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

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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
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
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.