

Interactive comment on “Air pollution during the 2003 European heat wave as seen by MOZAIC airliners” by M. Tressol et al.

Anonymous Referee #1

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1. General

The article presents an original description of the atmospheric composition in ozone CO and NO_y during the 2003 heat wave, as seen by the MOZAIC measurements. As the analysis bears on the description of vertical structures encountered above Frankfurt, it comes as a study complementary to other studies where the regional focusing on horizontal patterns of pollutant concentrations. In particular, layers with high CO burden are fairly well identified, which completes previous modeling works on the transport of Portuguese fire smokes across Europe. The paper is relatively well written. The results are original and deserve to be published in ACP after minor revisions of the manuscript listed below.

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2. Minor points

2.1 Several references are incomplete (ex: Albuissou et al, Barbosa et al, ...)

2.2 P 15916, second paragraph: reread carefully, there are misformed sentences and English problems

2.3 I think Figure 1 could contain more instructive informations: first of all, it is not clear whether the upper-air temperature anomalies in fig 1b are exceptional or not. It would be nice to have a kind of statistical analysis here, and show contours of the 1x and 2x standard deviation of temperature in August superimposed. Also it would be very instructive to represent the height of the PBL, which is relatively easy to calculated using potential temperature. At least Figure 1 would gain if 2 other panels of potential temperature or virtual potential temperatures and anomalies were added.

2.4 When plotting the profiles using an aircraft as a continuous time series like in Figure 1 and others, it would be nice to discuss the spread of aircraft trajectories at high altitudes. How far from Frankfurt are the Mozaic flights at 6-10 km altitude? Are they still above Germany? Maybe it would be nice to have a figure or statistics table on distance to airport.

2.5 P 15920 line 16: change "these anomalies" into "such anomalies"

2.6 Figure 3 has a problem, with a panel repetition

2.7 P 15921 line 23: "blown up" is not an appropriate expression

2.8 The quality of Figure 4 is poor

2.9 Page 15926 line 5: more details are required on how the "CO budget analysis" is made.

2.10 Page 15930 The first paragraph discussion long and windy, it could be in a discussion section.

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2.11 Page 15931 last lines: The arguments presented are not really convincing for the existence of fire-produced CO in the boundary layer. The fact that a few back-trajectories come from the Iberian peninsula is not a strong argument. In the light of the overall results I would rather say that one can only clearly identify smoke plume signatures in the free troposphere.

2.12 English has to be improved in the revised version

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 15911, 2007.

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