Comments and Suggestions for Authors

Characteristics of Precipitation Stable Isotopes and Moisture Sources in the Qinghai Lake Basin

1. Conceptual Framework (Introduction, pp. 1–2, lines 12–34 and 80–90) The manuscript provides adequate background; however, it lacks explicitly formulated research questions or hypotheses. The objectives are stated in general terms, which weakens the scientific framework and limits the coherence between the Introduction and subsequent sections. The authors should clearly define 2–3 research questions or testable hypotheses to guide the study.

2. Study Area and Sampling Design (Section 2.1–2.2, pp. 3–4, lines 92–121; Figure 1, p. 3)

The study area is well presented in Figure 1; however, the representativeness of a single sampling site within the basin is not discussed. Additionally, the sampling design lacks justification (frequency and duration), and no information is provided on analytical precision, calibration, or quality control of isotope measurements. These aspects should be clarified to ensure reproducibility.

3. HYSPLIT Model Configuration (Section 2.3, p. 4, lines 125–140) The application of the HYSPLIT model is appropriate, but the configuration lacks justification (e.g., 240 h trajectory length, 2000 m height). Moreover, uncertainties and limitations of backward trajectory modeling are not discussed. This reduces the robustness of the moisture source analysis presented later in the manuscript.

4. Temporal Isotope Variability (Section 3.1, pp. 4–6; Figure 2, p. 6) Figure 2 clearly illustrates temporal variations of $\delta^{2}H$, $\delta^{18}O$, and d-excess. However, the discussion is partially repetitive and lacks deeper physical interpretation of extreme values and variability. The linkage between isotopic patterns and atmospheric processes should be strengthened.

5. Meteoric Water Line Analysis (Section 3.2, pp. 6–7; Figure 3 and Table 1) The Local Meteoric Water Line and seasonal variations are well presented in Figure 3 and Table 1. Nevertheless, the discussion lacks sufficient comparison with regional and global studies, and deviations from the GMWL are not fully explained. A more critical and comparative analysis is required.

6. Statistical Analysis (Section 4.1, pp. 8–10; Figure 4)

The relationships between isotopes and meteorological variables are clearly visualized; however, the reported low R^2 values (0.075–0.079) are not critically discussed. This may lead to overinterpretation. Additional controlling variables (e.g., humidity, atmospheric circulation) should be considered or at least discussed.

7. Moisture Source Analysis (Section 4.2, pp. 10–12; Figures 5 and 6) Figures 5 and 6 effectively present moisture transport pathways and seasonal variability.

However, the interpretation remains largely descriptive and lacks integration with isotopic indicators such as d-excess. Furthermore, no uncertainty analysis is provided for trajectory clustering results.

8. Redundancy and Section Integration (pp. 4–12)

There is noticeable redundancy in the explanation of isotopic patterns across the Results and Discussion sections. Additionally, figures are not always fully integrated into the text. The manuscript would benefit from improved conciseness and stronger cross-referencing between sections.

9. Equation Formatting (pp. 9–10, lines 350–353)

Regression equations are inconsistently formatted. The authors should standardize notation, spacing, and symbols according to scientific conventions and guidelines.

10. Conclusions and Uncertainty (Section 5, p. 13, lines 473–501)

The conclusions are consistent with the results; however, the manuscript lacks a discussion of uncertainties and limitations (sampling, model assumptions, temporal representativeness). A dedicated subsection on limitations is strongly recommended.

11. References (pp. 14–15, lines 520–570)

The references are generally relevant but include some outdated sources and formatting inconsistencies. The authors should incorporate more recent literature (2020–2025) and ensure full compliance with formatting standards.