Science Question
The ocean is an important sink of anthropogenic CO2 emissions. Why is the subpolar North Atlantic one of the most intense regions of anthropogenic CO2 uptake?

Analysis
We used observations from the GO-SHIP program, ECCO v4 as an estimate of the physical state, and a hindcast model from NCAR

Results
● Old waters, low in anthropogenic CO2, are found in the nutrient stream of the Western North Atlantic
● These low anthropogenic CO2 waters are on isopycnals that outcrop in the subpolar North Atlantic
● Subpolar anthropogenic carbon uptake is sustained by these low anthropogenic CO2 waters supplied by the overturning circulation

Significance
We’ve come up with a mechanistic explanation for why the subpolar North Atlantic is an intense sink for anthropogenic CO2. This helps us understand what could happen to CO2 uptake in this region in the future as mixing and overturning change

Figure Caption
(Top) Anthropogenic carbon below the Gulf Stream (0-2000m). Measurements from a research cruise between Woods Hole, MA, to Bermuda. Note the low anthropogenic carbon waters sandwiched between higher waters. (Bottom) The Gulf Stream transports these low anthropogenic CO2 waters that have a high capacity for CO2 absorption (blue values)
Full citation:

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