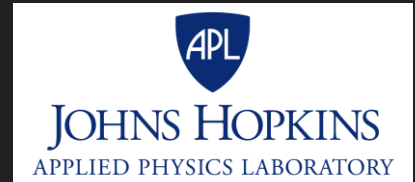


# Navigating Privacy in an Open Science Framework

Rebecca Ringuette, Alex Antunes, Chris Bard, Brian Thomas, Barbara J. Thompson, Jonathan T. Niehof, Shawn Alexander Polson, Yihua Zheng, Eric W. Grimes, Nicholas Murphy, Alexander Drozdov



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# What is Open Science?

Word cloud created using multiple definitions of Open Science:

- UNESCO
- NASA
- NSF
- US White House
- Europe
- Japan
- Africa
- Vietnam

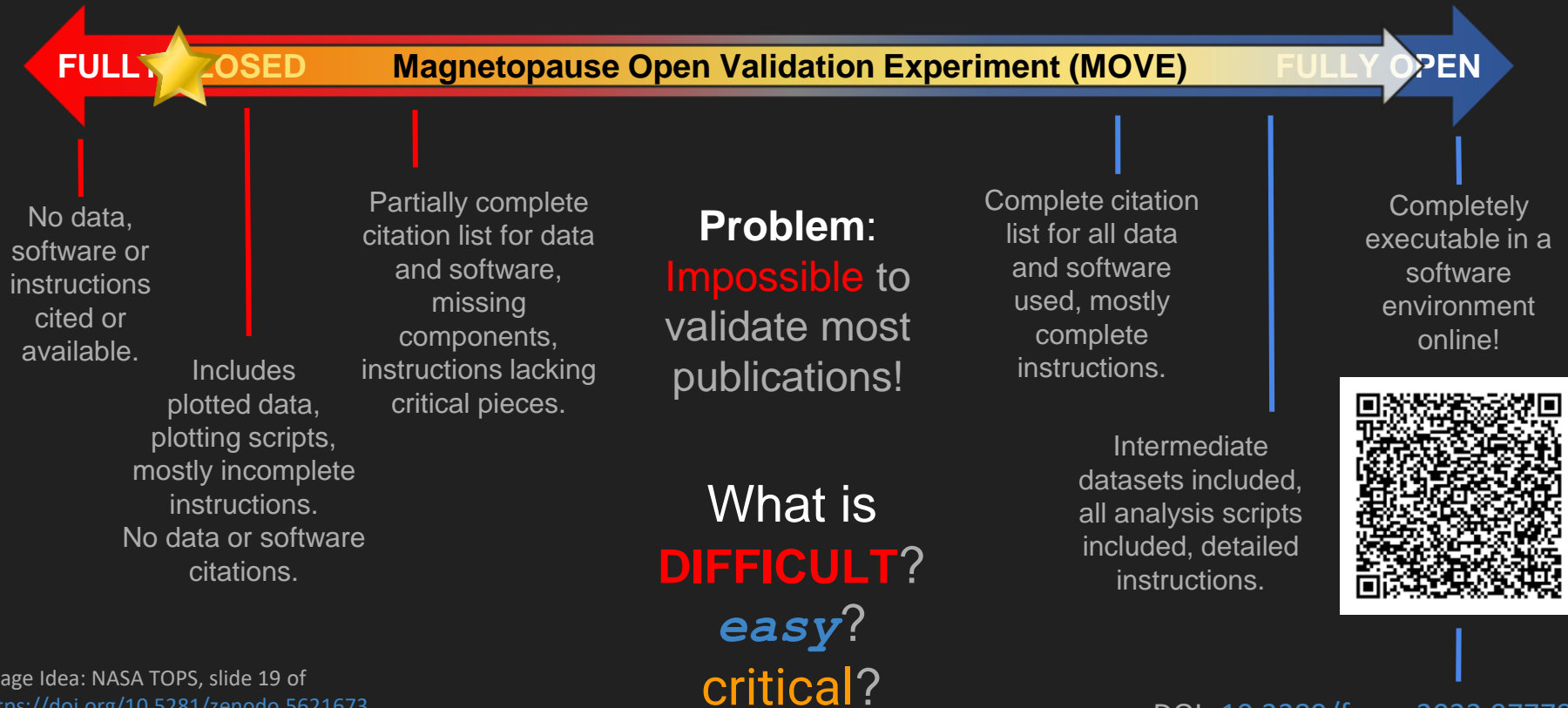
“Making scientific knowledge and collaborations open.”



