Response to the Editor

Dear Dr. Janssen,

We would like to thank you very much for your decision and for the constructive comments provided in your editorial note. We carefully revised the manuscript according to your requests and the minor suggestions. Below we provide a detailed point-by-point response.

Our responses are in blue, with specific changes to the text highlighted in *blue italics*.

All line numbers in this document correspond to the line numbers in the updated version of the manuscript.

With best regards,
Di WANG
On behalf of all authors

Dear Authors,

Thank you for submitting your article to AMT and for making the changes requested by the referees of a previous round. Based on these, and two more recent independent reviews, I decide publishing your article subject to minor revisions.

However, in order to assure good quality I urge you to address all of the referee's questions, particularly the request to put the results into perspective and to discuss the practicability of the correction/method (especially in the case when the correction goes into the wrong direction). Please also ensure that you use coherent notation and provide complete definitions in your revision and, in this context, introduce delta and d-excess values by giving the definition of these quantities so that a link can be made between the measurements/modelling (based on R) and the observational data given in the figures.

We appreciate the editor’s decision to publishing our article subject to minor revisions.

We have carefully addressed all reviewer and editor comments to further improve clarity, consistency, and practical context.

Ensuring consistent notation throughout the manuscript, particularly for λ, α, and other model parameters.

We now provide the full definitions of δ and d-excess (lines 230–235):

“The δ and d-excess values used in this study follow standard definitions:

$$\delta^{18}O = \left(\frac{R^{18}O_{sample}}{R^{18}O_{standard}} - 1\right) * 1000 \qquad (15)$$

$$\delta^{2}H = \left(\frac{R^{2}H_{sample}}{R^{2}H_{standard}} - 1\right) * 1000 \qquad (16)$$

$$d-excess = \delta^2H - 8 * \delta^{18}O \qquad (17)$$

Here, $R^{18}O_{standard} =$ *2.0052*10*$^{-3}$ *and* $R^2H_{standard} = 1.5576 * 10^{-4}$ *, corresponding to the VSMOW international reference values."*

Please prepare the revised manuscript by further taking into account the following three points apart from the minor corrections suggested in the list below.

1） According to Figure 7, it appears that diffusion corrections on d18O tend to be more relevant than corections on D, ie the correction at high altitudes has the size of the assigned error bar for 18O whereas the error bar for D is much larger than the correction itself. Therefore, d18O needs to be displayed in Fig 10 as well. This would make it easier to judge the quality and usefulness of the proposed diffusion correction.

We appreciate the editor's suggestion. Figure 10 presents comparisons with IASI satellite data, which currently provide retrievals only for δ^2H, not for δ^{18}O. To our knowledge, no existing satellite product offers δ^{18}O retrievals for atmospheric water vapor. Therefore, δ^{18}O cannot be included in this comparison. At the same time, we believe this limitation highlights the value of our drone-based sampling approach, which enables vertical profiling of δ^{18}O, a capability that is currently inaccessible via satellite remote sensing.

To clarify this limitation, we have added the following statement in the methods section (lines 428-430):

"In this study, as no satellite retrievals of $\delta^{18}O$ *are currently available, we compared our observed vapor* δ^2H *profiles up to the upper troposphere with satellite observations."*

2) The fact that lambda depends on bag size seems to contradict the model assumptions that the diffusion occurs across the surface, which should depend on the bag material only. What does the fact that lambda differs significantly between 0.5L bags and 4L bags (see values in Table 1) imply ? Does this question your conclusions ?

We thank the editor helping us clarify a potentially confusing point. Our theoretical formulation (Eq. 6) shows that the water vapor exchange coefficient λ is proportional to the exchange surface area *A* of the air bag: $\lambda = \frac{k*A}{M}$. Therefore, λ is expected to vary with bag size, as larger bags typically have greater surface areas. The observed differences in λ values between the 0.5 L and 4 L bags are fully consistent with this theoretical relationship. We clarified this in the methods section (lines 278-281):

"As λ is related to the exchange area (surface area of the air bag), measurements were conducted using 0.5L and 4L air bags, with repetitions on both identical and different air bags of the same dimensions (refer to the experiment times in Table 1 and results in Fig.3a)."

3) The fact that bags are not perfect and have finite permeability raises the question on how diffusion into the bags is taken care off before the bags are actually "filled". It seems that such effect can be neglected (eventually by continuous pumping on the

empty bag?), but the paper does not say so and the reconstitution equation starts at the time t=0 of the filling at measurement altitude. Can you be more specific on the sampling conditions and the diffusion modeling concerning this part ?

