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Interactive comment on "Hydroxyl radicals in the tropical troposphere over the Suriname rainforest: airborne measurements" *by* M. Martinez et al.

M. Martinez et al.

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We have marked questions by the reviewer with "R:" and our answers with "A:".

R: The flux is determined in both nitrogen and helium bath gases and Figure 5 shows a difference in behaviour for both gases. The flux measured in nitrogen shows a dependence on gas flow and %N2O added, while the flux measured in He does not. Has the NOx analyser response to the nitrogen and helium carrier gases been quantified? With a chemiluminescence TECO NOx analyser (as used here) the NO signal will be quenched by N2O in the gas flow. For 20% N2O in nitrogen, the NO signal is reduced by almost 20%, an effect comparable to that seen in Figure 6. This effect becomes non-linear with higher concentrations of N2O. Has this reduction been corrected for in the flux calculation?

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A: The NOx analyser has been calibrated both in N2 and He and the different sensitivities taken into account. The apparent trend in the flux measured in nitrogen is within the uncertainties of the measurements. The NOx analyser was also calibrated with different amounts of N2O added to the calibration gas, and reduction of the signal due to quenching with N2O was taken into account. We propose to add the following sentence in p15500 line 2: "The TECO analiser was calibrated with both N2 and He as carrier gases, as well as with addition of different amounts of N2O to each carrier gas, to account for quenching of the NO signal. "

R: Other comments: 1) In Table 1 the sum in quadrature of these parameters is over 17% - not the 12% quoted in the text. Why are the dimensions of the photolysis chamber known to within only 10%? Is there a mistake in the errors quoted or in the calculation of the total error?

A: The table caption is misleading: The errors listed in table 1 are not the effect of each uncertainty on the lamp flux error, but the errors of the variables involved in the calculation of the sensitivity. We propose to change the table caption to: "Uncertainties leading to systematic errors for the lamp flux calibration." There is also a typo in the table: The uncertainty for the photolysis chamber height is 3%, or 0.1 mm. The relative uncertainties for the other dimensions are negligible. We propose to correct this in the table.

R: 2) Contamination of optics by pump oil is suggested as a reason for C0 variation. If so, is there any reason the C0 for OH and HO2 would not follow the same trends?

A: Contamination of the optics with oil from the pumps cannot be expected to be equal in both measurement cells. Depending on where exactly how much oil deposits, the effect on sensitivity will vary. If we had never cleaned the optics during the campaign, a continuous decrease would be expected in C0 for both measurement cells. But we did, and this may also not have been equally successful for both measurement cells each time.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 15491, 2008.

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