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Wind-driven circulation in the Baltic Sea (homogeneous basin)

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Abstract

The computation of wind-driven steady circulation in the Baltic is given by the numerical solution of the unsteady equation of motion. The equation of mass transport and sea level (MTSL) are solved in time until a steady motion occurs. This approach enables the estimation of the absolute value of the sea level directly from hydronumerical equations. Equations of mass transport and sea level are derived, based on unsteady wind-driven flows of Druet (1970) and Kowalik (1969). Physical parameters applied to the models are (1) coefficient of the bottom stress, and (2) components of wind stress at the sea surface. Results of calculations obtained comprised the vertical distribution of components of current velocity at chosen points in the Baltic. The current components have been calculated by integrating the stationary equations with boundary conditions.