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Wind – Wave Potential Estimation in the Southern Aegean Sea by means of Geostatistical and Numerical Methods

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Given the current state of energy production versus consumption, it is imperative to continuously seek out new and hopefully renewable energy resources to power our technological and socioeconomical prowess. Such a strong and perpetual energy source may be drawn from sea waves, whose spatial and temporal variability hinges on multiple atmospheric and oceanic conditions, fetch length, local changes in bathymetry and other parameters.
To this end, the current study aims at the estimation of the Significant Wave Height and corresponding Period for regions in the southern Aegean Sea by the use of numerical wave modelling as well as spatial statistical methods. This is an initial attempt to compare and validate the accuracy of spatial statistics and their applicability to estimate the wind-generated wave distribution in the area. The data for the corresponding validation period were acquired from sea-surface and near sea-surface in-situ data from the EMODNET Portal (http://www.emodnet-physics.eu/Portal) and from the Copernicus Marine Environment Monitoring Service (CMEMS) portal. Both statistical and numerical methods where used to map the wave potential in the selected region on finer grid scales with increased spatial accuracy.
The correlated results between the two approaches, will be used to calibrate future geostatistical techniques applied to wave energy potential distribution calculations in the Aegean and Ionian Sea.

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