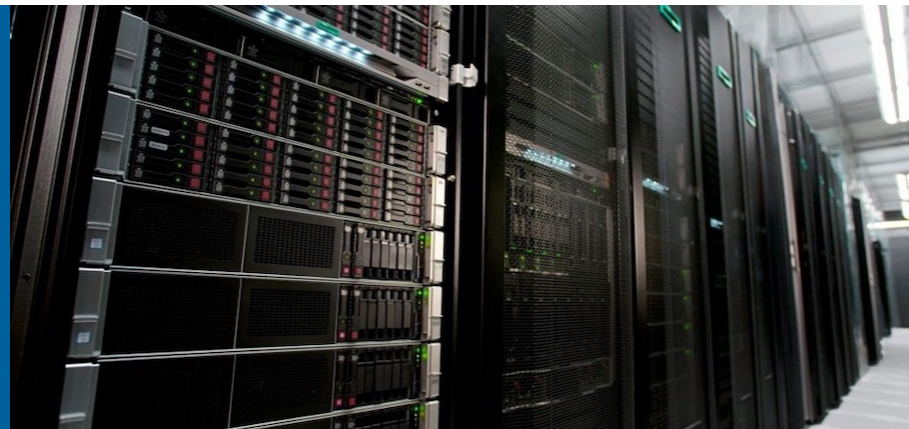


# OPEN SCIENCE AND EQUITABLE RESEARCH OPPORTUNITIES, INCLUDING EQUITABLE ACCESS TO DATA AND SOFTWARE CURATION RESOURCES

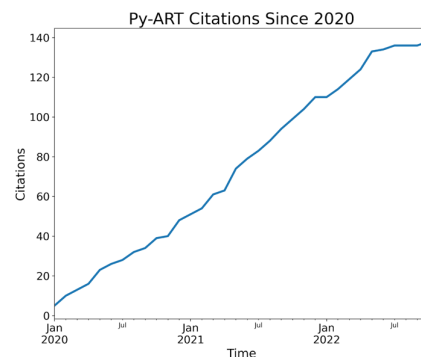
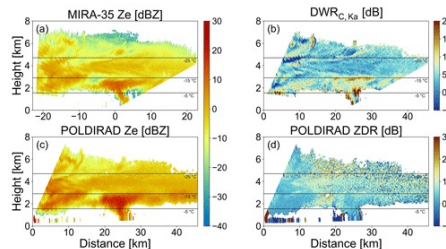


**SCOTT COLLIS**  
Head, Geospatial Computing, Innovations and Sensing  
Department.  
Senior Fellow, Northwestern Argonne Institute for Science  
and Engineering.

# WHO AM I?

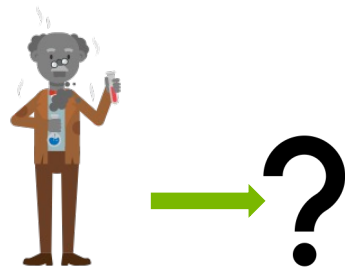
## Open Scientist and ARM's new Workforce Development Coordinator


- I became interested in open science when I moved to the USA in 2010 and got introduced to community software in 2012.
- Lead for the Python ARM Radar Toolkit. Reproduceable radar workflows.
- Now leading workforce development for DOE-ARM.
- ESGF2 server side compute co-lead. Sustainable workflows for CMIP6




Tetoni, E., Ewald, F., Hagen, M., Köcher, G., Zinner, T., and Groß, S.: Retrievals of ice microphysical properties using dual-wavelength polarimetric radar observations during stratiform precipitation events, *Atmos. Meas. Tech.*, 15, 3969–3999, <https://doi.org/10.5194/amt-15-3969-2022>, 2022.

