Research Data Camp: Data Publishing and Repositories

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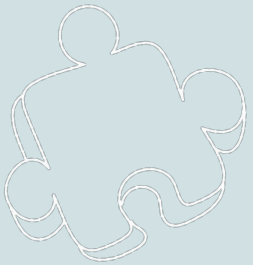
Center for Research Data & Digital Scholarship
UNIVERSITY OF COLORADO **BOULDER**

Agenda

1. What is data publishing?
2. Why publish data?
3. How to publish data
    a. Intro to FAIR principles
    b. Top considerations
    c. CU Scholar/Dryad examples
4. Questions and wrap-up

1. What is data publishing?



Working definition

- Making research data and metadata/documentation publicly available (or with appropriate access controls) via a formal web-based repository/database
- Preferably in adherence with FAIR data principles and/or other standards for data, metadata, and repository quality

Related terms

- Data sharing
- Data curation
- Data archiving
- Data preservation

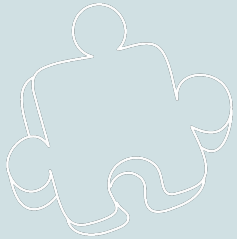
2. Why publish data?

Why publish data?

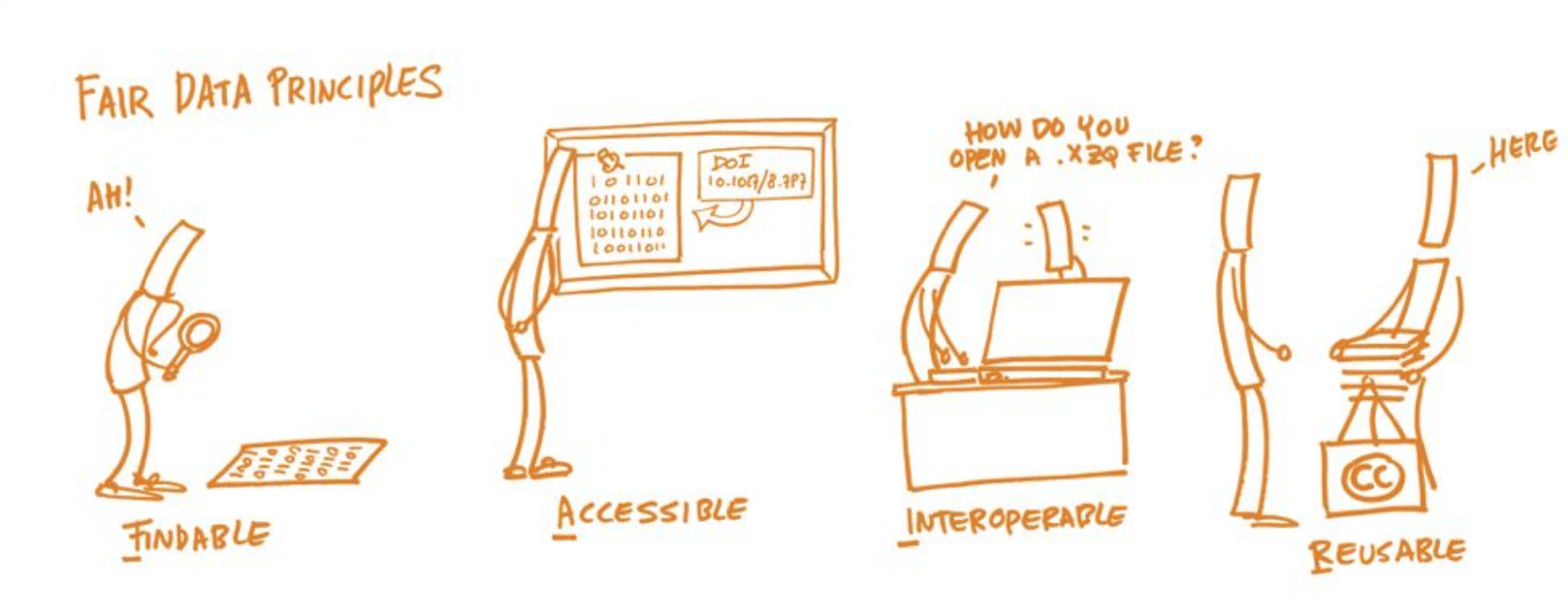
1. Scientific and public good
    a. Advance scientific innovation
    b. Address reproducibility
2. Journal/publisher requirements
    a. “Data availability statements”
    b. FAIR repositories with citations via persistent IDs
3. Funder requirements
    a. Part of NSF data management plans since 2011
    b. Part of NIH data management and sharing policy since 2023

