

Interactive comment on “The global impact of the transport sectors on atmospheric aerosol: simulations for year 2000 emissions” by M. Righi et al.

Anonymous Referee #2

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General comments: In this paper, authors performed 10 years EMAC-MADE model simulations to quantify the impact of land transport, shipping and aviation emissions on global aerosol distributions. A comprehensive model sensitivity study has been carried out to investigate emission impact from each sector, including 100% and 50% reduction and different particle size distribution of each sector. In addition, transport impacts on Earth's radiation budget have been also quantified. Overall, I would reckon this paper is scientific excellent and worth to be published in ACP. However, the paper is not very well written in current form of manuscript. Some structural re-organizing and more explaining text needed to make it easy to read. Firstly, there are ten sections in

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this paper, isn't it necessary to separate a paper in ten sections? If merge some of them (such as section 5, 6 and 7), maybe it will be easier for the discussion. Whether section 9 – effects of non-linearities is only for radiative forcing effects? If so, it can be merged into section 8. Secondly, this paper is difficult to be read for the first time, particularly for Section 3. It takes time to work out the difference between each model experiment and particle size distribution. As table 4 given the list of the experiment performed in this study, one or two paragraph needed to explain the relations to Table 2 and Table 3 and pointed out what the main difference among those parameters. Personally, I think if move section 4 model simulations before section 3 (or merged into section 2 EMAC-MADE model), it will be easier to read. I would suggest the authors make some effort to improve the manuscript and make this paper is valuable to different level of the scientists.

Some other minor comments: 1. There are two R11 in Table 2: R11 AGED1 and R11 AGED2, but in the later discussion section, a few place only use 'R11'. It needs to clarify whether R11 means both of them. 2. In page 13140, line 25, what is 25 ECHAM4.L39(DLR)? 3. In page 13142, line 15, ICOADS need to explain. 4. As there are so many abbreviations used in this paper, a list as appendix might be helpful.

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