The here presented study by Ring et al. assesses the impact of plant water use and other environmental drivers on the dynamics of atmospheric water vapor isotope signatures in an urban landscape, comparing two distinct periods: a drought and a rewetting period.

The study was well conducted and comprehensive, including many interesting and different results, which make it challenging to follow the story's "red string". Based on figure 11 (which is a really nice summary), I suggest streamlining your whole story: what is needed in the main text to understand the patterns observed in figure 11.
The link to urban green spaces is interesting, but the relevance of isotope measurements for assessing the cooling impact of vegetation seems a bit far-fetched. Other parameters, such as actual transpiration flux, provide better means to determine the actual cooling effect on the studied area.

I recommend reorganizing and revising your manuscript based on the Fig. 11 so that you focus primarily on results that explain or support your findings there. It seems that large parts of the Material and Method section are based on the author's previous studies, resulting in unexplained acronyms throughout the main text and paragraphs not optimally organized. I suggest rewriting and reorganizing the Material and Method section to make it shorter and more concise, ensuring that important information is included in the main text while moving or deleting unnecessary details.
11 figures in the main text is too much, consider merging or moving some to the supplement. Moreover, you only measured two trees. This limitation should be mentioned. Given the limited representative of two single trees and a patch of grass, caution needs to be taken to transfer this to larger green spaces. This point needs to be raised as well (see e.g., line 600).

All in all, a very nice study! Please find below my line-by-line comments.

Line-by-line comments

Title
I would suggest here a better link to the "water stable isotope" topic, as this is the focus isotope dynamics?

Abstract

- L15: Specify "natural summer drought." How long was the drought? When did the rewetting occur?
- L18: "dv values were characterized."
- L19: Consider "i.e., entrainment" (perhaps better phrasing).
- L19: add "values" or similar when using delta abbreviations (e.g., "enrichment dxyl values")

- L20: "enriched soil water at the topsoil" ?
- L24: How was PET during the summer drought? You only mention it for the rewetting period.
- L26: ET was not introduced yet (only PET).

The abstract could highlight more the main results.

Main text

- L73: See also publications from Till Volkmann and Markus Weiler (see references below).
- L93: It would be more interesting if it was the hottest summer in Berlin.
- L97: here it is written again xylem and water vapor isotope, I would stick to dxyl and dv values once introduced (especially in the same section)
- L101: would also talk about sub-daily values here
- L110: Add the full name for CRDS.
- L112: Write the full name for SE.
- L121: Compare the amount of rain received during the study period to the long-term mean.
- Lines 124-129: Merge these paragraphs with lines 113-116, as they both discuss the study site.
- L145: maybe add the distance from the rooftop to your site.
- L167: Introduce CRDS once, including the full name, company, etc.

Table 1: Explain the acronyms.
Figure 2: Consider writing "Atmosphere Tubing" to avoid confusion, as technically, xylem tubing also samples vapor. Mention standards in the caption.

- L159: Provide details on how you accounted for temperature dependencies and corrected them (e.g., Wassenaar 2008, Haberstroh 2024).
- L198: Include the spatial resolution of the sampling (e.g., depths).
- L206: Introduce SPAC
- L218: "the line..."
- L240: Compare to long-term mean.
- L241: mm in summer? and provide the long-term mean.
- The order is confusing: first, it mentions dryness with some numbers, then introduces temperature and PET values, and finally mentions precipitation values in l245 (which is an indicator for dryness). Consider reorganizing for clarity.
- L268: Specify which tree.

One possible reason for the enrichment in the xylem during the day could be water loss through the bark (see e.g., Lintunen et al. 2021). Do you have xylem/leaf water data from grassland vegetation? Can you rule out that the daily cycle in dD is not affected or driven by

temperature/concentration changes in your isotope measurements? How much did the concentration change during the day in the trees? Was full saturation always reached? (You can check this by calculating the saturation point for the respective temperature and comparing it to your value.)
The isotopic signature of transpiration, which significantly influences deltav values, can deviate substantially from the xylem isotopic signature due to stomatal regulation and non-steady state transpiration (see Simonin et al. 2013; Dubbert et al. 2017; Kübert et al. 2023). During drought and periods of high VPD, stomates may be closed. Since the isotopic signature of transpiration was not measured directly, discuss the possible deviation between xylem and transpiration isotopic patterns.

- L278: Add p-value.
-

Figure 6: VWC of 5-7% is very low; were the sensors calibrated? Why is the VWC so low between 6 and 20 cm? What happened on 28.7. at 00:00?

- L287: Note that you do not show radiation. Provide numbers for this "drive."
- L289: Did you do a zero lcorrection for sap flow? Unit missing for lc-excess.

Consider merging Figure 6 and 7 to save space, as the legend can be used for both. Also Figure 9 and 10.

- L321-326: This paragraph is very descriptive; could you add some numbers?

Figure 11: Consider summarizing the day-night change. How was day/night defined? Add information to the legend.

- L381: that is very general, maybe: "Sub-daily changes in isotopic signatures of... and … "
- L384: Midday LWP is usually more negative than in the morning, which is not necessarily related to drought.
- L385: "Indicating stomatal control which..."
- L565: Add "direct measurement of transpiration."
- L575: "which did not infiltrate"
- L582: maximum
- L600: Include "and sample size," as the studied area and the number of plants were quite limited.

General comments:

- Check for British vs. American English spelling, e.g., "vapor" vs. "vapour."
- Write *in situ* or in-situ
- Consistently use "water stable isotopes" (see l160, "stable water isotopes").

- Define delta notation.
- Use "value" or a similar term with deltav or deltaxyl
- lc-excess unit is missing

References

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