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1997-09-29
Dnr: SaO-1997-208

CRUISE REPORT FROM R/V ARGOS

Survey period: 970922-970926

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

Principal: SMHI

SUMMARY

The expedition was performed within SMHI's regular monitoring programme and covered the Skagerrak, the Kattegat, the Sound and the Baltic Proper. The weather was dominated by weak northerly winds and clear skies. The surface water temperatures, which at the last cruise generally were the highest on record, had now decreased to or near to normal values. However, the thermocline had simultaneously shifted downwards in the water column. In the Skagerrak and the Kattegatt the surface water was more or less depleted of all nutrients, whereas in the Baltic both phosphate (0.1-0.20 $\mu\text{mol/l}$) and silicate (4.5-12 $\mu\text{mol/l}$) was present.

Hydrogen sulphide was observed in the deep water of the East Gotland Basin (stations BY15 and BY20). No visible algae blooms were observed in any of the sea areas.

PRELIMINARY RESULTS

The expedition, which was part of SMHI's regular marine monitoring programme, commenced in Göteborg and ended in Västervik. The weather during the expedition was dominated by weak to moderate northerly winds, dry weather and air temperatures around 16°C.

The Skagerrak

The temperature in the surface water had decreased 15°C, which is about 6 degrees lower than at the previous expedition at the end of August. The thermocline had moved from 20 to 50 metres depth. The nutrient concentrations in the surface water were low, which is typical for this time of the year.

The Kattegatt and the Sound

The surface water temperatures varied between 14.2 and 15.5°C, which is normal for the season. This means a quite dramatic decrease since the last expedition, where an all-time high of 23°C was registered. The thermocline had moved from 10 to 25 metres depth. The surface water was deficient of nutrients, all registered values were below or very close to the detection limits. The lowest oxygen value in the deep water of the Kaategatt was registered at station Anholt E, 2.61 ml/l at 50 m depth, corresponding to a saturation of 40%. The oxygen concentration in the deep water of the Sound was 2.35 ml/l (36% saturation) at station W Landskrona.

The southern Baltic

The thermocline was found at 20 metres depth, and the surface water had a temperature of 14.5°C. At the previous expedition the surface temperature was more than 22°C and the thermocline was found at 10 metres depth. The nutrient concentrations in the surface water were typical for the season; phosphate 0.15-0.20 µmol/l, nitrite 0.02 µmol/l, nitrate <0.10 µmol/l, ammonia 0.10-0.30 µmol/l and silicate 9-12 µmol/l. The lowest oxygen value in the Arkona Basin was registered in the deep water at station BY2, 3.88 ml/l. However, this is an increase by 1.2 ml/l since the previous expedition. Low oxygen concentrations (<2 ml/l) were registered in the deep waters of the Hanö Bight and the Bornholm Basin. At station BY4 the concentration increased close to the sea floor, were the remains of an earlier inflow of saline water influenced the situation.

The central and northern Baltic

The surface temperature varied from 11.5°C in the north to 14.4°C in the south. The thermocline was found at 15 to 30 m depth, while the halocline was at 80 metres depth in the whole area. The nutrient concentrations in the surface water were typical for the season with nitrite and nitrate at their detection limits (<0.02 and <0.10 µmol/l, respectively), phosphate 0.10-0.15 µmol/l and silicate 4.5-6.7 µmol/l.

At all depths greater than 90 metres the oxygen concentrations were below 2 ml/l. Hydrogen sulphide was found at station BY15 below 200 m and at station BY20 below 150 metres depth.

PARTICIPANTS

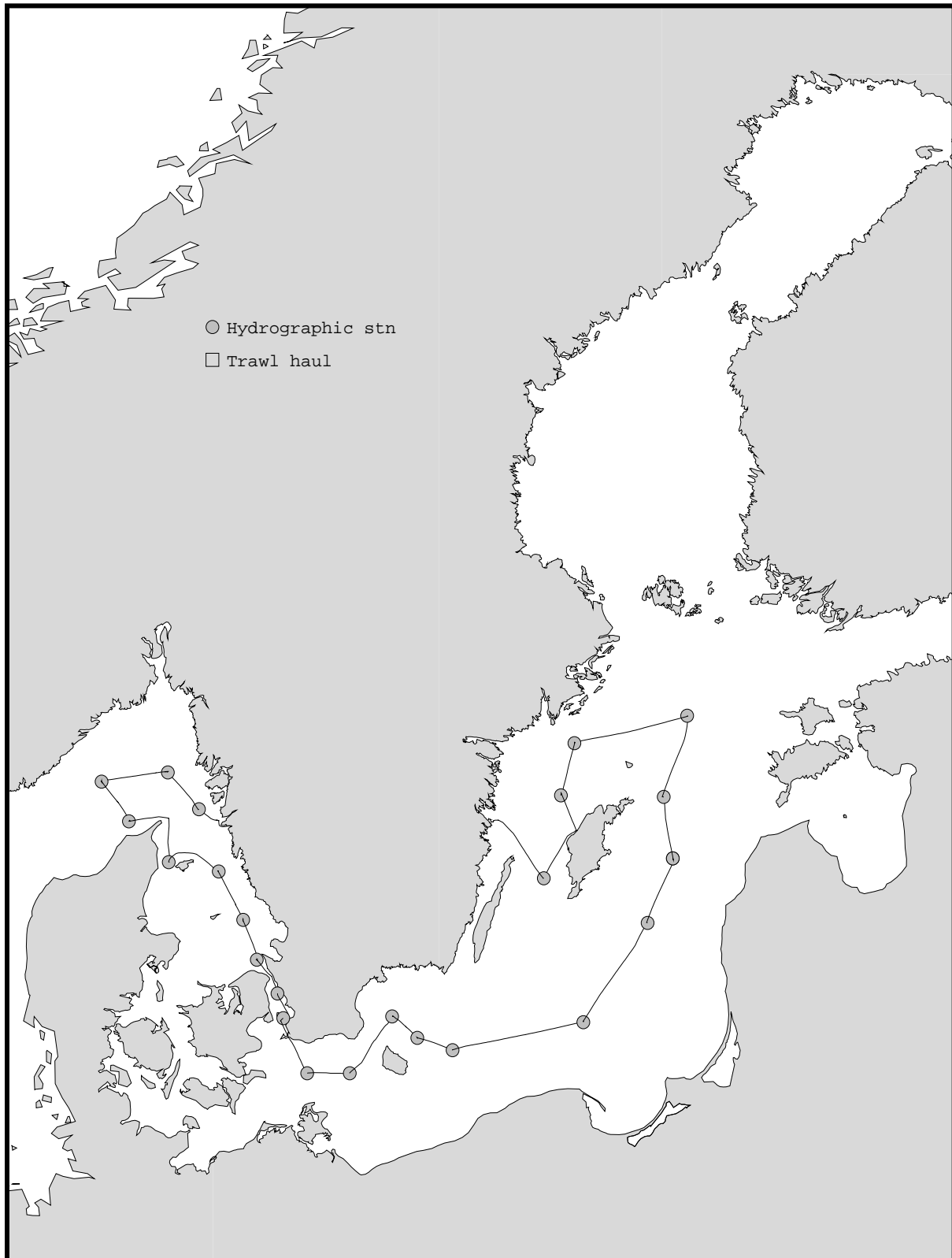
Name	From
Lars Andersson, chief scientist	SMHI Oceanographical lab.
Mikael Krysell	- " -
Marie Larsson	- " -
Bodil Thorstensson	- " -
Bo Juhlin	SMHI Norrköping
Carina Pettersson-Erlandsson	Student

APPENDICES

- Cruise track
- Table over stations, parameters and sampling depths
- Map showing bottom water oxygen concentrations
- Monthly average plots for selected stations

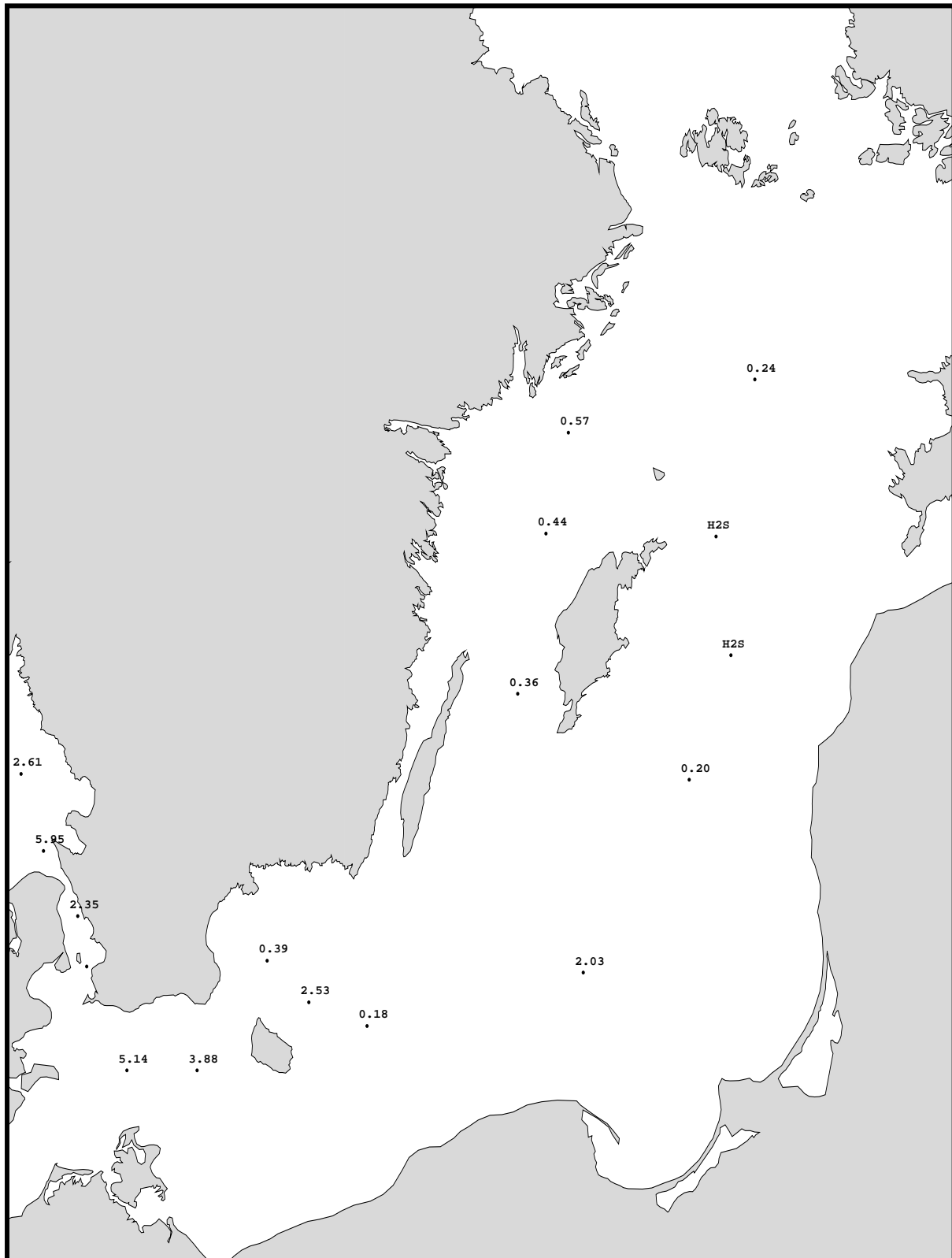
TRACK CHART

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Ship : Argos
Date : 970922-970926
Series : 0604-0627



