

Analysis and Validation of Ocean Wave Detected by ERS-1/AMI Image Data Near Japan

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Abstract

Ocean wave image data obtained by ERS-1/AMI (image mode) are analyzed in this study. Ocean wave directional spectrum and other ocean wave parameters are derived by using fast Fourier transform (FFT) and a series of modulation transfer function (MTF) corrections. The instrument modulation transfer function (IMTF) is estimated by the least square fit method in the range and azimuth direction separately. The significant wave height is estimated based on the azimuth smearing effects and compared with buoy data. Finally the integral of ocean wave directional spectrum derived from ERS-1/AMI data is compared with buoy data and the results of numerical predication. The difference of the spectrum in the high frequency range are considered to be due to the azimuth attenuation or noise removal during data processing.