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An example of model result correction to study the impact of climate change on electricity consumption

S. Parey, G. Galloy, and M. Nogaj
EDF, R&D, CHATOU, France (sylvie.parey@edf.fr)

Climate is changing and temperature evolutions are thought to impact electricity consumption in the future. In order to estimate these possible shifts, climate model results for two future periods: 2050 and 2100 are considered. However, the use of the electricity consumption forecast model with climate model outputs for the current period give unrealistic results compared to forecasts made with observations. As a matter of fact, consumption is forecasted using a taylor-designed mean of French temperatures. Therefore, it is necessary for the model results to be as close as possible to this observed mean. The first studies had been made using the so-called "delta method", which consists in adding future changes to the observations. This however supposes that there is no variance change, which is not necessarily valid. Thus, in a second step, the percentile correction method has been used, firstly considering the whole annual distribution. This is however not satisfactory, as the seasonal distributions remain too much biased. Thus, the correction had to be applied on a monthly basis. The method and results of the correction will be presented for this example of France.