

Workshop:
Ventilation of the Baltic Sea deepwater -
observations and model results.
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organized by

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The Baltic Sea is a strongly stratified semi-enclosed sea. Horizontal and vertical salinity gradients are the result of the high freshwater supply from rivers and net precipitation and of the reduced water exchange with the world ocean. The deepwater is ventilated mainly by large perturbations, so-called major Baltic inflows. During the last century these events occurred more or less randomly at intervals of one to several years. However, during the past two decades the frequency of major inflows has decreased. Significant inflows occurred only 3 times: 1983, 1993, and 2003. The lack of saltwater inflows caused stagnation periods, i.e. the ventilation of the Baltic deepwater ceased with decreasing oxygen and increasing hydrogen sulphide concentrations. Such stagnation periods have significant impacts on the marine ecosystem. Indeed, during the last century two exceptionally long stagnation periods have been found, the 1920s to 1930s and the 1980s to 1990s. In several publications the reasons for the occurrence of stagnation have been discussed. However, there seems to be no overall consensus.

In addition, inflow events of medium strength occurring several times per winter season are important since those events have a density signature sufficient for ventilating intermediate layers in the region of the Baltic proper halocline, which is generally subject to oxygen depletion. As the Arkona Sea is known to significantly reduce density of such inflowing water by means of turbulent mixing, the quantification of the relevant water mass transformations in this area is essential for the

understanding of the sensitivity of the Baltic Sea to climate change and human impact. For instance, it is speculated that the projected construction of extensive off-shore wind farms in the area of the Arkona Sea may have a significant impact on mixing.

The objective of this workshop is to discuss the state-of-the-art knowledge on the ventilation of the Baltic deepwater and its impact on the marine ecosystem and to improve our understanding of the physical and biogeochemical processes involved. Thereby, it is important to study observations. During the recent years the quantity and quality of available data from individual saltwater inflows have increased considerably. In addition, process oriented models and three-dimensional ocean circulation models have been applied to simulate either individual inflow events in process studies or longer periods in climate variability studies. In the workshop all these contributions are very welcome. The overall aim is to bring observers and modelers from different disciplines together for a comprehensive assessment of recent research results. Especially, still open questions and problems of available models should be discussed. The program of the workshop will include several short presentations on the topic and enough time for questions and discussion.

Welcome!