

## ***Interactive comment on “Statistical analysis of water vapour and ozone in the UT/LS observed during SPURT and MOZAIC” by A. Kunz et al.***

### **Anonymous Referee #2**

Received and published: 16 July 2008

Review of Kunz et al "Statistical analysis of water vapour and ozone in the UT/LS observed during SPURT and MOZAIC"

This paper presents a comparison of UT/LS O<sub>3</sub> and H<sub>2</sub>O from aircraft in two projects, SPURT and MOZAIC. The paper is well written, with some grammar correction needed. It should be publishable in ACP with minor revisions as detailed below.

General Points:

The really interesting parts of the paper are the simultaneous comparison in Figure 7 (CIRRUS III) and the lack of intraseasonal (10-190 day) variability in ozone seen in the MOZAIC data.

I think the description of the data would be a lot better if the results of the CIRRUSIII

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campaign were presented first, even in discussing the water vapor instruments in section 2. Certainly the top panel is not statistical, and would show the correspondence of the water vapor sensors.

The part of the variance that was most interesting was the lack of intraseasonal variance in the MOZAIC ozone data. This would be a much more interesting study if you speculated on why that is the case. Does it have to do with dynamics in the UT/LS, or does it have to do with ozone chemical timescales? It is probably beyond the scope of this work, but could model (either a CTM like CLaMS or a Coupled Chemistry Climate Model) help understand this?

Minor points

L48: "The data set is based on 36..."

L53: "The aircraft was based at the Hohn military base in northern..."

L102: "The sensor is mounted..."

L105: The MOZAIC sensor may also be subject to a moist bias due to evaporation of small or shattered ice crystals during compressional heating. Since these points then appear supersaturated, this is less of an issue in your analysis since you would throw out most of these points.

L230+ : I guess I am not surprised that these data are different due to the sampling differences, and I do not think this comparison worthy of so much space in the paper. The statistical analysis seems properly done, but it merely says what you conclude in the end: there are probably sampling issues here.

L291: I think this is the first time you are using the 'CIRRUS' campaign acronym. What does it stand for? More importantly, the project itself needs to be described in the text. Obviously the figure shows two sensors, the 'MOZAIC' and 'FISH' (SPURT) being compared. Are they on the same aircraft or different aircraft? More details are necessary.

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As noted above, I think this comparison (at least the top panel) could go into section 2 since it is more validation.

L300+: It does not seem surprising that there is no variance in SPURT between 10 and 90 days as you note.

L384+: the lack of variance in MOZAIC ozone is very interesting. As noted above: can you comment on this in the conclusions more (L414).

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Interactive comment on Atmos. Chem. Phys. Discuss., 8, 12561, 2008.

## ACPD

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