



National Aeronautics and
Space Administration



A NASA OPEN-SOURCE SCIENCE MISSION: **TOPS: TRANSFORM TO OPEN SCIENCE**

NASA HQ TOPS Core Team

Dr. Chelle Gentemann, TOPS Program Scientist
Yvonne Ivey, TOPS Project Manager
Cyndi Hall, TOPS Community Coordinator

NASA HQ OSSI Team

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Christian Reyes, OSSI Coordinator
Dr. Yaitza Luna-Cruz, OSSI/TOPS Science Coordinator
Dr. Elena Steponaitis, Chief Science Data Office Program Executive

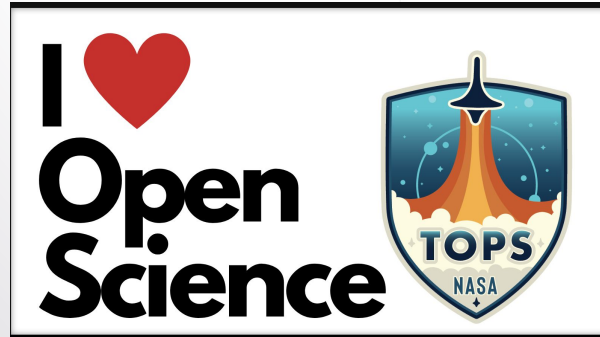
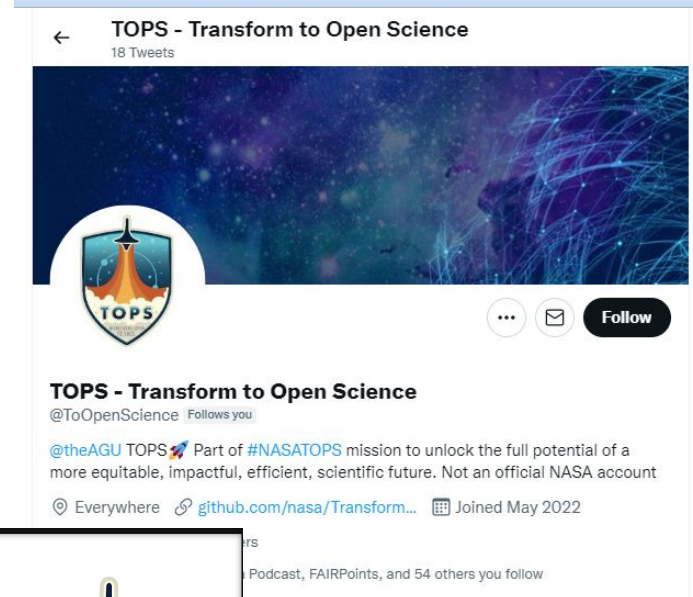




Welcome!

TOPS has a new Twitter presence!

We are encouraging people to use **#NASATops** and **#IHeartOpenScience**





Code of Conduct

Expected Behavior

All participants are to...

- Be treated with respect and consideration, valuing a diversity of views and opinions
- Be considerate, respectful, and collaborative
- Communicate openly with respect for others, critiquing ideas rather than individuals
- Avoid personal attacks directed toward other participants
- Be mindful of your virtual surroundings and of your fellow participants
- Alert a host if you notice a dangerous situation or someone in distress
- Respect the rules and policies of the virtual meeting space

Unacceptable Behavior

- Harassment, intimidation, or discrimination of any form will not be tolerated
- Physical or verbal abuse of any participant
- Examples of unacceptable behavior include, but are not limited to, verbal comments related to gender, sexual orientation, disability, physical appearance, body size, race, religion, national origin, inappropriate use of nudity and/or sexual images in the meeting space or in presentations or threatening or stalking of any participant.
- Disruption of proceedings, panels, discussions, and/or lightning talks.



Code of Conduct (Continued)

Expected Behavior

- Anyone requested to stop unacceptable behavior is expected to comply immediately.
- Hosts may take any action deemed necessary and appropriate, including immediate removal from the meeting without warning.

Reporting Unacceptable Behavior

- If you are the subject of unacceptable behavior or have witnessed any such behavior, please immediately notify a meeting host.
- Notification should be done by contacting a host via direct chat or emailing your concern to Chelle Gentemann chelle.gentemann@nasa.gov
- Anyone experiencing or witnessing behavior that constitutes an immediate or serious threat to public safety is advised to contact 911 or your local emergency number.



Submit Feedback or Suggestions

Your inputs are essential to the success of our mission. Please feel free to submit questions, feedback, or suggestions via the feedback tool.

