REHYDRATE

IAHS Working Group

Newsletter

November 2025

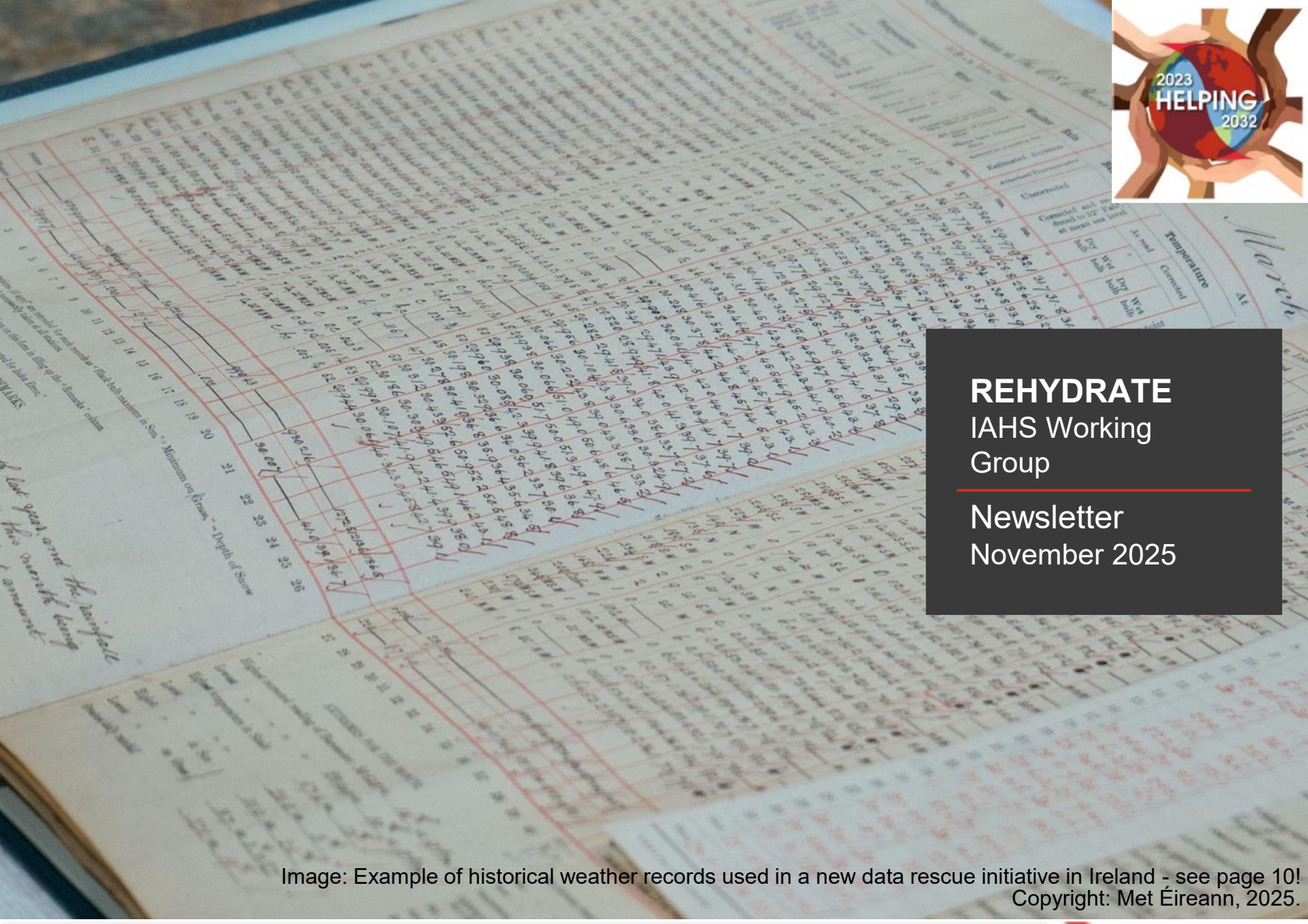


Image: Example of historical weather records used in a new data rescue initiative in Ireland - see page 10!