Bottom water oxygen concentration (ml/l)

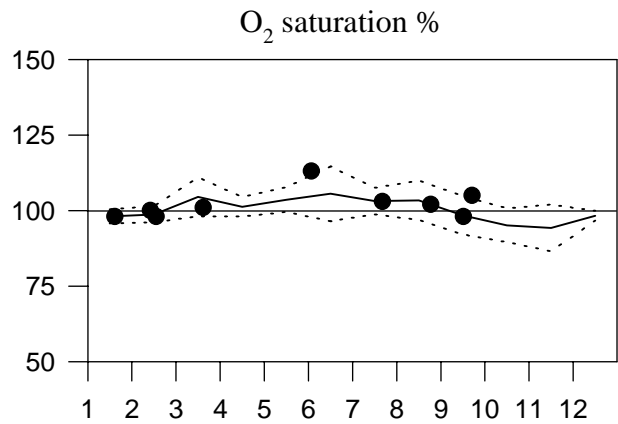
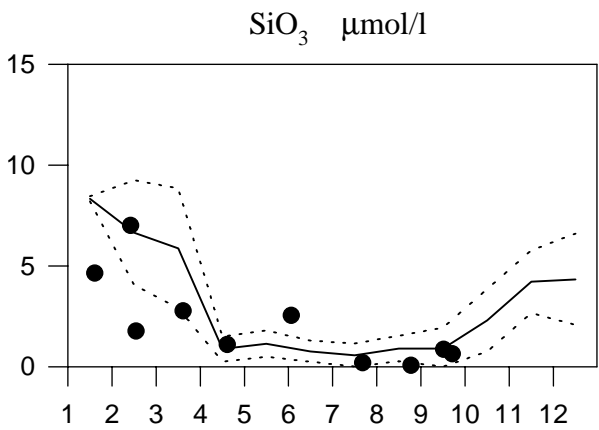
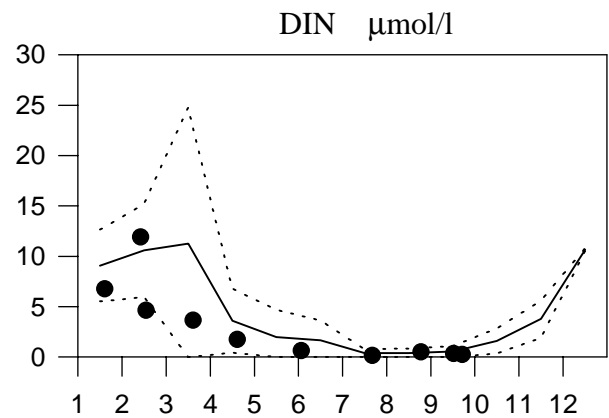
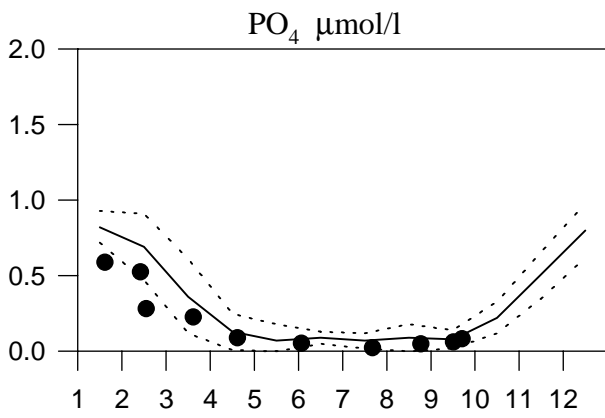
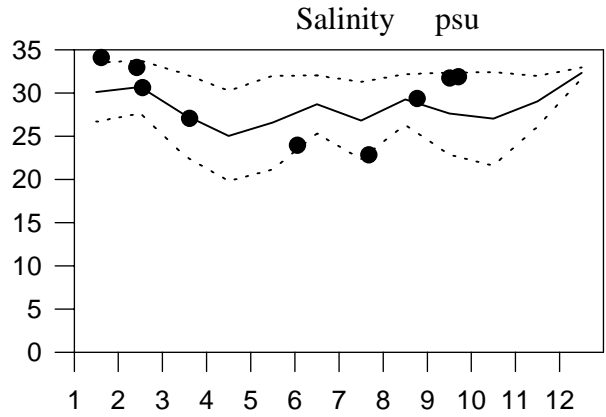
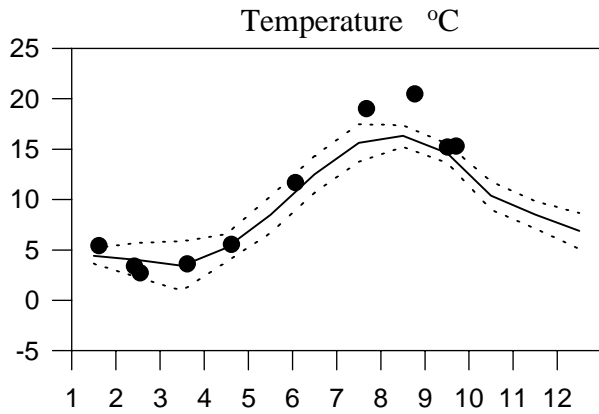
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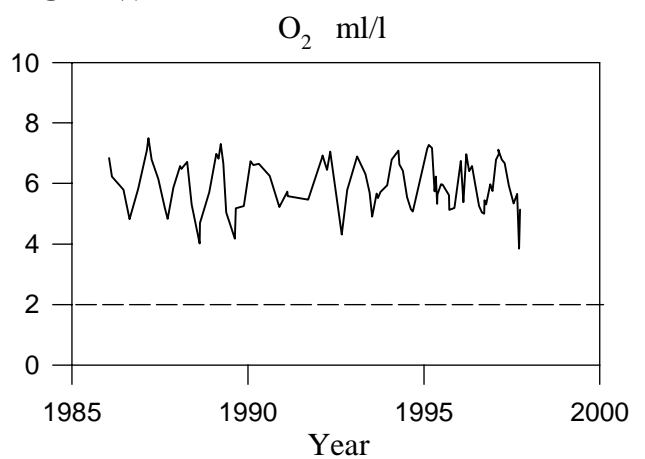
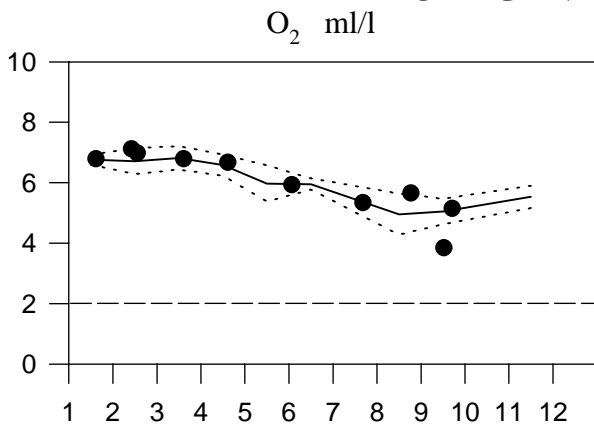
STATION P2 SURFACE WATER (0-15 m)

