

## ***Interactive comment on “Temporal variation of $^{129}\text{I}$ and $^{127}\text{I}$ in aerosols from Xi’an, China: influence of East Asian monsoon and heavy haze events” by Luyuan Zhang et al.***

### **Anonymous Referee #1**

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The paper acp-2019-818-manuscript-version1 entitled “ Temporal variation of  $^{129}\text{I}$  and  $^{127}\text{I}$  in aerosols from Xi’an, China: influence of East Asian monsoon and heavy haze events” provides interesting data for the distribution of iodine isotopes in the aerosols of part of China which are missing from the international data base. The paper has the potential for publication after revision as given below. 1. The paper needs some linguistic revision as there are many grammatic mistakes. 2. Lines 44-45 “As a consequence of these point sources of  $^{129}\text{I}$ , the distribution of  $^{129}\text{I}$  is rather uneven (Snyder et al., 2010)? Where? 3. The paragraph between lines 50 and 55 is long and difficult to follow and could be rewritten to focus on aims of the study. 4. It is not clear how much time is the “a day-resolution” sampling reflects in term of iodine residence time

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in the atmosphere? 5. Figures 1 a and b can be combined in one figure. 6. The results part needs further additions from the supplementary data including Figs. S1 and S2. 7. Connection of iodine chemical forms (I-127 and I-129) from the sources and in the atmosphere may elucidate some of the inconclusive correlations and relationship to spatial and temporal atmospheric transport on short and long distances. 8. More elaboration of weathering of basement rocks as a source of I-129 will be interesting. 9. Addition of Figure S7 and S8 to the discussion section will enhance the understanding of the atmospheric transport pathways of the isotopes. 10. More details on the paragraph in lines 100-104 can add clarity to general statement with respect to  $^{127}\text{I}$ -distribution in China. 11. The anthropogenic source for I-127 is mainly related to coal consumption (local source) whereas the I-129 source is mainly related to far away transport. It will be good to provide some details of how these isotopes are associated in the atmosphere with respect to airmasses altitude, chemistry and residence time of the isotope. 12. May be good to make the text in Figure 3 in larger font. 13. Although the authors pointed out the possible use of air masses transport to predict iodine sources and impact on future iodine distribution, it is still not clear how the iodine data enhance our understanding of the climate or atmospheric circulation.

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