

## Responses to reviewers' comments.

Ueyama et al.

Simulating carbon and water cycles of larch forests in East Asia by the BIOME-BGC model with AsiaFlux data

Manuscript for Biogeosciences (CarboEastAsia Special Issue)

**All revisions are marked as red in the revised manuscript.**

### Comment 1:

*The only substantive issue I identified is the treatment of field-based estimates of GPP and RE as equivalent to field-based estimates of NEE. The estimates of GPP and RE are based on the partitioning of NEE into GPP and RE based on a model that relates nighttime RE to temperature, which is a commonly used approach. However, it is a model and its uncertainty is not well understood in this study. I think that this is an issue that should be acknowledged with a few sentences in section 4.4 on "Further model improvements and potential limitations".*

#### **Response:**

Thank you very much for the useful comments. By incorporating the reviewer's comment, we more discussed the uncertainties in the section 4.4 as follows: "The field-estimated GPP and RE were derived from NEE measurements during nighttime period. Nighttime fluxes by the eddy covariance technique have been recognized to contain some uncertainties (e.g., Gu et al., 2005; Papale et al., 2006). In addition to the uncertainties from nighttime measurement, it is difficult to accurately partition NEE into GPP and RE because there is no consensus on the partitioning method (Reichstein et al., 2005; Richardson and Hollinger, 2005). Although this study standardized the partitioning methodology among the sites, further studies will be required to estimate GPP and RE from field observations."

### Comment 2:

*In general, the manuscript is well organized and well written. The figures and tables are all useful in my opinion. I realize that English is a second language for the authors, and so I've made a number of editorial suggestions below (mostly wording suggestions within sentences).*

#### **Response:**

We really appreciate your beneficial comments and editorial suggestions. All the sentences have been revised.

According to the comment from reviewer 1, since it might be difficult to read Table 2, we

revised the table by adding the cases.

We thank all the reviews comments and constructive discussion.