Supplementary information

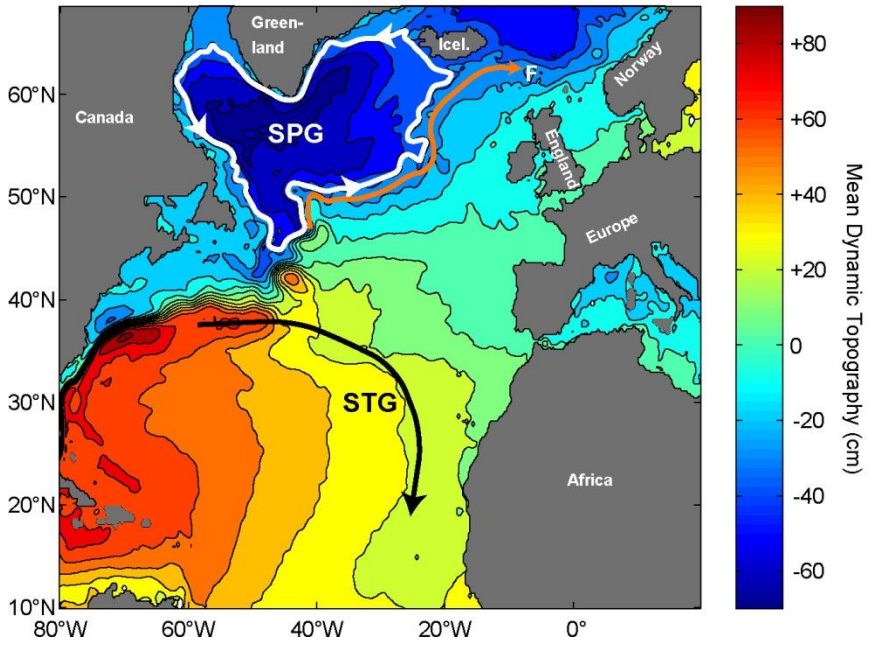

Figure S1. The background colours show the Mean Dynamic Topography (Mulet et al., 2021). The average Subtropical Gyre (STG) is indicated by the curved black arrow. The closed white contour is the MDT isoline with the highest value (-32 cm relative to the geoid), which is confined to the North Atlantic south of the GSR. This may be seen as the average boundary of the Subpolar Gyre (SPG), in the version used here. The curved orange arrow indicates the average surface path, according to geostrophy, of the Atlantic water flowing towards the IFR. A white "F" indicates the Faroes.

