HYDR's GitHub
A practical guide

VRIJE UNIVERSITEIT BRUSSEL

WATER AND CLIMATE DEPARTMENT

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All-hands meeting 2025
24/09/2025

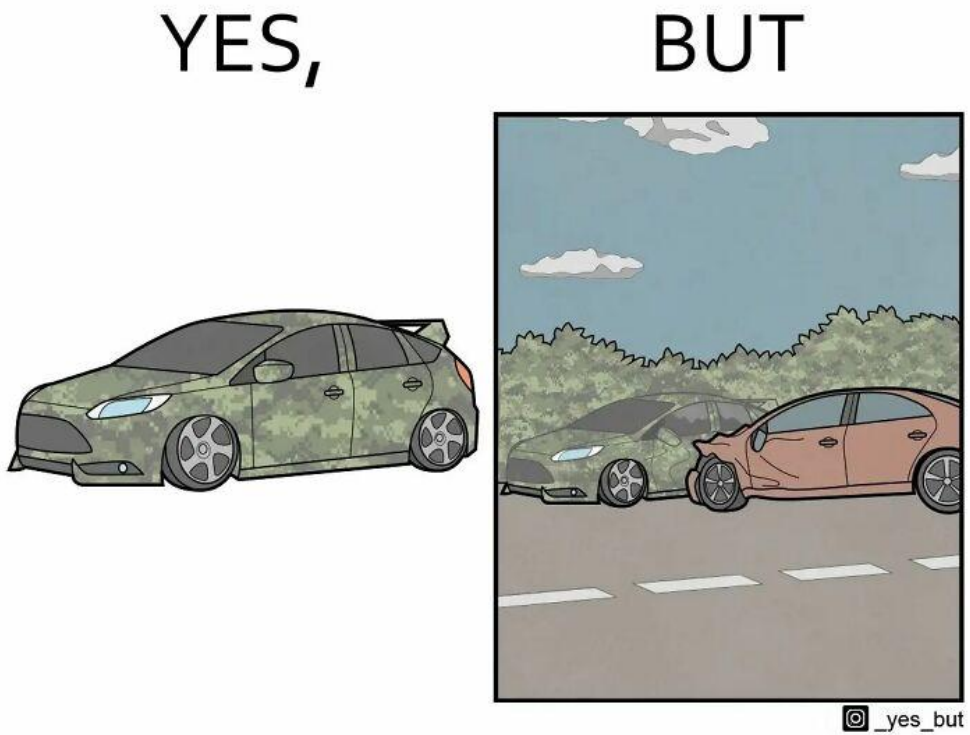
GitHub

- One place for all our code and workflows
- Most computational hydrology is not reproducible, so is it really science? (Hutton et al., 2016)
- Improves collaboration inside and outside HYDR
- Personal vs. HYDR
  - Own projects, personal website
  - HYDR: work done within the department

HYDR

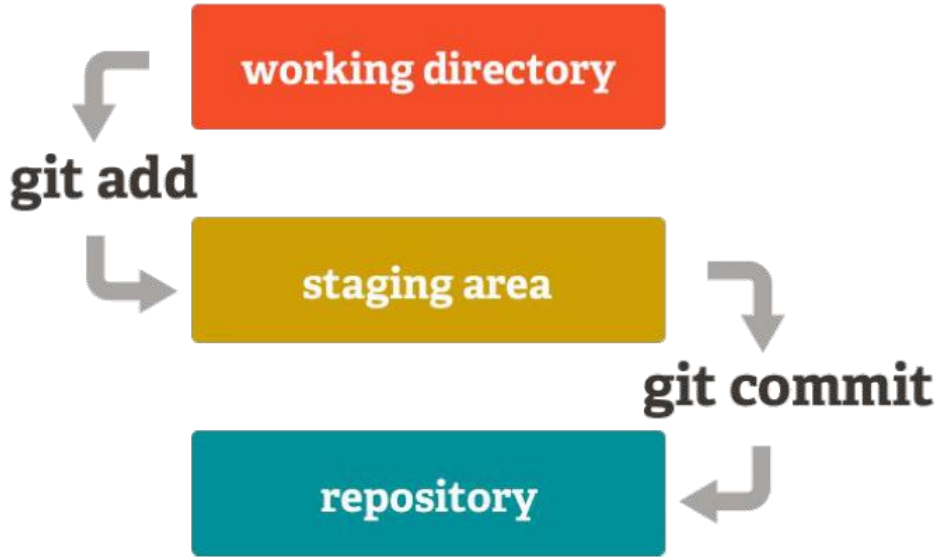
Our numbers in GitHub

- 71 repositories
- 39 members (>40 % are former)
- 0 projects (shared planning spaces)
- 1 team only (Groundwater group 👏)
- 0 Packages (available, but rarely used so far)

