Lars
Andersson

Swedish Meteorological and Hydrological Institute
Oceanographical Laboratory

1997-02-26
Dnr: SaO-1997-48

EXPEDITIONSRAPPORT FRÅN U/F ARGOS

CRUISE REPORT FROM R/V ARGOS

Expeditionens varaktighet: 970217-970222
Survey period:

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

Uppdragsgivare: SMHI and NSEPA
Principal:

SUMMARY

Skagerrak: *Surface temperatures varied between 2.5 and 4.5 °C and surface salinites from 30 in the east to 33.5 in the southwest. The pycnocline was located at a depth of 15 meters in the eastern part and at 30 meters along the Jutland coast. A bloom had started along the Swedish west coast and the nutrients showed concentrations below normal in this area.*

Kattegat and the Sound: *The pycnocline was located between 10 and 15 meters depth. The bloom that had already started in January was still ongoing and the nutrients showed concentrations typical for April-May. In the Sound, the situation was more normal with no signs of a spring bloom.*

The Baltic Proper: *Due to bad weather conditions, only stations in the southern and central part of the Baltic Proper were visited. In the southern part the pycnocline was located at a depth of 50 meters, increasing northwards to 90 meters. Surface water temperatures varied between 1.5 and 3 °C. All nutrients, except phosphate, showed normal winter concentrations. Phosphate on the other hand, showed very low concentrations, especially in the Arkona Basin.*

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PRELIMINÄRA RESULTAT

Expeditionen, som utgick från Göteborg och avslutades i Karlskrona, ingick i SMHIs ordinarie havsövervakningsprogram. Dessutom utfördes provtagning inom ramen för Baltic Monitoring Programme i Kattegatt, samt kartering i södra Östersjön för SMHIs årliga budget-beräkningar av närsalter. Dessutom ufördes även provtagningar på 7 stationer längs Hallandskusten för Hallands Kustvattenkontrollprogram.
Vädret under veckan dominerades av hårda till mycket hårda vindar med tidvis grov sjö.

Skagerrak

Ytvattentemperaturerna i området varierade från 2.5°-4.5°C och saliniteten från 30-33.5 psu. Språngskiktet låg på 15 meters djup i öster och på 30 meter utefter Jyllandskusten. Vårblomningen hade startat utefter svenska västkusten och närsalthalterna var för årstiden under det normala i detta området.

Kattegatt och Öresund

Språngskiktet låg på 10 till 15 meters djup och ytvatten-temperaturen varierade från 1.5° i nordväst till 3.0°C i sydost. Blomningen som redan hade startat under förra expeditionen i januari pågick fortfarande. Närsalthalterna uppvisade koncentrationer som är typiska för april-maj. Fosfat varierade från 0.02-0.10 µmol/l, nitrat 0.17-0.80 µmol/l och silikat 0.1-0.4 µmol/l. I Öresund hade ännu ingen blomning kommit i gång och förhållandena var för årstiden normala.

Östersjön

På grund av det dåliga vädret kunde endast stationerna i södra och mellersta Östersjön besökas. Ytvattentemperaturen var lägst i Arkona och vid Karlsödjupet, 1.5°, medan den i resten av området höll sig strax under 3°C. Språngskiktet i de södra delarna låg på ca. 50 meters djup medan det i de centrala delarna låg på 80 till 90 meters djup. Salthalten i ytan varierade från 7.0 till 8.0 psu från västra Östersjön till Arkonabassängen. Samtliga närsalter utom fosfat, som uppvisade låga koncentrationer i Arkona, hade för årstiden normala eller något under normala koncentrationer i hela området. Fosfat varierade från 0.3-0.6 µmol/l, nitrat från 3.2-4.4 µmol/l och silikat från 9.7-14.5 µmol/l. Inget svavelväte återfanns men syrgaskoncentrationerna var låga i djupvattnet, under 80-90 meter, i hela det besökta området.

DELTAGARE

Namn	Från
Lars Andersson, expeditionsledare	SMHI Oceanografiska lab.
Marie Larsson	- ″ -
Jan Szaron	- ″ -
Bodil Thorstensson	- ″ -
Jorge Valderrama	- ″ -

BILAGOR

- Färdkarta
- Tabell över provtagningsprogrammet + meteorologiska förhållanden
- Karta över syrehalter i bottenvattnet
- Profilplottar för vissa basstationer
- Månadsmedelvärdesplottar för vissa basstationer

