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Estimation of the current vertical velocity in the Baltic Sea

1. Introduction, 2. Standard way of estimating vertical velocity, 3. Simple model for calculating the vertical velocity, 4. Numerical example, 5. Conclusions

Abstract

In the paper an attempt of estimation of the vertical component of current velocity vectors based on the results of numerical model of steady - state water circulation in the Baltic Sea was performed.
A simple linear model for calculating the vertical velocity for the case of steady - state currents with constant vertical eddy viscosity coefficient and constant Coriolis parameter was presented.

The model was applied to estimate vertical components of currents velocity in the density homogeneous Baltic Sea for the wind of constant speed 10 m/s blowing from W, N, NE and NW. Spatial distributions of vertical component of velocity at the depth of 25 m and in the bottom layer were depicted. Vertical profiles of vertical current velocity component in the selected points of the sea were shown. The estimates of the vertical velocity are in good agreement with the results of calculations obtained by others modellers in different sea basins.