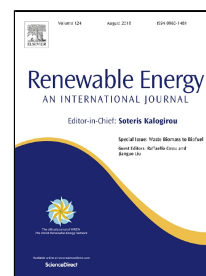


Accepted Manuscript

Wave energy Distribution along the Portuguese continental coast based on A thirty three years hindcast

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PII: S0960-1481(18)30558-5
DOI: 10.1016/j.renene.2018.05.037
Reference: RENE 10089
To appear in: *Renewable Energy*
Received Date: 25 January 2017
Revised Date: 07 April 2018
Accepted Date: 07 May 2018

Please cite this article as: Dina Silva, Paulo Martinho, C.Guedes Soares, Wave energy Distribution along the Portuguese continental coast based on A thirty three years hindcast, *Renewable Energy* (2018), doi: 10.1016/j.renene.2018.05.037

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1 **WAVE ENERGY DISTRIBUTION ALONG THE PORTUGUESE**
2 **CONTINENTAL COAST BASED ON A THIRTY THREE YEARS HINDCAST**

3
4 **Dina Silva, Paulo Martinho and C. Guedes Soares***

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5
6 **ABSTRACT**

7 An assessment of wave power resource for Portugal continental coast is presented,
8 using thirty three years (1979 - 2012) of wave hindcast. The hindcast system is based
9 in two spectral wave models, WWIII (WAVEWATCHIII) for the wave generation and
10 SWAN (Simulating WAVes Nearshore) for wave transformation in coastal areas. To
11 improve the SWAN model performance, six high resolution areas (Aguçadoura,
12 Figueira da Foz, São Pedro de Moel, Peniche, Cascais and Sines) were nested into one
13 large area (Iberian coast). The assessment of wave power potential was done by
14 studying the spatial and temporal behaviour using average for different time scales
15 (monthly, seasonal, inter-annual and total time). Moreover, the wave climate
16 variability was determined through the calculation of the coefficient of variation,
17 seasonal variability index and monthly variability index. The results have shown that
18 in Portugal the wave energy is higher in the northwest, that the wave climate
19 variability has more impact in the south and that the month with the highest energy is
20 January. A bivariate distribution of significant wave height and energy period was also
21 determined, showing that the sea states where more wave power can be extracted are
22 different than the ones that occur more frequently.

23
24 **Keywords:** WAVEWATCH III; SWAN; wave power potential; seasonal energy; inter-annual energy

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