Reviewer #1

General comments:

1. Even though the language quality has improved, I strongly recommend another language check by a native speaker before publication. There are many grammatical mistakes and sentences that are difficult to read which makes the scientific message difficult to understand.

Thanks for your suggestion, we have used the professional language editing company, American Journal Experts (AJE), to help us to polish our manuscript. Now, we believe our language quality has reached the requirements of the journal.

2. Both methods use an important assumption which is that the surface water vapour is (moist) adiabatically connected to the cloud-base water vapour. In method 1, this assumption is used to calculate the cloud base height, temperature and pressure. In method 2, the isotopic composition of the cloud-base water vapour is calculated assuming a moist adiabatic ascent of the measured ground-level water vapour.

This assumption only holds if the vertical column at the observation site is undisturbed by horizontal movement (as mentioned as assumption on lines 353-354). A discussion of the validity of these assumptions (under which circumstance can we assume a vertically undisturbed and connected column and where does the assumption not apply) is currently missing in the manuscript.

Thanks for your suggestion. Yes, you are right, these assumptions are very important, and should be clearly pointed out in the manuscript. Now, we added this information in Section 2.5, and it reads "Here, it should be noted that both methods use an important assumption which is that the surface water vapor is (moist) adiabatically connected to the cloud-base water vapor in the air column. In method 1, this assumption is used to calculate the cloud base height, temperature, and pressure (Appendix C, Eq. 14-16). In method 2, the isotopic composition of the cloud-base water vapor is calculated assuming a moist adiabatic ascent of the measured ground-level water vapor (Appendix C, Eq. 22). In addition, in method 2, we assumed that the raindrop isotopic composition (δ_{cb-p}) at the cloud base is in equilibrium with the surrounding water vapor, and the observed ground-level precipitation isotopic composition (δ_{gr-p}) includes the processes of evaporation, growth, and isotopic equilibrium with the surrounding vapor. Furthermore, the air column is assumed that there is no horizontal advection into or out of it, and no updraft or downdraft of the air masses during the hydrometeors' falling. That means the vertical column at the observation site is undisturbed by horizontal movement. These assumptions only hold if a single vertical column extends from the ground to the cloud-base height. When the rain events during which the single column is affected by the surrounding air, these assumptions become invalid."

3. Further, it's important to mention more prominently that method 1 only includes below-cloud evaporation by construction while in method 2 other processes can still be included. I'm missing a discussion of these differences between the methods and the learnings from the comparison. This should be added as a discussion/conclusion point on which method should be applied under which conditions (i.e. under which meteorological conditions might an

assumption of local (moist-) adiabatic (not be) valid) and how to possibly improve them in future studies (e.g. could the methods be improved to better represent below-cloud processes during snowfall?).

Thanks for your suggestion, we have added the content to the conclusions. "4. Considering the assumption that the surface water vapor is (moist) adiabatically connected to the cloud-base water vapor, therefore, the validation of the two methods is for frontal precipitation or convective precipitation. Here, method 1 only includes below-cloud evaporation by construction while in method 2 other processes can still be included, such as supersaturation. Therefore, both methods are suited to study the below-cloud evaporation effect (no statistical differences in $\Delta\delta^2H_p$ for rainfall events), however, if other below-cloud processes are included, applying method 2 is the better choice. In future studies, further high-resolution observations of vertical profiles of precipitation and water vapor isotopes, whether tower-based or aircraft-based, have the potential to greatly improve constraints on below-cloud processes."

