

Interactive comment on “The CAMS reanalysis of atmospheric composition” by Antje Inness et al.

Anonymous Referee #1

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This work details the new Copernicus Atmosphere Monitoring Service (CAMS) reanalysis of atmospheric composition (CAMSR) modeling system and compares results to previous atmospheric composition reanalyses from the European Center for Medium-Range Weather Forecasts (ECMWF) (i.e. MACCRA and CIRA). In addition to comparing the three reanalyses products, the paper shows initial validation using independent (non-reanalyzed) observations of ozone, carbon monoxide, nitrogen dioxide, and aerosols (aerosol optical depth). Along the way, the authors caution the reader on how to use the different datasets (e.g. whether or not they can be concatenated, or must be considered completely separately).

This paper will be a useful reference for users of these reanalyses products. I recommend acceptance after a few minor comments are addressed:

* The Table A1 in the Appendix, which details the different model versions, is very

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useful.

* Page 2, Lines 32-40: Agree with one comment poster that NRL aerosol reanalysis should be mentioned (Lynch et al., 2016)

* Page 2, Line 36: "also contained aerosols, assimilated concurrently with the meteorology"

* Table 1 greatly helps the reader to understand the differences between the three reanalyses, and is much appreciated.

*Page 7, Line 13: Isn't this still the case in CAMSR? Or did you not look if sulphates are overestimated?

*Page 8, Line 30: How do you deal with any mis-matches between DT and DB land MODIS observations? Are DB used over DT if there are any coincidences? Similarly, if there are any coincidences between AATSR and MODIS, how do you deal with these?

*Page 9, Line 35: Appreciate putting the monitoring timeseries in the supplement, as it reduces the text nicely

*Page 10, Line 16 - "reanalyse" -> "reanalyses"

*Page 11, Line 31 and Page 12, Line 12 and elsewhere: Appreciate pointing out where user should be aware of issues. If possible, suggest a table highlighting these issues as a useful addition (or a bulleted summary list at the end or in an appendix or supplement).

*Page 16, Line 41: Do you include nitrate aerosol? If not, what biases may this lead to?

*Page 17, Lines 9-20: AERONET is an acronym and should be in all caps