

## Response to Editor

The manuscript has improved substantially through your careful and thorough responses to the referees' comments. As you will see, Referee #1 is now also satisfied with the revisions and only raises a few minor technical points for consideration.

We are grateful to the reviewer for carefully reassessing the revised manuscript and for providing these additional comments. All line numbers mentioned in our responses refer to the revised version of the manuscript.

Before the paper can be finalized, a number of minor technical corrections remain. Please address the following points raised by Referee #1. Please find below our responses to the points raised by Referee #1:

Line 75: change consumable to consumables modified (line 75)

Line 78: ... duration, allowing... corrected (line 78)

Line 118: This is a very valuable statement for the reader, thanks for including it! We thank the reviewer for this comment.

Line 133: "target vial" instead of "targeted vial"? modified (line 133)

Line 140: "Isotope analysis" or "Isotopic analysis" instead of "Isotopes analysis"? modified (line 141)

Line 168: "described" instead of "descried" corrected (line 169)

Line 171: "was lifted" instead of "was lift"? modified (line 171)

Line 218: ... eluting prior to CO<sub>2</sub>, which is sufficiently separated and won't impact the sample analysis. (It is great this peak is shown and mentioned, suggest adding clarification that this has no impact on results) Thank you for this suggestion. The sentence has been revised to clarify that this peak does not affect the results (line 219).

Line 237: ...step, the precision... modified (line 239)

Line 238: ...markedly improves both... modified (line 240)

Line 262: ... 50 uL CO<sub>2</sub>... modified (line 264)

Line 289: Did you remove the butyl rubber for analysis, or does the needle penetrate through both, septum and butyl rubber? Yes, the butyl-rubber layer was removed prior to both sample injection and analysis. It was applied only during storage to improve sealing. The syringe needle therefore always penetrated only the septum and never the butyl-rubber compound. A sentence has been added to the manuscript to clarify this point (line 139).

Line 313, 318 and 322: Here and in lots of other places, temperatures are stated as -20 or -20, as well as and combination of the above with and without a space between the number and °C (i.e., 20°C and 20 °C). It would be good to follow AMT guidelines and harmonise throughout the manuscript. Modified throughout the manuscript.

Line 348: ...from 1 mL of WS2... modified (line 350)

Line 379: ...the presented method achieves... modified (line 381)

Line 386: "markedly improved both" instead of "markedly reduced both"? corrected (line 388)

Line 399: If I understand correctly, also the lack of a drift in accuracy with time (Fig. 7) suggests that a single systematic drift is not the cause of the deterioration of the isotopic signal in the sample. It is also our understanding.

Line 404: ...remained preserved within... modified (line 406)

Line 406: “degrades precision” instead of “increases precision” modified (line 408)

Line 420: “These preliminary results suggest that schedules short-term off-site sampling may be feasible under controlled temperature conditions and remote field campaigns without compromising short-term data quality.” I struggle to understand this sentence, should the word “schedules” be removed? The word “schedules” was indeed confusing and has been removed. The sentence has been revised accordingly to improve clarity (line 422).