We have now clarified the sampling process in the revised manuscript (lines 333-347):

"We designed and built a collection module for fixed-height sampling, incorporating diaphragm vacuum pumps, a rudder mounted on the drone, and a control module linked to a remote operating system. Before flight, each air bag was evacuated on the ground using the diaphragm pumps. When inactive, these self-sealing pumps effectively isolated the interior of the air bags from the external environment, minimizing diffusion prior to sampling. When the drone reaches a specified altitude, we remotely activate the designated air pump to inflate a specific air bag. Once sampling is complete, the pump is deactivated, and the drone ascends to the next target altitude, where the corresponding air pump inflates another air bag. This process was repeated until all predetermined samples were collected. After each sampling, the pump remained sealed, ensuring no unintended air ingress during descent., preventing unintended air ingress. Additionally, due to the flexible nature of the air bags, internal and external pressures remained balanced. As air pressure increases during the drone's descent after collection. To further prevent the loss of collected air samples, a one-way valve was installed to block backflow. Additionally, the one-way valve helps prevent large droplets from entering the air bag during the collection process."

Given these measures, we are confident that diffusion into the bags prior to filling was negligible.

Minor suggestions

l. 138 : the definition of kinetic fractionation factors is typically k_heavy/k_light. Please follow the convention and explain that you are approximating k_heavy ~ k.

We thank the editor for this helpful suggestion. In the revised manuscript, we have clarified this point as follows (lines 148-150):

"Since k represents the total flux including both light and heavy molecules, it is approximated as the conductance of the heavy molecules (k_{heavy}), so that Eq. (3) is consistent with the conventional definition of fractionation factors ($\alpha = \frac{k_{heavy}}{k_{light}}$). "

l. 204 : For clarity, please complete the phrase "... and the ambient values (qe(t), Re18O(t) and ReD(t)) at all times during and after the flight "

The revised sentence now reads (lines 211-214):

"If we know the initial values within the air bag (q_0, $R_{18}O_0$, R_2H_0), the ambient values during storage (q_e, $R_{18}O_e$, R_2H_e; approximated using ground-level conditions), and the storage duration after sampling ($T\_{storage}$), we are able to simulate the variations in humidity and isotopic ratios inside the air bag according to Eqs. 5 and 8."

l. 231 : The policy of our journal is to use SI units throughout. If you want to refer to your instrument reading/setting in non-SI units, you may give the value in SI (or related units such as hPa/mbar) and repeat the non-SI value (psi) in parantheses.

We have revised the sentence to comply with the SI unit policy by converting the pressure values to kilopascals (kPa) and retaining the non-SI unit (psi) in parentheses. The revised text reads (lines 249-251):

"In the measurement procedure, we first activated the dry air cylinder and adjusted the pressure reducing valve to approximately 13.8 kPa (2 psi), within the Picarro water isotope analyzer's recommended range of 13.8–27.6 kPa (2–4 psi) for carrier gas."

l. 241, "we achieved greater acccuracy" This is not evident. Please check your phrase. While precision is generally improved through averaging repeat measurements, accurray only improves if the accuracy is limited by statistical noise and not by stystematic bias.

Thank you for this remark. Our intention was not to claim an improvement of accuracy, but rather to emphasize that replicate samples were used to ensure the consistency of the measurements. We have therefore revised the sentence to (lines 259-261):

"By repeatedly measuring isotopic composition for replicate samples—air samples collected simultaneously under the same conditions—we ensured the consistency of the water vapor measurements."

l. 393. Satellite isotope data IASI -> Satellite isotope data from IASI

Revised to "Satellite isotope data from IASI".

l. 365 The method of uncertainty estimation -> Uncertainty estimation

We thank for your suggestion. To help readers clearly distinguish between the methodological description in Section 3.4.2 ("The method of uncertainty estimation") and the results presented in Section 4.4 ("Uncertainty estimates"), we would prefer to retain the original sub-section title.

Table 1 Average of all difference between ... -> Average of all differences ...

We have corrected "difference" to "differences".

l. 535 differentsources -> different sources

We have corrected this to "different sources".

l. 536 We analyzed ... -> We represent ... .