Specific comments:

4. The abstract needs a language check

We have carefully revised the abstract part, and now it reads "When hydrometeors fall from an in-cloud saturated environment toward the ground, especially in arid and semiarid regions, below-cloud processes may heavily alter the isotopic composition of precipitation through equilibrium and non-equilibrium fractionations. If these below-cloud processes are not correctly identified, they can lead to misinterpretation of the precipitation isotopic signal. To correctly understand the environmental information recorded in the precipitation isotopes, qualitatively analyzing the below-cloud processes and quantitatively calculating the below-cloud evaporation effect are two important steps. Here, based on two years of synchronous observations of precipitation and water vapor isotopes in Xi'an, we compiled a set of effective methods to systematically evaluate the below-cloud evaporation effect on local precipitation isotopic composition. The ΔdΔδ-diagram is a tool to effectively diagnose below-cloud processes, such as equilibration or evaporation, because the isotopic differences (δ^2H, d-excess) between the precipitation-equilibrated vapor and the observed vapor show different pathways. By using the ΔdΔδ-diagram, our data show that evaporation is the major below-cloud process in Xi'an, while snowfall samples retain the initial cloud signal because they are less impacted by the isotopic exchange between vapor and solid phases. Then, we chose two methods to quantitatively characterize the influence of below-cloud evaporation on local precipitation isotopic composition: one is based on the raindrop's mass change during its falling (hereafter referred to as method 1); the other is dependent on the variations in precipitation isotopic composition from the cloud base to the ground (hereafter referred to as method 2). By comparison, we found that there are no significant differences between the two methods in evaluating the evaporation effect on δ^2H_p, except for snowfall events. The slope of evaporation proportion to the variation in δ^2H ($F_i/\Delta\delta^2H$) is slightly larger in method 1 (1.0 ‰/%) than in method 2 (0.9 ‰/%). Additionally, both methods indicate that the evaporation effect is weak in autumn and heavy in spring. Through a sensitivity test, we found that in two methods, relative humidity is the most sensitive parameter, while the temperature shows different effects on the two methods. Therefore, we concluded that both methods are suited to investigate the below-cloud evaporation effect, while in method 2, other below-cloud processes, such as supersaturation, can still be included. By applying method 2, the diagnosis of below-cloud processes and the understanding of their effects on the precipitation isotopic composition will be improved."

5. Lines 33-37, the first sentence is difficult to read. I suggest to divide it into two sentences: "When hydrometeors fall from an in-cloud saturated environment towards the ground, especially in the arid and semi-arid regions, below-cloud processes may heavily alter the precipitation isotopic composition through equilibrium and non-equilibrium fractionation. If these below-cloud processes are not correctly identified, they can lead to misinterpretation of the precipitation isotopic signal. "
Thanks for your suggestion, we have divided this sentence into two sentences, and now it reads "When hydrometeors fall from an in-cloud saturated environment towards the ground, especially in the arid and semi-arid regions, below-cloud processes may heavily alter the precipitation isotopic composition through equilibrium and non-equilibrium fractionation. If these below-cloud processes are not correctly identified, they can lead to misinterpretation of the precipitation isotopic signal. "

6. Line 60, "therefore" in last sentence: It's not clear to me how this sentence connects to the previous sentence(s).
We have revised the last sentence, now it reads "Therefore, we concluded that both methods are suited to investigate the below-cloud evaporation effect, while in method 2 other below-cloud processes, such as supersaturation, can still be included. By applying method 2, the diagnosis of below-cloud processes and the understanding of their effects on the precipitation isotopic composition will be improved."

7. Lines 99-101: "The equilibrium fractionation would not change the d-excess while the non-equilibrium diffusional process would result in a decrease of d-excess in rain (Fisher, 1991; Merlivat and Jouzel,1979)"
This is not correct as a general statement. D-excess can change during equilibrium fractionation, depending on ambient temperature. Possibly rephrase to "Equilibrium fractionation does not substantially change d-excess while …"
Thanks for your suggestion, we have rephrased the sentence to "Equilibrium fractionation does not substantially change d-excess, while non-equilibrium diffusional process would result in a decrease of d-excess in rain (Fisher, 1991; Merlivat and Jouzel, 1979)."

8. Line 128: what do you mean with "initial signal"? The cloud-base signal?
Yes, you are right, we have changed the "initial signal" into the "cloud-base signal".

