

Interactive comment on “A plateau scale soil moisture and soil temperature observatory for quantifying uncertainties in coarse resolution satellite products” by Z. Su et al.

Anonymous Referee #2

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The paper introduces a soil moisture observatory on the Tibetan plateau that can be used for the validation of satellite soil moisture products. In particular the paper presents also first intercomparisons of three different satellite remote sensing products against the in situ measurements. The major conclusion of the paper is that satellite soil moisture products provide useful information about temporal soil moisture dynamics but have considerable problems in cold regions. Overall the paper is well written. My major concerns with the paper is that the data analysis performed is rather limited and it remains unclear if the conclusions drawn by the authors are in general valid (details below)

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Major remarks:

1. The authors present the different coarse scale soil moisture products in section 3, without giving much detailed information about the algorithms, but providing the necessary external references. However, in section 4.1, more details on the algorithms are discussed e.g. p. 257. The paper would benefit of a clearer structure of methods and results.
2. Inconsistent treatment of test sites: While authors provide quantitative estimates of the error of the different products for the Maqu network, not information on RMSE/correlation is provided for the Naqu network.
3. The soil moisture data presented in Fig. 3 exceeds by far a value of 0.5 which is a physical limit of soil moisture for most of the soils. The ASCAT soil moisture data is much higher than this value. Do authors have an explanation for this behaviour? From a theoretical point of view, the ASCAT soil moisture data should scale between the wilting point and the field capacity for the particular soil considered.
4. The authors illustrate large differences between the different data products as well as the in situ observations. While RMSE and correlation between in situ data and satellite observations are provided for one of the test sites, the overall data analysis is rather limited in the paper and basically presented in two figures (Fig. 3, Fig.6). It remains unclear where the large discrepancies between in situ observations and satellite data come from. In the way the results are presented, the conclusions remain rather qualitative. The data presented in the paper is also limited to a few months in 2008. Why is the analysis limited to a single year and why are no results for more recent years (2009/2010) presented?

Minor remarks:

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- provide significance information with correlations
- Fig3 and Fig6 do not provide much details about the presented data. It remains unclear how well the different satellite data products capture the temporal dynamics.

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