



# **Leibniz Institute for Baltic Sea Research Warnemünde**

Rv "Elisabeth Mann Borgese"

Monitoring cruise

Cruise- No. 06EZ1112

24<sup>th</sup> – 28<sup>th</sup> October 2011

Western Baltic to Arkona Basin

This report is based on preliminary data

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Cruise No. 06EZ1112  
rv “Elisabeth Mann Borgese“

Warnemünde 28<sup>th</sup> October 2011

The fifth monitoring cruise of the Leibniz Institute for Baltic Sea Research Warnemünde in 2011 was carried out with rv “Elisabeth Mann Borgese“ between October 24<sup>th</sup> and October 28<sup>th</sup> 2011. The cruise is part of the German contribution to the HELCOM COMBINE program.

Scientific staff participating:

Günther Nausch (scientist in charge)	24.10. – 28.10.2011
Jan Donath	24.10. – 28.10.2011
Annemarie Jetter	24.10. – 28.10.2011
Nadine Keiser	24.10. – 28.10.2011
Frank Pohl	24.10. – 28.10.2011
Ingo Schuffenhauer	24.10. – 28.10.2011
Andrea Taschkste	24.10.– 28.10.2011
Sven Trinkler	24.10. – 28.10.2011

The area under investigation covered the Baltic Sea between Kiel Bight and the Arkona Basin including Bornholmstrait as well as the Pommeranian Bight. Marine meteorological, hydrographic, hydrochemical and hydrobiological investigations were performed according to the COMBINE programme of HELCOM. The station map is attached to this report.

Despite air pressure varied only moderately between 1017 and 1020 hPa during the cruise, most of the time was characterized by strong wind. During the first three days wind speed of 7 Bft, sometimes 8 Bft, from southeastern directions dominated. Wave height was up to 2 m. Only at the end of the cruise, wind speed decreased down to 2 – 3 Bft. Air temperature varied only slightly during day and night. On average 7-11 °C were measured.

The following hydrographical and hydrochemical characteristics have been observed during the cruise (cf. Tables 1 and 2 and Figs. 3 and 4):

- Surface temperatures varied between 11.22°C (Kiel Bight) and 6.80°C (Arkona Basin). Surface cooling and already deep reaching mixing was most obvious in the Arkona Basin. Temperature in the depth showed only slight variations, ranging from 11.52°C in the

Lübeck Bight and 11.12°C at the Darss Sill. A clear depth stratification was only seen in the Arkona Basin.

- The strong wind caused mixing down to the bottom in the whole shallow western Baltic Sea. Thus, beside more or less homogenous temperature profile, also salinity showed only slight differences between the surface and the bottom. Only in the deeper areas (Arkona Basin and Bornholmsgat) a stable stratification remained. Below a well mixed surface layer of 20 – 30 m thickness, salinity increased and temperature decreased (Tables 1 and 2).
- This situation is also reflected in the oxygen situation. The mixing down to the bottom caused by the storm event ventilated the whole water column in the western Baltic and terminated the oxygen depletion period in the bottom water quite often occurring in autumn. Again, only the Arkona Basin showed different characteristics. The stratification caused oxygen depletion in the bottom water below the mixed surface layer.
- Beside hydrographic measurements, also samples for nutrients, chlorophyll a, phytoplankton composition and biomass, zooplankton composition and biomass and macrozoobenthos composition and biomass were taken. However, these data are not yet available.

Günther Nausch

Scientist in charge

#### Attachments

Tables 1 and 2: Preliminary results of selected parameters in the surface layer and the deep water layer (standard depths) - (invalidated results)

Fig. 1: Track chart

Fig. 2: Oxygen in the bottom near layer for selected stations

Fig. 3: Transect from the Kiel Bight to the Bornholmsgat for temperature, salinity and oxygen (invalidated data)

Table 1: Surface water layer (about 1 m depth)

Area Date	Stat. Name/No.*	Temp. °C	Sal. psu	O <sub>2</sub> ml/l
Kiel Bight 25.10.2011	360/0008	11.22	20.36	6.41
Meckl.Bight 24.10.2011	012/0003	11.11	16.33	6.70
Lübeck Bight 24.10.2011	022/0006	11.19	17.11	6.51
Darss Sill 25.10.2011	030/0014	9.06	8.10	7.36
Arkona Basin 25.10.2011	113/0018	6.80	7.62	7.49

