Comment “On the Presentation and Interpretation of Spectra of Large-Scale Disturbances”

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The paper by Zangvil (1977) recommends the use of plotting frequency times power spectrum versus log frequency as a method to define peaks in power spectra. In addition, he recommends a hypothesis test design by recognizing that the area under the curve plotted is the total variance. There is nothing new in this paper. The plot was suggested by Dr. Hans Panofsky years ago. The earliest reference I have is Panofsky and McCormick (1954). The graphic technique is used in the text by Panofsky and Brier (1968). It can also be found in the Russian literature (e.g., Kolesnikova and Monin, 1965). The hypothesis test can be strengthened by using the K-S test. An old reference for this is Moskowitz (1964). It is explained carefully in standard time series tests such as Jenkins and Watts (1969). I have not attempted to find the earliest suggestion for these two simple ideas in Zangvil’s paper, but it is easy to find numerous references since 1954 where the idea touted by Zangvil is used.

REFERENCES


Reply

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3 March 1978

O’Brien’s additional list of references is welcomed. However, O’Brien seems to have overlooked the purpose of the paper altogether. The purpose, as stated in the Introduction, is “. . . to reexamine several widely used methods of spectral presentations . . .”. A similar statement is given in the Abstract and repeated in Section 5. In addition, a few papers using various spectral presentations, including the logarithmic presentation, are mentioned in the list of references (e.g., Julian, 1966).

As is well known there is no consensus so far on whether, if at all, a standard presentation should be adopted in studies concerned with the determination of dominant scales. Currently many methods of spectral presentation are practiced in the literature resulting in considerable confusion.

The reexamination of the problem in my paper yielded a simple theoretical demonstration (given in...
Section 3) of the clear advantage of the logarithmic transformation in the kind of studies mentioned above.

On the other hand, O'Brien's comment consists mainly of a list of references that have used the logarithmic presentation before. However, the fact that the transformation has been used before has been mentioned in the paper several times. For these reasons O'Brien's comment is quite irrelevant to the contents of the paper.

REFERENCE