



Transformation of observed time series for climate change impact assessment

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Impact studies on climate change require extensive cooperation between climate scientists and specialists on the specific field of interest. Climate scenarios have to be “tailored”. In practice, it is impossible to be involved in all proposed impact studies. In the Netherlands for example, over 25 water boards and even more municipalities have to “climate-proof” their local water systems. Therefore, climate scenarios are necessary.

Time series of regional climate models are rarely, directly applicable. The spatial resolution is frequently too coarse and many climate variables are biased. The direct use of climate model output demands complex bias correction and sufficient awareness of the pitfalls.

The “delta change method” is an alternative in which the relative or absolute change of the mean is used to adapt observed precipitation or temperature series. However, changes of the variability and extremes are often more critical for water systems than the changes of the mean.

Therefore, the Royal Netherlands Meteorological Institute (KNMI) has developed four climate scenarios (KNMI’06 scenarios) for many important climate variables, e.g. the wet day frequency, mean precipitation on wet days and the 10-year return level of daily precipitation sum, for summer as well as for winter. Next to these scenarios an algorithm has been developed to transform observed precipitation or temperature series, such that the transformed series will match these climate scenarios. This algorithm is provided as an online tool and by now widely used by water managers and other users of climate information among the Netherlands.