We have revised the phrase from "We analyzed …" to "We represent …".

l. 536ff. Please clarify your approach further by recalling the meaning of the pdf-peak positions and -widths.

We are grateful to the reviewer for prompting this clarification. We have added an explanation of the PDF structure at the beginning of the paragraph, which improves the readability and interpretability of the subsequent analysis (lines 559-563):

"We represent the contributions of uncertainty sources to vertical vapor δ18O and d-excess measurements at different altitudes using probability density function plots (Fig. 8). Each PDF peak indicates the most probable uncertainty value, while its width reflects sensitivity to that parameter. Narrow PDFs suggest stable, well-constrained uncertainty sources, whereas broader PDFs indicate greater variability and a more diffuse impact on the correction outcome."

In addition, we have updated the caption of Figure 8 to include this clarification (line 558):

"Figure 8: Contributions of different sources of uncertainty for $\delta^{18}O$ (a–c for 4000 m, 6000 m, and 9000 m, respectively) and d-excess (d–f for 4000 m, 6000 m, and 9000 m, respectively). The green triangle indicates the average mismatch between the model and experimental results. The peak position of each probability density function (PDF) represents the most likely uncertainty value for a given source, while the width of the distribution reflects variability."

l. 566 The combined uncertainty from all sources, including λ_surface, α, pump efficiency (ε), and model-experiment mismatches, results in a total uncertainty ... -> The combined uncertainties from all sources, including λ_surface, α, pump efficiency (ε), and model-experiment mismatches, result in a total uncertainty ... ->

We have corrected the grammar and revised "results" to "result".

l. 571 Additionally, λ_surface and α and also contributes considerably ... Additionally, λ_surface and α and also contribute considerably

We have removed redundant "and".

Figures 8 and 9. Please take care of y-axis legends that have been cut off.

We have corrected the y-axis labels in Figures 8 and 9.

Response to Reviewer #2

General comments:

Wang et al. used a drone and inflatable teflon bags to sample air from different altitudes (3856 -11000 masl) for subsequent, ground-based water vapor isotope measurements. Raw data were corrected for assumed, environmentally induced isotope-fractionating diffusion through the sampling bags' walls. Parameters needed for the diffusion model had been obtained from temperature-controlled laboratory experiments simulating some of the environmental conditions encountered in an 11 km air column. The attempt to find a widely applicable, low-cost solution for aerial sampling for water vapor isotope analysis is appreciated, but the results still need to be put into the right perspective. Great efforts were made in this study to estimate diffusion parameters and apply the correction model but parts of the respective description could perhaps go to the attachment or supplemental material in order to streamline the manuscript.

We sincerely thank the reviewer for the positive evaluation of our method and for the constructive suggestions. We will address the specific comments point by point carefully. To ensure that all necessary content remains clearly presented, we did not make major structural changes to the manuscript.

It stands out from the comparison of corrected data with independent observations (in situ for near-ground sampling, IASI satellite data for higher altitudes) that the applied correction model often fails to significantly eliminate the observed offsets between raw bag data and the respective reference observations, especially in the case of high-altitude sampling. In many cases, correction-induced shifts of data were even in the wrong direction, i.e. away from reference observations, which makes the entire correction approach questionable or at least insufficient. This holds even for near-ground samples, where the environmental conditions should be known best and exposition of samples to potentially adverse conditions should be shortest between collection and analysis. Further, a quantitative assessment of the offset between corrected data and reference observations is critically needed and must be compared to the data uncertainty acceptable for atmospheric water vapor isotope studies.

We thank the reviewer for raising this important point.

Near-surface case (Fig. 10a–b): Because only a few bag samples were collected at surface, our original plot also included samples up to 4500 m. We have now updated the figure to show only the 3856 m bag samples, allowing a direct comparison with the in-situ Picarro observations at the same altitude. The in-situ Picarro values are period-averaged, whereas the bag samples are instantaneous, which may explain their minor differences. Quantitatively, the mean absolute errors (MAE) after correction are 0.51 ‰ for $\delta^{18}O$, 2.99 ‰ for $\delta^{2}H$, and 1.37 ‰ for d-excess, all within the range acceptable for atmospheric water vapor isotope studies.

