



BONUS

SCIENCE FOR A BETTER FUTURE OF THE BALTIC SEA REGION



BALTIC GAS

METHANE EMISSION IN THE BALTIC SEA: GAS STORAGE AND EFFECTS OF CLIMATE CHANGE AND EUTROPHICATION

Methane super-saturation has led to the accumulation of free gas in the form of dense bubbles in many areas of the Baltic seabed. A part of the methane escapes into the water column and some may escape into the atmosphere, thereby adding to the emission of green-house gas. The Baltic is an ocean margin sea with high accumulation of organic matter and nutrients and with a resulting high methane production. Information on the distribution of methane and free gas in the Baltic Sea has not been available, however, and the role of methane for the carbon cycle was therefore unknown.

KEY RESULTS

- BALTIC GAS has developed a new interdisciplinary approach to map and quantify the occurrence of gas. The project has demonstrated where the hotspots of methane production occur, why methane accumulates to high concentrations, and how the barrier against methane emission is controlled.
- Models of the evolution of shallow gas have now been calibrated against field data and are used to predict the future methane balance in the Baltic Sea under different scenarios of climate change and eutrophication. A critical factor is the accumulation of organic-rich mud in several of the oxygen-depleted basins where methane now penetrates up very close to the sediment surface.
- BALTIC GAS has generated and compiled an extensive database for methane in the Baltic Sea which is the basis for the first GIS maps of methane and gas distribution in any marginal sea.

WHO NEEDS THE INFORMATION

The new maps will be available for environmental authorities to evaluate potential risks coming from the seabed by continued eutrophication and climate change. They will also be available for planners of offshore constructions that depend on long-term seabed stability. The project develops a predictive model of gas accumulation and emission under realistic environmental scenarios which will improve the knowledge base for necessary future policy actions.

PROJECT PARTNERS

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Center for Geomicrobiology, Department of Bioscience, Aarhus University (Coordinating partner)

Department of Marine Ecology, National Environmental Research Institute (former), Aarhus University

The Geological Survey of Denmark and Greenland, Copenhagen

Germany

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The Leibniz Institute for Baltic Sea Research, Warnemünde

The Max Planck Institute for Marine Microbiology, Bremen

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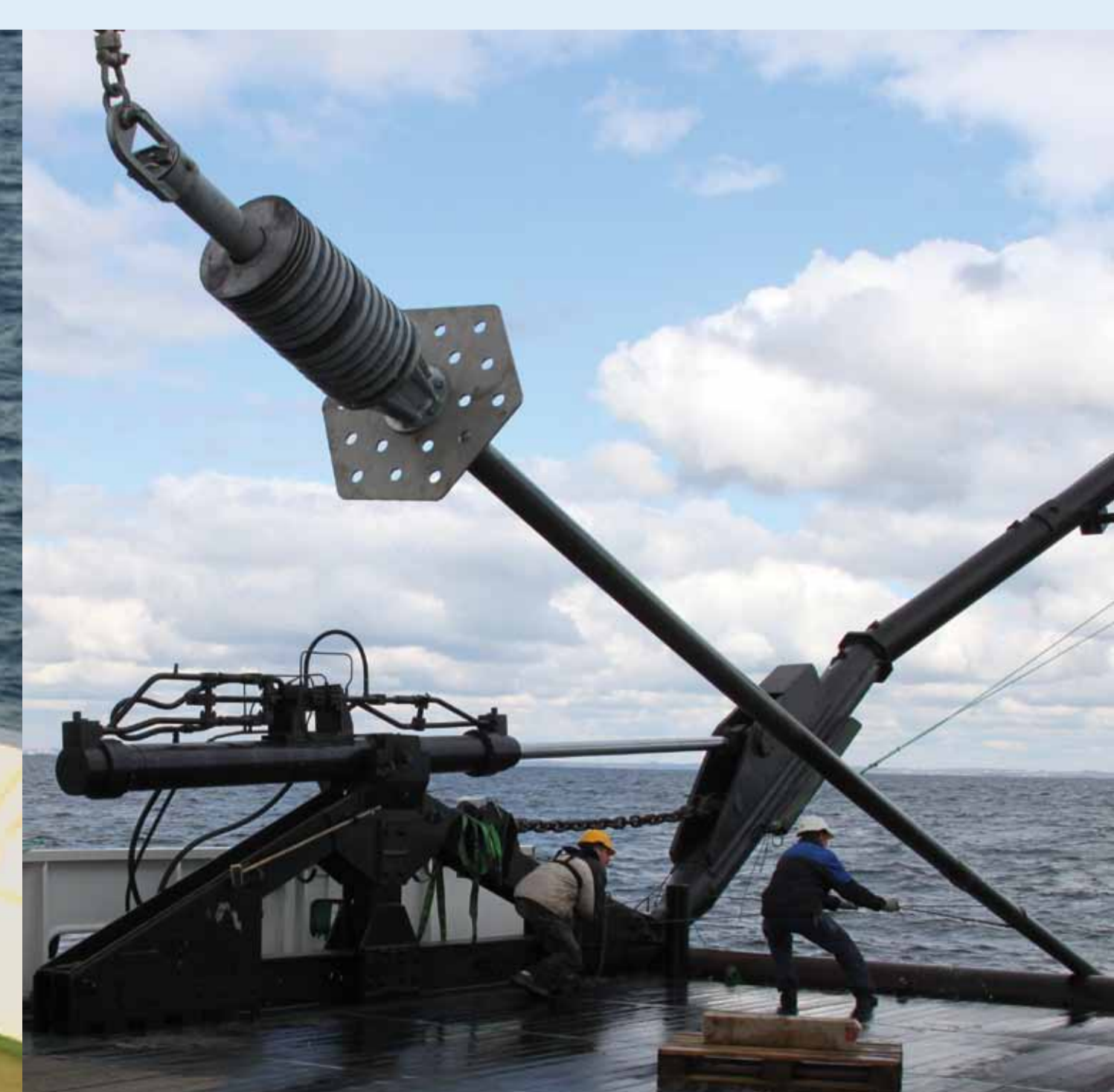
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