Author's response on egusphere-2025-3562

Dear Dr. Migliavacca and Dr. Ibrom,

Thank you very much for your positive feedback on our revisions. We appreciate your constructive comments to further improve our manuscript. Please find below our responses to referee's comments in blue.

Best regards,
Yi Wang on behalf of all authors

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.

Thank you for pointing this out. We have now thoroughly checked the wording and only use 'DaySinceUse' in the text. We have also clarified this in the Methods section (lines 120-122).

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.

Thank you for the comment. We have modified the sentence into "… should also be recognised: Rather than acting as a direct ecophysiological driver, DaySinceUse serves as a temporal index that tracks the time elapsed since the most recent management intervention (e.g., mowing or grazing). By establishing this temporal relation for each data record, the model can account for the recovery dynamics and residual effects of management that are otherwise omitted from standard meteorological drivers." (lines 434-438).

Comment 3: 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.

Thank you for this suggestion. To clarify, for grazing events, we define the start of any given grazing as the end of previous regrowth period, and the end of this grazing as the start of the next regrowth period. We have improved this in the Methods section (lines 114-116) as "We defined the period between two mowing/grazing/sward renewal events as a regrowth period (excluding the day(s) when management occurred). For grazing events, the start of any given grazing was defined as the end of the previous regrowth period, and the end of this grazing was considered the start of the next regrowth period.".

We have also added the definition of regrowth periods in the caption for Figure 3. To avoid overloading Figure 3, panel A, which is already very busy, we refrained from adding lines to panel A but put the necessary explanation in the figure caption.

Moreover, we have added a definition in the abstract as well (lines 16-17).

Comment 4: 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?

Thanks for this interesting thought. Yes, we could indeed look into this, however, we would need more years with grazing to separate the two management practices. Despite having 20 years of data in this study, we mainly encountered mowing events (n=86), much fewer grazing events/periods (n=27) across all regrowth periods. Moreover, not each year had grazing. To allow this potential comparison study in the future, we will keep measuring :)