Annual Cycles

— Mean 1986-1995 - - - St.Dev. ● 1997



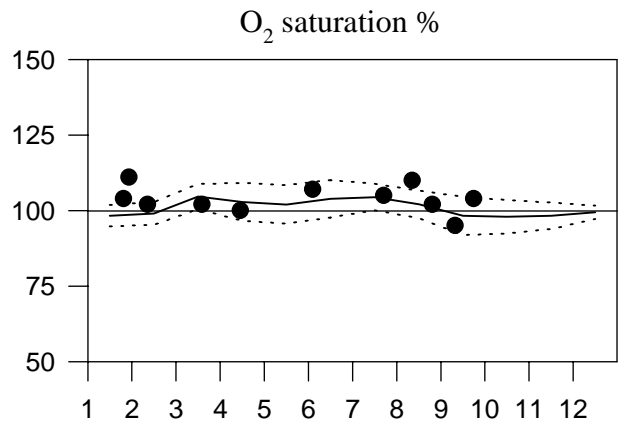
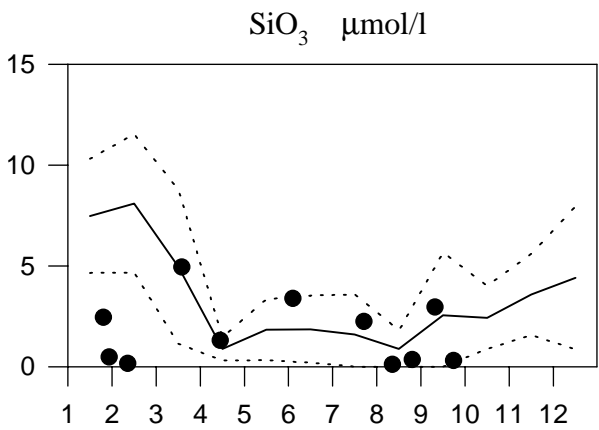
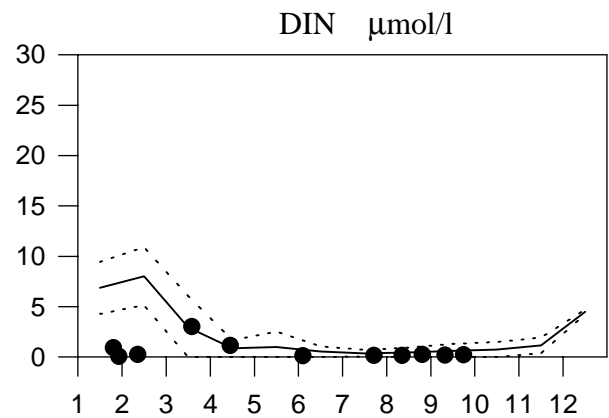
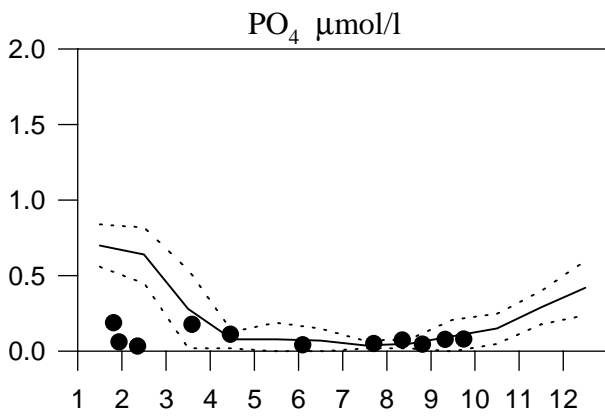
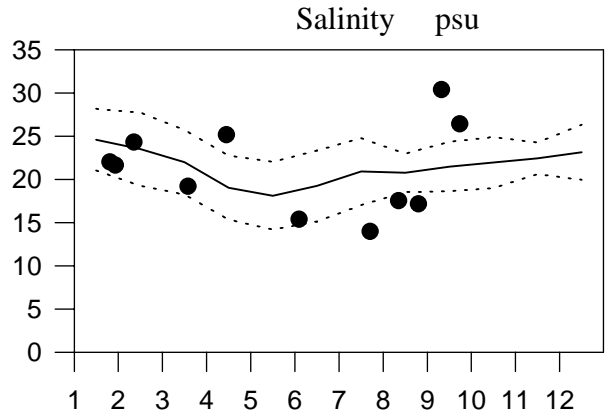
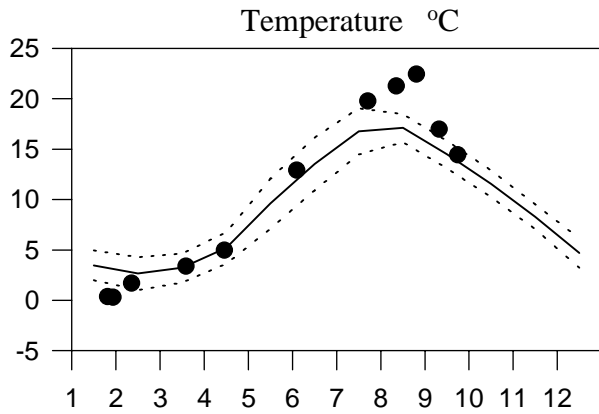
OXYGEN IN BOTTOM WATER



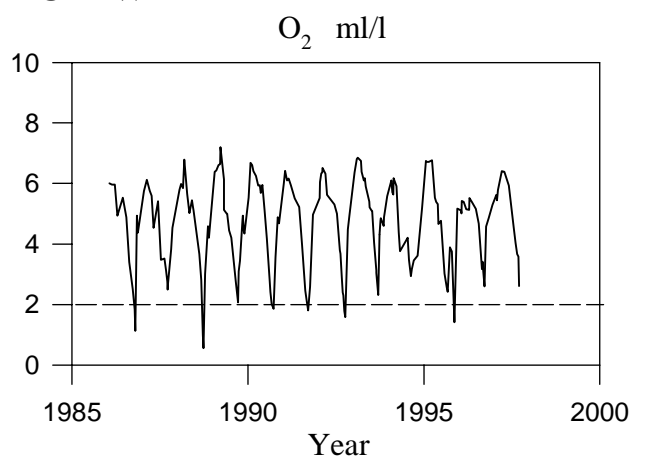
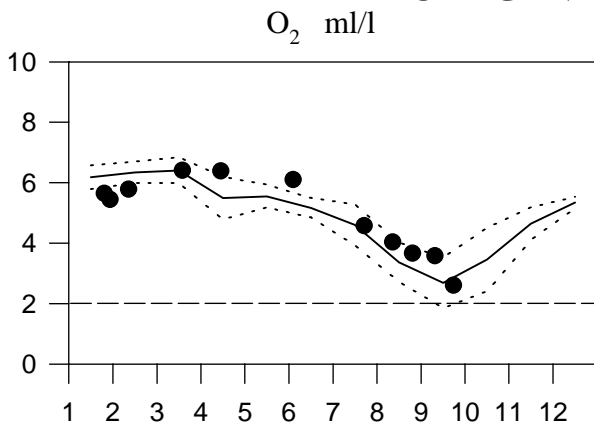
STATION ANHOLT E SURFACE WATER (above halocline)

Annual Cycles

— Mean 1986-1995 - - - St.Dev. ● 1997



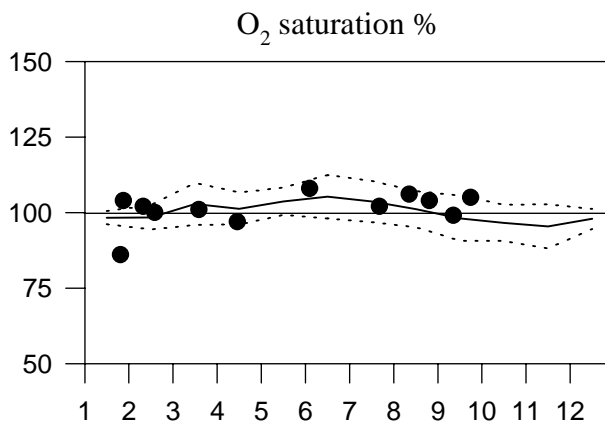
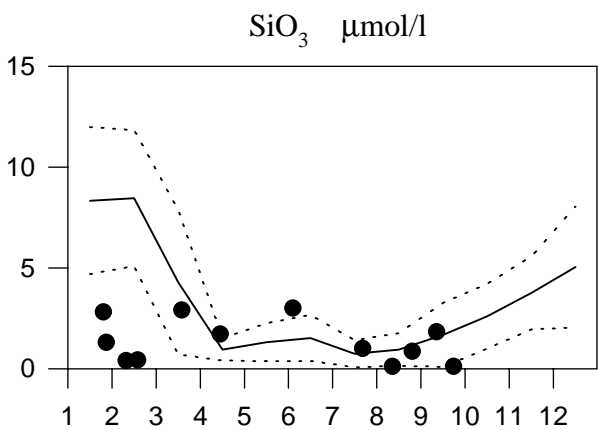
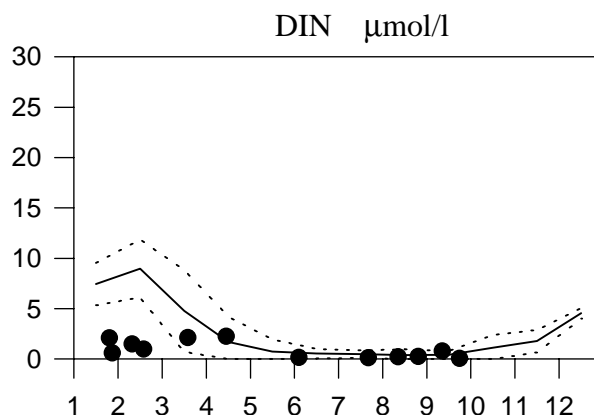
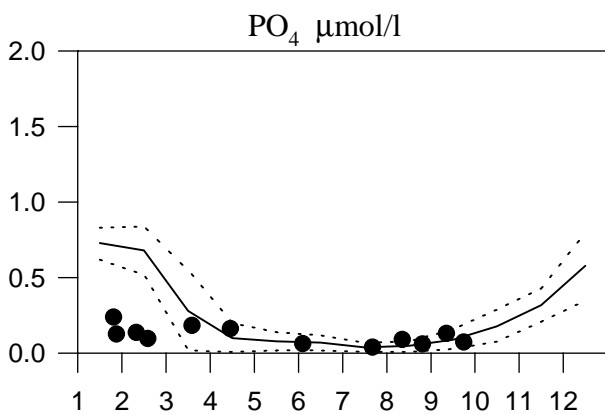
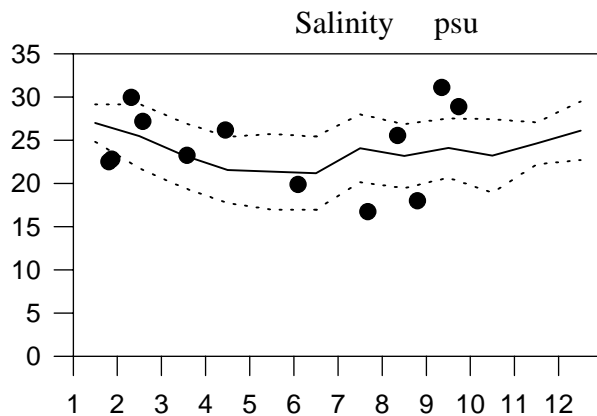
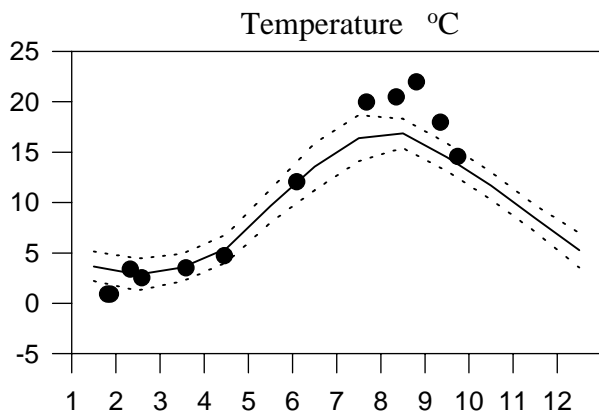
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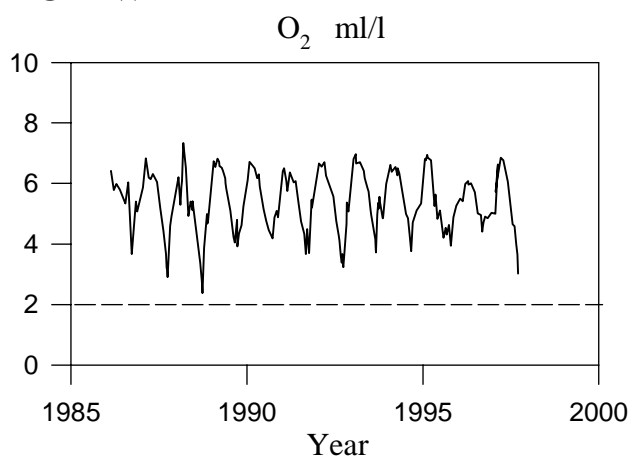
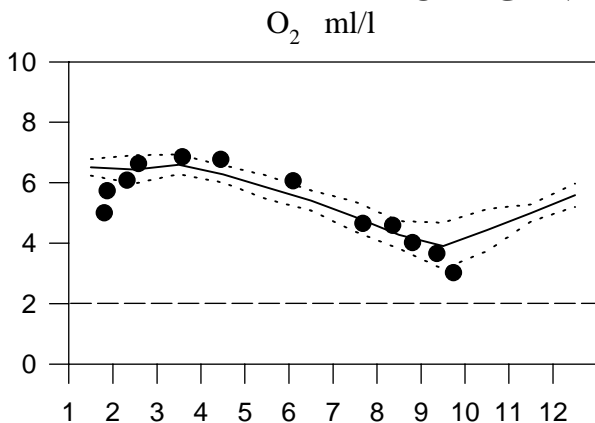
STATION FLADEN SURFACE WATER (0-15 m)

