

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.

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(RC 1) This manuscript reported on parameters adapting and model diagnosing of VPRM-CHINA for the eastern half of China. This paper is a well-presented and scientifically sound study and I recommend it for publication after minor revisions. However, I think the title ‘...Using the Vegetation, Photosynthesis, and Respiration Model to partition contributions to CO₂ measurements ...’ is not very proper for this paper:

C1

VPRM-CHINA model isn’t able to partition contributions of CO₂ concentration. A more scientific title should be needed for this manuscript.

(AC 1) Thank you for pointing this out. We emphasize that this is an effort to *model* partitioning. The VPRM is a helpful tool to provide insight into modeled estimates of what the relative contributions of vegetation and anthropogenic activity are to the atmospheric signal. We explore this concept in more detail in Section 3.4 (Fig. 9 and Fig. 10). As you point out, we cannot partition this in the real world, but we are showing that the VPRM-China model can do so to a certain extent and one of the purposes of the paper is to justify its use for this purpose by evaluating the vegetation-dominated growing season modeled time series relative to observations. We are unfortunately restricted by eddy flux site data availability – the uncertainty associated with this early version of VPRM-China (and, by extension, this study’s efforts to model partitioning) would be considerably reduced were additional validation data available. That being said, we are certainly open to a more appropriate title, if the editor or referee has suggestions.

(RC 2) P9 Table 1 Please explain clearly what is meant by ‘CN’ or ‘KR’).

(AC 2) This has now been clarified in the Table 1 caption: “Site Name abbreviations are according to FLUXNET convention; CN=China; KR=South Korea.”

(RC 3) P11 L11 Please describe how to scale annual gridcell emissions (as Gg CO₂) to $\mu\text{molCO}_2 \text{ m}^{-2}\text{s}^{-1}$

(AC 3) We have now clarified this in the text (P11 L11 to L13): Gridded annual emissions (Gg CO₂) are converted to fluxes in $\mu\text{mol/m}^2/\text{s}$ by dividing the annual emission by area in the grid cell and number of seconds in the year.

C2

