

Support for reproducible, collaborative work in CARDPIO

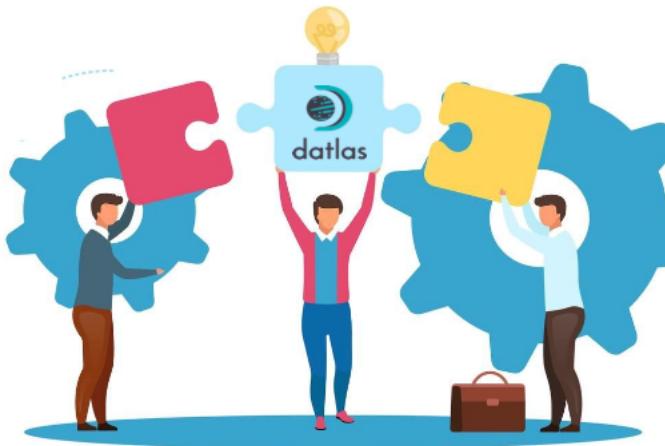


Stephanie Leroux,
Datlas, Grenoble, France
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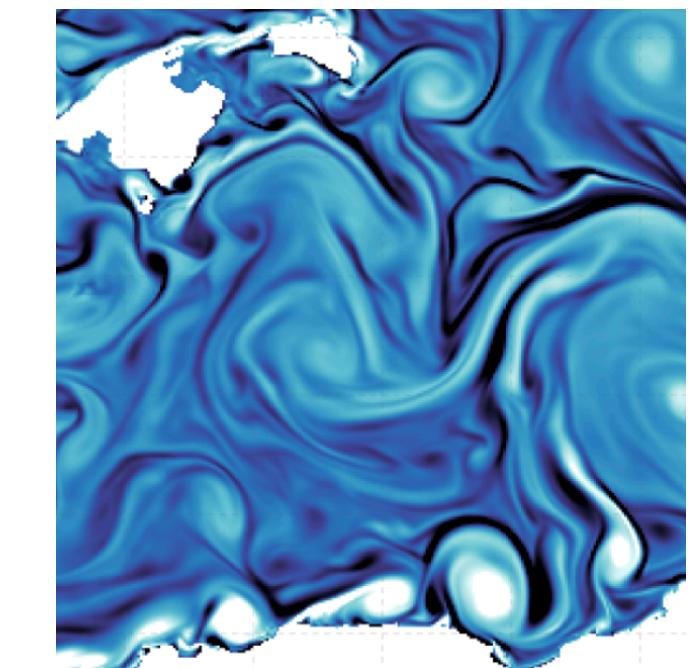
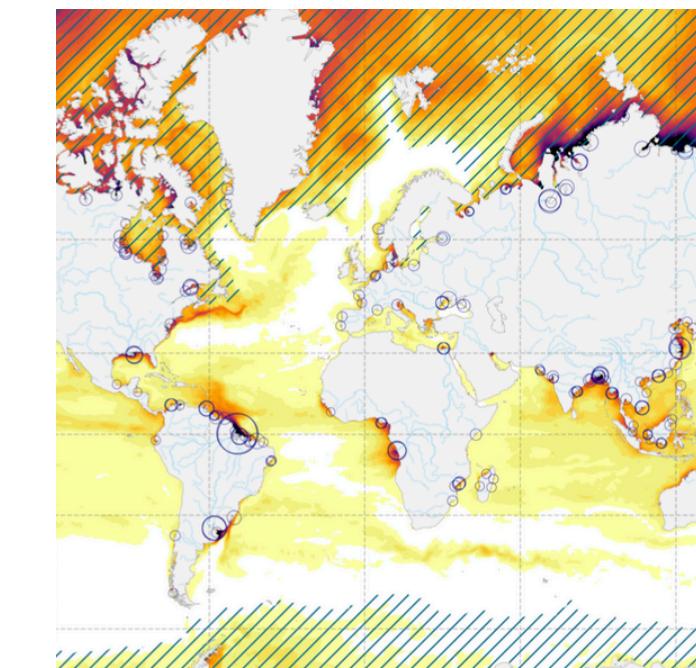
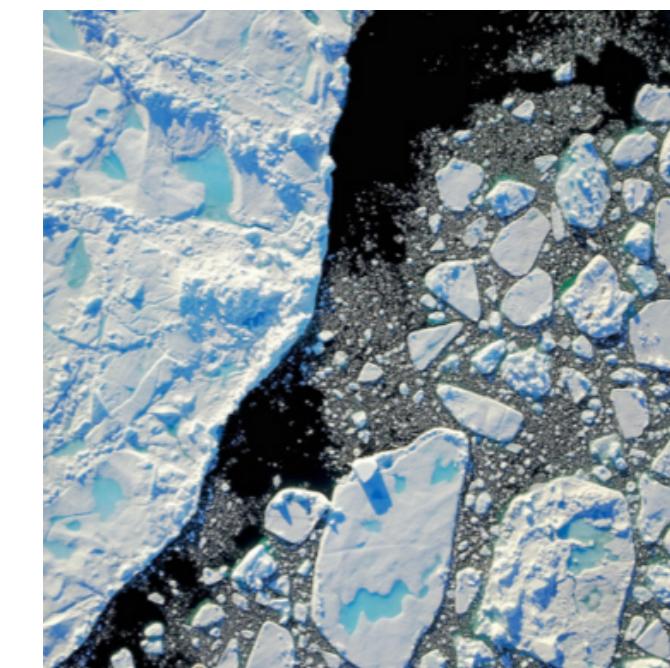
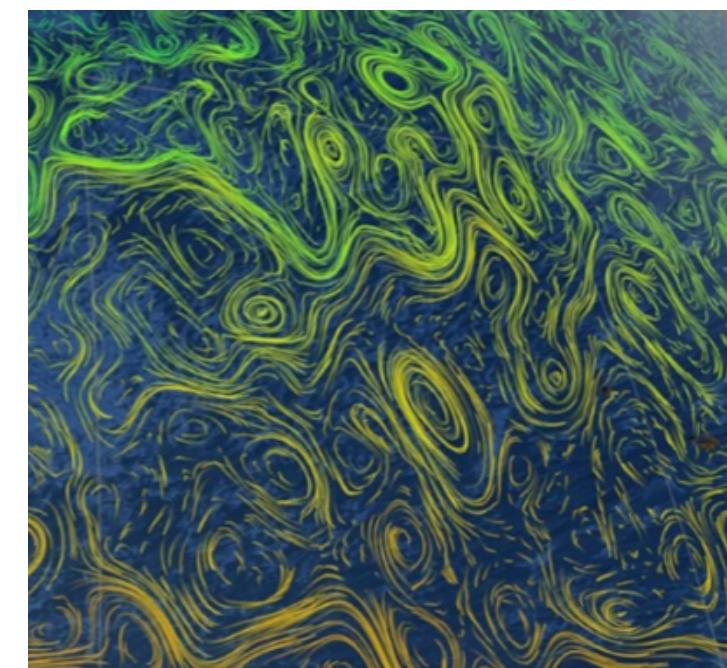


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- Small private company, based in Grenoble, France, owned and operated by its employees.
- We provide scientific and technical expertise and support for state-of-the-art, innovative research projects.
- At the interface to facilitate 2-way exchanges between academic research institutes and operational centres. (Spatial agencies, operational forecasting centres, etc)

- Our expertise:
 - Numerical modelling
 - Data assimilation and inverse methods.
 - Inter-comparison methods, data challenges.
 - Data and software management.



