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[Volume 13, Issue 2 \(February 1983\)](#)

Journal of Physical Oceanography

Article: pp. 269–291 | [Abstract](#) | [PDF \(1.63M\)](#)

On the Geographical Variability of the Upper Level Mean and Eddy Fields in the North Atlantic and North Pacific

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(Manuscript received May 21, 1982, in final form October 8, 1982)

DOI: 10.1175/1520-0485(1983)013<0269:OTGVOT>2.0.CO;2

ABSTRACT

All available historical expendable bathythermograph data are used to compute means and standard deviations in temperature for the upper 500 m in the North Atlantic and North Pacific. To take advantage of marked spatial differences in data coverage a variable grid scheme is employed. Both surface and subsurface annual mean temperature distributions agree well with published maps of these quantities. Climatological mean temperature-salinity and salinity-depth curves are used to infer salinities for the mean temperature profiles in order to compute 0/500 db inferred dynamic height and its standard deviation. These mean curves are also used to compute eddy potential energy at 300 m. The maps of mean annual inferred dynamic height agree well with traditional dynamic height maps and appear similar to the maps of mean temperature at 400 m. The North Atlantic eddy potential energy distribution is similar to an earlier calculation. Maps of the standard deviations in inferred dynamic height also represent the geographical variability in mesoscale activity and compare well with a recent global map of mesoscale variability based on satellite altimetry from SEASAT.

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