

Annex

A Brief History of SpaceOps

(Status 2024, U1.1)

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Glossary

Annex 1: The Journal of Space Operations & Communicator (U1, May 2024)

The following article describes the evolution of the SpaceOps online "Journal" and was added to complete the brief SpaceOps history.

In 1994, the founders of the SpaceOps Organization started to use the fledgling Internet to put papers from the SpaceOps '94 conference (in Greenbelt, Maryland, USA) in the so-called SpaceOps Electronic Publishing System (EPS) [1]. Then two years later, things progressed and papers from the Munich SpaceOps '96 Conference SpaceOps were made available on the DLR/ESA sponsored SpaceOps internet home pages as well as distribution via CD.

Since its inception, the SpaceOps Organization always planned to have an electronic publishing scheme for conference papers along with other cutting edge articles "in between" the biennial conferences. An opportunity arose when the SpaceOps Organization and the AIAA Space Operations Support Technical Committee (SOSTC) signed a cooperation agreement to coordinate their activities. The SOSTC had an AIAA hosted online publication webpage called "The Space Operations Communicator" and it was agreed to share the publication webpage between the two organizations. Then, in 2003 a new secure domain was set-up outside of AIAA. A new layout and structure was jointly defined and the implementation was performed by Christine Chubenko (whatwebsweweave.com) an experienced web-design contractor and GoDaddy as service provider - and was sponsored by the ASRC Aerospace Corporation. The name "Communicator" was changed to "Journal of Space Operations & Communicator", abbreviated the "Journal" or JSOC.

Both SpaceOps and SOSTC share a common goal for the "Journal" to "foster continuous technical interchange on all aspects of space mission operations and ground data systems, and to promote and maintain an international community of space operations experts from Agencies, Academic Institutions, Operators and Industry" and the SOSTC's motto "Evolving communication, Advancing space operations, Saluting the Pioneers" (SpaceOps Charter).

The "Journal" offers publication opportunities for:

- * Technical Papers
- * Technical Articles and Interviews
- * Book Reviews
- * SpaceOps News articles including the publication of conference presentations in Power-Point format
- * "Pioneers" section which features important (historical) space developments and events
- * Op-Ed's are invited via the provided Contact page
- * Quarterly poll on the latest space related issues.

A highly qualified expert team is available for the peer-review of technical papers. The "Journal" has a registered ISSN number (ISSN 2410-005) and is also registered with the internationally renowned "ResearchGate" organization.

All "Journal" articles and papers are archived, and a search engine allows for the quick location of "Back Issues". A standardized (AIAA) template is available for publishing of papers in the "Journal" along with a submission procedure (see "Downlink" on the home page).

Links from the "Journal" are provided to:

- * The "SpaceOps Wiki", which categorizes important papers from all SpaceOps Conferences according to keywords. This allows the quick location of papers "pushing the envelope" of space operations techniques. The SpaceOps Wiki features a direct link to the official SpaceOps archive, hosted and maintained by the AIAA Aerospace Research Central archive (ARC). All SpaceOps conference papers can be downloaded from the archive. This feature was disabled in 2018, the summary archive access procedure up to 2006-2018 is available on ResearchGate [2]
- * Facebook SpaceOps page, updated on a regular basis.
- * LinkedIn SpaceOps page conference and workshop dates, or SpaceOps award nominees.

The SpaceOps Facebook and LinkedIn pages also give announcements of important SpaceOps and SOSTC activities, e.g. the next conference and workshop dates.

The "Journal" has been online for over 20 years and has a quarterly audience of between 500 to 700 international readers. The "Journal" provides an excellent opportunity for sponsorship - described in "Sponsorship" (see home page).

Reference and Links:

[1] EPS System [https://www.researchgate.net/publication/277076082_SpaceOps_Electronic_Publishing_System_\(EPS\)](https://www.researchgate.net/publication/277076082_SpaceOps_Electronic_Publishing_System_(EPS))








[2] SpaceOps Wiki <https://www.researchgate.net/search.Search.html?query=SpaceOps+Wiki&type=publication>

*June 2015, written by Paul J. Douglas, Joachim J. Kehr, founding members of the "Journal"
Edited by Sean Burns, SpaceOps COPG Chairman
May 2024, Updated by Joachim J. Kehr*














Annex 2: List of SpaceOps conferences

As of today, 17 SpaceOps Conferences have taken place:


















