

### **Reply to Reviewer 1:**

We thank the Reviewer for providing useful comments and suggestions to improve our work. We intend to address all the concerns raised by the Reviewer and refine the methodology adopted to identify the dominant factors of vegetation productivity. Specifically, the revised version of the manuscript will explicitly account for the long-term contribution effect of CO<sub>2</sub> fertilization using the C4MIP 1pctCO<sub>2</sub>-bgc simulations available for 11 out of the original 13 ESMs considered in our original study. We will also use the 1pctCO<sub>2</sub>-rad simulation to disentangle the long-term climatic effect on ecosystem productivity, thus adopting the carbon-cycle framework to understand the relative contribution of both factors to the Amazon carbon sink in a future high-radiative forcing scenario. We will therefore revisit the methodology for estimating long-term changes as described above, while maintaining the multilinear regression framework used for assessing inter-annual variability responses of ecosystem productivity. Here, we will modify the regression by following the suggestions of the Reviewer and test the effects of precipitation and alternatively soil moisture, but neglecting the contribution of latent heat fluxes. Regarding the negative correlation of precipitation with NEP, we acknowledge that this unexpected incongruence is due to an unfortunate mislabeling of the Figure 7 and Figure 8 panels, so that precipitation is associated, as expected, with a positive regression coefficient. This error comes from a wrong figure upload into the final document, and it's resolvable without additional analysis. To conclude, we are confident that our revised study will benefit from these improvements both in terms of clarity and with respect to the consistency of the methodology and reliability of the results presented.