Verification of the Wind Wave Model for the Baltic Sea and the Sargasso Sea

A. Roland, U. Zanke , S-H. Ou, T-W. Hsu, J-M. Liau

roland@wb.tu-darmstadt.de

Recently a new spectral wave model with a flexible numerical scheme using triangular elements to describe the model domain has been developed by Hsu, Ou and Liau. This model and the SWAN model have been implemented at the Sargasso Sea and the Baltic Sea. Several severe wind events have been investigated. In addition to the source term formulation as used in the SWAN model we have implemented the source term formulation like suggested by Makin & Stam. The atmospheric boundary conditions have been obtained from the German Meteorological Service DWD. For the Baltic Sea assimilated wind fields from the Local Model (LM) have been used, which have a spatial resolution of $0.0625°$ and a time increment of one hour. The wind fields for the Sargasso Sea are have been obtained from the Global Model (GM), which has a grid resolution $0.5°$ and a time increment of three hours. The results of the simulation have been compared with buoy measurement in these regions. The comparison with the measurements showed that the wave models underestimate the average period with the default formulation like used in the SWAN model. The comparison with the measured wave spectra showed that the wave models tend to overestimate the energy in the high frequency region and underestimate the wave energy in the region of the spectral peak. The source term formulation like suggested by Makin & Stam improved the results, especially for the case of the Sargasso Sea.