#	Date	Host and location	Theme	Logo
1	1990-06-25_29	ESA-ESOC, Darmstadt, Germany	"Symposium on "Ground Data Systems for Spacecraft Control"	
2	1992-11-16_20	NASA-JPL, Pasadena, California, USA		
3	1994-11-15_18	NASA-GSFC, Greenbelt, Maryland, USA	"Opportunities in Ground Data Systems for High Efficiency Operations of Space Missions"	
4	1996-09-16_20	DLR-GSOC + ESA-ESOC, Munich, Germany	"Global operations for the next century"	
5	1998-06-01_05	NASDA, Tokyo, Japan		
6	2000-06-19_23	CNES, Toulouse, France	"Space operations at the start of the 3 rd millennium"	
7	2002-10-09_12	NASA-JSC + NASA-JPL, Houston, Texas, USA		
8	2004-05-17_21	CSA, Montreal, Canada	"A global enterprise"	
9	2006-06-19_23	ASI, Rome, Italy	"Earth, Moon, Mars, and Beyond"	
10	2008-05-12_16	ESA-ESOC + EUMETSAT, Heidelberg, Germany	"Protecting the Earth, Exploring the Universe"	
11	2010-04-25_30	NASA-MSFC, Huntsville, Alabama, USA	"Delivering on the Dream"	



















12	2012-06-11_15	DLR-GSOC + SSC, Stockholm, Sweden	“For the benefit of our world”	
13	2014-05-05_09	NASA-JPL, Pasadena, California, USA	”Explore Innovation”	
14	2016-05-16_20	KARI, Daejeon, Korea	“Expanding the Space Community”	
15	2018-05-28_06-01	CNES, Marseille, France	“... Inspiring Humankind’s Future”	
16	2021-05-03_05	SANSA, Cape Town, South Africa (virtual)	“Beyond boundaries to human endeavors”	
17	2023-03-06_10	MBRSC, Dubai, UAE	“Invest in space to serve Earth and Beyond”	
18	2025-05-26_30	CSA + CASI, Montreal, Canada	“Towards Space sustainability”	

Annex 3: List of the SpaceOps Executive Member Organizations

Country / Region	Organization:		Represented by:
Italy	 <p>Agenzia Spaziale Italiana</p>	Agenzia Spaziale Italiana (ASI)	Claudio Canu
Canada	 <p>CANADIAN SPACE AGENCY AGENCE SPATIALE CANADIENNE</p>	Canadian Space Agency (CSA)	Michel Doyon
France	 <p>cnes</p>	Centre National d'Etudes Spatiales (CNES)	Claude Audouy
Germany	 <p>DLR</p>	Deutsches Zentrum für Luft- und Raumfahrt (DLR)	Sabrina Eberle
Japan	 <p>JAXA</p>	Japan Aerospace Exploration Agency (JAXA)	Koichi Inoue
Europe	 <p>European Space Agency</p>	European Space Agency (ESA)	Mariella Spada
Brazil	 <p>INPE</p>	Instituto Nacional de Pesquisas Espaciais (INPE)	Eduardo Bergamini
USA	 <p>NASA</p>	National Aeronautics and Space Administration (NASA)	John Hudiburg
South Korea	 <p>KARI 한국항공우주연구원 KOREA AEROSPACE RESEARCH INSTITUTE</p>	Korea Aerospace Research Institute (KARI)	Okchul Jung
UAE	 <p>مركز محمد بن راشد للفضاء MOHAMMED BIN RASHID SPACE CENTRE</p>	Mohammed Bin Rashid Space Centre (MBRSC)	Saeed Hussain Al Mansoori
Europe	 <p>EUMETSAT</p>	European Organization for the Exploitation of Meteorological Satellites (EUMETSAT)	Sean Burns
USA	 <p>NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE NOAA</p>	National Oceanic and Atmospheric Administration (NOAA)	Richard Marlow
South Africa	 <p>SANSA SOUTH AFRICAN NATIONAL SPACE AGENCY</p>	South African National Space Agency (SANSA)	Tiaan Strydom






Annex 4: Members of SpaceOps Committee-at-Large

Country / Region	Organization / Company:	
Italy		Aerospace Logistics Technology Engineering Company (ALTEC)
Italy		Agenzia Spaziale Italiana (ASI)
Canada		Canadian Space Agency (CSA)
France		Centre National d'Etudes Spatiales (CNES)
Germany		Deutsches Zentrum für Luft- und Raumfahrt
Germany		DLR GfR – Galileo Control Center
Europe		European Organization for the Exploitation of Meteorological Satellites (EUMETSAT)
Europe		European Space Agency (ESA)
USA		General Dynamics C4 Systems
Spain, Germany		GMV
Brazil		Instituto Nacional de Pesquisas Espaciais (INPE)
India		Indian Space Research Organisation (ISRO)
Japan		Japan Aerospace Exploration Agency (JAXA)
USA		Johns Hopkins University - Applied Physics Laboratory
South Korea		Korea Aerospace Research Institute (KARI)
USA		Laboratory for Atmospheric and Space Physics (LASP)
Malaysia		Malaysian Space Agency (MYSA)




