

More frequent and extreme phenomena observed in marine areas related to climate change imply the need to develop and apply increasingly advanced forecasting and warning systems. The most optimal seems to be a system that consists of forecasting models enabling spatial information on the current and forecast meteorological and hydrodynamic situation in marine areas and of measurement infrastructure in the marine area, providing real-time data that can feed the models and serve for their verification. The system used operationally in the southern Baltic region, constituting the basis for the hydrological and meteorological protection of marine areas, consists of the COSMO meteorological model supplying the SWAN wave model with data on wind fields. The resolution of the implemented data from the COSMO model (7 km) allows for satisfactory simulation results, without the need to over interpolated the wave parameters in four forecast domains: the proper Baltic, the southern Baltic, the Gdansk Bay, and the Pomeranian Bay. The SWAN wave model enables the forecasting of significant wave height and sea states according to the Douglas scale for 72 hours with a time step of one hour. The model takes into account the morphology of the seabed and physical variables that generate and shape the wave dynamics in the southern Baltic area. An integral element of the system is wave measurement equipment: Acoustic Wave and Current Profiler (AWAC), WaveGuide (RADAC) installed on the Petrobaltic platform (southern Baltic) and Doppler probe operating in the Pomeranian Bay area, the data of which are used for the ongoing verification of forecasts. The real-time data from the meteorological station located on the Petrobaltic drilling platform and from three meteorological buoys located in the southern Baltic region are used for meteorological forecast verification.