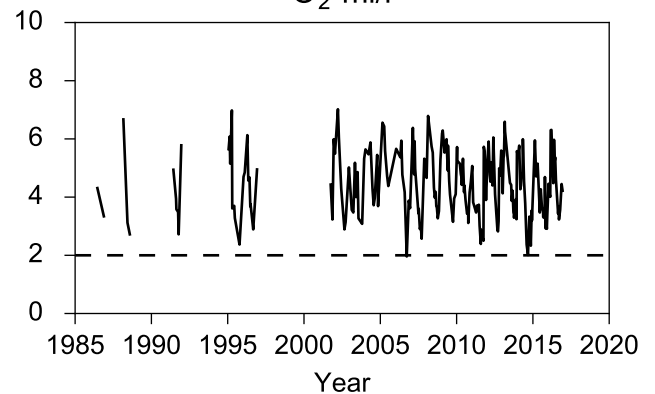


OXYGEN IN BOTTOM WATER (depth >= 64 m)

O₂ ml/l

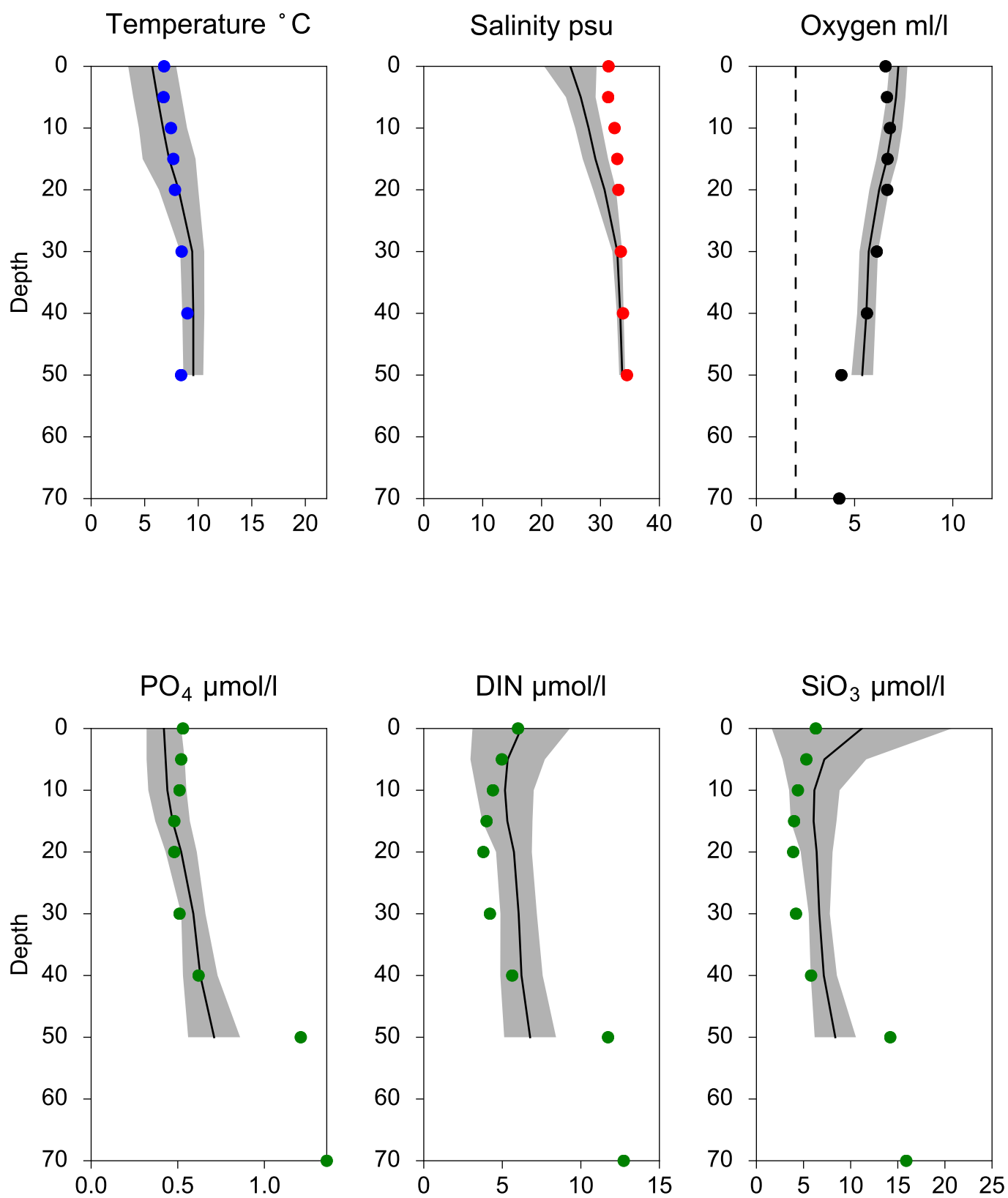


O₂ ml/l



Vertical profiles SLÄGGÖ December

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STATION P2 SURFACE WATER (0-10m)

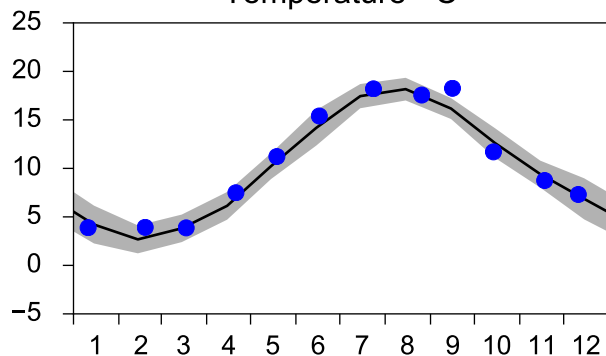
Annual Cycles

— Mean 2001-2015

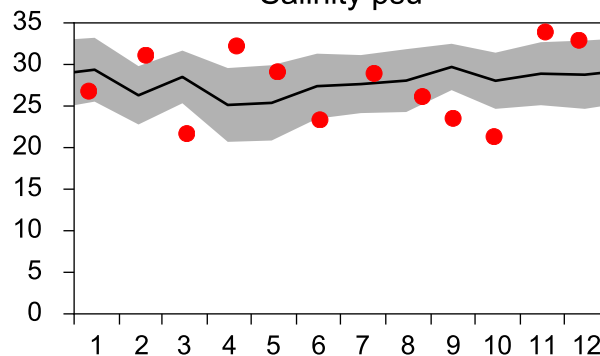
■ St.Dev.

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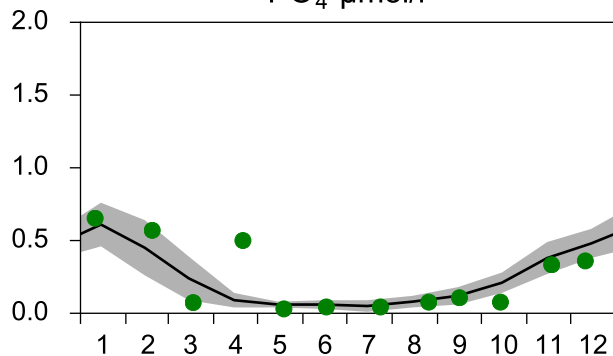
Temperature °C



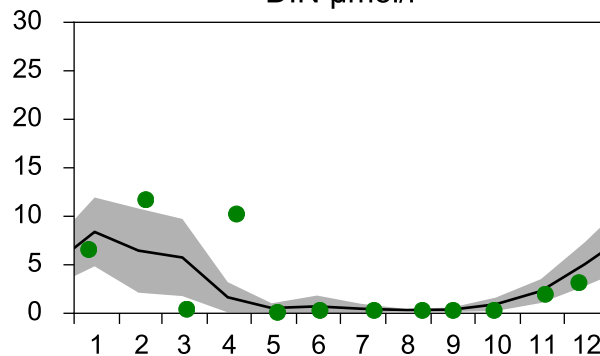
Salinity psu



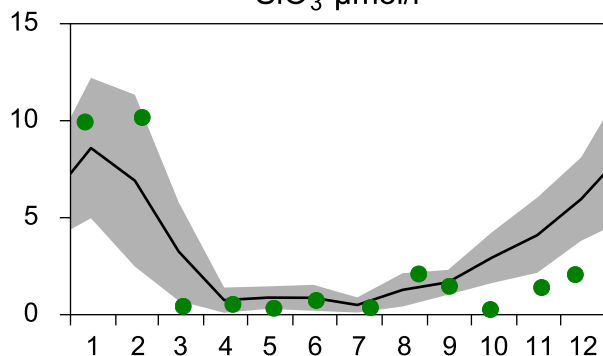
PO₄ µmol/l



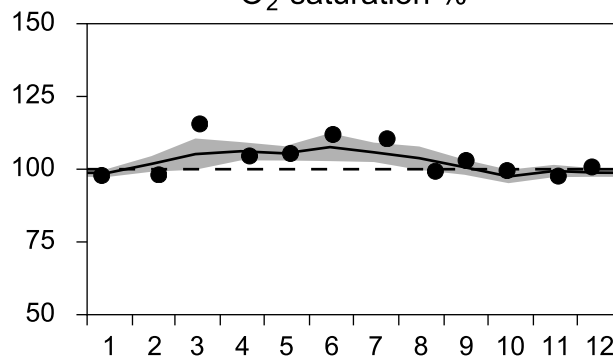
DIN µmol/l



SiO₃ µmol/l

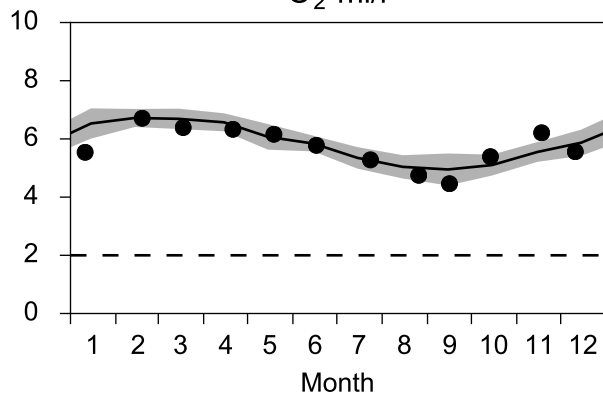


O₂ saturation %

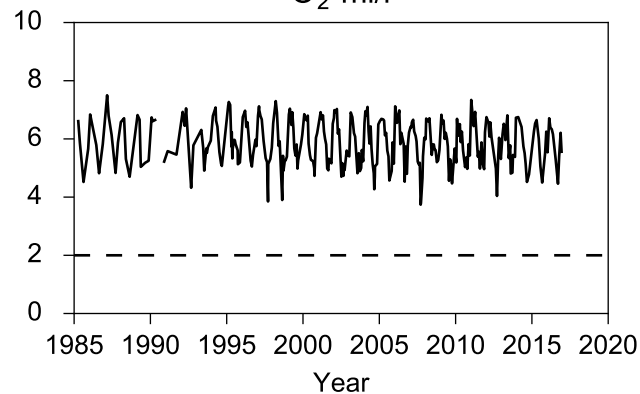


OXYGEN IN BOTTOM WATER (depth >= 75 m)