- Two main science focus currently:

- Ocean dynamics through surface observations and inverse methods
- Sea ice modelling and forecasting in interaction with the atmospheric boundary layer

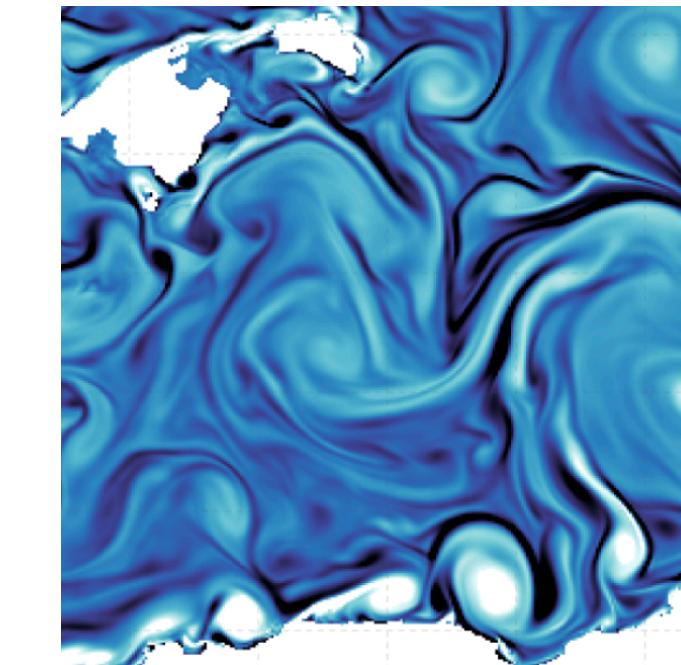
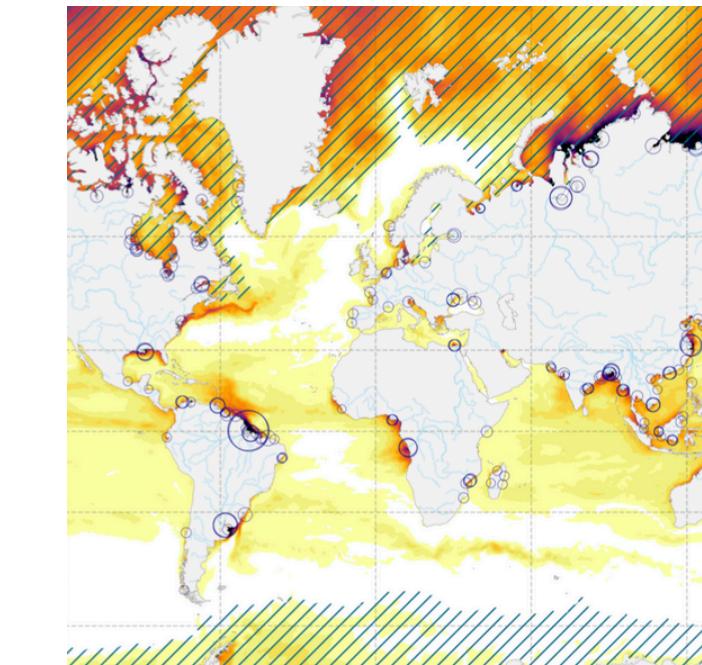
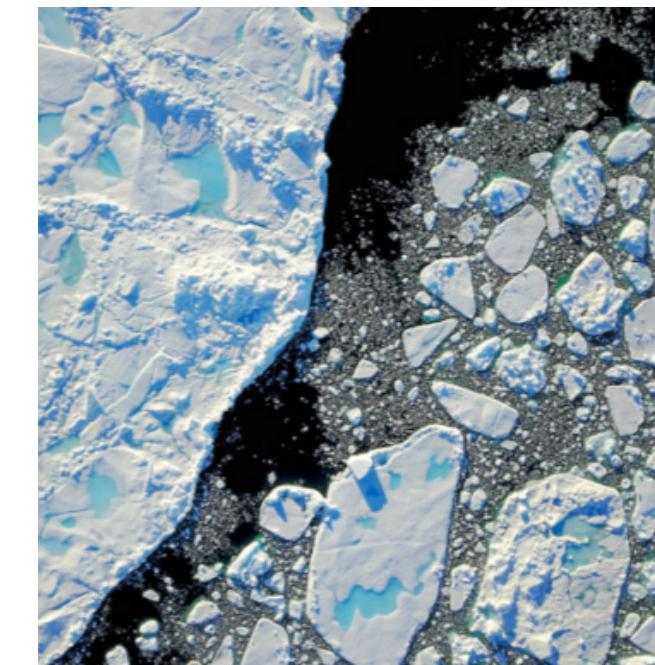
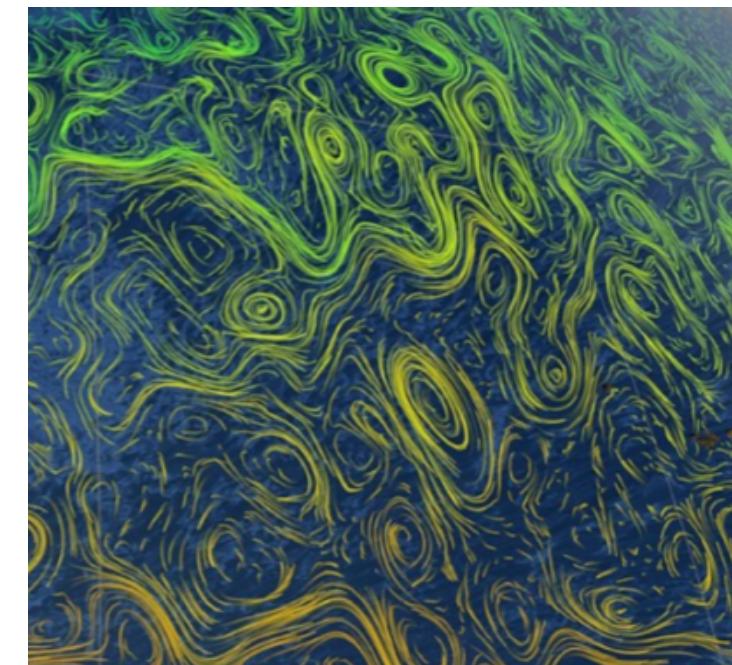


