

Author response to Editor comments for manuscript bg 2016-187

Editor Comments:

Associate Editor Decision: Publish subject to minor revisions (Editor review) (19 Nov

2016) by Mirco Migliavacca

Comments to the Author:

Dear authors,

in the revised manuscript you addressed properly all the concerns of the reviewers. The manuscript reads quite well and the analysis robust, and it will help to support further analysis on the phenology of Savanna and in general tree/grass mixed ecosystems.

The manuscript can be published after some minor revision

>P6 L1 Please describe very shortly the partitioning method used. Was it based >on a light
>response curve or night time NEE-temperature curves?
>We used a u^* filter and artificial neural network approach, with soil water, soil
>temperature,
>air temperature and EVI as the main model drivers, to determine respiration >(R)..

Can you please clarify which EVI was used? EVI MODIS or from field spectrometers? how was smoothed to produce daily time series (if it was)? a clarification could be useful for the readers (and at page 6 line 1 I haven't found the information).

Discussion with Reviewer #2 about automatic white balance

> However, white balance was set to zero in our analysis, which is a limitation in that
>it increases the scene illumination noise in our images.

If I understand correctly the white balance was kept fixed. In this case please clarify this aspect and the comment of the reviewer is amended. Of course the use of midday data also help as stated by the authors. The use of automatic white balance can have important impact on the digital number (DN) in particular of the blue channel impacting not only the noise but the seasonality on the GCC time series.

Sincerely,

Mirco Migliavacca

Author Response:

We wish to thank Dr. Migliavacca for finding our responses to the reviewer comments pleasing and for recommending our manuscript for publication. To answer the first minor concern of Dr. Migliavacca, we have clarified more explicitly in the text of section 2.2 that the partitioning method used was based on night-time NEE temperature response curve fitting. In regards to the second point raised by Dr. Migliavacca, it appears there was a typo in our response to reviewer #2's comment, in that white balance was actually set to 'auto', not 'zero' (AWB stated in section 2.3). Unfortunately, the cameras were installed before our realisation of the

importance of white balance for phenocam image analysis. We discuss this limitation in section 3.4, but feel it does not substantially change the overall message of our research; that inclusion of phenology information is important to consider when modelling GPP in savanna ecosystems, which is also supported by the EVI analysis. The use of AWB is likely to have more of an impact at the hourly to daily timescales due to changing sky conditions. We smoothed our GCC data using an 8-day running mean so as to remove some of the day-to-day noise likely from the AWB setting. This also made our comparison with MODIS-EVI more appropriate. We have added some more discussion about this to section 3.4 in order to make it clear that our phenocam data has this limitation, but that we also argue our results still tell an important story about the importance of phenology for predicting savanna GPP.