

## ***Interactive comment on “Error characterisation of global active and passive microwave soil moisture data sets” by W. A. Dorigo et al.***

**W. A. Dorigo et al.**

wd@ipf.tuwien.ac.at

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Specific comments:

[Comment] P5623.L9-12 onwards: To accommodate readers with no previous knowledge about the triple collocation method, it would be good to include a sentence about how exactly the method works already in the abstract.

[Reply] We will include some additional information on the triple collocation in the abstract although it is difficult to summarize a comprehensive summary of the method in one sentence.

[Comment] P5625.L26: Try to mention already here what kind of reference datasets

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these are not in-situ, etc.).

[Reply] We will add some more information on the reference datasets (i.e. that we are using reanalysis datasets)

[Comment] Sections 2.1-2.2: Please mention the difference in local overpass times between the two sensors, it might be of interest for the validity of the study.

[Reply] We will add the local equator crossing times for all sensors

[Comment] P5630.L16: Please rephrase "short observation period" so it is clear the recentness is meant, as opposed to duration of each overpass.

[Reply] We will use "operations period" instead.

[Comment] P5630.L16: Please rephrase the "solve for the calibration" so it is clear the coefficients of the equations are meant. Applies also to "both variables" on P5630.L27.

[Reply] We will change this into "solve for the calibration coefficients"

[Comment] P5631.L18: For the uninitiated, it is entirely clear what "expressed in the climatology" means.

[Reply] To avoid any confusion with the climatology mentioned in Section 3.2 we will substitute "climatology" with "dynamic range and units"

[Comment] P5633.L13-21: I must agree with the previous reviewer, the same vegetation-related processes are observed in the case of active microwave remote sensing (volume scattering), so the vegetation in itself cannot entirely account for the inferior/different performance of AMSR-E in these regions when compared to ASCAT.

[Reply] We will devote an extra paragraph to this issue, see corresponding comment reviewer 1

[Comment] P5634.L1: Please try to express "observation frequency" differently, it could confuse readers: in my case the flow of reading was interrupted because I connected

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to observation timeliness rather than the frequency of the electromagnetic wave.

[Reply] To avoid confusion with the revisit frequency of observations we will replace "frequency" with "observation wavelength" throughout the manuscript

[Comment] P5635.L16-19: The match between Figures (3c) and (3d) is quite difficult to see (e.g. in the Australian southwest or South Africa). Could there be other reasons for the distribution of the error differences?

[Reply] Areas where deviations between 3a and 3b are largest (both in positive and negative sense) correspond almost exclusively to areas where either the number of observations is relatively low or the signal-to-noise ratio of soil moisture is low: Latter occurs either in densely vegetated areas or in desert regions like in Southwest Australia. In such areas biases between the different datasets may persist when the number of common observations (triplets) is too low to catch the complete variability in the soil moisture datasets. Tests reveal that a stable solution in such areas sometimes is obtained only with a number of 300 triplets or more. We will address this issue in the discussion.

Technical corrections:

[Reply] We will perform all technical corrections as suggested by the reviewer

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 5621, 2010.

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