

**Thank you very much for your comments, that improved the manuscript. Our answers are in green below.**

The authors provided detailed responses to the review and the manuscript has been significantly improved. However, the revised manuscript requires minor revision before publication. Overall, references to previous work are used excessively. The addition of short descriptive sentences would be appreciated to improve the reading quality of the document. In addition, a thorough proofreading is recommended for typos and wording. **An effort has been made in this direction**

### **Abstract**

- Line 30:  $\delta^{18}\text{O}$  needs to be defined. The short summary, the abstract and the main text are distinct elements where each abbreviation/symbol must be defined independently. **Done**

### **Intro**

- Line 89-90 : an OFCEAS reference should be placed here **Done**
- Line 95: “classical” is not appropriate. IRMS should be defined. **Done**

### **Material and methods**

A couple of pages are not necessary to give a little more detail on the basic operation of your instrument. On the other hand, and as also notified by the second reviewer, the addition of a schematic diagram, a setup photo and dimensional specifications will certainly help the reader to get a better idea of your new analyzer. **A picture and schematic were added (figure 2)**

- Line 120 : A reference for spectral fitting is missing here. **Reference added**
- Line 168 : “sccm” must be defined **Done**
- Line 173-175 : This sentence needs rewording. **Done**
- Line 178 : “well-known” is not needed and the reference to Gordon et al. 2022 should be given. **Done**
- Line 191 : “by about the abundance ratio” not exactly, it also depends on the intensity of the transition. **Indeed since the transition intensities are somewhat different, that is why we say ‘by about’. What actually matters are the measured changes to the line intensities which provide linearly the change in the isotopic ratio in the sample. The fact that the intensities are not the same is then irrelevant.**
- Line 226 : For ease of comparison, the 1 sigma standard deviation of the cavity mode position fluctuation should be indicated. In addition, a graph showing the stability would be valuable for the paper (see Lechevallier et al. 2019). **After a closer look, the 1% fluctuations (relative to their spacing) of the cavity mode positions (or optical frequencies) mentioned in the manuscript are just a rough upper limit of the instantaneous fluctuations. The actual standard deviation of the cavity mode position from a laser scan to the next is actually 0.1%, which, multiplied to the cavity mode frequency spacing (187 MHz), gives ~200 kHz rms fluctuations. The manuscript has been modified accordingly. Adding a plot of a flat trace with uniform noise at the 0.1% level is not more informative than the corresponding text statement of this performance which we provide.**
- Line 295 : ‰, not in ppm **Done**

- Line 296 : The bottom subchart in scatter and line could be nice for a clearer view. The label axes should be colored. Why do the uncertainties appear in Figure 3 and not here? **Uncertainties were added to figure 2 as well (now numbered fig 3). Label axes was not colored, but the legend and the axes were improved to make the figure clearer**
- Line 306 :  $\delta^{18}\text{O}(\text{O}_2)$  should be used instead of “delta”. **Done**
- Line 315: A multiplication symbol should be used between 1.5 and  $10^{-3}$  **Done**
- Section 3.2 : The data on which this section is based are missing but necessary. Please include a graph with these data in the revised manuscript. **A graph was added, and the paragraph 3.2 was modified accordingly**
- Line 338 : “was expected as is usual in all spectroscopic measurements”. This sentence needs references and rewording. **In fact there is really not a reference to state this very general fact which is just intrinsic to any physical model of a measured function corresponding to a complex physical phenomenon, as is the case for the spectral absorption profile of a molecule in a thermal gas bath. We reformulated the paragraph in order to make it more evident our approach to the accounting of the change of concentration to the isotopic ratio measurement, which is actually very basic: we just not change the fitting model parameters but we experimentally determine the change of measured ratio of a fixed-ratio sample as a function of its dilution (changing the O2 concentration), which provides a linear slope for corrections in other measurements.**
- Line 346 : Uncertainties on O2 mixing ratios should be indicated. **Added to the legend (uncertainties were about 0.01%, so the error bars are not visible)**
- Line 415: What is configuration 2? **This sentence was reworded**
- Line 426 : Quality parameters for the linear regression should be presented. **This is not a linear regression, but a 1:1 line**