T R A C K C H A R T

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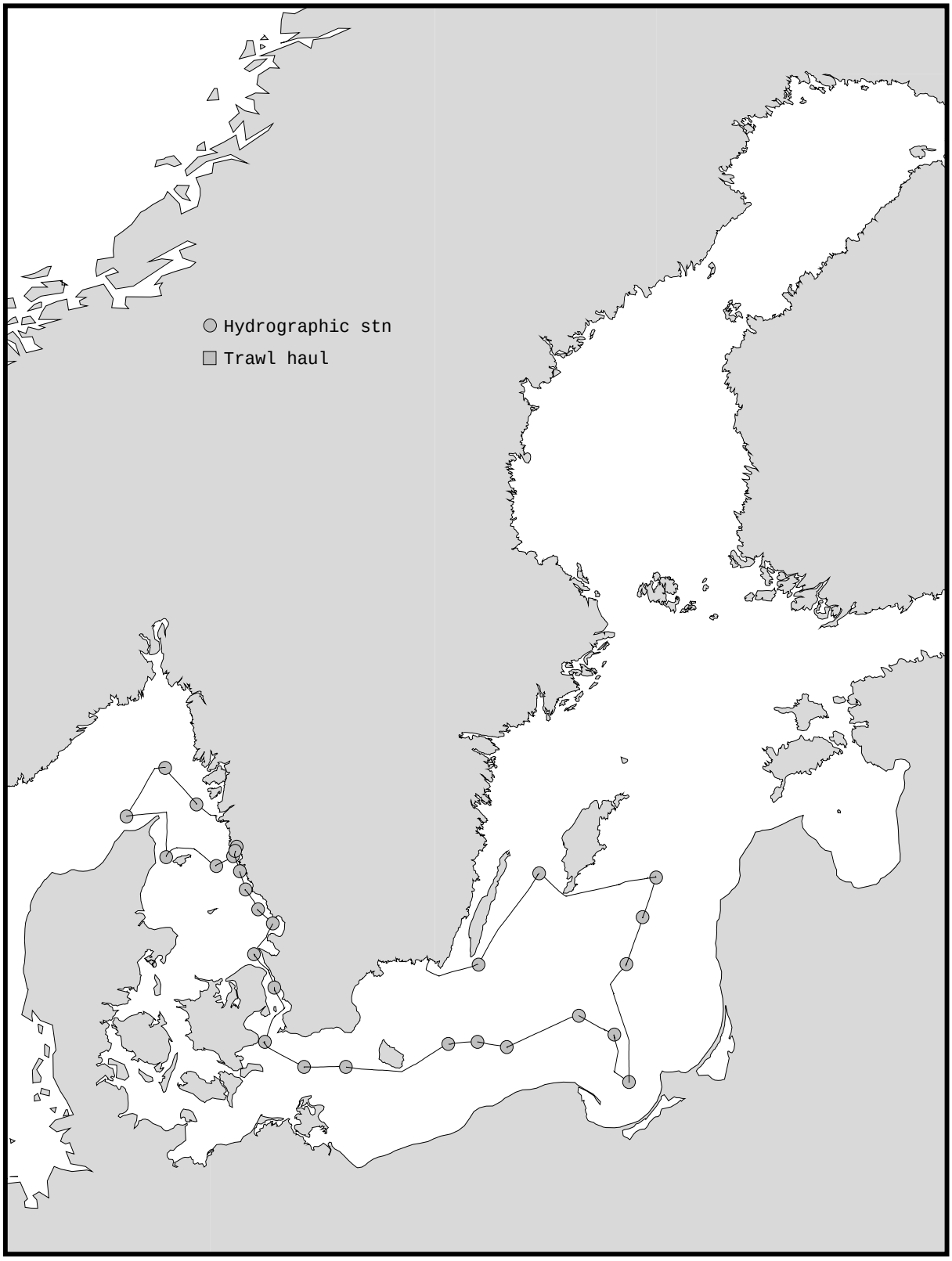
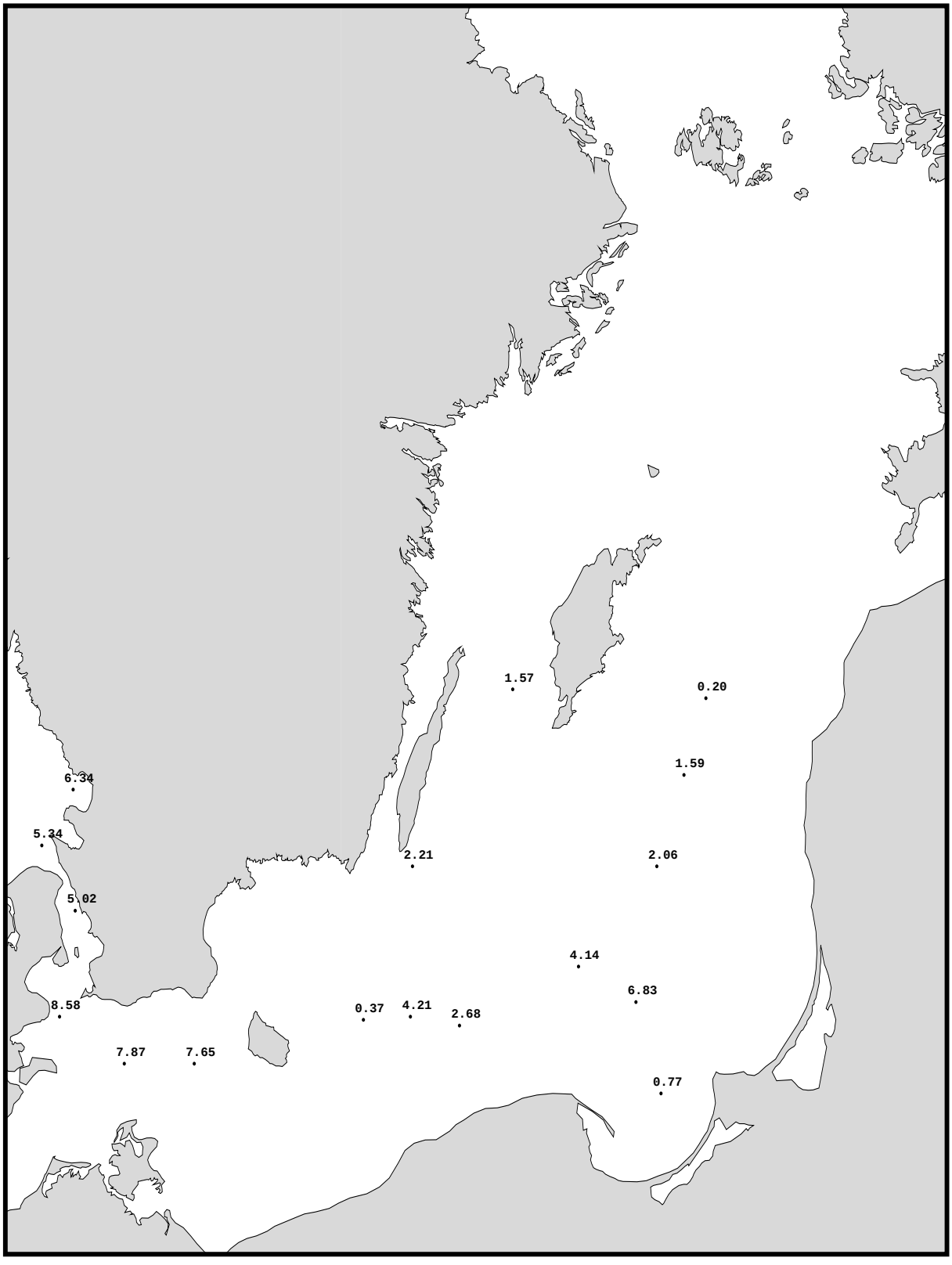
Ship: Argos
Date: 970217-970222
Series: 0146-0173



CSR RefNo: 1997-77AR/0146-0173

Bottom water oxygen concentration (ml/l)

Country: Sweden
Ship: Argos
Date: 970217-970222
Series: 0146-0173



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Ocean lab ***** series Year: 1997 ****** Time: 09:40

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0147	SKEX17BAS	Å16		N5816	E1043.5	970217	1515	199			14	18	0.7	1018	2850	-	--x----	15	x	x	-	x	-	x	x	x	x	x	x	-	x	-	-	-	-	-	x
0148	SKEX69BAS	HS5		N5744.15	E1000.46	970217	2200	89			16	18	1.1	1013	9950	-	--x----	10	x	x	-	x	-	x	x	x	x	x	x	-	x	-	-	-	-	-	x
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0163	BPSB07BAS	BY5 BORNHOLMSDJ		N5515	E1559	970220	0055	90			18	10	3.3	1008	9940	x	-xxx---	13	x	x	x	x	-	x	x	x	x	x	x	x	x	x	x	-	-	-	-	-
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SMHI ***** Hydrographic series ****** Ship: 14-Argos Year: 1997 Date: 1997-03-03 Time: 09:40

