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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Integrated Impact of Digital Elevation Model and Land Cover Resolutions on Simulated Runoff by SWAT Model" *by* Mahmoud Saleh Al-Khafaji and Fouad Hussein Al-Sweiti

Anonymous Referee #2

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This paper investigates the integrated impacts of Digital Elevation Model and Land cover Resolutions on Simulated Runoff by SWAT Model. Though the paper seems to address an interesting issue of the integrated assessment of the influence of the DEM and LC resolution, that, to my knowledge formed by quick search in the recent papers, has not been addressed yet, however, I think that the paper quality is seriously flawed and would need a serious revision, before it can be considered for publication in HESS. Major comments:

First of all, since, as also authors claim, there were done many assessments on the

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influence of the spatial data resolution on the hydrological model performance I would expect serious revision of the existing literature. Sadly, this has not been done - the authors have just mentioned couple of studies. Therefore, I would expect a serious literature revision in the Introduction section. Especially, since authors also claim that there is no consensus on how the resolution of LC and DEM influence the performance of the SWAT model. It will be also good to summarize the results of literature revision in a table. This would add to the quality of the paper. I have never conducted thorough assessment of the influence of the DEM and LC resolutions on the hydrological model performance, but quick search through the papers has shown much more studies that those, addressed by the authors, e.g. works of Geza and McCray, 2007; Jenson, 1991; Wechsler, 2007; Li and Wong, 2010; Wu et al, 2007; Mou Leong Tan et al. 2015; Jeongkon Kim et al. 2012; Branger et al. 2013; Bormann et al. 2009; Sharifi and Kalin 2010 etc. . .

Further, English has to be re-checked: some sentences are not clear at all, are not logically related to previous sentences or not even finished, e.g. lines 9-10, 28, 37 etc. There are also grammar mistakes in the text, a re-check by native speaker is essential! I will not provide specific comments on that. Another major issue – the hydrological model cannot be calibrated over two years and then validated over one year – this is too short for a simulation. Please use a longer period of time, at least 5 years for calibration and 5 years for validation.

Another issue of the methodology: all datasets used have different quality of the information as derived from different products. E.g. the original ASTER dataset is not hole-filled and contains serious gaps that can influence the model performance. In my opinion, it makes more sense to take a DEM and then re-sample it to higher resolution and see how this will influence the runoff! Otherwise the entire analysis doesn't make any sense.

Firstly, these major issues as well as issues raised by the first Refree have to addressed. Then the more specific comments can be given

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