



## ***Interactive comment on “Reducing impacts of systematic errors in the observation data on inverting ecosystem model parameters using different normalization methods” by L. Zhang et al.***

**M Chen (Editor)**

chenj@geog.utoronto.ca

Received and published: 30 December 2009

While I appreciate the motivation of this work to optimize a key ecosystem parameter  $V_{cmax}$ , I fail to see the usefulness of the normalization techniques for “inverting model parameters”. There are following issues that prevent me from understanding the significance of this work: 1. What data are used for inverting the model parameters? In Eq. 1, what are observations and simulations used? Are tower flux data used or just artificial LAI? The whole exercise does not seem to make sense if no actual observations are used for inverting any parameter. 2. Are the normalization methods applied to both observations and simulated results? I can't comprehend how observations can be nor-

C3761

malized to obtain a meaningful absolute value of a parameter. For example, if flux data are normalized, the absolute value that determines  $V_{cmax}$  is lost. If the whole purpose is to suppress the impact of LAI errors on  $V_{cmax}$  regardless of its influence on the absolute flux values, this work would have very limited value to publish. 3. It is not clear how LAI could affect  $V_{cmax}$  in the AVIM2 model. I guess AVIM2 is a big-leaf model, and Eqs. A1-A5 represent a canopy, not a leaf. In this case, A5 represents canopy conductance, rather than stomatal conductance. Is this true? Is the influence of LAI on A made through its influence on canopy conductance? The Appendix also needs an equation showing how NPP at the canopy level is related to variables in A1-A5. 4. The usefulness of this work is rather limited if the estimation of the leaf-level or canopy-level  $V_{cmax}$  is based on a big-leaf model and canopy-level flux measurements because big-leaf modeling is an incorrect upscaling methodology from leaf to canopy. In this way the inverted leaf-level  $V_{cmax}$  would depend on LAI itself, and the canopy-level  $V_{cmax}$  has no real meaning (it would change with sun angle on the same day, for example). The title may be changed to “Reducing impacts of systematic errors in LAI observation on inverting ecosystem model parameters using different normalization methods”. There are many grammatical typographical errors in the text, and it needs to be thoroughly edited.

---

Interactive comment on Biogeosciences Discuss., 6, 10447, 2009.

C3762