SPACE SCIENCE WEEK

The National Academies of SCIENCES ENGINEERING MEDICINE

COMMITTEE ON BIOLOGICAL AND PHYSICAL SCIENCES IN SPACE (CBPSS)

March 21-23, 2022

Virtual Public Draft Meeting Agenda

Monday, March 21, 2022

Space Science Week Plenary Session, Day 1

ALL TIMES IN US EASTERN DAYLIGHT TIME

Livestream Link: https://livestream.com/accounts/7036396/events/10214978

1:30 PM	**Welcome**	***Dr. Margy Kivelson, SSB Chair***
1:35 PM	**Address by NASA Deputy Administrator** (30-minute address)	***Ms. Pamela Melroy, NASA Deputy Administrator***
2:05 PM	**NASA Science Mission Directorate (SMD) Overview** (60-minute presentation and 15-minute discussion)	***Dr. Thomas Zurbuchen, Associate Administrator, NASA-SMD***
3:20 PM	*Break* *(55-minute break)*	
4:15 PM	**Panel 1: NASA SMD Science Endeavors** (7-minute presentation each and 25-minute discussion)	
	Moderator:	***Dr. Margy Kivelson, SSB Chair***
	Panelists:	***Dr. Thomas Zurbuchen, Associate Administrator, NASA-SMD*** ***Dr. Karen St. Germain, Director, Earth Science Division, NASA-SMD*** ***Dr. Nicola Fox, Director, Heliophysics Division, NASA-SMD*** ***Dr. Lori Glaze, Director, Planetary Science Division, NASA-SMD*** ***Dr. Paul Hertz, Director, Astrophysics Division, NASA-SMD*** ***Dr. Craig Kundrot, Director, Biological and Physical Sciences Division, NASA-SMD***
5:15 PM	**National Science Foundation (NSF) Science Program Update** (25-minute presentation)	***Dr. Debra Fischer, Director, Division of Astronomical Sciences, NSF***

5:40 PM **National Oceanic and Atmospheric Administration (NOAA)** ***Dr. Steve Volz***

National Environmental Satellite, Data, and Information Assistant Administrator, NOAA-NESDIS

Service (NESDIS) **Program Update**

(25-minute presentation)

6:05 PM *Plenary Session Adjourns for the Day*

Public Session
Keynote Space Science Week Public Lecture
TIME IS IN US EASTERN DAYLIGHT TIME

Livestream Link: https://livestream.com/accounts/7036396/events/10214978

7:00 PM **Opening Space Science Week Keynote Talk**

"The State of U.S. Science and Engineering 2022"

Dr. Julia Phillips

National Science Board

Keynote Abstract

Hear from Dr. Julia Phillips about a report from the National Science Board sent to the President and Congress. Hear about the global position of the U.S. science and engineering enterprise and how it has shifted due to rapid growth in Asia's research investments and science and technology capabilities. The data shows that strengthening the U.S. science and engineering enterprise is critical to maintaining the U.S. position as a lead performer and collaborator of science and technology activities globally.

Keynote Speaker Bio

Julia M. Phillips is Director Emeritus and Retired Vice President and Chief Technology Officer, Sandia National Laboratories. Previous positions include Deputy Chief Technology Officer and Director, Laboratory Research & Strategy Partnerships and Director, Nuclear Weapons Science and Technology at Sandia. Her research has been in the areas of epitaxial metallic and insulating films on semiconductors, high-temperature superconducting, ferroelectric, and magnetic oxide thin films, and novel transparent conducing materials. Dr. Phillips currently serves as Home Secretary for the National Academy of Engineering and is past chair of the APS Division of Condensed Matter Physics and served as president of the Materials Research Society. She served as a member of the Working Group for the 2014 NNI (National Nanotechnology Initiative) Review under the President's Council of Advisors on Science & Technology (PCAST). Dr. Phillips holds a Ph.D. in applied physics from Yale University and a B.S. in physics from the College of William and Mary.

Tuesday, March 22, 2022

Space Science Week Plenary Session, Day 2
ALL TIMES IN US EASTERN DAYLIGHT TIME

Livestream Link: https://livestream.com/accounts/7036396/events/10214997

11:30 AM **Welcome** ***Dr. Margy Kivelson***

SSB Chair

Updates from National Space Agencies and Research Institutions from Around the World

11:35 AM **European Space Agency (ESA) Program Science Highlights** ***Dr. Günther Hasinger***

(10-minute presentation and 5-minutes discussion) ***Director of Science, ESA***

11:50 AM **Japanese Aerospace Exploration Agency (JAXA) Science Highlights** ***Dr. Masaki Fujimoto***

(10-minute presentation and 5-minutes discussion) ***Deputy Director General, JAXA***

12:05 PM *Break*

(15-minute break)

12:20 PM **Chinese National Space Science Center (NSSC) Science Highlights** ***Dr. Chi Wang***

(10-minute presentation and 5-minutes discussion) ***Director-General, NSSC***

Chinese Academy of Sciences

12:35 PM **Panel 2: New Investigations in Space Science**

(6-minute presentation each and 16-minutes discussion)

Moderator: ***Dr. Colleen Hartman, SSB Director***

Panelists: ***Dr. Dipankar Banerjee, Indian Institute of Astrophysics*** **[Aditya-L1]**

Dr. Eli Waxman, Leader, ULTRASAT, Weizmann Institute of Science, Israel **[ULTRASAT]**

Dr. Chae Kyung Sim, Senior Researcher, Space Science Division, Korea Astronomy and Space Science Institute **[KPLO]**

Dr. Adenilson da Silva, Chief, Division of Space Systems, National Institute for Space Research, Brazil (INPE) **[Amazônia-1]**