You can use the QR code to access the feedback tool





Introduction

Chelle Gentemann

NASA HQ

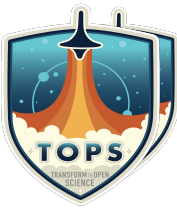
Transform to Open Science

Program Officer



Agenda

<i>Time (ET)</i>	<i>Agenda Item</i>	<i>Speaker</i>
1:00 pm	Welcome and Review of Code of Conduct	Cyndi Hall
1:15 pm	Introduction	Chelle Gentemann
1:20 pm	TOPS OpenCore Curriculum overview	Shelley Stall, Lauren Parr (AGU)
1:40 pm	Q & A	TOPS Team
1:55 pm	Announcement and Next Steps	Cyndi Hall



Leading the Path to Open-Source Science

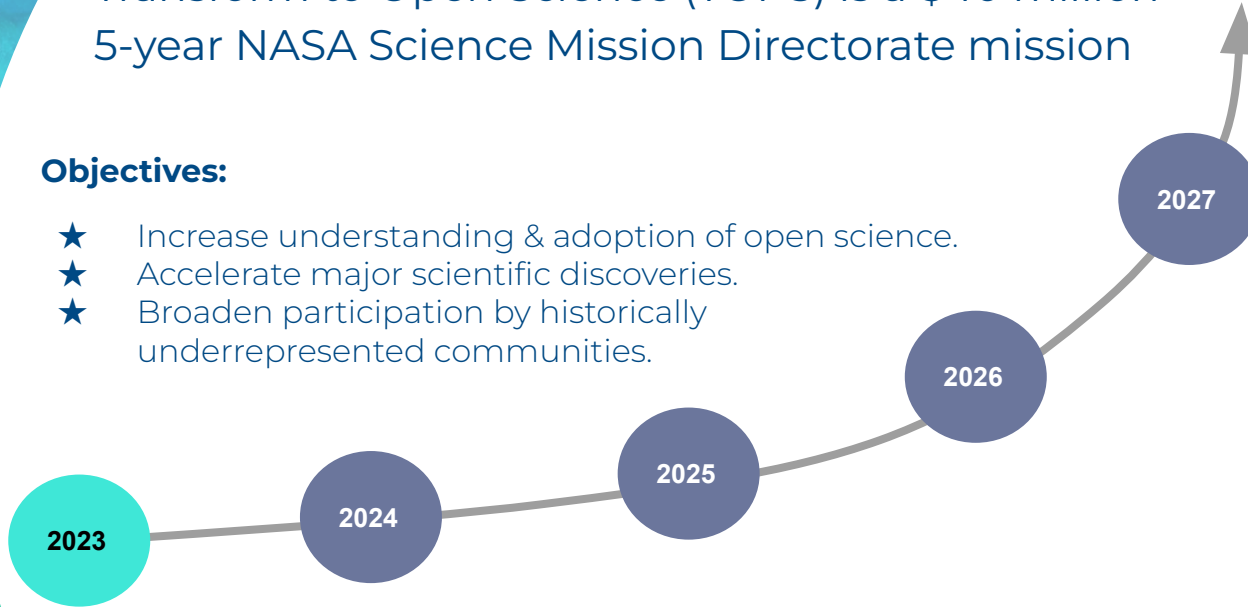
Transform to Open Science (TOPS) is a \$40 million*
5-year NASA Science Mission Directorate mission

Objectives:

- ★ Increase understanding & adoption of open science.
- ★ Accelerate major scientific discoveries.
- ★ Broaden participation by historically underrepresented communities.

Goals for 2027:

- ★ 20K earn Open Science Badge
- ★ 5+ major discoveries
- ★ Increase participation of underrepresented groups by 2x



