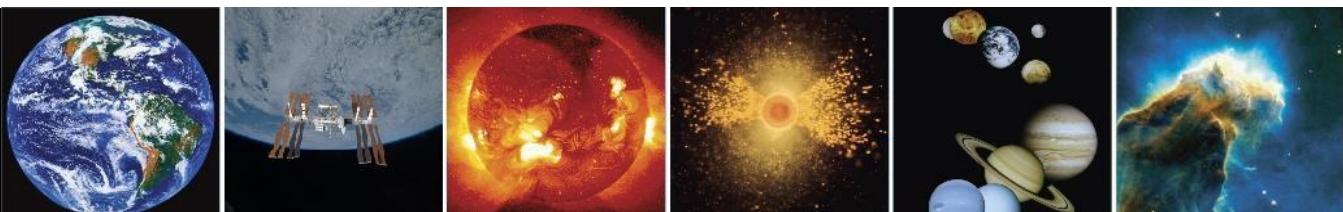


SPACE STUDIES BOARD NEWS



APRIL – JUNE 2013

INSIDE THIS ISSUE



And then there is NRC's "Space Science Week," which brings all of our standing committees together at one time. Our first one in March of this year was a great success; people appreciated the opportunity to interact with their colleagues in other space disciplines, and I am sure this will lead to a more interdisciplinary approach to the definition of long-term science goals.

—SSB Chair Charles F. Kennel

<i>From the Chair</i>	2
<i>SSB Membership</i>	3
<i>Seeking Nominees for COSPAR Awards and Medals</i>	4
<i>SSB Activities</i>	5
<i>SSB Standing Committees</i>	5
<i>First COSPAR Symposium</i>	7
<i>Summary of a Meeting of Interest</i>	8
<i>Personal Perspectives from the Johnson Space Center Site Visit</i>	8
<i>SSB Staff News</i>	9
<i>SSB Staff</i>	10
<i>National Research Council's Space Science Week</i>	10
<i>News from the National Academies</i>	10
<i>SSB Calendar</i>	11
<i>Selected Reports Available from the SSB</i>	12



NATIONAL ACADEMY OF SCIENCES

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SPACE STUDIES BOARD NEWS



FROM THE CHAIR



Recently, a number of colleagues have expressed to me the worry that "Our scientific advice is not getting through." It is hard to know precisely what to make of this, though I suspect there is a kernel of truth in there. Certainly, you have only to read the newspapers to know that the political divisions in our nation's capital have altered the once familiar ebb and flow of power and ideas between the administration and Congress. This is unfamiliar territory, so it is hard for us to perceive why things

happen as they do—or not. Our colleagues who manage NASA's science program must also be finding themselves in uncertain terrain. Maybe they are less open to listening to new ideas from the science community because they are concentrating on getting the present job done. In the present circumstance, this is necessary and admirable, but it could leave us with the impression that they aren't listening. My guess is that they are listening and wish they could respond.

A more dire version of the same complaint is "Our science advisory apparatus has broken down." There may also be something to this. Our "Lessons Learned in Decadal Planning in Space Science" workshop last November was devoted to understanding why NASA gave such an uncertain reception to the Space Studies Board's recent decadal surveys. Both NASA and the SSB believed the surveys were realistically designed when they began. There was a key breakdown, however. Both government and National Research Council (NRC) rules impeded the flow of information between NASA and the SSB during the conduct of the surveys. Our standing committees had stood down, so just as several critical situations emerged, our science communities were tied up writing decadal surveys—which they could not discuss with anyone until they had gone through NRC review. Just when our colleagues in NASA's science division wished they knew how the SSB would react, they could not tell us of their problems, and we could not tell them what we thought. Nor was the NASA Advisory Council (NAC) Science Committee as able to help as much as before; it was essentially disbanded in 2006. Both of these problems have been ameliorated. Our standing committees are up and running, and we hope to establish one devoted to life and microgravity sciences shortly. The NAC Science Committee was successfully rebuilt under the leadership of Wes Huntress, and NAC Chairman Steve Squyres and I have agreed that we must work together more closely in the future. It only makes sense. SSB's role is strategic; NAC is positioned to give NASA an ongoing stream of tactical advice.

The SSB and NAC are not the most important ways NASA gets technical advice. That comes from NASA's own scientists and

engineers. I worry that the travel restrictions placed upon all NASA personnel by the recently passed budget sequester will greatly limit the value of the advice NASA gives itself. It is not just that fewer NASA scientists can go to professional meetings, they will also be less able to visit their colleagues at other NASA centers or go to headquarters to work with their program leaders. These exchanges are the lifeblood of NASA, and one can only hope the travel restrictions will not last a long time. In the meantime, these circumstances place a great responsibility on the SSB and NAC, who still have the ability to convene groups to give NASA expert advice.

It is incumbent on both the SSB and NAC to build closer relationships with our NASA colleagues. SSB will hold most of its meetings in Washington, DC, for the foreseeable future. Our committees are making much more frequent use of conference calls and WebEx meetings, which are enabling more frequent contact with NASA. And then there is NRC's "Space Science Week," which brings all of our standing committees together at one time. Our first one in March of this year was a great success; people appreciated the opportunity to interact with their colleagues in other space disciplines, and I am sure this will lead to a more interdisciplinary approach to the definition of long-term science goals.

