## Reply to the Editor's comments

We thank the Editor for taking the time to review our revised manuscript. We firstly address the Editor's initial two comments and then reply to the Editors final comment.

**Comment 1:**
Page 4: “land cover classes, including oceans, tropical forests and deserts”.

Since you include here the oceans change to “surface cover classes....”

**Author's reply**
We have now modified this sentence as suggested by the Editor.

**Comment 2:**
Page 11, “..dominant vegetation types at a 1° scale in the latter data set”

**Author's reply:**
We have now changed the text as suggested by the Editor.

**Comment 3:**
Page 14: “In contrast, the differences in seasonal amplitude in total O3 dry deposition for oceans, grass land and deciduous forest are likely due to the large areas covered by these LCCs as the differences in seasonal amplitude in O3 dry deposition velocities for these LCCs is small.”

Now having this version of the manuscript that reads smoothly and which allowed me to also go over some of the more detailed information, I was struck by this finding. You would expect that actually have large seasonal cycles in the dry deposition velocities of deciduous forest with the changes in LAI over the season. This is quite a surprising result unless the deposition to this class would also include tropical rainforest.

**Author's reply:**
The Editor highlights an interesting finding which we discuss further below:

The seasonal cycle/amplitude in dry deposition velocity to deciduous forest is smaller than for coniferous forest or agricultural and crop land across the model ensemble. We suggest that this is due to the classification of deciduous forest, which encompasses a wide range of vegetation in the OW11 data set. The associated dry deposition velocity is therefore an average value from a large area. This issue is less pronounced in the data partitioned to the GLCF data set in which the forest land cover classes are more resolved and the seasonal amplitude in the $O_3$ deposition velocity is better correlated with the scale of the seasonal amplitude in total $O_3$ deposition for the forested GLCF LCCs.

We also highlight that we are attributing the large spread in the seasonal amplitude of total global $O_3$ dry deposition. across the model ensemble to the large global areas of grassland and ocean as this is not really explained by the relatively small spread in the seasonal amplitude of the $O_3$ dry deposition velocities. This is actually less pronounced for deciduous forest than grassland and ocean and we have removed deciduous forest from the following sentence on page 14:

“In contrast, the differences in seasonal amplitude in total O3 dry deposition for oceans, grass land

and deciduous forest are likely due to the large areas covered by these LCCs as the differences in seasonal amplitude in O3 dry deposition velocities for these LCCs is small."

This finding emphasizes our conclusions that land cover specific output would enable better diagnosis of the driving factors behind $O_3$ dry deposition in global scale models and that better constraints on $O_3$ dry deposition velocities and more resolved land cover data sets would improve $O_3$ dry deposition modelling.