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Hydrology and Earth System Sciences
Discussions

Interactive comment on "A framework for assessing hydrological regime sensitivity to climate change in a convective rainfall environment: a case study of two medium-sized eastern Mediterranean catchments, Israel" *by* N. Peleg et al.

Anonymous Referee #3

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General comments

This paper presented a model framework and a case study for assessing the impact of climate change on streamflow in an area dominantly affected by convective rainfall. The methods are not new, but the study finds interesting local results and complements the already published literature on the subject. The conclusion of the study, that changes in rainfall are amplified in changes in streamflow in arid to semi-arid catchments, is

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consistent with previous studies, which reinforce our knowledge. Furthermore, the methods used are well chosen, explained and justified and the paper is clearly written and logically structured. Therefore I recommend its publications with minor revision.

Specific comments

The paper deals with a subject that has been addressed by many similar studies and therefore I think it needs to emphasise its strengths/difference better in the introduction section. For instance, the integration of existing tools, the significance of the study area, the distinctive effects of convective rainfall, and the difficulty of capturing characteristics of convective rainfall in models.

Page 10569, lines 25-26. As far as I know, at least two of the studies listed here have used gridded rainfall datasets, instead of rainfall data for point locations.

Page 10572, lines 9-13. In fact Chiew et al. (2006) has assessed and discussed this ratio, which they called precipitation elasticity of streamflow ε_p, using the data across the world. Generally the ε_p values range from 1 to 3 with relatively strong inverse relationship with runoff coefficient. It is not surprising that in a semi-arid to arid catchment, the value could be more than 3.

I suggest the authors to separate discussion and conclusions into two sections so that the main findings/messages from the study can be clearly conveyed.

Table 1. It would be helpful to add one more column showing the time periods available for each dataset so that it is easier for readers to understand why the 12 years is chosen.

Figure 1. The map on the lower right should show the surroundings of the study area and clear boundaries of the two catchments. The current form is confusing and doesn't give much information.

Figures 5 and 8. It's better to have a side-by-side layout.

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Technical corrections

Page 10554, line 21. relative to

Page 10556, lines 28-29. high spatial and temporal resolution

Page 10557, line 11. that are dependent on

Page 10560, lines 28-19. 94% . . . as ML, and 6% as ARST.

Reference

Chiew, F.H.S., Peel, M.C., McMahon, T.A., Siriwardena, L.W., 2006. Precipitation elasticity of streamflow in catchments across the world. In: Demuth, S., Gustard, A., Planos, E., Scatena, F., Servat, E. (Eds.), Climate Variability and Change - Hydrological Impacts. Iahs Publication, 256–262.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 10553, 2014.