Response to the author comments and the first revision of the manuscript egusphere-2025-3562

Dear Editor, dear Authors

Overall, I thank the Authors for taking the time and work with the reviews and draw conclusions on whether and how to use the comments in the revision of their manuscript. I am very happy with the results.

I believe, and hope, that the work will inspire similar discussions of the value of the new tools, e.g. such being able to clarify a trivial statement such as "in the beginning, time was too short to grow sufficient leaves " into something like "In the beginning, the main driver was DaySinceUse with a negative effect as quantified by its negative SHAP value".

- mini comment 1: please note the difference between DaySinceUse = 10 means the tenth day while DaysSinceUse means a period of time. Distinction between these different meanings may be relevant.
- mini comment 2: Please also note that I suggest another interpretation of the variable Day[s]SinceUse than "DaySinceUse is not an ecophysiological driver, instead, it functions as *a proxy for otherwise neglected management events*"(L. 476-477) – which appears to me as a bit blurry, container(without windows!) statement.

To value your meticulous work, I make only one further detailed comment, highlighting my appreciation of the extension of Figure 3 of the revised manuscript.

In the caption it is said that the GPP RE dots were placed in the centers of the regrowth periods, which makes sense. What becomes clear from the figure (Fig. R2-1), too, in the areas marked in yellow, that the grazing, contrary to mowing, takes some time and I wonder, where did you position the start of a regrowth period, after the end, at the beginning or in the centre of the grazing period? I would like you to add in the caption, what was used to define the start of the regrowth periods, i.e. either mowing or grazing. And, I suggest drawing two simple lines as examples that mark 1) one regrowth period between mowing and 2) one starting with grazing activity to make the timing approach crystal clear.

And now, that this became clear, one can again think about, whether it makes sense to use the same variable, Day[s]SinceUse for the analysis for both cases. Would it not be more sensible to define a variable DaysSinceMowing and a variable DaysSinceGrazing? I believe that it would sharpen the analysis, maybe in a future follow up study?
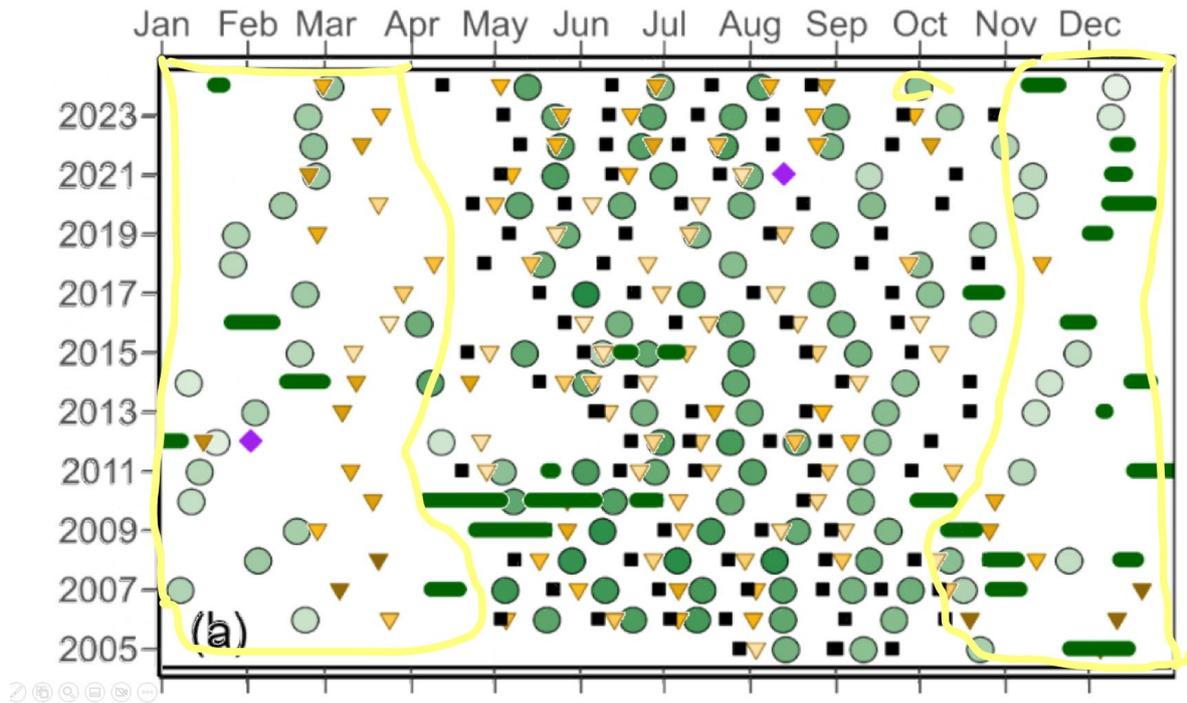
Fig. R2-1: Overlay of two panels, panel a) over panel b), of the figure three in the first manuscript revision. It shows that the timing in the centre seasons is given by the mowing activities. What parameter to determine the GGP dot positions outside that area?

I wish the authors excellent scientific recognition of their work, which, as said in the first review may well be developing as a model analysis for long-term CO_2 exchanges between managed ecosystems and the atmosphere.

With kind regards

Andreas Ibrom