

Interactive
Comment

Interactive comment on “Incorporation of crop phenology in Simple Biosphere Model (SiBcrop) to improve land-atmosphere carbon exchanges from croplands” by E. Lokupitiya et al.

Anonymous Referee #1

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The use of NDVI to estimate LAI is known to result in low biomass estimates for intensively managed crops. This causes problems for models that are being developed to estimate carbon fluxes.

This paper represents one method that can be used to overcome this issue. The use of crop-specific phenology models is developed, applied, and documented in this paper.

This paper contributes to an advancement in our ability to model carbon fluxes from croplands. I see two issues that can use clarification: 1. The phenology models developed here seem to represent optimum growth based on temperature and precipitation. If there are reduced or augmented yields associated with management (e.g., weed

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control, herbivory, fertilizer applications, etc.), they will not be captured here. It is worth clarifying this. It may be beneficial to consider the use of inventory data (in future model development) that captures average annual variation in crop yields. 2. In Figure 7, the observed is slightly less than the predicted. This is what I would expect given my #1 comment, above, and this is a reasonable and positive result. In Figure 7b for Bondville, the predicted biomass in DOY 225 is increased, and the observed biomass is the inverse. It may be worth including a sentence or two in the discussion as to why you think this relationships occurs.

Interactive comment on Biogeosciences Discuss., 6, 1903, 2009.

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6, S657–S658, 2009

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S658

