



Energy resources evaluation from wave records and historical simulation in the coastal region of the Baja California Peninsula

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Wave energy resources evaluation has been carried out for the Pacific coastal region off the Baja California Peninsula. Through historical numerical simulation and in situ records of the wave field, time and spatial variability of the wave field has been assessed in order to determine their impact on the estimation of energy potentially available. Hindcasting results are obtained by implementing a third generation spectral wave model over practically the whole Pacific Ocean and using NCEP surface wind re-analysis as forcing fields. While the wind input is every 6h results for the simulated wave field is obtained every hour with a spatial resolution of 1x1 degree. Fine resolution results are obtained after nesting smaller areas of interest and using the SWAN model in the coastal regions. An important issue is the wide range of frequencies resolved in order to better reproduce relevant processes in coastal regions such as non-linear interactions and changes in the directional spreading of the wave spectrum. A detailed analysis of time variability of the wave field is performed and the potential impact on the estimation of extreme values is addressed. Furthermore, the needs for long term projections of the wave characteristics and climate is discussed within the context of an experimental design proposed as Coupled Model Intercomparison Project.