Ocean lab ***** ******

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	Ctd	PPCPZZT Hrhhoor Cilyooa motPBw PrP l	No de	Temp	Salin	Ph	Oxyg	H2S	PO4P	TotP	NO2N	NO3N	NH4N	TotN	Alkal	SiO3	Humus	Ligni	PON	POC	TOC	Comm
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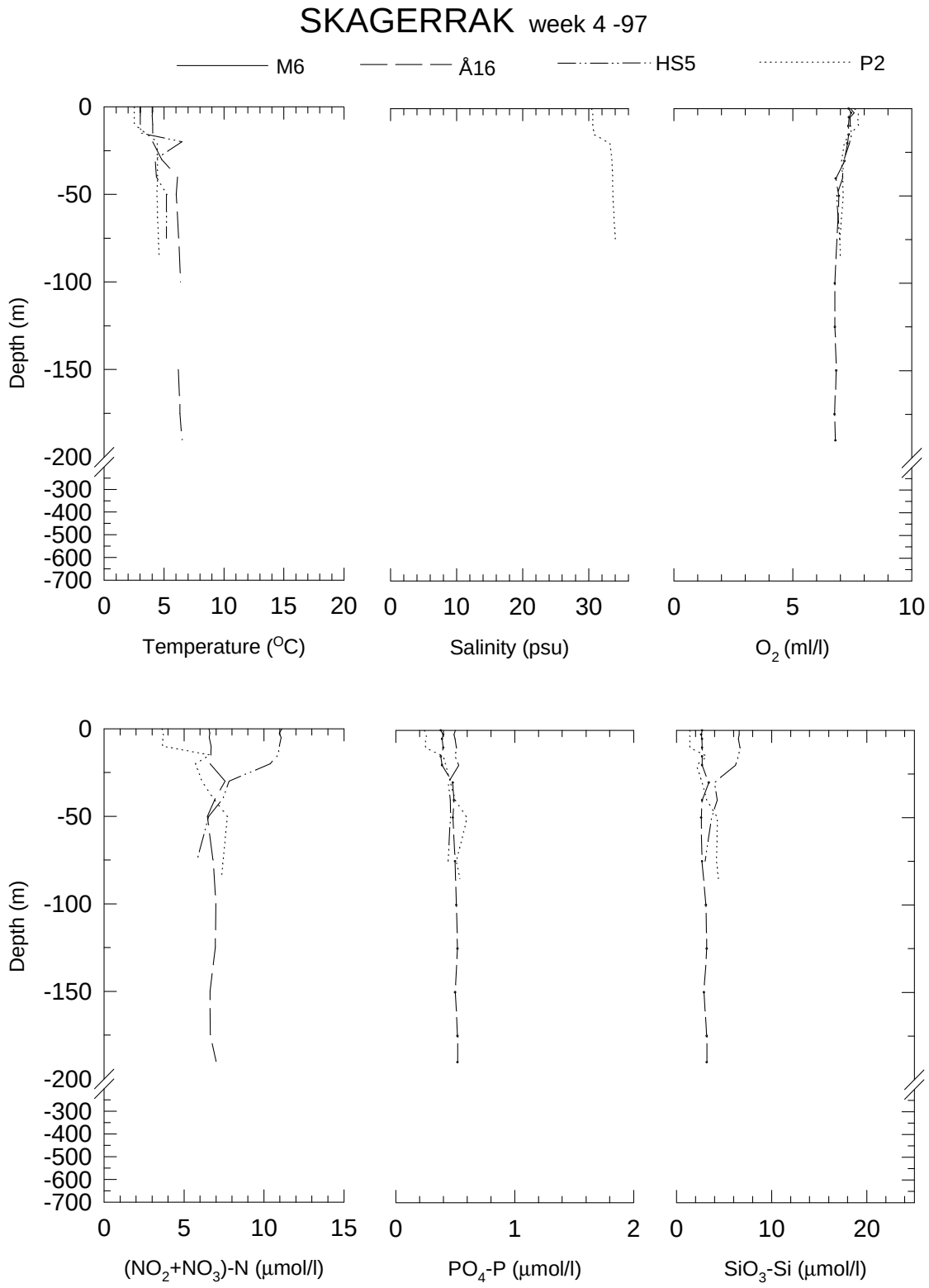
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M6
Å16
HS5
P2
Depth (m)
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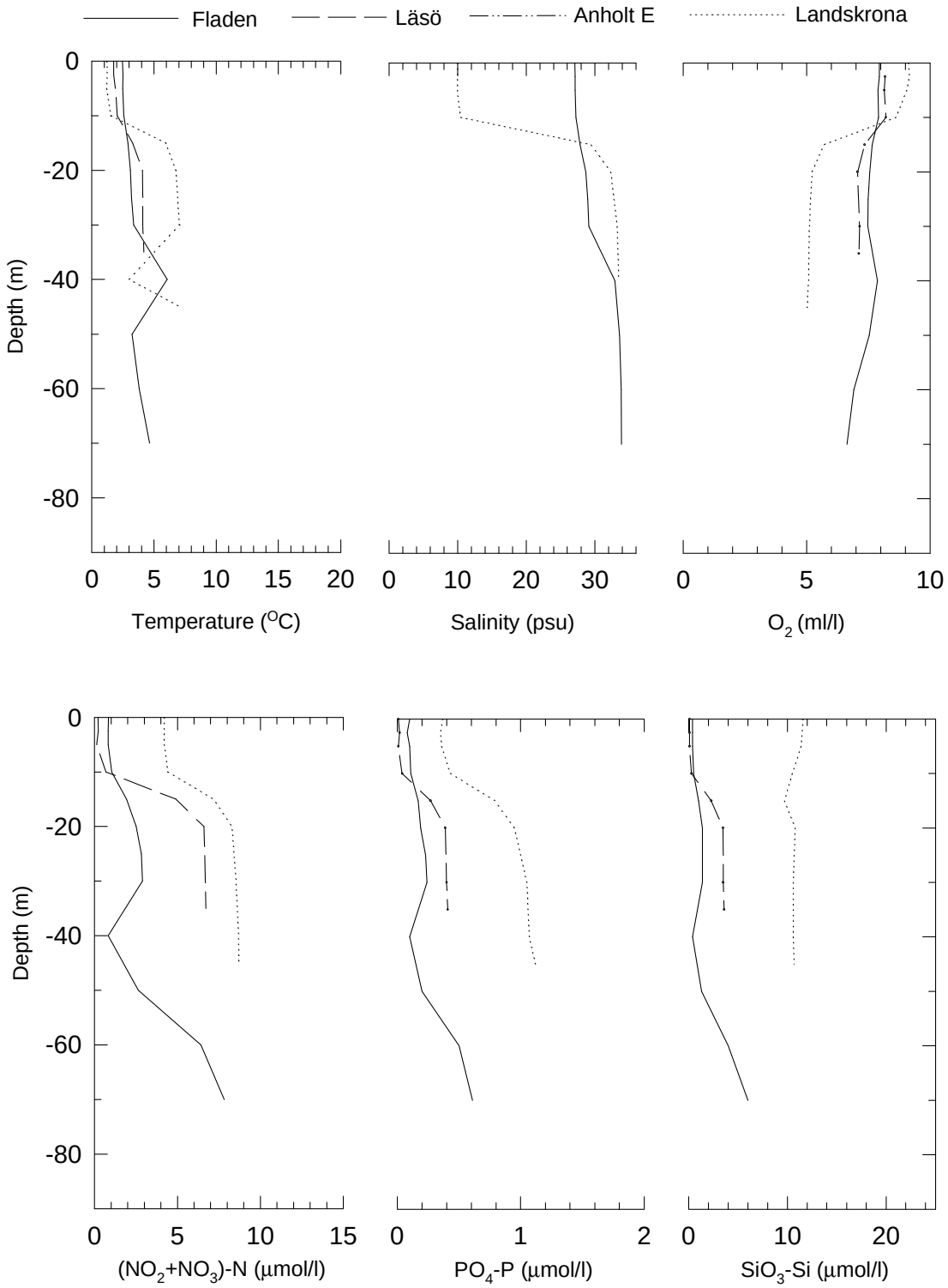
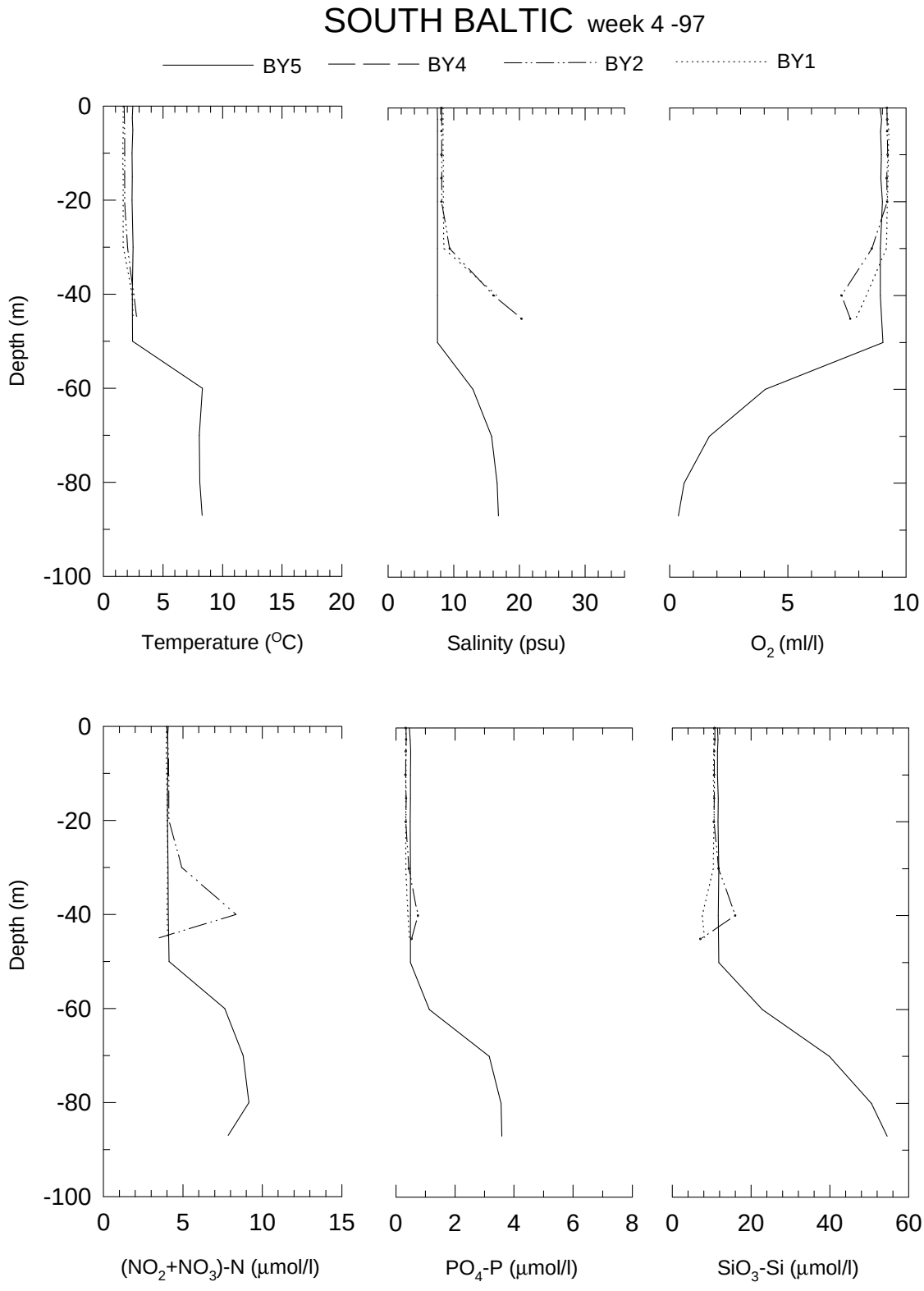
-50
-100
-150
-200
-300
-400
-500
-600
-700
0 5 10 15 20
Temperature (°C)
0 10 20 30
Salinity (psu)
0 5 10
O2 (ml/l)
0 5 10 15
(NO2+NO3)-N (µmol/l)
0 1 2
PO4-P (µmol/l)
0 10 20
SiO3-Si (µmol/l)

