

Equitable Access and the Year of Open Science

Chelle Gentemann (NASA/IPA)

Yvonne Ivey (NASA)

What are the biggest barriers to adoption of open science?

<https://nasa.cnf.io/sessions/kzbb#!/dashboard>

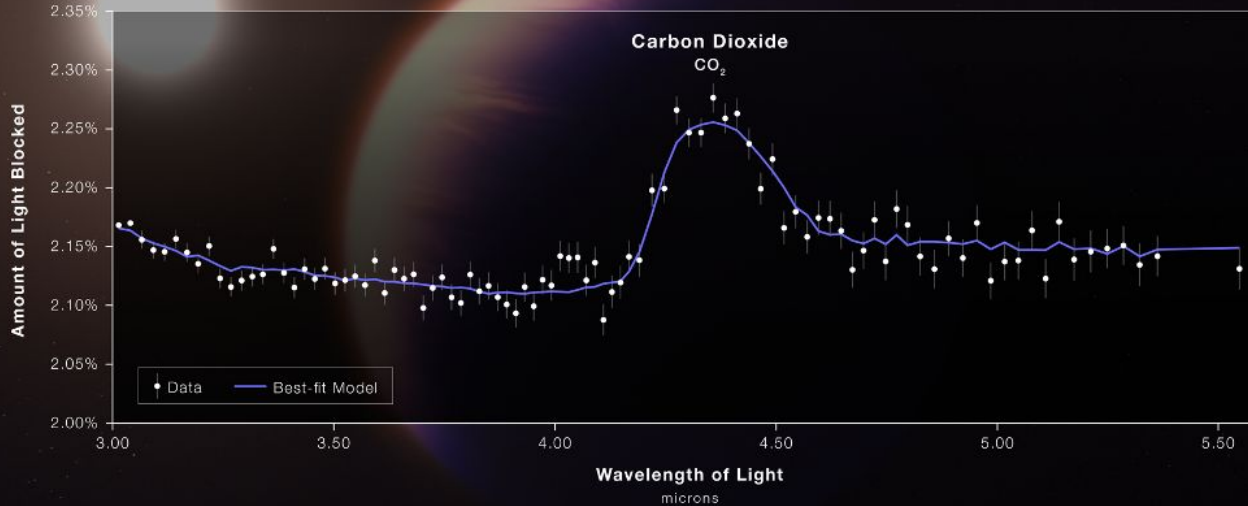




Astronomers see CO₂ on exoplanet for first time

HOT GAS GIANT EXOPLANET WASP-39 b
ATMOSPHERE COMPOSITION

NIRSpec | Bright Object Time-Series Spectroscopy



"NASA's open science guiding principles are centered in our Early Release Science work, supporting an inclusive, transparent, and collaborative scientific process."

*Dr. Natasha Batalha
(co-author)*

WEBB
SPACE TELESCOPE

<https://www.nature.com/articles/d41586-022-02350-2>



Is all of science
this awesome?



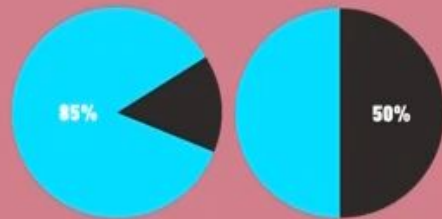
70%
of all scientific
publications
are locked behind
paywalls.



