



# **1 A Study of Wind Waves Forecasting in the Black Sea Shallow Waters by Neural Network Modelling**

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This paper examines a potential use of artificial intelligence technologies in wind wave modeling and in perspective for on-line forecasting. In spite of the evolution achieved during the past 60 years in wind wave forecasting on the basis of the spectral approach, the peaks of the wave conditions in storms are frequently missed. In the paper wave parameters forecasting by neural networks was applied to the shallow water case of the western Black Sea shelf. The available data consists of a station, equipped on the Galata gas exploration platform. It is situated about 25km offshore of cape Galata at a depth of 34m.

The application of neural networks to wind waves forecasting consists in designing and training a network that, given a time series of wind velocity and wind direction, correctly predicts wind wave parameters. For the Galata gas exploration platform the time series data for wind velocity, wind direction and wave height were analyzed. The mean hourly average wind velocity, wind direction, significant wave height  $H_s$  and period were calculated.

The available experimental data from Black sea storms monitoring were used to make an attempt at showing that neural networks provide practical solutions in modeling of the basic wind wave characteristics. Comparison of the performance of simulated and measured significant wind wave height by neural network model and by SWAN model

is given.