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Interactive comment on “Spatial–temporal variations, sources, and transport of airborne inhalable metals (PM₁₀) in urban and rural areas of northern China” by X. S. Luo et al.

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Reviewer #2

This manuscript shows a one year dataset of airborne inhalable metals in PM₁₀ at seven cities in northern China, the source and long-range transport were also investigated. The manuscript presents valuable results and is well interpreted, although there are still some needs to be modified, I therefore recommend this manuscript for acceptance by ACP after modifications. Reply and revision: We very much appreciate these comments on our manuscript. The manuscript has been revised thoroughly according

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to the reviewer's advice.

1. There is only one sample each month in this study, so the limitation of temporal variation analysis should be mentioned in this manuscript's conclusion. Reply and revision: Indeed, in our study, the sample size is one of the limitations for high resolution research with combined local and regional data. This limitation is discussed in the revised manuscript.

2. Dust storm was emphasized as an important factor impacting the analysis result, but it is not clear to show if any dust event was captured in the dataset and what is detailed difference between dust sample and normal samples. 3. The meteorological condition is quit important for analyzing these results, especially in hazy season of China (winter). Particularly there is only one sample each month, so the meteorological condition of the sampling should be discussed with more details in the manuscript. Reply and revision: We appreciate these comments. Because the influence of sandstorm frequency and precipitation on the distribution of PM10 has been discussed in another paper (Li et al., 2014), we have decided not to repeat this discussion in the current manuscript. Several severe dust events were recorded in the spring of 2011, and the sampling programs were affected at most sites by these sandstorms during March, with the exception of those in Dalian). Further information has been added in the revised manuscript.

4. In Fig 6, why Pb isotopic ratio of Wuwei is so special? Reply and revision: We suggest that there might be possible input from the re-suspension of Pb containing tailing materials (Pb ore isotopic ratios are much lower in northern than in southern China), such as locally from Wuwei and from nonferrous mining and metallurgy activities in nearby Jinchang.

5. In References section, the second and fourth papers are same. Reply and revision: Checked and revised accordingly.

6. Page 10, line 336, one "from" should be removed. Reply and revision: Corrected accordingly.

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Please also note the supplement to this comment:

<http://www.atmos-chem-phys-discuss.net/14/C6731/2014/acpd-14-C6731-2014-supplement.pdf>

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 13133, 2014.

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