

## Rapport från SMHIs utsjöexpedition med M/V Aura



|                                   |                                                                                    |
|-----------------------------------|------------------------------------------------------------------------------------|
| <b>Expeditionens varaktighet:</b> | 2017-10-10 - 2017-10-16                                                            |
| <b>Uppdragsgivare:</b>            | Sveriges Meteorologiska och Hydrologiska Institut,<br>Havs- och Vattenmyndigheten. |
| <b>Samarbetspartner:</b>          | Finlands miljöcentral (SYKE) & VG-Shipping                                         |

### SAMMANFATTNING

Under expeditionen, som ingår i det svenska pelagiala övervakningsprogrammet, besöktes Skagerrak, Kattegatt, Öresund, Hanöbukten, Arkona- och Bornholmsbassängen.

Till följd av hårt väder och tekniska problem med en vinsch kunde inte Östra och Västra Gotlandsbassängen besökas. Totalt fick sex stationer strykas under expeditionen. I Öresund påträffades akut syrebrist (~2 ml/l) direkt under språngskiktet på 15 meter djup ner till botten vilket är ovanligt. Akut syrebrist påträffades också Bornholmsbassängen och i Hanöbukten från 65 meters djup och syrgashalter nära noll från 75-80 meters djup. I Arkonabassängen var åter hela vattenkolumnen väl syresatt.

Närsalterna oorganiskt kväve och fosfat var generellt förbrukade i ytvattnet vilket är normalt för säsongen. Silikatkoncentrationerna i södra Egentliga Östersjön var fortsatt mycket högre än normalt.

Nästa ordinarie expedition planeras starta i mitten av november.

## RESULTAT

Oktoberexpeditionen genomfördes ombord på det finska fartyget Aura och startade i Göteborg den 10:e oktober och avslutades i samma hamn den 16:e. Vindarna i Skagerrak var under expeditionen friska och ökade ytterligare i Kattegatt. Till följd av det hårda vädret samt tekniska problem med en provtagningsvinsch gjordes ett hamnbesök i Helsingborg. Då vinschreperatören inte kunde komma direkt och vädret var lugnare fortsatte expeditionen. Till följd av uppehållet kunde inte provtagningsstationerna i Östra och Västra Gotlandsbassängen provtas. Totalt sex stationer kunde inte besöktas under denna expedition.

Under expeditionen gjordes extra håvdrag för övervakning av maneter vid Anholt och Släggö. Undersökningarna genomförs för att utvärdera en ny metod för övervakning av maneter.

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

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

### Skagerrak

Ytvattentemperaturen i Skagerrak var generellt något över det normala för årstiden och varierade mellan 12,4-14,7 °C. Salthalten i ytan var fortsatt högre än normalt och varierade mellan 28 och 35. Haloklinen i yttre Skagerrak var svagt utvecklad men närmare kusten mer framträdande mellan 5 till 20 meters djup. I de yttre områdena återfanns termoklinen djupt på 70-80 meters djup medan närmare kusten hade avkylningen av ytvattnet startat och skiktningen återfanns nära ytan mellan 5 och 20 meters djup.

Koncentrationer av närsalter i ytvattnet hade generellt ökat något sedan förra expeditionen i september. Halterna av oorganiskt kväve (summan av nitrat+nitrit+ammonium,) varierade mellan 0,1 och 0,67  $\mu\text{mol/l}$  vilket är normalt för årstiden medan höga halter, 2,3  $\mu\text{mol/l}$  noterades vid den kustnära stationen Släggö i Gullmarsfjordens mynning. Fosfatkoncentrationerna varierade mellan 0,09 och 0,34  $\mu\text{mol/l}$ , längre än normalt i yttre Skagerrak medan halterna var över det normala närmare kusten. Silikatkoncentrationerna låg mellan 0,8 och 3,2  $\mu\text{mol/l}$  och uppvisade ett liknande rumslig variation som fosfat.

Syrgashalten i hela vattenkolumnen var normal vid samtliga besökta stationer. Förutom vid Släggö där syrgashalten var mycket högre än normalt i djupvattnet.

Generellt visade fluorescensmätaren på CTDn viss planktonaktivitet från ytan ner till 20 meters djup, men inga fluorescensmaxima noterades.

## **Kattegatt och Öresund**

Temperaturen i ytvattnet var normal för årstiden och varierade mellan 12,8-13,4°C, högst i de norra delarna av Kattegatt och lägst i Öresund. Salthalten var mycket över det normala vid Fladen, 29, samt i Öresund, 21. Vid övriga stationer varierade salthalten mellan 20-23. Skiktningen återfanns på 15-20 meters djup.

Samtliga närsalter i ytvattnet uppvisade normala halter för årstiden med undantag av fosfat i Öresund samt silikat vid Fladen där halterna var mycket under det normala. Fosfathalten i Kattegatts ytvatten varierade mellan 0,15-0,21  $\mu\text{mol}$  och silikathalten mellan 0,7-3,9  $\mu\text{mol/l}$ . Halten av löst oorganiskt kväve låg under detektionsgränsen i hela området.

Syrgashalter i Kattegatts djupvatten var normal för årstiden förutom i Öresund där akut syrebrist (~2 ml/l) noterades redan under språngskiktet på 15 meter djup ner till botten.

Generellt visade fluorescensmätaren på CTDn viss planktonaktivitet från ytan ner till språngskiktet.

## **Hanöbukten, Arkona- och Bornholmsbassängen**

Till följd av hårt väder och en trasig vinsch besöktes inte Östra och Västra Gotlandsbassängen under denna expedition. Dock pågår en svensk fiskeriexpedition med R/V Dana i dessa områden med deltagare från SMHI under denna och kommande vecka. Fyra av de stationer som inte kunde besökas på denna expedition kommer kunna provtas av Dana.

Ytemperaturen i det undersökta området var normal för årstiden och varierade mellan 11,4 och 12,4°C. Salthalten i ytvattnet var också normal och låg mellan 6,9 och 8,0, lägst närmast kusten och högst i de västra delarna. En tydlig termoklin återfanns på 30-40 meters djup och haloklinen fanns djupare på 60-70 meters djup.

Närsalterna i ytvattnet uppvisade normala halter för årstiden förutom för silikat som fortsatt uppvisade mycket högre halter än normalt. Det lösta oorganiska kvävet var helt förbrukat i ytvattnet. Fosfathalterna i ytvattnet låg mellan 0,33 och 0,43  $\mu\text{mol/l}$ . Ytkoncentrationen av kisel varierade omkring 15  $\mu\text{mol/l}$ .

Akut syrebrist noterades i Bornholmsbassängen från djup överstigande 65 meter och syrehalter nära noll påträffades i samma bassäng från 75-80 meters djup. I Arkonabassängen hade syresituationen förbättrats och ingen syrebrist noterades i djupvattnet.

Fluorescensmätningarna från CTDn visade på låg växtplanktonaktivitet i det över vattenlagret.

## DELTAGARE

### Namn

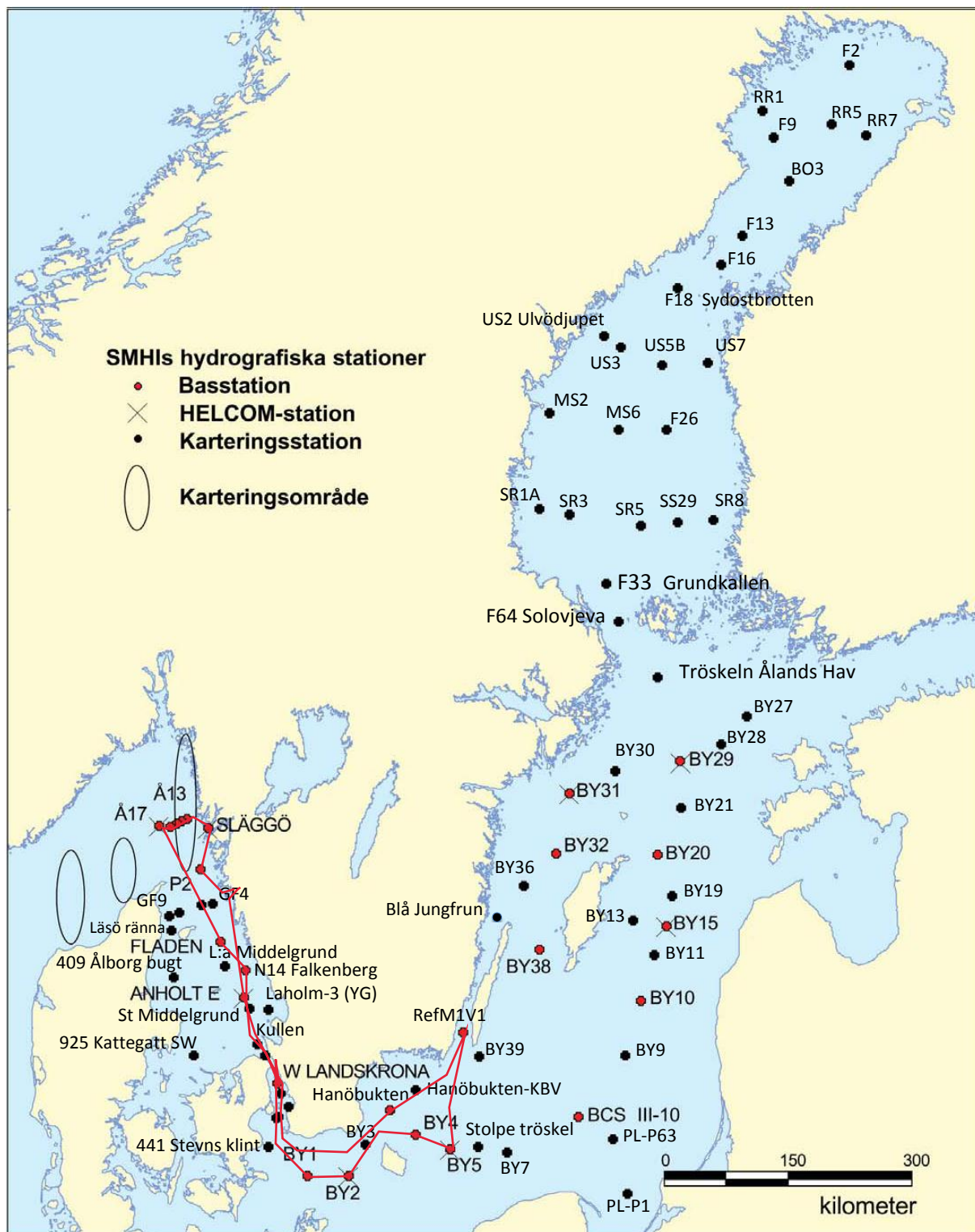
Martin Hansson                      Expeditionsledare  
Johanna Linders  
Karin Wesslander  
Lena Viktorsson  
Johan Kronsell  
Kristin Andreasson

### Från

SMHI  
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## BILAGOR

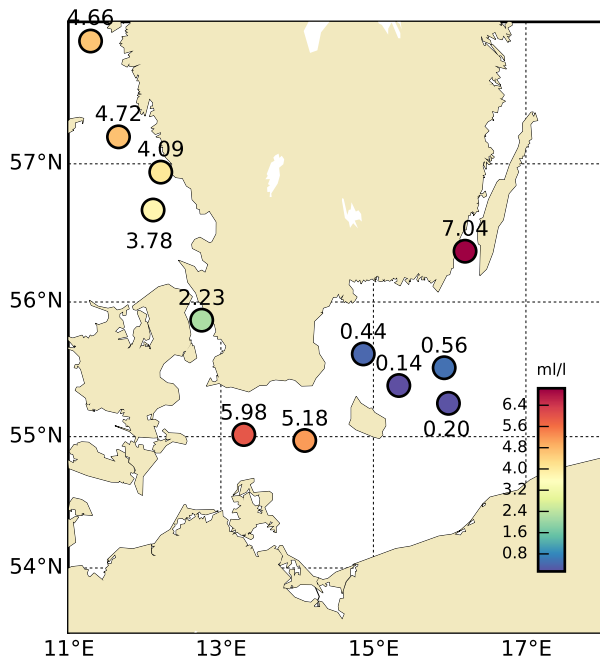
- Färdkarta
- Tabell över stationer, analyserade parametrar och antal provtagningsdjup
- Karta över syrehalter i bottenvattnet
- Vertikalprofiler för basstationer
- Figurer över månadsmedelvärden



Date: 2017-10-16  
Time: 08:19

Ship: 07  
Year: 2017

| Ser no | Cru no | Stat code | Proj | Stat name | Lat | Lon | Start date<br>yyyymmdd | Start time<br>hhmm | Bottom depth<br>m | Secchi depth<br>m | Wind dir vel | Air temp<br>C | Air pres<br>hPa | WCWI elac | CZPP hohp | No de | No btl | T e | T e | S a | P h | D o | D o | H 2 | P h | P t | P t | N t | N t | N t | N t | A z | N t | A z | S y | H 3 | C u | C n |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 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r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r | r r |



# STATION P2 SURFACE WATER (0-10 m)

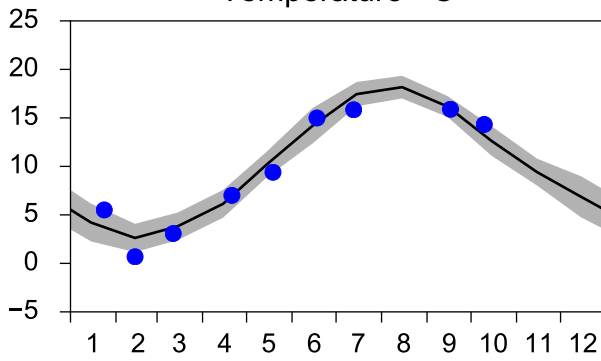
Annual Cycles

— Mean 2001-2015

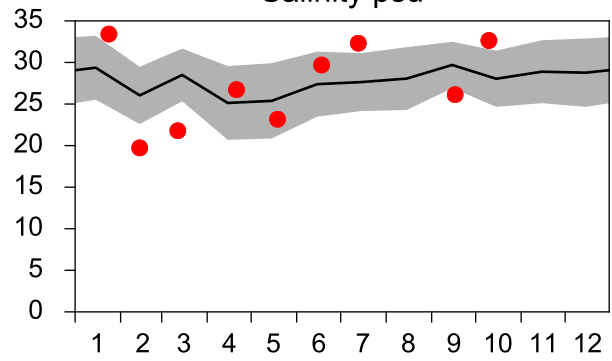
■ St.Dev.

● 2017

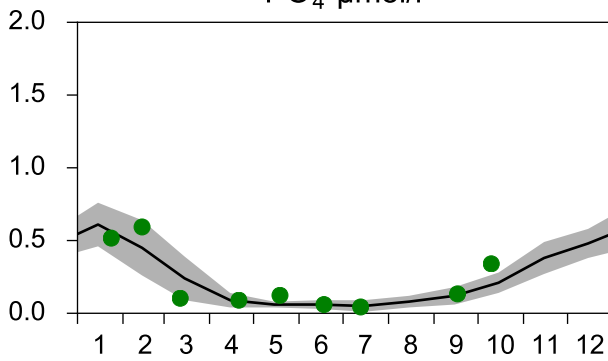
Temperature °C



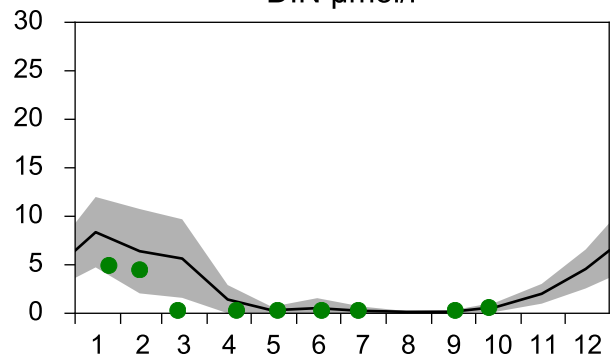
Salinity psu



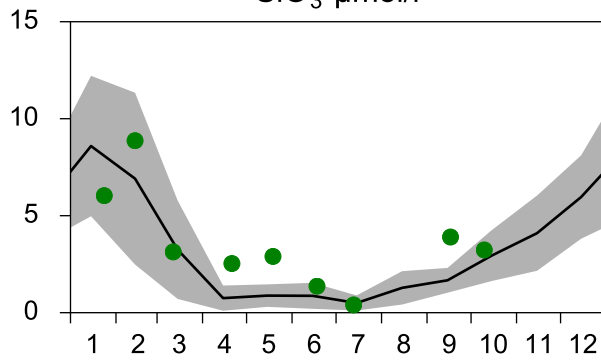
PO<sub>4</sub> μmol/l



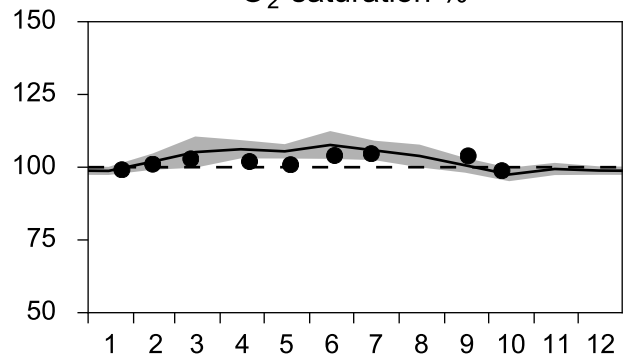
DIN μmol/l



SiO<sub>3</sub> μmol/l

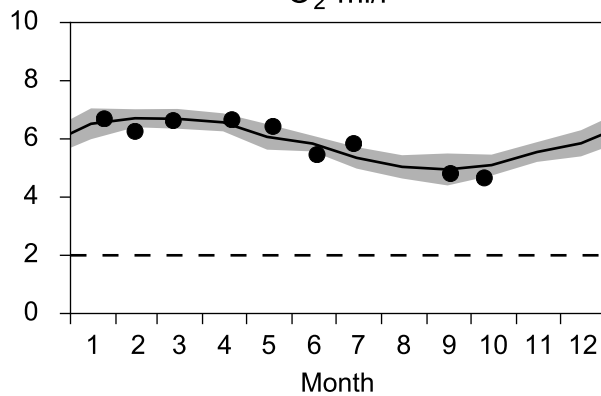


O<sub>2</sub> saturation %

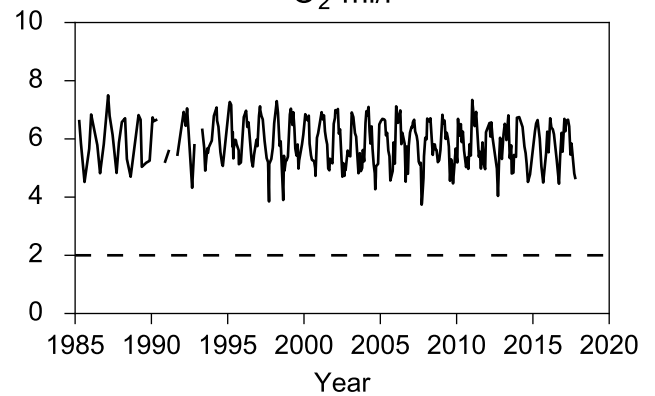


## OXYGEN IN BOTTOM WATER (depth >= 75 m)

O<sub>2</sub> ml/l

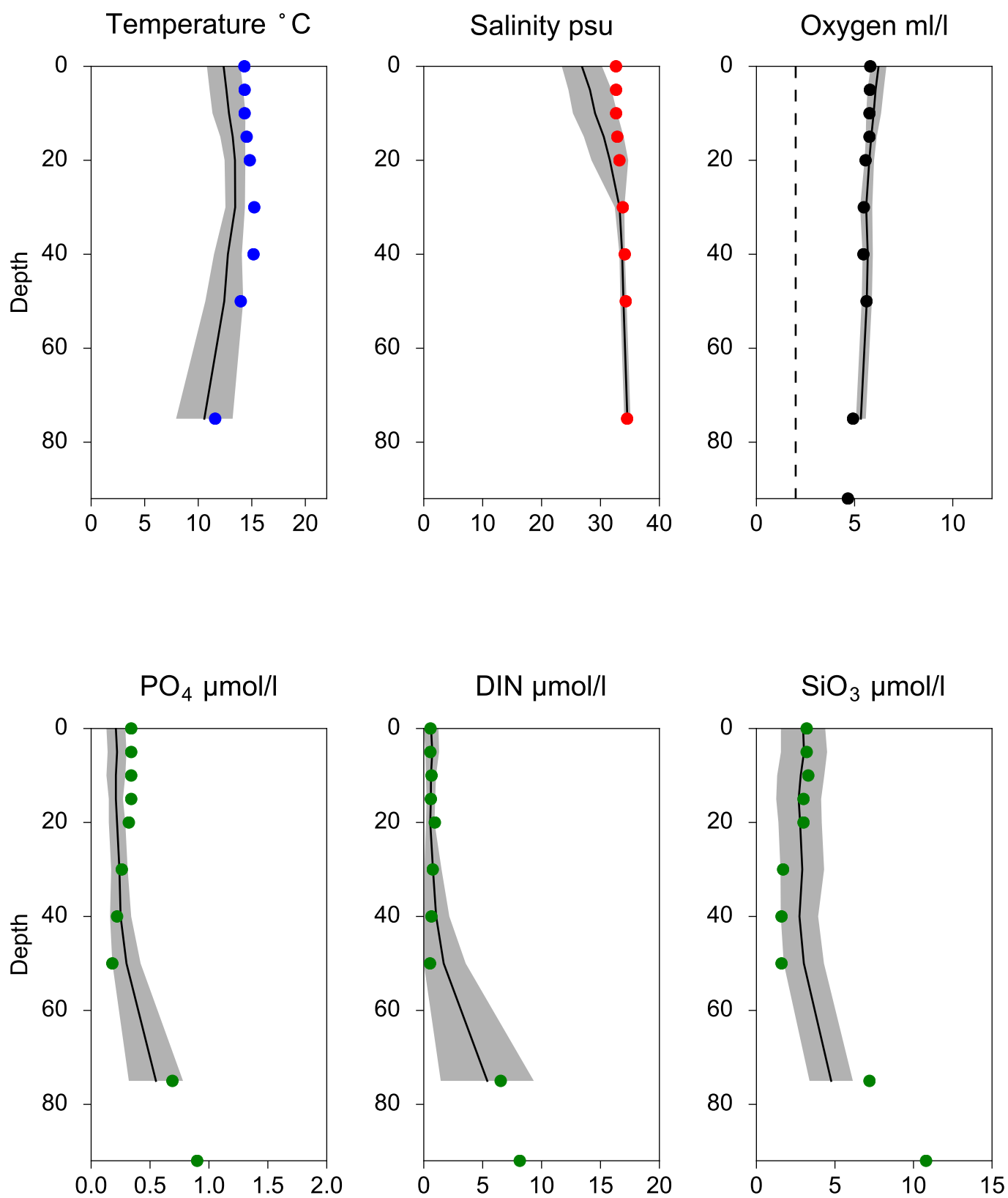


O<sub>2</sub> ml/l



## Vertical profiles P2 October

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# STATION SLÄGGÖ SURFACE WATER (0-10 m)

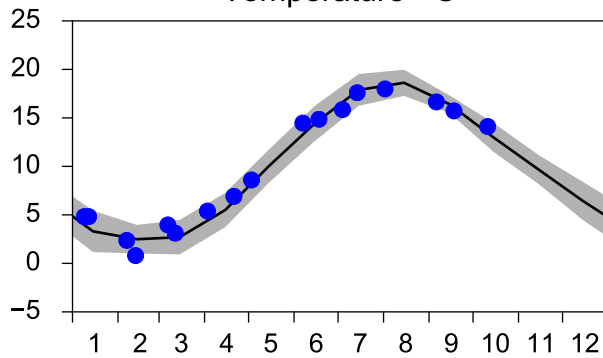
Annual Cycles

— Mean 2001-2015

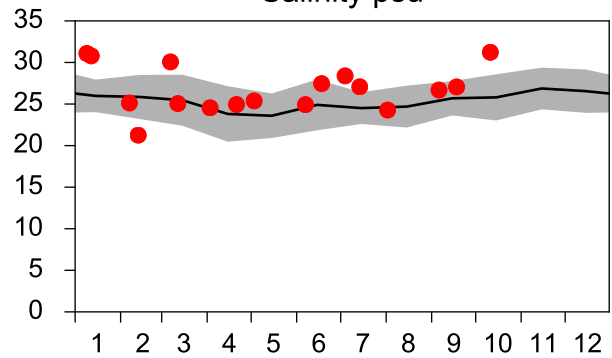
■ St.Dev.

