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Projected changes in frequency of compound events of strong wind and low temperature in EURO-CORDEX climate models

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Compound events of weather extremes considerably affect various sectors of human society and natural environment and therefore it is essential to understand projected changes of their characteristics in the future climate. We focus on the combination of low temperature and high wind velocity, because their compound effect strongly influences human thermal comfort in cold weather, as characterized by the wind chill factor. In our study, we analyse frequency of this extreme events and projected changes of their characteristics in simulations of RCMs from the EURO-CORDEX project. We investigate a set of 9 simulations of 3 different RCMs driven by 3 different global climate models which allow us to analyse the influence of driving data on the RCM's outputs. We focus on the Central European domain defined between 48–52°N and 10–19°E. The frequency of the compound events from historical simulations over 1970–2100 are compared to the projected frequencies under the RCP4.5 and RCP8.5 emission scenarios for the end of the 21st century (2070–2100). Since local climate is relatively tightly linked to a large-scale atmospheric circulation over Europe in winter, we also evaluate links of the compound events to the atmospheric circulation.