

RETRIEVING OF RENEWABLE WAVE ENERGY FROM ENVISAT SATELLITE DATA

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Abstract: In the last two decades, scientists have developed several powerful techniques to retrieve energy from natural sources such as a sun radiations, oceans and winds. This study is aimed at simulating wave energy from large scale synthetic aperture radar (SAR) during different monsoon periods. In doing so, nonlinear velocity bunching model algorithm is used to retrieve the information of ocean wave spectra parameters such as significant wave height, directions, and energy on offshore, midshore, and onshore. Therefore, the maximum peak of the wave energy spectra density of $1.4 \text{ m}^2 \text{ s}$ has occurred during northeast monsoon period. It is clear that the mid-shore and onshore has the highest peak of 0.8 and $1.37 \text{ m}^2 \text{ s}$, respectively as compared to offshore. In conclusions, a nonlinear algorithm of velocity bunching can be used to retrieve the significant wave height from synthetic aperture radar (SAR). In addition, SAR can be used to map the distribution of ocean wave spectra energy and determined the potential energy zone in Malaysia coastal waters.

Keywords: Synthetic aperture radar (SAR); ENVIST; significant wave heights; wave energy spectra, velocity bunching algorithm.