

FY 2016 Report on NASA Large Conferences

NASA Sponsored and Non Sponsored Conferences with Agency Spend of \$100,000 or More

October 1, 2015 – September 30, 2016

FY 2016 Report on NASA Sponsored Large Conferences

<u>Overview</u>: In accordance with Office of Management and Budget (OMB) Memorandum M-12-12, Section 2 – Conferences, the National Aeronautics and Space Administration (NASA) is providing this report on conferences. This report provides a summary of conference activities by NASA in Fiscal Year (FY) 2016. It includes a brief overview of each conference's purpose to highlight the valuable role that conferences play in NASA's mission, such as in key dissemination and exchange of cutting edge scientific and technological knowledge.

The Space Act of 1958 requires NASA to "provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof." Conferences provide an important vehicle for accomplishing this mandate. NASA scientists, engineers and leaders present scientific and technical papers and participate in interchanges on leading-edge research and technology with peers in the Federal Government, academia, the science community, the aeronautics and aerospace industries and international partners. NASA attended and sponsored conferences address a broad and diverse range of scientific and engineering challenges faced in carrying out its missions, including Earth science research, advanced aeronautics and the cutting-edge technologies needed for both current and planned robotic and human space flight programs.

In addition to facilitating the dissemination and advancement of scientific research, conferences also serve as a cost-effective way for NASA to carry out other mission-related purposes, such as educational outreach and program development, planning and information gathering. For example, conferences on program management provide opportunities for examination of current trends in aerospace project and engineering management; offering forums for the exchange and dissemination of best practices, new ideas, and training for managers across NASA to help the Agency cost-effectively meet the toughest challenges in space exploration today.

FY 2016 Conferences: NASA participated in 50 conferences in FY 2016 for which it spent more than \$100,000 each. Net conference expenses for the 2016 fiscal year, for conferences costing the Agency more than \$100,000, totaled just over \$15.9 million. Detailed information on the events approved under the justification and approval process under OMB M-12-12 follows.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
Exploring the Universe with James Webb					
Space Telescope	Noordwijk,				
(JWST)	Netherlands	10/12/2015	10/16/2015	\$132,051	46

Web site Link: http://congrexprojects.com/2015-events/15a02/introduction

Purpose: The JWST is a NASA-led partnership with the European Space Agency (ESA) and the Canadian Space Agency. This conference engages the scientific user community in planning for the JWST science objectives, provide details on the capabilities of the instruments, and enables teams to plan large, key projects.

NASA attendance at this event serves two purposes for the NASA JWST project. First, it is an opportunity to communicate the capabilities of the observatory to the user community in Europe, and to those US scientists who attend the conference. Second, it is an opportunity for the NASA-funded scientists working on the program to learn about the ideas and plans that the user community has for the telescope.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
66th International					
Astronautical Congress	Jerusalem,				
(IAC)	Israel	10/12/2015	10/16/2015	\$325,000	50

Web site Link: www.IAC2016.org

Purpose: The IAC is the preeminent annual global space conference organized by the International Astronautical Federation (IAF), which has 246 members from 60 countries. IAC acts as both a forum for public space diplomacy and high level consultations, involving NASA's most senior leaders and space agency leaders from around the world, as a substantive academic conference covering the full breadth and depth of NASA's activities across all mission directorates and scientific disciplines. NASA also uses this conference to engage in significant outreach to students and young professionals. The IAC positively influences the community of space faring nations, projects NASA's global reach and allows scientists and researchers to stay abreast of the latest in their respective scientific and technical fields.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
Research Earth Surface & Interior Workshop	Arlington, VA				
(RESIW)		11/1/2015	11/4/2015	\$105,525	38

Web site Link: https://science.nasa.gov/earth-science/focus-areas/surface-and-interior

Purpose: The RESIW gathers input to advance the state of knowledge of key scientific questions that form the basis of the NASA's Earth Surface and Interior focus areas. ESI's strategy is currently underpinned by the findings of the Solid Earth Science Working Group (SESWG) report Living on a Restless Planet (2002). The conference revisits core challenges and opportunities for NASA solid-Earth science in light of scientific progress and new capabilities realized over the past decade. This event supports NASA in fulfilling its mission to characterize the dynamics of Earth's surface and interior, and improve the capability to assess and respond to natural hazards and extreme events.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
Division Planetary					
Sciences Meeting	National				
(DPS) 2015	Harbor, MD	11/8/2015	11/13/2015	\$325,033	138

Web site Link: http://dps.aas.org/

Purpose: The DPS annual conference is a platform for dissemination of science results from Missions and Research and Analysis funded through the Planetary Science Division and the Astrophysics Division within the Science Mission Directorate. The conference addresses a broad spectrum of planetary and astrophysics research and mission results aligning with strategic goals of both Astrophysics and Planetary Science Division.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
American Society for	San				
Gravitational Space	Francisco,				
Research (ASGSR)	CA	11/11/2015	11/14/2015	\$322,522	123

Web site Link: https://www.asgsr.org

Purpose: The ASGSR brings together a diverse group of scientists and engineers to encourage and exchange ideas bridging basic and applied biological and physical science research in space and gravitational sciences, which advances science and technology directly supporting science exploration and terrestrial life.