# Open Science for Publications

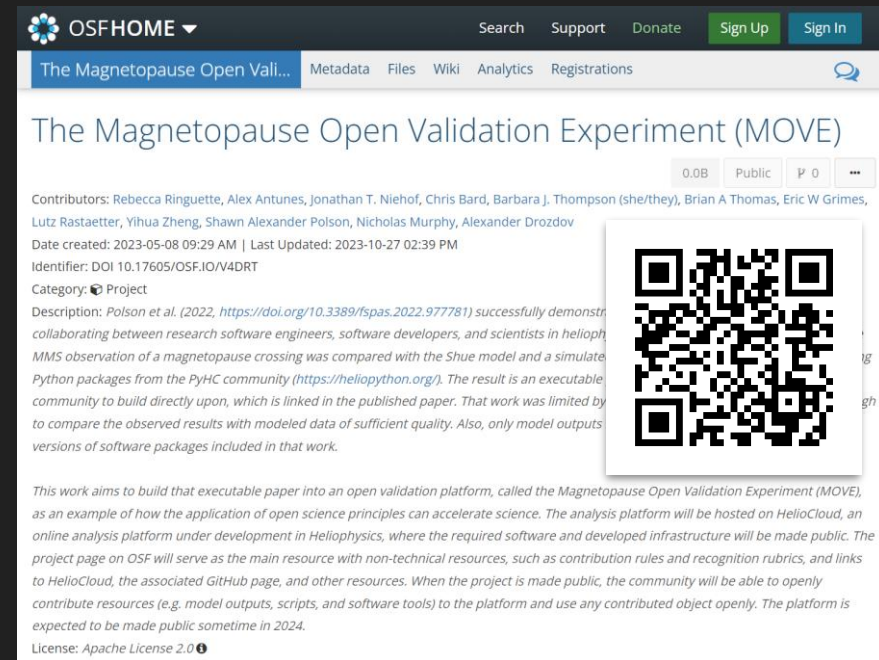


# Open Science for Publications: Using Modeled Datasets



# MOVE

- Determine what is **difficult**, **easy**, and **critical** for research to be open.
- Currently exploring **how to link technologies** together to make open research possible, especially with **large datasets**.
- Building on previous efforts to **further develop guidelines** to apply to research.
- Exploring how open research can be done for a spectrum of privacy demands.



OSFHOME

The Magnetopause Open Vali... Metadata Files Wiki Analytics Registrations

## The Magnetopause Open Validation Experiment (MOVE)

0.0B Public P D ...

Contributors: Rebecca Ringuette, Alex Antunes, Jonathan T. Niehof, Chris Bard, Barbara J. Thompson (she/they), Brian A Thomas, Eric W Grimes, Lutz Rastaetter, Yihua Zheng, Shawn Alexander Polson, Nicholas Murphy, Alexander Drozdov

Date created: 2023-05-08 09:29 AM | Last Updated: 2023-10-27 02:39 PM

Identifier: DOI 10.17605/OSF.IO/V4DRT

Category: Project

Description: Polson et al. (2022, <https://doi.org/10.3389/fspas.2022.977781>) successfully demonstrated collaborating between research software engineers, software developers, and scientists in heliophysics. MMS observation of a magnetopause crossing was compared with the Shue model and a simulated Python packages from the PyHC community (<https://heliopython.org/>). The result is an executable community to build directly upon, which is linked in the published paper. That work was limited by to compare the observed results with modeled data of sufficient quality. Also, only model outputs versions of software packages included in that work.

This work aims to build that executable paper into an open validation platform, called the Magnetopause Open Validation Experiment (MOVE), as an example of how the application of open science principles can accelerate science. The analysis platform will be hosted on HeliCloud, an online analysis platform under development in Heliophysics, where the required software and developed infrastructure will be made public. The project page on OSF will serve as the main resource with non-technical resources, such as contribution rules and recognition rubrics, and links to HeliCloud, the associated GitHub page, and other resources. When the project is made public, the community will be able to openly contribute resources (e.g. model outputs, scripts, and software tools) to the platform and use any contributed object openly. The platform is expected to be made public sometime in 2024.

