We are grateful to the Topical Editor for his last comments which we used raising the quality of the manuscript and clarifying some important aspects, at this regard to increment readability of the manuscript we removed all track changes (if you ever need to see changes we have the manuscript version with). Please find below our answers to comments (in italics):

According to the Referee#1 comments, authors provided list of newly introduced and calibrated parameters in the Table S2. However, what the Referee#1 requested was to provide description of your "tuning process", not just only its result.

We have already clarified this comment in the lines 344-347. As in Collalti et al. (2014), White et al. (2000) as well as in Naudts et al. (2014) (see below) if in literature it has been found more than one value for each parameter (rarely it happened) then a simple averaged value was used. In the manuscript we distinguish the terms "tuning" and "calibration" sensu strictu. We consider tuning a process in which any parameter value is used to obtain best fit (value that is not necessarily reported in literature) while in the calibration we used only values coming from literature

Also, please consider to reorganize the structure of section 2 of the discussion part (L643~715). I should say it is poor structured, and hence it requires much effort to follow for just getting a little message.

The section 2 of the discussion refers to lines 716-804, while lines 643-715 refers to section 1. We anyway worked on both to make the message clearer as much as we can.

[Minor Concerns]
L150
Totally no information is available on the website without authorization. Authors should provide, at least, information concerning who is responsible for the authorization on the website.

Clarified

L147~191
Very long paragraph. Please consider dividing it. Also, please provide your assumption for the crown depth.

Done

L206 (Equation 1)
"APARz" 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.

L207
"APAR" would be replaced by "APAR$_{y,z}$".

Done, we included the "z" index to "APAR"

L209
"were" would be replaced by "where".

Done, thanks.

L254~L260
I cannot follow the logic here.

Done, during the previous revision phase we jumped one line.

L269~270
This "up to" is cryptic for me.

Modified.

L354, L515, L529
Needless line breaks.

We removed the line breaks in those lines you mention as well as in other parts.

L406 (Equation 8)
This sigma should include the denominator.

Included.

L420 (Equation 10)
The sigma should include the second term. The sigma should be specified by indicating "i=1" and "N". Provide definition of the variable stdGPP$_{ECi}$ in the main text.

Done

L430
I cannot understand how you grouped time-series values into 18 clusters.

We rearranged the phrase for better understanding

L484
Assuming values in Table S1(a) are correct, values for MEF and NRMSE of X data set are switched.

Addressed

L485~L489
I cannot follow the logic here,

We rearranged the phrase for better understanding
L492 "flattening the seasonality model"
Please describe more.

We improved the punctuation of the phrase, we hope that now is more comprehensible.

L496
The word "skill" would be replaced by more accurate words. How about "reconstruction ability"?

Done

L503
This "low" is cryptic.

Clarified.

L612~613
But, performance statistics improved according to the Table 3.

Clarified

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.

L645 "annual cumulated"
It seems it would be "intra-monthly".

Clarified

L650~651
I cannot follow the logic here.

We are sorry for that, but we cannot understand what is not clear.

L717~747
Although the section is assigned for reproducibility of inter-annual variability, these paragraphs describe inter-monthly variability.

Included

L827~831
Provide explanation why some letters are in bold.

Addressed

L846 and L854 "IGBP"
It should be replaced by "IGBP vegetation class".

We apologize for that but in the our version of the manuscript (we've downloaded the pdf file "gmd-2015-122-manuscript-version3.pdf" from the GMD site) we didn't find any IGBP, neither in the line 846 nor in 854. But we addressed this point in the Figure 2 caption.

L848~851
Provide explanation how you classified the sites.

Apologize for that, what do you mean for classified? However we clarify this point in the Table 1 caption.

All figures and tables
Many of them lack specification tags [like (a), (b), (c)..]
Figure 1

Done

Results for the "Bl$_D$" should be replaced with those of the "MABstd" in the Table S1

The new Figure 1 doesn't have BId but contains the MABstd

Figure 2
Provide scales for circular arcs those indicate same distance from the "REF" point.

We are very sorry for that but the tool we used for this figure isn't able to include other circular arcs.

Figure 6
"GPP" on the vertical axis would be replaced by "GPP$_{MD}$"

Done

References

Collalti, A., Perugini, L., Santini, M., Chiti, T., Nolè, A., Matteucci, G., et al. (2014). A process-based model to simulate growth in forests with complex structure: Evaluation and use of 3D-CMCC Forest Ecosystem Model in a deciduous forest in Central Italy. *Ecological Modelling* , 362-378.

Naudts, K., Ryder, J., McGrath, M., Otto, J., Chen, Y., Valade, A., et al. (2014). A vertically discretised canopy description for ORCHIDEE (SVN r2290) and the modifications to the energy, water and carbon fluxes. *Geosci. Model Dev. Discuss.* , 7, 8565-8647.

White, M., Thornton, P., & Running, S. (2000). Parameterization and sensitivity analysis of the BIOME-BGC terrestrial ecosystem model: net primary production controls. *Earth interactions* , 4 (3), 1.