

Interactive comment on “MIX: a mosaic Asian anthropogenic emission inventory for the MICS-Asia and the HTAP projects” by M. Li et al.

Anonymous Referee #2

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Review of MIX: a mosaic Asian anthropogenic emission inventory for the MICS-Asia and the HTAP projects By Li et al. (2015), ACPD submitted for publication under ACP

The paper documents an important emissions dataset MIX, which consists of monthly Asian gridmaps of air pollutant and aerosol emissions for 2008 and 2010, which are and will be used in international collaborations under the MICS-Asia and the HTAP Task Force. In view of the latter, this paper would be appropriate for the ACP special issue on Global and regional assessment of intercontinental transport of air pollution: results from HTAP, AQMEII and MICS. The paper does not go beyond a standard inter-comparison of emissions datasets and misses a section discussing uncertainties and border inconsistencies by compiling this mosaic of gridmaps, addressing the closure of mass balance for the aerosols and the NMVOC species per grid cell. It addresses

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changes in emissions from 2006 to 2010, which is an important period of increasing emissions in the Asian countries with emerging economy. However, it is not clear why then the MIX dataset is not completely covering 3 years 2006, 2008 and 2010.

General comments

The documentation of the dataset could be considerably improved by: 1) Indicating a hierarchy of the datasets used for the compilation of the MIX dataset for the different countries and regions. 2) Giving an overview of the subsectors covered in the 5 source categories for each of the datasets used. 3) Giving a full documentation of the seasonality. References for the monthly profiles used are missing 4) Giving a full documentation of the spatial distribution. References for the geo-spatial proxy datasets are missing, except for power plants.

The structure of the paper could be improved by: 1) Explaining the different source categories (with emissions subsector-specification) in the methodology subsection 2.1 and then including a cross walk matrix of subsectors included in each of the different dataset components at the end of section 2. 2) Moving the subsection 3.4 and 3.5 on seasonality and gridding from the section 3 Results more upfront, documenting where the geo-spatial proxy and monthly profiles are coming from per subsector. 3) Discussing the aerosols and NMVOC speciation in more detail in separate section, following upon the Results section 3. That would allow to address also the consistency issues and issues with the closure of mass balance per grid cell, which is not trivial for a mosaic inventory.

The content of the paper could be enriched by: 1) Discussing separately the CO₂ emissions from MIX, REAS2, EDGARv4.2 and also using the national inventories reported to UNFCCC. 2) Elaborating more on the intercomparison between Asian countries. How do the emission factors (per unit of activity) vary amongst the different countries of groups of countries? Which countries have similar per capita emissions for certain (sub)-sectors? 3) Elaborating the trend discussion using also the comparison with

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satellite data.

Specific comments are given in the pdf-file of the main manuscript.

Please also note the supplement to this comment:

<http://www.atmos-chem-phys-discuss.net/15/C12474/2016/acpd-15-C12474-2016-supplement.pdf>

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 34813, 2015.

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