Abstract View

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A Model of the Summer Progression of the Cold-Pool Temperature in the Middle Atlantic Bight

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ABSTRACT

A simple one-dimensional model (in the alongshelf direction) that incorporates spatially non-uniform heating, advection and initial temperature field is proposed to explain the summer progression of the cold-pool temperature in the Middle Atlantic Bight. The observed local cooling is shown to require an upstream cold water source at the onset of the heating season. The observed secondary temperature minimum that stagnates at the Hudson Shelf Valley and the observed thermal front in the New York Bight can be explained by the alongshelf variation of the heating rate which is attributed mainly to the varying shelf width and hence the heat capacity of the cold pool. Although the model is highly idealized, a crude simulation using the input functions inferred from data has reproduced all the gross features observed in the thermal field.