Annual Cycles

— Mean 1986-1995 - - - St.Dev. ● 1997



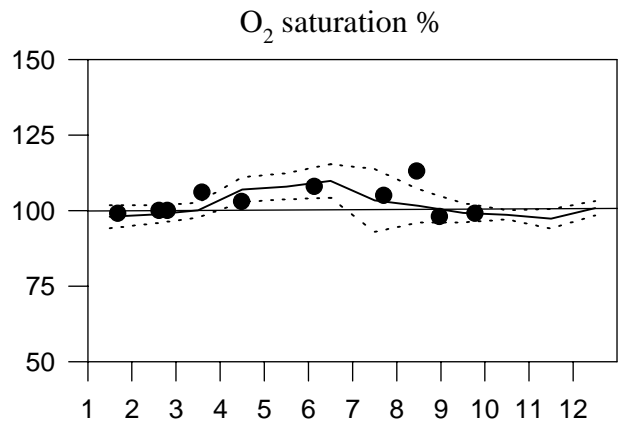
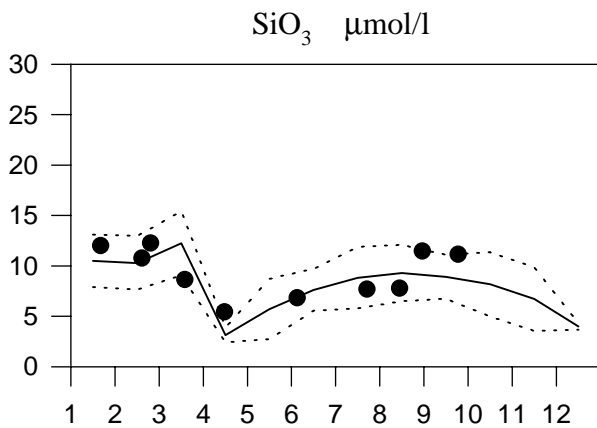
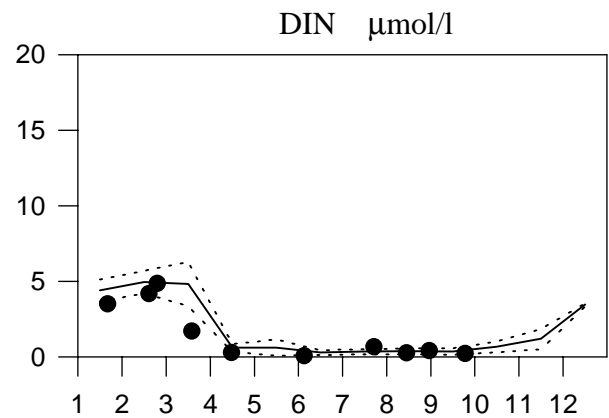
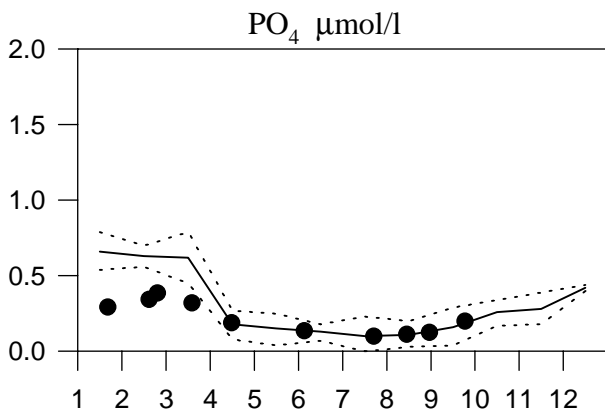
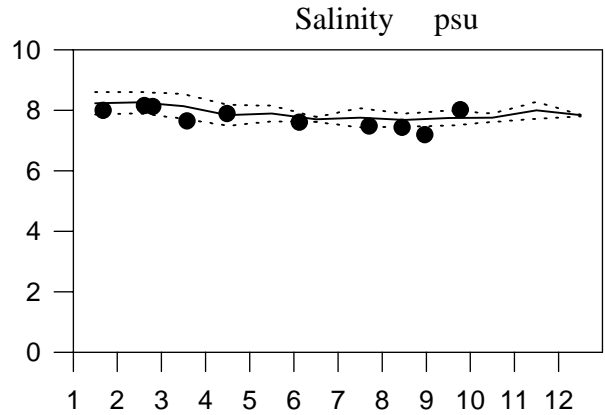
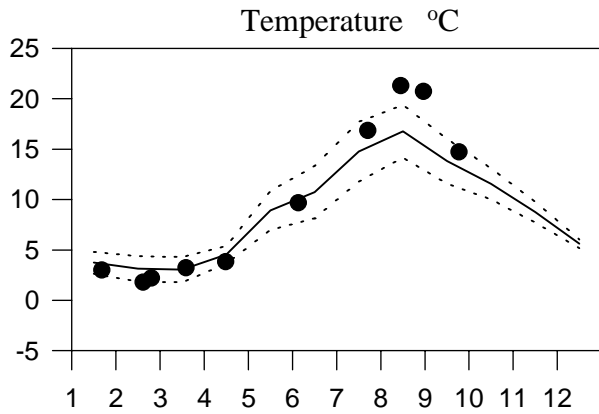
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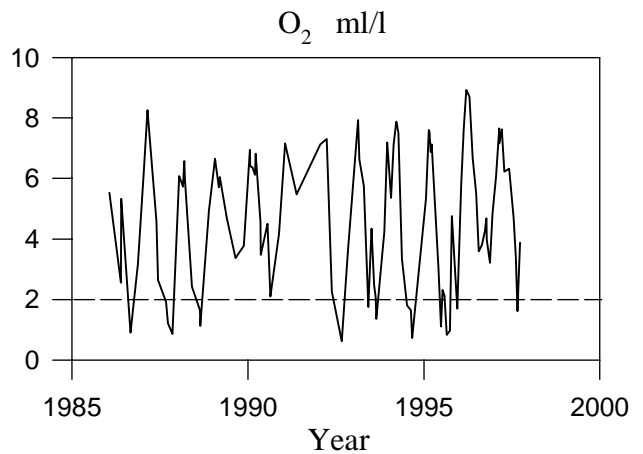
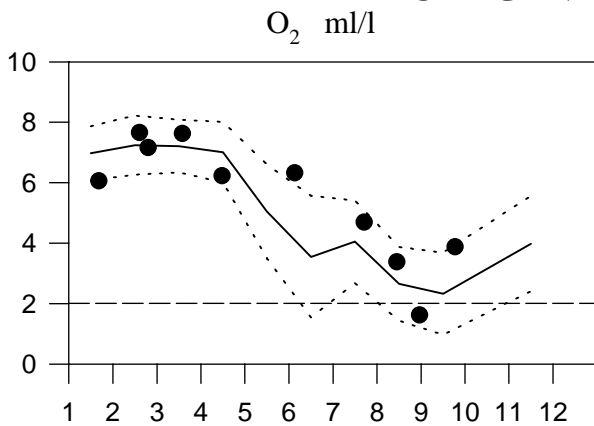
STATION BY2 SURFACE WATER (0-15 m)

