

I would also suggest that the authors check the version of FLUXCOM (FLUXCOM-RS or FLUXCOM-RS+METEO) used in the article. If the authors use the FLUXCOM-RS+METEO version, only mean seasonal cycles of RS-based land surface properties and concurrent meteorological input are used in the RS+METEO setup to predict the GPP in each time step (Jung et al., 2020). Therefore, in theory, the FLUXCOM GPP estimates should not be considered to respond to the meteorological conditions in the previous months. The FLUXCOM GPP estimates also lack the effect of CO₂ fertilization (Jung et al., 2020), so the discussion on the long-term trend of GPP due to CO₂ fertilization should also be reevaluated.

Thanks for bringing up the robustness of our results concerning the selection of the FLUXCOM version, similar to referee #1. We have confirmed that our results on dataset (dis-)agreement and our conclusions align between the RS and RS+METEO version. We will add supporting figures and text (new Fig. S6, S7) to the Supplementary Information that show the results of these sensitivity tests. Due to the longer time coverage of RS+METEO (1979-2014 vs. 2001-2014) improving the robustness of our statistical analysis, we will keep this dataset as the primary reference of our study. In addition to the new supplementary material, we will update the description of the datasets (Sect. 2) and discuss the results for the different datasets and conclusions to be drawn from this in Sect. 5.1.2.

Regarding the CO₂ fertilization, we already explicitly bring up that limitation of FLUXCOM in the data section (Sect. 2) and mention that this is not expected to affect the statistical coupling between temperature-moisture and GPP extremes as we do not consider state-dependency. In fact, the FLUXCOM dataset is not entirely lacking a CO₂ fertilization trend, but the trends are unrealistic, especially towards the end of the 20th century (see Sect. 2). We will expand and update the explanation in the following way:

Because FLUXCOM does not explicitly account for CO₂ fertilization effects on GPP, long-term CO₂ trends are not consistently realistic, especially in the late 1970s to early 1990s (Jung et al. 2020). However, since we are focusing on the statistical coupling between climatic compound events and GPP extremes in general and not on its state-dependency, this shortcoming is not limiting our assessment. This is confirmed by robustness testing of an early (1979-1992) versus a late subset (2001-2014) of the FLUXCOM dataset (Sect. S4), which shows no systematic differences in statistical coupling.