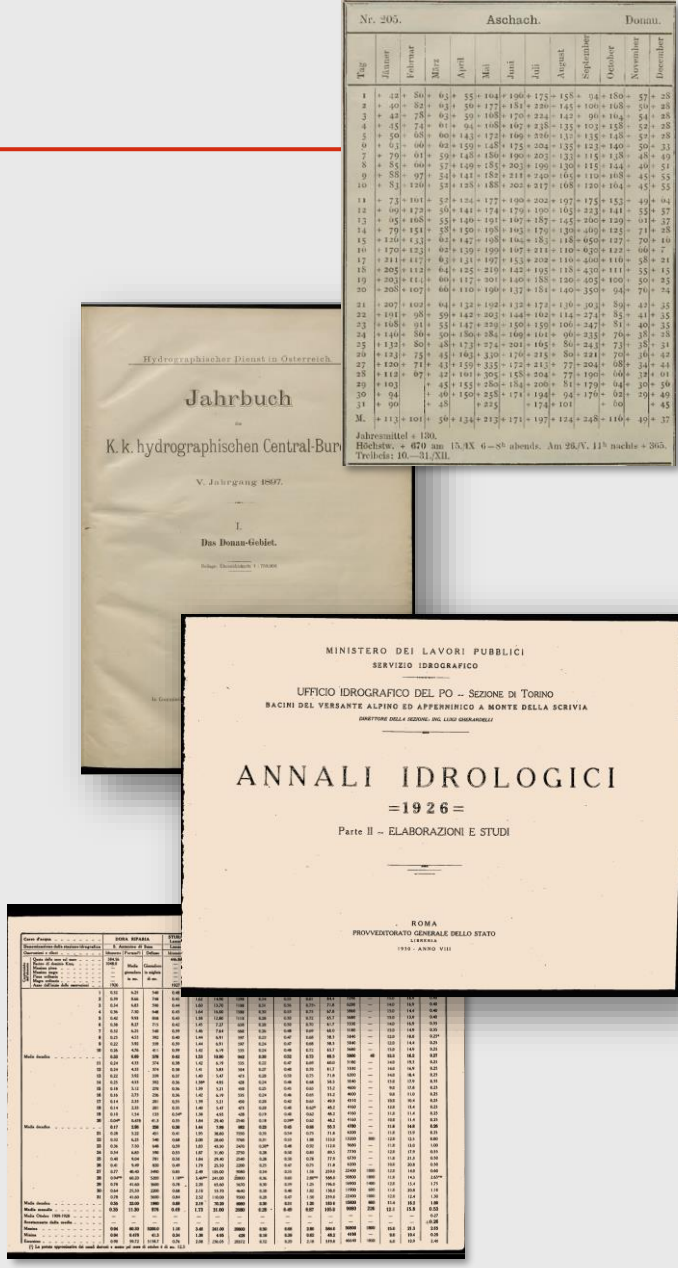
What's inside…

Introducing REHYDRATE

Historical hydrological **observations** are still often stored in **printed documents** and volumes of archives worldwide.
Problems:

- **inaccessible** and **unusable** data for modern analyses;
- risk of permanent loss due to medium **deterioration.**

Having **access** to historical data is essential to **understand** better the complexity and changes in the hydrological cycle and its extremes!



REHYDRATE was proposed as part of the **IAHS HELPING Science for Water Solutions** decade in summer 2023 with the **aim to connect** scientists engaged in **data rescue**, fostering a collaborative community to **exchange knowledge**, **experiences**, and **best practices** in hydrological **data rescue and digitization**

See our website! https://iahs.info/Initiatives/Scientific-Decades/helping-working-groups/rehydrate---retrieve-historical-hydrologic-data--estimates/

Meet the Coordination Team

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You are welcome to reach out to any of the Coordination Team directly with your ideas for the Working Group, or contact us via the Element channel.

