Abstract View

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Fluctuations of the Dynamic Topography in the Pacific Ocean

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ABSTRACT

The dynamic topography of the Pacific Ocean has been mapped and its mean annual and random variability has been investigated using approximately 66,600 hydrographic stations. Largest annual fluctuations are associated with the equatorial current system and are probably due to vertical displacements of the thermocline in response to the changing wind field. In the subtropical gyres and in higher latitudes, dynamic topography varies seasonally in response to the annual cycle of surface layer temperature, but the pattern of dynamic height does not change much between summer and winter. In the western portion of the North Pacific anticyclonic gyre, a U-shaped ridge is developed with its open end pointing east, which separates the western boundary current from the interior of the gyre and links the north equatorial ridge with a ridge at the right flank of the Kuroshio. The variability of dynamic height given by its standard deviation increases from east to west across the Pacific Ocean. Most of this variability is due to fluctuations in the position of currents, their meandering, and the presence of eddies.