UAE	 مركز محمد بن راشد للفضاء MOHAMMED BIN RASHID SPACE CENTRE	Mohammed Bin Rashid Space Centre (MBRSC)
USA		National Aeronautics and Space Administration (NASA)
USA		NASA Headquarters
USA		NASA Ames Research Center
USA		NASA Goddard Space Flight Center
USA	  Jet Propulsion Laboratory California Institute of Technology	NASA Jet Propulsion Laboratory
USA		NASA Johnson Space Center
USA		NASA Marshall Space Flight Center
USA		National Oceanic and Atmospheric Administration (NOAA)
USA, Germany		Planet
USA		Qwaltec
United Kingdom		Rutherford Appleton Laboratory (RALSPACE)
South Africa		South African National Space Agency (SANSAS)
Russian Federation		Space Research Institute of the Russian Academy of Sciences
Sweden		SSC Space
Italy, France, Germany	 a LEONARDO and THALES company	Telespazio
United Kingdom		UK Space Agency

Annex 5: SpaceOps Partners and Associated Organizations

Annex 5a: SpaceOps Partners

Country / Region	Organization / Company	
Japan		SKY Perfect JSAT Corporation
Germany, Netherlands		HE Space
USA		Orbit Logic
Argentina		AR-SAT
UK, Germany		CGI - SCISYS

Annex 5b: Associated Organizations:

Country / Region	Organization / Company	
USA		American Institute of Aeronautics and Astronautics (AIAA)
USA		AIAA Space Operations and Support Technical Committee (SOSTC)
Austria		Space Generation Advisory Council (SGAC)

Annex 6: Executive Committee Representatives and Committee Meetings

Annex 6a: List of Executive Committee Representatives

Country / Region	since	Organization	Represented by						
Brazil	1998	INPE	Eduardo Bergamini						
Canada	2002	CSA	Michel Doyon	Guennadi Kroupnik	Surendra Parashar	Benoît Marcotte	Rolf Mamen		
Europe	2004	EUMETSAT	Sean Burns	Mike Williams	Mikael Rattenborg				
France	1990	CNES	Claude Audouy	Hubert Fraysse	Jean-Marc Soula	Pierre Lods	Geneviève Campan	Roland Ivarnez	
Germany	1990	DLR	Sabrina Eberle	Thomas Kuch	Joachim Kehr				
India	2000-2010	ISRO	-	S. K. Shivakumar					
Italy	2000	ASI	Claudio Canu						
Japan	1990	JAXA	Koichi Inoue	Shinji Ogawa	Chikara Harada	Kaneaki Narita	Toshimitsu Uehara	Junjiro Nakahara	Akkio Yamamoto
South Africa	2016	SANSA	Tiaan Strydom						
South Korea	2006	KARI	Ok-Chul Jung	San-Gil Ahn	Dae-Won Chung	Hae-Jin Choi			
UAE	2017	MBRSC	Saeed Hussain Al Mansoori	Adnan Al Rais					
USA	1990	NASA	John Hudiburg	Greg Heckler	Phil Liebrecht	James Costrell	John Rodgers		
USA	1996	NOAA	Richard Marlow	Vanessa Griffin	Kathy Kelly				

Annex 6b: List of Committee Meetings

In preparation of the SpaceOps events and to keep the SpaceOps organization operational, the following Committee Meetings have taken place (* TPC meetings only):

2001-10	NASA, Washington D.C., USA
2002-05	ASI, Rome, Italy
2003-07	ASI, Rome, Italy
2003-11	CSA, Montreal, Canada
2004-02	CNES, Toulouse, France
2004-10	NASA-JPL, Pasadena, California, USA
2005-06	EADS Astrium, Bremen, Germany
2005-11	ASI, Rome, Italy
2006-01	* Pisa, Italy
2006-04	NASA-JPL, Pasadena, California, USA
2006-09	ESA-ESOC + EUMETSAT, Darmstadt, Germany
2007-04	JAXA, Tokyo, Japan
2007-11	* DLR-GSOC, Munich, Germany
2008-01	NASA-GSFC, Greenbelt, Maryland, USA
2008-10	CNES, Toulouse, France
2009-05	NASA-MSFC, Huntsville, Alabama, USA
2009-10	CSA, Montreal, Canada
2010-10	STFC-RAL, London, UK
2011-05	SSC, Stockholm, Sweden
2011-11	NOAA, Suitland, Maryland, USA
2012-02	* DLR-GSOC, Munich, Germany
2012-11	JAXA, Tokyo, Japan
2013-05	NASA-JPL, Pasadena, California, USA
2013-11	ESA-ESOC + EUMETSAT, Darmstadt, Germany
2014-10	ALTEC, Turin, Italy
2015-05	KARI, Daejeon, Korea
2015-11	SANSA, Cape Town, South Africa
2016-11	MBRSC, Dubai, UAE
2017-05	CNES, Marseille, France
2017-10	CU-LASP, Boulder, Colorado, USA
2018-11	JAXA, Tokyo, Japan
2019-05	SANSA, Cape Town, South Africa
2019-11	DLR-GSOC, Munich, Germany
2020-05	virtual mtg. (organized by SANSA)
2020-07	virtual mtg. (organized by SANSA)
2020-11	virtual mtg. (organized by JHU-APL)
2021-03	virtual mtg. (organized by SANSA)
2021-11	virtual mtg. (organized by IAF)
2022-03	MBRSC, Dubai, UAE
2022-08	ESA-ESOC + EUMETSAT, Darmstadt, Germany
2023-10	NASA-GSFC + JHU-APL, Greenbelt, Maryland, USA
2024-04	CSA, Montreal, Canada