License: Apache License 2.0

MOVE web page:

[osf.io/v4drt/](https://osf.io/v4drt/)

DOI:

[10.17605/OSF.IO/V4DRT](https://doi.org/10.17605/OSF.IO/V4DRT)

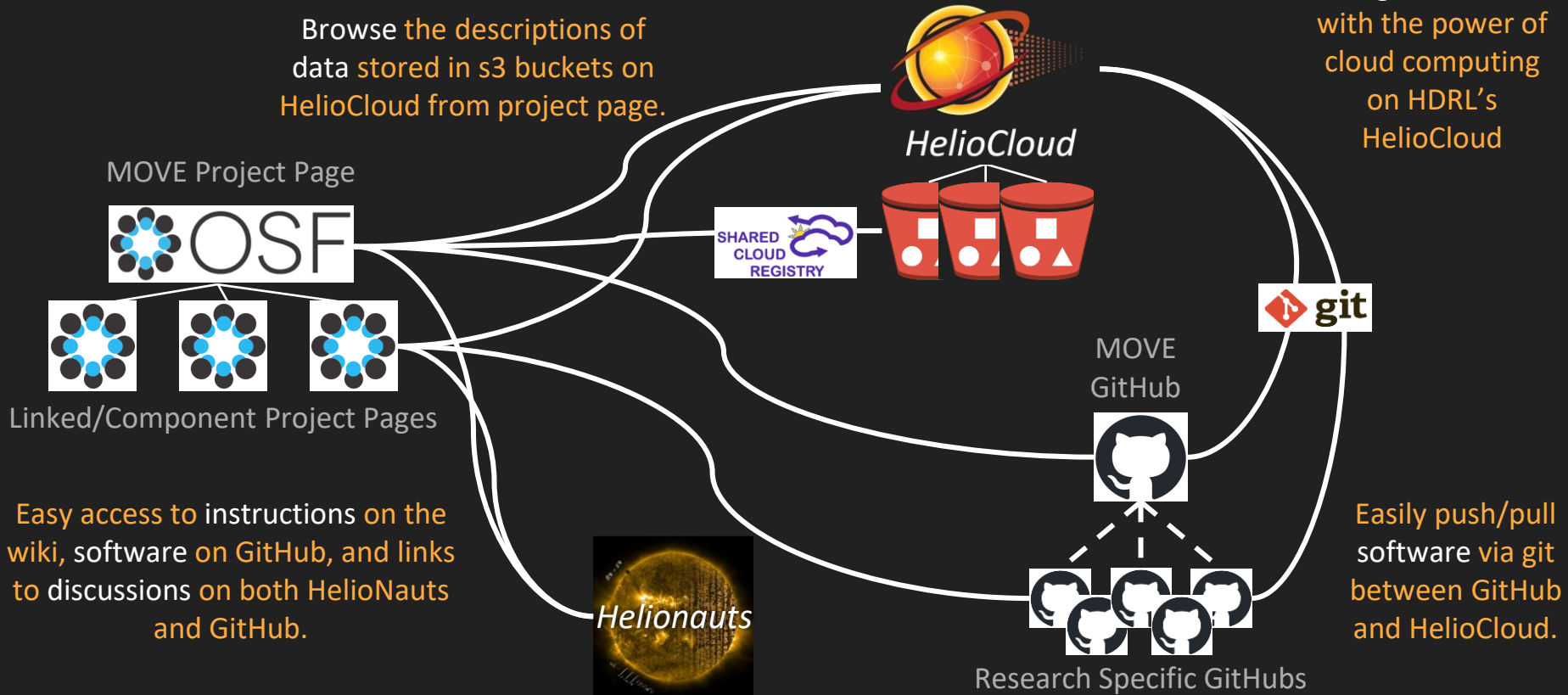


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Science 101

# MOVE: Linking Technologies Together

Browse the descriptions of data stored in s3 buckets on HelioCloud from project page.

