



Inventory changes in anthropogenic carbon in the Atlantic Ocean

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The formation of North Atlantic Deep Water (NADW) is a unique fast track for transporting anthropogenic carbon (C_{ant}) into the ocean's interior, making the deep waters in the Atlantic rich in C_{ant}. Thus the Atlantic is presently estimated to hold 38 % of the oceanic C_{ant} inventory, although its volume makes up only 25 % of the world ocean. Between 1997 and 2003, the column inventory of C_{ant} in the deep water formation regions, especially in the North western Atlantic, lacks the expected increase due to rising atmospheric CO₂ concentrations. It is demonstrated that this decrease in C_{ant} uptake is directly linked to the variability of the formation of (Upper) Labrador Sea Water, whereas the contributions of the overflow water masses do not show a distinct trend. Compared to the global oceanic C_{ant} uptake in the order of 2 Pg carbon per year, the decline in C_{ant} storage in the subpolar North Atlantic of about 0.2 Pg carbon between 1997 and 2003 is still small.