I have high hopes for Space Science Week's future. This is a time when we can not only reach out to our NASA colleagues but also to congressional staff and administration leaders who we hope will sit in. Next March, and hopefully every year from now on, we will invite foreign colleagues to brief our committees on their programs so that when decadal survey time comes around again, the U.S. space science community will be better informed about the prospects for international collaboration. We are planning a public lecture by a leading space scientist to share our vision of the future of space research with a wider public.

I hope that, eventually, the whole space science community will see Space Science Week as the time when the next year's agenda can be debated. I hope that Space Science Week can be coordinated with a spring NAC Science Committee meeting whenever feasible. I hope that industries interested in space science will find it valuable to attend. I hope that individuals will choose Space Science Week as a good time to communicate with Congress. But these hopes are in the hands of my successor, because my term of office reaches its statutory limitation next July 1.

I have high hopes for my successor. Stay tuned.



SSB MEMBERSHIP

JULY 1, 2012—JUNE 30, 2013

CHARLES F. KENNEL, CHAIRScripps Institution of Oceanography,
University of California, San Diego**JOHN KLINEBERG, VICE CHAIR**

former CEO of Swales Aerospace

MARK R. ABBOTT

Oregon State University

JAMES ANDERSON

Harvard University

JAMES BAGIAN

University of Michigan

YVONNE C. BRILL*

Aerospace Consultant

ELIZABETH R. CANTWELL

Lawrence Livermore National Laboratory

ANDREW B. CHRISTENSEN

Dixie State College of Utah

ALAN DRESSLERThe Observatories of the Carnegie
Institution**THOMAS R. GAVIN**

Jet Propulsion Laboratory

HEIDI B. HAMMEL

AURA

FIONA A. HARRISON

California Institute of Technology

JOSEPH S. HEZIR

EOP Group, Inc.

ANTHONY C. JANETOS

Boston University

JOAN JOHNSON-FREESE

U.S. Naval War College

ROBERT P. LIN*

University of California, Berkeley

MOLLY K. MACAULEY

Resources for the Future, Inc.

JOHN F. MUSTARD

Brown University

ROBERT T. PAPPALARDOJet Propulsion Laboratory, California
Institute of Technology**MARCI A. RIEKE**

University of Arizona

DAVID N. SPERGEL

Princeton University

MEENAKSHI WADHWA

Arizona State University

CLIFFORD M. WILL

University of Florida

THOMAS H. ZURBUCHEN

University of Michigan

LIAISON**ROBERT P. LIN***

U.S. REPRESENTATIVE TO COSPAR

* DECEASED

JULY 1, 2013—JUNE 30, 2014

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University of Michigan

THOMAS R. GAVIN

Jet Propulsion Laboratory

NEIL GEHRELS

NASA Goddard Space Flight Center

SARAH GIBSONNational Center for Atmospheric
Research**HEIDI B. HAMMEL**

AURA

RODERICK HELLIS

The University of Texas

JOSEPH S. HEZIR

EOP Group, Inc.

WESLEY HUNTRESS

Carnegie Institution of Washington

ANTHONY C. JANETOS

Boston University

JOAN JOHNSON-FREESE

U.S. Naval War College

JOSEPH FULLER, JR

Futron Corporation

JOHN F. MUSTARD

Brown University

DAVA J. NEWMAN

Massachusetts Institute of Technology

ROBERT T. PAPPALARDOJet Propulsion Laboratory, California
Institute of Technology**SAUL PERLMUTTER**

Lawrence Berkeley National Laboratory

MARCI A. RIEKE

University of Arizona

DAVID N. SPERGEL

Princeton University

MEENAKSHI WADHWA

Arizona State University

CLIFFORD M. WILL

University of Florida

THOMAS H. ZURBUCHEN

University of Michigan

LIAISON**LENNARD A. FISK**

U.S. REPRESENTATIVE TO COSPAR

For more information on SSB membership, visit our website at <<http://www.nationalacademies.org/ssb>>.*From the International Astronautical Federation—***IAF World Space Award**

The IAF World Space Award is presented for an outstanding contribution or contributions in space science, space technology, space medicine, space law or space management of exceptional impact to the world's progress in astronautics.

The first recipient is **Edward C. Stone**, professor of physics at the California Institute of Technology, and former director of the NASA Jet Propulsion Laboratory. Under his skilled leadership, the Mars Pathfinder and its Sojourner rover were successes. Dr. Stone became a well-known public figure through his work with NASA on the Voyager spacecraft, and has since been principal investigator on nine NASA spacecraft missions.

Dr. Stone, a member of the National Academy of Sciences, has served on numerous NRC committees and was a member of the most current solar and space physics decadal survey and a former Space Studies Board member.

