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# Traveling Wave-Like Mesoscale Perturbations in the North Pacific Current

**Warren B. White**

*Scripps Institution of Oceanography, university of California, San Diego, La Jolla, CA 92093*

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### ABSTRACT

Individual seasonal mean maps of temperature at 300 m in the North Pacific Current cast of 180° from 1976 to 1980 were constructed from TRANSPAC XBT data. The long-term annual mean map is relatively smooth, with some weak quasi-stationary meander activity. Most of the total variance was due to large-scale interannual variability (i.e., ~ 60%), less to the mesoscale perturbations (i.e., ~ 30%), and least to the annual cycle (i.e., ~ 10%). However, individual mesoscale perturbations were significant, clearly wave-like with a wavelength scale of 500–1000 km and a period scale of 1–2 years, and generally coherent in phase over 10° of latitude. These wave-like mesoscale perturbations emanated from the eastern boundary and propagated westward as coherent features at the phase speed of linear, non-dispersive, baroclinic long-waves. The latitudinal reduction in phase speed from 2.7 cm s<sup>-1</sup> at 35°N to 1.4 cm s<sup>-1</sup> at 45°N was consistent with baroclinic long-wave theory. An increase in time scale of these wave-like perturbations with latitude was consistent with the “critical latitude” concept.

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DC Office: 1120 G Street, NW, Suite 800 Washington DC, 20005-3826  
[amsinfo@ametsoc.org](mailto:amsinfo@ametsoc.org) Phone: 617-227-2425 Fax: 617-742-8718  
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