Biogeosciences Discuss.,
https://doi.org/10.5194/bg-2020-309-AC2, 2020

Biogeosciences Discussions
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EGU

Interactive comment on "Improving the monitoring of deciduous broadleaf phenology using the Geostationary Operational Environmental Satellite (GOES) 16 and 17" *by* Kathryn I. Wheeler and Michael C. Dietze

Kathryn I. Wheeler and Michael C. Dietze

kiwheel@bu.edu

Received and published: 23 October 2020

We want to thank the reviewer for their useful and thoughtful comments, as well as their overall positive response in feeling that our paper was interesting and a useful contribution to the community.

While a daily MODIS product is available and some studies do use it, it is harder to use and less straight-forward to access. The MODIS product used in this paper still represents the most commonly used product in most phenological studies. We will add

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more to the discussion pointing out that there are other MODIS products that might result in different conclusions.

Line 51: We agree that more explanation of the limitations that changing viewing angle has would be beneficial to the readers of this journal.

Line 65: We will add something about clouds limiting both; however, with the higher temporal frequency clouds limit GOES less because there are more opportunities for clear observations. Indeed, in our previous paper (Wheeler and Dietze 2019 Remote Sens.) we showed that GOES was frequently able to produce robust estimates of daily NDVI even when mid-day observations (the most common timing for polar orbits) were obscured.

Line 144: We were aware of the Klosterman et al. (2014) paper and their findings. We did not choose to use their equation because it has substantially more parameters in it that were not explained in the manuscript and we could not determine reasonable priors for most of them. We did already mention their estimation of transition dates in the methods section of our paper, but will add some more to the discussion. We acknowledge that with the transition date estimation methods that we are using we are missing the gradual decline in the summer, but we are not trying to estimate that. The bias in the transition date estimations is shared across all of the curves and sources in our study. Overall, would encourage others in the community to consider more complex models, but feel that fitting a range of alternative models goes beyond our primary aim of providing a demonstration of the value of GOES for studying phenology and an initial comparison to Phenocams and MODIS.

Line 230: We will remove the word “prematurely” and specifically reference understory vs top-of-canopy instead of only hinting to it.

Line 264: We thank the reviewer for pointing out the ambiguity in this sentence and we will revise it.

Section 4.2: We agree that heterogeneity in the timing of fall phenology is important and will add some more discussion about it.

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