



# 2025-2026 EOAS Colloquium Series

## Changes in ocean heat transport from the subpolar North Atlantic to the Arctic during recent decades

The Arctic Ocean has been warming nearly four times as fast as the global average since the 1990s, severely transforming the Arctic marine environment, yet the oceanic mechanisms underlying this rapid change are still not fully understood. In this study, I use a global  $\sim 1/12^\circ$  ocean–sea-ice coupled HYCOM historical simulation during 1980–2023 to represent the volume transport from major oceanic gateways into the Arctic. The model results show good agreement with observations in the strength of the Atlantic Meridional Overturning Circulation (AMOC) at OSNAP array during the observational period. In this talk, I will discuss the Arctic heat budget and focus on the poleward ocean heat transport. I will show that the latter has multi-decadal variability and is mainly dominated by the meridional heat transport through the Barents Sea Opening and Fram Strait. I will further show how the changes in the heat transport from the subpolar North Atlantic are attributed to the large-scale climate modes, such as the North Atlantic Oscillation (NAO). Finally, I will discuss ongoing work on the role of the AMOC in modulating poleward heat transport under a warming Arctic, offering new insights into how large-scale ocean circulation may influence the future Arctic climate.



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**Time:** 3:00 PM, Friday, October 17, 2025

**Location:** EOA 1044

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