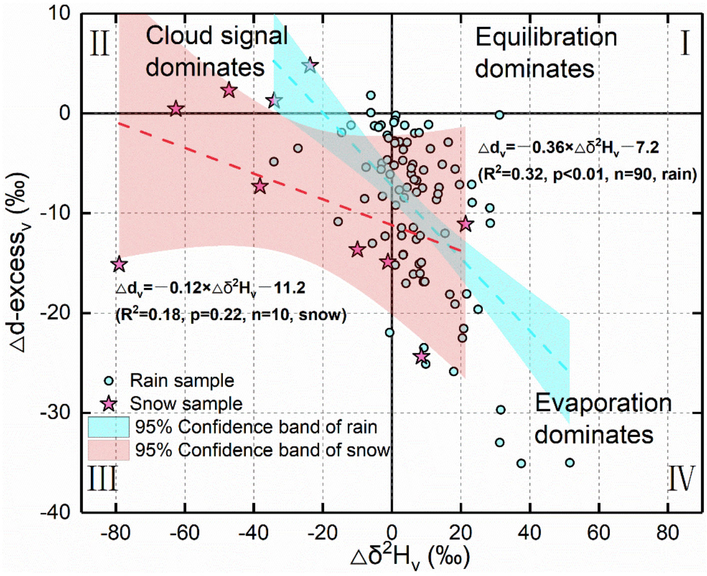
9. Line 205: "after filtration": do you mean: "second the samples were filtered, and then immediately..."
Yes, you are right. Following your suggestion, the sentence now reads "The

snowfall samples were first melted at room temperature in closed plastic bags, second the samples were filtered, and then immediately poured into 100 ml polyethylene bottles."

10. Lines 459-477: this paragraph is difficult to follow, many sentences are difficult to understand due to poor language; e.g. "Hence, rain/snow formed under such circumstances, their isotopic signals will be less impacted by the environmental factors during its falling."
Please, check the language in this paragraph.
Thanks for your suggestion, we have rephrased this paragraph, and it reads "Based on the results from numerical simulations and in situ observations, Graf et al. (2019) concluded that raindrop size and precipitation intensity are two important factors for determining below-cloud processes. For example, precipitation with large raindrops and heavy intensities is less affected by below-cloud processes because of the shorter residence time of raindrops in the atmospheric column with a faster fall velocity. Therefore, they are less affected by the evaporation and equilibration processes on their falling way toward the ground surface, and the $\Delta\delta^2H_v$ is more negative. It is worth noting that in the case of not considering the factors of raindrop size and rain rate, the different precipitation types also show a clear distribution on the ΔdΔδ-diagram, as almost all the snowfall samples have negative $\Delta\delta^2H_v$ values (Fig. 4). Theoretically, snowfall events normally occur in low-temperature conditions and correspond to weak evaporation. Furthermore, the diffusion speed of the ice phase (solid) to vapor is lower than that of liquid to vapor. Hence, under such conditions, the isotopic signals of rain/snow are less affected by the below-cloud processes during falling. This leads Δδ to be more negative with decreasing temperature, such as the observed phenomenon in the post-frontal precipitation isotopes in Graf et al.'s (2019) study. Additionally, on the ΔdΔδ-diagram, the snow samples with positive Δd-excess$_v$ (in the second quadrant) may be related to the supersaturation process, as the liquid has unusually high d-excess$_p$ for the non-equilibrium fractionation of supersaturation (Deshpande et al., 2013; Jouzel and Merlivat, 1984). We conclude that in addition to raindrop size and rain rate, precipitation type is also an essential factor in determining the data distributions on the ΔdΔδ-diagram."

11. Fig.4: It's nice that you added two regression lines and interesting that the linear regression for rain is similar to the results by Graf et al. (2019).
The colors of the regression lines don't match the colors of the markers for the respective precipitation type in the new figure. This makes the figure difficult to read.

Thanks for your suggestion. In order to make the colors of the regression lines match the colors of the markers, we have changed the colors in Fig.4.



