

# Mercury Exploration Assessment Group

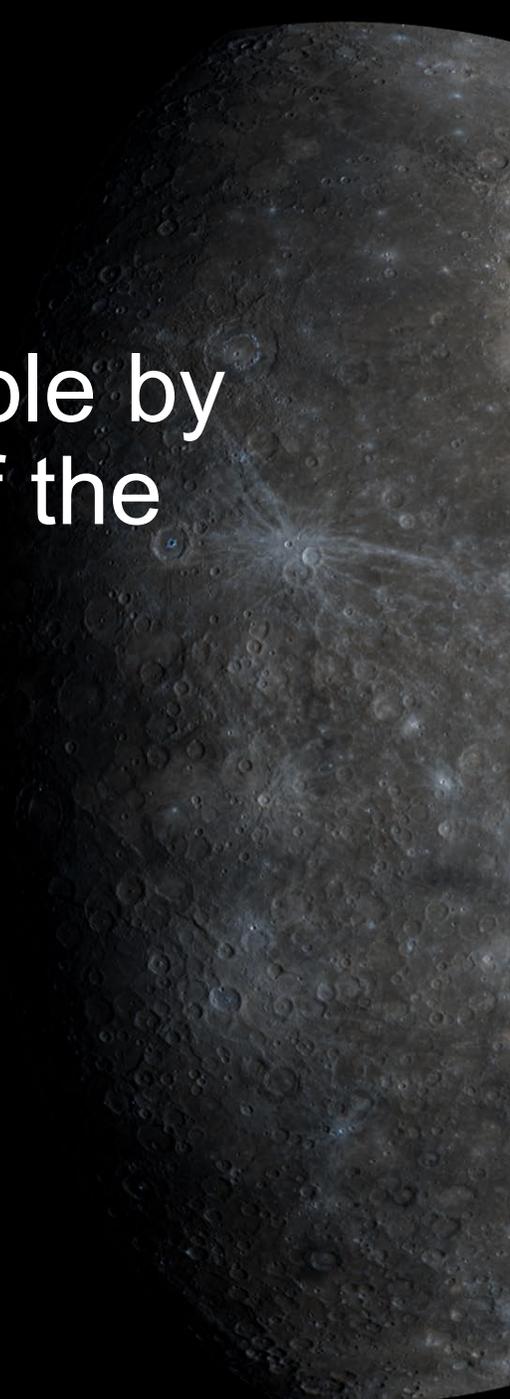
## Spring Town Hall

May 10, 2022



# Closed Captioning

- Closed captioning/live transcript is available by clicking on the CC button at the bottom of the Zoom window.



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Catholic U./ NASA GSFC  
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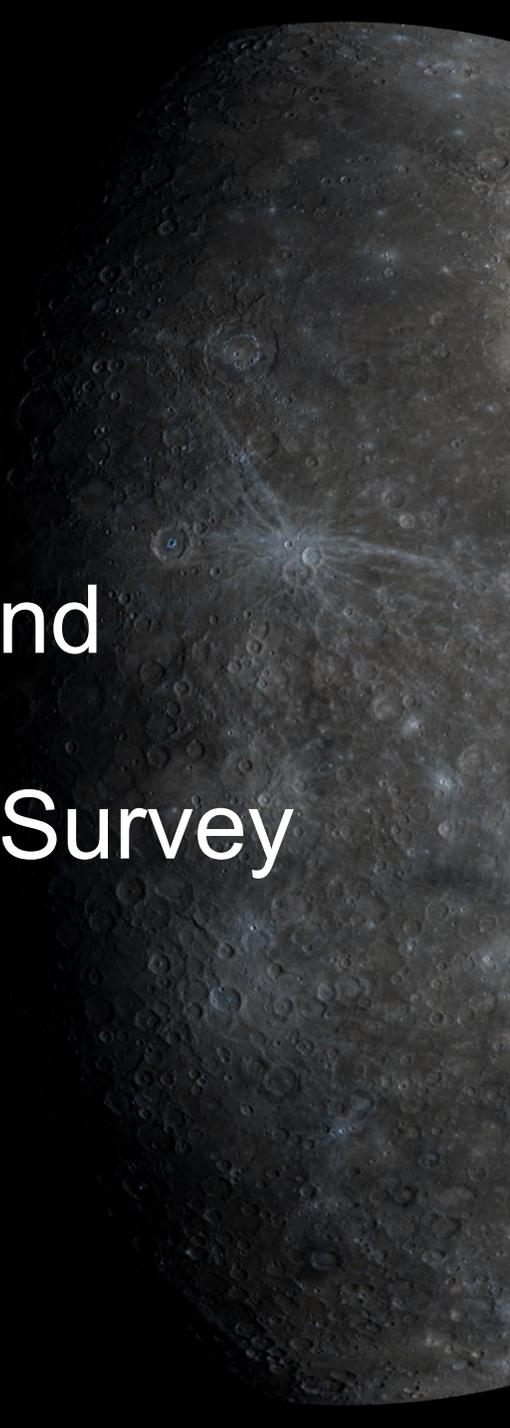
**Suzanne Imber**  
U. of Leicester  
*International Liaison*

