

Interactive comment on “VPRM-CHINA: Using the Vegetation, Photosynthesis, and Respiration Model to partition contributions to CO₂ measurements in Northern China during the 2005–2009 growing seasons” by Archana Dayalu et al.

Anonymous Referee #1

Received and published: 11 February 2018

The paper describes the first implementation of the diagnostic CO₂ flux model VPRM for a large part of China. In combination with gridded emission inventory data for CO₂ and atmospheric transport simulations with WRF-STILT, hourly atmospheric model fractions are simulated and compared to observations made at a rural site in northern China. The manuscript is well written, with clear tables and figures, and fits well within the scope of the journal. I recommend accepting the manuscript after applying a few minor changes mentioned in my comments below.

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Main comments:

I have a concern when setting NEE to missing values for shrubland vegetation classes, as this would mean that all simulated CO₂ values containing influence from that vegetation class are missing as well. How is this handled in the model? Would it not be better to either set NEE in those cases to zero, or to a value that is somewhat in the range of the observed fluxes?

Specific comments:

P3 L29: please clarify what is meant by “hourly CO₂ observations”. I assume atmospheric mole fractions have been measured.

Eq. 4a: LSWI_max should be described.

Fig. 4a: please mention what the colors (read, black) indicate

P19 L11: please explain in more detail what is meant by “unoptimized”

Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2017-504>, 2017.

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