Annual Cycles

— Mean 1986-1995 - - - St.Dev. ● 1997



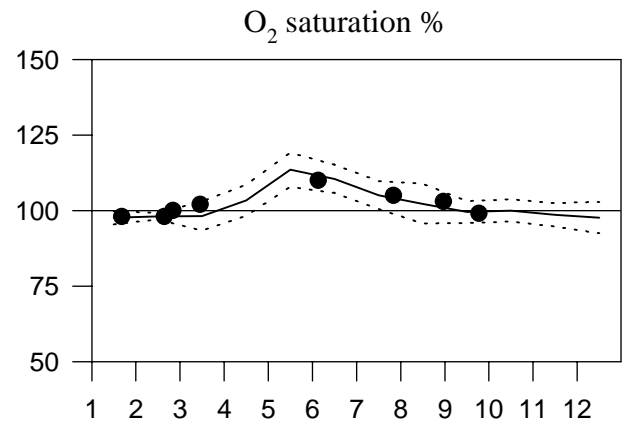
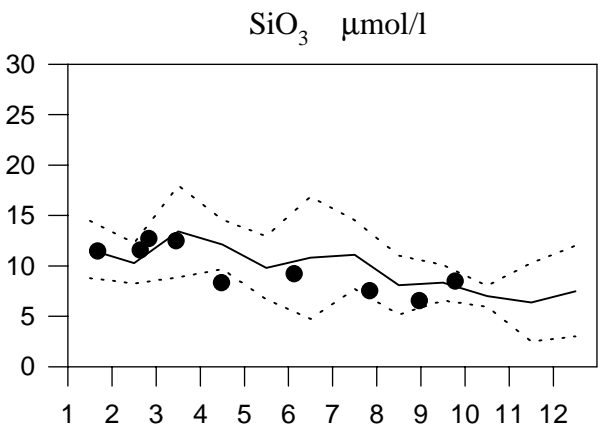
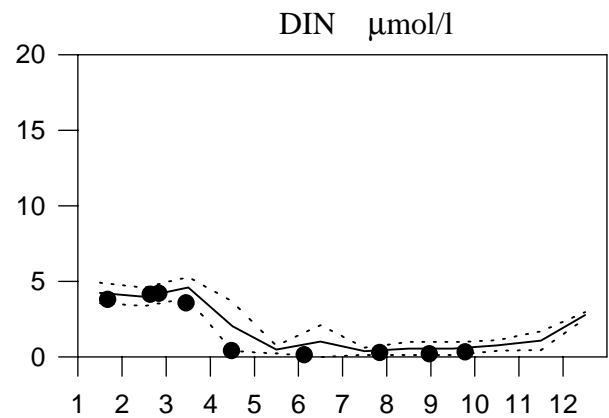
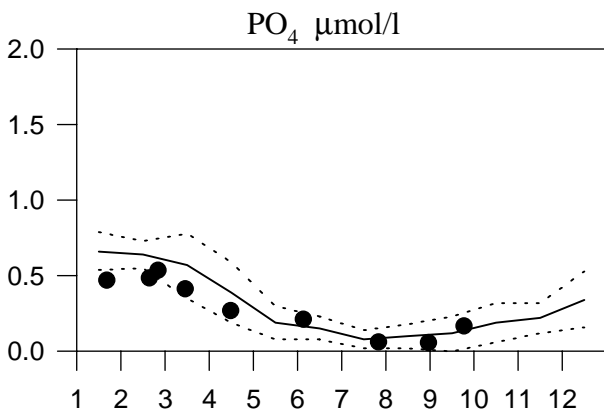
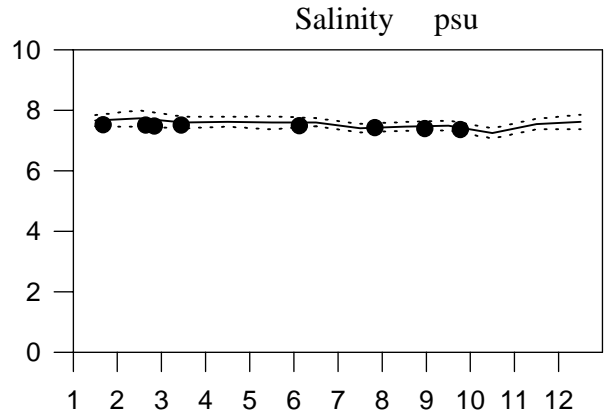
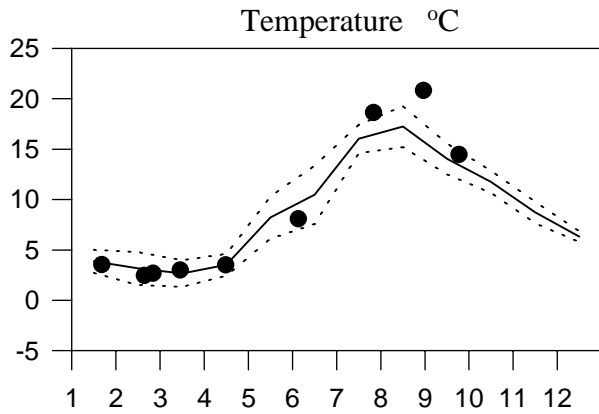
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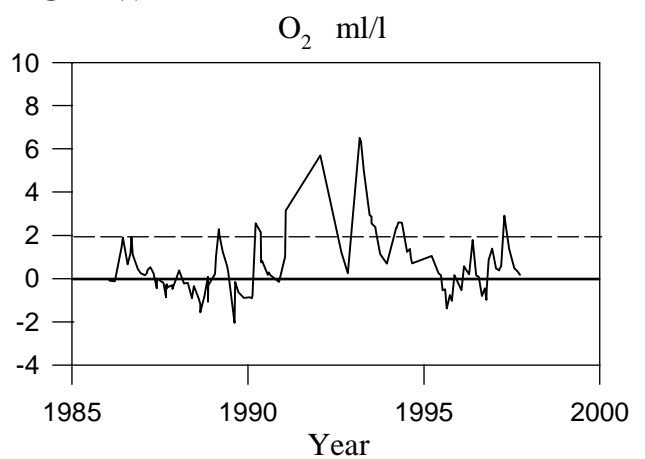
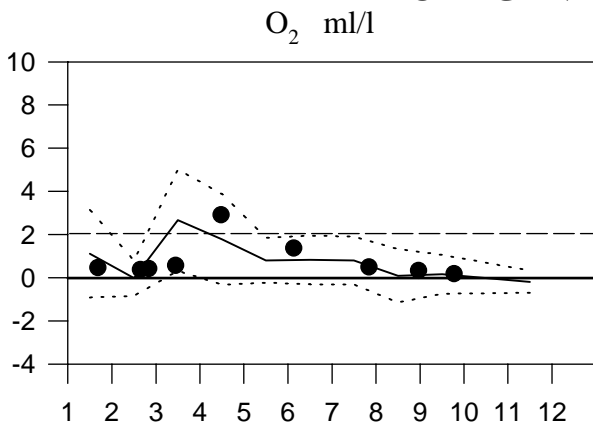
STATION BY5 SURFACE WATER (0-15 m)

Annual Cycles

— Mean 1986-1995 - - - St.Dev. ● 1997



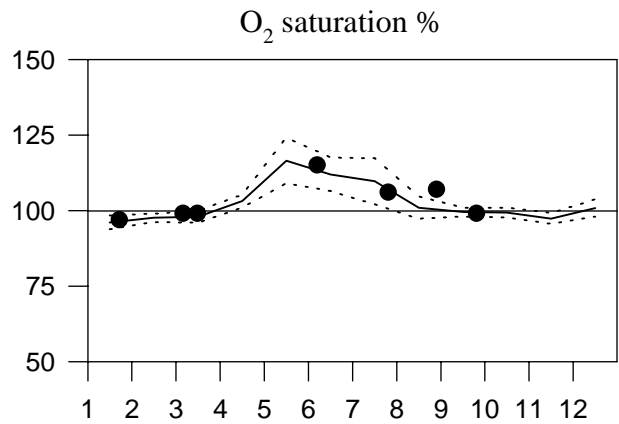
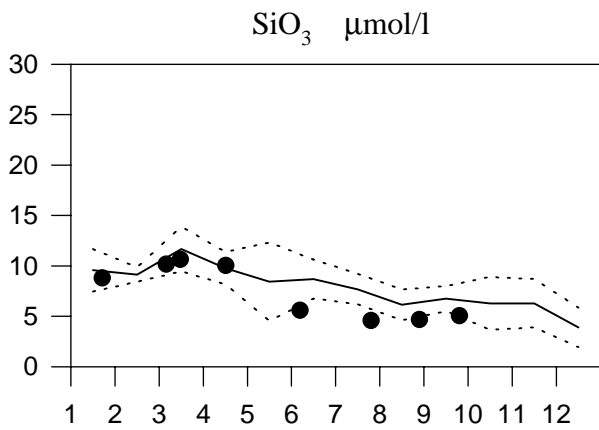
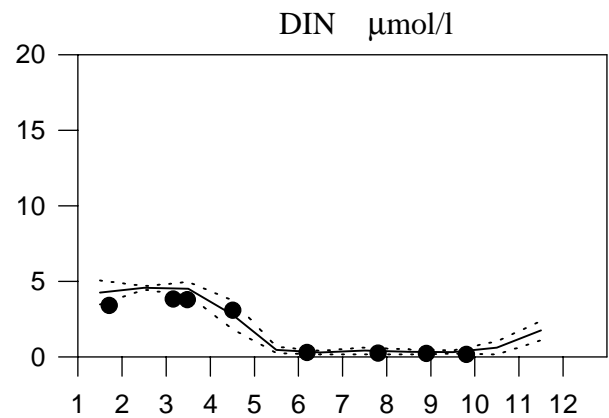
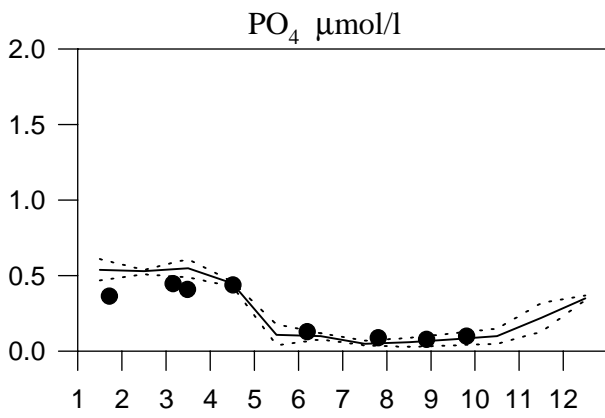
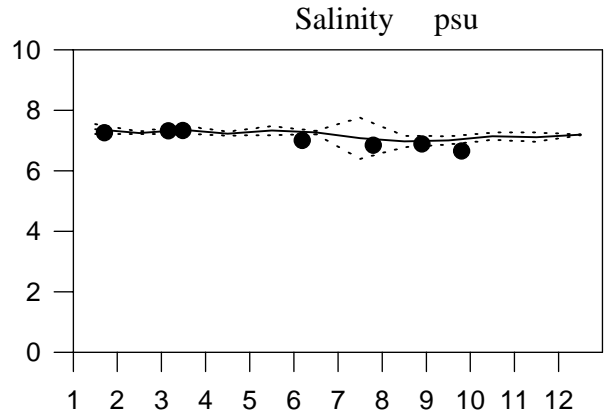
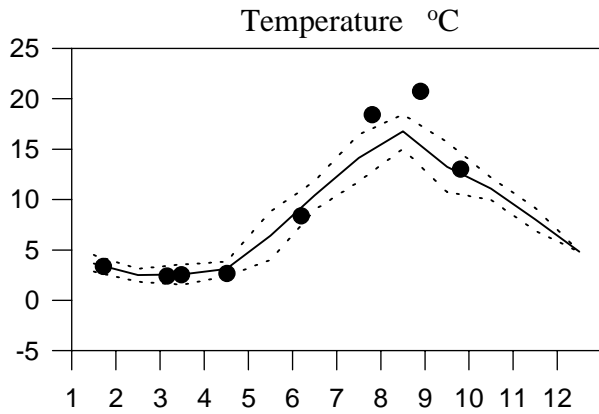
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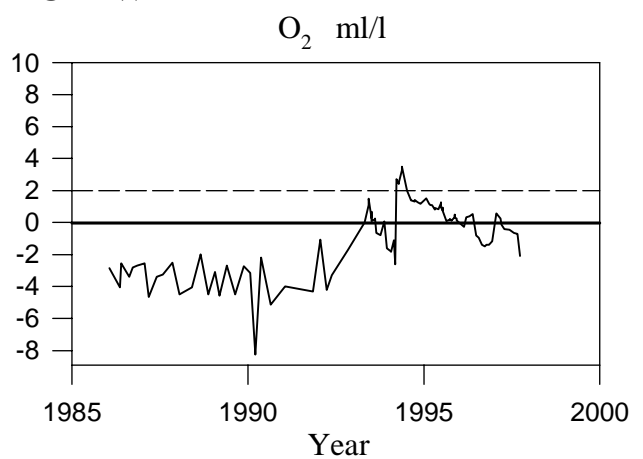
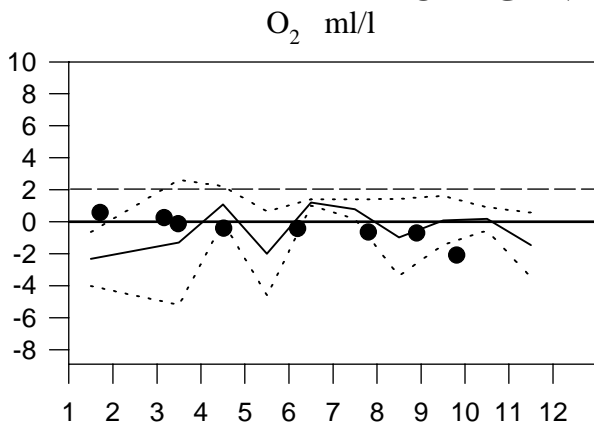
STATION BY15 SURFACE WATER (0-15 m)

