

Interactive comment on “Aircraft measurements over Europe of an air pollution plume from Southeast Asia – aerosol and chemical characterization” by A. Stohl et al.

Anonymous Referee #1

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This paper presents evidence of trace gas and aerosol enhancements in a South East Asian pollution plume sampled over Europe. The aircraft sampling of the plume was targeted using the FLEXPART particle dispersion model and the nearly hemispheric transport plume was followed using CO retrievals from the AIRS instrument.

General Comments

The paper addresses the very interesting question of how well models capture near-interhemispheric transport plumes and how cohesive pollution plumes remain after such long-distance transport. The measurements and model results are new and interesting, but the paper would be far more effective if the authors distilled the main

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findings to a smaller number of figures (I counted 18 - many of them multi panel) and shortened the text.

Specific Comments

Given that the authors basically discuss 1 transport plume sampled on 2 successive days, I find the paper to be too long and sometimes going into unnecessary details. Some of the material could be available in supplementary material instead of the main paper.

It takes 19 pages of text and 13 figures before reaching the interesting part of the paper on the chemical characterization of the plumes. Some of the information included before could be substantially shortened. For example, the campaign execution part contains too much information. The reader doesn't need to know about the logistical details (no suitcase flights, availability of aircraft, number of flight hours, air traffic control limitations) that lead the flight tracks into being what they are.

Technical Comments

+ The GFS model results are shown on Figures 8 and 10, but are not discussed in the text. I suggest eliminating them.

+ Figure 8 and 10 are difficult to read. I had a very difficult time understanding the way the age of the plumes is presented in figures 8ab and 10ab. I understand that the color corresponds to the age, but why are there multiple colors? Do they correspond to individual ages of the ensemble of particles? The figure legend was not very helpful. What does the y-axis represent? What not use a single 'mean age' representing the mean of the ensemble of particles? The y-axis of these figures are not labeled, and it is thus difficult to see what axis corresponds to what variable. What is the difference between CO_t and CO? Which one is plotted?

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 12611, 2006.

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