*From the American Geophysical Union—***2012 Roger Revelle Medal Winner****Steven C. Wofsy**

was awarded the 2012 Roger Revelle Medal at the AGU Fall Meeting Honors Ceremony, held on December 5, 2012, in San Francisco, Calif. The medal is for "outstanding contributions in atmospheric sciences, atmosphere-ocean coupling, atmosphere-land coupling, biogeochemical cycles, climate, or related aspects of the Earth system."

atmospheric sciences, atmosphere-ocean coupling, atmosphere-land coupling, biogeochemical cycles, climate, or related aspects of the Earth system."

Dr. Wofsy of Harvard University is a member of the National Academy of Sciences and a current member of the SSB's Committee on Earth Science and Applications from Space.



Seeking Nominees for COSPAR Awards and Medals

COSPAR, the Committee on Space Research of the International Council for Science, is seeking candidates to be nominated for COSPAR awards and medals, which recognize the outstanding achievements of space scientists throughout the world. The awards will be presented at the 40th COSPAR Scientific Assembly, to be held in Moscow, Russia, on 2-10 August, 2014.

It is important to honor the contributions of your colleagues. Please take a moment to consider nominees for the following awards and medals:

COSPAR Space Science Award honors a scientist who has made outstanding contributions to space science. Recent recipients include: J. Luhmann (2012), G. Hasinger (2010), S.W. Squyres (2010), and G. Gloeckler (2008).

COSPAR International Cooperation Medal is awarded to a scientist (or group of scientists) who has made distinguished contributions to space science and whose work has contributed significantly to the promotion of international scientific cooperation. Recent recipients include: R.-M. Bonnet (2012), L.-L. Fu and Y. Ménard (2010), and M.A. Geller (2008).

COSPAR William Nordberg Medal is presented to a scientist who has made a distinguished contribution to the application of space science. Recent recipients include: H. Fischer (2012), K.-N. Liou (2010), and J. Waters (2008).

COSPAR Massey Award is awarded in recognition of outstanding contributions to the development of space research, interpreted in the widest sense, in which a leadership role is of particular importance. Recent recipients include: N. Gehrels (2012), H. Tananbaum (2010), G.G. Fazio (2008), C. Elachi (2006), Y. Tanaka (2004), G. Bignami (2002), J. Paul (2002) and S.C. Bower (2000).

COSPAR Distinguished Service Medal serves to honor extraordinary services rendered to COSPAR over many years. Recent recipients include: P. Willmore (2012), M.A. Shea (2010), and I. Révah (2008).

Vikram Sarabhai Award is awarded by the Indian Space Research Organization for outstanding contributions to space research in developing countries. Eligible candidates for next year's award must have performed relevant work mainly in the period 2008-2013. Previous recipients include: R. Navarro-Gonzalez (2012), Z. Pu 2010), and M.A. Abdu (2008).

Jeoujang Jaw Award is bestowed by the Chinese Academy of Sciences and is intended to recognize scientists who have made distinguished pioneering contributions to promoting space research, establishing new space science research branches, and founding new exploration programs. Past recipients are: R.P. Lin (2012), C.T. Swift (2010), and J.L. Burch (2008).

Zeldovich Medal is conferred by the Russian Academy of Sciences to scientists, less than 36 years of age, for excellence and achievements. Medals are presented to a scientist in each of COSPAR's Scientific Commissions (SC). Recipients of the 2012 Zeldovich Medals are: J. Dash (SC-A); B.L. Ehlmann (SC-B); T. Yokoyama (SC-C); J.P. Eastwood (SC-D); M. Uemura (SC-E); C. La Tessa (SC-F); M. Lukasser (SC-G) and P.J. Wass (SC-H).

Additional details concerning the awards, together with instructions and nomination forms, can be found at <<https://cosparhq.cnes.fr/awards>>. Completed nominations forms must be received by the COSPAR Secretariat in Paris no later than November 30, 2013. Questions can be addressed to David H. Smith, executive secretary of the U.S. National Committee for COSPAR, at dsmith@nas.edu.

The SSB's sister Board, the Aeronautics and Space Engineering Board, also publishes a newsletter; visit <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 publishes a newsletter; visit <http://sites.nationalacademies.org/DEPS/DEPS_059299> to subscribe.



SSB ACTIVITIES

THE BOARD AND ITS STANDING COMMITTEES

The Space Studies Board (SSB) met on April 4-5 at the Keck Center in Washington, DC (see http://sites.nationalacademies.org/SSB/ssb_052298). On July 8 the Board had a teleconference with John Grunsfeld, Associate Administrator for the NASA Science Mission Directorate (SMD) and Stephanie Stockman, E/PO (Education/Public Outreach) lead at the SMD to discuss the current budget situation and the changes to SMD's education and outreach programs. The Board's next meeting will be held November 5-7 in Washington, DC. The Executive Committee will meet August 8-9 in Washington, DC. Visit <<http://www.nas.edu/ssb>> to stay up to date on board, workshop, and study committee meetings and developments.

A report summarizing the discussions and dialog that took place at the November 2012 workshop **Lessons Learned in Decadal Planning in Space Science** is in the final stages of the peer review process and is expected to be released in August 2013. At the workshop, hosted by the SSB in collaboration with the Board on Physics and Astronomy, participants reviewed and discussed key aspects of the most recent NRC decadal surveys in space science with the goal of identifying lessons learned and best practices. More information on the workshop is available at <http://sites.nationalacademies.org/SSB/CurrentProjects/SSB_070954> and video of the workshop is available at <http://sites.nationalacademies.org/SSB/CurrentProjects/SSB_070954>. A follow-on study is under consideration.

