Abstract View

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The Fraction of Vertical Isotherm Deflections Associated with Eddies: An Estimate from Multiship XBT Surveys

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ABSTRACT

Six multiship XBT surveys in the area between 29 and 42°N in the North Pacific and North Atlantic Oceans were examined with respect to the following questions: What fraction of significant vertical isotherm deflections may be associated with horizontally closed eddies, and which of these eddies have identifiable thermal expressions at the sea surface? From all six surveys 45 significant deflection features, with amplitudes exceeding one standard deviation, were selected from isotherm deflections in the central vertical temperature sections. Approximately half of these deflections could be identified as parts of horizontally closed eddies (mean diameters ~ 150 km). In turn, approximately one-third of the eddies were associated with a significant anomaly ($\geq$0.5°C) of sea surface temperature. Examples of both isolated and close-packed eddies wore observed. Most of the eddies identified in the western North Atlantic were in the region of increased eddy kinetic and potential energies associated with the Gulf Stream. In this area the number of eddies per unit area equaled approximately 0.14 eddies per 10^4 km^2 (~ 1 square degree).

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