

Baltic Sea Research Institute Warnemünde

Cruise Report

R/V "A.v.Humboldt"

Cruise- No. 44 / 01 / 03

This report is based on preliminary data

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1. **Cruise No.:** 44 / 01 / 03
2. **Dates of the cruise:** from 22.03.2001 to 05.04.2001
3. **Particulars of the research vessel:**
Name: A.v.Humboldt
Nationality: Germany
Operating Authority: Baltic Sea Research Institute (BSRI) Warnemünde
4. **Geographical area in which ship has operated:**
Western and Central Baltic Sea
5. **Dates and names of ports of call**
26.03.2001 Sassnitz, 30.03.2001 Ventspils, 02.04.2001 Sassnitz
6. **Purpose of the cruise**
Monitoring cruise in the frame of HELCOM
7. **Crew:**
Name of master: G. Herzig
Number of crew: 16
8. **Research staff:**
Chief scientist: R. Feistel

Scientists: -

Engineers: S. Weinreben

Technicians: B. Kayser, J. Dankert, B. Wachs, A. Welz, C. Peters, G. Lehnert
9. **Co-operating institutions:**
10. **Scientific equipment**
CTDO Bathysonde SBE 911+, Plankton net

11. **General remarks and preliminary result**

The area under investigation covered the Baltic Sea between Kiel Bight and the Northern Gotland Basin as shown in the station maps attached. Marine meteorological, hydrographic, marine chemical and biological investigations were performed according to both the Baltic Monitoring (BMP) and the Coastal Monitoring Programme (CMP) of HELCOM.

In the first part of the cruise, from Kiel Bight to Bornholm Island, a stable high was located over Scandinavia, causing permanent easterly winds of BF 4-6 over the Western Baltic together with mostly clear skies and temporary snow showers. Surface water temperature was between 2 and 3°C. In the second part of the cruise, the Scandinavian

high moved slowly towards the South-East. In the Central Baltic this pressure field caused calm conditions with weak winds of BF 0-4, mostly from southerly directions, clear skies, excellent visibility, and night temperatures below the freezing point. At the same time, the western edge of the high was located over the Western Baltic with winds from the South up to BF 9. This was the situation when an oil tanker ("Baltic Carrier") collided with a sugar freighter between Darss and Moen Island in the night from March 29 to 30. The oil spill was driven towards the Danish shore. On March 30 over the Central Baltic, a warm front propagated from West into the weakened high pressure system, replacing cold and dry by mild and humid air, leading to hazy or even misty conditions over the cold surface water of 2-4°C. Winds turned to SW but remained weak up to BF 4.

The hydrographic, hydrochemical and hydrobiological parameters which have been observed during the cruise near to surface and near to sea floor in the area of investigation are given in Table 1 and 2. Hydrographic overview sections of temperature, salinity, and oxygen from Kiel Bight to NE Gotland Basin are attached as well. Note the yet uncalibrated oxygen figures shown are too high by a factor of about 2.

In the Central Baltic, there was no sign for a recent deep water renewal, and the stagnation period continues. At station 271 in the center of the Gotland Basin, already at 110m depth anoxic conditions have been measured. Deep water exchange in the Eastern Gotland Basin with salty, warm and oxygen-poor water had been observed in Spring 1998 due to an inflow of North Sea waters into the Baltic in September 1997. Between the Monitoring cruises in October 1997 and in March 1998 the bottom temperature and salinity in the Eastern Gotland Basin had changed from 5.3°C, 12.1 psu to 7.1°C, 12.6 psu. The recently measured values are 6.3 °C and 12.1 psu and fit well into a continuous, slowly decreasing time series after that 1997/98 inflow event.

Hydrogen sulfide has also been found at Karlsö and Landsort Deeps.