# REPRODUCIBILITY AND REUSABILITY



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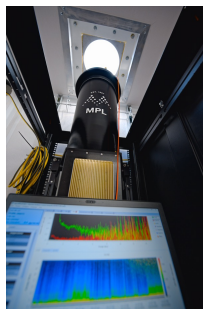
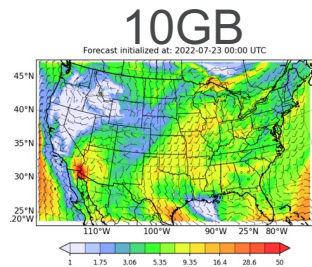
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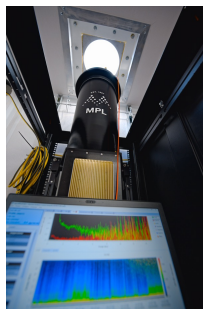
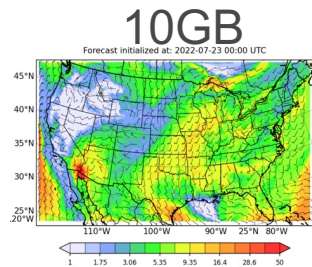
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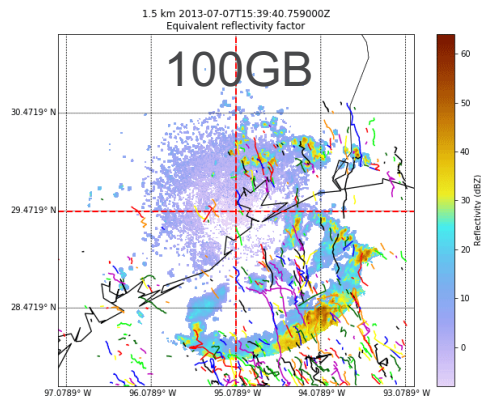
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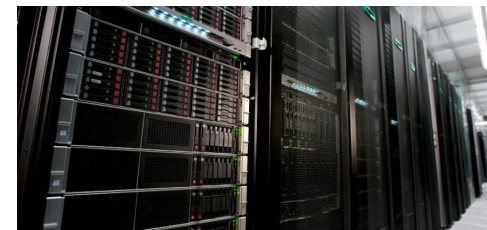
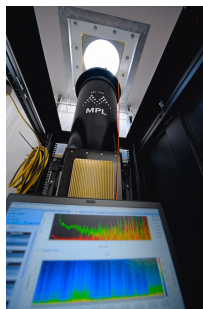