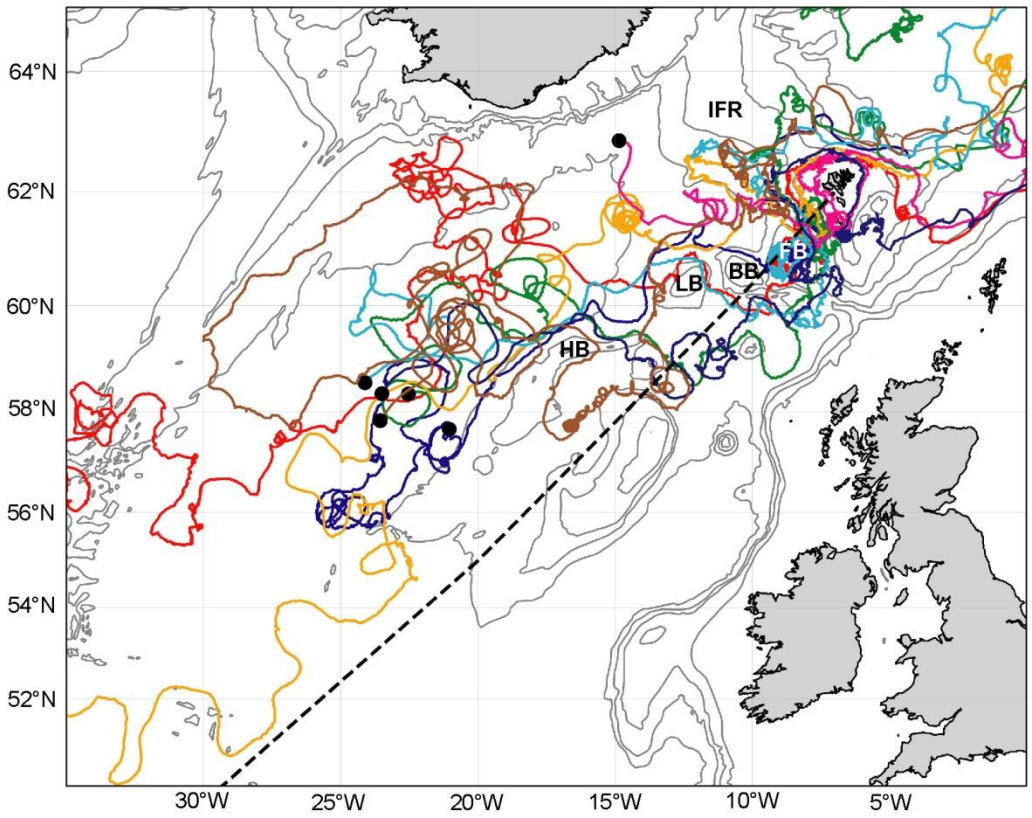

Figure S2. Eight of the 101 drifters crossing the IFR (shown with colored lines) crossed the dashed black line, and entered the bank area between the Iceland Basin and the Rockall Trough area. Black dots show where the drifters were deployed if they fall inside the map area. Thin grey lines show bottom contours for 200 m, 500 m, 1000 m and 2000. IFR: Iceland-Faroe Ridge. HB: Hatton Bank. LB: Lousy Bank. BB: Bill Baileys Bank. FB: Faroe Bank.

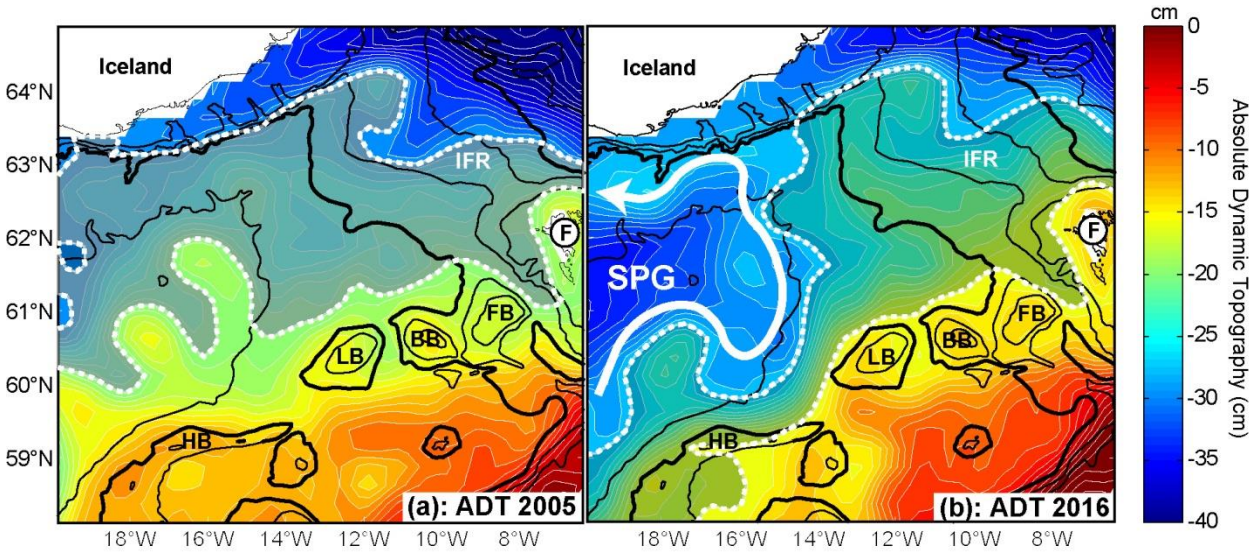

Figure S3. Absolute Dynamic Topography (average sea level height) for the year with the lowest value for pc_1: 2005 **(a)** and for the year with the highest value for pc_1: 2016 **(b)**. In both panels, the location of the Faroes is indicated by an "F" in a circle while the semi-transparent grey region bounded by thick dashed white curves indicates surface water on its way to cross the IFR. A curved white arrow in (b) shows intrusion of the Subpolar Gyre (SPG) into the region. Black lines on the maps show bottom contours for 200 m, 500 m, 1000 m and 2000 m with the 1000 m contours thicker. IFR: Iceland-Faroe Ridge. HB: Hatton Bank. LB: Lousy Bank. BB: Bill Baileys Bank. FB: Faroe Bank.