● 2017

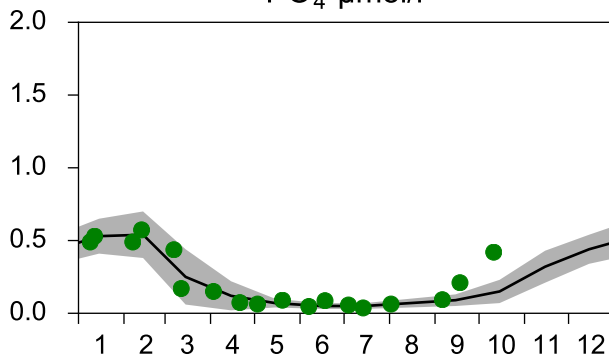
Temperature °C



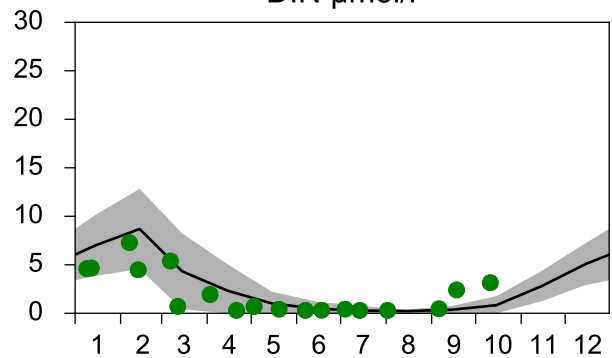
Salinity psu



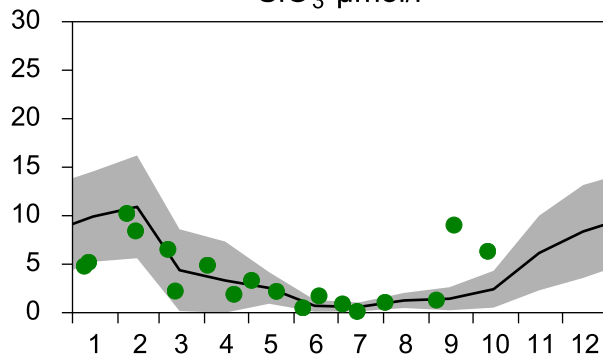
PO<sub>4</sub> µmol/l



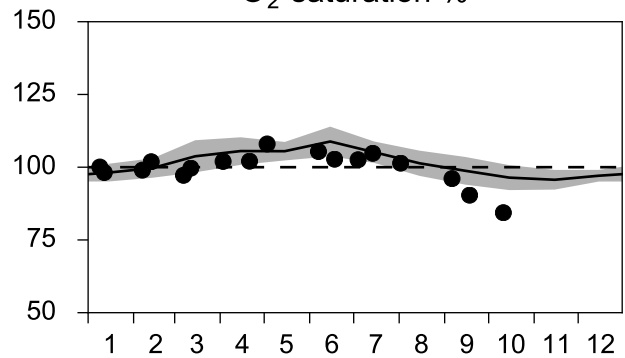
DIN µmol/l



SiO<sub>3</sub> µmol/l

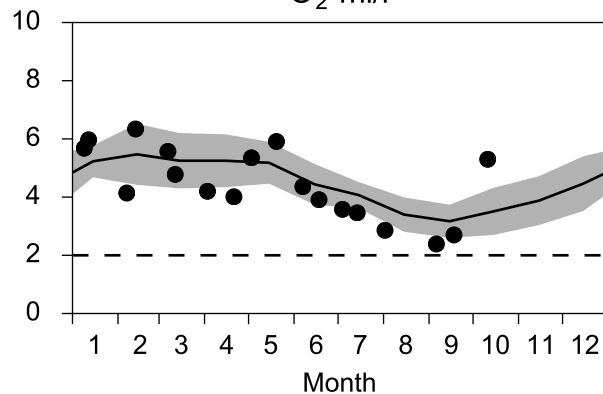


O<sub>2</sub> saturation %

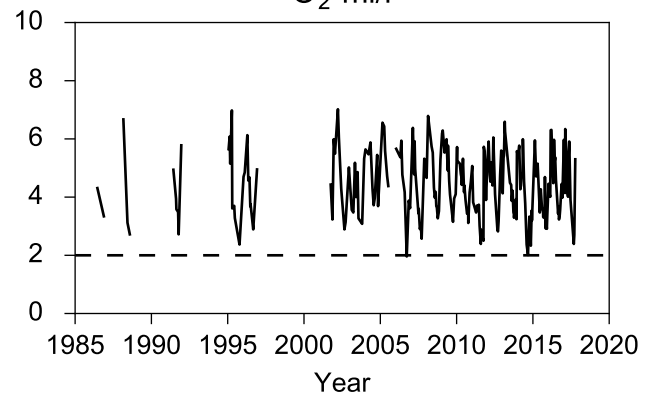


## OXYGEN IN BOTTOM WATER (depth >= 64 m)

O<sub>2</sub> ml/l



O<sub>2</sub> ml/l

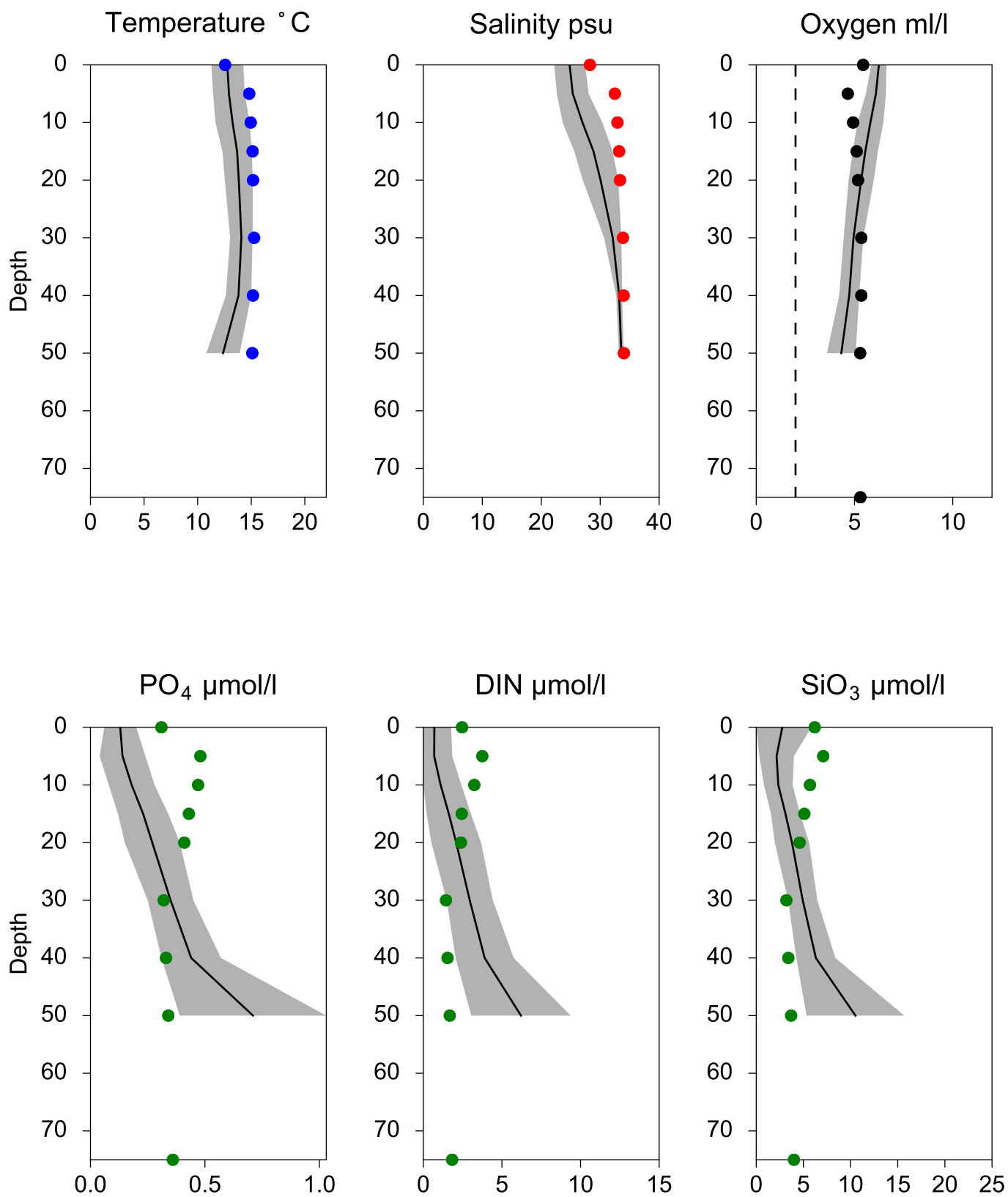


# Vertical profiles SLÄGGÖ October

— Mean 2001-2015

■ St.Dev.

● 2017-10-11



# STATION Å13 SURFACE WATER (0-10 m)

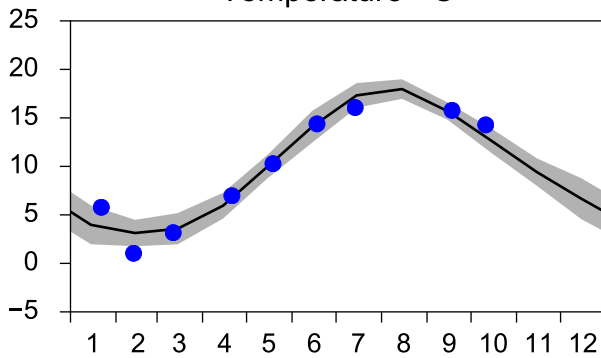
Annual Cycles

— Mean 2001-2015

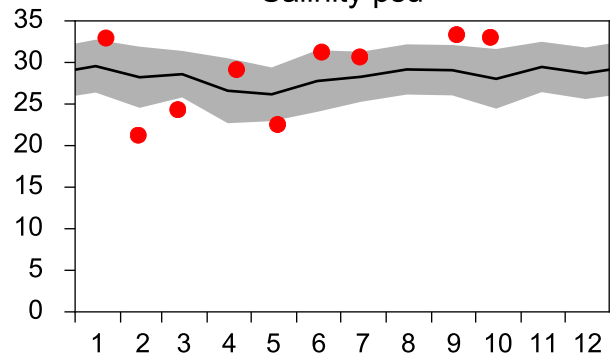
■ St.Dev.

● 2017

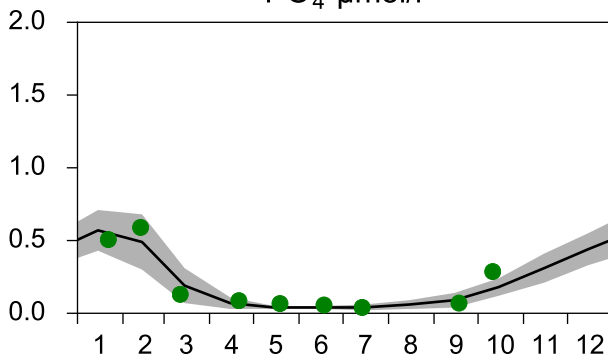
Temperature °C



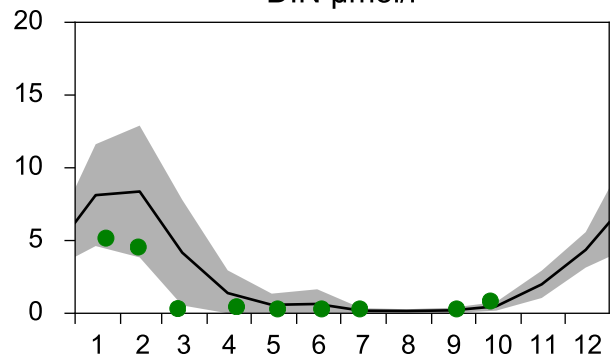
Salinity psu



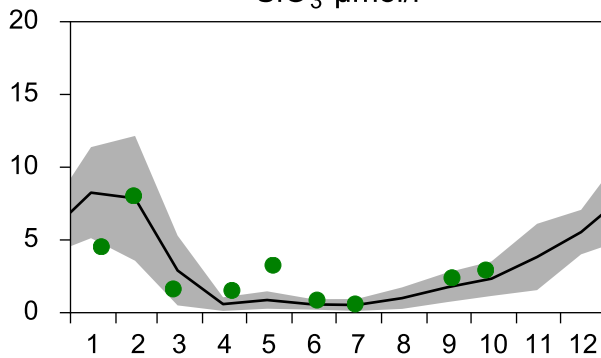
PO<sub>4</sub> µmol/l



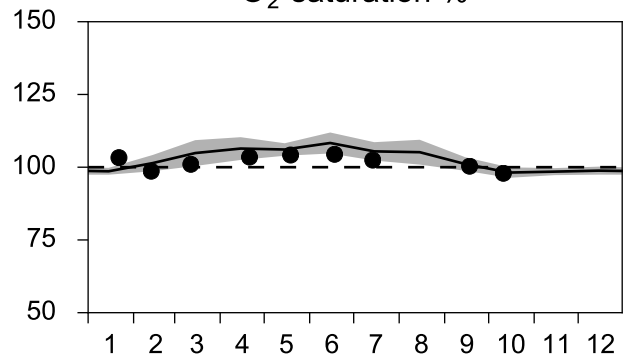
DIN µmol/l



SiO<sub>3</sub> µmol/l

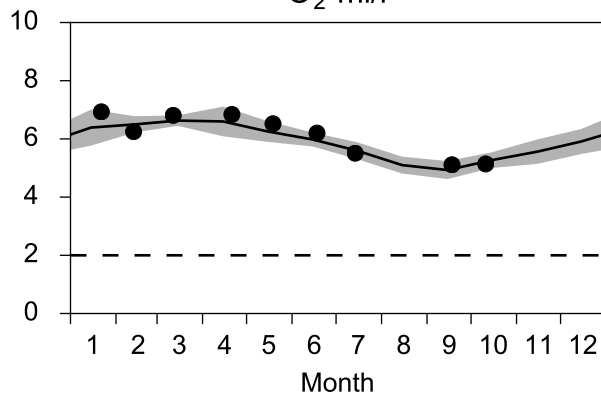


O<sub>2</sub> saturation %

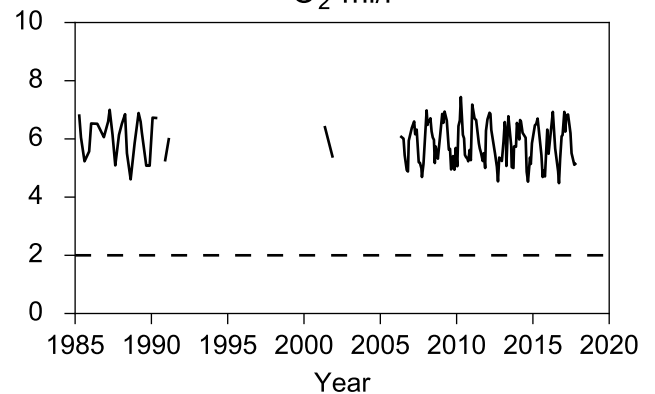


## OXYGEN IN BOTTOM WATER (depth >= 80 m)

O<sub>2</sub> ml/l

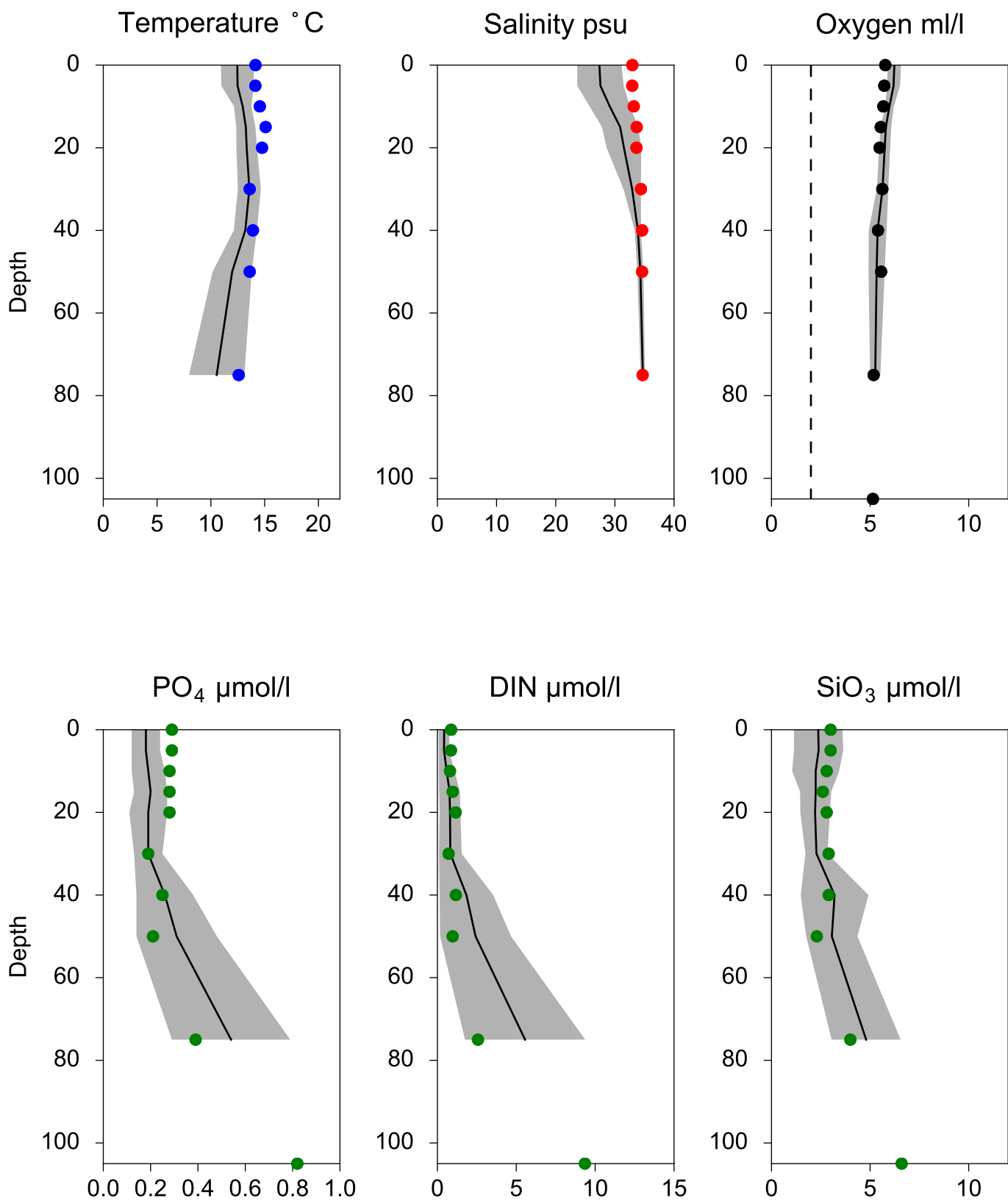


O<sub>2</sub> ml/l



# Vertical profiles Å13 October

— Mean 2001-2015    St.Dev.    • 2017-10-11



# STATION Å15 SURFACE WATER (0-10 m)

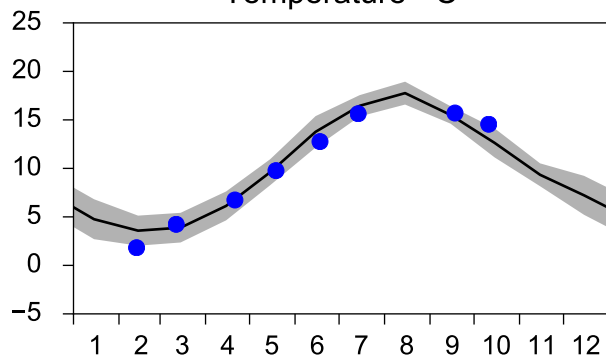
Annual Cycles

— Mean 2001-2015

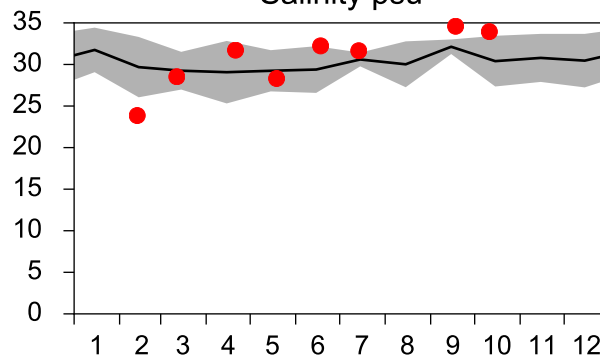
■ St.Dev.