The Committee on Astronomy and Astrophysics (CAA) met by teleconference on June 5 to discuss the Astronomy and Astrophysics Advisory Committee's (AAAC) annual report. Martha Haynes, the AAAC chair, and Andy Albrecht, its vice-chair, also participated in the call. The call focused on several discussion topics in addition to the AAAC report, including the ground-based optical and infrared system, data sharing, and recent legislation regarding education and public outreach. The CAA plans to hold several teleconference-based meetings before its Fall meeting, scheduled to be held in Washington, DC, on November 4-5, 2013. More information about the CAA is available at <http://sites.nationalacademies.org/BPA/BPA_048755>.

The Committee on Earth Science and Applications from Space (CESAS) did not meet in this quarter; however, members were actively engaged in discussions with NASA that resulted in a request for a new project that will examine the "continuity" needs for NASA-sustained remote sensing observations of Earth from space. Instruments on NASA research and NOAA "operational" spacecraft measure numerous variables relevant to Earth's biosphere, hydrosphere, atmosphere, and oceans and their interactions on various scales. However, there is a growing tension between the need for measurement continuity of data streams that are critical components of Earth science research programs—including, but not lim-

More information on the SSB and ASEB Board Meetings is at
http://sites.nationalacademies.org/SSB/SSB_054577 (SSB) and
http://sites.nationalacademies.org/DEPS/ASEB/DEPS_058923 (ASEB)

National Research Council's Space Science Week 2014

March 3-5, 2014

National Academy of Sciences Building
 2101 Constitution Avenue
 Washington, DC

ited, to areas related to climate—and the development of new measurement capabilities. While there is an increasing societal need for information products derived from Earth observations, the federal agencies responsible for providing these measurements face a near-perfect storm of diminished fiscal resources, growth in program costs, and a coming loss of heritage assets.

CESAS is also in the process of arranging teleconference meetings with individuals prior to its next in-person meeting on October 29-30, 2013, in Washington, DC. This Fall 2013 meeting will focus primarily on discussing the structure of and relevant issues for the next decadal survey in Earth science and applications from space, as well as other pertinent issues. For more information about CESAS and to learn about upcoming meetings, please visit <http://sites.nationalacademies.org/SSB/SSB_066587>.

The Committee on Astrobiology and Planetary Science (CAPS) did not meet during this quarter. A committee-wide conference call was held on May 31 to discuss the status of NASA enacted and

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)

Paul L. Schechter, MIT (Co-Chair)
 David N. Spergel, Princeton University (Co-Chair)

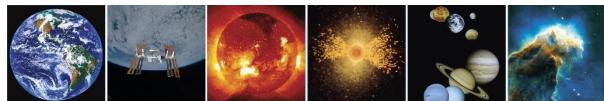
Committee on Earth Science and Applications from Space (CESAS)

Mark R. Abbott, Oregon State University (Chair)
 Joyce E. Penner, University of Michigan (Vice 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



SSB ACTIVITIES, *CONTINUED*

proposed budgets for fiscal years 2013 and 2014, respectively. The committee was also briefed on NASA's plans to revise the Astrobiology Roadmap and spent some time discussing the Administration's proposals concerning NASA's educational activities. A committee-wide conference call devoted mainly to astrobiology issues is scheduled for July 9. The committee's next meeting will take place at the National Academies' Keck Center in Washington, DC, on September 4-6. The first CAPS meeting of 2014 will take place March 3-5 as a part of the NRC's Space Science Week. More information about CAPS is available at <http://sites.nationalacademies.org/SSB/SSB_067572>.

The **Committee on Solar and Space Physics (CSSP)** did not meet in-person during this quarter; the committee did meet by teleconference including a May 20, 2013, WebEx event with Vicki Elsbernd, Acting Director of NASA's Heliophysics Division (HPD). During the call, the committee discussed the implications of sequestration on HPD programs; the outlook for future budgets, and other issues of interest, including implementation of the recently completed decadal survey, roadmap status, and the status of NASA Education and Public outreach (E/PO) programs. The committee devoted considerable time to discussions about NASA E/PO as the President's proposed FY 2014 budget includes major changes and restructuring of science, technology, engineering, and math (STEM) E/PO at NASA and other federal agencies. In the President's proposed budget for FY 2014 and going forward, NASA's education and outreach funds in the Science Mission Directorate (SMD) are eliminated; individual science mission budgets are reduced, reflecting the elimination of education and outreach funds; and SMD is directed to not fund education.

As the quarter ended, the committee was planning a WebEx teleconference with Richard Behnke, head of the Geospace Section of the NSF's Division of Atmospheric and Geospace Sciences (GEO/AGS). Members of the committee also continued to work on a popularization of the decadal survey; they also engaged in discussions with agency officials at NASA, NOAA, and NSF regarding potential future activities related to national needs for improved forecasts of space weather events. Planning for a Fall 2013 in-person meeting of the committee is underway. Further information about CSSP, including future meetings, is available at <http://sites.nationalacademies.org/SSB/ssb_052324>.

