The authors thank the reviewer for the valuable comments and recommendations to improve our manuscript. The comments of the reviewer are in boldface, whereas our responses are in normal fonts. Italic text is quoted from the updated manuscript. Line numbers refer to the manuscript version with track changes.

Reviewer #2:

1. ***Comparison to satellite observations:*** **I am still a little puzzled as to what is compared here. The model simulations assume C3 crops all over, and no irrigation (SIM1 and SIM2). These simulation results are compared to satellite estimates, where soil moisture numbers are affected by whatever vegetation is present. Should the variability of these estimates necessarily follow each other? Would the results be similar with any vegetation type? I am just wondering if the comparison most of all say something about the quality of the precipitation variability in the ISIMIP datasets.**

Answer: Meteorological forcings are indeed dominating the SSM variations but the aim is to evaluate the ability of AquaCrop to integrate these forcings and to provide SSM. With other types of vegetation, the simulated SSM would be biased but the main variations would remain unchanged (especially at the resolution of this study). For this reason, the model is also evaluated with bias-free metrics. This has been clarified at the end of section 3.1.1.

L265-269: "*The aim of the historical evaluation is to assess the performance of AquaCrop to integrate ISIMIP3 meteorological forcings and to provide SSM estimates. By design, the model and satellite retrievals are biased, due to model parameters related to the soil and the uniform vegetation type (generic C3 crop), vertical representativeness bias, etc. Therefore, bias-free metrics (R and ubRMSD) are essential to assess whether the main temporal variations of SSM are captured by the model forced with ISIMIP3 data."*

Technical issues:

2. ***Europe:*** **Some northern Europeans (e.g. Finns) or Russians might feel a little left out by your definition of the European continent (line 124). Possibly you should state that you focus on the part of continental Europe that is between the chosen latitudes and longitudes.**

Answer: Thank you for this recommendation. We adjusted this in the text.

L124-125: *"The study domain focuses on the part of the European continent with latitudes (lat) ranging from 34.75° N to 59.75° N and longitudes (lon) from -10.75° E to 41.25° E."*

3. **Possibly I missed something, but why are some areas in Fig. 1a grey? It would be helpful to explain in the figure caption or include in legend.**

Answer: Grey areas correspond to locations where there are not enough satellite retrievals to evaluate AquaCrop surface soil moisture. We clarified this in the caption of Fig. 1

L311-312: "*Grey areas correspond to pixels where the number of satellite retrievals is smaller than 100."*

The minimum threshold of observations per pixel was also specified in section 3.1.1.

L264: *"A minimum threshold of N=100 reference data points in time are set per pixel for all analyses."*