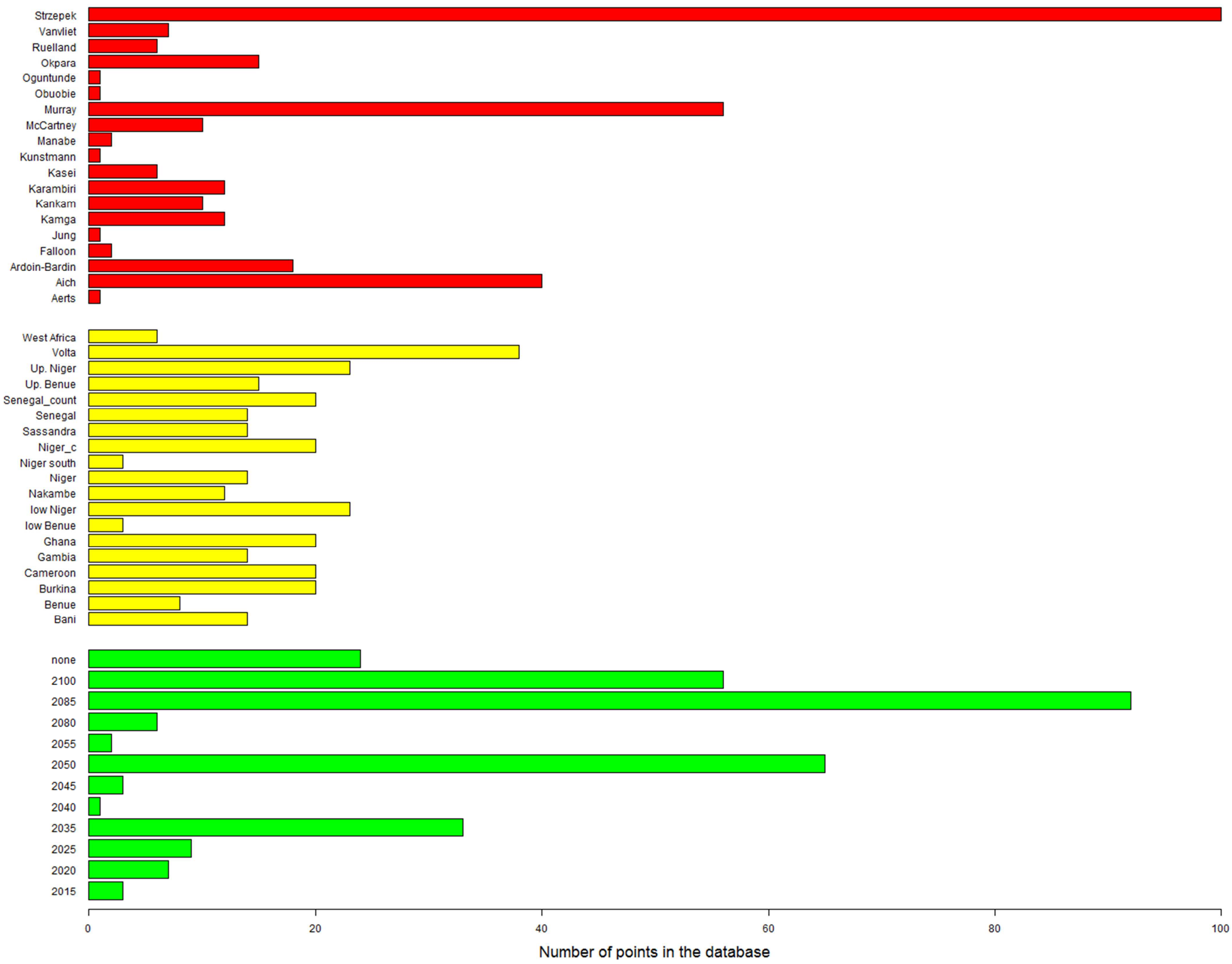

Figure S1: Description of the database, by authors (top), area (middle) and time period (bottom). The whole database is made of 301 runoff change values.

