



National Aeronautics and
Space Administration

OSDMP and SPD-41a

Planetary Science
Division Update

Dr. Robin Fergason
PSD Planetary Data Officer

Lunar and Planetary Sciences Conference
March 12, 2024

Welcome everyone!
The talk will begin at 11:30 CDT



Agenda

- 01** PDE Team
- 02** Open Science
- 03** ROSES-24 Highlights

- 04** SPD-41a Policy Review
- 05** OSDMP



Planetary Data Ecosystem – Org Chart



PSD Director – Lori Glaze
PSD Deputy Director – Eric Ianson



Planetary Data
Officer – Robin
Ferguson

PDS Deputy
Program
Scientist - K.C.
Hansen

PDE Program
Scientist – Becky
McCauley Rensch

PDE Chief
Scientist –
Moses
Milazzo

PDE Program
Executive –
Meagan
Thompson

PDS Program
Executive -
Bo Trieu



We are all available to answer questions - hq-pde@mail.nasa.gov

Open Science, Data, and Software

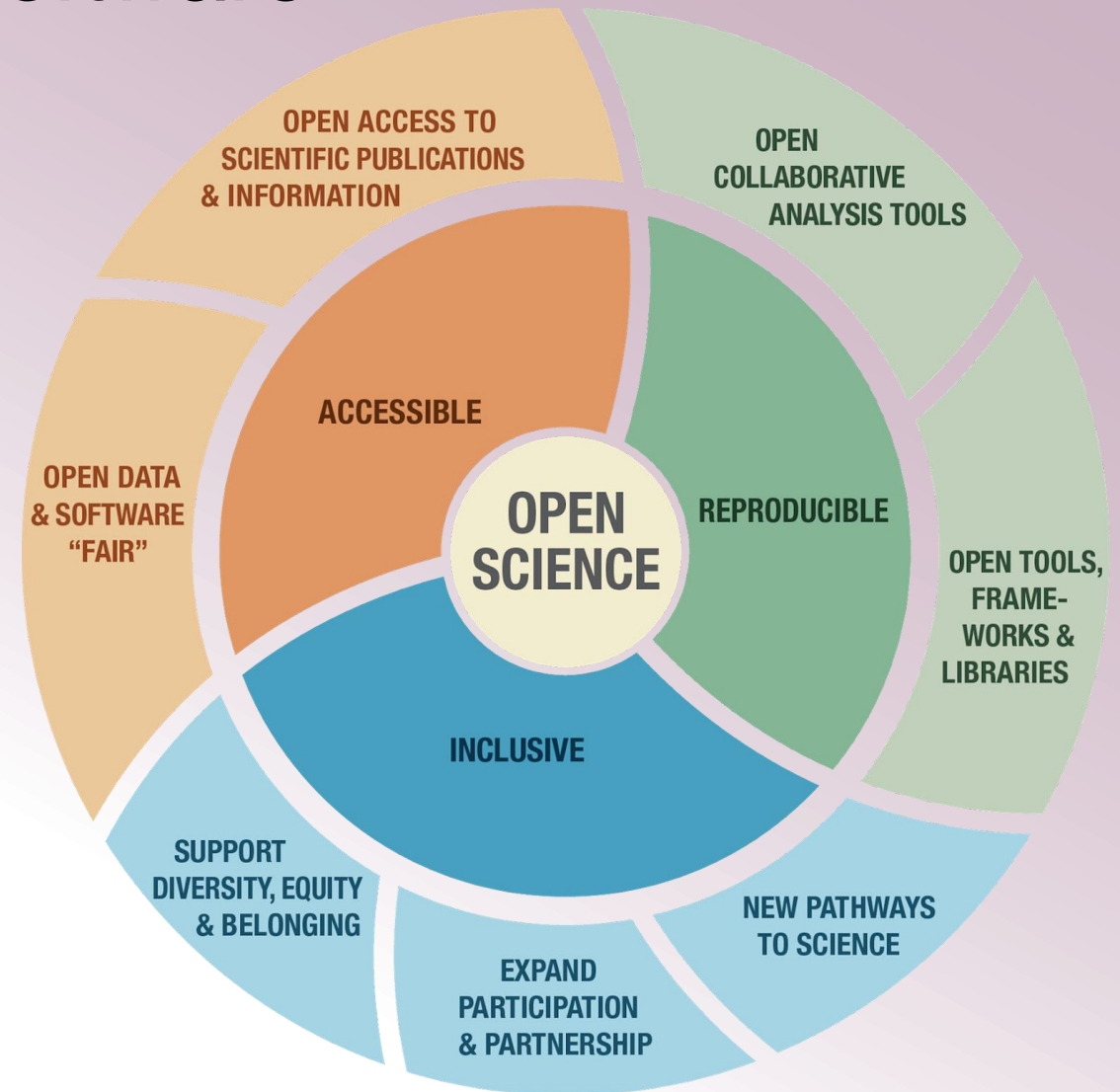
Open Science is the principle and practice of making research products and processes available to all, while respecting diverse cultures, maintaining security and privacy, and fostering collaborations, reproducibility and equity.

Creates research that is:

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

Inclusive science means more:

- Collaborative projects
- Sharing knowledge within and across domains
- Equitable Systems
- Increased Participation



NASA's Open Science Curriculum – Now Available

Open Science 101:

A community-developed introduction to **core open science skills**

Learn how to write a NASA open science and data management plan

Learn about tools and best practices

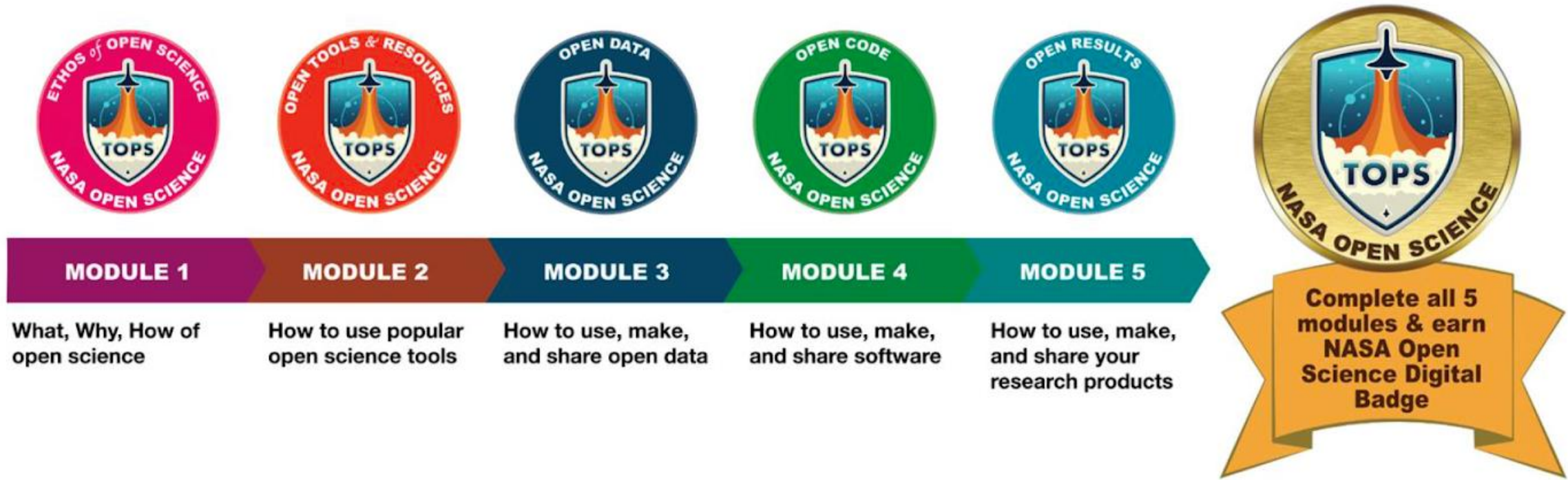
Increase the impact & visibility of your science

