

Interactive comment on “Field-based groundwater recharge and leakage estimations in a semi-arid Eastern Mediterranean karst catchment, Wadi Natuf, West Bank” by Clemens Messerschmid et al.

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Dear reviewer,

thank you very much for your comments. Please find enclosed - our answers - and an additional file on misreadings best regards, also on behalf of my colleagues,

Clemens Messerschmid

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Please also note the supplement to this comment:

<https://www.hydrol-earth-syst-sci-discuss.net/hess-2018-329/hess-2018-329-AC4-supplement.pdf>

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2018-329>, 2018.

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Some erroneous data readings in the SM-probes

Initial remarks & context:

For our model we measured soil moisture at 8 locations and with two to three sensors at each location, covering different depths between surface (top soil) and bottom soil. All together we measured a total period of 1,818 days of soil moisture readings, spread over all stations (1,710 days of which had wetted soil, i.e. with effective moisture larger than SM_{min}). The total modelling period spans over seven years or 2,557 days with modelled SM (for all stations together equal 20,456 days modelled SM).

After running our parsimonious model we compared observed soil moisture (SM_{obs}) with modelled soil moisture (SM_{mod}) for each location (on example, RK-W is shown in Fig. 4). However, some misreadings occurred, in which observed soil moisture levels (normalized to mm water column) were lying above accumulated rainfall, which is physically impossible. Since at the locations, no transfer of runoff, soil or groundwater could be transferred from other areas to the measurement plot, these high allegedly “observed” SM readings are faulty and constitute machine failure (misreadings) of either the sensors or the loggers.

The important question asked by the reviewers therefore was:

How grave is the error caused by misreadings, how deep its impact?

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Some technical problems were faced at some of the SM stations. During brief periods, the devices read out wrong soil moisture data (higher than preceding accumulated rainfall). This was the case at