STUDY COMMITTEES

At the request of the Department of Defense (DOD; Air Force Research Laboratory) and the National Science Foundation (NSF; Directorate for Geosciences/Division of Atmospheric and Geospace Sciences), the SSB held a workshop on May 20-21, 2013 in Washington, DC, entitled, "**The Role of High-Power, High Frequency-Band Transmitters in Advancing Ionospheric/Thermospheric Research.**" The workshop provided a forum for information exchange between the comparatively small group of researchers engaged in programs of upper atmospheric research using high-power high-frequency (HF) radar transmitters ("heaters") and the larger ITM (ionosphere-thermosphere-magnetosphere) research community. For a variety of reasons, including the different orientations of DOD, which is primarily interested in applied research related to

active ionospheric modification, and the civil agencies, principally NSF, which have broader mandates for basic research, these communities have historically viewed themselves as being distinct with limited overlapping interests.

Per the statement of task, the workshop was organized to consider the utility of heaters in upper atmospheric research in general, with a specific focus on the High-frequency Active Auroral Research Program (HAARP) transmitter facility, which is located in Gakona, AK. The reasons for this are twofold: First, the sponsors of the study were aware of the potential—one that became increasingly apparent during the period between project approval by the NRC in late Spring 2012 and the actual workshop in late Spring 2013—for substantial cutbacks in support by the Air Force for the continuing operation of HAARP. Second, NSF's upper atmosphere research section was considering transfer to Gakona, AK, of the AMISR (Advanced Modular Incoherent Scatter Radar) relocatable modular phased-array radar at Poker Flat, AK, for joint research campaigns with the HAARP transmitter and ancillary instruments. The organizers were keenly aware of the increasing interest among the sponsors for focused discussions on the HAARP facility and the agenda for the meeting and the preponderance of discussions at the workshop reflected these interests. A summary of the workshop is expected to be available by September 30, 2013. By design, this report will not include any NRC-approved findings or recommendations. Further information about the workshop, including the membership of the organizing committee, the project statement of task, and the May 2013 workshop agenda, is available at <http://sites.nationalacademies.org/SSB/CurrentProjects/SSB_082082>.

An edited and final version of *Solar and Space Physics: A Science for a Technological Society*, the NRC's second decadal survey in solar and space physics from the ad hoc **Committee on A Decadal Strategy for Solar and Space Physics (Heliophysics)**, will be published by August 31, 2013. Once published, copies of the report will also be posted for free download at <http://www.nap.edu/catalog.php?record_id=13060>, the website that currently hosts the pre-publication version of the report. Information about the survey is available at <http://sites.nationalacademies.org/SSB/CurrentProjects/SSB_056864>.

The **Committee for the Implementation of a Sustained Land Imaging Program** has completed a draft report and is now in the final stages of review. The prepublication report is expected to be delivered mid-2013. More information is available at <http://sites.nationalacademies.org/SSB/CurrentProjects/SSB_065886>.

Several meetings were held by the **Human Spaceflight Committee** (ASEB led) and its panels during this period. The full committee met on April 22-24, in Washington, DC to hear presentations from NASA and invited speakers on topics such as robotics, commercial spaceflight, security, and international relations. These discussions including perspectives on the future of human spaceflight from Roscosmos and ESA. Following that meeting, several committee members conducted two scheduled site visits to Johnson Space Center and the Kennedy Space Center (the final site visit is scheduled in August to the Marshall Space Flight Center). During this period the committee also issued a widely disseminated call for interested parties to submit papers that described their own ideas

**SSB ACTIVITIES, CONTINUED**

on the role of human spaceflight and their vision for a suggested future. This call had a submission deadline of July 9. The committee also continued to coordinate closely with its panels during this period, committee working groups gathered data in relevant focus areas, and members participated in conferences. The committee will hold a working meeting (closed to the public) in late July in Woods Hole, MA.

The **Technical Panel** held its second meeting on June 19-21 in Irvine, CA. The panel heard presentations about the challenges in reducing the cost of exploration in in-space propulsion and the technical challenges for the asteroid redirect and piloted missions to the outer planets. The panel is currently drafting a report of its work, which it will provide to the committee. The panel's final meeting, to be held in closed session, will take place in October, in Washington, DC.

The second panel of the committee, the **Public and Stakeholder Opinions Panel**, held meetings on April 5 and June 19, in Washington, DC. These focused on extensive literature reviews, and planning and development of data gathering efforts. At the June meet-

ing the committee heard from NASA regarding their research on Public and Stakeholder opinions. The panel is currently working to develop and launch a survey of stakeholders. The committee will hold its next meeting on October 4, in Washington, DC.

