

Abstract

The thesis deals with detailed analysis of the climate change rate throughout the European continent with an emphasis on Central Europe in the period 1951–2005. The main aim was to find out whether the rate of climate change is getting lower or higher during the monitored period and identify when the changes in the rate occurred. Changes of three climatic elements – minimum air temperature, maximum air temperature, and precipitation, were described for climatic seasons of the year. Other climatic elements were also available, however, amount of data is insufficient for such a detailed trend analysis for the entire second half of the 20th century. First part of the thesis summarizes current knowledge of changes in climate change rate, which is so far rather scarce. Most scientific articles are limited to detecting warming or cooling, decrease or increase in precipitation during a certain period. They, however, do not research when these changes of climatic elements occurred. For my analysis, which tries to offer a detailed insight into changes in European climate, daily records from European Climate Assessment and Dataset (ECA&D) database of 122 stations (spaced as evenly as possible) were used. For examining variability trends (i.e. the rate of climate change) I tested moving 20-year trend (15- and 25-year trends were tested as well) with one-year shifting. The results are presented in form of comprehensive tables and graphs of sliding trends temporal evolution plotted to maps. Neither Central Europe nor other parts of Europe showed continual decline or rise of minimum and maximum air temperature during the second half of the 20th century. In each season there are parts of Europe, where temperature decline was recorded in some of the 20-year periods. Except for autumn, positive trends prevail; however, they are interrupted by periods with temperature decline. Trends in precipitation amounts are very variable both temporally and spatially, which makes the description of general development rather impossible.

Keywords: climate change, trends, climate elements, Central Europe