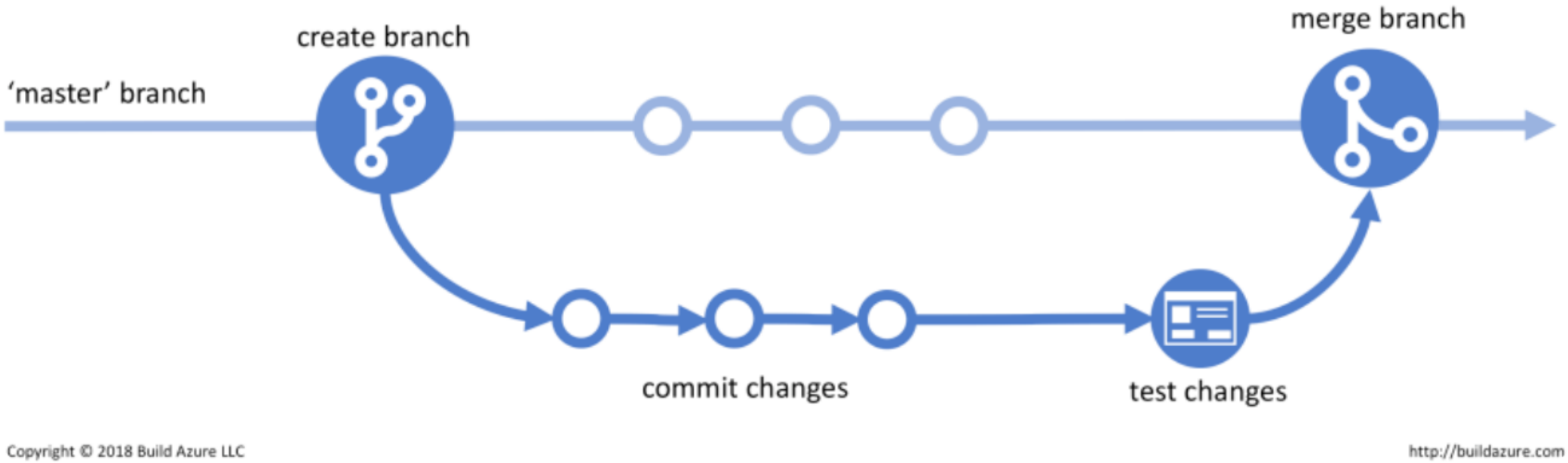


Git & GitHub Basics

- Key terminology: repo, commit, branch, fork, pull request
- Basic commands
  - git clone {repo url}
  - git add {filename}
  - git commit -m “comments”
  - git push
  - git pull
  - git status
- Undoing mistakes (reset, revert, checkout)



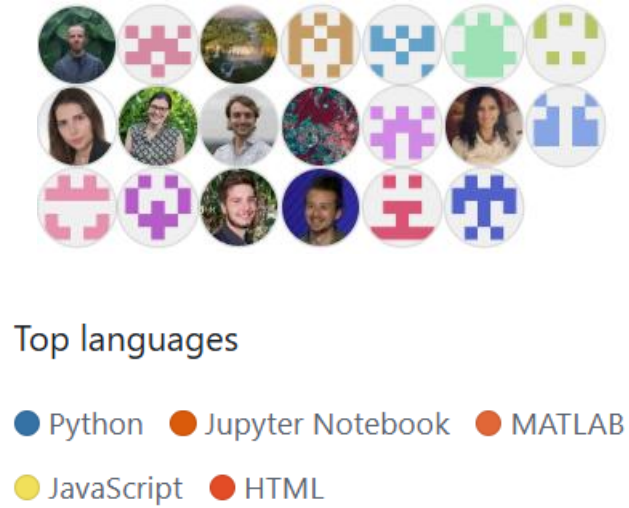
Git & GitHub Basics



Getting started

1. Installing Git in your machine

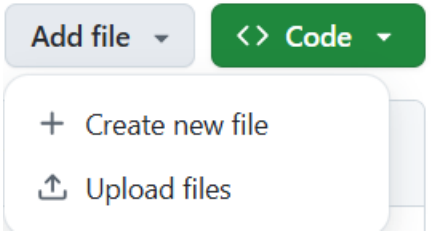
2. Setting up a GitHub account & 'joining' HYDR



