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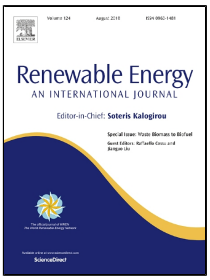

Wave energy Distribution along the Portuguese continental coast based on A thirty three years hindcast

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

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ABSTRACT

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

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