

EGU2020-3790

<https://doi.org/10.5194/egusphere-egu2020-3790>

EGU General Assembly 2020

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



Atlantic Salinity Pileup as a Remote Fingerprint of Weakening Atlantic Overturning Circulation under Anthropogenic Warming

Chenyu Zhu^{1,2,3} and Zhengyu Liu³

¹Peking University, Department of Atmospheric and Oceanic Sciences, China (zhuchenyu91@pku.edu.cn)

²Open studio for Ocean-Climate-Isotope Modeling, Pilot National Laboratory for Marine Science and Technology (Qingdao), China

³Atmospheric Science Program, Department of Geography, Ohio State University, USA

Climate models show a weakening Atlantic meridional overturning circulation (AMOC) under global warming. Limited by short direct measurements, this AMOC slowdown has been inferred, with some uncertainties, indirectly from some AMOC fingerprints locally over the subpolar North Atlantic region. Here we present observational and modeling evidences of the first remote fingerprint of AMOC slowdown outside the North Atlantic. Under global warming, the weakening AMOC reduces the salinity divergence and then leads to a remote fingerprint of “salinity pileup” in the South Atlantic. Our study supports the AMOC slowdown under anthropogenic warming and, furthermore, shows that this weakening has occurred all the way into the South Atlantic.