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Comment

# ***Interactive comment on “Quantitative assessment of atmospheric emissions of toxic heavy metals from anthropogenic sources in China: historical trend, spatial variation distribution, uncertainties and control policies” by H. Z. Tian et al.***

## **Anonymous Referee #2**

Received and published: 23 June 2015

General comments: This is a good paper quantifying China’s anthropogenic atmospheric heavy metal emissions. Results are useful giving China’s current concern in controlling heavy metal emissions. Some aspects of this paper, especially the concision and citation support, need to be improved before the publication.

Specific comments: 1. The title: I suggest you change “spatial variation distribution” to “spatial distribution”. 2. The Introduction: I would suggest you shorten the Introduction part. The first 4 paragraphs can be merged into one paragraph describing the

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importance of heavy metals. Paragraphs 5-7 can be merged together to describe what existing studies have done and what the knowledge gap is. The rest paragraphs can describe what you have done in this paper. 3. The Methods: Please give more details about the theory of your S-shaped Curves method. Please give a brief description of your Monte Carlo simulation. What's your assumed distribution pattern? What's your simulation times, 10,000 or 100,000? 4. Lines 17-18 page 12127: You should give a citation to support your following statement "In term of Pb emissions, the reduced lead content of gasoline was the primary reason for the sharp decrease in total Pb emissions in 1991 and 2001." You results cannot prove this statement. Similarly, for the sentence "Subsequently, along with the rapid increase of vehicle volume and oil consumption" in this paragraph, give a citation to support your statement. Lines 24-26 page 12127: "Due to the technological process resulting in relatively low emission factors of HMs and economic development bringing about high coal consumption and industrial products output" This may be true, but giving a citation (or other) support can make your statement easier to believe. Lines 2-4 page 12128: "These were mainly due to the different volatility of these 12 elements during high temperature process resulting in diverse release rates of furnaces and synergistic removal efficiencies of control measures." Please give a support. There are many other similar situations in this paper. It's better to give related citations to make your discussion more believable. 5. I would suggest you merge sections 3.1 and 3.2 and shorten them to make your paper more concise. Similar suggestion to section 3.3. This section is too long. Several short paragraphs can give enough information. 6. Section 3.6 control policies: I do not agree with this suggestion "stop mining and burning of coal with high HM concentrations (or stop utilizing high-sulfur coal in China due to the high affinity between HMs and pyrite in coal)". China is facing energy shortage problem. Stopping some coal mining is not a good idea considering China's energy supply and energy security.

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Interactive comment on Atmos. Chem. Phys. Discuss., 15, 12107, 2015.

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