



27th Workshop on Space Technology for Socio-Economic Benefits: "Ensuring Inclusiveness through Space- based Applications and Space Exploration"



Organized by the International Astronautical Federation (IAF) and
supported by the United Nations Office for Outer Space Affairs (UNOOSA)

Hosted by the American Institute of Aeronautics and Astronautics (AIAA)

VENUE: Walter E. Washington Convention Center, 801 Mt Vernon PI NW, Washington, DC 20001, United States of America

DATES: 18-20 October 2019, in conjunction with the 70th International Astronautical Congress

Programme at a glance

	18 October 2019	19 October 2019	20 October 2019
Morning	08:00-09:00 Registration 09:00-10:15 Opening ceremony <i>10:15-10:30 Coffee break</i> 10:30-10:50 Keynote speech 10:50-12:30 Session 1: Space for Inclusiveness: Leaving no one behind	09:00-10:35 Session 3: Opportunities for space emerging countries and industries to join efforts on space science and technology <i>10:35-11:00 Coffee break</i> 11:00-11:30 High Level Keynote speech 11:30-13:00 Session 4: Space exploration for everyone	09:00-09:20 Keynote speech 09:20-10:30 High Level Panel: Efforts of the space community to ensure no one is left behind <i>10:30-11:00 Coffee break</i> 11:00-11:20 Keynote speech 11:20-11:45 Closing ceremony
Lunch	<i>12:30-13:30 Lunch break</i>	<i>13:00-14:00 Lunch break</i>	
Afternoon	13:30-15:00 Session 1 (continued): Space for Inclusiveness: Leaving no one behind <i>15:00-15:30 Coffee break and poster session</i> 15:30-15:50 Keynote speech 15:50-17:30 Session 2: Mobilizing everyone: Innovative space applications for socio-economic development	14:00-15:30 Interactive session <i>15:30-16:00 Coffee break and poster session</i> 16:00-17:30 Session 5: Developing collaborations for space applications	
		<i>18:00-21:00 Reception*</i>	

*The reception will be held in the South Prefunction area of the Walter E. Convention Center (3rd floor)

AGENDA OF THE WORKSHOP

Friday, 18 October 2019, Morning session

Time	Activity		
08:00	Registration		
09:00-10:15	Opening ceremony		
	Chair: Shirish Ravan		
09:00-09:10	Opening remarks (video message)	Simonetta Di Pippo	UN Office for Outer Space Affairs (UNOOSA)
	Opening remarks (video message)	Jean-Yves Le Gall	International Astronautical Federation (IAF)
09:10-09:20	Opening remarks	Pascale Ehrenfreund	International Astronautical Federation (IAF)
09:20-09:30	Opening remarks	Jon Harrison	US Department of State
09:30-09:40	Opening remarks	Vincent Boles	American Institute of Aeronautics and Astronautics (AIAA) (USA)
09:40-09:50	Opening remarks	Christina Giannopapa	Committee for Liaison with International Organisations and Developing Nations (CLIODN)
09:50-10:00	Opening remarks	Pamela A. Melroy	Colonel, USAF, Ret. and former NASA Astronaut
10:00-10:15	Setting the scene	Shirish Ravan	UN Office for Outer Space Affairs (UNOOSA)
10:15-10:30	<i>Coffee break</i>		

Friday, 18 October 2019, Morning session (continued)