Annex 7: SpaceOps Awards and List of Awards Winners

Annex 7a: SpaceOps Awards

Through its awards, the SpaceOps Organization recognizes outstanding achievement by individuals and teams in the space operations field. Major awards presented by the SpaceOps Organization include:

<p>International SpaceOps Lifetime Achievement Medal (LAM)</p>		<p>This award is presented to give unique recognition to an individual who has distinguished himself or herself in the field of space operations and support over an extended period of time. The recipient shall be an individual whose illustrious career and exceptional contributions were critical to the success of several space missions or who has made many significant contributions to the field of space operations.</p>
<p>International SpaceOps Exceptional Achievement Medal (EAM)</p>		<p>This award recognizes an individual who has distinguished himself or herself to the field of space operations and support. The recipient shall be an individual whose exceptional contributions were critical to the success of one or more space missions or who has made significant contributions to the field of space operations.</p>
<p>International SpaceOps Award for Outstanding Achievement (AOA)</p>		<p>This award recognizes outstanding efforts in overcoming space operations and/or support challenges and recognizes those teams whose exceptional contributions were critical to the success of one or more space missions.</p>
<p>International SpaceOps Distinguished Service Medal (DSM)</p>		<p>This award recognizes an individual who has distinguished himself or herself with service to the SpaceOps Organization. The recipient shall be an individual who has shown exceptional dedication to the interests of the organization by making significant contributions over an extended period of time.</p>
<p>SpaceOps Appreciation Award (SAA)</p>		<p>The SpaceOps Organization also presents the SpaceOps Appreciation Award to recognize the contribution of members of the SpaceOps Organization after supporting at least two SpaceOps Conferences and upon their departure from the organization, or to individuals who have provided great service to the organization.</p>

Annex 7b: List of Awards Winners

Lifetime Achievement Medal (LAM):

year	recipient	citation
2021		
2018	Kaneaki Narita, JAXA	for his dedication in modernizing satellite operation ground control, especially increasing the ability of interoperability, and for being a trailblazer in the field of cross-support operations through education.
2016	Christopher Kraft, NASA-JSC	for pioneering concepts that laid the foundation for spaceflight mission control and human spaceflight missions, and for technical and inspirational leadership that led to the establishment of essential elements of successful space mission operations.

Award for Outstanding Achievement (AOA):

year	Recipient	citation
2021	Cassini Flight Operations Team, NASA-JPL	for outstanding performance in the planning and execution of the Cassini mission leading to unprecedented scientific data return from the Saturn system.
2018	GRACE Operations Team, DLR-GSOC	for one of the most successful missions ever with already more than 4,100 peer-reviewed papers. Operations are especially challenging because the two satellites themselves are the probes in the terrestrial gravity field. The interaction between payload and satellite operations intensified even more with the mission in its sixteenth year now, more than threefold beyond the original expectation.
2016	New Horizons Mission Ops. Team, JHU-APL	for the successful flight and flyby operations of the New Horizons spacecraft of the dwarf planet Pluto
2014	TerraSAR-X Ops. Team, DLR	for their outstanding and unique achievements during more than four years of operations. Team Members: Alessandro Codazzi, Jaap Herman, Harald Hofmann, Ralph Kahle, Wilfried Kruse, Edith Maurer, Falk Mrowka, Heinz Wacker, and Steffen Zimmermann
2012	Hayabusa Ops. Team, JAXA	for excellent collaborative work that successfully returned the Explorer to Earth despite difficulties due to equipment failure onboard. The award was accepted by Dr. Junichiro Kawaguchi, Hayabusa program manager/team lead.
2010	Mars Exploration Rover Ops. Team	for its remarkable success in meeting the unique and varied challenges of operating two rovers on Mars for several years past their design life and establishing a model for future in situ operations. The award was accepted by Mars Exploration Rover Operations Project Manager John Callas.
2008	Ulysses Mission Ops. Team	for its outstanding contributions to the success, scientific productivity, and longevity of the joint ESA-NASA Ulysses Mission to the poles of the sun.
2006	U.S. Geological Survey Landsat 5 Flight Ops. Team	for its dedicated efforts in recovering Landsat 5 from two potentially mission-ending hardware anomalies and restoring the mission for full operations. Team members included: Ron Smilek, Steve Covington, Gengmun Eng, John Gasch, Claef Hakun, Sergio Hasebe, Javier Lecha, Dave Lorenz, John Rowe, and Marco Toral.

