

Dear editors and reviewers,

We sincerely appreciate your constructive comments and suggestions to improve this manuscript. We have revised the manuscript and addressed these comments point by point. We hope that this revised manuscript fulfills the editor's and reviewers' high standards for the *Earth System Science Data*.

The reviewers' comments are shown in **black**, our responses are highlighted in **blue**, and the revised text in the manuscript is highlighted in **orange**.

We look forward to your feedback.

Yours sincerely,

Yao Li

## Topic Editor

Our main concern remains the accessibility and usability of the in-situ discharge data. The authors should clearly document the Zenodo versioning in the Data Availability section and, importantly, provide the in-situ records with actual timestamps rather than only a chronological index so that the data can be independently used and verified. Please provide a point-by-point response and address all comments in detail.

**Response:** We sincerely appreciate the editor's valuable comments and constructive suggestions. We have clearly documented the Zenodo versioning information in the Data Availability section and provided the in situ observations with their actual timestamps. The updated dataset is publicly available at <https://doi.org/10.5281/zenodo.22231453>. In addition, we have provided a detailed point-by-point response and carefully addressed all the comments.

## Reviewer 2

My main concern remains accessibility of the in-situ discharge data that were used to generate the reconstructed discharge dataset.

I have two concerns:

1) The in-situ dataset is made available as version 2 of <https://zenodo.org/records/20152832>. I do not think this is appropriate. The two versions of the dataset now contain two different things. Version 1 contains the reconstructed discharge dataset. Version 2 contains the in-situ dataset. From my point of view, it would be better to have the in-situ data and the reconstructed data in two separate folders of the same version. If authors want to keep things this way, it should be explained in detail in the data availability section of the manuscript. In the manuscript, it is still stated that in-situ data are available from the website, and the zenodo archive is not mentioned.

**Response:** We sincerely appreciate the reviewer's valuable comments and constructive suggestions. We fully understand the reviewer's concern regarding the accessibility of in situ discharge observations and recognize their critical importance to the hydrological community. To address this concern, we have made both the reconstructed discharge records and the complete in situ observations used in this study publicly available in a single Zenodo dataset (<https://doi.org/10.5281/zenodo.22231453>). The in situ observations and reconstructed discharge records are organized into two separate

folders within the same dataset version to ensure clear distinction and convenient access. We have also revised the Data Availability section to provide a detailed description of the dataset contents, organization, and access information “The China Daily River Discharge Records (CDR2) dataset developed in this study is publicly available on Zenodo at <https://doi.org/10.5281/zenodo.22231453> (Wang and Li, 2026). The dataset is distributed in CSV format, with each file named according to its corresponding gauge ID. It contains reconstructed river discharge records with daily temporal resolution for 310 gauges across China from 1990 to 2024, along with the associated width–discharge power-law relationships. In addition, the dataset provides the complete in situ daily river discharge observations for these 310 gauges, which were used to develop and validate the reconstructed discharge records.

The in situ daily river discharge observations were originally obtained from the National Hydrological and Rainfall Information System of the Ministry of Water Resources of China (<http://xxfb.mwr.cn/>), which is accessible only within China. Data from the Global Runoff Data Centre (GRDC) are available at: <https://portal.grdc.bafg.de/applications/public.html?publicuser=PublicUser>. The Chinese Hydrology Project (CHP) dataset was used only for comparison with the in situ observations collected in this study and was not used in the development or validation of the CDR<sup>2</sup> dataset. The CHP data are not publicly available and were provided by the original dataset authors (Henck et al., 2010; Schmidt et al., 2011). The Surface Water and Ocean Topography River Database (SWORD, Version v17) is available at: <https://zenodo.org/records/14727521>. All Landsat-5/7/8 and Sentinel-2 optical remote sensing data were accessed via the Google Earth Engine platform (<https://earthengine.google.com/>). The following publicly available global satellite-based river discharge datasets were used for comparison. Satellite Altimetry-based Extension of global in situ river discharge Measurements (SAEM) is available at: <https://doi.org/10.18419/darus-4475>. Remote Sensing-based Extension for the GRDC (RSEG) is available at: <https://doi.org/10.18419/darus-3558>. Datasets developed by Lin et al. (2023) and Riggs et al. (2023) are available at: <https://zenodo.org/records/6655532#.Yqw37XZBz-g> and <https://zenodo.org/record/7150168#.ZAow8RXMIuV>.”

2) In situ data is shared with a chronological index not with real time stamps. In this format, the in-situ data cannot be used by others and are thus not useful. From my point of view, authors must share the dataset with time stamps.

**Response:** Thanks for this comment. In the new version of the dataset, we have provided the real time stamps associated with the in situ discharge observations.