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Locating the upstream path of the Denmark Strait overflow water

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Denmark Strait overflow water (DSOW) is one of the main components of the thermohaline circulation in the North Atlantic. There has in the past been no consensus on where it is formed and by which way it is brought to the Denmark Strait sill. It has been shown that a substantial part of the DSOW is brought to the sill by a current that runs along the Icelandic slope. This current has been measured annually in November since 2001 with a vessel mounted ADCP on the Hornbanki section north of Iceland. The water carried by the current has properties similar to the DSOW at the sill. The transport with the current has ranged from 0.6 to 2.7 Sv with an average of 1.7 Sv. Assuming some entrainment of ambient water this source can account for a large part of the overflow water at the sill. Using water mass properties, the current is traced even further into the Iceland Sea or to the northernmost station on the standard CTD section, Siglunes, off central northern Iceland. This station is over 1000 m deep and lies over the slope just west of the Kolbeinsey Ridge. More research is needed in order to trace the origin of the DSOW further and to see if it is confined to the west of the Kolbeinsey Ridge or if some of it crosses the ridge from the east.