Exceptional Achievement Medal (EAM):

year	recipient	citation
2018	Nestor Peccia, ESA-ESOC	for always emphasizing the importance of Ground Systems allowing flawless operations, being a leader of international cooperation, and fostering the development of international standards for cross-support between space agencies.
2014	Manfred Warhaut, ESA-ESOC	for always emphasizing the importance of operations in a project, ensuring that operations get the appropriate appreciation, and being a strong supporter of cross-support between space agencies.
2012	Sami Asmar, NASA-JPL	for creating a system that has transformed space operations during critical events to acquire information indispensable to the safety and health of costly space exploration missions via Radio Science Systems.
2010	Eugene Kranz, NASA-JSC	for his pioneering the concepts and procedures that laid the foundation for human spaceflight operations, many of which are still in use today, and for his inspirational leadership that raised the awareness of the importance of spaceflight operations throughout the world.

Distinguished Service Medal (DSM):

year	recipient	citation
2018	Michael Kearney, NASA	in appreciation of outstanding and steadfast support to the SpaceOps Organization and for distinguished service to colleagues and organizations around the world for the betterment and interests of space mission operations.
2018	Megan Scheidt, AIAA	in appreciation
2016	Christine Chubenko, What Webs We Weave	in appreciation for the design, maintenance, and upgrading of the SpaceOps and AIAA Space Operations and Support Technical Committee's online Journal of Space Operations & Communicator since 2005.
2014	Genevieve Campan, CNES	in appreciation for involvement in the SpaceOps Organization and many valuable contributions to its activities in various functions for more than ten years.
2012	James Costrell, NASA-HQ	for four decades of leadership and service in the International Space Operations community
2012	Terry "Dave" Linick, NASA-JPL	for being recognized as the initiator of the SpaceOps Organization in its current form.
2010	Paolo Maldari, ESA-ESOC	for his dedication to the SpaceOps Organization since its early days and as one of the "fathers" of international space agency cross-support, and for his involvement with the planning committees for the SpaceOps 2008 Conference and the Reducing the Cost of Spacecraft Ground Systems and Operations Symposium.
2008	Robert Wilson, NASA-JPL	for outstanding dedication, leadership, operational excellence, innovation, and sustained technical performance, significantly contributing to the success of NASA Astronomy Physics, Planetary and Earth Observing missions and the Spitzer Space Telescope
2008	John Rodgers, NASA-HQ	for his service as one of the founding members of the SpaceOps Organization, his dedication to SpaceOps activities since its formation in 1992, and his unwavering support by representing NASA in the newly-formed Organization.
2008	Herwig Laue, ESA-ESOC	recognized for over five years of dedicated service as acting SpaceOps Co-Chair, including his role in organizing the 1996 SpaceOps Symposium – in excellent cooperation with DLR, the German Aerospace Center – which featured the first "on-line" paper collection system, the first CD publication of the proceedings, and numerous other innovations.
2006	Joachim Kehr, DLR-GSOC	for being a founding father of the SpaceOps Organization, for nurturing it through its formative years, and for playing an active role in it even after officially retiring from the German Space Operations Center.

SpaceOps Appreciation Award (SAA):