● 2017

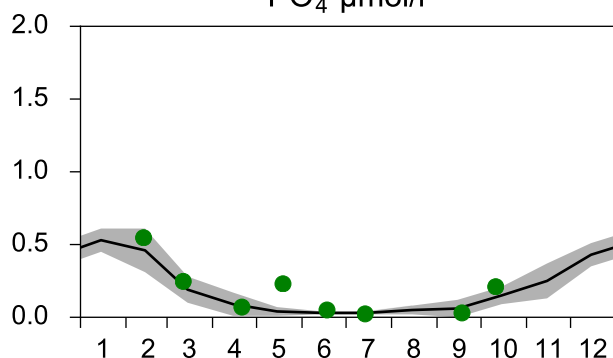
Temperature °C



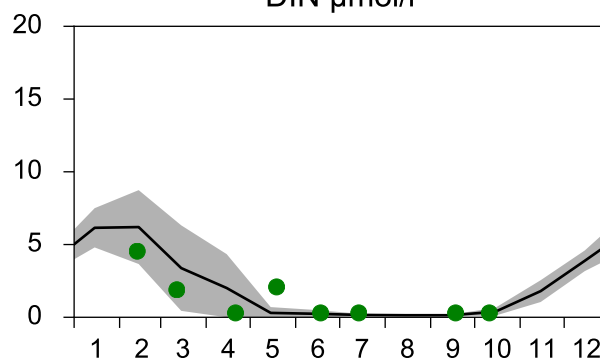
Salinity psu



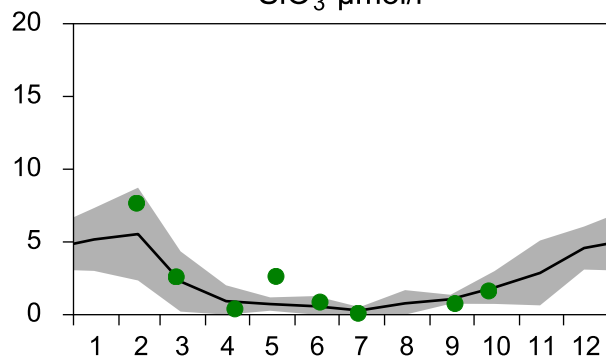
PO<sub>4</sub> μmol/l



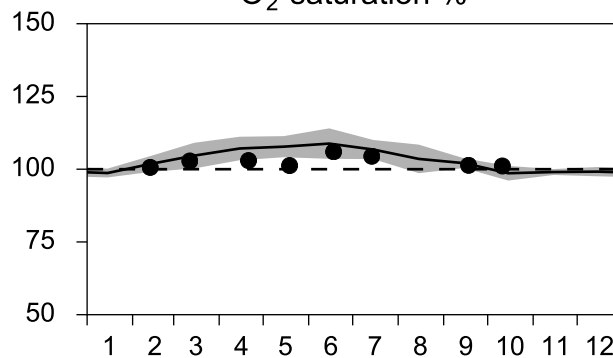
DIN μmol/l



SiO<sub>3</sub> μmol/l

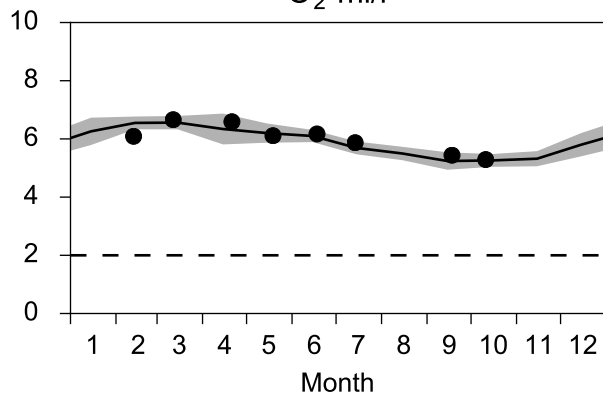


O<sub>2</sub> saturation %

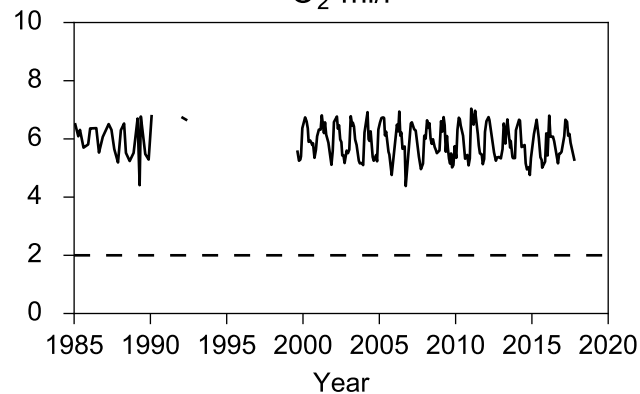


## OXYGEN IN BOTTOM WATER (depth >= 125 m)

O<sub>2</sub> ml/l

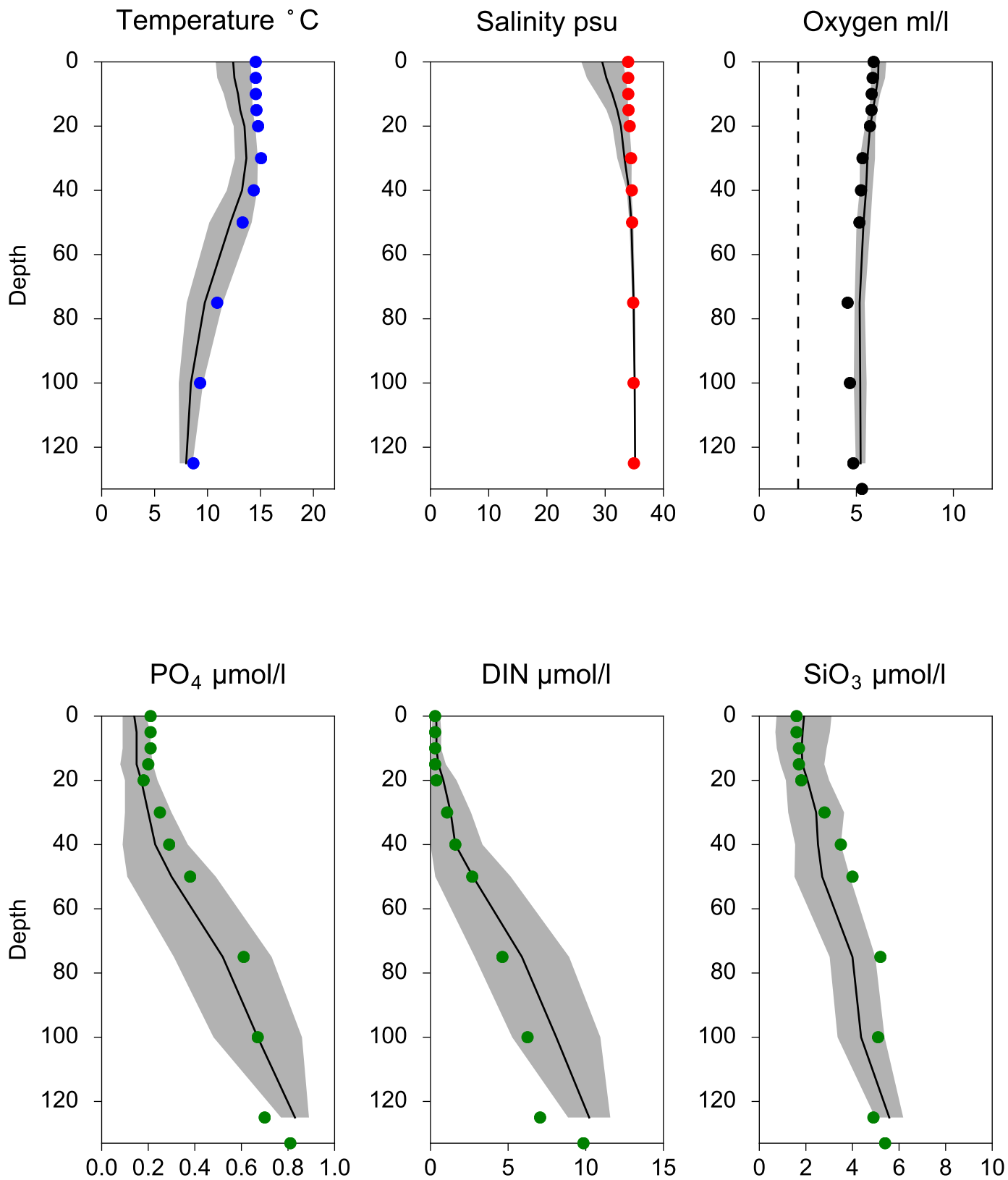


O<sub>2</sub> ml/l



# Vertical profiles Å15 October

— Mean 2001-2015    ■ St.Dev.    ● 2017-10-11



# STATION Å17 SURFACE WATER (0-10 m)

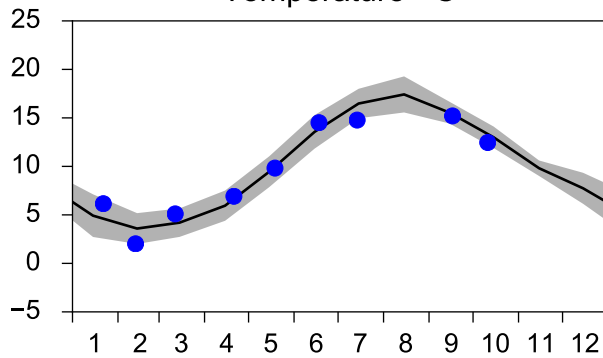
Annual Cycles

— Mean 2001-2015

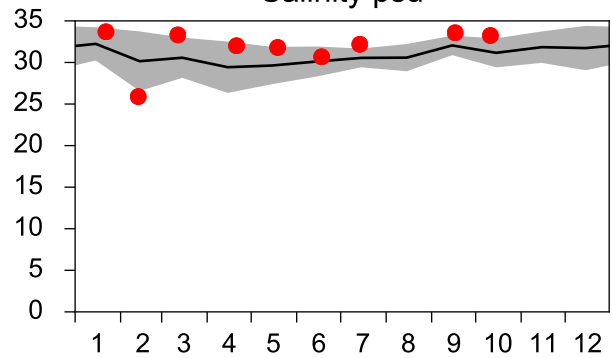
■ St.Dev.

● 2017

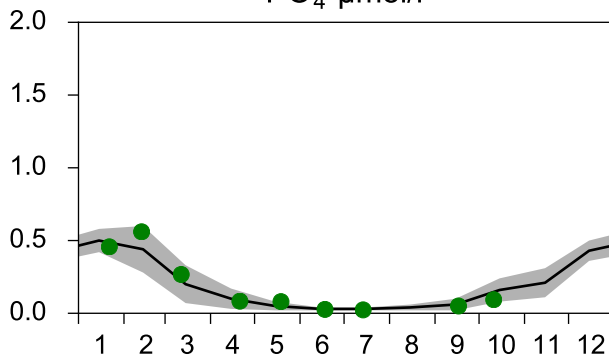
Temperature °C



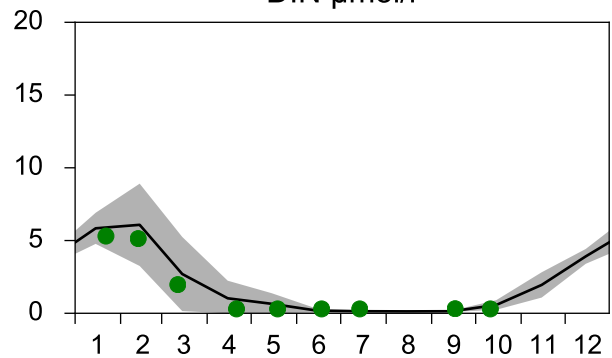
Salinity psu



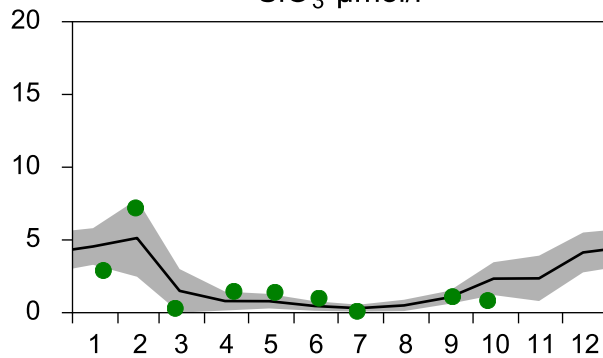
PO<sub>4</sub> µmol/l



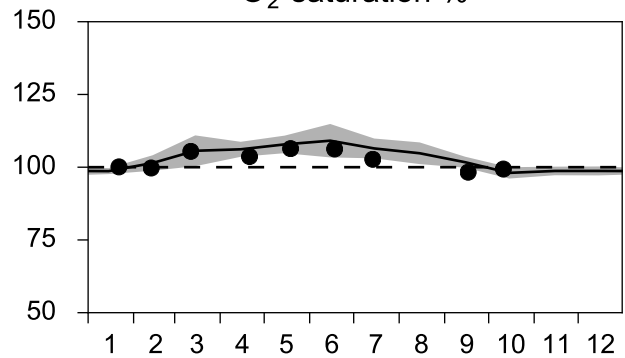
DIN µmol/l



SiO<sub>3</sub> µmol/l

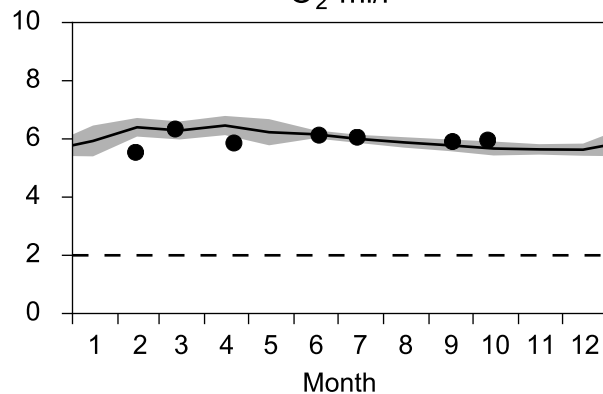


O<sub>2</sub> saturation %

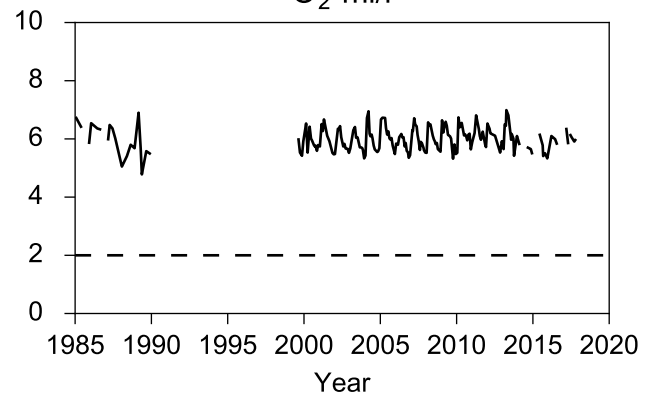


## OXYGEN IN BOTTOM WATER (depth >= 300 m)

O<sub>2</sub> ml/l

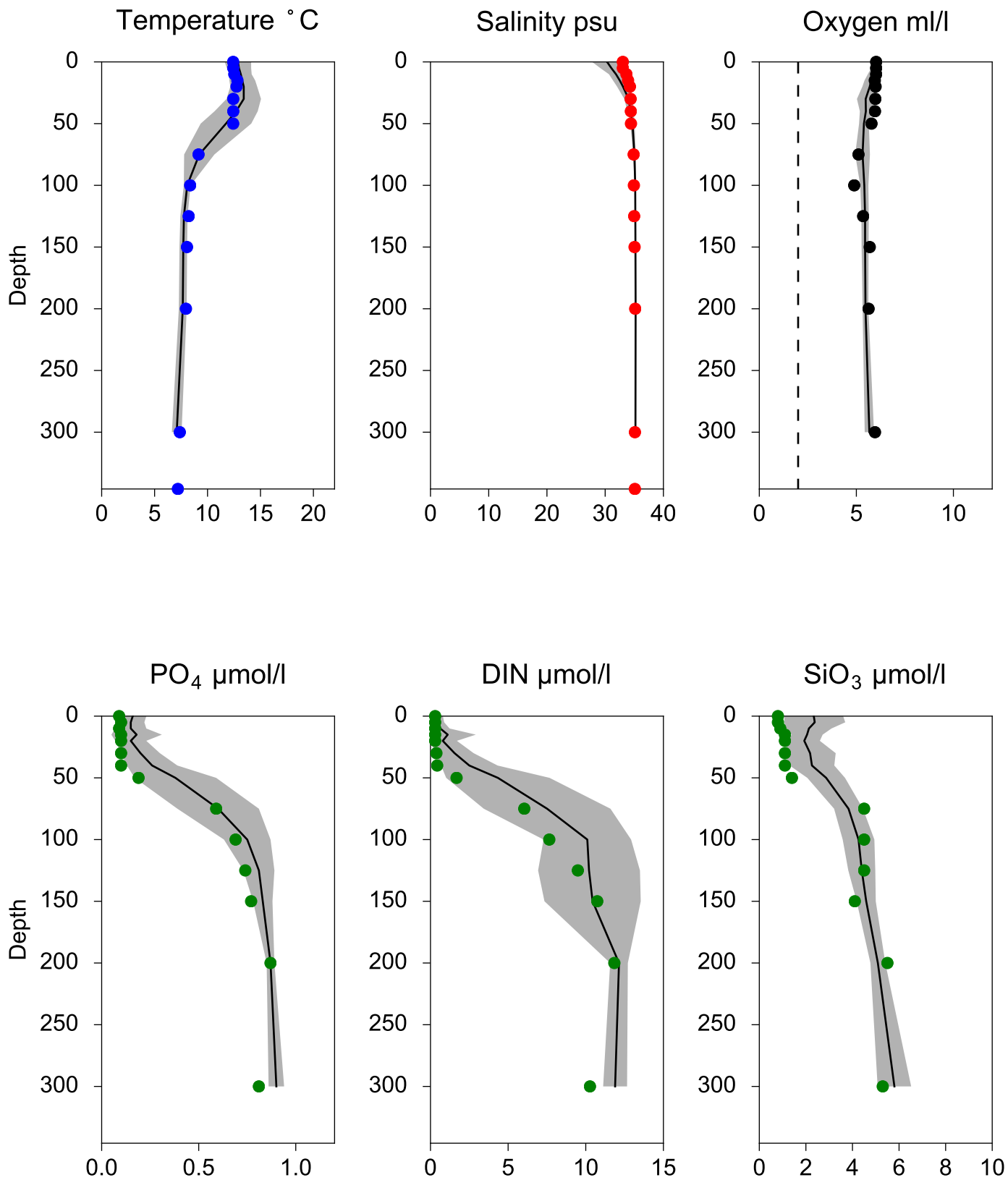


O<sub>2</sub> ml/l



# Vertical profiles Å17 October

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# STATION FLADEN SURFACE WATER (0-10 m)

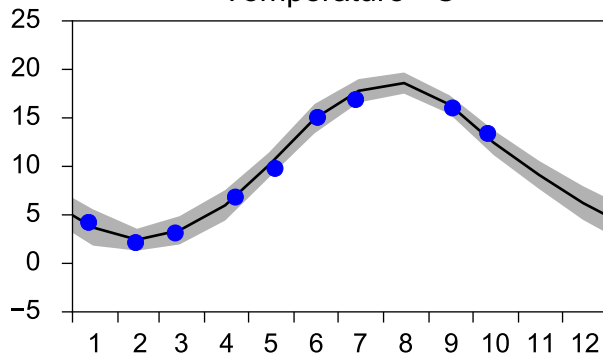
Annual Cycles

— Mean 2001-2015

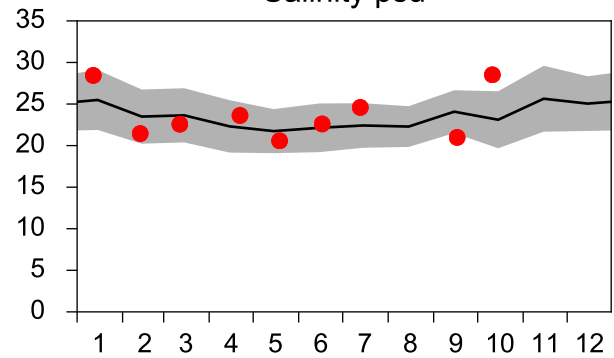
■ St.Dev.

