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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Trace metal characterization of aerosol particles and cloud water during HCCT 2010" *by* K. W. Fomba et al.

Anonymous Referee #3

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General comments: The paper is generally well written and the data presented in the paper are important for aerosol – cloud interaction studies. However, the parts related to general comments on aerosol origin and relations between individual species found by chemical analysis in aerosols have tendency to overstate what it is found in the data that are actually composed from few data points only. The correlations between different species in aerosol connected with anthropogenic emissions tend to be high as they are often driven by meteorological situation causing various atmospheric mixing. The changes in size distribution and concentrations between upwind and downwind sites are quite different from each other if one takes into account that these four events were carefully selected from many sampling days. One would expect more detailed evaluation of connected meteorology or possible sources interacting with the transported

aerosol at the downwind site to improve reasoning about these differences. Therefore, I think, the paper needs major revision before it will be suitable for publication in ACP

The other minor comments are bellow:

The sampling dates and times of samples analysed here should be given earlier than in the last picture description

p. 5, line1: the lowest cut point (stage 1) is missing in the list.

p. 9, line 5-6: Entrainment of air above may also increase the concentration.

p. 9, line 27: There is apparent increase of Ni, Cr (at least 3 times what authors call insignificant) and Cu concentration at GB site in FCE 11.3 sample (Fig. 1), but there is almost no comment about it.

P.10, lines 1-13: It is not very clear what statement is related to what sample. Please improve.

p. 10, line 3-5: It is not clear if the words “in general” are related to selected 4 cases or much broader number of events.

Fig 2 and 3: Graphs contain 5 points, but only 4 events are discussed.

Chapter 3.2.1. : It is difficult to speculate about sources based on 4 data points. The only important fact seems to be higher decrease of levoglucosane concentration in comparison with these four combustion related metals (K, Zn, As, Pb). The crustal element correlation with OC shows, as mentioned in the text later, that the basic correlation among aerosol components is often driven by meteorology. The same probably holds for fig. 4.

Chapter 3.2.2. : The same is valid as for previous chapter and correlations. Discussion of sources is quite speculative based on 4 points. The authors are adviced to study them only from point of view of their changes between the sites.

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p. 17, line 21. Probably should be Fe(III) instead of Fe(II)

p. 17, line 25. The sentence needs correction.

p. 18, line 17. Table numbers should be corrected.

p. 20, line 18-20: Remove the sentence, it partially contradicts the next sentence and there is no need to speculate about aerosol origin in this paper.

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 10899, 2015.

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