



Early 20th century Arctic warming in upper-air data

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Between around 1915 and 1945, Arctic surface air temperatures increased by about 1.8 °C. Understanding this rapid warming, its possible feedbacks and underlying causes, is vital in order to better assess the current and future climate changes in the Arctic. In order to be able to address the processes, it would be important to analyse this period from a three dimensional perspective. Here we present an analysis of historical upper-air (radio sonde, aircraft) data from various sites in Scandinavia and the former Soviet Union. Some of the series reach as far back as 1934 and thus cover the last part of the warming period, including the exceptionally warm winters 1936/37 and 1943/44. The data were digitised from written sources, processed, and validated using statistical methods. We present the data validation as well as analyses with respect to the Arctic warming period. The upper-air data are analysed together with statistical reconstructions of upper-level geopotential height and temperature fields.