



SPACEOPS 2023

THE 17TH INTERNATIONAL
CONFERENCE ON SPACE OPERATIONS
6 – 10 March 2023
Dubai, United Arab Emirates



CALL FOR PAPERS

Abstract Submission Deadline: ~~29 June 2022~~ 15 July 2022

<https://spaceops2023.org>

WELCOME TO SPACEOPS 2023

March 6 –10, 2023

Mohammed Bin Rashid Space Centre (MBRSC) is delighted to welcome you to Dubai, United Arab Emirates for SpaceOps 2023 with the theme of ***“Invest in Space to Serve Earth and Beyond”***.

The International Committee on Technical Interchange for Space Mission Operations and Ground Data Systems (also known as the SpaceOps) is a spacecraft operations oriented international association consisting of representatives from the major space-faring institutions of the world.

From more than 25 years, the SpaceOps Conference has been the technical forum for the space operations community that addresses state-of-the-art operations principles, methods, and tools. The scope is intended to cover all spaceflight missions, including human and robotic, near Earth and deep space.

SpaceOps provides a technical and managerial forum for experts of Space Operations (Mission and Ground Segment Designers, Mission Operators, Engineers in charge of mission logistic support, Technical and Administrations Managers, Industry, Academia, etc.) to present, discuss and promote technical concepts, emerging methodologies and measures for advanced Space Operations. The overall aim is to maximize mission return whilst still maintaining the required mission safety within the framework of today’s increasingly demanding and complex Space Missions. If your organization is new to the Space Operations domain, we encourage you to come to SpaceOps conference to share your ideas, plans, techniques and technologies with others.

If your organization is already familiar with the Space Operations domain, you will find again a great opportunity to gather necessary feedback for your projects and missions at SpaceOps conference, as well as a chance to develop new ties with colleagues devoted to the space sector, which may one day be your partners.

We, the SpaceOps Community, firmly believe that with an enthusiastically communicating and networking Space Operations community, we all become stronger- and mankind's dream to utilize and explore space becomes a reality.

SpaceOps 2023 is hosted and organized by MBRSC. It is founded in 2006, is home to the UAE National Space Program. The Centre builds and operates earth observation satellites, offering imaging and data analysis services to clients around the world. The UAE National Space Program consists of four main pillars that are:

Satellite Development Program

The UAE Satellite Development Program has been at the forefront of the nation's steadily achieved mission in the space science and technology sector. In 2006, MBRSC was entrusted with the development of the UAE's first satellite and a team of Emirati engineers was deployed to South Korea as part of a knowledge transfer program. Over the next decade, working hand in hand with South Korean experts, DubaiSat-1 and DubaiSat-2, which were launched in 2009 and 2013, respectively. In October 2018, the launch of the first 100% UAE-designed and manufactured Earth observation satellite, the highly sophisticated KhalifaSat, was celebrated as a historical milestone.



Emirates Mars Mission (EMM)



The Emirates Mars Mission "*Hope Probe*" is the first probe to provide a complete picture of the Martian atmosphere and its layers. It reached the red planet's orbit in 2021. It helps answering key questions about the global Martian atmosphere and the loss of hydrogen and oxygen gases into space over the span of one Martian year.

Mars 2117 Strategy

The UAE aims to establish the first inhabitable human settlement in Mars by 2117. In line with Mars 2117 Strategy, the UAE will build a complex of buildings called Mars Scientific City. It will comprise laboratories for food, energy and water, agricultural testing and studies about food security in the future. Mars Scientific City will include a laboratory that will stimulate the red planet's terrain and harsh environment through advanced 3D printing technology and heat and radiation insulation. A team of scientists and astronauts will live in this simulated environment for one year.



UAE Astronauts Program



The UAE Astronaut Program was launched in 2017 to train and prepare a team of Emiratis to be sent to space for various scientific missions. The UAE Astronaut Program is the first in the Arab world aimed towards developing skilled and capable Emirati astronauts to embark on future space missions and serve as ambassadors for the UAE and the Arab world in space exploration. Emirati astronaut Hazza Al Mansoori is the first Arab and Emirati astronaut to travel to ISS on an eight-day space mission on 25 September 2019.



