EARTH AND SPACE SCIENCES DATA ARE A WORLD HERITAGE

Community Partnership to Develop Best Practices Across the Data Lifecycle to Advance Open and Fair Data

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THE PROBLEM

Integrity and transparency within research is solidified by a complete set of research products that are findable, accessible, interoperable, and reusable. These are known as the FAIR Guiding Principles [1]. Unfortunately not all research artifacts are saved in such a way that they can be understood by other researchers reading the publication, and reused and repurposed in multiple other research endeavors.

THE SOLUTION

To accelerate this process, the American Geophysical Union and a set of partners representing the International Earth and Space Science community have been awarded a grant from the Laura and John Arnold Foundation to develop a collaborative solution across researchers, journals and repositories that will evolve the Earth and Space Science (ESS) publication process to include not just the publication, but all research inputs into that publication and related derived data products to help develop a unified process that is efficient and standardized for researchers and supports their work from grant application through to publishing [2].

Partners include:

- Research Data Alliance (RDA)
- Earth Science Information Partnership (ESIP)
- Coalition for Publishing Data in Earth and Space Sciences (COPDESS)
- *Nature*
- *Science*
- *Proceedings of the National Academy of Sciences (PNAS)*
- AuScope
- Australian National Data Service (ANDS)
- National Computational Infrastructure (NCI)
- Center for Open Sciences (COS)
- DataCite

Consider having your organization to be part of this growing list.

PROJECT AIMS

The aim of the project is to develop and implement a collaborative solution for researchers, journals and repositories that will connect publications in the Earth and space sciences with related data, samples and software in repositories, and then make these connections and data discoverable and connected across the scientific community.

Data are referenced in a citation, and no longer placed in Supplementary Information.

A reference set of best practices will be developed for researchers, publishers, and repositories that will include:

- Metadata and identifier standards
- Data repository selection tool
- Data services
- Common taxonomies
- Landing pages at repositories to expose the metadata and standard repository information
- Standard data citation
- Standard integration into editorial peer review workflows

The solution will include defining and managing the metadata requirements and storage requirements for data and derived products, and the incorporation of the changes needed into the submission and workflows for each publisher. It will also provide support and oversight of the adoption process, best practices, and continued compliance of the requirements by both repositories and publishers ensuring a sustainable, scalable solution.

USE OF FAIR GUIDING PRINCIPLES

The project will be based around the FAIR Guiding Principles [1], which seeks to ensure that research artifacts that are input to and/or support the publication process will be Findable, Accessible, Interoperable, and Reusable (FAIR). Research artifacts can include:

- Datasets
- Images
- Video
- Software
- Scripts
- Models
- Physical samples
- Other tools and technology

All are an integral part of modern day research and hence by providing persistent identifiers for each and then being able to link their IDs to publications they provide the supporting evidence, reproducibility, and integrity of the scientific record.

GET INVOLVED

You are invited and encouraged to be part of the project and give your voice this community-driven effort. To get oriented, read the Eos article that describes the project [6], as well as a the out-brief from the Stakeholder Meeting in November 2017 [7]. To join the mailing list, send an email to sstall@agu.org.

REFERENCES

1. The FAIR Guiding Principles for Scientific Data Management and Stewardship. Available from https://www.nature.com/articles/sdata201618., accessed 21 November 2017.

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