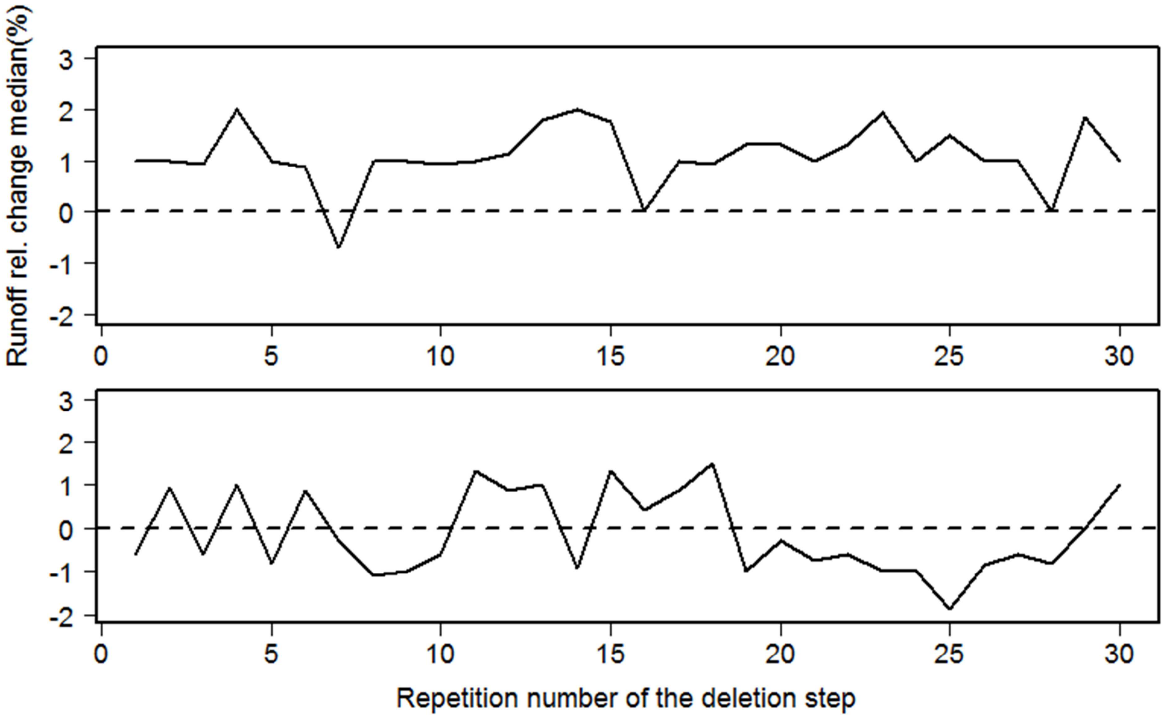

Figure S2: Sensitivity of the median to the deletion of values in Strzepek and McCluskey (2006) (top panel, 50% random deletion, repeated 30 times) and in the whole database (bottom, 20% random deletion).