85%
of covid-19
related publications
are **open access.**



in contrast, **85%**
of covid-19
related publications
are **open access.**

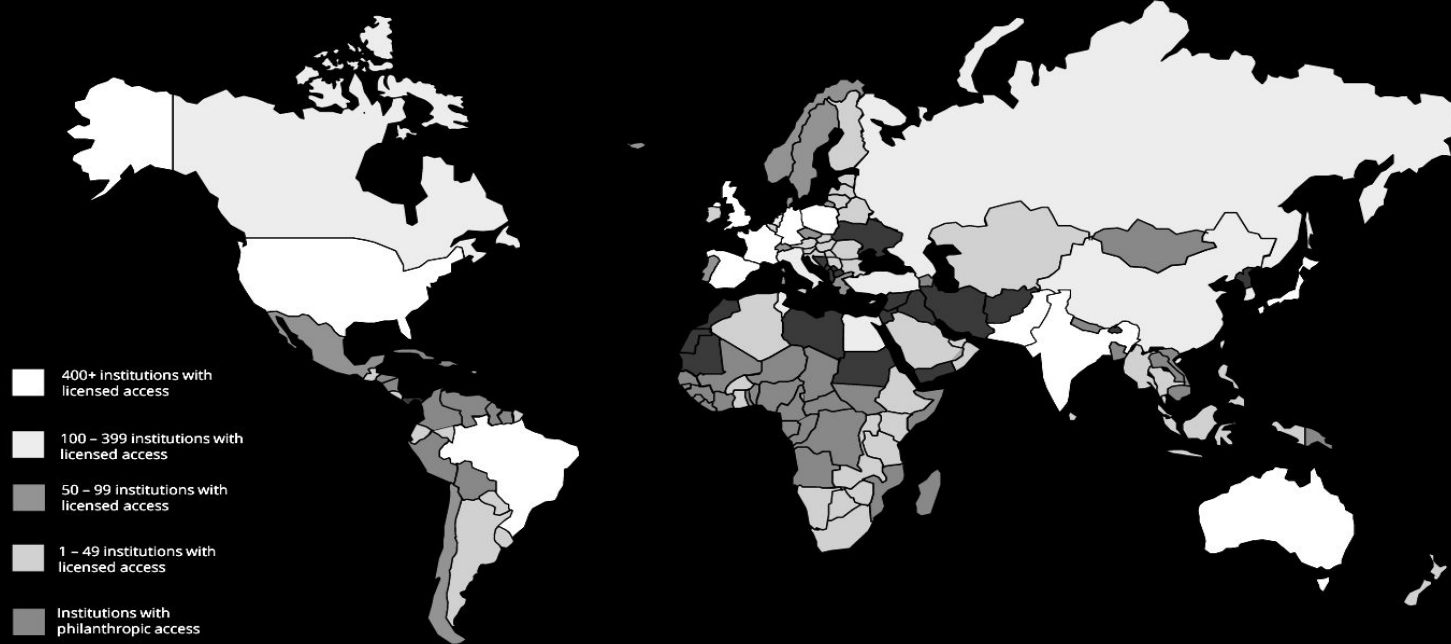


For climate
change **50%**
of the publications
are still locked behind
paywalls.



Can anyone participate?

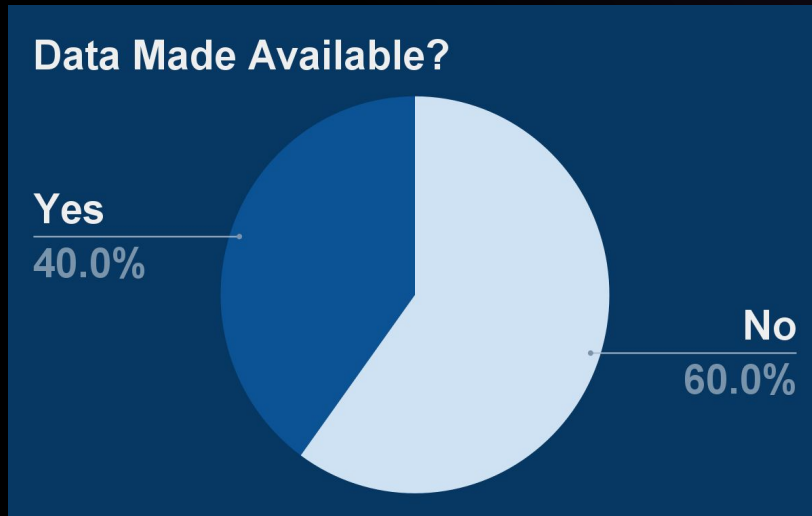
Access to journals worldwide via Wiley licenses





Can we build-on and extend results?

2011: AAAS Science Journal policy requires sharing data & software upon request; Tested 204 scientific papers after policy implemented:



<https://www.pnas.org/doi/full/10.1073/pnas.1708290115>





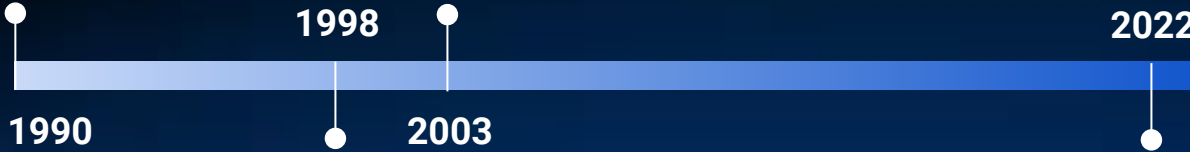
Closed Science is slow to correct errors

Global cooling in upper atmosphere reported

Analysis of satellite data showed cooling, therefore global warming is a farce

New version released

Closed code. Took 5 years & lots of funding to a different group to re-do analysis



Error in analysis discovered

Authors didn't account for the satellite height and local time correctly and introduced an artificial cooling trend

