

Reviewer 2

Dear reviewer,

Thank you very much for your positive and helpful review of UK-Flow15.

We have addressed all the **General Comments** point by point. Our responses are provided in the Response column of Table 1, alongside the corresponding changes made to the manuscript in the Changes column. In the same manner we have addressed your **Specific Comments** in Table 2.

We also greatly appreciated the **Technical Corrections**, which were very helpful in identifying errors. These have been corrected, as detailed in Table 3.

Several of your broader suggestions reflect ideas that are already being considered for future development through the Flood and Drought Research Infrastructure ([FDRI](#)), including making rainfall-gauge observations more readily available and defining a time scope for the type of work done in this manuscript. We are very pleased to see that the hydrological community considers these developments valuable, and these suggestions have been useful in guiding our future work.

Thank you again for the time and care you dedicated to reviewing our work. Your comments have helped us improve the manuscript and will also inform the continued development of UK-Flow15 and related data products.

Table 1: General Comments Addressed

Nbr	Comment	Response	Changes
1	In the introduction, I think that references to other initiatives elsewhere in the world are missing. I am thinking in particular:	We agree that these initiatives are important for facilitating access to hydrological data. Although they operate differently from the dataset repository presented here, they provide valuable examples of infrastructure supporting the management, discovery, sharing, and reuse of	Replaced the sixth paragraph of the Background session to:
1.1	Consortium of Universities for the Advancement of Hydrologic Science (CUAHSI), the TERENO infrastructure (https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2024EF004510),		For many years, access to high-resolution data has been a barrier to hydrological research.
1.2	the eLTER infrastructure (https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2025EF006743),		

1.3	Theia-OZCAR portal (https://www.tandfonline.com/doi/full/10.1080/02626667.2020.1764568)	hydrological observations. We have therefore added them to the paragraph discussing access to high-resolution hydrological data.	International initiatives have tried to improve the management, discovery, sharing, and reuse of hydrological and environmental observations through data infrastructures, repositories, portals, and web services (Tolsá et al., 2014; Braud et al., 2022; Zacharias et al., 2024; Zacharias et al., 2026). Additionally, national measuring authorities have also aimed at improving access to hydrological observations. In the UK, APIs such as the SEPA Time Series Data Service and the Environment Agency Data Explorer now provide access to 15-minute-resolution hydrometric data for Scotland and England, facilitating research and model development. Nevertheless, the data remains distributed across different providers, and quality assurance is
1.4	the BDOH (https://www.tandfonline.com/doi/abs/10.1051/lhb/2014005).		

			undertaken locally using different practices and metadata standards. Furthermore, while data are available through these services for England and Scotland, equivalent access remains limited for Wales and Northern Ireland, which are still only available upon request. Overall, there is a need for a centralised, consistently quality-controlled dataset with standardised documentation for the UK.
2	Regarding the scope of the dataset, I think it would have been interesting to also include the hydrometric stations managed by academic research laboratories in the UK. I can only see the CEH stations in this study. I am not very familiar with the UK research community, but I am thinking of centres such as the University of Exeter and the University of Aberdeen, for example.	Efforts have previously been made to integrate stations operated by academic institutions into the NRFA archive. Consequently, the dataset includes not only UKCEH experimental sites but also stations originally associated with universities, such as Coal Burn (76011), which was linked to Newcastle University. Nevertheless, we agree that additional observations from academic research catchments would be valuable but not in the scope of this dataset.	None

3	As for the data itself, I feel that information is missing regarding the data curation process carried out by the data producers themselves. Would it be possible to add some further details here:		
3.1	Any information referring to documents that explain how to control the data would be useful.	We agree that the quality-control definitions, parameters, and thresholds require detailed documentation. The present manuscript explains how to use the quality-control outputs and provides examples of their application. The complete methodology, including the statistical tests, equations, thresholds, and limitations, is presented in the companion paper: https://doi.org/10.5194/egusphere-2026-277. We organised the documentation in this way to keep the present manuscript focused on the description and use of the dataset while providing a comprehensive methodological description of the quality control in the companion paper.	None
3.2	For example, the authors do not specify the type of hydrometric station. I found some of this information in the “supporting document” (Table 10), but this type of information could have been included in the metadata files (00_station_id_meta.csv).	We agree that 00_station_id_meta.csv could be more descriptive.	We have added latitude, longitude, station type, and measuring authority to 00_station_id_meta.csv to facilitate interpretation of the data.
3.3	Ideally, the genealogy of the versions of the stage-discharge rating curves used to generate the discharge time series would have been included. I recognise that this represents a considerable additional step, but it would have been ideal in terms of reproducibility and for the use of the data in other fields, such as hydrometry. In this	We agree that stage–discharge relationships are important for hydrometric applications. The curation and organisation of rating-curve	None

