

***Interactive comment on “On estimating Gross Primary Productivity of Mediterranean grasslands under different fertilization regimes using vegetation indices and hyperspectral reflectance” by Sofia Cerasoli et al.***

**Anonymous Referee #1**

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The authors use simple empirical models based on combinations of VIs and individual bands to estimate GPP and study the effect of different fertilization treatments on GPP. While this study is of interest, various flaws have been identified. They are briefly discussed below.

By focusing on VIs make the novelty of the work questionable. There are loads of similar papers. It is long known that VIs have their limitations. One wonders why not directly using non-parametric regression models that make more optimal use of all available, e.g. in the field of machine learning regression algorithms?

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- The methodology used to choose relevant variables for model construction seems not optimal. There is a dimensionality reduction done at 3 different levels while that could be done in one step by choosing a more appropriate method.

- There is nothing in the discussion about the influence of the fertilization treatment on PAI and GPP (fig 2 & 3). Yet, some interesting observations can be made from the figures and would be worthy for further discussion:

- Fertilization has an effect on PAI<sub>gr</sub> but not on GPP - PAI<sub>gr</sub> continues to increase with P treatment until May20 (and not with NPF treatment) → Indication that P fertilization enables to keep photosynthetic active leaves for a longer period?

- I do not really get why it is interesting to calculate different VI values for different treatments? (see fig 5)

- English can be significantly improved and should be revised by native speaker.

Detailed comments

See comments within the pdf document.

Please also note the supplement to this comment:

<https://www.biogeosciences-discuss.net/bg-2018-110/bg-2018-110-RC1-supplement.pdf>

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Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2018-110>, 2018.

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