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Measured volume, heat, and salt fluxes from the Atlantic to the Arctic Mediterranean

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The flow of warm and saline Atlantic water towards the Arctic crosses the Greenland-Scotland Ridge in three current branches. Since the mid 1990's, extensive monitoring with quasi-permanent moorings and regular CTD cruises has been in operation on three sections crossing the branches. Averaged over the years 1999 to 2001, values of volume, heat (relative to 0ºC) and salt flux due to the total Atlantic inflow across the Greenland-Scotland Ridge into the Nordic Seas are estimated as 8.5 Sv (1 Sv = 10^6 $m^3 \cdot s^{-1}$), $313 \cdot 10^{12}$ W, and $303 \cdot 10^6$ $kg \cdot s^{-1}$, respectively. In this period, the average temperature and salinity of the Atlantic inflow were 8.5ºC and 35.25, respectively. Within the observational uncertainty, we do not find any persistent seasonal variation of the volume flux, but there seems to be a negative correlation between the inflow flux through the Faroe-Shetland Channel and through the other two gaps.