12. Lines 529-532:
"During the supersaturation process, vapor deposition occurs over ice (Jouzel and Merlivat, 1984), which may cause the snow isotopic composition at the ground to be more depleted than its formation height."
It is not entirely clear to me where this vapor deposition takes place: is it vapor deposition during falling or in the cloud before the snowfall? Why does vapour deposition during snow fall decrease δ18O and δD of the snow? Whether the isotopic composition of snow becomes less depleted in heavy isotopes during this process depends on the isotopic composition of the water vapour below the cloud relative to in-cloud vapour.
That is a good question. Here, the vapor deposition takes place in the cloud before the snowfall. We cited the hydrometeors formation mechanism in Graf's et al. (2019) study (Appendix A: A2.1 Growth by vapor deposition).
Precipitation formation in both mixed-phase and ice clouds occurs by deposition of vapor on ice particles. Non-equilibrium fractionation due to supersaturation with respect to ice is taken into account with a kinetic fractionation factor α_k.

$$R_{cb\text{-}ps} = \alpha_s \alpha_k R_{cb\text{-}v} \qquad \text{Eq.1}$$

where $R_{cb\text{-}ps}$ is the isotopic composition of precipitation at the cloud base, α_s is the equilibrium fractionation coefficient with respect to the solid phase, $R_{cb\text{-}v}$ is the isotopic composition of water vapor at the cloud base, and α_k is the kinetic fractionation factor that vapor deposition occurs over ice during the supersaturation process, which can be written in terms of properties of the bulk gas:

$$\alpha_k = \frac{S_i}{\alpha_s D/D'(S_i-1)+1} \qquad \text{Eq.2}$$

where S_i is the supersaturation over ice, and D/D' is the ratio of the diffusion coefficients of the light and heavy isotopes.

In the equilibrium state, the isotopic fractionation between the solid and vapor phases follows a temperature-dependent factor:

$$R_{cb\text{-}pe} = \alpha_s R_{cb\text{-}v} \qquad \text{Eq.3}$$

Here, the kinetic fractionation factor α_k is not taken into account.

Because the D/D' of HDO or $H_2{}^{18}O$ is lower than 1, α_k is lower than the unity. Hence, the R_{cb-ps} calculated by Eq.1 is smaller than the R_{cb-pe}. The R_{cb-ps} and R_{cb-pe} correspond to δ_{gr-p} and δ_{cb-p} in Eq. 4, respectively.

$$\Delta\delta_p = \delta_{gr-p} - \delta_{cb-p} \qquad \text{Eq.4}$$

Therefore, during the supersaturation process, the snow isotopic composition observed at the ground is more depleted than its formation height.

Here, to make our expression more clear, we revise the sentence to "During the supersaturation process, vapor deposition takes place over ice in the cloud (Jouzel and Merlivat, 1984) with non-equilibrium fractionation (the kinetic fractionation factor $\alpha_k<1$), leads the effective isotopic fractionation factor ($\alpha_{eff} = \alpha_{eq}\alpha_k$) to be smaller than the equilibrium fractionation coefficient (α_{eq}), and results in the ground observed δ_{gr-p} of solid precipitation (snow) more depleted than the calculated δ_{cb-p} under equilibrium fractionation (in Eq. 7).

13. Lines 534-536: "The diameter of the raindrop used to determine the terminal velocity and evaporation intensity (Supplemental material, eq. 10-13) does not take into account the snowfall factor which results in great uncertainty in method 1.
What's "the snowfall factor"? Do you mean the different relationship of fall velocity to hydrometeor size for snow flakes and rain drops?
Yes, you are right. Following your suggestion, the sentence now reads "The diameter of the raindrop used to determine the terminal velocity and evaporation intensity (Supplemental material, Eq. 10-13) does not take into account the different relationship of fall velocity to hydrometeor size for snowflakes and raindrops, which results in great uncertainty in method 1."

