



## Abstract View

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# The Relationship Between Deep Ocean Currents and Winds East of Barbados

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### ABSTRACT

Observations of currents collected at the POLYMODE array III cluster C (16° N, 54°W) are compared with radiosonde winds measured at Barbados (13°N, 62°W) using a linear response analysis. The winds and the currents are coherent throughout the water column (5400 m) over the subinertial frequency range of 0.025 to 0.25 cpd. The coherence is highest between the east-west wind stress and north-south currents over smooth topography. The wind-related ocean currents have a rms of  $2.5 \text{ cm s}^{-1}$  at 500 m and  $1.1 \text{ cm s}^{-1}$  at 4000 m and account for approximately one-third of the total eddy kinetic energy. The wind-current phase is depth independent and does not vary significantly over the 200 km horizontal scale of the array. The response amplitude is surface intensified and increases with decreasing frequency which is consistent with a deterministic theoretical model. The coherence values and response estimates suggest an off-resonant barotropic response to large-scale wind forcing.

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