Bengt Yhlen

Swedish Meteorological and Hydrological Institute
Oceanographical Laboratory

1997-10-22
Dnr: SaO-1997-226

EXPEDITIONSRAPPORT FRÅN U/F ARGOS

CRUISE REPORT FROM R/V ARGOS

Expeditionens varaktighet: 971012-971017
Survey period:

Undersökningsområde: The Skagerrak, the Kattegat, the Sound,
Survey area: and the Baltic Proper

Uppdragsgivare: SMHI
Principal:

SUMMARY

The expedition was performed within SMHIs regular monitoring programme and covered the Skagerrak, the Kattegat, the Sound and the Baltic Proper. The weather was dominated by weak to moderate northerly winds. The surface water temperatures showed normal values. In the surface water of the Skagerrak the nutrient contents were low. In the surface water of the Kattegatt and the Baltic, outside the Sound area, the nitrogen componds were below or close to the detection limit, whereas both phosphate, 0.1-0.2 µmol/l, and silicate, 0.2-0.7, in the Kattegatt and, 6-10, µmol/l in the Baltic was present.
The oxygen conditions in the bottom water are displayed in a figure. Hydrogen sulphide was observed in the deep water of the East Gotland Basin (stations: BY10, BY15 and BY20). The concentration close to bottom in the Gotland deep is now almost 50 µmol/l.
No visible algae blooms were observed in any of the sea areas.

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PRELIMINÄRA RESULTAT

Expeditionen, som ingick i SMHIs ordinarie övervakningsprogram, utgick från Karlskrona och avslutades i Göteborg. Vädret under expeditionen dominerades av svaga till måttliga vindar omkring nord, men under resans sista dygn blåste en sydlig kuling upp.

Skagerrak

Temperaturen i ytvattnet varierade mellan 11.0 och 12.3°C vilket är normalt för årstiden. Närsalthalterna i ytlagret var för årstiden normala, d.v.s. låga. In situ fluorescensen var låg i området vilket tydde på att någon blomning ej pågick.

Kattegatt och Öresund

Ytvattentemperaturen varierade mellan 10.7 och 11.8°C, vilket är normalt för årstiden. Termoklinen var svagt utbildat och låg i Kattegatt grundare än 10 meter. Kvävekomponenterna i ytlagret utanför Öresundsområdet var uttömda och samtliga mätvärden låg under eller strax över detektionsgränserna, vilket är normalt för årstiden. Även här var in situ fluorescensen låg. Det lägsta syrevärdet i Kattegatts djupvatten uppmättes vid Anholt E, 2.13 ml/l på 50 m djup, motsvarande en mättnad på 35%. I Öresund var syrehalten på 40 meters djup vid W Landskrona 3.81 ml/l (63% mättnad).

Östersjön

Temperaturen i ytvattnet var normal för årstiden och varierade mellan 12.7 och 10.0°C , med det lägsta värdet i norr. Termoklinen låg på mellan 30 och 40 meters djup i hela området, utom i Arkonabassängen där den låg 10 meter grundare. Närsalthalterna i ytlagret var typiska för årstiden; fosfat 0.1-0.2 µmol/l, nitrat omkring detektionsgränsen på 0.10 µmol/l, och silikat 6-10 µmol/l. In situ fluorescensmätningarna visade att höstblomningen ännu ej hade börjat. Syreförhållandena i bottenvattnet under haloklinen framgår av figur. Syrehalterna var låga utom i Arkonabassängen. Gränsen för 2 ml O_2/l låg i Bornholmsbassängen på mellan 60 och 70, i östra Gotlandsbassängen mellan 80 till 90, i norra Gotlandsbassängen mellan 70 till 80 och i västra Gotlandsbassängen på mellan 70 till 90 meters djup. Svavelväte återfanns i Gotlandsdjupet och Fårödjupet på djup större än 200 m samt på station BY 10 på 140 meters djup. Halterna vid botten är nu relativt höga och börjar närma sig 50 µmol/l i Gotlandsdjupet.

DELTAGARE

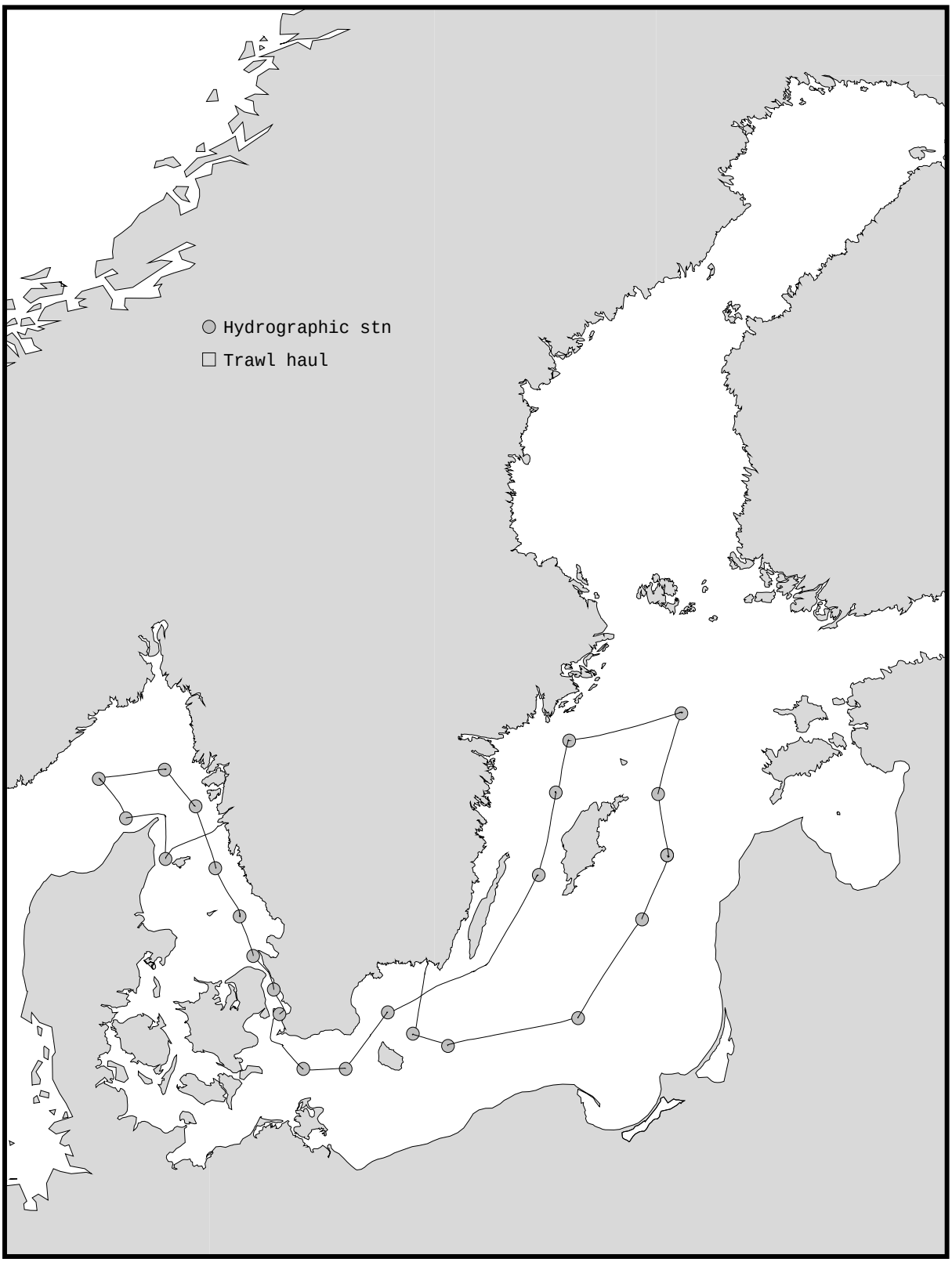
Namn	Från
Bengt Yhlen, expeditionsledare	SMHI Oceanografiska lab.
Markel Bertilsson	-”-
Tuulikki Jaako	-”-
Marie Larsson	-”-
Mats Ohlson	-”-

BILAGOR

- Färdkarta
- Tabell över stationer, antal parametrar och provtagningsdjup
- Karta över syrehalter i bottenvattnet
- Profilplottar för vissa basstationer
- Månadsmedelvärdesplottar för vissa basstationer

T R A C K C H A R T

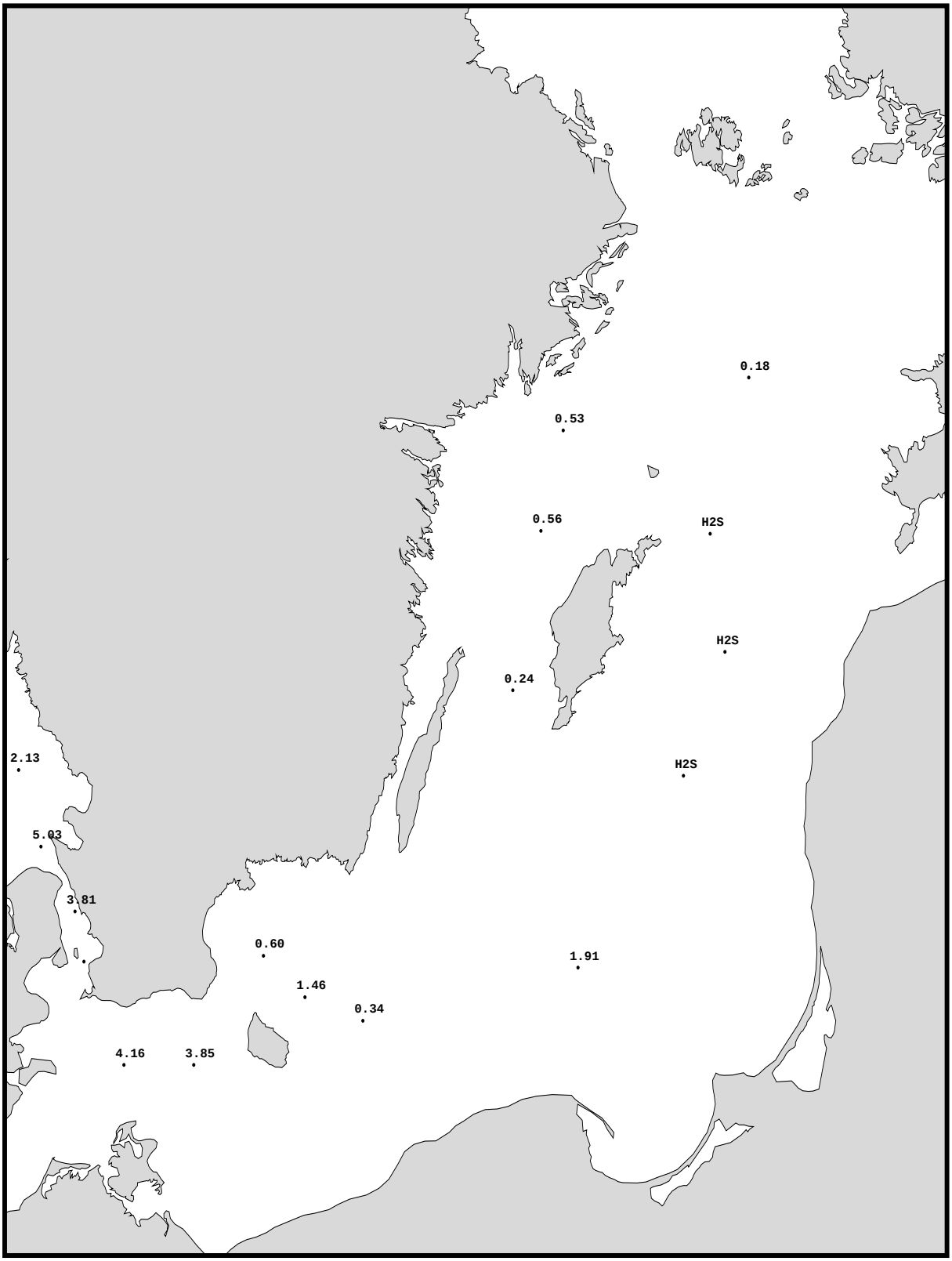
Country: Sweden
Ship : Argos
Date : 971012-971017
Series : 0671-0697