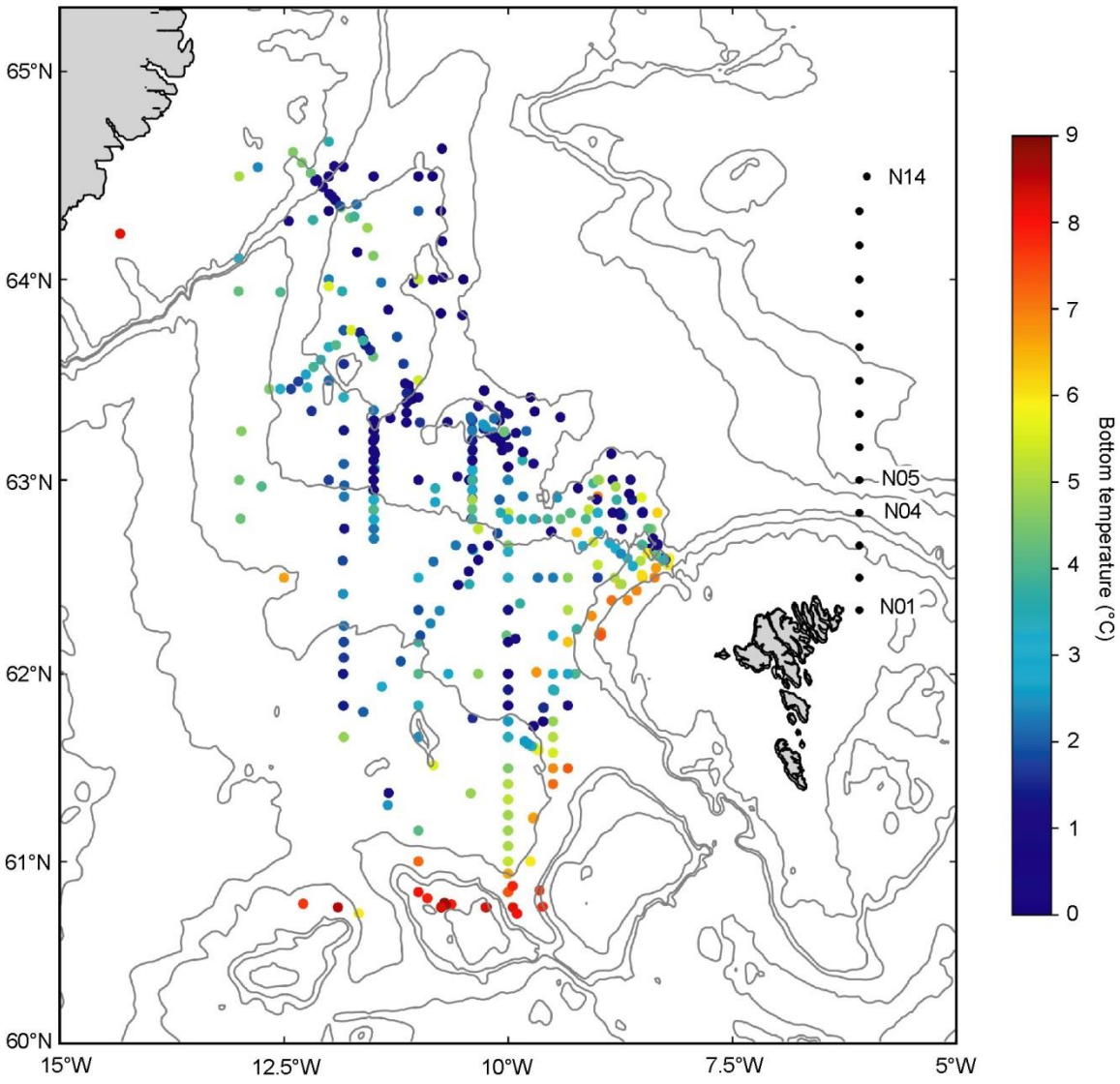

Figure S4. Bottom temperature from all CTD profiles in Figure 3.7a, where temperature is measured less than 50 m above the seabed. Thin grey lines show bottom contours for 200 m, 400 m, 500 m, 1000 m, 1500 m, 2000 m and 3000 m.

