

***Interactive comment on* “Does forest replacement increase water supply in watersheds? Analysis through hydrological simulation” by Ronalton Evandro Machado et al.**

Anonymous Referee #1

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The paper by Ronalton Evandro Machado et al. studies the effect of forest change on hydrologic regime in the Pinhal River watershed in Brasil. They used the SWAT model to simulate changes in water balance and sediment yield as results of changes in land use/cover scenarios in which one of them covered critical and fragile environmental sensitive areas (ESAs) with overlapping forest cover on the land use map. They concluded that the role of forest in hydrological process and water yield is controversial and that impacts of land use change on hydrological processes are complex and with various consequences.

I was very enthusiastic when I start to read the work but as I reach the end of the

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manuscript I didn't find any novelty either to model development theory or hydrological modelling approach. In addition, I find that the paper doesn't add any additional knowledge to the role or the impact of forest change in the hydrological cycle.

Authors used regionalized stream flow to calibrate SWAT model but without any uncertainty assessment and compared the scenarios simulation the SWAT simulation. They didn't present the regionalization approach in the manuscript which is very important in that case. Further, authors tested a scenario where forest covers Critical and Fragile ESAs in the catchment but they admit that this is a theoretical scenario that cannot be realized in practice. So, what is the aim of testing such scenario? and how it can assist or inform the management of water in the catchment?

Some details L.27, P.2. add in Brazil L.30, P.3. 1,240 mm or 1240 mm?

P.4. Section: SWAT model and input data: Please update with recent SWAT references

P.5. Section Model evaluation. This section is not clear. The regionalization approach is not described. For instance, what kind of information are transferred (is it the FDC?) and what are the catchment attributes or similarity considered to perform the regionalization? This section also lacks discussion (at least few lines) regarding the uncertainty related to the regionalization technique.

P.5(2). Why not apply and calibrate SWAT in a physically similar catchment and then transfer the model parameters (calibrated) instead of transferring the FDC and then calibrate the model?

P.7. I don't see the need to report the flowchart by Adami et al. (2012) in this manuscript. I would prefer to see the flowchart of the methodology of the paper.

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