

# SPACE SCIENCE WEEK

The National  
Academies of

SCIENCES  
ENGINEERING  
MEDICINE



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## SPRING 2019 MEETING OF THE COMMITTEE ON BIOLOGICAL AND PHYSICAL SCIENCES IN SPACE

March 26-28, 2019

NAS Building – 2101 Constitution Ave NW – Washington D.C.

### PUBLIC AGENDA

(Subject to Change)

**Tuesday March 26, 2019**

#### MORNING PARALLEL BREAK-OUT SESSION

COMMITTEE ON BIOLOGICAL AND PHYSICAL SCIENCES IN SPACE (CBPSS) – Room 120

**7:30 AM** *Registration Opens and Working Breakfast is Available in the Great Hall*

#### CLOSED SESSION

**8:30 to 9:25 AM**

Committee Discussion

#### OPEN SESSION

<b>9:30 AM</b>	<b>Welcome and Introductions</b> <ul style="list-style-type: none"><li>• New Members</li><li>• New Committee Charge</li><li>• Status of Decadal Planning</li><li>• Other Issues</li></ul>	<b>Rob Ferl, Co-Chair</b>
<b>10:15 AM</b>	<i>Break</i>	
<b>10:30 AM</b>	<b>Update on SLPSRA Activities</b> <i>Presentation 20 min, Q&amp;A 10 min</i> <ul style="list-style-type: none"><li>• Update on SLPSRA Roles and Responsibilities</li><li>• Program Status</li><li>• Status of ISS Transition Planning</li><li>• Update on Research Planning for Gateway and Lunar Surface</li></ul>	<b>Craig Kundrot, NASA</b>
<b>11:00 AM</b>	<b>ESSC Life and Physical Sciences Update</b> <i>Presentation 20 min, Q&amp;A 10 min</i>	<b>Dominique Langevin</b> <b>ESSC Life and Physical Sciences Panel</b>
<b>11:30 AM</b>	<b>Discussion</b> <ul style="list-style-type: none"><li>• Questions for Plenary Speakers</li><li>• Questions for Symposium Speakers</li></ul>	
<b>12:00 PM</b>	<i>Working Lunch Available in the Great Hall</i>	

Tuesday March 26, 2019

## JOINT PLENARY SESSION in the Kavli Auditorium

## Opening Session: NASA Science Program Update

1:00 PM	Welcome	Colleen Hartman, SSB/ASEB Director
1:05 PM	<b>NASA Science Mission Directorate: FY 2020 Budget, Lunar Program, Science at the Gateway, and D&amp;I</b> <i>Presentation 25 min, Q&amp;A 30 min</i>	Thomas Zurbuchen, NASA-SMD

## **Focus Session: Areas of International Cooperation in the Program of Record and Near- to Long-term Challenges**

2:00 PM	<b>International Panel A</b> <i>90 min (15 minute talk per person; Q&amp;A 30 min)</i> <ul style="list-style-type: none"><li>• European Space Agency – Space Science (ESA-SCI) <span style="float: right;">Fabio Favata, ESA-SCI</span></li><li>• Chinese Academy of Sciences – National Space Science Center (CAS-NSSC) <span style="float: right;">Xiaolong Dong, CAS-NSSC</span></li><li>• JAXA Institute of Space and Astronautical Science (JAXA/ISAS) <span style="float: right;">Masaki Fujimoto, JAXA/ISAS</span></li><li>• Committee on Space Research (COSPAR) <span style="float: right;">Len Fisk, COSPAR President</span></li></ul>	<b>Steve Running, Moderator</b>
3:30 PM	<i>Break</i> <i>Refreshments available in the West Court</i>	
4:00 PM	<b>International Panel B</b> <i>90 min (15 minute talk per person; Q&amp;A 30 min)</i> <ul style="list-style-type: none"><li>• European Space Agency – Human and Robotic Exploration <span style="float: right;">David Parker, ESA-HRE</span></li><li>• Canadian Space Agency – Space Exploration Development (CSA-SED) <span style="float: right;">Erick Dupuis, CSA-SED</span></li><li>• NOAA National Environmental Satellite, Data, and Information Service (NESDIS) <span style="float: right;">Steve Volz, NOAA</span></li><li>• NASA Science Mission Directorate (SMD) <span style="float: right;">Thomas Zurbuchen, NASA-SMD</span></li></ul>	<b>Alvaro Giménez, Moderator</b>
5:30 PM	<b>Closing Comments</b>	<b>John Grunsfeld, Astrophysicist/Astronaut</b>
6:00 PM	<i>Working Dinner</i>	