	regard, information on the station's sensitivity to changes in the stage-discharge curves would be very useful.	information are time-consuming and fall outside the scope of the current release. However, this work is currently under development and is planned for a future product.	
4	Another issue that is not addressed in the article is the question of intermittence or river flow interruption. Are there any stations where flow cease during certain periods? How were these periods identified, as this remains a sensitive issue?	Yes, the dataset includes intermittent rivers. Periods of recorded zero flow are retained as zero values in the time series. Persistent sequences of zero or near-constant low flows may also be identified by the low-flow truncation flag. Although this flag identifies potentially truncated or persistent low-flow values it should not, by itself, be interpreted as a definitive classification of river intermittency, as it might also represent artefacts and malfunctions. Further details are provided in the companion quality-control paper.	None
5	There is one point that is unclear when reading the article. At one point, the authors state (lines 206–208): “Instead of removing or altering observations, we adopted a flagging approach designed to maximise transparency, minimise subjective decisions, and allow users to select the level of curation appropriate for their needs.” Later in the article, it is stated: “In the dataset processing, to ensure that the data was both comprehensible and suitable for analysis, it was necessary to apply several modifications; however, to retain full transparency, these were documented in dedicated metadata files. These allow users to trace each processing step, enabling informed use of the data and facilitating scrutiny of the resulting dataset.” In the end, I am in the doubt, based on these two statements, whether the dataset has been corrected or not, and whether the erroneous data has been archived somewhere.	Thank you for pointing out this ambiguity, we have clarified in text. The original source data often included multiple files for the same station, resulting in duplicated timestamps, sometimes with different values recorded for the same timestep. Some files also contained observations at temporal resolutions finer than 15 minutes. These issues were resolved to produce a consistent dataset at 15-minute resolution, and all changes	Changes in line 206-208: Our aim was to make as much of the available data publicly accessible as possible while ensuring that users could identify observations that may be unsuitable for particular analyses. The only observations

		made during this temporal harmonisation were documented in the corresponding metadata file. After harmonisation, we adopted a flagging approach: potentially problematic observations, including negative or truncated values, etc were retained and assigned quality-control flags rather than removed.	removed during processing were those associated with duplicated timestamps. All remaining observations were retained without alteration.
6	Overall, “NA” values are frequently found in the data files. There can be several reasons for these “NA” values: for example, lack of data (gaps) or removal of erroneous data. This type of information could have been tracked in greater detail using codes.	All NA values in the 15-minute flow files represent observations that are currently missing for the corresponding timestep.	None
7	Similarly, in the metadata, “NA” values often appear. Are these solely due to missing data, or are there other possible explanations? For example, the “NA” values in the ‘Split’ column of the file ‘01_common_sense_anomalies_meta.csv’ are not straightforward to interpret.	We agree that the meaning of NA values requires clearer explanation. We have added a general definition in Section 4.2, clarifying that NA in the metadata indicates either that a field is not applicable or that the relevant information is unavailable.	Changes in line 324-325: <i>Across the metadata files, NA indicates that a field is not applicable to a particular station or that the relevant information is unavailable.</i>
8	Overall, there would be significant hydrological benefit in making catchment rainfall data available in the same repository or a supplementary repository. Normally, this data has been used to validate discharge data for the identification of anomalous spikes (see section 5.3). It would be a great added value to include them in the dataset (if they are available) or give an access link.	The main focus of this release was to provide 15-minute river-flow data in a standardised format for the UK. Users requiring sub-daily catchment rainfall data can refer to CAMELS-GB v2 (https://doi.org/10.5285/9a46d428-958f-4ac1-86eb-94eee70c0955). Future products developed through FDRI will aim to make rain-gauge observations more readily available and facilitate their use alongside the river-flow data. We therefore	None

		appreciate the reviewer's suggestion, which supports our plans for future development.	
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Table 2: Specific comments addressed

Nbr	Comment	Response	Changes
9	l.70: It is not the Turia river which was so much flooded but rather the Poyo river. See https://www.investigacionesgeograficas.com/article/view/30056 and https://www.mdpi.com/2073-4441/17/21/3177	Thank you for the correction. The river name has been corrected to Poyo Stream, and the suggested reference has been added.	catastrophic flooding of the <i>Poyo Stream</i> in Valencia—where >500mm of rain fell in just 8 hours (Green et al., 2025; Muñoz et al, 2025),
10	l.83-85: you can add other references such as https://doi.org/10.1016/j.ejrh.2026.103491 and https://doi.org/10.1016/j.jhydrol.2024.131267	Thank you for the suggestions. The references have been added and the sentence revised accordingly.	Added the references and changed sentence accordingly: <i>These approaches are particularly problematic in small (<100 km²), fast-responding catchments, where runoff generation and flood-peak dynamics commonly unfold at sub-daily timescales (Hachgenei et al., 2024; Hachgenei et al., 2026; Kjeldsen, 2007; Tramblay et al., 2026).</i>
11	l.138-140: you can add this reference https://www.nature.com/articles/s44221-024-00351-1	Thank you for the suggested reference.	Added reference and extra descriptive text: <i>“Despite comprising a substantial proportion of river networks smaller catchments are underrepresented... (Golden et al. 2025)”</i>
12	Section 4.1: the format of the data files is not specified	We agree that the file format should be stated explicitly.	<i>“Each gauging station is represented by a csv file”</i>

