EGU22-8901 “Open Science in the publishing landscape of hydrology research”

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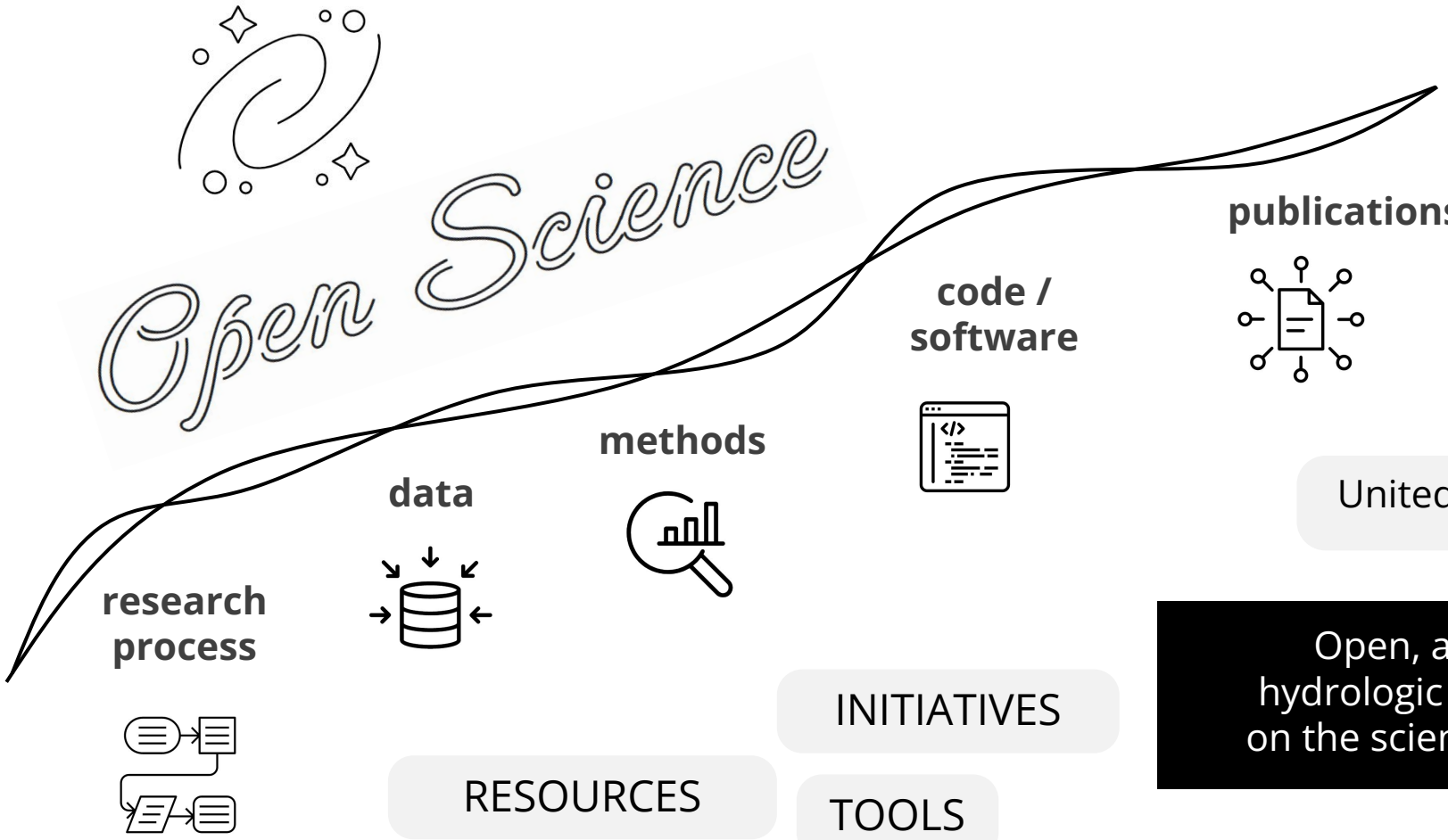


