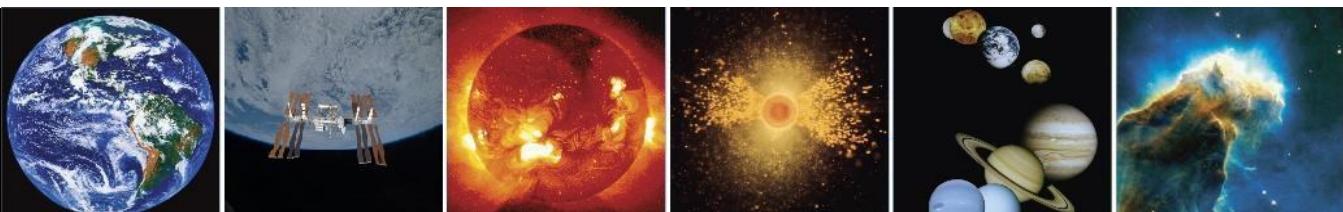


# SPACE STUDIES BOARD NEWS



JULY - SEPTEMBER 2015

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*"The international roadmap model is an interesting complement to domestic decadal surveys. "*

*SSB Chair David Spergel*

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# SPACE STUDIES BOARD NEWS



## FROM THE CHAIR



### How do we plan as an international community?

"How do we plan as an international community?" was one of the questions asked at the August 2015 XXIX International Astronomical Union (IAU) General Assembly in Hawaii. Members of the Space Studies Board helped organize a Focus Meeting at the IAU assembly that explored this challenge and related issues.

In the United States, the Space Studies Board organizes decadal surveys that provide a framework for prioritizing scientific goals and missions across astronomy and astrophysics, planetary sciences, heliophysics, earth science from space and most recently, biological and physical sciences in space. While each nation or region has its own process for planning for major government investments in these disciplines, many space-science communities are moving towards models like the U.S. decadal surveys. The Australian and Canadian scientists each conduct their own surveys for astronomy on a roughly 10-year time scale. The Japanese academic community engages in an even more ambitious process of prioritizing projects across the sciences and humanities. The European science community has processes of identifying and ranking its top priorities as an international community and a long tradition of engaging in international projects through organizations like CERN, European Southern Observatory (ESO) and the European Space Agency (ESA).

A first step towards harmonizing these national (and European) efforts is through communication. The IAU provided a format where U.S. scientists could hear the exciting ambitions of our international colleagues, including those from China. With Congress limiting contacts between NASA and China's space agencies, international forums are essential for maintaining contacts and learning of future mission plans. China is poised to become a major player in space science.

Extending the decadal survey model to an international prioritization effort would be difficult and in many ways counterproductive. The U.S. government (and similarly other governments) relies on these surveys to identify priorities for federal spending. If extended to international prioritization, one could imagine that government leaders would be unlikely to want scientists from other nations setting domestic priorities. Organizing a national decadal survey is already a herculean effort; these surveys bring together very diverse subcommunities and it is always challenging to reach consensus. An international survey would be an even more daunting process and one that just may be too ambitious.

So in considering alternate models for promoting the coordination of national priorities across international boundaries, the recently released COSPAR space weather roadmap provides an interesting framework for international collaboration in space planning. An international team led by Karel Schrijver of Lockheed Martin in the U.S. and Kirsti Kauristie of the Meteorological Institute of Finland formulated a roadmap which, building from current agency plans and visions, discusses the current landscape of our understanding of space weather and of the current suite of resources deployed by various nations, as well as trying to anticipate future needs. The roadmap identifies upcoming gaps in space weather related data and develops a common vision for science priorities and for the best observational pathways to achieve them.

The international roadmap model is an interesting complement to domestic decadal surveys. While a survey provides a well-vetted set of priority science objectives for a national scientific program, a roadmap outlines our broader aspirations of how the international community might pursue scientific questions of global importance. Just as part of the benefit of the decadal survey is bringing together the national community to build a consensus on priorities, the international roadmap is an opportunity to communicate national and trans-national plans. Given the pace of big projects, updating roadmaps on a 5-year timescale would likely be a realistic goal.