2017	Megan Scheidt, AIAA	Citation: In appreciation of a decade of extraordinary contributions to the SpaceOps Organization, in particular shaping and optimizing the role of the newly established SpaceOps Secretariat
2015	Madeline Butler, NASA-HQ	<ul style="list-style-type: none"> • as the NASA GSFC representative on the Committee-at-Large and your participation in the Technical Program Committee for multiple SpaceOps Conferences • NASA GSFC representative on the Committee-at-Large 2004-2012 • Member of the Technical Program Committee 2006, 2008, 2010, 2012 Citation: In appreciation of your many contributions to the SpaceOps Organization
2015	Vern Hall, NASA-JSC	<ul style="list-style-type: none"> • NASA JSC representative on the Committee-at-Large 2004-2014 • Member of the Technical Program Committee 2008, 2010, 2012, 2014 Citation: In appreciation of your many contributions to the SpaceOps Organization as the NASA JSC representative on the Committee-at-Large and your participation in the Technical Program Committee for multiple SpaceOps Conferences
2015	Patrick Hogan, CSA	<ul style="list-style-type: none"> • Canadian Space Agency representative on the Committee-at-Large 2010-2014 • Member of the Technical Program Committee 2010, 2012, 2014 Citation: In appreciation of your many contributions to the SpaceOps Organization as the Canadian Space Agency representative on the Committee-at-Large and your participation in the Technical Program Committee for multiple SpaceOps Conferences
2015	Mike Kearney, NASA-MSFC	<ul style="list-style-type: none"> • NASA MSFC representative on the Committee-at-Large 2004-2014 • Member of the Technical Program Committee 2006, 2008, 2012, 2014 • Chair of the Technical Program Committee for SpaceOps 2010 Citation: In appreciation of your many contributions to the SpaceOps Organization as the NASA MSFC representative on the Committee-at-Large and your outstanding leadership as the Chair of the Technical Program Committee for SpaceOps 2010
2015	Martin Pilgram, DLR-GSOC	<ul style="list-style-type: none"> • German Aerospace Center (DLR) standardization expert supporting the Committee-at-Large meetings since 1990 • Member of Technical Program Committees since 1996 • Plenary Coordinator for SpaceOps 2012 Citation: In appreciation of your many contributions to the SpaceOps Organization as the DLR expert on the Committee-at-Large meetings and your participation in the Technical Program Committee for multiple SpaceOps Conferences
2013	Ben Chu, CSC	CSC representative on the Committee-At-Large from ... through 2013
2013	Kathy Kelly, NOAA	Citation: In appreciation of your many years of service and significant contributions to the SpaceOps Organization as the NOAA representative on the Executive Committee
2013	Dave Linick, NASA-JPL	NASA/JPL representative on the Committee-At-Large from 1990 through 2013
2013	Mikael Stern, SSC	Citation: In appreciation of your participation in the SpaceOps Organization as the SSC representative on the Committee-at-Large and your involvement in the organization of SpaceOps 2012
2012	Annika Benson, SSC	<ul style="list-style-type: none"> • Chair of the SpaceOps 2012 conference Organizing Committee (Stockholm) Citation: In appreciation of your participation in the SpaceOps Organization and your leadership as the chair of the SpaceOps 2012 Organizing Committee
2012	Loredana Bruca, ASI	<ul style="list-style-type: none"> • ASI representative on the Committee-At-Large from 2004 through 2009 • Involved in planning for a successful SpaceOps 2006 conference in Rome • Editor of the SpaceOps 2006 book, the initial book published to archive papers from a SpaceOps conference Citation: In appreciation of your active participation in the SpaceOps Organization, especially your work on the SpaceOps 2006 conference and book
2012	Angela Head,	<ul style="list-style-type: none"> • ESA representative on the Committee-at-Large from 2009 through 2012

