

# PAMIP Webinar Series

## Mid-latitude cold extreme weather response to Arctic sea ice loss across the PAMIP simulations

**Svenya Chripko**

Université de Toulouse

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**Time: 3:00 pm (GMT)**

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Or contact Lantao Sun:

[lantao.sun@colostate.edu](mailto:lantao.sun@colostate.edu).

### Abstract

Arctic sea ice loss has been suggested to weaken the mid-latitude circulation and to promote severe cold winters. However, this link remains under debate due to divergent results between modeling and observational studies, and among modeling studies themselves. In this study, we investigate the relationship between Arctic sea ice loss and mid-latitude cold extreme weather, using ten climate models involved in the Polar Amplification Model Intercomparison Project. Sensitivity experiments in which the atmosphere is forced by sea ice anomalies associated with +2°C warming are compared to others in which the atmosphere is forced by present-day sea ice conditions. We find that winter cold extremes are more frequent due to Arctic sea ice loss over central Asia in the majority of the models, and that they are generally less frequent over Europe and Western North America. Moreover, we find that more frequent cold extremes does not necessarily imply more severe cold extremes. By using two statistical methods, we further analyze the role of circulation in driving these changes in cold extremes in response to Arctic sea ice loss.



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