Renato
Castelao
University of Georgia, Department of Marine Sciences
Ruoying He, North Carolina State University
Poster
Satellite-derived sea level anomaly fields constructed by combining measurements from simultaneously operating altimeters are used to quantify properties and propagation characteristics of eddies in the South Atlantic Bight (SAB). Eddy detection and eddy tracking algorithms are applied to 19 years of high-resolution observations available at weekly intervals. Inshore of the 800 m isobath, eddies are most frequently observed at and downstream of the Charleston Bump (a major topographic feature located at 31°-32°N), a region where the amplitude of most eddies is increased. The bump is also a preferred region for eddy generation. The amplitude of eddies is found to increase with water depth. Eddies generated in the SAB tend to propagate westward toward the coast and to the northeast, presumably due to the influence of the strong mean northeastward flow of the Gulf Stream. Those eddies are highly nonlinear, with potential to trap water in their interior as they propagate. Since a large fraction of the eddies that at some point in their histories are found inshore of the 800 m isobath experience large bathymetric changes along their trajectories, they can potentially serve as efficient mechanisms for cross-isobath transport in the SAB. Analysis of temporal variability in eddy activity suggests that cross-isobath transport due to nonlinear eddies may be significant during all seasons, but will likely be characterized by large interannual variability.
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