Atmos. Chem. Phys. Discuss., 7, S3014–S3016, 2007
www.atmos-chem-phys-discuss.net/7/S3014/2007/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Seasonal variation of ozone deposition to a tropical rain forest in southwest Amazonia" *by* U. Rummel et al.

Anonymous Referee #1

Received and published: 11 July 2007

General comments:

The paper present valuable data-sets for O_3 flux over Amazonian rain forest. Such data are extremely rare in the literature. The methodology is of a very high standard, which results in a high confidence in the data. The paper also provides a detailed analysis of the components of the total flux and I find this analysis and accompanying discussion very interesting Especially the storage flux and its diurnal variation is a novel contribution to the O_3 flux science, at least for tropical sites.

The authors conclude that there are distinctive differences in the ozone flux during wet and dry seasons. They find a strong limitation in the stomatal uptake due to specific humidity deficit in the dry season. Large daytime ozone mixing ratios caused a

substantial canopy ozone storage during the dry season which masked the true diel variation of the ozone deposition as measured by eddy covariance.

I suggest that the paper is accepted with minor corrections addressing the comments given below.

Specific comments:

p.7404, l.8: How were the periods for measurements actually chosen? They are defined as the end of the wet and dry seasons, respectively. Looking at figure 2, the periods look more like the end and beginning of the wet season. More extreme situations could probably have been found by measuring in the middle of the wet and dry seasons respectively. However, it is a bit strange that the SHD for for LBA-EUSTACH-2 is close to that of the peak dry season even after a considerable amount of rain. Is there any explanation for that?

p.7406, l.14: I suppose the calibration unit included an O_3 generator?

p.7406, l.19: Does this imply, that each height was measured for about 2 minutes? Which part of the measurements were used for calculating the means for each height?

p.7408, l.10: What is the justification for choosing 0.01 m/s as the threshold for u_*?

p.7409, eq.1: I miss a few details about how the storage flux was calculated.

p.7413, l.13. If the purpose of fig.6 is to show co-variance between O_3 and SHD, fig. 7 is sufficient.

Fig. 8: It would improve the readability if the figure was annotated with ”wet season“ and ”dry season“ above the columns. The same holds for figs. 9, 10 and 11.

p.7415, l.14: I suppose the deposition velocity was *always* calculated as the ratio of the storage-corrected O_3 flux and the O_3 mixing ration. Delete ”generally“.

p.7416, l.26: I suppose it should be the average SHD found in the *dry* season during

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daytime (10:00-18:00, as stated in the legend to fig. 7).

p.7418, l.28: The depletion of O_3 during night is not only by deposition, but also by chemical reactions.

p.7428, l.2ff : Like reviewer no. 2, I find that this part is somewhat speculative and does not add substantial new information.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 7399, 2007.