Store and analyze large datasets with the power of cloud computing on HDRL's HelioCloud

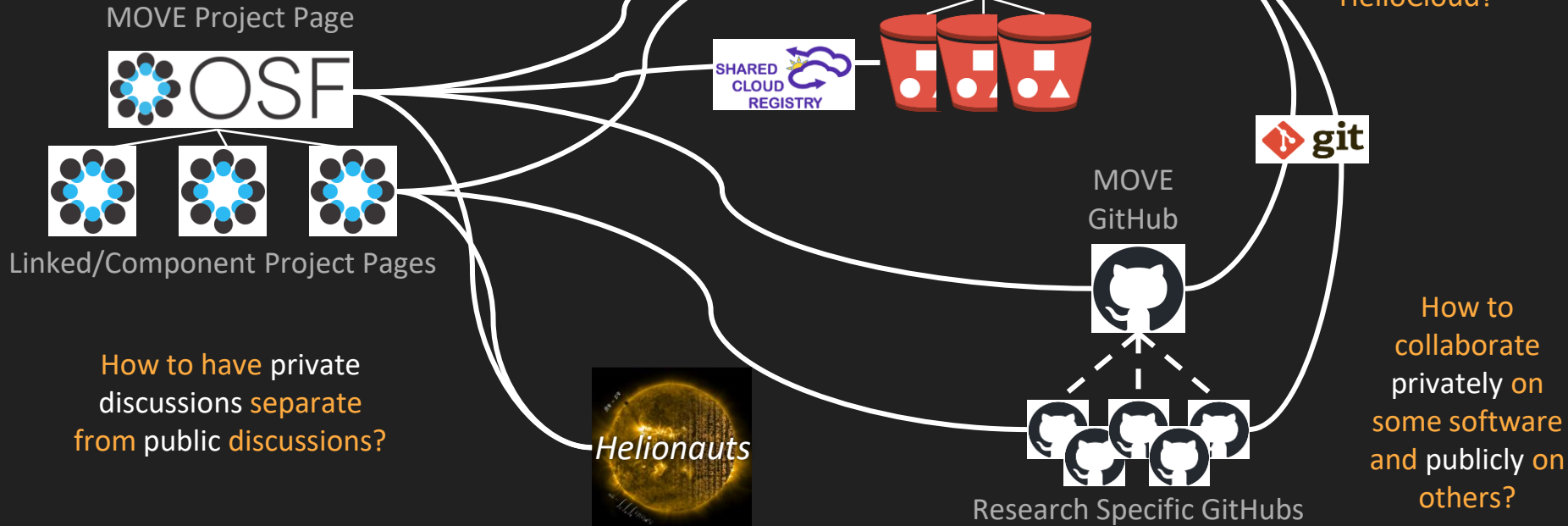


# MOVE: Navigating Privacy and Transparency

How to openly share progress but maintain privacy?

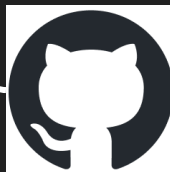
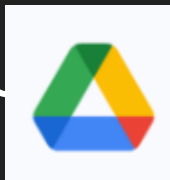
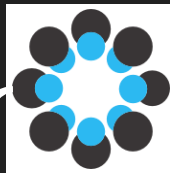
How to publicly share some datasets but keep others temporarily restricted?

How to collaborate privately with team members on HelioCloud?



# OSF Privacy Testing

Tested Action	Public				Private			
	Linked/Component Project				Linked/Component Project			
	Admin	Write	Read	Public	Admin	Write	Read	Public
View project web page	✓	✓	✓	✓	✓	✓	✓	✗
View project name from MOVE page *requires MOVE write permissions for private projects if not a contributor	✓	✓	✓	✓	✓	✓	✓	✗
View project wiki	✓	✓	✓	✓	✓	✓	✓	✗
View files linked from <b>public</b> Google Drive folder	✓	✓	✓	✓	✓	✓	✓	✗
View files linked from <b>private</b> Google Drive folder	✓	✓	✓	✓	✓	✓	✓	✗
View files on project's OSF Storage	✓	✓	✓	✓	✓	✓	✓	✗
Add/Edit/Delete files on project's OSF Storage	✓	✓	✗	✗	✓	✓	✗	✗
View files linked from <b>public</b> Github	✓	✓	✓	✓	✓	✓	✓	✗
View files linked from <b>private</b> Github	✓	✓	✓	✓	✓	✓	✓	✗
Link/unlink project to/from MOVE *requires write permissions on MOVE	✓	?	✗	✗	✓	?	✗	✗
Create/Delete project components *requires admin (or write?) permissions on project component	✓	?	✗	✗	✓	?	✗	✗
Text search feature works on linked spreadsheet	✓	✓	✓	✓	✓	✓	✓	✗