● 2017

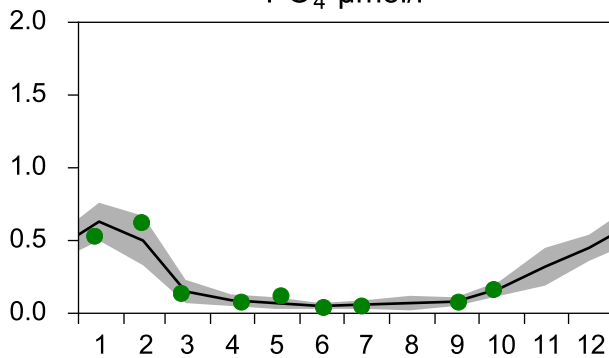
Temperature °C



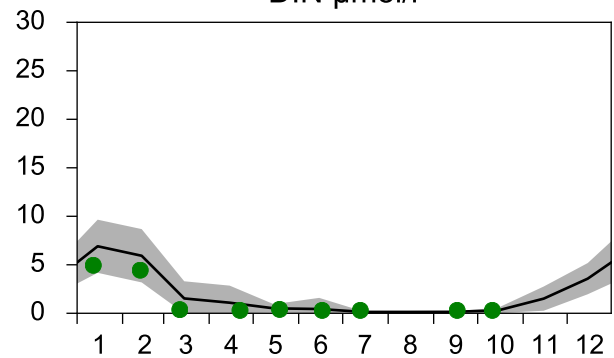
Salinity psu



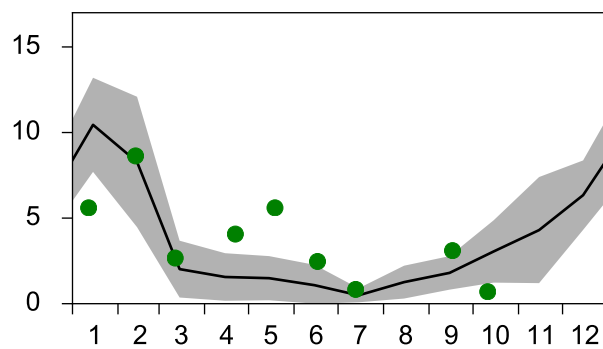
PO<sub>4</sub> µmol/l



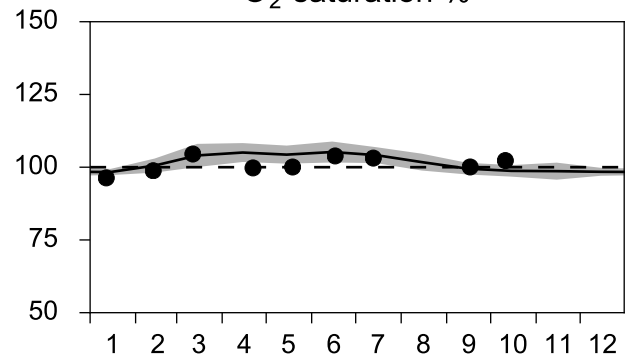
DIN µmol/l



SiO<sub>3</sub> µmol/l

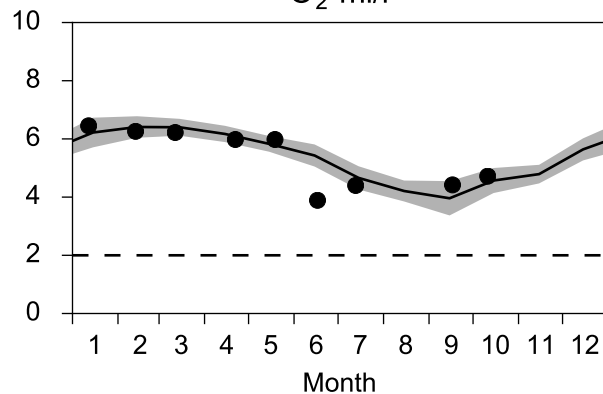


O<sub>2</sub> saturation %

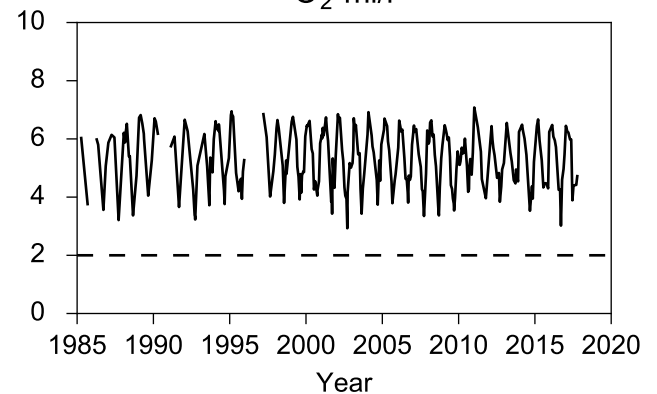


## OXYGEN IN BOTTOM WATER (depth >= 74 m)

O<sub>2</sub> ml/l

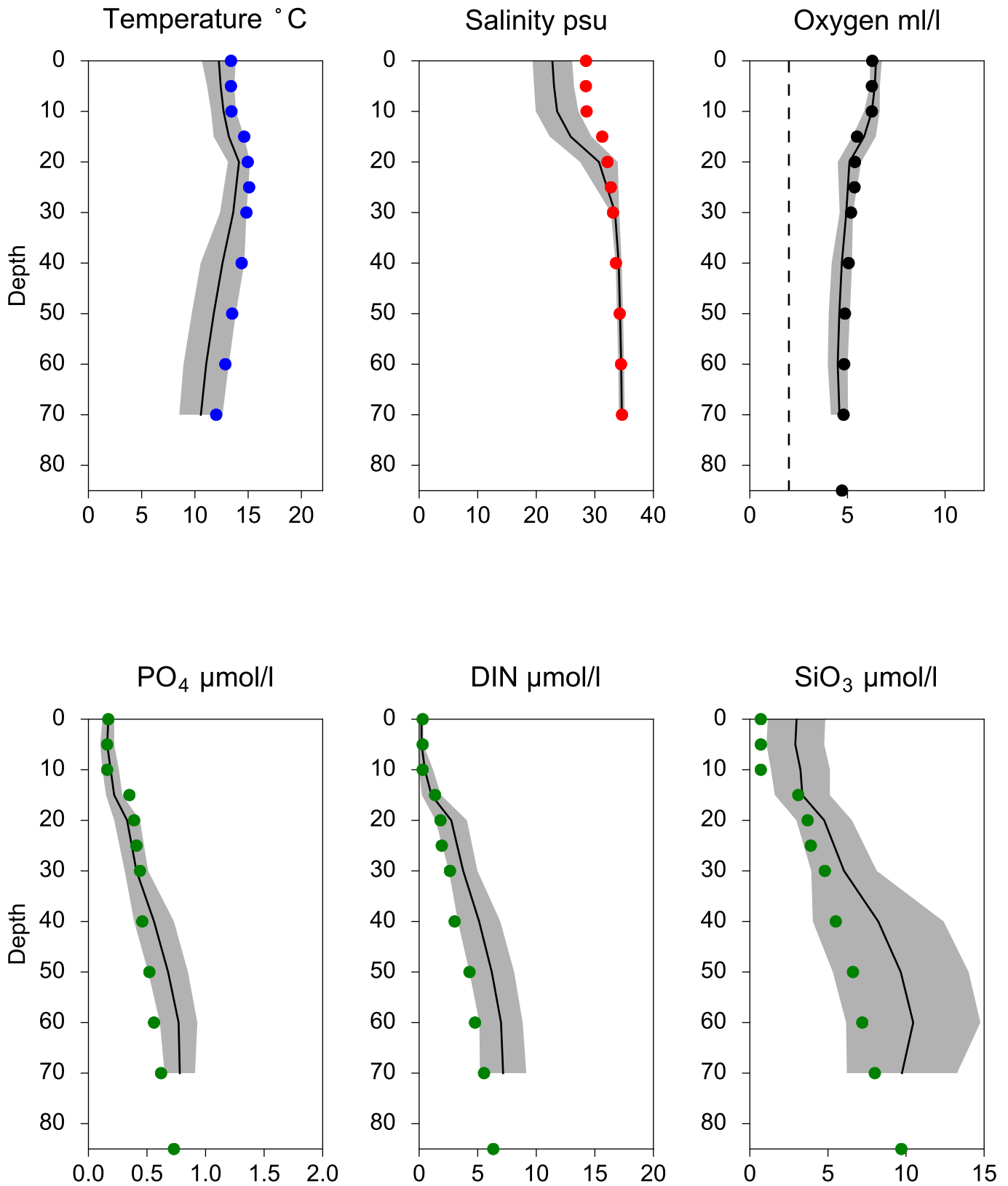


O<sub>2</sub> ml/l



# Vertical profiles FLADEN October

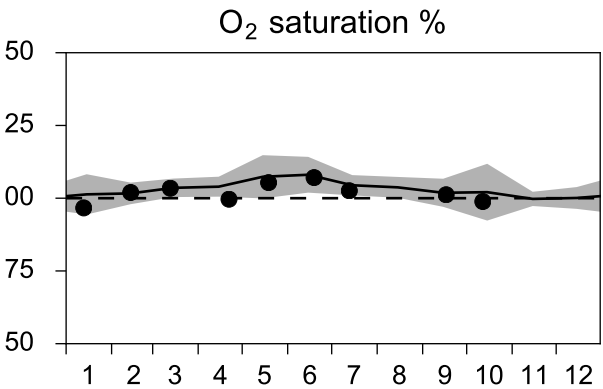
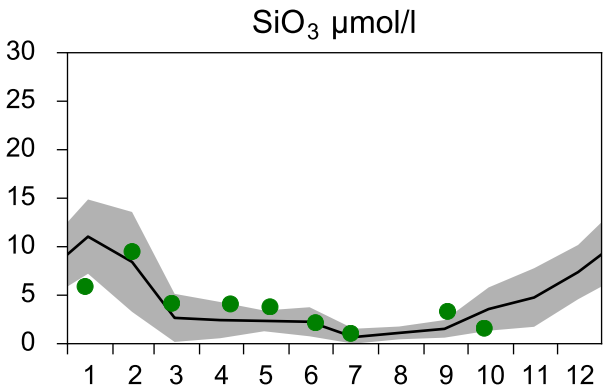
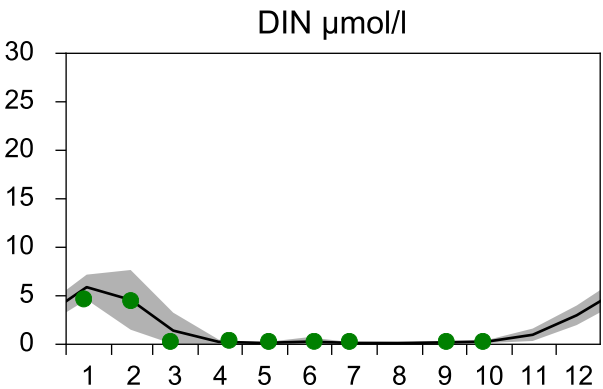
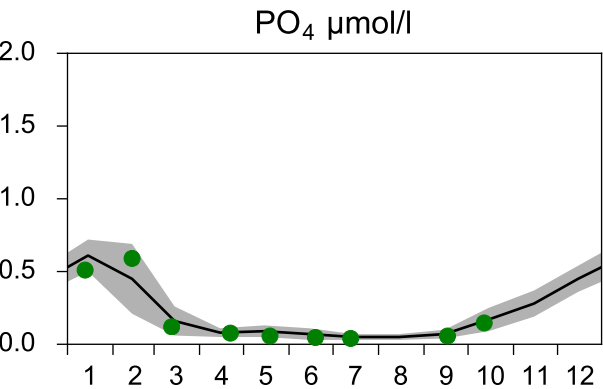
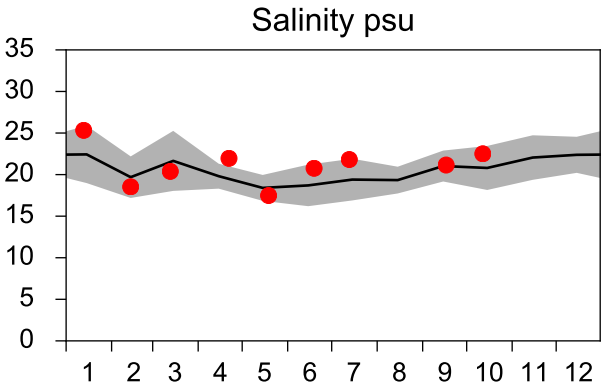
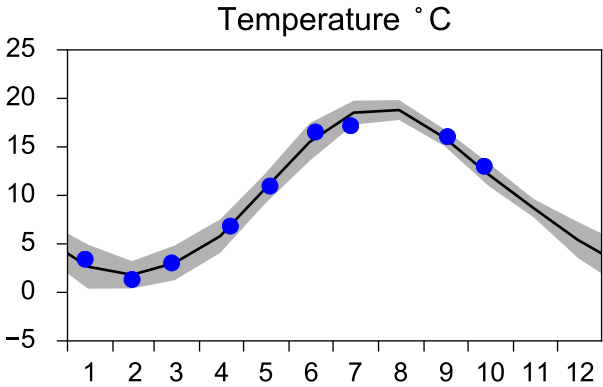
— Mean 2001-2015    St.Dev.    • 2017-10-11



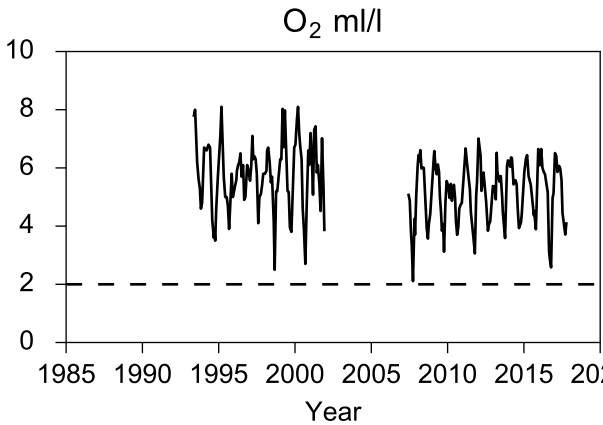
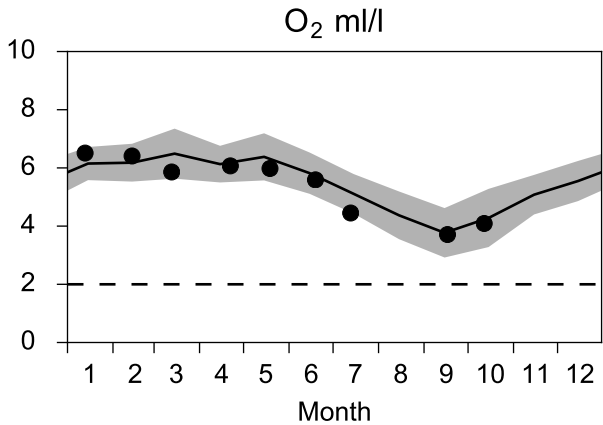
# STATION N14 FALKENBERG SURFACE WATER (0-10 m)

Annual Cycles

— Mean 2001-2015    St.Dev.    • 2017

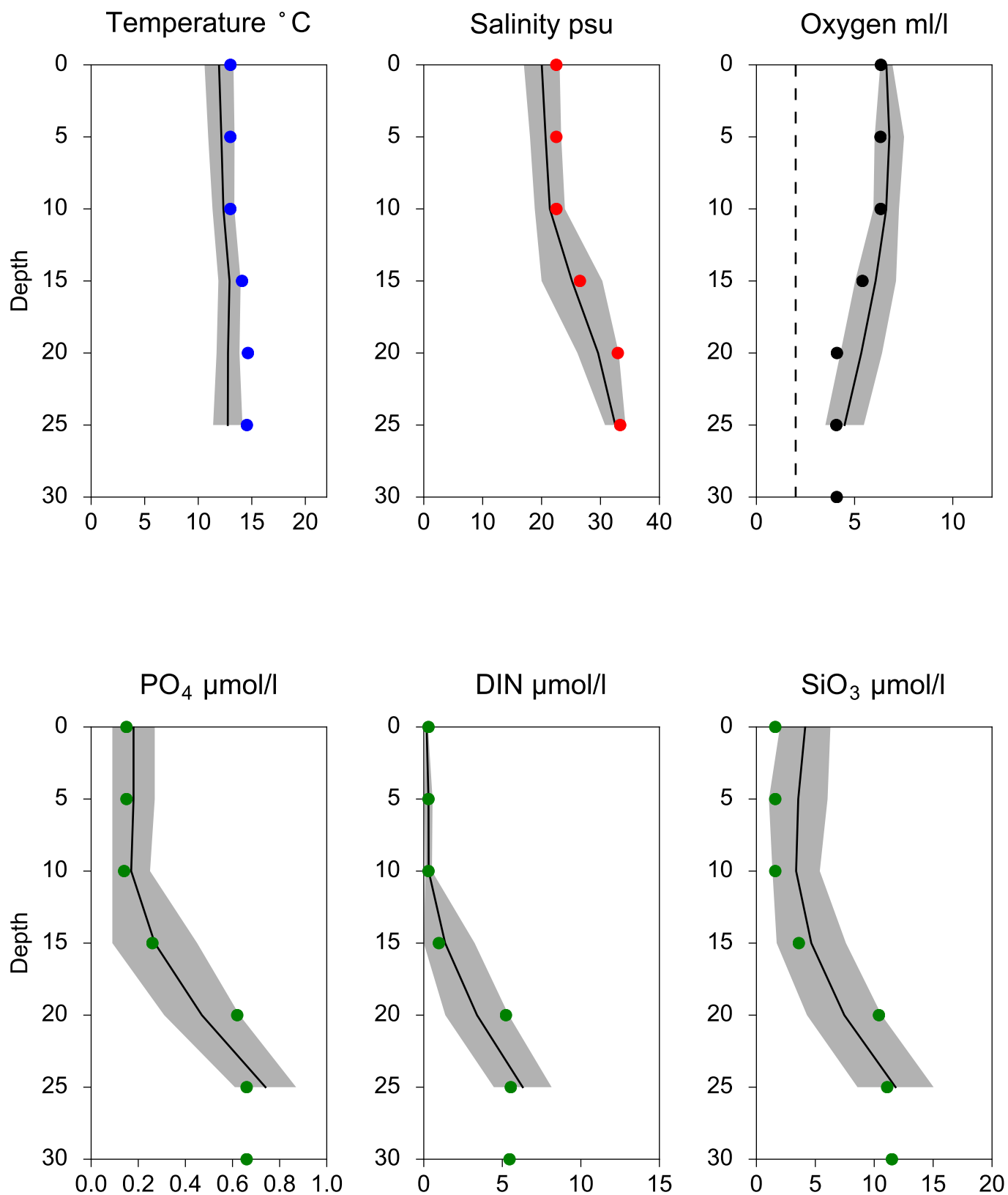


## OXYGEN IN BOTTOM WATER (depth >= 25 m)



# Vertical profiles N14 FALKENBERG October

— Mean 2001-2015    St.Dev.    • 2017-10-12



# STATION ANHOLT E SURFACE WATER (0-10 m)

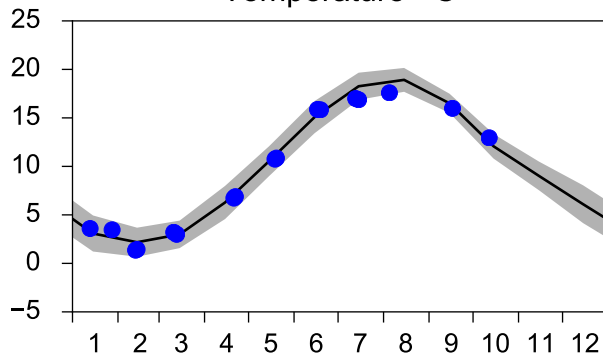
Annual Cycles

— Mean 2001-2015

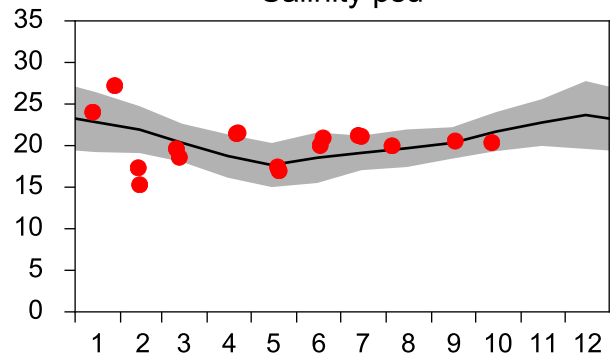
■ St.Dev.