The NASA Chief Scientist supports participation in this conference as it brings together two fundamental research communities that rely on the International Space Station (ISS) for the major conduct of their science projects.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
Supercomputing SC15	Austin, TX	11/15/2015	11/20/2015	\$277,916	73

Web site Link: http://sc15.supercomputing.org/

Purpose: The Supercomputing conference series is the largest supercomputing conference in the United States and is attended by approximately 10,000 people. SC15 is the largest event in the world devoted to this area. The conference and exhibit cover subjects that are vitally important to NASA's missions, our core capabilities, such as tutorials on new programming models and user tools and NASA's academic and commercial partners.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
SpaceCom: Exploring					
the Business of Space	Houston, TX	11/17/2015	11/19/2015	\$229,034	203

Web site Link: http://www.spacecomexpo.com/

Purpose: The SpaceCom event allows NASA to explore options for leveraging innovation and technology development capabilities with public and private organizations to enable future missions through collaborative development partnerships and technology infusion. The growth and fostering of such business networks is critical to cost efficient spacecraft development. Attendance at the conference fosters the economic development of space, the creation of new business models to support that development and the application of space technologies across important industry sectors of the global economy.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
Solutions for Enterprise-					
Wide Procurement					
(SEWP) Procurement	Baltimore,				
Training Forum	MD	12/7/2016	12/10/2016	\$479,330	264

Web site Link: https://www.sewp.nasa.gov/

Purpose: The NASA procurement workforce performs a vital mission throughout the Agency. Annually, over 80% of NASA's budget is obligated by this segment of the workforce in support of Agency programs and projects. Warranted Contracting Officers (CO) are the only individuals authorized by the Federal Acquisition Regulation (FAR) to obligate the government and with such a weighty responsibility, training is a key component to ensuring that taxpayer funds are prudently spent.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
2015 Fall American	San				
Geophysical Union	Francisco,				
(AGU)	CA	12/14/2015	12/18/2015	\$2,610,055	1,309

Web site Link: http://fallmeeting.agu.org/2015

Purpose: AGU is the largest worldwide meeting in the geophysical sciences. AGU's activities focuses on the organization and dissemination of scientific information in the interdisciplinary and international field of geophysics. The geophysical sciences involve four fundamental areas: atmospheric and ocean sciences; solid-Earth sciences, hydrologic sciences and space sciences.

Participation in the annual AGU meeting addresses NASA's mission to "drive advances in science, technology and exploration to enhance knowledge, education innovation, economic vitality, and stewardship of Earth" and enables broad and deep interaction with the worldwide community of researchers in Earth and space science.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
227th American					
Astronomical Society	Kissimmee,				
(AAS)	FL	1/3/2016	1/7/2016	\$455,997	184

Web site link: https://aas.org

Purpose: The AAS meetings enable the achievement of NASA's science mission through the participation of NASA scientists in the meetings. For Astrophysics, the AAS semi-annual meetings are the primary fora that bring together the science community and NASA scientists. Therefore, the AAS meetings are the most effective means of fostering understanding of NASA's mission, and of the understanding of NASA's scientists of the intellectual questions and national concerns that will be addressed by future missions. NASA's scientists efficiently maintain relevance in their disciplines by presenting and by participating in the many scientific and programmatic sessions held during the meeting. NASA-funded scientists and other scientists present their latest results, often in advance of publication. Discussions at the meetings by NASA's scientists are an effective means to maintain understanding of recent trends in astrophysics research. A significant level of meeting participation by NASA's scientist is warranted in order to carry out their programmatic and professional responsibilities on behalf of NASA.

Conference	Location	Start	End	Total Cost	NASA Paid
		Date	Date		Attendees
American Institute of Aeronautics and Astronautics (AIAA)	San Diego,				
SciTech 2016	CA	1/4/2016	1/8/2016	\$1,086,318	400

Web site Link: https://www.aiaa-scitech.org/

Purpose: Sci-Tech is a co-located conference with a total of 12 conferences in one. SciTech brings together over 3,500 participants and more than 2,500 technical presentations from nearly 800 institutions in 39 countries to offer the latest research results on 44 high-impact topics and scores of opportunities for networking.

In order to share the latest technical information, current and emerging topics, and to advocate future conference session topics that are relevant to NASA, attendance at the conference is considered mission critical. This conference covers many areas that are vitally important to strengthen core capabilities that cut across missions and offers discipline integration expertise which can bring innovative and affordable solutions at the discipline and systems level to address NASA's mission challenges.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
Earth Science					
Information Partners					
(ESIP) Federation	Washington,				
Winter Meeting 2016	DC	1/6/2016	1/8/2016	\$120,464	95

Web site Link: http://www.esipfed.org/meetings

Purpose: The ESIP Federation meetings align with and are crucial to the goals and activities of NASA's Earth Science Data Systems (ESDS) Program at NASA HQ as well as the Earth Science Data and Information System (ESDIS) Project at NASA Goddard Space Flight Center (GSFC). The ESDIS Project is responsible for management, oversight, and technical direction of the Earth Observing System Data and Information System (EOSDIS), which includes, among other things, 12 Distributed Active Archive Centers (DAACs). ESIP is the primary venue for bringing together Earth science data users and information technology experts.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
96th American					
Meteorological Society	New				
(AMS)	Orleans, LA	1/10/2016	1/14/2016	\$341,510	138

Web site Link: http://annual.ametsoc.org/2015/

Purpose: The AMS meetings attracts thousands of Earth and space scientists, policy makers, educators, students, and news media. Participation in the AMS meetings are critical to NASA's mission to "drive advances in science, technology, and exploration to enhance knowledge, education, innovation, economic vitality, and stewardship of Earth" because it enables broad and deep interaction with the worldwide community of researchers in the Earth and space sciences. For scientists, the aforementioned interactions are integral to the process of science and often grow into proposals to NASA research announcements.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
American Astronautical Society (AAS) Guidance,					
Navigation, and Control	Breckenridge,				
(GN&C) Conference	CO	2/5/2016	2/10/2016	\$107,515	38

Web site Link: http://aas-rocky-mountain-section.org/conference-info/

Purpose: The AAS GN&C event hosts topics covering the entire lifecycle of GN&C for spacecraft and sensors while reflecting some of the most relevant and current topics in the industry. This is the premier conference for the exchange of technical information, technology developments, and recent experience in the GN&C field. The conference presents an opportunity for NASA engineers to interact with their peers to develop new contacts and future collaborations.

