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# Spectra of Internal Waves: *In-Situ* Measurements in a Multiple-Layered Structure

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### ABSTRACT

The persistence of layering between 200 and 400 m depth in the Arctic Ocean has enabled construction of accurate internal wave amplitude traces from a 30-hr series of successive temperature profiles taken at 4-min intervals. Spectral density estimates computed from this series diminish with frequency in proportion to  $f^{-2}$ , over the frequency range 0.6 to 2.3 cycles  $\text{hr}^{-1}$  (cph). In the vicinity of the Väisälä frequency at 3.0 cph, the spectrum falls off as  $f^{-8}$ . An equivalent wave amplitude signal, which would have been obtained from a sensor deployed at a fixed depth, is also constructed from the temperature profiles; the resulting spectral estimates decrease in proportion to  $f^{-2}$ , over a frequency range from 0.7 to 7.5 cph, well beyond the Väisälä frequency. These results are consistent with recent analytical studies of internal wave spectra in the presence of fine-structure.

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