KATTEGAT and THE SOUND week 8 -97




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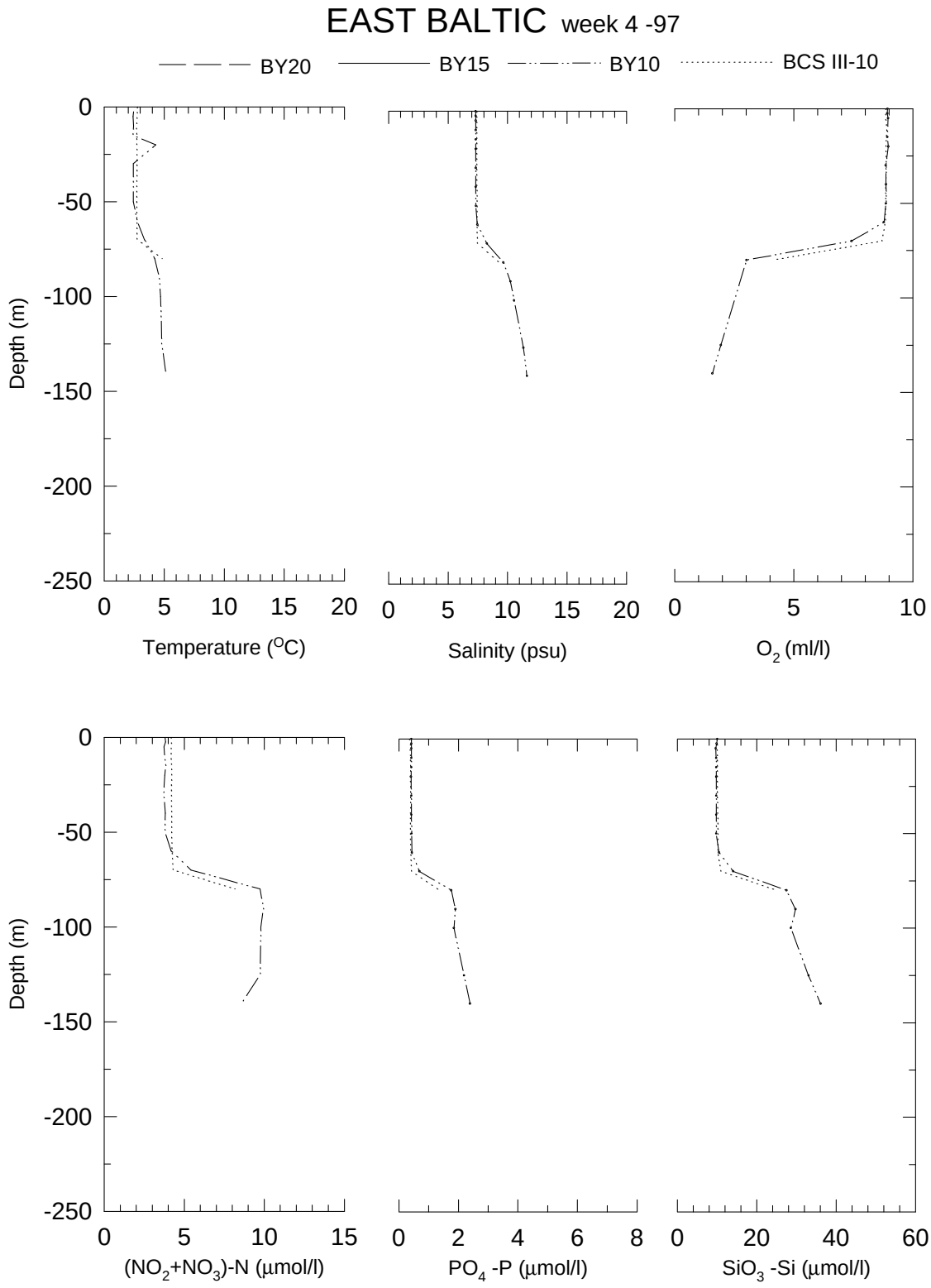
-20
-40
-60
-80
-100
0 5 10 15 20
Temperature (°C)
0 10 20 30
Salinity (psu)
0 5 10
O2 (ml/l)
0 5 10 15
(NO2+NO3)-N (µmol/l)
0 2 4 6 8
PO4-P (µmol/l)
0 20 40 60
SiO3-Si (µmol/l)