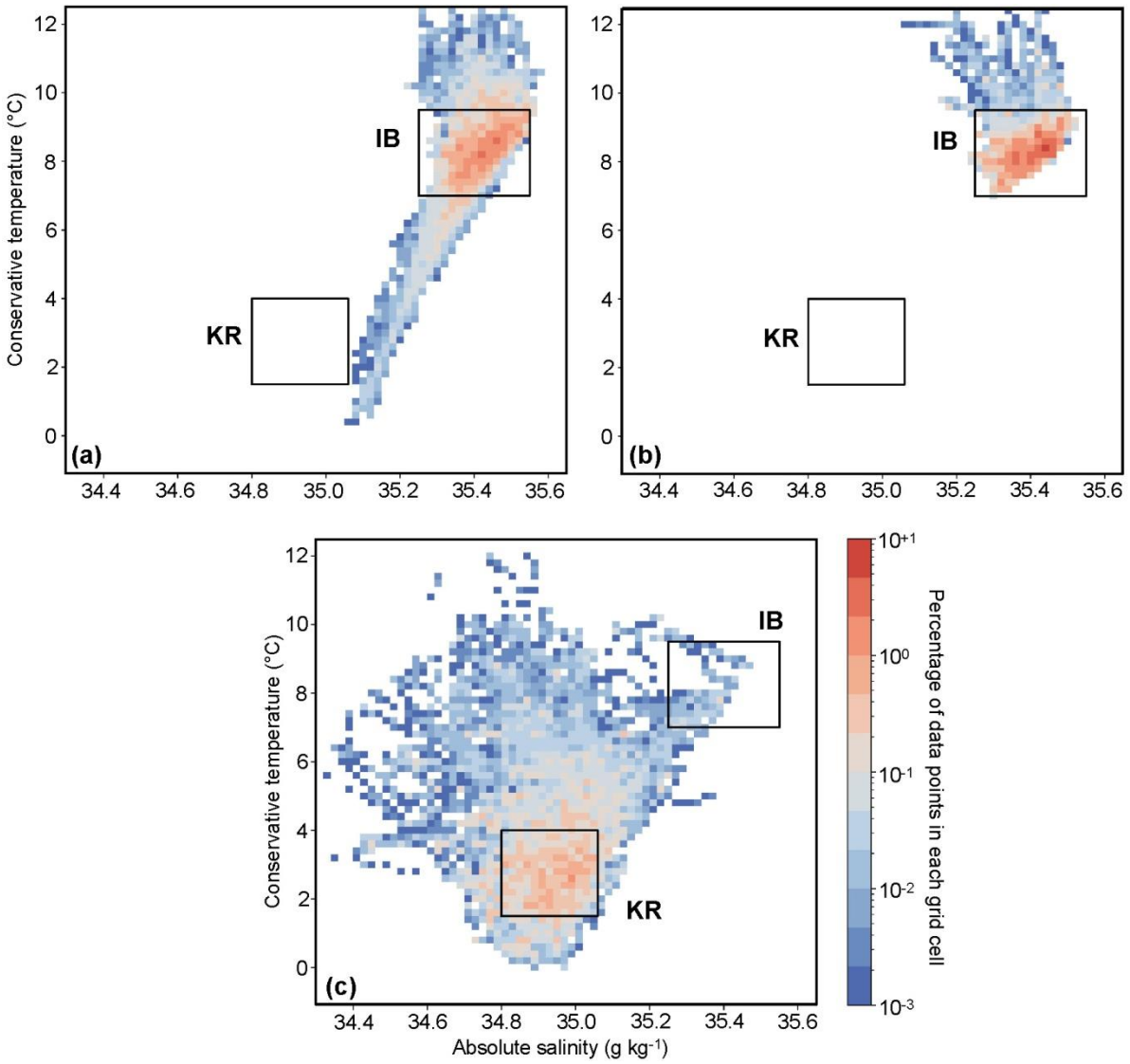

Figure S5. T-S diagrams for **(a)** standard station V for the upper most 500 m, **(b)** standard station I for the uppermost 500 m and **(c)** for Krossanes section, standard stations KR2 to KR6 the uppermost 100 m. (a) and (b) are used to find the typical properties for the Atlantic water before it enters the IFR-area (called IB). (c) is used to find the typical properties of the Arctic water that enters the IFR-area and meets with the IF-inflow (called KR). The typical properties are found by drawing a box that captures most of the measurements. The colour scale is the same for all the panels and shown bottom right.