CSR RefNo: 1997-77AR/0671-0697

Bottom water oxygen concentration (ml/l)

Country: Sweden
Ship: Argos
Date: 971013-971017
Series: 0671-0694



SMHI ***** Hydrographic Ship: 14-Argos ****** Date: 1997-10-20
Ocean lab ***** series Year: 1997 ****** Time: 10:01

Ser no	Stat code	Proj	Station	Lat	Lon	Date yymmdd	Time hhmm utc	Bott deph m	Mld m	Secc deph m	Wind di	Wind ve	Air temp C	Air pres hPa	WCSI elec aoae tu hd	C t d	PPCPZZT Hrhhoor Cilyooa motPBw PrP l	No de m p n	T e m	S a l i	P h i g	O x y	H 2 S	P o 4 P	T o t P	N o 2 N	N o 3 N	N o 4 N	T o t N	A l k a l	S i O 3	H u m u s	L i g n i	P O N	P O C	T O C	C o m m
0671	BPSB06BAS	BY4	CHRISTIANSÖ	N5523	E1520	971013	0245	94			32	7	8.5	996	9930	x	-------	12	x	x	-	x	-	x	x	x	x	x	x	-	x	-	-	-	-	-	-
0672	BPSB07BAS	BY5	BORNHOLMSDJ	N5515	E1559	971013	0540	93		6	32	6	10.4	996	1330	x	-xxx---	13	x	x	x	x	-	x	x	x	x	x	-	x	x	-	-	-	-	-	-
0673	BPSE11BAS	BCS III-10		N5533.3	E1824	971013	1325	90		8	30	5	10.6	1000	1330	x	-xxx---	13	x	x	x	x	-	x	x	x	x	x	x	x	x	-	-	-	-	-	-
0674	BPEX13BAS	BY10		N5638	E1935	971013	2015	148			34	6	8.9	1000	9920	x	--x----	16	x	x	-	x	x	x	x	x	x	x	-	x	-	-	-	-	-	-
0675	BPEX21BAS	BY15	GOTLANDSDJ	N5720	E2003	971014	0105	249			32	7	7.3	1002	9930	x	-xxx---	20	x	x	x	x	x	x	x	x	x	x	x	x	x	x	-	-	-	-	-
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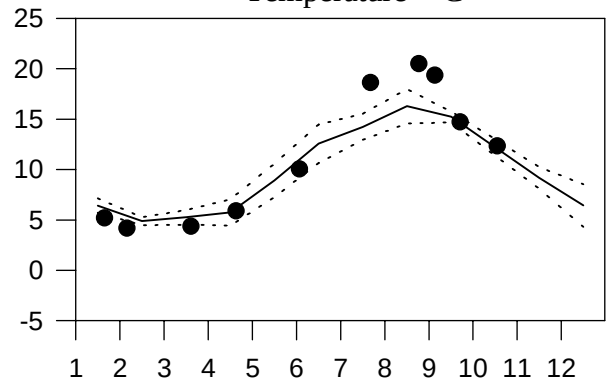
STATION HS5 SURFACE WATER (0-15 m)

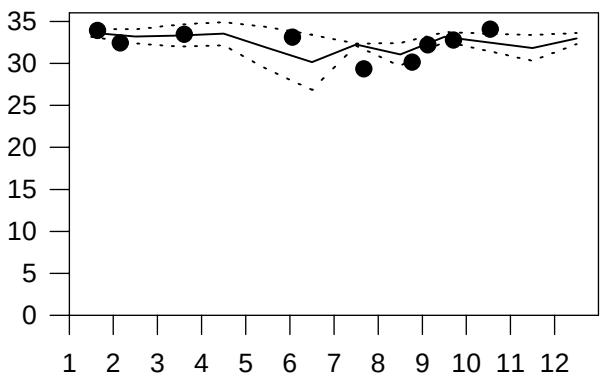
Annual Cycles

Mean 1986-1995 St.Dev. 1997

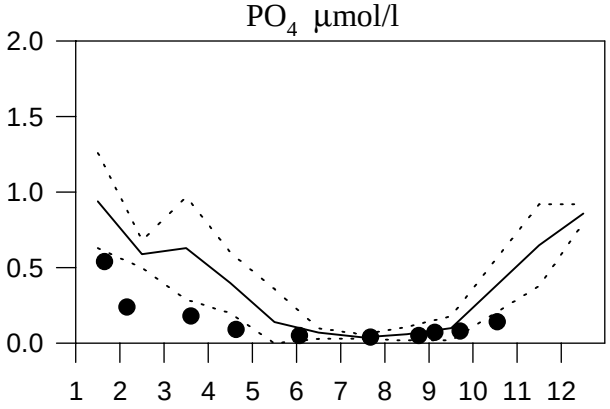
Temperature °C



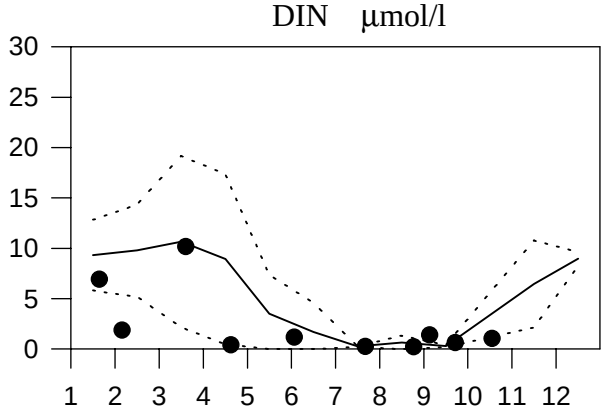
Salinity psu



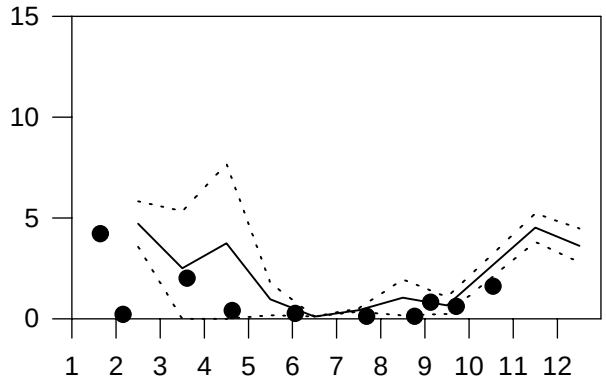
PO_4 µmol/l



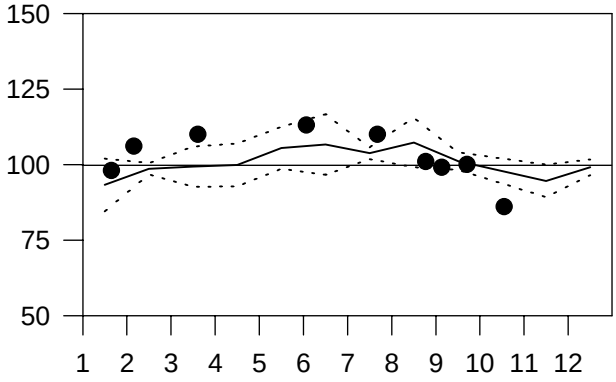
DIN µmol/l



SiO_3 µmol/l

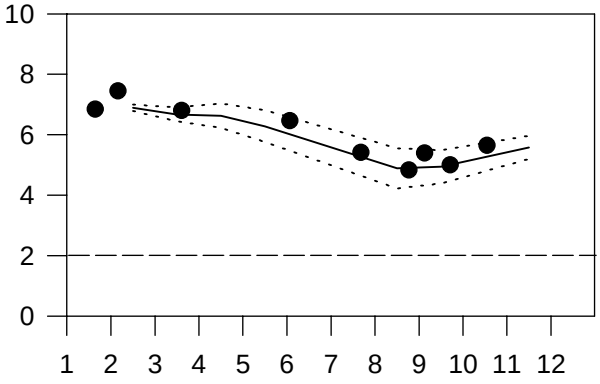


O_2 saturation %

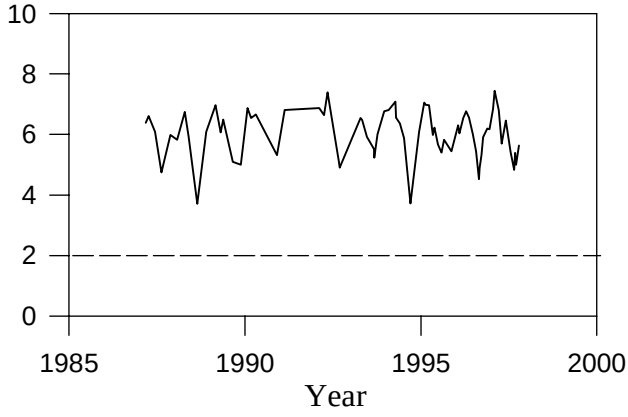


OXYGEN IN BOTTOM WATER

O_2 ml/l



O_2 ml/l

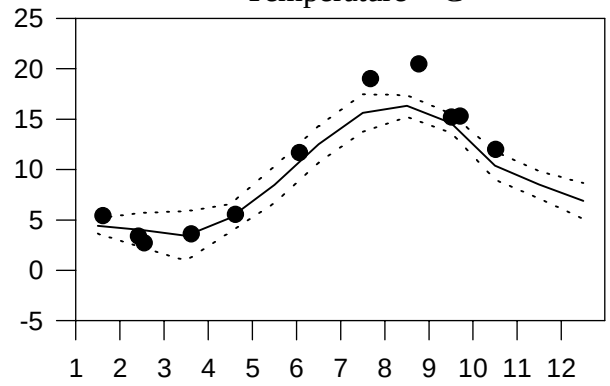


STATION P2 SURFACE WATER (0-15 m)

