



USRA's Advocacy for the Space Sciences

26 September 2024

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President and Chief Executive Officer

USRA Was Founded in 1969

"I would like to propose that the Academy take initiative in convening the representatives of a number of appropriate universities to discuss the formation of such a consortium."

James E. Webb, NASA Administrator, 1961 – 1968
In his 1967 letter to Frederick Seitz,
President of the National Academy of Sciences

"To constitute an entity by means of which universities and other research organizations may cooperate with one another, with the governments of the United States and other nations, and with other organizations toward the development and application of space-related science, technology, and engineering."

From the USRA Articles of Incorporation



USRA Continues to Evolve

LPI - 1968 - Today

President Johnson announces the establishment of the Lunar Science Institute in Houston, Texas, now known as the Lunar and Planetary Institute. **LPI Summer Interns began in 1977** and in 1991, a new building designed and built by USRA becomes LPI's new home.



1970

STI - 1971 - Today

Work begins at NASA's Marshall Space Flight Center through USRA's support of NASA's experimentation in microgravity. In 1976, USRA began work with Marshall in atmospheric sciences and, in 1983, high energy astrophysics. In 2012, USRA activities were merged to form the USRA Science and Technology Institute.

1980

ADP - 1980 - 1990

USRA creates and manages the NASA/USRA University Advanced Design Program, which influences the criteria for university engineering design accreditation.

RIACS - 1983 - Today

USRA establishes the Research Institute for Advanced Computer Science at NASA's Ames Research Center to serve as a bridge between NASA and academe. In 2013, USRA enters into a joint Space Act Agreement with NASA and Google, establishing the **Quantum AI Lab**. In 2016, RIACS establishes Feynman Quantum Academy.



1990

SOFIA - 1996 - 2024

NASA selects USRA to build and operate an airborne astronomical observatory. USRA leads the modification of a Boeing 747 and develops instruments that will achieve first light in 2010.



2000

Glenn Programs - 1997 - Today

USRA establishes the National Center for Microgravity Research (focusing on fluids and combustion research) at NASA's Glenn Research Center and Case Western Reserve University. Today, work continues through Glenn Engineering and Research Support efforts.

CSNR - 2005 - Today

Idaho National Laboratory and USRA establish the Center for Space Nuclear Research to foster collaboration with university scientists to develop advanced space nuclear systems, including power systems, nuclear thermal propulsion, and radioisotopic generators.

2010

Arecibo - 2011 - 2018

USRA leads the astronomy and planetary science programs at the National Science Foundation's Arecibo Observatory in Puerto Rico as part of a multi-organization team.



NAMS - 2016 - Today

The USRA-led NASA Academic Mission Services team begins supporting Ames in areas such as navigation of unpowered aircraft systems, air traffic management, autonomous systems, airborne sciences, aeroacoustics, synthetic biology, quantum computing and small spacecraft development.



2020

ICASE - 1972 - 2002

USRA operates the Institute for Computer Applications in Science and Engineering at NASA's Langley Research Center. In 2002, ICASE is awarded for pioneering research.



DSLS - 1983 - 2016

The Division of Space Life Sciences is established to facilitate the participation of the university community in biomedical research programs.

Goddard Programs - 1988 - Today

NASA's Goddard Space Flight Center scientists begin collaborating with universities through the Visiting Scientist Program. In 2007, USRA partners in the Center for Research and Exploration in Space Science and Technology for astrophysics research. In 2012, USRA begins leading the Goddard Earth Sciences Technology and Research. In 2021, USRA is selected as a member of **PHaSER**, supporting NASA Goddard's Heliophysics Science Division.

NIAC - 1998 - 2007

USRA operates the NASA Institute for Advanced Concepts providing revolutionary aeronautical and space concepts to NASA.

NASA Interns 2007 - 2023

USRA is awarded NASA's Undergraduate Research Program and the 2013 follow-on program, NIFS, in which USRA manages the internship program.



