

## ***Interactive comment on “Analyzing the carbon dynamics in north western Portugal: calibration and application of Forest-BGC” by M. A. Rodrigues et al.***

**Anonymous Referee #1**

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The authors present an application of Forest-BGC to estimate NPP in three different forested areas in Portugal trying to assess the effect of the changes in temperature and precipitation on the model results. Although the topic is interesting I found the paper not clear and with major lacks and flaws and for this reason I recommend to reject it. The main concerns are:

- 1) Methodology is unclear and without detailed description. The model calibration procedure is not explained. Model calibration is not only the use of specific meteorological data or LAI values. Has been the model calibrated at the site?
- 2) Models applied to specific conditions or locations (like in this study) without any

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validation of the results must be avoid. The conclusions could be wrong if the model is not able to represent the studied ecosystem. For this reason also the sentence in the conclusions (line 3-5 page 52) is not justified (there is no “applicability and accuracy” analysis in the paper).

3) Analysis of role of changes in Temperature and Precipitation in the NPP model predictions: given the fact that the model seems to be not specifically calibrated at the site, the role of meteorological conditions is the one intrinsic to the model formulation, so one could arrive to the same conclusions just analyzing the model formulation or using artificial meteo data. In addition, the differences in NPP reported in table 1 are significant in particular in relation to the uncertainty in both the model and the drivers?

Others points:

Add references to figures and tables in the text!

Figures 2 to 7 are not very relevant for the paper, could be summarized in one or two. Typo in the Y axis (Rainffal instead of Rainfall)

Figure 4: there are very low rainfall values for the first 7 years respect to the rest of the timeseries. Are the authors sure about these values, that seems to be also responsible for the positive trend?

4.1: it seems to be not a calibration but just the description of the input and output files needed to run the model. What are the “input-output processor controls”?

P50-L11: Three possible outputs but then only two described.

P50-L23-24: define PPL and Pb

P46-L5: leaf carbon or leaf dry matter? In the methods explained in 3.2 the reference seems to be dry matter weight.

3.1.1: very long but not very clear how the data have been treated.

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P48-L23: "... , the tendency to decrease of the minimum. . . " ?

P49-L9: "The in index. . ." is it a typo? Otherwise explain.

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