O₂ ml/l

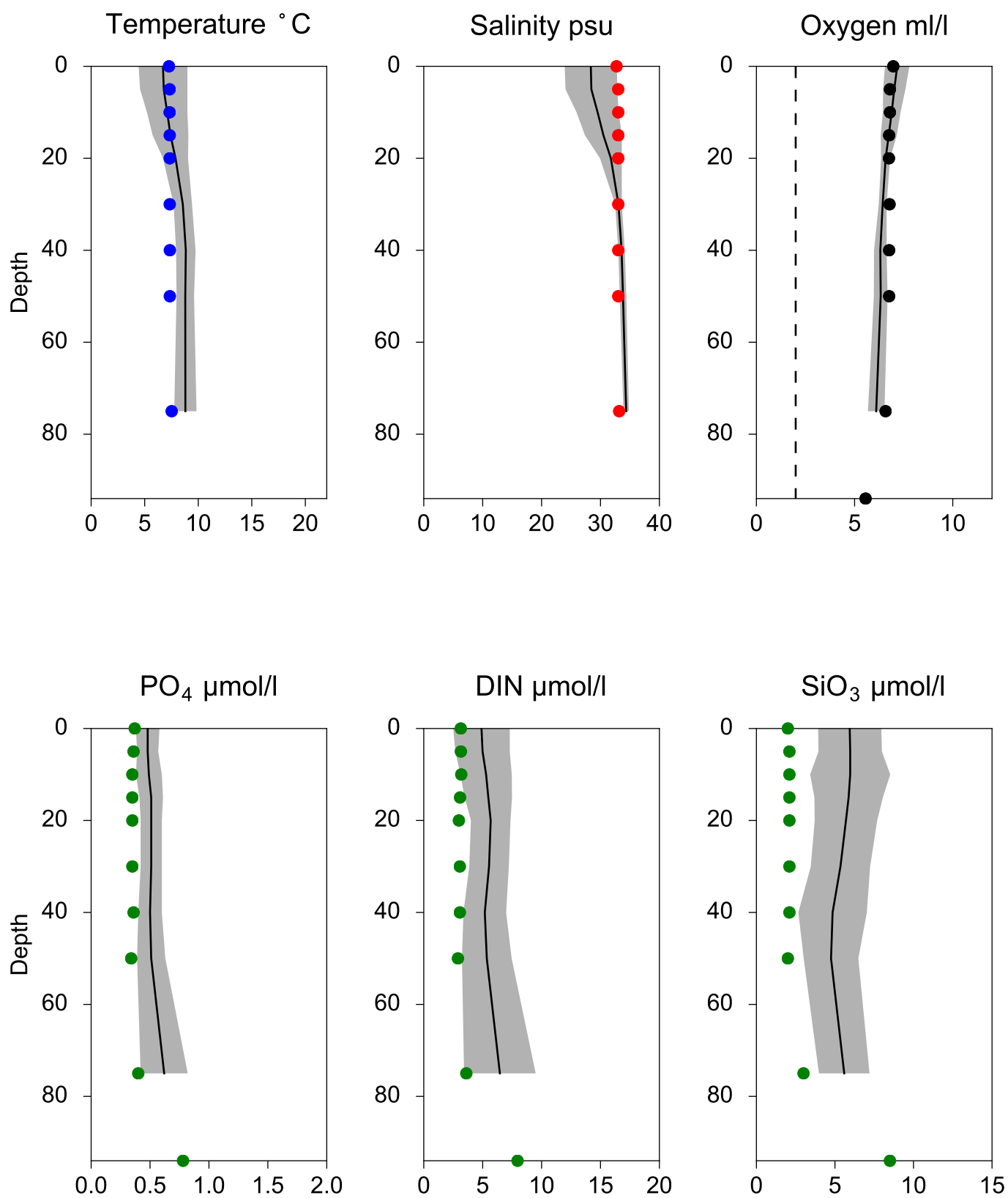


O₂ ml/l



Vertical profiles P2 December

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STATION N14 FALKENBERG SURFACE WATER (0-10m)

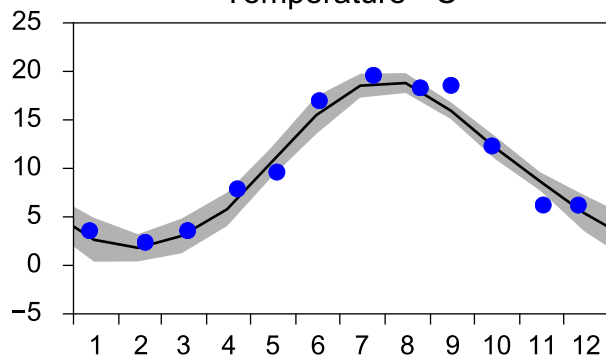
Annual Cycles

— Mean 2001-2015

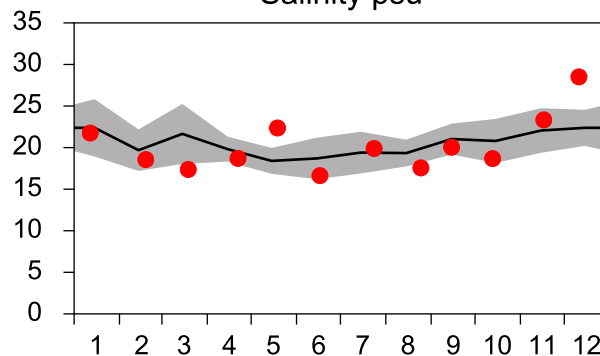
■ St.Dev.

● 2016

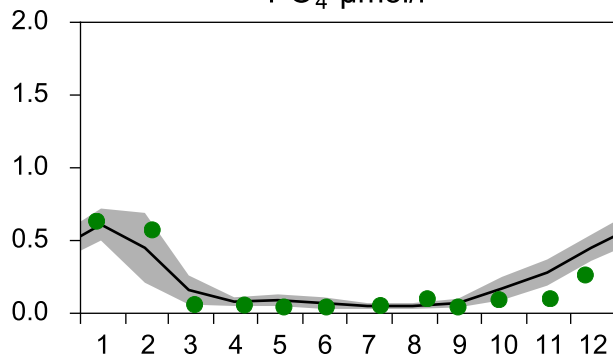
Temperature °C



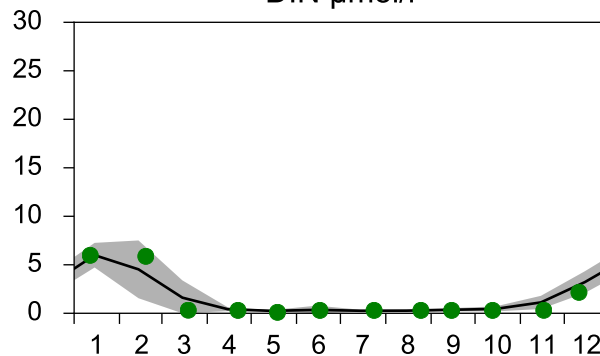
Salinity psu



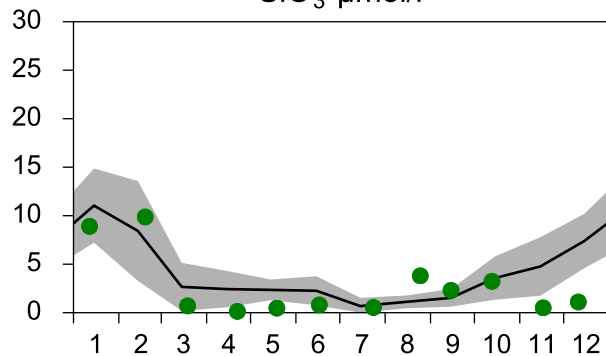
PO₄ µmol/l



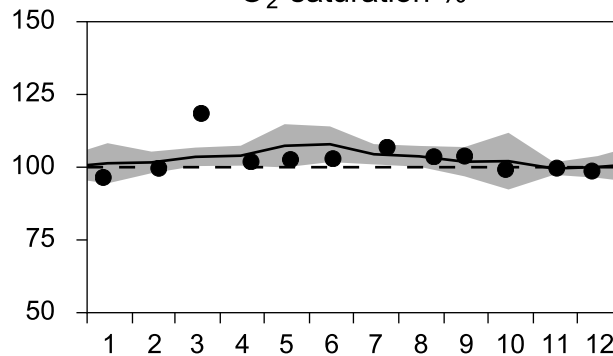
DIN µmol/l



SiO₃ µmol/l

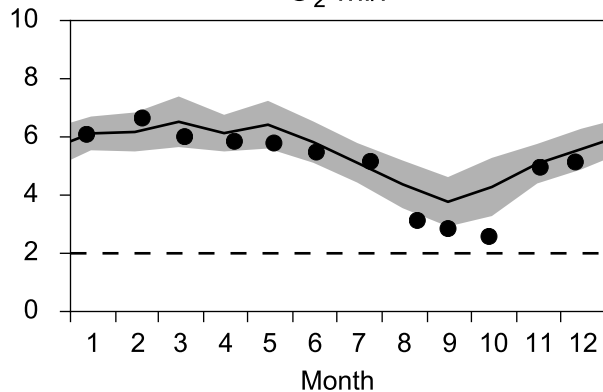


O₂ saturation %

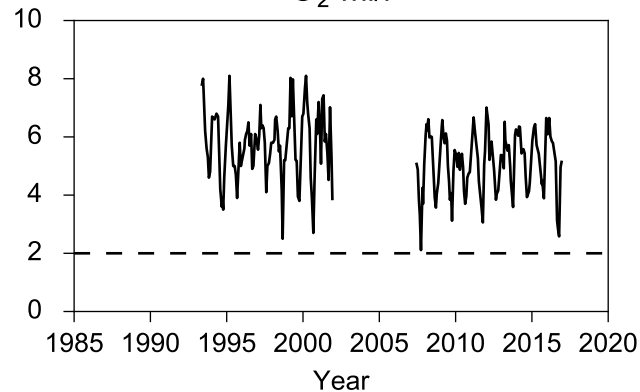


OXYGEN IN BOTTOM WATER (depth >= 25 m)

O₂ ml/l

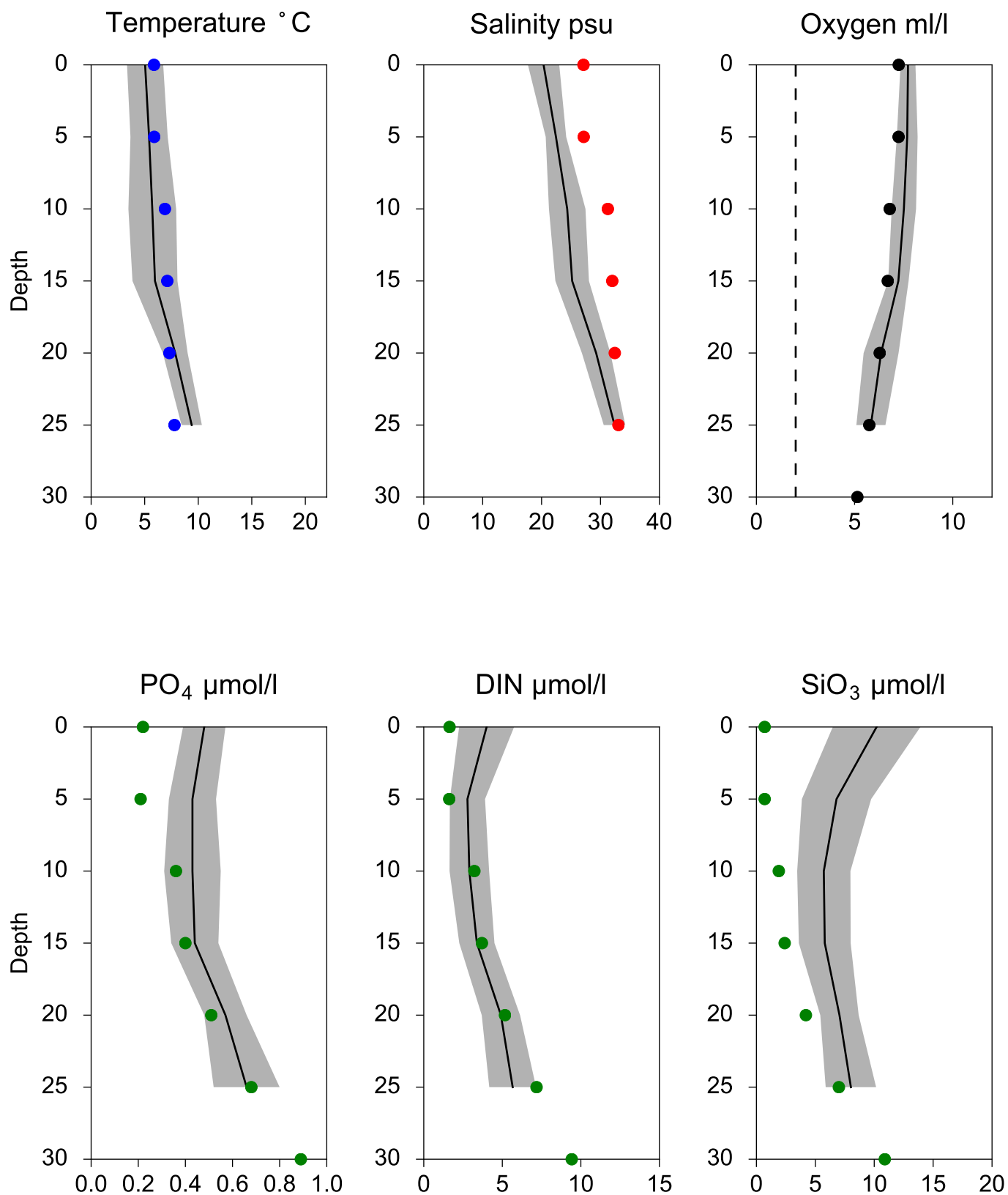


O₂ ml/l



Vertical profiles N14 FALKENBERG December

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STATION ANHOLT E SURFACE WATER (0-10m)

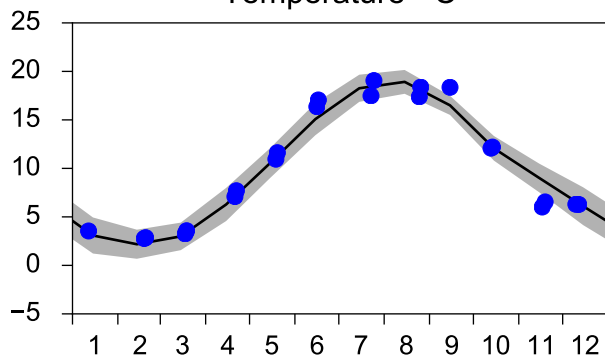
Annual Cycles

— Mean 2001-2015

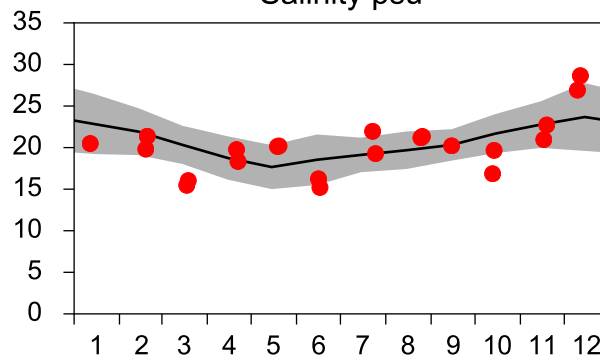
■ St.Dev.