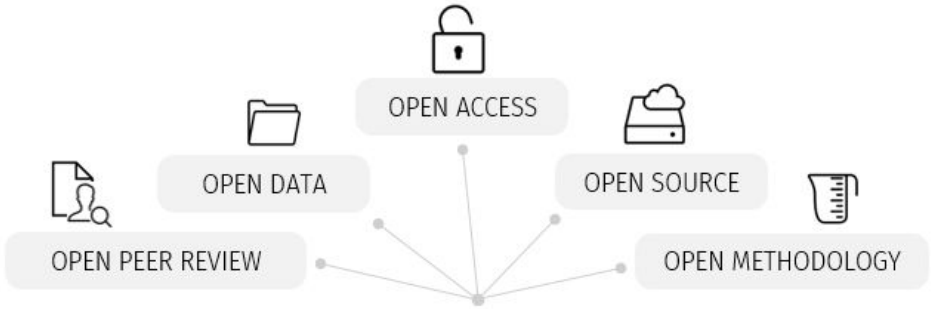
“Open science is the process, not just the product.”

- Micah Vandegrift (NC State Libraries)

UNESCO Recommendation on Open Science

United Nations Open Science Conference

Open, accessible, reusable, and reproducible hydrologic research can have a **positive impact** on the scientific community and broader society.



Open Science

HYDROLOGY ?

How to start?
How to advance?

Hall et al. (2022, HESS)

Hydrol. Earth Syst. Sci., 26, 647–664, 2022
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Hydrology and Earth System Sciences
Open Access
EGU

A hydrologist's guide to open science

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Abstract. Open, accessible, reusable, and reproducible hydrologic research can have a significant positive impact on the scientific community and broader society. While more individuals and organizations within the hydrology community are embracing open science practices, technical (e.g., limited coding experience), resource (e.g., open access fees), and social (e.g., fear of weaknesses being exposed or ideas being scooped) challenges remain. Furthermore, there are a growing number of constantly evolving open science tools, resources, and initiatives that can be overwhelming. These challenges and the ever-evolving nature of the open science tions will evolve and expand with emerging open science infrastructures, workflows, and research experiences. Therefore, we encourage hydrologists all over the globe to join in and help advance open science by contributing to the living version of this document and by sharing open hydrology resources in the community-supported repository (https://open-hydrology.github.io, last access: 1 February 2022).

1 Motivation for open hydrology

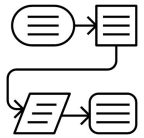
Hall, C. A., Saia, S. M., Popp, A. L., Dogulu, N., Schymanski, S. J., Drost, N., van Emmerik, T., and Hut, R.: A Hydrologist's Guide to Open Science, Hydrol. Earth Syst. Sci., 26, 647-664, https://doi.org/10.5194/hess-26-647-2022, 2022.

OPEN HYDROLOGY PRINCIPLES

Hall et al. (2022, HESS)

1

OPEN RESEARCH PROCESS AND APPROACH

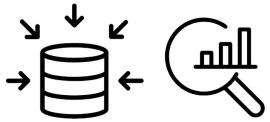


Principle 1

Open hydrologists intentionally plan for, describe and share the entire research approach and process from motivation to the final output.

2

OPEN DATA COLLECTION AND ANALYSIS

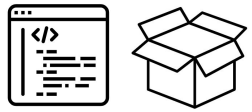


Principle 2

Open hydrologists document all components of their data collection and analysis pipeline, favoring open and non-proprietary technologies.

3

OPEN CODE, SOFTWARE DEVELOPMENT AND USE

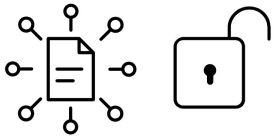


Principle 3

Open hydrologists test, archive, document, and version control their research code and software using standard open-source software protocols and accessible documentation language.