AFRL Scholars 2012 - Today

USRA manages the program that provides internships to hundreds of high school, undergraduate and graduate students from across the country each year at multiple U.S. Air Force Research Laboratory locations.



NPP - 2015 - 2022

The NASA Postdoctoral Program manages applications, reviews proposals, and awards fellowships based on NASA selection in order to develop a workforce for space and aeronautics-related research careers.

Generative AI Lab 2024 - Today

USRA enters a Space Act Agreement with NASA and Boston Consulting Group to establish and maintain a Generative AI Laboratory on the NASA Ames campus. The Laboratory aims to further AI innovations and drive toward a national AI R&D strategy.



USRA Is Overseen by a Council of Institutions

USRA's 121 Member Institutions Throughout the U.S. and Around the World

Region I

- Boston College
- Boston University
- Brandeis University
- Brown University
- University of Connecticut
- Harvard University
- Massachusetts Institute of Technology
- University of New Hampshire
- Tufts University
- Yale University

Region II

- University at Buffalo, SUNY
- Columbia University
- Cornell University
- Lehigh University
- New Jersey Institute of Technology
- New York University
- The Pennsylvania State University
- Princeton University
- Rensselaer Polytechnic Institute
- University of Rochester
- Rochester Institute of Technology
- The Rockefeller University
- Stony Brook University, SUNY
- University of Pittsburgh

Region III

- Case Western Reserve University
- University of Delaware
- George Mason University
- The George Washington University
- Georgetown University
- Howard University
- Johns Hopkins University
- University of Maryland
- Ohio University
- The Ohio State University
- University of Virginia
- Virginia Polytechnic Institute & State University

Region IV

- University of Central Florida
- William & Mary
- Embry-Riddle Aeronautical University
- University of Florida
- Florida Institute of Technology
- Florida State University
- Georgia Institute of Technology
- Hampton University
- North Carolina A&T State University
- North Carolina State University
- Old Dominion University
- University of Tennessee, Knoxville
- Vanderbilt University

Region V

- The University of British Columbia
- University of Canterbury
- The Chinese University of Hong Kong
- Indian Institute of Space Science and Technology
- Korean Advanced Institute of Science and Technology
- Seoul National University
- The University of Sydney
- Technion – Israel Institute of Technology
- Tel Aviv University
- University of Toronto

Region VI

- The University of Chicago
- University of Illinois at Urbana Champaign
- Indiana University
- The University of Iowa
- Iowa State University
- University of Michigan
- Michigan Technological University
- University of Minnesota
- Montana State University
- The University of Nebraska-Lincoln
- Northwestern University
- University of Notre Dame
- Purdue University
- University of Wisconsin - Madison

Region VII

- Alabama A&M University
- The University of Alabama in Huntsville
- Auburn University
- Baylor University
- University of Houston
- Louisiana State University
- Mississippi State University
- Rice University
- Texas A&M University
- Texas Tech University
- University of Texas at Arlington
- University of Texas at Austin
- University of Texas at Dallas
- University of Texas at El Paso
- University of Texas at San Antonio
- University of Texas Medical Branch at Galveston