● 2017

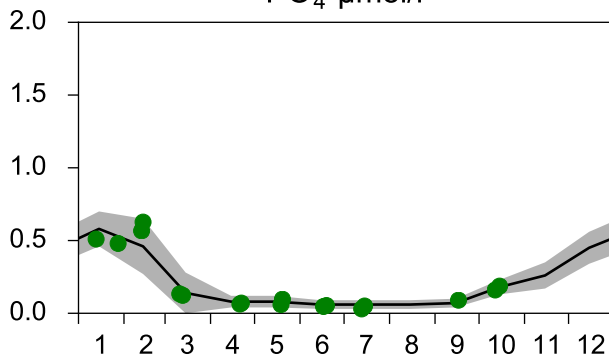
Temperature °C



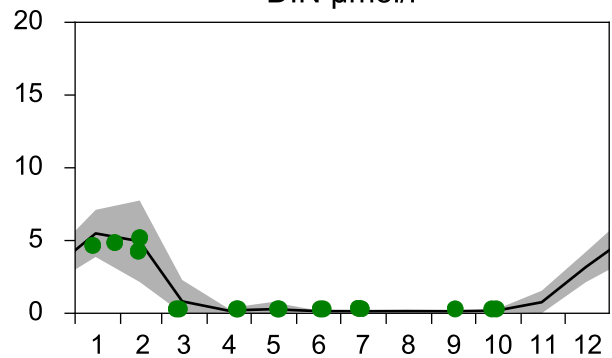
Salinity psu



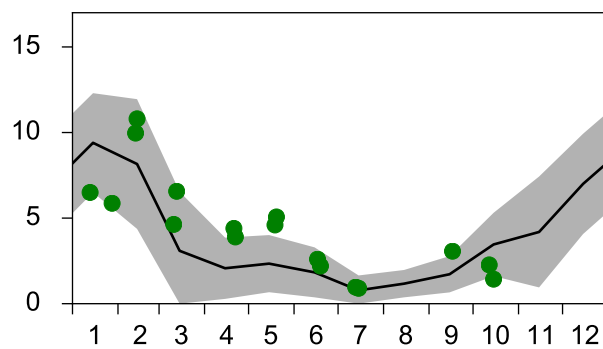
PO<sub>4</sub> µmol/l



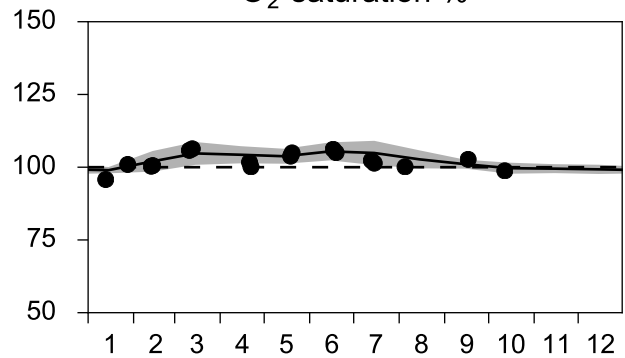
DIN µmol/l



SiO<sub>3</sub> µmol/l

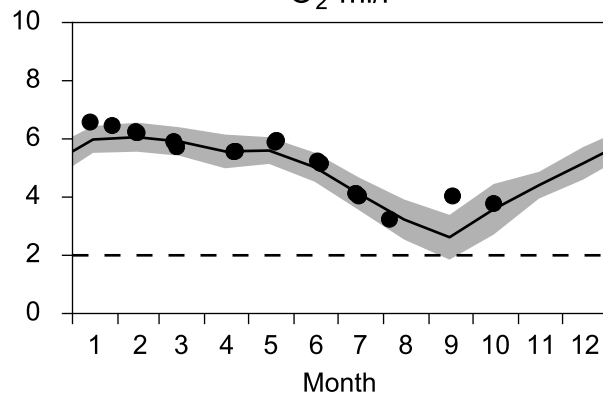


O<sub>2</sub> saturation %

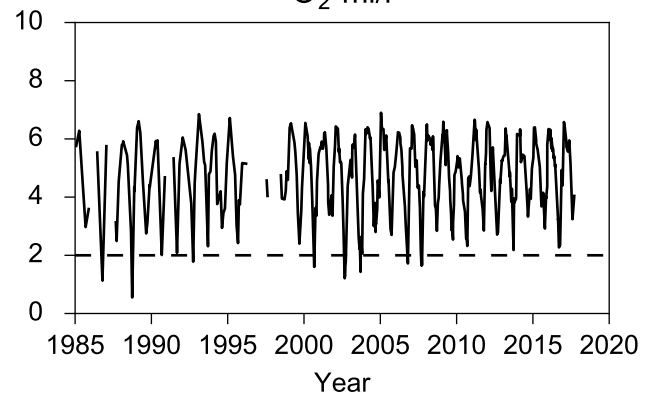


## OXYGEN IN BOTTOM WATER (depth >= 52 m)

O<sub>2</sub> ml/l

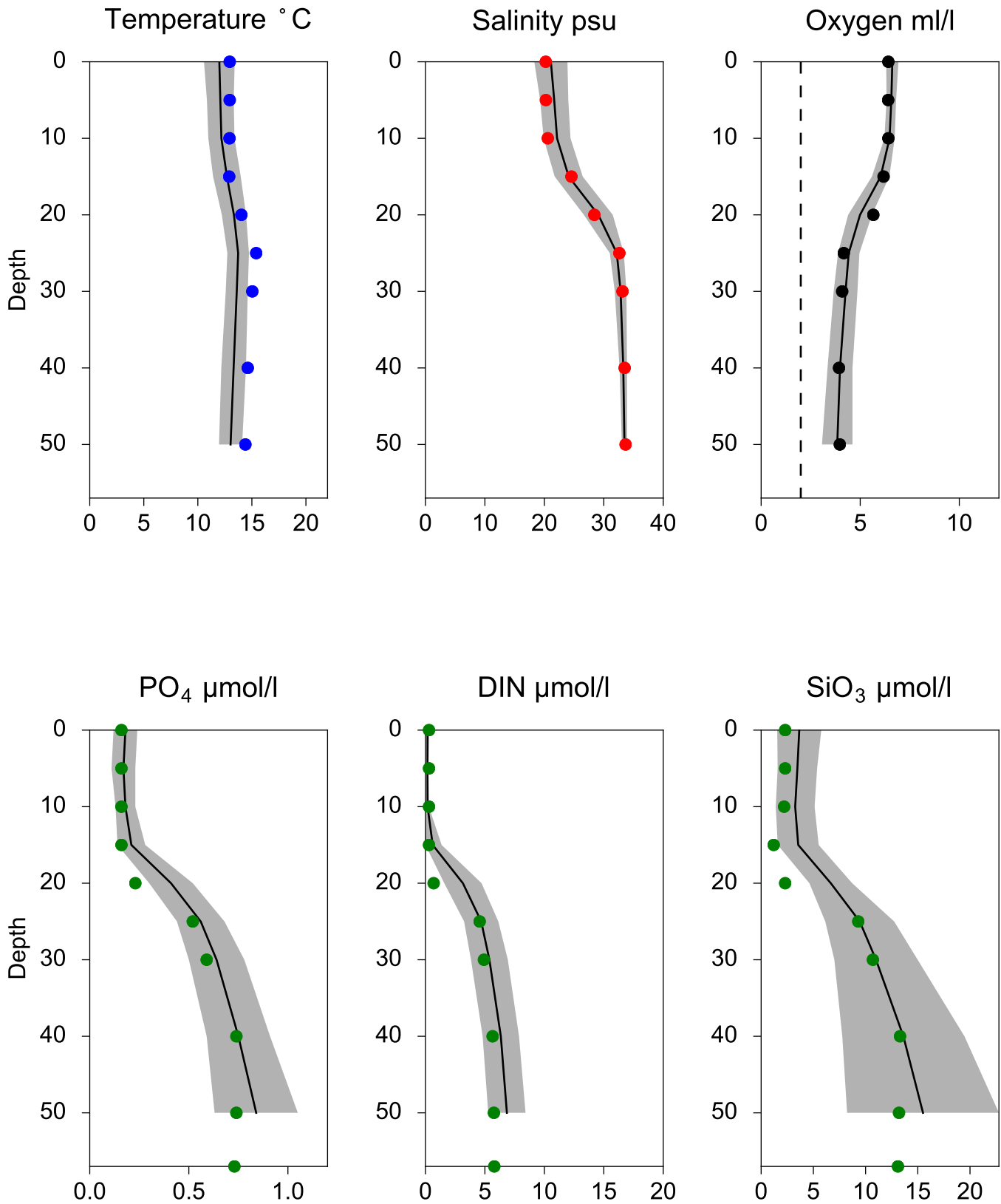


O<sub>2</sub> ml/l



# Vertical profiles ANHOLT E October

— Mean 2001-2015    St.Dev.    • 2017-10-12



# STATION W LANDSKRONA SURFACE WATER (0-10 m)

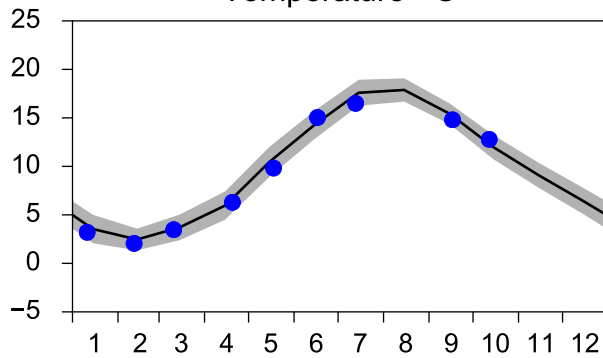
Annual Cycles

— Mean 2001-2015

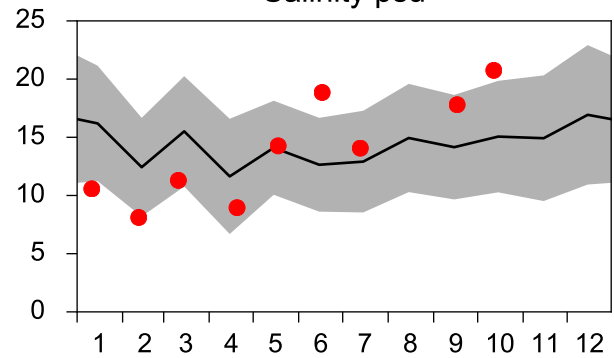
■ St.Dev.

● 2017

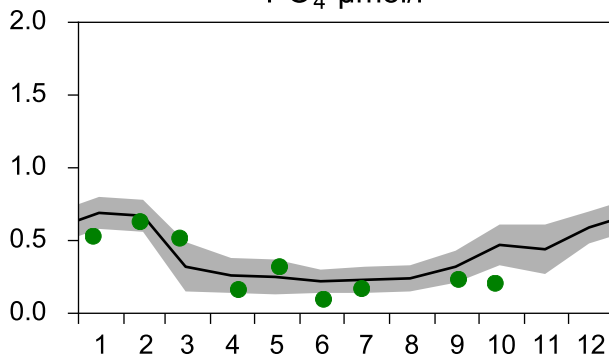
Temperature °C



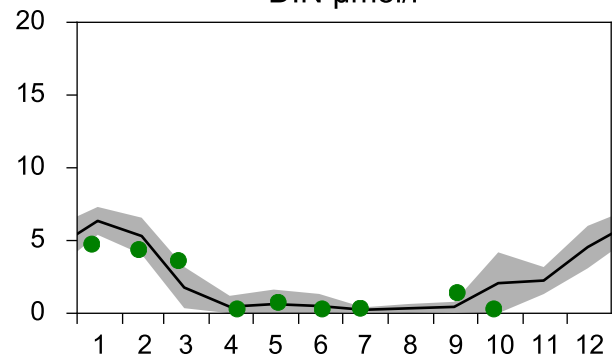
Salinity psu



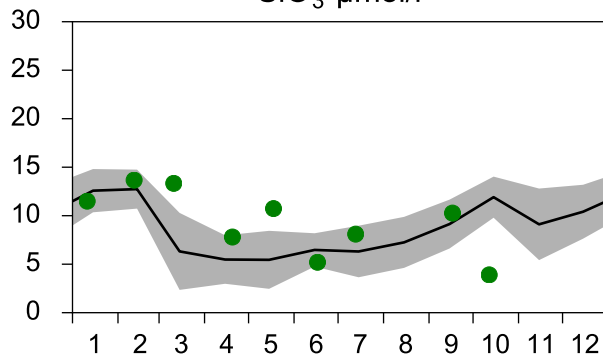
PO<sub>4</sub> µmol/l



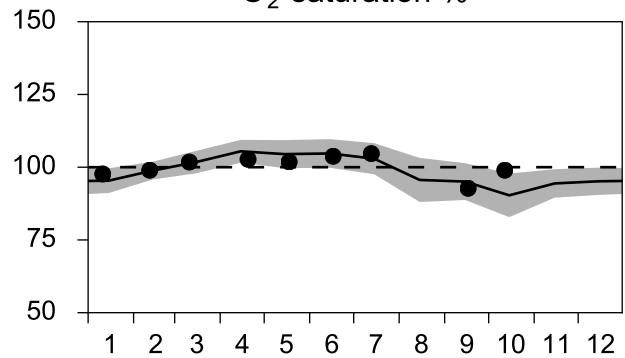
DIN µmol/l



SiO<sub>3</sub> µmol/l

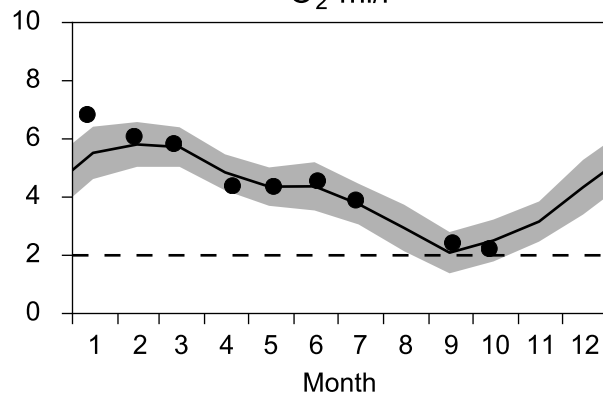


O<sub>2</sub> saturation %

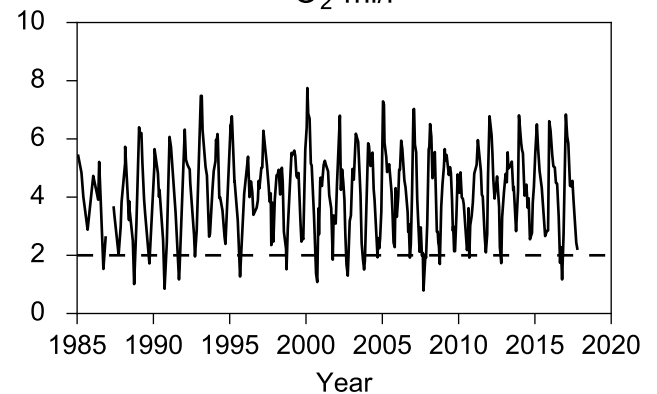


## OXYGEN IN BOTTOM WATER (depth >= 40 m)

O<sub>2</sub> ml/l

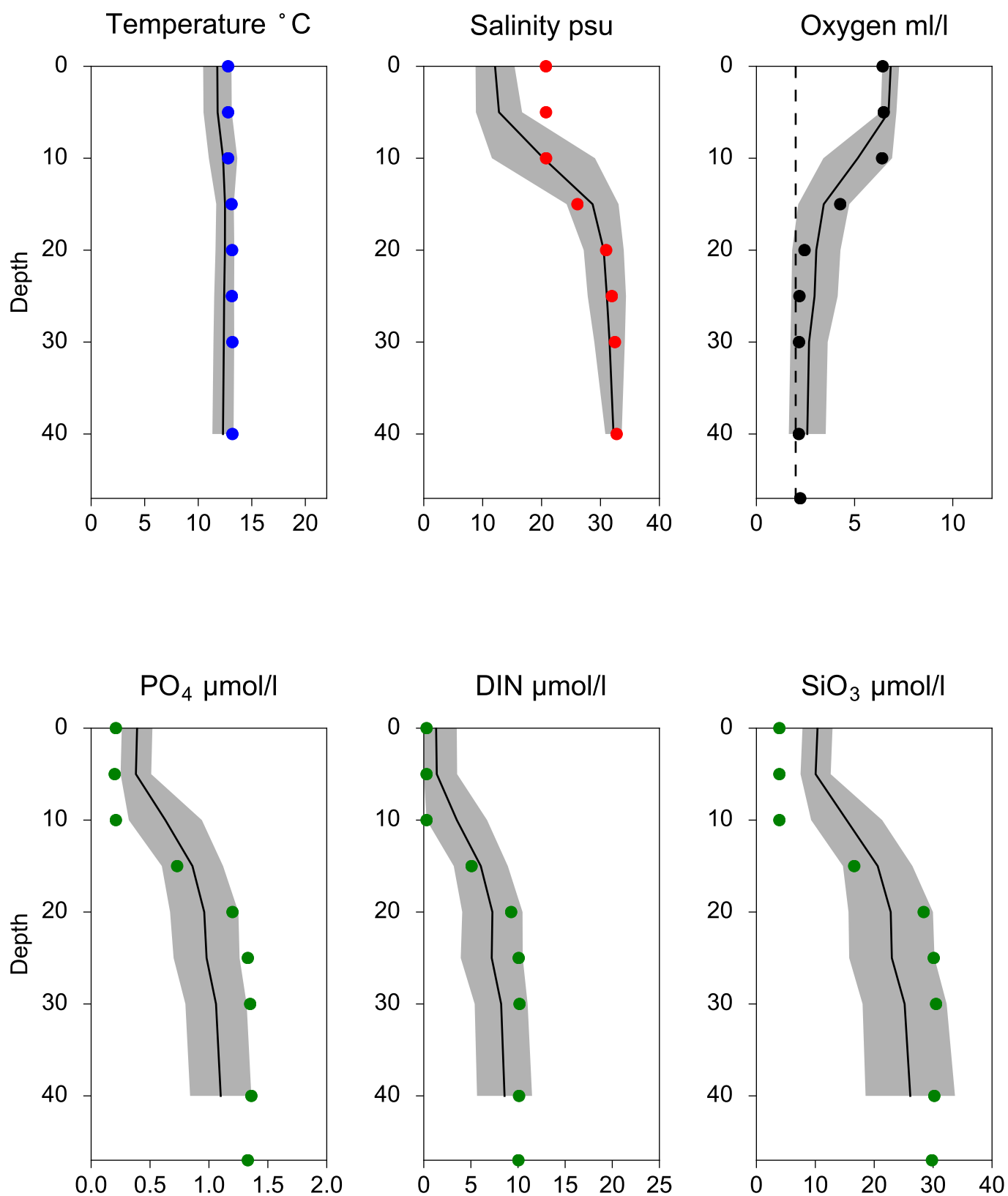


O<sub>2</sub> ml/l



# Vertical profiles W LANDSKRONA October

— Mean 2001-2015    St.Dev.    • 2017-10-12



# STATION BY1 SURFACE WATER (0-10 m)

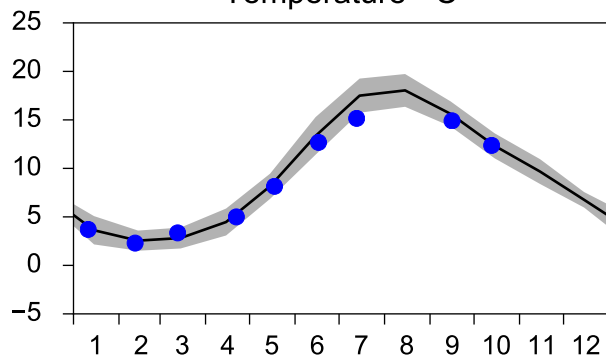
Annual Cycles

— Mean 2001-2015

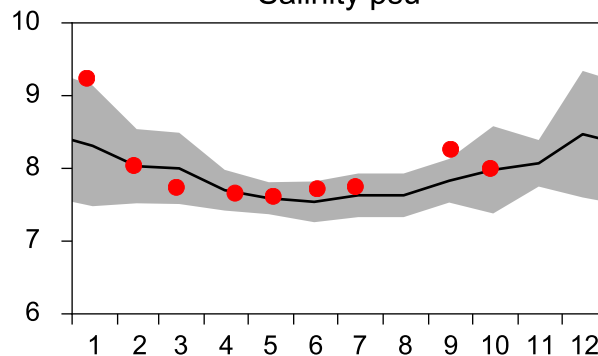
■ St.Dev.

