



Abstract View

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Topographic Modification of the Florida Current by Little Bahama and Great Bahama Banks

Kevin D. Leaman

Rosenstiel School of Marine and Atmospheric Science, University of Miami, Miami, FL 33149

Robert L. Molinari

National Oceanic and Atmospheric Administration, Atlantic Oceanographic and Meteorological Laboratory, Miami, FL 33149

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ABSTRACT

The effect of local topography in modifying the structure and variability of the Florida Current is examined using shipboard acoustic Doppler and PEGASUS acoustic current profiler data. PEGASUS absolute velocity data were obtained during 16 cruises in the Florida Current at 27°N as part of the Subtropical Atlantic Climate Studies (STACS) program. The ensemble average of all PEGASUS velocity data shows that the effect of the constriction imposed on the mean Florida Current by Little Bahama Bank can be detected up to 30 km into the Straits of Florida. A simple model is proposed to explain how this effect can produce the subsurface maximum of northward flow commonly observed in the eastern Straits.

PEGASUS and acoustic Doppler data obtained during the March 1984 STACS cruise are used to describe the temporal and spatial variability of the flow. It is shown that intermittent southward flow can exist in a band 10–15 km wide off Little Bahama Bank; one such event was detected during this cruise. The PEGASUS data suggest that these events are associated with meandering of the Florida Current. These results may explain earlier observations in satellite synthetic aperture radar images of small-scale vortices moving southward across the mouth of Northwest Providence Channel.

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Headquarters: 45 Beacon Street Boston, MA 02108-3693
DC Office: 1120 G Street, NW, Suite 800 Washington DC, 20005-3826
amsinfo@ametsoc.org Phone: 617-227-2425 Fax: 617-742-8718
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