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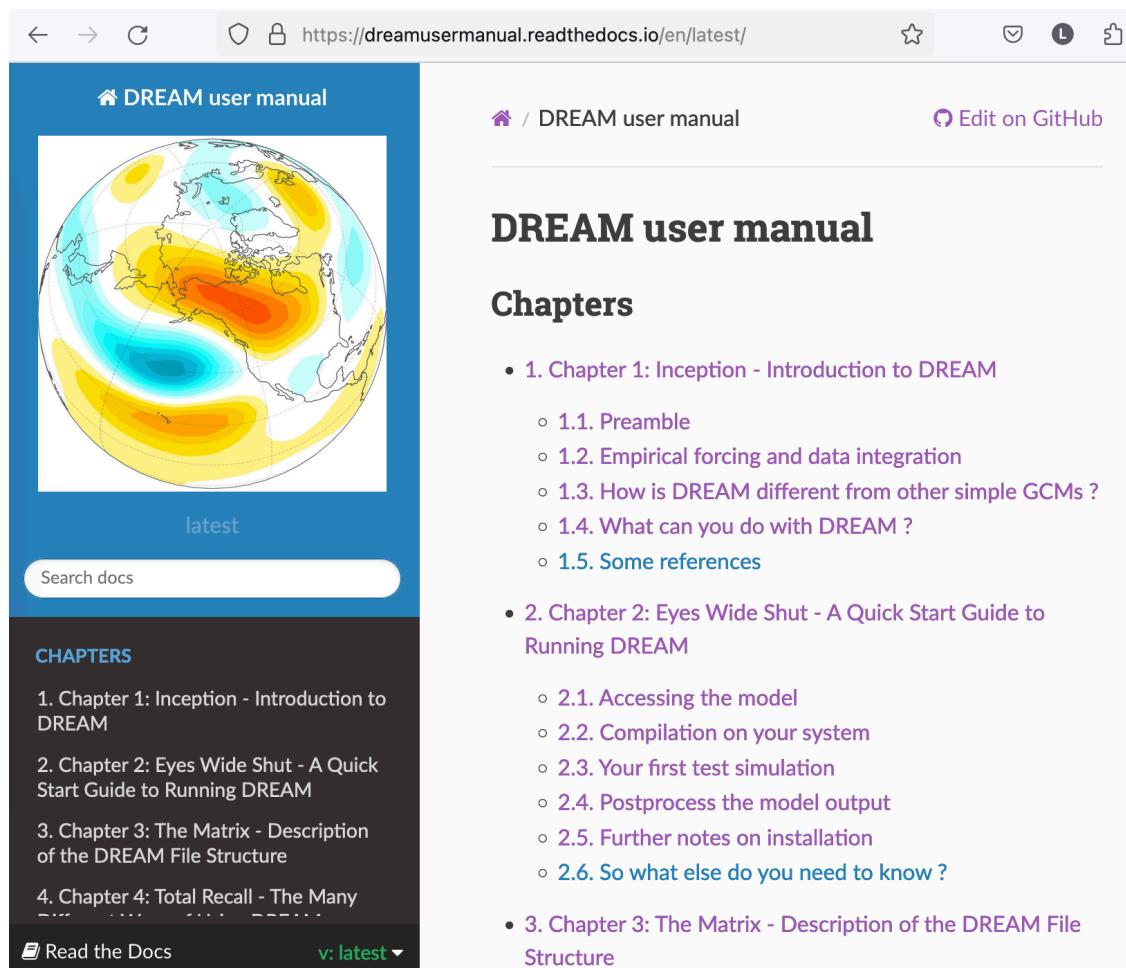
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My contributions to the CARDAPIO project:

