



## **Estimation of extremely high temperature at the end of the century in France for power plant dimensioning**

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For the next generation of nuclear power plants, Electricité de France would like to have an estimation of, among others, the extremely high air temperature at the end of the century. Extremely high temperatures are usually evaluated using statistical Extreme Value Theory (EVT), which consists in modelling the tail of the distribution to evaluate rare levels (typically 100-year return level). In order to estimate such extremes at the end of the century, EVT has been applied to climate model simulation results. Results of “time-slice” regional simulations using an IPCC-A2 scenario, produced by the 2 French climate models (ARPEGE-Climat and LMDZ) and by models used in the European PRUDENCE project are considered. Firstly, the representation of the tail of high temperature distribution by the models is compared to the nearest observation series for present-day climate. Then, taking model ability to reproduce this tail of distribution into account, evaluations of the same extremes are made under future climate conditions. The study is conducted for 12 French observation series beginning at least in 1960 and their nearest grid-points for different models, which gives an estimation of the order of magnitude of such extremes in the future.