



Abstract View

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Upper Ocean Thermal Variability in the Sargasso Sea July 1977–July 1978: The POLYMODE XBT Program

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ABSTRACT

We discuss the upper ocean mesoscale temperature variability field as sampled by XBT's in the joint US-USSR POLYMODE Synoptic Experiment during July 1977 to July 1978. There is a “background” persistent, relatively weak and rather large-scale pattern of variability, of alternating warm and cold areas which propagate nearly westward. For the background, very little point correlation between surface temperatures and temperatures beneath the mixed layer is found, but sub-mixed-layer temperatures above and below the “18°C water” show negative correlation. We also find a number of smaller scale, apparently discrete, features which are somewhat more intense than the background. They exhibit little consistency in direction of propagation, and pattern propagation, rather than pattern evolution, as generally observed. The time-average depth field of the 15°C isotherm exhibits spatial variations comparable in magnitude to its pointwise standard deviation values. Removing the mean by linear fits in latitude and/or longitude produces horizontal auto-correlation functions substantially different from those based on removing the time-averaged field. The statistics of the horizontal correlation are not satisfactorily determined by this data set.

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