The National Academies of
SCIENCES • ENGINEERING • MEDICINE

DIVISION ON ENGINEERING AND PHYSICAL SCIENCES
SPACE STUDIES BOARD

Planetary Science Decadal Survey 2022-2032
Panel on Mars
Meeting No. 5
December 15, 2020
Virtual Meeting
ALL TIMES IN US EASTERN STANDARD TIME (UTC-5:00)

This agenda is a draft, subject to change, and was last updated on 12/8/2020 12:02 PM

AGENDA

TUESDAY, DECEMBER 15, 2020

OPEN SESSION

Meeting Open to the Public
Livestreaming Link: https://livestream.com/accounts/7036396/events/9437059

11:00 AM **Welcome and Introductions** ***Dr. Vicky Hamilton, PSDS2022 Mars Chair / Dr. Bethany Ehlmann, PSDS2022 Mars Vice-Chair***

11:05 AM **Panel 1: Geochronology and Cratering Studies on Mars**
(10 minute presentations & 45 minute discussion period)
ISSUE: What are outstanding questions for geochronology that can be addressed at Mars or via analysis of samples from Mars? What instruments or mission concepts bring new capabilities to the outstanding questions?
Moderator: ***Dr. Hap McSween, Member, PSDS2022-Mars***
Panelists: ***Dr. James Day, Professor, Geosciences Research Division, Scripps Oceanography Institute, U. of California – San Diego***
Dr. Stuart Robbins, Research Scientist, Southwest Research Institute
Dr. F. Scott Anderson, Principal Scientist, Southwest Research Institute
Dr. Barbara Cohen, Planetary Scientist, NASA-GSFC

12:30 PM *Committee Adjourns to Closed Session*

The following information is provided for any members of the general public who may be in attendance:

This meeting is being held to gather information to help the committee in its charge. This committee will examine the information and material obtained during this, and other public meetings, in an effort to inform its work. Although opinions may be stated and lively discussion may ensue, no conclusions are being drawn nor will recommendations be made. Observers who draw conclusions about the committee's work based on this meeting's discussions will be doing so prematurely.

Furthermore, individual committee members often engage in discussion and questioning for the specific purpose of probing an issue and sharpening an argument. The comments of any given committee member may not necessarily reflect the position he or she may actually hold on the subject under discussion, to say nothing of that person's future position as it may evolve in the course of the project. Any inference about an individual's position are therefore also premature.

NOTES FOR PRESENTERS

If your presentation contains unpublished data, ITAR controlled and/or other sensitive information, please be aware that the open sessions at the meeting may be recorded and/or webcast. Presentation materials given to the committee may be posted on a publicly accessible website. Please edit your presentations accordingly.

Mac users should assume that their presentation will be displayed via one of the NASEM's PCs. If your presentation is graphics heavy and best displayed via your own laptop, you should also bring a plain-vanilla pdf version of your presentation with you. The audience in the meeting room will see your presentation via your laptop and we will webcast the pdf file.

At some point a staff member will be asking you to sign a consent form allowing us to use your presentation, specifically to post it on our website.

STATEMENT OF TASK

The Space Studies Board shall establish a survey committee (the "committee") to develop a comprehensive science and mission strategy for planetary science that updates and extends the Board's current solar system exploration decadal survey, Vision and Voyages for Planetary Science in the Decade 2013-2022 (2011).

The new decadal survey shall broadly canvas the field of space- and ground-based planetary science to determine the current state of knowledge and to identify the most important scientific questions to be addressed during the interval 2023-2032. For the first time, this decadal survey will also study aspects of planetary defense, now that this activity is fully incorporated as an element of NASA's planetary science endeavors. The survey will also take into account planned human space exploration activities. In addition, the survey and report shall address relevant programmatic and implementation issues of interest to NASA and the National Science Foundation (NSF). Since the content and structure of the program portfolios of the two agencies are distinct from one another, implementation and investment recommendations specific to each agency should be elaborated in separate sections of the final report. This will ensure that the report's investment guidance will be clearly addressed to the appropriate agency.

It is critically important that the recommendations of the Committee be achievable within the boundaries of anticipated funding. NASA and NSF will provide an up-to-date understanding of these limitations to the committee at the time of survey initiation.

The report should provide a clear exposition of the following:

1. 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;

2. A broad survey of the current state of knowledge of the solar system;

3. The most compelling science questions, goals and challenges which should motivate future strategy in planetary science, astrobiology, and planetary defense;

4. A coherent and consistent traceability of recommended research and missions to objectives and goals;

5. 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;

6. 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;

7. 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;

8. 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

9. 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. Where possible, provide specific, actionable and practical recommendations to the agencies and community to address these areas.