

Chistyakov A.E. (Rostov-on-Don, Russia) — Stochastic modeling of turbulent flows in coastal system on supercomputer.

Stochastic methods are often used for describing the turbulent flows in waters; and different fluctuating values are considered as random functions. The turbulence on dissipative scales has the complex statistical structure, caused by the strong intermittency. Expedition researches of coastal systems were performed on the example of the Azov Sea. As a result, the data about water velocity pulsations in some water points were obtained using the WHS600 Sentinel ADCP (Acoustic Doppler Current Profiler) [1].

Stochastic model was developed and numerically implemented on multiprocessor computer system for calculation the vertical turbulent exchange coefficient in coastal system on the example of the Azov Sea. The model is based on the definition of turbulent flows as space-averaged (correlation) multiplication of deviations of flow velocities components and portable physical quantity. Because of numerical experiment, the mechanisms of vertical turbulent exchange are suppressed on large scales of vertical grids in numerical simulation of hydrodynamic processes of the coastal system.

REFERENCES

1. *Sukhinov, A.I., Chistyakov, A.E., Alekseenko, E.V.* Numerical realization of the three-dimensional model of hydrodynamics for shallow water basins on a high-performance system. *Mathematical Models and Computer Simulations*, 2011, vol. 3:5, pp. 562-574.