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# Hydrological impact of climate change in the Seine River basin : Uncertainty analysis

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Climate change impacts are subjected to several sources of uncertainties. The evolution of green-house gas emissions, controlled by human activity, are by essence uncertain. The assessment of their future impact on the earth system calls for modelling, but models are imperfect, so that their results are uncertain. To explore the range of related uncertainties on the impact of climate change on Seine River basin hydrology , we compare the impact of 12 scenarios of climate change, based on climate change simulations by 8 different general circulation models, some of them forced with different radiative scenarios (SRES-A2, SRES-B2 or CMIP). We used a simple technique for bias correction and downscaling, the alteration, or perturbation, method. The resulting scenarios agree on a significant warming, and precipitation rates that increase in winter and decrease in summer. These precipitation changes, however, are not statistically significant and the different scenarios exhibit an important scatter. These scenarios serve as input for a land surface model and a hydrogeological model, representative of the diversity of hydrological models. All simulations agree on enhanced seasonal contrasts of river discharge, related to the seasonal precipitation changes. The two models, however, produce different mean responses to climate change, which is mainly attributed to the different processes described by the models. The influence of the scenarios A2 and B2 of radiative forcing is also analysed.