Earn your digital NASA open science badge

All 5 modules are available through a self-paced online course and through in-person and virtual instructor-led workshops.



<https://go.nasa.gov/40pPQMx>



Ethos of Open Science	Open Resources & Tools	Open Data	Open Software	Open Results
Reflection Discussions The Test Drive JWST Case Study	Tool Show and Tells Quick Start Guide DOAJ Show and Tell	Actionable Workflows Community	Feedback in Knowledge Checks Community	JWST Case Study Downloadable Authorship Checklist DOAJ Activity



ROSES-24 Highlights - Research Opportunities in Space and Earth Science

Planetary Science ROSES-24 Updates

- Removed substantial duplicate information from individual program elements and consolidated into C.1, including information on the DAPR submission process.
 - It's more important than ever to read C.1 when preparing a proposal submission.
- [C.25 Lunar Mapping Program](#) is a new program element solicited in ROSES-24
 - Intended to enable individual researchers to participate as a member of a geologic mapping team in the planning and execution of campaign-style mapping of selected regions of the Moon.
 - Open now! **Due June 12, 2024**
- [C4. Planetary Data Archiving, Restoration, and Tools \(PDART\)](#) – No Due Date proposal
 - Proposals for software and tools are accepted by PDART, beginning in ROSES-23
 - PDART will transition away from providing funding support for long-term maintenance of software tools.
 - In response to recommendations by the [Planetary Data Ecosystem \(PDE\) Independent Review Board \(IRB\) Final Report](#), PSD is developing a strategy to support the long-term development and maintenance of software tools.
 - Topical conferences, workshops, or symposia may not be proposed through PDART (propose instead through TWSC).

Open Science Solicitation Opportunities

- [Topical Workshops, Symposia, and Conferences \(TWSC\)](#) - can be used to support trainings or conferences that support the science and/or technical SMD community.
 - A revised, stand-alone, TWSC-24 solicitation has been released.
 - Proposers should first contact a NASA division, office, or program that may have funding before preparing a proposal, and the information to include in that email is listed in the solicitation.
- [F.7 Support for Open-Source Tools, Frameworks, and Libraries \(OSTFL\)](#) - supports improvement and sustainment of high-value, open-source tools, frameworks, and libraries that have made significant impacts to the SMD science.
 - Open now! **Due June 7, 2024.**
- [F.8 Supplements for Open-Source Science \(SOSS\)](#) - supports supplements to parent awards for the conversion of legacy software into modern code to be released under a generally accepted, open-source license and to support cloud-based activities for an existing NASA award.
 - Eligibility is limited to those with parent awards. Proposals may be submitted at anytime.
- [F.15 High-Priority Open-Source Science \(HPOSS\)](#) - supports innovative proposals that would advance and streamline the open sharing of scientific information.
 - No Due Date proposal

Stricter Enforcement of Existing Policies (across SMD)

- No Cost Extensions (NCEs)
 - The NSSC has recently begun enforcing the deadline for requesting NCEs.
 - NCEs must be requested between 60 and 10 days prior to the end of the PoP (period of performance).
 - ***If you miss this deadline -- even by a day -- the NCE may be denied, causing the grant to terminate.***
 - The same NCE rules apply to PI Transfers.
 - Your grant must be active at the time that the final, approved paperwork is submitted to the NSSC.
 - If the grant expires before you submit transfer paperwork, the grant may be terminated.
- Progress Reports
 - The NSSC has begun enforcing very specific content requirements for progress reports. Please provide reports in compliance with these requirements.
 - Updated [progress report template](#) is available.



SDP-41a Policy Review

SPD-41a is SMD's Scientific Information Policy

SPD-41a updates the previously released SPD-41, which consolidated existing Federal and NASA policy on sharing scientific information.

Policy updates were developed with the following input:

- SMD community input via workshops, 61 RFIs, and Townhalls
- National Academies studies
- Responsive to White House OSTP Memo on Ensuring Free, Immediate, and Equitable Access to Federally Funded Research

Open-Source Science Guidance for Researchers and FAQ are available.

- Each division has also released policies and templates for their communities.

Compliance is required beginning with ROSES-23 submissions.

**Scientific Information
Policy Website**



What falls under SPD-41a?

- Publications (SPD-41A, Section II.B.i): Scientific and technical documents released through print, electronic, or alternative media.
 - Peer reviewed manuscripts, technical reports, conference materials, and books.
 - Does not include internal reports, laboratory notebooks, preliminary analyses, drafts of scientific papers or preprints, plans for future research, peer review reports, proposals, or communications with colleagues.
- Data (SPD-41A, Section II.B.ii): Scientific or technically relevant information that can be stored digitally and accessed electronically.
 - Produced by missions including observations, calibrations, coefficients, documentation, algorithms, and any ancillary information.
 - Needed to validate the scientific conclusions of peer-reviewed publications. This includes data underlying figures, maps, and tables. This includes data produced from models or simulations.
 - Produced outside of PSD-funded activities but necessary to validate and reproduce scientific conclusions, such as calibration data or ground observations.
- Software (SPD-41A, Section II.B.iii): Computer programs in both source and object code that provide users some degree of scientific utility or produce a scientific result or service (SPD-41a, Appendix F, provides additional information).
 - Used to process data and produce figures. This does not include software developed only for preliminary analysis, plans for future research, or communication with colleagues.
- Physical samples
 - This includes samples collected or created as a part of a PSD-funded activity.

PSD Information and Data Management Policy

The Planetary Science Division has released its own [Information and Data Management Policy](#) that aligns with SPD-41a and provides implementation guidance.