● 2016

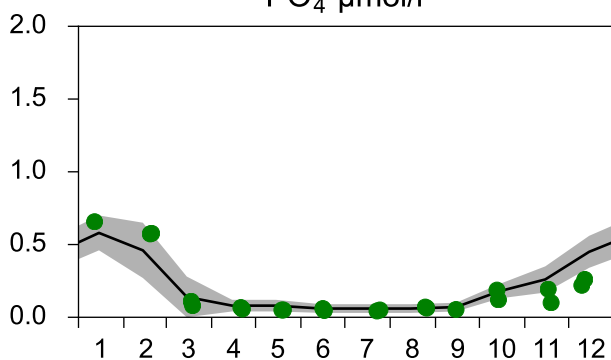
Temperature °C



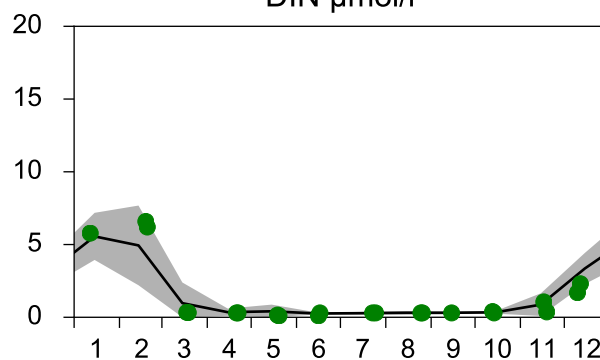
Salinity psu



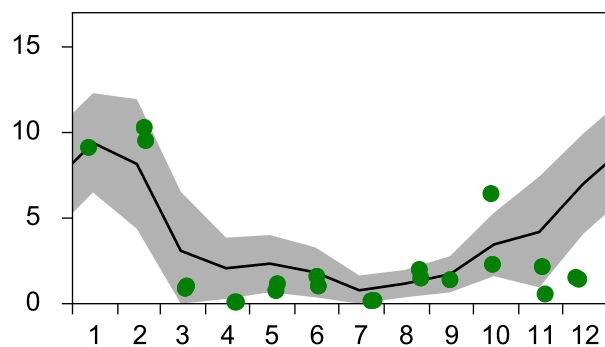
PO₄ µmol/l



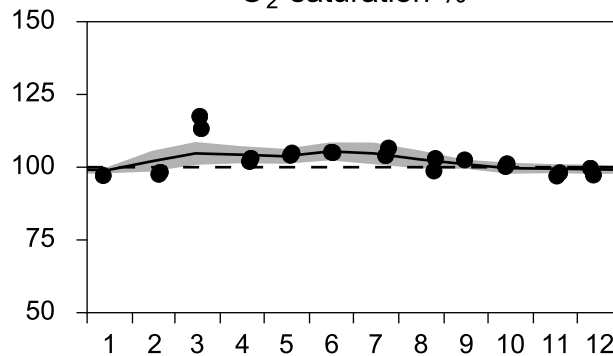
DIN µmol/l



SiO₃ µmol/l

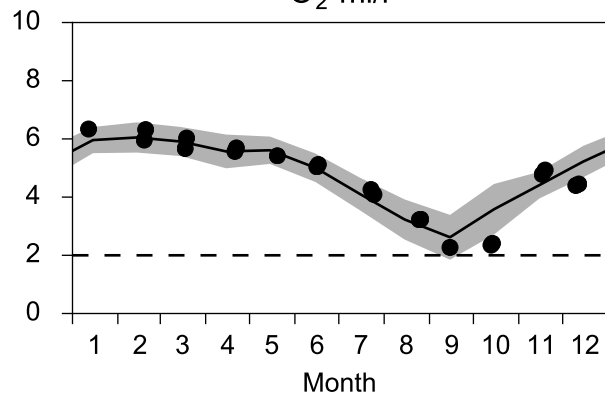


O₂ saturation %

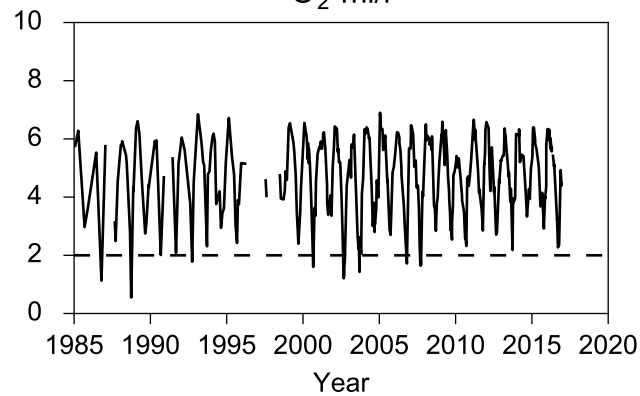


OXYGEN IN BOTTOM WATER (depth >= 52 m)

O₂ ml/l

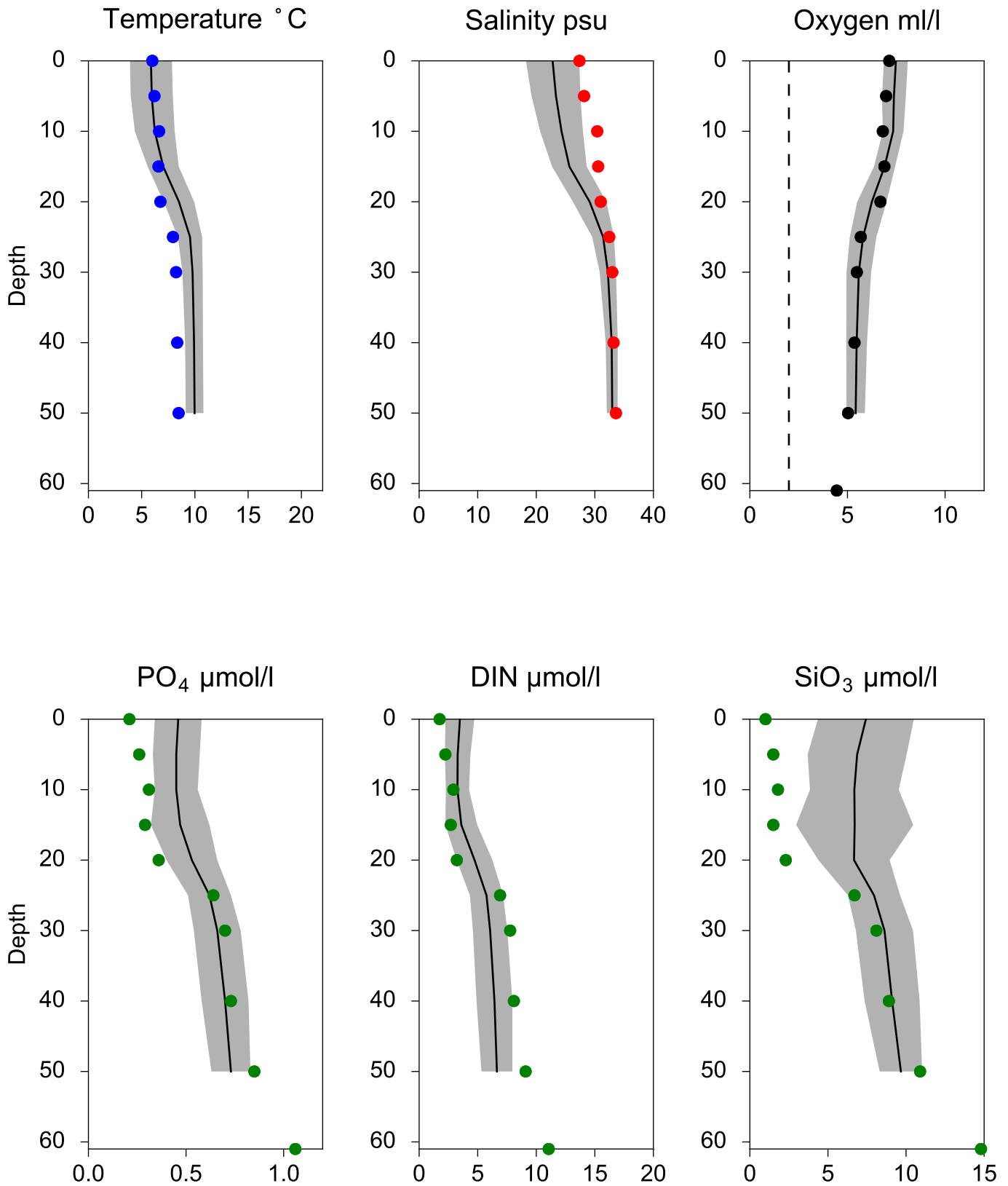


O₂ ml/l



Vertical profiles ANHOLT E December

— Mean 2001-2015 St.Dev. • 2016-12-12



STATION BY4 CHRISTIANSÖ SURFACE WATER (0-10m)

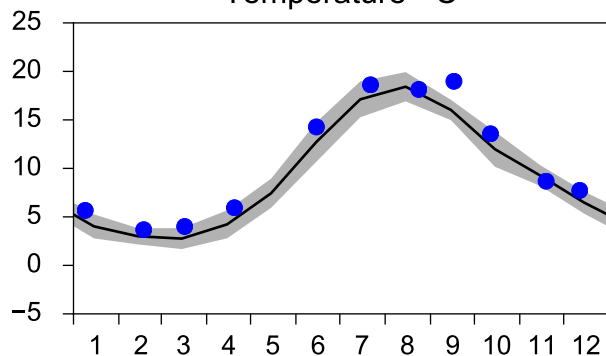
Annual Cycles

— Mean 2001-2015

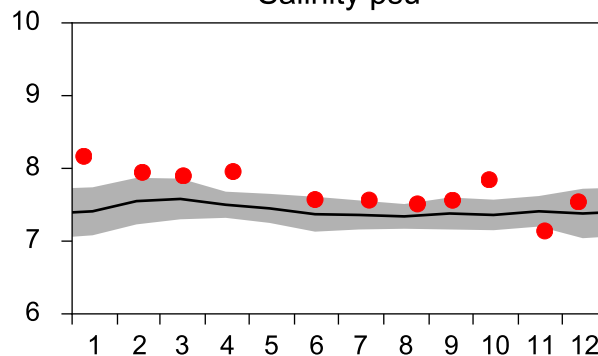
■ St.Dev.

