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Hydrology and Earth System Sciences Discussions

Interactive comment on "Supplemental irrigation potential and impact on downstream flow of Karkheh River Basin of Iran" *by* B. Hessari et al.

Anonymous Referee #1

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Overall the research seems to be well organized. Specific comments on the manuscripts are as below:

Criteria for identifying the potential rainfed areas for supplement irrigation has been considered as 1000 m around the stream network (section 2.4). Is conveyance of water restricted beyond this buffer due to topographical, technological and economical constraints? Why are the rainfed areas beyond this buffer not potential for receiving supplement irrigation? This needs to be well justified.

Are the strategies considered for supplement irrigation (section 2.3) based on the average crop water requirement in the basin and does both the strategies implemented have similar and optimum water productivity (main goal of supplement irrigation)? The

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basis for adopting these strategies needs to be further elaborated.

In section 2.4 it is mentioned “all rainfed crop areas with less that 20% slopes were considered potentially suitable for supplement irrigation”. But later on the same section it is argued “Ideally, slopes above 12% should neither be cultivated with field crop nor irrigated. . .. . .” Also i have the impression that three different irrigation methods are considered based on the land slopes (0 – 12%). Section 2.3 indicated that estimation of supplement irrigation requirement considers conveyance efficiency. As conveyance efficiency is highly depended on the irrigation method implemented, it was not clear how conveyance efficiency was considered for estimating supplement irrigation requirements for the rainfed area having slope in the range of 12-20%.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 13519, 2012.