Dear Editor,

We would like to express our sincere gratitude for the reviewers' thorough evaluations and constructive and supportive comments. We believe that their insightful feedback has helped us improve the manuscript.

Please find below our point-by-point responses to all reviewer comments. For clarity, our responses and the corresponding changes in the manuscript are indicated using coloured text.

Thank you again for your time and consideration.

Kind regards,

Süleyman Selim Çallı
On behalf of all authors

Reviewer 1 (Sylke Hilberg):

The manuscript High Resolution Karst Spring Discharge Datasets of the Euro-Mediterranean Mountain Regions by Selim Calli et al. presents a newly compiled dataset of 118 high-resolution karst spring discharge time series from major mountain regions across the Euro-Mediterranean area.

General comments: The study is specifically designed to support hydrological modelling of vulnerable karst groundwater systems. The dataset provides long-term, discharge records, offering an important resource for studying the impacts of climate change and improving the sustainable management of high-altitude karst aquifers. The manuscript is clearly written, provides a good overview of the most important karst aquifers in Europe, and thus serves as a solid foundation for in-depth karst hydrological studies. Publication is highly recommended.

Specific comments: I don't have any specific comments, as the study has been presented in a perfectly adequate way. The data collection and presentation of the results are clear and transparent. The challenge of presenting a large volume of data and a broad scope of investigation in a way that conveys information while keeping the manuscript easy to read is effectively addressed using examples in combination with supplementary materials.

Technical comments: I just have two very minor comments: in Fig. 2, some of the mountain names are hard to read; at first, I couldn't find the Alps at all. In Figure 7A, there is no boundary indicating which section is shown in Figure 7B.

Author response:

We thank to the reviewer for their supportive comments. As recommended by the reviewer in the technical comments paragraph, we updated Figure 2 (Line 235), Figure 7A and 7B (Line 339).

Due to the extension of the dataset, we have added 3 Pyranean, 7 Carpathian, and 1 Hellenides karst springs, and updated the corresponding figures accordingly. Updated figures could be found at line 299 (Figure 5_ Atlas, Betics and Pyrenees) and line 395 (Figure 9_Apennines-Hellenides map).

Reviewer 2:

This manuscript presents the KaMERaMAN dataset, which compiles high-resolution discharge time series from 118 karst springs distributed across 13 European–Mediterranean mountain systems. The topic addresses the pressing need for high-quality observational data for hydrological modeling in climate-sensitive regions of the Mediterranean, and is therefore of clear scientific significance and practical relevance.

The dataset demonstrates good performance in terms of adherence to the FAIR principles, metadata completeness, spatial coverage, and data volume. All 120 data files are accompanied by comprehensive descriptive metadata with unique site identifiers, and the use of a standardized CSV format substantially enhances data accessibility and reusability. The dataset contains more than one million observations, with an average record length of approximately 19 years, making it a valuable resource for regional comparative hydrological studies.

I recommend minor revision prior to acceptance, with the following comments:

Comment 1:

Negative discharge values: Some stations (e.g., TAU_03_TR@Pinarbasi) contain a small number of physically implausible negative discharge values. The authors should verify the origin of these values and provide an explanation in the data documentation. If these values result from measurement or post-processing errors, appropriate correction or clear flagging should be implemented.

Author response: We sincerely thank the reviewer for carefully identifying this issue. We investigated the negative discharge values and confirmed that they originated from the extrapolation of the stage–discharge rating curve under very low-flow conditions, rather than representing actual negative spring discharge. We have corrected these values in the dataset and updated the repository accordingly. We also included an explanation in the revised manuscript and the data documentation to clarify the origin of these values and the corrections that were applied. The corrected dataset can be accessed via the link below:

10.5281/zenodo.19448790.

Comment 2:

Empty data files: A small number of station files contain entirely missing discharge values. The authors are encouraged to further check data completeness, clarify the reasons for missing data, or adjust the statement regarding the total number of "118 stations" to ensure consistency between the manuscript and the dataset.

