

Wave Energy Potential for Development of Renewable Energy in Riau Archipelago Province

Title	Wave Energy Potential for Development of Renewable Energy in Riau Archipelago Province
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Abstract	<p>Energy and electricity demand in Riau Islands is increasing rapidly due to the fast-growing population, urbanization, industrial development, and economic growth. The limitations of energy and electricity in the Riau Islands caused frequent blackouts. To support the high demand for energy and electricity in the Riau Islands, renewable energy is the most suitable alternative energy solution. Renewable energy is not only playing a key role in providing energy but also providing long-term clean and sustainable energy. We investigated the wave energy potential in the Riau Islands Sea in four different consecutive monsoons (North monsoon, East monsoon, South Monsoon and West Monsoon) using ECMWF data during January 2018 to December 2018 with 0.125o x 0.125o and 6 hourly spatial and temporal resolutions. We extracted bathymetry data from NOAA's database ETOPO1 and forecasting wave characteristics use the SPM (Shore Protection Manual) method. The potential wave energy simulation from significant wave height (Hs) and energy period (Te) was shown in spatial distribution based on different monsoon. Our studies found that the potential wave energy was higher in north monsoon with maximum spatial of wave power density 3.240 – 3.640 kW.m-1. The east monsoon tended to be lower potential wave energy with dominance of wave power density at 0 – 0.127 kW.m-1. Keywords: wave power density, potential wave energy, ECWFM, monsoon</p>
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