

How to explore confidence in the data?

The data and results are based on state of the art modelling systems combining widely used regional climate models and three different large scale hydrological models. The indicator data presented in the demonstrator are based on the best available knowledge on changes in the hydrological cycle for Europe. The climate and hydrological modelling assessments were done by a consortium of leading research institutes in Europe. The main results in terms of changes in key water related indicators such as precipitation, run-off and river flow are consistent with other climate change impact studies.

Nevertheless, there are significant differences in outcomes of the different climate and hydrological models, which indicate important uncertainties in climate change impacts on various indicators for the water sector. The main impacts of climate change on the European water sector, however, become more and more clear and there is high confidence in some of the projected changes.

If all models of an ensemble give a similar signal, we have a generally high confidence in a particular impact. If this is the case it is often called a robust signal. For example, there is high confidence that Europe will become warmer in the future because all climate models indicate that temperatures will increase (see Figure 1). Robustness is also used to compare signals of change in different variables and indicators. For example the changes in temperature are more robust compared to changes in precipitation. It is important to acknowledge that even if all models indicate little or no change this is still a robust signal, which can be important information for adaptation strategies.

Due to the large-scale assessments, there are significant biases in our data if they are compared with local observations. If local observations are available, these biases can be adjusted to some extent by using bias correction methods.

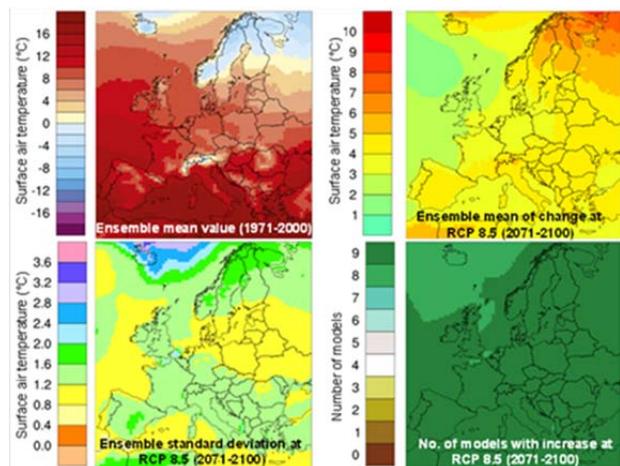


Figure 1: Evaluating confidence by using standard deviation and model spread.

Top Left panel: Ensemble mean of nine CORDEX models during present climate.

Top right panel: Mean change by end century compared to the reference period (1971-2000) at RCP 8.5.

Bottom left panel: Standard deviation as a measure of the ensemble spread of climate change. Low values indicate little spread around the mean value and robust results.

Bottom right panel: The number of models in the ensemble showing increased temperature by the end of the century. Similar trends in results from many models indicate confidence, while discrepancy indicates uncertainty.