WELCOME TO DUBAI

Dubai is part of the United Arab Emirates (UAE), which was established in 1971 as an independent federation along with Abu Dhabi, Dubai, Sharjah, Ajman, Umm Al Quwain and Fujairah, with Ras Al Khaimah joining in 1972. Regarded as the commercial capital of the UAE, Dubai is the second largest of the seven emirates.

As the business hub of the Middle East, Dubai has continued to invest in strategic infrastructure and transportation projects to support the growing service sectors and ensure a stable economic future.

One of Dubai's most significant achievements has been the attraction of foreign business and investment through world-class category-based free trade areas such as Jebel Ali Free Zone,

These have helped to position the city as a knowledge hub, where a combination of home grown and global talent is helping to further diversify the economy, bring in more investment from around the world, and nurture startups and entrepreneurial endeavours.

Dubai's transformation into a global knowledge hub is backed by significant national legislative development and investment, including the UAE National Innovation Strategy, which has distributed more than Dhs300 billion investments across seven main sectors: Renewable energy, Transport, Education, Health, Technology, Water and Space.



Topics and Sub-Topics

The SpaceOps 2023 Technical Program Committee (TPC), composed of experts from the major space organizations in the world, will prepare an ambitious program focused on today's achievements in space operations and outlining trends in the operations of future missions. The conference program will bring together experienced and young professionals, as well as students, from all over the world to discuss the current status and future ideas of space operations. *The program consists of presentations in the following areas:*

1. Mission Design and Management (MDM)

- Mission Design and Architectures
- Mission Simulation and Modelling
- Mission Design for Constellations
- Mission Design for Robotic Missions
- Multi-mission Approaches and Strategies
- Revectoring Old Missions to New Tasks
- Regulations and Laws Affecting Operations
- International, Public, and Private Cooperation

2. Operations Concepts (OC)

- Operations Automation and Optimization
- Operations Engineering
- Operations Procedures Management
- Operational Validation
- Operations Concepts for Constellation and In Situ Ops
- Operations Concepts for robotic missions
- Payload Operations Concepts
- Processes for Designing Operations

3. Flight Execution (FE)

- Real-time flight control, lessons and plans
- Operations Management
- End of Life Operations
- Fault Management and Recovery
- Spacecraft Emergency and Contingency Operations
- Evolving Mission Capabilities
- Long-Range Planning and Mission Optimization
- Operational organization & associated skills

4. Ground Systems Engineering (GSE)

- Ground Segment Architecture and Design
- Control Centre Architectures
- Flight Control Systems and EGSE
- Payload Monitor and Control
- Service Oriented Architectures
- Software Development and Maintenance
- Systems Engineering and System Design for Operability
- Ground Systems Testing and Validation

5. Data Management (DM)

- Ground Data Systems Development, validation and Maintenance
- On-board/ground Interfaces
- Archive Systems and Data Mining
- Automation and health monitoring, flight and ground Data Distribution
- Information Architectures and Information Models
- Payload and Science Data Handling

6. Planning and Scheduling (PS)

- Mission Planning and Scheduling Systems
- Asset Scheduling
- Merging Plans from Different/many Agencies
- Merging Plans from MOCs and SOC
- Planning for Planetary Relay and Surface Communications
- Resource Management
- Real-time Re-planning Techniques
- Science Observation Planning
- Detailed Crew Planning versus "Job Jars"

7. Guidance, Navigation and Control (GNC)

- Flight Dynamics and Navigation
- Attitude Determination and Control
- Challenges in Trajectory Design and Analysis
- Interplanetary Missions
- Formation/Constellation Management
- Global Navigation Systems and Applications
- GNC and Astrodynamics Software
- Techniques for Using Earth-Orbital Global Positioning System
- (GPS) at Lunar Distances
- GPS Constellations for Other Planetary Bodies