David Spergel, SSB Chair

*The views expressed here do not necessarily reflect those of the SSB or the National Academies of Sciences, Engineering, and Medicine*



## SSB MEMBERSHIP

JULY 1, 2015—JUNE 30, 2016

**DAVID N. SPERGEL**, *Chair*

Princeton University

**ROBERT D. BRAUN**, *Vice Chair*

Georgia Institute of Technology

**JAMES ANDERSON**

Harvard University

**JAMES BAGIAN**

University of Michigan

**JEFF M. BINGHAM**

Consultant

**PENELOPE J. BOSTON**

New Mexico Institute of Mining and Technology

**MARY LYNN DITTMAR**

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Futron Corporation

**THOMAS R. GAVIN**

Jet Propulsion Laboratory

**NEIL GEHRELS**

NASA Goddard Space Flight Center

**SARAH GIBSON**

National Center for Atmospheric Research

**WESLEY HUNTRESS**

Carnegie Institution of Washington

**ANTHONY C. JANETOS**

Boston University

**CHRYSSA KOUVELIOTOU**

The George Washington University

**SAUL PERLMUTTER**

Lawrence Berkeley National Laboratory

**LOUISE M. PROCKTER**

Johns Hopkins University, Applied Physics Laboratory

**MARK THIEMENS**

University of California, San Diego

**MEENAKSHI WADHWA**

Arizona State University

**THOMAS H. ZURBUCHEN**

University of Michigan

**LIAISON**

**CHARLES KENNEL**

*U.S. REPRESENTATIVE TO COSPAR*

Several members of the SSB participated in a 2-day focus session on international coordination and collaboration in research in astronomy and astrophysics at the IAU's General Assembly in August. The IAU is the international astronomical organization that brings together more than 10,000 professional astronomers from almost 100 countries. Its mission is to promote and safeguard the science of astronomy in all its aspects through international cooperation. *Photo courtesy of Michael Moloney.*



Former SSB (and Aeronautics and Space Engineering Board) Director, Marcia S. Smith was awarded the International Institute of Space Law (IISL) Lifetime Achievement Award at the 66th International Astronautical Congress (IAC 2015) held October 12-16 in Jerusalem, Israel. "In recognition of her four decades of outstanding service to the international community of nations and the IISL, to which she has made invaluable contributions as a director and as Vice President, played notable roles in the promotion of research and discourse on policy and legal aspects throughout her distinguished professional career, making significant contributions to the development of literary resources and rendering immense service to academies and policy making bodies at national and international levels in the fields of space and astronautics."

## SSB STANDING COMMITTEES

### Committee on Astrobiology and Planetary Science (CAPS)

Philip R. Christensen, Arizona State University (Co-Chair)  
J. Gregory Ferry, Pennsylvania State University (Co-Chair)

### Committee on Astronomy and Astrophysics (CAA)

(Joint with the Board on Physics and Astronomy)

Marcia Rieke, University of Arizona (Co-Chair)  
Paul L. Schechter, MIT (Co-Chair) *through August 2015*

### Committee on Biological and Physical Sciences in Space (CBPSS)

(joint with the Aeronautics and Space Engineering Board)

Elizabeth Cantwell, Lawrence Livermore National Laboratory (Co-Chair)  
Robert J. Ferl, University of Florida (Co-Chair)

### Committee on Earth Science and Applications from Space (CESAS)

Joyce E. Penner, University of Michigan (Chair)

### Committee on Solar and Space Physics (CSSP)

J. Todd Hoeksema, Stanford University (Co-Chair)  
Mary K. Hudson, Dartmouth College (Co-Chair)

For more information, go to <[http://sites.nationalacademies.org/SSB/ssb\\_052296](http://sites.nationalacademies.org/SSB/ssb_052296)>.



## SSB ACTIVITIES

### THE BOARD AND ITS STANDING COMMITTEES

The Space Studies Board (SSB) did not meet during this quarter, however the Executive Committee (XCOM) of the SSB met July 28-29 in Washington, DC. The XCOM was joined by John Culberson, Chairman of the House CJS Appropriations Subcommittee and Congressman Chaka Fattah, Ranking Member of the House CJS Appropriations Subcommittee for a discussion on congressional perspectives. The XCOM was also joined by John Grunsfeld, associate administrator, NASA SMD to discuss potential topics that SMD might ask the SSB to address. Discussions on the views from Capitol Hill and the White House on space science issues were held with Congressional, OSTP and OMB staff. The XCOM was given briefings and had discussions with the chairs of two completed studies, Phil Christensen (*Sharing the Adventure with the Student: Exploring the Intersections of NASA Space Science and Education: A Workshop Summary*) and Alan Dressler (*The Space Science Decadal Surveys: Lessons Learned and Best Practices*); and one ongoing study chair, Thomas Zurbuchen (Achieving Science Goals with CubeSats). The XCOM also had discussions with standing committee chairs and amongst themselves about various potential topics for new studies, the biennial SSB workshop and planning for the Fall 2015 and Spring 2016 meetings.

