

Interactive comment on “Evaluation of the MACC operational forecast system – potential and challenges of global near-real-time modelling with respect to reactive gases in the troposphere” by A. Wagner et al.

Anonymous Referee #2

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In this paper an evaluation of the MACC operational forecast system is given with comparisons of the model with surface and satellite data of O₃, NO₂ and CO. The comparisons show deficiencies in the model or the model input that are pointed out. The paper gives the impression of hastily being put together leaving a lot of work to the reader. This should really be tidied up before publication. For example the number and choice of GAW stations shown should be motivated, or should be similar for the different comparisons (O₃, CO and NO₂). For NO₂ ground based data is missing, FTIR or UV-VIS data could be used here. Figures and tables numbering need to be

C1193

tidied up. Figures with the lots of lines are illegible. Please try to be consistent with the analysis of the 3 different data sets.

page 6280:

line 4: Avoid one sentence paragraphs

line 19: better: "in their respective summer months" instead of just "in the summer months"

page 6282:

line 16: It is no the 'paper that investigates', more something like this "In this paper we describe the investigation of..."

page 6284:

line 24: "Table 2 lists the assimilated data products." instead of "...lists up..."

O₃

page 6291

line 23: The figure order needs to be checked. This should be Figure 2 and not Figure 11, the Figure order has to be changed.

Fig.1

Fig.11 should be 2

Fig.13 should be 3

Fig.12 should be 4

Fig.14 should be 5

Fig.15 should be 6

Fig.2-10 should be 7-15

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page 6292:

line 8: Figure 13 (which should be plot 3) shows very large variability in the model data, compared to the observations. The agreement does not seem very good for the high latitude stations but there seems to be indeed an amelioration after Jul 2012.

line 15: O3 in tropical regions (30°S to 30°N) seem to have min 20% differences up to 40%

line 19: could you show the correlation coefficients on the plots?

Table 6 should be Table 4. Please change Table order.

Figure 12: Legends are not legible, there are too many lines. The plots should be numbered a, b, c. There are curves that stop, eg the pink line in plot a. in Dec 2011. Why? Or one starts in Jun 2010 (black?) Maybe the plots should be stacked on top of each other.

page 6293:

line 8: The correlation does not show a distinct seasonal behaviour in Fig 12, but the MNMBs or the RMSEs not either on this plot! How do you know this?

line 15: There also seems to be a phase shift at KOS, KOV and CVO. TSU seems to have random observations, but the black points are not really visible behind the red line.

line 27: Figure 15 should have the panels stacked and numbered a, b, c.

CO

page 6294:

line 6: MNMBs have already been described. These descriptions (also for RMSEs) could move to the O3 section.

line 20: Reference to Table 4 should come earlier (line 7).

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line 24: Figure 2 could have the 3 plots stacked again.

page 6395:

line 3: Fig 3: Why do you use different stations for O3 and CO?

page 6296:

line 1: Why do you use the IASI product, when you know that it is not as good as the MOPITT product for higher latitudes?

NO2

page 6296:

line 27: There is a stray 'to'

Discussion

page 6298:

lines 7-9: 'realistically reproduces': Isn't this a bit of an exaggeration with up to 110% underestimations for NO2? Incidentally the values are all negative overall an range from 5% to 70% underestimation. The values for CO seem to be 15% to -23%, whereas the overall values of -50% to 28% do not really agree well...

line 9: It would be good to have a Table with the satellite results for CO, too.

page 6299:

lines 27 to end of Discussion: O3 section should probably come first in the discussion.

Conclusion

page 6301:

line 8: 'however with a negative offset' should probably be 'however, with a large negative offset'

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line 18: Wasn't the impact of the fire emission error rather large!!

Tables:

Check order of tables with first occurrence in the text being first.

Figures:

General: Be consistent, sometimes it is Fig. in the text other times it is Figure.

Check order of figures with first occurrence in the text being first.

Better use a, b, c, d, e, f, etc for the sub-figures.

Figure 9 Caption, the latitudinal and longitudinal boundaries are defined in Figure 1 not in the text!

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 6277, 2015.