● 2016

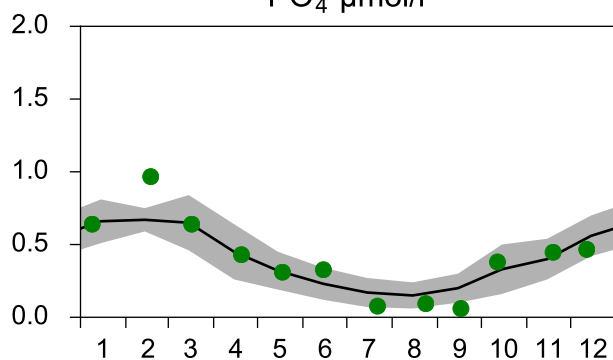
Temperature °C



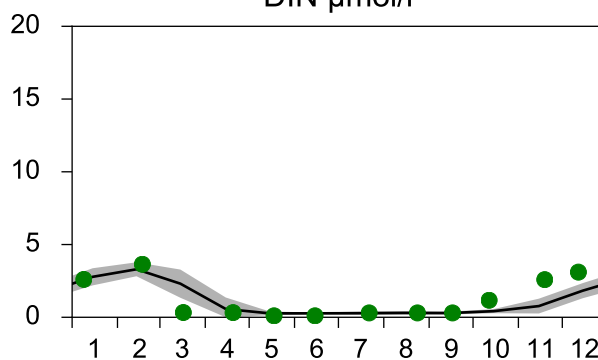
Salinity psu



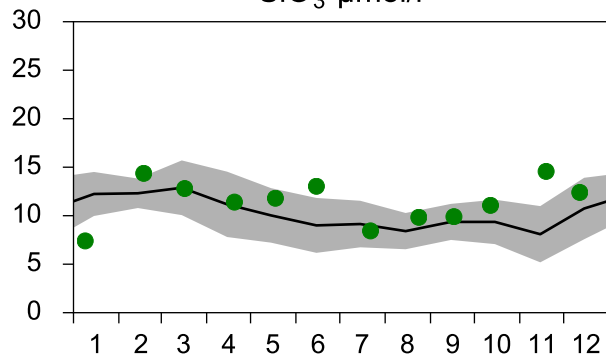
PO₄ µmol/l



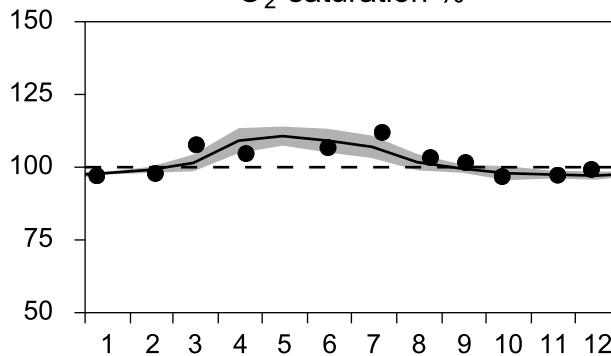
DIN µmol/l



SiO₃ µmol/l

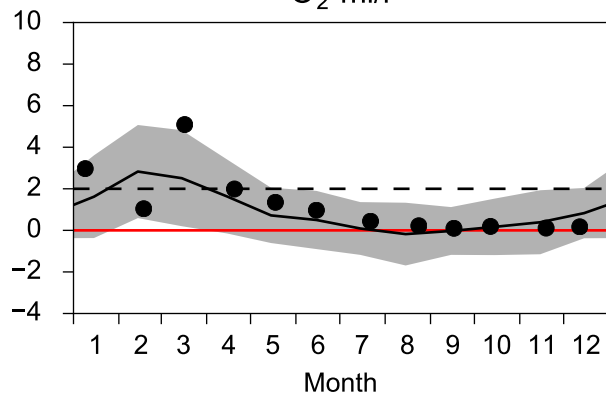


O₂ saturation %

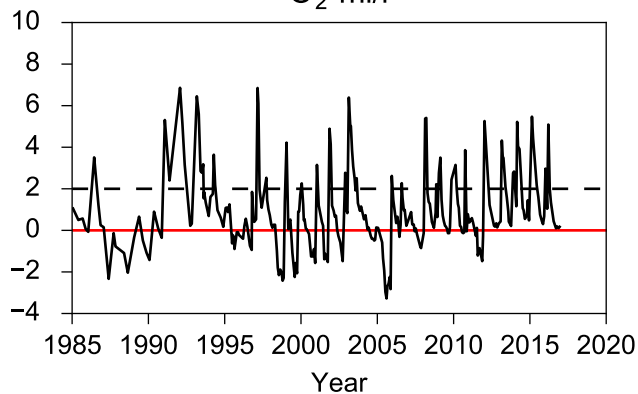


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

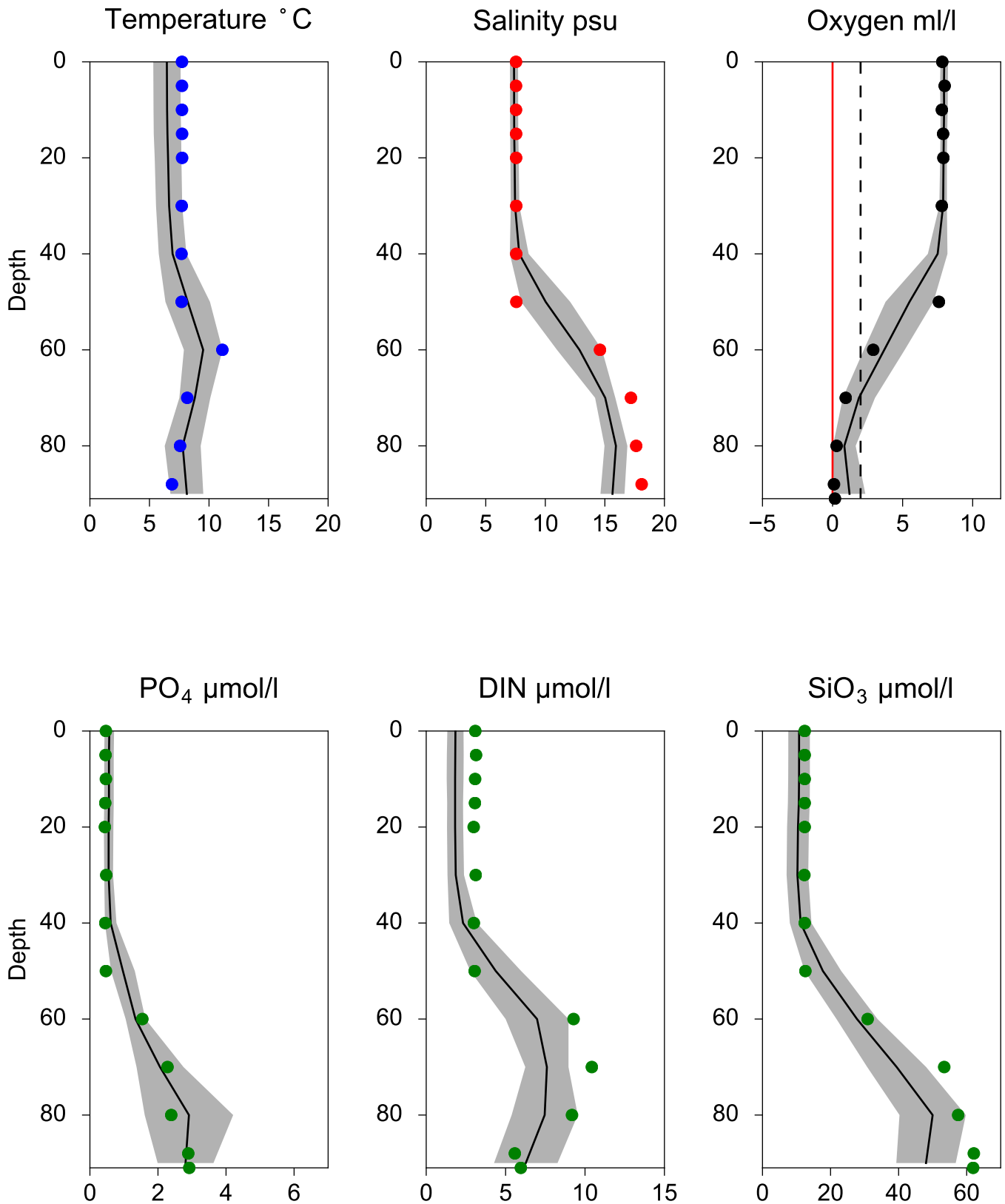


O₂ ml/l



Vertical profiles BY4 CHRISTIANSÖ December

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STATION BY5 BORNHOLMSDJ SURFACE WATER (0-10m)

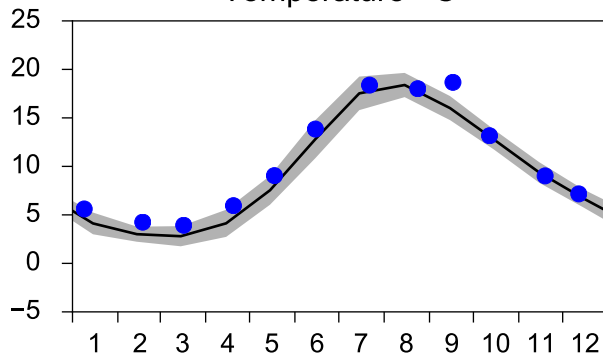
Annual Cycles

— Mean 2001-2015

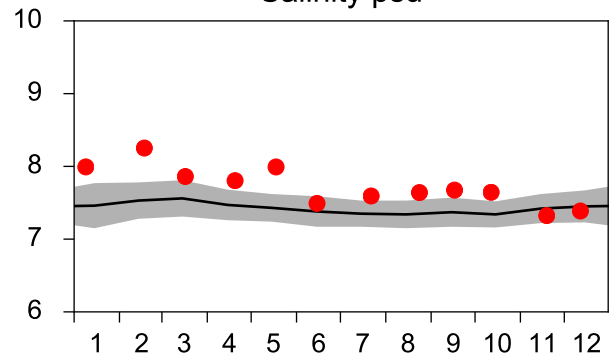
■ St.Dev.

