

Interactive comment on “The composition and variability of atmospheric aerosol over Southeast Asia during 2008” by W. Trivitayanurak et al.

A.R. MacKenzie (Editor)

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In the absence of a second referee’s report and open discussion comments, I provide here an editor’s assessment of the above manuscript. The ms provides a GEOS-Chem global modelling study of the aerosol budget, focusing on SE Asia during the period of the OP3/ACES field campaigns. The ms provides a useful modelling perspective to compare with the observations, and shows, inter alia, that the aircraft observations during OP3/ACES possibly under-sampled biomass burning air masses. The model is also compared to satellite retrievals of aerosol optical depth. The model-data comparison is generally consistent across the satellite and aircraft data, which provides a useful consistency check of the data as well as allowing a detailed discussion of the (inevitable, given the state-of-the-art) shortcomings of the modelling. I provide specific

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comments on the ms, below.

Taking into account these comments and those of the referee, I consider the manuscript to be suitable for publication in ACP subject to the comments being addressed adequately.

Substantive comments

P22040/22041: the discussion of the MEGAN implementation here does not describe how variation in land use – particularly oil palm plantation vs rainforest – was taken into account. Because oil palm has extremely large isoprene emissions and a different terpene emission speciation, the details of the land-use map may be important for interpreting model-measurement differences in section 4.2.1. See MacKenzie et al. (2011) and , P. K., Nemitz, E., Langford, B., Di Marco, C. F., Phillips, G. J., Hewitt, C. N., MacKenzie, A. R., Owen, S. M., Fowler, D., Heal, M. R., and Cape, J. N.: Direct ecosystem fluxes of volatile organic compounds from oil palms in South-East Asia, Atmos. Chem. Phys., 11, 8995-9017, 2011.

P22047/22048: if a similar regional comparison of the GEOS-Chem model against MODIS AOD has been carried out for Amazonia or central Africa, it would be useful to report how the current comparison relates.

Minor comments

Abstract, line 5: “during when” can be simply “when”

P22039, line 25. I think 10 oS – 55 oN is clearer

P22044, line 3, p22045, line 11 and elsewhere: use “sulphate” or “sulfate”, not “SO4”.

Figure 2 could be easier to read, in the online format at least, if the caption ran beside it in a second column, rather than underneath it.

References: the Phil Trans issue containing Fowler et al. 2011, Mackenzie et al. 2011, and Pyle et al. 2011b will be published on 17th October, so the references can be

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completed.

P22046, line 19. Please re-word this sentence (should say that the comparison of model and data is consistent between model-satellite and model-aircraft comparisons).

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 22033, 2011.

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