Subject: Revision to WATER, Special feature " Long-Term Monitoring and Research in Forest Hydrology: Towards Integrated Watershed Management "
MS. NO: water-1609181
Title: IMPACT OF FOREST CONVERSION TO AGRICULTURE ON HYDROLOGIC REGIME IN THE LARGE BASIN IN VIETNAM
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2 March 2022

Dear Editor (s),

Thank you very much for the valuable comments and suggestions from the three reviewers to our manuscript entitled “IMPACT OF FOREST CONVERSION TO AGRICULTURE ON HYDROLOGIC REGIME IN THE LARGE BASIN IN VIETNAM”. These comments were very constructive and helpful to improve the quality of the manuscript. We have studied these comments and responded to every given specific point. The paper now provides more insights into the impact on the water cycle due to the conversion of forest to coffee plantations in a tropical humid climate region. They are useful for policymakers in balancing economic development and water resource protection.

We are very grateful if the revised manuscript is reviewed again and be considered for publication in WATER.

Best regards,

(On behalf of co-authors)
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AUTHORS' RESPONSES TO REVIEWERS' COMMENTS, SUGGESSTIONS

Reviewer #2:

In the proposed paper, the authors' goal is to evaluated the effect of land-use changes that took place during 1994 to 2005, on runoff, actual evapotranspiration, soil water content and ground water in Vietnam. They used SWAT model to quantify these changes, using observed data of rainfall and river discharge. The results showed that the land use changes greatly impacted the forest coverage of the study area and the surface runoff.

Minor comments:

1. Lines 66-67: Here, you highlight a very significant aspect that influence the runoff and flood generation in forest environments. *"It is known that forests present finite capabilities to retain large amounts of precipitation, especially during extreme rainfall events, even if the forest cover percentage is significantly high*" (Kastridis et al. 2021, De Jong 2016). So, the runoff and flood are highly influenced from rainfall intensity and the forest cover sometimes is not capable to retain the rainfall, independently if the forests are located in developing or developed countries. Please, rephrase these two lines in the text addressing the above, and add the proposed 2 literatures with the existing.

Thank you very much for your suggestion. We have rephrased this content in line 63-71.

2. Lines 238-242 and table 2: Here, you presented the known Curve number II (CN2). In lines 129-134 you informed us that the study area has two seasons (dry and rainy). However, the presented calculation of CNII is for standard initial soil moisture conditions. More specifically, you calculated the CNII for initial loss rate of 20%, which is the reference value and corresponds to average humidity conditions (Antecedent Moisture Conditions, (AMC II)). But, throughout the year the AMC is changing in your study area (dry and rainy season). The runoff generation is significantly different during the rainy period when the soil moisture is higher, in comparison to the drought season when the soil moisture in lower. For that reason, when CN is estimated the AMC is taken into account according the following table (Chow et al. 1988)

Thank you very much for your excellent suggestion. We added the explanation of the issue of CN selection for different seasonality in line 257-263.

3. Table 3. There is a small mistake in row 4, NSE column, "0.50 < NS. E ≤ 0.65".

Thank you very much. We edited the Table 3.

4. Lines 253-282 and tables 3 and 4: I think that you could provide also the RMSE (that you have already calculated) with the Standard Deviation (SD), in order to give an in-depth view of model performance. The best way to interpret the RMSE and understand if is acceptable for model evaluation, is to provide the Standard Deviation (SD). It is known from previous studies that RMSE values less than half of the SD (Standard Deviation) of the measured data may be considered low and acceptable for model evaluation (Kastridis et al. 2021, Singh et al. 2005). Provide the SD with the RMSE, discuss in the text the above mentioned, and explain if the RMSE is acceptable in terms of the SD, adding the proposed literature to support your discussion.

RSR is the ratio of RMSE and SD. According to that, less than 0.5 RSR value as the most stringent “very good” rating, and two less stringent ratings of 10% and 20% greater than this value for the “good” and “satisfactory” ratings, respectively (Table 3). We have added this description in 278-282.