● 2016

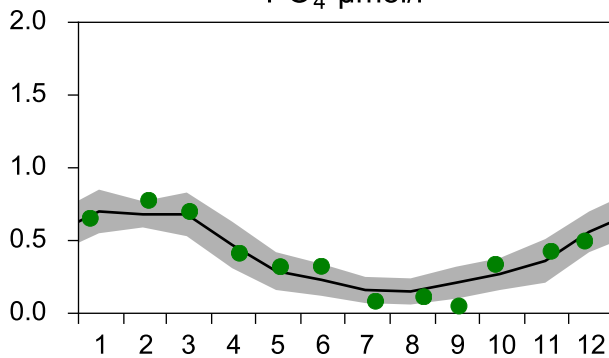
Temperature °C



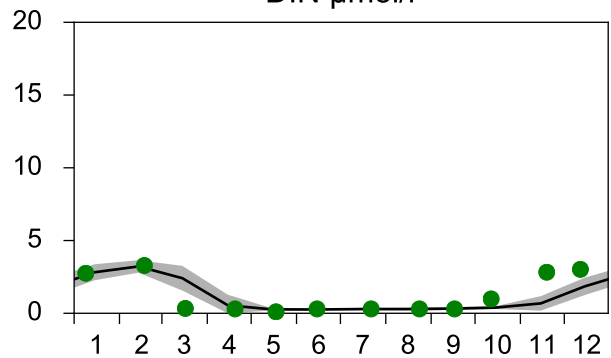
Salinity psu



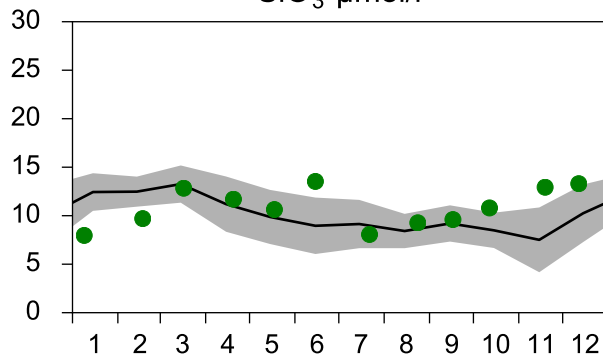
PO₄ μmol/l



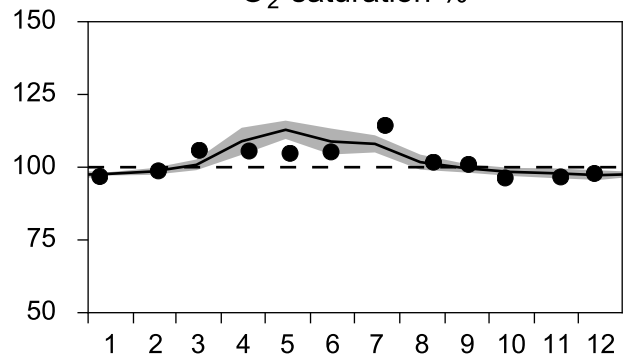
DIN μmol/l



SiO₃ μmol/l

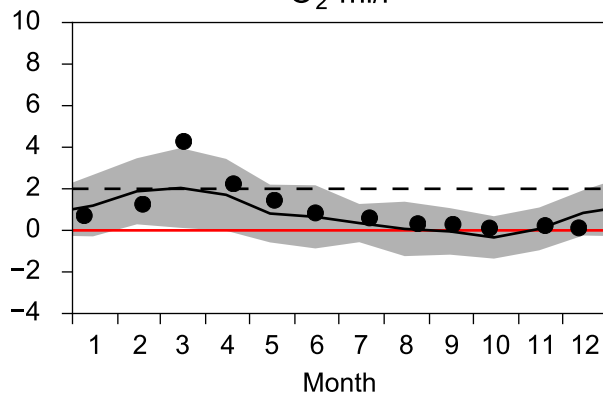


O₂ saturation %

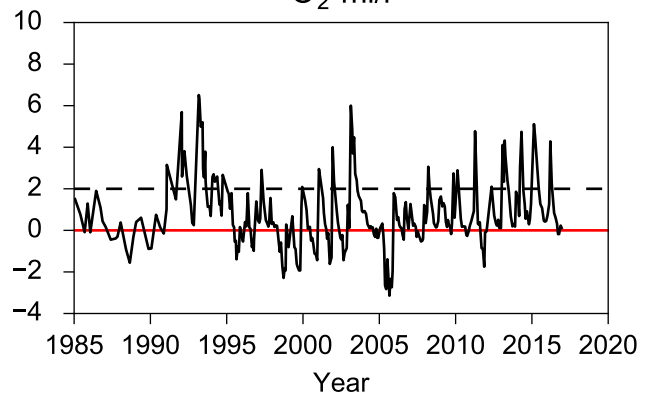


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

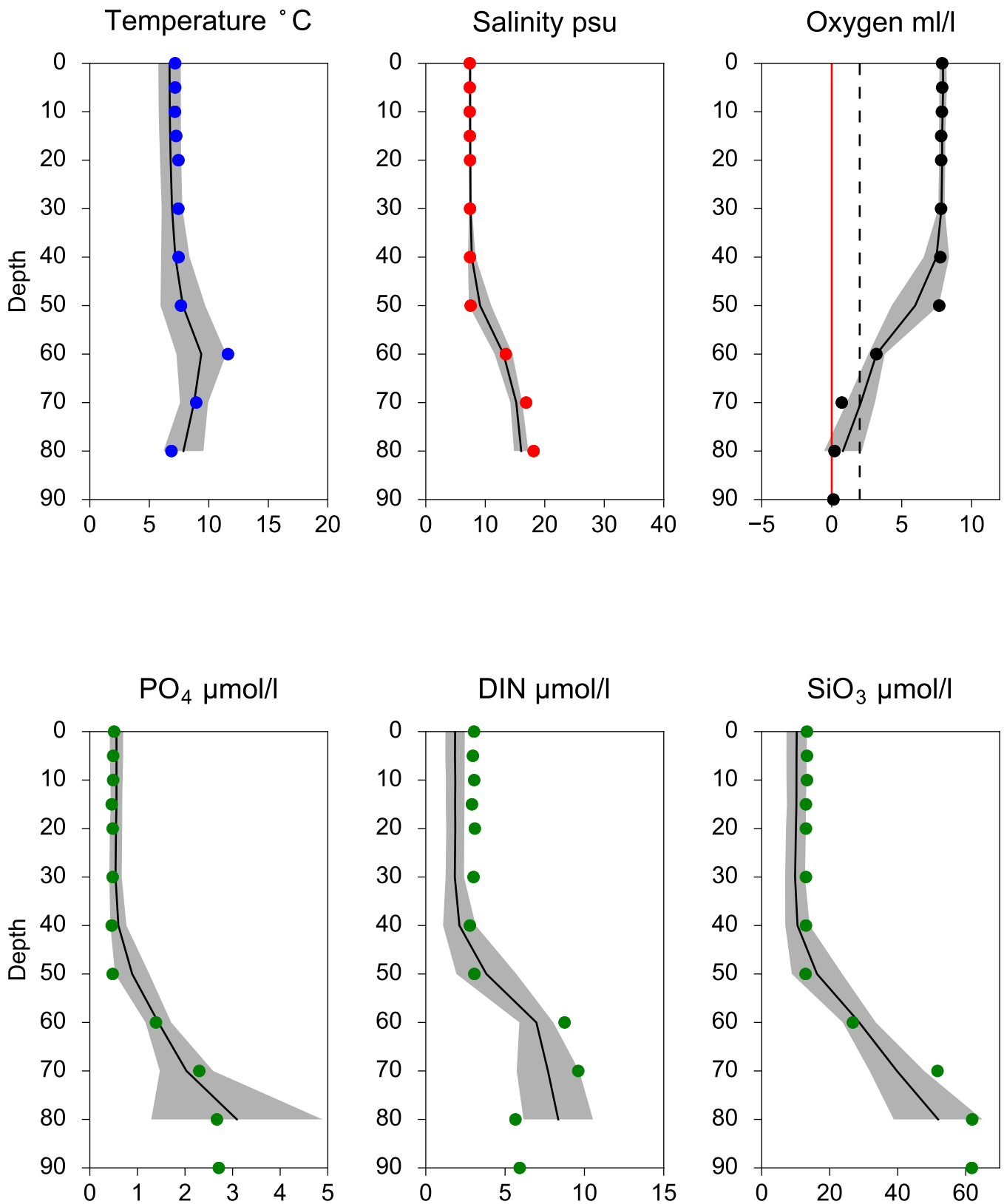


O₂ ml/l



Vertical profiles BY5 BORNHOLMSDJ December

— Mean 2001-2015 ■ St.Dev. ● 2016-12-12



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

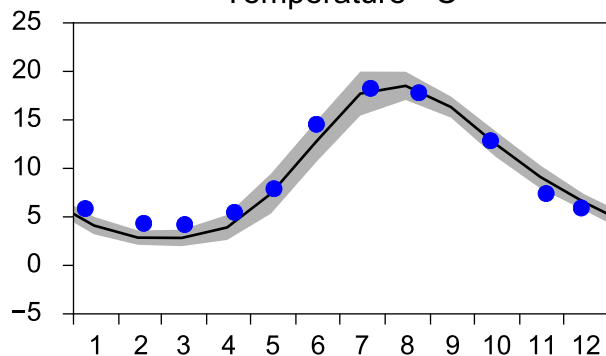
Annual Cycles

— Mean 2001-2015

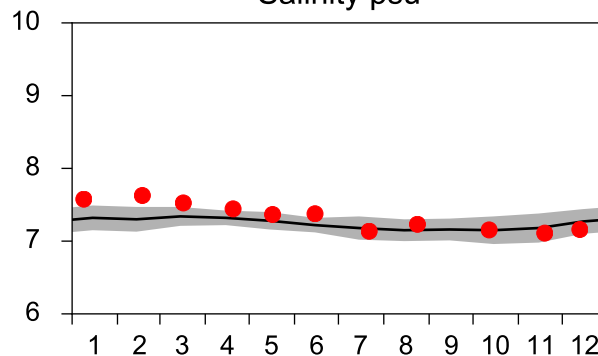
■ St.Dev.

● 2016

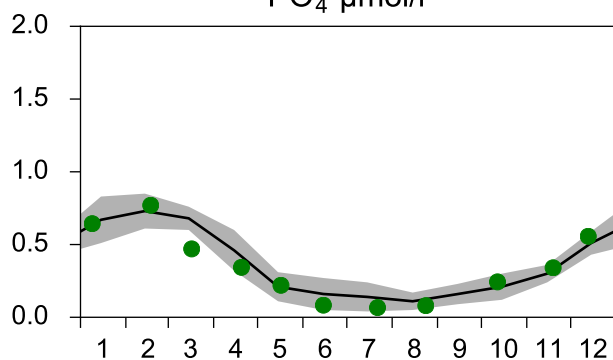
Temperature °C



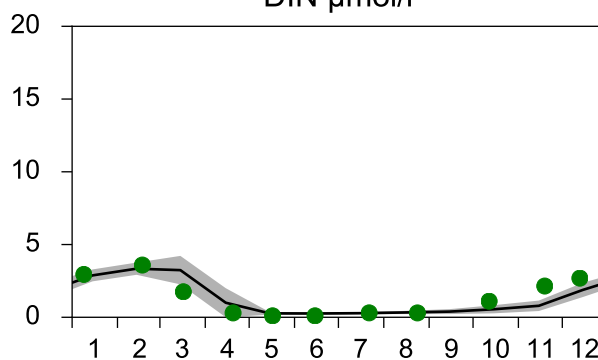
Salinity psu



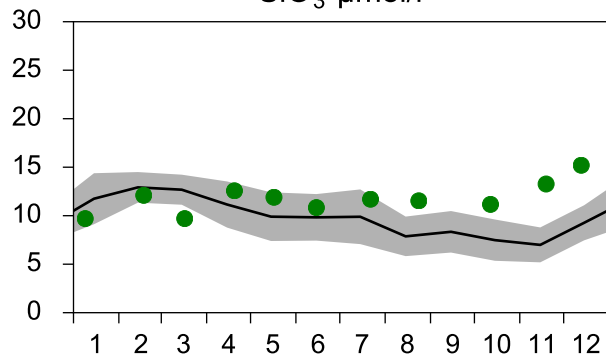
PO₄ µmol/l



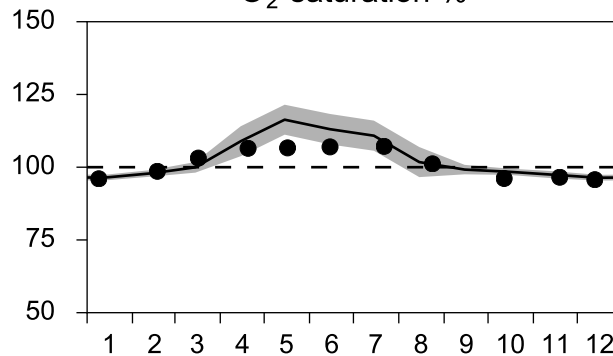
DIN µmol/l



SiO₃ µmol/l

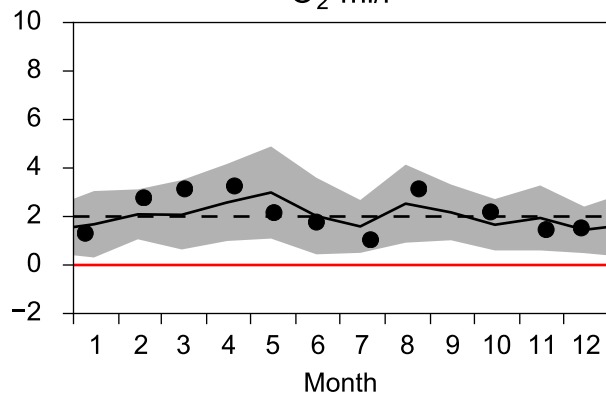


O₂ saturation %

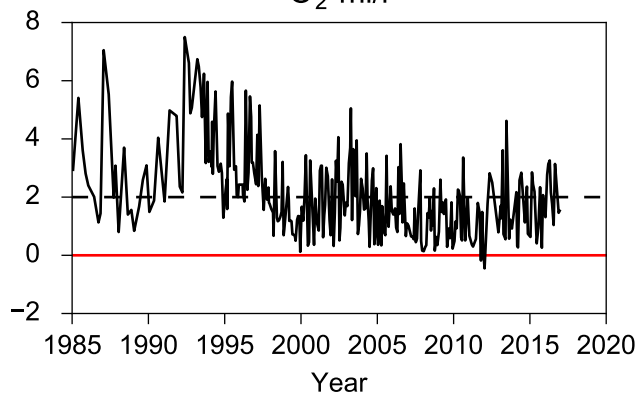


OXYGEN IN BOTTOM WATER (depth >= 80 m)

O₂ ml/l

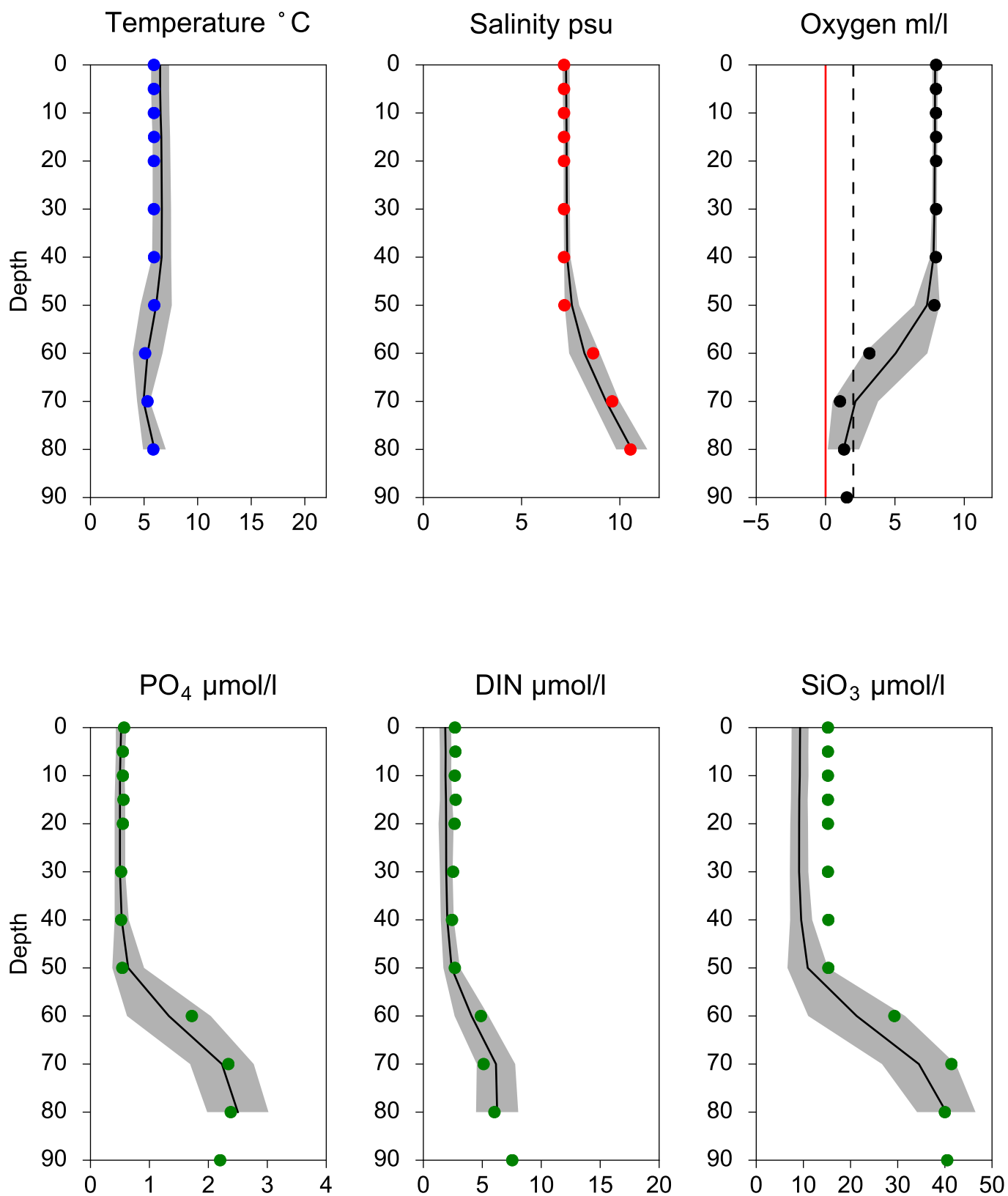


O₂ ml/l



Vertical profiles BCS III-10 December

— Mean 2001-2015 St.Dev. • 2016-12-13



STATION BY10 SURFACE WATER (0-10m)