- Relies heavily on Open Science and Data Management Plans (OSDMP) to identify data, software, publications, and physical samples to which SPD-41a applies.
- Provides guidance on implementation of SPD-41a, as applied to Planetary Science Division activities.
- Planetary encourages PIs to be realistic in cost of compliance, which is an allowable cost associated with a funded activity.
- Updated using input received from the community through PDE IRB, RFIs, PDE community members and its archives/repositories.
 - Thank you for your continued feedback!

PLANETARY SCIENCE DIVISION POLICY

Information and Data Management Policy

Supplement to SPD-41A

Overview

This PSD Information and Data Management Policy is a supplement to NASA's Science Mission Directorate (SMD) [SPD-41A Scientific Information Policy for the Science Mission Directorate](#). It was developed by NASA's Planetary Science Division (PSD) to assist the planetary science community, NASA Program Officials, and NASA partners in meeting the requirements in SPD-41A for scientific information, which includes data, publications, software, and, for the purposes of PSD, physical samples. Descriptions of how an SMD-funded project will comply with SPD-41A must now be provided in an Open Science and Data Management Plan (OSDMP).

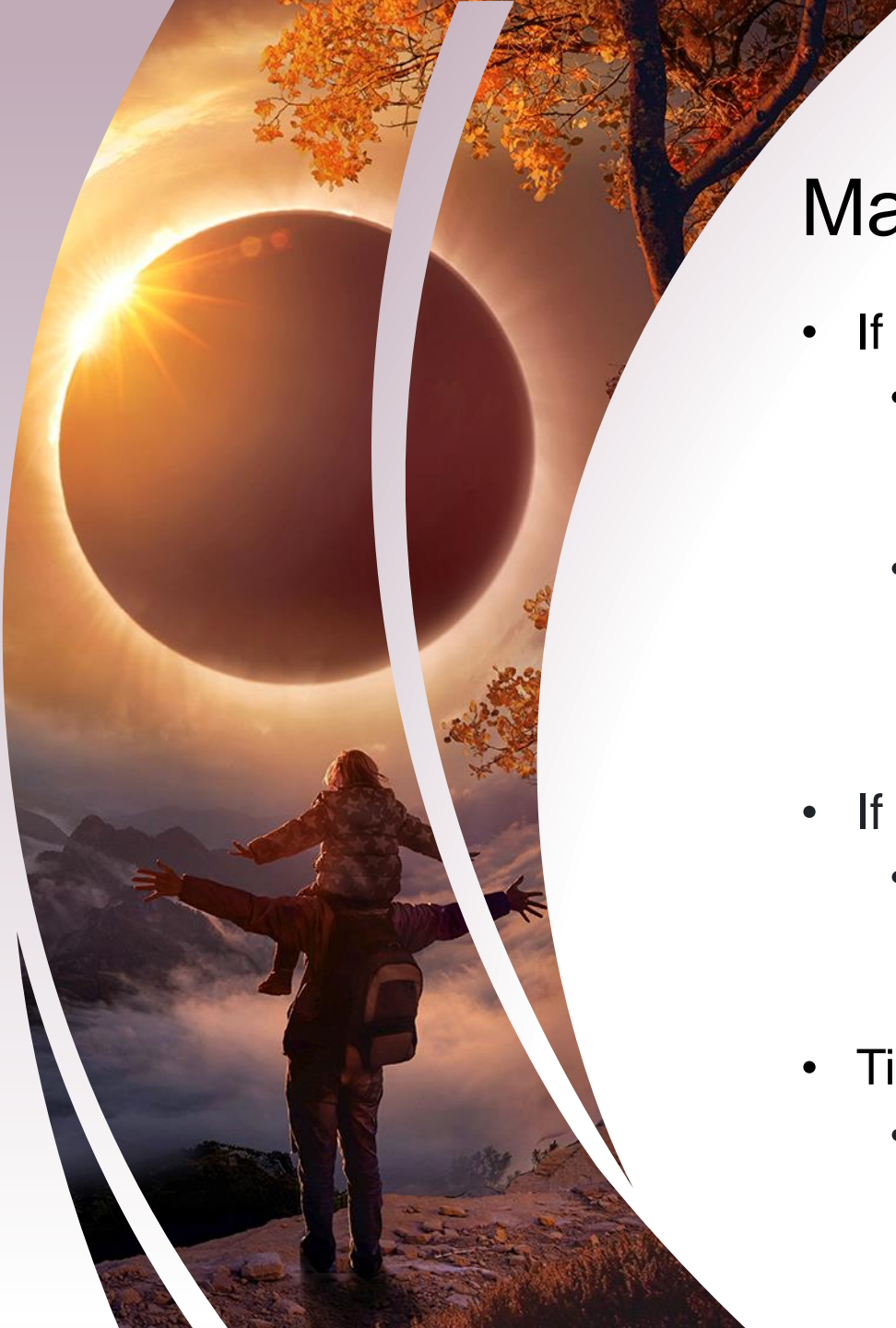
SMD has provided on its [Science Information Policy website](#) the [Open-Source Science Guidance](#) and an [FAQ](#) for general implementation of SPD-41A. This document provides the PSD-specific context for implementing SPD-41A for research, missions, and other activities; this includes information on:

- choosing repositories for data and software;
- developing solicitations and proposals;
- crafting OSDMPs;
- archiving mission data; and
- curating physical samples.

As NASA's approach to the management of scientific information is in transition, this document