Annual Cycles

— Mean 1986-1995 - - - St.Dev. ● 1997



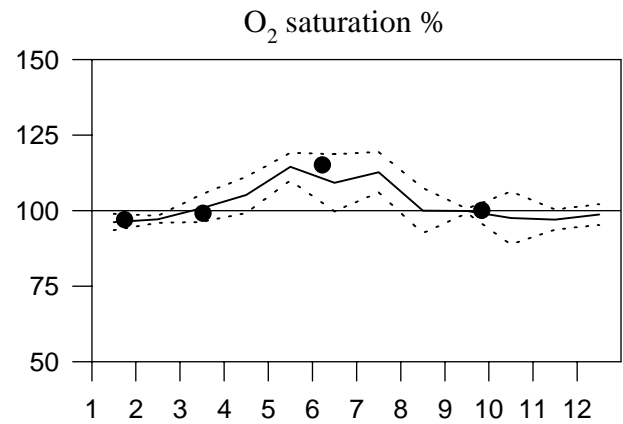
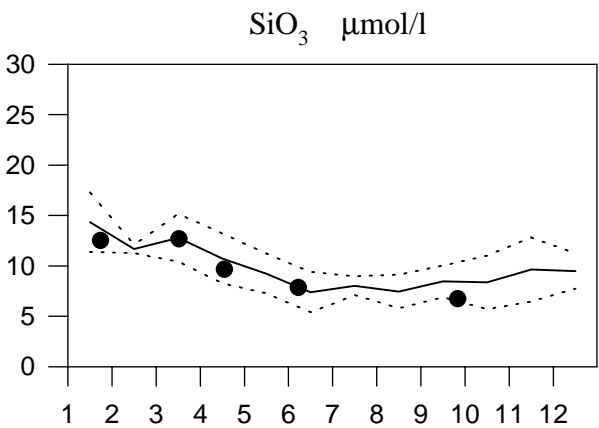
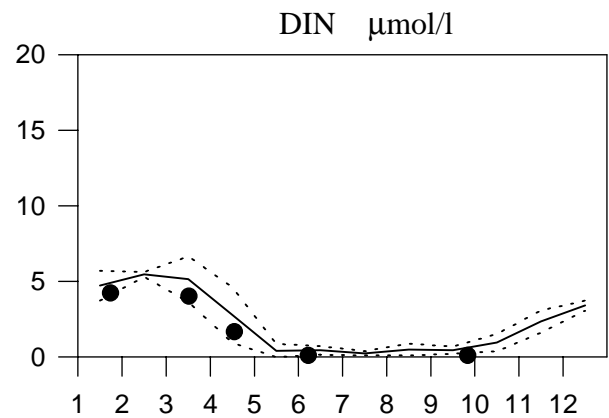
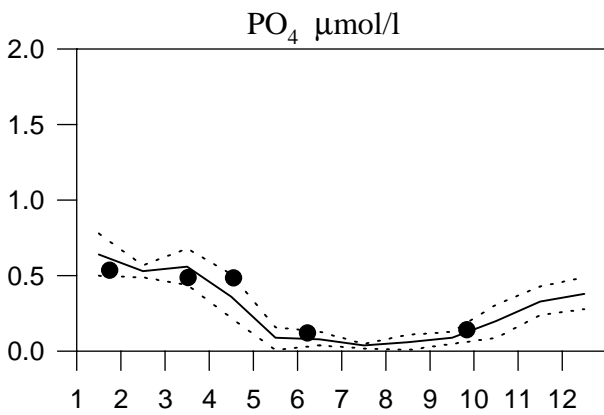
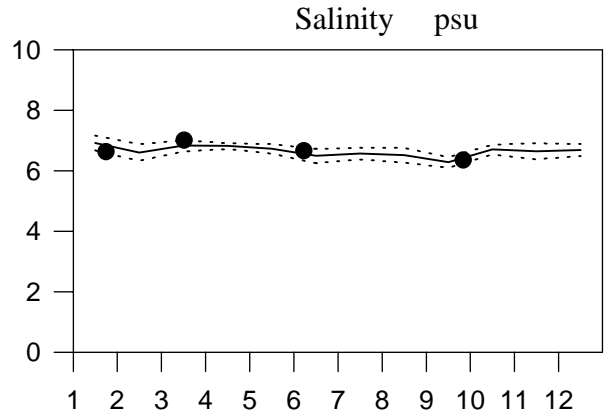
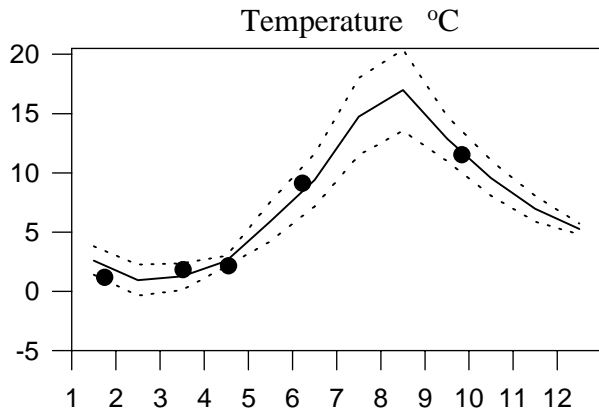
OXYGEN IN BOTTOM WATER



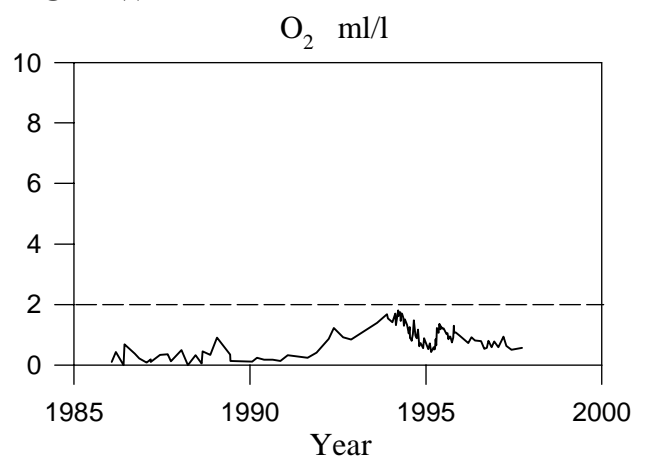
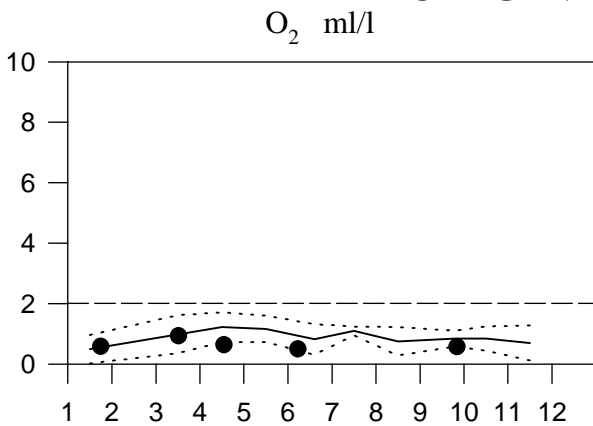
STATION BY31 SURFACE WATER (0-15 m)

