



## Abstract View

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## On the Skewness of Sea-Surface Slopes

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### ABSTRACT

Sunlight reflected from a wind-roughened sea surface produces a glitter pattern in which the region of maximum intensity tends to be shifted horizontally by an apparent angle  $\Delta$ , depending on the wind speed. It is shown that  $\Delta$  is related directly to the skewness of the distribution of surface slopes. From the observed data of Cox and Munk (1956) it is possible to deduce a simple correlation between  $\Delta$  and the wind stress  $\tau$ .

The physical mechanism underlying slope skewness is investigated. The skewness which results from damping of individual waves is shown to be negligible. A two-scale model is proposed, in which damped ripples or short gravity waves ride on the surface of longer gravity waves. The model is found to give skewness of the observed magnitude. The sign of the skewness depends on the angle between the wind maintaining the ripples and the direction of the longer waves, in agreement with observation.

Certain theoretical relations between  $\Delta$  and the phase  $\phi$  of the short-wave modulation may be of interest in interpreting observations of the sea surface by other types of remote sensing.

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