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Solar/geomagnetic signature in climate parameters. A comparative analysis of temperature evolution in Atlantic Canada and Central-Eastern Europe

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It is well known that the observed changes in global climate are likely to be due to a combination of both natural and human forcings. Solar/geomagnetic variability as external natural forcing on terrestrial climate is investigated in this study, by means of long-term statistical correlations between surface air temperature and solar/geomagnetic indices at local and regional scales. A comparative analysis of temperature evolution in Atlantic Canada and Central-Eastern Europe using time series of surface air temperature was also done. The time series were filtered by means of 11- and 22-year running averages and the corresponding variations were compared to solar/geomagnetic variability. Strong and coherent solar signals have been found at Schwabe and Hale solar cycles timescales. Results show a similar temporal behaviour at all analysed stations with amplitude differences that can be understood in terms of large-scale atmospheric circulation patterns influenced by the solar/geomagnetic forcing at the corresponding timescales, but with local intensity differences.