***Year of Open
Science***

*pending appropriations

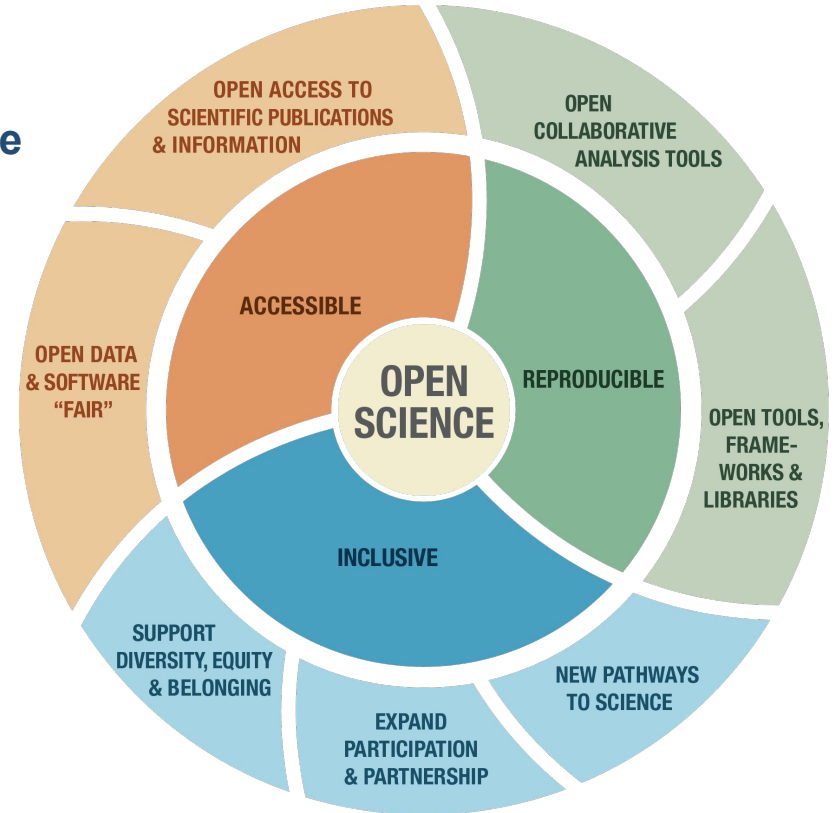
Open Science: Accessible, Reproducible & Inclusive...

Creates research that is:

- Cited more
- Creates a bigger impact
- Increases transparency
- Generates more scholarly collaborations

Inclusive science means more:

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



2023 is NASA's Year of Open Science



TOPS will be energizing and uplifting open science across the scientific community through:



Visibility

Publishing articles, appearing on podcasts, developing targeted communication that expands footprint

Integrating Open Science into themes at large-scale events and conferences



Capacity Sharing

Producing online, free, Open Science curriculum on Open edX

Hosting workshops, events, cohorts, science team meetings, hackathons

Constructing multiple pathways to Open Science Badge



Incentives

Developing Open Science Badge/Certification

Sponsoring high profile prizes and challenges

Establishing high profile awards in support of open science research



Moving toward Openness

Recognizing open science practices

Holding open meetings

Sharing hidden knowledge

Inclusive collaborations

2023 Year of Open Science

NASA has selected American Geophysical Union (AGU) to create *OpenCore* - the core modules for the TOPS open science curricula, provide visibility to TOPS, and organize *OpenCore* workshops at society meetings.



AGU Mission

To support and inspire a global community of individuals and organizations interested in advancing discovery in Earth and space sciences and its benefit for humanity and the environment.

AGU By the Numbers

AGU ADVANCING
EARTH AND
SPACE SCIENCE

agu.org



125,000+

worldwide experts to enthusiasts
in the Earth and space sciences



345,000+

social media
followers



51,000+

authors



24,000+

#AGU21
Fall Meeting
participants



826

editors and
associate editors



18,000+

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



National Aeronautics and
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A NASA OPEN-SOURCE SCIENCE MISSION:
TOPS: TRANSFORM TO OPEN SCIENCE

AGU

OpenCore Curricula

Open Science Curricula: *OpenCore*

There are basic skills that all scientists need....

but rarely are trained on

How do you share your research to maximize its impact?

- Basic open science skills
- Scientific discipline-agnostic



- Additional scientific discipline-specific, advance modules available

Open Science Curricula: *OpenCore*

OpenCore technical design



- Developed openly on [GitHub](#)
- Hosted on [Open edX](#)
- Easily discoverable and accessible
 - Workshops, summer schools, virtual cohorts, complete independently
- Design principles
 - Basic open science skills
 - Scientific discipline-agnostic
 - High quality, interactive Open Online Course
 - Free, public, open



Curriculum Plan: OpenCore

OpenCore Open Science Curricula: 5 Modules Organized as a Scientific Workflow

What is open science, why does it benefit me, and why does it benefit the greater scientific community?



How to share software



Best practices for sharing all results and analysis, as well as peer reviewing

ETHOS OF OPEN SCIENCE

OPEN TOOLS & RESOURCES

OPEN SOFTWARE

OPEN DATA

OPEN RESULTS



How to use popular open science tools



How to effectively use and share open data



Complete All 5 & earn TOPS Open Science Badge & Certification

Earn Micro-Badges at Each Module



Fast Pass Option for Participants With Existing Knowledge



ETHOS OF OPEN SCIENCE

OPEN TOOLS & RESOURCES

OPEN SOFTWARE

OPEN DATA

OPEN RESULTS



Participants can demonstrate proficiency in order to skip modules

Ethos of Open Science

Module Topics:

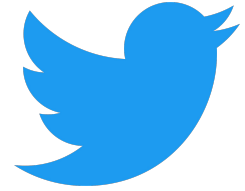
- What is open science
- Why open science?
 - Benefits and examples of open science
- Equity and open science
- Barriers to open science



