**Sukhinov A. I.** (Rostov-on-Don, Russia), **Sidoryakina V. V.** (Taganrog, Russia).
**Combined stochastic models of sediment transport and multicomponent suspension of coastal systems.**

This work is devoted to the construction of a joint model of sediment transport [1] and suspensions [2] in the coastal zone, taking into account the stochastic nature of wind waves [3], which are the main factor determining the flow, and, therefore, the movement of bottom sediments and suspended matter in the coastal zone. Previously, spatially two-dimensional models of sediment transport in the coastal zone under the influence of waves were constructed. The chain of linearized initial-boundary value problems approximating the nonlinear parabolic equation has been constructed on a time grid [1]. The correctness of the model has been investigated and the convergence of the approximating chain of problems to the solution of the initial nonlinear problem in norm of the Sobolev space $L_1$ with the velocity O $(\tau)$ has been proved, where $\tau$ is the time step. The model takes into account many physically significant factors, such as, the complicated bottom relief, the porosity of bottom sediments, the size and density of particles, its components, the effect of gravity, etc., and also requires the diffusion coefficient and the tangential stress value near the bottom surface. The diffusion coefficient mainly dependents on the frequency of the wind waves, which is described, in general, semiempirical distribution function, which has high-frequency and low-frequency components [3]. The tangential stress is determined mainly by the orbital velocity of the water particles near the bottom. It is proposed to use its expected value for the defining of the wind wave frequency In the case of experimental data for wave frequency distribution the average value has been used. Determination of the velocity distribution of the water medium is carried out numerically on the basis of a 3D model of hydrodynamics. The input data are the distribution of the heights of the wind waves, which is near the boundary of the bottom influence zone and is described by a function close to the Rayleigh distribution. The expected value for the heights of wind waves has been used as input data for the 3D model of wave hydrodynamics.

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