Interactive comment on "Establishing relationship between measured and predicted soil water characteristics using SOILWAT model in three agro-ecological zones of Nigeria" *by* OrevaOghene Aliku and Suarau O. Oshunsanya

Anonymous Referee #2

General comments:

Soil water is a highly spatially and temporally variable. Determining soil water is quite difficult. Real, direct measurement on soil is valuable. This study use SOILWAT model compared to laboratory measurement of soil physical properties (soil available water, bulk density, field capacity, saturated hydraulic conductivity, soil moisture content, maximum water holding capacity, and wilting point) at three agro-ecological sites of Nigeria.

However, the results showed that SOILWAT cannot act as a good model to present the real status in the case. The authors should pass their own special opinion to modify it.

Otherwise, this work remained uncompleted. For example, in page 7, line 227-228, as Saxton and Rawls (2006) indicated the organic matter content is important, and then the author should make a contribution to resolve it. Investigate the impact of vegetation on soil water is also needed.

Besides, the purpose of this study also wants to manage irrigation planning and scheduling, but only the comparison between model and laboratory measurement has been shown. Not have detailed discussion in the management. The study should take responsibility for the research community, how the works can make a contribution to the related topic should be included.

Some questions and suggestions:

The review in performance of SOILWAT is lacked. How do authors think SOILWAT is a good tool to do such research in this region? Authors should use the physics formula to explain the uncertainties of predicted parameters. The explanations are too weak.

Page 4, line 87: Why do authors choose these sites?

Page 4, line 112: Lack of information as what in 'Derived Savannah'

Page 4, line 117: Lack of information as what in 'Derived Savannah'

It may need a real map to show the location of these three sites.

Page 7, line 222-223: The R-squared value (0.44) could not indicate that SOILWAT model can be used to predict soil available water.

Page 9, line 279: The results showed SOILWAT overestimated at Derived savannah and rainforest but under estimated in Savannah in soil moisture content, how do authors comment it?

Page 21, Figure. 1: Please provide the description on it and also a better resolution one to replace it.

C3