

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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Reviewer #2

The authors thank the anonymous referee #2 for his/her review of the manuscript and for the fruitful comments. For an easier comprehension, general comments of the referee are also reported (2.XX).

2.1 [Some information is redundant (e.g. Table 4) and the analysis could have been more detailed. Moreover, the text is somewhat imprecise in the description of results (see points 1)-3) below). Finally, while it is interesting that the correlation of the site measurements with the ASCAT retrievals may depend on the choice of the ASCAT grid

points (Table 3), it is not very consistent to provide this analysis only for the "problematic" stations. Thus I would suggest that the same analysis be performed for all stations (point 4) below. Also, it would be useful that the authors would reflect on possible explanations for the better performance of the ASCAT data depending on location at the LZC and SFL sites (Table 3).]

Response 2.1 We agree that the presentation of the results, and the analysis the representativeness of the ground stations and of the ASCAT product, need to be improved. The results presented in Tables 1, 3 and 4 will be presented in a single Table. 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. NBN is located close to the Mediterranean sea (15 km) and because of the coarse ASCAT resolution of circa 50 km, the soil moisture retrieval is affected by the proximity of the sea. At a lesser degree, LZC is also affected by this problem. Concerning SFL, eastern and western measurements are affected by relief. 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 above an elevation range of 216m (a.s.l.). Those areas present hilly to mountainous terrains.

2.2 [Abstract, Page 2222, lines 11-12: "the other 11 stations present significant correlation levels". This is not exact. Only 9 stations present significant correlation levels (Table 1). For the other 2 stations (LZC, SFL), the significant correlation is only available when one solely considers part of the ASCAT data (Table 3). Please revise the text accordingly.]

Response 2.2 Yes, we agree and the text will be revised accordingly.

2.3 [Page 2231, section 3.1.: "The URG and LZC in-situ observations present the highest correlation". This is not quite exact. In the case of the LZC station, this is only correct for the western measurements from ASCAT (Table 3).]

Response 2.3 Yes, we agree and the text will be revised accordingly.

2.4 [Page 2234, section 4 (conclusions): "11 stations present significant correlation levels of SSM for the descending (a.m.) orbit with an average correlation coefficient of 0.556." This is not exact (see points 1) and 2)). Please revise the text accordingly.]

Response 2.3 Yes, we agree and the text will be revised accordingly.

2.5 [Table 3: The authors should extend this analysis to all 12 considered stations. It is well possible that the results may be spatially variable for the other stations as well.]

Response 2.5 The Table 3 results were extended to all the ground stations (see Response 2.1). 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 above an elevation range of 216m (a.s.l.). Those areas present hilly to mountainous terrains.

2.6 [Table 4: This table is redundant to Tables 1 and 3 (the only difference to Table 1 is that the results of the NBN station are removed and that the results of the SFL and LZC stations are replaced with the "best fit" to ASCAT measurements (SFL: Northern value, LZC: Western value)).]

Response 2.6 We agree that the presentation of the results needs to be improved. Since the Table 3 results are extended to all the ground stations, the results presented

in Tables 1, 3 and 4 will be presented in a single Table.

2.7 [Fig. 1: Location of stations. Please add a second plot on this figure zooming on Southwestern France with a precise map of the region and the exact location of the soil measurement stations with name.]

Response 2.7 A new figure zooming on SW France, with a digital elevation model (90m provided by CGIAR CSL, <http://srtm.csi.cgiar.org>), will be added with the location of the ground stations.

2.8 [Fig. 6: Since measurements down to 90 cm are available at the SMOREX site, please add another figure with the same analysis down to 90 cm at this site.]

Response 2.8 Fig. 6 will be revised accordingly.

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

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