Abstract View

Volume 17, Issue 11 (November 1987)

Journal of Physical Oceanography
Article: pp. 1944–1949 | Abstract | PDF (387K)

A Note on the Reflection of Low-Frequency Equatorial Rossby Waves from Realistic Western Boundaries

John D. McCalpin

Mesoscale Air-Sea Interaction Group, The Florida State University, Tallahassee, FL 32306

(Manuscript received October 6, 1986, in final form January 20, 1987)

DOI: 10.1175/1520-0485(1987)017<1944:ANOTRO>2.0.CO;2

ABSTRACT

The analytic theory of Cane and Gent on the reflection of low-frequency equatorial waves from arbitrary boundaries is applied to the reflection of long Rossby waves from realistic approximations to the western boundaries of the Atlantic, Pacific, and Indian oceans. The results show that low-frequency (annual period or longer), first meridional mode, first baroclinic mode reflection is close to that of straight north–south boundary in all three basins. However, increasing the frequency, meridional mode number, and/or vertical mode number causes drastic changes in the energy flux reflection coefficients. Corresponding to the general slope and complexity of the coastline, the effects are greatest for the Pacific Ocean and least for the Indian Ocean.