



## **Autumn-time response of the ocean-atmospheric system to interannual changes in Arctic sea-ice extent**

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Sea-ice has a memory of several months and influences the atmosphere by modifying exchange of heat, moisture and momentum at the ocean-atmosphere interface, and by changing the albedo in summer. Thus, being a slowly evolving component of the Earth's climate, sea-ice could be very important for seasonal weather forecasting, especially in the polar regions.

Arctic sea-ice extent reaches a minimum in September and sea-ice variability is highest during this period. Here we use a set of simulations from a state-of-the-art coupled ocean-atmosphere model to study the response of the northern hemispheric mid- to high-latitude ocean-atmospheric system to interannual changes in Arctic sea-ice extent during boreal Autumn-early winter. The model set-up consists of 5-member 5-month long simulations, with atmospheric and ocean initial conditions from 1 October 2007. Sea-ice in the model is prescribed, and is derived from observed SST for the years 2000 to 2007. We focus especially on 2007 when Arctic sea-ice extent reached a record lowest and show that there might be improved prediction skill associated with the low sea-ice conditions. Further, implications for seasonal weather predictability over western Europe and the Arctic region will be assessed.