NEW GENERATION OF WIND AND WAVE CLIMATE HANDBOOKS

Modern handbooks of wind and wave climate are based on hindcasting (hydrodynamic spectral models are used) with following stochastic simulations (a set of models are used and will be presented). Input to spectral models is reanalysis data (NCEP/NCAR, ERA, some local). Assimilation of additional data is needed as some storm situations may be lost. Approaches and results of these procedures will be shown.

Russian Maritime Register of Shipping published two handbooks based on this approach. In 2003 — the handbook for Barents, Okhotsk and Caspian Seas; in 2006 — the handbook for Baltic, North, Black, Azov, and Mediterranean. Modern approach allowed calculating some statistics impossible in the case of traditional approach. E.g., in 2006 edition climatic two-dimensional wave spectra are published (i.e., the probability of different types of spectra and their transition from one type to another). Published information used and approved by some shipbuilding, gas and oil companies.

In realized investigations the problems, connected with joint extremes (e.g., wave-heights and periods, wave heights and wind or current speed, wave heights in two different points simultaneously, or wind waves and swell spectra, etc) will be regarded. In particularly, absence of simple and single meaning definition of return period (as the estimates with single return period belong to a set of pairs of random values) will be investigated by introduction of risk function. Some results will be presented

For long return periods (100 years and more) climate variability will be also considered.