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Fine-Structure Contamination of Moored Temperature Sensors: A Numerical Experiment

Terrence M. Joyce

Woods Hole Oceanographic Institution, Woods Hole, Mass. 02543

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ABSTRACT

Using an inverse fast Fourier transform technique, numerical calculations have been made in order to study the contamination of moored temperature measurements of internal waves by passive temperature fine-structure. Vertical displacements and fine-structure spectra typical of the central North Atlantic have been modelled. Results indicate general agreement with the theory of Garrett and Munk for contamination of temperature autospectra with the amount of signal degradation depending upon the square of the Cox number. Studies of coherence loss with vertical sensor separation indicate no significant dependence for separations greater than several meters. Attempts at “decontaminating” autospectral and coherence calculations *post facto* given sufficient fine-structure statistics appear promising. Thus, it would seem that for central ocean work, fine-structure contamination, when important at all, can be partially removed during the spectral analysis of temperature time series.

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amsinfo@ametsoc.org Phone: 617-227-2425 Fax: 617-742-8718
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