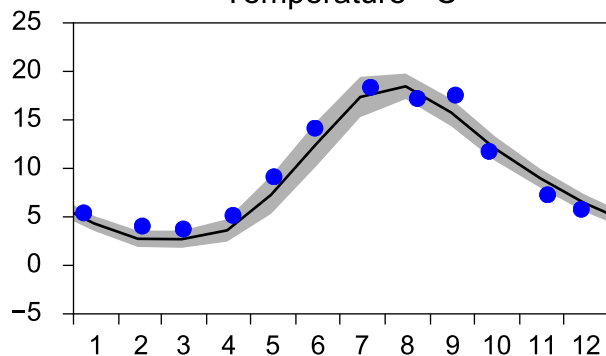
Annual Cycles

— Mean 2001-2015

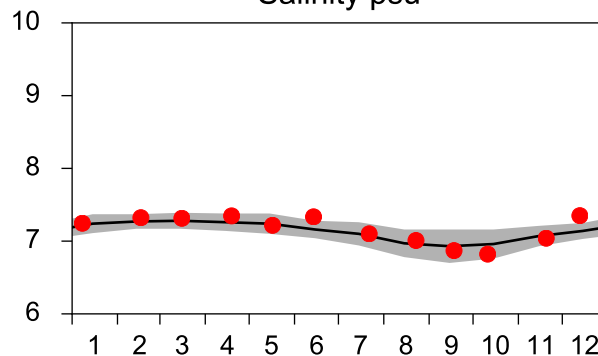
■ St.Dev.

● 2016

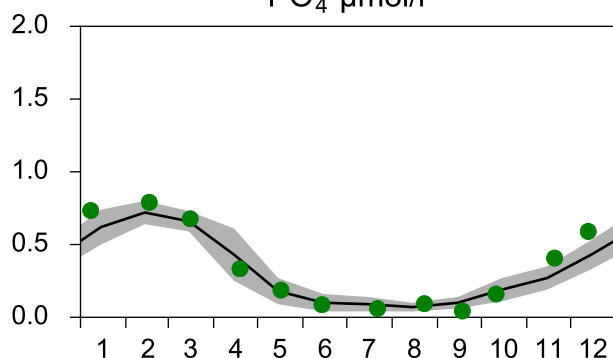
Temperature °C



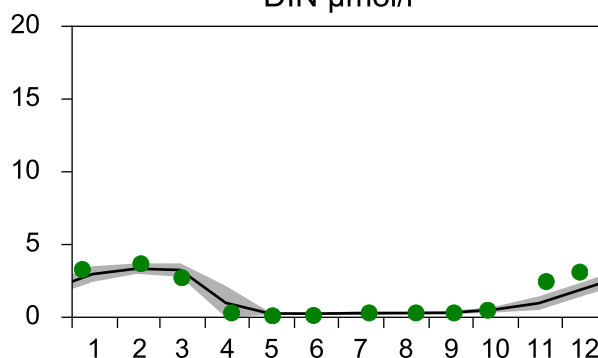
Salinity psu



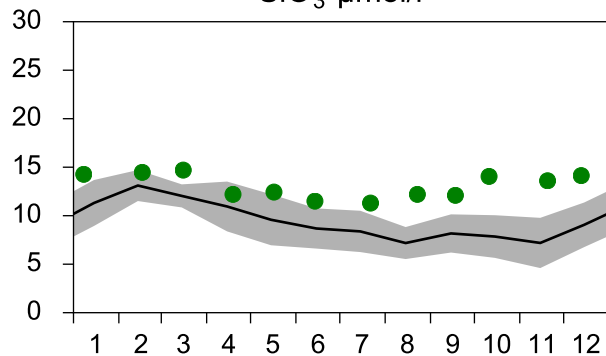
PO₄ µmol/l



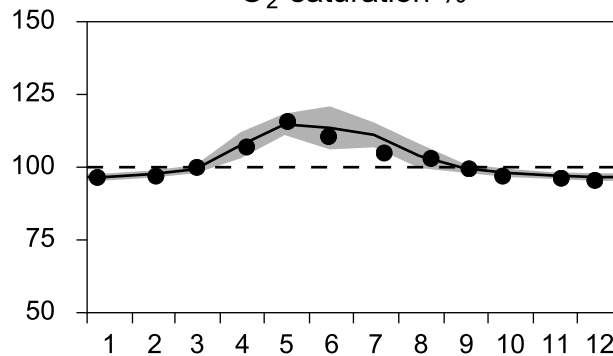
DIN µmol/l



SiO₃ µmol/l

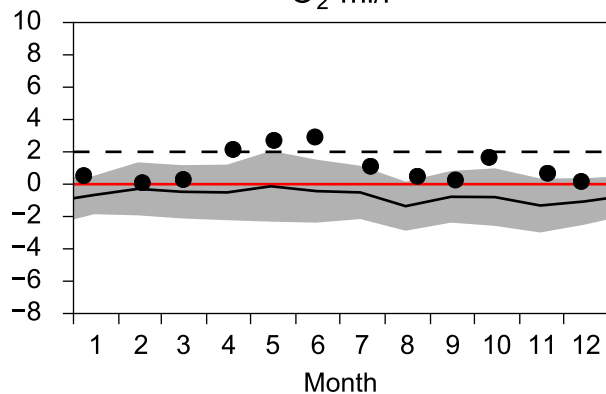


O₂ saturation %

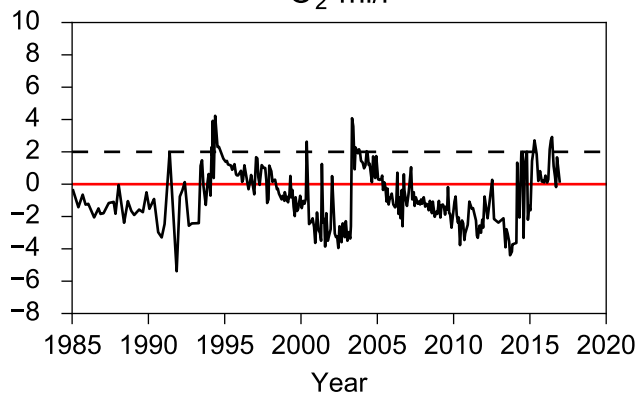


OXYGEN IN BOTTOM WATER (depth >= 125 m)

O₂ ml/l

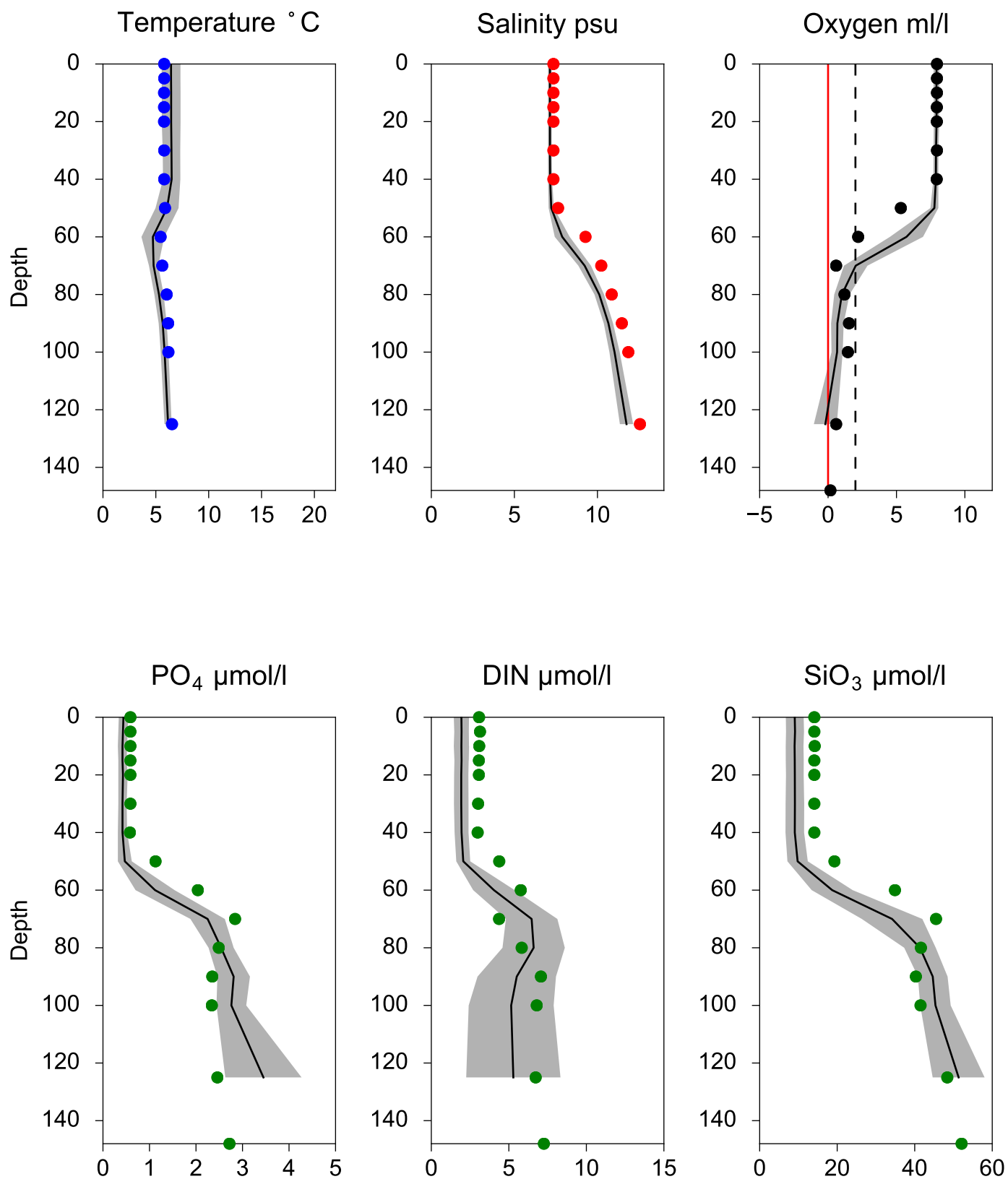


O₂ ml/l



Vertical profiles BY10 December

— Mean 2001-2015 ■ St.Dev. ● 2016-12-13



STATION BY15 GOTLANDSDJ SURFACE WATER (0-10m)

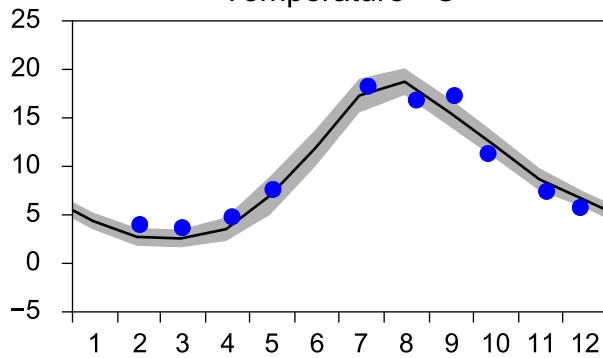
Annual Cycles

— Mean 2001-2015

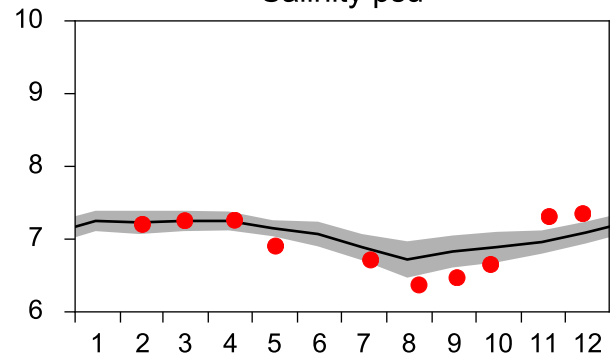
■ St.Dev.