Conference	Location	Start	End Date	Total Cost	NASA Paid
		Date			Attendees
Human Research	Galveston,				
Program (HRP)	TX				
Investigators					
Workshop		2/8/2016	2/1/2016	\$202,495	74

Web site Link: http://www.cvent.com/events/2016-human-research-program-investigators-workshop/custom-37-f91101be2110489384f5efbd33d2b5a7.aspx

Purpose: The HRP Investigators Workshop (IWS) is the single opportunity for HRP management to review with customers and stakeholders the status and progress of grantees, contractors, and civil servant investigators in addressing human health & performance risks of space exploration missions. Since inception, HRP uses the annual Investigator's Workshop to assess research progress, and facilitate communication between researchers, management, Headquarters, other programs that HRP supports and stakeholders in Medical Operations and the Astronaut Office. The HRP Investigator's Workshop is the only venue where all of these groups and International partners can see the breadth of human life sciences research being conducted in support of exploration missions.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
International Global					
Navigation Satellite					
System (GNSS)					
Service (IGS)					
Workshop 2016	Sydney, AU	2/8/2016	2/12/2016	\$107,515	38

Web site Link: http://igsworkshop2016.org/

Purpose: The IGS is a voluntary federation of over 200 self-funding agencies, universities, and research institutions from more than 100 countries. Its mission is to provide the highest quality GNSS data, products and services in support of the terrestrial reference frame; Earth observations and research; positioning, navigation, and timing (PNT); and other applications that benefit the scientific community and society. At a high level, the IGS solicits contributions related to multi-GNSS observations, processing strategies, the modelling of new GNSS satellites, as well as multi-GNSS products. Contributions building on data and products from the IGS MGEX project are specifically encouraged.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
2016 Ocean Sciences Meeting (OSM)	New Orleans, LA	2/21/2016	2/26/2016	\$105,424	44

Web site Link: http://osm.agu.org/2016/

Purpose: The OSM focuses on all aspects of the Earth's Oceans, including physics, chemistry and biology. NASA has a number of spaceborne assets constantly returning data regarding the Earth's Oceans: Jasons-2 and the soon-to-be-launched Jason-3, GRACE and the future GRACE Follow-on, Rapidscat on the Space Station, MODIS (or Moderate Resolution Imaging Spectoradiometer) on Aqua and Terra. Results from all these missions are presented at the OSM conference, and results from insitu instrumentation relevant to these missions are also be presented. In addition, NASA oceanographers will learn the cutting edge science questions that can be addressed by these instruments.

Conference	Location	Start	End	Total Cost	NASA Paid
		Date	Date		Attendees
2016 Institute of					
Electrical and					
Electronics Engineers					
(IEEE) Aerospace					
Conference	Big Sky, MT	3/5/2016	3/12/2016	\$576,812	148

Web site Link: http://www.aeroconf.org/

Purpose: The IEEE Aerospace Conference is organized to promote interdisciplinary understanding of aerospace systems, their underlying science and technology, and their application to government and commercial endeavors, by providing a working environment that encourages collaboration and interaction. This conference has a long-standing reputation for identifying, promoting and facilitating collaborations across NASA, DOD and international communities and has enhanced value by broad participation across all NASA Centers. This multi-discipline conference is the forum for disseminating information on NASA's missions and all of the disciplines associated with them through papers and 10 panels on Government plans, policies and education.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
47th Lunar and	The				
Planetary Science	Woodlands,				
Conference (LPSC)	TX	3/21/2016	3/25/3016	\$550,422	223

Web site Link: http://www.hou.usra.edu/meetings/lpsc2016/

Purpose: The LPSC is one of the traditionally large conferences with wide attendance by academia, industry and international partners. It is the primary community-driven conference where researchers from around the world present results from a variety of topic areas of specific interest to NASA's Planetary Science Division within the Science Mission Directorate. This conference brings together international specialists in petrology, geochemistry, geophysics, geology, and astronomy to present the latest results of research in planetary science.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
Green Aviation					
Technical Interchange	Hampton,				
Meeting (TIM)	VA	3/29/2016	3/31/2016	\$140,098	76

Web site Link: https://www.nasa.gov/subject/7564/green-aviation/

Purpose: The Green Aviation TIM advances the mission of the agency by enabling increased awareness of progress toward Ultra-efficient subsonic transport aircraft through achievement realized by NASA, industry, academia, and other Government agencies. This is accomplished by providing a forum for open discussion through presentations, panel discussion, and networking. Further, through awareness of Green Aviation developments, the event fosters collaboration amongst participants for technology advancement with benefits in air travel for the American public.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
SPIE Asia-Pacific					
Remote Sensing	New Dehli,				
(APRS) 2016	India	4/4/2016	4/7/2016	\$179,469	33

Web site Link: http://spie.org/asia-pacific-remote-sensing

Purpose: The 2016 APRS Symposium focuses on the application of remote sensing technologies for disaster mitigation and to better monitor global climate change. Remote sensing data processing and characterization are an integral part of weather and climate predictions. Analysts use advanced remote sensing maps for the monitoring of hazardous phenomena, exploration of ocean resources, and tracking cryospheric changes that result from global warming. Advanced remote sensing and data processing is a crucial information resource for in-depth understanding of the interrelated processes of the atmosphere, ocean, geosphere, cryosphere and biosphere. The focus of this symposium aligns to the NASA vision for Earth Observations using remote sensing technologies and techniques for disaster management, weather and climate predictions and societal benefit.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
	Colorado				
32nd Space Symposium	Springs, CO	4/11/2016	4/14/2016	\$142,781	95

Web site Link: http://www.spacesymposium.org/

Purpose: The Space Symposium has been firmly established as one of the single most important events for government organizations, and between government and industry focused on space research objectives and expectations. NASA plays a unique role in both national space and commercial space. This conference presents a distinct opportunity to identify potential government and industry partners in one setting to support a broad range of space R&T needs and opportunities for NASA to collaborate. Participants are there to help facilitate various meetings on partnerships as well as share information on NASA technology portfolio that align with current and future public and private space technology development opportunities.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
International Radiation	Auckland,				
Symposium (IRS)	Netherlands	4/16/2016	4/22/2016	\$231,490	44