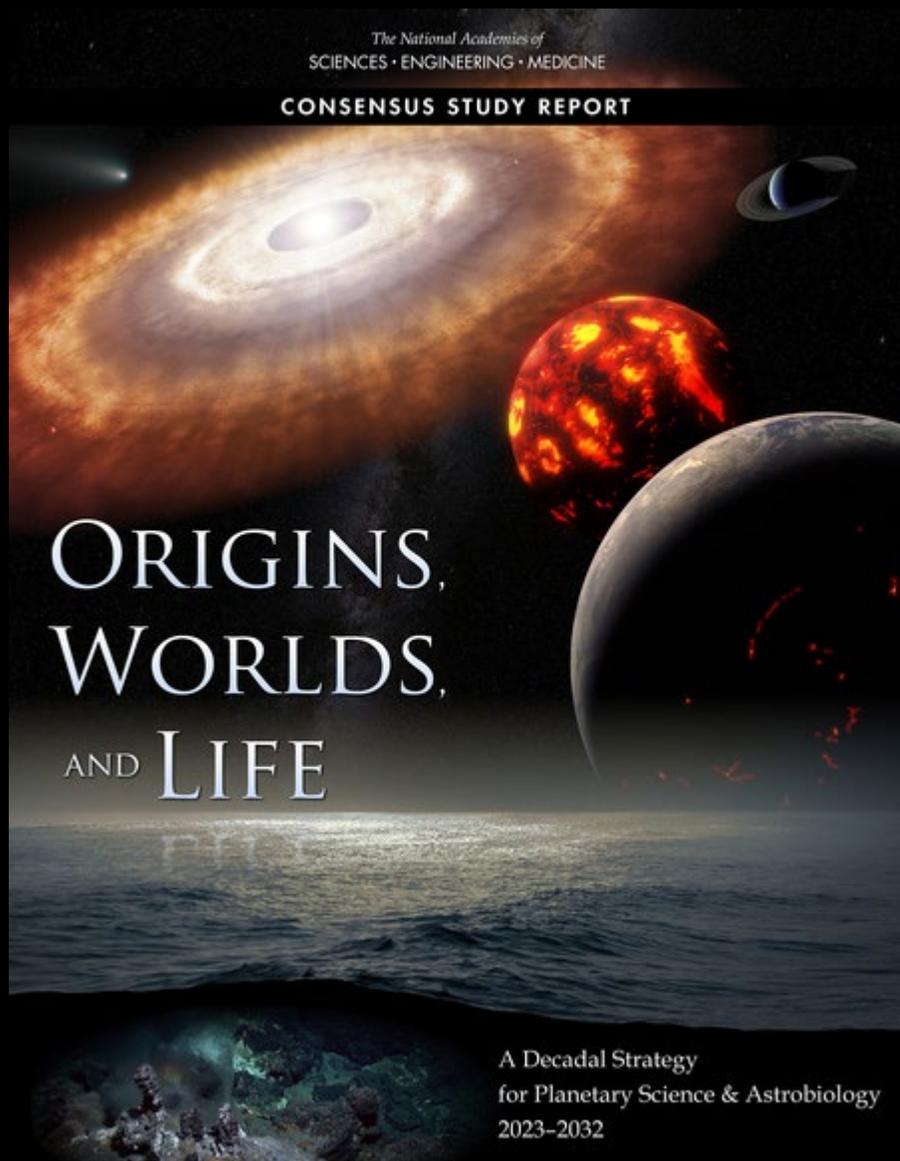


**Shoshana Weider**  
NASA HQ  
*NASA Liaison*

# Purpose of Town Hall

- Discussion of topics of interest within the MExAG Community
- Community discussion of opportunities (and ways to turn any gaps into potential opportunities) resulting from the Decadal Survey