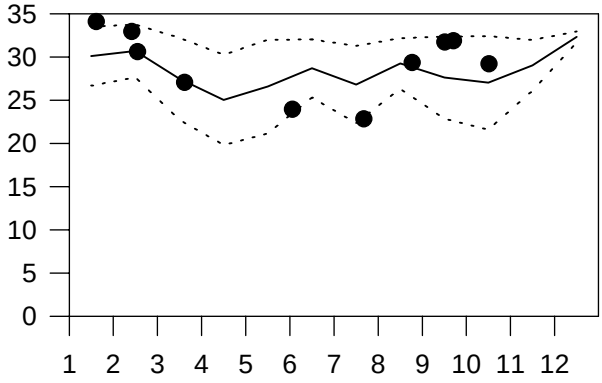
Annual Cycles

Mean 1986-1995 St.Dev. 1997

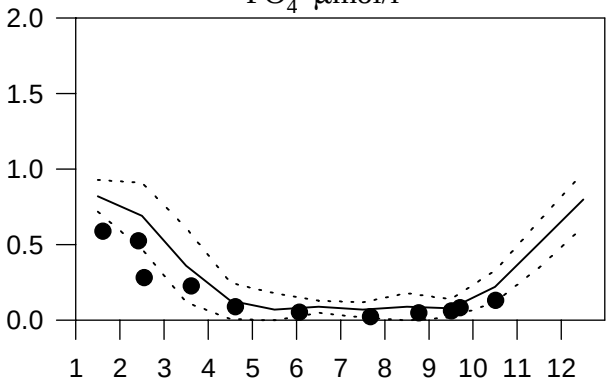
Temperature °C



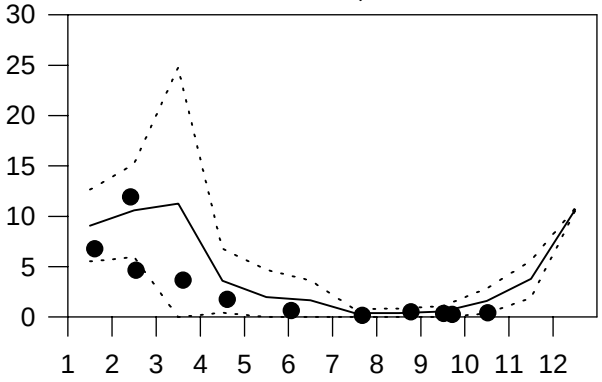
Salinity psu



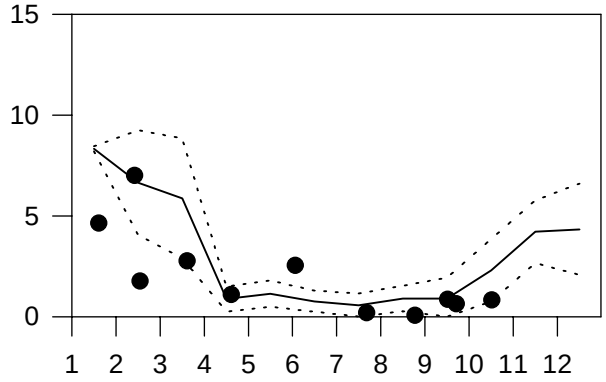
PO_4 µmol/l



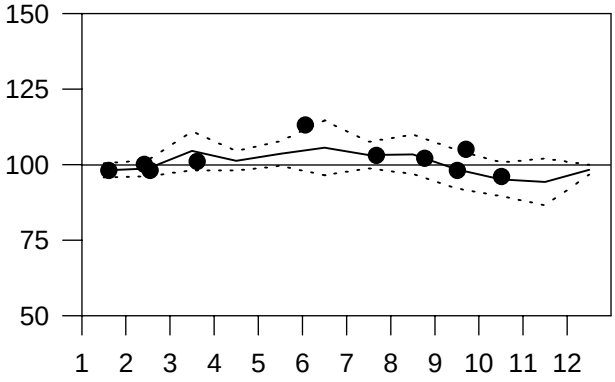
DIN µmol/l



SiO_3 µmol/l

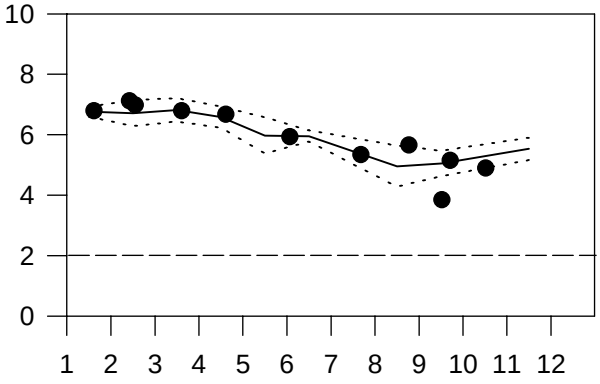


O_2 saturation %

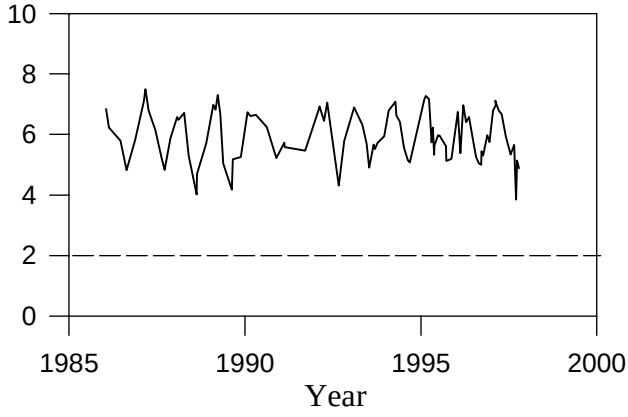


OXYGEN IN BOTTOM WATER

O_2 ml/l



O_2 ml/l

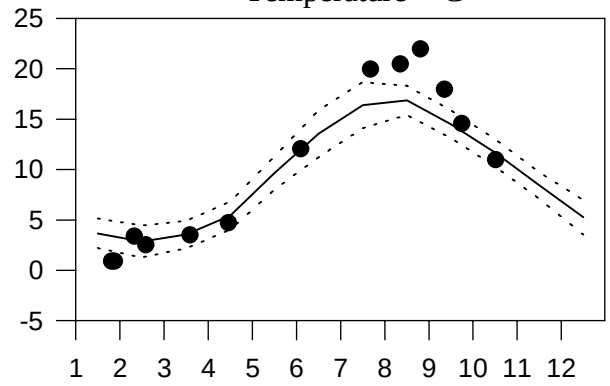


STATION FLADEN SURFACE WATER (0-15 m)

