



Simulation of extreme events using a stochastic weather generator in view of its ability to deal with compound events

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Weather generators have been widely used in climate change impact analysis due to their ability to produce realistic climate data representing both present and future climate. Before using these data, the weather generator should be tested for its ability to reproduce not only mean and variability in synthetic data but also extremes. We introduce a WGEN type parametric single-site weather generator (SiSi), which is a 6-variate (precipitation, minimum and maximum temperature, solar radiation, relative humidity and wind speed) daily weather generator. In the first part of our contribution, SiSi is validated for its ability to reproduce extreme events based on precipitation and temperature (annual extremes, dry/wet spells, cold/warm spells) for several locations spanning different climates across Europe. The results indicate that the overall performance of SiSi for reproducing means and extremes is reasonably good, although it is not uniform in all locations. In the second part, we assess ability of SiSi to reproduce compound events based on both temperature and precipitation (cold/dry, cold/wet, warm/dry and warm/wet days and spells).