

Hydrol. Earth Syst. Sci. Discuss., referee comment RC1  
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## Comment on hess-2021-171

Anonymous Referee #1

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Referee comment on "Representation of seasonal land use dynamics in SWAT+ for improved assessment of blue and green water consumption" by Anna Msigwa et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-171-RC1>, 2021

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**General Comments:** Overall this paper reports a new approach to the use of an existing hydrological model to better represent African cropping patterns. With water resources (the use and availability of) an important current and future issue for tropical regions, highlighting and documenting a method for improving model outcomes is of use. The paper is well presented and the methods documented satisfactorily.

**Specific Comments:** Whilst the paper reports the differences between the static and dynamic method in terms of the RMSE and NSE, I would like to have included whether the difference between the two methods results in a statistically significant difference in ET. This would help in showing the magnitude of the difference between the methods. For example, this could be included in the paragraph starting at line 286 where the static, dynamic, and remote sensing methods are compared. Also line in 371 the authors state "Our study shows a **significant** impact of the representation of seasonal land-use in the SWAT+ model by reducing the errors in water consumption estimations." whereas this has, in fact, not been proven statistically.

Were any of the default setting for the land use codes (e.g. PAST) changed in SWAT to better represent African growth? - or are the defaults representative? It would be good to have a sentence relating to this.

**Technical Comments:** Line 19 (Abstract) The abbreviation for ET has already been defined earlier in the abstract, do not need to do this twice. Line 26 LULC abbreviation is not defined. Line 37 Nitrogen does not need a capital 'N'. Line 38 LAI abbreviation is not defined (unless I missed it).