Getting started

Three ways to interact with GitHub:

1. Create/upload files online
   (limited use, not recommended)



2. GitHub Desktop

3. Git command line (powerful, flexible, for advanced workflows)

GitHub desktop

GitHub Desktop documentation

With GitHub Desktop, you can interact with GitHub using a GUI instead of the command line or a web browser. You can use GitHub Desktop to complete most Git commands from your desktop, such as pushing to, pulling from, and cloning remote repositories, attributing commits, and creating pull requests, with visual confirmation of changes.

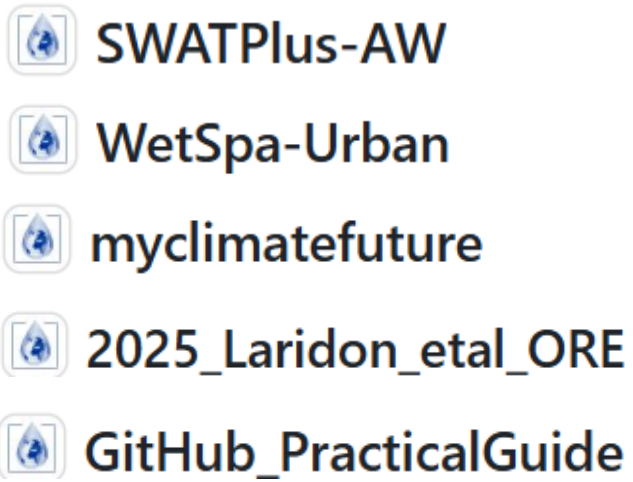
Download

HYDR conventions

Classes of repositories (not official GitHub categories):

1. Software → models, big codes
2. Tools → scripts, pre/post-processors
3. Publications → code used in papers
4. Vignettes → tutorials, workflows, documentation
5. Presentations → slides, seminar material

Add class as repo topic →example



HYDR conventions

- Naming conventions for repos

  Publications:
  YYYY_LASTNAME_JOURNAL_SUFFIX

- Metadata requirements:
  written in the Markdown ".md" language

  - SESSIONINFO (mandatory for publications)
  - README (mandatory)
  - LICENSE (mandatory)
  - Optional:
    .gitignorem, AUTHORS, CONTRIBUTING, etc.

MIT License

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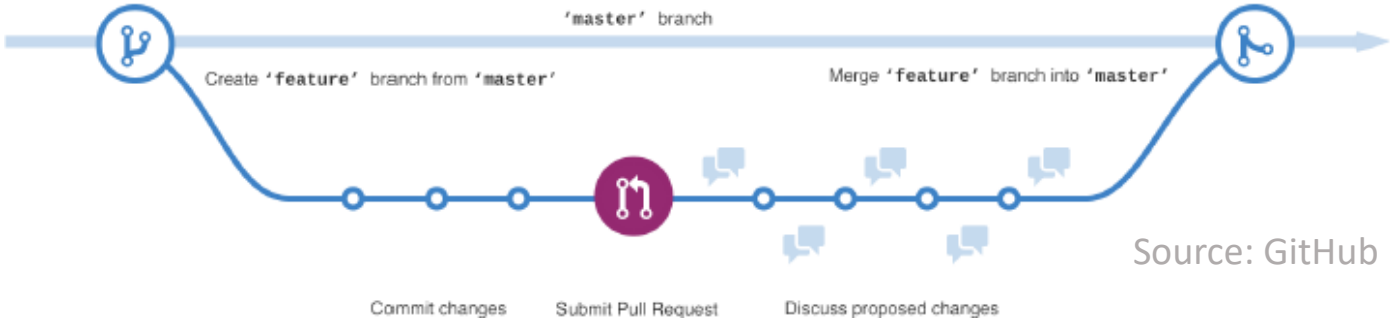
Ways to collaborate

- Internal (HYDR) and external collaborators
  (managed by HYDR owners)

- Use a ‘Team’ when multiple people committing to one or more repos (managed by Team owner)
  Read-only, cloning, pushing