Open Tools and Resources

Module Objectives:

- Why use open tools?
- Introduction to Open Science communities
 - Introduce places to ask questions, build community: StackOverFlow, GitHub discussions, Twitter, Discourse
- Introduction to popular tools and resources for Open Science
 - GitHub
 - Jupyter Lab
 - Zenodo
 - Open Science Framework



Open Results

Module Objectives:

- Why open results?
 - Amplifying the impact of your research
 - How sharing results and getting credit is changing
 - Equity and open access
- Sharing results
 - Preprints
 - Computational notebooks
 - Blogs, social media, video tutorials...
- Open Science as advocacy (e.g., your own rights as an author, advocating for open access for others)



Curriculum Modules Leads, Content SMEs

Role	Amount	Filled By	Key Details
Curriculum Module Leads (5)	1 for each module	Volunteers (Participation Support)	<ul style="list-style-type: none"> Responsible for design/curation of module Module curation facilitator Responsible for ensuring diverse perspectives that will be respected and included during module design Volunteer as Maintainer with the TOPS Core Team.
Content SMEs (25-35)	5 to 7 per module	Volunteers (Participation Support)	<ul style="list-style-type: none"> Contribute to brainstorming, discussion, and curation for one module May participate in the creation/recommendation of novel teaching materials for module Should bring diverse, scientific perspectives and life experiences for consideration Volunteer as Maintainer with the TOPS Core Team.

- **Curriculum Module Lead:** \$10,000 and acknowledgement
- **Content Subject Matter Experts (SMEs):** \$3,000 and acknowledgement

Curriculum Module Leads

1. Yo Yehudi - Ethos of Open Science
2. Sara El-Gebali - Open Data
3. James Powell, Cameron Riddell - Open Software
4. Shilaan Alzahawi - Open Science Tools and Resources
5. Natasha Batalha - Open Results

https://github.com/nasa/Transform-to-Open-Science/blob/main/docs/Area2_Capacity_Sharing/opencore/OpenCore_leads.md

Sprint Timeline

June 4-26 *Selection of Content Subject Matter Experts, Prep for Curriculum Sprint*

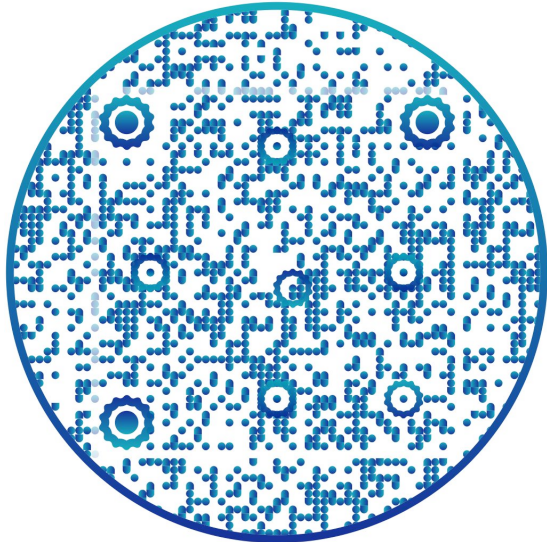
**June 27-July 1 Curriculum Sprint, Core Team, Modules Leads,
Content Subject Matter Experts**

July 2-Aug 8 *Reconcile, Test*

August 9-11 Post-Sprint, Core Team and Leads

August 12- *Post Sprint Review*

Curriculum Development Team Call



Scan this QR code or visit to
apply:

<https://bit.ly/AGUTOPSSME>

We seek participation from individuals actively engaging with Open Science communities, open software and data, and related practices to serve on a TOPS Curriculum Development Team.

- Participation in a series of virtual meetings and sprints
- Curriculum Module Leads: In-person working sessions in Washington, DC (module development leads)
- Please fill out this form to share your interest, will close on June 15, 2022.

Testing, Management, and Maintenance: Continued Engagement, Community Involvement

Curriculum Testing Approach

- Organization and management of community testing (Mid July)
- Module testing with community members
 - Early career researchers
 - Participant support
- Content testing
- Iterative updates guided by Learning Management System data analytics

Curriculum Management and Maintenance

- Transition of subject matter experts to maintainers
- Each module maintainer coordinates feedback and recommends updates
- Maintainers will be supported by the American Geophysical Union (AGU) TOPS Team
- Make use of workflow, participation best practices
- Credit for all contributors throughout development work

Curriculum Development Roadmap

Year 1: OpenCore development and deployment

Year 2-5: Evolve, Engagement, Assess

- Outreach, training, community engagement, assessment
- Updates to OpenCore and support deployment of new modules



Q&A

Learn more and
collaborate with us!



TOPS Email List



TOPS Website