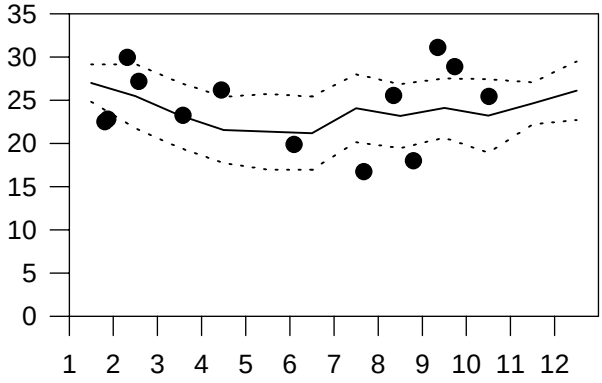
Annual Cycles

Mean 1986-1995 St.Dev. 1997

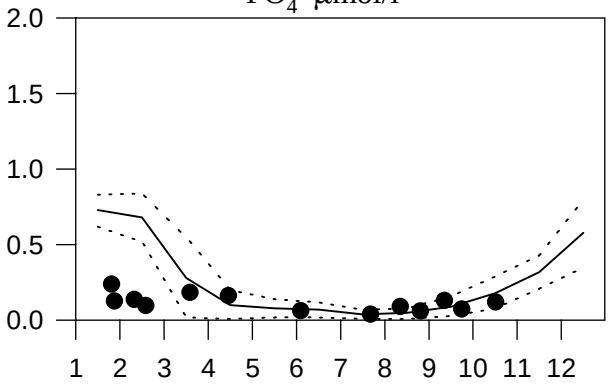
Temperature °C



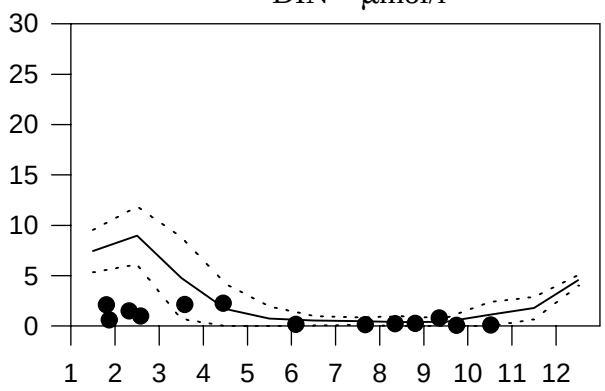
Salinity psu



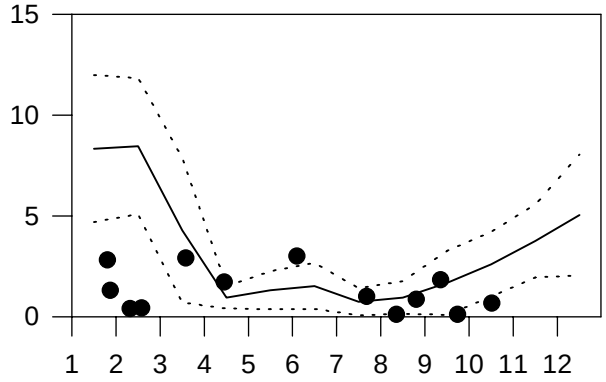
PO_4 µmol/l



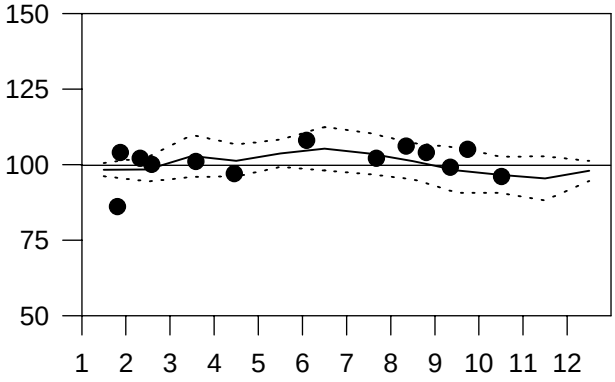
DIN µmol/l



SiO_3 µmol/l

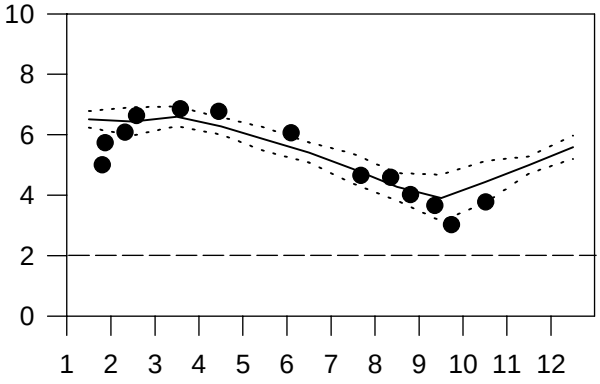


O_2 saturation %

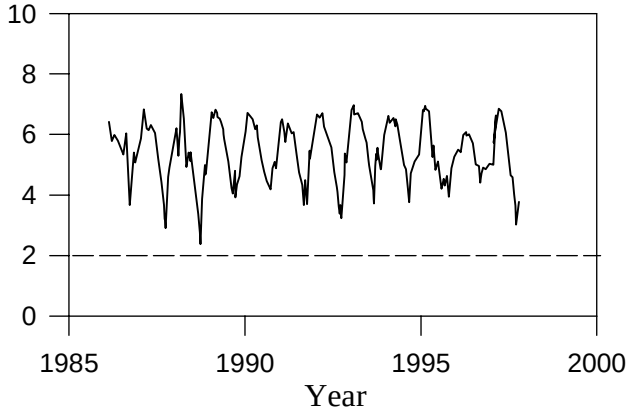


OXYGEN IN BOTTOM WATER

O_2 ml/l



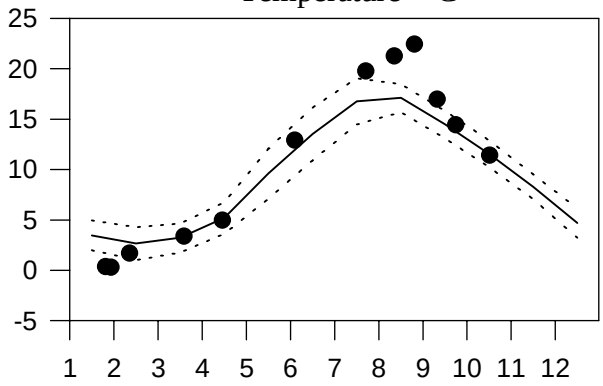
O_2 ml/l



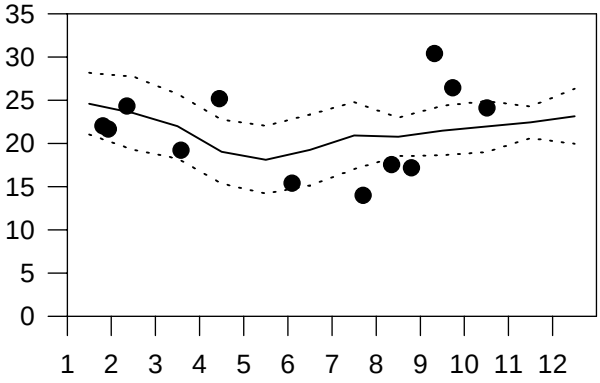
STATION ANHOLT E SURFACE WATER (above halocline)

Annual Cycles

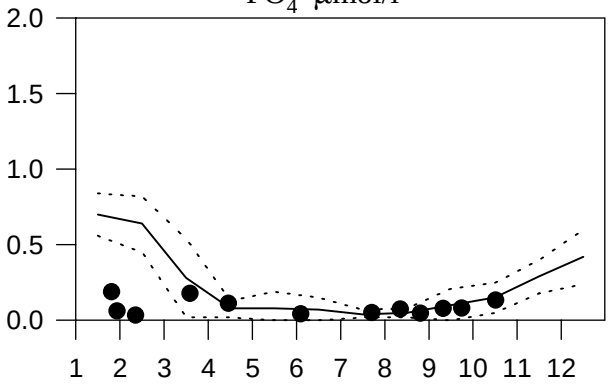
Temperature °C



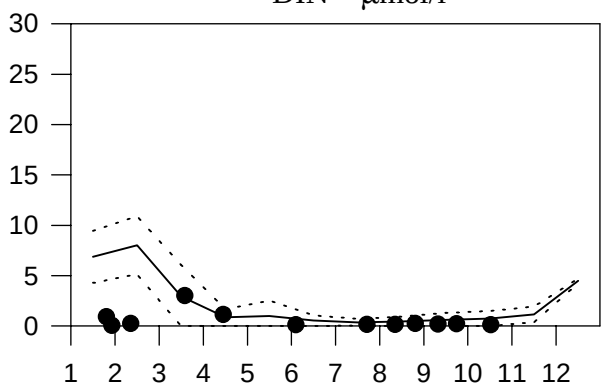
Salinity psu



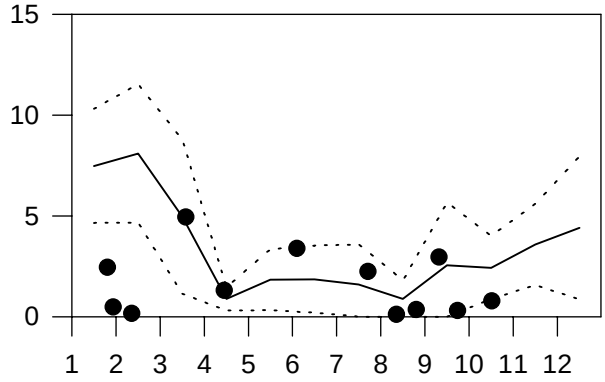
PO_4 µmol/l



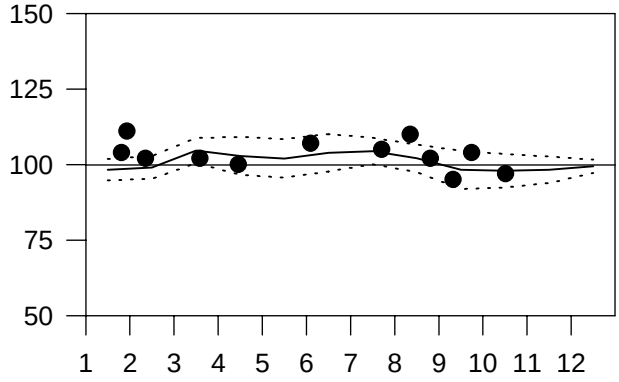
DIN µmol/l



SiO_3 µmol/l

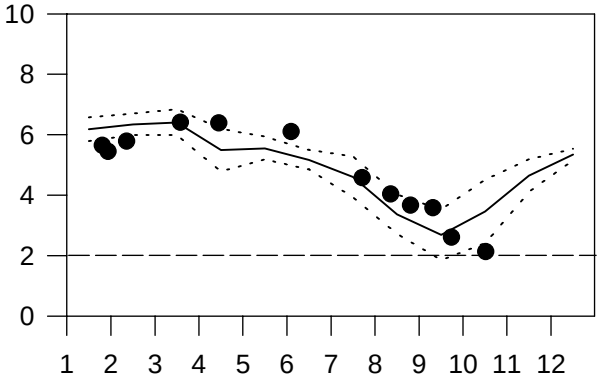


O_2 saturation %

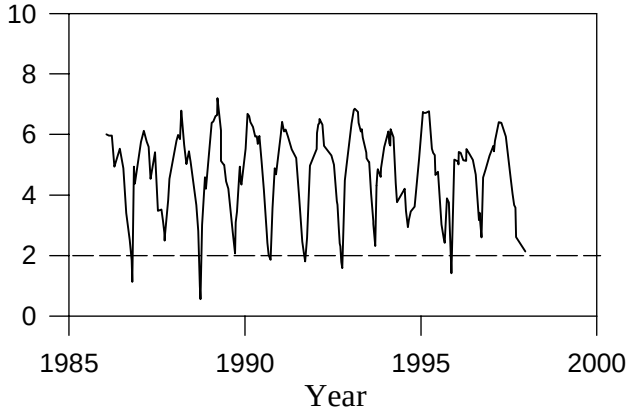


OXYGEN IN BOTTOM WATER

O_2 ml/l



O_2 ml/l

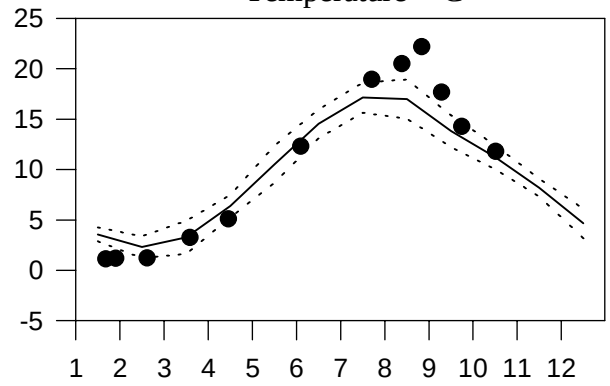


STATION W LANDSKRONA SURFACE WATER (0-15 m)