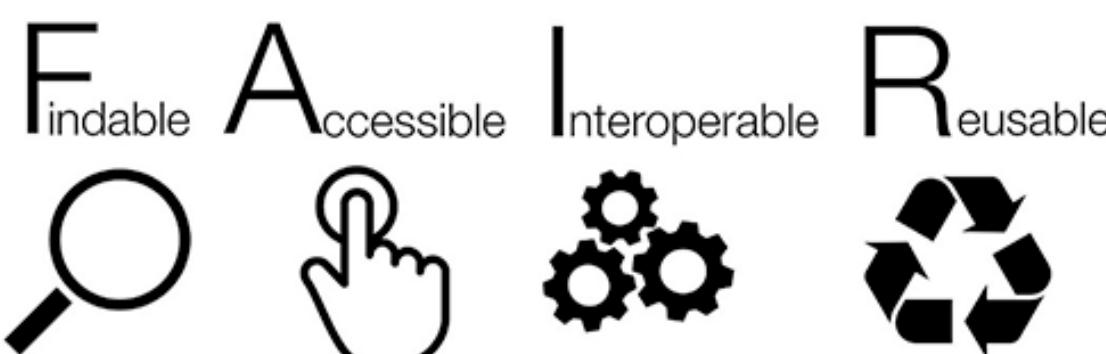


● Facilitate the accessibility of the DREAM model to new users:

- ▶ Improve the documentation,
- ▶ Create tutorials,
- ▶ Create a Docker image (and a cloud version (?))