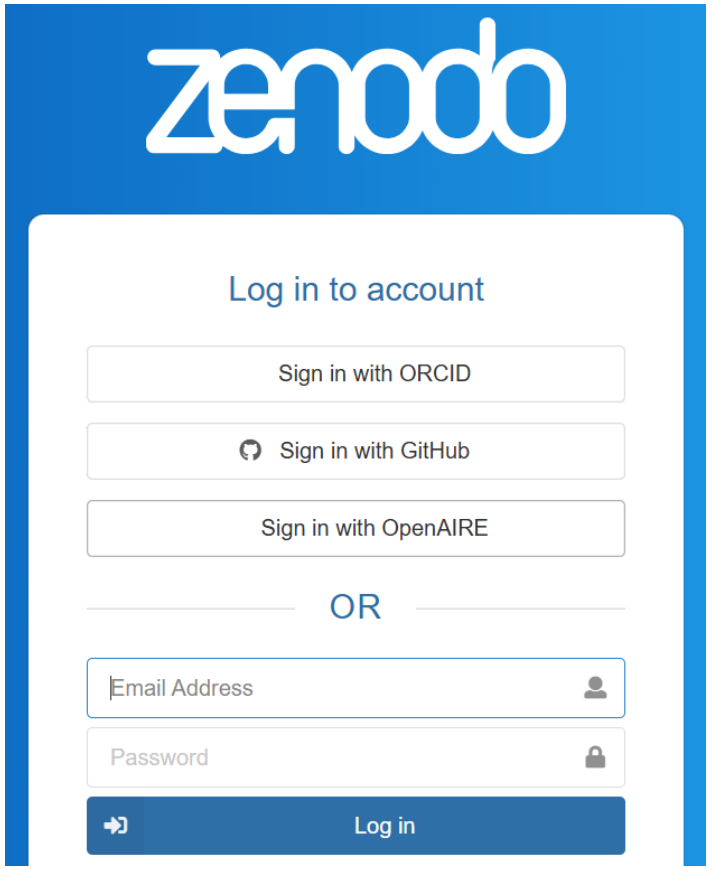
Source: GitHub

All changes are made in a separate branch. Members **never push directly to the main branch**.

Adding a DOI to your repository

- A Digital Object Indicator doesn't get broken
- Different code versions with different DOIs
- Adding a DOI via Zenodo (https://zenodo.org/)

- Steps:
  - Prepare your repo → README, LICENSE, Create a release (tag version, publish)
  - Connect GitHub → Zenodo
  - Add DOI badge in README



A good example

2025_Laridon_etal_ORE Public

main · 1 Branch · 1 Tag · Go to file · Add file · Code

AmauryLaridon Update README.md — 1eec28a · last month · 73 Commits

Publication Notes	Publication v2.0 Ready	last month
data	finish v1 of v2.1, remains figures mod	last month
figures	Publication v2.0 Ready	last month
ATCM.ipynb	Publication v2.0 Ready	last month
LICENSE	Create LICENSE	8 months ago
Laridon et al (2025) ORE - published v1.0.pdf	update publication v1.0	6 months ago
README.md	Update README.md	last month
SURFER_pre3.0_ATCM.ipynb	Publication v2.0 Ready	last month

Feb 28

AmauryLaridon · v1.0 · 3f7633e · Compare

v1.0

Latest

Release associated with the submission to Open Research Europe on 28 February 2025

