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Are Labrador Sea Water eddies an important transport mechanism in the AMOC?

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As part of the Export Pathways from the Subpolar North Atlantic Experiment (ExPath), about 70 RAFOS floats were released sequentially in the Deep Western Boundary Current (DWBC) during 2003-2006 near 50°N at the depths of Labrador Sea Water (LSW). Several of these floats drifted southward with the DWBC to the Tail of the Grand Banks of Newfoundland, and revealed there the formation of relatively small, energetic anticyclonic eddies containing a core of modified LSW (looping periods were 4-6 days at radii of 15-30 km). Three separate eddy formation events were observed, two with 700-m floats and one with a 1500-m float. The latter eddy crossed under the Gulf Stream into the subtropical gyre and drifted southwestward to about 35°N, where it was evidently destroyed by colliding with the Corner Rise Seamounts five months after it formed. Eddies with similar characteristics have been occasionally observed in the subtropical gyre in current meter data and with hydrography, but the float observations are the first to show where and how these subthermocline eddies form. An estimate of the vorticity of the eddies suggests that their anticyclonic rotation has its origin in the inshore part of the boundary current. With no surface expression and small horizontal scale, many of these eddies may go undetected. We carry out a census of LSW eddies in the subtropical region using Argo profiles and historical hydrographic data in an attempt to determine their importance in the southward transport of LSW.