8. Communications Architecture and Networks (CAN)

- Communications, Ground and Space Networking Network Operations and Management
- Integrating Communications Networks
- Ground Network and Antenna Concepts
- Communications Architectures for Complex Constellations
- Operational Impact of Spectrum Allocations
- Layered versus Integrated Architectures
- Backup Communications Approaches
- Interplanetary Networking

9. Human Spaceflights and Operations (HSO)

- Mission Architectures for Human Spaceflight Operations with Space Tourists On-board
- Flight Crew Operations Techniques and Training Human Operations with Long Light-speed Delays Long Duration Human Missions – New Concepts Crew-driven Requirements (videoconference, comm. bandwidth, etc.)
- Medical Operations in Human Missions (not an emphasis on medical techniques)
- Reliability (RMA) Standards and Methods, Unique for Human Spaceflight
- Human/Robotic Integration and Cooperation Habitat Operations, Orbital and Planetary Surface Space Environment Factors for Human Lunar/Mars Mission Design
- Utilization of the International Space Station (ISS)

10. Commercial Space Operations (CSO) **(Conference Topic)**

- Air and Space Traffic Management
- Commercial Manned Spaceflight
- Lean and Lights-out Commercial Control Centers
- Managing a Constellation of Satellites
- Operations with Space Tourists On-board
- Training Spaceflight Participants
- Commercial Utilization of ISS

11. Artificial Intelligence for Space Operations (AI)

- Approaches to introduce AI in operations
- AI operational processes
- Methods and algorithms (Machine Learning, Neural networks, reinforcement techniques, etc.)
- AI integration & interfaces in operational ground segments
- AI in planning and scheduling (on-board and on ground)
- AI in payloads mission data processing
- AI on-board space systems autonomy

12. Space Transportation Operations (STO)

- Space Transportation Operations include Balloons, Airplanes, Sounding Rockets, Launchers and Space-tugs related operations
- Operational concepts for Space Transportation Systems including associated Ground Facilities
- Launch Systems and associated Facilities Operations
- Space Transportation Systems Availability, Reliability, Integrated Health Monitoring and Risk Management
- Space Transportation Vehicles Engines Test Bench Operations
- Space Transportation Systems Ground Processing Operations
- Spaceports, Launch Bases, Launch Ranges and Launch Pads Infrastructure & Logistics
- New Space Transportation Systems

13. Safety and Sustainability of Space Operations (SSU)

- Space Transportation Operations include Balloons, Airplanes, Sounding Rockets, Launchers and Space-tugs related operations
- Operational concepts for Space Transportation Systems including associated Ground Facilities
- Launch Systems and associated Facilities Operations
- Space Transportation Systems Availability, Reliability, Integrated Health Monitoring and Risk Management
- Space Transportation Vehicles Engines Test Bench Operations
- Space Transportation Systems Ground Processing Operations
- Spaceports, Launch Bases, Launch Ranges and Launch Pads Infrastructure & Logistics
- New Space Transportation Systems

14. Human Factors Training and Knowledge Transfer (HFT)

- Human Factor & Behavior in Operations
- Control Rooms and Operations Rooms, Tools & Techniques
- Knowledge Management
- Knowledge Transfer
- Lessons Learned Assessment & Management
- Training Methodologies
- Simulation Methods & Tools
- Simulation and Training Operations, Techniques
- Educational and Inspirational applications of Space Operations
- Government, Agencies and corporate outreach programs

15. Cross Support, Interoperability, and Standards (CSIS)

- Communications Standards (Link Layer, Network Layer, Application Layer etc.)
- Software Standards
- Modelling standards
- Interoperability and Cross Support Standards
- Tele-robotics Standards
- Other Relevant Standards
- Applying Standards to Space Missions
- Cross Support Catalogues, Development and Utilization
- Interoperability Successes and Failures

Procedures for Abstract Submission

Abstract Requirements

The SpaceOps 2023 conference organizing committee's highest priority is to accept abstracts and papers that emphasize unique and innovative practices, technologies, and experiences from which others in the space operations community will benefit.

