

Interactive comment on “Forest-atmosphere exchange of reactive nitrogen in a low polluted area – temporal dynamics and annual budgets” by Pascal Wintjen et al.

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Author comment to reviewers’ comments - manuscript *BG-2020-364* “Forest-atmosphere exchange of reactive nitrogen in a low polluted area – temporal dynamics and annual budgets”

We thank the reviewers for their constructive comments. We appreciate their suggestions and agree that including analyses about deposition velocities and canopy resistance brings further insight into the exchange patterns of reactive nitrogen species. We further agree that a better streamlining of the discussion will improve

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readability and quality of the paper. After carefully reflecting on the given suggestions and how these could be implemented in the best way given the fact that the current version is already relatively long, we decided to split the manuscript into two parts.

The first part will address the TRANC measurements, the second part will be focusing on the modeling of reactive nitrogen dry deposition. Therefore, a revised version of the submitted preprint will solely concentrate on the evaluation of the TRANC measurements. We will extend our analysis and will show diurnal cycles of both deposition velocities and canopy resistances stratified by meteorological drivers and concentration, as was done in the former Figure 4. The discussion will be updated accordingly. We will further show the impact of flux filters and different statistical gap-filling approaches on the dry deposition budget. A point-by-point response will be provided to keep track of the changes made and how the individual comments were taken into account.

The second part will deal with the nitrogen deposition modeling and will be submitted to BG as a separate manuscript at a later stage. We plan to draw comparisons of measured and modeled deposition velocities and, similar to the measurement part, investigate the dependencies of modeled total reactive nitrogen dry deposition velocities on micrometeorology. We will include wet deposition results from model calculations to discuss the total nitrogen deposition. Comments exclusively dealing with modeling aspects will be taken into account in the second paper. We hope that our strategy for a revised version will be supported by the editor and the reviewers.

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