3D Visualization of Glider Data through Eigenmode Expansions

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Abstract (Oral Presentation)

The nature of glider data collections allows for visualization in 1D, profiles, and 2D, vertical slices, through the ocean. A choice of course that zig-zags through the Mid-Atlantic Bight (MAB) creates a situation which allows for the measured data to be "enclosed" within a volumetric space. In this case the boundary extends from slightly offshore out to the 100 m isobath and is bounded to the north and south by the extent of the glider path. A method to visualize the glider data in perspective is based on a fit of the data to 3D eigenmodes calculated on a grid of the MAB. The Partial Differential Equation (PDE) toolbox from MATLAB was used to compute a series of 3D eigenmodes. Values from these modes corresponding to locations where glider data is present were extracted from each mode. These values were then used as a basis to fit the glider data, in this case temperature, to reveal a basic structure of the MAB cold pool. These cold pool representations are then available for an analysis of the spatial and temporal variability of the MAB cold pool.