1:15 PM *Break*

(55-minute break)

2:10 PM **Reflections of the COSPAR President** ***Dr. Len Fisk, President***

(20-minute presentation and 15-minute discussion) ***Committee on Space Research (COSPAR)***

2:45 PM **Panel 3: Space Situational Awareness, Orbital Debris Mitigation, and Hazards in the Commons**

(5-minute presentation each and 25-minute discussion)

Moderator: ***Dr. Colleen Hartman, SSB Director***

Panelists: ***Dr. J.-C. Liou, Chief Scientist for Orbital Debris, NASA***

Dr. Riccardo Bevilacqua, Professor, Aerospace Engineering, Embry-Riddle Aeronautical University

Dr. John Crassidis, Samuel P. Capen Chair Professor, Department of Mechanical and Aerospace Engineering, University at Buffalo

Dr. Holger Krag, Head, Space Debris Office, European Space Agency

3:30 PM *Break*

(60-minute break)

4:30 PM **Space Debris Removal** ***Dr. Gregory Miller, Professor, Military and Security Studies***

(20-minute presentation and 10-minutes discussion) ***Air Command and Staff College***

5:00 PM **NASA Human Space Operations Presentation** ***Ms. Kathy Lueders, Associate Administrator***

(20-minute presentation and 10-minutes discussion) ***Space Operations Mission Directorate, NASA***

5:45 PM **Closing Remarks** ***Dr. Margy Kivelson***

SSB Chair

5:50 PM *Plenary Session Adjourns*

Public Session
Keynote Space Science Week Public Lecture
TIME IS IN US EASTERN DAYLIGHT TIME

Livestream Link: https://livestream.com/accounts/7036396/events/10214997

6:30 PM **Keynote Space Science Week Public Lecture**

The *Curiosity* to Explore and the *Perseverance* to Rove: A Decade of Discoveries on Mars

Dr. Amy Williams Assistant Professor, Department of Geological Sciences, University of Florida

Public Lecture Abstract

The exploration of Mars has taken us from 'Follow the Water' with the Spirit and Opportunity rovers, to 'Follow the Carbon' with the Curiosity rover. We now accept the challenge to 'Follow the Life' with the grand search for ancient life on Mars through the Perseverance rover mission and the Mars Sample Return program. This lecture will explore the foundational discoveries and ongoing exploration of Mars with NASA's Curiosity and Perseverance rovers.

Speaker Bio

Dr. Amy Williams is an astrobiologist and assistant professor of Earth and Planetary Sciences at the University of Florida. Her research focuses on the interaction between microbial life, the geochemical environment, and the rock record on Earth, and how to recognize habitable environments and potentially preserved microbial life on Mars. She has been a member of the NASA Mars Curiosity rover mission since 2009 and has recently joined the cohort of MSL Participating Scientists. She works with the SAM instrument as a lead for SAM's TMAH wet chemistry experiment, designed to detect specific recalcitrant organic molecules in Mars' sediments. She is also a Participating Scientist with the NASA Mars Perseverance rover science team, where she is a Long Term Planner for the mission. She has previously been a NASA Earth and Space Science Fellow, a NASA postdoctoral research associate, and a member of the 2023-2032 Planetary Science and Astrobiology Decadal Survey. She received nominations for the 2017 Maryland Academy of Sciences Outstanding Young Scientist Award, the 2021 UF College of Liberal Arts and Sciences Faculty Mentor of the Year Award, and the 2022 UF Excellence Award for Assistant Professors. She received a University of Florida Research Promotion Initiative Award in 2021

Wednesday, March 23, 2022 COMMITTEE ON BIOLOGICAL AND PHYSICAL SCIENCES IN SPACE (CBPSS) CLOSED SESSION	
Pacific/Eastern Time Zones **08:00 AM/11:00 AM**	**Committee and Staff Only**
9:30 AM/12:30 PM	***Closed Session Adjourns and Break/Lunch / Reconvene in Open Session*** *(60 mins.)*

Wednesday, March 23, 2022 OPEN SESSION		
Livestream Link: https://livestream.com/accounts/7036396/events/10215041		
Pacific/Eastern Time Zones **10:30 AM/1:30 PM**	**Welcome**	Dava Newman and Douglas Matson, CBPSS Co-Chairs
10:35 AM/1:35 PM	**Biological and Physical Sciences Division Status** - Status and Planning (30 mins.) - Q&A (10 mins.)	Craig Kundrot, NASA SMD BPS
11:15 AM/2:15 PM	**ISS Planning for Research through 2030** (*Presentation 20 min, Q&A 10 min)*	Robyn Gatens, NASA SOMD
11:45 AM/2:45 PM	**Panel: Commercial LEO Destination (CLD) Plans and Research Opportunities** *(80 min (12 minute talk per person; Q&A 20 min))* Moderators: Dava Newman and Douglas Matson • CLD Program Overview — **Misty Snopkowski, NASA** • Orbital Reef — **Erika Wagner, Blue Origin** • Northrop Grumman Space Station — **Sean Chait, Northrop Grumman** • Starlab — **David Marsh, Nanoracks** • Axiom Station — **Mary Lynne Dittmar, AxiomSpace**	
1:05 PM/4:05 PM	***Open Session Adjourns and Short Break / Reconvene in Closed Session*** (10 mins)	

CLOSED SESSION	
1:15 PM/4:15 PM	**Committee and Staff Only**

2:00 PM/5:00 PM	***Meeting Adjourns***

REMOTE CONNECTION DETAILS

To view the open session of the CBPSS meeting on March 23rd, please use the link provided below.

https://livestream.com/accounts/7036396/events/10215041

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