

Dear anonymous referee #2:

We thank you for your insightful comments. The replies to the comments are highlighted in blue. The new text added to the revised manuscript are marked in red.

I still do not find the formulation in Lines 34-35 clear. Redundancy in between TBh and TBv is certainly not the cause of better retrieval quality. But is possible that for surfaces and conditions that make possible good retrievals, TBh and TBv are more redundant than in other cases. In other words, I suggest rephrasing to avoid giving the impression that there is a cause-effect relationship.

Response: We thank the reviewer for this comment. We have rephrased Line 34-Line 35 to “**T_{Bh} and T_{Bv} tend to contribute large redundant information to DCA estimates under surfaces or 30 conditions where DCA makes better retrievals.**”

Otherwise, I only have a minor comment: Line 529. Please note that in the case of SMAP, NDVI is not used as a first guess to estimate the vegetation optical depth (VOD). NDVI is used to fix the VOD value and to only retrieve soil moisture. So, I strongly suggest to remote "initial guess".

Response: We thank the reviewer for this comment. We have removed the “initial guess” from Line 529.