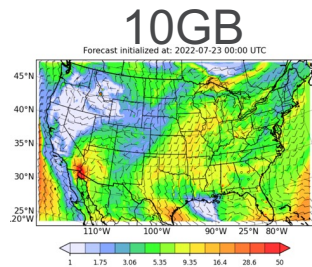
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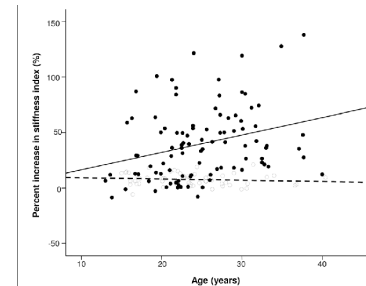
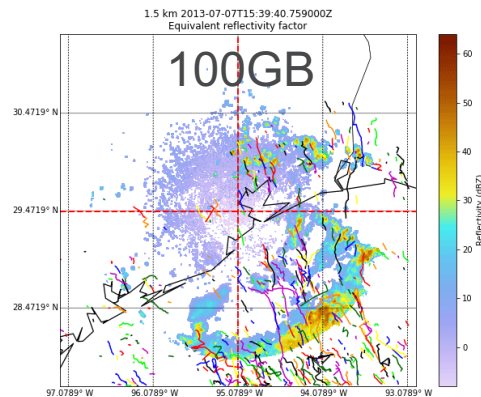
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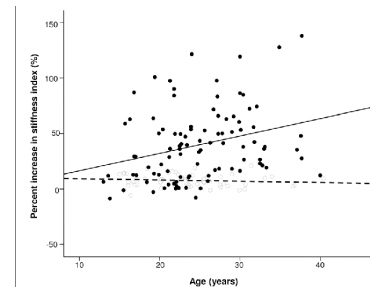
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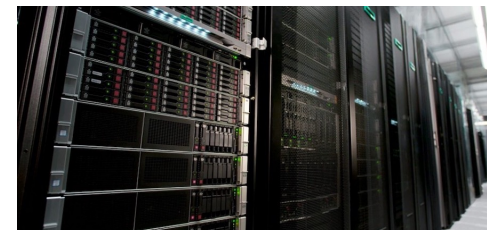
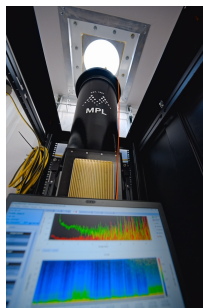
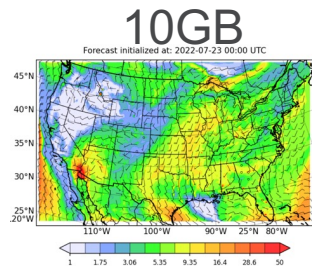
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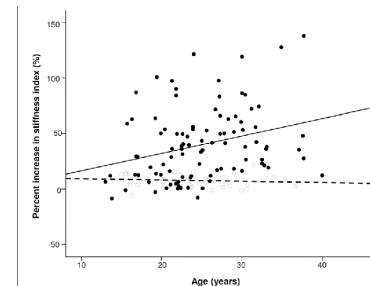
