National Aeronautics and Space Administration

NASA

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

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Yvonne Ivey, TOPS Project Manager
Cyndi Hall, TOPS Community Coordinator
Dr. Karla Mastracchio, TOPS Communication Strategy
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Kevin Murphy, Chief Science Data Officer SMD
Katie Baynes, Deputy Chief Science Data Officer SMD
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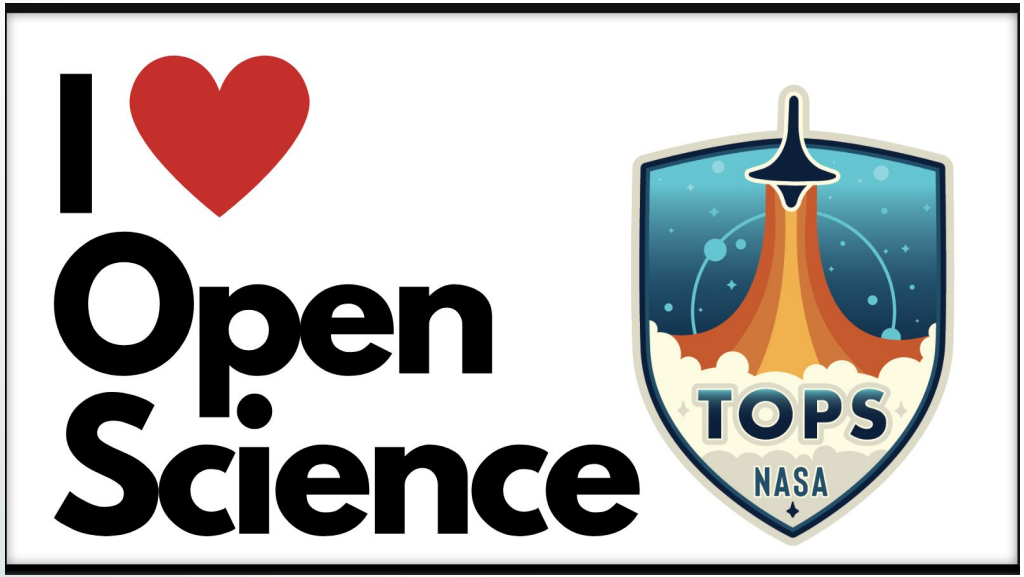
Amy (Uyen) Truong, Chief Science Data Office Coordinator
Christian Reyes, OSSI Coordinator

Shelley Stall, Vice President, Data Leadership, AGU
Lauren Parr, Senior Vice President, Meetings & Learning, AGU
Chris Erdmann, Assistant Director, Data Stewardship,AGU
Laura Lyon, Program Manager, Science, AGU
Brooks Hanson, Executive Vice President, Science, AGU

Welcome!

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. Throughout this week's panel, please feel free to submit questions, feedback, or suggestions via the feedback tool.

You can use the QR code to access the feedback tool

Agenda

Time (ET)	*Agenda Item*	*Presenter*
12:00 pm	Introduction and Review of Code of Conduct	Karla Mastracchio
12:05 pm	Expectations of Panelist	Chelle Gentemann
12:10 pm	Recap of Day One	Yvonne Ivey
12:20 pm	Overview of OpenCore Curriculum	Shelley Stall & Chelle Gentemann
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2:55 pm	End of Day Wrap Up	Yvonne Ivey

Expectations of Panelists

Meeting Objectives:

🚀Introduction to TOPS plans

🚀Key preparation for 2023 Year of Open Science

🚀Engagement Approach and Opportunities

Panel Review: Individual reviews synthesized into a panel review.

5/23/22: We will provide panelists with a short written summary of each day, via a google doc.

6/17/22: Panel will provide written feedback in the google doc. Please work with each other to provide constructive feedback on our future work.

Day One Recap

Overview of OpenCore Curriculum

American Geophysical Union
TOPS Team

Shelley Stall
Vice President, Data Leadership

Lauren Parr
Senior Vice President, Meetings and Learning

Chris Erdmann
Assistant Director, Data Stewardship

Laura Lyon
Program Manager, Science

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You!

We Need Your Help!

Our goal is to design an Open Science course following the principles of open science - involving the community in the creation process.