Making Publications Publicly Accessible

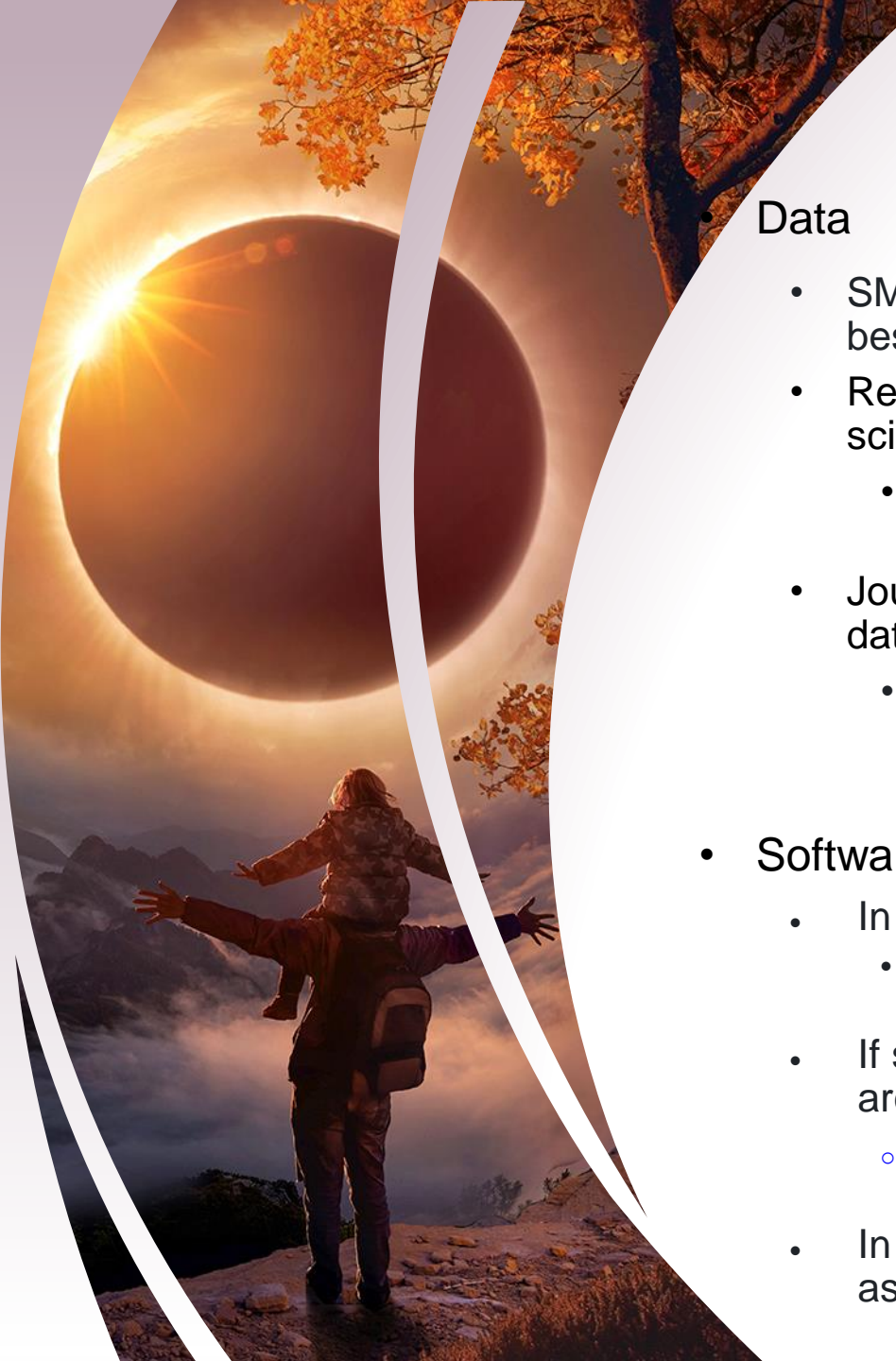
- If published as Open Access
 - If published by a journal participating in [CHORUS](#) or indexed by the [Astrophysics Data System \(ADS\)](#), no further action is needed.
 - If not, authors must submit either the final published article or the author's copy of an accepted manuscript to the STI Repository via the [PubSpace submission page](#).
- If **not** published as Open Access
 - Author's copy of an accepted manuscript may be made publicly available in the STI Repository via the [PubSpace submission page](#).
- Timeline for Sharing
 - Submit accepted manuscripts to the STI Repository no later than the article's publication date.



Sharing Data and Software

Data

- SMD encourages archiving data in community-recognized data repositories as a best practice.
- Researchers may select a generalist data repository that is already in use by the scientific community.
 - [Zenodo](#) is the preferred generic repository, as NASA and Zenodo have an agreement to collaborate.
- Journal supplemental material may be an appropriate location for making the data accessible.
 - The journal must not restrict usage or require a fee to access the supplemental material, and any data provided as supplemental material must be machine readable.
- Software
 - In the supplemental material of a publication.
 - This is ideal for small scripts, notebooks, or spreadsheets that include calculations necessary for reproducing results in the paper.
 - If shared on a version-controlled platform (e.g. [GitHub](#)), it is also important to archive the software at a designated repository.
 - [GitHub has integration with Zenodo](#) to make it easier to create an archived copy of the software.
 - In public repositories already used in the community such as [Zenodo](#), [Astrophysics Source Code Library](#), and [Software Heritage](#).



Data and Software (cont.)

- Timeline for Sharing – Requirements for data and software are the same
 - Scientific data and software needed to validate the scientific conclusions of peer-reviewed manuscripts shall become publicly available no later than the publication date of the corresponding peer-reviewed article.
 - This includes data and software required to derive the findings communicated in figures, maps, and tables, as well as scientifically useful data from models and simulations.
 - Any scientifically useful data and software associated with a SMD research award shall be made publicly available by the end of the period of performance, whether or not the data would be needed to validate the scientific conclusions of a peer-reviewed publication.
- Additional Information – From SMD Open Science Guidelines
 - Publications - https://github.com/nasa/smd-open-science-guidelines/blob/main/OSS_Guidance/Publications.md
 - Data – https://github.com/nasa/smd-open-science-guidelines/blob/main/OSS_Guidance/Data_Management_Sharing.md
 - Software - https://github.com/nasa/smd-open-science-guidelines/blob/main/OSS_Guidance/Software_Management_Sharing.md
 - [Planetary Science Division Data and Information Management Policy](#) - PSD supplement to SPD-41a



A person carrying a child on their shoulders, standing on a mountain peak with arms outstretched, looking at a large sun and moon in the sky. The scene is framed by a large, dark, circular shape that overlaps the right side of the image.