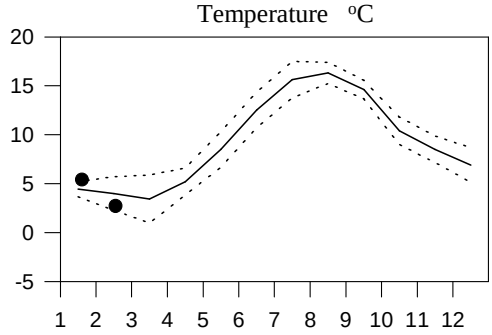

EAST BALTIC week 4 -97
BY20
BY15
BY10
BCS III-10
Depth (m)
0
-50
-100
-150
-200
-250
0 5 10 15 20
Temperature (°C)
0 5 10 15 20
Salinity (psu)
0 5 10
O2 (ml/l)
0 5 10 15
(NO2+NO3)-N (µmol/l)
0 2 4 6 8
PO4 -P (µmol/l)
0 20 40 60
SiO3 -Si (µmol/l)

STATION P2 SURFACE WATER (0-15 m)

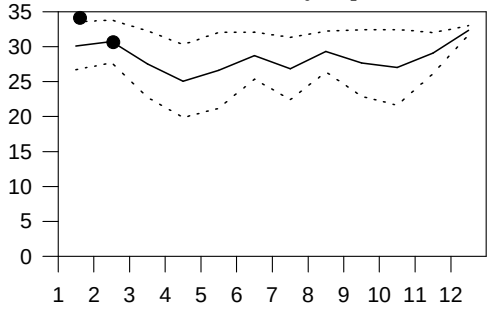
Annual Cycles

Mean 1986-1995 St.Dev. 1997

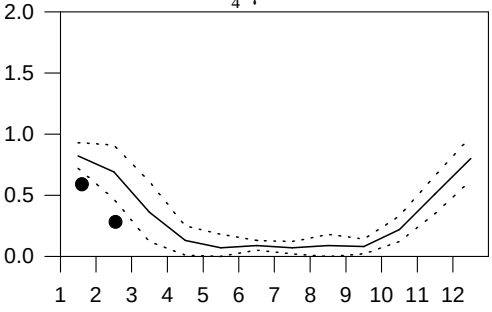
Temperature °C



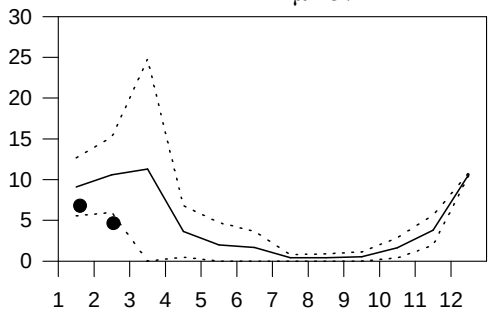
Salinity psu



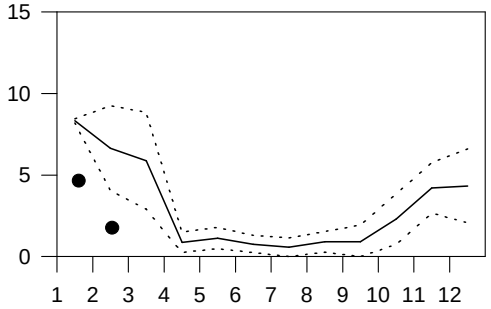
PO_4 µmol/l



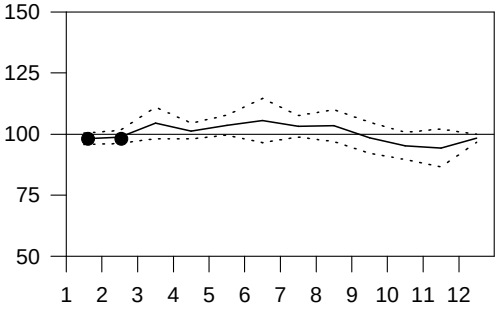
DIN µmol/l



SiO_3 µmol/l

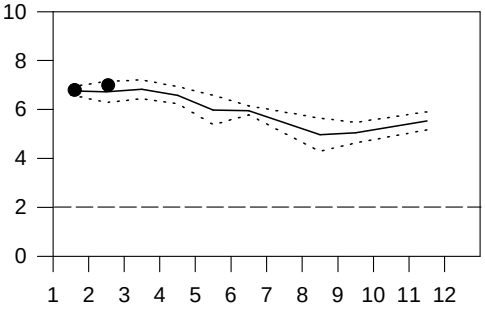


O_2 saturation %

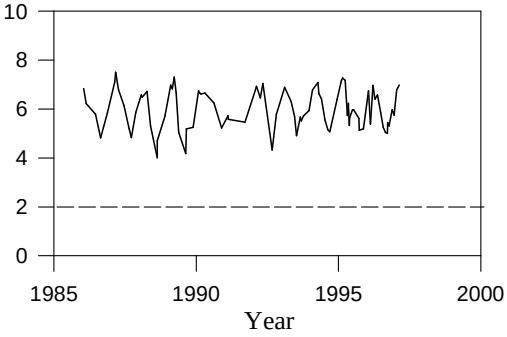


OXYGEN IN BOTTOM WATER

O_2 ml/l



O_2 ml/l

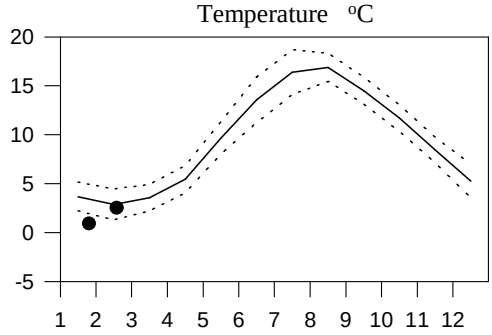


STATION FLADEN SURFACE WATER (0-15 m)

