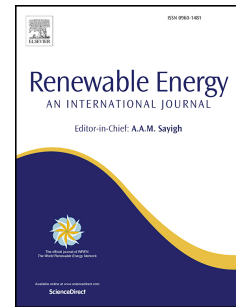


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Wave Energy Assessment in the Central-South Coast of Chile

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Abstract

This paper presents an assessment of the wave energy resource in nearshore waters along the central coast of Chile (Lat.:32.5°S to 42.5°S). The assessment is built upon the combined use of hindcast and measured data collected specifically for this goal. Offshore and nearshore data at a number of locations were collected with buoys and ADCPs, with dwell times ranging from 3 up to 12 months. These were used to assess the accuracy of modeled data at the both offshore and nearshore locations. Modeled offshore data comprises three hourly sea states obtained from a third generation ocean wave model, covering the 1989-2013 period, thereby allowing long-term estimates. By using the wave model SWAN, these data was propagated to the nearshore shallow waters to obtain modeled wave climate along the entire section of coast. Validation results indicate good model skill, where both offshore and nearshore results are within 10% of the measured data, with an over prediction of wave power. The long-term wave power estimates show an increase of the median power with increasing latitude, fluctuating between 20 and 35 kW/m in areas near the coast. Monthly and seasonal variability also increase with latitude, with higher energy events present during the winter season. These results are qualitatively consistent with previous assessments in the

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