The fall meeting of the board was held in Irvine, CA at the Arnold and Mabel Beckman Center, November 3-5, 2015 (a full write-up for that meeting will appear in the next newsletter). The spring meeting will be held in Washington, DC, April 26-28, 2016. Visit [www.nas.edu/ssb](http://www.nas.edu/ssb) to stay up to date on board, workshop, and study committee meetings and developments.

The Committee on Astrobiology and Planetary Science (CAPS) met on September 16-17, 2015 in Irvine, CA. At this meeting, CAPS was presented with a Europa Mission update from Robert Pappalardo and Barry Goldstein of JPL. Gregg Vane, JPL, discussed preparing for COPAR 2018. Neil Murphy, JPL, presented on Ice Giant Mission Status and Planning. CAPS was briefed on the report *The Space Science Decadal Surveys: Lessons Learned and Best Practices*, by Alan Dressler and Steve Mackwell. Michael New gave a presentation regarding NASA's Astrobiology Strategy and Carl Pilcher gave an update on the status of the NASA Astrobiology Institute. Michael Mumma, NASA, presented about Martian Methane and Chris Webster discussed MSL Observations of Martian Methane. CAPS also heard a presentation from Ken Far-

ley, Caltech, on the Mars 2020 and Sample Caching Study. Jim Green presented a NASA Planetary Science Division update.

The next meeting of CAPS will be held in Washington, DC on March 31- April 2, 2016 during Space Science Week. To learn about upcoming meetings, and download presentations from past meetings, please visit [http://sites.nationalacademies.org/SSB/SSB\\_067577](http://sites.nationalacademies.org/SSB/SSB_067577).

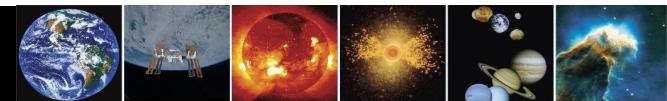
The Committee on Astronomy and Astrophysics (CAA) did not meet in person this quarter. In July, the committee held a teleconference with the NASA Astrophysics Division, the NSF Astronomy Division, and the DOE Office of High Energy Physics to discuss the recent Academies report, *Optimizing the U.S. Ground-Based Optical and Infrared Astronomy System*.



The next committee meeting will take place during Space Science Week on March 29-31, 2016. In the interim, the CAA may meet periodically via teleconference. For more information about the CAA, and to download presentations from past meetings, please visit [http://sites.nationalacademies.org/BPA/BPA\\_048755](http://sites.nationalacademies.org/BPA/BPA_048755).

The Committee on Biological and Physical Sciences in Space (CBPSS) met on October 27-29, 2015 in Irvine, California for a meeting organized to explore both near term challenges and opportunities in the microgravity research endeavor, and long term

planning for the post-ISS period. At the meeting, CBPSS received a presentation on NASA's SLPSSRA Program Status and Issues from Marshall Porterfield who also updated the committee on the status of Genelab and Open Science. David Tomko, NASA, presented on Space Biology planning and Steve Davison, NASA, discussed Human Research planning. Francis Chiaromonte, NASA, briefed CBPSS on Physical Sciences and Nan Yu, JPL, presented on Fundamental Physics planning. The committee also heard briefings from Robyn Gatens regarding Commercial LEO for Research; Warren Bates, CASIS, on Promoting LEO Ecosystem development and Ben Roberts, OSTP for a discussion on Commercial LEO and ISS follow-on Issues. The committee also held a focused panel session on the Potential of Cubesats for Microgravity Research which included a presentation from Tony Ricco, NASA and Wayne Nicholson of the University of Florida. The Panel session included discussions with A.C. Matin, Stanford; John Hines, JH Technology Associates; Sharmila Bhattacharya, NASA Ames; and Andrew Pohorille, NASA. CBPSS also heard from Jeff Smith, NASA on the potential for biological experiments on the Orion EM-1 Mission. CBPSS augmented its membership this quarter with three additional members following an examination of the



(Continued from page 4)

full scope of NASA program activity and plans during its first year of activity. The open sessions concluded with parallel breakout discussion groups focused on needs, challenges, and far term directions. After consideration of the most rapidly developing programs and research areas, the committee added membership expertise in statistics and translational bioinformatics, science of decision making, and fluid dynamics in low gravity.