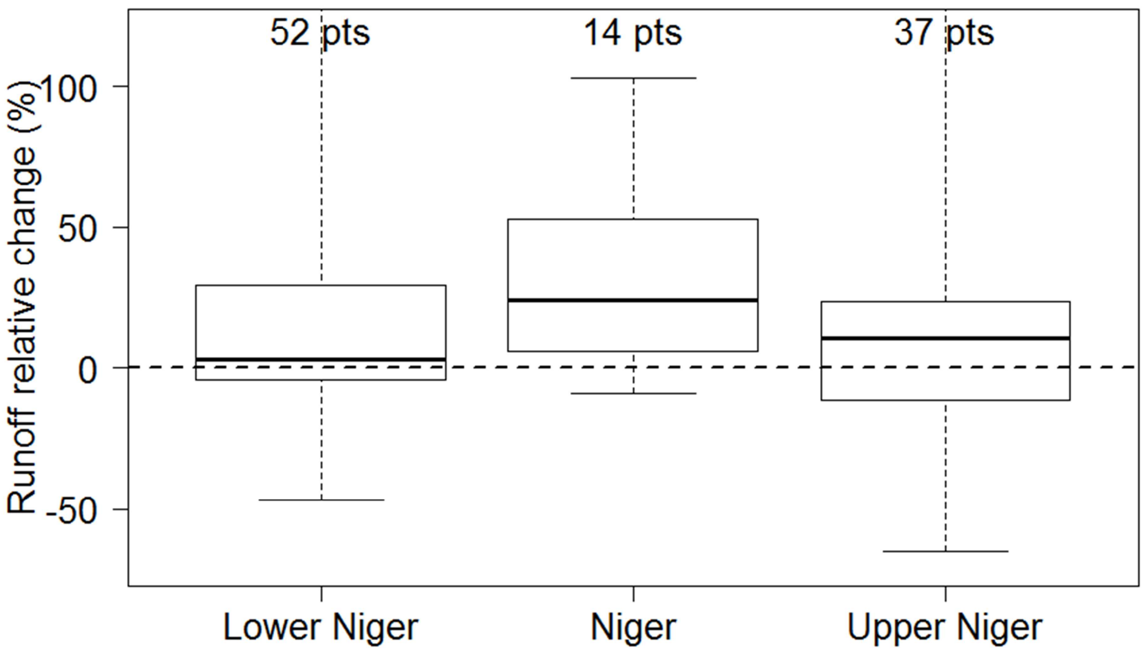

Figure S3: Runoff relative change (%) for different parts of river Niger, according to the database.

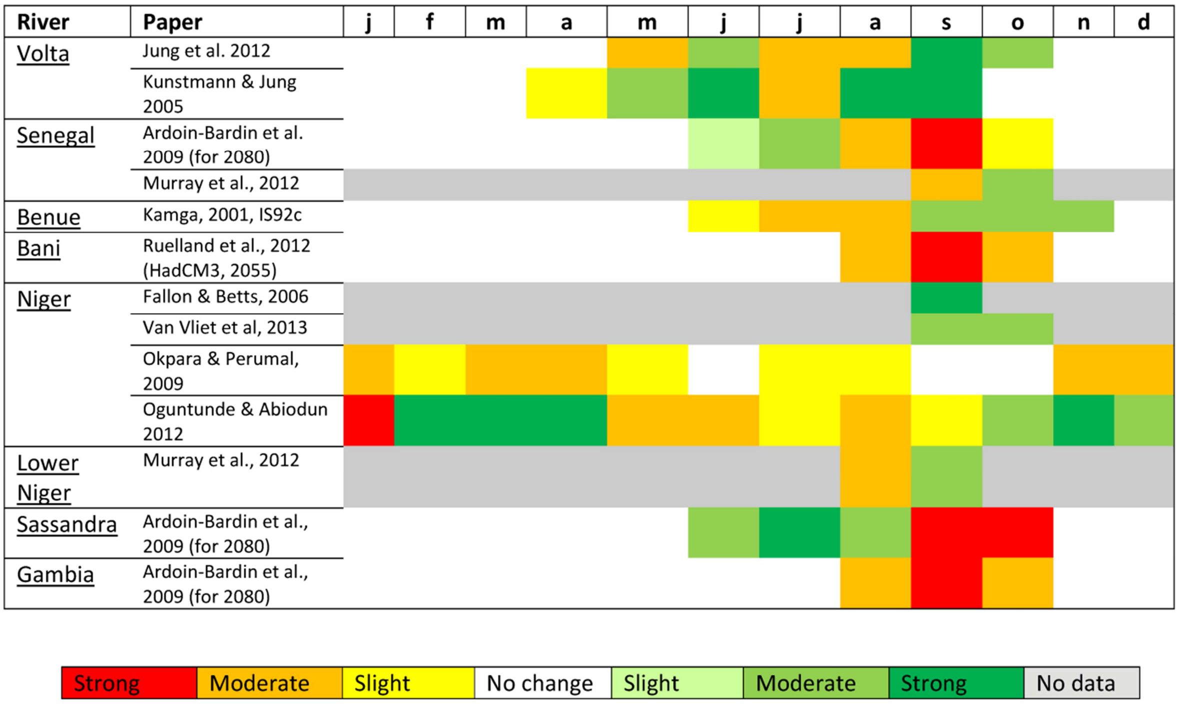

Figure S4: Qualitative assessment of monthly runoff relative change, for different studies of the database and for different rivers. The assessment may be an interpretation of the paper's results (see Table A1 for more details about each paper results). In some cases we only detailed here one time horizon or one climate model.