\* see attached map

Table 2: Deep water layer (standard depths)

Area Date	Stat. Name/No.*	Depth m	Temp. °C	Sal. psu	O <sub>2</sub> ml/l
Kiel Bight 25.10.2011	360/0008	15	11.27	20.43	6.35
Meckl.Bight 24.10.2011	012/0003	20	11.23	16.53	6.63
Lübeck Bight 24.10.2011	022/0006	20	11.52	18.94	5.98
Darss Sill 25.10.2011	030/0014	20	11.12	10.04	5.42
Arkona Basin 25.10.2011	113/0018	40	11.33	11.97	2.70

\* see attached map

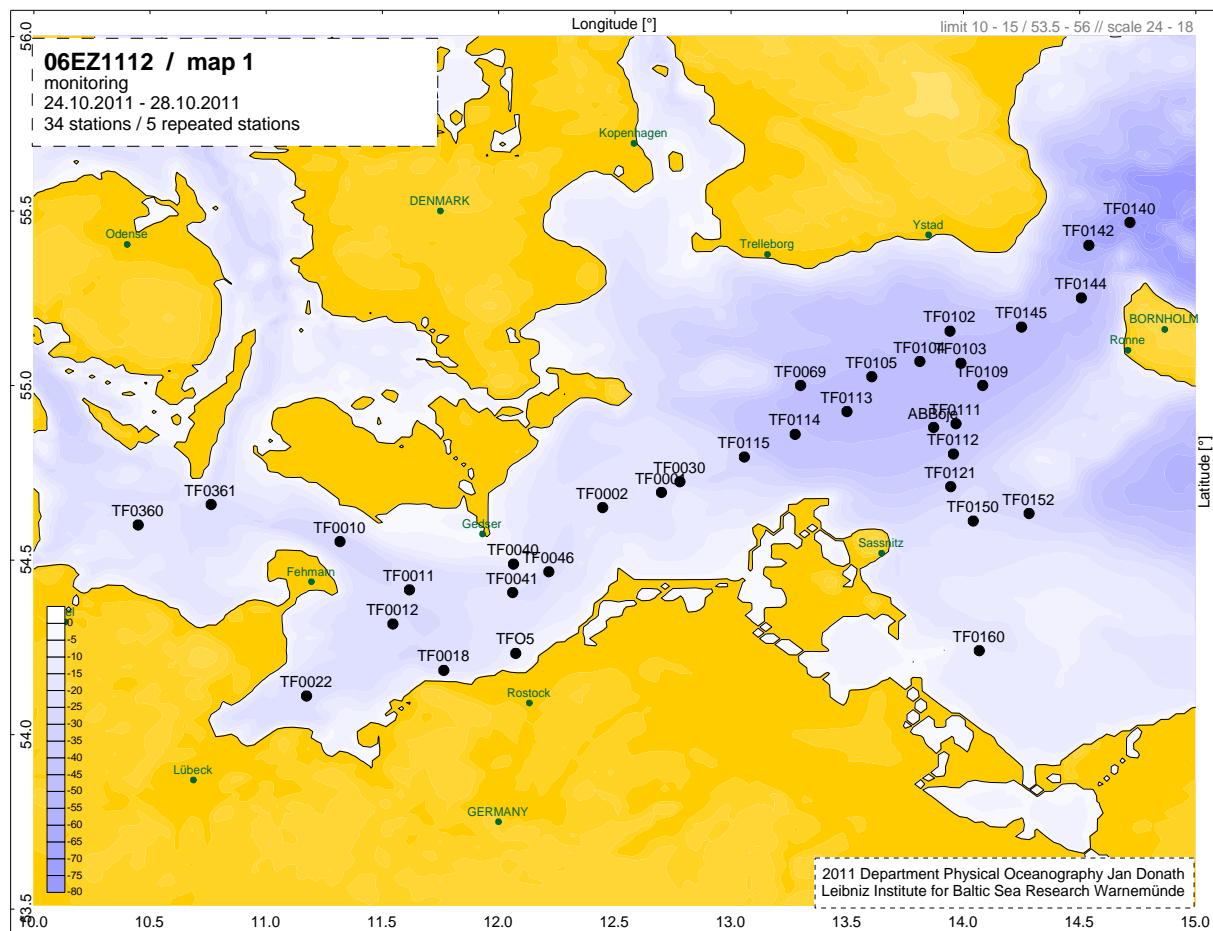


Fig. 1: Track chart

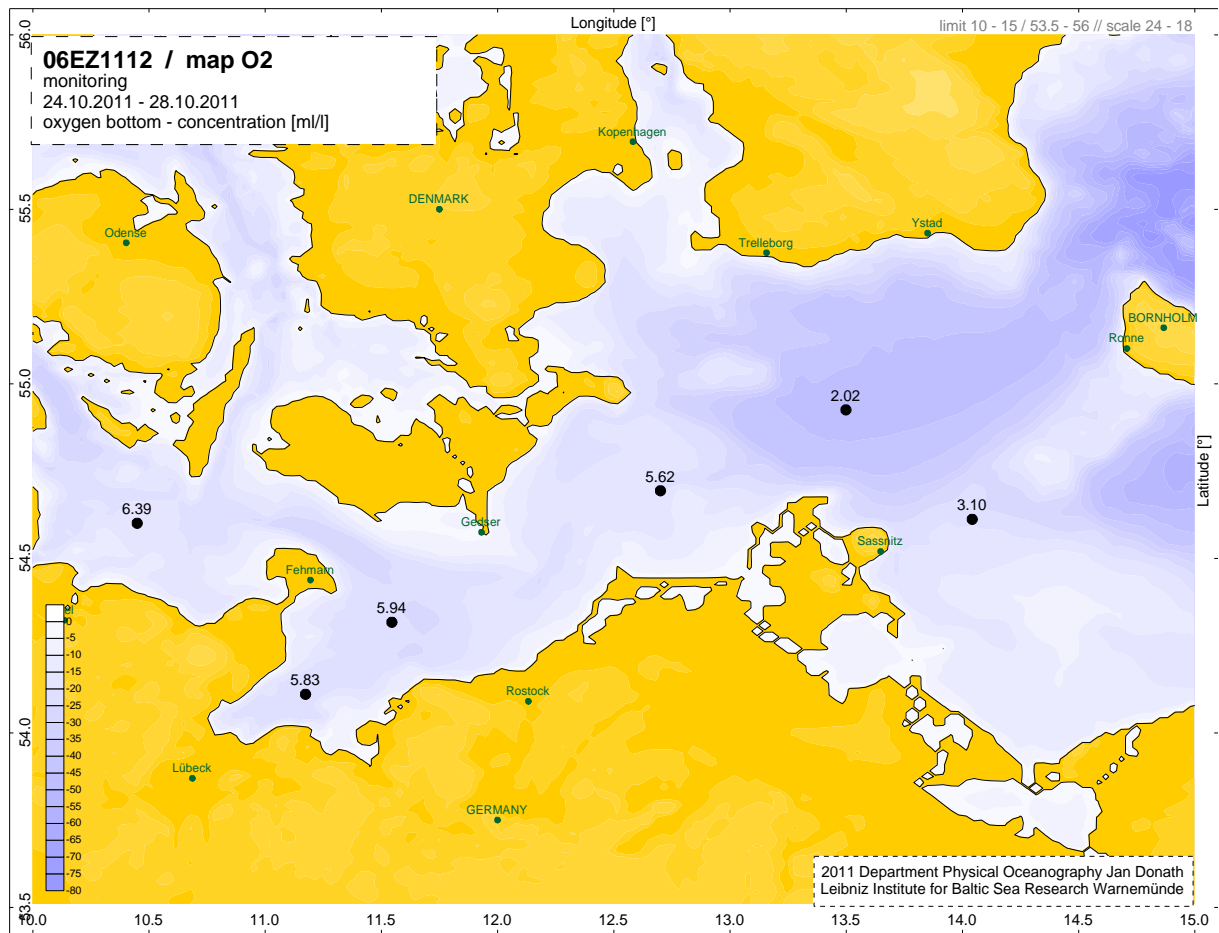


Fig. 2: Oxygen in the bottom near layer for selected stations

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Kiel Bight - Bornholm  
24.10.2011 13:45 - 26.10.2011 12:17 UTC