The next in person meeting will be held Mar. 29-31, 2016 in Washington, DC during Space Week. More information about the committee and its membership can be found at [http://sites.nationalacademies.org/SSB/SSB\\_145312](http://sites.nationalacademies.org/SSB/SSB_145312).

The **Committee on Earth Science and Applications from Space (CESAS)** did not meet in-person during the 3rd quarter; however, it met virtually via WebEx, including sessions on September 24-25 when it received briefings from Michael Freilich, Director of NASA's Earth Science Division; Ajay Mehta, Deputy Director for NOAA's Joint Polar Satellite System (JPSS); and Tim Newman, Land Remote Sensing Program Coordinator at the USGS, who briefed the committee on the OSTP-led, Second Earth Observation Assessment. The committee also continued to be active in the planning of the second decadal survey for Earth science and applications from space. In particular, the committee and staff

engaged in extensive discussions with other units of the Academies and potential study sponsors on the terms of reference for the survey. The committee also developed and issued a community request for information (RFI) on the questions that should drive space-based Earth observations in the decade defined roughly from 2017 to 2027. CESAS met on December 2-3, 2015 in Washington, DC (a full write-up for that meeting will appear in the next newsletter).

The next CESAS meeting will be during Space Science Week on March 31-April 2, 2016 in Washington, DC. For more information about CESAS, to learn about upcoming meetings, and download presentations from past meetings, please visit [http://sites.nationalacademies.org/SSB/SSB\\_066587](http://sites.nationalacademies.org/SSB/SSB_066587).

The **Committee on Solar and Space Physics (CSSP)** met October 14-15, 2015 in Washington, DC. At the meeting, CSSP held discussions on decadal survey issues such as the progress of the DRIVE initiative at NASA and NSF and pacing of new Explorer missions. They also held discussions on the status of the space weather action plan implementation, Heliophysics mission management, possibilities for the start of an IMAP-like mission, future studies,

and strategies for including solar and space physics in transition information for the incoming presidential administration. The committee heard briefings from Janet Kozyra, NSF, with an update from NSF Geospace; Ralph Stoffler with Air Force Perspectives on Space Weather; Tom Berger, NOAA, with an update on SWPC and DSCOVR; William Lotko on the NSF Geospace Portfolio Review; Todd Hoeksema on the Grants Success Rate study; Jim Ulvestad, NSF, on DKIST and Arecibo; and from NASA's Living With a Star Planning. CSSP also heard an Update on Achieving Science Goals with CubeSats Study from its chair, Thomas Zurbuchen.

The committee's Spring meeting will be held during Space Science Week on March 31-April 2, 2016 at the NAS building in Washington, D.C.. Further information about the committee are available at [http://sites.nationalacademies.org/SSB/SSB\\_052324](http://sites.nationalacademies.org/SSB/SSB_052324).

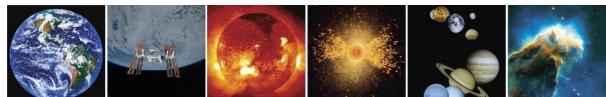


## STUDY COMMITTEES

The **Committee on Achieving Science Goals with CubeSats** had their second committee meeting which included a community symposium on September 2-3, followed by a committee-only session on September 4, 2015, at the Beckman Center in Irvine, CA. The symposium began with keynote presentations on CubeSats and Science Return from David Korsmeyer, NASA Ames Research Center, and on Technology Trends from Richard Welle, The Aerospace Corporation. The symposium continued with a series of keynote speakers and panel discussions. The first four sessions involved science areas: CubeSats in

Heliophysics with a keynote by Harlan Spence, University of New Hampshire; CubeSats in Planetary Science with a keynote by Julie Castillo-Rogez, Jet Propulsion Laboratory; CubeSats in Astronomy and Astrophysics with a keynote by Kerri Cahoy, Massachusetts Institute of Technology; and CubeSats in Earth Science with a keynote by Antonio Busalacchi, University of Maryland. Additional panel discussions were held on Technology for CubeSats, CubeSats for Technology Development, Industry Capabilities, and CubeSats in Education. The symposium also included a poster session with over 60 participants. The third committee meeting was held in closed session on October 22-23, 2015, in Washington, DC. More information about this project is available at: [http://sites.nationalacademies.org/SSB/CurrentProjects/SSB\\_160539](http://sites.nationalacademies.org/SSB/CurrentProjects/SSB_160539).

