The authors would like to express gratitude to our anonymous reviewer for taking the time to review our manuscript again. We appreciate his constructive comments very much.
Response to comments are shown in 'bold'.

1) The purpose of your manuscript indicates that you will establish the water balance of the watershed. However, only Figure 5 shows a water balance, not complete elsewhere, which is only a monthly average. It would have been interesting to make an assessment, even annual, on the different years of simulation (calibration + validation) to get an idea of the different terms and their evolution over time. In addition, a complete analysis would make it possible to check that the water balance is closed. It would also be interesting to add in the total water balance, the surface, lateral and groundwater contribution part instead of the water yield. The definition of this last term must be modified on page 6 line 14: WYLD = SURQ + LATQ + GWQ -TLOSS - pond abstractions. Using only discharge data to explain the different contribution of precipitation and evapotranspiration on total runoff is not enough.

Two new figures have been plotted and updated for annual evolution of the water balance from 1986 to 2015 in the manuscript. The first new figure shows the annual water balance comprising of rainfall, surface runoff, soil moisture, actual evapotranspiration and potential evapotranspiration. Groundwater, lateral and percolated water flows had low values and hence were plotted on a different figure to show their trends. The water yield equation has been updated according as well as appropriate discussions in the water balance section of the paper.

2) Many details are missing in the methodology section and in particular explanations about the choices that the authors have done. Some examples: Why this partial evolution of vegetation cover? How precisely climate biases have been corrected? How are the comparisons made on the different scenarios? Which criterion is used in this case? Where are located the meteorological stations? (Closest is not sufficient, gives values and indicates on figure), Why did you use the Hargreaves method for evapotranspiration? (just temperature data are available?) This information should also appear in the methodology section and not only in the result section. Check all this part.

Choice/criterion for the evolution of vegetation cover: Although the catchment is prone to anthropogenic invasion, there have been strict forestry rules that safe-guards the forest from human occupation. These rules are unlikely to be relaxed for the benefit of the residents since the catchment is prided as an international and only inland ramsar site in Ghana. Forest guards are observed to patrol the forest atleast twice a day, with severe penalties awarded on any defaulters. It is therefore likely, that current settlement areas can either remain the same, or grasslands and croplands would be urbanised to support growing population. These assumptions formed the criteria for developing the two landuse scenarios or the evolution of the vegetation cover. Comparison between the scenarios was done based on streamflow to ascertain the amounts that would be available in future for water processing, demand and supply within the Kumasi metropolis. In the study, only one climate ensemble was used for the projections, however we have now used three different climate ensembles under each of the different RCPs for the future projections at a higher resolution of 0.22 lon/lat, as against the 0.44 lon/lat used currently in the study. This will give a much clearer view on the future dynamics of streamflow under various climatic conditions.

The CmHyd software has about seven bias correction options available for precipitation and temperature. This included; distribution mapping of precipitation and temperature, linear scaling, delta-change correction, precipitation local intensity scaling, power transformation of precipitation. All these options were used to correct for biases in the projection rainfall and temperature datasets with reference to the observed rainfall and temperature data which also served as an input. After correction, the best bias correction option was the distribution mapping and hence was chosen for the hydrological climate change analysis. This option has also been found to be the most reliable per Teutschbein and Seibert, 2012.

The Offin, Barekese and Kumasi airport meteorological stations used for data in-filling for Owabi are not located within the catchment area. Hence to provide clarity of the image of the study area (Fig1), it is impossible to show these stations on the map. However, the study area map has been updated to show the Owabi meteorological station, whiles the coordinates of the other stations have been stated in the 'hydrometeorological data' section to give clearer understanding of their distance from the Owabi catchment.

The Hargreaves method was used for the calculation of evapotranspiration because only rainfall and temperature datasets were available at the study area. This information has been inserted in the methodology.

3) The observed discharge from the neighboring station, Offin river are used for this study. The regionalization method to determine runoff is a strong assumption in an article on calibration and validation of a model from these data. It seems important to me that the authors develop this part and explain in detail the different steps, datasets used etc. According to Hrachowitz et al. (2013), to regionalize, it is necessary to admit a homogeneity in terms of land use, topography and land cover between watersheds, is that true here? Expend this part.