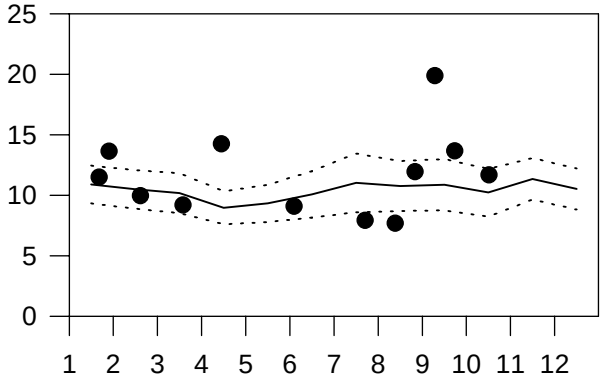
Annual Cycles

Mean 1986-1995 St.Dev. 1997

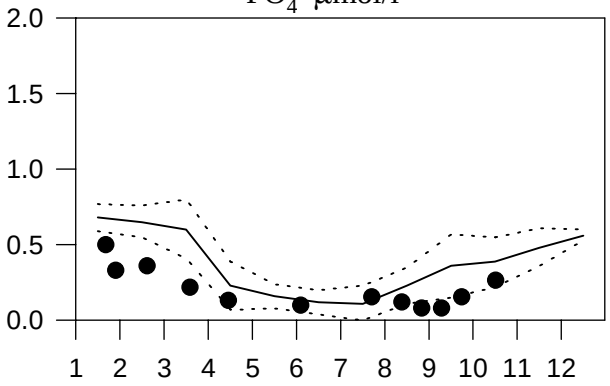
Temperature °C



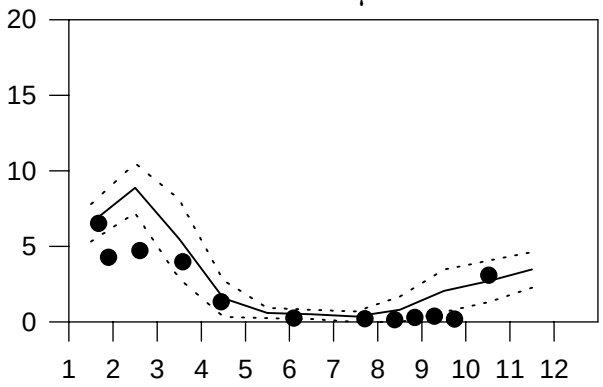
Salinity psu



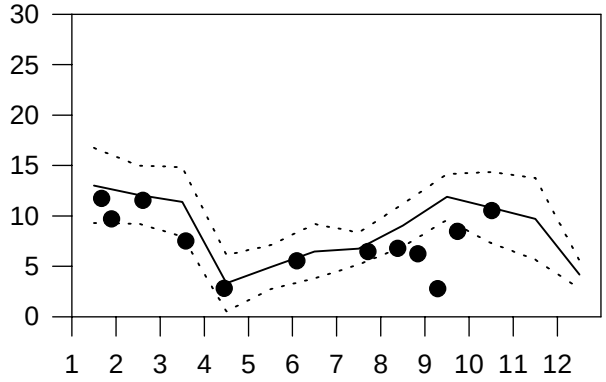
PO_4 µmol/l



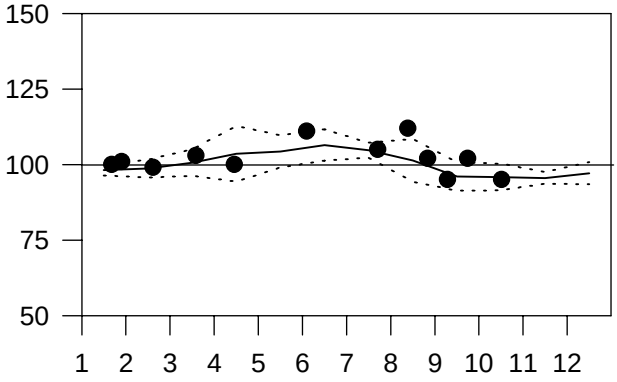
DIN µmol/l



SiO_3 µmol/l

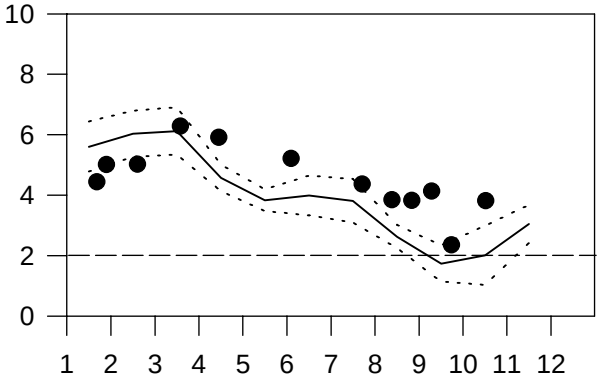


O_2 saturation %

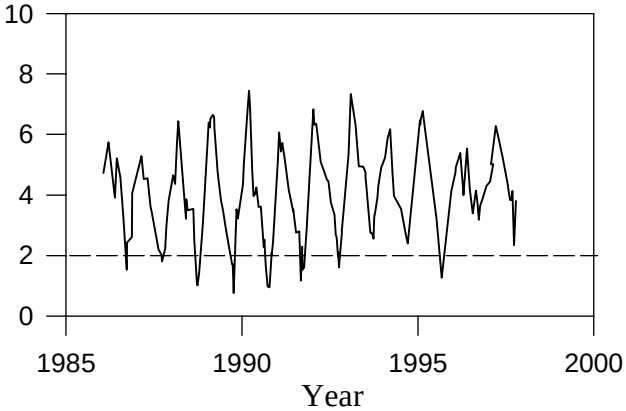


OXYGEN IN BOTTOM WATER

O_2 ml/l



O_2 ml/l

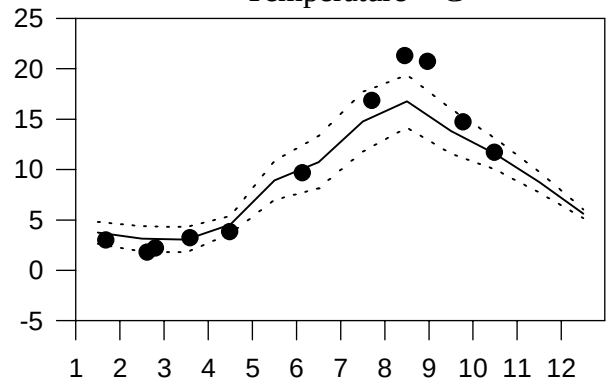


STATION BY2 SURFACE WATER (0-15 m)

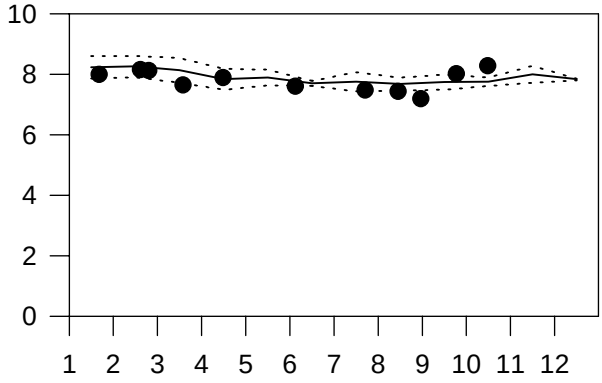
Annual Cycles

Mean 1986-1995 St.Dev. 1997

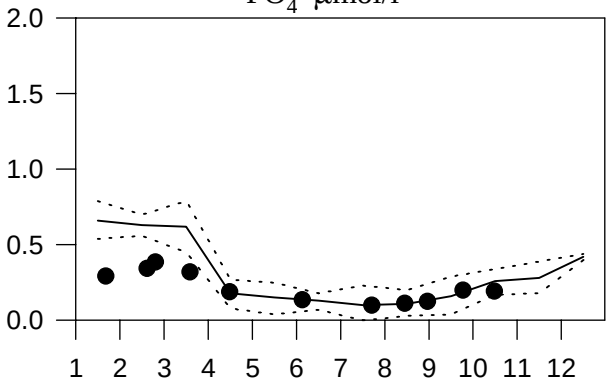
Temperature °C



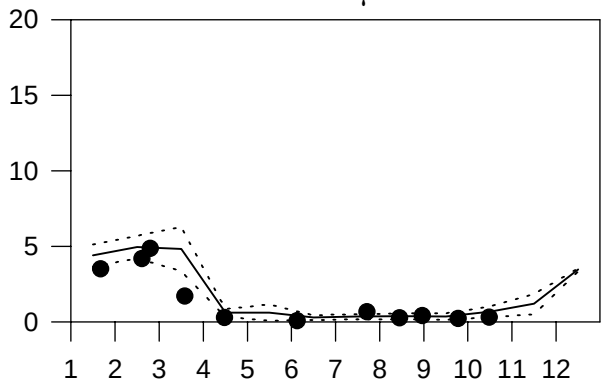
Salinity psu



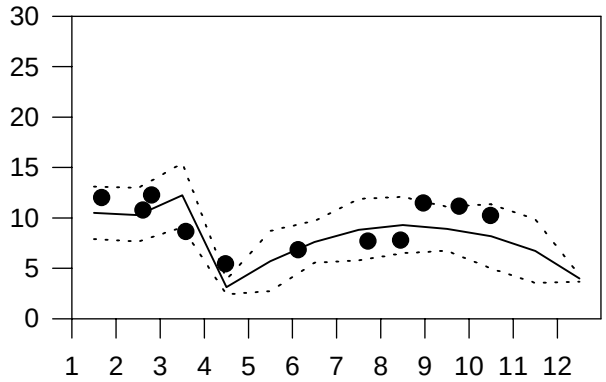
PO_4 µmol/l



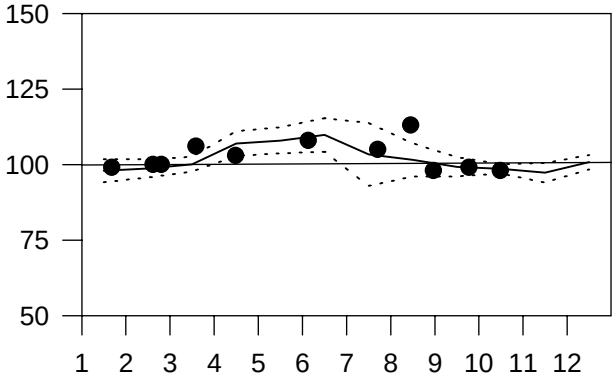
DIN µmol/l



SiO_3 µmol/l

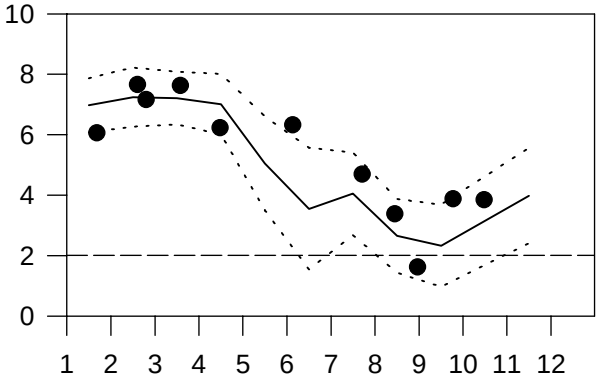


O_2 saturation %

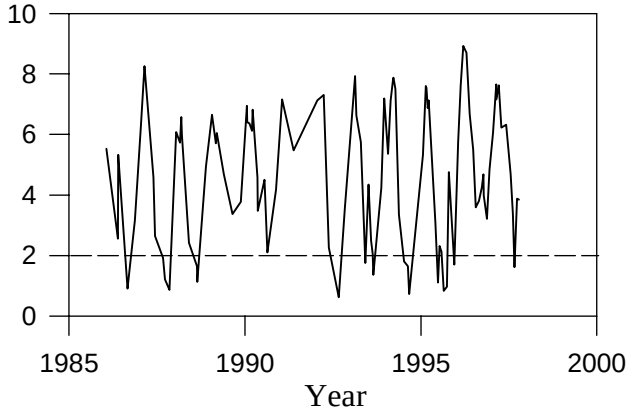


OXYGEN IN BOTTOM WATER

O_2 ml/l



O_2 ml/l

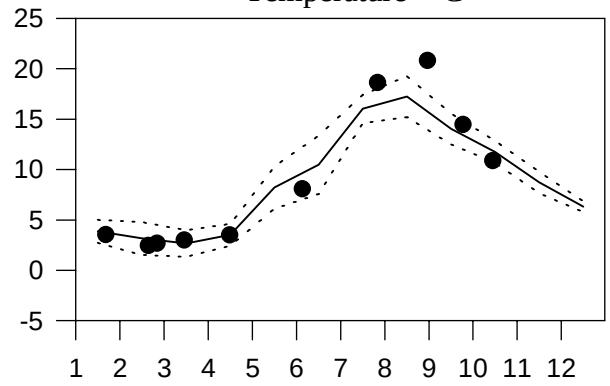


STATION BY5 SURFACE WATER (0-15 m)