14. Lines 551-552: "The significant difference in winter might be related to the supersaturation process."
So far, you've mentioned supersaturation and vapour deposition as a possible mechanism leading to negative ΔδD during winter. Instead of referring to this process, I'd refer to the presence of solid precipitation during winter time. E.g.: "The significant difference in winter might be related to the predominance of solid precipitation which is not accounted for in method 1."
Thanks for your suggestion, we have revised this sentence to "The significant difference in winter might be related to the predominance of solid precipitation which is not accounted for in method 1."

15. Lines 562-564: "Wang et al. (2016b) explicitly pointed out that among the parameters of temperature, precipitation amount, RH, and raindrop diameter, RH generally plays a decisive role on Δd-excess in the below-cloud evaporation process."
You're only showing ΔδD, how about the role of these parameters for Δdexcess in your data? This might be too much to add in this manuscript but mentioning the results from Wang et al. (2016b) on Δdexcess rises this question.
You are right. According to your suggestion, we have deleted the cited reference.

16. Section 3.4: This part seems out of place and I didn't learn anything new while reading it (especially after seeing Figure S4 in Section 3.3.1). Further, it seems partly a repetition of the lines 549-552. Is this section needed?
Following your suggestion, we have deleted this paragraph.

17. Fig.7: out of curiosity: there seems to be a seasonality on the effect of a temperature decrease on ΔδD, which is opposite for method 1 and 2. How do you explain the (opposite) seasonality?
Yes, you are right. Here, the method 1 and 2 show a weak seasonality on the effect of a temperature decrease on ΔδD, but their trends are opposite.
In method 1, the temperature is related to the calculation of F_r, α, γ, and β (Eq. 5), and thus the complex calculating processes offset its impact on the ΔδD, which results in less sensitivity of temperature on the variations of ΔδD.

By comparison, the temperature highly impacts the calculation of δ_{cb-p} in method 2 (Eq. 5). In addition, we used the different equations to calculate the equilibrium factors when the temperature is below or above 0°C. For example, when the temperature is greater than 0 °C, we use the equation of Horita and Wesolowski (1994) to calculate $^{2}\alpha$ and $^{18}\alpha$, when the temperature is below 0 °C, the equilibrium fractionation factor proposed by Ellehoj et al. (2013) is used (supplemental material: Appendix B). Therefore, the different equations may cause the seasonality in method 2.

18. Lines 686-687: "the precipitation and water vapor isotopic compositions have a good relationship" What do you mean with "good relationship"?
Thanks for your suggestion, we have changed the sentence into "In arid areas, the precipitation and water vapor isotopic compositions are closely related, and therefore the joint observation of the two tracers could provide more information on the precipitation processes."

Reviewer #2

General technical issues:

1. "eq." should be written in capital letter throughout the manuscript and supplement (thus "Eq.", see ACP guidelines)

Thanks for your suggestion, we have changed "eq." into "Eq." throughout the manuscript and supplement.

2. There should be a colon or full stop after Figure [Number], thus e.g "Figure 1:" or "Figure 1." instead of "Figure 1"

Thanks for your suggestion, we have added a full stop after Figure [Number] throughout the manuscript and supplement.

Specific comments:

3. P1, L60ff: It is still not clear why the two methods improve our understanding. Please clearly state what is improved. What do we derive from these methods? Which method is better? Are both methods well suited to investigate below cloud processes or are there some restrictions for one or the other method? This should be clearly stated in the abstract.

Thanks for your suggestion. To more clearly express our intention, we have revised the last sentence to "Therefore, we concluded that both methods are suited to investigate the below-cloud evaporation effect, while in method 2 other below-cloud processes, such as supersaturation, can still be included. By applying method 2, the diagnosis of below-cloud processes and the understanding of their effects on the precipitation isotopic composition will be improved."

