



Seasonal temperature anomalies in the Iceland region – structure, persistence and connections with the large scale flow

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One hundred and seventy years of temperature observations in Iceland are explored to assess the contribution of individual seasons to the interannual temperature variability and the persistence of temperature anomalies. The mean temperatures in the mid- and late winter and in the spring correlate well with the mean annual temperature, while the mean temperatures in the autumn and in early winter show a very low correlation with the mean annual temperature. Mean temperatures in the winter are positively correlated with the temperatures of the following summer, while there is very little correlation between the winter and summer temperatures and the temperatures the following autumn. The correlation between the winter and the following summer is stronger during cold periods, than during warm periods. In cold periods, there is a moderate but inverse correlation between the autumn temperatures and the temperatures of the preceding winter, spring and summer. An analysis of the vertical structure of the atmosphere shows that the interannual variability of the late winter temperatures is to a great extent associated with an anomaly in the lowest part of the atmosphere, while the autumn anomalies extend more clearly throughout the troposphere.

The observed correlation between late winter and summer temperatures can be explained by the persistence of the surface temperatures associated with the sea and sea ice cover. The negative correlation between the winter and the summer with the following autumn can be attributed to the large scale N-hemispheric flow pattern and teleconnection with the mean temperatures in E-Canada.