

Interactive comment on “Modelling LAI at a regional scale with ISBA-A-gs: comparison with satellite-derived LAI over southwestern France” by A. Brut et al.

Anonymous Referee #1

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Comparison of land surface and biogeochemical model simulation to different types of data is an important feature and then is important to publish such kind of paper even if it is not very new in term of science. One original point of this paper is the high resolution of the simulation (8km) and few attempt has been done to compare simulation and remote sensing data at this scale. However I regret that discussion part of the paper is very limited. It mainly consists in description of difference between model and data with only few attempts to explain these differences. For instance, as explained by the authors it is surprising that MODIS growing phase of LAI is earlier

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than in CYCLOPE ?. The given explanation if that saturation effect can produce an apparently earlier calculated leaf onset. This can explain a part of difference found in figure 8 but in figure 4 there is no onset date calculated and we clearly see the difference between MODIS and CYCLOPES for instance!. Some interesting part of the paper is the attempt to explain the difference between model and observations for the mid-latitude grassland. But unfortunately it is done only for one site and one land cover type whereas other flux tower stations exists in this region. It would improve the paper to do the same exercise for others sites. It would be also interesting to compare simulated and satellite derived LAI with in situ LAI measurements that are probably available in this region (in particular to try to understand which of the LAI from MODIS and CYCLOPES is the more realistic).

Here are some others more specific points:

It is explained that initial MODIS LAI product is too noisy to be used and hence a new algorithm has been developed. It would be interesting add on figure 4 the initial MODIS LAI product (which is used by a lot of peoples) to compare initial and modified LAI calculated from MODIS.

A major difficulty for comparing satellite and model LAI is that models simulate “pure” vegetation types whereas most of pixels are mix vegetation. This is for instance clearly visible for crops in figure 4 where satellite date show very long and slow decrease of the LAI with is probably not representative of C3 winter crops. So I suggest to make a figure like in figure 4 (or to repalce it) with a more restrictive rule for determination of the pixels considered from satellite (for instance 90% of the same patch for the pixel and also for surrounding pixels) even if there is very few pixels to see if agreement with model is not improved.

Why for the comparison of onset dates (figure 8) only MODIS data is used and not CYCLOPES (whereas we have seen a possible bias in MODIS for the onset date) ?