4. P4, L128: What do you mean with "initial signal"? Is this found in the delta diagram?

Thanks for your suggestion, we have changed the "initial signal" into the "cloud-base signal"

5. P9, L272: Why does this function need to be determined? Why is this correction necessary?

Many studies have pointed out that the water vapor isotopic composition measured by cavity ringdown spectrometer has the humidity (water vapor mixing ratio) dependency, especially at the low water vapor mixing ratios. Furthermore, Weng et al., (2020) reported that the isotope composition of water vapor has a substantial and systematic impact on the mixing ratio dependency. If you want to get the accurate water vapor isotopic result, you need to build the relationship between the water vapor isotopic composition and its mixing ratio. Therefore, it is necessary to determine the isotopic composition-humidity correction response function.

To express more clearly, we have revised the sentence to "The water vapor concentration effect and isotopic composition dependency of the cavity ringdown spectrometer have been pointed out by many studies (e.g., Bastrikov et al., 2014; Benetti et al., 2014; Steen-Larsen et al., 2013; Weng et al., 2020). In order to minimize the uncertainty from the measurement, it is important to determine the isotopic composition-humidity correction response function.”

6. P11, L354: What is meant here with “updraft” and “downdraft”?
Here, we want to express that the horizontal and vertical air motion are neglected, while the updraft or downdraft corresponds to the vertical motion of air masses.
We have revised this sentence, and now it reads “In addition, during the hydrometeors falling we assumed that there is no horizontal advection into or out of the column, and no updraft or downdraft of the air masses.”

7. P11, L366: What is SPSS? What does this p value mean? Why has this value been chosen. This should be clarified in the manuscript.
SPSS is the abbreviation of Statistical Package for Social Sciences. p represents the level of confidence.
Following your suggestion, we have revised this sentence to “To compare the difference between the two methods, the independent t-test was performed on Statistical Package for Social Sciences (SPSS 13.0, Inc., Chicago, US), followed by setting the significant statistical difference at the $p=0.05$ level of confidence.”

8. P13, L423-424: Sentence is not clear. It may be that there is just a “the” missing, but what exactly is meant with two monthly equilibrated water vapour values? Are this values observed on a two monthly basis or derived (averaged?) over two years?
Thanks for your suggestion, we have revised this sentence to “Jacob and Sonntag (1991) suggested that the water vapor isotopic composition is possible to be deduced from the corresponding precipitation isotopic composition, but Wen et al. (2010) speculated that the equilibrium method cannot accurately predict the ground-level water vapor isotopic composition in arid and semiarid climates because of two the monthly equilibrated water vapor values in April and November deviating from the observed values.”

9. P19, L581ff: Clearly write what the differences are. To make these more clearly I would suggest to write that the same input parameters as for method 1 have been used except precipitation amount.
Following your suggestion, we have revised the sentence to “In method 1, the input physical parameters include temperature, RH, surface pressure, and precipitation amount. In method 2, the same input parameters as for method 1 have been used except for precipitation amount.”

10. P21, L646: Be more precise. Have been added quadratically to what?
Thanks for your suggestion. To make the sentence more clearly, we have revised it to “Hence, the lower and upper limits of the above used input parameters in for method 1 and method 2 are used to quantify the uncertainties and add them quadratically to ascertain the total uncertainty (Rangarajan et al., 2017; Wu et al., 2022).”

11. P21, L652: Change the order of the sentence parts so that it reads: Before exploring……it is important…. since ……….

Thanks for your suggestion. Now, it reads "Before exploring the information contained in the precipitation isotopes, it is important to clearly know the variation of precipitation isotopic composition during its falling, since the below-cloud evaporation is very common in arid and semi-arid regions."

12. P23, L707ff: As in the abstract, also here in the conclusion a clear message should be provided. When should one use method 1 and when method 2? Which of the two methods is better or are the same result derived?