● 2017

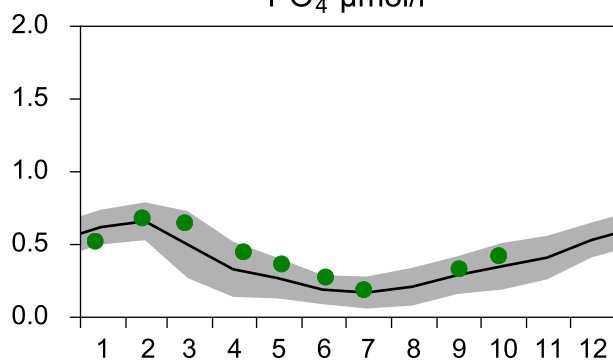
Temperature °C



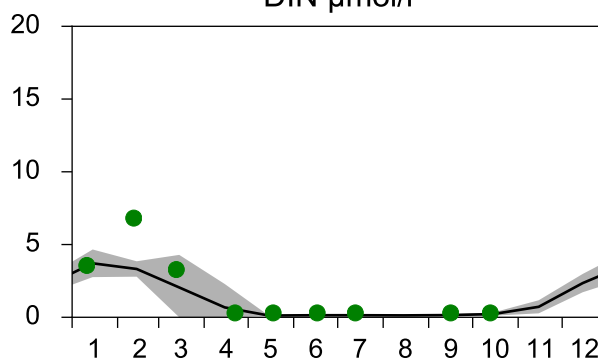
Salinity psu



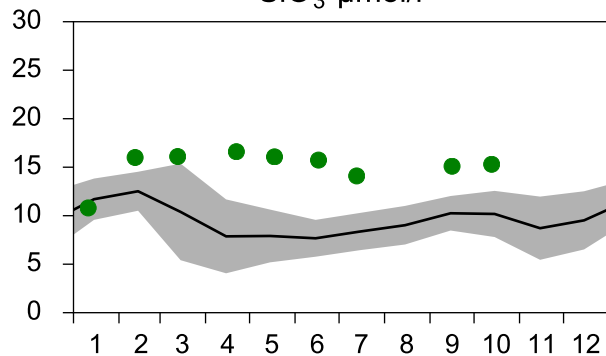
PO<sub>4</sub> µmol/l



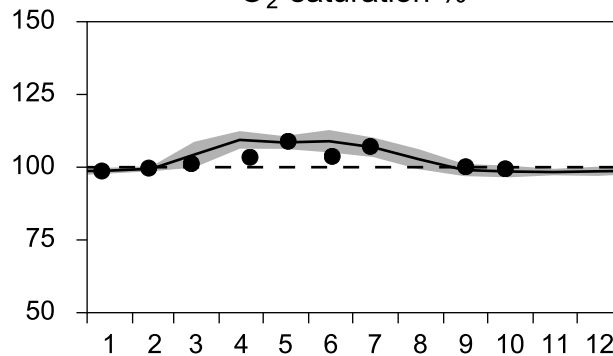
DIN µmol/l



SiO<sub>3</sub> µmol/l

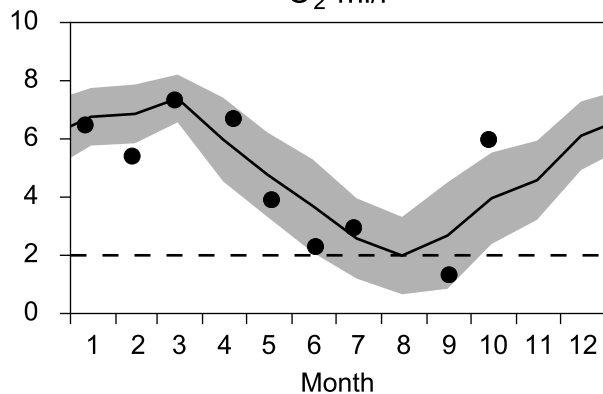


O<sub>2</sub> saturation %

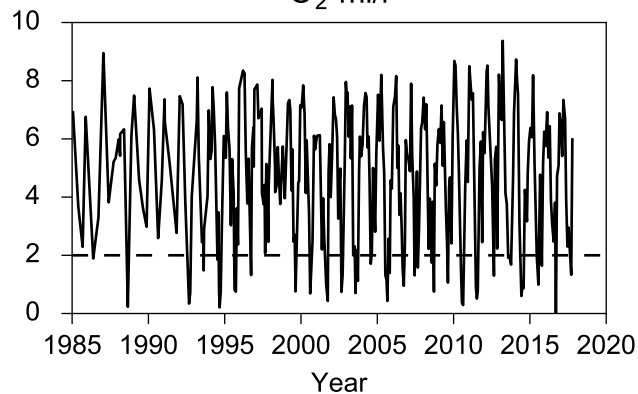


## OXYGEN IN BOTTOM WATER (depth >= 40 m)

O<sub>2</sub> ml/l

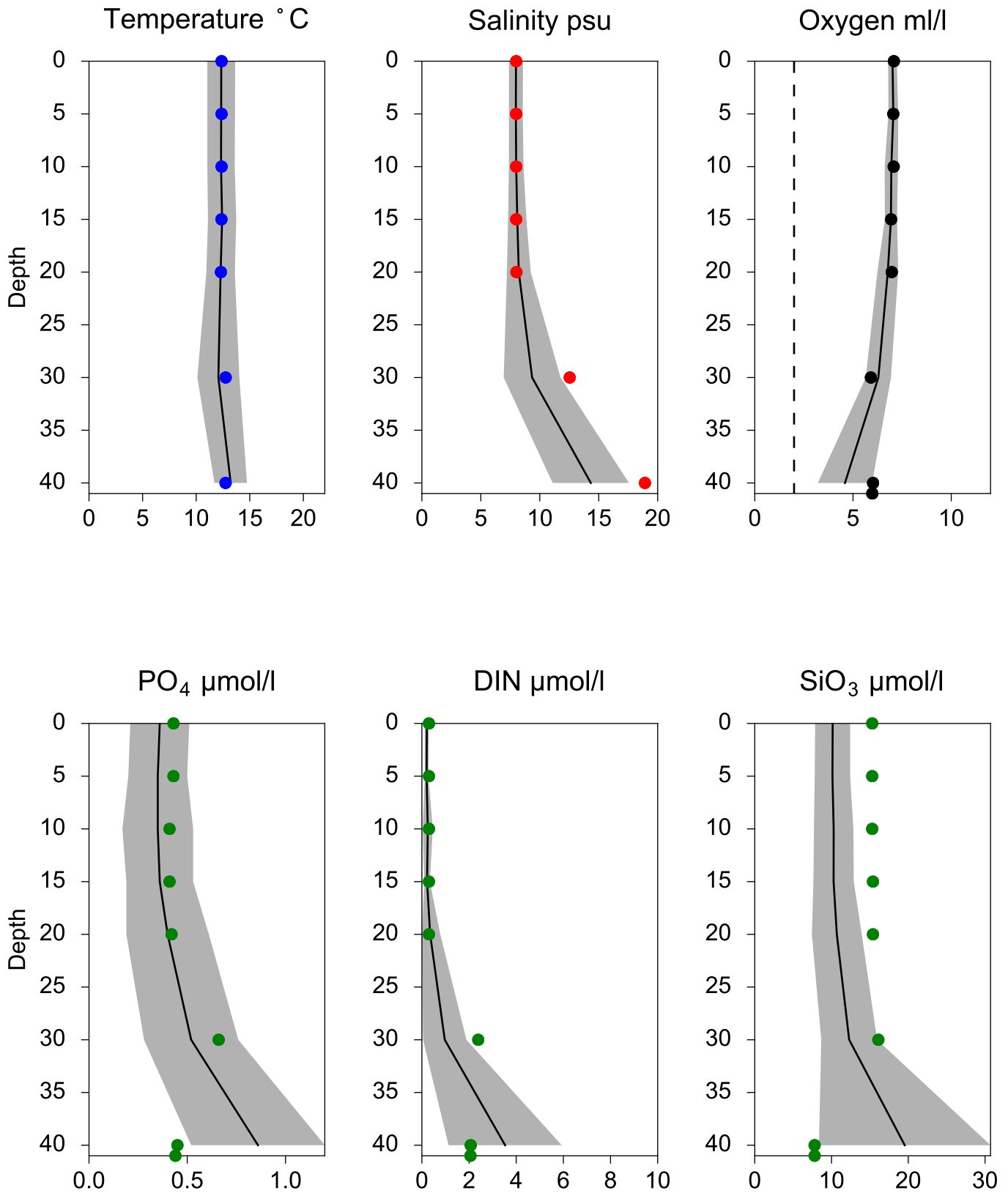


O<sub>2</sub> ml/l



# Vertical profiles BY1 October

— Mean 2001-2015    St.Dev.    • 2017-10-13



# STATION BY2 ARKONA SURFACE WATER (0-10 m)

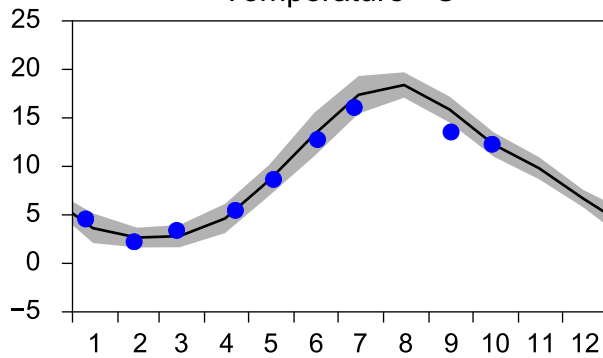
Annual Cycles

— Mean 2001-2015

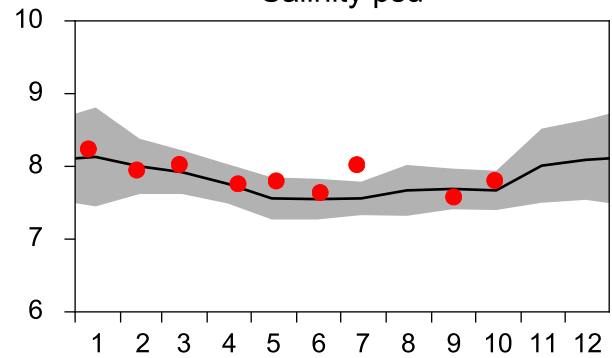
■ St.Dev.

● 2017

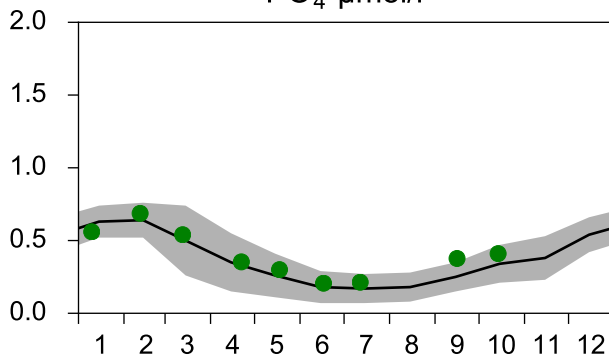
Temperature °C



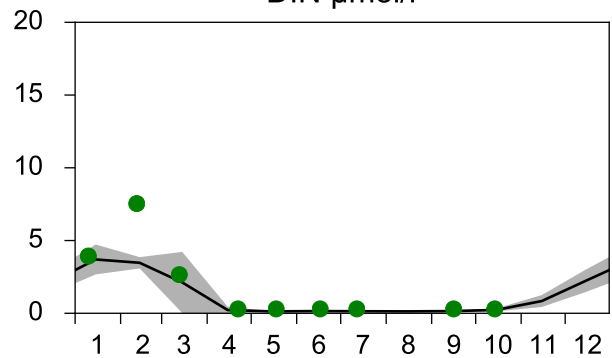
Salinity psu



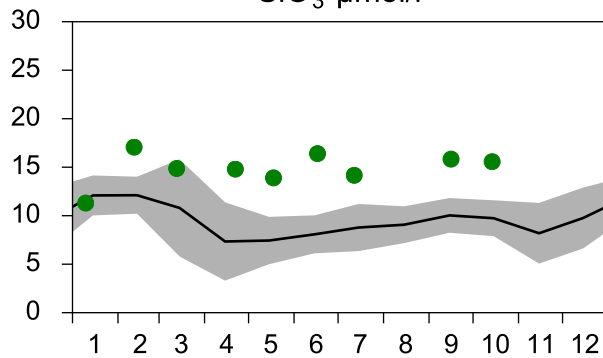
PO<sub>4</sub> µmol/l



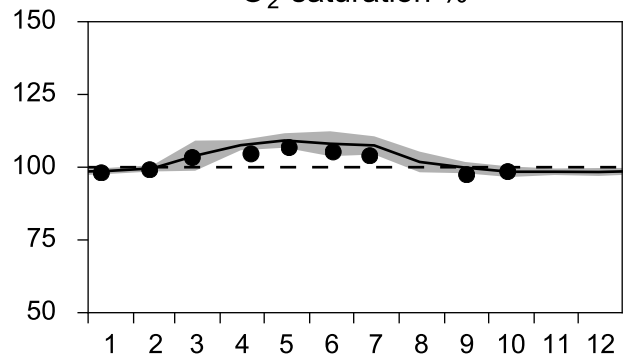
DIN µmol/l



SiO<sub>3</sub> µmol/l

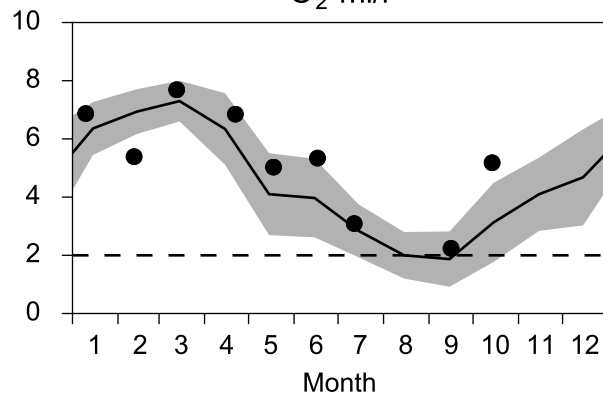


O<sub>2</sub> saturation %

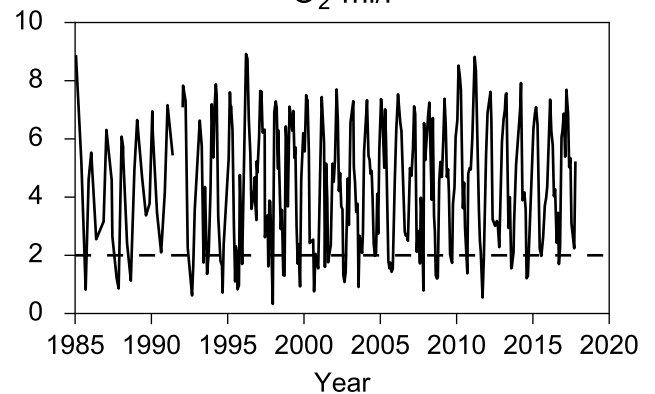


## OXYGEN IN BOTTOM WATER (depth >= 40 m)

O<sub>2</sub> ml/l

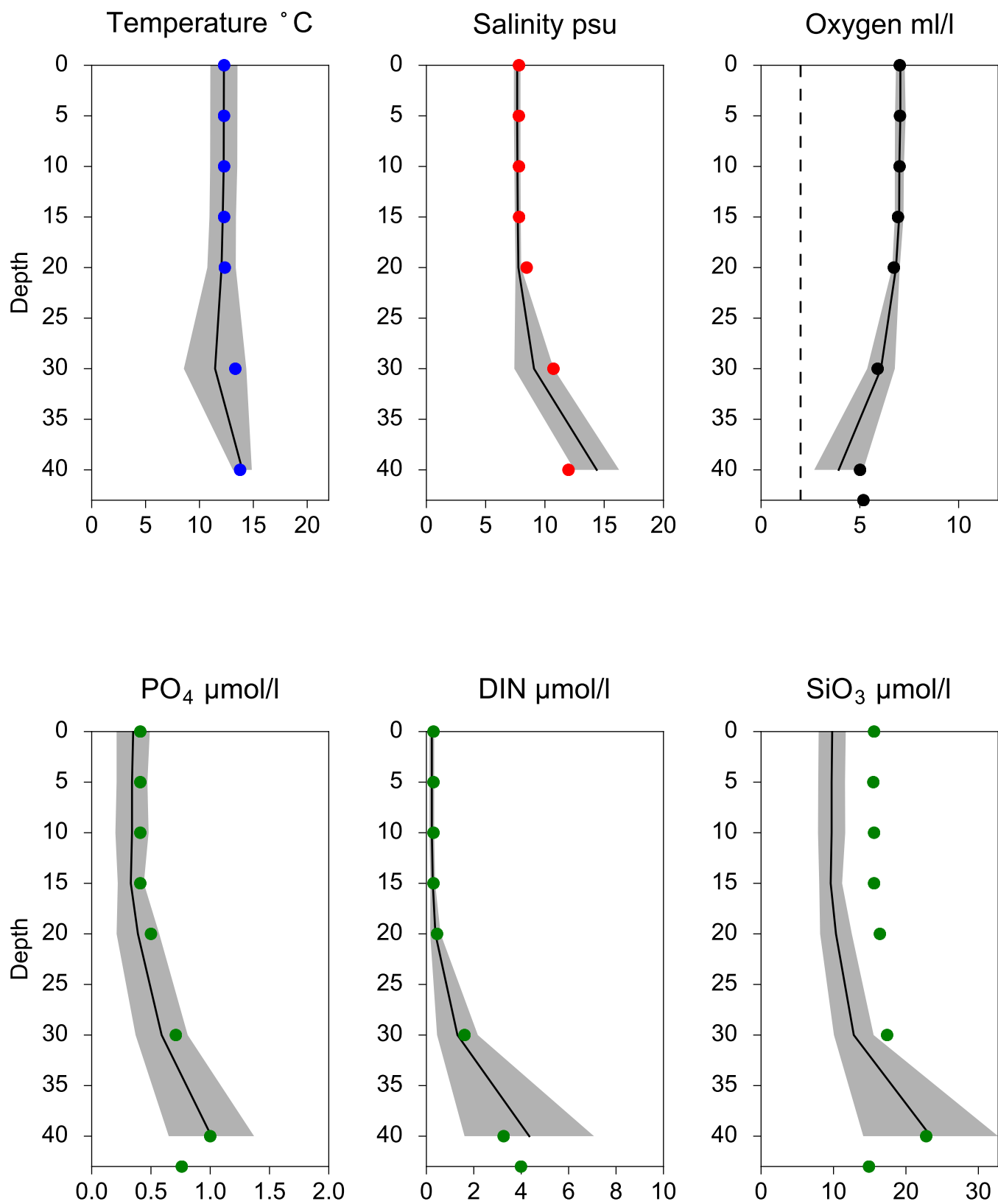


O<sub>2</sub> ml/l



## Vertical profiles BY2 ARKONA October

— Mean 2001-2015    ■ St.Dev.    ● 2017-10-14



# STATION BY4 CHRISTIANSÖ SURFACE WATER (0-10 m)

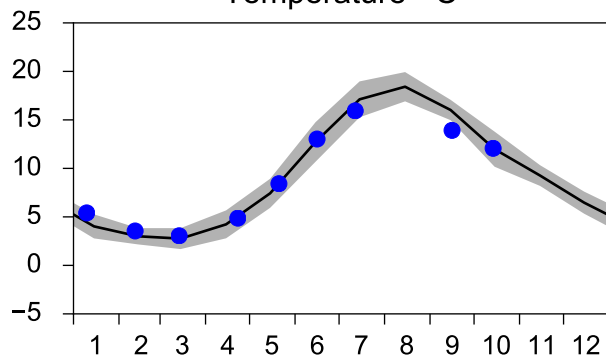
Annual Cycles

— Mean 2001-2015

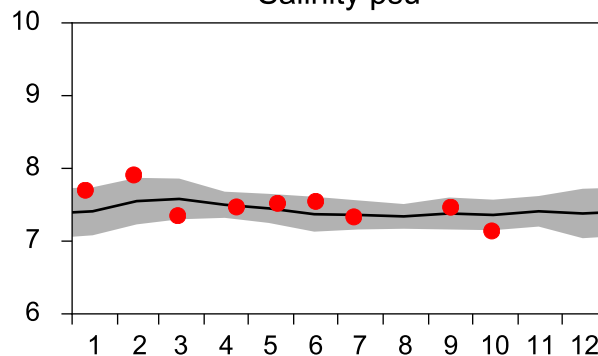
■ St.Dev.

