Interactive comment on "Evaluation of 18 satellite- and model-based soil moisture products using in situ measurements from 826 sensors" *by* Hylke E. Beck et al.

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The manuscript of Beck et al. evaluated the temporal dynamics of 18 state-of-the-art (quasi-)global near-surface soil moisture products. I this study very interesting and up-to-date. Overall, the paper is well organized and well written, and provides new insights about the advantages and disadvantages of different soil moisture products and on the merit of various technological and methodological innovations.

However, the introduction is not well written and more discussion and comparison to recent studies should be provided. In my opinion, the paper deserves publication once the following points are addressed with some more details.

line 4-12: Provide the reason why you would like to address these questions. I like your way to express your purposes of your study. However, it's not appropriate to pose so many questions here without giving any reason.

Section 2: Why these datasets are chosen out for comparison? What are main differences among the products within each group (i.e., satellites, open-loop models, and models with DA)?

The authors missed some recent publications on soil moisture evaluation. For example:

Chen, Y., & Yuan, H. (2020). Evaluation of nine sub-daily soil moisture model products over China using high-resolution in situ observations. Journal of Hydrology, 125054. https://doi.org/10.1016/j.jhydrol.2020.125054

Tavakol, A., Rahmani, V., Quiring, S. M., & Kumar, S. V. (2019). Evaluation analysis of NASA SMAP L3 and L4 and SPoRT-LIS soil moisture data in the United States. Remote Sensing of Environment, 229, 234-246. https://doi.org/10.1016/j.rse.2019.05.006

Add a review on these publications in introduction and more discussions with these papers in Section 4 will add much value to this manuscript.

line 30: What are the sensor types? Are there all FDR sensors?

Add a map showing the observation length and the frequency of in-situ observation.

Table 1: Add one column to describe the vertical layers for the soil moisture products. Since soil moisture data of model products or satellites are not representative at 5 cm, have you done some vertical interpolation?