INSTITUT FÜR OSTSEEFORSCHUNG WARNEMÜNDE
an der Universität Rostock BALTIC SEA RESEARCH INSTITUTE

Baltic Sea Research Institute Warnemünde

C r u i s e R e p o r t

R/V "Professor Albrecht Penck"

Cruise- No. 40 / 03 / 22

This report is based on preliminary data

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1. **Cruise No.:** 40/03/22

2. **Dates of the cruise:** from 24.01.2003 to 26.01.2003

3. **Particulars of the research vessel:**
   Name: Professor Albrecht Penck
   Nationality: Germany
   Operating Authority: Baltic Sea Research Institute (BSRI) Warnemünde

4. **Geographical area in which ship has operated:**
   Mecklenburg Bight – Bornholm Basin

5. **Dates and names of ports of call**
   no port of call

6. **Purpose of the cruise**
   Studies if the inflow of highly saline water across the sills into the deeper basins of the Baltic Sea

7. **Crew:**
   Name of master: O.Albrecht
   Number of crew: 10

Participants: G.Nausch (scientist in charge)
B. Sadkowiak
S. Weinreben
J. Donath

After observing an inflow of highly saline water (18-20 PSU) at the Darss Sill measuring platform from January 16th onwards, see Fig.3, an ad-hoc expedition was organized to detect the spatial and temporal distribution of the water masses into the deeper basins of the Baltic Sea.
The area under investigation covered the Baltic Sea between the Mecklenburg Bight and the Bornholm Basin. Focus was laid on hydrographical measurements accompanied by numerous oxygen determinations. The station map is attached to this report.

The weather situation was dominated on the first day by a high pressure cell (air pressure 1035 hPa) causing calm conditions. On the two following days air pressure decreased down to 1017 hPa and wind speed increased up to 7 Bft from south westerly directions.

Measurements at the Darss sill showed that the inflow event was terminated by January 26th latest. The inflowing water had reached the Arkona Basin where it formed a 10m thick saline layer at the bottom. This water was well enriched with oxygen (around 8 ml/l).

In the Bornholmsgat highly saline water with up to 24.5 PSU near to the bottom was observed indicating the contribution of inflowing water via the Sound.
The effects of the inflow could be found also already in the Bornholm Basin. In the western part the whole water column was well oxygenated with 6.69 ml/l near to the bottom. The salinity measured there was 18.7 PSU. Also at the central station in the Bornholm Basin (BY 5) the first signs could be seen. An oxygen poor layer was lifted up by new inflowing water which had at 87 m depth 16.2 PSU and 2.98 ml/l oxygen.

Investigations with upcoming monitoring cruises have to describe the further propagation of the inflowing water and possible effects in the eastern Gotland Basin.

Günther Nausch

Scientist in charge

Attachments:

- Track chart
- Transsect from the Mecklenburg Bight to the Bornholm Basin for temperature, salinity and oxygen
- Vertical of salinity (upper panel) and temperature (lower panel) measured at the MARNET Station Darss Sill

