

Interactive comment on “A spatially downscaled sun-induced fluorescence global product for enhanced monitoring of vegetation productivity”

by Gregory Duveiller et al.

Gregory Duveiller et al.

gregory.duveiller@ec.europa.eu

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We are glad the the reviewer agrees with us that the dataset should be useful for the Earth System Science community at large. However, regarding the comment about how the downscaled SIF data may not provide information beyond greenness, we believe the reviewer might have missed a point regarding some choices in the methodology have been taken precisely to avoid this shortcoming. The downscaling is based on a semi-empirical light-use efficiency framework that is *locally* calibrated both in space and time. At each time step, the spatial disaggregation of the information of every SIF pixel is done based on the spatial distribution of the finer spatial scale pixels of NIRv,

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NDWI and LST over that single time window. This is done independently at every time step. As a result, the information contained in the downscaled time series is still following the same general pattern as that of the original SIF time series, and not that of the greenness which is used to downscale it. Therefore, if we assume that SIF contains more information than what is available from the ‘greenness’, which is the claim many publications have made about SIF in the past years, then the downscaled SIF we provide contains the same information. This local adjustment of the downscaling is actually what differentiates our work methodologically from that of others who used fixed models and basically rescale SIF to greenness (e.g. Gentine & Alemohammad, 2018). We will try to make this clearer in the revised manuscript.

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