During this quarter, the ad hoc **Committee on a Framework for Analyzing the Needs for Continuity of NASA-Sustained Remote Sensing Observations of the Earth from Space** has concluded its work and has released its final report *Continuity of NASA Earth Observations from Space: A Value Framework (2015)*. For more information, and a free PDF of the report, please visit <http://www.nap.edu/catalog/21789/continuity-of-nasa-earth-observations-from-space-a-value-framework>.



(Continued from page 5)

The ad hoc **Committee for the Review of the Mars Exploration Program Analysis Group (MEPAG) Report on Planetary Protection for Mars Special Regions**, an ad hoc activity of the Academies of Science Engineering and Medicine and the European Science Foundation has released the prepublication version of its report *Review of the MEPAG Report on Mars Special Regions*. Additional details can be found at [http://sites.nationalacademies.org/SSB/CurrentProjects/SSB\\_153480](http://sites.nationalacademies.org/SSB/CurrentProjects/SSB_153480).

The ad hoc **Committee on Survey of Surveys: Lessons Learned from the Decadal Survey Process** completed a draft report in February. The committee released its final report *The Space Science Decadal Surveys: Lessons Learned and Best Practices* (2015) as a prepublication July 29 and the final published version was available in October. For more information, and a free PDF of the report, please visit <http://www.nap.edu/catalog/21788/the-space-science-decadal-surveys-lessons-learned-and-best-practices>

## OTHER ACTIVITIES

The **Forum for New Leaders in Space Science**, a cooperative activity between the Academies and the Chinese Academy of Sciences (CAS), is designed to provide opportunities for a highly select group of young space scientists from China and the United States to discuss their research activities in an intimate and collegial environment at meetings to be held in China and the United States. The first session of the second Forum took place in Shanghai on October 9-10, 2015 (*photo below, courtesy of the Chinese Academy of Science*) and the second session will be held in Irvine on May 16-17, 2016. The scientific focus of both meetings is planetary science and Earth science from space. Additional details can be found at [http://sites.nationalacademies.org/SSB/SSB\\_086017](http://sites.nationalacademies.org/SSB/SSB_086017).



**U.S. National Committee for COSPAR** held the second of its new series of "off-year" symposia, at Foz do Iguaçu, Brazil, on November 9-13. The SSB, in its capacity as the US National Committee for COSPAR, continues to follow closely the arrangements for COSPAR's 41st Scientific Assembly, held in Istanbul, Turkey, on July 30 -7 August, 2016. COSPAR's next round of business meetings will be held at COSPAR's Paris headquarters on March 14-17, 2016. Nominations are currently open for COSPAR prizes and medals to be awarded at the 41st Scientific Assembly. Full details of awards, eligibility, and nomination procedures can be found at <https://cosparhq.cnes.fr/awards>. All nominations had to reach the COSPAR Secretariat in Paris no later than November 30.

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Professor Ji Wu, Director of the National Space Sciences Center of the Chinese Academy of Sciences, and Dr. Michael Moloney, Director for Space and Aeronautics of the U.S. National Academies of Sciences, Engineering, and Medicine exchange letters outlining cooperative actions on the joint CAS-NAS Forum for New Leaders in Space Science. The exchange took place during the Forum's third meeting at the CAS campus in Shanghai, China in October 2015. *Photo courtesy of the Chinese Academy of Sciences.*



The SSB's sister Board, the Aeronautics and Space Engineering Board, also publishes a newsletter; visit <[http://sites.nationalacademies.org/DEPS/ASEB/DEPS\\_046908](http://sites.nationalacademies.org/DEPS/ASEB/DEPS_046908)> to subscribe or to view past newsletters. SSB's division, the Division on Engineering and Physical Sciences, also pub-

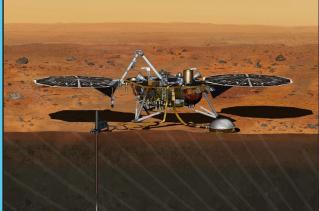


## NEW RELEASES

Copies of reports are available from the SSB office at 202-334-3477 or at <http://www.nap.edu/>.