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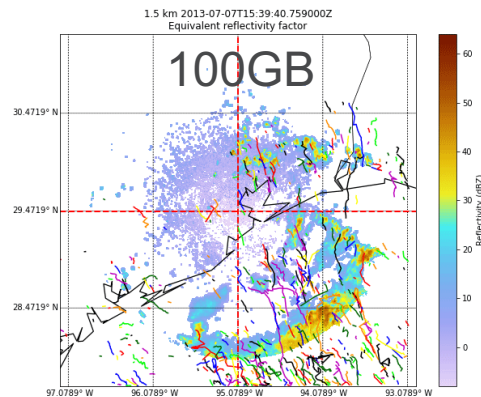
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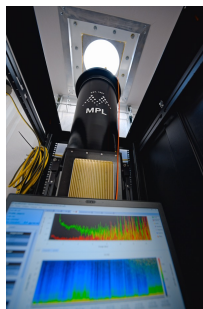
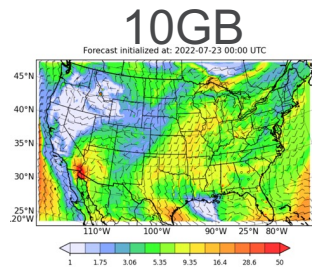
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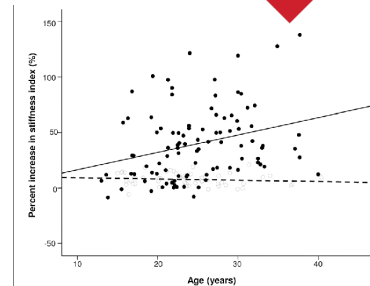
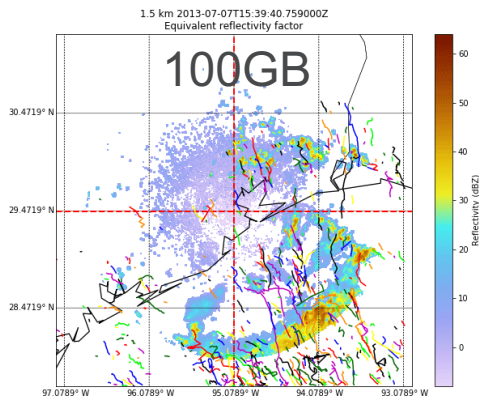
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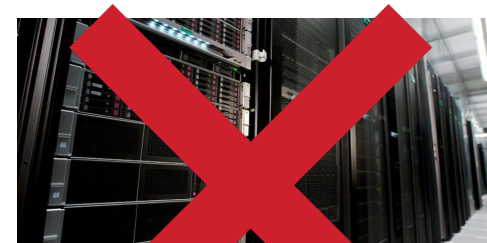
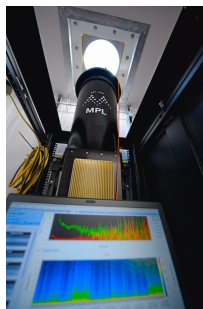
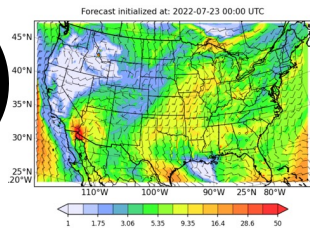
