

EGU21-11619

<https://doi.org/10.5194/egusphere-egu21-11619>

EGU General Assembly 2021

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



Recirculation of Canadian Basin Deep Water in the Amundsen Sea

Salar Karam¹, Céline Heuzé¹, and the MOSAiC Ocean Team*

¹University of Gothenburg, Göteborg, Sweden (salar.karam@gu.se)

*A full list of authors appears at the end of the abstract

Previous literature has shown that Canadian Basin Deep Water (CBDW) crosses the Lomonosov Ridge into the Amundsen Basin close to the North Pole. This intrusion subsequently flows along the ridge towards Greenland and eventually all the way to the Greenland Sea, but an influence of CBDW in other parts of the Amundsen Basin has also been shown. We detect this deep CBDW intrusion, which is visible as a salinity maximum and oxygen minimum at a depth of about 2000 metres, in hydrographic measurements from MOSAiC and historical data sets. We also use measurements of CFC concentrations for increased robustness, as the high age of CBDW means the water mass is characterised by a CFC minimum. We map the recirculation of this CBDW in the Amundsen Basin and determine its spatial and temporal variability. In particular, we find that CBDW likely flows as a boundary current going eastwards along Gakkel Ridge, and even detect CBDW-like properties on the Nansen Basin side of Gakkel Ridge. As the Arctic Ocean is changing rapidly, understanding its deep circulation and its drivers is becoming increasingly urgent.

MOSAic Ocean Team: Jacob Allersholt, AWI; Marylou Athanase, LOCEAN-IPSL; Chris Basque, WHOI; Dorothea Bauch, GEOMAR; Till Baumann, UiB; Dake Chen, SIO; Silvia Cole, WHOI; Sam Cornish, U Oxford; Lisa Craw, U Tasmania; Andrew Davies, WHOI; Dmitry Divine, NPI/HAVOC; Francesca Doglioni, WHOI; Falk Ebert, Herder-Gymnasium Berlin; Carina Engicht, AWI; Ying-Chih Fang, AWI; Ilker Fer, UIB; Mats Granskog, NPI/HAVOC; Rainer Graupner, AWI; Hailun He, SIO China; Yan He, FIO; Céline Heuzé, U Gotheburg; Mario Hoppmann, AWI; Markus Janout, AWI; David Kadko, FIU; Torsten Kanzow, AWI; Salar Karam, U Gothenburg; Yusuke Kawaguchi, Uni. Tokyo; Zoe Koenig, UIB; Bin Kong, FIO; Rick Krishfield, WHOI; David Kuhlmeier, AWI; Ivan Kuznetsov, AWI; Musheng Lan, PRIC; Ruibo Lei, PRIC; Tao Li, OUC; Long Lin, SIO; Hailong Liu, SJTU; Na Liu, FIO; Xiaobing Ma, FIO; Rosalie MacKay, NTNU; Maria Mallet, AWI; Robbie Mallet, UCL; Wieslaw Maslowski, NPS; Christian Mertens, Uni Bremen; Volker Mohrholz, IOW; Matthias Monsees, AWI; Morven Muilwijk, UiB; Jeff O'Brien, WHOI; Algot Peterson, UIB; Pierre Priou, U Newfoundland; Benjamin Rabe, AWI; Julia Regnery, AWI; Jian Ren, SIO; Natalia Ribeiro Santos, U Tasmania; Janin Schaffer, AWI; Ingo Schuffenhauer, IOW; Kirstin Schulz, AWI; William Shaw, NPS; Timothy Stanton, NPS; Mark Stephens, FIU; Jie Su, OUC; Natalia Sukhikh, Uni Bremen; Arild Sundfjord, NPI/HAVOC; Sandra Tippenhauer, AWI; John Toole, WHOI; Pedro Torre, NTNU; Jutta Vernaleken, AWI; Myriël Vredenburg, AWI; Hangzhou Wang, ZJU; Lei Wang, BMU; Yuntao Wang, SIO; Bai Youcheng, SIO; Jinping Zhao, OUC; Meng Zhou, SJTU; Jialiang Zhu, OUC