OTHER ACTIVITIES

The **Committee on Space Research (COSPAR)** held its annual business meetings in Paris, France, during the week of March 18. The inaugural COSPAR Symposium will be held in Bangkok, Thailand, on November 11-15, 2013. Details concerning the symposium can be found at <<http://www.cospar2013.gistda.or.th/index.php>>. The next COSPAR scientific assembly will be held at the Lomonosov Moscow State University in Moscow, Russia, on August 2-10, 2014. Preliminary details concerning the Moscow assembly can be found at <<https://www.cospar-assembly.org/>>. COSPAR is currently soliciting nominations for awards and medals to be presented during the Moscow assembly (see page 4). Instructions, details concerning past recipients and nomination forms are available at <<https://cosparhq.cnes.fr/awards>>.

First COSPAR Symposium
Planetary Systems of Our Sun and Other Stars, and the Future of Space Astronomy
Bangkok, Thailand
November 11-15, 2013

The 2013 COSPAR Symposium on "Planetary Systems of our Sun and other Stars, and the Future of Space Astronomy" (<http://www.cospar2013.gistda.or.th/>) is the first of a new series of events initiated by COSPAR, which aims to promote space research at a regional level in emerging countries. It will be held every two years in a different area of the world.

The Symposium will be multidisciplinary in nature and address topics ranging from astronomy, Earth observation, planetary, and astrobiology, up to citizen science. The Symposium will feature plenary lectures, parallel and poster sessions, as well as training sessions. It is open to participants worldwide, and scientists, young professionals, and students from the Asian region are particularly encouraged to participate.

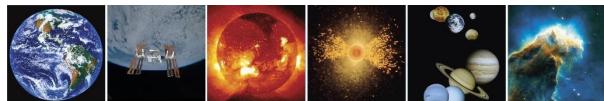
The deadline for submitting an abstract and application has passed.

A selection of refereed papers will be published after the Symposium in *Advances in Space Research*, and authors are encouraged to submit manuscripts after the Symposium for consideration.

Please note that a Capacity Building Workshop entitled "Atmospheric Correction of Earth Observation Data for Environmental Monitoring: Theory and Best Practices" will also take place in Bangkok at GISTDA the week before the Symposium from November 4-8, 2013, for which participants from the Asian region will be selected by application.

Contact cospar2013@gistda.or.th with any questions.





SUMMARY OF A MEETING OF INTEREST

Personal Perspectives from the Johnson Space Center Site Visit

*Attended and prepared by Harrison Dreves,
SSB Lloyd V. Berkner Space Policy Intern*

In June 2013, I traveled to NASA Johnson Space Center (JSC) with members of the Human Spaceflight Committee. As a new SSB intern, I was quite surprised to be invited along, but I was more than happy to visit the nerve center of human spaceflight. While growing up I was lucky enough to travel several times to both Marshall Space Flight Center and Kennedy Space Center, giving me a good understanding of where NASA designs and launches many of its rockets. In my mind, however, Johnson was still "that place in Texas with the simulators and Mission Control," so I was eager to visit.

The committee received a full-access, top-notch tour of the facilities. After seeing the high-fidelity simulators for the International Space Stations (ISS) and Orion, the massive vacuum chamber awaiting the James Webb Space Telescope, and the Neutral Buoyancy Lab, I came to better understand the extensive testing and training required to prepare humans and equipment for spaceflight. In Mission Control, we explored the complex networks of computers and people that support human spaceflight. At the Space Food Systems Lab, the committee was even treated to four-course meal of ISS-ready food.

Just as impressive as the facilities were the people. The Center Director and her staff spent several hours engaged with us in deep and real conversation about the challenges and opportunities they face. We also heard from senior members of the Orion design team, Mission Operations, the Astronaut Office, and the ISS program. All of the JSC staff with whom we spoke were highly capable and eager to develop the human spaceflight program. Additionally, the committee members were incredibly knowledgeable and approached their task from a wide array of perspectives. By the end of the trip, I had learned a great deal.

JSC is a unique location. It is home to multiple national historic landmarks and newly designed, cutting-edge facilities (Vacuum Chamber A and Mission Control qualify as both). I think this dichotomy gives the people that work at JSC a special sense of purpose. The center holds an awe-inspiring legacy and a community of scientists and engineers that's trying its best, albeit with limited resources, to continue that legacy.



Committee members tour an ISS simulator and talk with program staff.



JSC staff, committee members, and NRC staff enjoy a lunch of rehydrated and preserved space food.



SSB Intern Harrison Dreves, seated at the Apollo Flight Director's station, a seat once filled by Gene Kranz.



STAFF NEWS

We are happy to announce the following staff promotions:

Linda Walker will join the staff of the Board on Physics and Astronomy as a Program Coordinator on July 13. Ms. Walker has been with the NRC since 2007. Before her assignment as a senior project assistant with the SSB, she was with the National Academies Press.

Lewis Groswald was promoted to Associate Program Officer for the SSB on May 18. Mr. Groswald joined the SSB as an Autumn 2008 Lloyd V. Berkner Space Policy Intern and then served as a research associate for more than 4 years.

Cathy Gruber, editor for the SSB and the Aeronautics and Space Engineering Board (ASEB), will move to the NRC's Division on Engineering and Physical Sciences (DEPS) as Managing Editor. Ms. Gruber started at the NRC in 1988 working with CSTB and after a brief hiatus joined the Space Studies Board in 1995. **Susan Maurizi** is retiring from her post as Senior Managing Editor for DEPS on July 13 after more than 25 years.

