Abstract View

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Directional Wave Spectra Measured with the Surface Contour Radar

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ABSTRACT

The Surface Contour Radar is a 36-GHz computer-controlled airborne radar which generates a false-color coded elevation map of the sea surface below the aircraft in real-time, and can routinely produce ocean directional wave spectra with post-flight data processing which has much higher angular resolution than pitch-and-roll buoys. When compared with waveriders and the XERB and EDECO pitch-and-roll buoys, there is good agreement among the nondirectional spectra. There is also good agreement among the angles associated with a_1, b_1, and a_2, b_2 Fourier coefficients of the spreading function for XERB, ENDECO, and the Surface Contour Radar. There are indications that the pitch-and-roll buoys in this study may have calibration problems with the magnitudes of the Fourier coefficients of the spreading function, and that the radar system determines the Fourier coefficients with significantly less noise and bias. The high spatial resolution and rapid mapping capability over extensive areas make the Surface Contour Contour Radar ideal for the study of fetch-limited wave spectra, diffraction and refraction wave patterns is coastal areas, and wave phenomena associated with hurricanes and other highly mobile events.