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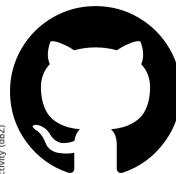
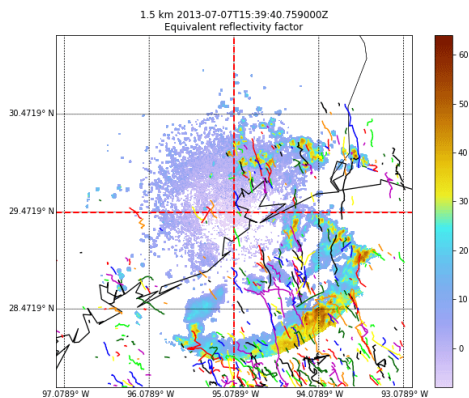
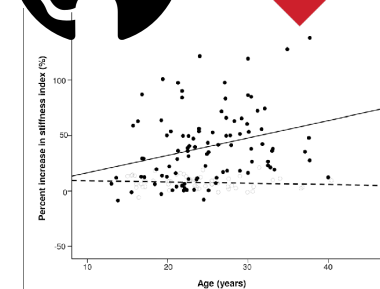
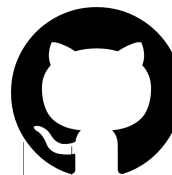
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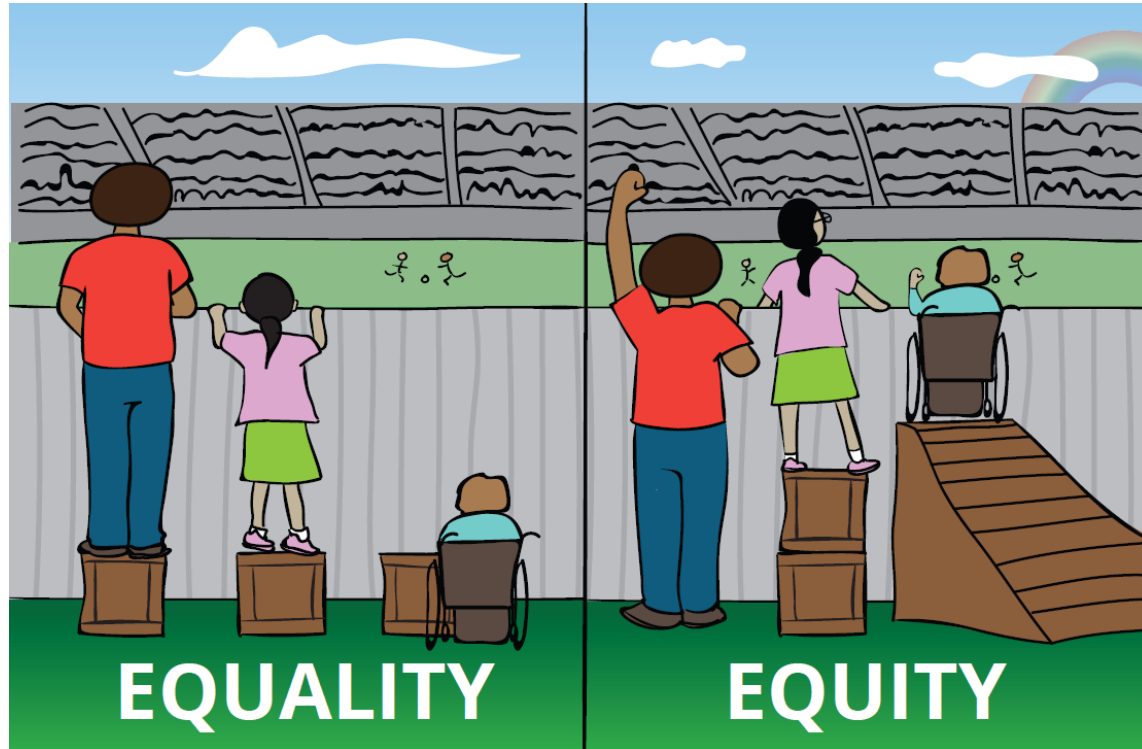
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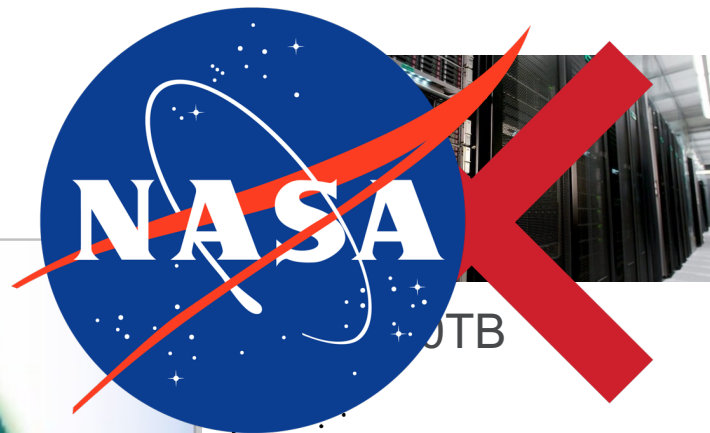
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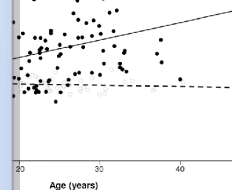
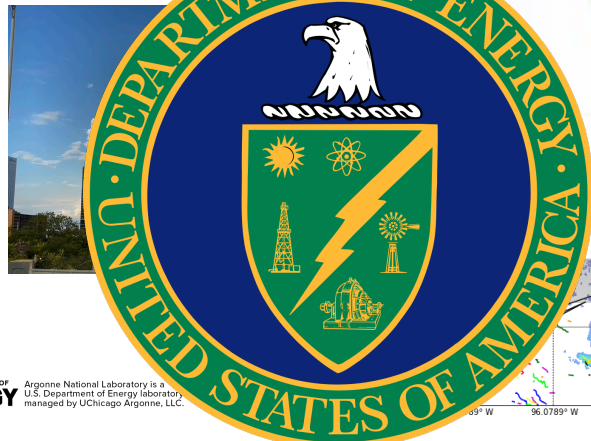
# But what about Equity?