Wednesday, March 27, 2019

COMMITTEE ON BIOLOGICAL AND PHYSICAL SCIENCES IN SPACE (CBPSS) – Room 120

**7:30 AM** *Registration opens and breakfast is available in the Great Hall*

OPEN SESSION

## Symposium<sup>1</sup>: Issues Informing the Decadal Study

## 9:00 AM      Welcome and Introductions      Robert Ferl, Co-Chair

<sup>1</sup> Symposium Zoom connection instructions available at the end of the agenda.

<b>9:15 AM</b>	<b>NASA Technology Leaders Forum – Understanding Research Needs and Directions</b> Moderator: Krystyn Van Vliet, CBPSS Member <i>Moderator Intro 5 min</i> <i>Presentation 12 min Each</i> <i>Moderated Discussion and Q&amp;A 30 min</i>	<b>AI Conde, OCT</b> <b>Jim Reuter, STMD</b> <b>Christopher Moore, Advanced Exploration Systems</b> <b>Robyn Gatens, ISS (via Zoom)</b> <b>Craig Kundrot, SLPSRA</b>
<b>10:50 AM</b>	<i>Break Available Outside Room</i>	
<b>11:10 AM</b>	<b>Accomplishments and Potential in Space Manufacturing</b>	<b>Robert Hoyt, Tethers Unlimited</b>
<b>11:40 AM</b>	<i>Working Lunch Available in the Great Hall</i>	
<b>1:00 PM</b>	<b>Forecasting the 2024-2035 Space Based National Laboratory for Life and Physical Sciences Space Research</b>	<b>Richard Leach, ISS National Laboratory</b>
<b>1:15 PM</b>	<b>Panel: Commercial Providers of Research Platforms and Capabilities</b> Moderator: Steven Collicott <i>Moderator Intro 5 min</i> <i>Presentation 12 min Each Panelist</i> <i>Moderated Discussion and Q&amp;A 35 min</i>	<b>John Koroshetz, Sierra Nevada Corporation</b> <b>Christian Maender, Axiom Space(via Zoom)</b> <b>Bob Richards, Northrop Grumman</b> <b>Jana Stoudemire, Space Tango</b>
<b>2:45 PM</b>	<i>Break Available Outside Room</i>	
<b>3:00 PM</b>	<b>High Priority Questions and Emerging Areas in Regenerative Engineering and Medicine</b>	<b>Yusuf Khan, UConn Health Center</b>
<b>3:30 PM</b>	<b>Panel: Research Interests and Future Needs at Federal Agencies Outside NASA</b> Moderator: Jim Pawelczyk, CBPSS Member <i>Moderator Intro 5 min</i> <i>Presentation 12 min Each Panelist</i> <i>Moderated Discussion and Q&amp;A 35 min</i>	<b>Shahab Shojaei-Zadeh, NSF CBET</b> <b>Lucie Low, NIH (NCATS&amp;NCI)</b> <b>Hongda Chen, USDA-NIFA</b> <b>Carolynn Conley, MEI Technologies (DOD Space Test Program)</b>
<b>5:00 PM</b>	<b>Wrap-Up Discussion</b>	<b>All</b>
<b>5:30 PM</b>	<i>Symposium Adjourns</i>	
<b>5:30 PM</b>	<i>Working Dinner</i>	

#### Public Lecture – Kavli Auditorium

<b>7:00 PM</b>	<b>Sea Level Rise from Melting Ice Sheets and What We Should Do About it</b>	<b>Dr. Eric Rignot</b> University of California Irvine and JPL
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#### Thursday March 28, 2019

**COMMITTEE ON BIOLOGICAL AND PHYSICAL SCIENCES IN SPACE (CBPSS) – Room 120**  
Open Session is currently scheduled for 9:00am-11pm, but is subject to change

<b>7:30 AM</b>	<i>Registration Opens and Working Breakfast Available in the Great Hall</i>	
<b>9:00 AM</b>	<b>Decadal Planning Discussion with NASA</b>	<b>Craig Kundrot, NASA</b>
<b>10:45 AM</b>	<i>Break (Open Session Ends; Committee Reconvenes in Closed Session)</i>	

**CLOSED SESSION**

**11:00 AM to 1:30 PM**

**Committee Discussion**

## GENERAL NOTES

**Pre-registration:** All participants, including committee members, invited speakers and other attendees, are strongly encouraged to preregister at <https://www.surveymonkey.com/s/4808628/Space-Science-Week-2019>

**Registration** will be located in the Great Hall during the event. Please check-in there to receive your badge.

**NAS Building:** Is located at 2101 Constitution Ave., NW, between the State Department and the Vietnam Veterans Memorial. Additional information about the NAS Building is available at <http://www.nationalacademies.org/about/contact/nax.html>.

