

Dear Prof. Cook,

As requested, I am providing an explanatory document detailing the suggested non-typesetting changes to our manuscript “Technical note: Testing a new approach for the determination of N<sub>2</sub> fixation rates by coupling a membrane equilibrator to a mass spectrometer for long-term observations” (EGUSPHERE-2024-2049) that require editorial approval.

Unfortunately, I have noticed a rounding error in the manuscript that affects the reported accuracy for argon (Ar). This is particularly noticeable when looking at Figure 2. The current rounding results in a wrong and too high error estimate (0.70 % instead of 0.03 %). Therefore, I would like to make the necessary corrections as suggested below, which refer to the abstract, to a sentence in the main text and to Table 2:

Abstract (page 1, line 19, typeset manuscript version 3)

Original text: “Ar (0.70 %)”

**Revised text: “Ar (0.03 %)”**

Main text (page 5, lines 77-79, typeset manuscript version 3)

Original text: “Due to the lower concentration values, the averaged offset was 0.7 % for Ar, twice as high as that of the other gases (Table 2).”

**Revised text: “For Ar, the averaged offset was 0.03 %, an order of magnitude smaller than for the other gases (Table 2).”**

Table 2 (page 6, typeset manuscript version 3)

Original text:

Gas	$aSD$ [μmol/L]	$rSD$ [%]	Precision [μmol/L]	Precision [%]	$c_{meas}$ [μmol/L]	$c_{sat}$ [μmol/L]	$\Delta c$ [μmol/L]	$\Delta c$ [%]
<sup>28</sup> N <sub>2</sub>	0.15	0.03	0.30	0.05	552.3	551.2	1.1	0.2
<sup>32</sup> O <sub>2</sub>	0.16	0.05	0.32	0.11	292.1	291.5	0.6	0.2
<sup>40</sup> Ar	0.01	0.07	0.02	0.14	14.4	14.3	0.1	0.7

**Revised text:**

Gas	$aSD$ [μmol/L]	$rSD$ [%]	Precision [μmol/L]	Precision [%]	$c_{meas}$ [μmol/L]	$c_{sat}$ [μmol/L]	$\Delta c$ [μmol/L]	$\Delta c$ [%]
<sup>28</sup> N <sub>2</sub>	0.15	0.03	0.30	0.05	552.3	551.2	1.1	0.2
<sup>32</sup> O <sub>2</sub>	0.16	0.05	0.32	0.11	292.1	291.5	0.6	0.2
<sup>40</sup> Ar	0.01	0.07	0.02	0.14	<b>14.351</b>	<b>14.346</b>	<b>0.005</b>	<b>0.03</b>

Additionally, the subscript “0” was missing in Eq. (18) and has now been added as indicated below:

Equation 18 (page 8, typeset manuscript version 3)

Original text:  $p_g(t) - p_g(\text{eq}) = [p_g(t) - p_g(\text{eq})] \cdot e^{\left(\frac{-t}{\tau}\right)}$ .

**Revised text:**  $p_g(t) - p_g(\text{eq}) = [p_g(t_0) - p_g(\text{eq})] \cdot e^{\left(\frac{-t}{\tau}\right)}$ .

Thank you for your attention to these updates. Please don't hesitate to contact me with any questions.

Best regards,  
Sören Iwe