Summary of WG activities during 2025

Two surveys have been shared (**and remain open for contributions**) to collect information on initiatives, projects, and scientific publications related to data digitisation.

REHYDRATE: articles, books and reports on hydrological data digitisation

REHYDRATE: initiatives, databases and projects on hydrological data digitisation

We have already received a good response, with projects ranging from **global initiatives** to **local case studies**, contributed by participants worldwide.

The two surveys show that most efforts focus on **discharge** and **water level**, while **precipitation** also plays an important role, followed by **temperature** and **soil moisture**.

The methodologies collected are equally diverse, ranging from **OCR techniques** for extracting historical data to **citizen science platforms** and the development of **best-practice guidelines** to standardize digitisation processes.

One idea is to use this information as part of a review paper to be compiled throughout 2026. This idea will be further developed over the coming months and opportunities to contribute will be shared with the Working Group.

The Coordination Team thanks everyone for their involvement in REHYDRATE activities to date and encourage you to share your ideas and volunteer your knowledge and expertise to support the WG in 2026.

Upcoming online workshops

Tuesday 9th December 2025
13:00 UTC

A reassessment of the history of the temporal resolution of rainfall data at the global scale

Presenter: Dr. Jacopo Dari, University of Perugia (Italy)

Teams link to join: click here!

Tuesday 10th February 2026
12:30 UTC

Insights into GPCC and GRDC: Storage, use and dissemination of rescued historical data

Presenters: Dr. Markus Ziese (GPCC), Dr. Simon Mischel (GRDC)

Link to be provided in future communications.

Abstracts available on the following pages!

A reassessment of the history of the temporal resolution of rainfall data at the global scale

Dr. Jacopo Dari, University of Perugia (Italy)

9 December 2025, 13:00 UTC

Abstract: The availability of rainfall data is of paramount importance in most hydrological studies and is directly dependent on the type of sensors used as well as the recording systems adopted. In fact, these elements have a crucial influence on the temporal resolution (t_a) of stored rainfall data, which in turn affects the types of analysis that can be conducted, making knowledge of t_a on a global scale of particular interest to the entire scientific community and also for engineers. For rain gauges installed more than 70–80 years ago the earliest recordings were manual with coarse temporal resolution. Instead, mechanical recordings on paper rolls began in the early decades of the last century, while digital recordings began only in the last four decades, making analyses requiring long time series of sub-hourly rainfall data impossible. This work presents a significant update of a previous historical analysis of the time-resolution of t_a by which 126,438 stations, located in 77 different geographical areas, were collected into a database, quintupling the number of stations of the previous database and including areas not considered before.

Teams link to join: click here!

Online workshop in February 2026

Insights into GPCC and GRDC: Storage, use and dissemination of rescued historical data

Dr. Markus Ziese (GPCC), Dr. Simon Mischel (GRDC)

10 February 2026, 12:30 UTC Weblink to be provided in future communications.

Abstract:

GPCC: The Global Precipitation Climatology Centre (GPCC, gpcc.dwd.de) is in operation at Deutscher Wetterdienst (DWD) under umbrella of the World Meteorological Organization (WMO) since 1989. To support analyses regarding the (global) water cycle, water availability and other precipitation related topics, the GPCC collects in-situ precipitation observations globally. Collected data are quality controlled and stored. Provided by the GPCC to its user community are gridded analyses using the collected data. Those analyses are available with different temporal resolution - daily and monthly, various spatial resolutions - from 0.25° up to 2.5° lat/lon, different effort in quality control - automatic, statistical pre-selected, human interactions, and different timeliness - daily/monthly updates to new versions every three to four years.

The presentation from GPCC will provide some background information about the GPCC, its data processing, the quality control, as well as the provides analyses and possible applications.