### Review of the MEPAG Report on Mars Special Regions (2015)

Review of the MEPAG Report on Mars Special Regions



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Space  
Agency

Planetary protection is a guiding principle in the design of an interplanetary mission, aiming to prevent biological contamination of both the target celestial body and the Earth. The protection of high-priority science goals, the search for life and the understanding of the Martian organic environment may be compromised if Earth microbes carried by spacecraft are grown and spread on Mars. This has led to the definition of Special Regions on Mars where strict planetary protection measures have to be applied before a spacecraft can enter these areas.

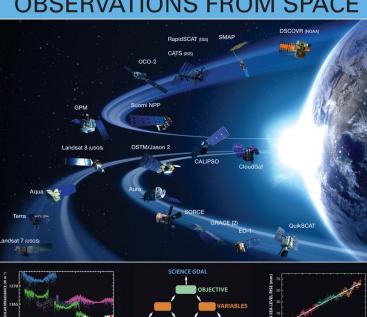
At NASA's request, the community-based Mars Exploration Program Analysis Group (MEPAG) established the Special Regions Science Analysis Group (SR-SAG2) in October 2013 to examine the quantitative definition of a Special Region and proposed modifications to it, as necessary, based upon the latest scientific results. Review of the MEPAG Report on Mars Special Regions reviews the conclusions and recommendations contained in MEPAG's SR-SAG2 report and assesses their consistency with current understanding of both the Martian environment and the physical and chemical limits for the survival and propagation of microbial and other life on Earth. This report provides recommendations for an update of the planetary protection requirements for Mars Special Regions.

View the full report at:

<http://www.nap.edu/catalog/21816/review-of-the-mepag-report-on-mars-special-regions>

### Continuity of NASA Earth Observations from Space: A Value Framework (2015)

CONTINUITY OF NASA EARTH OBSERVATIONS FROM SPACE



A VALUE FRAMEWORK

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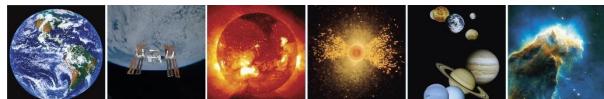
NASA's Earth Science Division (ESD) conducts a wide range of satellite and suborbital missions to observe Earth's land surface and interior, biosphere, atmosphere, cryosphere, and oceans as part of a program to improve understanding of Earth as an integrated system. Earth observations provide the foundation for critical scientific advances and environmental data products derived from these observations are used in resource management and for an extraordinary range of societal applications including weather forecasts, climate projections, sea level change, water management, disease early warning, agricultural production, and the response to natural disasters.

As the complexity of societal infrastructure and its vulnerability to environmental disruption increases, the demands for deeper scientific insights and more actionable information continue to rise. To serve these demands, NASA's ESD is challenged with optimizing the partitioning of its finite resources among measurements intended for exploring new science frontiers, carefully characterizing long-term changes in the Earth system, and supporting ongoing societal applications. This challenge is most acute in the decisions the Division makes between supporting measurement continuity of data streams that are critical components of Earth science research programs and the development of new measurement capabilities.

This report seeks to establish a more quantitative understanding of the need for measurement continuity and the consequences of measurement gaps. Continuity of NASA's Earth's Observations presents a framework to assist NASA's ESD in their determinations of when a measurement or dataset should be collected for durations longer than the typical lifetimes of single satellite missions.

View the full report at:

<http://www.nap.edu/catalog/21789/continuity-of-nasa-earth-observations-from-space-a-value-framework>



THE COMMITTEE ON SPACE RESEARCH  
LOOKS FORWARD TO HOSTING YOU

IN **ISTANBUL - TURKEY**  
AT ITS 41<sup>ST</sup> SCIENTIFIC ASSEMBLY, **30 JULY - 7 AUGUST 2016**



Assembly Venue  
Istanbul Congress Center (ICC)

Abstract Submission Deadline  
**12 February 2016**



Scientific Program/Abstract Submission  
<https://www.cospar-assembly.org>

Early Registration Deadline  
**31 May 2016**

Website of the Local Organizers  
<http://cospar2016.tubitak.gov.tr/>





## Staff News

*Charles Harris joined us in September 2015 as Research Associate.*

Charles Harris is a research associate for the Space Studies Board and the Aeronautics and Space Engineering Board. He graduated



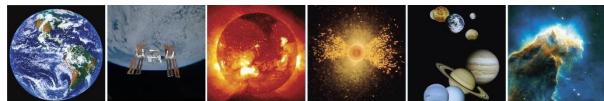
from the University of North Carolina at Chapel Hill in 2014 with a double major in Public Policy and Communication Studies, and a minor in Astronomy. He has served as an intern with NASA's Space Technology Mission Directorate at NASA Headquarters and with the Committee on Science, Space, & Technology in the House of Representatives. He has also worked as a Junior Associate with an independent policy firm focused

on providing clients in the commercial space sector with government relations services and strategic consulting. His hobbies include video production, graphic design, music, and running.

