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[Volume 15, Issue 3 \(March 1985\)](#)

Journal of Physical Oceanography

Article: pp. 316–329 | [Abstract](#) | [PDF \(1009K\)](#)

The Seasonal Linear Response of the Tropical Atlantic Ocean

Yves Du Penhoat and Anne Marie Treguier

Antenne ORSTOM, Centre Océanologique de Bretagne, 29273 Brest cédex

(Manuscript received May 9, 1984, in final form January 8, 1985)

DOI: 10.1175/1520-0485(1985)015<0316:TSLROT>2.0.CO;2

ABSTRACT

The linear response of the tropical Atlantic ocean to climatological winds is calculated in a continuously stratified model and compared with observations. All the characteristic features of the dynamic topography are reproduced at the proper locations including the series of zonally oriented ridges and troughs, the equatorial “pivot” zone and the seasonal variations of slope along the equator. Linear theory fails to explain seasonal variations of the South Equatorial Current and of the Equatorial Undercurrent, but it compares favorably for the major zonal currents off the equator (the North Equatorial Countercurrent, the Guinea Current and Undercurrent).

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Headquarters: 45 Beacon Street Boston, MA 02108-3693

DC Office: 1120 G Street, NW, Suite 800 Washington DC, 20005-3826

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