4

OPEN PUBLISHING



Principle 4

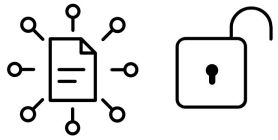
Open hydrologists publish all components of their research on citable platforms and in journals that follow ethical standards and are accessible to both the research community and the general public.

HYDROLOGY JOURNALS

?

4

OPEN PUBLISHING



What are the current Open Science policies of major hydrology journals?

- **i) open-access model**
- **ii) publication finance policy**
- **iii) preprint policy**
- **iv) release requirements for data, code & software**
- **v) peer-review procedure**

We hope to **kick off a broader discussion** about the hydrologic publishing landscape and how it can **evolve to foster Open Science**.

HYDROLOGY JOURNALS

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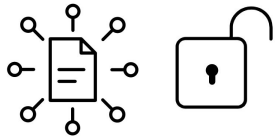
OPEN PUBLISHING



Which journals?

In total 30 key journals in the field of water sciences incl. internationally recognized journals and those published by hydrology professional societies.

Link to the table with meta-data:
https://docs.google.com/spreadsheets/d/1FCdbvlMyPmuxlSLpIPe-DHQIFnLOlLNoS5mrX_HfFhk/

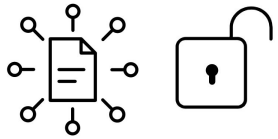
Please note that the data was collected through March - May 2022. Hence, there might be changes/updates on some journals' open science policies.

Data Sources are:

- Journal home pages (i.e., publisher websites)
- DOAJ (Directory of Open Access Journals) https://www.doaj.org/about/
- Sherpa Romeo https://v2.sherpa.ac.uk/romeo/

4

OPEN PUBLISHING



i) open-access (OA) model

- “Hybrid” is the new black.
- Fewer “Fully OA” journals than “Hybrid” journals.
- Transformative journals (**Plan S**), e.g. Hydrogeology Journal.

Plan S
Making full & immediate Open Access a reality

cOAlition S (https://www.coalition-s.org/) is an international consortium of research funding and performing organisations.

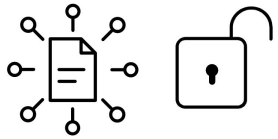
Plan S is an initiative for Open Access publishing that was launched in 2018.

Plan S requires that, from 2021, scientific publications that result from research funded by public grants must be published in compliant Open Access journals or platforms.

- Hybrid journals are only accepted by associated funding agencies that are in a transition to fully open.
- Mirror journals are not compliant with **cOAlition S**.

4

OPEN PUBLISHING



ii) publication finance policy

Article Processing Charge (APC)

- The cost of Open Access is high regardless of embargo period and publication license options.
- Ranges considerably between journals (US$ 1100-4600).

Fee waiver or discount for authors from developing countries

- Exists for some journals depending on the publisher policy.
- Offered by commercial and for-profit publishers (often associated with non-profit societies), but not by society publishers (e.g., ASCE).

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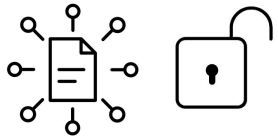
OPEN PUBLISHING