When all abstracts are received, the Technical Program Committee (TPC) – staffed by volunteers from the agencies and industry partners of the SpaceOps Organization – will evaluate the submitted abstracts based upon (but not limited to) these four evaluation criteria:

- ❖ Relevance to topic
- ❖ Substantive merit (content and realism)
- ❖ Innovation
- ❖ Applicability and benefit to future missions



Presentation Approach

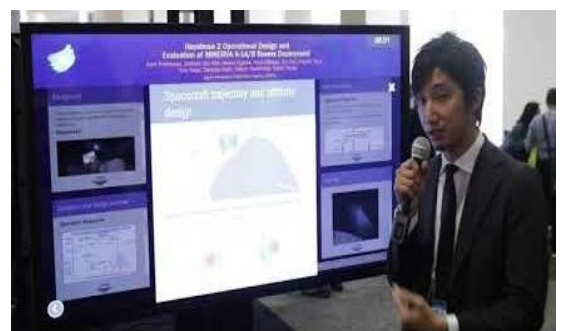


When you submit your abstract, you will be able to choose your preferred presentation approach: Oral Session or Electronic Presentation Session. The characteristics of these sessions are:

- ❖ **Oral sessions** are 20-minute lectures followed by 5 minutes of Q&A. The recommended file types for Oral are MS Power Point and Adobe PDF. Software demonstrations are eligible to Oral Sessions, with the understanding that the presentation must comply with the 20 + 5 minutes duration constraint.



- ❖ **Electronic presentations sessions** are intended for presentation of demonstrations (SW/HW). Electronic demo sessions will be supported by a conference-provided active electronic display. They include software demonstrations and will give the opportunity to interact with delegates. This format will be scheduled in the program for you to interact with the delegates and show your demo. The demonstration can be augmented with a slide presentation.





Procedures for Abstract Submission

Abstract Submission

SpaceOps 2023 Technical Program Committee (TPC) requests that you submit your abstract electronically through the conference website at www.spaceops2023.org where you will be re-directed to the abstract submission tool. This website will be open for the submission of abstracts until 29th June 2022.

Simply click on “Abstract Submission” and you will be forwarded to our web-based abstract and paper submission tool, where you will find detailed guidelines.

We request that you limit your abstract to text only, no graphics. You will have the opportunity to indicate your preference of presentation style (oral/ e-presentation) and the most appropriate topic area. The TPC will then make the best effort at placing your submission in the program in a way that best connects you with your audience. Please consider that due to the overall scheduling constraints, the allocation of the topic area could be changed by the decision of the TPC. Authors having issues submitting abstracts electronically should contact us at support@spaceops.org

Best Papers Award



The TPC has a plan to award “Best Papers” for the conference. The TPC will review final papers just prior to the conference and will select approximately 10% of final papers.

The TPC has a plan to award a “Best Student Paper” for the conference. Thus, we are asking that student primary authors identify themselves when submitting an abstract.

To qualify, the abstract and manuscript must be the primary work of a student, as indicated by being the lead author, and the student must make the presentation.

Special Reminder

Participation in this conference

- ❖ To be allowed to present at any session, you have to submit, in advance, an abstract that complies with the requirements for abstracts, as documented in the [Abstract Submission FAQ](#).
- ❖ All conference presenters in all types of sessions are required to submit manuscripts that comply with the standard requirements for professional conferences, as documented in the “Instructions to Authors” that will be supplied to accepted authors.
- ❖ If the author’s organization/agency/nation requires export approval of the material for this international conference, the author must follow that process, and must do it on a schedule that allows to meet the conference deadlines.
- ❖ All authors are required to register for the conference in the same fashion as all other attendees as this will allow the authors access to the live content and video paper repository.
- ❖ For all manuscripts submitted, and for all presentations, we will not accept overt marketing material or “sales pitches.” These forums and products are for the exchange of technical information, not for marketing. The information must impart some benefit to the space operations community independent of any product or service that may be incidentally mentioned in the presentation materials. Nevertheless, oral presentations and electronic presentations are allowed to include software demonstrations as a way to better present such benefits.