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

Earn Micro-Badges at Each Level

Complete All 5 & earn TOPS Open Science Badge & Certification

Ethos of Open Science

Module Topics:

- History of research, publication, and merit.
- Global/regional perspectives
- Community science
- Definitions of Open Science, FAIR principles
- Benefits and examples of Open Science
- The intersection of Open Science and metrics/altmetrics
- Overview of the motivation behind Open Science frameworks and workflows

Key Terms:

Open Science, open data, open source, open access, interdisciplinary, equitable, citizen science, open research, open scholarship, reproducibility and replicability, peer-review, FAIR principles, metrics [in context of scientific merit], altmetrics, openness, transparency, rigor, computational provenance

Suggested Activities:

Discussion: Take an “open” policy held by your (or public any) institution and examine it as a group. Who is it for? Who does it benefit? How “open” is it truly?

Open Tools and Resources

Module Objectives:

- Open Science as advocacy (e.g., your own rights as an author, advocating for open access for others)
- Introduction to popular tools and resources for Open Science
- Introduction to Open Science communities

Key Terms: Virtual research environments (VRE), advocacy, metadata, data repository, executable environments, Persistent Identifiers (PIDs)

Suggested Activities:

Module should include hands-on experience with Open Science tools.

Examples: Open Science Framework, AsPredicted, GitHub, GitLab, Bitbucket, Jupyter Notebooks, KnitR, Sweave, EDUAT, Harvard Dataverse, Zenodo, Dryad, GitHub, Figshare, or Protocols.io, mybinder, Rocker or Code Ocean

Open Software

Module Objectives:

- Sharing software as a form of improving impact, reproducibility and and replicability of research
- Code repositories and software repositories
- Importance of documentation to open software
- How to attribute/cite open software
- Quality requirements for sharing code
- Choosing an appropriate license

Key Terms: open software, source vs. compiled code, permissive vs. non-permissive license, version control, README, documentation, code repository vs. software repository

Suggested Activities:

Practice with common code-sharing tools

Creating a README

Choosing a license

Discussion: Why is open software critical to the democratization of science and for advancing diversity and equity in science and research?

Open Data

Module Objectives:

- FAIR principles and data, including what to do with sensitive and/or proprietary data
- Data citation and metadata.
- Importance of tracking changes and keeping copies
- Identification of a trusted, community-accepted repository

Key Terms: Copyright, license, CC-BY and CC0 license, data management plan, metadata, machine-readable persistent identifiers (PID), findable (data), accessible (data), interoperable, reusable (data), privacy, sensitivity, de-identification, mediated access, crawland mine [research articles], analytical reproducibility, dataflow

Suggested Activities:

Choosing a copyright

Data management plan

Citing data

Open Discussion: Rewarding the accumulation of high-quality data as noteworthy accomplishments

Open Results

Module Objectives:

- Working openly as a research/lab team
- Preserving and sharing all digital objects related to research
- Open and accessible research benefits
- Democratization
- Credit for FAIR data and software
- Digital Presence
- Linked Research

Key Terms: team sharing, quality checks, computational notebooks, persistent identifiers, ORCID, DOI, rewards and recognition, code of conduct, lab guidelines, data and digital management plans

Suggested Activities:

Discussion: How do we plan for open results during the grant writing process and beyond?

Open Discussion

Break until 1:20

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AGU
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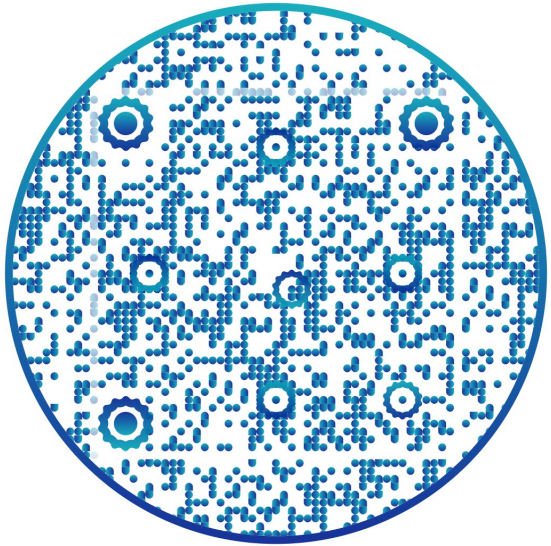
TOPS
Engagement of Open Science Community - OpenCore Curriculum Development

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 May 25, 2022.