Open Science Data Management Plans

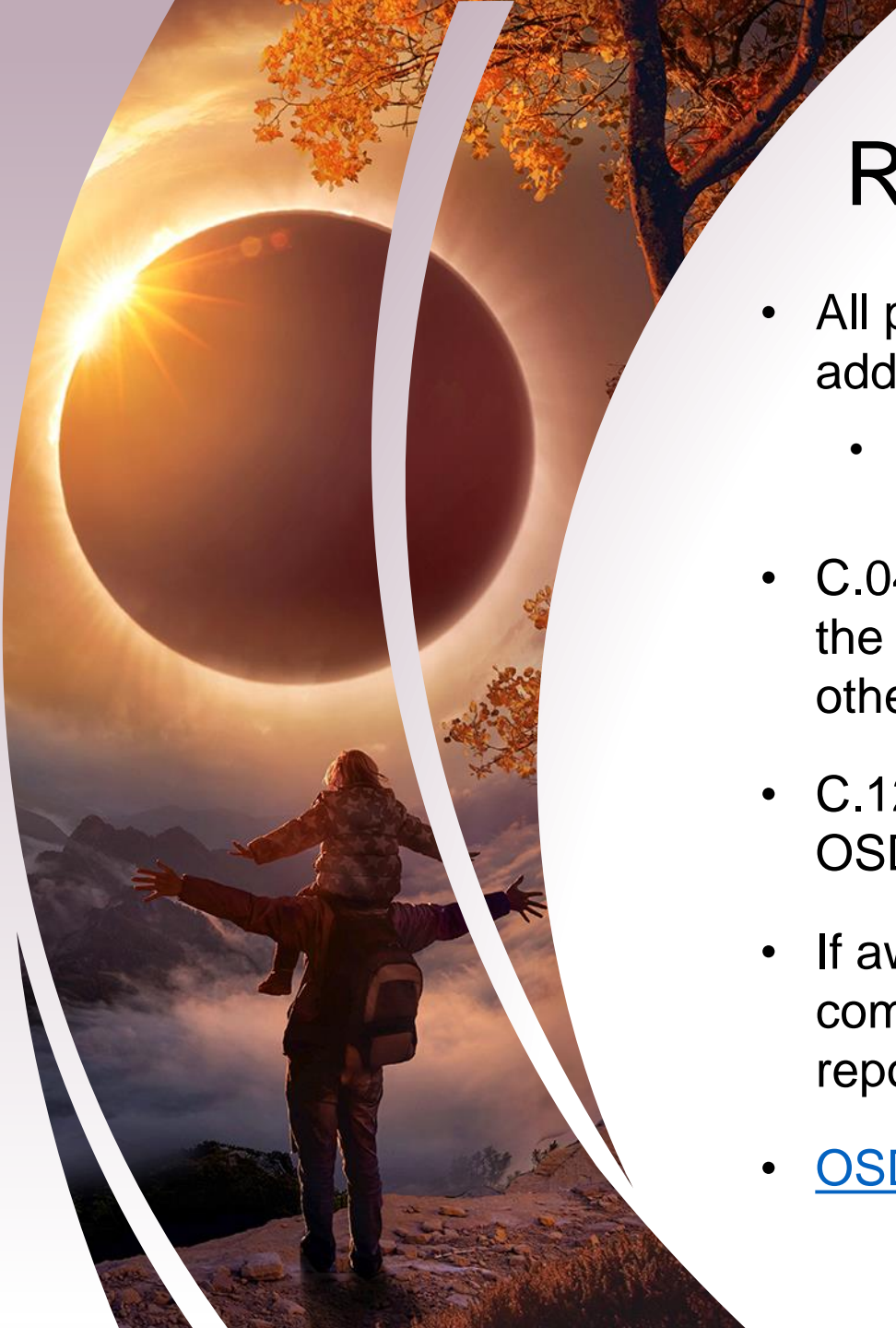
What is an OSDMP?

- Describes how the scientific information that will be produced from SMD-funded scientific activities will be managed and made openly available.
 - Replaces previous Data Management Plans (DMPs)
 - Required component of Planetary Science Division ROSES-24 proposals
 - Living document to help you manage your data, software, and open science-related activities
 - Resource for NASA Program Officers
- Additional Information
 - OSDMP Information - See Section 5.2 of [Planetary Science Division Information and Data Management Policy](#)
 - Planetary Science Division provides [OSDMP templates](#) for research projects.



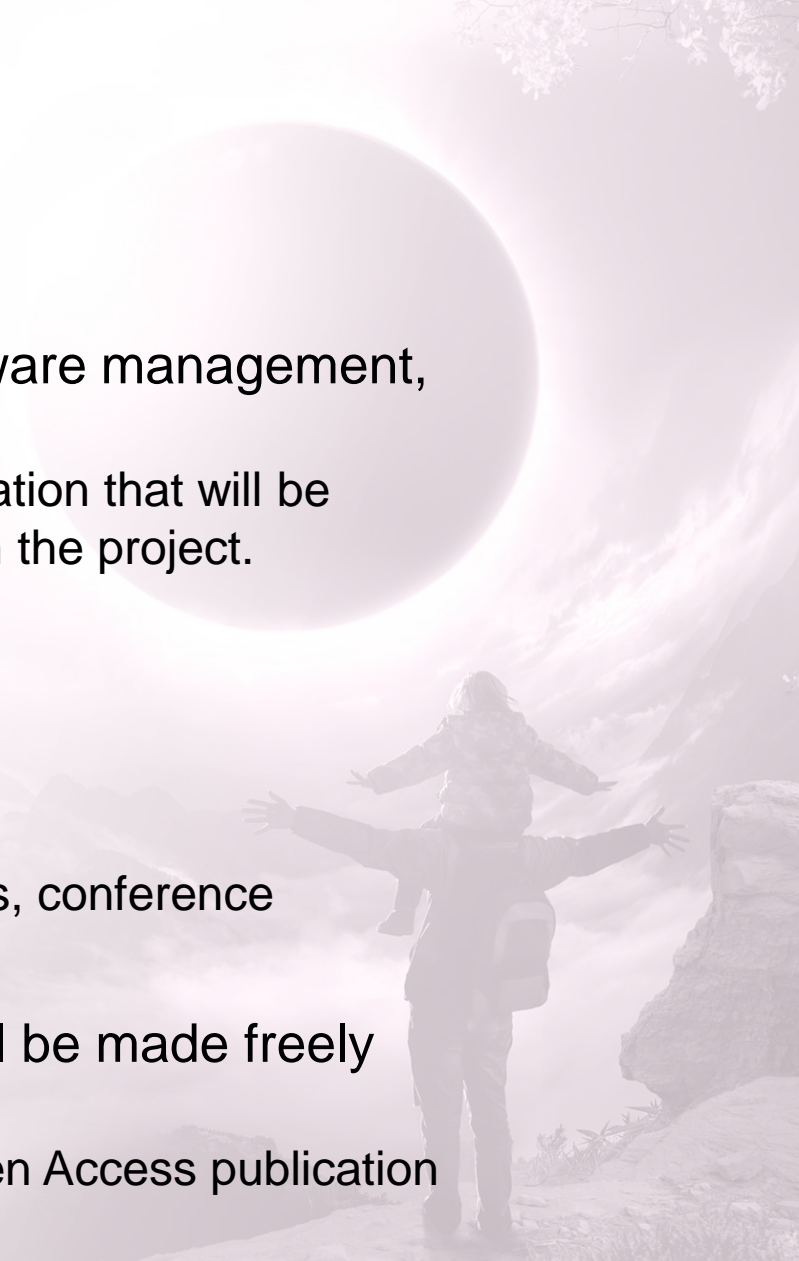
ROSES-24 OSDMP Changes

- All programs that require an OSDMP now require it as an additional 2 pages.
 - OSDMPs are no longer accepted in the STM of any program covered by C.1.
- C.04 PDART and C.11 DDAP have pulled the OSDMP out of the 15-page STM and will now allot 2 additional pages like other program elements.
- C.12 PICASSO, C.13 MatISSSE, and C.19 DALI now require OSDMPs.
- If awarded, proposers must be prepared to demonstrate compliance with SPD-41a and PSD guidance in progress reports.
- [OSDMP templates](#) are available for ROSES-24