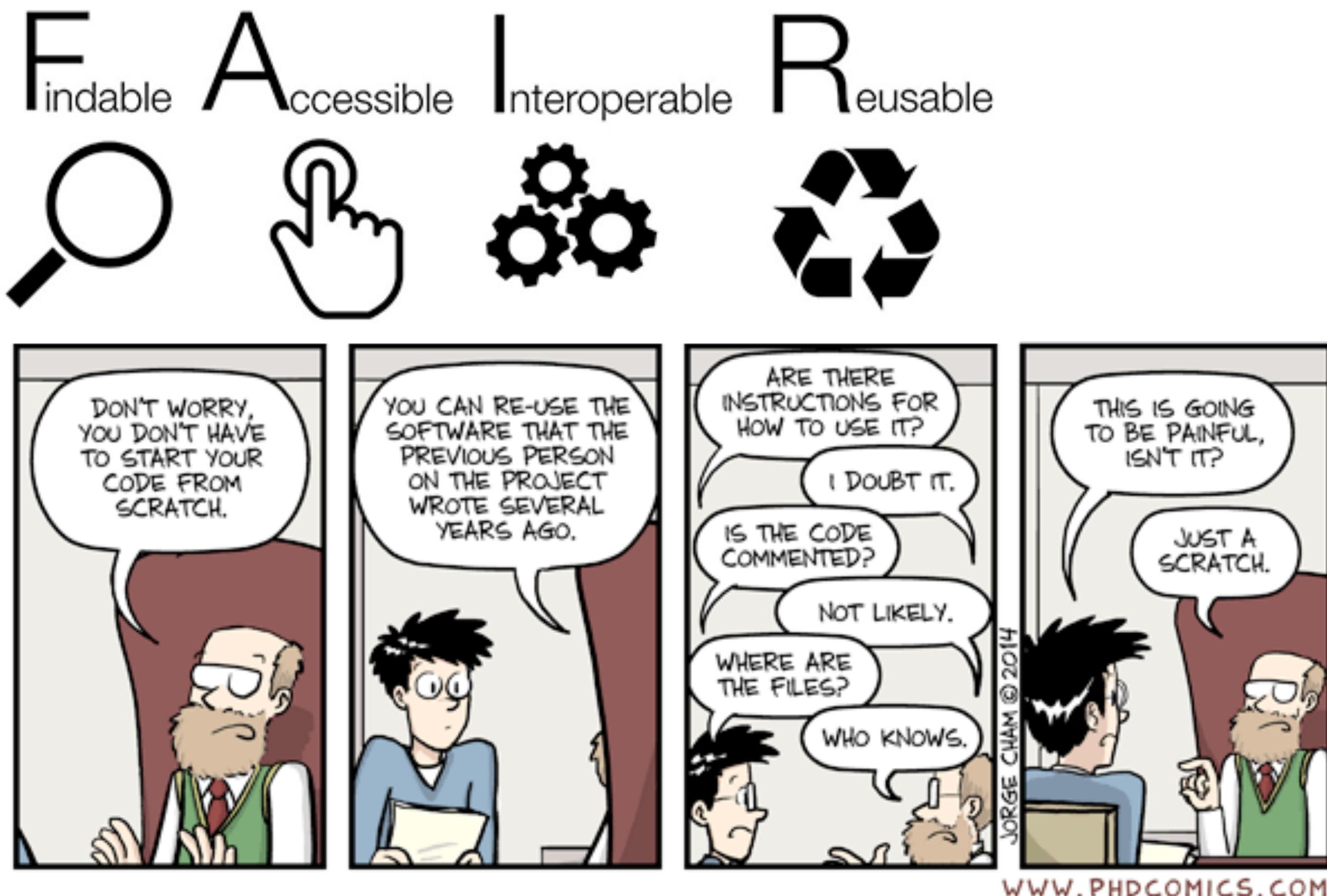


● Facilitate external communication and internal collaboration of the CARDAPIO project



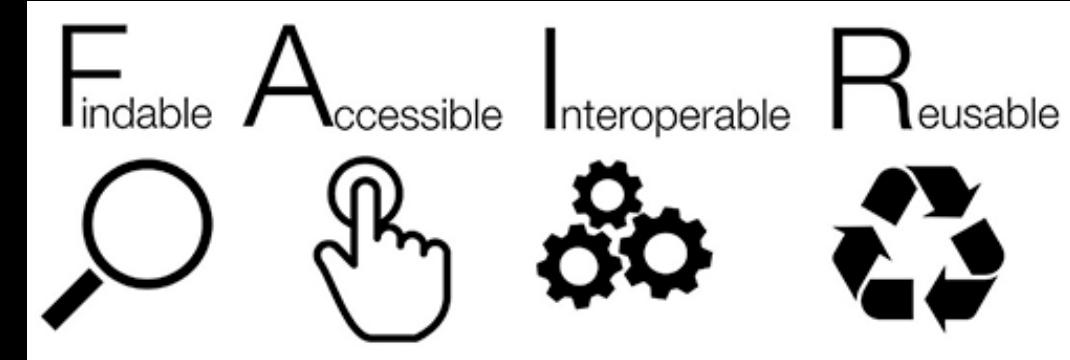
- ▶ Create a project web page,
- ▶ Create a CARDAPIO GitHub to share tools and codes
- ▶ Provide some support to encourage good practices in sharing and documenting codes (#F.A.I.R principles, #reproducible science)

F.A.I.R principles - Why is it useful ?



