Geophysical Research Abstracts
Vol. 13, EGU2011-7421, 2011
EGU General Assembly 2011

Upwelling in the Baltic Sea -a review

Kai Myrberg (1) and Andreas Lehmann (2)
(1) Finland (kai.myrberg@ymparisto.fi), (2) Lebnitz-Institute of Marine Sciences, Kiel, Germany

Upwelling is a typical phenomenon of the Baltic Sea. Because the Baltic Sea is a semi-enclosed basin, winds from favorable directions blowing predominately parallel to the coast cause upwelling leading to vertical displacement of water body and to mixing. During the thermal stratified period, upwelling can lead to a strong sea surface temperature drop of more than 10°C changing drastically the thermal balance and stability conditions at the sea-surface. Upwelling can play a key role in replenishing the euphotic zone with the nutritional components necessary for biological productivity when the surface layer is depleted of nutrients. Consequently, it has been found out that in such areas where upwelling lifts phosphorus-rich deep water to the surface, the N/P ratio becomes low which favors the blooming of nitrogen-fixing blue-green algae. The rapid temperature decrease during such events was early recognized and documented since temperature measurements became available. Thus, the study of the upwelling process has a long tradition. However, although the importance of upwelling has generally been accepted for the Baltic Sea, no general review of upwelling exists. The objective of this presentation is a comprehensive review of the upwelling process, its dynamics and reflections to ecosystem processes in the Baltic Sea using all relevant literature which will help to close the gaps of present knowledge and some recommendations for future work are outlined accordingly.