GRDC: The Global Runoff Data Centre (GRDC, grdc.bafg.de) operates under the auspices of the World Meteorological Organization (WMO) at the German Federal Institute of Hydrology (BfG). It holds the most substantive collection of quality-assured river discharge data on a global scale. Established in 1988 to support research on global and climate change and integrated water resources management, GRDC has been a key partner in several data collection and data management projects. It connects national hydrological and hydrometeorological services, the primary providers of river discharge data and associated metadata, with the scientific research community utilizing this unique data collection. Currently, the GRDC contains river discharge data collected at daily or monthly intervals from more than 11,000 stations in 160 countries. GRDC archives international data up to 200 years old, with an average record length of 40 years.

The presentation from GRDC will briefly introduce the work of GRDC and the data centre. We will present a potential collaboration point with REHYDRATE working group and to foster further discussions.

News and resources from the Working Group community

Recently several exciting data digitization projects have been launched. Here is a list of projects looking for the help of volunteers:

- Africa - https://www.zooniverse.org/projects/healion90/weather-archive-africa

- DO IT!, Germany - https://doit-lwi.tu-braunschweig.de/en/index.html;

It should be mentioned that the just started German project ‚DO IT!' (**D**igitization **O**f analogue records **I**n **T**ime) is not limited to a single data set, but is **open to all hydrologic-relevant data sets from all over the world**. The strong advantage of the DO IT-platform is the flexibility of the forms for digitization, additional features as e.g., loupes for zooming in the scans of the analogue data sheets and possibilities for quality control of the digitized data (during the process and subsequently in the data base).

For more information contact: hydriv-digitization@tu-braunschweig.de

- Ireland - https://www.zooniverse.org/projects/met-rhonda/irish-weather-rescue

Calling all weather and climate enthusiasts! Help recreate the past climate of Ireland.

The Irish Weather Rescue project seeks volunteers to transcribe historic rainfall observations from the National Climate Archive in Ireland.

Climate change poses a critical challenge for Ireland's economy, environment and society. To respond effectively to this challenge, an understanding of how the climate is changing and the impacts it has on Ireland is required. This project aims to do that by providing access to valuable data that will improve understanding of how rainfall patterns have changed over longer timescales and provide context for the changes we see in our current climate and possible future climate.

The researchers are looking for volunteer citizen scientists to help digitise over 3.5 million historical rainfall observations. The Rainfall Registers series spans the period 1864-1951, with daily rainfall data from 763 stations across Ireland. The workflow is split into two whereby volunteers can choose to digitise data (daily rainfall values) or metadata (station name, unit of measurement, observers name) from any province, county and station across Ireland. Once digitised, the data will be made available to researchers and shared with national and international data repositories.

Get involved and give the project a try -- visit: www.irishweatherrescue.ie

News and resources from the Working Group community

Some recent papers of interest include:

A Journal of Hydrology article on the reassessment of the history of the temporal resolution of rainfall data at the global scale, led by Prof. Renato Morbidelli (https://doi.org/10.1016/j.jhydrol.2025.132841).

A recent article published by the SIREN project team sheds light on **what drives people to donate their time to digitization project**. Their main findings: 1) many volunteers use skills they already have, like fast typing, to help the project; 2) some volunteers see SIREN as a relaxing activity, something pleasant they do in their spare time; 3) some are interested in water, science, or Italy, so they feel connected to the project's purpose; 4) a good number of volunteers are retired and still very active in helping. For more info: https://doi.org/10.1371/journal.pone.0333091.

Get Involved! Element channel

To provide members of the WG with a platform for discussion, an Element channel has been established, featuring three threads:

- General – for discussion on all things data rescue!
- Literature – to share new resources amongst the membership.
- Newsletter – to share items for future newsletter editions with the Coordination team, and to share finalised newsletters with members.

Join the channel here! https://matrix.to/#/#rehydrate:matrix.tu-bs.de

Looking forward to 2026

Please use the Element channel or email us directly with your ideas and suggestions for the REHYDRATE network in 2026. Perhaps you'd like to volunteer to give a workshop on an aspect of data rescue, or there is a data rescue topic that you'd like to learn more about and other members might be able to help with.

All ideas are welcome!