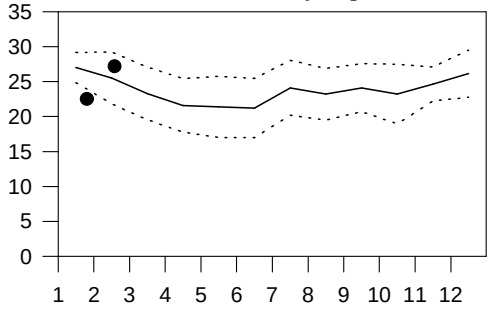
Annual Cycles

Mean 1986-1995 St.Dev. 1997

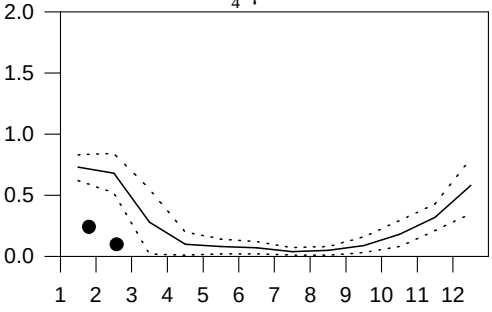
Temperature °C



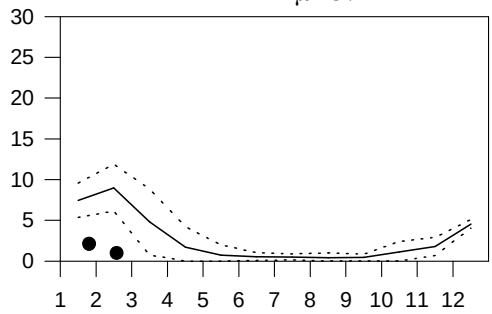
Salinity psu



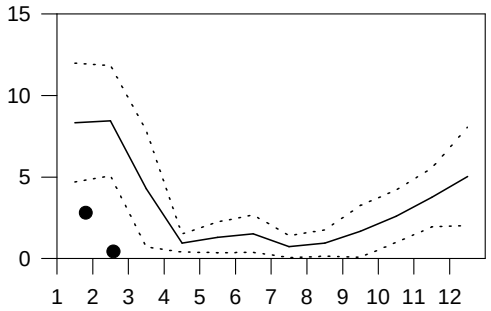
PO_4 µmol/l



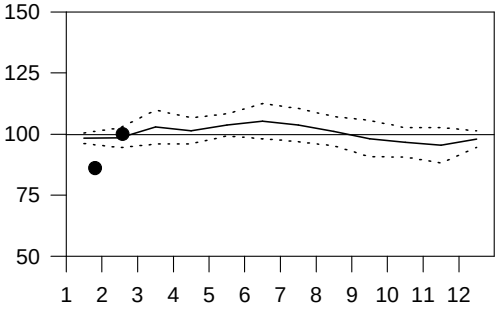
DIN µmol/l



SiO_3 µmol/l

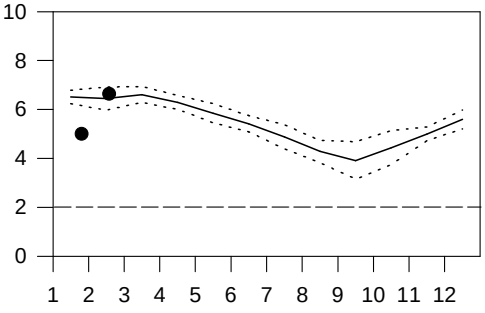


O_2 saturation %

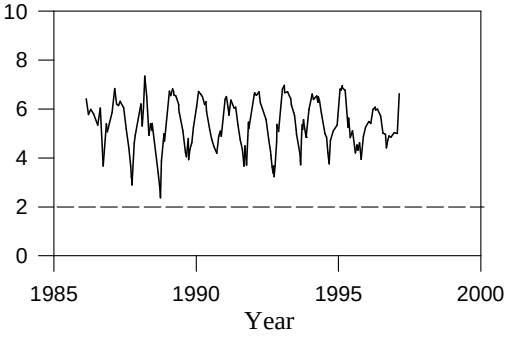


OXYGEN IN BOTTOM WATER

O_2 ml/l

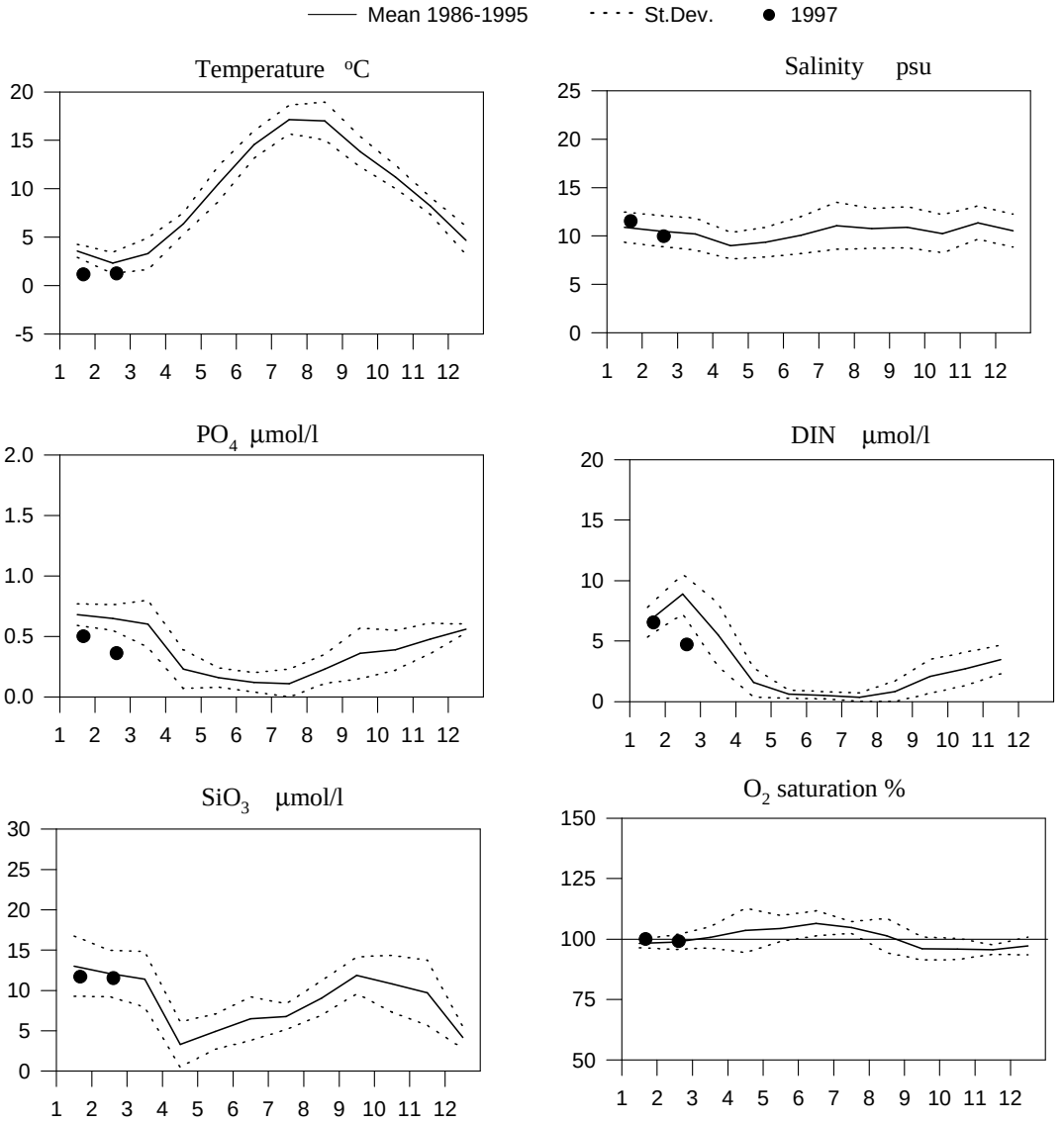


O_2 ml/l

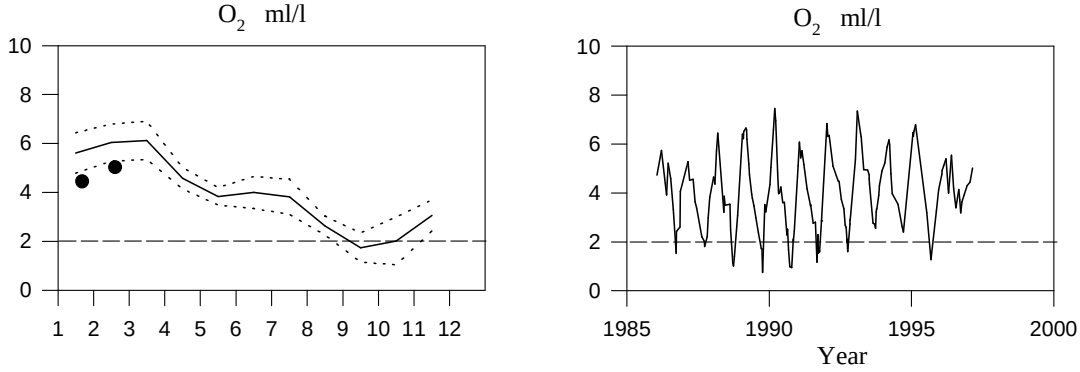


STATION W LANDSKRONA SURFACE WATER (0-15 m)