# Decadal Survey Released

- Thank you to the many community members who served on the Decadal Survey and produced this monumental (800 pgs) & foundational document.
- Especially thankful to:
  - Panel chairs: Robin Canup and Phil Christensen
  - Mercury and the Moon panel chairs: Tim Grove and Brett Denevi
  - All the panelists, especially the many members of the MExAG community

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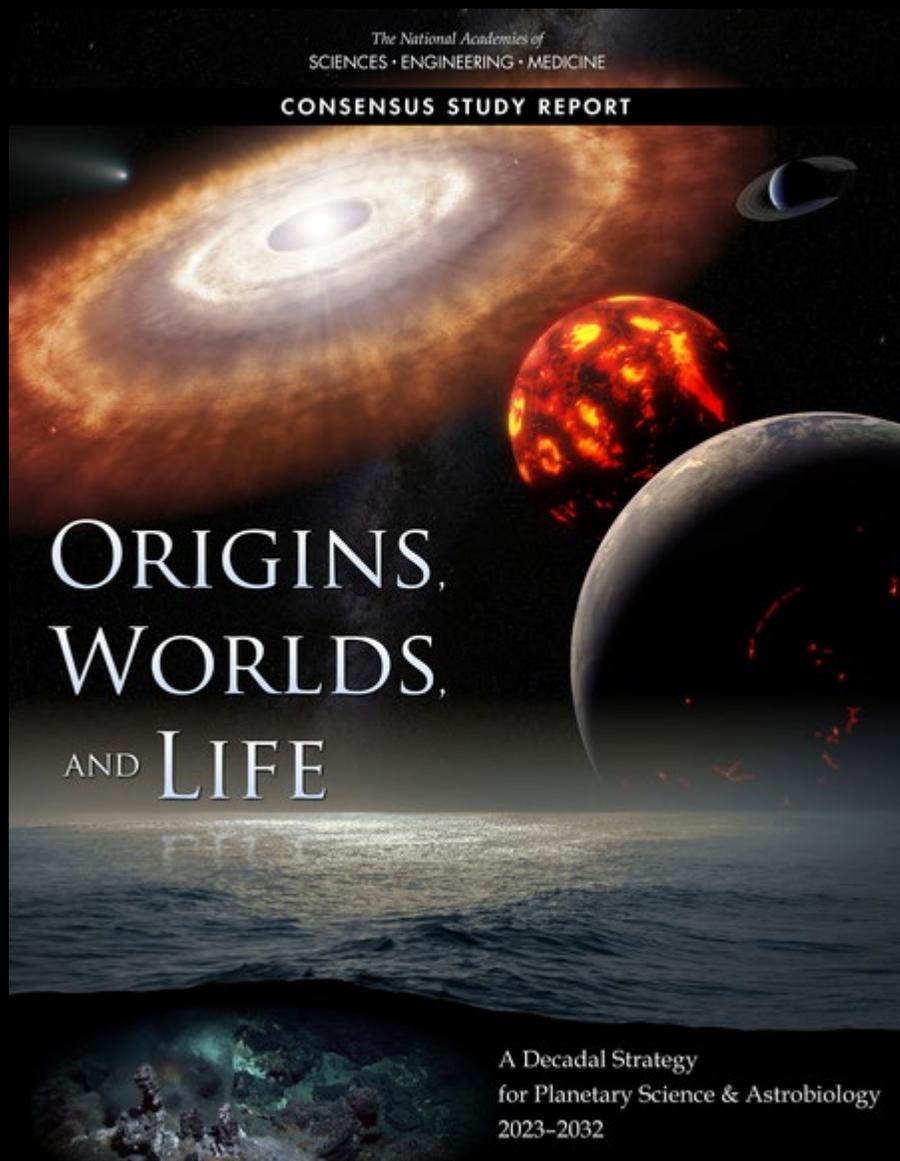
CONSENSUS STUDY REPORT

# ORIGINS, WORLDS, AND LIFE

A Decadal Strategy  
for Planetary Science & Astrobiology  
2023-2032

## 12 Priority Question Topics

1. Evolution of the protoplanetary disk.
2. Accretion in the outer solar system.
3. Origin of Earth and inner solar system bodies.
4. Impacts and dynamics.
5. Solid body interiors and surfaces.
6. Solid body atmospheres, exospheres, magnetospheres, and climate evolution.
7. Giant planet structure and evolution.
8. Circumplanetary systems.
9. Insights from terrestrial life.
10. Dynamic habitability.
11. Search for life elsewhere.
12. Exoplanets.



