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Earth System Science Data Discussions

Interactive comment on "Gridded Emissions of Air Pollutants for the period 1970–2012 within EDGAR v4.3.2" *by* Monica Crippa et al.

Anonymous Referee #2

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This manuscript presents updated gridded emissions of air pollutants from anthropogenic sources for the period of 1970 to 2012. This does not cover the emissions of GHGs, which is a separate publication. These emissions data are presented not only in the form of time series but also in the form of per capita and per GDP emissions. They also give high emitting areas over time and space known as hot spots at 0.1x0.1 grid cell level. The present version v4.3.2 is extended till 2012 and also has some updated information activity data and emission factors. This is a very good effort and is essential for modelling work in this field. It is very well written article. I suggest that it may be approved for publication after the following comments/suggestions are taken care.

Major comments:

1. The emissions are calculated using emission factors mostly based on tests carried out possibly in US and Europe. What is the uncertainty of these emission factors for the Asian, African and south/central American regions? In particular a variety of fuels are used for cooking purpose in the developing countries (SE Asia, Africa, Central America etc). How these are taken care? Since these regions are contributing significantly to these emissions globally, such a question becomes important. The authors may clarify this aspect.

2. There are various emission inventories available now, which are used in various chemical-transport models. Some of these are compared in Fig. 5a and 5b. There may be some feedback from these models based on the comparison with the observations. Do these updates in the calculation of the emissions take care of such comparison with observations?

3. Why emissions of aerosols (all given components) are lower in this version than earlier ones and also with other inventories (Fig. 5b)? What factor (factors) has (have) contributed to this change?

4. Why OC has increased only by a factor of 1.2 from 1970 to 2012 while other components of aerosols (PM10, PM2.5 and BC) have increased by a factor of about 1.7 in the same time period? If this has been explained earlier, a reference may be given.

Minor comments:

1. Changes from the earlier versions may be explained in more detail and also highlighted in the abstract as well as in the final summary. However, the present abstract is rather lengthy. General description may be cut as this is an update of the previous version v4.3.1.

2. Emission of NMVOC is much higher in this version (Fig. 5a) compared to your own earlier two versions as well as other inventories. It is mentioned that it includes the emissions from the gas distribution losses. This could be explained in more detail.

3. Figs. 1-4: The color codes for total emissions are not very clear in these diagrams. This may be taken care while making final diagrams.

4. Fig. 9 is very small and not readable. Hope this will be taken care.

5. Figs. S2a and S2b: Figure captions are not matching with the figures.

6. Figs. S3a and S3b: Same color may be used for these sectors as in Figs. S2a &S2b

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