

Interactive comment on “Climate change impacts on river discharge in West Africa: a review” by P. Roudier et al.

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<General Comment> This is a very well-written review paper on the impact of climate change on runoff in West Africa. The authors show future runoff change in West Africa is very uncertain, by investigating 19 published papers (i.g. multiple GC, multiple scenario, multiple hydrological models). Because of such a large uncertainty, it is dangerous to judge a future trend of runoff in West Africa from the results of one or few studies. Therefore, I think the authors' work is useful. I recommend the paper to be published in HESS after minor revision.

<Specific Comments> P2483, Title: I think this study is on “runoff” but not “river discharge”. River discharge is a flux of water at a specific point in river channel. Therefore,

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I think the term “river discharge” may lead to misunderstanding of the results. For example in Figure 4b, “river discharge” of “the lower Niger” should be the summation of runoff in the “upper, middle and lower Niger”, while “runoff” in “the lower Niger” only accounts for the runoff from “the lower Niger” area. I recommend the authors to change the word in the title.

P2484, L10: “PET” Please don't use an abbreviation (PET) without mentioning it's full description in the abstract.

P2484, L15: “an urgent need for integrated studies that quantify the potential effects of these processes on water resources in West Africa.” Integrated studies are off course important, however improvement of climate model's accuracy is also essential given that the runoff change is mostly decided by projected future rainfall.

P2489, L22: “Since such scenarios are within the range of potential evolutions simulated by the GCMs, we decided to include them in the database.” Even though the scenario is within the range of GCM projections, inclusion of “okpara and Perumal 2009) may introduce a bias in the results because runoff change is dominated by rainfall change. I think if the scenario (-5% rainfall) does not have any scientific basis, it should be removed from the database.

P2491, L6: “2 -CO₂” It's better to clearly write “doubling CO₂”

P2492, L2: “we clustered river basins” If possible, please draw the boundaries of these clusters in Figure 1a.

Figure 1b: The colors for the Niger River are not clear. I recommend to change the colors.

Figure 4(b) It's better to write the definition of “Niger” in the caption (i.e. no description on upstream or downstream in the original paper in the database). It's quite confusing.

Figure 7 Please describe which colors (red or green) represents which signal (decrease or increase).

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