Global Data Resilience

From Regional Risk to Global Sustainability through Trust and Collaboration

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DPC Risk Resilience Around the World

18 November 2026

RESEARCH DATA ALLIANCE

AGU ADVANCING EARTH AND SPACE SCIENCES



AGU By the Numbers

AGU ADVANCING EARTH AND SPACE SCIENCES

agu.org



500,000+

global community of advocates and professionals in Earth and space sciences



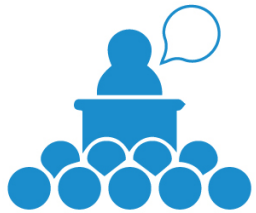
300,000+

social media followers



8,500+

articles published annually



25,000+

Annual Meeting attendees



1,000+

editors and associate editors



20,000+

reviewers



20,000+

volunteers



~500

members of Union-level committees, task forces and advisory boards

75

council members

16

members of the board of directors

AGU By the Numbers

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33

Years of affirming that Earth, space, and environmental science **data are a world heritage.**

We are the data stewards.

Kirsten Elger, Danny Kingsley, Beth Inadomi, et al. Preserving open data as a world heritage to secure our future. *ESS Open Archive* . October 02, 2024.
DOI: 10.22541/essoar.172788649.90106607/v1

Earth Observations serving the world…

Climate Science and Meteorology

- Atmospheric science
- Computer science
- Oceanography

Agriculture and Food Security

- Agronomy
- Economics
- Data science

Disaster Management and Risk Reduction

- Emergency response
- Civil engineering
- Geology

Public Health and Epidemiology

- Medicine
- Geography
- Sociology

Ecology and Biodiversity Conservation

- Biology
- Forestry
- Landscape architecture

Urban Planning and Sustainable Infrastructure

- Architecture
- Sociology
- Economics

Caution…

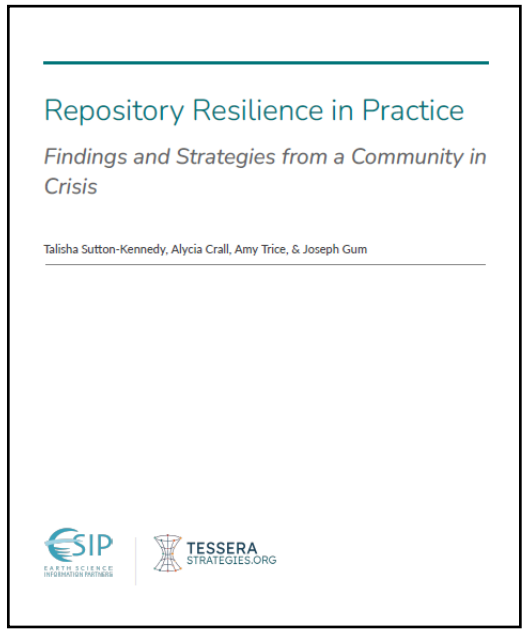
- Global research infrastructure (RI) investment has been historically underfunded an uncoordinated
- Ongoing reduction in RI / data funding with little or no consultation

Urgent attention is needed



Photo credit: by Andreas Schantl on Unsplash

Should we care?



An ESIP study of 44 repositories in 10 countries found them well prepared for routine operations but much less prepared for systemic shocks.

Sutton-Kennedy, T., Crall, A., Trice, A., & Gum, J. (2026). Repository Resilience in Practice: Findings and Strategies from a Community in Crisis. Zenodo. https://doi.org/10.5281/zenodo.20617197

Invest in Open Infrastructure tracked 87 data rescue projects and found that only 16 build technical tools, and most of those build only for themselves

Katherine Skinner https://investinopen.org/blog/data-resilience-funding-landscape/