13	Table 2: the issue related to data gaps do not appear in this table. The absence of flow due to intermittency could also be included in this table.	Please see our response to comment 4.	None
14	Table 4: “Station identification metadata”: it would have been useful to include in the description the type of hydrometric station (Weir Flume, Velocity Area, Others, Weir/Flume + VA, Other combined measurement methods), whether the station is subject to changes in the stage-discharge rating curve, and whether the station is subject to intermittency. It would also be useful to provide the topographic catchment area in order to calculate specific discharges and to assess the consistency of discharge from upstream to downstream or between geographically neighbouring stations	We agree that this information would improve the station metadata. We have therefore added the hydrometric station type to the dataset. Topographic catchment area is already provided in the area field. Information on changes in stage-discharge rating curves and river intermittency are currently under development. Although they will not be included in this dataset, they are planned for future release.	Added type of hydrometric station in the metadata.
15	l.323–325: are there any bibliographical references to support this assertion?	We have clarified that this statement describes a screening test developed and applied to the dataset rather than a general assertion requiring support from the existing literature.	<i>This ratio test compares the flagged event with concurrent rainfall and flow events at neighbouring stations. Events are flagged when the relative occurrence probabilities differ by a factor of at least 20, indicating that the event magnitude may be disproportionate to the associated rainfall or nearby flow responses.</i>
16	l.352: what does FOI mean?	Thank you for identifying this undefined abbreviation. FOI refers to a Freedom of Information request. As the distinction	<i>timeseries file, obtained through requests to corresponding measuring authorities.</i>

		was not relevant in this context, we have removed the abbreviation and simplified the sentence.	
17	l.374–376: I do not understand this sentence	We have revised the sentence for clarity.	<i>The visual metadata comments were then reviewed to decide whether the full station record should be removed or whether only selected periods should be excluded.</i>
18	l.396: I do not understand properly this sentence “Spurious flows during timesteps unlikely to affect high-flow analyses”	Thank you. We have rewritten the paragraph to clarify the meaning of this sentence and the treatment of flagged spikes.	Both absolute and relative spikes, i.e. increases and decreases of flows within one timestep, have been systematically removed then interpolated as part of high-flow dataset curation. Visual inspection provided confidence that interpolating all flagged spikes is appropriate. The automated criteria identify isolated single timestep excursions, defined by a rapid increase immediately followed by a rapid decrease, or vice versa, rather than the coherent sequence of values across a rising limb, peak, and recession that characterises a genuine high flow event. The flagged values fell into three groups: : Spurious high-flow values (Figure 5.a); spurious values occurring outside high-flow periods and therefore unlikely to influence high-flow analyses (Figure 5b); Plausible low-flow variations flagged by the relative

			spike QC (Flag X2Z in the timeseries) due to low baseline values (Figure 5.c).
19	Figure 6: a), b), c) and d) are missing from the figure	Thank you. The missing panel labels have been added to the figure.	Changed figure
20	l.463: the term FAIR is never mentioned in the article.	We agree that the FAIR principles should be introduced before they are discussed in the conclusion. Thank you for identifying this omission.	Background: <i>Accordingly, UK-Flow15 was developed to support the FAIR principles of findability, accessibility, interoperability, and reusability (Wilkinson et al., 2016), through a persistent dataset identifier, consistent station-level data structures, and detailed metadata documenting data provenance, processing decisions, and quality-control outcomes.</i> Conclusion: <i>This level of transparency supports FAIR and reproducible data use, facilitates comparison between studies, and supports informed decision-making across a range of hydrological applications.</i>
21	It would be interesting to know the time spent on this work and the programme that funded it. This would benefit from being clarified in the 'Acknowledgements' section. Indeed, an analysis covering more than 50,000 years of data spread across more than 1,300 stations, requiring expert visual checks in addition to automated rules, is a very substantial work, not easy to replicate. It seems important to realise the scale of the work involved if others wish to carry out similar work in other countries.	We agree and would love to see more initiatives like that to in science. Unfortunately, we cannot provide a reliable estimate, as the work began within a PhD project and developed	None

		through contributions from several co-authors and organisations at different stages. Drawing on this experience, we are now working through the Floods and Droughts Research Infrastructure (FDRI - https://www.ceh.ac.uk/our-science/projects/floods-and-droughts-research-infrastructure-fdri) to document and share how this type of work can be undertaken, including a clearer understanding of its scope, timescales, and resource requirements.	
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Table 3: Technical corrections addressed

Nbr	Comment	correction
22	l.40-41 : the authors wrote “for a specific measurement point in time”. I would rather say “at a specific moment”	Corrected
23	l.297: “they follow” instead of “they follows”	Corrected
24	l.380: “different from”	Corrected