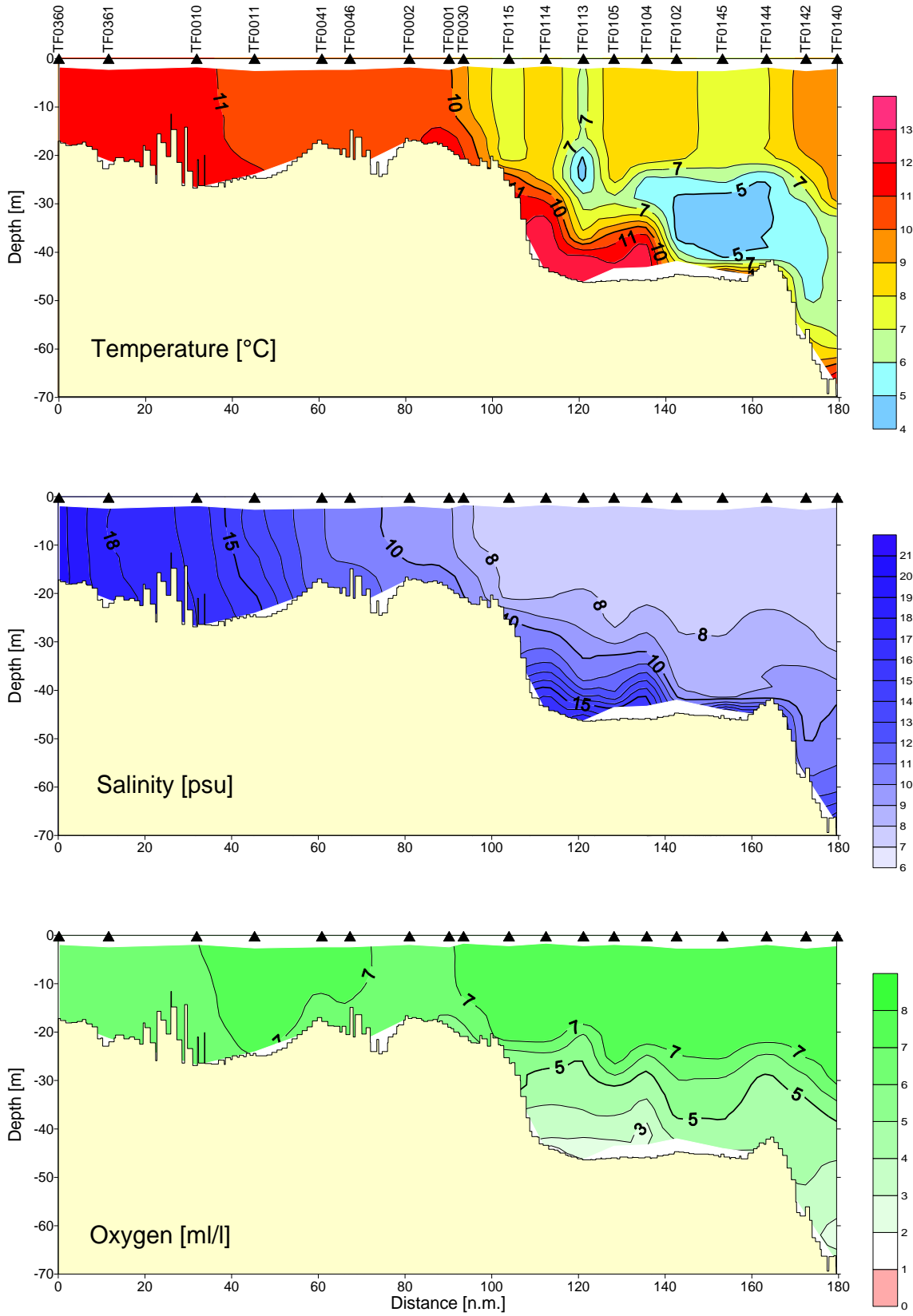


Fig. 3: Transect from the Kiel Bight to the Bornholmsgat for temperature, salinity and oxygen (invalidated data)