

Interactive comment on “Effects of multi-temporal high-resolution remote sensing products on simulated hydrometeorological variables in a cultivated area (southwestern France)” by Jordi Etchanchu et al.

Anonymous Referee #1

Received and published: 7 February 2017

General comment: the objective is significant. the problem of land cover spatial variability and remote sensing estimation at appropriate spatial scale is a key topic. However, several problems and comments are described below and need to be addressed. In particular, I have several doubts on the spatial scales of model, remote sensing observations and eddy covariance fluxes. I think that the paper can be accepted but the following clarifications need to be addressed for properly evaluating the paper.

Specific comments: 1) Introduction: not really clear. You need to write more clearly the objectives and what is the new contribution of the paper. 2) The following are

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comments and doubts on spatial scales of remote sensing observations, model and eddy covariance fluxes. What is the height of the eddy covariance tower? What is the foot print length? Are you comparing observed fluxes with modeled fluxes at 1 km resolution? If yes, why? I noted that the foot print of the eddy covariance tower may be not homogenous: are you addressing the spatial variability of the land cover in the foot print? 3) Why are you not running ISBA at finer spatial scales? If you have remote sensing observations at 8 m resolution you can use ISBA at finer spatial scales than 1 km. The use of ISBA at finer spatial scale may help a lot to understand the effect of land cover heterogeneity on land surface fluxes. In this way, you can use properly the remote sensing observations at 8 m spatial resolution. 4) Figure 4: What is the spatial scale? 5) Fig. 5. What is the aggregation scale for comparing LAI values? ECOCLIMAP-II database (1 km resolution) and Formosat-2 database (8 m resolution) are providing different LAI values at the same scale. 6) Figure 5 and 6. You need to show the comparison results for all the simulated period (2006-2010) not just one year. Are the hydrometeorological conditions the same for all the years. Typically Mediterranean regions are characterized by strong interannual variability, hence it is very interesting to evaluate it. In this way you can see the impact of the interannual variability of rainfall seasonality on LAI and fluxes. 7) I'm not sure about figure 7. If you are modeling at 1 km spatial resolution, how can you simulate fluxes of specific cultivations (e.g., wheat, maize-sorghum, etc.)? In a 1 km grid cell you have more than 1 specific cultivation. 8) I'm trying to understand how SURFEX using ECOCLIMAP and SURFEX using FORMOSAT (and GDAL polygonise) are modeling each land cover component. Please, add information and explanations.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2016-661, 2017.

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