Interactive comment on "Developing a GIS-based water poverty and rainwater harvesting suitability maps for domestic use in the Dead Sea region (West Bank, Palestine)" *by* Sameer M. Shadeed et al.

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First of all, we would like to thank you very much for your appreciated effort in reviewing our manuscript. You really went carefully throughout the entire body of the manuscript and did some valuable comments and suggestions. Most of your comment are valid and we will do our best to modify the manuscript accordingly.

Responses to the general comment: The paper presents an application of spatial multi-criteria decision analysis to evaluate areas of water poverty and rainwater harvesting

suitability in the West Bank, using the Analytical Hierarchy Process and weighted overlay methods. These two maps are then overlayed to determine "hotspots" of high water poverty and high rainwater harvesting suitability. Overall, the paper presents an interesting case study to determine the suitability of rainwater harvesting in a water scarce region but the presentation needs to be improved for publication. In particular, the use of English is currently not adequate throughout the text. The English will be improved as much as possible in the final version References are also not consistent and some citations are missing or inaccurate. Done. Citations in the text and the reference list is already modified. Although the paper presents a novel method, there is no discussion comparing this approach with related work on determining suitable locations of rainwater harvesting systems, for instance using MCDA or multi-objective optimization. This will be considered in the final version

Responses to the specific comment: L35: It would be worthwhile to write the definition of DWP Done and will be considered in the final version L40: Sentence should be rephrased Done and will be considered in the final version L47: This citation does not in appear in references Done and will be considered in the final version L47: There has been much research conducted on the suitability of rainwater harvesting in different parts of the world in comparison with other types of water supply systems. A paragraph could be helpful to demonstrate the higher suitability of RWH in this particular area (e.g., considering rainfall, roof areas, costs, etc.) Done and will be considered in the final version L63: What uses? Will be included in the final version (e.g. domestic, agricultural and industrials) L63: Unusual citing style Modified L65: The review of literature is concentrated on RWH systems in general but should also include MCDA studies applied to RWH. Valid point and will be considered in the final version L66: Acronyms need to be defined Done L72: Acronyms should be used once defined L85: Acronyms need to be defined Valid point. Done L92: Why is this an indication of high rwh potential? The paragraph is updated and will be considered in the final version L108: The authors should make clear of what type of rainwater harvesting they are investigating. Is the water collected from roof runoff, surface runoff or both? The type

of rainwater harvesting is likely to influence the selection of suitability criteria. Both. Will be considered in the final version L108 & L119: Formatting of text and equations is not consistent Modified L111: What is the spatial resolution of land use and elevation maps? The landuse map which was used is available as a vector data and the resolution issue is not valid. Regards the elevation map (DEM). The available and used one is of 25x25 m. L124: These variables should be described in greater detail for readers unfamiliar with the AHP method. For example, what is the random consistency index? How is it calculated? Will be considered in the final version L131: The score is assigned based on what? It was done based on personal experience of the three authors. L132: Why "however"? God point. Will be modified in the final version Fig 3: The legends are hard to read. Also, given the values are continuous, why not use a continuous color legend? You are right. Legends and unified coloring scheme will be use and considered in the final version L143: Are i and j meant to be subscripts? What is n? total number of cell or number of cells in each administrative area? i and j have to be superscript. Will be modified in the final version. n is total number of cells in each administrative area? Fig 6: It would be more consistent to use the same colours as in Figure 5 Good point. A unified coloring scheme will be use and considered in the final version L196: Results could include further discussions. For example, what does this mean to policy makers or water managers? And how is this method an improvement compared to existing methods used to determine the suitability of rainwater harvesting systems Results will be further discussed in the final version. However, our ambitious is to convince key policy makers (e.g. Palestinian water authority) to turn research outputs (findings) into development outcomes for the benefit of end-users. L208: What makes variations reliable? L209: What expectation? The developed DWP map (spatial variation) is going inline (reliable) with the existing expected water shortage issues (PWA expectation) in different governorates L308: The authors should revise the reference section. This reference is incorrect and the formatting is inconsistent. Will be updated and reformatted in the final version

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2018-344, 2018.

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