

## ***Interactive comment on “Constraining the Accuracy of Flux Estimates Using OTM 33A” by Rachel Edie et al.***

**Anonymous Referee #2**

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This paper deals with a commonly used ground-based method (OTM33A) for estimating emissions rates. Recent papers have highlighted the relevance of site-level (facility-wide) emission estimates. The authors perform tests to assess accuracy of this approach in the context of methane emissions from single sites as well as ensembles (i.e., characterize emissions distributions from a population of sites). The results are relevant due to the increasing use of the approach. I recommend publication after some minor edits/clarification.

Two main points to be addressed/expanded by the authors: (1) Effect of multiple sources-distance selection (2) Determination of non-detects and potential effect of overestimation in determining fraction of sites that fall below detection limit.

Additional comments: INTRODUCTION: Page 1, Line 23: “Site-level measurements  
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are therefore necessary for improving emission estimates of the O&G production sector.” This is true, might be also useful to mention importance of site-level measurements in conjunction with component-level measurements to understand source of emissions.

Page 2, Line 3: ‘However, more permanent approaches are still under development and must be approved as equivalent monitoring technologies before they can replace existing EPA approved Leak Detection and Repair (LDAR) methods like optical gas imaging (OGI).’ Suggest expanding discussion of difference between leak detection and leak (emissions) quantification, which is important in the context of LDAR and equivalency. One could argue that main goal of LDAR is not improving inventories, but repairing leaks. I think this idea needs to be further developed to link it to importance of site-level measurements.

METHODS It might be useful to briefly discuss the detection limit of the method (threshold for considering a site as non-detect). This is discussed in previous papers, but might be useful to summarize here. Consequently, discuss the potential overestimation at lower emission rates with the threshold for non-detects. This is something that matters for the ensemble.

Page 5, line 23: Might be good to mention that this could also affect flares (in addition to liquids unloadings).

Page 9, line 11-14. What happens with multiple sources on site? This paragraph hints at the importance of using OGI to locate source. Might be useful to expand on distance selection under various sources (i.e., based on highest emission point?)

Page 10, line 9-11. ‘These results also indicate OTM 33A does not drastically underestimate the total emissions for an ensemble or group of measurements, and that scaling-up mean emissions measured with OTM 33A to an entire basin is a valid approach.’ This is an important conclusion from the paper since the ensemble is a common application of this method. Might be good idea to further highlight in the abstract.

Figure1: It might be useful to expand caption to include label of release points (i.e., what is the source of emissions). Figure 2: Significant figures for R parameter.

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Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2019-306, 2019.