Author response: We sincerely thank the reviewer for bringing this issue to our attention. Following the observations of the reviewer, we carefully rechecked all station files in the repository. We identified that the files **ALP_05_AT@Doserfall**, **ALP_29_AT@Schreiende Brunnen**, and **ALP_31_AT@Schwarzbach Moosquelle** contained formatting errors introduced during dataset preparation. Specifically, the date columns were missing, and the discharge values had been inadvertently shifted to the first column, resulting in the discharge records being interpreted as missing (NA). We have corrected these formatting errors and updated the repository accordingly. You can access the corrected dataset via the link below:

10.5281/zenodo.19448790.

We would also like to clarify that several other stations contain missing discharge observations during certain monitoring periods rather than entirely missing datasets. These gaps reflect periods during which no measurements were available and are an inherent characteristic of long-term observational records. To avoid any ambiguity, we have expanded the discussion in the revised manuscript (Lines 450-467) to explicitly describe data completeness, the occurrence of missing periods within individual records, and the reasons for these gaps wherever such information is available.

Furthermore, during the revision process, the KaMERaMAN dataset was expanded from **118 to 129** karst spring discharge time series through the addition of several karst springs.

Carpathians have 7 more karst springs from Hungary (4) and Romania (3). Hellenides have 1 new spring from Greece and Pyrenees have 3 more karst springs from France. The manuscript, metadata, and repository have been updated accordingly to ensure complete consistency.

Comment 3:

Justification of variable selection: The dataset currently includes discharge as the sole variable. It would be beneficial to briefly justify this design choice in the manuscript and discuss potential future extensions to additional hydrological variables, in order to better define the scope and applicability of the dataset.

Author response: We thank the reviewer for this valuable suggestion. In the revised manuscript, we have added a paragraph (Lines 460-467) explaining the rationale for focusing exclusively on spring discharge and mention the future directions of the initiative.

"The present focus on spring discharge represents a practical first step toward a harmonized, large-scale karst hydrological dataset. As additional observations become accessible through continued collaboration with data providers, KaMERaMAN can be progressively extended to include other hydrometeorological and hydrogeological variables, such as precipitation, air temperature, snow observations, groundwater levels, and water-quality parameters. Such future developments would enhance the capacity of the dataset to support process-based investigations, model evaluation, and comparative assessments of mountain karst systems across the Euro-Mediterranean region."

Changes inside the manuscript:

Lines 5-65: New co-authors and their affiliations are added to the paper mainly considering the data they provided.

Vincent Bailly-Comte, Huan Fang Dang, Virgil Dragusin, Istvan Gabor Hatvani, Zoltan Kern, Bernard Ladouche, Jean-Christophe Marechal, Eleni Zagana, Yining Zang.

Lines 69-88: The abstract is updated according to new statistics after the addition of the new karst springs.

Line 106: A new reperence is added. Zorn et al. (2020).

Line 180: Into the Table 1, three new collaborators are added to the French team (V Bailly-Comte, B Ladouche, J-C Maréchal, S Beranger).
Line 188: In Table 1, collaborator name is corrected (P Malík).

Line 192: Collaborator names are corrected (V Bailly-Comte, B Ladouche, J-C Maréchal, S Beranger).
Line 192: New karst spring names and collaborators are added to Table 3.
Line 224: The total number of karst springs is corrected (129 kars springs).
Lines 225-232: The statistical data is updated according to the spatial and temporal coverage of the karst springs.
Line 240: Figure 2 is updated.
Line 245: Figure 3 is updated.
Line 248: Figure 4 is updated.
Lines 298-299: Two new reference is added for the Pyranean karst systems. Bailly-Comte et al. (2018); Ladouche et al. (2024).
Line 303: Figure 5 is updated according to newly-added karst springs.

