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Interactive comment on "Inverse modelling of CF$_4$ and NF$_3$ emissions in East Asia" *by* Tim Arnold et al.

Anonymous Referee #2

Received and published: 11 March 2018

The authors discuss measurements of CF4 and NF3, along with HFC-23, in South-East Asia and derive country wide emissions of these compounds. This is very relevant work considering the large global warming potential of these compounds and increasing use. The paper is well written, scientifically sound and has a clear structure. The technical descriptions are not easy to understand and maybe could be improved by including a figure showing the region of influence of emissions on the measurement site. The figures could also be improved by adding labels and headers so they are more easily understood without reading the caption. I think the paper is suitable for ACP. Below are a number of smaller comments that could improve the paper.

L18: I don't understand the 'Well mixed' before 'abundances'. What do you want to convey? L29: Remove digits here: 4.3 +/- 2.7 Gg L24-26: Why do you mention the

poor prior in the abstract? Also with a good prior the derived results would hopefully depend on the measurements and not on the prior information. L30: Add a digit to 0.6 to be in agreement with the 0.07. L60: What is the reason the GWP is estimated higher? Because of lifetime? Please add this here. L108: Add here that developing countries are not required to report. L117: Add where Jeju Island is located, other ways the rest of the sentence cannot be placed. I also suggest to add the marker at the GSN station in Figure 4, 5, and 6 and refer here to this figures for reference. L185ff: It would be very useful if a figure could be included showing matrix D. This would make it clear the regions the inversion is most sensitive for. L319: I assume MH should be NH. L494: Is 'remove' the correct word here? The influence of the prior is reduced and replaced by the observational data. L697: Typo: Maps A, C and E, not A, D, and E. L740, Figure 4: The readability would be greatly improved if labels/headers are added, instead of explaining all in the caption. Figure 6: Same comments as for Figure 4.

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2017-1171, 2018.