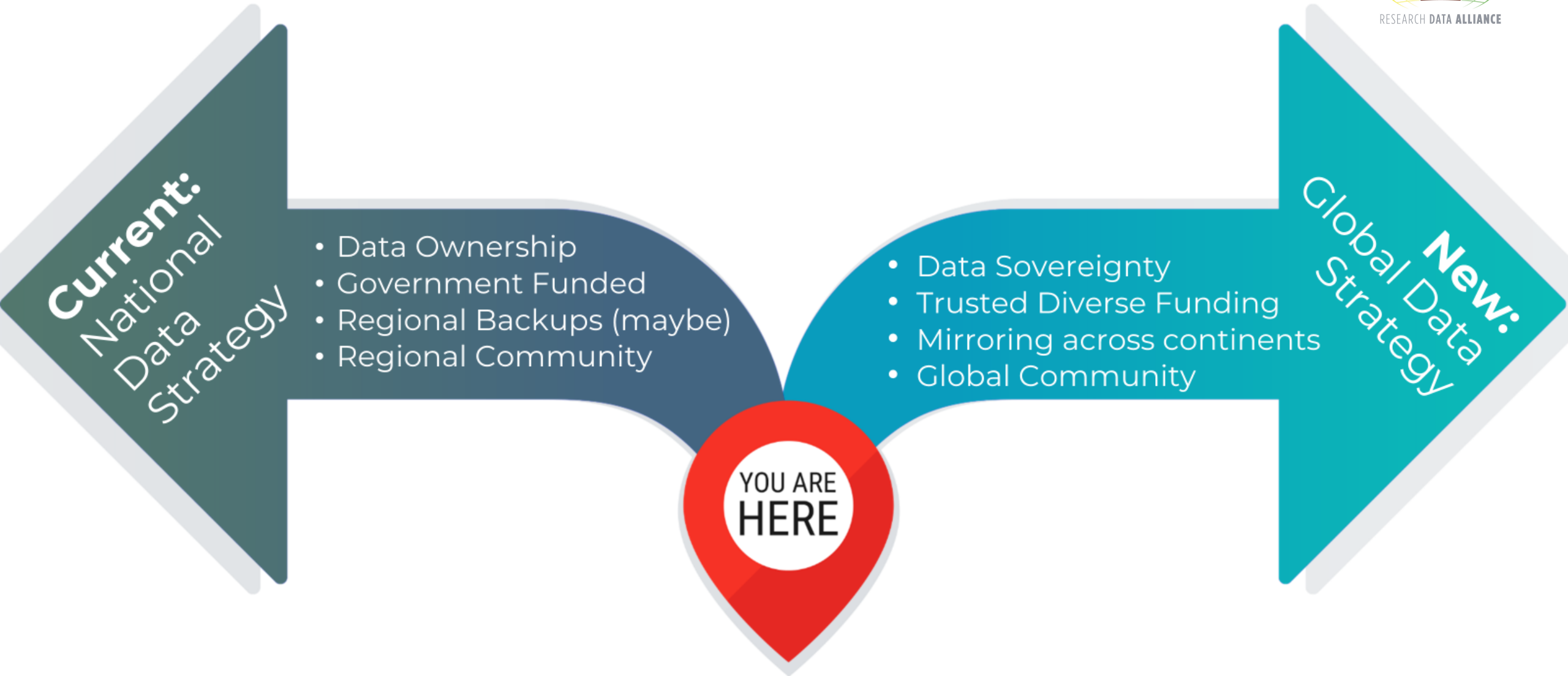
RDA RESEARCH DATA ALLIANCE

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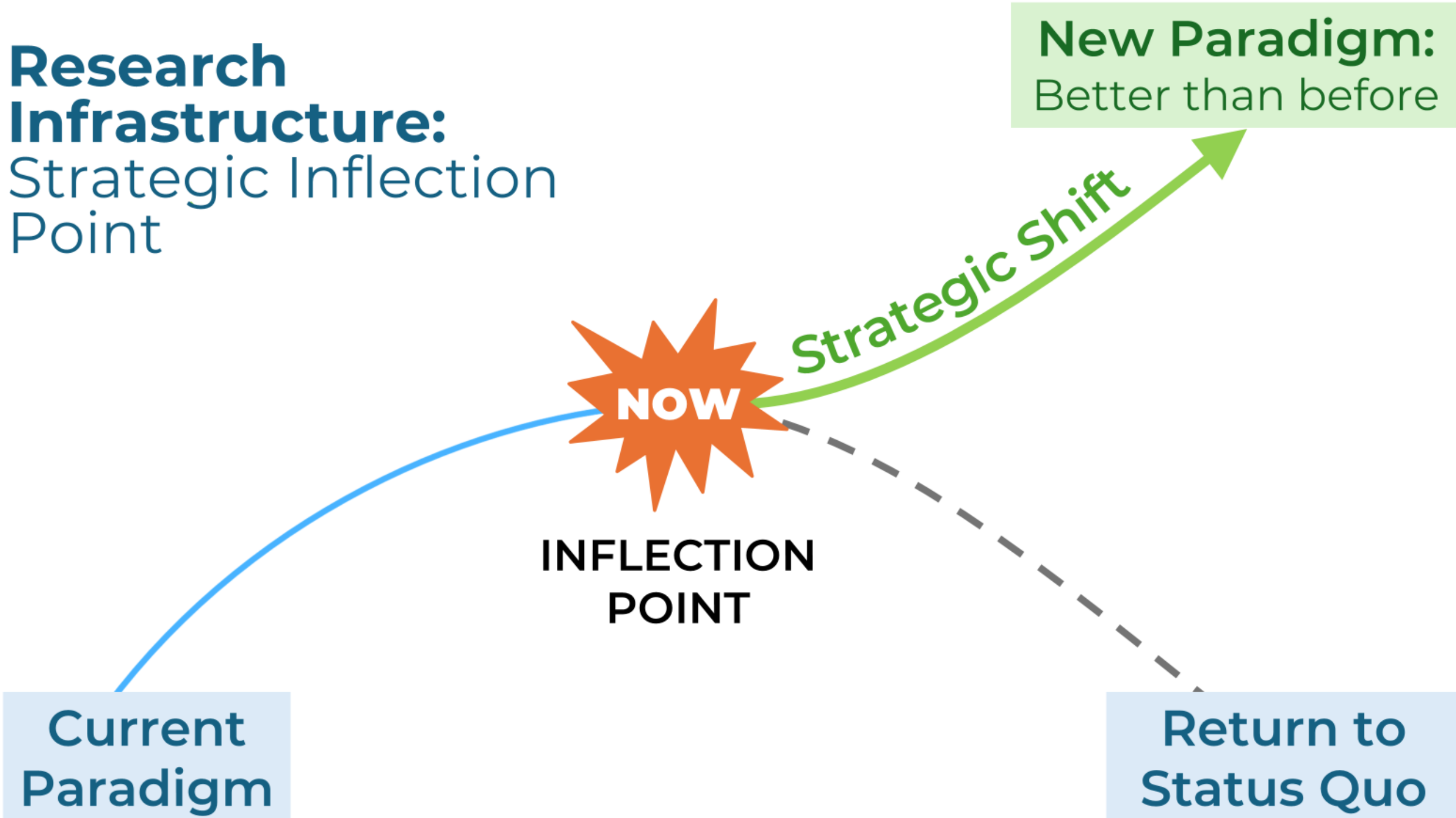
Are we building global knowledge infrastructure for the world we have, or for **the world we are trying to create**?

- 23 March 2026, Hilary Hanahoe, Keynote
AGU Global Data Resilience 5-day meeting in Berlin

New Paradigm: Better than Before



Research Infrastructure: Strategic Inflection Point



A New Paradigm: Better than Before

Data are...

- Foundational for AI
- Interoperable
- Stewarded & managed in a distributed manner
- In context with local knowledge
- “Easy” to use

Data Serve the World

10 short-term task groups

	Title	Co-Chairs
TG1	Data Interoperability & User Understanding	Lou Darroch, Doug Fils
TG2	Process Resilience and Asset Transfer Planning	Adam Leadbetter, Graham Parton
TG3	Mid-to-Long Term Business Models	Katherine Skinner, Matt Harrison
TG4	Governance	Hilary Hanahoe, Tim Rawling
TG5	Mid-to-Long Term Technical Solutions	Andrew Padilla, Francisca Muñoz Bravo
TG6	Sovereignty and Ethics	Gaby Pino, Louise Bezuidenhout
TG7	Indigenous Data Sovereignty	Cas Sedran Price, Maui Hudson