Region VIII

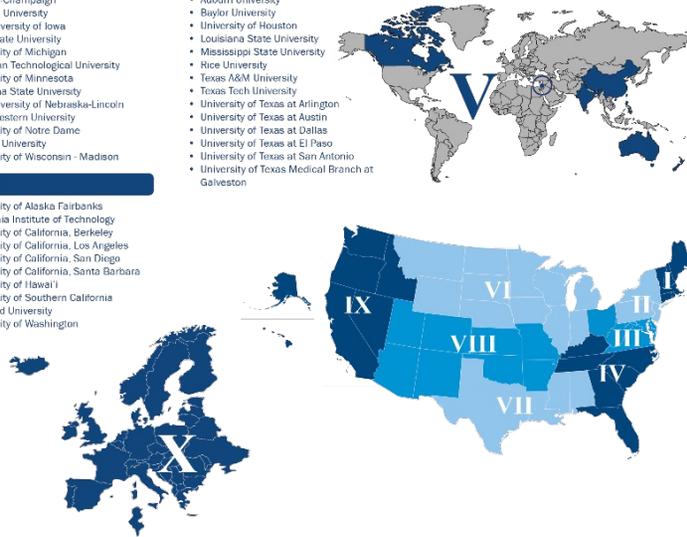
- The University of Arizona
- Arizona State University
- University of Arkansas
- University of Colorado Boulder
- Colorado School of Mines
- University of Denver
- The University of Kansas
- The University of New Mexico
- New Mexico State University
- The University of Oklahoma
- Oklahoma State University
- Utah State University
- Washington University in St. Louis

Region IX

- University of Alaska Fairbanks
- California Institute of Technology
- University of California, Berkeley
- University of California, Los Angeles
- University of California, San Diego
- University of California, Santa Barbara
- University of Hawaii
- University of Southern California
- Stanford University
- University of Washington

Region X

- University of Bern
- University of Cologne
- Ecole Polytechnique Fédérale de Lausanne
- University of Leoben
- University of Padua
- Polytechnic University of Turin
- University of Sheffield
- University of Stuttgart
- University of Zurich



Council representatives:

- Establish Bylaws
- Elect Board of Trustees
- Elect member universities
- Guide public policy advocacy

USRA's Issues and Program Committee (IPC)

IPC Purpose and Approach

- Provides a voice on public policy issues important to the university space research community
- Comprised of representatives drawn from each Region of the Council of Institutions
- Formulates public policy positions
- Meets with members of Congress and their staffs; provides testimony, as requested
- Supported by Mr. Eric Hammond, USRA Director, Corporate & Government Affairs



IPC Congressional Briefing on University Small Sat Missions

Issues and Program Committee Membership

Chair	Joan Ramage Macdonald	Lehigh University
Vice Chair	Jed Hancock	Space Dynamics Lab, Utah State
Region I	Josh Grindlay	Harvard University
Region II	Joan Ramage Macdonald	Lehigh University
Region III	Wayne Scales	Virginia Tech
Region IV	Iso Ero-Johnson	Hampton University
Region V	Chris Damaren	University of Toronto
Region VI	Neil Cornish	Montana State University
Region VII	Truell Hyde	Baylor University
Region VIII	Steve Stochaj	New Mexico State University
Region IX	Bob McCoy	University of Alaska Fairbanks
Region X	Vacant	
Observer	David Canales Garcia	Embry-Riddle Aeronautical University

Issues and Program Committee Advocacy

Past Advocacy Efforts:

- Reversing the decline in the NASA suborbital program
- Reforming space-related export control law (ITAR Category XV)
- Strengthening the relevance of Decadal Surveys

Ongoing Efforts:

- Advocating for university small satellite missions, which enable hands-on training of students
- Advocating for a higher NASA top line and the inextricable linkage between science and exploration

Reversing the Decline in the NASA Suborbital Program (1 of 2)

NASA 2008 Authorization Act (P.L. 110-422):

- The **Issues and Program Committee (IPC)** successfully advocated for the inclusion of a provision calling for a study by the National Research Council (NRC), part of the National Academies of Sciences, Engineering, and Medicine, on the value of NASA's suborbital mission program
- This led to the NRC releasing the report, *Revitalizing NASA's Suborbital Program: Advancing Science, Driving Innovation, and Developing Workforce* in 2010
- **Summary of NRC Report:** The report emphasized the essential role of suborbital missions in advancing scientific research, fostering innovation, and developing the next generation of space scientists and engineers

Reversing the Decline in the NASA Suborbital Program (2 of 2)

NASA 2010 Authorization Act (P.L. 111-267):

