



Abstract View

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On the Potential Energy of Baroclinic Rossby Waves in the North Pacific

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ABSTRACT

Estimates of baroclinic Rossby wave potential energy spectra for various parts of the North Pacific were calculated from published material containing information about this energy in many different formats, definitions and units. The standardized results lead to frequency spectra of potential energy, ranging from 0.1 to 0.45 cpy (cycles per year), in 34 5° squares between 20 and 30°N; to energy spectra, ranging from 0.28 to 2.11 cpy, in eight subsections of the great circle route from Honolulu to San Francisco; and to a map of annual Rossby wave energy between 30 and 40°N. The most remarkable finding is a consistent sequence of interannual Rossby wave spectra, with a peak at 0.15 cpy (i.e., at a wave period of 6.7 years) covering the area 20–25°N and 175–130°W. The most complete information is available for a 5° square east of the Hawaiian Islands. There the spectrum shows, besides the 0.15 cpy peak, another broad peak ranging from about 0.4 to 1.4 cycles per year.

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