

Interpretation of climate change in France using city analogues in the DRIAS climate services project

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Although climate change is an unequivocal reality, it is difficult for users to imagine what represents at the local scale an increase of several degrees of the global temperature. However, to adapt their territories to announced change, policymakers and stakeholders need climate information to enable them to understand and anticipate what they should expect. The jump between climate modeling groups and the end-users facing the adaptation challenge needs to be helped. In the framework of the French DRIAS project, which aims at easing the access to climate scenarios information, a research study is carried on focusing on the way to convey uncertainty to end-users.

In this study, climate analogues of several French cities are computed to interpret the results of climate simulations for the XXIst century. The selected cities represent the different types of climates representative of France. An analogue is defined as a city whose climate today corresponds to the future climate given by scenarios for the considered city. Rather than delivering climate projection for a given territory in terms of meteorological projected variables, it is simply a location elsewhere in Europe which is proposed as a target to the end-user. This speaks to users.

The search of city analogues is done from seasonal temperature and precipitation resulting from the multi-model ensemble of the FP6 ENSEMBLES project. The latter is composed of 9 regional climate simulations at the horizontal resolution of 25km and daily time step on the period 1961-2100. After the correction of simulations compared to observations using a quantile-quantile correction, the calculation of cities analogues is made on the multi-model ensemble to take into account the uncertainty of different models. A Kolmogorov-Smirnov Test generalized at 2 dimensions is applied to temperature and precipitation in summer and winter seasons, for the three future periods 2031-2060, 2051-2080 and 2071-2100. Cities analogues found, represented on a European map, show important disparities between seasons and horizons.

Results will be presented and hopefully open to discussions regarding the challenge of conveying climate future scenarios and impacts to a large spectrum of users, ranging from decision makers to the public.