



Effects of climate change on seasonal morbidity and mortality on respiratory diseases in Germany

Irmela Schlegel (1), Stefan Muthers (1), Andreas Matzarakis (1), and Hanns-Guido Mücke (2)

(1) Deutscher Wetterdienst, Research Center Human Biometeorology, Freiburg, Germany (andreas.matzarakis@dwd.de), (2) Federal Environmental Agency, Germany

Daily weather affects human health in several ways and not only concerning climate change. In a previous study it was shown for Germany, that the occurrence of ischemic heart diseases is strongly linked with the thermal environment. In particular, the mortality due to ischemic heart diseases increases with higher temperatures. For the morbidity, however, no significant relationship to the thermal environment could be found.

In this study, we focus on respiratory diseases and possible effects of daily weather, climate and climate change. Therefore, a systematic literature review on this subject is conducted in the first step. In the second step, the relationship between respiratory diseases and weather is assessed for several regions in Germany. Therefore, daily mortality and morbidity data on a county level for the period 2001-2015 will be used in combination with meteorological observations from the DWD network. The data analysis is focused on the identification of specific weather patterns or variables, which have a significant influence on the occurrence of respiratory diseases. In the last step, the change of these specific weather patterns or variables in the context of climate change is assessed using regional climate model simulations from the CORDEX project. Several approaches based on single parameters (air temperature, relative humidity, vapor pressure, day to day changes), simple (humidex) and complex thermal indices (physiologically equivalent temperature, perceived temperature universal thermal climate index) will be applied. This will allow us to estimate potential changes in the occurrence of respiratory diseases due to climatic changes for different periods in the future.