● 2016

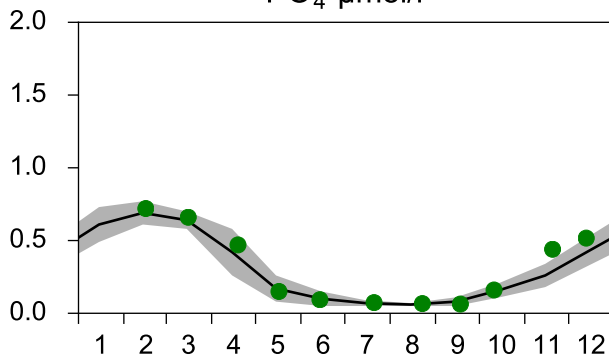
Temperature °C



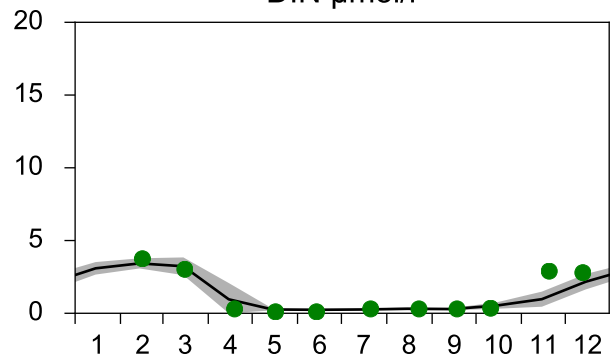
Salinity psu



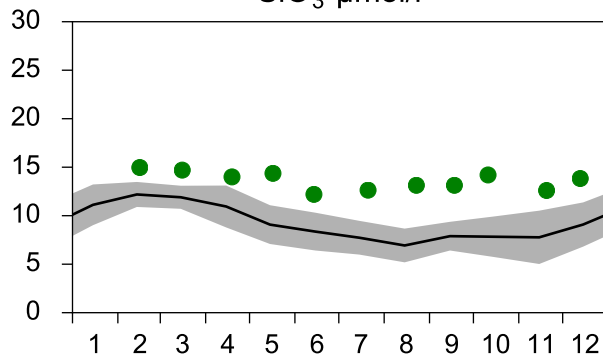
PO₄ µmol/l



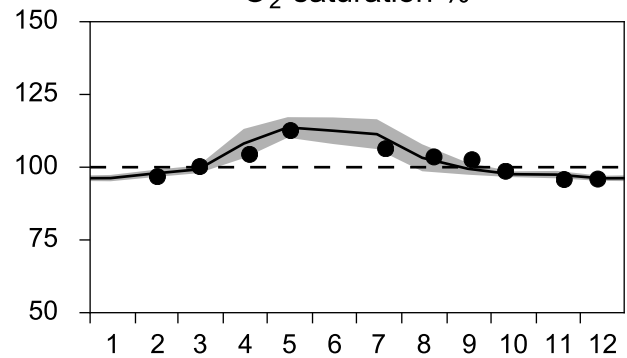
DIN µmol/l



SiO₃ µmol/l

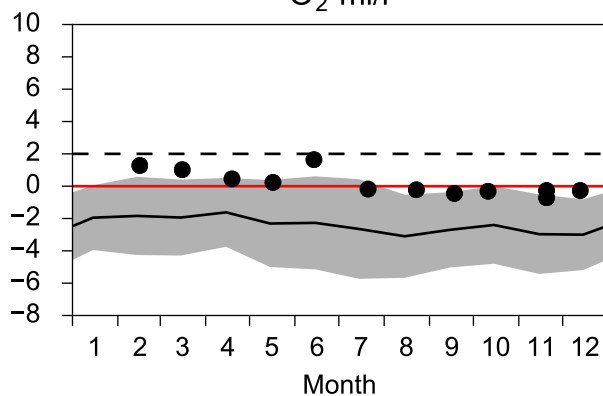


O₂ saturation %

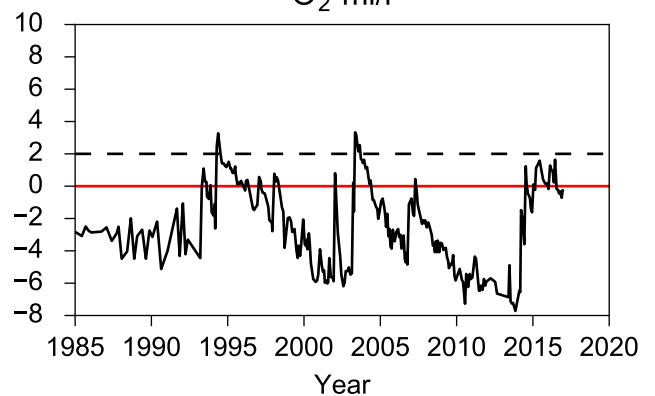


OXYGEN IN BOTTOM WATER (depth >= 225 m)

O₂ ml/l

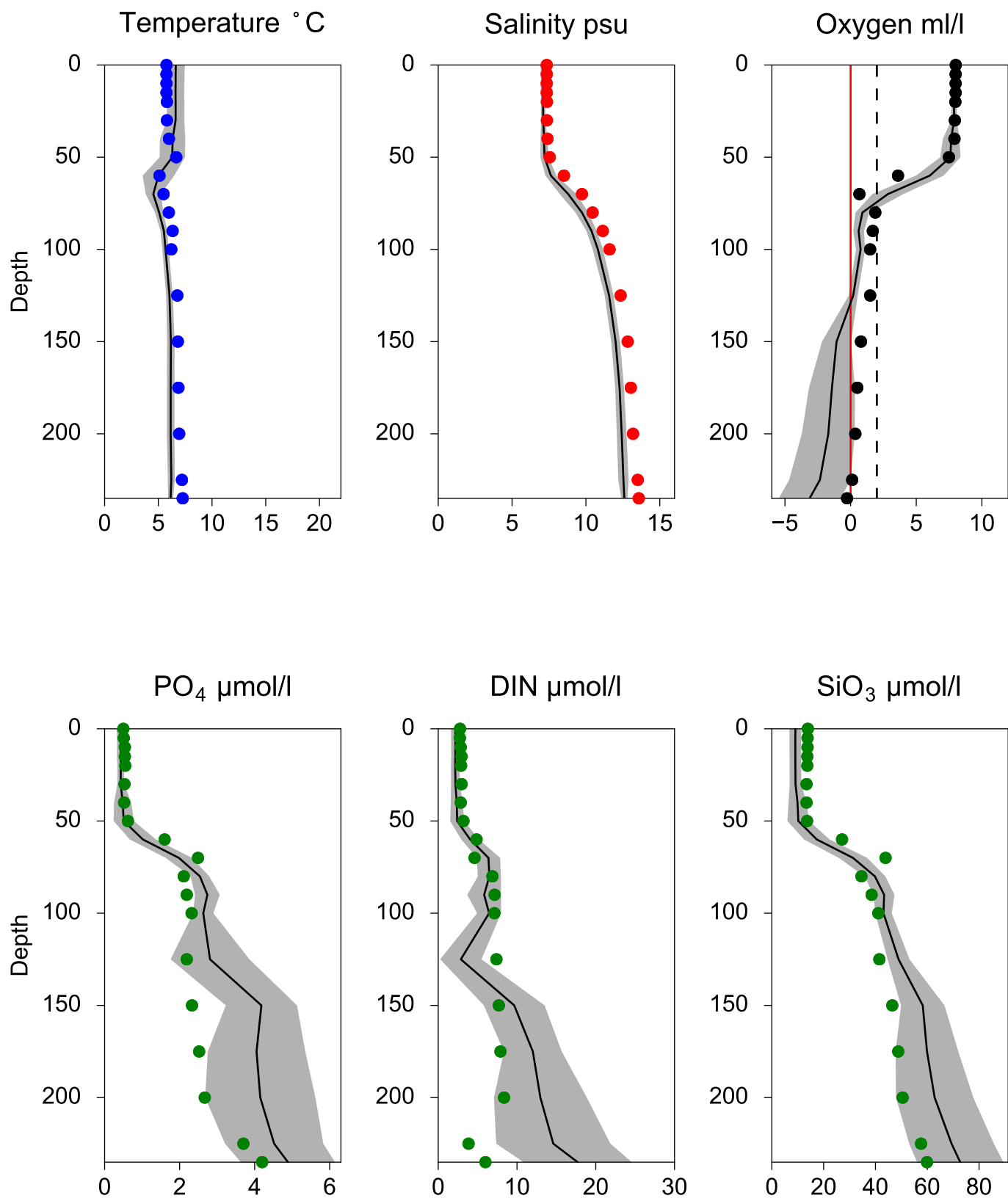


O₂ ml/l



Vertical profiles BY15 GOTLANDSDJ December

— Mean 2001-2015 ■ St.Dev. ● 2016-12-13



STATION BY15 GOTLANDSDJ SURFACE WATER (0-10m)

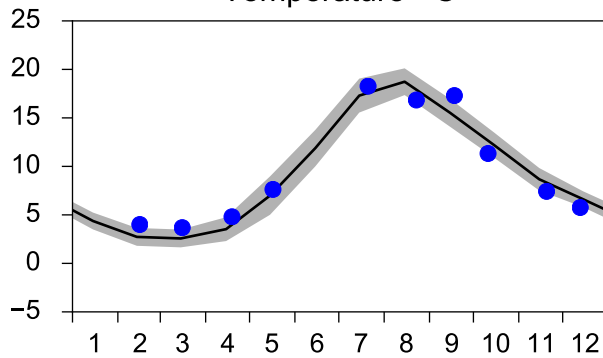
Annual Cycles

— Mean 2001-2015

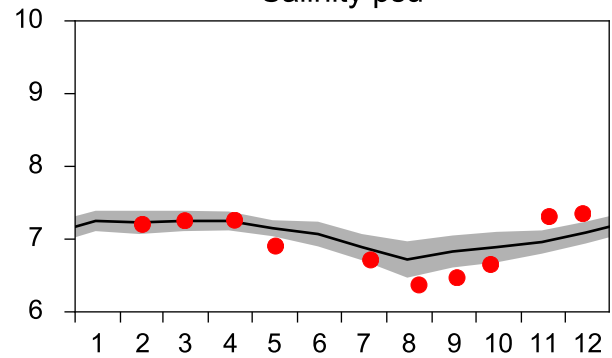
■ St.Dev.