OSDMP – Publications

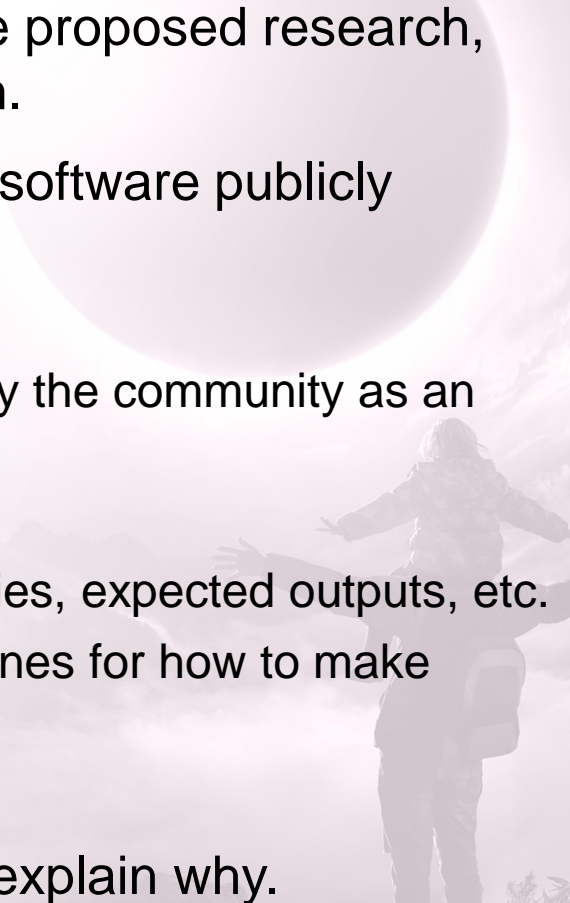
- General Comment
 - OSDMPs should include sections on data management, software management, publication sharing, and roles and responsibilities.
 - May also include a description of other types of scientific information that will be shared openly, and other open science activities associated with the project.
- Publication Specific
 - Describe the publications expected from the proposed work
 - Include anticipated peer-reviewed manuscripts, technical reports, conference materials, and books.
 - Describe how the publications resulting from SMD funding will be made freely available without any delay after the publication date.
 - Describe whether (or not) the article will be published as an Open Access publication and include appropriate budget requests for publication costs.



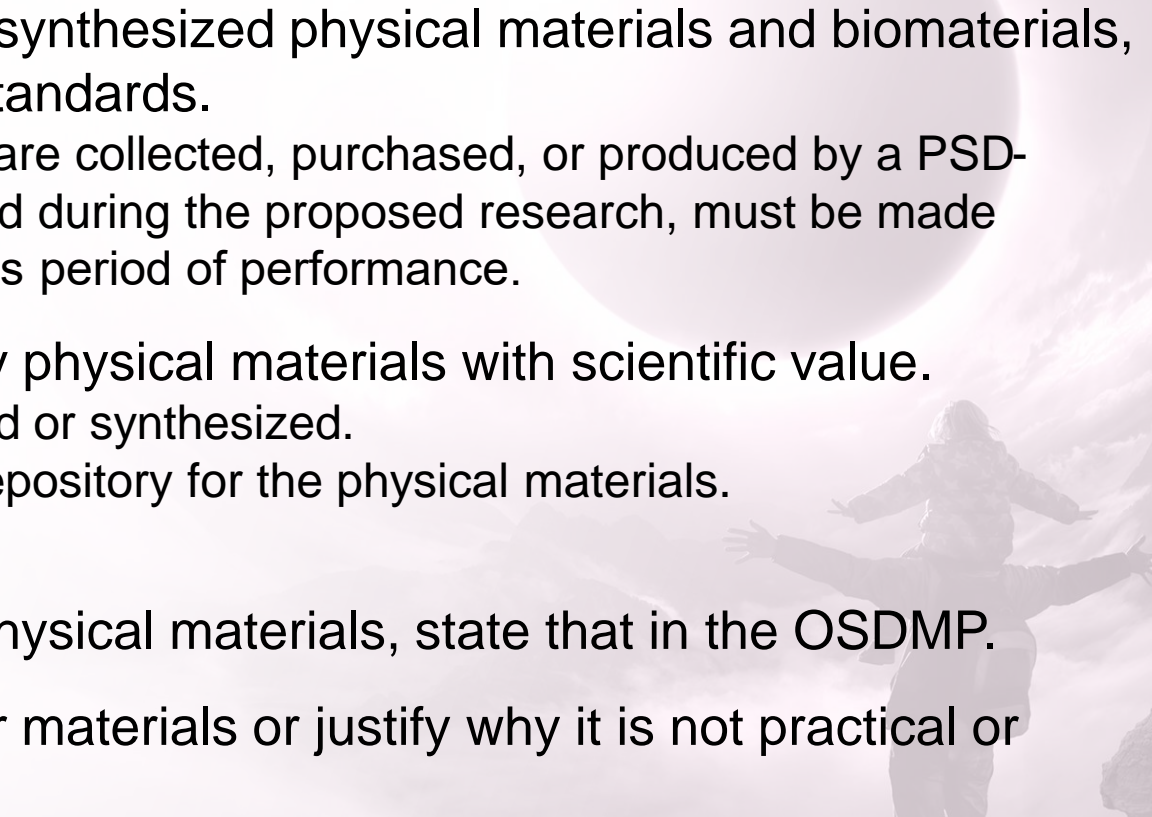
OSDMP – Data

- Scientifically useful data includes any data produced by missions, needed to validate the scientific conclusions of peer-reviewed publications (such as those communicated in figures, maps, and tables), necessary to validate and reproduce scientific conclusions.
- Proposers must identify the community appropriate archive or repository in which they plan to deposit the scientific information to be generated from the project.
 - PIs should contact the identified archive or repository prior to proposal submission to ensure it can receive the information as stated in the OSDMP (strongly encouraged).
 - The proposal should include a letter of support from community archives or repositories (not expected for generic repositories, e.g. Zenodo).
 - **A letter of support is required for products archived in the PDS.**
- Describe the expected data products and plans for making these data publicly available.
 - Major types of data to be produced and anticipated data volumes.
 - Planned data formats and how those formats are compliant with SPD-41a requirements.
 - Metadata standards used describe how this format related to community standards.
 - Describe and justify the long-term archive or repository where the data would be deposited.
 - See SPD-41a, Appendix D for guidelines for an SMD-acceptable repository.
- If the award would produce no data or only exempted data, explain why.

