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Hydrology and Earth System Sciences Discussions

Interactive comment on "A soil moisture and temperature network for SMOS validation in Western Denmark" *by* S. Bircher et al.

Anonymous Referee #1

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In the framework of the recently launched Soil Moisture and Ocean Salinity (SMOS) spatial mission a soil moisture and temperature network was established in Denmark. This manuscript reports a complete description of this network as well as a preliminary comparison between the 0-5cm in situ measurements and the SMOS soil moisture (L2).

The paper is well written, well structured and clear. The title clearly describes the contents of the paper. The abstract provides a concise and complete summary and the reference list is appropriate. The presentation is clear and the language is fluent and precise. It addresses an important topic that should be of great interest to HESS readers. The results are generally sound and well supported with figures and tables.

While the article is not particularly original and mostly a description paper, it is certainly useful to document this effort. I recommend this paper for publication after minor revisions.

P.9962, L.2: '[...] soil moisture data globally, [...]' please add the revisit period P.9962, L.5: 'Decagon ECH2O 5TE', not appropriate in the abstract P.9962, L.22-24:"Consequently,the network performs according to expectations and proves to be well-suited for its purpose." Please consider removing/rephrasing this sentence, I believe that the quality of such a network has nothing to do with the result of the comparison between measurements and remotely sensed products. According to this sentence, one may assume that Networks are monitored by satellite data.

P.9963, L.12: soil moisture of good quality P.9963, L.14: launched in 2009 P.9963, L.14: update Kerr et al 2001 by Kerr, 2007, Kerr et al., 2010 Kerr, Y. (2007): Soil moisture from space: where are we?, Hydrogeol. J., 15(1), 117–120. Kerr, Y.H., Waldteufel, P., Wigneron, J.-P., Delwart, S., Cabot, F., Boutin, J., Escorihuela, M.-J., Font, J., Reul, N., Gruhier, C., Juglea, S.E., Drinkwater, M.R., Hahne, A., Martín-Neira, M. & Mecklenburg, S., (2010). The SMOS Mission: New Tool for Monitoring Key Elements of the GlobalWater Cycle. Proceedings of the IEEE, 98 (5), 666 - 687.

P.9964, L.2: 'Spain (Martinez-Fernandez & Ceballos, 2003)' Please add Martinez-Fernandez & Ceballos, 2005. Martínez-Fernández, J. & Ceballos, A. (2005). Mean soil moisture estimation using temporal stability analysis, J. Hydrol., 312 (1-4), 28–38, doi:10.1016/j.jhydrol.2005.02.007. P.9964, L.3: 'France (Calvet et al.,2007)' Please add Albergel et al, 2008. Albergel, C., Rüdiger, C., Pellarin, T., Calvet, J.-C., Fritz, N., Froissard, F., Suquia, D., Petitpa, D., Piguet, B. & Martin E. (2008). From near-surface to root-zone soil moisture using an exponential filter: an assessment of the method based on in situ observations and model simulations, Hydrol. Earth Syst. Sci., 12, 1323–1337, doi:10.5194/hess-12-1323-2008.

P.9966, L.24: Accuracies according to constructor?

P.9967, L25: SMOS measures Full polarization, not dual polarization. It is not clear to me what is the source of the SMOS level2 data (ESA?).

P.9969, L.18: '[...]and 0.56%', respectively.

P.9970, L.10: Please add acronym of GIS. P.9970, L.13: above sea level => a.s.l.

P.9974, L1: How does it affect the continuity of the measure, do cultural practices impact the soil structure?

P.9975, L.23: 'RMSE' In situ data contain errors (instrumental and representativeness), so they are not considered as 'true' soil moisture, particularly when they are not calibrated. It should be underlined by using the RMS Difference terminology instead of RMS Error.

P.9977, L.22: typo, 'of both'

P.9980, L.24: typo, 'Ruediger' is 'Rüdiger' (also in references list). P.9980: More emphasis should be put on RFI as Denmark was particularly affected in 2010.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 9961, 2011.