

EGU21-5271, updated on 04 May 2021

<https://doi.org/10.5194/egusphere-egu21-5271>

EGU General Assembly 2021

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



How does the Arctic affect North Atlantic climate? Fresh perspectives on a long-standing question.

Marilena Oltmanns¹, N. Penny Holliday¹, James Screen², D. Gwyn Evans¹, Simon A. Josey¹, Ben Moat¹, Johannes Karstensen³, and G. W. Kent Moore⁴

¹National Oceanography Centre, Marine Physics and Ocean Climate, United Kingdom of Great Britain – England, Scotland, Wales (marilena.oltmanns@noc.ac.uk)

²University of Exeter, Mathematics, United Kingdom of Great Britain – England, Scotland, Wales

³GEOMAR Helmholtz Centre for Ocean Research Kiel, Physical Oceanography, Germany

⁴University of Toronto, Department of Physics, Canada

Recent decades have been characterised by amplified Arctic warming and increased occurrence of extreme weather events in the North Atlantic region. While earlier studies noticed statistical links between high-latitude warming and mid-latitude weather extremes, the underlying dynamical connections remained elusive. Combining different data products, I will demonstrate a new mechanism linking Arctic ice losses with cold anomalies and storms in the subpolar region in winter, and with heat waves and droughts over Europe summer. Considering feedbacks of the identified mechanism on the Arctic Ocean circulation, I will further present new support for the potential of Arctic warming to trigger a rapid change in climate.