

**Baltic Sea Research Institute Warnemünde**

*Cruise Report*

*No. 44/97/01*

*R/V "A. v. Humboldt"*

*7 to 14 January 1997*

*Kiel Bight to Bornholm Basin*

**This report is based on preliminary data and is subject to changes**

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Cruise No. 44/97/01  
r/v "A. v. Humboldt"

Warnemünde  
15. 1. 1997

The Baltic Sea Research Institute Warnemünde carried out a cruise aboard r/v "A. v. Humboldt" from 7 to 14 January 1997 in order to investigate effects of the small inflow of saline water into the Baltic Sea in November 1996 and the oceanographic conditions in the Bornholm Basin.

Scientific staff participating:

Chief scientist: W. Matthäus

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Master: G. Herzig

The weather conditions were predominated by a strong High over Middle and Eastern Europe. From 7 to 11 January, the observation area was influenced by a bridge of high pressure between that High and a High over Greenland. Weak winds with changing directions supported outflow from the Baltic. Between 12 and 14 January, cyclonic activity increased in the area causing partly wind speeds up to 14 m/s from southwest.

During the observation period, we had outflow conditions from the Baltic in the surface layer and weak ingoing currents near the bottom of the Belt Sea with a strong haline stratification. We measured surface salinities between 16 PSU in the Kiel Bight and <9 PSU in the Darss Sill area. The Belt Sea interface hit the bottom at the eastern slope of the Darss Sill. The surface temperatures increased from the Kiel Bight (about 0 °C) into the Arkona and Bornholm Basins (3 - 3.5 °C) (cf Table 1).

**Table 1: Surface layer**

Area Date	Stat Name/No. **	Temp. °C	Sal. PSU	O <sub>2</sub> cm <sup>3</sup> /dm <sup>3</sup>
Kiel Bight 07-01-1997	361/003	0.36	10.59	-
Meckl. Bight 07-01-1997	012/001	0.98	10.95	8.96
Arkona Basin 08-01-1997	113/016	2.90	8.05	8.78
Bornholm Deep 08-01-1997	213/027	3.57	7.30	8.58

**Table 2: Near-bottom water layer**

Area Date	Stat. Name/No.	Depth m	Temp. °C	Sal. PSU	O <sub>2</sub> cm <sup>3</sup> /dm <sup>3</sup>
Kiel Bight 07-01-1997	361/003	23	4.64	21.27	-
Meckl. Bight 07-01-1997	012/001	23	5.53	19.45	6.04
Arkona Basin 08-01-1997	113/016	46	7.29	17.33	6.00
Bornholm Deep 08-01-1997	213/027	87	8.49	16.75	1.26

\*\* See attached map

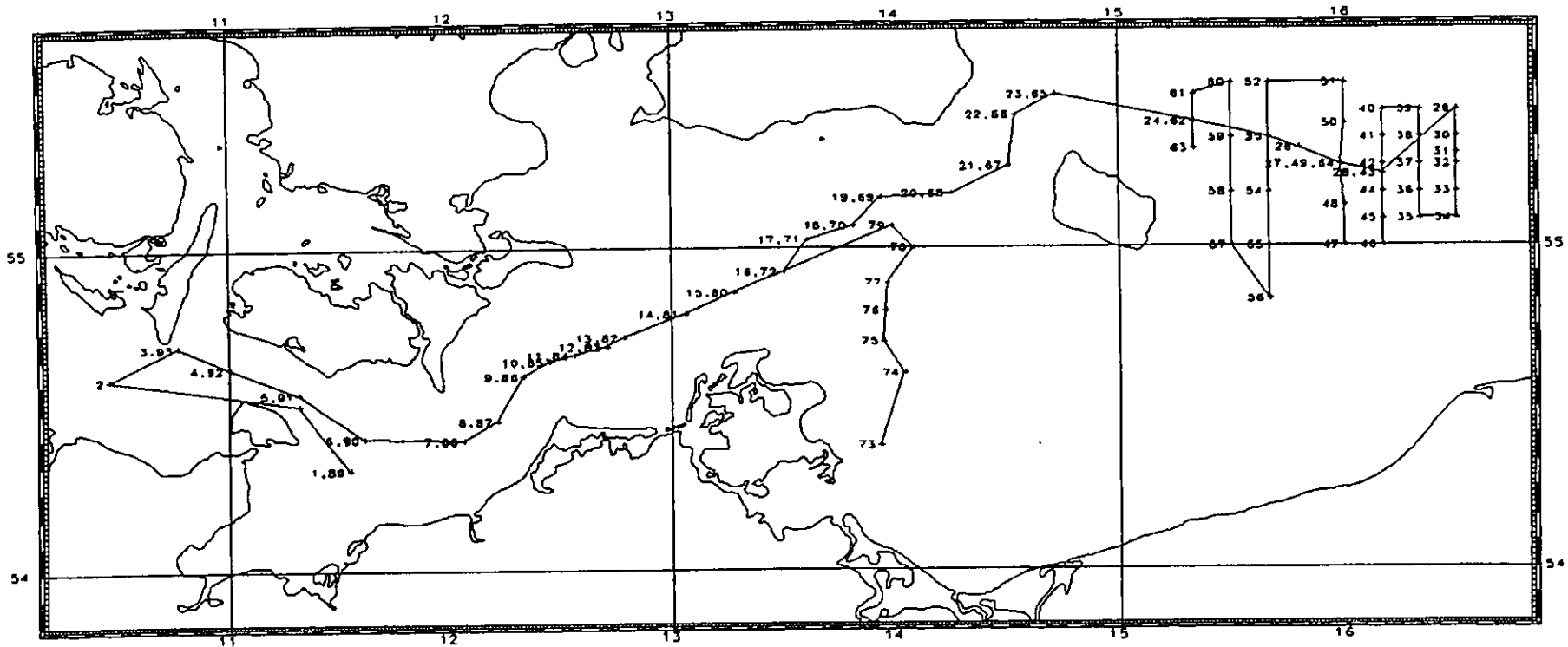
The salinity of the surface water was observed between 7.6 and 8.2 PSU in the central Arkona Basin. The halocline was located between 40 and 45 m. Bottom salinities between 17 and 18.8 PSU were measured (cf. Table 2).