● 2017

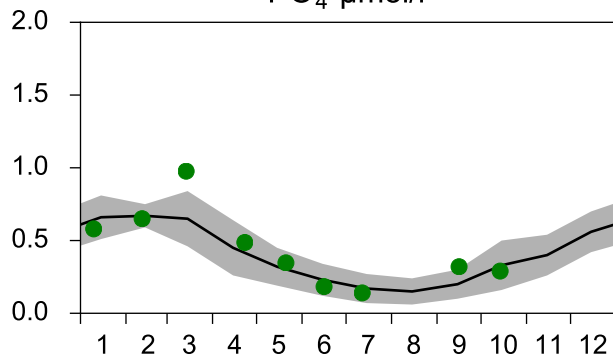
Temperature °C



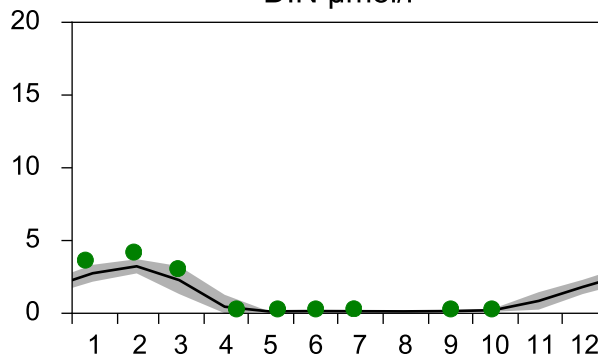
Salinity psu



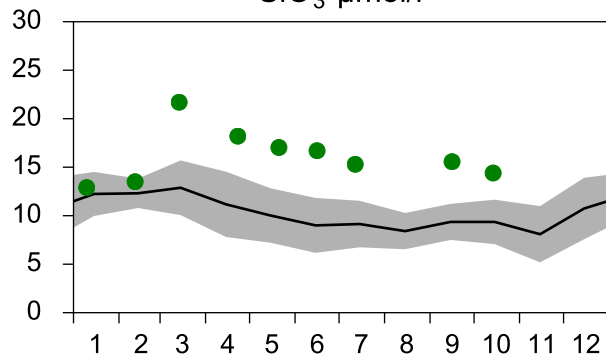
PO<sub>4</sub> µmol/l



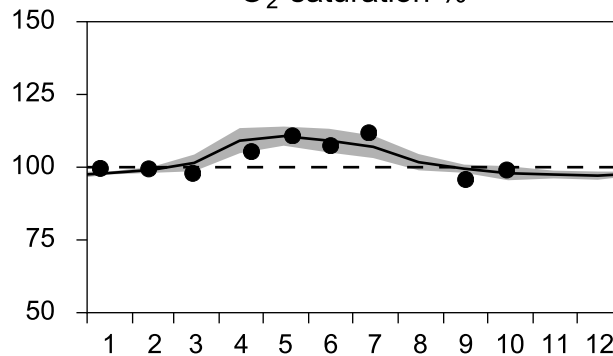
DIN µmol/l



SiO<sub>3</sub> µmol/l

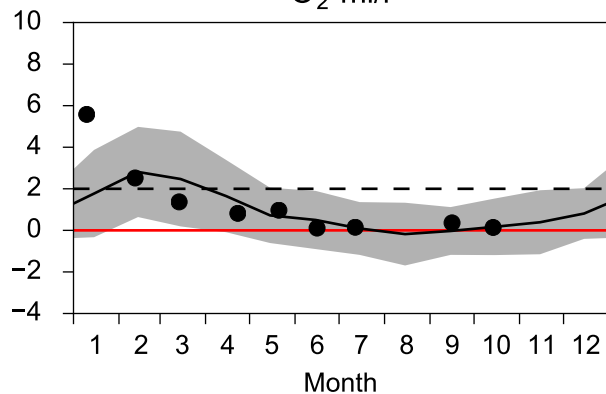


O<sub>2</sub> saturation %

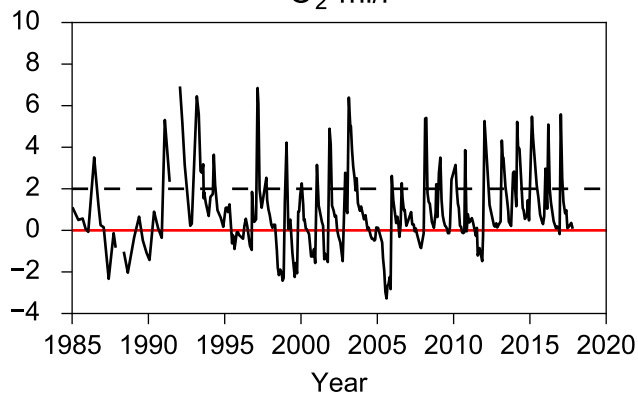


## OXYGEN IN BOTTOM WATER (depth >= 80 m)

O<sub>2</sub> ml/l



O<sub>2</sub> ml/l

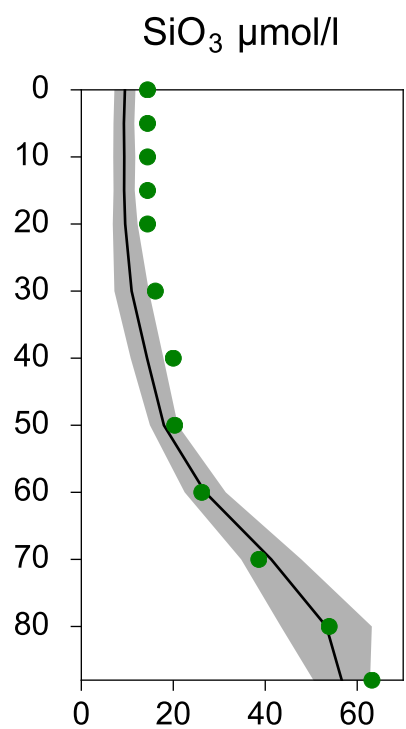
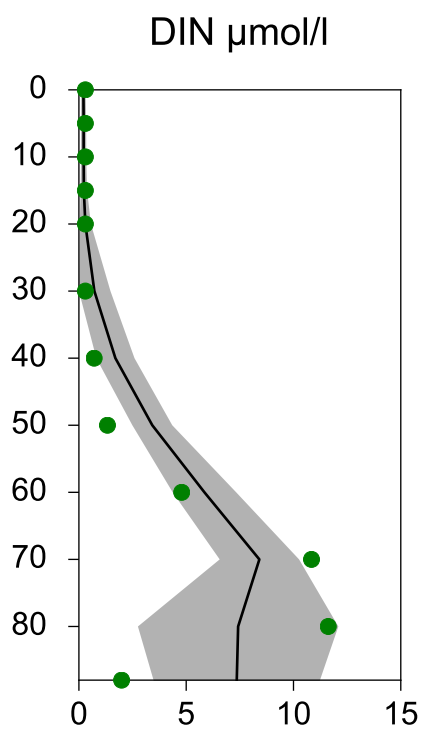
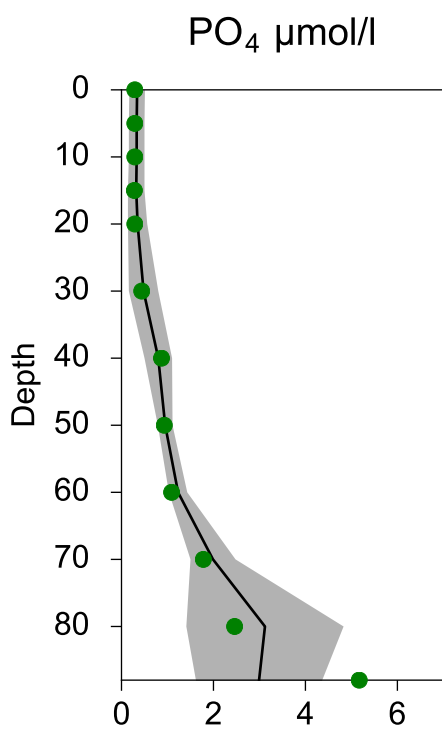
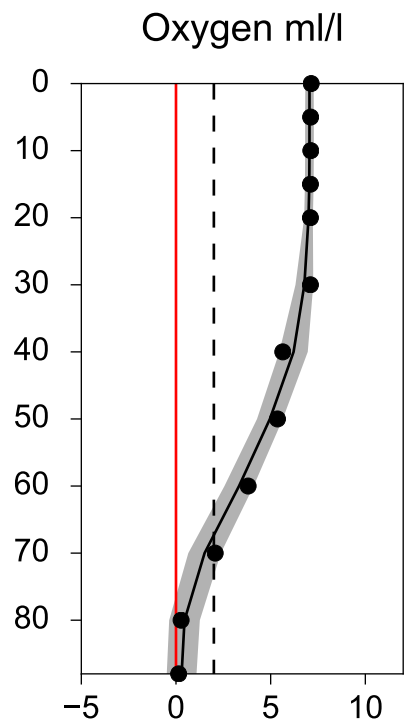
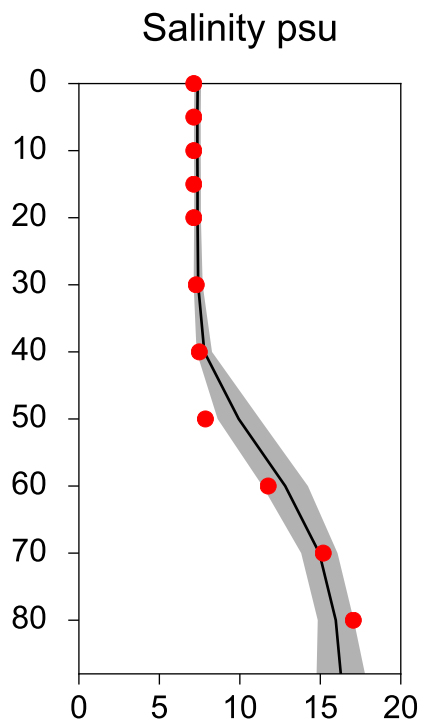
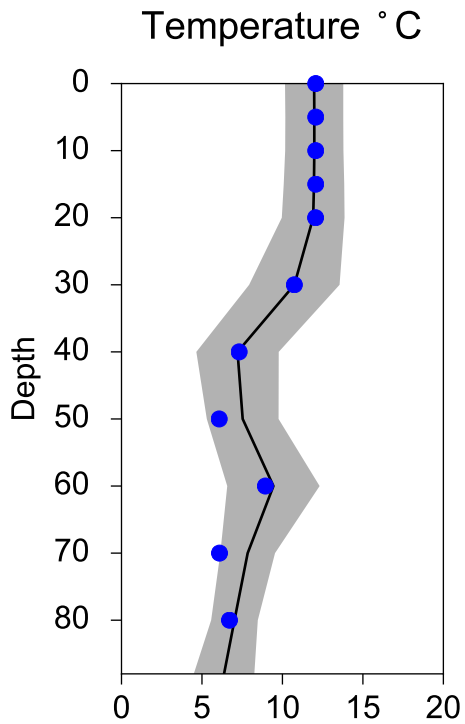


# Vertical profiles BY4 CHRISTIANSÖ October

— Mean 2001-2015

■ St.Dev.

● 2017-10-14



# STATION BY5 BORNHOLMSDJ SURFACE WATER (0-10 m)

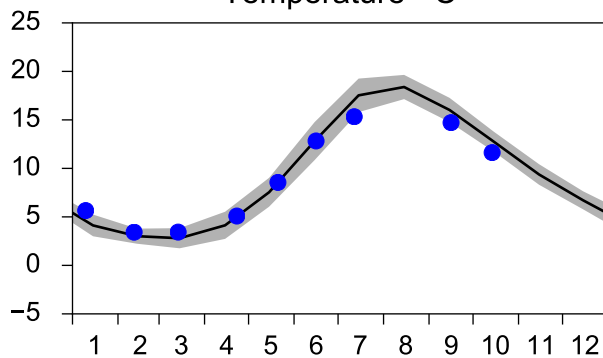
Annual Cycles

— Mean 2001-2015

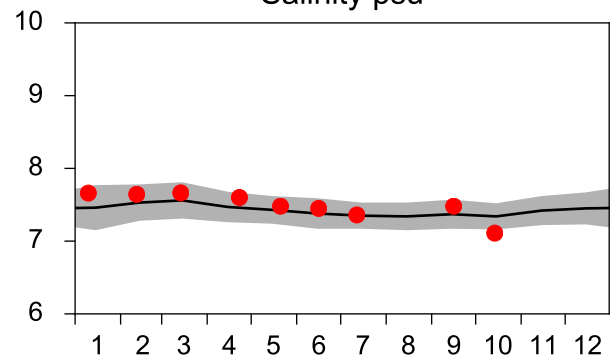
■ St.Dev.

● 2017

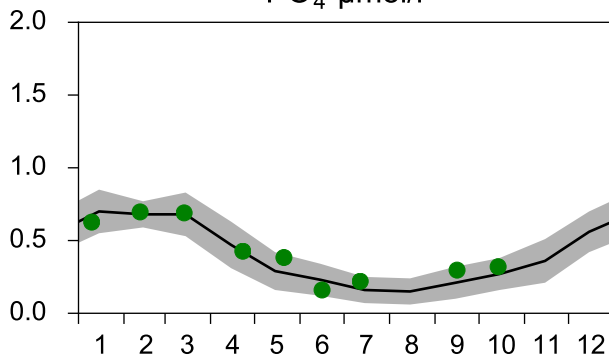
Temperature °C



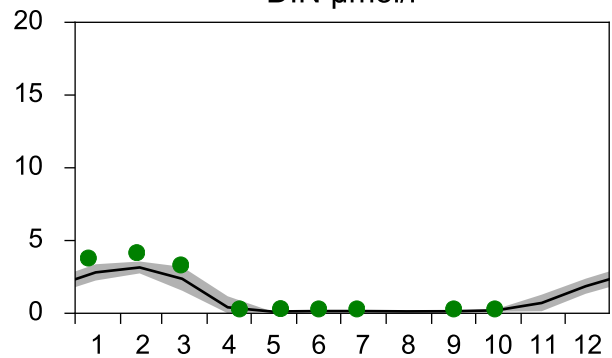
Salinity psu



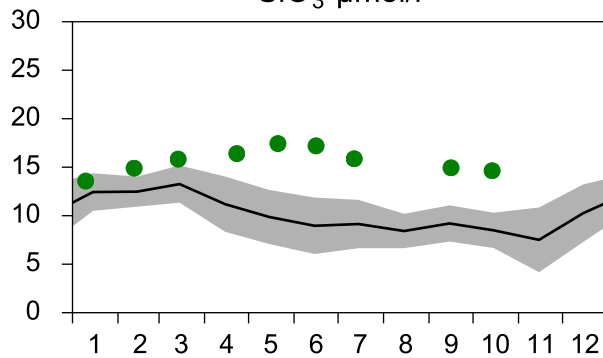
PO<sub>4</sub> μmol/l



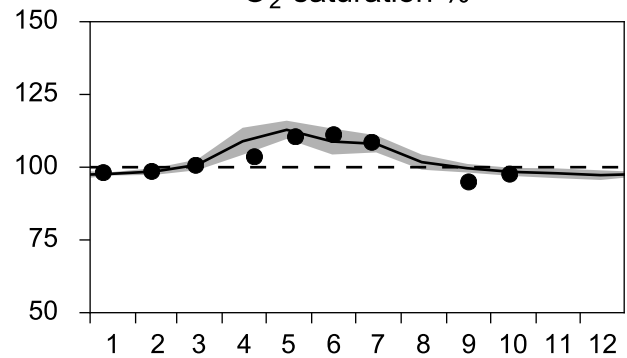
DIN μmol/l



SiO<sub>3</sub> μmol/l

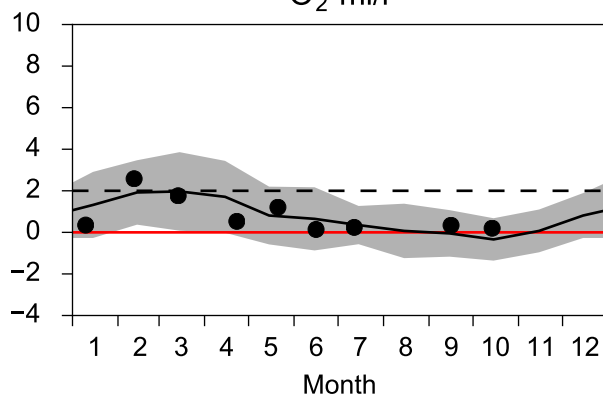


O<sub>2</sub> saturation %

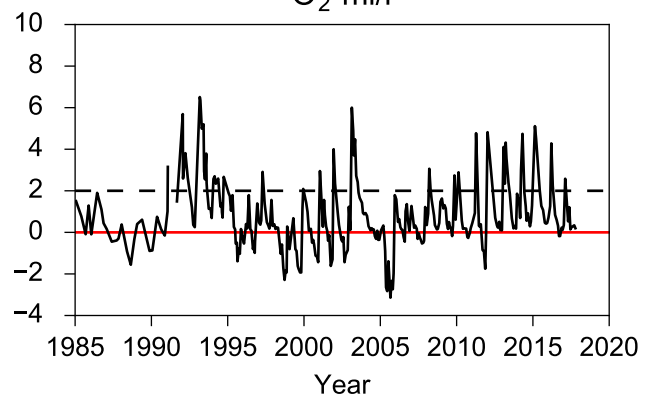


## OXYGEN IN BOTTOM WATER (depth >= 80 m)

O<sub>2</sub> ml/l

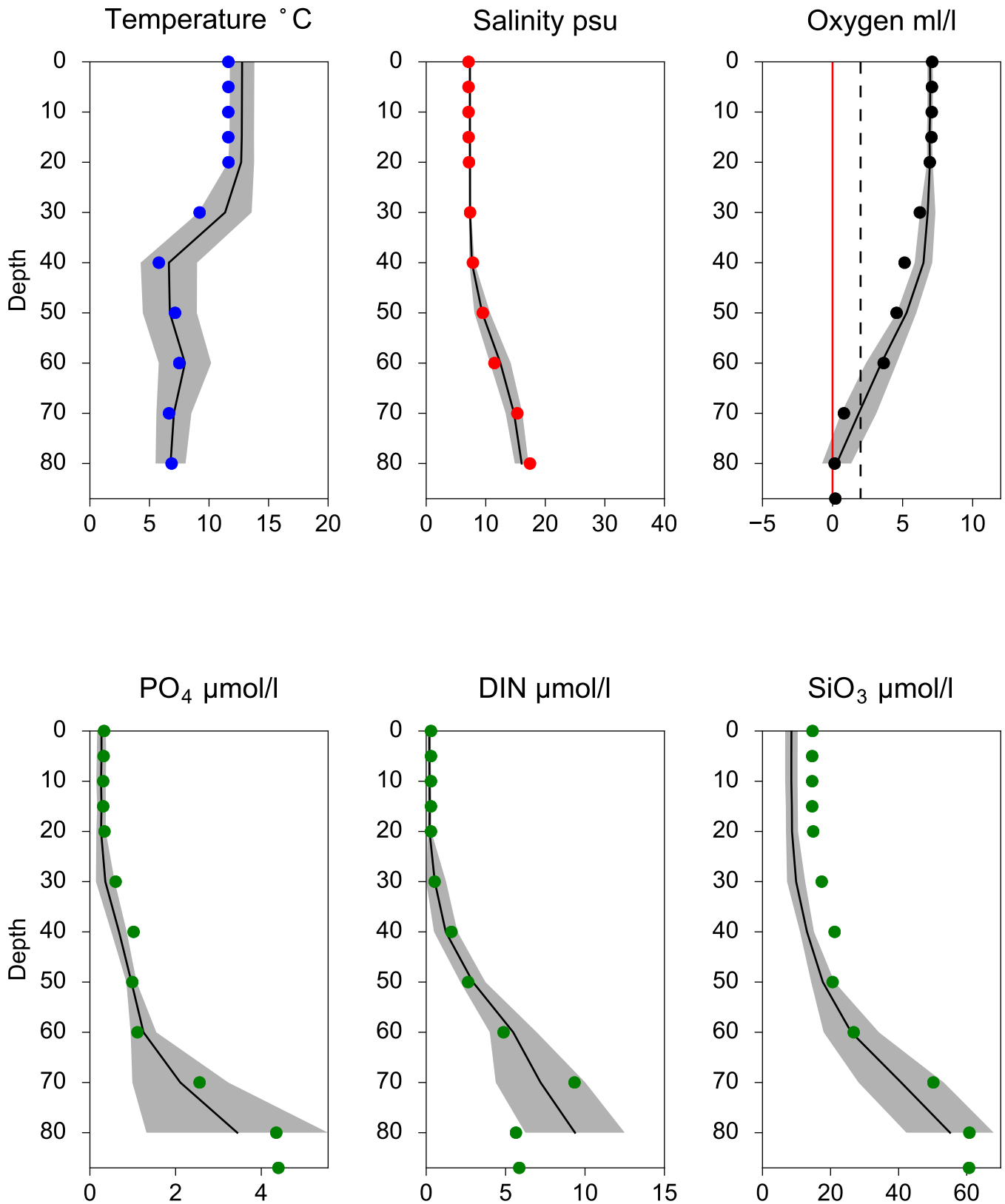


O<sub>2</sub> ml/l



# Vertical profiles BY5 BORNHOLMSDJ October

— Mean 2001-2015    ■ St.Dev.    ● 2017-10-14



# STATION REF M1V1 SURFACE WATER (0-10 m)

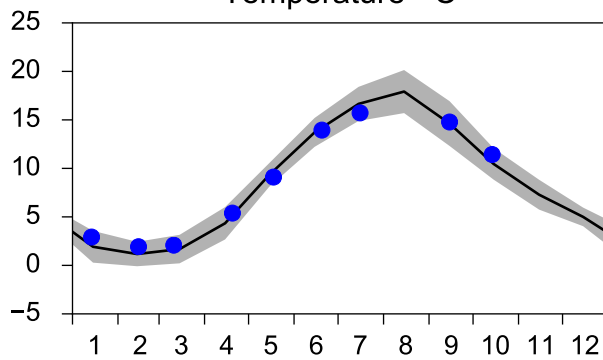
Annual Cycles

— Mean 2001-2015

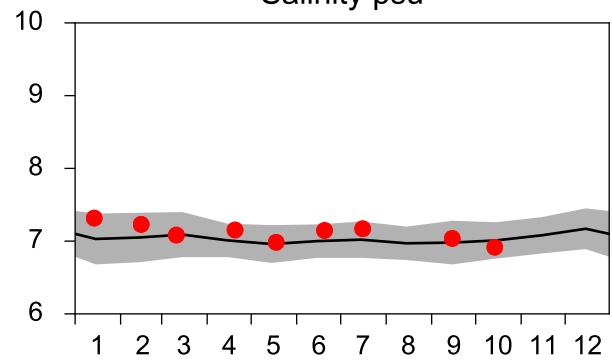
■ St.Dev.