Thinking Ahead

3. How to publish data



Introduction to FAIR data principles (Wilkinson et al., 2016)

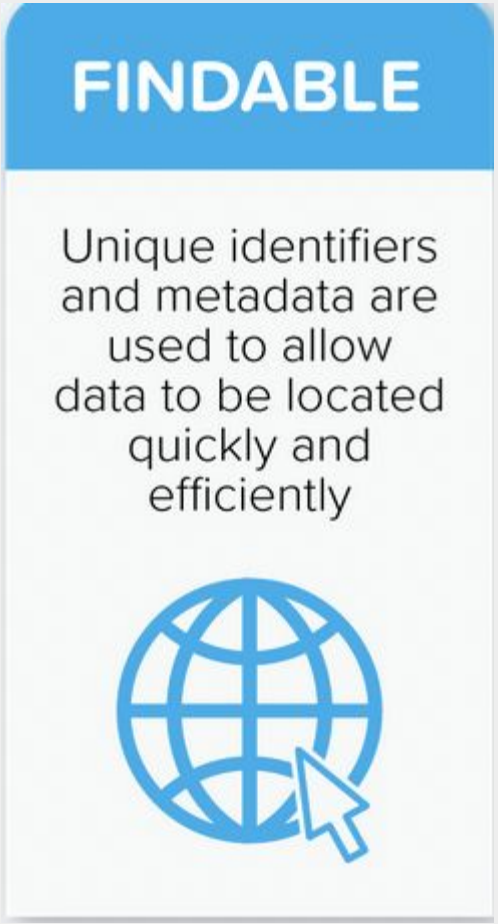


OpenAire: “How to Make Your Data FAIR”

Image by Patrick Hochstenbach, CC0 1.0

Findable (F)

- Apply a globally unique and persistent identifier
- Describe your data in a data repository



https://www.go-fair.org/fair-principles/

Accessible (A)

- Consider what will be shared, and share via a open, free, and universally implementable protocol
- Metadata are valuable and accessible, even when the data are no longer available

https://www.go-fair.org/fair-principles/

Interoperable (I)

- Use:
  - Open formats
  - Consistent vocabulary
  - Common metadata standards

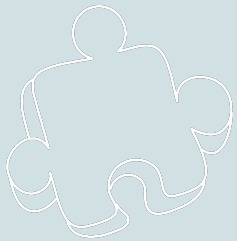
https://www.go-fair.org/fair-principles/

Reusable (R)

- Origin, context, history, and who to credit/cite are all crucial for data reusability
- Consider permitted use and apply the appropriate license

https://www.go-fair.org/fair-principles/

Top Considerations…**Before you start collecting data**



Top Considerations for You # 1

Have clear documentation and a data management plan from square one.

- Think ahead about repositories and requirements for a finished project
- Document throughout the process/project: how data was created/gathered/used/etc.
- R (Reusable) in FAIR is very hard to achieve just at the end of the project; important to think about from the beginning

Top Considerations for You # 1

Before you start collecting data, think about:

- How much of your data will you/can you share?
- How and where will you share your data?
- When will you share your data?
- With whom will you share your data?

University of Colorado Boulder

CU Scholar

UNIVERSITY LIBRARIES

Top Considerations for You # 2:

Select a FAIR-aligned data repository

- CU Scholar
  - FAIR-aligned public access repository for CU Boulder affiliated researchers (i.e., have an IdentiKey)
  - Has CoreTrustSeal certification
  - Review and curation of all data sets
  - DataCite DOIs registered for all data sets
  - Public access to large data sets via Globus and PetaLibrary
  - Free to deposit up to 500 GB per data set for CU Boulder affiliated researchers
  - Over 1600 data sets published in CU Scholar to date

Top Considerations for You # 2:

