



Impacts of Changing Sea Ice Cover on Northern Hemisphere Atmospheric Conditions

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The impact of Arctic sea-ice on atmospheric circulation and temperature is still intensely debated. Here, we show the response of the HadGEM3 atmospheric model to prescribed sea-ice cover. In particular, large sea-ice cover (average of 1979-1984), small sea-ice cover (average of 2010-2014), medium sea-ice cover (average of 1979-2014) and interannually varying sea ice cover from 1979-2014. It is found that larger sea ice concentrations lead to colder conditions over the high latitude northern hemisphere and Northern Europe, while the smaller sea ice concentration leads to warmer conditions over the high latitude northern hemisphere and northern Europe. These results are corroborated with initialised seasonal forecasts with different atmosphere and sea-ice cover conditions. Reduced sea-ice cover over the Barents and GIN seas is associated with a low-pressure system advecting warm air over its eastern flank, with warmer summers in Northwest Europe as a result. Further links between Arctic sea ice concentration and European Weather will be discussed as well as the seasonality of these links.