Causes and consequences of Arctic amplification elucidated by coordinated multimodel experiments

Professor James Screen
University of Exeter

Date: February 24th, 2026
Time: 3:00 pm (GMT)

Human-induced warming is amplified in the Arctic, but its causes and consequences are not precisely known. To address these challenges, the Polar Amplification Model Intercomparison Project (PAMIP) delivered a large set of coordinated multi-model experiments and analyses. Here, I will review scientific advances facilitated by the PAMIP. Surface heat flux changes and feedbacks triggered by sea-ice loss are critical to explain the magnitude and seasonality of Arctic amplification. Tropospheric responses to Arctic sea-ice loss that are robust across models and separable from internal variability have been revealed, including local warming and moistening, equatorward shifts of the jet stream and storm track in the North Atlantic, and fewer and milder cold extremes over North America. Whilst generally small compared to simulated internal variability, the response to Arctic sea-ice loss comprises a non-negligible contribution to projected climate change. For example, Arctic sea-ice loss is essential to explain projected North Atlantic jet trends and their uncertainty. Model diversity in the simulated responses has provided pathways to observationally constrain the real-world response. As this work will be familiar to many in the PAMIP community, I will also present some new (as yet unpublished) analyses from my group and collaborators using the PAMIP experiments.

Join the PAMIP group:
https://groups.google.com/u/1/g/pamip?hl=en

Contacts
Joonsuk Kang (jk5081@columbia.edu)
Lantao Sun(lantao.sun@colostate.edu)
Yu-Chiao Liang (yuchiaoliang@ntu.edu.tw)

@PAMIP_news

https://www.cesm.ucar.edu/projects/cmip6/pamip/webinars