OSDMP – Software

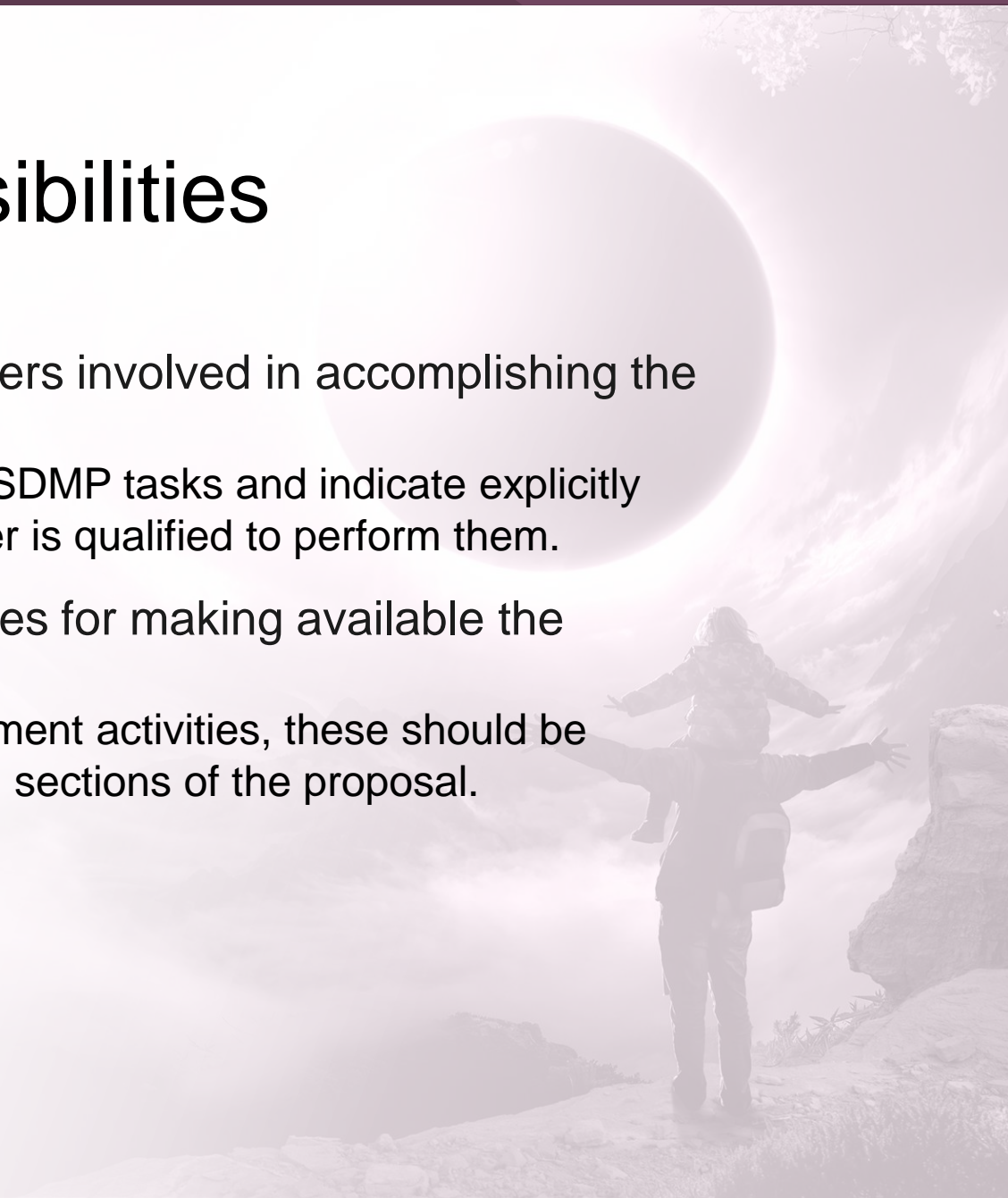
- Scientifically useful software is that which is required to complete the proposed research, reproduce expected published results, and/or enable future research.
 - Describe the expected software produced and plans for making this software publicly available.
 - Software expected to be produced, including the language(s) used.
 - Describe and justify the repository for the software and its recognition by the community as an appropriate repository.
 - Describe documentation to be developed that explains relevant topics
 - E.g., purpose of the software, how to use the software, dependencies, expected outputs, etc.
 - Recognition of the requirement to include a code of conduct and guidelines for how to make contributions as part of the public release of software.
 - Identify the anticipated software license used.
 - If the award would produce no software or only exempted software, explain why.
- 

OSDMP – Physical Materials

- Physical materials include all astromaterials, synthesized physical materials and biomaterials, analog materials, and associated analytical standards.
 - Any physical materials of scientific value that are collected, purchased, or produced by a PSD-funded research award, and are not consumed during the proposed research, must be made publicly available before the end of the award's period of performance.
 - Describe plans to make publicly available any physical materials with scientific value.
 - Describe the samples expected to be collected or synthesized.
 - Describe and justify the intended archive or repository for the physical materials.
 - Describe and justify the proposed timeline.
 - If the award would not collect or synthesize physical materials, state that in the OSDMP.
 - Describe plans for the availability of any other materials or justify why it is not practical or scientifically useful to do so.
- 
- A person is standing on a rocky outcrop, looking out over a vast, hazy landscape. Their arms are outstretched, and they appear to be in awe of a large, bright celestial body in the sky. The scene is misty and atmospheric, with soft light filtering through the haze.

OSDMP – Roles and Responsibilities

- Explain the roles and responsibilities of team members involved in accomplishing the plan.
 - Explain which team members would perform what OSDMP tasks and indicate explicitly what those tasks would be and why the team member is qualified to perform them.
- Proposals should allocate suitable time and resources for making available the results of federally funded research.
 - If funds are required for science information management activities, these should be covered in the normal budget and budget justification sections of the proposal.





Meet & Greet

AT LPSC 2024

**Free & Open
to All!**

**Stop by for
a snack &
beverage before
the poster session**



**Bring your astromaterials
data questions or
ask us about:**

- How to archive your data
- Accepted types of data & formats
- Sample registration & identifiers
- Compliance with SPD-41a
- Data availability
- Assistance with Open Science
Data Management Planning,
Letters of Collaboration, etc.

