Atmos. Chem. Phys. Discuss., 6, S2380–S2381, 2006
www.atmos-chem-phys-discuss.net/6/S2380/2006/

Atmospheric Chemistry and Physics Discussions

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 #2

Received and published: 10 August 2006

General Comments This paper describes estimates of carbonaceous aerosol emissions from fossil fuel and biofuel sources from 1860-1997. Similar data sets exist in the literature for the same period (1860-present; Novakov et al., 2003; Ito and Penner, 2005), but the novelty of this paper is that historical fuel consumption data and time varying emission factors are used to derive the emissions. Determination of emission factors for countrywide emission inventory analysis is a notoriously uncertain art however in this case the approach used is reasonably well described, apart from some additional information on comparisons with other data sets. The paper certainly merits

publication in ACP, after the comments below have been addressed.

Specific Comments. 1. Emission factors. a) The authors should provide tables of all the emission factors used in the inventory, for key years in the time series (eg. 1860, 1900, 1950,1997) and not just those for current valued for hard coal and diesel and biofuel in tables 1 2.

b) In order to better understand the impacts of the different emission factors used in Bond et al. (2004) Novakov et al. (2003) and Ito et al. (2005) and the current study it would be very helpful to have an overview table of the comparable global and or regional emissions of BC OC for the main sectors and fuel types for the current day from each study. This would both highlight any 'structural' differences in how the different inventories distribute their total emissions across activities and fuels, and also provide a point of reference for the extrapolation backwards in time of the simplified approach used here, relative to Bond et al. (2004).

2. Fuel consumption data. There appears to be consistent c 200mt/a of hard coal and c20 mt/a of brown coal missing from Eternad et al. in comparison to UNSTAT. For hard coal this is c10

3. Graphs. I would include a break in all the graphs, not just figure 8 to cover the period of WW2, as the extrapolation of trends between the pre- and postwar worlds is very misleading, as the authors note on p4907

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