Higher altitudes (Fig. 10c–f): For $\delta^{2}H$, comparisons were made with IASI satellite retrievals, which provide values only for three broad vertical layers (1–3 km, 4–7 km, 8–12 km). These data represent vertical averages determined by averaging kernels and therefore allow only qualitative comparison with observations. This limitation highlights the importance of our drone-based high-resolution profiles. As expected, the corrections behave consistently with physical principles: the adjustments for δ^{18}O are small because diffusion effects are relatively minor, whereas for δ^{2}H and especially d-excess the corrections are larger, reflecting the stronger kinetic fractionation of hydrogen isotopologues.

Importantly, the detailed uncertainty assessment provided in this study effectively compensates for the limited availability of independent reference data for direct quantitative comparison. Our method provides a detailed assessment of all potential sources of error and quantifies the uncertainty range of the corrected data- including λ_surface, α, pump efficiency (ε), and model-experiment mismatches—is ~1 ‰ for δ^{18}O and ~8 ‰ for d-excess across 98% of the data. These ranges are slightly larger than the precision of direct Picarro in-situ measurements (~0.5 ‰ for δ^{18}O and ~4 ‰ for d-excess), but remain acceptable when compared to the substantial vertical variations we observed (~20‰ for δ^{18}O and ~100 ‰ for d-excess). We have now made this quantitative comparison explicit in the revised text (lines 592-595):

"The combined uncertainty from all sources, including λ_surface, α, pump efficiency (ε), and model-experiment mismatches, results in a total uncertainty of approximately 1‰ for δ^{18}O and 8‰ for d-excess across 98% of the data. These ranges is acceptable when compared to the substantial vertical variations we observed (~20‰ for δ^{18}O and ~100 ‰ for d-excess)."

The other detailed discussion and the corresponding manuscript revisions are provided in our reply to Fig. 10 and L578.

In general, I appreciate the changes that have been made in response to previous revisions and I agree with the authors that a low-cost solution for high-altitude, high-resolution air sampling would benefit the community. However, I cannot second their conclusion that the presented approach is a big step forward in this direction (expressed by, e.g., "notable agreement", "practical solution" etc.). Currently, the main obstacle seems to be the choice of a not-diffusion-tight sampling bag, the too simplistic assumptions made regarding the diffusion model or other significant processes beyond diffusion that were not considered in the applied correction (potentially varying temperature and pressure conditions).

We thank the reviewer for this balanced comment. In the revised manuscript, we clarified the limitations of the current approach and its applicability.

In the conclusion we now state (lines 670-673):

"This study was conducted under stable temperature and equal internal and external pressures during storage. We acknowledge that a formulation based on partial pressure of water vapor would be more general and could improve model applicability under varying temperature and pressure conditions. Future work could extend the model to account for these factors."

In addition, we explicitly noted this in the main text:

(e.g., lines 458-460) "These values depend on bag material, temperature, and pressure, which should be considered when applying the model under different conditions."

We also carefully toned down expressions such as “notable agreement” and “practical solution” to more cautious wording.

Specific Comments:
L 71 and L81 The cited study by Jiménez-Rodríguez is only available as preprint in HESSD. It was under review in 2019 but never accepted. No revision was provided by the authors afterwards, thus no accepted peer-reviewed version exists. Therefore, this pre-print must not be cited in your manuscript.
Instead, you could add Havranek et al. (2020), Magh et al. (2022), Herbstritt et al. (2023) in L71, and Gralher et al. (2021) in L 81.

We thank the reviewer for catching this. The preprint has been removed. We now cite Havranek et al. (2020), Magh et al. (2022), Herbstritt et al. (2023) in L71 and Gralher et al. (2021) in L81, as suggested.

L 95-97 The bags used by Herbstritt et al. (2023) were proven diffusion-tight. Issues with these impermeable bags were based on adsorption not on diffusion. Please rephrase accordingly.

We thank the reviewer for pointing this out. We have revised the sentence to clarify that Herbstritt et al. (2023) used diffusion-tight bags and that the remaining challenges were mainly related to adsorption rather than diffusion (lines 95-97):

“To mitigate these issues, specific diffusion-tight materials are highly recommended for water vapor isotope measurements, although adsorption effects may still occur with such materials (Herbstritt et al., 2023).”

L 107-108 Varying humidity and differences in isotopic composition is important, but what about varying (partial) pressure and varying temperature? This will eventually also affect material properties and diffusion coefficients of the Teflon bags in up to 11000masl. An easy pre-test would have been to fill some replicates of the bags, put them on the drone and take them to high altitudes just for exposure to the different ambient conditions, then bring them down again for analysis and compare the results with measurements from other replicate bags, which had been stored at the ground, as well as with the in situ measurements. Was something similar done?