Select a FAIR-aligned data repository

- Dryad @ CSU
  - Dryad is a non-profit FAIR-aligned data repository
  - Data preserved in CoreTrustSeal-certified repository
  - Review and curation of all data sets
  - DataCite DOIs registered for all data sets
  - Free to deposit up to 300 GB per data set for CSU affiliated researchers
  - Requires ORCID for login
  - Over 400 CSU data sets published in Dryad

Top Considerations for You # 2:

re3data.org
REGISTRY OF RESEARCH DATA REPOSITORIES

Select a FAIR-aligned data repository

- General repositories (e.g., Dryad, Dataverse, Zenodo)
  - Open to anyone to deposit
  - Minimal review/curation of deposits
  - Typically provide DataCite DOIs and usage metrics
  - Size limits and/or additional fees for large data
- Domain repositories:
  - Re3data repository registry
  - Level of review/curation varies
  - Ability to deposit varies
  - May be recommended/required for certain data types by funders/publishers (e.g., Springer-Nature's list)

Top Considerations for You # 3:

Consider copyright and licensing of your data set

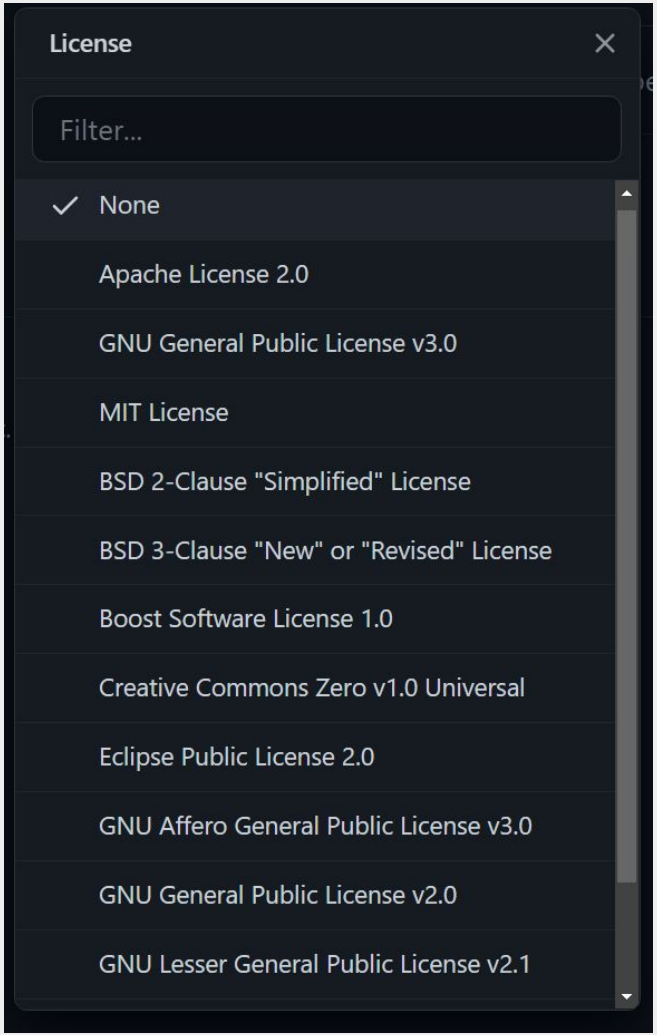
- The license that is selected facilitates sharing and reuse of the data set
  - Creative Commons
  - CC BY: Creative Commons Attributions License
  - CC 0: When an owner wishes to waive their copyright and/or database rights
  - Public Domain mark (PDM): It is used to mark works that are in the public domain, and for which there are no known copyright or database restrictions.

Top Considerations for You # 3:

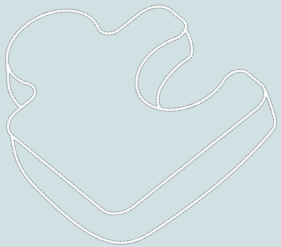
Consider copyright and licensing of associated software/code