Appendix: map and list of stations

Table 1: Surface layer (0 - 10m)

Area	Station	Temperature	Salinity	PO ₄ ³⁻	NO ₂ ^{3- *}
Date	Name/ No. **	°C	PSU	µmol/dm ³	µmol/dm ³
Kiel Bight 23.03.2001	361/ 0006	2.95	12.14	0.12	0.12
Meckl. Bight 23.03.2001	12 / 0009	2.82	10.87	0.18	0.20
Lübeck Bight 22.03.2001	23 / 0001	3.01	15.22	0.16	0.75
Arkona Basin 24.03.2001	113 / 0022	2.67	7.73	0.22	0.01
Pom. Bight 25.03.2001	162 / 0042	2.07	7.01	0.03	6.52
Bornholm Deep 27.03.2001	213 / 0052	2.72	7.11	1.19	0.37
Stolpe Channel 27.03.2001	222 / 0054	3.06	7.17	0.97	0.50
SE Gotland Basin 27.03.2001	259 / 0056	3.24	7.19	0.59	3.60
Gotland Deep 29.03.2001	271 / 0075	2.87	7.12	0.47	2.94
Fårö Deep 31.03.2001	286 / 0089	2.77	6.97	0.36	2.39
Landsort Deep 31.03.2001	284 / 0092	1.86	6.09	0.15	0.04
Karlsö Deep 01.04.2001	245 / 0094	2.96	6.70	0.39	2.70

* $\Sigma \text{NO}_2^- + \text{NO}_3^-$; NO₂ was present only in traces in most areas under investigation

