



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 (Cant) into the ocean's interior, making the deep waters in the Atlantic rich in Cant. Thus the Atlantic is presently estimated to hold 38 % of the oceanic Cant inventory, although its volume makes up only 25 % of the world ocean. Between 1997 and 2003, the column inventory of Cant 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 Cant 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 Cant uptake in the order of 2 Pg carbon per year, the decline in Cant storage in the subpolar North Atlantic of about 0.2 Pg carbon between 1997 and 2003 is still small.