

Topics (T)  
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A FLEXIBLE OF THE SHALLOW WATER EQUATION SYSTEMS ALGORITHMS MODELLING OF  
THE LARGE-SCALE SEA CURRENT

**Abstract**

In this scientific paper has been demonstrated sea current pictures achieved as a result of numerical experiments on the base of difference schemes for a system of equation of shallow water basin. This approach has made to obtain picture of water currents of Caspian and Black Seas. In the meantime for the Mexico Gulf pictures of water currents have been developed according to the shallow water model taking into account the vertical compositional Coriolis force. It has been created a “weakly curved grids” for carrying out calculations which can be integrated with uniform orthogonal grids. The depth of relief functions is given by the ETOPO1 NOAA. It is historically known that in the seas and oceans permanent water currents, sessional currents and unstable currents exist always due to the impact of climatic circumstances. There is a big interest in terms of mathematical modelling to the constant current and their large-scale structure. Today variety of the mathematical models of the hydrodynamic of seas and oceans have been developed [1]. The fact is that there are one-dimensional models that do not have interesting to the numerical solution due to their simplicity. A two-dimensional model like shallow water model [2], model of the Marchuk Institute of Numerical Mathematics of the Russian Academy of Sciences [3] contains three components of the velocity vectors is also rather a two-dimensional multilayer model. There are complete three-dimensional non-stationary models for sea current from where can be obtained one-dimensional and two-dimensional models. It is necessary to indicate that three-dimensional models for numerical modelling are not yet interesting in use due to their complexity.