

Title: Spatiotemporal variability of global and regional climate models

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Abstract: This thesis deals with variability of basic meteorological variables in global and regional climate models (GCMs and RCMs) outputs. Three different approaches were used in order to analyse climate models' ability to represent different aspects of variability of meteorological variables. The temporal variability with focus on its changes during a time and temporal scale components were studied. The relationship between air temperature and precipitation were employed in order to investigate the representation of spatiotemporal variability in climate models. Moreover, the influence of different characteristics of climate model simulations, such as the size of the RCM integration domain or differences between RCM and GCM simulations, were also considered. Two simulations of RCM ALADIN-Climate/CZ with different sizes of integration domain and their driving simulation of GCM ARPÉGE-Climat were used for analysis of the temporal changes in temperature mean and variability and selected simulations of RCMs and GCMs from the EURO-CORDEX and CMIP5 projects were employed for analyses of variability temporal scale components and relationship between air temperature and precipitation. The analyses were carried out over European region.

Keywords: regional climate models, global climate models, temperature and precipitation variability, variability temporal components, relationship between temperature and precipitation