

# Decadal Survey for Solar and Space Physics (Heliophysics) 2024-2033

## June 2023 Update on Solar and Space Physics (Heliophysics) Decadal

*Stephen Fuselier, Robyn Millan, Co-chairs: Steering Committee  
Art Charo, Abigail Sheffer, Responsible Staff Officers*

<https://nas.edu/ssphdecadal>

# Update on the Solar and Space Physics Decadal Survey

- What's new and Survey Organization
- Decadal Survey Current Status and Schedule
- Questions?

# New for 2024!

- The statement of task (<https://nas.edu/ssphdecadal>) for this Decadal Survey is broader than that for the previous DS
- Statement of Task explicitly includes:
  - space weather
  - state of the profession
  - emerging opportunities (astrospheres, ...)
- The panel structure was developed in response to these new tasks

# Solar and Space Physics Decadal: Survey Organization

- Steering Committee:
  - Robyn Millan, Dartmouth College and Stephen Fuselier, SwRI
- Panel on the Physics of the Sun and Heliosphere: (SH)
  - Dan Reisenfeld, LANL and Sabrina Savage, NASA MSFC
- Panel on the Physics of Magnetospheres: (MAG)
  - Lynn Kistler, Univ. of New Hampshire
- Panel on the Physics of Ionospheres, Thermospheres, and Mesospheres: (ITM)
  - Phil Erickson, MIT Haystack Observatory and Lara Waldrop, Univ. of Illinois
- Panel on Space Weather Science and Applications: (SWSA)
  - Christina Cohen, Caltech and T. Paul O'Brien, Aerospace Corp.
- Panel on the State of the Profession: (SoP)
  - Aprille Ericsson, NASA GSFC and Mark Moldwin, Univ. of Michigan

Panel staff: Art Charo (Steering Committee and SWx), George Coyle (Mag), Chris Jones (Sun and Heliosphere) Arul Mozhi (SoP), Abigail Sheffer (Steering Committee and ITM) with Megan Chamberlain (Senior Program Assistant) and Mia Brown (Research Associate)

# Decadal Survey Steering Committee Update

CO-CHAIR

**Stephen A. Fuselier**

CO-CHAIR

**Robyn M. Millan**

MEMBER

**Fran Bagenal**

MEMBER

**Timothy S. Bastian**

MEMBER

**Sarbani Basu**

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**Richard Doe**

MEMBER

**Eileen Dukes**

MEMBER

**Allison N. Jaynes**

MEMBER

**Dana W. Longcope**

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**Viacheslav G. Merkin**

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**Daniel Mueller**

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**Terrance G. Onsager**

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**Tai D. Phan**

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**Tuija Pulkkinen**

MEMBER

**Liyong Qian**

MEMBER

**Marilia Samara**

MEMBER

**Joshua Semeter**

MEMBER

**Endawoke Yizengaw**

MEMBER

**Gary P. Zank**

Former Member: Tomoko Matsuo (resigned 6/5/23)

Steering committee staff: Art Charo & Abigail Sheffer with Megan Chamberlain (Sr. Prog. Ass't) and Mia Brown (Research Assoc.)

# Solar and Space Physics Decadal: Working Groups

- Similar to previous Decadals, we have several working groups that will provide input to the Steering committee on a range of cross-cutting topics
- Typical composition ~8 people, populated from the steering committee and the panels
- Access to Space – Lead: Eileen Dukes; Expert Advisor: Dave Klumpar
- Data Exploitation - Lead: Josh Semeter
- Theory and Modeling – Leads: Slava Merkin, Dana Longcope, Tuija Pulkkinen
- Integrating Ground- and Space-based Observatories – Leads Tim Bastian, Marilia Samara
- Communications Infrastructure and Innovations – Eileen Dukes, Rick Doe
- These working groups have their own statements of task and are starting to organize
  - We have purposely started these slowly because the panels are very busy right now

# Solar and Space Physics Decadal: Status, White Paper Distribution, Timeline

- Status for the Panels
  - All panel finalized and working on their reports
  - 450 White Papers were received and span multiple panels
  - White Papers are available (<https://nas.edu/ssphdecadal>) and will be published by the Bulletin of the AAS as well as on the Survey's webpage




# Panels: Space Mission and Ground-Based Project Selection

- The science panels (SH, MAG, ITM) are tasked to:
  - Identify elements of a research strategy for accomplishing [the panel identified] goals and emerging opportunities
  - These elements include NASA missions (larger than a medium explorer), ground-based projects (NSF mid-scale and larger), theory and modeling, etc.
- To develop the research strategy, the science panels have a large number of community white papers as starting points
- Limited number of space missions go through Technical, Risk and Cost Evaluation (TRACE) process
  - Missions that go to TRACE are ultimately selected by the Steering Committee from missions proposed by the panels
- How a panel evaluates missions and ground-based projects is up to that panel
  - Panels have chosen to use different means for this process
  - Some panels have requested information from the authors of a select number of white papers and others have chosen to hear from all or nearly all of the white paper authors
  - A request for information does not necessarily imply that a particular space mission is going to the TRACE process



# The Decadal Survey and GDC: Response

- It is important for the Solar and Space Physics community to understand the role of the Decadal Survey in the “GDC Pause”
  - The Decadal Survey Steering Committee has a Statement of Task and Guidance agreed upon by NASA and the National Academies – this guidance is unchanged  Available at: <https://nas.edu/ssphdecadal>
    - Describe the highest priority science goals to be addressed in the period of the survey.
    - The survey will not reprioritize GDC or DYNAMIC but is requested to reaffirm the continued priority of the science goals.
  - The previous Decadal Survey and the Decadal Survey Mid-Term Assessment in 2020 and the GDC Independent Review Board affirmed the priority science of GDC
    - Per the Statement of Task, the highest priority science goals will take into account these documents
  - The Decadal Survey receives input from the community and from the Survey Panels and then must deliberate and build its advice in private.
    - This protects the integrity of the process: Decadal advice is not vetted or buffeted by considerations other than the communities’ consensus about scientific priorities
  - The Decadal Survey Report will not be public until Summer 2024 – This report can impact the **FY2026** President’s budget proposal and later budgets

The Bottom Line: The Decadal Survey will continue with its tasks under the auspices of the National Academies and as agreed to by NASA.

# Summary and Conclusions

- The 2024-2033 Solar and Space Physics Decadal Survey is Progressing
  - Panels are hard at work drafting their reports
  - Steering Committee has met four times and will meet again in mid June
  - We are confident that we will produce a Report for publication in Summer 2024
    - Two critical points in the remaining schedule: receiving the final results from TRACE (Late Summer), getting the preliminary and final reports from the panels (Late Summer/Early Winter)
- There will be additional opportunities to follow the process and contribute
  - Panels are developing their programs and may continue to call on the community for additional input
  - Steering Committee and panel meetings include open sessions
  - Updates on the website (<https://nas.edu/ssphdecadal>); there is also a project mailbox
  - Additional Town Halls in 2023, Updates at summer meetings (Solar Wind 16, CEDAR, SPD, SHINE)
  - Community members will be requested to peer review the survey
- Questions?