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A study was conducted to assess the accuracy of wind wave height forecasts in the Tsemess (Novorossiysk) Bay using the spectral model WAVEWATCH III forced by GFS winds (0.25°). Comparison of model simulations with in situ measurements obtained at the Sheskharis pier during December 2023 – August 2025 showed that the system provides satisfactory forecast quality of wave heights for different lead times up to 72 hours. The root-mean-square error of significant wave height forecasts ranges from 0.17 to 0.22 m, the correlation coefficient is 0.85–0.9, and the systematic bias is negative (–0.09…–0.13 m). The smallest errors were observed for a lead time of 15 hours. Seasonal variability analysis revealed higher forecast accuracy in the autumn–winter period and lower accuracy in the spring–summer season due to the influence of local wind effects. It was found that the model reproduces wave characteristics more accurately during offshore winds (from sea to land) than during onshore winds (from land to sea). The obtained results can be used to improve the accuracy of operational wave forecasting systems and to enhance maritime safety in the Tsemess Bay area.

Keywords: Black Sea, Tsemess Bay, wind waves, wave forecast, spectral model, WAVEWATCH III, GFS, forecast accuracy, lead time, Novorossiysk bora

Tab. 1. Fig. 8. Ref. 32.