	ESA-ESOC	<ul style="list-style-type: none"> • Member of SpaceOps 2010 and 2012 Technical Program Committee • Member of SpaceOps Awards Group <p>Citation: In appreciation of your participation in the SpaceOps Organization as the ESA representative on the Committee-at-Large and member of the SpaceOps 2010 and 2012 Technical Program Committees</p>
2012	Geneviève Campan, CNES	<ul style="list-style-type: none"> • Long-standing member and CNES representative on the Executive Committee (from 2001 through 2011) <p>Citation: In appreciation of your long-standing participation in the SpaceOps Organization as the CNES representative on the Executive Committee and your many contributions over your years of service</p>
2012	Mike Fawcett, NASA-MSFC	<ul style="list-style-type: none"> • Chair of the SpaceOps 2010 conference Organizing Committee (Huntsville) • Participated in Committee-At-Large meetings from 2008 through 2011 to report out on SpaceOps 2010 • Member of SpaceOps 2008 Technical Program Committee <p>Citation: In appreciation of your participation in the SpaceOps Organization and your leadership as the chair of the SpaceOps 2010 Organizing Committee</p>
2012	Alberto Foni, Univ. Pisa	<ul style="list-style-type: none"> • Chair of the SpaceOps 2006 Technical Program Committee <p>Citation: In appreciation of your support of the SpaceOps Organization in your role as chair of the SpaceOps 2006 Technical Program Committee</p>
2012	Mary Ellen McGuire, CSA	<ul style="list-style-type: none"> • Chair of the SpaceOps 2004 conference Organizing Committee (Montreal) <p>Citation: In appreciation of your participation in the SpaceOps Organization and your leadership as the chair of the SpaceOps 2004 Organizing Committee</p>
2012	Rolf Mamen, CSA	<ul style="list-style-type: none"> • Executive Committee co-chair from September 2002 to June 2006 • CSA Executive Committee representative from 2000 to 2007 • When he was Co-chair, CSA hosted the excellent SpaceOps 2004 conference in Montreal <p>Citation: In appreciation of your leadership of the SpaceOps Organization as Executive Committee co-chair and your role on behalf of CSA as host of SpaceOps 2004</p>
2012	Junjiro Nakahara, JAXA	<ul style="list-style-type: none"> • JAXA representative on Executive Committee from 2006 through 2007 • On the Technical Program Committee for SpaceOps 1998 • Involved with and initiated the 2009 RCSGSO (now SpaceOps) workshop in Japan <p>Citation: In appreciation of your participation in the SpaceOps Organization as the JAXA representative on the Executive Committee and your involvement in various SpaceOps activities</p>
2012	Mikael Rattenborg, EUMETSAT	<ul style="list-style-type: none"> • ExCom co-chair from June 2006 to April 2010 • When he was co-chair, EUMETSAT and ESA co-hosted the very successful SpaceOps 2008 in Heidelberg and EUMETSAT became an active member in the SpaceOps Organization • In September 2006, the EUMETSAT facility in Darmstadt hosted the SpaceOps Organization committee meetings <p>Citation: In appreciation of your leadership of the SpaceOps Organization as Executive Committee co-chair and your role on behalf of EUMETSAT as co-host of SpaceOps 2008</p>
2012	Dan Showalter, CSA	<ul style="list-style-type: none"> • CSA representative on the Committee-At-Large from 2006 through 2009 • Chair of SpaceOps 2004 Technical Program Committee • Member of SpaceOps 2008 Technical Program Committee <p>Citation: In appreciation of your participation in the SpaceOps Organization and your role as chair of the SpaceOps 2004 Technical Program Committee</p>
2012	Manfred Warhaut, ESA-ESOC	<ul style="list-style-type: none"> • ESA representative on the Executive Committee from 2006 through 2012 • Executive Committee co-chair from June 2006 to April 2010 • When he was co-chair, EUMETSAT and ESA co-hosted the very successful SpaceOps 2008 in Heidelberg <p>Citation: In appreciation of your leadership of the SpaceOps Organization as Executive Committee co-chair and your role on behalf of ESA as co-host of SpaceOps 2008</p>

Annex 8: List of SpaceOps Conference published books

Since 2007 books have been published after the SpaceOps Conferences:

<p>2007 Space Operations – Mission Management, Technologies, and Current Applications</p>		<p>2017 Space Operations – Contributions from the Global Community</p>	
<p>2011 Space Operations – Exploration, Scientific Utilization, and Technology Development</p>		<p>2019 Space Operations – Inspiring Humankind’s Future</p>	
<p>2013 Space Operations – Experience, Mission Systems, and Advanced Concepts</p>		<p>2022 Space Operations – Beyond Boundaries to Human Endeavours</p>	
<p>2015 Space Operations – Innovations, Inventions and Discoveries</p>			

Annex 9: List of SpaceOps Workshops

The SpaceOps Workshop is conducted under the auspices of the SpaceOps organization with the following guidelines:

- The Workshop is held in May-June of years without a SpaceOps conference
- Attendance is approx. 60 people, by nomination
- The Workshop is managed by a local organizing committee and an international technical committee
- There are minimal/no social plan and minimal/no fee
- The Workshop shall have 2-3 themes to exchange experience on few actual topics
- It provides a discussion forum to Space Operations Institutions (Agencies, but could include also Industry, Academia, Satellite commercial operators, etc.)

Workshop Structure

- Participants with technical/managerial (budget, strategy) leadership responsibility will lead
- The workshop should be based on Agency experience/view/plans on the selected Technical/Managerial themes, and should keep enough “open forum” discussions with audience.
- Require nominated management reviewed and approved material
- Position Paper for the themes will be prepared by the Workshop Technical Committee to guide nominator’s preparation
- Only “Presentation” to be applied instead of legacy “Abstract > Selection > Paper > Presentation” process.