Annual Cycles

— Mean 1986-1995 - - - St.Dev. ● 1997



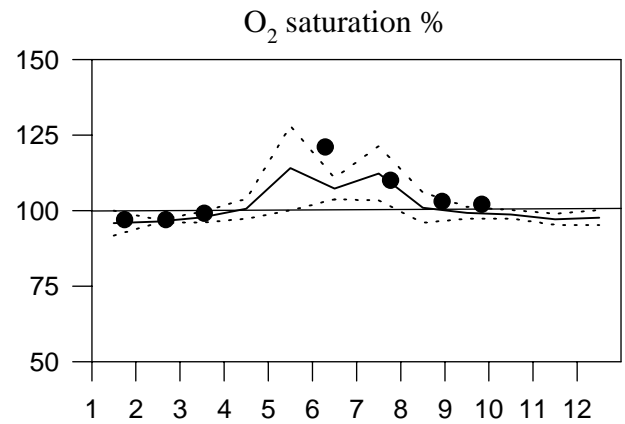
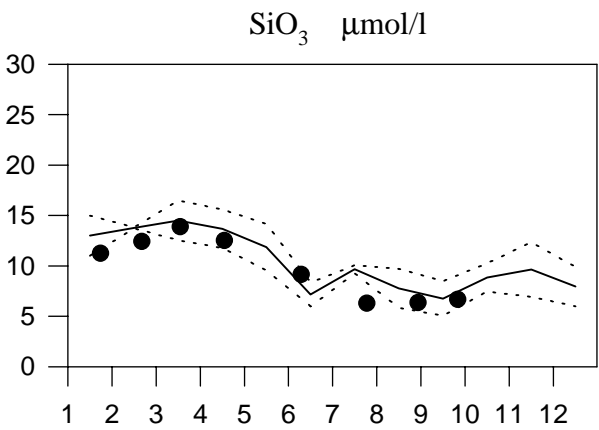
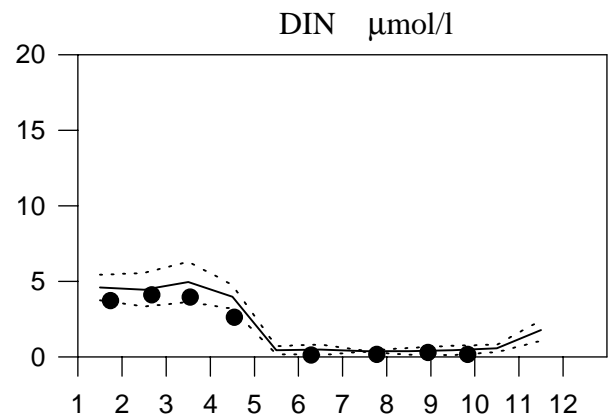
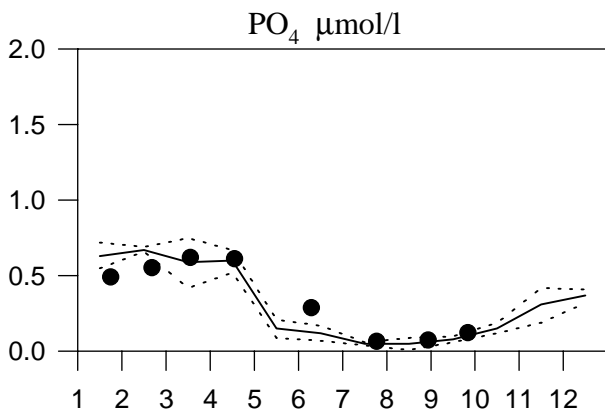
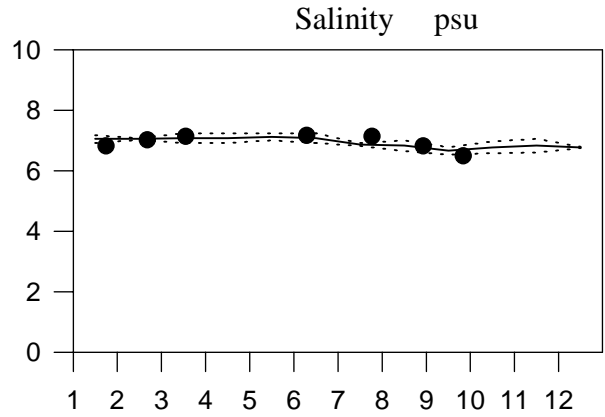
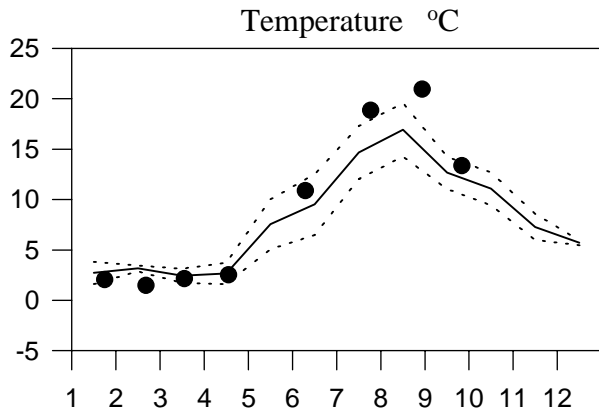
OXYGEN IN BOTTOM WATER



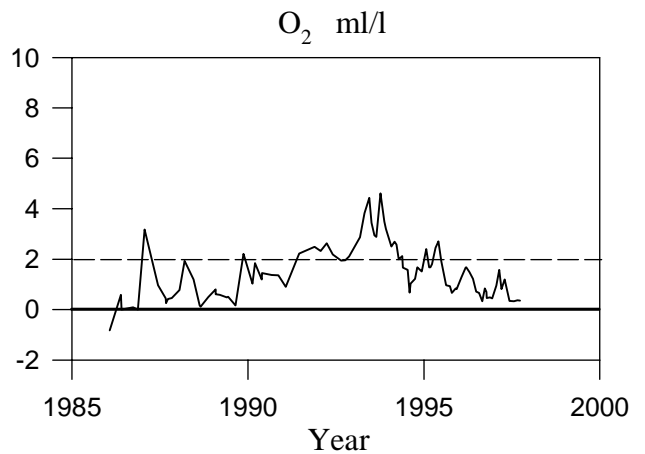
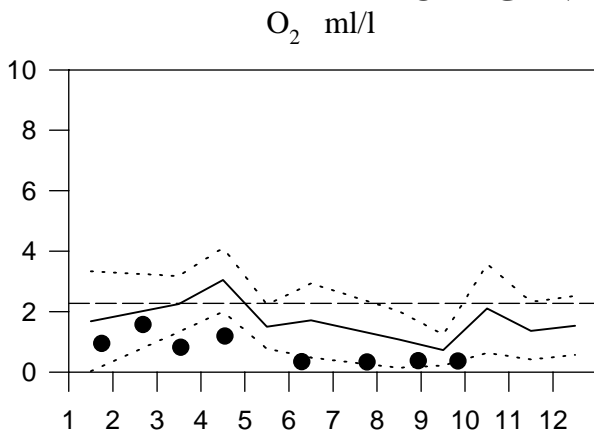
STATION BY38 SURFACE WATER (0-15 m)

