



## Abstract View

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## Directional Spectra of Seas near Full Development

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### ABSTRACT

Estimates of the directional wave spectrum have been obtained from a data buoy in the southwest approaches to the British Isles. Four years of simultaneous wave and wind data measured at the data buoy were screened for conditions approaching full development. The observed frequency spectra were made nondimensional using the similarity law of Kitaigorodskii and then averaged over six wind speed classes. Comparisons are made with the Pierson-Moskowitz spectrum for fully developed seas. For wind speeds (at the 10 m level) below  $16 \text{ m s}^{-1}$ , the average spectrum lies consistently below the Pierson-Moskowitz form, while for higher wind speeds the spectra in the region of the peak have similar values to this spectrum. Similarly, values of the nondimensional wave energy are significantly lower than the Pierson-Moskowitz value for wind speeds less than  $16 \text{ m s}^{-1}$ . For higher wind speeds, the nondimensional wave energy is close to the Pierson-Moskowitz value. The directional spread was studied using two parameters derived from the first- and second-order harmonics of the angular distribution. The speed parameter  $s_2$ , which depends on the second-order harmonics, was found to be more reliable. Estimates of  $s_2$  as a function of wave frequency in relation to peak frequency differ from the expression for fetch-limited waves. Although the peak value is comparable, the decrease with increasing frequency is less rapid.

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