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CLIMATE CHANGE IMPACTS ON WATER RESOURCES AND HYDROLOGICAL EXTREMES IN NORTHERN FRANCE

A. Ducharne [1], F. Habets [1,2], C. Pagé [3], E. Sauquet [4], P. Viennot [2], M. Déqué [5], S. Gascoin [1], A. Hachour [1,2], E. Martin [5], L. Oudin [1], L. Terray [3] and D. Thiéry [6]

[1] UMR Sisyphe, CNRS/UPMC
UPMC Case 105, 4 Place Jussieu, 75005 Paris, France
e-mail: agnes.ducharne@upmc.fr

[2] Centre de Géosciences, MINES ParisTech
35 rue Saint Honoré, 77305 Fontainebleau cedex, France

[3] CERFACS
42 avenue Gaspard de Coriolis, 31057 Toulouse cedex 01, France

[4] Cemagref, UR Hydrologie-Hydraulique
3bis quai Chauveau, CP 220, 69336 Lyon cedex 09, France

[5] CNRM, Météo-France
42 avenue Gaspard de Coriolis, 31057 Toulouse cedex 01, France

[6] BRGM, Service Eau
3 avenue Claude-Guillemin - BP 36009 - 45060 Orléans Cedex 2, France

Summary. We downscaled 12 scenarios of anthropogenic climate change in the basins of the Seine and Somme Rivers (France). They were used as input to 5 different hydrological models. This framework allowed us to quantify the different sources of uncertainty. The resulting hydrological scenarios agree on a marked depletion of water resources during the 21st century with an annual mean decrease in both water table level and river discharge. At the seasonal scale, the reduction of river flow is more marked on low than on high flows, the decrease of which is also less robust. The response of extreme flows is even more contrasted, with a decrease of low-flow quantiles, whereas high-flow quantiles would not change significantly. In the Beauce region, one of the hotspots for irrigation in Europe, we show that the increase in potential demand for irrigation would have a lesser impact on water resources than the decrease in groundwater recharge directly caused by climate change, which is enough in itself to threaten the reliability of water resources.