Plinius Conference Abstracts
Vol. 16, Plinius16-9, 2018
16th Plinius Conference on Mediterranean Risks

Climatological analysis of extreme precipitation in five European countries: Results from the TRIBUTE project

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Changes in the intensity of precipitation events will have important implications for water resources and flood risk/control, soil degradation and agriculture. In this study, the impacts of global warming and climate change on the precipitation regime of five Member States,namely Greece, Bulgaria, Italy, Spain and the Netherlands, are investigated. Exploiting the added value of the ensemble of high-resolution model simulations provided by the Euro CORDEX, daily precipitation data are used from a number of Regional Climate Models (RCMs) in the European CORDEX domain. Three time slices are considered, one for the present (1971-2000) and two for the future climate (2021-2050 and 2071-2100) using the most recent IPCC RCP4.5 and RCP8.5 future emission scenarios. The analysis of absolute, threshold and duration precipitation indices reveals that in all countries, an increase in the indices that describe heavy and very heavy precipitation is simulated especially for the end of the century under both future emission scenarios. The aforementioned results combined with the results for decreased total precipitation indicate an increase in the extreme precipitation events. The work is part of the project TRIBUTE – TRigger BUffer zones for inundaTion Events. TRIBUTE is co-funded by European Commission DG ECHO (ECHO/SUB/2016/742480/PREV08).