- Easier to share your code with collaborators,
 - Easier to use again your own code in the future,
 - Make your work reproducible,
 - Have your work properly cited by others,
 - Easier to get feedbacks from others on your work,
- Better science !

In practice, what to do ?



- Add comments in your code, for yourself and for others,
- Document its usage (documentation, tutorials, examples, etc),
- Keep track and manage versions with a version control software (ex: git)
- Select an open-source licence (ex: MIT, GNU-GPL)
- Publish the main versions of your code with a D.O.I. (ex: on Zenodo) to get properly cited



Example with the DREAM model:

● DREAM-GCM GitHub

This screenshot shows the GitHub organization page for 'dream-gcm'. It features a profile picture of a globe with atmospheric patterns, a repository count of 6, and a package count of 0. A prominent 'DREAM' section describes it as the 'Dynamical Research Empirical Atmospheric Model'. Below this, there's a 'README.md' file snippet with a 'Hi there' message and a link to the user manual. A 'Popular repositories' section lists 'dream-gcm.github.io' and 'dream-tools'.

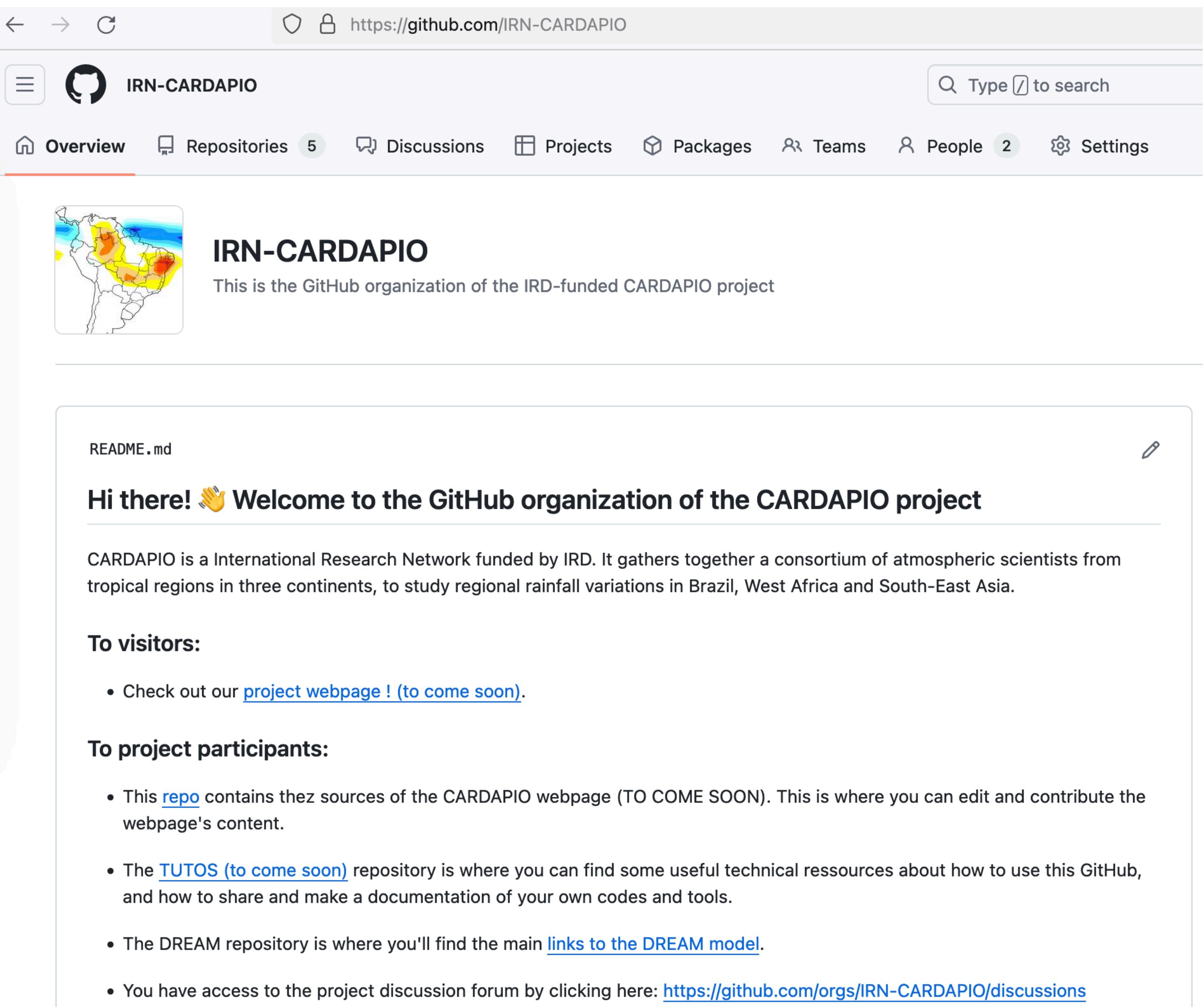
● User manual

This screenshot shows the 'DREAM user manual' documentation page. It includes a large globe map showing atmospheric patterns, a search bar, and a 'CHAPTERS' section with links to four chapters: 'Chapter 1: Inception - Introduction to DREAM', 'Chapter 2: Eyes Wide Shut - A Quick Start Guide to Running DREAM', 'Chapter 3: The Matrix - Description of the DREAM File Structure', and 'Chapter 4: Total Recall - The Many Facets of DREAM'.

● Website

This screenshot shows the 'DREAM user interface' website. It has a header with navigation links for 'HOME', 'ABOUT THE MODEL', 'SCIENCE', 'DREAM-ERS', and 'SEASONAL FORECAST'. The main content area features a large background image of a sunset over mountains. It includes sections for 'DREAM Chapters' (with links to the same four chapters as the user manual), 'About the model', 'Related science', and 'Seasonal forecast' (with a map of Brazil showing rainfall patterns).