For the marketing or commercial purpose, please look at the Exhibition Opportunities section.

IMPORTANT DATES

Abstract submission opens	31 January 2022
Abstract submission closes	29 June 2022 (Extension Deadline: 15 July 2022)
Notification to authors	31 October 2022
Registration opens	01 September 2022
Final Paper submission deadline	22 January 2023
Presentation material submission	05 February 2023
Student & Young Professional Workshop	05 March 2023
Conference dates	06 - 10 March 2023

Students and Young Professionals Program (SYP)



Organized and Offered by:  SpaceOps


مركز محمد بن راشد
للفضاء
MOHAMMED BIN RASHID SPACE CENTRE

 SPACE GENERATION
ADVISORY COUNCIL

SpaceOps committee, Mohammed Bin Rashid Space Centre (MBRSC) and Space Generation Advisory Council (SGAC) organize and offer “**Students and Young Professionals (SYP)**” program as a part of SpaceOps 2023 Conference program.

- SpaceOps 2023 student workshop, dedicated to SYP, will be held on Sunday, March 5, 2023, the day before the SpaceOps 2023 conference begins.
- Women in SpaceOps event will be held, for the first time, in this edition of the conference on Tuesday, March 7, 2023. This one-hour event will host a panel discussion carried out by inspiring ladies working in space operations, representing agencies from all over the world. “Opportunities for women in Space Operations” will be the theme of this panel discussion.
- A back-to-back event, a Speed Mentoring and Networking session will be convened, on the same day, to provide unique networking opportunities for SYP with SpaceOps mentors to discuss careers in space operations and business. Round tables format will be used to promote discussions among SYP and SpaceOps mentors.
- We also offer SYP with a technical tour that will be announced by the end of February 2022.

Please explore this great opportunity to engage and enjoy unique networking experience with SYP and SpaceOps professionals throughout the SpaceOps 2023 Conference.

To attend this SYP program, please follow the registration process on the SGAC website: www.spacegeneration.org. This SYP program is free of charge and open to students and young professionals.



Exhibition and Sponsorship Opportunities

RESERVE YOUR
SPOT!



Exhibiting Opportunities

SpaceOps is structured to maximize networking opportunities; its organizers place heavy emphasis on the creation of alliances and partnerships during the event's run. SpaceOps 2023 will provide a platform to link the industry providers with space operations leaders and to make critical business connections. It will allow for collaboration and cooperation on a domestic as well as an international level.

We invite the industry members to exhibit and bring their best and most innovative products, solutions, systems, and services to the SpaceOps 2023 Exhibition for broad exposure to the space operations professional delegates.

Join us and interact with leaders from Space Operations Industry, high-level officials and executives, Industry representatives and innovators, Space Operations Clients, engineers, and specialists, Researchers and academics, Young professionals and students and Members of the press.

Sponsorship Opportunities

There are different levels available of sponsoring SpaceOps 2023. Each level provides unique and great benefits to promote your organization's brand and expertise internationally, both in advance of the conference and at the event itself.

