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Observations of the Directional Distribution of Ocean-Wave Energy in Fetch-Limited Conditions

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ABSTRACT

Directional energy distributions of wind-generated waves were observed with a relatively high directional resolution in fairly homogeneous and stationary wind fields in fetch-limited conditions using stereophotography of the sea surface. In a situation that is traditionally considered as the ideal fetch-limited wave-generation situation, the shapes of the observed distributions were found to agree well with the $\cos^{2s}(\theta/2)$ model proposed by Longuet-Higgins *et al.* (1963). In non-ideal situations in which the wind slanted across the upwind coastline or in which the upwind coastline was irregular, the shapes of the directional distributions were strongly influenced by the geometry of the upwind coastline. This suggests that the process of wave generation is directionally decoupled.

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