Web site Link: http://irs2016.org/

Purpose: The IRS conference provides a forum for the presentation of the best and latest research in Atmospheric Radiation in its many forms. Radiation research is a major component of the NASA Global Energy and Water Exchanges (GEWEX) projects across NASA. The IRS provides a variety of topics in radiation research to assist with research, observation and science activities within the NASA GEWEX projects. A combination of plenary and parallel sessions will be held during the first five days. Based on the events overwhelming response, IRS hosts approximately 300 oral presentations as well as several poster sessions. Sessions include topics on but not limited to: Topical Union, Radiative Transfer Theory and Modeling, Particle Radiative Properties, General Remote Sensing, Radiation Budget and Forcing, etc.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
European Geosciences	Vienna,				
Union General (EGU)	Austria	4/17/2016	4/22/2016	\$260,996	65

Web site Link: http://www.egu2016.eu/

Purpose: The EGU conference brings together NASA employees and contractors working on various Earth science missions and projects, such as the Earth Observing System (EOS) Mission, the Global Precipitation Mission (GPM), the Suomi-NPP (National Polar-orbiting Partnership), ICESAT-2, and SMAP among others, to interact with international colleagues from various space agencies such as European Space Agency (ESA) and Japan Aerospace Exploration Agency (JAXA). This year focused on sharing the results of planetary projects, such as Rosetta and JUICE.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
NASA Imagery Experts	Las Vegas,				
Group (NIEG)	NV	4/18/2016	4/21/2016	\$106,119	56

Web site Link: https://sharepoint.msfc.nasa.gov/msfc/nieg

Purpose: The NIEG chartered from HEOMD, includes three Working Groups and multiple Configuration Control Boards. These working groups and control boards manage the NASA TV system, the Agency's core infrastructure for content creation, production and distribution, are responsible for all of NASA's web streamed video, and provide direct support to programs in all the Mission Directorates, the Office of the CIO, and the Office of Communications.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
87th Aerospace					
Medical Association	Atlantic				
Conference (AsMA)	City, NJ	4/24/2016	4/28/2016	\$171,411	69

Web site Link: https://www.asma.org/annual-meetings/registration

Purpose: The annual scientific meeting of the AsMA is the major domestic conference for exchange of space-related medical and scientific information between NASA, Department of Defense (DoD), Federal Aviation Administration (FAA), and other international aerospace medicine organizations. This exchange of medical and scientific data and opinion is vital for keeping NASA physicians and scientists abreast of the state of the art in aerospace medicine, and provides an opportunity for NASA personnel to submit their work to critique by their peers. Specialty sessions permit the engagement of NASA and ISS partners to exchange medical and scientific findings regarding long-duration space flight, and for NASA and FAA counterparts to participate in issues important to commercial space flight.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
Living Planet Symposium 2016	Prague, CZ	5/9/2016	5/13/2016	\$124,604	29

Web site Link: http://lps16.esa.int/

Purpose: The Living Planet Symposium takes place every three years and is sponsored by the European Space Agency (ESA). The conference focuses on all aspects of Earth observations from space, both from ESA assets and 'third party mission data' which is dominated by NASA data. The data interpretation and analysis of NASA Earth science measurements is performed collaboratively by scientists across the world, who will continue to use NASA, ESA and other space borne and suborbital data. This event will report results from NASA spaceborne missions such as OCO-2, Rapidscat, Aura, Aquarius, SMAP and others, from NASA airborne missions such as HyTES or UAVSAR, as well as plans for future NASA missions such as OCO-3 and NISAR furthers NASA's core mission.

Conference	Location	Start	End Date	Total Cost	NASA Paid
		Date			Attendees
NASA Office of the					
Inspector General					
(OIG) Office of Audits					
(OA) All-Hands	Savannah,				
Training	GA	5/16/2016	5/20/2016	\$126,460	85

Web site Link: No URL

Purpose: The OIG All-Hands conference provides required training and coordination on a variety of different subject areas, including tools and resources that will enable the auditors to conduct objective oversight of NASA missions, programs, and operations in a more efficient manner. Training also enables the audit organization to obtain required certification.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
14th International					
Conference Space	Daejon,				
Operation (SpaceOps)	South Korea	5/16/2016	5/20/2016	\$217,384	46

Web site Link: http://www.spaceops2016.org/Overview.php

Purpose: SpaceOps promotes and fosters collaboration and cooperation between space agencies. AIAA coordinates the SpaceOps conference to exchange information about mission operations disciplines in order to leverage the world space operations community's resources and increase the chances of mission success. Since its inception, all of NASA's core missions have benefited from the lessons learned, technical information and best practices communicated and relationships incubated within the SpaceOps community.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
2016 Facilities and Real Estate Conference	Cleveland, OH	5/16/2016	5/20/2016	\$354,096	225

Web site Link: None

Purpose: This event provides the opportunity for face-to-face meetings between the communities of practice comprising and the Facilities and Real Property Division. This brings together representatives from each of the NASA Centers to provide a unique capability to network, share best practices, explain policies and enhance mission support. This conference provides an in-depth discussion on program development and timely exchange of ideas on facility-related topics and issues.

