

## ***Interactive comment on “Combined impact of local climate and soil properties on soil moisture patterns” by Thushara Gunda et al.***

### **Anonymous Referee #1**

Received and published: 3 August 2017

The manuscript by Gunda et al., (2017) evaluated the soil moisture patterns in Sri Lanka based on soil moisture deficient that was calculated from meteorological measurements. The soil moisture from SMAP was also applied for the analysis. In general, the study was well designed and written. However, I would like to discuss the following points with the authors:

1. The title of the paper emphasizes the soil moisture patterns. And the spatial variations of soil moisture were highlighted in the whole manuscript such as abstract, introduction, discussion and conclusion sections. I expected that there are figures or plots showing spatial patterns of the soil moisture. However, the current analyses are mainly based on station measurements. I think it is not appropriate to use spatial patterns or spatial variations in the manuscript.

[Printer-friendly version](#)

[Discussion paper](#)



2. SMAP soil moisture was used to cross compare with the calculated soil moisture deficits such as Figure 4. In page 8 line 1, the statement is not true, because the seasonal patterns from SMAP and calculated deficit are quite different for station Colombo. The authors should discuss the reasons. In addition, I am wondering how accurate is SMAP soil moisture over these stations. Did you validate the SMAP soil moisture over the study area? Why do you choose SMAP rather than other soil moisture products such as ESA CCI?

3. The name of the sections should be more precise, for example, section 2 Methods should be Study area and methods. Section 2.1 should be Study area rather Study site. Section 2.1.1 Soil moisture calculations should be Soil moisture deficit calculation. Could you provide more details on the equations of soil moisture deficit? It is not clear for me how do you calculate SMD.

4. The conclusion part could be improved to answer the research questions that were raised in the introduction section. In addition, the last sentence is not clear for me, as far as I know, the downscaling method for SMAP can only provide soil moisture at 1-10 km. For regional agriculture applications, the soil moisture at tens of meters is more required. Is soil moisture at scale of km enough for the “informing local practices” ?

---

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2017-357>, 2017.

Printer-friendly version

Discussion paper