We appreciate this insightful suggestion. The actual residence time of our samples at high altitude was very short. We did not directly perform exposure-only high-altitude experiments, as conducting controlled tests at different altitudes, temperatures, and pressures is technically very challenging. Moreover, even if air bags were transported to ~11 km altitude and then brought back to the surface, as suggested by the reviewer, the bags would still not only be exposed to a stable high-altitude environment. For these reasons, we consider our approach both needed for done-based observation and practical: as described in Section 3.4 (Eqs. 15–16), we estimated λ (k*A/M) for different altitudes ($\lambda_{\_alt}$) through the variable of collected air mass (M), which was calculated from pressure, sampling time, and pump efficiency (ε). A comprehensive uncertainty assessment was carried out to account for the potential variability of these factors.

Regarding pressure, since the bags are flexible, no net pressure gradient exists across the membrane during sampling and storage. For temperature, we simplified the treatment by assuming isothermal laboratory conditions. In reality, samples remained at high altitude only briefly (10–20 minutes). Moreover, the lower ambient temperature at high altitudes and the reduced difference between ambient air and the stored samples compared to ground-level conditions are expected to further limit the magnitude of diffusion effects. Therefore, we have applied conservative error ranges in our uncertainty analysis, which has already overestimated the true impact of these factors.

We clarified that while our current treatment does not explicitly resolve the temperature dependence of bag permeability, this represents an important avenue for future work to improve the general applicability of the model:

In the Introduction (after line 119–126):

"However, because of the short residence time at high altitudes, the reduced diffusivity at low temperatures, and the flexibility of the bags maintaining equal internal and external pressure, our current approach does not explicitly resolve potential temperature- or pressure-dependent changes in bag permeability. Under our experimental conditions, these effects were instead addressed indirectly through conservative uncertainty estimates. Future applications should take into account the specific experimental conditions, and future developments may extend the model to explicitly incorporate the dependence of bag permeability on partial pressure and temperature, thereby improving its applicability under a wider range of atmospheric conditions."

L 121ff. Fickian diffusion as a physical law has been described before. Please cite the general equation(s) accordingly. Same for 'isotopic fractionation'.

We thank the reviewer for pointing this out. We have now clarified in the text that Eq. (1) is derived from Fick's first law of diffusion (Fick, 1855) (lines 136-140):

"The flux of water into the bag, F (in kg/m2/s), is expressed as:

$$F=k*(qe-q(t)) \tag{1}$$

where q(t) represents the variation of humidity inside the air bag over time (in kg/kg), qe denotes the environmental humidity (in kg/kg), k is water vapor conductance. This first-order formulation is derived from Fick's diffusion law(Fick, 1855)."

Figure 10: Comparison of corrected data with independent observations shows that the applied correction model often fails to significantly eliminate the observed offsets, especially in the case of high-altitude sampling (10c and 10e). It stands out that in many cases, even the direction of the applied correction is wrong, i.e. raw data plot between corrected data and references, rendering the applied model or its parameters questionable. This holds even for near-ground sampling (10a and 10b), where no significant isotopologue-specific vapor pressure gradients must be assumed to affect the respective samples' integrity during the short time between collection and analysis. I assume that a better agreement of independent observations with raw bag data rather than corrected data would also become evident when presenting data in cross plots including a 1:1 line (in addition to the time series), which I strongly suggest.

We thank the reviewer for this valuable suggestion. We have addressed the deviations between corrected and reference data in our general reply. For the near-surface case, because only a few bag samples were collected at 3856 m, our original plot also included samples up to 4500 m. We have now updated the figure to show only the 3856 m bag samples, allowing a direct comparison with the in-situ Picarro observations at the same altitude.

Following the reviewer's advice, we have also added cross plots comparing raw and corrected air bag data with in-situ observations averaged over the sampling period, including a 1:1 reference line, in the revised manuscript. For δ²H, the corrected data fall essentially along the 1:1 line, while for d-excess the points are more scattered. Nevertheless, our method explicitly quantifies the uncertainty range of the corrected values. As shown in this figure (Fig.A3), and as expected for near-surface sampling, the differences between the bag samples and the ambient values are very small, and the impact of diffusion is minimal. Consequently, the applied corrections are also small, although they bring the data closer to the 1:1 line. Overall, the raw bag values, the corrected bag values, and the in-situ Picarro measurements remain in very close agreement.

