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Interactive comment on "Chromatography related performance of the Monitor for AeRosols and GAses in ambient air (MARGA): laboratory and field based evaluation" *by* Xi Chen et al.

Anonymous Referee #1

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In this paper accuracy and precision associated with processing of the MARGA instrument chromatograms was studied. The results of the MARGA automated software were compared with the results of the chromatograms corrected using Chromeleon software (Dionex). A systematic bias was found especially at low concentrations. The authors should take into account: 1. Especially the chromatograms of low concentration samples should always be manually checked and reprocessed. The normal procedure is not (or at least shall not be) just trusting the results of automated integration. Therefore, I can't find the point, why just the "not-so-well" automatically integrated results (without any other manual peak integration adjustment) were compared with the off-line system. My opinion is that you should use (or at least add) the results found

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after the best possible off-line MargaTools-correction. Especially, for blank-results, it is questionable to use the chromatograms without checking, because depending on the parameters used, baseline noise can be considered as real peaks. 2. For measuring low concentrations the LiBr internal standard used in this study is quite high (320 μg/l Li and 3680 μg/l Br) and could be at least half of that. The external standards you used should were much lower. You get more bias, if the concentration of the ITSD is much higher than the measured concentrations. 3. For low concentrations it is better to use a concentration column. The loop size used was not mentioned in the text.

p. 6 r. 160 . . . MargaTool. . . peak search sensitivity and peak search smoothing. . .are applied to all chromatograms. – Yes, BUT you can select the chromatograms you want to reprocess and use different parameters to each chromatogram. If you want to use different integrating parameters for the first peaks of one chromatogram and different ones for the last ones, then you have to save them separate files. Like File_A for Chloride and File_B for nitrate and sulphate. That is not so handy and it really is time-consuming, I agree. p. 9 r. 264 . . . the detection limits. . .evaluated here are large than in Rumsey and Walker (2016). . . I honestly hope that Rumsey and Walker did reanalyze the chromatograms, without doing that the detection limits will be quite high. And the detection limits vary also depending on the purity of the system and the column used. There would be more benefit of the article for the MARGA community, if you would also tell, what kind of Java script you used for reformatting MARGA raw data. You could also make a list of the changes that could be done to make the MargaTools better.