



## Abstract View

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# Meandering and Transport Variations of the Florida Current

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### ABSTRACT

Current meter observations were collected from a three-dimensional array moored in the Florida Straits between December 1983 and June 1984 as part of the Subtropical Atlantic Climate Studies (STACS) program. Approximately one-fourth of the total subinertial velocity and temperature variance contained in these records is associated with meandering of the Florida Current on time scales ranging from several days to a few weeks. There approach to be no strong correlation between the occurrence of meanders and variations in Florida Current volume transport or local wind forcing.

Utilizing frequency-domain empirical mode analysis we find the most coherent, energetic meandering signals within two limited frequency bands centered near periods of 12 days and 5 days. These meanders propagate downstream (northward) with phase speeds and wavelengths of approximately  $(28 \text{ km d}^{-1}, 340 \text{ km})$  and  $(36 \text{ km d}^{-1}, 170 \text{ km})$  respectively. Periodic waveforms composed from these modes indicate an asymmetric meander pattern with wave crests and troughs leading on the eastern side of the Florida Straits. These meanders appear to be giving up significant energy to the mean flow through up-gradient eddy momentum and buoyancy fluxes in the cyclonic shear zone of the Florida Current, with the net energy transfer being generally dominated by barotropic (eddy momentum flux) processes.

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