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Hydrology and Earth System Sciences Discussions

Interactive comment on "The International Soil Moisture Network: a data hosting facility for global in situ soil moisture measurements" *by* W. A. Dorigo et al.

Anonymous Referee #1

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This paper presents a new soil moisture data base used as a centralised data hosting facilities where soil moisture measurements from different soil moisture networks and validation campaigns around the world are gathered and harmonised, it is called the International Soil Moisture Network (ISMN). In this way, data are made available to users in a unique format which is easier to handle for scientific purposes.

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 (but should be enlarged). The presentation is clear and the language is fluent and precise.

While the article is not a 'Research Article' but mostly a description paper, it is certainly useful to the scientific community and deserves publication. This is an interesting paper which is within the scope of HESS.

I recommend this paper for publication. However, I do have a couple of comments that should be considered prior to publication, mainly to increase its relevance. On one hand, the different datasets mentioned in this paper are already published, on the other hand, gathering them into a unique data base to make them available is such a important and valuable effort that it needs to be known by the scientific community.

Some information is redundant and the description of the different data set available so fare in the ISMN could have been more detailed (or at least described in a similar way).

One omission in the paper is the lack of discussion about the quality and the use of the different datasets, in this way the use of more references about them is a prerequisite e.g., bibliography on the use of the mentioned datasets is missing, for what purpose the different soil moisture networks were developed? Example of their use could be added and will add more interest for the paper, also.

P. 1616, L.22 : Most of the measuring methods do not directly measure soil moisture (as you mentioned in section 2.2), which is obtained through model inversion or calibration curves (e.g. a Theta probe will provide a signal in units of volt and its variation is virtually proportional to change in the soil moisture). Hence, could you please replace "[. . .] measure only soil moisture in [...]" by "[. . .] sample only soil moisture in [...]".

P. 1619-1621 : Section 2.2.5 "Further considerations" should be moved to the discussion part.

P.1626, L.5-7 : Last sentence should be rephrased or removed.

P. 1627, section 4 : Description of the different soil moisture datasets is not consistent, sometimes the number of stations, the period covered and the techniques used are

given, sometimes not. Please be consistent in the description of the different datasets. Examples of how these data have been used so far should be included (e.g. modelling with Brocca et al., 2008, 2010 for CNR-IRPI, evaluation of modelled or remotely sensed surface soil moisture with Albergel et al., 2010).

Brocca, L., Melone, F., Moramarco, T., Wagner, W., and Hasenauer, S.: ASCAT Soil Wetness Index validation through insitu and modeled soil moisture data in central Italy, Remote Sens. Environ., 114(11), 2745–2755, doi:10.1016/j.rse.2010.06.009, 2010.

Albergel, C., J.-C. Calvet, P. de Rosnay, G. Balsamo, W. Wagner, S. Hasenauer, V. Naemi, E. Martin, E. Bazile F. Bouyssel, and Mahfouf, J.-F.: Cross-evaluation of modelled and remotely sensed surface soil moisture with in situ data in southwestern France, Hydrol. Earth Syst. Sci., 14, 2177-2191, doi:10.5194/hess-14-2177-2010, 2010.

P.1628, L.14 : You define as “a small network” the four stations of CNR-IRPI whilst nothing is mentioned about the CAMPANIA network of two stations (P.1627, L.24).

P. 1634, L. 16 : References of evaluation between the mentioned satellite based soil moisture and in soil moisture network included in the ISMN should be added.

P.1636, L.11-12 : “ Are land surface models accurate and unbiased enough to be used in data assimilation?” This question is really not clear to me, if you want to assimilate data such as surface soil moisture (e.g. from remote sensing), you need a land surface model and if it is not “ [. . .] accurate and unbiased enough [...]” what do you suggest to use? Please consider to revise or delete this sentence as it is not clear and could leads to misunderstanding.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 1609, 2011.