- Following the release of the NRC report, IPC members successfully advocated for the implementation of its recommendations into legislation through the 2010 NASA Authorization Act
- This resulted in renewed investments by NASA in suborbital facilities and capabilities, helping stabilize and grow the program

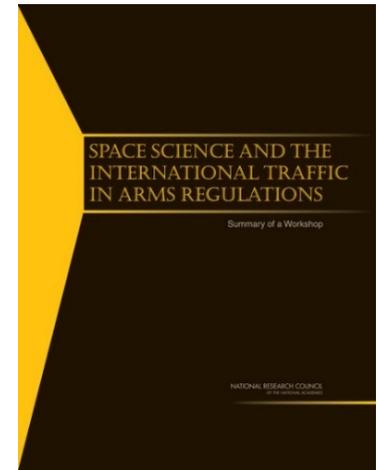
December 2012 Congressional Testimony by Prof. Thomas Zurbuchen:

- Prof. Zurbuchen, former USRA COI Chair, testified before Congress, advocating for increased focus on Principal Investigator (PI)-led missions and a diversification of mission sizes, including smaller, higher-risk missions that could deliver significant scientific advancements

ITAR Category XV and Space Research and Education at Universities

Background:

- Cox Committee Report (1999) led to Congress casting a broad net that “satellites and related items” be transferred from the Commerce Department to the State Department and be covered as defense articles under ITAR
- ITAR was amended in 2002 to exclude U.S. universities from having to obtain ITAR licenses when performing fundamental research
- But uncertainty and concern remained on campuses:
 - An export can be “deemed” to have taken place when information is conveyed to a foreign national, including through conversation or classroom teaching
 - In space research, university scientists work in teams with colleagues and students, many of whom may be foreign nationals



Uncertainty Had a Chilling Effect on Space-Related Research and Education at U.S. Universities

USRA informed of several unintended consequences:

- To mitigate risk, faculty forced to choose between excluding non-U.S. students from their courses and research projects, or “dumbing down” the curriculum for all students
- Students and able young faculty members were avoiding space-related fields, where the uncertainties and burdens of ITAR compliance and the ITAR approval process are acute
- Universities were weighing the costs and risks of conducting research and teaching students in disciplines associated with space science and technology, versus opting out and placing investments in non-space-related fields

The Advocacy Effort: Space-Related ITAR Reform (1 of 2)

The university message to Congress:

- The impact of ITAR Category XV on university research and education is exacerbating the growing problem of the U.S. having the space workforce needed to design and deploy the space systems of the future
 - Current regulations are harming U.S. national security
- Provide authority to the President to remove satellites and related components from the USML, including scientific research and experimental (SRE) satellites
- Reforming current law will allow sensible consideration of what space-related technology must be controlled, as opposed to the current blanket restriction
 - Restore to our universities the ability to teach our students space technology and to conduct research in space in a way that will enable the U.S. to remain a leader in the future

The Advocacy Effort: Space-Related ITAR Reform (2 of 2)

- USRA, the American Association of Universities (AAU), and the Satellite Industry Association (SIA) worked together, as single united coalition
- Advocated for broad reform, not limited to commercial satellites
- Undertook joint congressional visits
 - Foreign Relations and Foreign Affairs
 - Armed Services
- Testified before Congress
 - Communication with White House agencies: National Security Council
 - National Economic Council
 - Office of Science and Technology Policy

Outcome: Space-Related ITAR Reform

New Law Passed

- Space-related export control form was signed into law on January 2, 2013, as part of the NDAA
- Reform not limited to commercial satellites—new law restores to the President authority for “Removal of Satellites and Related Items from the United States Munitions List (USML)”

Regulatory Implementation

- Final regulations published May 13, 2014
- USRA-submitted comments affected the final regulations
- Regulations became effective November 10, 2014

Subtitle E—Satellites and Related Items

SEC. 1261. REMOVAL OF SATELLITES AND RELATED ITEMS FROM THE UNITED STATES MUNITIONS LIST.

