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ICE MELTING IN THE ARCTIC AND HEMISPHERIC WARMING TRENDS IN THE WINTER

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ABSTRACT

The ongoing shrinkage of the Arctic sea ice cover is apparently linked to the global temperature rise, to the pronounced warming in the Arctic and weather anomalies in the middle latitudes. Unlike previous studies, by statistically analyzing atmospheric energy data over the Northern Hemisphere from 1980 to 2014, we found that linear trends of only three well known atmospheric oscillation patterns approximate the spatial structure of near surface temperature tendencies in the winter. They are the North Atlantic Oscillation (NAO), the El Niño – Southern Oscillation (ENSO) and the Scandinavian Blocking (SB). NAO and SB are directly related to the ongoing ice melting in the Barents Sea. These two atmospheric structures dynamically connect the Arctic sea ice melting with recent tendencies for cold weather over highly populated areas of the Europe and the east coast of the North America. In this way, although they both carry positive hemispheric averages of temperature trends, they may also significantly impact the negative public perception of the global temperature change process in the winter. The ENSO impact on the Northern Hemisphere change of near-surface temperature is, on the other hand, mainly limited to lower latitudes and the Pacific Ocean.



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