Conference	Location	Start	End Date	Total Cost	NASA Paid
		Date			Attendees
63rd Joint Army-Navy-					
NASA-Air Force					
(JANNAF) Propulsion	Newport				
Meetings	News, VA	5/16/2016	5/20/2016	\$224,007	102

Web site Link: https://www.jannaf.org/mtgs/May2016/pages/index.html

Purpose: The JANNAF Interagency Propulsion Committee focuses on the technology, development, and production capabilities for all types of propulsion systems and energetics for tactical, strategic and missile defense rockets and missiles, for space boost and orbit transfer, for in-space propulsion, and for gun systems. JANNAF provides a forum for discussion of propulsion issues, challenges, and opportunities across the Military Departments, Defense Agencies and NASA. This conference directly supports the Agency's core mission and Strategic Goal 1, Expand the frontiers of knowledge, capability, and opportunity in space, and Strategic Goal 3, Serve the American public and accomplish our Mission by effectively managing our people, technical capabilities, and infrastructure.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
47th Solar Physics					
Division (SPD)					
Meeting	Boulder, CO	5/31/2016	6/3/2016	\$148,417	79

Web site Link: http://www.nso.edu/SPD2016

Purpose: This event will bring together scientists from around the world who perform research relevant to all areas of solar physics, covering all NASA solar physics mission areas as well as many other NASA missions from Heliophysics, Planetary Sciences, Astrophysics, and Earth Sciences. The goal is to bring all of these scientists together to discuss new and collaborative findings that ensure the continued scientific success of the field.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
228th American					
Astronomical Society	San Diego,				
(AAS)	CA	6/12/2016	6/16/2016	\$249,015	88

Web site Link: https://aas.org

Purpose: The AAS meetings enable the achievement of NASA's science mission through the participation of NASA scientists in the meetings. For Astrophysics, the AAS semi-annual meetings are the primary fora that bring together the science community and NASA scientists. Therefore, the AAS meetings are the most effective means of fostering understanding of NASA's mission, and of the understanding of NASA's scientists of the intellectual questions and national concerns that will be addressed by future missions.

Conference	Location	Start	End	Total Cost	NASA Paid
		Date	Date		Attendees
American Institute of					
Aeronautics and					
Astronautics (AIAA)					
Aviation and	Washington,				
Aeronautics Forum	DC	6/13/2016	6/17/2016	\$916,852	291

Web site Link: http://www.aiaa-aviation.org/

Purpose: The AIAA Aviation program covers many subjects that are vitally important to NASA's missions, to our core capabilities, and to our academic and commercial partners. Aviation hosts discussions of a global aviation ecosystem and its economic value by building upon a foundation in engineering disciplines, such as, acoustics, applied aerodynamics, fluid mechanics and dynamics, aero measurement technology, flight and ground testing, atmospheric flight mechanics, thermophysics and heat transfer, in addition to broader topics of atmosphere and space environments, and aviation technology, integration and operations. The study of aviation as a changing ecosystem is the result of market success driven by the democratization of international travel making air travel more accessible to more people and the desire to sustain that access for future generations.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
Coupling, Energetics and Dynamics of					
Atmospheric Regions	Santa Fe,				
(CEDAR) Workshop	NM	6/19/2016	6/24/2016	\$102,169	48

Web site Link: http://www.cvent.com/events/2016-cedar-workshop/custom-20-a9c1f9d3db5e404bb3350dd04171394a.aspx

Purpose: CEDAR focuses on Global Change program sponsored by the National Science Foundation (NSF) to enhance the capability of ground-based instruments to measure the upper atmosphere and to coordinate instrument and model data for the benefit of the scientific community. The CEDAR Workshops provide the preeminent national venue to present and discuss finding from NASA Geospace missions.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
SPIE Astronomical	Edinburgh,				
Telescopes	UK	6/26/2016	7/1/2016	\$396,887	76

Web site Link: http://spie.org/conferences-and-exhibitions/astronomical-telescopes-and-instrumentation

Purpose: The 2016 SPIE Astronomical Telescopes Instrumentation conference is the most prestigious event for designers and developers of space and ground base telescopes, supporting technologies and the latest advances in instrumentation. SPIE enables the exchanging of information on new technologies to further science and innovation -- to allow NASA to explore the universe.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
International					
Geoscience and					
Remote Sensing					
Symposium (IGARSS)	Beijing,				
2016	China	7/10/2016	7/15/2016	\$215,634	39

Web site Link: http://www.igarss2016.org/

Purpose: NASA's Earth Science mission is to explore Earth to better understand the Earth as a system, and to benefit society. For NASA to fulfill its mission, it is essential to exchange ideas with others with a similar vision so NASA research can remain current and minimize redundancy with efforts by other researchers and space agencies. IGARRS, which was founded over 50 years ago, remains one of the principal remote sensing conferences in which to present remote sensing results, concepts, techniques, and technologies. IGARSS 2016 theme "Advancing the understanding of our living planet" emphasized the dynamic nature of our planet and addressing research in many Earth Science core missions.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
5th Annual					
International Space					
Station (ISS) Research					
and Development	San Diego,				
(R&D) Conference	CA	7/12/2016	7/14/2016	\$394,265	161

Web site Link: https://www.issconference.org

Purpose: The ISS R&D conference provides an opportunity to showcase the results and benefits of ISS R&D programs and promote future opportunities to the widest available audience of potential users of the ISS. It is the only U.S. conference dedicated to the full breadth of ISS science and technology utilization and directly supports NASA's Strategic Plan Goal 1 to fully utilize the ISS. At this event, potential non NASA users of the ISS, investigators and new sources of research funding, including industrialists, academics and other government agency researchers have an opportunity to learn about current research being conducted on the ISS and understand how the unique environment of the ISS could be used to conduct research to support their own unique science and technology objectives.

