

Interactive comment on “Validation of reactive gases and aerosols in the MACC global analysis and forecast system” by H. Eskes et al.

Anonymous Referee #2

Received and published: 8 April 2015

The manuscript by Eskes et al. provides an outline of the global validation component of the European MACC project. The MACC project seeks to establish and evaluate atmospheric composition modelling tools. Basic model configurations are described, an overview of metrics is given, and the recent performance of operational part of the system is evaluated. Particular weight is attached to the importance of having easily accessible metrics of model performance so that end-users of the MACC (and subsequently CAMS) data can assess the quality of that data.

The format and content of the manuscript are appropriate, and when published the paper will provide a very useful reference point for users of MACC / CAMS data. I would recommend addressing the general and specific comments listed below, prior to publication, however.

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I would also recommend a detailed reading by a native English speaker to pick up on a few instances of slightly awkward phrases.

General comments Many acronyms are not defined, e.g. ECMWF, IFS, FTIR, SDs

I would like to see more development / justification / discussion of the metrics used – this would seem to be a focal point of the manuscript. The formulae behind the calculation of the metrics is presented, but there is very little justification given for why those metrics are suited. What do they tell us, what are their limitations?

Furthermore, the presented model / obs comparisons summaries don't appear to make full use of the metrics outlined. In fact in many parts of the manuscript a qualitative description of model performance is given instead of the metrics. Why describe the metrics if they're not going to be used in the evaluation summaries?

Specific comments Page 1121, line 18: 'Haiden et al., 2014' does not appear in Reference list

Page 1122, line 7: 'Copernicus' (unavoidably) refers to one of two different entities in the context of the manuscript. I would suggest adding 'EGU' before 'Copernicus' in this instance

Page 1122, line 20: Author name not given in citation

Page 1123, lines 12-14: Better word for 'aspects' might be 'species' or 'quantities'? Otherwise the meaning of the sentence is not clear

Page 1126, line 26: '...this report...'. Not clear which report is being referred to – the present manuscript, or the 'living document on the evaluation methodology'?

Page 1128, equations 1-3: 'N' not defined

Page 1130, paragraph beginning on line 18: this paragraph seems a bit out of place – better placed in Section 9.6?

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Page 1131, line 14: in the model simulations without data assimilation, where are the initial conditions derived from?

Page 1135, line 13: give value of 'low bias'

Page 1140, Section 9.4: Is there any value in presenting a figure (time-series) of HCHO? As per the other quantities?

Page 1140, Section 9.5: (Aerosol evaluation) gives percentage biases – are these based on the MNMB? It would be preferable to retain the same metric for all modelled quantities. If percentages are considered appropriate please list formula for reference (as per other metrics)

Page 1143: line 7: '>5%' should be '<5%'? Or perhaps better to present MNMB rather than percentage?

Page 1159, Caption for Table 1: 'quantities' instead of 'aspects'?

Page 1161, Figure 2: Extra AERONET sites marked on maps but not referred to?

Page 1161, Caption for Figure 2: Date given in caption different to that on maps (22 June vs 25 June)

Page 1162, Figure 3: MACC o-suite values are daily means?

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