Sandra Wilson, senior financial assistant is leaving the SSB because she has been promoted to the position of financial/administrative associate with The National Academies Press. We extend our congratulations and thanks for her unwavering support to our successful operations during her tenure with our boards. She began as a program assistant in 2007, but due to her love of accounting, she was eventually promoted to senior financial assistant where she provided critical support to the operations of both the Space Studies Board and the Aeronautics and Space Engineering Board. Sandra will work part time with our staff this fall to assist training her replacement.



Lloyd V. Berkner Space Policy Intern Thomas Katucki visits the California Science Ceneter where the Space Shuttle Endeavour is on display in the Samuel Oschin Pavilion. *Photos courtesy of Dwayne Day*



## Intern News



*Thomas Katucki, joined us as the new Lloyd V. Berkner Space Policy Intern in September 2015.*

Thomas Katucki is a political science major at Grinnell College. He comes to the Space Studies Board after interning with the B612 Foundation and working on Asteroid Day in the summer. He is currently working on a variety of projects for the Space Studies Board and has looked for ways to offer a unique viewpoint on different aspects of his work. Mr. Katucki has a wide range of academic interests, ranging from international relations to astrophysics. Thomas hopes that his experience with the SSB will propel him in his goal of advancing mankind's interest in space.

*Danielle (Dani) YoungSmith completed her assignment as an SSB intern from June 2015 through August 2015. Her reflection on her experience with the SSB is below*

The Lloyd V. Berkner Space Policy Internship at the Space Studies Board attracted me as an opportunity to learn about how space policy is made, from the science community to the policy-makers. I had the chance to see the full process of report-writing at the Academies, from the request to committee appointment, the first meeting, symposium planning, the review process, publication, and dissemination. But what I learned at the SSB was so much more than the mechanics of this process. I got a glimpse of how widely the work of the Academies reaches and how deeply respected it is across the board. I can easily see the influence of the Academies' recommendations on the scientific research I have done, and their reports were constantly mentioned in the meetings I attended in Washington as the guiding documents for the science and policy worlds alike.

My time at the SSB also showed me how essential cross-disciplinary collaboration is, and more importantly, how to facilitate it. I was constantly shocked by the level of participation, engagement, and collaboration that the Academies quite literally bring to the table in writing their reports. This kind of partnership is unique to the Academies' role as translator between the technical and political realms. Having seen the enormous feats that it can accomplish, I endeavor to bring this commitment to excellence through communication to all aspects of my life, be they personal or professional.

I am deeply thankful to have been a part of this system for a summer, and for the unlimited opportunities to learn, network, and explore that abound in the District in summer time, especially when you have the SSB on your side! Thank you to everyone at the Academies and beyond that made this summer one for the books. I am sure I will be back at the Academies before too long—perhaps even as a committee member helping to define the frontiers of my field!

*James Alver completed his assignment as an SSB intern from June 2015 through September 2015. His reflection on her experience with the SSB is below*

My time working at the National Academy of Sciences Space Studies Board as a Lloyd V. Berkner Space Policy Intern has been immeasurably valuable. I would like to remain involved in space policy for the duration of my career, and seeing its creation up-close has been an incredibly enriching experience. I have seen the process of producing Academies reports almost in its entirety, from informal communication with sponsors prior to the formal start of a report all the way through to publishing, publicizing, and producing summaries for a completed report. Along the way, I had a chance to see just how much influence SSB's reports have on the space community by hearing mission leaders, NASA officials, and even members of Congress talking about their impact at various events.

Beyond preparing reports, interning at the Space Studies Board has given me numerous other opportunities to dive into the space community firsthand. Attending the Small Bodies Advisory Group meeting and watching debates at the Mars Society conference were some of the highlights, but the greatest experience of all was the chance to go to the Applied Physics Laboratory to watch the first results from Pluto come in. Seeing the largest body since Neptune in 1989 transform from a point of light into a true world before our very eyes, surrounded by the mission team and a whole community of space enthusiasts, was unforgettable.

