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## **DESTRUCTION OF EIGHTEEN DEGREE WATER AND THE EVOLUTION OF THE SEASONAL PYCNOCLINE**

Eighteen Degree Water (EDW) is a large, nearly homogeneous (low potential vorticity), subsurface reservoir of heat, nutrients, and CO<sub>2</sub> in the Sargasso Sea. The EDW layer partially erodes during summer, diffusing its properties into the thermocline, and is ventilated during winter. CLIMODE is investigating the dominant mechanisms driving each seasonal process, as well as the respective influence of the processes on the EDW volume budget. CTD observations from profiling floats from CLIMODE and Argo during 2006 and 2007 are used to observe the cycle of the seasonal pycnocline, which isolates EDW from the surface mixed layer during spring, summer, and fall, and to quantify the degree of mixing which may be responsible for the erosion of the subducted EDW layer during this restratification season. Elevated mixing and EDW erosion rates are found near the top of the EDW layer and are substantially larger than those found at the bottom of the layer. Assuming that vertical mixing is the dominant mechanism of EDW destruction, time dependent, upper bound estimates of diapycnal diffusivity ranging from O(10<sup>-5</sup>) to O(10<sup>-4</sup>) m<sup>2</sup>s<sup>-1</sup> are inferred using potential vorticity (PV) as a tracer. Diapycnal mixing is also inferred using CLIMODE and Line W hydrography. These mixing rates are used to estimate upper bound EDW volume destruction rates that are compared to formation and destruction rates inferred from climatological air-sea fluxes.

<http://www.sgmeet.com/osm2012/viewabstract2.asp?AbstractID=10580>

Poster presentation

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