In practice, in CARDAPIO :



The screenshot shows the GitHub organization page for 'IRN-CARDAPIO'. The URL in the address bar is <https://github.com/IRN-CARDAPIO>. The page includes a search bar, navigation links for Overview, Repositories (5), Discussions, Projects, Packages, Teams, People (2), and Settings. A map of South America highlights regions in yellow and red. The main content area is titled 'IRN-CARDAPIO' and describes it as 'This is the GitHub organization of the IRD-funded CARDAPIO project'. It features a 'README.md' file with the following content:

```
Hi there! 🙌 Welcome to the GitHub organization of the CARDAPIO project

CARDAPIO is a International Research Network funded by IRD. It gathers together a consortium of atmospheric scientists from tropical regions in three continents, to study regional rainfall variations in Brazil, West Africa and South-East Asia.

To visitors:
• Check out our project webpage ! \(to come soon\).

To project participants:
• This repo contains thez sources of the CARDAPIO webpage (TO COME SOON). This is where you can edit and contribute the webpage's content.
• The TUTOS \(to come soon\) repository is where you can find some useful technical ressources about how to use this GitHub, and how to share and make a documentation of your own codes and tools.
• The DREAM repository is where you'll find the main links to the DREAM model.
• You have access to the project discussion forum by clicking here: https://github.com/orgs/IRN-CARDAPIO/discussions
```

- A GitHub is now created for CARDAPIO :

<https://github.com/IRN-CARDAPIO>

where to find links, ressources, and where to share your codes.

- Send me your GitHub login to become a member!
- I will soon add links to some tutorials (about git, read-the-docs, etc) in the TUTOS folder.
- This is also where the project webpage will be published (and you will be able to contribute !)
- You can contact me if you need some support:
stephanie.leroux@datlas.fr

To sum up:



Bon appétit ! Hope you'll enjoy your meal !