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Topical editor  
Annales Geophysicae

Dear Daniel Whiter

Thank you for the comments on our submission *Observations of sunlit  $N_2^+$  aurora at high altitudes during the RENU2 flight*. I am confident that the replies to the comments listed below are sufficient to get the paper accepted.

- *Line 120: 428.7 should be 427.8.*
  - Thank you, is has been corrected
- *There is still a date with an ordinal suffix, on line 139 ("13th"). Please convert this to a date (with month and year) both to avoid ambiguity and to follow the journal guidelines.*
  - It has been changed
- *Line 176: I assume "comprehensible" should be "comprehensive".*
  - Changed
- *Figure 6 caption: Please add "(dashed line)" and "(blue line)" into the caption somewhere to make things easier for the reader and to avoid ambiguity.*
  - It has been added to the text even though the figure legend contained the information.
- *Figure 6: Please mark on the start and end times of the "plateau", e.g. with shading, vertical lines, or arrows, as requested by the reviewer. This plateau is unclear to the reviewer, so is likely to also be unclear to other readers.*
  - I am sorry to say I can not see any good reason for cluttering the figure with annotations. The text clearly references the data and time points (500 s. and 630 s), which can easily be found on the  $x$ -axis. Throughout the article there are numerous references to axis coordinates without any annotations. This is common practise in scientific papers. Might I speculate that the reviewer forgot that the  $y$ -axis is logarithmic, and thereby missing the significant step up/down at the referenced time points?
- *Line 206, sentence starting "However": I suggest rewriting this sentence to make it easier to read. Perhaps this is an accurate rewrite: "However, during this period the AURIC/B3C modelling shows that the resonance scattering component of the 391.4 nm emission vastly exceeds the direct auroral emission component, and is enhanced due to the increased production of  $N_2^+$  ions by the auroral precipitation."*
  - The sentence has been rewritten and simplified.
- *Line 216, sentence starting "The data": I'm sorry but I don't understand what point you are trying to make with this sentence, and I don't think the reviewer did either. Are you saying the model predicts that emission from auroral precipitation should be observed from 450s onwards? If so, what point does the "therefore" follow from?*

- The sentence has been rewritten and simplified.
- *Line 269: "is closely followed by" - to me this reads as if there is a lag between the correlation coefficients, but I don't think that's what you mean. Probably "closely follows" is better.*
  - You are correct. Thank you.

Kind regards on behalf of the authors

Pål Gunnar Ellingsen