The study used monthly streamflow data from the nearest catchment, the Offin Basin and spanned a period of 2001 to 2010. This information is seen in table 1. However, it has again been updated in the text. Please note that, the data was not subjected to any rigorous statistical tests before use, however, we applied the spatial proximity global arithmetic mean method (page 6 line 8-9) as used in Oudin et al. (2008) and the results obtained with the raw data for calibration purposes were good for the Owabi catchment. Again, the spatial proximity does not rely heavily on physical characteristics of the watersheds but instead on a dense gauge network, but it is worth knowing that both catchments (Owabi and Offin) are dominated by the same soil characteristics, but the landuse dynamics and topography are slightly different.

4) The authors list the different uncertainties associated with the observation data but do not show their impact on the results. It would be interesting to add an "uncertainty" part to the input data regardless of the 99PPU SWAT-CUP analysis.

The uncertainty analysis has been rediscussed as much as possible to reflect their impact on the results obtained during calibration and validation. These would be found in the revised manuscript.

5) A first calibration step is performed on various sensitive parameters of the model (9): CN2, SURLAG, ESCO, SOL_BD, SOL_AWC, CH_N2, ALPHA_BF, RCHRG_DP, and GW_REVAP. The calibrated model is then used as to generate runoff with the different landscape scenarios. However, calibration of parameters such as CN2 or SOL_AWC is not possible if thereafter, the surface condition changes. The authors must think carefully about the parameters that can be used in the calibration without biasing the scenario part. The authors should be careful with the calibration of some parameters taking into account the possible bias on the scenarios results.

Upon a second review, it was noticed that the model was highly overparameterised and ill-conditioned. For instance, the parameter value of CN2 was out of range after calibration. The model calibration has been rerun and new sensitive values include CN2, ALPHA_BF and SURLAG, with the other parameters being highly insensitive. As regarding the hydrological soil group "D" at the catchment, it is not surprising that most groundwater parameters were not sensitive such as the delay time, recharge depth among others. The D soil group is characterised by low infiltration and high surface runoff capacity. Therefore, we assume that these new sensitive parameters illustrate the hydrology of the catchment and result in the reduction of biases which might be introduced into future projections.

6) Some parts of the article should be changed or even deleted to focus on a more innovative and interesting part to clearly see the originality of the paper (I suggest you read Srinivasan et al., 2010 or Sisay et al., 2017 for example).

The entire manuscript would be reviewed by authors and appropriate redundant sections removed. The suggested manuscripts (Srinivasan et al., 2010 and Sisay et al., 2017) would also be reviewed to boost our paper.

Technical and specific comments:
I listed few important technical comments here but I have not developed this part at this stage.

Figure 1: Keep the same term: "Catchment" or "Watershed"

The word "Catchment' would be used throughout the manuscript.

Figure 2: Add the hydro-Meteorological stations on this figure

For clarity of the study map, only the Owabi meteorological station have been added to the map but the geographical coordinates of the other stations have been stated in the 'hydrometeorological data' section.

Figure 3: Add "(LU1)" in the legend as in the Figure 4

LU1 has been updated in figure 3.

Figure 9 and 10: Not readable, zoom over hydrological year

There will be new figures to replace figures 9 and 10 for the streamflow projections and the images made clearer in the manuscript update.

Table 1: Add “Temporal resolution” or “Acquisition dates” for all data (DEM etc.)

Temporal resolutions have been added to the DEM (2000-02-01:2000-02-29), Soil map (2007-02-28) in table 1.

Page 2, Line 6: Management

Management has been updated.

Page 3, Line 54: Keep the same precision of the surface area (69.72 here and 69 in the abstract)

The surface area of “69 km2”, will be used throughout the manuscript.

REFERENCES

Oudin, L., Andréassian, V., Perrin, C., Michel, C., and Le Moine, N.: Spatial proximity, physical similarity, regression and ungaged catchments: A comparison of regionalization approaches based on 913 French catchments, Water Resources Research, 44, 2008.

Teutschbein, C. and Seibert, J.: Bias correction of regional climate model simulations for hydrological climate-change impact studies: Review and evaluation of different methods, Journal of Hydrology, 456, 12–29, 2012.