Thanks for your suggestion, we have added a clear statement in the conclusion. Now, it reads "4. Considering the assumption that the surface water vapor is (moist) adiabatically connected to the cloud-base water vapor, therefore, the validation of the two methods is for frontal precipitation or convective precipitation. Here, method 1 only includes below-cloud evaporation by construction while in method 2 other processes can still be included, such as supersaturation. Therefore, both methods are suited to study the below-cloud evaporation effect (no statistical differences in $\Delta\delta^2H_p$ for rainfall events), however, if other below-cloud processes are included, applying method 2 is the better choice. In future studies, further high-resolution observations of vertical profiles of precipitation and water vapor isotopes, whether tower-based or aircraft-based, have the potential to greatly improve constraints on below-cloud processes."

Technical corrections:

13. Title: in Xi´an -> for Xi´an

Have done.

14. P2, L40: delete "a" rephrase as follows: …based on two-years of synchronous observations of precipitation……

Have done.

15. P2, L46: add "the" -> By using the

Have done.

16. P2, L58: add "we found that" -> Through the sensitivity test we found that relative humidity ……

Have done.

17. P2, L60: "following" is not the right term here. I would suggest to rephrase as follows: Therefore, by applying the two methods, the diagnosis of below-cloud processes and the understanding of their effects on the precipitation isotopic composition can be improved."

Have done.

18. P4, L105: rephrase as follows: "…..and a slope lower than 8.0 points to a non-equilibrium fractionation, such……." Further, I am not sure if it rather should non-equilibrium fractionation process.
Thanks for your suggestion, we have changed the sentence to "Generally, the LMWL's slope is approximately equal to 8.0 belonging to equilibrium fractionation, and a slope deviating from 8.0 is related to a non-equilibrium fractionation, such as the re-evaporation of raindrops.

19. P4, L120 and 122: add "the" before delta-diagram (twice) and LMWL (once).
Have done.

20. P4, L125: works -> work
Have done.

21. P4, L139: frame is not the correct term here. Rather "region" or "area". What is meant here with "simple"?
We have revised the sentence to "Froehlich et al. (2008) adapted the Stewart model and then assessed the change in d-excess due to below-cloud evaporation in the European Alps."

22. P5, L155: Change sentence to: However, so far these have not been systematically compared.
Have done.

23. P6, L178: remove "year"
Have done.

24. P7, L206: delete "a"
Have done.

25. P7, 207: Since the measurements are performed based on samples I would rather write "analysed" than "measured".
Have done.

26. P7, L216: same here
Have done.

27. P7, L224 and 225: Spaces are missing. You could also write VSMOW-GISP (Vienna Standard Mean Ocean Water – Greenland Ice Sheet Precipitation).
Have done.

28. P7, L227: This sentence is not clear and I would suggest to rephrase as follows: To correct the instrument drift, the instrument was repeatedly calibrated with the laboratory standards after analysing 8 samples.
Have done.

29. P9, L298: lead to -> encounter
Have done.

30. P9, L300: a -> the
Have done.

31. P10, L310: add “the” -> of the equilibrium
Have done.

32. P10, L330: variations -> variation
Have done.

33. P11, L341: isotope -> isotopic
Have done.

34. P11, L344: is able to calculate -> can be calculated
Have done.

35. P11, L349: Be more precise. Which method? Method 1 or method 2?
Have done.

36. P11, L352: isotopically -> isotopic
Have done.

37. P11, L357: more works need to -> more work is needed to
Have done.

38. P11, L358: delete “the”
Have done.

39. P11, L375: the LWML is -> the LMWL is defined as……. (or can be calculated by…….)
Have done.

40. P11, L376: same here for LWVL
Have done.

41. P11, L376: add “the” -> based on the per-precipitation-event water vapour
Have done.

42. P12, L378: of LMWL -> of the LWML
Have done.

43. P12, L378: are 8.0 and 10.0…… -> have a slope of 8.0 and 10.0….
Have done.

44. P12, L382: little -> somewhat
Have done.

45. P12, L382: of LMWL -> of the LMWL
Have done.

46. P12, 383: may also relate to -> may also be related to
Have done.

47. P12, L388:which -> where; Further, I would suggest to write “with the former being generally more negative when the latter”
Have done.

