Abstract View

Volume 6, Issue 3 (May 1976)

Journal of Physical Oceanography
Article: pp. 316–323 | Abstract | PDF (600K)

Probability Distributions of Breaking Wave Heights Emphasizing the Utilization of the JONSWAP Spectrum

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(Manuscript received January 27, 1975, in final form January 5, 1976)

DOI: 10.1175/1520-0485(1976)006<0316:PDOBWH>2.0.CO;2

ABSTRACT

An approximate determination has been made of the probability distribution function for breaking wave heights in the deep ocean. It was necessary to make simplifying assumptions of the joint distribution of wave height and wave period so that a semi-closed mathematical solution could be obtained as an illustration of the total processes that actually occur. These assumptions lead one to a calculation which predicts more and larger breaking waves than those which actually occur. Thus, for the design of structures in the deep ocean which are sensitive to breaking waves, a conservative determination of the probability distribution function is obtained. The distributions can be obtained for any location in the deep ocean given a sufficient history of surface meteorological data on wind speed and fetch. The joint distribution of wind speed and fetch for station PAPA in the North Pacific Ocean proved to be independent of storm duration. Thus, 6 h unit storms were considered to be independent in the computations.