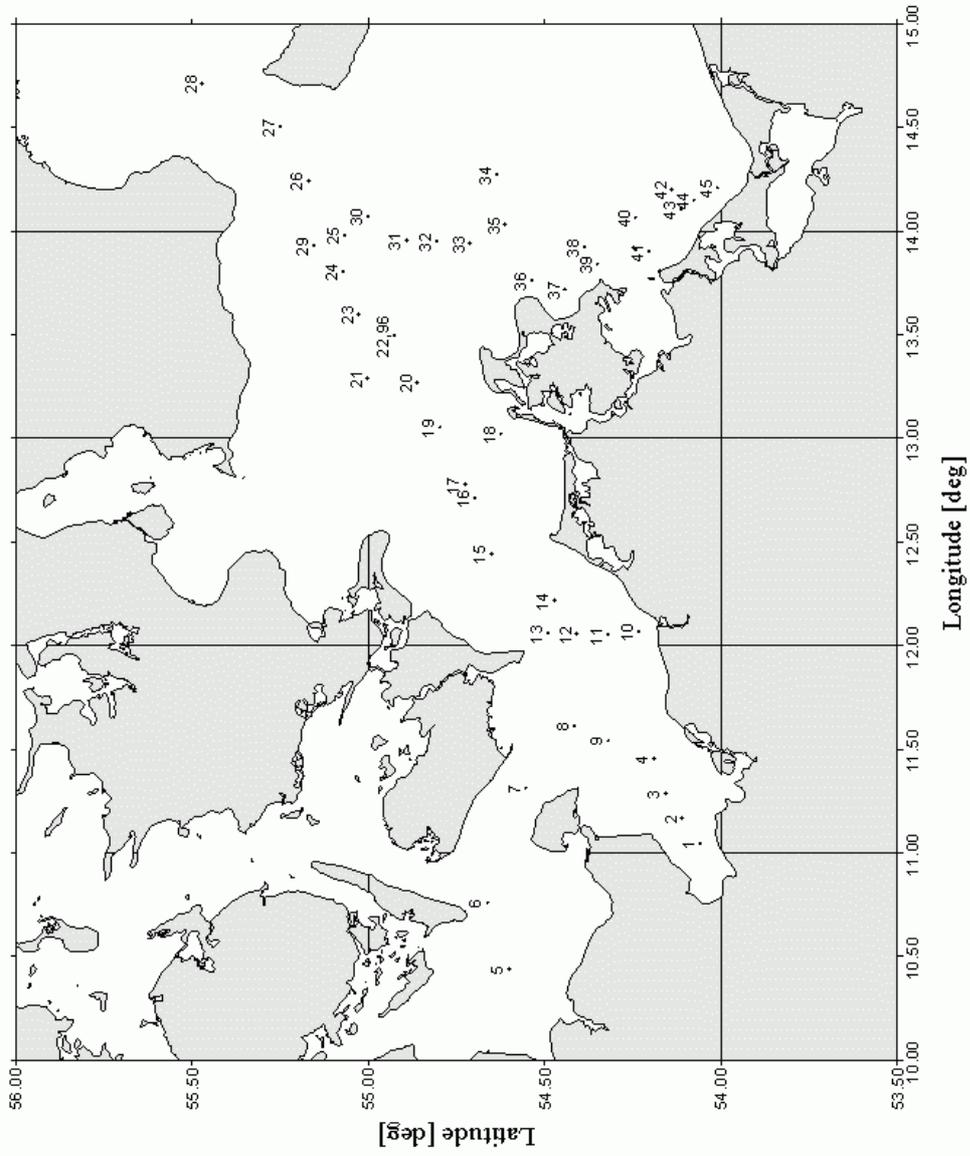
** See maps

Station map
Monitoring

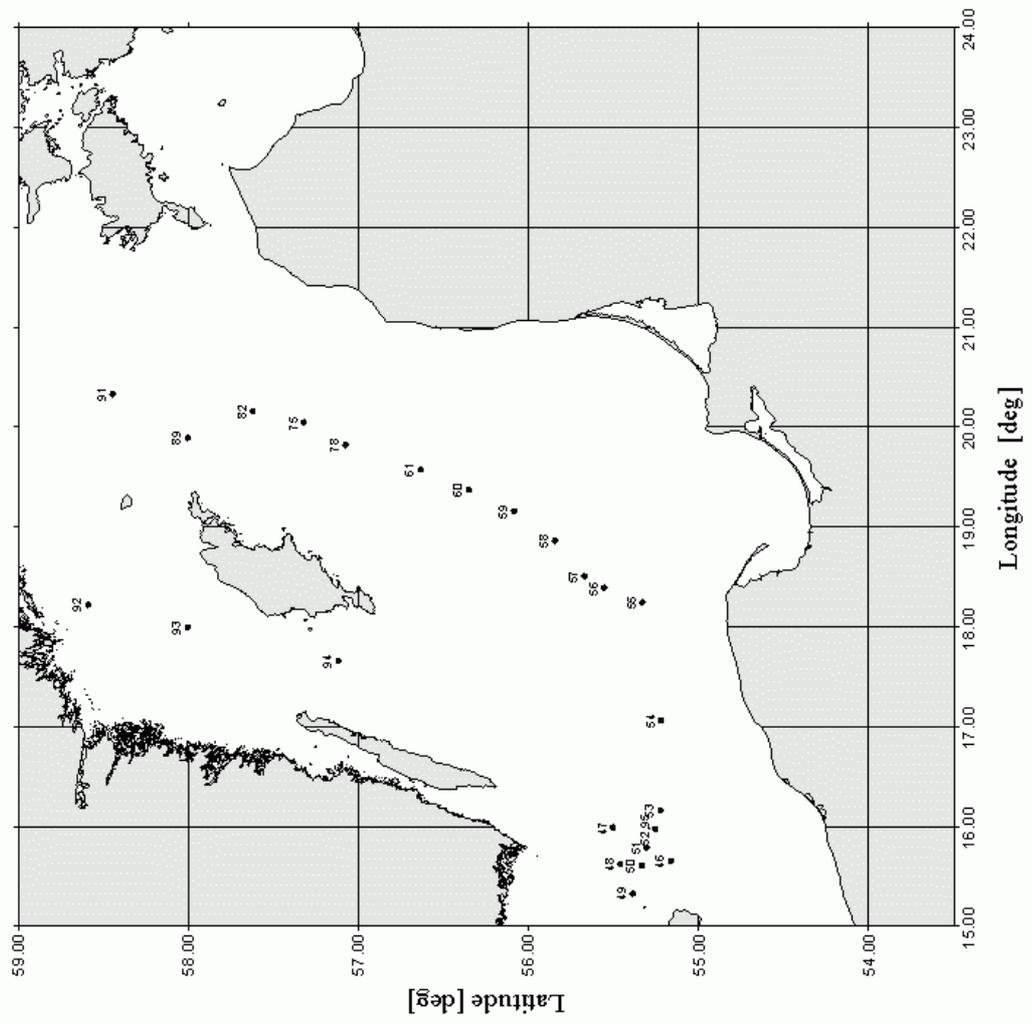
TF 2001 / 03

46 Stations

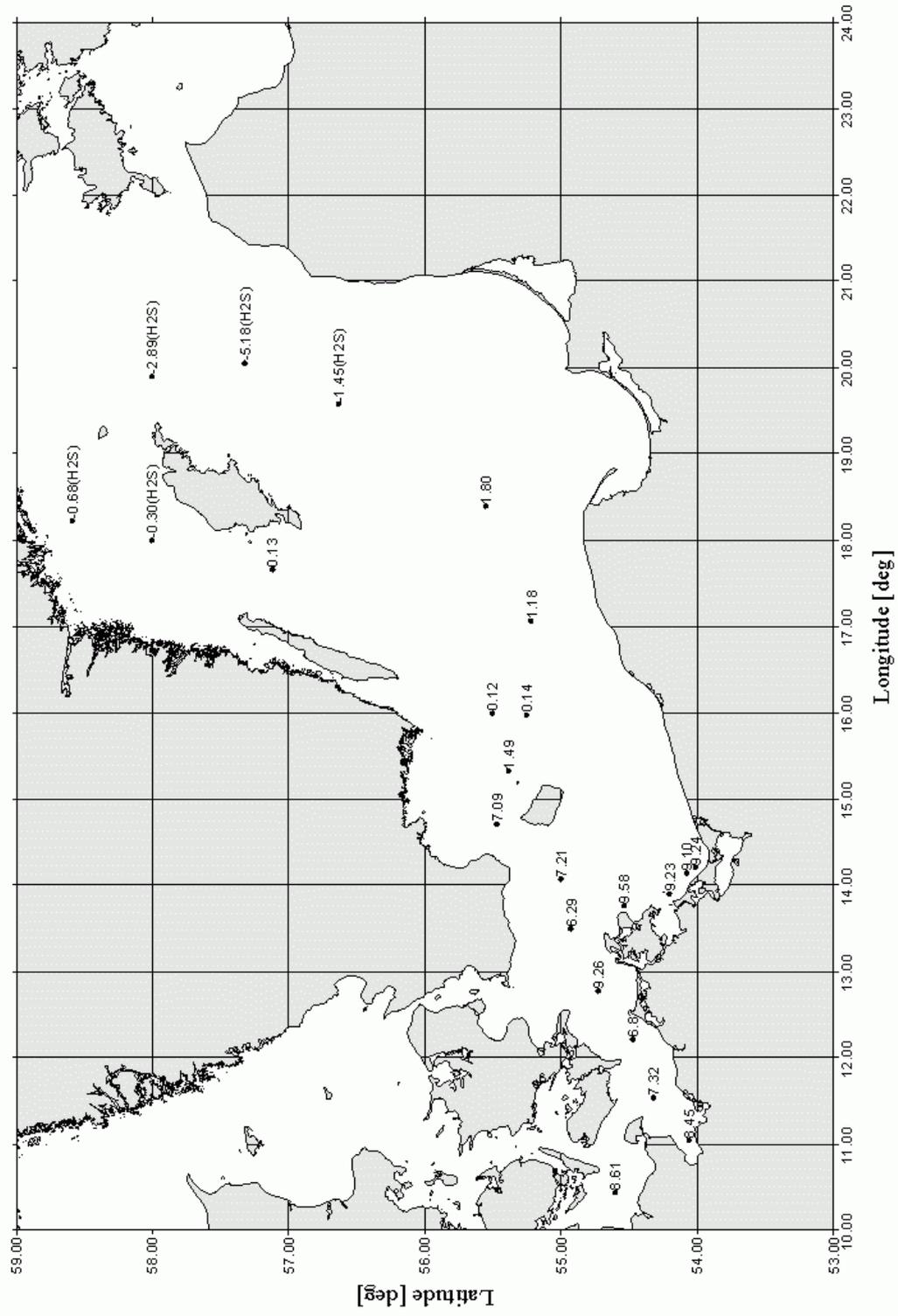
22.03. - 25.03.01
(2.4.01)



Station map
Monitoring
TF 2001 / 03
2.5 Stations
26.03. - 01.04.01



Oxygen bottom concentration



Monitoring

TF 2001 / 03

23 Stations

22.03. - 01.04.01