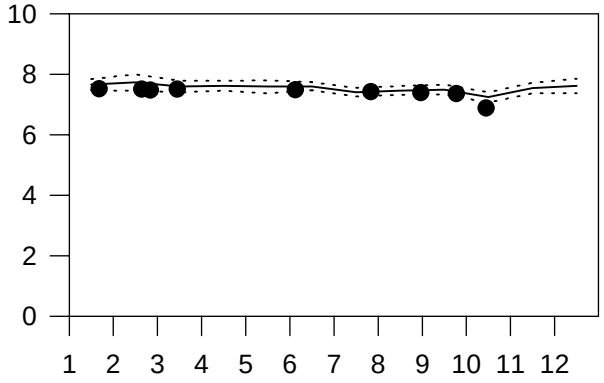
Annual Cycles

Mean 1986-1995 St.Dev. 1997

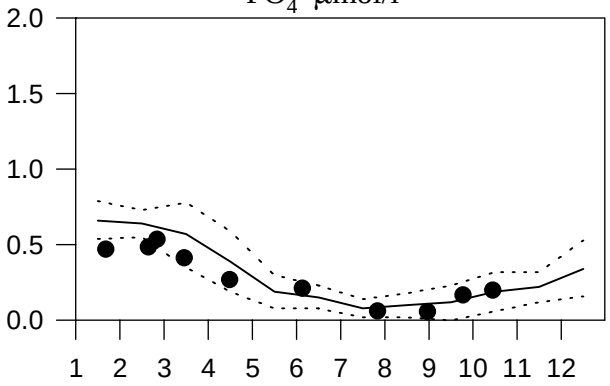
Temperature °C



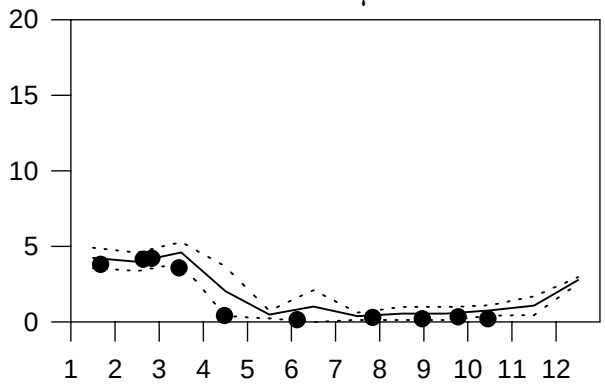
Salinity psu



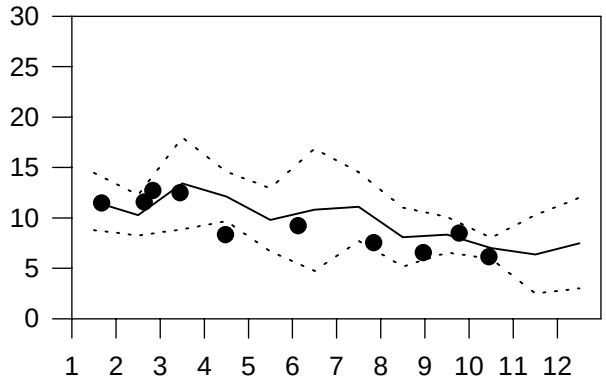
PO_4 µmol/l



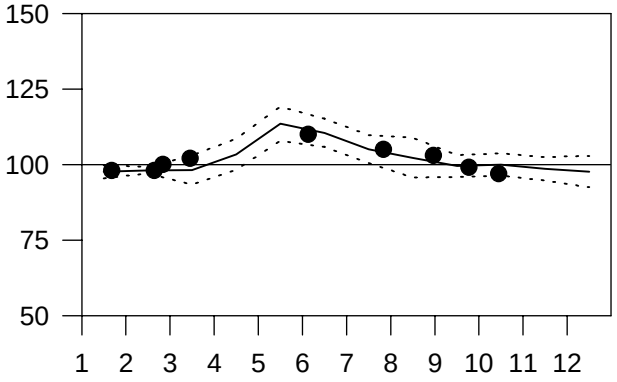
DIN µmol/l



SiO_3 µmol/l

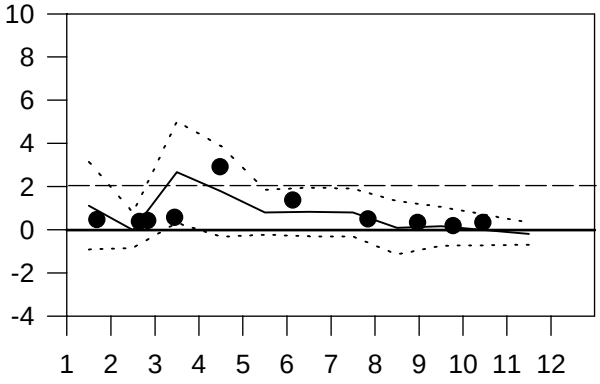


O_2 saturation %

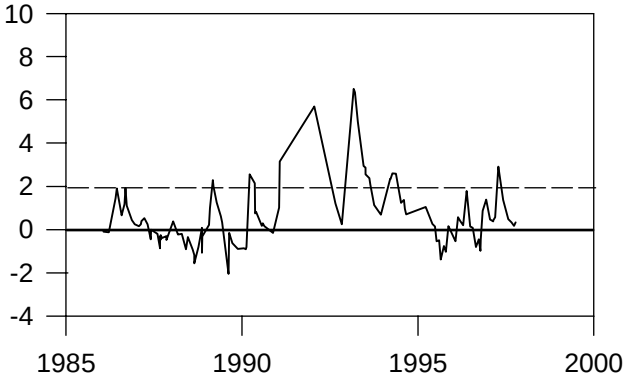


OXYGEN IN BOTTOM WATER

O_2 ml/l



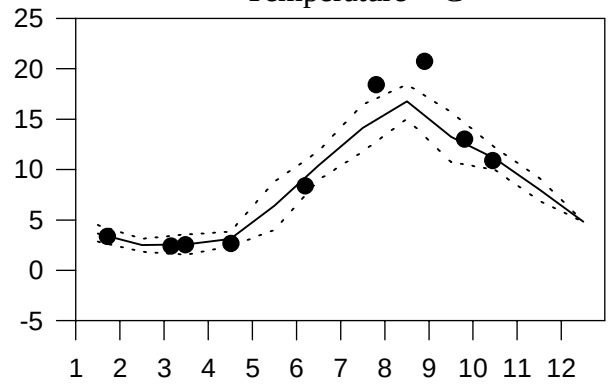
O_2 ml/l



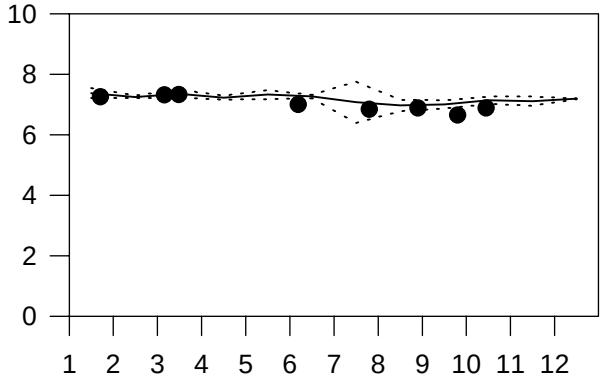
STATION BY15 SURFACE WATER (0-15 m)

Annual Cycles

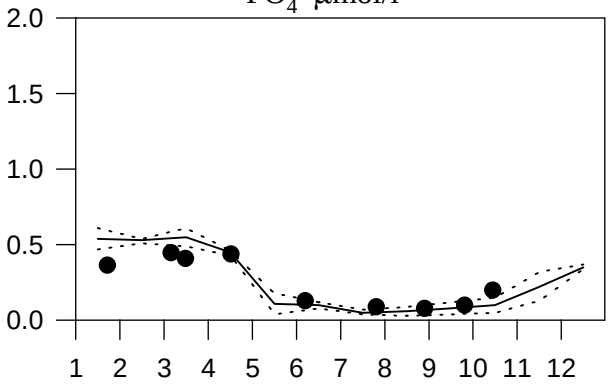
Temperature °C



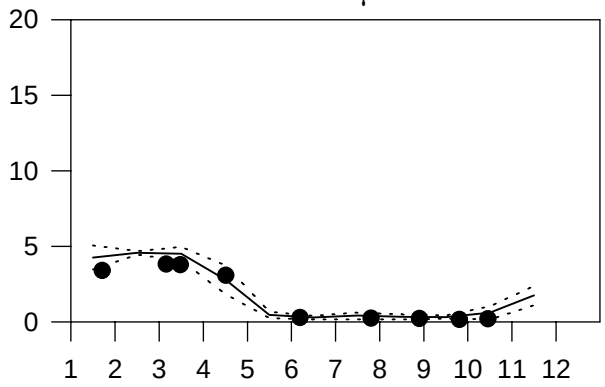
Salinity psu



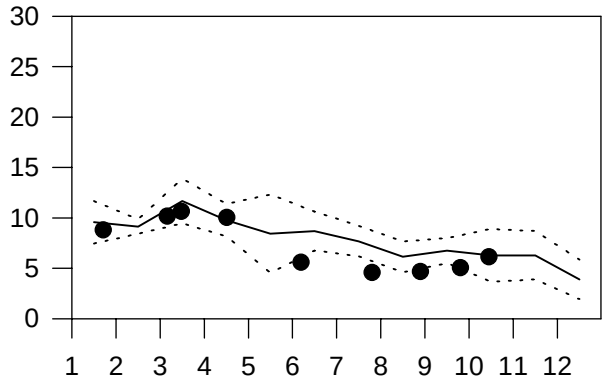
PO_4 µmol/l



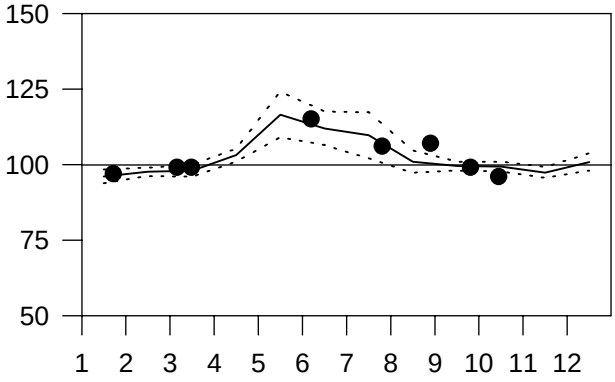
DIN µmol/l



SiO_3 µmol/l

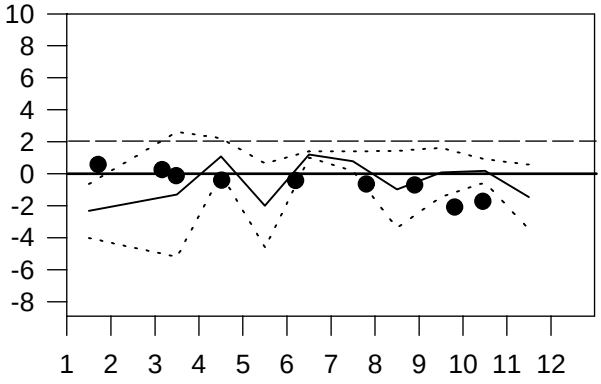


O_2 saturation %

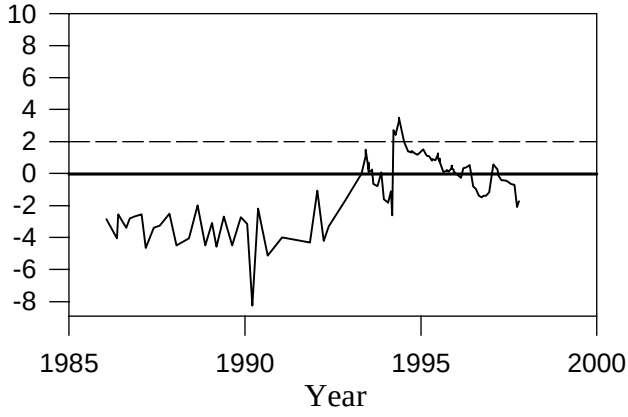


OXYGEN IN BOTTOM WATER

O_2 ml/l



O_2 ml/l

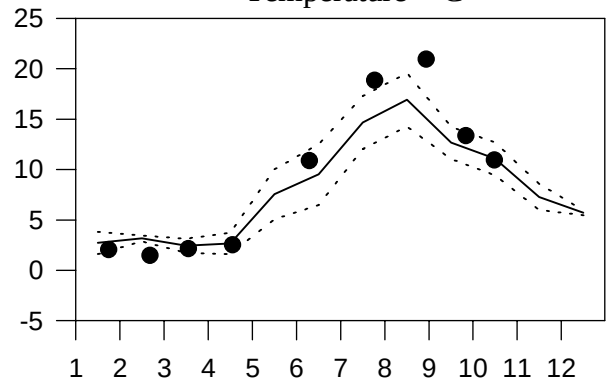


STATION BY38 SURFACE WATER (0-15 m)