**Wi-Fi Connection:** To connect to the Wi-Fi choose “Visitor Network” then open up a browser and click “Accept terms and conditions.” You will then be connected to the internet.

**Metro:** The closest Metro station (0.5 miles) is Foggy Bottom (Blue and Orange lines; exit and turn right, then turn left once you have passed the State Department)—see <https://www.wmata.com/rider-guide/stations/foggy-bottom.cfm>.

**Parking:** Very limited parking is available onsite at the NAS. The 22 available parking spaces are first come first served. Other available parking options are as follows:

- Columbia Plaza –23<sup>rd</sup> and Virginia Avenue NW.
- Colonial Parking – 20<sup>th</sup> Street, NW, between E and F Streets.

**Space Science Week Website:** [http://sites.nationalacademies.org/SSB/SSB\\_177653](http://sites.nationalacademies.org/SSB/SSB_177653)

**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.

## REMOTE CONNECTION DETAILS

### Zoom Web Conference & Telecon Instructions

Join from a computer:

1. Click on the URL (below). A popup will appear that says “Open URL:Zoom Launcher;” Click the “Open” button and let Zoom load (may take a minute).
2. Once loaded, Zoom will automatically display another pop-up for the audio connection. Please click the “call me” tab and enter the phone number you would like to be called at (i.e. home, office, mobile). Click “Call me” and follow the prompts.

Join from a mobile device:

1. Download the Zoom app from your phone’s app store (if you don’t have it installed already).
2. Click on the URL (below), or open the Zoom app and enter the Meeting ID: (below), and press join. Enter your name if requested.
3. The Zoom app will automatically display a pop-up window for the audio connection. Select the “Call my Phone” option from the menu, enter your phone number, press call, and follow any prompts.

Join by phone only:

1. Connection quality is much better via Zoom’s “Call me” feature from the web-conference, so we strongly recommend that you connect this way.
2. If you are not able to do so, you can dial 1-877-853-5257 (Toll Free) and enter the Meeting ID: (below). International numbers are available at: [https://nasem.zoom.us/zoomconference?m=dm0fun9LyXrhECcUWQt2Wwdh\\_9TUrhXG](https://nasem.zoom.us/zoomconference?m=dm0fun9LyXrhECcUWQt2Wwdh_9TUrhXG)

*NOTICE: The Zoom service allows audio and any materials exchanged or viewed during the session to be recorded and shared. Please be aware that by participating in this activity, you consent to your voice, likeness, and any materials you provide, being recorded for use and dissemination, without payment of any compensation for such use, in any language, format, or media now known or later devised, and you release the National Academies of Sciences, Engineering, and Medicine from any and all claims, liability, or damages arising from any such use. The Academies will proceed in reliance upon such consent and release. If you do not consent to the foregoing, please do not join the session.*

Topic	Time (EDT)	Meeting ID	Join URL
<b>TUESDAY, March 26</b>			
CBPSS SSW Day 1 Open	9:30 AM	775 680 700	<a href="https://nasem.zoom.us/j/775680700">https://nasem.zoom.us/j/775680700</a>
Space Science Week 2018 Plenary	1:00 PM	999 0000101	<a href="https://nasem.zoom.us/j/999000010">https://nasem.zoom.us/j/999000010</a>
<b>WEDNESDAY, March 27</b>			
CBPSS Symposium Open	9:00 AM	686 950 352	<a href="https://nasem.zoom.us/j/686950352">https://nasem.zoom.us/j/686950352</a>
<b>THURSDAY, March 28</b>			
CBPSS SSW Day 3 Open	9:00 AM	980-294-588	<a href="https://nasem.zoom.us/j/980294588">https://nasem.zoom.us/j/980294588</a>