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Velocity and transport across the Extended Ellett Line in the subpolar North Atlantic

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The Extended Ellett Line repeat hydrographic section is located between Iceland and Scotland, crossing the Iceland and Hatton-Rockall Basins and Rockall Trough. 90% of the water flowing northwards into the Nordic Seas passes across the section, and half the returning dense water; two key parts of the Atlantic meridional overturning circulation. As the upper water moves northwards it releases heat to the atmosphere, contributing to the moderate climate of the UK and Western Europe. In this study, the long-term (1997-2015) mean velocity field along the section is computed using direct velocity measurements to reference geostrophic velocity. We present improved estimates of the mean volume, temperature and freshwater transport through the eastern subpolar North Atlantic. We decompose the section into layers consisting of the upper ocean water, the permanent thermocline, Labrador Sea water and the Iceland-Scotland overflow water. We discuss the uncertainty of these values, and consider next steps in examining long-term variability.