# DS Document also covers

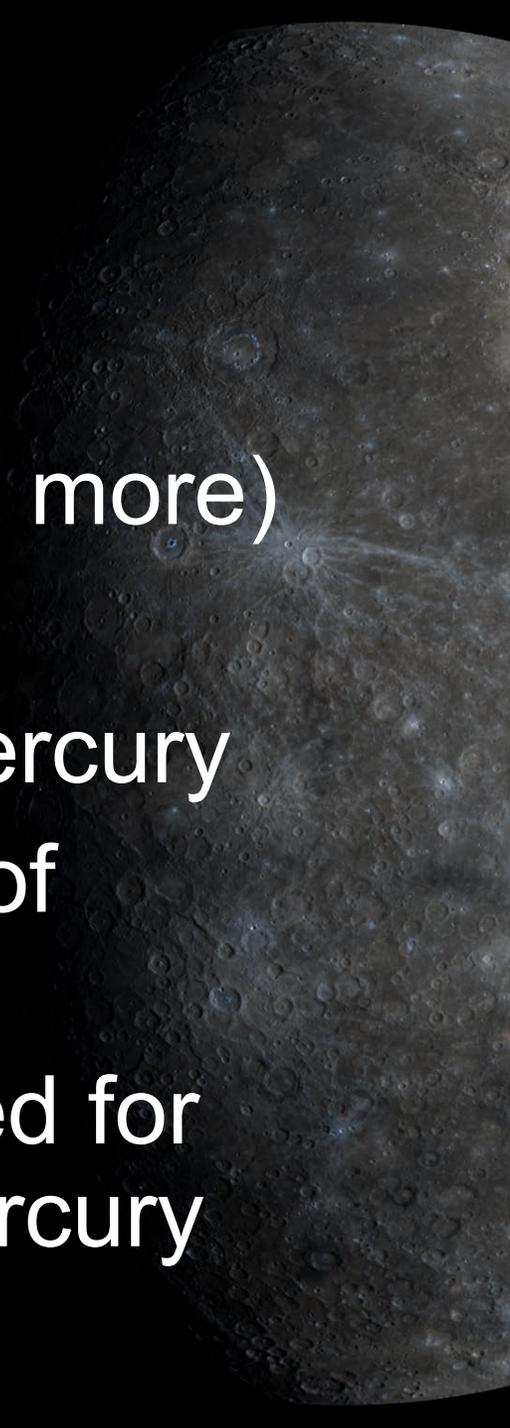
- State of the Profession
- Research and Analysis
- Technology
- Research Infrastructure
- Human Exploration
- Planetary Defense

Details at:

<https://www.nationalacademies.org/our-work/planetary-science-and-astrobiology-decadal-survey-2023-2032>

# A few highlights

- Mercury was featured in 8 of 12 Priority Question chapters (and had a cameo in 2 more)
- 7 of the sub-questions focus on Mercury
- 20 Strategic Research topics focus on Mercury
- Technology section highlights the needs of Mercury's challenging environment
- More than two dozen mentions of the need for samples and *in situ* measurements of Mercury



# Highlights of recommendations include

- R&A constitute 10% of PSD budget.
- Technology be 6-8 % of PSD budget.
- New NF concepts due to new discoveries be evaluated before NF-7.
- Plutonium-238 needs be evaluated against mission portfolio and increased as needed.
- Expanding NSF support for ground-based telescope observations and planetary astronomers.
- Reviewing current radar infrastructure to meet community needs, including replacing capabilities lost with Arecibo

# Highlights of recommendations include

- Prioritize collecting evidence about the size, identity, demographics, and workplace climate of the community
- Implement practices to reduce potential bias through decision-making and procedures
- Consider mechanisms to support direct engagement of planetary scientists with members of society, especially students
- Implement codes of conducts for funded activities
- Strengthen and expand programs that enhance participation of students and faculty from URCs
- Improving review process by allowing response to major weaknesses in prior proposals

# Missions/exploration

- Mercury Lander was not selected for prioritization
- TRACE (independent cost and risk assessments) estimated cost at \$2.8B instead of project estimate of \$1.8B
  - Decadal survey explicitly chose to treat lander as Flagship due to its high priority science rather than a non-viable New Frontiers concept.
  - Published outcomes of TRACE reports are too brief to provide sufficient information to ascertain the drivers of differences on cost estimates to provide the feedback NASA and the planetary science community need to make technology & mission development decisions.

# Discussion

- What is good?
- Where are there gaps that still need to be filled?
- What steps can the MExAG community take next?

