



Precipitation extremes and dry spells in the present and future climate in Finland modeled with a state-of-the-art high-resolution regional climate model

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Precipitation extremes and dry spells are examples of extreme weather phenomena which have significant impacts on society, environment, water resources and economy. Extreme precipitation events can lead to flooding and thus high economic losses. Furthermore, it is estimated that the intensity and frequency of extreme weather phenomena at local and global scale are going to be affected by climate change. In Finland, climate change is predicted to increase the annual precipitation amounts, but also dry spell periods, especially during the springtime.

The objective of this study is to estimate how climate change is impacting the occurrence of extreme weather phenomena in Finland by using a state-of-the-art regional climate model, the HIRLAM–ALADIN Regional Mesoscale Operational NWP in Europe (HARMONIE) Climate (HCLIM) at 12.5-km horizontal resolution with lateral boundary conditions provided by ERA-Interim and integrated over the Nordic region, and with convection permitting scales at 3-km resolution over Finland driven by the 12.5-km model. The high resolution enables to study the occurrence of heavy precipitation and dry spells more accurately compared to the previously used methods. First, 20-year-long model simulations are performed in the current climate. We will show the results of these simulations at 12.5-km and 3-km resolutions, and they will be compared with the high-resolution observations. The next task is to perform the climate change simulations. The first simulations with HCLIM at 12.5-km resolution in the current climate in Finland show a very good agreement with the observations.