



SUBPOLAR MODE WATER AND THE NORTH ATLANTIC CURRENT

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The northeastward extension of the North Atlantic Current (subarctic front) divides the Subpolar Mode Water into eastern and western portions. Surface flow, based on Lagrangian drifters, altimetric geostrophic velocities, and dynamic height is generally northeastward throughout the eastern subpolar region. Thus the surface SPMW in the eastern North Atlantic feeds the Iceland-Faroe Front and the Norwegian Current but not the region west of the subarctic front. The SPMWs that feed the Labrador Sea originate from the SPMWs on the north/west side of the subarctic front. The connection of these SPMWs to the thermocline waters below the sill depth of the Iceland-Faroe Ridge and hence below the eastern SPMWs is investigated using historical synoptic hydrographic sections. Throughout the subpolar gyre, the thickest SPMW layers are associated with topography and/or strong fronts. A particularly homogeneous pool of western SPMW is found along the Reykjanes Ridge. The surface circulation that carries the SPMWs is studied using Lagrangian surface drifters, which document the three strong branches of the North Atlantic Current, the isolation of the Irminger gyre and the separation between the subtropical and subpolar circulation.