**Tuesday
March 12**

5:30 – 6:30 PM

Indian Springs
peripheral meeting room

astromat.org

info@astromat.org



THANK YOU!
hq-pde@mail.nasa.gov



Back-up Slides

Differences Between Open and FAIR

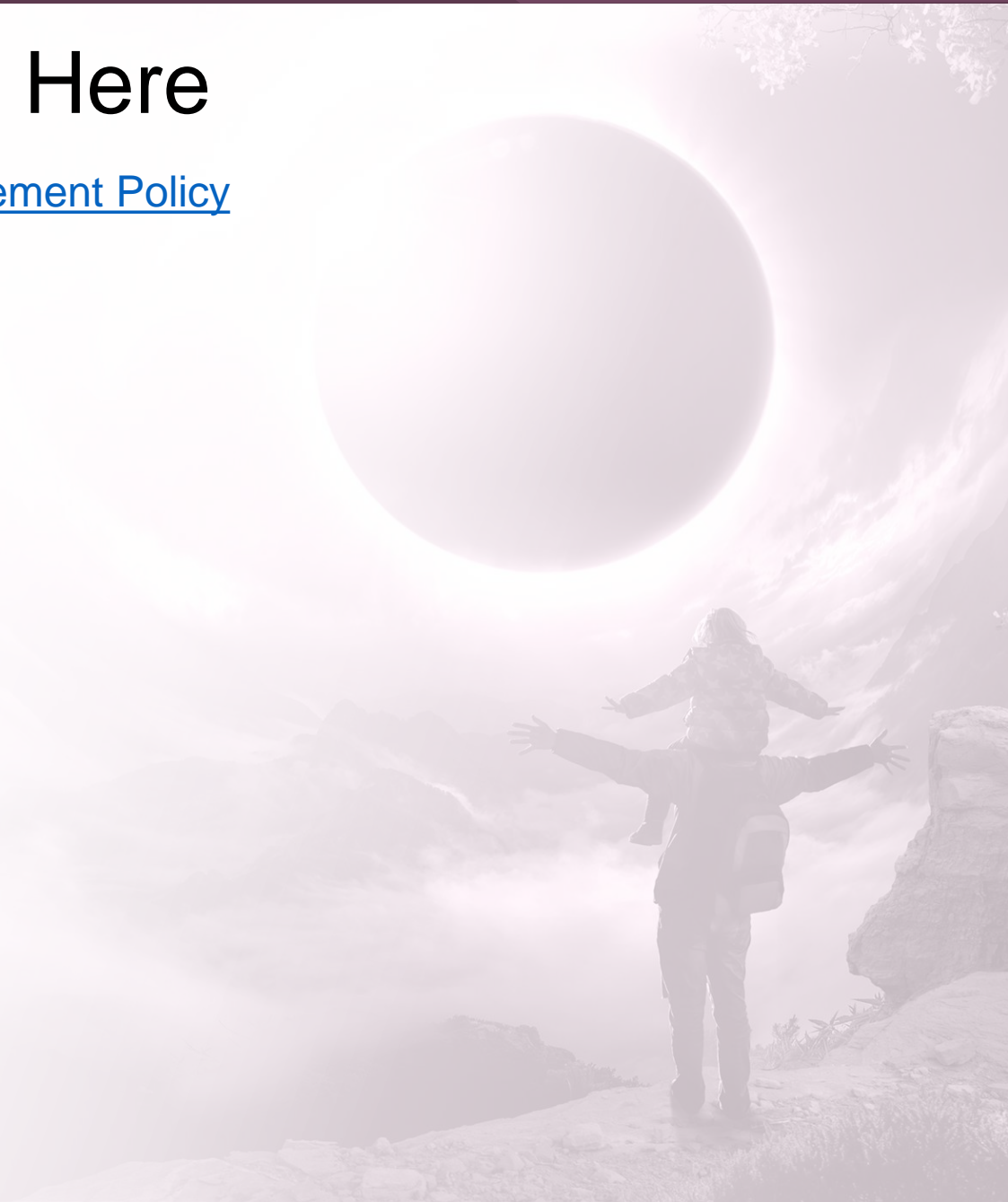
- Open ≠ FAIR
 - These concepts are synergistic with one another.
 - We want to consider both philosophies.
- Open = Principle and practice of making research products and processes available
 - Aimed at removing barriers for sharing any kind of output, resources, methods or tools, at any stage of the research process.
 - Concerned with tools to make output publicly available, licensing, data rights, and ensuring appropriate credit.
 - [Fecher and Friesike \(2014\)](#). Open Science: One Term, Five Schools of Thought
- FAIR = Findability, Accessibility, Interoperability, and Reuse of digital assets.
 - Emphasize machine-actionability as humans increasingly rely on computational support to manage data
 - Due to the increase in volume, complexity, and creation speed of data
 - [Wilkinson et al. \(2016\)](#). The FAIR Guiding Principles for scientific data management and stewardship
 - <https://www.go-fair.org/fair-principles/>



Resources

ROSES-24 Resources - *Start Here

- [*Planetary Science Division Information and Data Management Policy](#)
 - Section 5.2 has specific information about OSDMPs
- [*ROSES-24](#) release announcement
- [ROSES-24 FAQ](#) – Answers to common questions
- Additional [funding opportunities and announcements](#)
- [*NASA Proposers Guide](#)
- [New Principal Investigator \(PI\) Resources](#)
- *OSDMP templates – for the Planetary Science Division
 - [Word \(docx\)](#)
 - [PDF](#)
 - [LaTeX](#)
- [Inclusion plan resources](#)
- [Dual-Anonymous Peer Review \(DAPR\)](#) information
- [ROSES budget redaction](#) information



SPD-41a and Open Science Resources - *Start Here

- [SMD Science Information Policy](#) (background and additional resources)
- [SPD-41a](#)
 - NASA policy that defines the requirements for how SMD-funded scientific information must be shared, including publications, data, and software.
- [*SMD Open Science Guidelines GitHub Repository](#)
- [*SMD Open-Source Science Guidance](#) (SPD-41a implementation guidance, updated December 2023)
- [*Planetary Science Division Information and Data Management Policy](#)
 - Each SMD Division has provided a Division-level guidance to SPD-41a.
 - Key PSD additions include guidance on Physical Materials and Derived Science Data (Section 7).
 - PSD considers this guidance to be a living document and community feedback is welcomed!
- [NPR 2210 – NASA Software Release](#) (June 2023 update)
 - Describes a revised process for releasing software solely developed for scientific publications; Most relevant to NASA Civil Servants.

[NASA Open Science](#) (Overview, TOPS, SMD AI Initiatives, Core Data and Computing Services)

- [Transform to Open Science \(TOPS\) GitHub Website](#)
- [TOPS GitHub Repository](#)

Open Science Data Management Plan (OSDMP) - *Start Here

- [SMD Open-Source Science Guidance](#) (SPD-41a implementation guidance, updated December 2023)
 - *OSDMP information begins on p. 6
 - SMD Open-Source Science Guidance on [GitHub](#)
- [Planetary Science Division Information and Data Management Policy](#)
 - *Section 5.2 has specific information about OSDMPs
- [ROSES OSDMP](#) information
- *Planetary Science Division OSDMP Templates
 - [Word \(docx\)](#)
 - [PDF](#)
 - [LaTeX](#)
- [Planetary Data System \(PDS\) information for data proposers](#)