# EXECUTABLE WORKFLOWS



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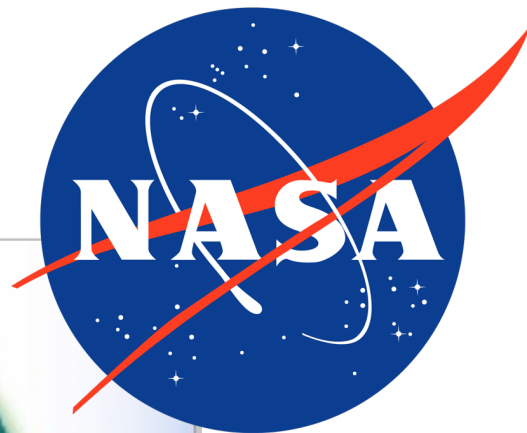
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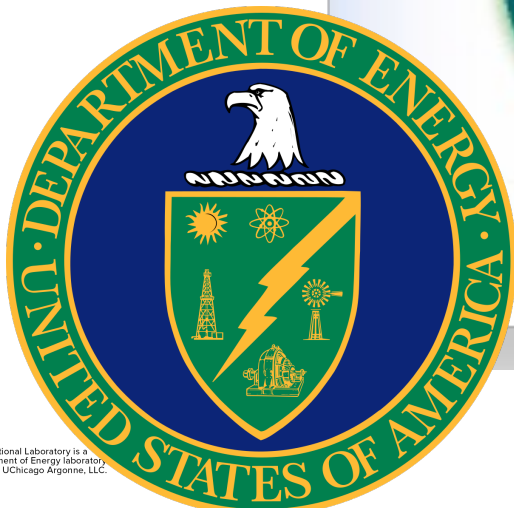
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# HOT OFF THE PRESSES



EXECUTIVE OFFICE OF THE PRESIDENT  
WASHINGTON, D.C. 20503



Agencies should balance priorities to ensure that resources are allocated for agency-specific, mission-driven R&D, including discovery-oriented research and use-inspired research, while at the same time focusing resources, where appropriate, on the following multi-agency R&D and STEM education activities that cannot be addressed by a single agency.

M-22-15

July 22, 2022

MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

FROM: SHALANDA D. YOUNG *Shalanda D. Young*  
DIRECTOR  
OFFICE OF MANAGEMENT AND BUDGET

*Alondra Nelson*  
DR. ALONDRA NELSON  
DEPUTY ASSISTANT TO THE PRESIDENT  
PERFORMING THE DUTIES OF THE DIRECTOR  
OFFICE OF SCIENCE AND TECHNOLOGY POLICY

SUBJECT: Multi-Agency Research and Development Priorities for the FY 2024 Budget

- Preparing for and preventing pandemics
- Reducing the death rate from cancer by half
- Tackling climate change
- Advancing national security and technological competitiveness
- Innovating for equity
- Cultivating an equitable STEM education, engagement, and workforce ecosystem
- Promoting open science and community-engaged R&D

The following sections describe in greater detail the motivation and priorities within these seven domains.

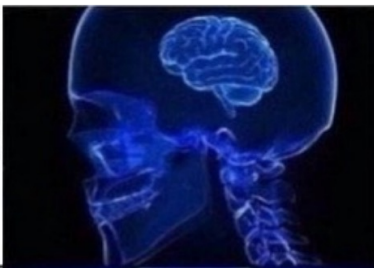
Agencies should seek out public participation in R&D programs wherever possible. Community participation in the scientific endeavor enriches and extends the benefits to the Nation, can increase public trust in science, and leads to more innovative research of all kinds, including research that addresses the needs of diverse communities. Examples of public participation in R&D include open science, which broadens public access to scientific data and publications, and participatory modes of research, such as community-based datahubs that give members of the American public access to Federal resources and data, as well as community-engaged research that respectfully provides opportunities for the public, especially those historically excluded from the scientific enterprise, to contribute to the development of research questions.

# EQUITABLE OPEN SCIENCE IS GOOD FOR ALL

## Share Workflows

- Increasingly we are using more and more complex tools.
- Sharing all data to achieve reproducibility is burdensome.
- Sharing workflows has dual benefits of less G/T/PB and also more reusability.
- True equity = Cross agency or agency duplicated HPC+Cloud facility for executable workflows.

**CLOSED SCIENCE**



**SHARING DATA**



**SHARING WORKFLOWS**



**PROVIDING EQUITABLE ACCESS TO WORKFLOWS!**





# THANK YOU!

[SCOLLIS@ANL.GOV](mailto:SCOLLIS@ANL.GOV)

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