Over the last 3 months, I've treasured my Berkner experience, and I would happily recommend the position to anyone who is passionate about space exploration and science policy.

## SSB Staff

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Financial Officer

### CELESTE A. NAYLOR

Information Management Associate

### TANJA E. PILZAK

Manager, Program Operations

### SANDRA WILSON

Senior Financial Assistant

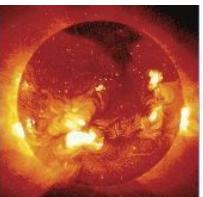
### JAMES ALVER

Lloyd V. Berkner Space Policy Intern

### DANIELLE YOUNGSMITH

Lloyd V. Berkner Space Policy Intern

\* Staff of other Academies boards who are shared with the SSB.



## SSB Calendar

S E P T E M B E R							
S	M	T	W	Th	F	Sa	
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27	28	29	30	31			

September 2-4, 2015	Achieving Science Goals with CubeSats Symposium	Irvine, CA
September 16-17, 2015	Committee on Astrobiology and Planetary Science	Irvine, CA
September 24-25, 2015	Committee on Earth Science and Applications from Space	Washington, DC
October 8-10, 2015	Review of Progress Toward the Decadal Survey Vision in New Worlds, New Horizons in Astronomy and Astrophysics	Washington, DC
October 14-15, 2015	Committee on Solar and Space Physics	Washington, DC
October 22-23, 2015	Achieving Science Goals with CubeSats	Washington, DC
October 27-29, 2015	Committee on Biological and Physical Sciences in Space	Washington, DC
November 3-4, 2015	Studies Board Fall Meeting	Irvine, CA
December 2-3, 2015	CESAS Fall Meeting	Washington, DC
December 12, 2015	Astronomy & Astrophysics Midterm Assessment Symposium	Irvine, CA
December 13-14	Astronomy and Astrophysics Midterm Assessment Meeting	Irvine, CA

## Future Meetings

March 29-31, 2016	Space Science Week	Washington, DC
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More information on the SSB and ASEB Board meetings is at  
[http://sites.nationalacademies.org/SSB/SSB\\_054577](http://sites.nationalacademies.org/SSB/SSB_054577) (SSB) and  
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### Our meeting facilities

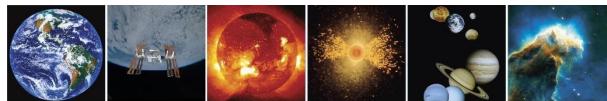


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 Washington, DC

Keck Center  
 500 Fifth St NW,  
 Washington, DC

Arnold and Mabel Beckman  
 100 Academy Drive  
 Irvine, CA

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- Review of the MEPAG Report on Mars Special Regions
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- Sharing the Adventure with the Student: Exploring the Intersections of NASA Space Science and Education: A Workshop Summary
- Space Studies Board Annual Report 2014 (2015) **Book and CD**
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- Solar and Space Physics: A Science for a Technological Society: An Overview (2014) **Booklet**
- Pathways to Exploration: Rationales and Approaches for a U.S. Program of Human Space Exploration (2014) **DVD Only**
- Evaluation of the Implementation of WFIRST/AFTA in the Context of New Worlds, New Horizons in Astronomy and Astrophysics (2014)
- Review of the Draft 2014 Science Mission Directorate Science Plan (2014)
- Opportunities for High-Power, High-Frequency Transmitters to Advance Ionospheric/Thermospheric Research: Report of a Workshop (2014)
- Lessons Learned in Decadal Planning in Space Sciences: Summary of a Workshop (2013) **CD**
- Landsat and Beyond: Sustaining and Enhancing the Nations Land Imaging Program (2013)
- Solar and Space Physics: A Science for a Technological Society (2013) **Book and CD**
- NASA's Strategic Direction and the Need for a National Consensus (2012)
- The Effects of Solar Variability on Earth's Climate: A Workshop Report (2012)
- Vision an Voyages for Planetary Science (2012) **Booklet**
- The Role of Life and Physical Sciences (2012) **Booklet**

- Earth Science and Applications from Space: A Midterm Assessment of NASA's Implementation of the Decadal Survey (2012) **Book and CD**
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- Technical Evaluation of the NASA Model for Cancer Risk to Astronauts Due to Space Radiation
- Report of the Panel on Implementing Recommendations from the New Worlds, New Horizons Decadal Survey (2012)
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