(a) REPEAL.—

(1) IN GENERAL.—Section 1513 of the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999 (Public Law 105-261; 112 Stat. 2174; 22 U.S.C. 2778 note) is amended by striking subsection (a).

(2) CONFORMING AMENDMENT.—Subsection (c) of such section is amended by striking “(1) Subsection (a)” and all that follows through “(2) The amendments” and inserting “The amendments”.

(b) ADDITIONAL DETERMINATION AND REPORT.—Accompanying but separate from the submission to Congress of the first notification after the date of the enactment of this Act under section

38(f) of the Arms Export Control Act (22 U.S.C. 2778(f)) relating to the removal of satellites and related items from the United States Munitions List, the President shall also submit to Congress—

(1) a determination by the President that the removal of such satellites and items from the United States Munitions List is in the national security interests of the United States; and (2) a report identifying and analyzing any differences between—

(A) the recommendations and draft regulations for controlling the export, re-export, and transfer of such satellites and related items that were submitted in the report to Congress required by section 1248 of the National Defense Authorization Act for Fiscal Year 2010 (Public Law 111-84; 123 Stat. 2546); and

(B) the final regulations under which the export, reexport, and transfer of such satellites

Strengthening the Relevance of Decadal Surveys

IPC proposed legislation:

“The Administrator shall be guided in decision-making on the prioritization of science missions and activities by the decadal surveys. The Administrator shall report to Congress, annually, at the time of the President’s budget request, on any significant deviations from the recommendations of the current decadal surveys, including decision rules, and provide a rationale for each such deviation.”

Language in introduced legislation:

S.3346 - National Aeronautics and Space Administration Transition Authorization Act of 2016 (*Introduced September 15, reported September 21, 2016*)

“The Administrator should set science priorities by following the guidance provided by the scientific community through the National Academy of Sciences’ decadal surveys.”

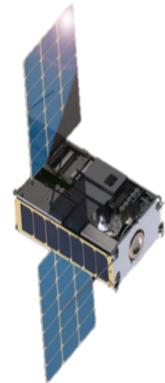
Current law:

42 USC 18384: Decadal results

“NASA shall take into account the current decadal surveys from the National Academies' Space Studies Board when submitting the President's budget request to the Congress.”