- Many licenses available for software/code

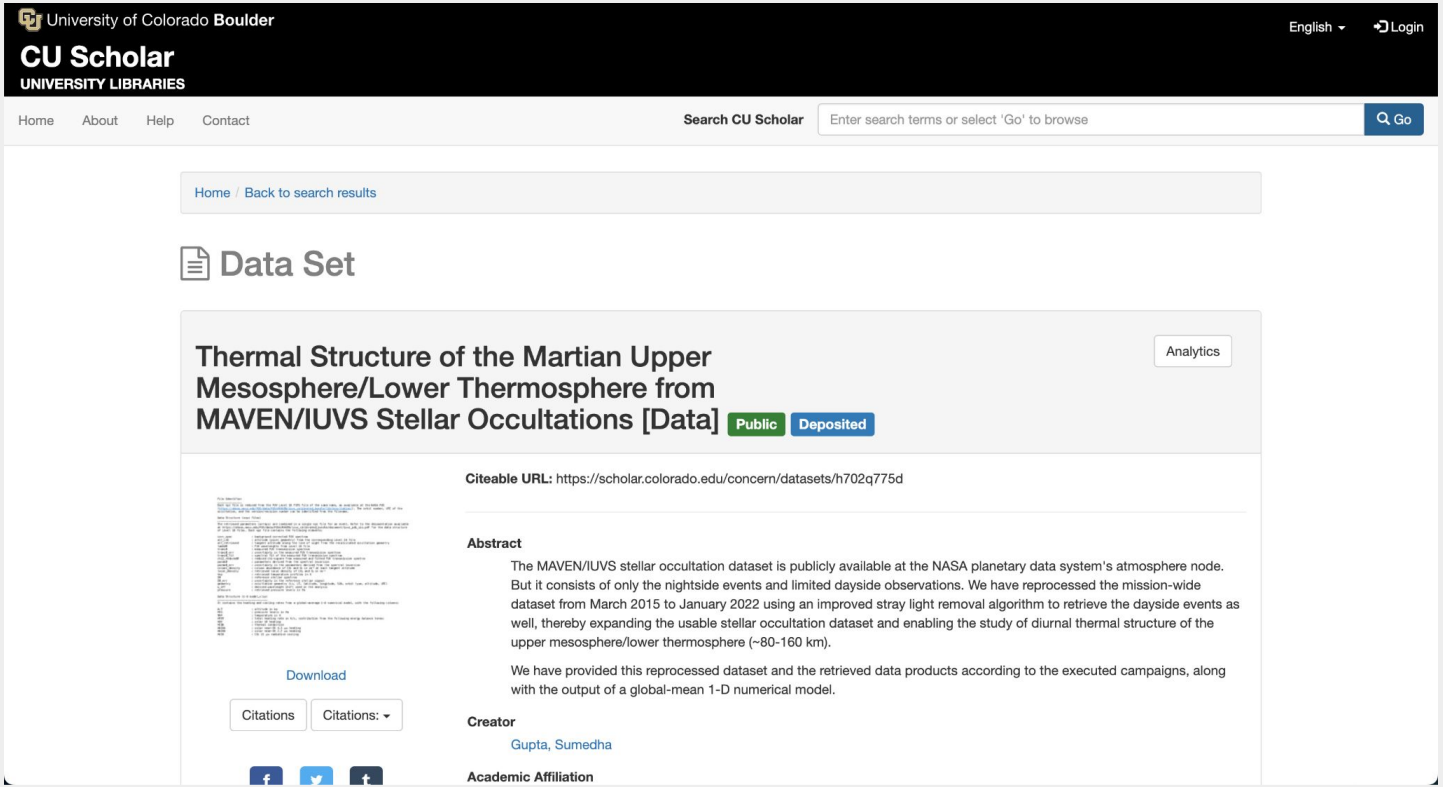
GitHub



CU Scholar/Dryad Examples

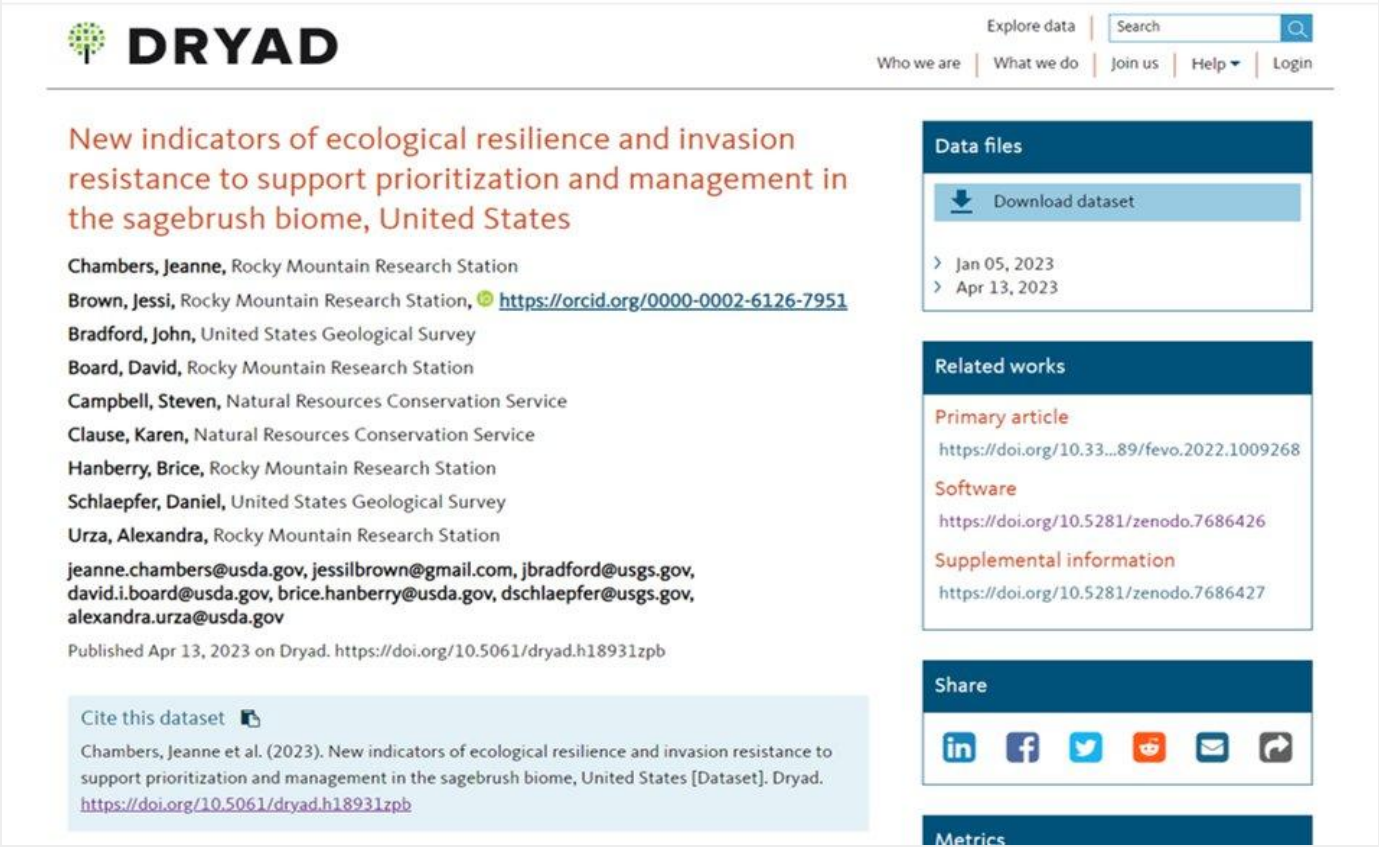


Example Data Set in CU Scholar



https://doi.org/10.25810/z1wy-cq62

Example Data Set in Dryad



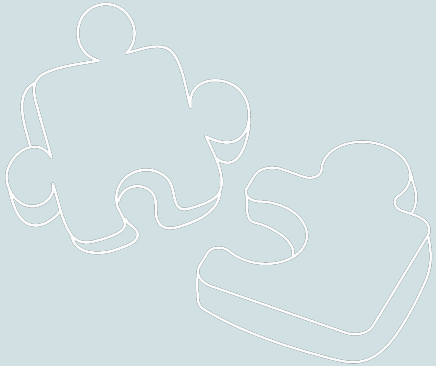
https://doi.org/10.5061/dryad.h18931zpb

CSU & Dryad Resources

- CSU Libraries Data Management website: https://lib.colostate.edu/services/data-management/dryad
- Dryad best practices guide: https://datadryad.org/stash/best_practices
- CSU Open Data guide: https://libguides.colostate.edu/openaccess/opendata

Thank you!

Comments? Questions?



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CSU & Dryad Questions:
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