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Hydrology and Earth System Sciences Discussions

Interactive comment on "An evaluation of ASCAT surface soil moisture products with in-situ observations in southwestern France" *by* C. Albergel et al.

C. Albergel et al.

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The authors thank the anonymous referee #1 for his/her review of the manuscript and for the fruitful comments. For an easier comprehension, general comments of the referee are also reported (1.XX).

1.1 [Structure of section2: Section 2.1: It would be useful for the reader to have more information on which ASCAT product will be used in the following of the paper. The SWI products are very well known, but not mentioned at this stage. And until the end of section 2.5 the reader has no idea of which product will be used in the paper. The section 2.4, which introduces the SWI, would be better right after 2.1, followed by a few

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lines to explain that both ms and SWI will be used in this paper.]

Response 1.1 Yes. Section 2 needs to be reorganised.

1.2 [Section 2.5, it is not clear from line 1 to 25 which product will be used. This must be clarified earlier. (see above)]

Response 1.2 Section 2.5 focuses on the SSM product. We agree that explaining how the SWI product is analysed would be useful, at this part of the Material and Methods section.

1.3 [Section 2.4: the explanation is copied word to word from the paper Albergel et al., Hydrol. Earth Syst. Sci. Discuss., 5, 1603-1640, 2008. It would be interesting to provide an other point of view, or at least to modify the text. There is an error in equation 4: the sum must be done until ’n-1’ (not ’n’) on the denominator.]

Response 1.3 Many thanks for noting the typo in Eq. 4. Indeed, the link to the HESSD companion paper could be improved.

1.4 [Section 3.1, page 2231: Changing the location of the ASCAT grid with respect to station allows to identify the location that the station is able to be representative for. This is interesting for future use of SMOSMANIA data for satellite validation.]

Response 1.4 Yes, the location-dependent correlation between ground and ASCAT SSM permits to characterise the representativeness of the ground stations and of the ASCAT product. The Table 3 results were extended to all the ground stations. It was found that the correlation at the west of SVN is not significant. In the same way, non significant correlations are observed at the north and west of MNT and at the east of SMX. The presence of hilly terrain and forests may explain those results. A new figure will be added with a representation of the elevation (thanks to a digital elevation model, 90m from CGIAR CSL, http://srtm.csi.cgiar.org). On this figure, it will be shown that most often than not, the stations with partly non significant results correspond to areas

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above an elevation range of 216m (a.s.l.). Those areas present hilly to mountainous terrains.

1.5 [Section 3.4 and Figure 7: As expected higher T values are obtained with ASCAT 0-2cm data than with in situ 0-5cm data. When reading the paper the reader wonders what value of T would have been obtained with 0-2cm in situ data instead of 0-2cm satellite data. It will be interesting to investigate this with the future SMOS where in situ and SMOS products will have the same sampling depth.]

Response 1.5 Yes, it is expected that plotting a figure similar to Fig. 7 using the future SMOS SSM products would give a lower optimal value of T.

1.6[Page 2223, line 24: do you refer to Wagner et al., 2007 a or b ? or both ?]

Response 1.6 Here, we refer to Wagner et al., 2007b.

1.7[Editorial comments (figure, consistency ...)]

Response 1.7 The suggested improvements will be accounted for in a final version of this paper.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 5, 2221, 2008.