● 2017

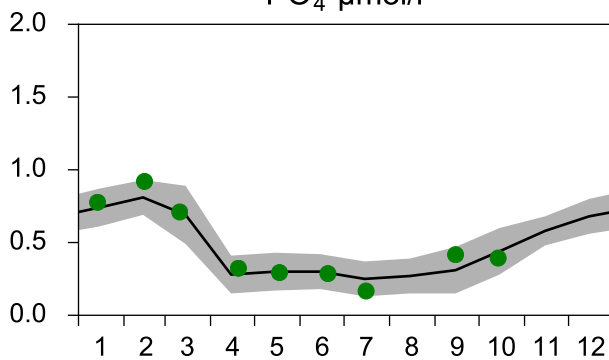
Temperature °C



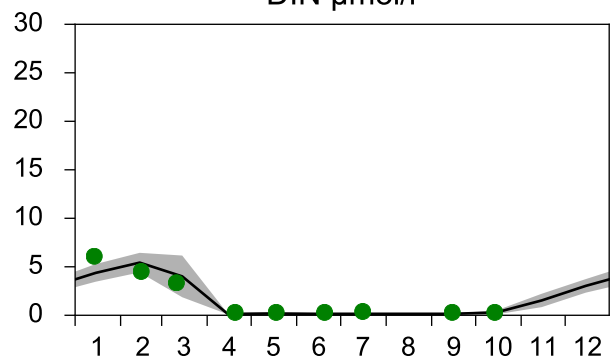
Salinity psu



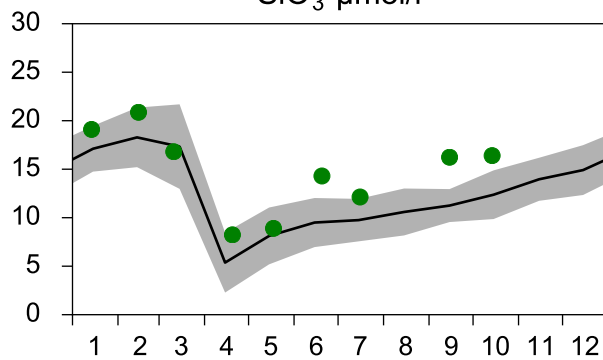
PO<sub>4</sub> µmol/l



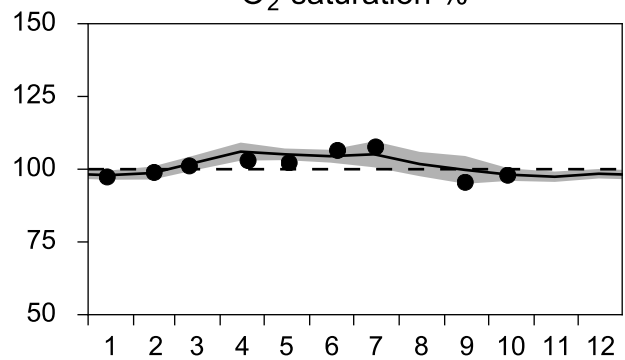
DIN µmol/l



SiO<sub>3</sub> µmol/l

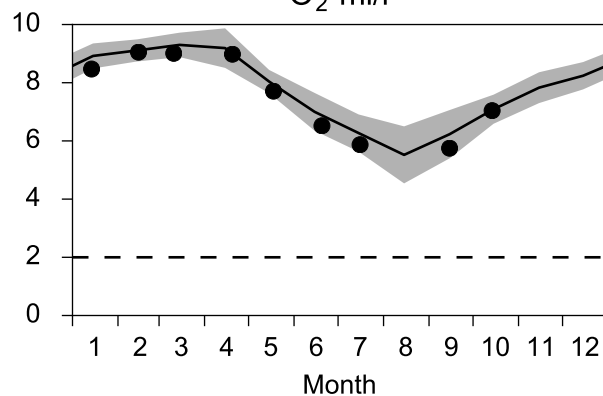


O<sub>2</sub> saturation %

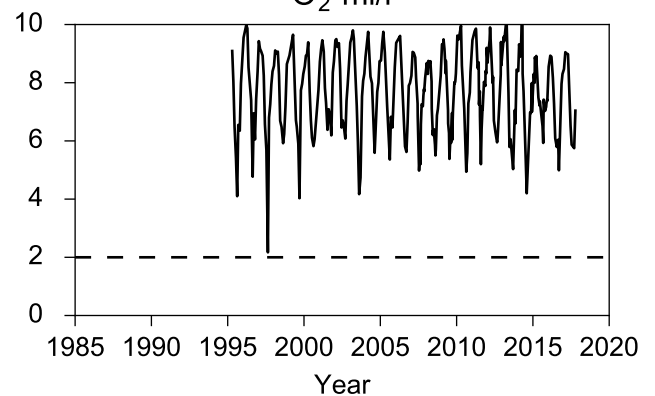


## OXYGEN IN BOTTOM WATER (depth >= 17 m)

O<sub>2</sub> ml/l

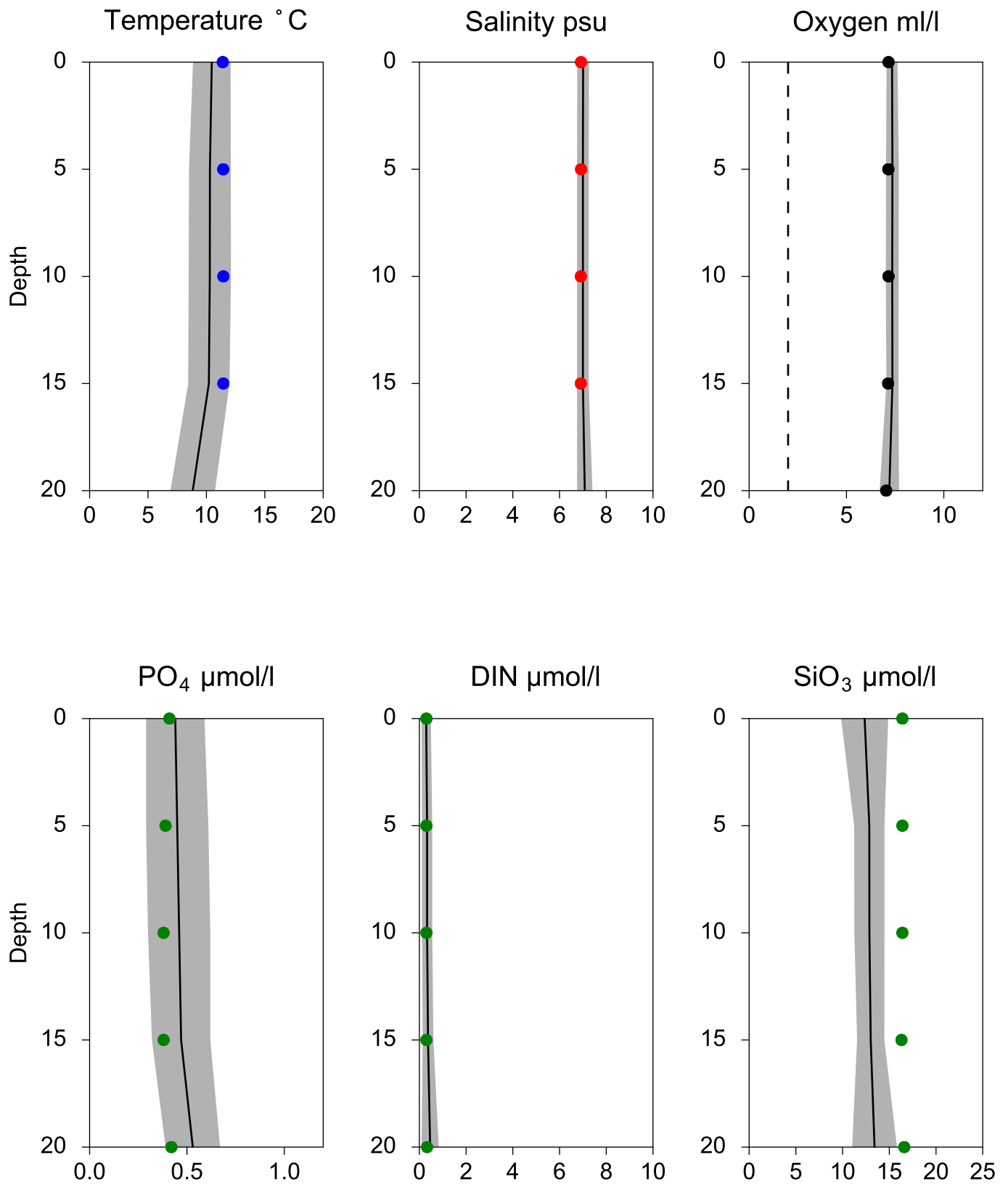


O<sub>2</sub> ml/l



# Vertical profiles REF M1V1 October

— Mean 2001-2015    ■ St.Dev.    ● 2017-10-14



# STATION HANÖBUKTEN SURFACE WATER (0-10 m)

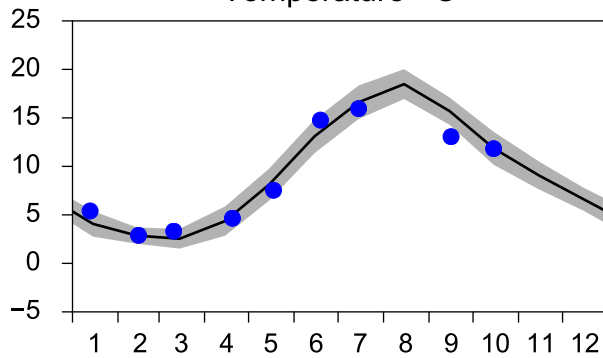
Annual Cycles

— Mean 2001-2015

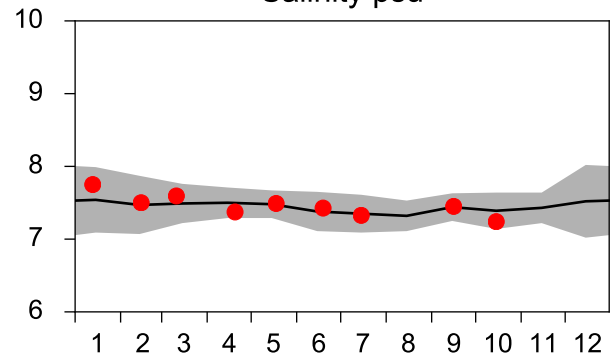
■ St.Dev.

● 2017

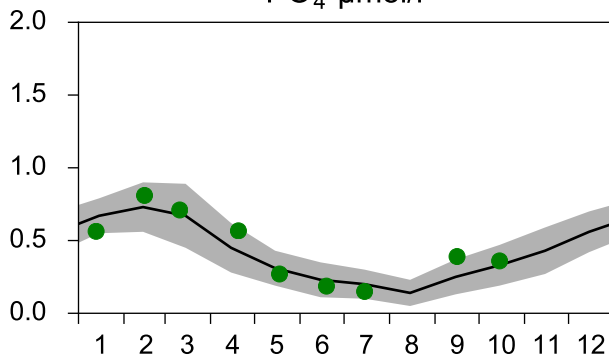
Temperature °C



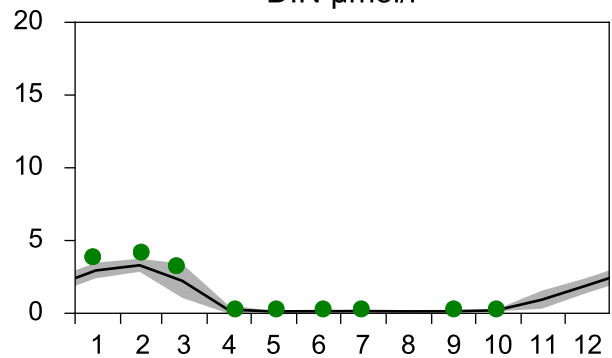
Salinity psu



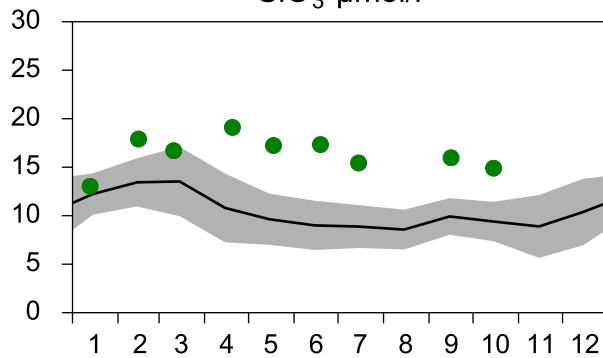
PO<sub>4</sub> µmol/l



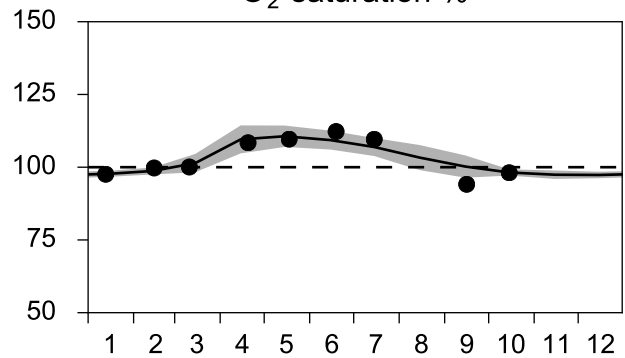
DIN µmol/l



SiO<sub>3</sub> µmol/l

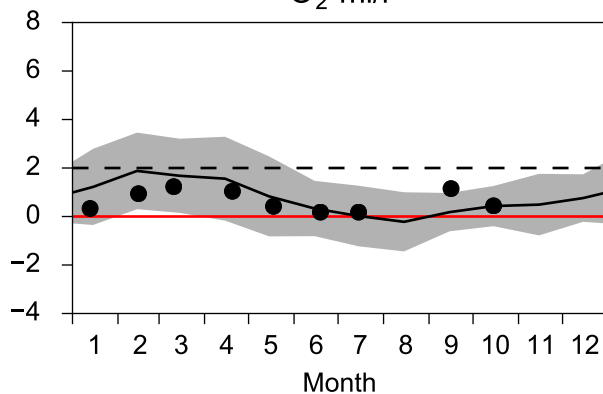


O<sub>2</sub> saturation %

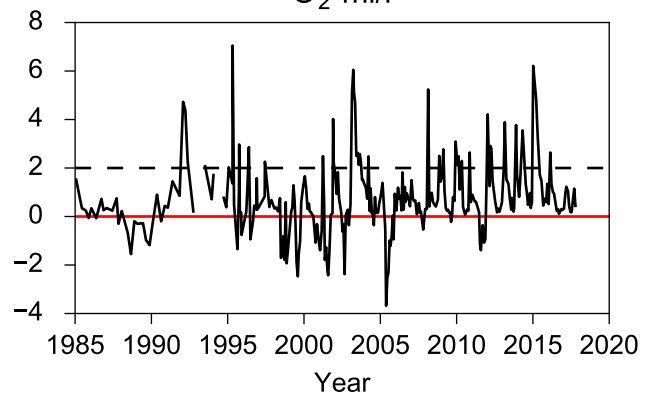


## OXYGEN IN BOTTOM WATER (depth >= 70 m)

O<sub>2</sub> ml/l



O<sub>2</sub> ml/l

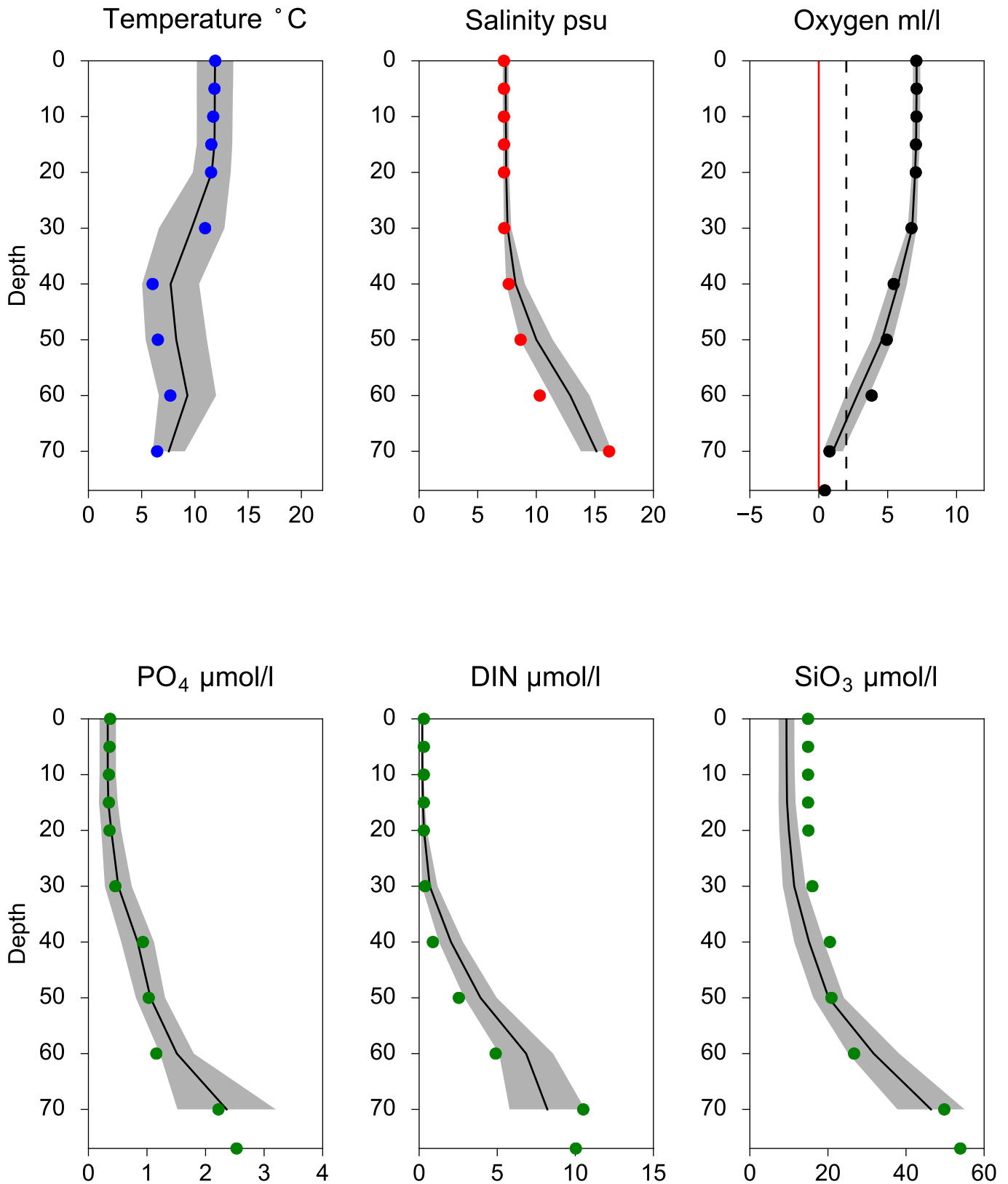


# Vertical profiles HANÖBUKTEN October

— Mean 2001-2015

■ St.Dev.

● 2017-10-15



# STATION ANHOLT E SURFACE WATER (0-10 m)

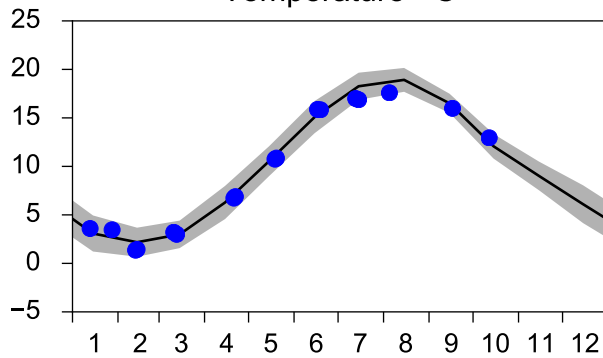
Annual Cycles

— Mean 2001-2015

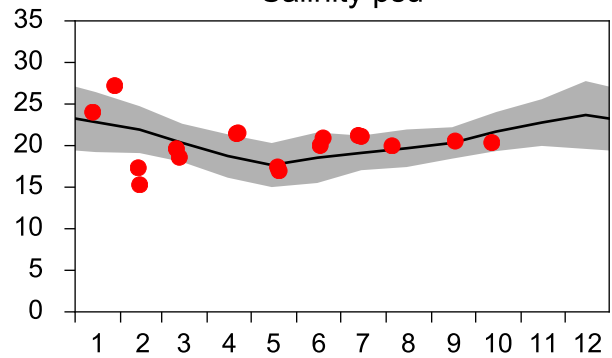
■ St.Dev.

● 2017

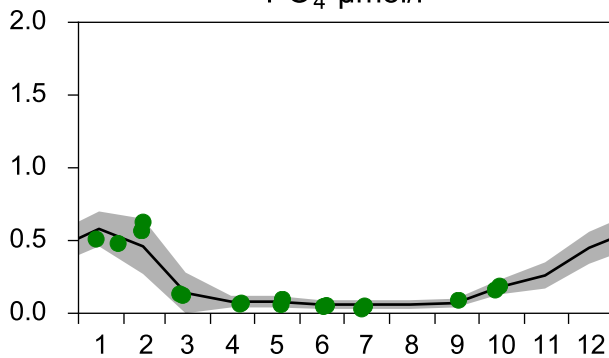
Temperature °C



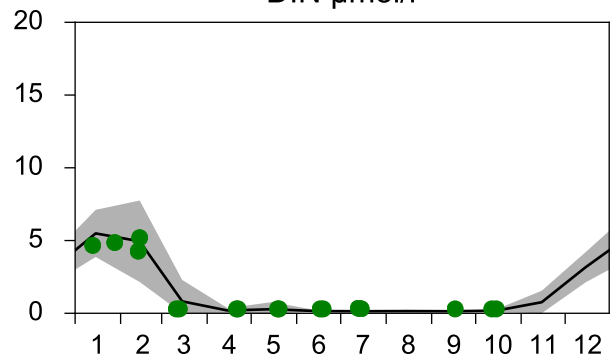
Salinity psu



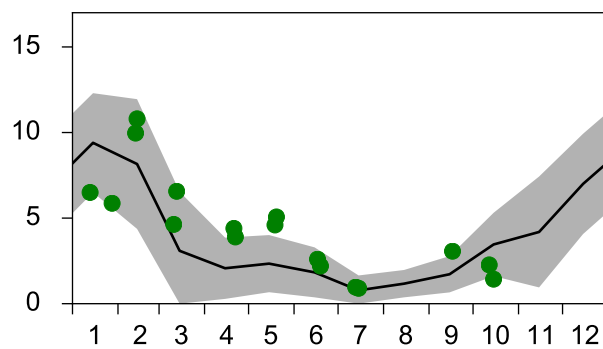
PO<sub>4</sub> µmol/l



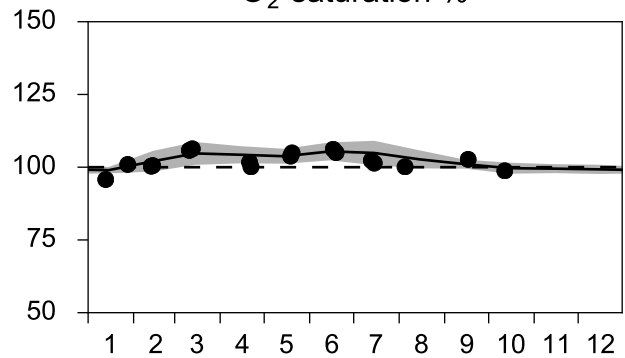
DIN µmol/l



SiO<sub>3</sub> µmol/l

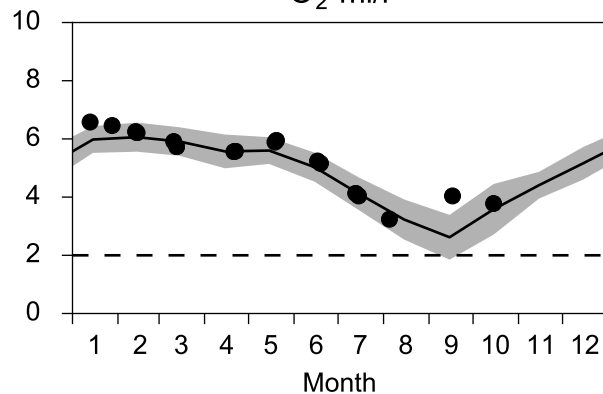


O<sub>2</sub> saturation %

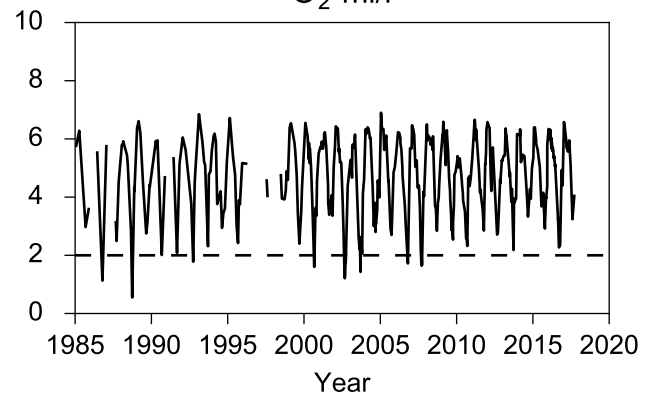


## OXYGEN IN BOTTOM WATER (depth >= 52 m)

O<sub>2</sub> ml/l



O<sub>2</sub> ml/l



# Vertical profiles ANHOLT E October

— Mean 2001-2015    ■ St.Dev.    ● 2017-10-15

