

Interactive comment on “A global emission inventory of carbonaceous aerosol from historic records of fossil fuel and biofuel consumption for the period 1860–1997” by C. Junker and C. Liousse

Anonymous Referee #1

Received and published: 11 July 2006

The present paper presents historical emissions of carbonaceous aerosols from fossil fuel and biofuel sources. Although historical emissions do exist in the literature for the same period (1860-present; Novakov et al., 2003; Ito and Penner, 2005), the present approach uses varying emission factors with time, which is an important improvement since the previous studies. The approach used is well presented and the results will be useful to the modeling community. I therefore suggest to publish the paper in ACP, after applying the minor corrections listed below.

1. Page 4902, lines 15-16: The good agreement is better to be quantified, for example

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by giving

2. Page 4903, line 7: Liousse et al. (2004) is a reference hard to find, you should either give an additional one or say a couple of sentences more to support the reduction of the emission factor of traffic.

3. Page 4903, lines 8-9 and 11: As in comment 2, You should say a couple more sentences about the decrease of the emission factor of domestic use, since Guillaume and Liousse (2006) is not available yet.

4. Page 4903, line 10: If I understood correct, you increased the emission factor of refinery oil from 0.025 g/kg to 1 g/kg? This is a rather huge increase and has to be supported by evidence, rather with a paper in preparation. This increase is for all 3 country types?

5. Page 4905, line 11 and also in other places in the manuscript: Pertuisot (1993) was the first to use the approach described there, but there are no future uses of it? Please refer to more papers there, and again they should preferably be widely accessible to everyone. If there are no other works using this approach, maybe it is obsolete and shouldn't be used?

6. Page 4907, lines 13-14: "available upon request" is what the scientific community expects, and not only for the 4 years mentioned here but for all years mentioned in page 4900, lines 4-5. You should better mention this in page 4900, if you think that there is a need to say it at all.

7. Page 4908, lines 4-5: Did you assume that the population density per country is constant since 1860, or changes with time? You should mention this in the manuscript. On top of that, my guess is that as we move from the preindustrial to the modern era, industrial activities (and especially, power plants) move away from the dense populated areas. This will change (perhaps only slightly) the spatial distribution of the emissions. Please make a short comment on the uncertainties that this assumption might intro-

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duce to your results.

8. Figure 8: It would be very interesting to have a graphical representation of OC too, additionally to BC, together with the corresponding comparison with previous works. Further, Ito and Penner (2005) do not have data before 1950? It should be included in the figure.

Technical corrections:

- Page 4909, line 5: Instead of 2000, write 1997.
- References: Etemad et al. (lines 6-7 of page 4910) is not in alphabetical order.
- The authors should use the same nomenclature at all times. Although clear to common sense, they should refer to the country types with the same name in tables/figures. For example, table 1a has once the term "developed" and once "industrialized". Although the same, one of the two should be used.
- Table 2 legend, line 2: "or OC a factors" eliminate "a". Additionally, many references mentioned there are not listed in the references list, although they should.
- Figure 1: a/b notation is mixed. Additionally, in a (correct-b) in the second box from the end, the word "country" is missing. Finally, in b (correct-a) industrialized (or developed) period should be 1939-1949, since 1950 belongs to the other tree diagram.
- Figures 10 and 11 will become easier to read if they will be in color.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 4897, 2006.

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