Conference	Location	Start	End	Total Cost	NASA Paid
		Date	Date		Attendees
The 46th International					
Conference on					
Environmental Systems	Vienna,				
(ICES)	Austria	7/16/2016	7/20/2016	\$367,515	81

Web site Link: https://www.ices.space/

Purpose: ICES addresses the disciplines of Environmental Control and Life Support, Thermal Control, and Extra Vehicular Activity (ETE) which have all been identified as critical fields to address in developing future spacecraft and conducting exploration missions. The ICES provides a forum to tell colleagues from around the world about the progress being made in space and to hear about progress being made in other parts of the space ETE community. The ICES has and will continue to provide a way to exchange information with international space organizations and set the stage for future NASA and international projects.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
Earth Science					
Information Partners					
(ESIP) Summer	Chapel Hill,				
Meeting	NC	7/19/2016	7/22/2016	\$168,622	95

Web site Link: http://nexsci.caltech.edu/workshop/2016/

Purpose: The ESIP Federation meetings align with and are crucial to the goals and activities of NASA's Earth Science Data Systems (ESDS) Program at NASA HQ as well as the Earth Science Data and Information System (ESDIS) Project at NASA GSFC. The ESDIS Project is responsible for management, oversight, and technical direction of the Earth Observing System Data and Information System (EOSDIS), which includes, among other things, 12 Distributed Active Archive Centers (DAACs). ESIP is the primary venue for bringing together Earth science data users and information technology experts.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
52nd Joint Propulsion	Salt Lake				
Conference (JPC)	City, UT	7/25/2016	7/27/2016	\$310,484	136

Web site Link: http://www.aiaa-propulsionenergy.org/JPC

Purpose: The JPC conference directly addresses the need to drive advances in science, technology, and exploration to enhance knowledge, education, innovation, economic vitality, and stewardship of the Earth. The focus of this conference is on aerospace propulsion and energy conversion technology, advanced energy and power systems, devices for terrestrial energy systems and aerospace applications. The JPC focuses on identifying and highlighting how innovative aerospace propulsion technologies powering both new and evolving systems re being designed, tested and flown.

Conference	Location	Start	End	Total Cost	NASA Paid
		Date	Date		Attendees
13th Annual Meeting of					
Asia Oceania					
Geosciences Society	Beijing,				
(AGOS)	China	7/31/2016	8/5/2016	\$191,641	41

Web site Link: http://www.asiaoceania.org/aogs2016/

Purpose: The AGOS meeting is one of the most important Asian meetings in heliophysics research. AOGS is focused on the geosciences with an emphasis on global issues. In addition, its location allows U.S. NASA researchers to interact with a population of researchers that are not otherwise readily available for scientific discussions. This conference allows NASA scientists to expose and disseminate the latest results from NASA missions and provide access to state-of-the-art simulations and correlative data sets from foreign space missions.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
Thermal & Fluids					
Analysis Workshop	Moffett				
(TFAWS) 2016	Field, CA	8/1/2016	8/5/2016	\$138,272	71

Web site Link: https://tfaws.nasa.gov/

Purpose: The TFAWS conference advances the Agency's core mission through the exchange of knowledge and information, and by enhancing collaboration between NASA Centers and the passive thermal, active thermal, fluids and aerothermal disciplines. The Agency's core mission is directly supported through the offering of various courses on fundamental theory and hands-on training for the key analytical tools utilized by the agency for these disciplines. This sharing of expertise between centers and with other government agencies, industry, and academia invigorates the communication, teamwork, and excellence that are integral to NASA's core values.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
Small Satellite					
Conference	Logan, Utah	8/6/2016	8/11/2016	\$364,892	135

Web site Link: http://www.smallsat.org/

Purpose: The Annual AIAA/USU Conference on Small Satellites is essential; this conference directly relates to creating innovative new space technologies for our exploration, science, and economic future. Attendees will participate in formal and informal knowledge and information sharing, and provide opportunities for NASA to interact with key Small Satellite developers and hardware providers, and other Small Satellites missions, to discuss fundamental technologies, and resolve issues essential to advancing NASA's current and future Small Satellite missions. Attendance allows the NASA conference participants, to share NASA's innovations and investments in Small spacecraft and Space Technology capabilities, systems, and data from current NASA Small Satellite missions and Space Technology development.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
2016 NASA Cost	Cleveland,				
Symposium	OH	8/23/2016	8/25/2016	\$147,994	77

Web site Link: https://www.nasa.gov/offices/ocfo/cost_symposium/

Purpose: The NASA Cost Analysis Symposium is essential to maintaining and improving the estimating and analysis functions across the NASA community. The NASA cost analysis community includes most Centers as well as Headquarters and represents an essential function to the agency. The NASA Cost Symposium advances NASA's core mission by providing a professional forum for agency analysts to present and learn results of cost research, and participate in training sessions on methods and tools to support important agency initiatives such as conducting Joint Confidence Level (JCL) analyses.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
SPIE Optics +	San Diego,				
Photonics 2016	CA	8/28/2016	9/1/2016	\$193,078	75

Web site Link: http://spie.org/optics-photonics.xml

Purpose: The SPIE Optics and Photonics Conference is held once every two years, and has been a key showplace conference for NASA to represent and present current technologies, current mission data, and interact with the international community in fields of Optics, Detectors, Systems Engineering, Contamination Engineering, Materials, Nanotechnology, and many other critical technical fields. NASA's involvement in this conference allows participants to interact with peers in the community, and increase our knowledge in these technical areas, which aid in improving NASA's technical abilities to meet goals of the Agency's mission.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
Aura Science Team Meeting	Rotterdam, Netherlands	8/30/2016	9/1/2016	\$114,350	42

Web site Link: http://acdb-ext.gsfc.nasa.gov/People/Witte/

Purpose: NASA's Aura Earth-observing satellite was launched into the "A-Train" constellation in 2004. Three of Aura's four instruments (MLS and TES, both managed by JPL, and OMI, managed by the Dutch with GSFC science involvement) continue to make routine observations of atmospheric composition. With Aura now in its 13th year of operation, community-wide "Aura Science Team Meetings" are only held every two years. These meetings are a critical and unique opportunity for the Aura project scientists and instrument teams to be made fully aware of the scientific advances being made with Aura observations, and thus to prepare for the biennial "Senior Review" activity, wherein the Aura team proposes for a further two years of operation, motivated in large part by the scientific successes highlighted during the meeting.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
Quadrennial Ozone	Edinburgh,				
Symposium 2016	Scotland	9/4/2016	9/9/2016	\$112,174	29