▼ Assets 2

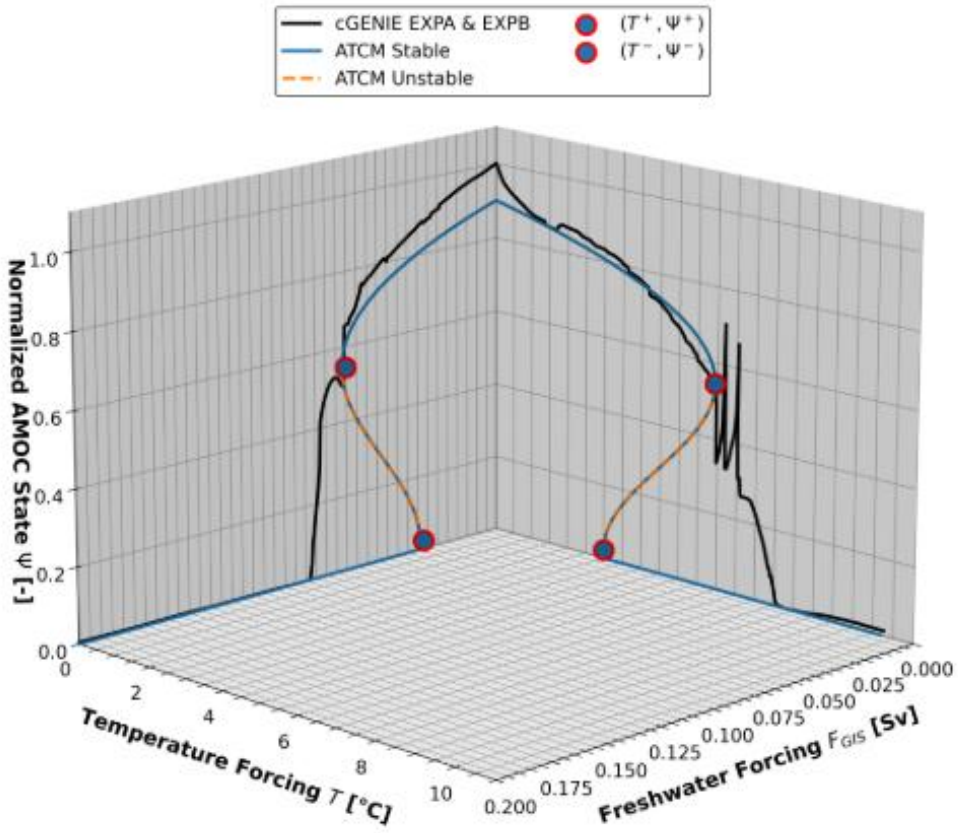
Source code (zip) Feb 14

Source code (tar.gz) Feb 14

SURFER pre3.0 with AMOC Tipping Calibration Module (ATCM)

Paper : DOI 10.5281/zenodo.14979157

Supplementary Material : DOI 10.5281/zenodo.14979157



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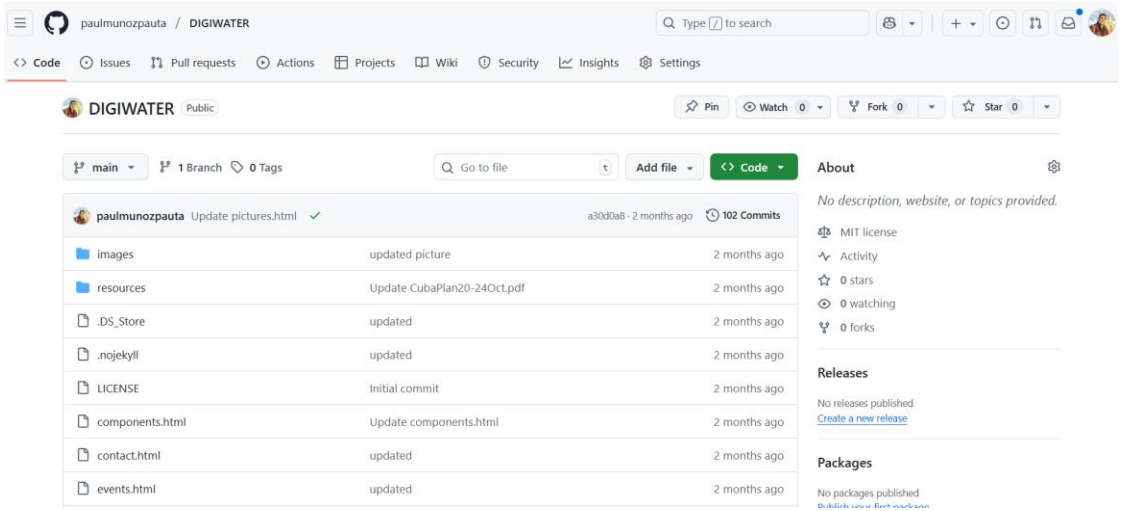
GitHub hosts pages for free

- GitHub repository for a Project



- Page associated to a project repo
- Optional: buy a domain only, server not needed (https://digiwater.net/) pulling from repo

Other advanced features

- GitHub actions → automate tasks (e.g., testing, building, or deploying)
- Turning code into packages (R, Python)
- Projects & Kanban boards → organize tasks and milestones
- Issues & Pull requests → structured way to report bugs, suggest features, code review
- Wikis & pages → host documentation, guides, or even project websites
- …

Next steps

- Talk to your group leader and admin

  Special licence for repo?
  Add external collaborators

- Strongly recommended to have teams either by projects/research groups.

- Populate HYDRWiki with general/practical information

- Check the GitHub guide

Docjobs 2025

Afnan
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