



Analysis of projected changes of heat days frequency within the Mediterranean region using CMIP6 simulations

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The potential increase of heat stress is a major challenge of the 21st century, and the Mediterranean region is especially exposed to this natural hazard due to the anthropogenic global warming. This study evaluates the multi-model and multi-scenario ensemble from global climate model simulations - available from the CMIP6, i.e. Coupled Model Intercomparison Project Phase 6 of the World Climate Research Programme - including four different SSP-RCP scenario pairs (i.e. from immediate rapid mitigation and effective adaptation, SSP1-RCP2.6, to no mitigation with highly challenging adaptation, SSP5-RCP8.5). For this purpose, the Interactive Atlas of the IPCC AR6 Working Group 1 is used, and the geographical differences of climate projections are compared within the Mediterranean region of Europe. The study provides key information so the regional and national adaptation strategies for different socio-economic sectors can be built and/or updated accordingly.

This study focuses on temperatures extremes, i.e. the monthly frequency of heat days with daily maximum temperature above 35 °C. The target periods cover two decades on medium-term (2041-2060) and long-term (2081-2100), and the reference period is defined as the last two decades of the historical simulation period (1995-2014). Several zonal and meridional segments were defined over Europe, along which the projected changes are analysed with a special focus on sea cover, continental, and topography effects. Furthermore, the consequences of different scenarios are also compared. The results clearly show that greater radiative forcing change implies more severe health effects via the more frequent heat stress events. However, substantial differences can also be identified from south to north as well, as from west to east. The study highlights the differences within the Mediterranean region.

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