Annual Cycles

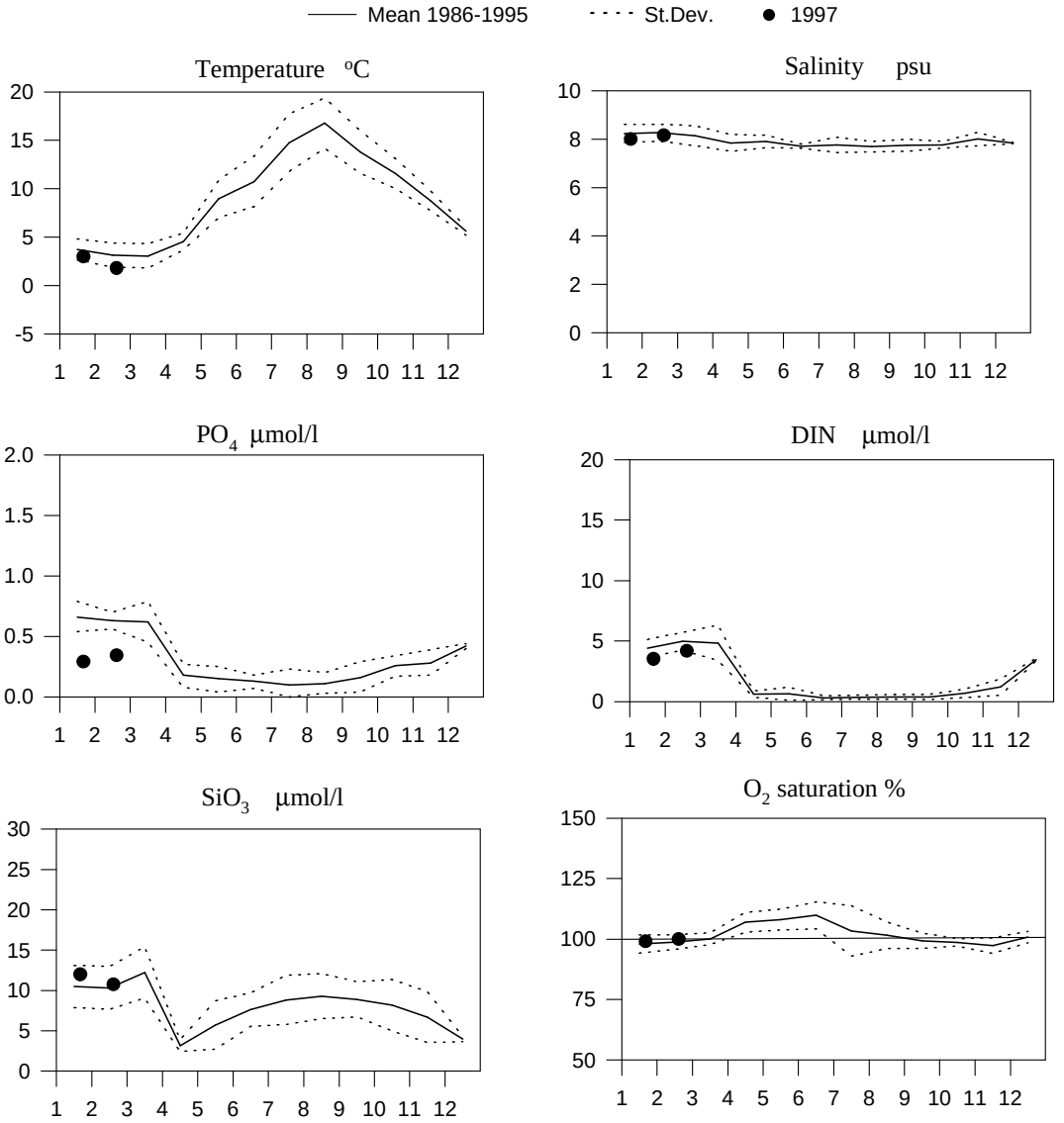


OXYGEN IN BOTTOM WATER

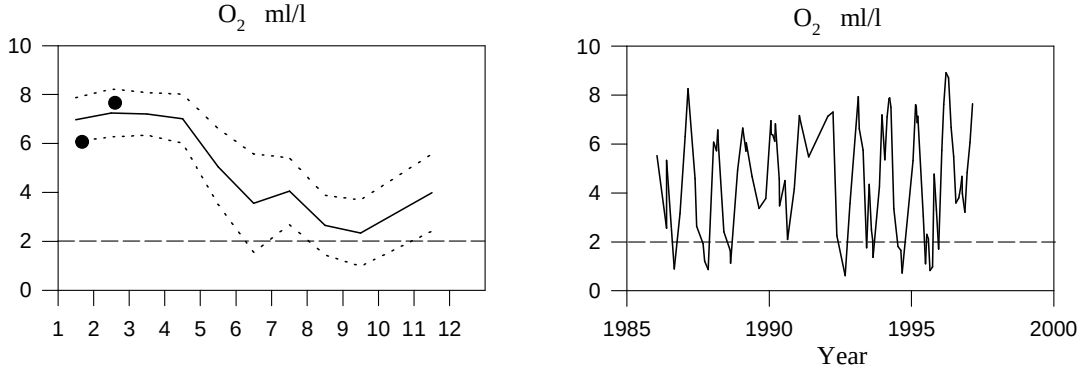


STATION BY2 SURFACE WATER (0-15 m)

Annual Cycles



OXYGEN IN BOTTOM WATER

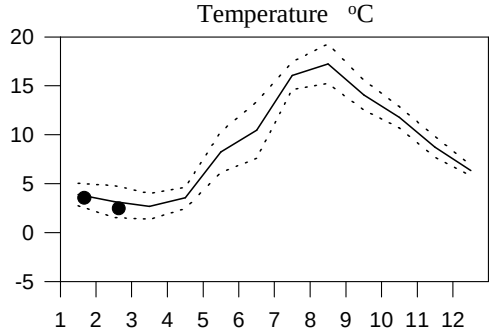


STATION BY5 SURFACE WATER (0-15 m)