Advocating for University Small Satellite Missions

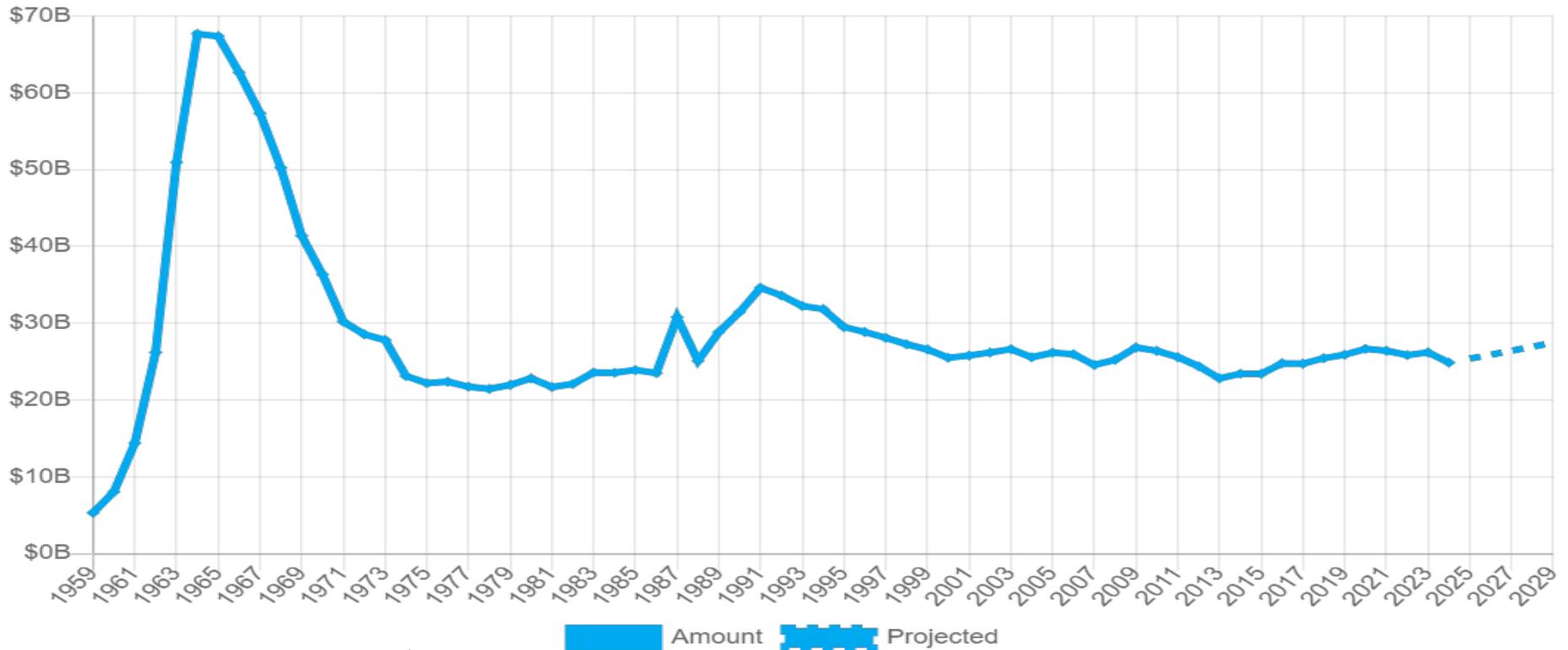
- Long history of USRA advocacy of small missions since Student Explorer Demonstration Initiative (STEDI) in the late 1990s
- With IPC concurrence, USRA has been advocating since 2018 for increased funding for universities to perform small satellite missions with university PIs
- Repeated success with appropriators since 2020—but not authorizers



The FY2025 House report for NASA notes:

University Small Satellite missions.—The agreement supports NASA's collaborative efforts with U.S. colleges and universities to conduct research through small spacecraft missions and provides not less than \$30,000,000 for these missions.

Historical NASA Appropriations



Source: The Planetary Society

Current NASA Appropriations

(All values are in millions of \$)	FY24 Final	FY25 President's Budget Request	FY25 House	FY25 Senate
NASA	\$24,875	\$25,384	\$25,179	\$25,400
Science	\$7,334	\$7,566	\$7,334	\$7,576
Planetary Science	\$2,717	\$2,732	\$2,930	\$2,722
Earth Science	\$2,195	\$2,379	\$2,000	\$2,367
Astrophysics	\$1,530	\$1,578	1,532	\$1,583
Heliophysics	\$805	\$787	\$787	\$812
Exploration	\$7,666	\$7,618	\$7,618	\$7,648
Space Technology	\$1,100	\$1,182	\$1,182	\$1,182
Space Operations	\$4,220	\$4,390	\$4,474	\$4,400
Aeronautics	\$935	\$966	\$966	\$966
STEM Engagement	\$143	\$143.5	\$89	\$144

USRA Advocacy Campaign for NASA Funding

- **Overarching objectives:**

- Raise NASA top-line funding in FY26 and beyond
- Promote inextricable linkage between science and exploration
- Ensure healthy budget lines for ESMD, SMD, STMD, and ARMD

- **Planned Actions:**

- Sign out a letter from USRA to House and Senate appropriations to advocate for increased NASA funding
- Secure a similar letter signed by USRA member universities
- Engage Congress, leveraging relationships with universities
- Keep NASA leadership informed
- Engage OMB
- Other TBD as events unfold



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