



Status Report: Decadal Survey on Planetary Science and Astrobiology 2023-2032

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LEAG/SSSERVI Decadal Meeting
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What is the Statement of Task?

- The statement of task can be found at this website:
<https://www.nas.edu/planetarydecadal>
- It is the guiding document for the survey
- It outlines exactly what the sponsors—NASA and NSF—and the National Academies want the survey committee to do
- The National Academies commits to do no more and no less than that specified in the statement of task
- The website contains additional information (scope, considerations, and approach) in the form of suggestions to make the survey most useful to NASA and NSF, but they are not binding on the survey committee



What is the Same?

- Overview of relevant disciplines
- Broad survey of the current state of knowledge
- Inventory of top-level science questions and research activities
- Recommendations on optimum balance between target bodies, large/medium/small missions, ground versus space, etc.
- Assessment of infrastructure
- Discussion of strategic technology development needs
- Identification and ranking of large/medium space missions (with cost and technical evaluation). Recommendations on other initiatives.



What is New?

- A higher profile for astrobiology and planetary defense
- Recommended activities clearly traceable to goals/objectives
- Decision rules to accommodate significant deviations in budget, new discoveries, or technological development
- Awareness of human exploration activities undertaken by NASA and international partners
- Discussion of opportunities for collaboration with other SMD divisions, NASA directorates, federal agencies, international partners and the private sector
- Consideration of issues related to the state of the profession



LEAG-Related Language

The statement of task makes no specific statement about the Moon. But the considerations section of the (non-binding) language does:

Item 1d: “The prioritization of flight investigations for Mars and the Moon should be integrated with flight investigation priorities for other solar system objects into a single prioritized list of all recommended missions;” and

Item 4: It should include “A discussion of:

- a. Potential opportunities for conducting planetary science investigations involving humans in situ; and
- b. The relative value of human-tended investigations to those performed solely robotically.”



Co-Chairs Appointed



ROBIN M. CANUP

Assistant vice president of the Planetary Sciences Directorate at Southwest Research Institute.



PHILIP R. CHRISTENSEN

Regents Professor and the Ed and Helen Korrick Professor in the School of Earth and Space Exploration at Arizona State University



Early-Career Opportunities

- **Early-career Event 1:** 27 March—Introduction to Decadal Surveys
https://youtu.be/j1j_tbj9WI4
- **Early-career Event 2:** 7 May—Whitepapers 101—350 participants
<https://vimeo.com/418576172>
- **Early-career Event 3:** June?—details TBA
- **White Papers:** any and all can author and submit a white paper on any topic relevant to the statement of task. Deadline 4 July
- **Full-time Job:** The SSB has a job vacancy (PhD preferred)
<https://www.nationalacademies.org/humanresources/>
- **Note Takers**—Recruiting will begin once meeting dates are set
- **Lloyd V. Berkner Internships**—Available at SSB for undergraduates (summer and autumn) and graduate students (autumn only)
<https://sites.nationalacademies.org/SSB/index.htm>
- **Christine Mirzayan Fellowship:** Offered annually by the National Academies for graduate student and <5 years from Ph.D.
<https://sites.nationalacademies.org/pga/policyfellows/>



Schedule for Decadal Survey

2020

- January to March Statement of Task posted, Funding proposal to NASA, NSF agreed to support, town hall and Early-career event 1
Survey officially began (20 March), website established, Whitepaper and nominations sites open
- May Nominations close (1 May—347 nominations)
Early-career event 2, Co-Chairs announced (18 May)
- June Panel structure announced, Other appointments begin
- July White paper deadline (4 July)
- August First meeting of steering group (virtual or in-person)????
- September First meetings of panels (virtual or in-person)????

2021

Complete draft of survey report (early 4th quarter)

2022

Survey report released (late 1st quarter),
Dissemination starts

2023

End of dissemination/NASA contract (late 1st quarter)



White Paper Deadline

- The 4 July submission deadline is not arbitrary
- Survey report must be delivered to sponsors by 31 March 2022
- Deadline requires that the survey committee start work in August
- Survey committee needs 4-6 weeks to read and digest whitepapers
- NASA/NSF must receive the survey report by 31 March 2022 so they can use it to plan their budget submission for FY 2024 (to be announced by the President in February 2023)
- Missing the deadlines delays the survey's survey impact
- Submit at <https://www.nas.edu/planetarydecadal>



Thank You

<https://www.nas.edu/planetarydecadal>



What is a Decadal Survey?

- Assesses the current status of an entire scientific discipline
- Defines and prioritizes the key scientific questions that could potentially be addressed in the next decade
- Prioritizes the most important initiatives that might be undertaken to address the most important questions
- Conducted by the National Academies, independently of sponsoring agencies and organizations
- Required by language in the NASA Authorization Acts of 2005 and 2008 to engage with the National Academies and conduct decadal surveys in all major space science disciplines
- Post-2005 surveys have required independent cost and technical evaluations of recommended projects

Sponsoring agencies and Congress views surveys as the formal statement of priority by the US space science community, and have repeatedly stated their intent to give highest priority to the missions identified in the survey



The Statement of Task

- An overview of planetary science, astrobiology, and planetary defense—what they are, why they are compelling undertakings, and the relationship between space- and ground-based research;
- A broad survey of the current state of knowledge of the solar system;
- The most compelling science questions, goals and challenges which should motivate future strategy in planetary science, astrobiology, and planetary defense;
- A coherent and consistent traceability of recommended research and missions to objectives and goals;
- A comprehensive research strategy to advance the frontiers of planetary science, astrobiology and planetary defense during the period 2023-2032 that will include identifying, recommending, and ranking the highest priority research activities (research activities include any project, facility, experiment, mission, or research program of sufficient scope to be identified separately in the final report). For each activity, consideration should be given to the scientific case, international and private landscape, timing, cost category and cost risk, as well as technical readiness, technical risk, lifetime, and opportunities for partnerships. The strategy should be balanced, by considering large, medium, and small research activities for both ground and space;
- Recommendations for decision rules, where appropriate, for the comprehensive research strategy that can accommodate significant but reasonable deviations in the projected budget or changes in urgency precipitated by new discoveries or technological developments;
- An awareness of the science and space mission plans and priorities of NASA human space exploration programs and potential foreign and U.S. agency partners reflected in the comprehensive research strategy and identification of opportunities for cooperation, as appropriate;
- The opportunities for collaborative research that are relevant to science priorities between SMD's four science divisions (for example, comparative planetology approaches to exoplanet or astrobiology research); between NASA SMD and the other NASA mission directorates; between NASA and the NSF; between NASA and other US government entities; between NASA and private sector organizations; between NASA and its international partners; and
- The state of the profession including issues of diversity, inclusion, equity, and accessibility, the creation of safe workspaces, and recommended policies and practices to improve the state of the profession.