New NASA Scientific Information Policy SPD-41a

Mission software must be open

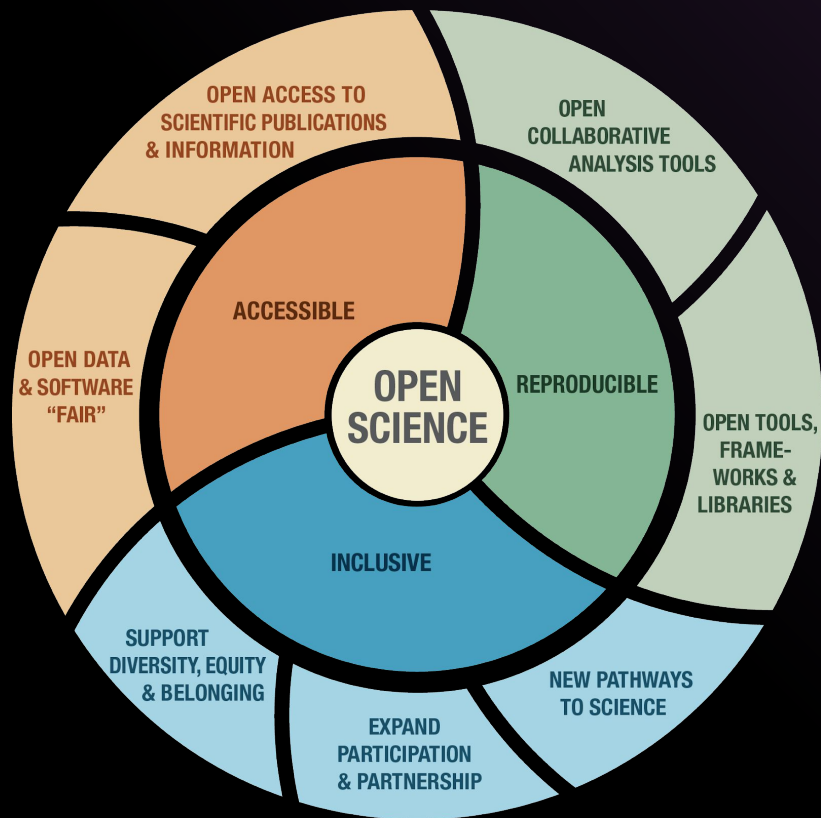


What can we do
about this?





Open Science is Accessible, Reproducible, and Inclusive



Creates research that is:

- Cited more
- Has a bigger impact
- Increases transparency
- More inclusive

Inclusive science means more:

- Collaborative projects
- Access to 'hidden knowledge'
- Equitable Systems
- Increased Participation





2023

NASA's Year of Open Science

NASA Transform to Open Science Mission

Dr. Chelle Gentemann, Science Lead
Yvonne Ivey, Equity Lead
Cyndi Hall, Community Coordinator
Isabella Martinez, Content Coordinator
Dr. Yaitza Luna-Cruz, TOPS Program Officer
Dr. Paige Martin, TOPS Program Officer
Dr. Sam Gabre, ARS, Science Advisor
Dr. Ryan McGranaghan,, Science Advisor

Kevin Murphy, Chief Science Data Officer SMD
Katie Baynes, Deputy Chief Science Data Officer SMD
Dr. Steve Crawford, Science Policy Officer SMD
Dr. Elena Steponaitis, SMD Development Program Executive
Amy (Uyen) Truong, Chief Science Data Office Coordinator



The White House announces The 2023 Year of Open Science

NASA ♦ NSF ♦ NOAA ♦ DOE ♦ GSA ♦ NEH ♦ NIH ♦ NIST ♦ SI ♦ USDA ♦ USGS

A multi-agency initiative across the federal government to spark change and inspire open science engagement through events and activities that will advance adoption of open science.

Factsheet: <https://www.whitehouse.gov/ostp/news-updates/>

Nature: <https://doi.org/10.1038/d41586-023-00019-y>

Website: <https://open.science.gov/>



A spark to change the culture of science



Definition:

Open science is the principle and practice of making research products and processes available to all, while respecting diverse cultures, maintaining security and privacy, and fostering collaborations, reproducibility and equity.

Goals:

1. Develop a strategic plan for open science;
2. Improve the transparency and equity of reviews;
3. Account for open science activities in evaluations; and
4. Engage underrepresented communities in the advancement of open science





The NASA Open Science Certificate identifies researchers who use key open science skills

- Able to use digital tools to perform open science (e.g., ORCID, Zenodo, Github accounts)
- Familiar with data management and software management plan best practices and resources
- Grow connections across a community of open science practitioners

Open Science 101: A community-developed introduction to open science with inclusivity, accessibility, and diversity at the forefront.



“Somewhere,
something incredible
is waiting to be known.”
-Carl Sagan