Web site Link: http://www.ozone-symposium-2016.org/

Purpose: The Quadrennial Ozone Symposium 2016 provides an opportunity to present to the international community NASA research that addresses five major science questions of the NASA Atmospheric Composition Focus Area. It also addresses issues associated with the stratospheric ozone layer, which NASA is mandated to observe under the Clean Air Act.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
AIAA Space and Astronautics Forum					
and Exposition (Space	Long Beach,			****	
2016)	CA	9/13/2016	9/16/2016	\$419,537	202

Web site Link: http://www.aiaa.org/EventDetail.aspx?id=27130

Purpose: The AIAA SPACE 2016 is an essential forum for NASA's technical leaders in astrodynamics to present their work, network with potential new hires, and discuss cross-collaborations across NASA and other international space agencies. By virtue of having a strong NASA cadre at these meetings, it is possible for the outcome of these meetings to provide strong direction back to NASA. Finally, NASA also gains immediate and independent feedback on presented work as well as exposure to fruitful ideas from outside NASA.

Conference	Location	Start Date	End Date	Total Cost	NASA Paid Attendees
67 th International					
Astronautical Congress	Guadalajara,				
(IAC)	MX	9/26/2016	9/30/2016	\$249,207	68

Web site Link: http://www.iac2016.org/

Purpose: The International Astronautical Congress (IAC) is the preeminent annual global space conference organized by the International Astronautical Federation (IAF), which has 246 members from 60 countries. IAC acts as both as a forum for public space diplomacy and high level consultations, involving NASA's most senior leaders and space agency leaders from around the world, as a substantive academic conference covering the full breadth and depth of NASA's activities across all mission directorates and scientific disciplines. NASA also uses this conference to engage in significant outreach to students and young professionals. The IAC positively influences the community of space faring nations, projects NASA's global reach and allows scientists and researchers to stay abreast of the latest in their respective scientific and technical fields.



<u>Purpose</u>

The Science Mission Directorate (SMD) is requesting a waiver for 1,513 participants to attend the **Fall American Geophysical Union (AGU)** conference which is proposed to be held on December 14-18, 2015, in San Francisco, CA. This conference is estimated to exceed \$500,000 in net NASA expenses. The cumulative Agency participation is projected as 1,513 employees, at an estimated cost of approximately \$3.9M.

The following strategic goals will be addressed through NASA's attendance at the AGU:

- 1. Expand the frontiers of knowledge, capability, and opportunity in space.
- 2. Advance understanding of Earth and develop technologies to improve the quality of life on our home planet.

Conference Background

AGU is the largest worldwide meeting in the geophysical sciences. AGU's activities are focused on the organization and dissemination of scientific information in the interdisciplinary and international field of geophysics. The geophysical sciences involve four fundamental areas: atmospheric and ocean sciences, solid-Earth sciences, hydrologic sciences and space sciences.

Participation in the annual AGU meeting addresses NASA's mission to "drive advances in science, technology and exploration to enhance knowledge, education innovation, economic vitality, and stewardship of Earth" and enables broad and deep interaction with the worldwide community of researchers in Earth and space science.

Conference Explanation

The AGU Fall Meeting brings together the entire Earth and space sciences community for discussions of emerging trends and the latest research. The technical program includes presentations on new and cutting- edge science, much of which has not yet been published. AGU is considered the best place to gain insights and updates on the latest scientific research and network with both luminaries and up-and-coming talent across disciplines.

With more than 1,700 sessions, the AGU Fall Meeting's scientific program spans the Earth and space sciences, offering something for everyone no matter their scientific discipline. The meeting offers a unique mix of more than 23,000 oral and poster presentations, a broad range of general sessions, more than 50 formal and informal networking and career advancement opportunities, and an exhibit hall packed with nearly 300 exhibitors showcasing new and relevant research tools and services that could help scientists and researchers streamline their work. This event is a main venue for NASA's mission of disseminating information.

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Purpose

The Langley Research Center (LaRC) is requesting a waiver for 520 participants to attend the **American Institute of Aeronautics and Astronautics (AIAA) SciTech** conference which is proposed to be held on January 4-8, 2016, in San Diego, CA. This conference is estimated to exceed \$500,000 in net NASA expenses. The cumulative Agency participation is projected as 520 employees, at an estimated cost of approximately \$1.6M.

The following strategic goals will be addressed through NASA's attendance at the AIAA SciTech:

- 1. Expand the frontiers of knowledge, capability, and opportunity in space.
- 2. Advance understanding of Earth and develop technologies to improve the quality of life on our home planet.

Conference Background

This is a co-located conference with a total of 12 conferences in one. SciTech brings together over 3,500 participants and more than 2,500 technical presentations from nearly 800 institutions in 39 countries to offer the latest research results on 44 high-impact topics and scores of opportunities for networking. The following conferences will be held in conjunction with SciTech:

- · 24th AIAA/AHS Adaptive Structures Conference
- 54th AIAA Aerospace Sciences Meeting
- · AIAA Atmospheric Flight Mechanics Conference
- 15th Dynamics Specialists Conference
- · AIAA Information Systems-AIAA Infotech @ Aerospace
- · AIAA Guidance, Navigation, and Control Conference
- · AIAA Modeling and Simulation Technologies Conference
- · 18th AIAA Non-Deterministic Approaches Conference
- 57th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference
- 9th Symposium on Space Resource Utilization
- · 3rd AIAA Spacecraft Structures Conference
- · 34th Wind Energy Symposium

Conference Explanation

The significance of this conference to NASA's missions necessitates considerable Agency participation. NASA's proposed participants will be an integral part of this conference, and their participation is essential to exchanging the knowledge and progress made on several technology endeavors in aeronautics, exploration, and space technologies. This event and other consolidated conferences also give NASA a great opportunity to strengthen the Agency connectivity with academia, both domestic and international, which is critical for benefiting from the global knowledge, as it occurs.