48. P12, L391: add “being” -> composition being more positive
Have done.

49. P12, L397: add “the” -> the precipitation
Have done.

50. P13, L400: add “the” -> with the observed
Have done.

51. P13, Figure 3 caption: dash-dot -> dash-dotted
Have done.

52. P13, L409: Add in which figure.
Have done.

53. P13, L413: deviation -> deviate
Have done.

54. P14, L429: clearly state which one? From the isotope composition?
Have done.

55. P14, L444: richer -> more
Have done.

56. P15, L466: event happens -> events happen
Have done.

57. P15, L467: corresponds -> correspond
Have done.

58. P15, L492: move “the” behind “in”
Have done.

59. P16, L493: scope is not the correct term here. It should rather read “area of” or “region of”.
Have done.

60. P16, L496: works -> work
Have done.

61. P16, L500: “rich” is not the correct term. Use “valuable”.
Have done.
62. P16, L506: The section header should rather read “Quantitative evaluation of the below-cloud evaporation effect derived from the two methods”.
Have done.

63. P16, L508, L509 and L510: range -> ranges
Have done.

64. P16, L513: delete “a”
Have done.

65. P16, L514 and L515: in -> for or better write “derived from”
Have done.

66. P16, L514 and L515: delete “+-“ before standard deviation
Have done.

67. P17, L523: show -> appears
Have done.

68. P17, L528: could not -> can not or better write “is always positive” instead of “be a negative number”.
Have done.

69. P17, L538: when the -> for
Have done.

70. P19, L583: test -> tests
Have done.

71. P19, L591: at -> to
Have done.

72. P19, L597: have positive impact -> have a positive impact
Have done.

73. P20, L629: deciding -> determining
Have done.

74. P21, L643: section 2.4 -> Sect. 2.4
Have done.

75. P21, L645: add “used“ -> above used input parameters
Have done.

76. P21, L645: in -> for
Have done.
77. P22, L691: add “the” -> of the local RH
Have done.

78. P23, L692: validates -> evaluates (?)
Have done.

79. P23, L705. difference -> differences
Have done.

80. P23, L707: add “we found that” after sensitivity analysis
Have done.

Supplement:
81. General: Add page numbers
Have done.

82. eq. -> Eq.
Have done.

Specific comments:
83. sentence after Eq. 14: add “the” -> the average
Have done.

84. P6: What is Q1 and Q2?
Q1 and Q2 are two parameters that are used to calculate the evaporation intensity of the falling drops, and there are no specific expressions for these two parameters. The values of Q1 and Q2 for specific conditions, i.e., T=0°C, 10°C, 20°C, 30°C, 40°C; D=0.01cm, 0.02cm, 0.03cm, ... , 0.44 cm; and h=10%, 20%, 30%, ..., 100%, were presented by Kinzer and Gunn (1951).
According to previous research, Wang et al., (2021) gave two approximative formulas to respectively calculate Q1 and Q2:

$$Q1=(-0.2445T+131.28)(0.1D)^{1.6139}$$

$$Q2=(-0.73h+0.7264)e^{(-0.002h+0.0371)T}$$

Based on Kinzer and Gunn (1951), the Pearson's determination coefficient (R^2) between the observations and estimates is 0.9826 for Q1 and 0.9942 for Q2 ($p < 0.0001$).

85. Appendix D, second paragraph: cloud base follows -> cloud base that follows vertical distribution of what?
Thanks for your suggestion, we have revised this sentence, and it reads "Therefore, the water vapor isotopic composition at the cloud base that follows the vertical distribution of Rayleigh distillation can be described by the following equation (Araguás-Araguás et al., 2000; Deshpande et al., 2010)"

86. Paragraph after Eq. 22: add "the" twice -> denotes the scale height of the atmospheric water vapour
Have done.

87. can use eq. 14 to calculate -> can be calculated by using Eq. 14
Have done.

88. Appendix E: in the two -> by the two
Have done.

89. defined -> derived (?)
Have done.

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