SpaceOps 2023 will not just be a unique chance to meet and interact with these factions, but it is also a chance for organizations to showcase their developments and contributions in front of key representatives. ***For any further queries or assistance on Exhibition and Sponsorship opportunities, you may contact:***

Ms. Ghariba Salem – Specialist, Business Development –
Telephone: +971 4 6071 240, Email: SponsorExh@mbrsc.ae

Show your interest &
Join us today



Preliminary SpaceOps 2023 at a Glance

March 5, 2023 (Sunday)	March 6, 2023 (Monday)	March 7, 2023 (Tuesday)	March 8, 2023 (Wednesday)	March 9, 2023 (Thursday)	March 10, 2023 (Friday)	Time
Registration & Welcome Drink	Registration & Preview	Registration	Registration	Registration	Registration	08:00 - 08:30
	Opening Ceremony (Auditorium)	Plenary Session 2 (Auditorium)	Plenary Session 3 (Auditorium)	Plenary Session 4 (Auditorium)	Plenary Session 5 (Auditorium)	08:30 - 09:00
	Exhibition Opening/Coffee Break (Exhibition Area)	Coffee Break	Coffee Break	Coffee Break	Coffee Break	09:00 - 09:30
	Plenary Session 1 (Auditorium)	Oral Presentations	Oral Presentations	Oral Presentations	Oral Presentations	09:30 - 10:00
	Lunch	Lunch	Lunch	Lunch	Lunch	10:00 - 10:30
	Electronic Presentation	Oral Presentations	Oral Presentations	Oral Presentations	Oral Presentations	10:30 - 11:00
	Exhibition	Exhibition	Exhibition	Exhibition	Exhibition	11:00 - 11:30
	Electronic Presentation	Oral Presentations	Oral Presentations	Oral Presentations	Oral Presentations	11:30 - 12:00
	Oral Presentations	Coffee Break	Coffee Break	Coffee Break	Coffee Break	12:00 - 12:30
	Electronic Presentation	Oral Presentations	Oral Presentations	Oral Presentations	Oral Presentations	12:30 - 13:00
[SYP]: Workshop	Exhibition	Exhibition	Exhibition	Exhibition	Exhibition	13:00 - 13:30
	Oral Presentations	Oral Presentations	Oral Presentations	Oral Presentations	Oral Presentations	13:30 - 14:00
	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	14:00 - 14:30
	Oral Presentations	Oral Presentations	Oral Presentations	Oral Presentations	Oral Presentations	14:30 - 15:00
	Electronic Presentation	Oral Presentations	Oral Presentations	Oral Presentations	Oral Presentations	15:00 - 15:30
	Exhibition	Exhibition	Exhibition	Exhibition	Exhibition	15:30 - 16:00
	Oral Presentations	Oral Presentations	Oral Presentations	Oral Presentations	Oral Presentations	16:00 - 16:30
	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	16:30 - 17:00
	Oral Presentations	Oral Presentations	Oral Presentations	Oral Presentations	Oral Presentations	17:00 - 17:30
	Electronic Presentation	Oral Presentations	Oral Presentations	Oral Presentations	Oral Presentations	17:30 - 18:00
Registration & Welcome Drink	Welcome Reception	[SYP]: Women in SpaceOps	[SYP]: Technical Tour	Technical Tour to MBRSC	Closing Ceremony	18:00 - 18:30
	Exhibition	[SYP]: Speed Mentoring				18:30 - 19:00
	Oral Presentations					19:00 - 19:30
	Electronic Presentation					19:30 - 20:00
	Oral Presentations					20:00 - 20:30
	Coffee Break					20:30 - 21:00
	Oral Presentations					21:00 - 21:30
	Electronic Presentation					21:30 - 22:00
	Oral Presentations					
	Electronic Presentation					



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6 – 10 March 2023

Dubai, United Arab Emirates

CONTACTS

Local Organizing Committee



Adnan Al Rais, Chair
MBRSC, United Arab Emirates

Technical Program Committee



Saeed Al Mansoori, Chair
MBRSC, United Arab Emirates

Event Management Committee



Ayesha Al Mulla, Chair
MBRSC, United Arab Emirates

Marketing Committee



Ghariba Salem, Chair
MBRSC, United Arab Emirates

For more information regarding SpaceOps 2023, please visit
www.spaceops2023.org or SpaceOps 2023 Secretariat at
info@spaceops2023.org

 <https://spaceops2023.org>

 [Spaceopsdubai2023](https://www.instagram.com/spaceopsdubai2023)



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