

Interactive comment on “Monthly and Spatially Resolved Black Carbon Emission Inventory of India: Uncertainty Analyses” by U. Paliwal et al.

Anonymous Referee #1

Received and published: 23 March 2016

These are few raised concern by referee : 1) To build a scientifically viable BC emission inventory for developing country like India is very curial and sensitive for climate scientific point of view. I am happy that author has adopted some approach to build an inventory but same time I am not agreed with the methodology and approached they adopted. Moreover the spatial data used to build such a fine resolution inventory is not up to mark and nearly impossible. To use the inventory in atmospheric model, it needs to be scientifically valid rather than just to adopt a statistical approach to come up an inventory. 2) The title of manuscript clams its spatially resolved BC emission inventory of India But in reality there is very little or very poor spatial/geographical data are being used to build a 40x40 km resolution inventory. In fact there is no road network data is used or any discussion. If you input emission estimations are at such a coarse level i.e. district and state level then how can you generated spatially resolved inven-

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tory at such fine resolution? It is very easy to interpolate in GIS environment to any finer resolution. This kind of inventory will mislead in further application is in climate or chemistry model. It is likely to introduce further uncertainty in terms of spatial allocation. 3) I would like to suggest author to enlighten the detail of industrial units/ activity data used/its spatial pattern over India for present work. There is little discussion about activity data for each sector. I will suggest elaborating each dataset quantitatively. 4) There is no road network data used to allocate transport emissions is another big gap in developing robust and reliable inventory. 5) Some sectors like Mobile towers, etc. are calculated at very coarse resolution like state level. 6) An inventory has to build based appreciate emission factor which is scientifically correct and suitable to Indian condition rather than just emission factor/activity data generated based on statistical approach. An emission inventory like climate agent BC has to be scientifically correct in terms of selection of emission factors data due to existing large uncertainty of the order of 2 to 4. We have to very careful in selecting the EFs as most of available EFs are generated for developed countries except in few cases. It is extremely important to select an EF suit to Indian condition rather than taking EF derived from simple statistical approach. This is a ongoing big issue and major reason of debate among scientific community across the globe. It has to be tackle scientifically instead of statistically. 7) Emission inventory are never being interpolated with coarse level emission estimation i.e. state and district level data. I can agree for state/district level national estimation but can not with 40x40km surface emission date. 8) I am very surprised that NCT contributes just 6.7 Gg/yr of BC but in reality NCT account nearly between 5-10 % of transport and industrial load in India with high population density. This number appears to be very small and unrealistic. I will recommend author to recalculation of emission especially sensitive regions like NCT and other industrial regions. These regions are very sensitive due to air quality issues in recent times. I pretty sure the BC estimation over NCT should have been much higher than author's calculation. Otherwise this kind of miss representation may be due to unappreciated emission factor and approach used for estimation.

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