Hydrol. Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/hess-2018-424-RC1, 2018

Hydrology and Earth System Sciences
Discussions

Interactive comment on "Spatial Relationship between Precipitation and Runoff in Africa" *by* Fidele Karamage et al.

Anonymous Referee #1

Received and published: 18 October 2018

I would like to start my comments by referring to one of the authors conclusions that states 'The interpolation method of observed runoff coefficient ..... that affect the runoff generation process has improved the estimation of runoff coefficient and runoff depths in ungauged basins'. This is simply NOT TRUE for several reasons. The most obvious reason is that the paper includes no validation of the estimated runoff coefficients. The 2nd reason is that the runoff data set used to establish the runoff coefficient estimates is based on observed data from some basins which have huge impacts of reservoir storage, hydropower releases, irrigation abstractions (and others) all of which will affect either the annual runoff coefficient and/or the seasonal patterns of runoff coefficient. The 3rd reason is that many of the observed runoff data represent very large catchments that have hugely spatially variable patterns of runoff such that an average runoff

coefficient would be meaningless. The 4th reason is that in many parts of the continent runoff coefficients will be strongly related to topographic characteritics that might not be adequately reflected in the input variables used by the authors. This is not the first paper that attempts to apply methods at very course spatial scales and to suggest (without any validation what so ever) that the outputs will be useful to water resources management. Quite often these papers (as does this one) criticise the use of 'un-well-constructed models' (page 21) that are based on non-error free data. Are the authors seriously suggesting that their data are error-free, because this is a claim that can very easily be refuted. There are many people within the African continent (and from other countries) who have been using hydrological and water resources assessment models for practical water resources management and are unlikely to see the results of this study as adding anything, either from a scientific or practical persepective, to the approaches that can be applied. Apart from the points that I have already raised about the complete lack of validation, the spatial scale of the study is simply too coarse to be of any value to the type of water resources management and planning issues that confron African countries.

I also found it rather interesting that the authors fail to qoute any of the scientific literature that has been produced in the region on the subject of water resources estimation (see the rather condescending sentence on line 10 of page 2).

In summary, this study is seriously flawed from a scientific hydrology perspective and adds nothing to either African hydrological sciences nor to the methods that can be used to manage water resources over different parts of the continent.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2018-424, 2018.