



Abstract View

[Volume 7, Issue 1 \(January 1977\)](#)

Journal of Physical Oceanography

Article: pp. 22–32 | [Abstract](#) | [PDF \(680K\)](#)

Discrimination between Internal Waves and Temperature Finestructure

Terrence M. Joyce

Woods Hole Oceanographic Institution, Woods Hole, Mass. 02543

Yves J.F. Desaubies

Applied Physics Laboratory, University of Washington, Seattle, 98105

(Manuscript received December 1, 1975, in final form August 23, 1976)

DOI: 10.1175/1520-0485(1977)007<0022:DBIWAT>2.0.CO;2

ABSTRACT

Discrimination between internal waves and finestructure in the ocean is made difficult because of over-lapping scales of each process. We have assumed as a working hypothesis that low frequency/wavenumber variability is predominantly wave-like, while high frequency/wavenumber variability is step-like. Thermal finestructure is modeled as a steppy Poisson process in the vertical, while internal waves are modeled as a random Gaussian process. The model developed is an extension of one of McKean (1974). We describe the vertical temperature spectrum of finestructure, and moored temperature and temperature difference measurements of the internal wave experiment (IWEX). For the data considered, the contamination of moored spectra and cross-spectra is small for low frequencies. The vertical temperature difference, measured over a vertical distance which is small compared to the correlation length of the internal wave field, is shown to provide a critical check of the model, since this signal is directly related to finestructure variability. Thus, it appears possible to use moored differential temperature sensors as monitors of finestructure activity.

Options:

- [Create Reference](#)
- [Email this Article](#)
- [Add to MyArchive](#)
- [Search AMS Glossary](#)

Search CrossRef for:

- [Articles Citing This Article](#)

Search Google Scholar for:

- [Terrence M. Joyce](#)
- [Yves J.F. Desaubies](#)



© 2008 American Meteorological Society [Privacy Policy and Disclaimer](#)
Headquarters: 45 Beacon Street Boston, MA 02108-3693
DC Office: 1120 G Street, NW, Suite 800 Washington DC, 20005-3826
amsinfo@ametsoc.org Phone: 617-227-2425 Fax: 617-742-8718
[Allen Press, Inc.](#) assists in the online publication of *AMS* journals.