# OSF Privacy Testing

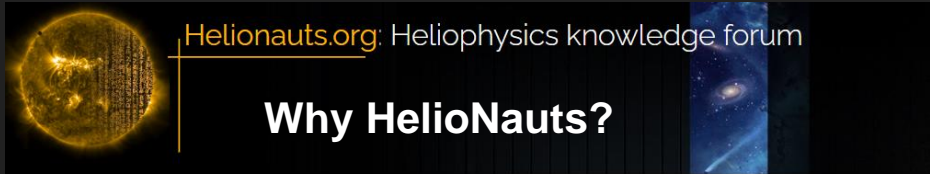
## Interesting items:

- Can see files and their contents from a private GitHub when linked to OSF **even if not a contributor to the GitHub**, but can only go to the GitHub site if allowed.
- MOVE admin **can only see private projects if added as a contributor** to the project.
- Need write permissions on Google Drive, GitHub, or other linked storage to make edits on those files.

## Further testing needed:

- Combinations of permissions required to create/delete project components?

# HelioNauts Privacy Testing



[Helionauts.org](https://Helionauts.org): Heliophysics knowledge forum

## Why HelioNauts?

Slack, Teams, Discord... Helionauts.org

- **Ephemeral and synchronous:** simultaneous presence often necessary. Content scrolled off the page gets lost. Poor or no information archiving
  - **Unpractical across time zones**
  - **FOMO**
- **Not scalable:** many conversations occurring at the same time across myriads of "channels"; unclear where a particular discussion should occur. Information fragmenting with the nb of users. Slack "pro": **>\$300/user!**
  - **Hard limits on how far chat rooms can scale**
- **Mental "Zoom" fatigue:** Chat rooms are like conveyor belts: speed increases with the nb of participants; video meetings keep happening back-to-back in our agenda; some attempt to follow them in parallel!
  - **Mentally exhausting to be prompted for immediate feedback on matters that require time to think.**

- **Permanent and asynchronous:** No simultaneous presence required. Questions remain visible to whomever available in the next hours or days, notifications highly customizable.
  - **no FOMO**
- **Scalable knowledge capture:** Topic-based discussions, granular structure through categories and tags, searchable with an optimized search engine. Leverage NASA AWS for seamless scalability. **Free to join** thanks to NASA support (HelioAnalytics & SDO mission).
  - **Currently >400 heliophysicists**
- **Designed for scientific discourse:** LaTeX's **Math mode**, supports programming languages like **StackOverflow**. **Private groups** for your work team. Alternative to Facebook to advertize your papers to other heliophysicists.
  - **Helionauts is where you ask questions from the full breadth of Heliophysics.**

HelioNauts Privacy Testing		Parent Category	
		Member	Non-Member
Subcategory	Member	✓	---
	Non-Member	Mixed	✗

Mixed = Can see posts in parent category but not in subcategory

## Positives:

- Can use varying view/edit permissions per group of users to **provide flexible privacy capabilities.**

## Drawbacks:

- Must be a member of HelioNauts to see anything (but it is easy to join).

# Summary

Sign-up for  
Open Science  
101!



- Need education on how to create research that is transparent and FAIR.
- MOVE **compliments the TOPS curriculum** by experimenting what is technology needed to support *complex workflows, large datasets, flexible privacy demands*, and an *open culture* in **open research**.
- Lessons learned from MOVE will be **published openly**, possibly added to NASA Open Source Science guidance.
- After MOVE, planning **community workshop to create rubrics** to judge how transparent a given publication is.

## Contact me to get involved!

- Work is in progress to **improve privacy** on HelioCloud.
- Planning to be open to beta testers **next spring**, live next summer/fall.

# Useful Links



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- MOVE website: <https://doi.org/10.17605/OSF.IO/V4DRT>
- TOPS Open Science Guidelines: <https://github.com/nasa/smd-open-science-guidelines>
- Sign up for Open Science 101: <https://nasa.github.io/Transform-to-Open-Science/signup/>
- Related work on open science for missions: <https://doi.org/10.5281/zenodo.8415584>



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MOVE  
website



Open  
Science  
for Missions