Annual Cycles

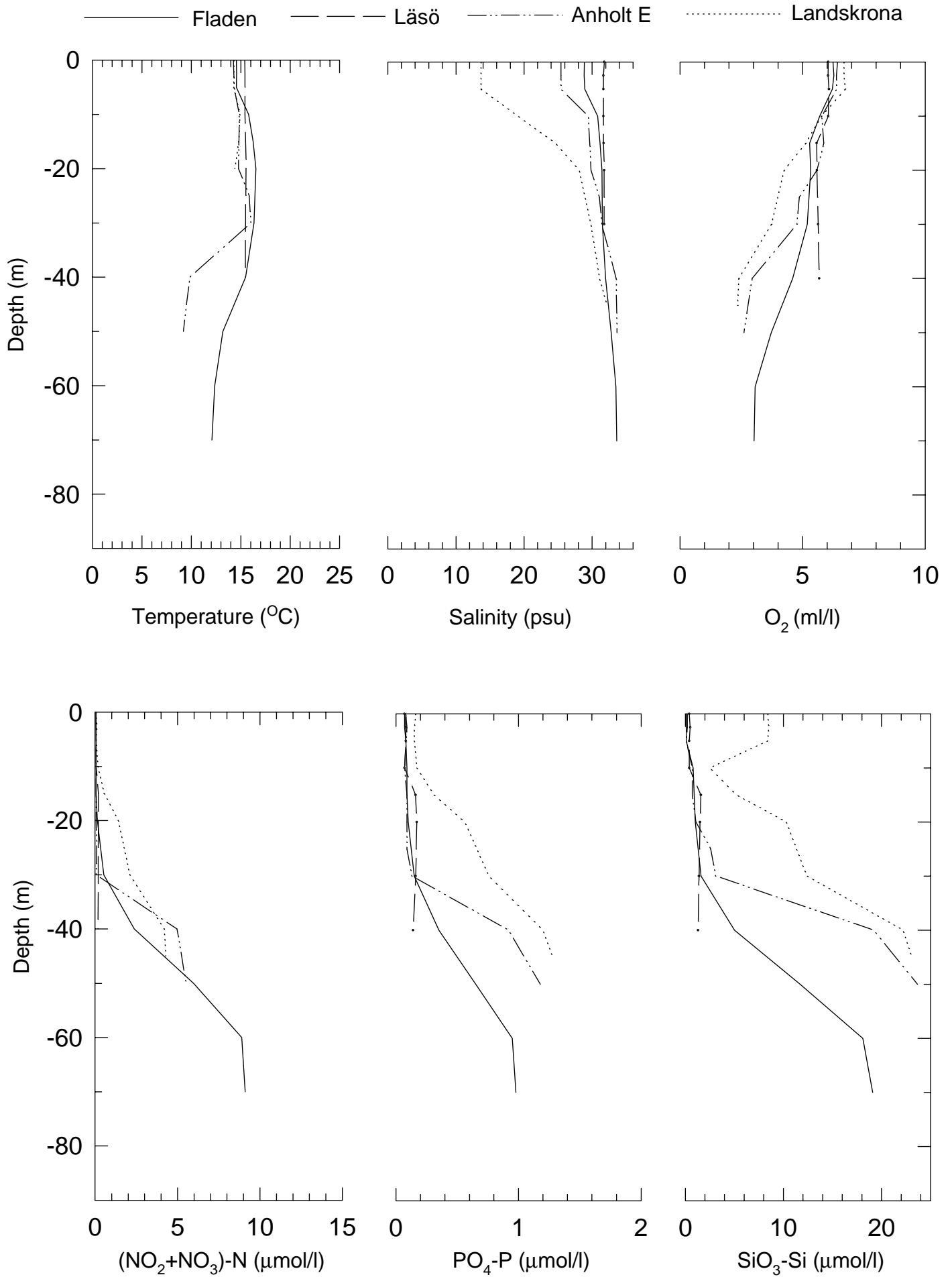
— Mean 1986-1995 - - - St.Dev. ● 1997



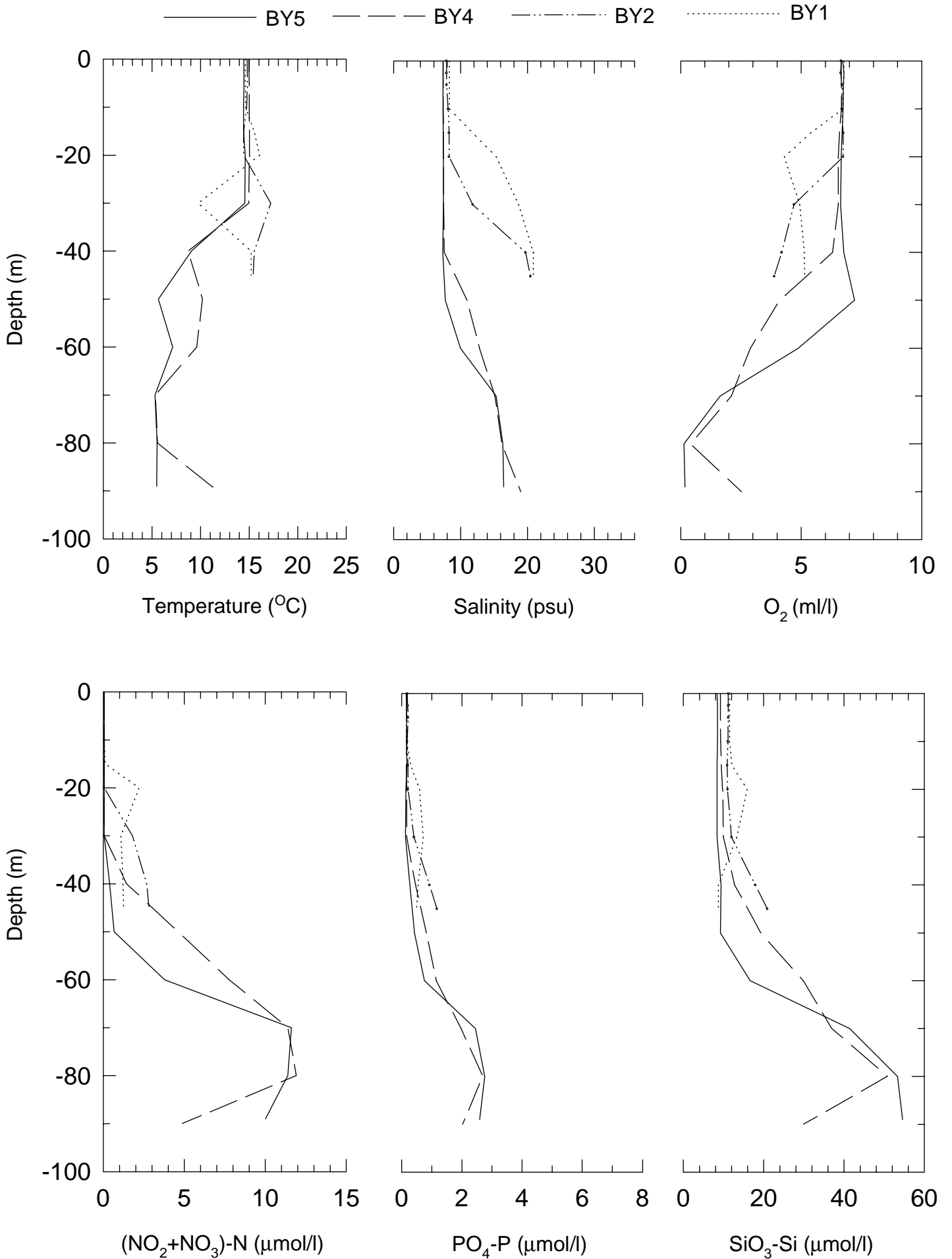
OXYGEN IN BOTTOM WATER



KATTEGAT and THE SOUND week 39 -97

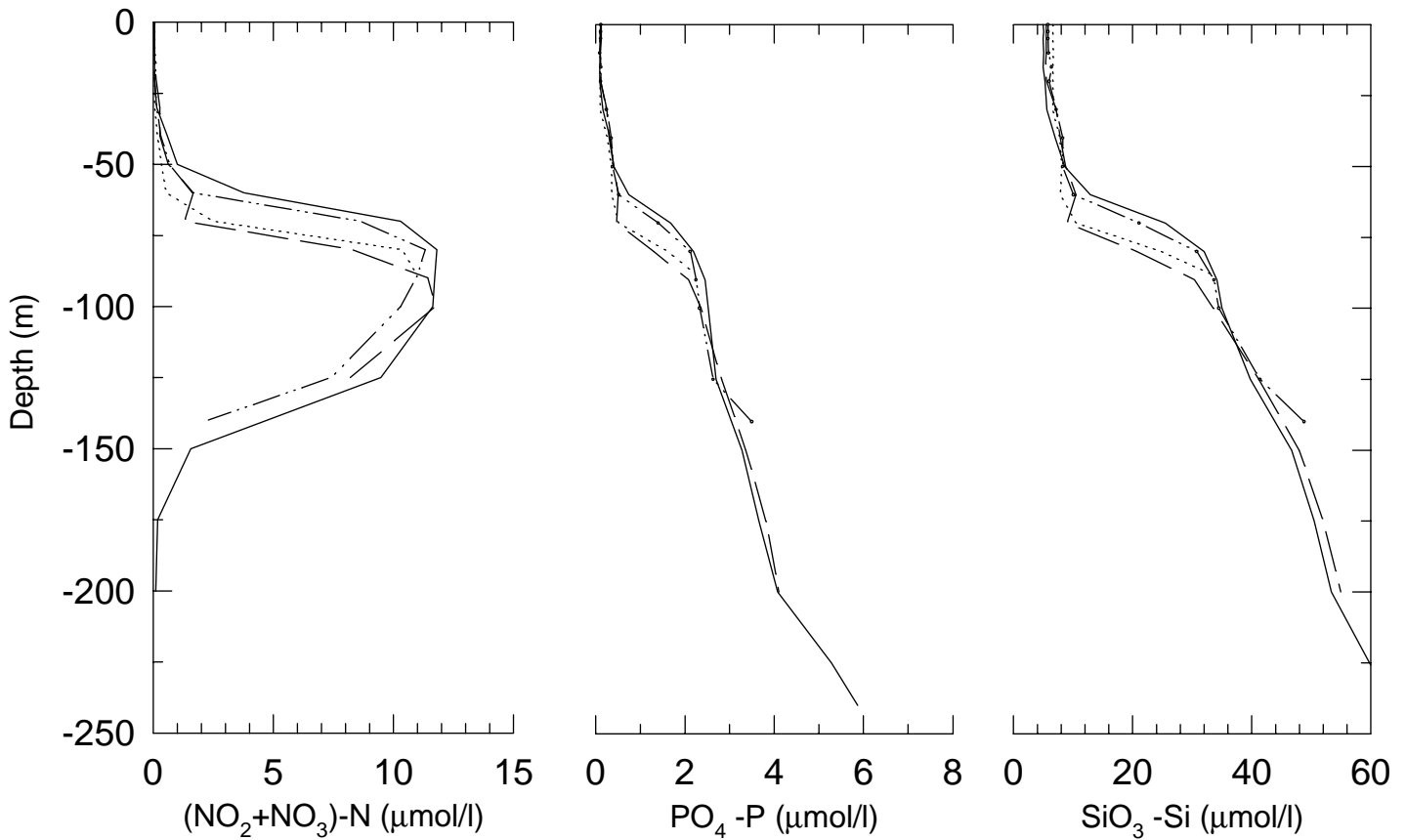
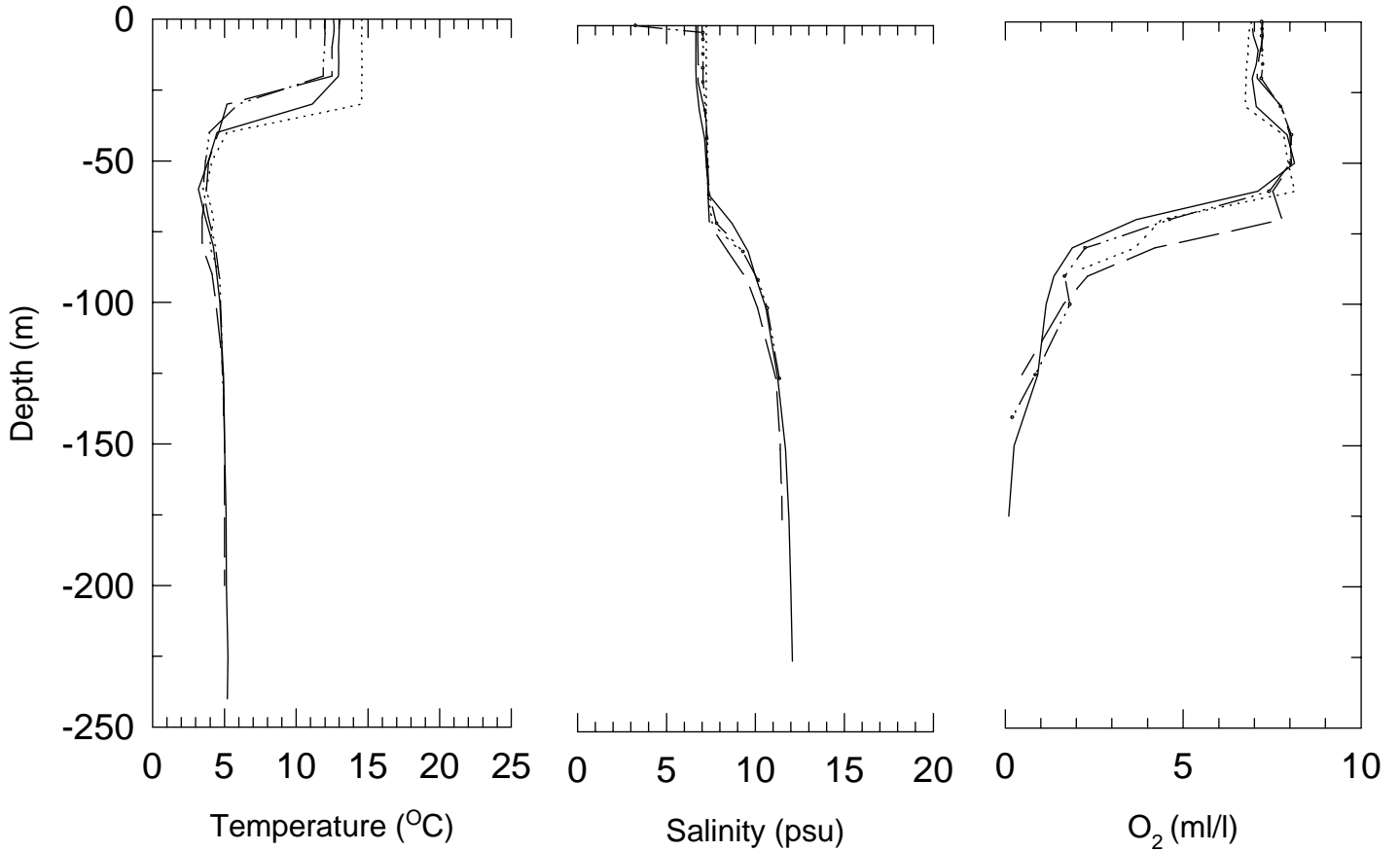


SOUTH BALTIC week 39 -97



EAST BALTIC week 39 -97

— BY20 — BY15 - - - BY10 ···· BCS III-10



WEST BALTIC week 39 -97

— BY31 - - - BY32 ····· BY38

