

Reply to Editor Initial Decision: Publish subject to technical corrections
(22 Apr 2015) by William Lahoz.

Our replies are in bold italics.

Authors should address the following comments: Page numbers are for the response from the authors – main text starts on p. 16.

One general comment: With the addition of new text, a number of paragraphs become quite large. Consider breaking them up into smaller paragraphs.

We have broken up several of the paragraphs.

P. 17

L. 5: Style issue – I suggest you do not start a sentence with an acronym. Perhaps use: “The IFS...”. Same elsewhere in the paper and in the supplement.

We have changed this here and in a few other places. However, there are occasions where we start sentences with O3 or CO or the experiment abbreviation, e.g. REAN, and we think it would make the text more cumbersome to rephrase this (e.g. if we inserted ‘The experiment REAN...’ instead of REAN), and we have not changed those.

L. 12: Introduce acronyms when first used, in the abstract, in the main manuscript, and in the supplement. For example, do so for MOPITT and OMI.

Done.

P. 22

L. 20: I suggest you use “...without degrading the...”.

Done.

P. 23

L. 3: Include subscript in O3.

Done.

L. 14: Do you need “practically”?

Yes, because they are small, but not exactly zero.

P. 33

L. 24: It is Lefever et al. (2015). The paper is out in ACP.

Changed.

P. 35

L. 15: Do you need “clearly”? Same P. 40, L. 15, P. 42. L. 2.

Removed ‘clearly’ in those places

P. 63

Fig. 1 caption: Identify the information provided above the plots (eg., mean, std). Same for Fig. 8, 17.

Do you mean Fig. 2 (and 8, 17)? We have added to the 3 captions: 'Also shown above the panels are the number of observations that make up the average, as well as the mean, RMS and SD of the departures with values for REAN in brackets.'

P. 74

Fig. 14 caption: I suggest you indicate the number of sites – I now you mention it in the legend, but this would make the information clearer. Same for Fig. 15, and Fig. 23 (in this case, number of measurements).

We have added this information to Fig. 14, Fig. 15, Fig. 23:

Figure 14: Timeseries of monthly mean tropospheric O3 in ppb over (a) Europe (11 stations), (b) North-America (11 stations) and (c) East Asia (4 stations) averaged in the pressure bands 1000-700 hPa (bottom), 700-400 hPa (middle) and 400-200 hPa (top) from ozonesondes (black), CIFS-AN (red), CIFS-CTRL (blue) and REAN (orange) in 2008.

Figure 15: Timeseries of monthly mean tropospheric O3 in ppb over (a) Tropics (15 stations), (b) Arctic (10 stations) and (c) Antarctic (8 stations) averaged in the pressure bands 1000-700 hPa (bottom), 700-400 hPa (middle) and 400-200 hPa (top) from ozonesondes (black), CIFS-AN (red), CIFS-CTRL (blue) and REAN (orange) in 2008.

We have added to the caption of Fig. 23: '413 measurements were available during the period.' Also, the legend of panel c) was misleading as it listed the number of days and not observations, so we removed that information from the legend.

Supplement

P. 2

L. 17: "...the Rodgers...".

Changed.

L. 23-24: Omit extra "de".

Done.

P. 4

L. 26: "Brewer-Mast".

Changed.

P. 6

Table S1: Have you defined NOx?

No, we hadn't. It is now defined on p.19 of the main paper, where it is first used, and in Table 2 of the supplement.

P. 9

Table S3: If the authors wish, they could use the original spelling of some of the stations: Ny Ålesund; Sodankylä. There may be others.

Changed those two names in Table S5.

We have also changed the caption of Figure 9, because it was not correct.