On June 28, former SSB Director **Joseph K. Alexander** marked his full, formal retirement from the SSB and NRC. His career included 36 years in the government followed by 15 years at the Academies.

The ASEB saw two departures this quarter from staff that are shared with the Space Studies Board:

Paul Jackson departed on July 1 from the ASEB. Paul, who joined the NRC in 2006, was a co-study director for the 2011 report *Defending Planet Earth: Near-Earth Object Surveys and Hazard Mitigation Strategies* of the SSB and the ASEB.

John F. Wendt retired on June 28 after 11 years at the Academies. His first retirement was from the von Karman Institute for Fluid Dynamics in 1999. John was the study director for the 2010 report *Capabilities for the Future: An Assessment of NASA Laboratories for Basic Research* of the Laboratory Assessments Board, the SSB, and the ASEB.

Former ASEB Director **George M. Levin** passed away June 17. After a 35-year career at NASA, he joined the NRC in 1997 and retired in 2007.

Christine Mirzayan Science and Technology Policy Graduate Fellowship Program

Over the years, the SSB has participated in the Christine Mirzayan Science and Technology Policy Graduate Fellowship Program. The Christine Mirzayan Science & Technology Policy Graduate Fellowship Program will be accepting applications for the January 2014 fellowship session soon. Applications will be due on September 5, 2013. Selections will be made in late October 2013. More information can be found at <<http://sites.nationalacademies.org/PGA/policyfellows/index.htm>>.

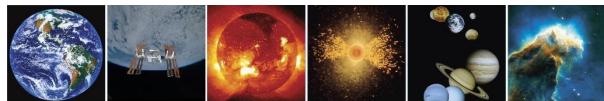
Lloyd V. Berkner Space Policy Internship

The SSB's Lloyd V. Berkner Space Policy Internship enrolled its most recent participant—Frederick Harrison Dreves—on June 3. Harrison came to the SSB after completing a double major in Earth and environmental sciences and communications of science and technology at Vanderbilt University. Harrison's current projects include the drafting of text for the popular version of the 2012 decadal survey in solar and space physics and the video editing of the highlights of the SSB's November 2012 workshop on lessons learned in decadal planning. The SSB received a record number of applications (22) for the Berkner program's autumn session during the second quarter of this year. Two interns, Jinni Meehan and Sierra Smith, were selected in early July and will begin their 12-week internships in the latter part of September.

Applications for the program's summer-2014 session will be accepted between September 1, 2013, and February 7, 2014. Selections will be made no later than March 7. Details concerning the program can be found at <http://sites.nationalacademies.org/SSB/ssb_052239>.

Jinni Meehan is a Ph.D. student at Utah State University in the department of physics. Her research is directed towards alleviating space weather effects on the Global Navigation Satellite System (GNSS) by better characterizing the ionosphere, which can improve forecast models. Jinni developed an interest for science policy when she spent a summer with the American Meteorological Society as a policy fellow working on space weather policy issues. She has authored several publications and presentations and has been a contributing author to numerous workshop reports for the space sciences community. The societal impacts due to space weather effects on GNSS is something she is passionate about and understands the importance of effective communication between scientists and government and she plans to pursue a career in the field when she completes her Ph.D. Jinni is a marathoner, snowboarder and hiker who enjoys being active on campus through committees and honor societies, cooking, photographing and spending time with her two dogs. She is very excited for the opportunity to work with the SSB in Washington, D.C. this autumn.

Sierra Smith recently graduated from James Madison University with an MA in history. The research for her master's thesis focused on the sociopolitical context of the Search for Extraterrestrial Intelligence and its broader relationship to space sciences. While working at the National Radio Astronomy Observatory, she conducted research on the evolution of radio astronomy in the United States. She plans to continue her studies by pursuing a PhD in the history of science. An internship with the Space Studies Board presents her an exciting opportunity to experience the real time development of space policy.



CONGRESSIONAL HEARINGS OF INTEREST

The following is provided for information only, as there was no testimony provided on behalf of the National Research Council.

Threats from Space: A Review of Private Sector Efforts to Track and Mitigate Asteroids and Meteors, Part II

House Committee on Science, Space and Technology

April 10, 2013

[<http://science.house.gov/legislation/hearings>](http://science.house.gov/legislation/hearings)

Challenges and Opportunities for Human Space Exploration

Senate Committee on Commerce, Science, and Transportation

April 23, 2013

[<http://www.commerce.senate.gov/public/index.cfm?p=Hearings>](http://www.commerce.senate.gov/public/index.cfm?p=Hearings)

An Overview of the National Aeronautics and Space Administration Budget for Fiscal Year 2014

House Subcommittee on Space

April 24, 2013

[<http://science.house.gov/legislation/hearings>](http://science.house.gov/legislation/hearings)

Exoplanet Discoveries: Have We Found Other Earths?

