

SPACE SCIENCE WEEK

The National
Academies of

SCIENCES
ENGINEERING
MEDICINE



SPRING 2021 MEETING OF THE COMMITTEE ON BIOLOGICAL AND PHYSICAL SCIENCES IN SPACE (CBPSS) March 23-25, 2021

Virtual Public Workshop Agenda

REGISTRATION: <http://ssw2021.eventbrite.com>

Wednesday, March 24, 2021

OPEN SESSION Workshop, Day 1

Using Commercial Lunar Payload Services (CLPS) to Achieve Lunar Biological and Physical Science Objectives

Workshop Organizing Question - *Looking at the period of time prior to the release of the next decadal survey, how can this community support and utilize commercial lunar payload services to address areas of research identified in the 2011 decadal?*

Pacific/Eastern Time Zones 8:00 AM/11:00 AM	1. Preparing for Biological and Physical Sciences on the Moon Moderators: Dava Newman and Robert Ferl CBPSS Co-Chairs Introduction (5 mins) Dava Newman and Robert Ferl Advancing Space Biology and Physical Sciences to the Moon (30 mins) Kevin Sato, NASA The Future of Space Biology Research as We Move Past Low-Earth Orbit (15 mins) Sharmila Bhattacharya, NASA Physical Sciences Experiment Concepts on the Moon (15 mins) Fran Chiaramonte, NASA
9:05 AM/12:05 PM	2. CLPS Plans and Opportunities Moderators: Mohammed Kassemi and James Pawelczyk CBPSS Members Introduction (5 mins)

	Overview of the CLPS Program (15 mins) Jay Jenkins, NASA CLPS Payload Integration (15 mins) Julie Schonfeld, NASA Best Practices for Lunar Science: Lessons from a CLPS Provider (15 mins) Sean Mahoney and Matt Kuhns, Masten Space Systems ESA Strategy for Science at the Moon and Cooperation with NASA through CLPS (15 mins) Jason Hatton, ESA CLPS Session Q&A (25 mins)
10:35 AM/1:35 PM	Break (40 mins)
11:15 AM/2:15 PM	3. Life Sciences Research on the Lunar Surface Moderators: Krystyn Van Vliet and Jana Stoudemire CBPSS Members Introduction (5 mins) Footprints & Fingerprints: Microbiome and the Moon (15 mins) Rob Knight, University of California, San Diego Mobilizing Microbes for the Moon (15 mins) Charles Cockell, University of Edinburgh Organ Chip Systems and Future Stem Cell Manufacturing on the Moon (15 mins) Clive Svendsen, Cedars-Sinai Medical Center The Impact of the Chang'e-4 Mission on Lunar Exploration Biology Perspectives (15 mins) Anna-Lisa Paul, University of Florida Life Sciences Session Q&A (25 mins)
12:45 PM/3:45 PM	Break (30 mins)
1:15 PM/4:15 PM	4. Physical Sciences Research on the Lunar Surface Moderators: Steven Collicott and Douglas Matson CBPSS Members Introduction (5 mins)

	Fire on the Moon (15 mins) Paul Ferkul, USRA Granular Materials Research in Lunar Gravity (15 mins) Karen Daniels, North Carolina State Radio Science from the Moon Enabled by NASA Commercial Landers (15 mins) Jack Burns, University of Colorado, Boulder Biological and Physical Science Research Possibilities on the Lunar Surface (15 mins) Clive Neal, University of Notre Dame Physical Sciences Session Q&A (25 mins)
2:45 PM/5:45 PM	Workshop Adjourns for the Day

Thursday, March 25, 2021 OPEN SESSION Workshop, Day 2 Using Commercial Lunar Payload Services (CLPS) to Achieve Lunar Biological and Physical Science Objectives	
Pacific/Eastern Time Zones 8:00 AM/11:00 AM	5. Moderators Present their Assessment of Issues and Major Ideas from their Sessions (10 mins each) CLPS Plans and Opportunities Moderators: Mohammed Kassemi and James Pawelczyk Life Sciences Research on the Lunar Surface Moderators: Krystyn Van Vliet and Jana Stoudemire Physical Sciences Research on the Lunar Surface Moderators: Steven Collicott and Douglas Matson
8:30 AM/11:30 AM	Closing Remarks (15 mins) Dava Newman and Robert Ferl
8:45 AM/11:45 AM	Workshop Adjourns

REMOTE CONNECTION DETAILS
Meeting Open to the Public Livestreaming Link: https://livestream.com/accounts/7036396/events/9578188
QUESTION & ANSWER SESSION

Using Slido for Session Q&A's

1. To participate in the Session Q&A's you **do not need** to download the Sli.do application.
2. Use the following link <https://app.sli.do/event/slugryxv> to take you directly to the Public Q&A (see #5 for next step)
3. Alternatively, you can access the Q&A by from Slido's site at <https://www.sli.do/> or download the app from
4. At the top of the screen, a bar with "joining as a participant? Enter the code **PublicCBPSS** in the box next to the hashtag
5. **Select the Session** that you are attending (i.e. 2. CLPS Session, 3. Life Sciences Session, or 4. Physical Sciences Session). To change the session, use the selection drop down found in upper left corner. See the agenda for Session times.
6. The Q&A question box will appear. Type in your question, please indicate if it is directed to a specific presenter or all session presenters.
7. Enter your name or remain Anonymous and click the "Send" button to submit your question.
8. You will then see your question and any others being asked by members of the public.
9. If you see a question that you would like asked in the list of questions, you can click on the thumbs up icon to UpVote it. UpVotes will be very helpful to the moderator if there are a lot of questions.

GENERAL NOTES

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.

RECORDING OF THE MEETING

This meeting will be recorded on Zoom by the National Academies of Sciences, Engineering, and Medicine ("The Academies"). Please be aware that by attending the meeting, you consent to your voice and likeness being for use on the Committee's website and in any media now known or hereafter devised in perpetuity, and you release The Academies from any liability due to such usage.

Committee on Biological and Physical Sciences in Space Website: <https://www.nationalacademies.org/our-work/committee-on-biological-and-physical-sciences-in-space>

Space Science Week

For additional information on all the Space Science Week activities, please visit: www.nas.edu/ssw