

Dear Editor,

We thank you for your precious comments and we hope to have satisfactorily answered to your comments, those are colored in blue.

Alessio Collalti

L206 (Equation 1)

"APAR_z" would be replaced by "APAR_{y,z}".

It's not necessary to include the "y" index because the amount of APAR is computed for a specific layer not for a specific diameter class (or height class). To avoid to have multiple canopy layers corresponding to multiple height (or diameter) classes the model include different height (or diameter) classes in a prearranged number of forest layers. So the amount of APAR is referred to that forest layer and not to that height (or diameter) class.

Then, GPP_{x,y,z,k} would be replaced by GPP_{x,z,k}. (L207 in the latest manu.)

Also, explanation that each cohort had unique z, would be required.

We agree with the Editor's comment, but we cannot change GPP definition for two main reasons:

First of all:

model code needs to specify all indexes in this case. Indeed, model variables need to be specified in all of its indexes because variables are declared in the C code as a chain of structs nested within arrays in this way:

`m->cells[cell].heights[height].ages[age].species[species].value[variable]`, where (simplifying):

"m" refers to matrix

"cells." refers to the cell counter

"[cell]" refers to the number of the cell

"heights." refers to the height class counter (number of different height classes)

"[height]" refers to the number of the height class and the variables or index as for example ("z" index)

"ages." refers to the age classes (cohorts) counter (number of different cohorts)

"[age]" refers to the number of age class

"species." refers to species counter (number of different species)

"[species]" refers to species modeled

"value." or "counter" (depending on the variable if a double or an integer)

"[variable]" refers to the variable (e.g. LAI or GPP)

We can have for example for the first "class" of a first cell:

`m->cells[0].heights[0].ages[0].species[fagussylvatica].value[GPP]`

(C language starts to count from zero)

Secondarily, in the case of GPP we necessarily have to use all indexes because (including "y") model considers that in a single "z" layer you can have more than one height class, at the beginning of each year of simulation, the model groups in a prescribed thickness (that depends of the number of height classes and their values) more than one height class and share them in different layers if their differences exceed a prescribed value.

L484

Assuming values in Table S1(a) are correct, values for MEF and NRMSE of X data set are switched.

Addressed

Authors did not address neither in the manuscript (L481~482 in the latest manu.) nor in the Table 1.

We thank the Editor for this comment, we made confusion among the different versions of the revised paper and we apologize for that.

L612~613

But, performance statistics improved according to the Table 3.

Clarified

I cannot find where you clarified on the manuscript. In the IT-Ren site, performance of 2L-2C favors that of 1L-1C for all performance statistics except r.

We better explain this part in L607-610 within the new revised manuscript.

L643~644 “seasonal fluctuations in GPP and their effects”

I cannot find any effects.

Clarified, it referred to the effects of seasonality on GPP validation, we preferred to remove this sentence to avoid misleading.

I cannot find where on the manuscript you modified according to the comment

We modified the two sentences (L129-130 and L640-641) to avoid misunderstandings. Anyway we preferred speaking about “effects” of the differences to GPP using the X and Y datasets when reducing the seasonal trend of GPP.