Atmos. Chem. Phys. Discuss., 10, C8320–C8322, 2010
www.atmos-chem-phys-discuss.net/10/C8320/2010/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Air mass origins influencing TTL chemical composition over West Africa during 2006 summer monsoon" *by* K. S. Law et al.

K. S. Law et al.

kathy.law@latmos.ipsl.fr

Received and published: 6 October 2010

Reply to reviewer 2

Replies to the reviewer's minor comments as follows:

1. In the abstract and once in the text, CO is mentioned as a short lived species. It may be true relative to CO2 but CO is a rather long lived species relative to NO and also to O3.

Text amended to "species with short lifetimes (relative to CO2) like CO, NO, .." in the abstract and to "particularly in species like NO, CO and aerosols which have shorter

lifetimes relative to CO2." in section 6. In fact, CO has a similar lifetime to O3.

2. Transport from Asia to Africa in the TTL is mostly referred to as "westerly flow" or "westerly transport" throughout the manuscript. I think that transport "primarily from the East" or by the TEJ is easterly or westward. It has to be checked and corrected in the whole manuscript.

Corrected to westward.

3. p15498-l12: upper TTL is <100hPa. Corrected

4. p15506-l16 ". . .influenced primarily by. . ." Corrected.

5. p15507-l28: it is mentioned that "African monsoon is...transporting air masses up to at least 360-365 K". It should be rather "up to a maximum altitude of 360-365".

Corrected.

6. p15511-l6: ". . . the lower TTL is photochemically. . .

Text ammended to "much of the TTL over West Africa, and especially the lower TTL, is photochemically active and . . .."

7. Fig. 3: caption "crossing 1000-400 hPa" isn't it rather "crossing 400 hPa"?

Yes, caption corrected.

8. Fig 7: why no back trajectories originating below 800 hPa are starting over West Africa? Is there no large scale uplift that could be seen by the model using ECMWF analyses in West Africa ? Or does it mean that the M55 flights did not sample air masses impacted by large scale uplift from West Africa (except on the 11/08 as shown in Fig 9)?

A more strict criteria of uplift from below 800 hPa arriving along the M55 flights was used in Figure 7 compared to 650 hPa in Figure 9. There was an error in the figure caption for Figure 9 which has been corrected. The ECMWF analyses do see large

ACPD

10, C8320–C8322, 2010

scale uplift as also shown by the results in Figures 4a and 4b.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 15485, 2010.