River	Changes
Volta	- The magnitude of low return period (i.e., frequent) floods decreases in 2035 and 2085 in all sub-basins. For higher return period floods, it depends (McCartney et al., 2012) - Streamflow increases in Sept-Oct (around 20%), decrease in July-Aug (about -10%) ((Jung et al., 2012)) - Higher runoff values in May-June and Aug-Sept but lower in July (Kunstmann and Jung, 2005)
Senegal/Gambia	- At the 2080 horizon, the peak flows in September show a decrease for the Senegal (–27%) and Gambia (–37%) catchments (Ardoin-Bardin et al., 2009) - According to global maps (Murray et al., 2012), in some parts of Senegal and Gambia, the month of maximum runoff is delayed of 1 month, no strong change of minimum runoff.
Niger/Bani/Benue	- similar pattern (month by month) but higher peak flows in Sept-Oct and slightly lower in July-august (Kamga (2001), for Benue River) - a later occurrence of the flows and an earlier start of the depletion phase (Ruelland et al. (2012), for the Bani River) - Changes in maximum monthly river flow: A1B: +105% and A2: +137%. Peak flow is one month later for scenario A2, no change for A1B (Falloon and Betts (2006), Niger) - -1% for low flows and +11% for high flows (van Vliet et al. (2013), for the Niger River) - According to global maps (Murray et al., 2012), in the Niger delta and the Niger loop, the month of maximum runoff is 1 month delayed, no strong change of minimum runoff -For Aich et al. (2013), high flows (Q10) and especially low flows (Q90) are generally expected to increase.
Sassandra	Simulated flows for June to August are greater than observed flows and partly offset the decrease in runoff in September–October in 2080 (-22%) (Ardoin-Bardin et al., 2009)

Table S1: Impact of future climate on monthly runoff and on floods/droughts, according to the papers selected in the database and detailed by rivers

