This study by Dunkl et al. used six earth system models' output from the Decadal Climate Prediction Project to evaluate the inter-annual variability (IAV) of terrestrial gross primary production (GPP) and models' predictability of GPP IAV. Overall, the manuscript is well organized and written. The spatial patterns of GPP IAV and their predictability from environmental drivers are shown for each model. Then the differences in GPP IAV and predictability between models are clearly presented. I recommend its publication after addressing minor issues.

We thank the reviewers for their constructive and helpful comments and appreciate their careful reading of the manuscript.

After reading the text, I think implications of the findings should be addressed or discussed in-depth. Now in section 3, results are described but little linkage with findings/questions summarized in the introduction section. It is better to add more discussion and/or implications.

The reviewer is making the comment that the manuscript would benefit from putting the findings of the study into a broader perspective. This also reflects the views of reviewer No. 2. We will address this by extending the conclusions section of the manuscript to include comments on the implications of the findings and an outlook on the topic.

I am wondering whether regional results can be presented, such as Anders Ahlstorm et al., Science 2015. This would help our understanding on GPP IAV from models.

We were considering such an approach during the early stages of the analysis. However we decided that the separation of results by plant functional types would add little. As a step towards this, we will however introduce a figure showing the differences in aridity among the models. This will allow the readers to gain some insights on the contribution of biome types to GPP IAV.