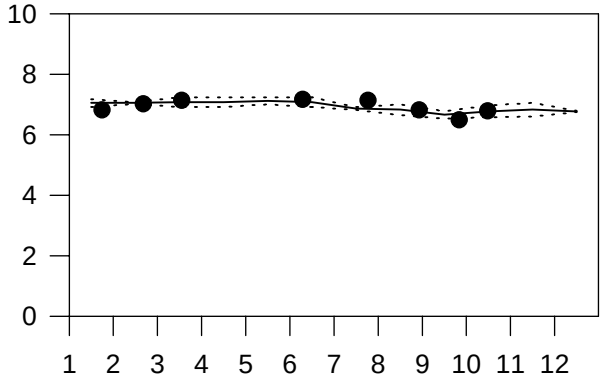
Annual Cycles

Mean 1986-1995 St.Dev. 1997

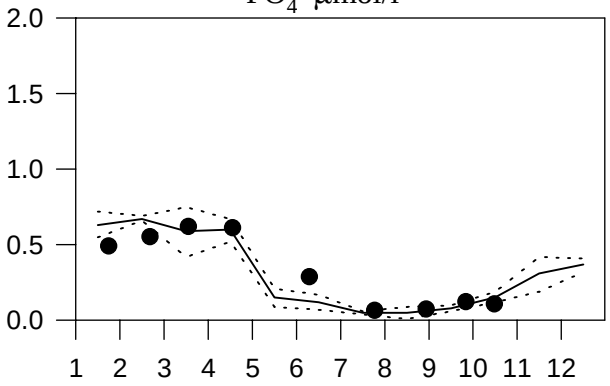
Temperature °C



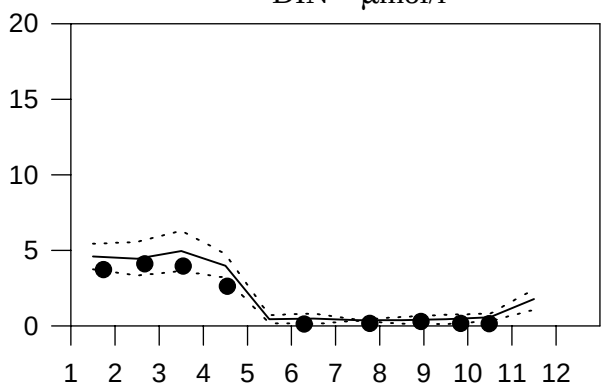
Salinity psu



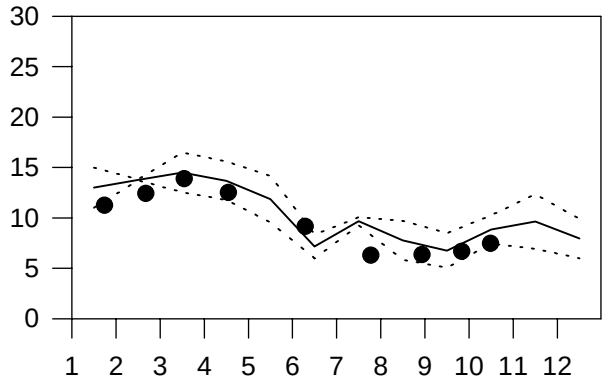
PO_4 µmol/l



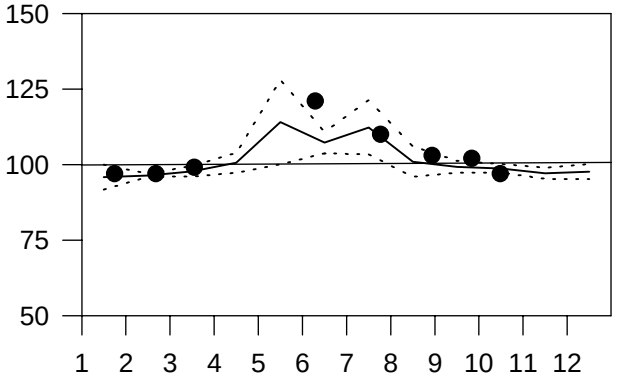
DIN µmol/l



SiO_3 µmol/l

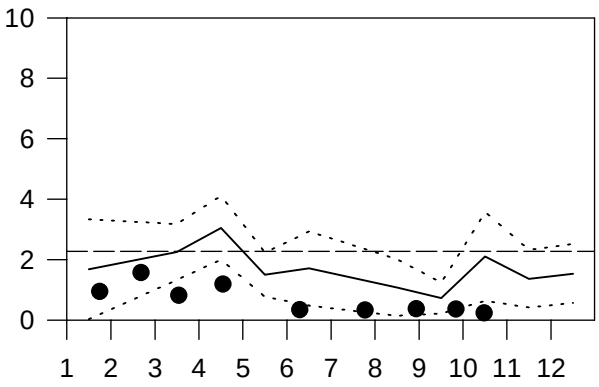


O_2 saturation %

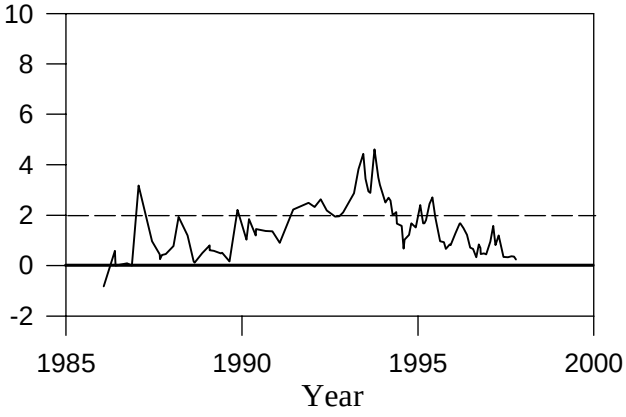


OXYGEN IN BOTTOM WATER

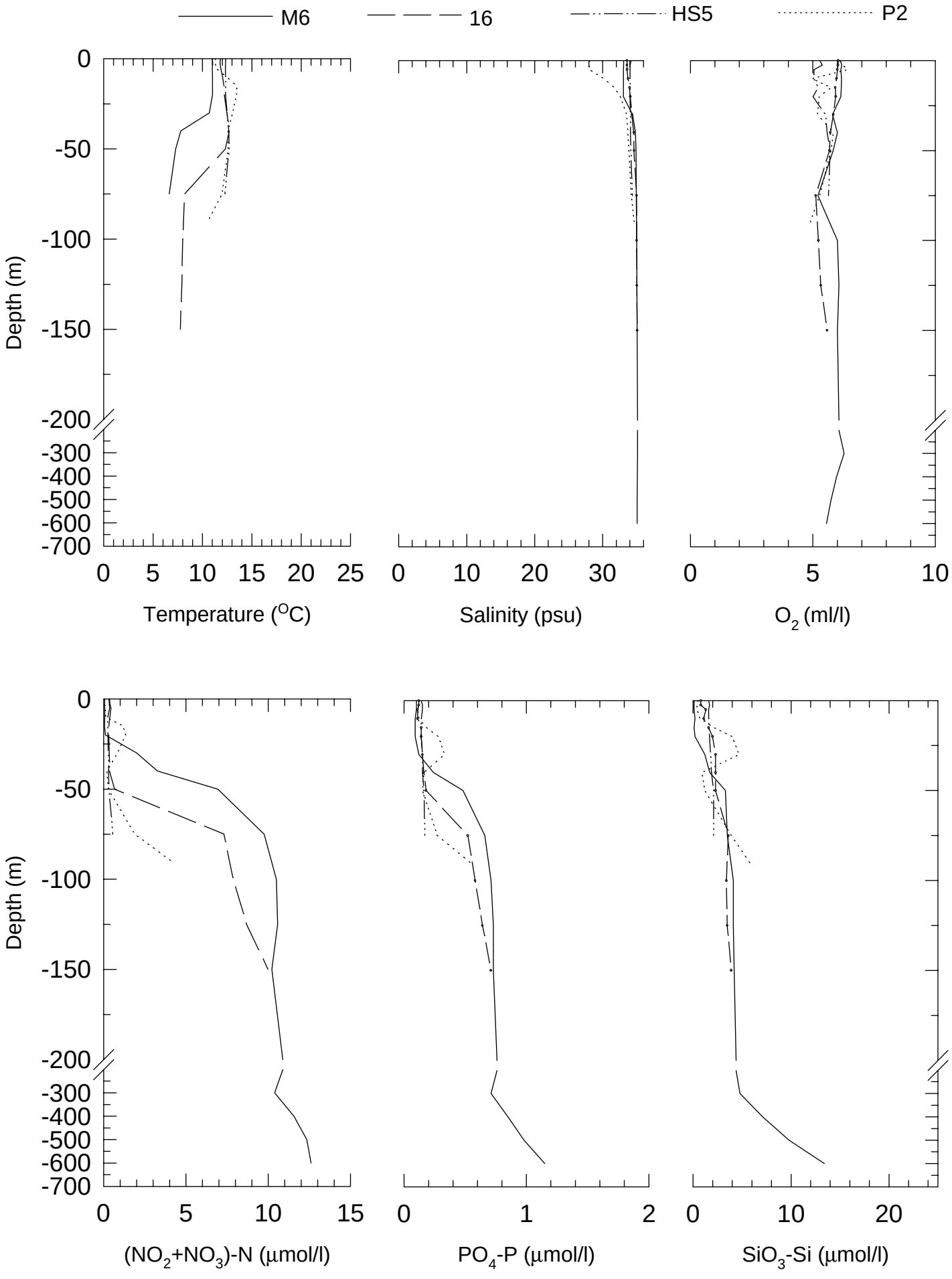