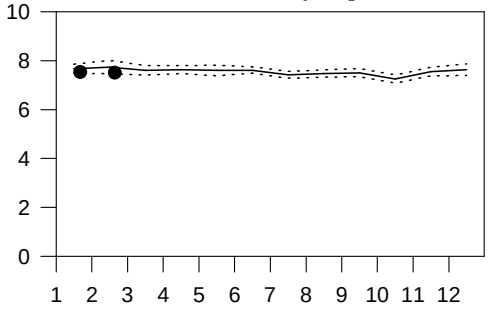
Annual Cycles

Mean 1986-1995 — St.Dev. - - - - ● 1997

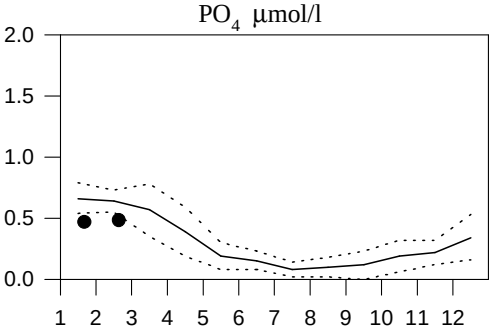
Temperature °C



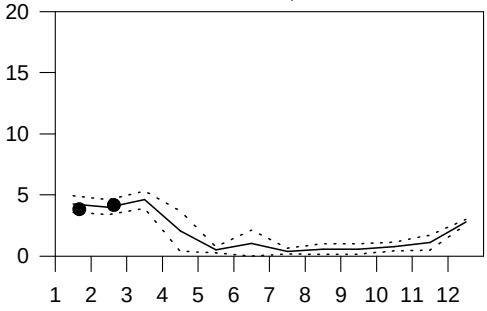
Salinity psu



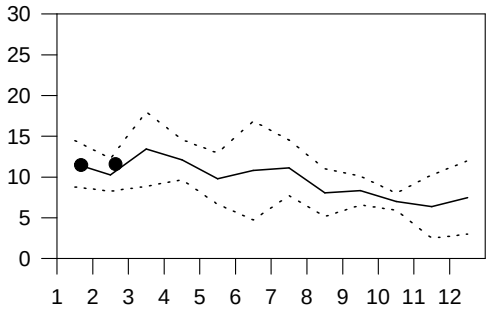
PO_4 µmol/l



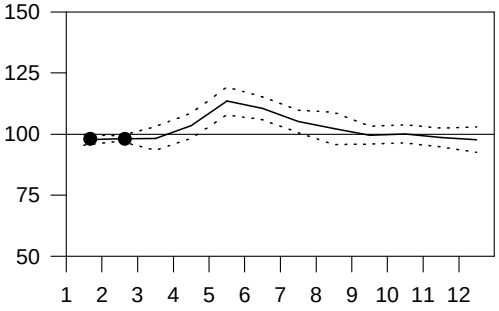
DIN µmol/l



SiO_3 µmol/l

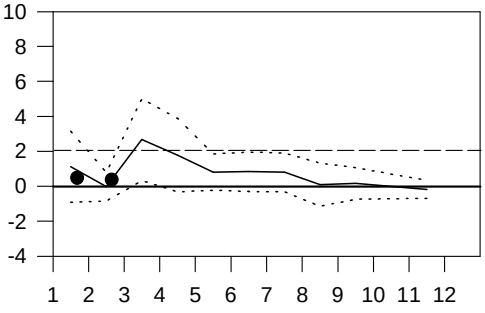


O_2 saturation %

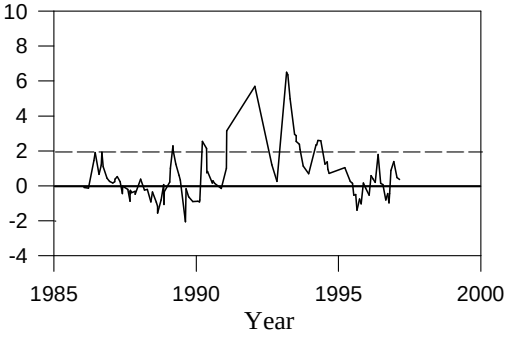


OXYGEN IN BOTTOM WATER

O_2 ml/l



O_2 ml/l

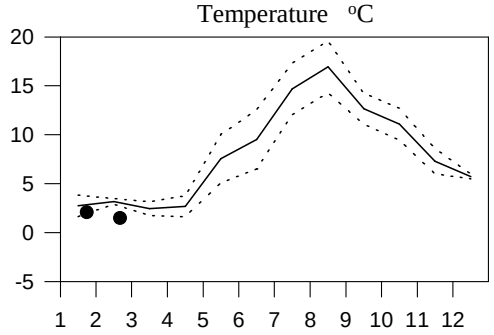


STATION BY38 SURFACE WATER (0-15 m)

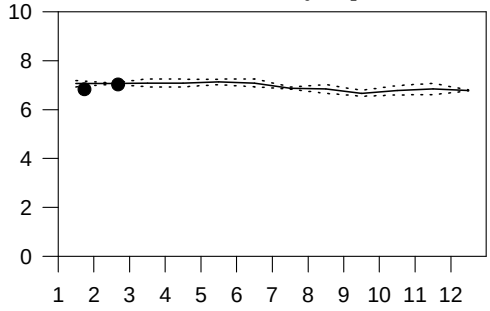
Annual Cycles

Mean 1986-1995 — St.Dev. - - - - 1997

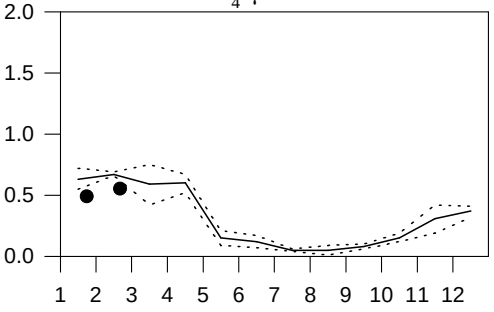
Temperature °C



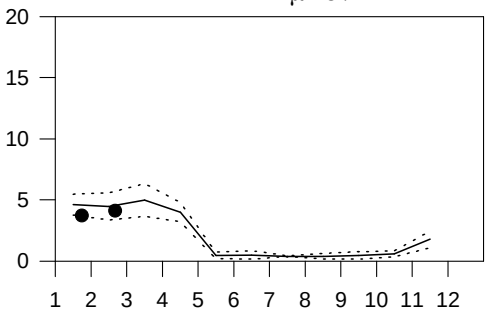
Salinity psu



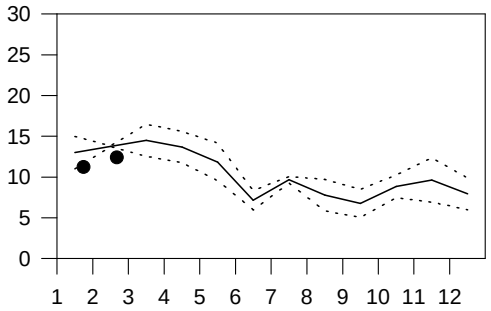
PO_4 µmol/l



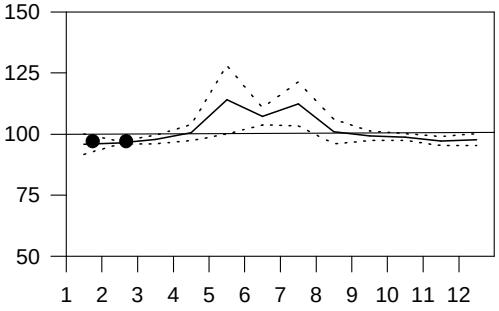
DIN µmol/l



SiO_3 µmol/l

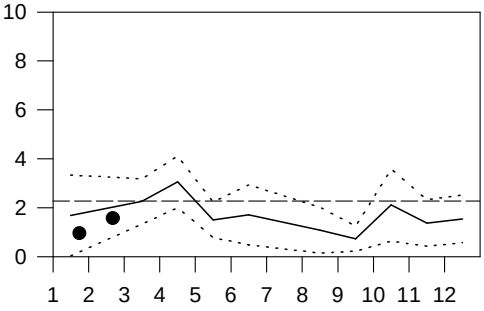


O_2 saturation %



OXYGEN IN BOTTOM WATER

O_2 ml/l



O_2 ml/l