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Forcing of the Recent Climate Change over Eurasia by Atlantic SSTs and Arctic Sea Ice

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Sensitivity experiments with the ECHAM5 general circulation model have been performed using observed data for sea surface temperatures (SSTs) and sea ice concentrations. Numerical experiments were aimed to estimate a contribution of the North Atlantic SST transition from a relatively cold state in 1970s to a warm anomaly in the first decade of the 21st century. Additional experiments were performed to evaluate an impact of the corresponding sea ice decline in the Atlantic sector of the Arctic. Being forced by changes of the global SST field and Arctic sea ice, the model realistically simulates the recent climate changes over Eurasia. The retreat of the sea ice cover imposes a negative feedback on temperature changes resulting in cooling over the continent. Changes of the SST in the northern North Atlantic alone are not able to explain the warming over Eurasia.