

## ***Interactive comment on “Ethane measurement by Picarro CRDS G2201-i in laboratory and field conditions: potential and limitations” by Sara M. Defratyka et al.***

### **Anonymous Referee #1**

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The stated main objective of this paper: is to evaluate the performance of the CRDS G2201-i and the applicability of making short-term, direct, continuous, mobile measurements of ethane in methane-enriched air, with sufficient precision during near source (“pollution plume conditions”) surveys. The authors did a commendable amount of work characterizing their instrument and in presenting all the limitations of this instrument. This is to their credit, and to this end the work described herein achieves its objectives.

However, with that being said, this reviewer finds very limited applications where the G2201-i analyzer can be employed in measuring ethane/methane slopes in real world

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situations. As stated, peak ethane enhanced values of at least 100 ppb and peak methane values of at least 1 ppm are needed on stationary platforms for meaningful slopes. Unless one is directly at a well head or at a compressor source, this type of performance is not very useful. Also, more discussions of the 30 ppb bias in their ethane measurements, its sources, and its variability are needed.

Despite the body of work here, this reviewer does not find any utility in publishing this paper with very limited real world applications for the G2201-i analyzer in terms of ethane/methane slopes. This reviewer recommends that the authors instead focus on a similar concerted effort to characterize their CRDS 2210-i analyzer, which they briefly mention, and shows superior performance for ethane.

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