



Temporal and Spatial Variability along the Deep Western Boundary Current

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The North Atlantic Deep Western Boundary Current (DWBC) connects the polar and subpolar regions, where the ocean is ventilated to greater depth, with the tropical oceans and beyond. It is part of the global ocean circulation as the deep branch of the Atlantic meridional overturning circulation (AMOC). It has a core depth between 1500–4500m with water mass properties varying by origin and decade. We analyze all publically available CTD data from Porcupine Abyssal Plain along Denmark Strait, Labrador Sea, Cape Cod, Cape Hatteras and Bahamas to the equator. The spatial and temporal development is analyzed for the past five decades. Waters originating from the overflow regions between Greenland and Scotland and from the Labrador Sea merge along the pathway but show distinct temporal variability and trends. We distinguish between local and large-scale variability and relate our results with the atmospheric forcing of the North Atlantic. This gives insight into new key aspects to be validated with state of the art ocean circulation models.