

# Interactive comment on “Comparison of nitrous oxide (N<sub>2</sub>O) analyzers for high-precision measurements of atmospheric mole fractions” by B. Lebegue et al.

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Received and published: 14 December 2015

Four referees have agreed that this paper is suitable for publication in AMT after mainly technical corrections. I invite you to address the comments and submit a revised manuscript.

**We would like to thank D.W.T. Griffith for his editor work on this paper and for his helpful comments. We answer all referees comments separately as well as the editor's hereafter.**

I would like to add to two common comments from the referees:

1. Co-authorships of commercial instrument providers. I agree that the current authorship list may appear unequal and inconsistent. The roles of commercial suppliers need to be very clear and equitable. The overriding criterion for co-authorship is an intellectual contribution to the research described in the paper. In my view, this requires input beyond supply of an instrument and advice on its implementation, and the study is best done at arm's length from the instrument providers to avoid any possibility of perceived bias, whether real or not. In fact active roles for suppliers is a negative, the opposite of a blind test. With the caveat that I do not know the details of the contributions of the industry authors, my recommendation would therefore be to invite the suppliers of all instruments to provide comments on the paper in its current form (or as revised including referees comments), to remove both current authors associated with suppliers, and to gratefully acknowledge all contributions from instrument suppliers (with specific contributions as appropriate). If the present industry co-authors have indeed made significant intellectual contributions to the work and wish to remain as authors, representatives from all instrument suppliers should also be offered the opportunity to comment on and revise the paper, and co-authorship. However, as one referee points out, this may constrain freedom in making specific recommendations and decrease the value of the paper.

**The two co-authors who are also instrument vendors have decided to withdraw from the co-author list as their contribution, apart from lending us their instrument, was minimal. The acknowledgment will be rewritten in order to acknowledge all the contributions from the various instruments.**

2. N<sub>2</sub>O isotopes. Two referees point out the lack of treatment of the possible effects of isotopic fractionation, including site preference for <sup>15</sup>-N, on measurements of total N<sub>2</sub>O. There are two aspects to address here: (1) the possible impact on total N<sub>2</sub>O measurements for single-line laser instruments which measure a particular isotopologue and isotopomer. (2) the ability to measure isotopic fractionations and site preference with useful precision and accuracy in their own right. I accept that this aspect is outside the scope of this work, and a comment should be added to this effect.

**We understand the interest from the two referees for studying the N<sub>2</sub>O but in this paper we chose to compare different analyzers measuring the same species. As the isotopes of N<sub>2</sub>O**

are measured by only one instrument, comparisons and study of interferences were not made.