The following SpaceOps Workshops have taken place in the years in between two SpaceOps conferences:

(* until 2007 RCSGSO-workshops were organized by RAL before being integrated to the SpaceOps organization)

Date	Organizer and location	Topics
1995-09-27_29	* STFC-RAL, Chilton, UK	
1997-07-21_23	* STFC-RAL, Chilton, UK	
1999-03-22_24	* University of Tainan, Tainan, Taiwan	
2001-04-24_27	* JHU-APL, Laurel, MD, USA	
2003-07-09_11	* NASA-JPL, Pasadena, CA, USA	
2005-06-14_17	* ESA-ESOC, Germany	
2007-06-11_15	* IKI, Moscow, Russia	
2009-05-26_28	JAXA, Tokyo, Japan	1) Automation 2) Virtualization 3) Outsourcing
2011-06-14_16	STFC-RAL, Chilton, UK	1) Agency-Industry-Academia Partnerships 2) Plan Management Systems for Space Missions 3) Collision Avoidance
2013-06-11_13	JHU-APL + NASA-GSFC, Laurel, MD, USA	1) Operations implications with Optical Communications 2) Countering Security Threats to Space Flight and Ground Systems 3) Human Space Exploration Strategies
2015-06-10_12	Telespazio, Fucino, Italy	1) Advanced Technologies 2) Big Data 3) CubeSats
2017-06-26_29	IKI, Moscow, Russia	1) Mission Operations 2030 and beyond 2) Space Endeavors via Moon and Mars 3) Advanced Data Analysis Technologies
2019-06-03_05	CSA, Montreal, Canada	1) Space Situational Awareness – space weather, near earth objects, space debris and ops management 2) IT Security Updates vs Operations Stability of Ground Segments 3) Spacecraft Operations Concept with Optical Links
2022-06-01_03	NASA-ARC, Mountain View, CA, USA	1) Innovation 2) Lunar Operations 3) Satellite Constellations and Swarms
2024-06-18_20	CNES, Toulouse, France	1) New Ops Paradigms 2) New Solutions 3) Ops Challenges for Exploration 4) Zero Debris Approach: Current Capabilities and Future Needs 5) In Orbit Services Mission

Glossary

AIAA	American Institute of Aeronautics and Astronautics (Reston, Virginia, USA)
ALTEC	Aerospace Logistics Technology Engineering Company (Turin, Italy)
APL	Applied Physics Laboratory (Laurel, Maryland, USA)
ARC	Aerospace Research Central archive
ASI	Agenzia Spaziale Italiana (Rome, Italy)
ASRC	Arctic Slope Regional Corporation - Aerospace Corporation (Greenbelt, Maryland, USA)
CNES	Centre Nationale d'Etudes Spatiales (Paris, France)
CSA	Canadian Space Agency (Longueuil, Montréal, Québec, Canada)
CST	Centre Spatial de Toulouse (Toulouse, France)
CU	Colorado University (Boulder, Colorado, USA)
DLR	German Aerospace Center, Cologne, Germany
EADS	European Aeronautic Defence and Space (Bremen, Germany) – now: Airbus
EPS	Electronic Publishing System
ESA	European Space Agency (Paris, France)
ESOC	European Space Operations Centre (Darmstadt, Germany)
EUMETSAT	European Organisation for the Exploitation of Meteorological Satellites (Darmstadt, Germany)
GSFC	Goddard Space Flight Center (Greenbelt, Maryland, USA)
GSOC	German Space Operations Center (Oberpfaffenhofen, Munich, Germany)
IAF	International Astronautical Federation (Paris, France)
IKI	Space Research Institute of the Russian Academy of Sciences - ИКИ (Moscow, Russia)
ISAS	Institute of Space and Astronautical Science (Sagamihara, Kanagawa, Japan) – now: JAXA
ISSN	International Standard Serial Number
JAXA	Japan Aerospace Exploration Agency (Tokyo, Japan)
JHU	Johns Hopkins University (Laurel, Maryland, USA)
JPL	Jet Propulsion Laboratory (Pasadena, California, USA)
KARI	Korea Aerospace Research Institute (Daejeon, Korea)
LASP	Laboratory for Atmospheric and Space Physics (Boulder, Colorado, USA)
MBRSC	Mohammed bin Rashid Space Centre (Dubai, UAE)
MSFC	Marshall Space Flight Center (Huntsville, Alabama, USA)
NASA	National Aeronautics and Space Administration (Washington, D.C., USA)
NASDA	National Space Development Agency (Tokyo, Japan) – now: JAXA
NOAA	National Oceanic and Atmospheric Administration (Suitland, Maryland, USA)
RAL	Rutherford Appleton Laboratory (Chilton, Oxfordshire, England, UK)
RCSGSO	Reducing the Costs of Spacecraft Ground Systems and Operations
SANSA	South African National Space Agency (Pretoria, South Africa)
SOSTC	Space Operations and Support Technical Committee
SSC	Swedish Space Corporation (Stockholm, Sweden)
STFC	Science and Technology Facilities Council (Swindon, Wiltshire, England, UK)
TKSC	Tsukuba Space Center (Tsukuba, Ibaraki, Japan)
TPC	Technical Program Committee