TG9	Repository Crisis Preparedness Kit	Amy Nurnberger, Doug Schuster, Riley Conroy
TG10	Building Mutual Aid Networks of Repositories	Reyna Broadhurst, Lesley Wyborn
TG11	Legal Consultation	Jens Klump

Global Data Resilience

Vision

All impactful Earth, space, and environmental science data is persistently available through and beyond periods of disruption.

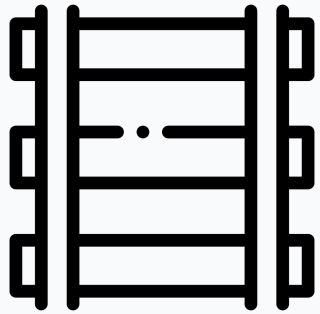
Mission

To ensure the long-term resilience of Earth, space, and environmental science data by establishing a sustainable federated network of repositories sharing capacity, coordinating effort, and building a collective safety net.

Principles

- Federated, not centralized (Subsidiarity)
- Lightweight and minimum-viable
- Inclusive and multilingual by design
- Committed voluntary participation
- Built for resiliency
- Shared values and trust as the foundation
- Data sovereignty respected
- Reciprocity

Four Tracks of the Roadmap



01

Preparedness & Response

What does a repository need to do to be prepared for and respond to a crisis?

02

Governance & Collaboration

How do we coordinate and manage a collaborative support network and consortium?

