Hydrol. Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/hess-2018-344-RC1, 2018

Hydrology and Earth System Sciences
Discussions

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.

Anonymous Referee #1

Received and published: 30 August 2018

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. References are also not consistent and some citations are miss-

ing or inaccurate. 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.

Specific comment:

L35: It would be worthwhile to write the definition of DWP

L40: Sentence should be rephrased

L47: This citation does not in appear in references

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.)

L63: What uses?

L63: Unusual citing style

L65: The review of literature is concentrated on RWH systems in general but should also include MCDA studies applied to RWH.

L66: Acronyms need to be defined

L72: Acronyms should be used once defined

L85: Acronyms need to be defined

L92: Why is this an indication of high rwh potential?

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.

L108 & L119: Formatting of text and equations is not consistent

L111: What is the spatial resolution of land use and elevation maps?

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?

L131: The score is assigned based on what?

L132: Why "however"?

Fig 3: The legends are hard to read. Also, given the values are continuous, why not use a continuous color legend?

L143: Are i and j meant to be subscripts? What is n? total number of cell or number of cells in each administrative area?

Fig 6: It would be more consistent to use the same colours as in Figure 5

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

L208: What makes variations reliable?

L209: What expectation?

L308: The authors should revise the reference section. This reference is incorrect and the formatting is inconsistent.

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