

Answer to referee comment 3

October 23, 2020

Dear referee, many thanks for the comments. We appreciate that the referee recognise the purpose and the importance of this manuscript. Please find our replies to the special comments below.

Special comments

Abstract could be revised to better summarize (shorten) the model development details and leave room for model performance improvement and impact on global ozone budget, etc.

Reply: We agree that the abstract can be more concise to include additional important aspects you mentioned. We will re-write it.

Authors selected 6 land types out of 11 in the model. Could authors add in the reason for including or excluding certain land types?

Reply: We used the already existing surface scheme in MESSy for this study. The 6 land types (better termed surface types) is a generalisation of the originally given 11 types ((1) Urban land, (2) agricultural land, (3) range land, (4) deciduous forest, (5) coniferous forest, (6) mixed forest including wetland, (7) water including both salt and fresh, (8) barren land - mostly desert, (9) non-forested wetland, (10) mixed agricultural and range land, (11) rocky open areas with low-growing shrubs) whereas e.g. the here used surface type vegetation represents all vegetated areas.

Mismatching meteorology: in Sect. 4.2, authors choose/have to use meteorology data from ERA5 to assess the impact of stress factors on the diurnal cycle of dry deposition. And in line 371-372, ‘... , as the humidity over the Amazon forest is probably too low in the model’. Same argument is presented in line 415-417. Could these mismatches/comparisons in meteorology be shown in appendix as figures?

Reply: Yes, the mentioned aspect plays an important role for the analysis at ATTO. The argumentation can be illustrated and clarified with figures of the comparison of the meteorology. We will add these figures to the appendix.

The typos mentioned in the technical comments will be corrected.