

# Copyright ©

---

Es gilt deutsches Urheberrecht.

Das Hochschulschrift darf zum eigenen Gebrauch kostenfrei heruntergeladen, konsumiert, gespeichert oder ausgedruckt, aber nicht im Internet bereitgestellt oder an Außenstehende weitergegeben werden ohne die schriftliche Einwilligung des Urheberrechtsinhabers. Es ist nicht gestattet, Kopien oder gedruckte Fassungen der freien Onlineversion zu veräußern.

German copyright law applies.

Copyright and Moral Rights for this thesis are retained by the author and/or other copyright owners. The work or content may be downloaded, consumed, stored or printed for your own use but it may not be distributed via the internet or passed on to external parties without the formal permission of the copyright holders. It is prohibited to take money for copies or printed versions of the free online version.

VOLUME AND SALT TRANSPORTS  
IN THE BALTIC SEA AND ITS SUBBASINS

S. Malz, Institut für Meereskunde, D-24105 Kiel, Germany, e-mail: smalz@ifm.uni-kiel.de  
A. Lehmann, Institut für Meereskunde, D-24105 Kiel, Germany, e-mail: alehmann@ifm.uni-kiel.de

One of the main aims of BALTEX is the determination of the water, heat and salt budget for the Baltic Sea and its drainage basins. As there aren't any long-term measurements of transports in the Baltic Sea available, results of three dimensional high resolution models have to be used to calculate the budgets. At the Institute of Marine Research in Kiel a coupled ice-ocean model for the whole Baltic has been developed since many years and validated against observations. The oceanic component is based on primitive equations, with horizontal resolution of 5 km and 28 vertical levels specified. The ice model is based on the Hamburg Sea Ice Model, with the same horizontal resolution. Identical fields of temperature and salinity may be taken from monthly mean values or from hydrographic observations interpolated onto the model grid. Atmospheric forcing is taken from the SMHI data base.

The model is integrated for two years starting in January 1992 until December 1993 including the latest major salt water inflow event which led to drastic changes in the salinity distribution in the Baltic Sea. Based on monthly mean model data volume transports as functions of salinity between the different subbasins are calculated. Due to the fresh water input mainly into the Bay of Bothnia and the Bay of Finland and due to the inflow of high saline water from the Kattegat into the Baltic a two layered estuary is established. The calculated monthly mean transports are analysed with respect to seasonal changes and correlated to the forcing functions.

One of the results is that the mean vertical integrated transports for 1992 and 1993 are very similar. The interannual variability seems to be small compared to the seasonal. Therefore these two in detail analysed years turn out to be typical for the horizontal circulation pattern in the Baltic Sea. Due to the lack of data the long-term mean of the vertical circulation couldn't be analysed because the residence time of the Baltic Sea is much longer than the investigated integration period.

In: Second study conference on the Baltic Sea Experiment. , 25.-29.05.1998, Geesthacht, Germany . Conference Proceedings of the Second Study Conference on BALTEX. ; p. 148