Major issue:

The reworking of the manuscript has been carefully done, however there is still a major issue with the findings presented. As correctly mentioned by Reviewer 3, the moisture source conditions were not diagnosed in an event-based manner, meaning considering the exact location and timing of the uptake, which has been shown to be important in the state-of-the-art of the literature (e.g. Sodemann et al. 2008, Pfahl et al. 2008, Aemisegger et al. 2014, Aemisegger, 2018, Weng et al. 2021). To diagnose the RHsst at the moisture source, the conditions at the time and place of the uptake need to be diagnosed, not the climatological conditions or the conditions in the last few days before arrival. The RHsst has been shown to be highly variable over tropical regions due to dry intrusions, trailing cold fronts, cold pool activity and convective cells (Villiger and Aemisegger, 2024). In this respect the text in the methods in Section 2.4 as well as Fig. 5 and the analysis around it are confusing. The RHsst or the needed variables to compute it have to be traced along the trajectories to take into account the "time lapse" between moisture source conditions and arrival at the location of the measurements, where the observations are done. Since the authors have implemented the moisture source diagnostics, the step for diagnosing moisture source conditions is not a big one and should really be taken to be able to draw robust conclusions. Details on how to implement the moisture source conditions diagnostics are documented in Sodemann, 2025 as well as the papers cited above.

If by implementing the moisture source diagnostics carefully, the authors still find no existing correlation between dexcess and RHsst, then they should discuss their findings in terms of other processes that have been shown in previous studies to interfere with this relation, in addition to the processes already mentioned an important factor is the influence of plant transpiration discussed in Aemisegger et al. 2014 to strongly affect the dexcess-RHsst relationship. Furthermore, the resolution of the data used for trajectory calculation has to be discussed as an important factor in potentially masking an existing dexcess-RHsst at the source relationship.

This major revision of the analysis is indispensable given how central the relationship between the dexcess and the source RHsst is in this paper. Furthermore, when rereading this manuscript, I realised that the English Language still needs significant improvement, please go through the text again carefully and use a copy-editing service.

References:

Aemisegger, F., Pfahl, S., Sodemann, H., Lehner, I., Seneviratne, S. I., and Wernli, H.: Deuterium excess as a proxy for continental moisture recycling and plant transpiration, Atmos. Chem. Phys., 14, 4029–4054, https://doi.org/10.5194/acp-14-4029-2014, 2014.

Aemisegger F. On the link between the North Atlantic storm track and precipitation deuterium excess in Reykjavik. *Atmos Sci Lett*. 2018; 19:e865. https://doi.org/10.1002/asl.865

Pfahl, S., and H. Wernli (2008), Air parcel trajectory analysis of stable isotopes in water vapor in the eastern Mediterranean, *J. Geophys. Res.*, 113, D20104, doi:10.1029/2008JD009839.

Sodemann, H., C. Schwierz, and H. Wernli (2008), Interannual variability of Greenland winter precipitation sources: Lagrangian moisture diagnostic and North Atlantic Oscillation influence, *J. Geophys. Res.*, 113, D03107, doi:10.1029/2007JD008503.

Sodemann, H.: The Lagrangian moisture source and transport diagnostic WaterSip V3.2, EGUsphere [preprint], https://doi.org/10.5194/egusphere-2025-574, 2025.

Villiger, L. and Aemisegger, F.: Water isotopic characterisation of the cloud–circulation coupling in the North Atlantic trades – Part 2: The imprint of the atmospheric circulation at different scales, Atmos. Chem. Phys., 24, 957–976, https://doi.org/10.5194/acp-24-957-2024, 2024.

Weng, Y., Johannessen, A., and Sodemann, H.: High-resolution stable isotope signature of a land-falling atmospheric river in southern Norway, Weather Clim. Dynam., 2, 713–737, https://doi.org/10.5194/wcd-2-713-2021, 2021.

Small changes for clarity of the science:

1. L. 15: precipitation (instead of rain) – vapour interactions
2. L. 17: due to anticorrelated seasonal cycles (instead of similar seasonal patterns)
3. L. 23: replace dynamics by circulation changes
4. L. 24: of shifts in moisture sources (instead of different moisture sources)
5. L. 35 a shift in moisture source **regions**
6. L. 42: that monsoon convection at upstream **locations** along moisture transport pathways
7. Fig. 8 panel b upstream.