● 2016

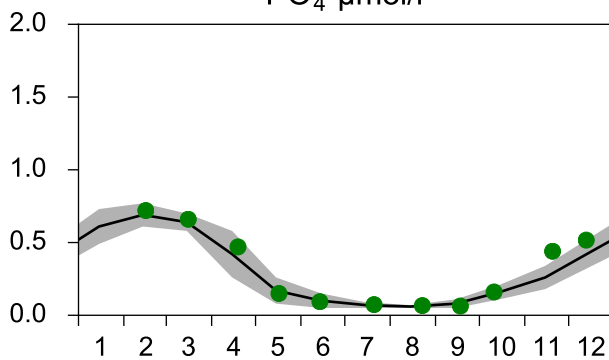
Temperature °C



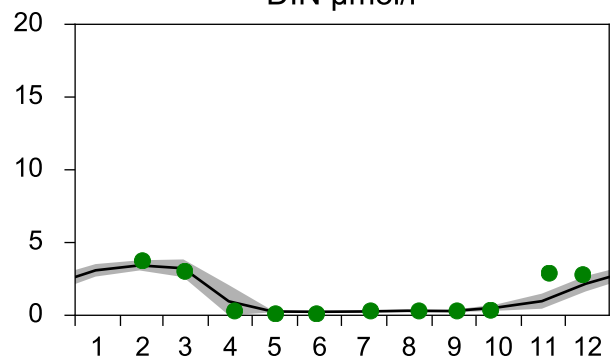
Salinity psu



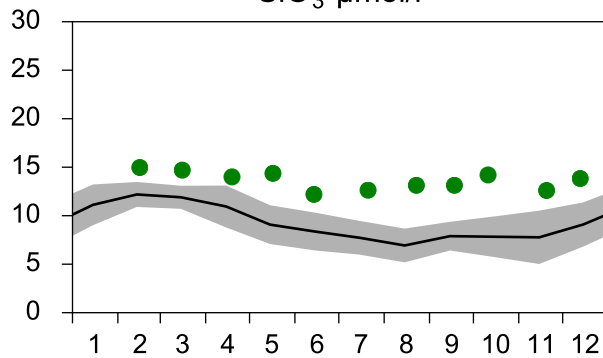
PO₄ µmol/l



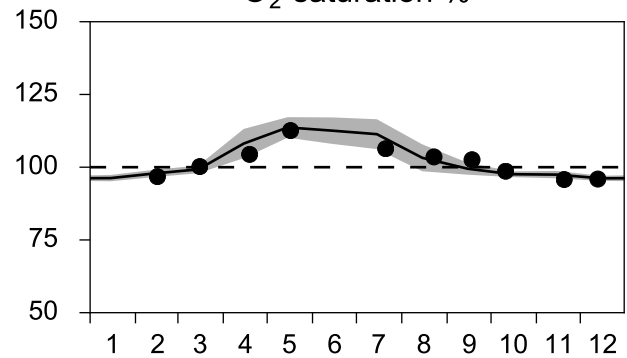
DIN µmol/l



SiO₃ µmol/l

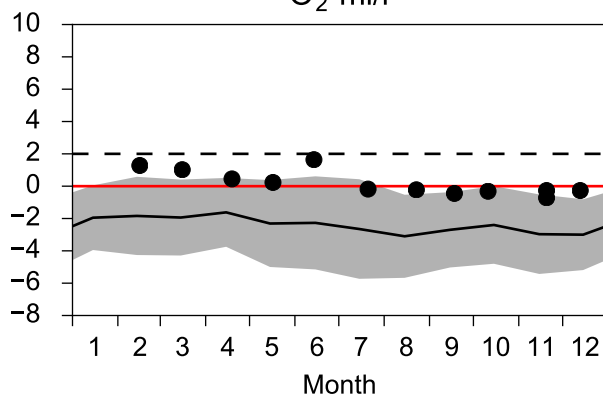


O₂ saturation %

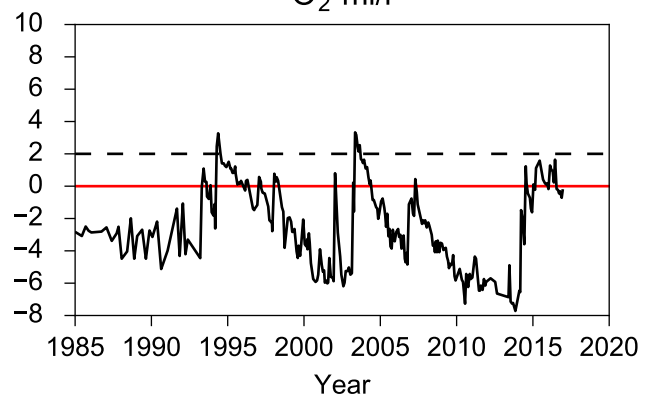


OXYGEN IN BOTTOM WATER (depth >= 225 m)

O₂ ml/l

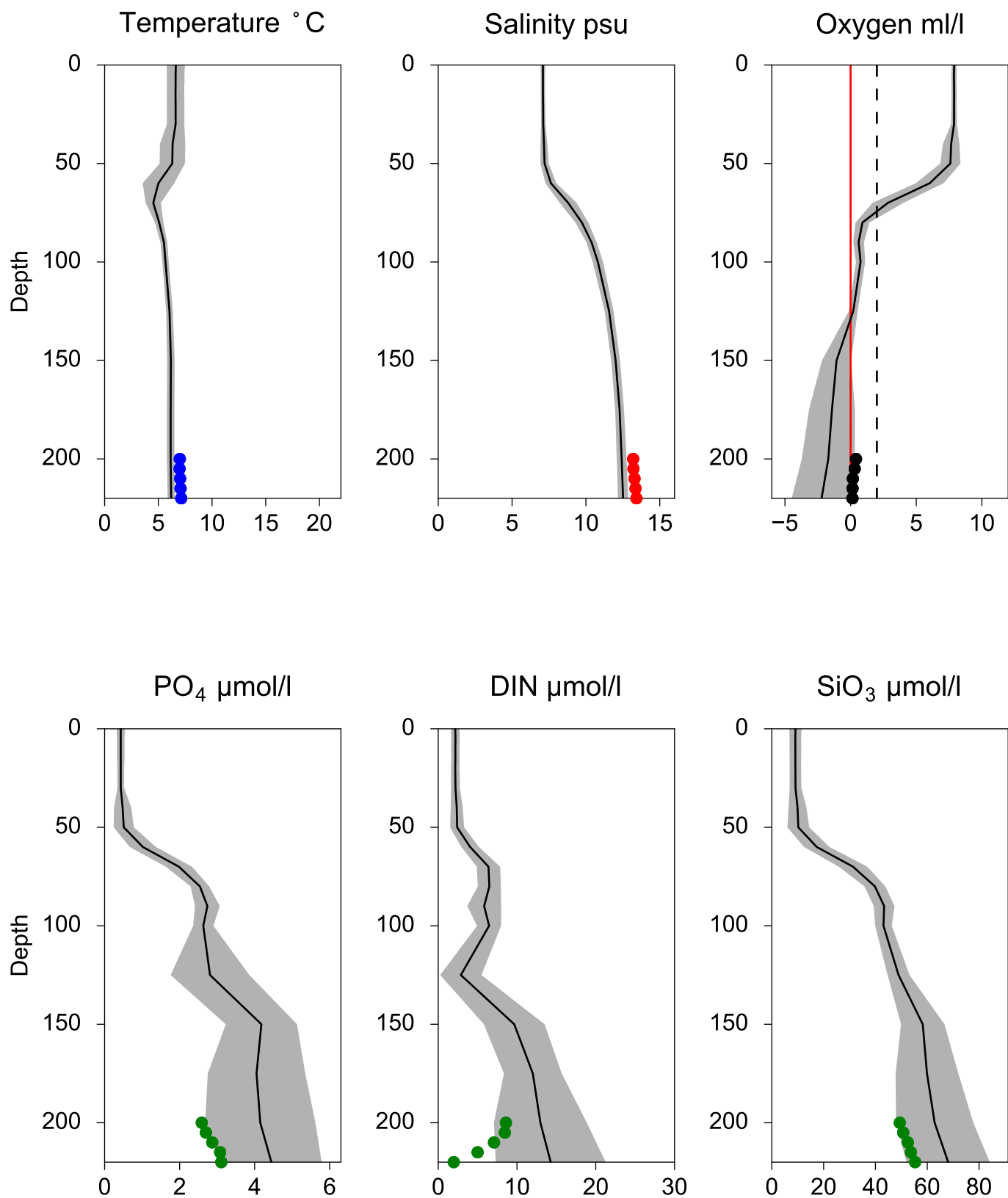


O₂ ml/l



Vertical profiles BY15 GOTLANDSDJ December

— Mean 2001-2015 ■ St.Dev. ● 2016-12-13



STATION BY20 FÅRÖDJ SURFACE WATER (0-10m)

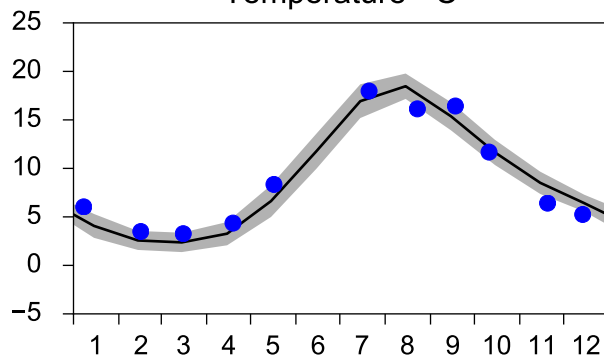
Annual Cycles

— Mean 2001-2015

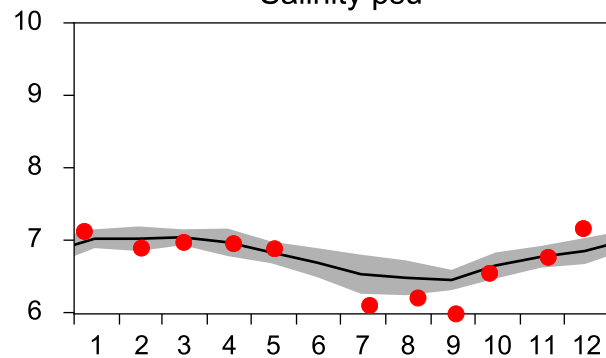
■ St.Dev.

● 2016

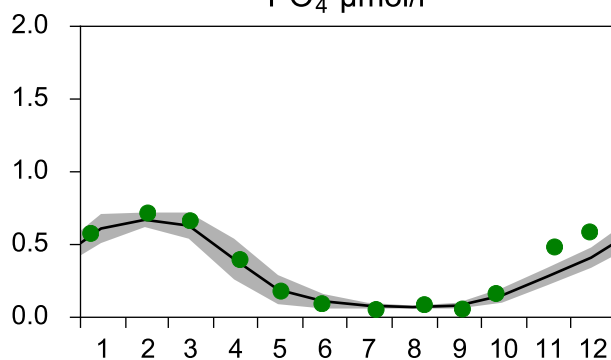
Temperature °C



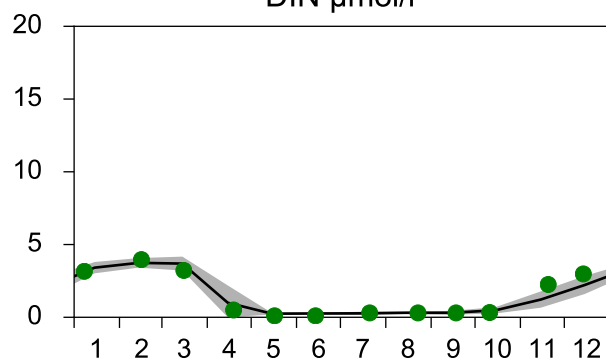
Salinity psu



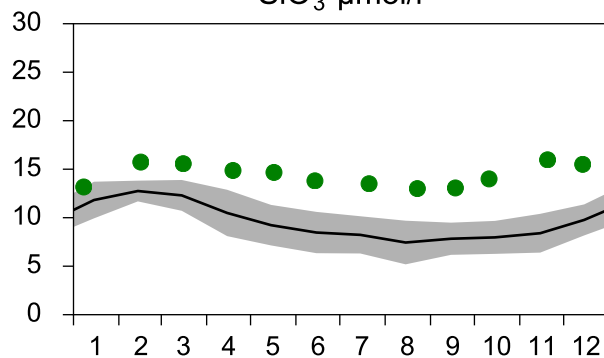
PO₄ µmol/l



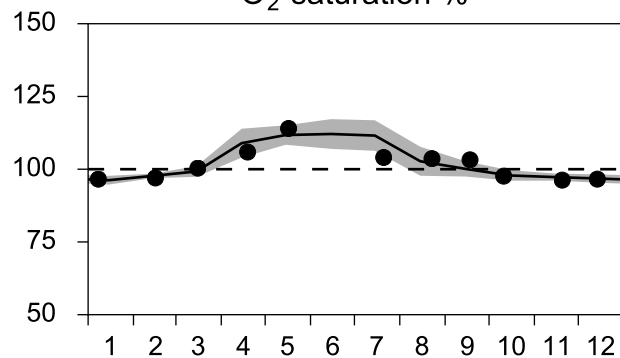
DIN µmol/l



SiO₃ µmol/l

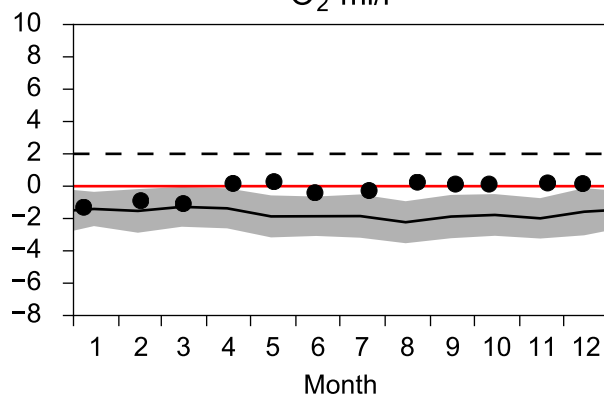


O₂ saturation %

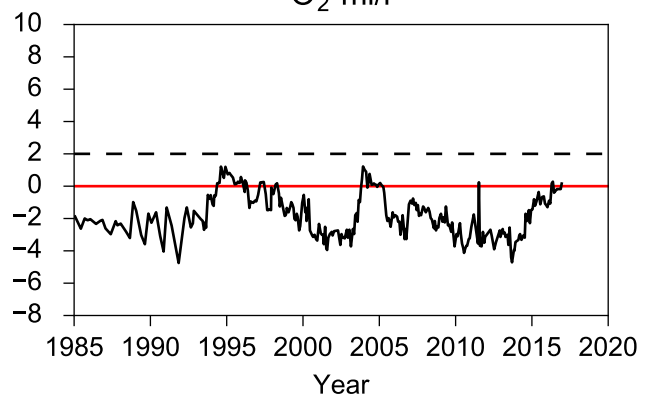


OXYGEN IN BOTTOM WATER (depth >= 175 m)

O₂ ml/l



O₂ ml/l



Vertical profiles BY20 FÅRÖDJ December

— Mean 2001-2015

■ St.Dev.

● 2016-12-14