L 578 What measure was used for the assessment of 'notable agreement'? Please provide quantitative assessments of the offsets between 'raw measurements' vs. references and 'corrected data' vs. references and compare them to the uncertainty acceptable for atmospheric water vapor isotope studies.

We thank the reviewer for this helpful suggestion. We have now quantified the offsets between corrected data and in-situ Picarro time-averaged observations at 3856 m using the mean absolute error (MAE). After correction, the MAEs are 0.51 ‰ for δ¹⁸O, 2.99 ‰ for δ²H, and 1.37 ‰ for d-excess. These values are well within the combined uncertainty of our correction method (~1 ‰ for δ¹⁸O and ~8 ‰ for d-excess across 98% of the data) and are comparable to the precision typically considered acceptable for atmospheric water vapor isotope studies. We have added this quantitative statement in the revised manuscript (lines 607-611).

"There is agreement between the raw and corrected δ²H measurements for altitudes 3856–4000 m and the in-situ δ²H observed directly by the Picarro at ground level (3856 m), with a mean absolute error of 2.99 ‰ (Fig. 10a, Fig. A3). The remaining minor differences can be attributed to the fact that the Picarro in-situ observations are period-averaged, whereas the bag samples represent instantaneous values."

"After correction, d-excess decrease and are similar to in-situ surface-level measurements on the Picarro at 3856 m, with a mean absolute error of 1.37 ‰."

The mentioned dependencies of the specific parameters on temperature and pressure as well as the mentioned batch-to-batch variations (L 435-440) could also be reasons for the observed deviation between the 'measured data' and the 'Picarro' data in Fig. 10 and should be briefly discussed here.

This has been addressed in our response above and corresponding changes have been made in the manuscript

Technical corrections:

L 2 Typo: should be 'case studies' instead of 'cases studies'.

"Cases studies" has been corrected to "case studies."

L 23 Please delete the comma.

Thank you. We have removed the comma.

L43 Typo: 'in situ' instead of 'in suit'.

Corrected. "In suit" has been replaced with "in situ".

L 86 and throughout the manuscript: please check the order of the references (oldest to newest).

We have carefully revised the reference order throughout the manuscript, in accordance with the journal's guidelines.

L 137 Please add '(\alpha)' after '…fractionation coefficient' and check for identical notation (sometimes ',\alpha,') throughout the manuscript.

We have added "α" after "fractionation coefficient" as requested, and ensured that the notation for α is consistently applied throughout the manuscript.

L 153 Please add '(\lambda)' after '…exchange coefficient'.

"λ" has been added after "exchange coefficient"

L 184 \alpha is the fractionation coefficient, not the mass flow. Please move the '\alpha' accordingly.

We thank the reviewer for pointing this out. We have revised the sentence accordingly to avoid the misleading association between α and mass flow (lines 194-196):

"This equation demonstrates that the slope of ln (R_e-$R(t)$) against time is the water vapor isotopic exchange coefficient $\frac{\lambda}{\alpha}$. *Knowing λ, we can deduce the isotopic fractionation coefficient α for each isotope."*

Figure 2 The air bag in the picture seems to be metalized – is this a Teflon bag??

We have updated Figure 2 with a clearer photo showing the actual Teflon air bag used in this study.

L 233 Gas flow rate is '40sccm at 760 Torr' according to the L2130-i Analyzer Datasheet.

We thank the reviewer for the clarification. In the revised manuscript, we have updated the description to be consistent with the L2130-i Analyzer datasheet (lines 251-254):

"The instrument's built-in flow regulation maintains a gas flow rate of 40 sccm at 760 Torr, corresponding to ~ 30–50 mL/min in our measurement conditions, ensuring

stable sample delivery.”

L244 the correct name is ‘L2130-i’.

We have corrected “Picarro 2130i” to “Picarro L2130-i”.

Figure 10 is still hard to understand. ‘Measured data’ are also measured by the Picarro, right? To avoid confusion, I would suggest something like ‘Raw air bag data’ – ‘Corrected air bag data’ – ‘in situ measurements’ in the figure legend.

We agree and appreciate the helpful suggestion. We have revised the legend of Figure 10.

Literature:

Havranek et al. (2020) https://doi.org/10.1002/rcm.8783
Magh et al. (2022) https://doi.org/10.5194/hess-26-3573-2022