

Committee on Biological and Physical Sciences in Space (CBPSS)

Disclaimer: These slides are a personal assessment of issues discussed during recent Committee on Biological and Physical Sciences in Space meetings, and should not be cited or quoted - as the views expressed do not necessarily reflect those of Committee, the SSB, the ASEB or the Academies.

CBPSS Status

- Committee
- NASA reorganizations related to CBPSS
- Space Life and Physical Sciences Mid Term Assessment
- Mission architectures, destinations and impacts to CBPSS
- Next Decadal

CBPSS Status

- CBPSS
 - Round of transitions, including co chair rotation

Elizabeth R. Cantwell, Arizona State University (Co-Chair)

Robert J. Ferl, University of Florida (Co-Chair)

Kenneth M. Baldwin, University of California, Irvine

Marianne Bronner, California Institute of Technology

Steven Collicott, Purdue University

Vijay K. Dhir, University of California, Los Angeles

Mohammad Kassemi, Case Western Reserve University

Wayne Nicholson, University of Florida

James A. Pawelczyk, The Pennsylvania State University

Marylyn D. Ritchie, Geisinger Health System

Pol D. Spanos, Rice University

Krystyn J. Van Vliet, Massachusetts Institute of Technology

Peter W. Voorhees, Northwestern University

Erika Wagner, Blue Origin

Hai Wang, Stanford University

David Weitz, Harvard University

CBPSS Status

- CBPSS
 - Round of transitions, including co-chair rotation
- Movement from Standing to Discipline Committee
- Notion of primarily NASA providing the access to this science portfolio in the era of commercial LEO and Gateway
- National Space Council Discussions

CBPSS Status

- Opportunities for Exploration and Science Synergies
 - Syncopation of decadal with ISS transition and emergence of Gateway create enormous opportunity
 - Physical Sciences
 - Gateway: Nothing more obvious or critical than the need for better life support systems
 - Gateway: Widely recognized that ISS systems are too labor intensive and prone to repair
 - Gateway: Interactions of phase flow and systems, together with the microbiomes of the build environment highlight the value of science in the evolution of systems.
 - ISS: Emergence of physical phenomena driving current wave of manufacturing and process development, and the earliest needs for commercial science in microgravity. Followed by biotechnology but that is truly less developed, even if it is more celebrated?
 - Biological Sciences
 - Gateway: Radiation is the major key
 - Interactions of radiation and microgravity in a new realm
 - Preparation for partial g deployments on Moon and Mars

CBPSS Status

- Biggest elements, however, are more immediate and critical
 - Role of science in defining the reasons for the Gateway, from the exploration perspective
 - Role of science in defining the reasons for LEO Commercialization
 - From the National Space Council, this is emerging as the big elephant in the room
 - One major opportunity for LEO development is the known quantity of science needs that exist at NASA and increasingly, perhaps, in the commercial realm.
 - Near-term, the biggest LEO science needs are likely to be from NASA. NASA science, therefore, can be a mechanism to support LEO commercial development
- Therefore one way that NASA can increase the commercial development of LEO is by supporting science in LEO and returning SLPSRA budgets to Spacelab era levels and maintaining access to LEO platforms

Next Decadal

- Discussions with community have begun
- Discussions with NASA have begun
- ASGSR and others query to input
- October CBPSS meeting focused on strategic planning questions for decadal process
- 2019 nominal for formal discussions on the process, in order to be out on time

