

2nd Review - A preliminary study on a synergistic assimilation scheme for multi-band satellite soil moisture data

June 5, 2026

1 General comment

The revisions made to this article have improved its quality even further and mostly addressed the concerns raised in the previous review. While I acknowledge the additional work involved, I would have preferred the simulation to be expanded to other seasons for all configurations rather than a couple and evaluated on only three randomly chosen stations in the network. The additional modifications sometimes provide too much detail, which slows the pace of the article and makes it difficult to follow at times. My suggestions focus more on the form than the scientific content of the article. I have made some minor suggestions and comments which I hope will help you to consider its acceptance.

2 Minor comments and suggestions

- General comment: The introduction feels a bit long and heavy.
- l45 - 48: The succession of 'The effectiveness of data assimilation... data' and 'Although the ISMN... makes it difficult to comprehensively represent regional or global conditions based solely on limited in-situ data' is confusing. It makes me wonder if the ISMN data are already assimilated by default, which I don't think is the case here. I suggest splitting the paragraph between the two sentences. Move the upper part to the previous paragraph, introducing the land surface model and the purpose of data assimilation. The lower part should be moved to the 'Observations' section and the 'Although' removed.
- l57 - SAR is not introduced here and it is only introduce L77.
- l57 - Since you are not using the active L-Band measurement of SMAP, I suggest to not mention it in the introduction.

- 175 to 139 - Starting here, you will introduce the characteristics of only two of the satellite products that you will use in detail, as well as their strengths and weaknesses with respect to spectral band use. The third product, MWRI , will be described in a separate paragraph (L130) after a specific paragraph on the benefits of assimilating several complementary satellite products for weather forecasting. This split has led to redundancy (several mentions of the relationship between spectral bands and vegetation density) and confusion. I suggest reshaping this part of the introduction.
- Section 2.1 has been significantly improved and is now more detailed. If possible, I suggest adding a table that summarises the key characteristics of the product you are using, e.g. spatial resolution, swath, equatorial crossing time and global revisit.
- Figure 19: It is easier to see the changes when the PDF is drawn instead of the histograms.