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

Anonymous Referee #3

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Wintjen et al. present an interesting and valuable data set on total nitrogen deposition to a forest spanning multiple years. The paper will be a worthy addition to N deposition literature, but would be improved by providing a few additional details and considering some additional analysis and interpretation.

Page: 8 line 252-254.It would be helpful to provide a little more detail on the calculation of resistances beyond just giving a reference.The actual equation itself would be ideal, but at least note what input variables are used in the parameterizations so that readers can know what the calculations are based on without having to consult multiple sources from the literature.

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line 257. Here it notes that alternate data sources are used for missing NH3 and HNO3. Is it stated anywhere how the data sources compare to one another when there are simultaneous measurements? Readers need this to assess whether there is any bias in the gap filling? Showing or mentioning a direct comparison would complement the plots showing cumulative deposition computed from different approaches. The direct comparison of simultaneous concentrations removes any confounding influence of other inputs to the calculated fluxes

Page: 23 Line 449.Here it concludes that radiation is the primary driver affecting the diel cycle of N deposition. How have you discounted the role of wind speed/turbulence intensity, which will covary to radiation, as an alternative? If you account for the turbulence contribution to deposition velocity based on resistance model and thus compute an apparent canopy resistance from the residual is there still a dependence on radiation?

Page: 24 line 574 Do you consider the role of humidity and temperature on the partitioning between gaseous NH3 and NH4 aerosol? The patterns imposed by stomatal opening and NH3 partitioning might be difficult to distinguish. The observed pattern would be consistent with shifting the equilibrium toward gaseous NH3 during the warm and dry daytime conditions.

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