Curriculum Modules Leads, Content SMEs

Role	Amount	Filled By	Key Details
Curriculum Module Leads (5)	1 for each module	Volunteers (Participation Support)	• 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)	• 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 SMEs:** $3,000 and acknowledgement
- **Maintainer:** Additional support/acknowledgement

Curriculum Module Lead (5) Role Responsibilities

- Up to 1-year commitment to participation
- Pre-sprint meeting **in-person* participation: June 1-3, 2022**
- Content Development Sprint **virtual participation: June 27 - July 1, 2022**
- Post-sprint meeting **in-person* participation: August 9-11, 2022**
- Providing verbal and/or written feedback at these meetings and follow up activities
- Sharing concrete and testimonial examples of conducting and/or supporting Open Science principles and practices, particularly regarding educational approaches, tools, and/or resources

**in accordance with state, local, and Federal COVID protocols*

Content SMEs (25-35) Role Responsibilities

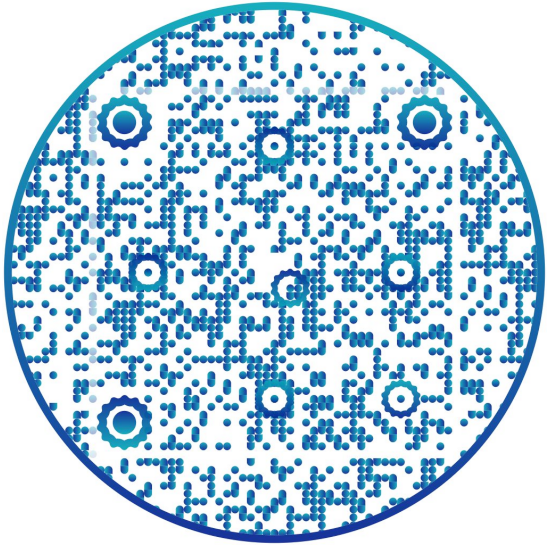
- Up to 1-year commitment to participation
- Content Development Sprint **virtual participation: June 27 - July 1, 2022**
- Providing verbal and/or written feedback on TOPS materials at these meetings and follow up activities
- Sharing concrete and testimonial examples of conducting and/or supporting Open Science principles and practices, particularly regarding educational approaches, tools, and/or resources

Maintainer
Role Responsibilities

- Voluntary role to support the sustainment of the curriculum to deployment
  - Module maintainer coordinates feedback (issues, pull requests)
- Moderate and merge overarching content beyond automated and straightforward changes (e.g., spelling correction).
- 5-10 members

Curriculum Development Team Call

- Background
- Motivation
- Module
- Role
- Availability
- CV
- Teaching/Training Example



https://bit.ly/AGUTOPSSME

Selection Approach

Individuals with diversity of experience, including diversity with respect to race, gender, geography, country of citizenship, academic background, profession, and areas of expertise.

In addition to curriculum knowledge/experience:

- Participation or leadership in Open Science communities;
- Participation or leadership in diverse communities dedicated to advancing diversity in STEM, diversity in academia; and,
- Participation or leadership in community organizing around equity and inclusion in STEM, climate justice, or citizen science.
- Knowledge of Open Science pedagogy, training approaches, and/or tools.

Open Discussion

https://bit.ly/AGUTOPSSME

Break until 2:20

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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 and notebook testing (using rubrics)
- 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 pull requests
- Maintainers will work with the AGU TOPS Team
- Make use of workflow, participation best practices
- Efficiency in mind, minimize workload
- Credit for all contributors throughout development work

Curriculum Development Roadmap

Year 1: Curriculum development and deployment

Year 2-5: Engagement, outreach, training to community

- Minor feedback (via issues, pull requests) via GitHub
- Major feedback will drive curriculum extensions

AGU FALL MEETING

Chicago, IL & Online Everywhere

12–16 December 2022

Year of Open Science

AGU ADVANCING EARTH AND SPACE SCIENCE

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AGU FALL MEETING

Chicago, IL & Online Everywhere
12–16 December 2022

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TOPS

AIP

NASA Year of Open Science

AMS American Meteorological Society

AAAS

EGU European Geosciences Union

THE GEOLOGICAL SOCIETY OF AMERICA

AIAA

Frontiers in Hydrology

...AND MORE

Open Discussion

WRAP UP