

Interactive comment on “Observations of total peroxy nitrates and total alkyl nitrates during the OP3 campaign: isoprene nitrate chemistry above a south-east Asian tropical rain forest” by E. Aruffo et al.

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Aruffo et al. “Observations of total peroxy nitrates and total alkyl nitrates.”

I have a few specific questions and comments:

Page 4807 and figure 3 Comparison of NO_z from chemiluminescence NO_z and LIF NO_z. There is a correlation value, (R or R²), which is correct, the plot or the text? What was fitting method used? Did the fit account for uncertainties in both measurements? Why were medians compared and not means? It would really nice to plot a time series

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of these two measures of NO_z. The scatter plot indicates large differences between the two measurements. There are times when NO_z Chem is measuring 300 ppt and the LIF techniques measures near zero and times where the reverse, nearly 200 ppt in the LIF and near zero in the Chem. NO_z. Does the comparative time series tell us the reason for these differences? For example, does one instrument over-measure relative the other during particular circumstances? The reason given on page 4807 does not seem to me to be sufficient and the discussion would benefit from a comparison of the time-series and a discussion of the pros and cons of both techniques in particular configuration in which they were operated in the tropical forest, for example:

How well does the chem. NO_z instrument measure HNO₃? Were there inlet losses along a long humid inlet?

How does the failure to measure HONO, NO₃ and HNO₃ account for the time periods where the LIF instrument measures more than the Chem. NO_z?

If HNO₃ was 25% of the NO_y and the LIF did not measure it, why is there not a gradient larger than one in the comparison fit?

The abstract and the conclusions state that the model reproduced the ΣPNs well, but the plot of the comparison shows a disagreement for 6 out of the 10 hours. What is the definition of good agreement? Does the model get it right for the wrong reason in the middle of the day or wrong for the right reason at either end of the day?

It does not seem to me that there is any improvement in the fit between the model and the experiment for the alkyl nitrates by adjusting yields and recycling. It gets better in parts and worse in others. The whole shape of the diurnal is not particularly similar suggesting that the model is not simulating the situation well and therefore the statement regarding the recycling and yield is not supported by this data.

I find figure 4 very difficult to read.

These are interesting measurements in a location which is rarely studied and it would

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be of benefit to explore the measurements in themselves in greater detail before using a box model to draw conclusions about particular specific mechanisms in model systems.

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