

***Interactive comment on* “Spatial and temporal distribution of atmospheric aerosols in the lowermost troposphere over the Amazonian tropical rainforest” by R. Krejci et al.**

R. Krejci et al.

Received and published: 9 March 2005

1. In abstract, line 9, 4-5 cm/s could be given in m/h, that would be more informative.

Changes made in manuscript

2. In abstract, lines 16 and 19, although the readers of ACP probably know what is meant by Aitken mode and accumulation mode particles, it would be still good to give size ranges as general information. Also, for example, in p. 3573, line 16, what is meant exactly by N₁₂₀, is it really a mode or number of particles larger than 120 nm?

Meaning of N₆, N₁₈ and N₁₂₀ abbreviations is explained in experimental part of this

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paper on pages 3569-3570. Different modes of aerosol size distribution are not defined arbitrary within absolute size limits, but more by shape of aerosol distribution, which is in turn defined by processes as condensation, coagulation and cloud processing of aerosol particles. Size of the particles belonging to specific mode is variable within different parts of atmosphere as well as it is changing with time at a certain point. Thus giving arbitrary sizes can be misleading.

3. Introduction, line 25, what is meant by semilagrangian, explain by a couple of words.

We assume that reviewer is pointing to page 3568. True lagrangian experiment requires repeated measurements in the same air parcel to study temporal evolution of the certain properties during transport. Such experiment we were not able to perform. Trade winds controlling the air mass transport in lowermost troposphere are well known for their persistence. Based on the observed wind speed and wind direction one can fairly well estimate time needed for an air parcel to be transported between two points where measurements were performed. Moreover in this case we learned from several measurement flights that aerosol properties over the coastal Atlantic Ocean were very stable and they can be extrapolated over the several days in time. It is why we call the experimental set up as semilagrangian as we did not follow exactly the same air parcel, but extrapolated measurements in MBL in time, otherwise keeping the rest of the experimental set up similar to a lagrangian approach.

4. Experiments, p. 3571, line 3, the accuracy is 5%, relative (% of RH) or absolute accuracy (RH itself).

The accuracy is relative in % of RH. See change in text

5. The last paragraph of 3.1 Marine BL could be put earlier when Fig. 2 was mentioned and briefly discussed.

Changes made in manuscript

6. Summary and Conclusions, p. 3588, line 24: "nocturnal fossil layer", normally the

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term is "nocturnal residual layer".

Changes made in manuscript

7. Fig. 2., why data from 21 March is plotted, what special it is there?

Measurements in the MBL on March 21 were performed over the coastal region where marine air enter the continent and flow over the rain forest to region where measurements over the land were performed (see Fig. 1). The other reason is to show that observed aerosol distribution was not different from the mean MBL aerosol distribution observed during several flights during a course of the campaign.

References, which belong to the first part of the reviewer's comments

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