House Subcommittee on Space and Subcommittee on Research

May 9, 2013

[<http://science.house.gov/legislation/hearings>](http://science.house.gov/legislation/hearings)

Partnerships to Advance the Business of Space

Senate Subcommittee on Science and Space

May 16, 2013

[<http://www.commerce.senate.gov/public/index.cfm?p=Hearings>](http://www.commerce.senate.gov/public/index.cfm?p=Hearings)

Next Steps in Human Exploration to Mars and Beyond

House Subcommittee on Space

May 21, 2013

[<http://science.house.gov/legislation/hearings>](http://science.house.gov/legislation/hearings)

STEM Education: The Administration's Proposed Reorganization

House Committee on Science, Space and Technology

June 4, 2013

[<http://science.house.gov/legislation/hearings>](http://science.house.gov/legislation/hearings)

NASA Authorization Act of 2013

House Subcommittee on Space

June 19, 2013

[<http://science.house.gov/legislation/hearings>](http://science.house.gov/legislation/hearings)

SSB STAFF	
MICHAEL H. MOLONEY Director	LINDA WALKER ³ Senior Program Assistant
JOSEPH K. ALEXANDER ¹ Senior Program Officer	TANJA E. PILZAK Manager, Program Operations
ARTHUR A. CHARO Senior Program Officer	CHRISTINA O. SHIPMAN Financial Officer
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DWAYNE A. DAY [*] Senior Program Officer	SANDRA WILSON Senior Financial Assistant
DAVID LANG [*] Program Officer	<i>Lloyd V. Berkner Space Policy Intern</i> FREDERICK HARRISON DREVES
ABIGAIL SHEFFER Associate Program Officer	* Staff of other NRC boards who are shared with the SSB.
LEWIS GROSWALD Associate Program Officer ²	¹ Through June 28.
ANDREA REBOLZ [*] Program Associate	² As of May 18.
DIONNA WILLIAMS Program Associate	³ Through July 12.
	⁴ Through June 28.

News from the National Academies

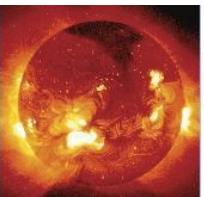
National Academy of Sciences Members and Foreign Associates Elected

The National Academy of Sciences announced on April 23 the election of 84 new members and 21 foreign associates from 14 countries in recognition of their distinguished and continuing achievements in original research. The following recipients served on an SSB committee:

Michael E. Brown, Richard and Barbara Rosenberg Professor, Division of Geological and Planetary Sciences, California Institute of Technology, served as a member of the Primitive Bodies Panel of the 2011 Planetary Decadal Survey and on the Committee on Planetary and Lunar Exploration.

Katherine H. Freeman, Professor, Department of Geosciences, Pennsylvania State University, served on the Committee on the Astrophysical Context of Life and the Committee on the Origins and Evolution of Life.

Chryssa Kouveliotou, Astrophysicist and Senior Scientist for High Energy Astrophysics, Science and Technology Office, NASA George C. Marshall Space Flight Center, Huntsville, Ala., served on the Committee on Astronomy and Astrophysics.



SSB Calendar

J U L Y						
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27	28	29	30	31		

July 24-26

Committee on Human Spaceflight (ASEB-led)

Irvine, CA

August 8-9

Space Studies Board Executive Committee (XCOM)

Washington, DC

September 4-6

Committee on Astrobiology and Planetary Science (CAPS)

Washington, DC

October 4

Public and Stakeholder Opinions Panel (Human Spaceflight)

Washington, DC

October 15-16

Technical Panel (Human Spaceflight)

Washington, DC

October 21-23

Committee on Human Spaceflight (ASEB-led)

Washington, DC

October 29-30

Committee on Earth Science and Applications from Space

Washington, DC

Future SSB Meetings

November 7-8, 2013, SSB, Washington, DC

April 3-4, 2014, SSB, Washington, DC

November 5-7, 2014, SSB, Irvine, CA

Visit <<http://www.nas.edu/ssb>> to stay up to date on board, workshop, and committee meetings and developments.

Our meeting facilities

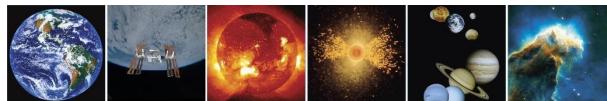


National Academy of Sciences
Building
2101 Constitution Ave NW
Washington, DC

Keck Center
of the National Academies
500 Fifth St NW,
Washington, DC

Arnold and Mabel Beckman
Center of the National Academies
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- The Effects of Solar Variability on Earth's Climate: A Workshop Report (2012)
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- Recapturing a Future for Space Exploration: Life and Physical Sciences Research for a New Era (2011) **Book and CD**
- Visions and Voyages for Planetary Science in the Decade 2013-2022 (2011) **Book and CD**
- Space Studies Board Annual Report 2010 (2011)
- Assessment of Impediments to Interagency Collaboration on Space and Earth Science Missions (2011)
- Forging the Future of Space Science: The Next 50 Years (2010) **CD Only**

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- Capabilities for the Future: An Assessment of NASA Laboratories for Basic Research (2010) **CD Only**
- Revitalizing NASA's Suborbital Program: Advancing Science, Driving Innovation, and Developing a Workforce (2010)
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