General assessment

I appreciate the authors' efforts in revising the manuscript. Several aspects have improved, in particular the clarification of Section 3.4 and the addition of flow directions to Figure 1. However, in my view, several major concerns remain insufficiently addressed, most importantly the lack of a clear research question and the limited integration between the different tracer datasets. These issues continue to affect the overall structure of the manuscript and the interpretation of the results.

Major concerns

1. Research question

This point remains unresolved. At present, the research question is still not clear. The only sentence in the introduction that appears to state a possible research objective (L32–35) is too weak to serve as a proper research question.

More generally, the introduction does not build toward a clear scientific objective. It provides very little general background and moves rapidly to the statement mentioned above. The subsequent paragraphs then introduce the different tracers used in the study one by one, often with theoretical explanations of how each tracer works. This structure is not appropriate for an introduction and would be more suitable, in a much shorter form, within the methodology section.

In a scientific paper, the introduction should develop from general background toward a clearly identified knowledge gap, which then motivates the research question and the chosen methodology. Here, this step is missing. In particular, no clear knowledge gap is articulated, making it difficult to understand what specific problem the study is addressing or why this combination of tracers is required.

I therefore strongly suggest rewriting the introduction so that it explicitly identifies a knowledge gap and builds logically toward a well-defined research question. One possible approach would be to briefly review how tracers are currently used to investigate groundwater systems (from an application perspective rather than a theoretical one), and then explain why this approach is insufficient in the present hydrogeological context. This would provide a clear rationale for the study.

This issue also affects the discussion. At present, the discussion does not follow a clear line toward answering a defined question and instead largely describes the results in more detail. In its current form, the manuscript reads more like a scientific report than a research paper.

2 & 3. Tracer interpretation and methodological transparency

These points have been addressed substantially better in the revised version. In particular, the rewritten Section 3.4 is much clearer and improves the manuscript considerably, although a few refinements are still needed.

It remains remarkable that these deep waters contain relatively high dissolved oxygen concentrations, together with probably up to 5% CO_2. I would encourage the authors to discuss the origin of the CO_2 in more detail. For example:

- Could the CO_2 be linked stoichiometrically to O_2 consumption or production processes?
- If the oxygen is not due to contamination, does it provide information about recharge or (fast) infiltration conditions?

4. Integration between datasets

This remains a major concern. The connection between the different tracer datasets and the microbiological data is still not sufficiently developed. However, this issue may partly stem from the lack of a clear research question. A better-defined objective would likely also provide a stronger basis for integrating the different tracers and discussing how they complement one another.

5. Site characterization

This point has been addressed satisfactorily. The addition of flow directions to Figure 1 is useful and improves the hydrogeological context.

One minor comment remains: Figure 1 was modified, but the legend does not appear to have been updated consistently. Several legend elements still seem to refer to the previous version of the figure.

6. Figures and tables

I remain concerned that seven main figures and four main tables are too much for the main manuscript. Some of this material could likely be moved to the Supplementary Information. For example, Table 1 could probably be moved out of the main text.

Figure 5 could also be shortened. At present, both the bar plots and the heatmaps convey largely similar information, but at different taxonomic levels: the bar plots at phylum level and the heatmaps at order level. This could likely be streamlined, or the heatmaps could be moved to the Supplementary Information.

This point also relates back to the lack of a clear research question. Without a defined question guiding the paper, the figures seem to serve mainly to display all measured results rather than to support a focused interpretation. Figures should help answer the research question and address the identified knowledge gap. Since this is currently missing, it is difficult to judge which figures are truly essential.

7. Discussion

This concern is, in my opinion, largely encompassed by the comments above. The descriptive character of the discussion is closely tied to the absence of a strong research question and a corresponding conceptual framework.

Minor comments

I am not sure how useful these minor comments are at this stage, given that the manuscript still appears to require major revision. I would strongly encourage the authors to focus first on the major concerns above.

- L106–107: “The aim of this study was” — it is not clear whether this refers to the cited study or to the present manuscript. More generally, present tense should be used in the introduction.
- L275: use a non-breaking space before °C.
- Table 2: it is unclear what the reported depth represents in the clustering.
- L336: the last sentence should be rewritten.
- L345–346: the sentence should also be rewritten for clarity.
- L352–353: it would help to add one short sentence explaining why large Ne uncertainties make age calculations more difficult.
- L356–358: this is a good argument, but it is only valid if the CFC and noble gas analyses were performed on the same physical sample container. If different containers were used, for example sample A for CFCs and sample B for noble gases, the absence of contamination in sample A does not exclude contamination in sample B.
- Figure 4: the figure is currently rather difficult to read, especially the point labels. Please improve readability.
- L433–437: this is not a very useful paragraph with which to open the discussion.
- L443–444: please be more precise. Lower or higher pH may indicate longer interactions; the wording in terms of “differences” is unclear.
- L476: “which corresponds to R56, but also to the rest of the samples here” — this effectively means all samples. Please reformulate.
- L486–487: sentence unclear, please reformulate.

General writing and notation

Please be consistent with abbreviations and chemical notation. Some abbreviations are introduced but then not used consistently. For example, tritium is introduced as ^{3}H, but the text later reverts to spelling out “tritium”. The chemical notation should also be standardized throughout the manuscript, for example using ^{3}H instead of “3H”.

Recommendation

In my view, the manuscript has improved in some respects, but the central issue remains the absence of a clearly formulated research question and the resulting lack of a coherent interpretative framework. This continues to affect the introduction, the discussion, the integration of datasets, and the selection of figures and tables. I therefore consider that major revision is still required.