

Comment on hess-2021-37

Anselme Muzirafuti (Referee)

Referee comment on "Dynamics of hydrological and geomorphological processes in evaporite karst at the eastern Dead Sea – a multidisciplinary study" by Djamil Al-Halbouni et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-37-RC1>, 2021

Overall, I considered this manuscript as a well written paper that is based on substantial hard work by the authors. The paper investigates the nature of subsurface groundwater flow and its interaction with hypersaline Dead Sea water. The authors conducted a multidisciplinary scientific study combining field observations, remote sensing data analysis, multiple geophysical surveying methods (shear wave reflection seismic, electrical resistivity tomography, self-potential and ground penetrating radar) and Hydrogeological modelling. The research design is so appropriate and the methodological approach adopted is adequately described and suitable for karst environment studies. The results obtained are very interesting and very well presented. This manuscript contains significant scientific information and is very interesting for the readers and for the scientific community in general. The manuscript constitutes a suitable study that I recommend to be accepted for publication in Hydrology and Earth System journal after minor revisions. Below are some comments and suggestions: Could you please present the results of regional and local geological summary that you used for geophysical data interpretation? This would help readers get a sense of how you calibrated geophysical data. Page 5: The Figure 1 (b). It is difficult to identify Ground penetrating Radar and S-Wave reflection seismic profiles Page 6: Figure 2. Could you please indicate on the field photos the limits of alluvial fans, halite cover, silt-clayey marl deposits, and alluvial deposits? Page 8: Table 1. Could you please provide the Spring Id with logical numeration? Or provide the missing information for (4,5,6) Spring Id. Page 10: line 28: Pansharpening pre-processing: What were the results? Did you obtain the same spatial resolution for all the satellite images you used? These could help readers understand the smallest fluvial and karst features you were able to identify and extract on remote sensing data. Page 10: lines 32-34: What were the band combinations you chose for aerial and satellite images on which you manually digitalize the fluvial and karst features? Which bands did you choose? What was the base on which you chose these bands? Did you notice any band combination which highlights better the fluvial and karst features? Please provide more details. Page 11: Lines 17-19: Please provide spatial distance between each SP point measurements. Page 16: Figure 6: Please indicate the limits of CS (with a box). Pages 20-21: Figure 7-8: Could you please provide the name of satellite and the band

combination for aerial and satellite imagery presented on the left column of these Figures?