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Purpose

The Science Mission Directorate (SMD) is requesting a waiver for 400 participants to attend the 47th Lunar and Planetary Science Conference (LPSC) conference which is proposed to be held on March 21-25, 2016, in The Woodlands, TX. This conference is estimated to exceed \$500,000 in net NASA expenses. The cumulative Agency participation is projected as 400 employees, at an estimated cost of approximately \$780K.

The following strategic goals will be addressed through NASA's attendance at the LPSC:

- 1. Expand the frontiers of knowledge, capability, and opportunity in space.
- 2. Advance understanding of Earth and develop technologies to improve the quality of life on our home planet.
- 3. Serve the American public and accomplish our mission by effectively managing our people, technical capabilities, and infrastructure.

Conference Background

The LPSC is the primary community-driven conference where researchers from around the world present results from a variety of topic areas of specific interest to NASA's Planetary Science Division within the Science Mission Directorate. Special sessions are chosen each year to highlight current issues, such as results from new planetary missions or emerging new fields of study, essential to timely expand the studies by students and professional scientists. This conference continues to serve as the forum where the scientific community presents results from most NASA and international planetary missions.

Conference Explanation

The LPSC is one of the traditionally large conferences with wide attendance by academia, industry, and international partners. It is the primary community-driven conference where researchers from around the world present results from a variety of topic areas of specific interest to NASA's Planetary Science Division within the Science Mission Directorate. This conference brings together international specialists in petrology, geochemistry, geophysics, geology, and astronomy to present the latest results of research in planetary science.

LPSC's special sessions are chosen each year to highlight current issues, such as results from new planetary missions or emerging new fields of study, essential to timely expand the studies by students and professional scientists. This conference began as the forum where the scientific community presented results from the Apollo program and continues today as the major forum for primary results from most NASA and international planetary missions.

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Purpose

The Glenn Research Center (GRC) is requesting a waiver for 385 participants to attend the American Institute of Aeronautics and Astronautics (AIAA) Aviation conference which is proposed to be held on June 13 -17, 2016, in Washington, DC. This conference is estimated to exceed \$500,000 in net NASA expenses. The cumulative Agency participation is projected as 385 employees, at an estimated cost of approximately \$1.2M.

The following strategic goals will be addressed through NASA's attendance at the AIAA Aviation:

- 1. Expand the frontiers of knowledge, capability, and opportunity in space.
- 2. Advance understanding of Earth and develop technologies to improve the quality of life on our home planet.
- 3. Serve the American public and accomplish our mission by effectively managing our people, technical capabilities, and infrastructure.

Conference Background

The AIAA Aviation program covers many subjects that are vitally important to NASA's missions, to our core capabilities, and to our academic and commercial partners. Aviation 2016 will drive discussions of a global aviation ecosystem and its economic value by building upon a foundation in engineering disciplines, such as, acoustics, applied aerodynamics, fluid mechanics and dynamics, aero measurement technology, flight and ground testing, atmospheric flight mechanics, thermophysics, and heat transfer, in addition to broader topics of atmosphere and space environments and aviation technology, integration, and operations.

Conference Explanation

AIAA Aviation 2016 will bring together more than 35 countries of experts reporting on the latest advancements in applied science and aviation technologies. More than 1,500 papers will be presented at the 12 technical conferences (with ITAR-compliant sessions). Seventy percent of the technical presentations will focus on the following 5 areas.

- Applied Aerodynamics.
- Atmospheric Space Environments.
- Computational Fluid Dynamics.
- Fluid Dynamics.
- Air Transportation Integration and Operations.

NASA attendees will be chairing many of the sessions and leading the integration across the diverse conferences and topics. Attendees are representing the Agency as keynote speakers/panelists, presenting papers at technical sessions, and serving as session organizers of the conference. NASA's participation in this overall event is essential to maintaining key contacts and disseminating and sharing technical information. No alternative comparable forum currently exists.

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Purpose

The Jet Propulsion Laboratory (JPL) is requesting a waiver for 244 participants to attend the **International Institute of Electrical and Electronic Engineers (IEEE) Aerospace** conference which is proposed to be held on March 5-12, 2016, in Big Sky, MT. This conference is estimated to exceed \$500,000 in net NASA expenses. The cumulative Agency participation is projected as 244 employees, at an estimated cost of approximately \$980K.

The following strategic goals will be addressed through NASA's attendance at the IEEE Aerospace:

- 1. Expand the frontiers of knowledge, capability, and opportunity in space.
- 2. Advance understanding of Earth and develop technologies to improve the quality of life on our home planet.
- 3. Serve the American public and accomplish our mission by effectively managing our people, technical capabilities, and infrastructure.

Conference Background

The International IEEE Aerospace Conference is organized to promote interdisciplinary understanding of aerospace systems, their underlying science and technology, and their application to Government and commercial endeavors, by providing a working environment that encourages collaboration and interaction. This conference has a long-standing reputation for identifying, promoting, and facilitating collaborations across NASA, DOD, and international communities and has enhanced value by broad participation across all NASA Centers. This multi-discipline conference is the forum for disseminating information on NASA's missions and all of the disciplines associated with them through papers and ten panels on Government plans, policies, and education.

Conference Explanation

The IEEE Aerospace Conference gives NASA the opportunity to invite comments and advocacy from a large community focused on Aerospace endeavors and their support. The breakdown for papers submitted to the IEEE is as follows: 20 percent NASA, 37 percent academic community, 21 percent international community, 2 percent Government defense work and 20 percent representing the aerospace business community. Proposed NASA participation levels are commensurate with presentation of submitted technical papers and conference participation in planned technical activities such as panels, workshops, and technical exchange meetings. Requested NASA attendance is, in general, proportional to the NASA sourced papers and panels. At these participation levels, NASA can expect to capture significant value from the dissemination of technical information and establishing working intra-agency collaborations.

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