



HE14A-1908 - Evidence of a Slope Jet Transporting Dense Water toward the Faroe Bank Channel

 Monday, 17 February 2020

 16:00 - 18:00

 SDCC - Poster Hall C-D

Abstract

The densest overflow water from the Nordic Seas passes through the Faroe Bank Channel and contributes to the headwaters to the lower limb of the Atlantic Meridional Overturning Circulation. The upstream pathways of this dense overflow water are not well known. Using data from a high-resolution hydrographic/velocity survey in 2011, as well as long-term moored velocity and shipboard hydrographic measurements north of the Faroe Islands, we present evidence of a current following the continental slope from Iceland toward the Faroe Bank Channel. This narrow current, which we call the Iceland-Faroe Slope Jet (IFSJ), is bottom-intensified and associated with dense water banked up on the slope. North of the Faroe Islands the IFSJ is situated beneath the Faroe Current, and its variability is tightly linked to the flow of Atlantic Water above. The bulk of the IFSJ's volume transport is confined to a small area in Θ - S space centered near a potential density anomaly of 28.06 kg m^{-3} . This is slightly denser than the transport mode of the North Icelandic Jet, which follows shallower isobaths along the slope north of Iceland in the opposite direction and feeds the Denmark Strait overflow. However, the similarity of the hydrographic properties suggests that the two currents have a common source. The average transport of water denser than $\sigma_{\theta} = 27.8 \text{ kg m}^{-3}$ in the IFSJ is on the order of 1 Sv, which may account for roughly 50% of the overflow through the Faroe Bank Channel.

Authors

Stefanie Semper

Geophysical Institute, University of Bergen and Bjerknes Centre for Climate Research

Robert S Pickart

Woods Hole Oceanographic Institution

Kjetil Våge

Geophysical Institute, University of Bergen and Bjerknes Centre for Climate Research

Karin Margretha Husgard Larsen

Faroe Marine Research Institute

Bogi Hansen

Faroe Marine Research Institute
[Hjálmar Hátún](#)
Faroe Marine Research Institute

View Related

[HE14A - Arctic-North Atlantic Connectivity: Variability, Changes, and Impacts of Freshwater and Heat Exchange III Posters](#) >



CONTACT US

2000 Florida Ave. NW,
Washington, DC 20009
Phone: +1 202 462 6900
Toll Free: 800 966 2481
(North America only)

© 2019. American Geophysical Union | All rights reserved | [Privacy Policy](#)

[What can Hydrography Tell Us about the MOC on Centennial Timescales?](#)

H. Thomas Rossby, *University of Rhode Island, Narragansett, RI, United States*

[Sources and upstream pathways of the densest overflow in the Nordic Seas](#)

Jie Huang^{1,2}, *Robert S Pickart*², *Rui Xin Huang*², *Peigen Lin*², *Ailin Brakstad*³ and *Fanghua Xu*¹, (1)*Tsinghua University, Beijing, China*, (2)*Woods Hole Oceanographic Institution, Woods Hole, MA, United States*, (3)*Bjerknes Centre for Climate Research, University of Bergen, Geophysical Institute, Bergen, Norway*

[Influence of the Norwegian Sea Gyre on the heat transports to the Arctic](#)

Hjálmar Hátún¹, *Leon Chafik*² and *Bogi Hansen*¹, (1)*Faroe Marine Research Institute, Tórshavn, Faroe Islands*, (2)*Stockholm University, Department of Meteorology, Stockholm, Sweden*