Lines 303-307: Figure caption is updated according to the names of karst springs.
Line 308: Table 4 is updated. 3 new karst springs are added to the Pyranean karst systems. Fontmaure, Arbas, and Plan de Pouts karst springs, and their attributes are added to the Table 4.
Lines 334-336: New references are added. Maucha (1998); Palcsu et al. (2021); Mádl-Szőnyi et al. (2022); Rispal et al. (2026); Çallı (2026).
Line 340: Figure 7 is updated.
Lines 341-357: The caption of Figure 7 is updated according to the newly-added karst springs.
Line 358: Table 5 is updated. 7 new karst springs are added to Carpathian region.
Line 369: A new reference is added. Carminati and Doglioni (2012).
Line 395: Figure 9 is updated according to newly-added karst spring from Greece.
Lines 396-402: The figure caption is updated according to the newly-added karst spring.
Line 403: Table 6 is updated. Stymfalia spring is added to the table, and Almyros spring name is corrected as "Almyros Heraklio".
Line 449: The zenodo data-access link is updated according to the newly-added karst springs.
Line 485: Acknowledgement statement is changed.
Line 504: Reference list is updated:

Bailly-Comte, V., Ladouche, B., Allanic, C., Bitri, A., Moiroux, F., Monod, B., Vigouroux, P., Maréchal, J-C., Grandemange, A., Bardeau, M., Tilloloy, F. (2018) - Evaluation des ressources en eaux souterraines du Plateau de Sault - Amélioration des connaissances sur les potentialités de la ressource et cartographie de la vulnérabilité. Rapport final. BRGM/RP-67528-FR, 305 p.

Line 546: Reference list is updated as follows:

Çallı, S.S. (2026)a. Hourly snowmelt estimations improved performance on daily karst spring discharge predictions: A case study in the Austrian Alps. Hydrogeology Journal, https://doi.org/10.1007/s10040-026-03090-7

Line 547: The reference is added as follows:

Çallı, S. S. (2026)b. Modeling the discharge of Kapuzbaşı spring for parameterization of the karst aquifer, Aladağ Mountains, Central Taurus, Türkiye. *Bulletin of the Mineral Research and Exploration*, *180*(180), 97-115.

Line 685: The reference is added as follows:

Ladouche, B., Bailly-Comte, V., Maréchal, J. C., Monod, B., Grandemange, A., Hermand, L., & Levard, F. (2024). Caractérisation de l'organisation des écoulements karstiques du plateau de Sault par une approche multi-traceurs géochimiques et isotopiques. *Karstologia*, (83 1-2024), 21-32.

Line 693: The reference is added as follows:

Mádl-Szőnyi, J., Erőss, A., Csondor, K., Iván, V., & Tóth, Á. (2022). Hydrogeology of the karst regions in Hungary. In: Veress, M. & Leél-Őssy, S. (eds.) Cave and Karst Systems of Hungary, Springer, Cham, pp. 137–160. https://doi.org/10.1007/978-3-030-92960-2_6

Line 707: The reference is added as follows:

Maucha L. (1998): Az Aggteleki-hegység karszthidrológiai kutatási eredményei és zavartalan hidrológiai adatsorai (1958-1993) - A VITUKI Rt. Hidrológiai Intézete, (in Hungarian)

Line 740: The reference is added as follows:

Palcsu, L., Gessert, A., Turi, M., Kovacs, A., Futó, I., Orsovszki, J., ... & Koltai, G. (2021). Long-term time series of environmental tracers reveal recharge and discharge conditions in shallow karst aquifers in Hungary and Slovakia. *Journal of Hydrology: Regional Studies*, *36*, 100858.

Line 761: The reference is added as follows:

Rispal, N., Arfib, B., Audra, P., Henry, P., Viguier, B., Zappelli, A., Mocochain, L., Jagercikova, M., Vallet-Coulomb, C., Miche, H., Cadilhac, L., Sivelle, V., and Delestre, O. (2026) Impact of seasonal snow on the recharge of a mountain karst aquifer under climate change: the Dévoluy case study (Southern Alps, France), Hydrol. Earth Syst. Sci., 30, 4699–4720, https://doi.org/10.5194/hess-30-4699-2026

Line 800: The reference is added as follows:

Zorn, M., Komac, B., Carrey, A., Hrvatin, M., & Lyons, B. (2020). The disappearing cryosphere in the southeastern Alps: Introduction to special issue. *Acta Geographica Slovenica*, *60*(2), 109-124.