iii) preprint policy

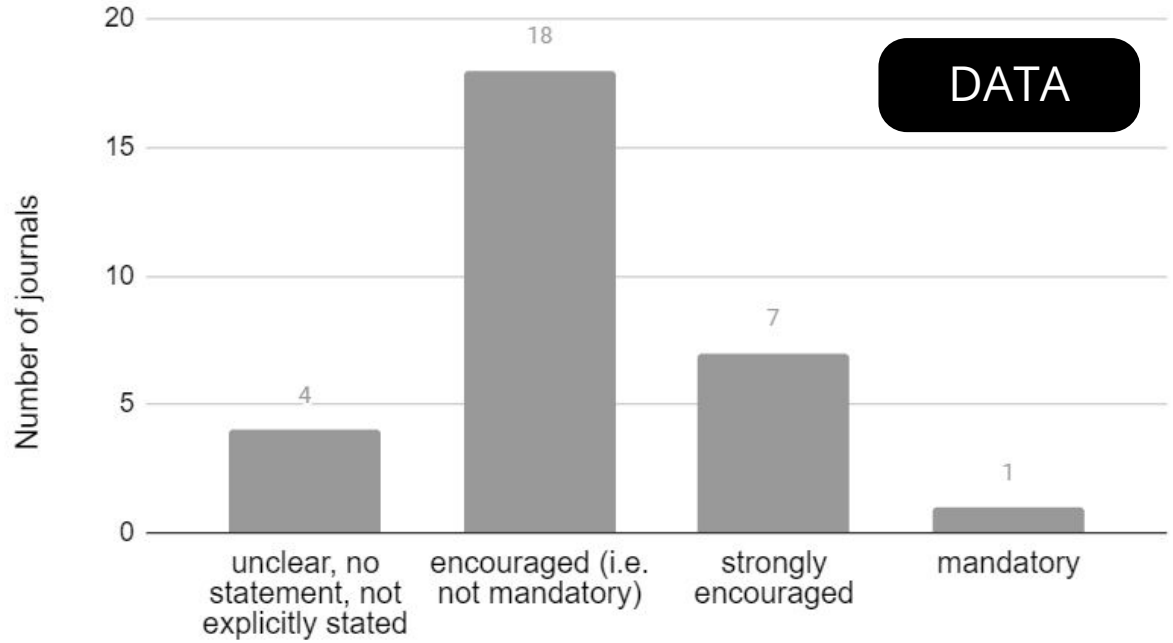
- Preprints are highly common among most journals.
  - Only 5 journals (out of 30) doesn’t accept preprints.
  - Some journals, e.g. Copernicus journals, have their own preprint servers, so it is even mandatory in those cases.
- Allowed preprint servers / repositories differ across journals.

4

OPEN PUBLISHING

iv) release requirements for data, code & software

- No consistent policy across journals, even for data sharing.
- “Encouragement” of data, code sharing does not always imply shared data, code.
- Most journals require data availability statement.



- The situation is more worrisome for code and software, with often no mention in the guidelines.

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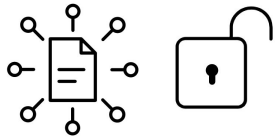
OPEN PUBLISHING



v) peer-review procedure

Interactive public discussion (open access)

- None, except the Copernicus journal HESS.
- Frontier has review forum for “collaborative peer review”, not open though.

Peer review type (no blind, single blind, double blind)

- Mostly single blind, i.e. the authors do not know who the reviewers are.

HYDROLOGY JOURNALS

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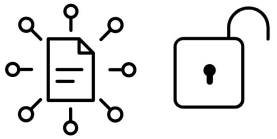
OPEN
PUBLISHING



Sharing data is being expected by journals more and more (exceptions granted).

Sharing of code is being encouraged more and more strongly.

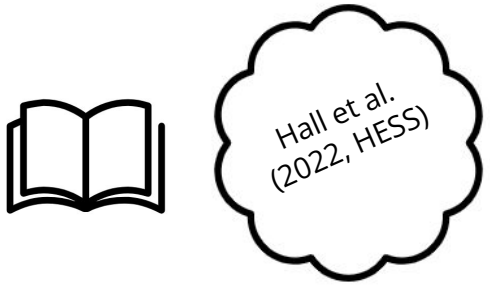
Addition of code and data to peer-review process is important.

We're moving in the right direction...but still have a long way to go.

To progress, everyone in the publication pipeline (i.e., authors, reviewers, editors) need to apply new Open Science standards.

HOW CAN YOU GET INVOLVED?

1- **Read** the HESS paper



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2- Suggest your research/lab groups **reads & discusses the scenarios**.

3- **Sign on** as an open hydrologist.

https://open-hydrology.github.io/signees

4- Contribute to the discussion on **GitHub** & **Twitter**.

#OpenHydrology #OpenScience
@Open_Hydrology

GitHub

https://github.com/open-hydrology/open-hydrology.github.io/discussions