

Horizontal tow flashbacks, and what they can tell us about the frequency content of the internal wavefield.

Jody Klymak

Understanding the structure of the internal wave continuum has involved measurements from a variety of sources. Some of the first measurements were from towed platforms, though in recent decades these have largely been supplanted by moorings and vertical profilers. In fact the shape of the wavenumber continuum changed from $m^{-5/2}$ based on towed measurements to m^{-2} from profilers. Here we present data from a towed vehicle that corroborates the results from the 70s and 80s, again finding a slope in wavenumber space of $m^{-5/2}$.

A reconciliation between these findings comes from noting that the high- m portion of the vertical spectrum has an m^{-3} slope, and that this high- m part of the spectrum spreads energy to the low- k_x portion of the horizontal spectra, distorting the wavenumber slope. In order to make this agree with data we need to specify the frequency content of the internal wavefield. If the frequency content has a broadband character (ala GM81), the agreement is poor; if it is just composed of two frequencies it is also poor; the agreement is “just right” if there are spikes in the frequency spectrum added to a broadband continuum.

Jody Klymak
Assistant Professor
School of Earth and Ocean Sciences
University of Victoria
jklymak@uvic.ca