03

Sustainability & Partner Development

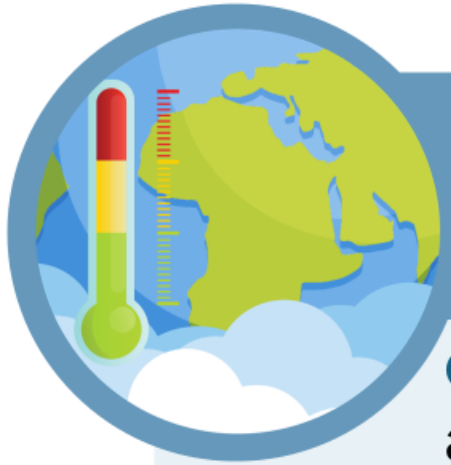
What are the business and organizational models that can sustain repositories and consortia? How do we implement them?

04

Rights

What are the legal, ethical, and sovereignty issues that need to be addressed in a federation? How should they be addressed?

Preparedness pilots



Atmospheric and Climate Data

in collaboration with NFDI Saving Endangered Data (SEND)

Goal: develop draft repository preparedness guidelines through actual data mirroring

Participants:

- National Center for Atmospheric Research (NCAR)
- PANGAEA, Germany
- German Climate Analysis Center (DKRZ)
- Centre for Environmental Data Analysis (CEDA), UK
- Texas Advanced Computing Center (TACC)



Seismology Data

in collaboration with FDSN: International Federation of Digital Seismograph Networks

In development for 2027



Risk Assessment Model

in collaboration with New York Climate Exchange

Goal: model a repeatable methodology for assessing data risk

Approach:

- Start with precipitation data as a test case
- Conduct a short workshop of experts
- Apply and refine a suite of tools to score datasets for their risk, resilience, and utility
- Create knowledge graphs showing the inputs and dependencies for the top datasets
- Repeat in other disciplines



Sustainability (Business Model Pilots)

Goal: to develop sustainable business/organizational models for **repositories** that can also contribute to the **overall network** and provide an adaptable model for others.

Led by Invest in Open Infrastructure (IOI) as an expert advisor and coach

Initial Participants:

- Biological and Chemical Oceanographic Data Management Office (BCO-DMO)
- Environmental Data Initiative (EDI)
- Consortium for Advancement of Hydrological Sciences Inc. (CUAHSI)/HydroShare



Governance & Collaboration

Formal governance structure deferred while we explore options and figure out what exactly we are governing and how to balance responsibilities and authority.

Meanwhile, **Coordination and Communication** happens in partnership with RDA, as a community-driven effort catalyzed by AGU.



Rights Activity

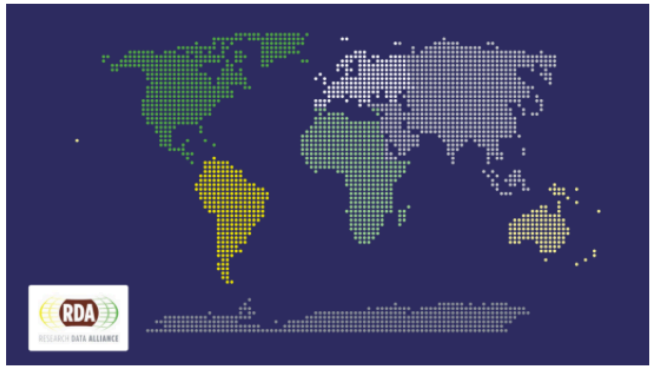
Exploring how we can foster "soft law" arrangements to raise the critical issues of data preservation, ethics, and national sovereignty expressed at an international level.

Incorporate established Indigenous data sovereignty plans and recommendations into the Governance and Preparedness Tracks as part of routine operations. (Planned to begin 2027).

RDA Global Data Resilience Homepage

https://www.rd-alliance.org/value_rda/global-data-resilience/

Global Data Resilience



The recent closure and dismantling of data infrastructure across the globe has motivated the need for the rescue, preservation, safeguarding, and perpetuity of data. More efforts are required to ensure data is accessible and not erased.

The Global Data Resilience (GDR) initiative for the Earth, space, and environmental sciences, stewarded by the American Geophysical Union (AGU), has undertaken efforts to strengthen and reestablish data resilience mechanisms and infrastructure, connecting researchers, organizations, and data stewards. Previous meetings served to secure commitment from data professionals and organizations, finalizing best practices for dataset mitigation, and articulating the outcomes, action items, and next steps to developing and implementing a global data resilience roadmap.

Sign up for the GDR Newsletter!

https://www.rd-alliance.org/global-data-resilience-initiative-form/

Thank You!

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