



## **Investigation of the stochastic nature of wave processes for renewable resources management: a pilot application in a remote island in the Aegean sea**

Evangelos Moschos, Georgia Manou, Xristina Georganta, Panayiotis Dimitriadis, Theano Iliopoulou, Hristos Tyralis, Demetris Koutsoyiannis, and Vicky Tsoukala

Department of Water Resources and Environmental Engineering, School of Civil Engineering, National Technical University of Athens (NTUA)

The large energy potential of ocean dynamics is not yet being efficiently harvested mostly due to several technological and financial drawbacks. Nevertheless, modern renewable energy systems include wave and tidal energy in cases of nearshore locations. Although the variability of tidal waves can be adequately predictable, wind-generated waves entail a much larger uncertainty due to their dependence to the wind process. Recent research has shown, through estimation of the wave energy potential in coastal areas of the Aegean Sea, that installation of wave energy converters in nearshore locations could be an applicable scenario, assisting the electrical network of Greek islands. In this context, we analyze numerous observations and we investigate the long-term behaviour of wave height and wave period processes. Additionally, we examine the case of a remote island in the Aegean sea, by estimating the local wave climate through past analysis data and numerical methods, and subsequently applying a parsimonious stochastic model to a theoretical scenario of wave energy production.

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