



Impact of Arctic Sea Ice Reduction on Extratropical Storminess and the NAO

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The impact of a reduced Arctic sea ice cover on wintertime extratropical storminess is investigated by conducting atmospheric general circulation model (AGCM) experiments. The AGCM ECHAM5 is forced by the present and a projected future seasonal cycle of Arctic sea ice. In the experiment with projected sea-ice concentrations significant reductions in storminess were found during December and January in both midlatitudes and towards the Arctic. However, a substantially larger reduction in extratropical storminess was found in March, despite a smaller change in surface energy fluxes in March than in the other winter months. The magnified response in March is shown to resemble the negative phase of the North Atlantic Oscillation (NAO). The impact of sea-ice anomalies on the NAO and its dependence on the background flow is further investigated by a series of experiments under perpetual January, February and March model states. The analysis of these experiments will also be presented.