Geophysical Research Abstracts
Vol. 14, EGU2012-11664, 2012
EGU General Assembly 2012

Wave Climate and Extreme Events Analysis in the Central Mediterranean Sea

S. Morucci, R. Inghilesi, A. Orasi, and G. Nardone
Italian National Institute for Environmental Protection and Research, Rome, Italy (sara.morucci@isprambiente.it)

Wind wave time series are serially correlated, have variable autocorrelation dependent on the geographic position and exhibit different properties on different time scales. While there is evidence of daily and seasonal periodicity, results for longer time scales are not yet conclusive, given the length of the available series. In fact, since the use of accelerometric buoys has been introduced in relatively recent times, waves time series are generally not longer than 30 years. In this study, the statistical analysis on more than 2 decades of wave data, collected on 15 locations in the Central Mediterranean Sea all around the Italian coasts, is presented. Wave recordings have been taken from the archive of the Italian National Wind Wave Measurement Network (RON), run by ISPRA since 1989. An effort has been made in order to provide a common level of homogeneity and quality control to the series. The statistics considered are mainly the Joint Frequency Functions of significant wave heights with respect to directions, peak periods and mean periods. The distribution of significant wave heights and direction, known as 'wave climate', is shown in the form of two-entries tables and wind roses. In order to determine the relative importance of the historical storms in terms of the return times and to estimate the expected values of the wave heights over several decades, the Peak Over Threshold method is applied to sets of independent events extracted from each series. Attention has been focused on the determination of the independent events introducing a specific threshold in the autocorrelation function. Even though the series are limited to a 22 years period, the analysis gives valuable information about the spatial distribution of the storms and their variability on a decadal time scale in the Central Mediterranean Sea.