

Interactive comment on “How to predict hydrological effects of local land use change: how the vegetation parameterisation for short rotation coppices influences model results” by F. Richter et al.

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General thanks:

We very much appreciate the general attention given to our manuscript and the constructive remarks of all reviewers and try to answer them here.

Reply to Anonymous Referee #1

1. R#1: “Introduction. The authors give the aim and hypothesis, but it would be re-

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markable to clearly address the main goals/objectives.”

A: Thank you very much for a very constructive remark. Indeed, we clearly defined the aim or the goal of our study – to show that using both literature and locally measured values of parameters “LAI”, “Rsc” and “leaf unfolding date” introduces the uncertainty in hydrological modelling, and to quantify these uncertainties. The objectives were also formulated, but definitely not clearly enough. Therefore, we will complement the Introduction and formulate the objectives inserting following sentence after hypothesis: “To reach the goal of the study following objectives should be met: 1) to quantify the WaSim response (sensitivity) to variations of following parameters: LAI, Rsc and leaf unfolding date, caused by different measurement methods and modelling approaches; 2) to estimate the most sensitive parameter and 3) to evaluate quantitatively whether it is advisable to directly implement in model the locally point-measured values of sensitive parameters. We use GWR and plant available water as indicators for estimations.

2. R#1: “Discussion. This section could be improved whether the authors discussed their results regarding other studies conducted in similar/different environments and conditions.”

A: To our knowledge there are no comparable studies. Of course there are investigations of the water budget of SRC, but most studies do not present the precise parameterization. Furthermore, other studies used different models, mostly plot-model approaches like SWAT or BROOK90 that have different sensitivities. We used the regional model approach WaSim on a plot model domain here, because we use the model and parameterization for catchment analyses in other related studies (not shown here). The comparison of different models applied at different locations (different soils and climate) is definitely out of scope of our study and the discussions on comparability of results would considerably expand the size of the manuscript. Of course we could compare hydrological quantities of SRC like evapotranspiration or percolation rates, but such quantities are related to the local conditions. We decided to evaluate our model's sensitivity using local soil water measurements. The comparison to other

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studies would be interesting for further investigations on the catchment level. Thus we would like to focus our study on WaSim sensitivity to different parameterizations and avoid the comparison to different models and locations. We are aware that the effects we are showing and discussing in this paper are relevant to WaSim based studies and should be considered with care for other hydrological models and environments.

3. R#1: "Conclusions. This section is quite long in my opinion. Please, be more concise and follow the scheme i) ii) iii) giving answer to the study goals."

A: In the conclusions we showed the complexity of the topic and gave the answer to the aims and objectives. . Generally the numbered conclusions are not the common practice, however to be more concise and to correspond to main aim of study as well as to newly formulated objectives (Remark 1): we will add following sentences like: L16. Thus, we reached the main goal of our study and demonstrated the uncertainties in modelling results caused by variations in modelling parameters. Answering the objective 1 our study demonstrates that: that LAI, Rsc as well as the beginning and length of growing season are the sensitive parameters when investigating the effects of an enhanced cultivation of SRC on local water budget, i.e. GWR, by means of the hydrological model WaSim. Different combinations of parameters results in GWR changes up to Most sensitive parameter is the beginning of the growing season (Objective 2). ... As for objective 3, the implementation of locally measured vegetation parameters. ...

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