

Interactive comment on “Isotopic partitioning of nitrogen in PM_{2.5} at Beijing and a background site of China” by Yan-Li Wang et al.

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The apportioning of PM_{2.5} contributions from multiple sources, in a complex environment such as Beijing, is a most challenging undertaking. This is especially the case for systems where the number of sources is greater than the number of isotopes plus 1. For such systems the isotopic mixing model developed by Phillips et al, has been relatively widely embraced, and to some degree has become a standard approach. While there are a number of limitations and issues with the by Phillips et al approach (these are widely documented in the open literature) this model has been successful in a number of situations. It appears that there is a void of information in this area relating to the highly polluted Chinese Beijing environment, and thus this work is timely. Using previously published N isotopic values of various NO_x and NH₃ sources, the authors attempted to determine the contribution of these sources to the composition of PM_{2.5}

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at two different sites. The successful use of this methodology and its results should be considered as a first attempt to initiate new ideas needed to better control and regulate nitrogen emissions in a given airshed. While ideally more detailed analyses of the component nitrogen species of the PM_{2.5} particle fraction, such as ammonia, ammonium, nitrate and oxides of nitrogen, can provide additional information regarding the sources of these nitrogen components, bulk PM_{2.5} analyses can still provide significant scientific merit. On the same token, ideally, additional isotopes, such as the carbon isotopes, should be considered in future studies. It would be hoped that this study would be followed up by further work that includes a wider range of isotopes analyses and the inclusion of more detailed analyses of some of the chemical components of the PM_{2.5}.

It is recommended that this manuscript be published after some general editing to correct some of the grammatical errors contained in the manuscript.

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