

Interactive comment on “Validation of SMAP L2 passive-only soil moisture products using *in situ* measurements collected in Twente, The Netherlands” by Rogier van der Velde et al.

Anonymous Referee #2

Received and published: 2 June 2020

The paper compares SMAP soil moisture estimates with *in situ* measurements for validation purposes, which is a rather common practice with satellite-derived products. Besides all the technical details and difficulties in the process due to representativeness and scale mismatch, I found that the most interesting (and potentially novel) piece of research consists of the use of a model to get more spatially distributed data and up-scale the *in situ* measurements to the scale of the satellite pixel size. Unfortunately, the upscaling does not seem to produce better results than the raw *in situ* measurements when compared to the SMAP values. Still, the results are interesting.

My comments are mostly about the model, as I consider that the rest of the methodol-

C1

ogy is relatively standard. I believe the authors should explain better why they used a model for root-zone soil moisture (40 cm depth) to represent the 5 cm depth soil moisture (both *in situ* and SMAP estimates). Figures 5 and 6 shows that the match between model and measurements is not very good and I was wondering if the authors tried to get a relationship between the 5 cm and the 40 cm soil moisture values.

The validation is then carried out using the raw *in situ* measurements because it gives better results. The authors explain mismatches based on physical processes and the inability of SMAP to capture those processes. I would have liked to see more references when describing potential sources of error. The last paragraph does not seem to follow directly from the objectives of the paper or the results presented in the paper. It is also not clear to me how the mismatches can be used to help management.

My last point is regarding the abstract: even though the fact that the upscaling did not work is included in the conclusions, it has not been included in the abstract.

A minor point is that in the supplement, the title of the paper wrongly includes the word “upscale”.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2019-471>, 2019.

C2