O_2 ml/l



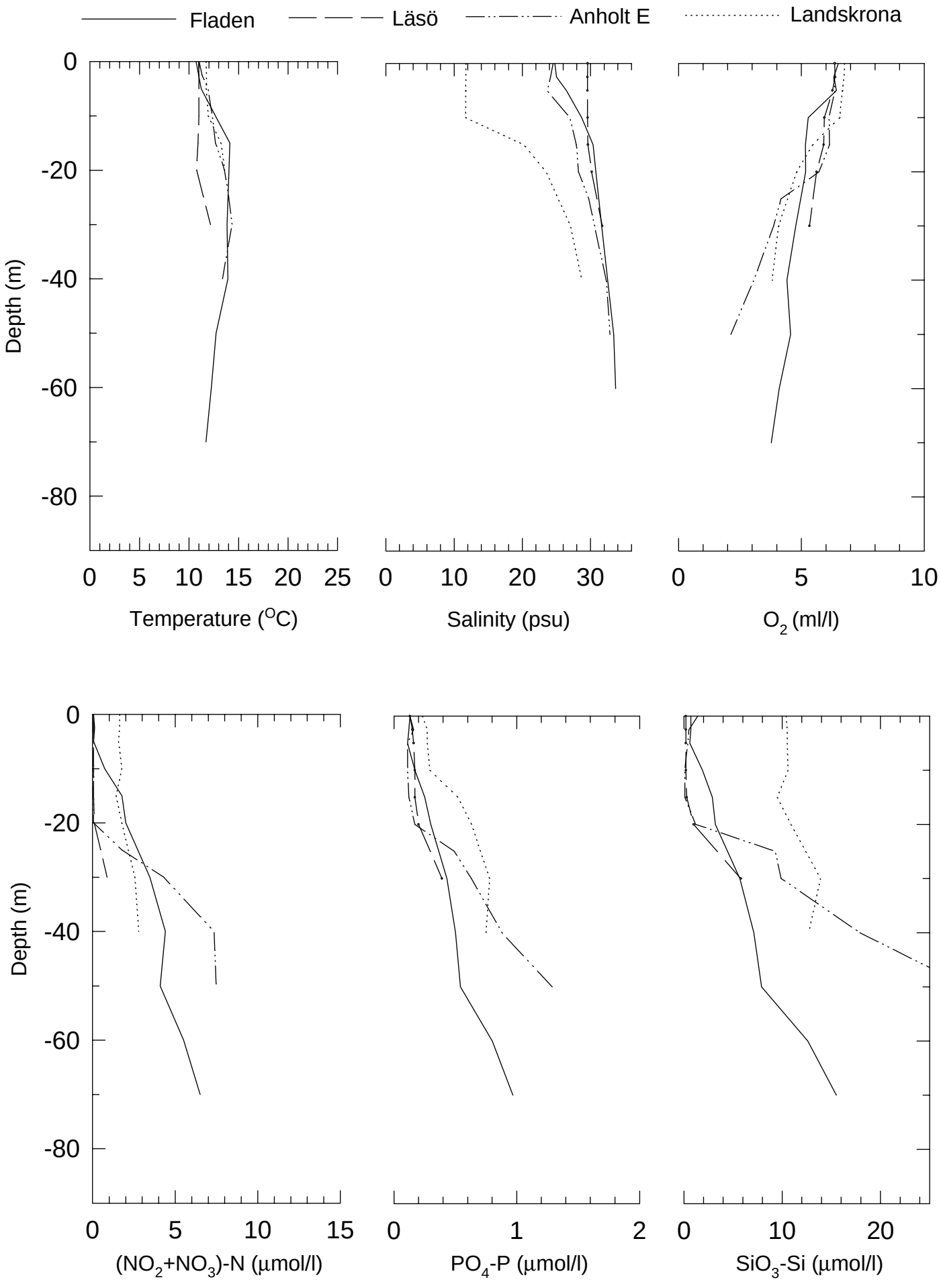
O_2 ml/l

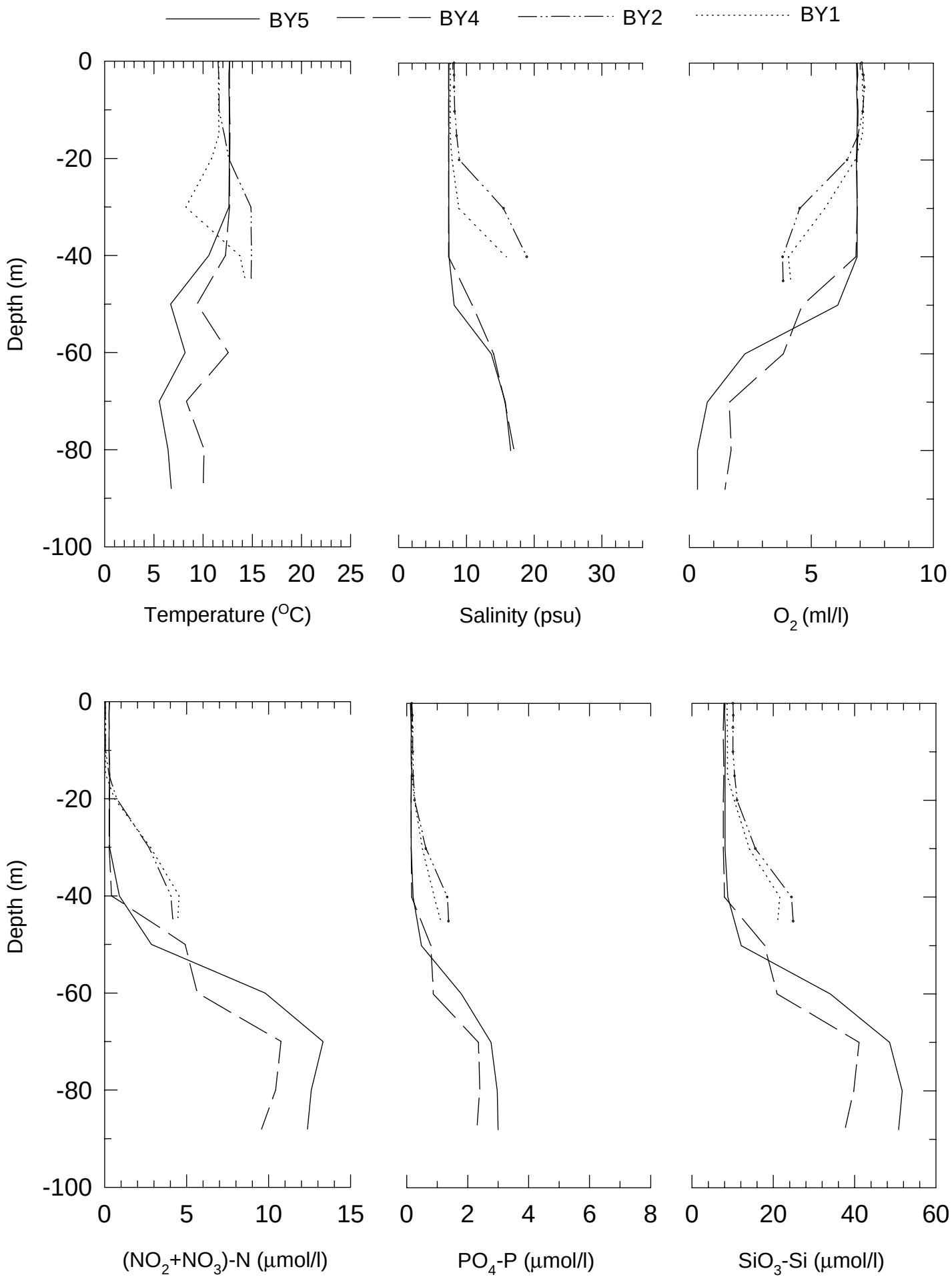


SKAGERRAK week 42 -97

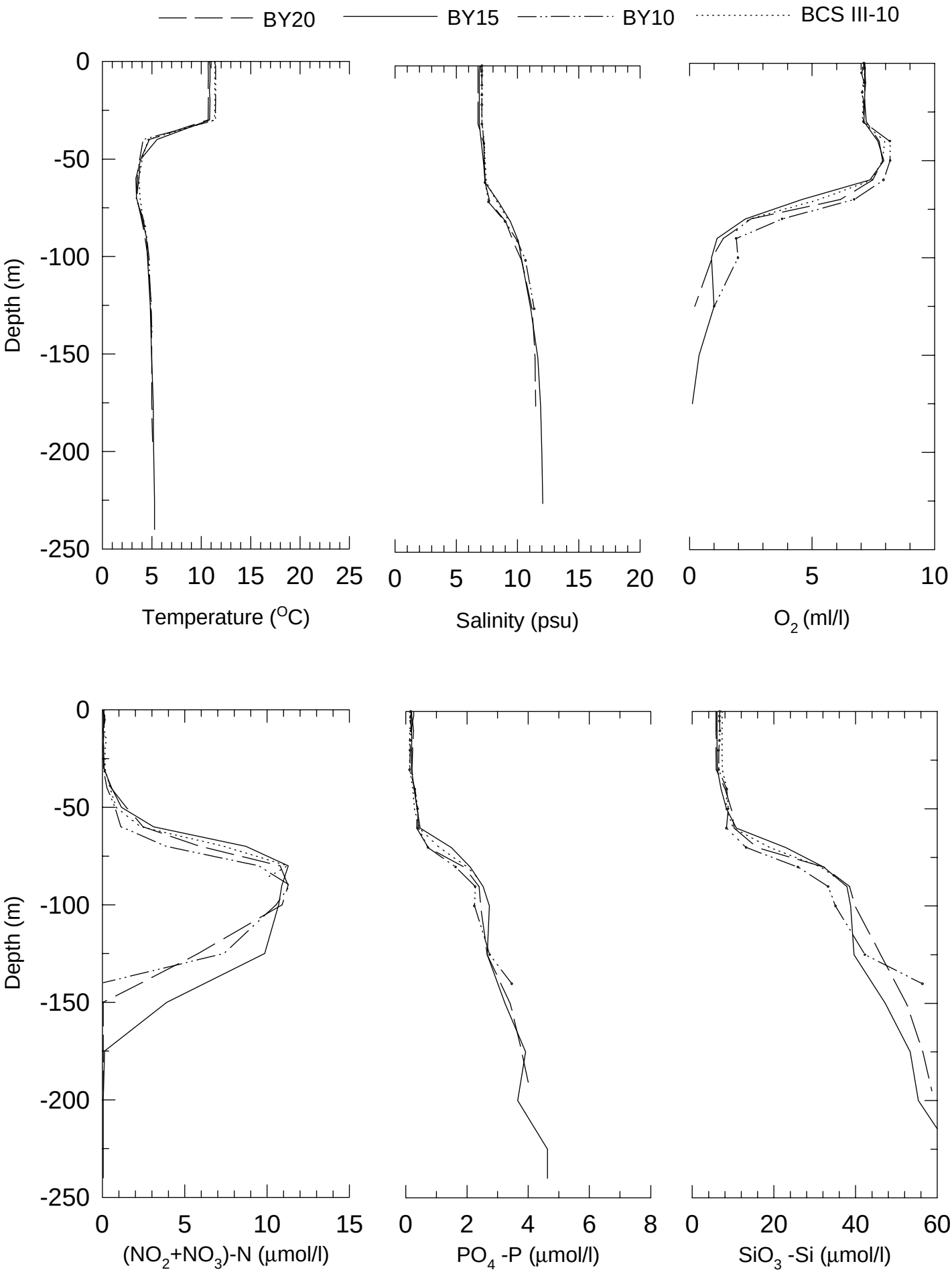


KATTEGAT and THE SOUND week 42 -97




SOUTH BALTIC week 42 -97
BY5
BY4
BY2
BY1
Depth (m)
0
-20
-40
-60
-80
-100
0 5 10 15 20 25
Temperature (°C)
0 10 20 30
Salinity (psu)
0 5 10
O2 (ml/l)
0 5 10 15
(NO2+NO3)-N (µmol/l)
0 2 4 6 8
PO4-P (µmol/l)
0 20 40 60
SiO3-Si (µmol/l)

EAST BALTIC week 42 -97



WEST BALTIC week 42 -97