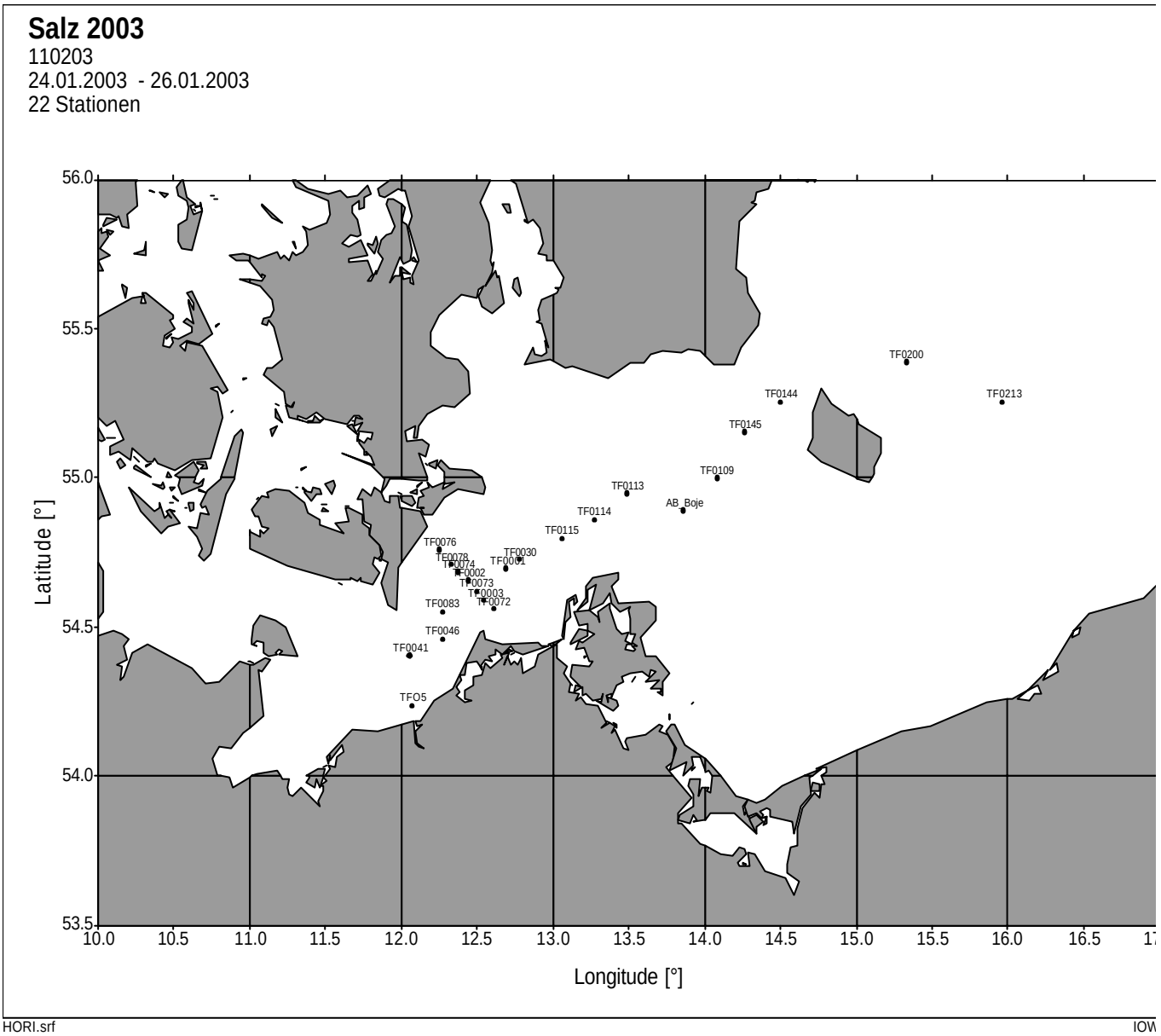
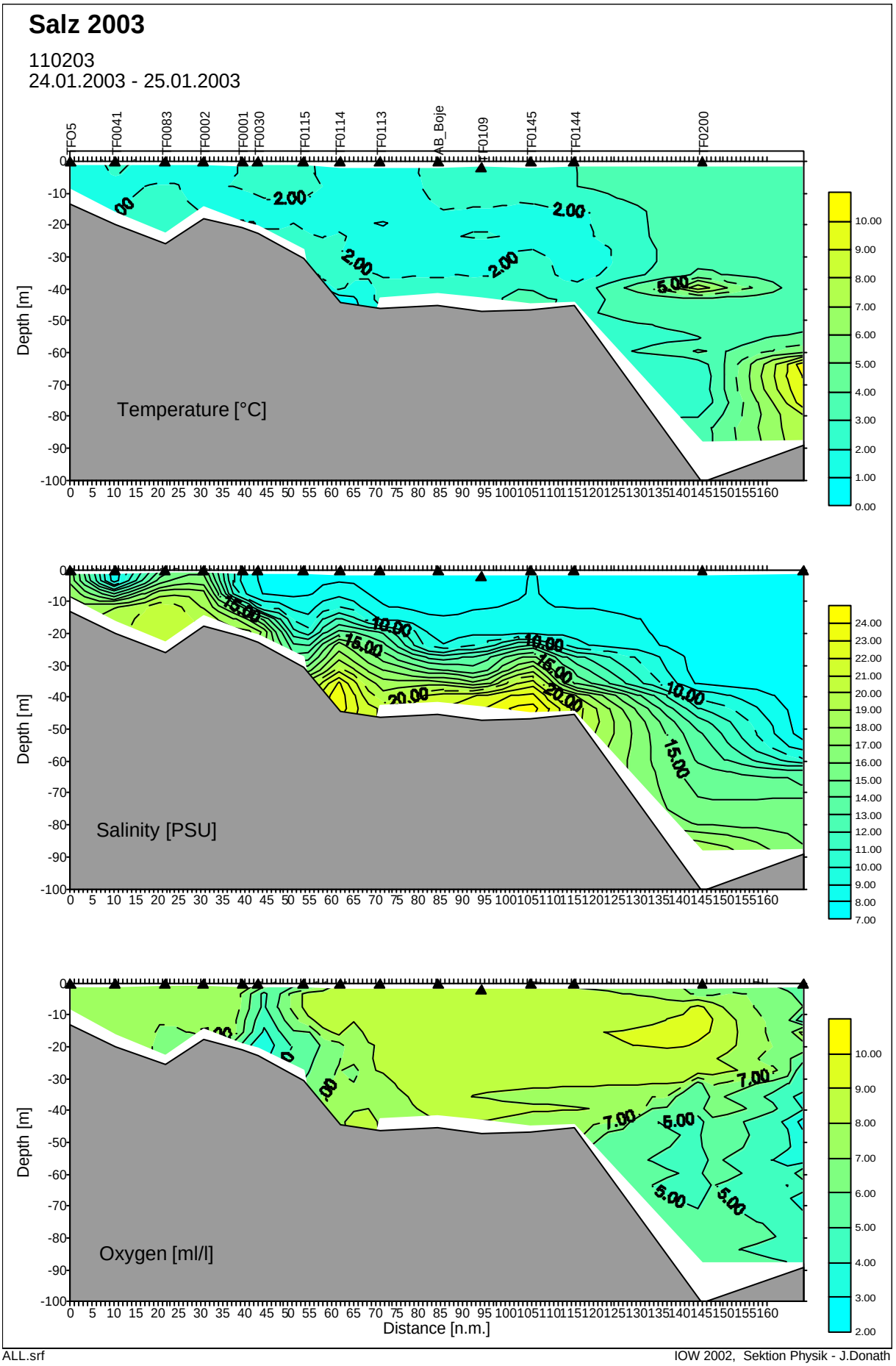


Fig. 1: Track chart

Fig. 2: Vertical distribution of temperature, salinity and oxygen



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IOW 2002, Sektion Physik - J.Donath

Fig. 3: Vertical distribution of salinity (upper panel) and temperature (lower panel) measured at the MARNET Station Darss Sill