The surface salinities in the Bornholm Basin ranged by 7.2 PSU. The effect of saline water entered the Baltic in the beginning of November 1996 (> 19 PSU across the Darss Sill) was only small in the basin. The salinity in the deep water was > 15 PSU below the 70 m level. Compared to the conditions in November the bottom salinity decreased and was always smaller than 17 PSU (cf. Figure). Oxygen concentration near the bottom of the central Bornholm Basin was about 1 cm<sup>3</sup>/dm<sup>3</sup> (uncorrected O<sub>2</sub> sensor values in Figure). Hydrogen sulphide could not be detected.



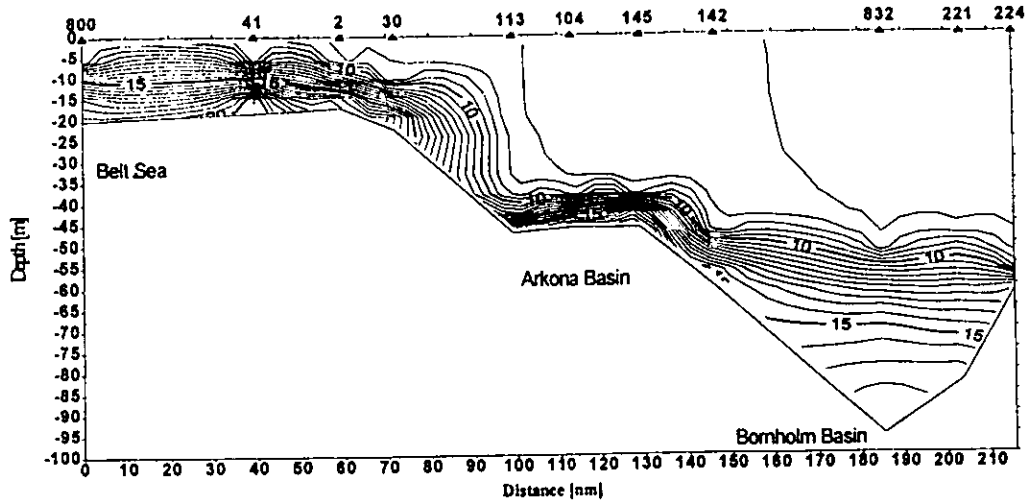
Wolfgang Matthäus  
(Chief scientist)

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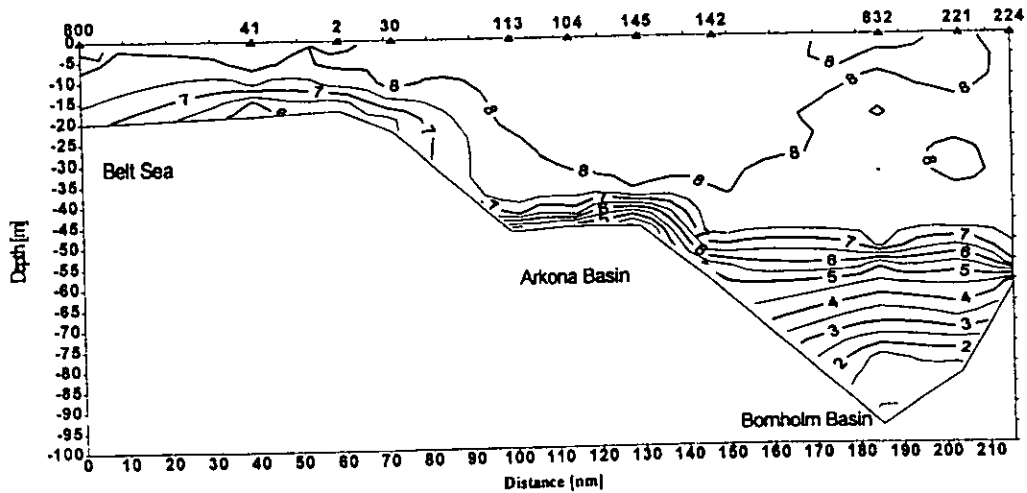
Salinity [PSU]



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Oxygen [cm<sup>3</sup>/dm<sup>3</sup>]



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