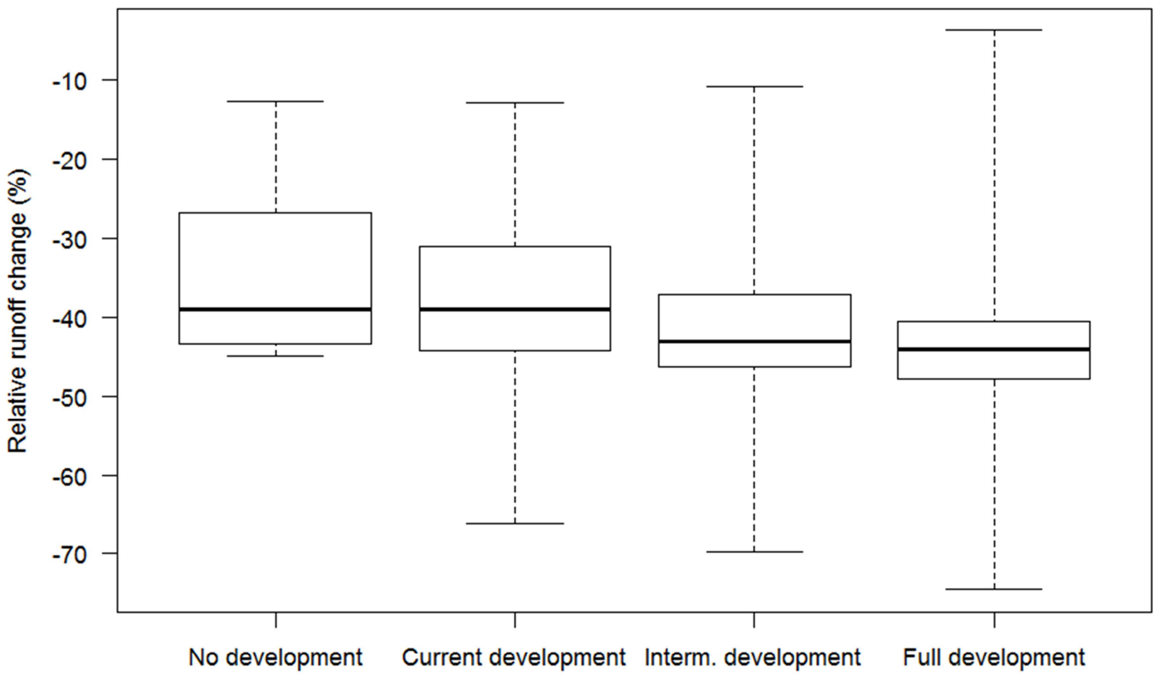

Figure S5: Relative runoff change (%, on the river Volta) for four different water consumption scenarios. “No development” does not take water use into account. Values are taken from McCartney et al. (2012). There are 8 points per boxplot.

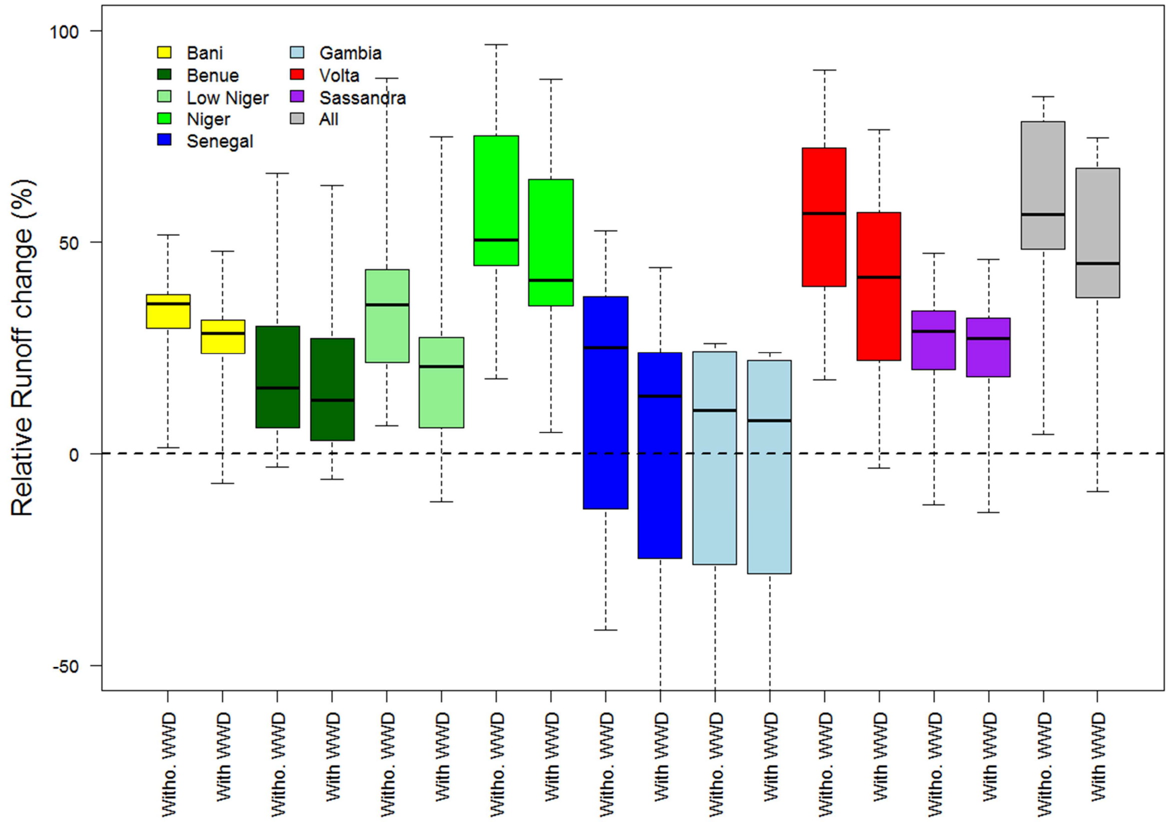

Figure S6: Impact of Future water withdrawals on runoff relative change (%) for 8 rivers. “without WWD” is the scenario without water withdrawals and “with WWD” with. Values are from Murray et al. (2012).

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