Abstract View

Volume 3, Issue 4 (October 1973)

Journal of Physical Oceanography
Article: pp. 448–457 | Abstract | PDF (646K)

Profile of an Isopycnal Surface in the Main Thermocline of the Sargasso Sea

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(Manuscript received April 19, 1973, in final form July 6, 1973)

DOI: 10.1175/1520-0485(1973)003<0448:POAISI>2.0.CO;2

ABSTRACT

The vertical displacement and slope of an isopycnal surface (by which is meant a density surface of constant σ_t) are described spatially. The data were acquired by towing pressure, temperature and conductivity sensors in the main thermocline of the Sargassso Sea south of Bermuda at depths between 550 and 7oo m. Four tows are discussed, the longest being 580 km and two consisting of repeated tracks.

The mean slopes of the surfaces lie between 2×10^{-4} and 3×10^{-4} rad and can extend for hundreds of kilometers. The power spectrum of vertical displacement is computed over a bandwidth of 0.02 to 30 cycles km^{-1}. The effective internal wave bandwidth is suggested to extend from about 0.05 to 1 cycle km^{-1}, and its spectrum has a −1.55 wavenumber dependency. Above 1 cycle km^{-1}, it falls off more rapidly. The spectrum is repeatable and, weighted by the Väisälä frequency, agrees with the few previous reports in widely different locales.