

We would like to thank Anonymous Referee #1 (AR1) for their positive and concise comment, and for the recommendation for publication in HESS. Below, we will respond to the comments made by AR1 which require explanation or additional information: the comments from AR1 in black, [our response in blue](#).

9. Only the definitions of the abbreviations (see note under point 12) are missing. For a complete summary in my opinion, information on the most important data sources (e.g. MODIS product, spatiotemporal resolution) and most important results should be given in figures (e.g. fit statistics and critical soil moisture).

[We agree that we did not sufficiently explained every abbreviation, and we will update this in the next version of the manuscript.](#)

10. Nevertheless, I recommend a slight shortening of the introductory chapter up to a maximum of 1.5 to 2 pages.

[We understand the concerns of AR1 that the current introduction is too lengthy. We will try to shorten some paragraphs, but we believe that the current introduction covers all relevant topics necessary to introduce and frame our work.](#)

In my understanding, the sentence "The availability of a [. . .]" (line 71) marks a new paragraph.

[This is indeed correct, and we will correct this.](#)

11. Only some sentences seem to be too long, so that the readability is a bit difficult. For this reason, I recommend a revision regarding the shortening of some sentences or separation of one sentence into two (e.g., lines 17-19, 39-41).

[We will shorten these sentences together with the shortening of the introduction.](#)

In line 48, the sentence "This is confirmed [. . .]" is missing the preposition "by".

[Thanks for this correction, we will fix this sentence.](#)

In line 85, the reading flow of the sentence is a bit hampered by double "due to". I recommend restructuring this sentence

[We will rewrite this sentence.](#)

12. Although the mathematical function for deriving the daily NIRv index would certainly be beneficial for the reader, this is not urgently necessary due to the comprehensive reference.

[The calculation procedure to calculate NIRv is described in lines 111-112. We will add this as equation to the text.](#)

Only for the abstract, a definition of the abbreviations NIRv, VOD and GPP according to the HESS guidelines has to be implemented.

[We will make sure every abbreviation is explained before its introduction.](#)

13. For the chapter 'Introduction', a slight reduction of the text to a maximum of 1.5 to 2 pages is recommended. On the other hand, some additions in the form of examples would certainly be advantageous. A list of two or three examples of mentioned 'remote sensing products' (line 39) and corresponding references should be added in my opinion. Also specifications on the temporal resolutions for NIRv, VOD, and SIF data should be added – for instance using brackets – even though it is obvious from the section 'Material

and Methods'. Furthermore, the basis for the assumption in lines 105 to 106 is not clearly evident. What is the basis of this assumption? How are the soils in Raam and Twente soil moisture networks characterized?

As mentioned above, we will try to shorten the introduction. The "remote sensing products" in line 39 refers to the products used in the studies mentioned before this sentence. The representative soil depth assumption is based on that the measure value is representative for the soil around this depth: the probe at 5 cm depth is representative for a total depth of 5 cm: from 2.5cm to 7.5cm, et cetera.

14. For the inexperienced reader, information on the area size of the individual Raam and Twente networks and the density of the networks would be helpful. How far apart are the individual stations located in each area? Are the soil moisture networks heterogeneous in terms of topography? In my opinion, an appropriate characterization of the areas would increase the readability of the results.

The location of the soil moisture sensors, and the rough area of each region can be found in Figure 2. To give a sense of the coverage of each network, we will add information about the mean spacing for both Twente (6.2 km) and Raam (3.4 km). We will add some information on the topography, further details on the networks are described in the first paragraph of the methods.

Moreover, a specification of the space-borne microwave sensor (line 121; AMSR-E and AMSR2, WindSat?)

The data is based on multiple sensors: SSM/I, TMI, AMSR-E, WindSat, and AMSR2. We will add this information.