Time	Activity		
10:30-10:50	Keynote speech	Kai-Uwe Schrogl	International Institute of Space Law (IISL)
10:50-12:30	Session 1: Space for inclusiveness: Leaving no one behind		
	Chair: Kai-Uwe Schrogl	Rapporteur: Milica Milosev	
10:50-10:55	Setting the scene (session 1)	Kai-Uwe Schrogl	International Institute of Space Law (IISL)
10:55-11:05	Inspiring Stars and a sonification tool for teaching astronomy and observing solar eclipses	Allyson Bieryla	International Astronomical Union
11:05-11:15	Lowering the barriers to STEAM engagement through space-themed, hands-on technical learning and teamwork: A case study of "Mars Week" at Oxford area schools, South Island, New Zealand	Jennifer Glee Blank	Blue Marble Space (USA)
11:15-11:25	The Travelling Telescope: A social enterprise dedicated to promoting science and technology using astronomy tools	Susan Murabana Owen	The Travelling Telescope (Kenya)
11:25-11:30	Q&A		
11:30-11:40	Putting the stars within reach: NASA 3D data-based models in 3D print and Virtual Reality applications, and their potential effects on improving spatial reasoning skills and STEM interest in underrepresented groups of young female learners	Kimberly Arcand	Center for Astrophysics, Harvard & Smithsonian (USA)
11:40-11:50	Space for international cooperation for sustainable development	Christina Giannopapa	Committee for Liaison with International Organisations and Developing Nations (CLIODN)
11:50-12:00	Girls InSpace project: Looking up, going higher	Alessandra Abe Pacini	InSpace LLC (USA)
12:00-12:10	Natural Physics global outreach: A global outreach template for our global community	LeRoy Larry	Natural Physics Global Outreach (Costa Rica)
12:10-12:30	Q&A and discussion with the audience		
12:30-13:30	Lunch break		

Friday, 18 October 2019, Afternoon session

Time	Activity		
13:30-15:00	Session 1 (continued): Space for inclusiveness: Leaving no one behind		
	Chair: Danielle Wood	Rapporteur: Georgios Profitiliotis	
13:30-13:35	Setting the scene (session 1)	Danielle Wood	Massachusetts Institute of Technology (USA)
13:35-13:45	She-Space International: Societal change through space science and technology education	Shimrit Maman	Ben-Gurion University of the Negev (Israel)
13:45-13:55	Space diplomacy: Gender equality and sustainable development	Witchayanee Ocha	Rangsit University (Thailand)
13:55-14:05	Extending human presence into the solar system for the benefit of all	Lara Keaney	National Aeronautics and Space Administration (NASA) (USA)
14:05-14:10	Q&A		
14:10-14:20	UNOOSA Space for Women	Irianna Vlachopoulou	UN Office for Outer Space Affairs (UNOOSA)
14:20-14:40	From local to global: A framework for a new space paradigm	John Paul Donehoo	The Space Team (USA)
14:40-14:50	The importance of cross-culture communication in the NEO community	Nancy C. Wolfson	IAF Technical Committee on NEOs
14:50-15:00	Q&A and discussion with the audience		
15:00-15:30	Coffee break and poster session 1		
15:30-15:50	Keynote speech		
	The new paradigm for cooperation in the UN system to promote commercial space for sustainable development	Kenneth Hodgkins	US Department of State
15:50-17:15	Session 2: Mobilizing everyone: Innovative space applications for socio-economic development		
	Chair: Kenneth Hodgkins	Rapporteur: Arthur Nielsen Demain	
15:50-15:55	Setting the scene (session 2)	Kenneth Hodgkins	US Department of State
15:55-16:05	How Earth observation SAR data as the InSAR landslide models have been allowed to support disaster emergencies in emerging countries	Norma Angelica Davila Hernandez	Autonomous University of Mexico State (Mexico)
16:05-16:15	High resolution earth observation radar data for disaster management: Presentation of use-cases applied in real scenarios in Ghana, Guatemala, Brazil and other countries	Ciro Farinelli	Airbus Defence and Space (Germany)
16:15-16:25	World Space Week Association: Strengthening the link between space and society	Maruska Strah	World Space Week Association
16:25-16:30	Q&A		
16:30-16:40	Space and astronomy for achieving socioeconomic development	Ramasamy Venugopal	International Astronomical Union
16:40-16:50	Smile Donation	Hayaki Tsuji	Tsuji Music Office (Japan)
16:50-17:00	Capacity-building for emerging space states: ISU's ARESS and Space Ready reports	Andrew Butler	University of Melbourne (Australia)
17:00-17:10	Space technology and application: Sustainable tools for monitoring and management of global natural resources	Basuti Bolo	Botswana International University of Science and Technology (Botswana)
17:10-17:30	Q&A and discussion with the audience		
17:30	Closure		

Saturday, 19 October 2019, Morning session

Time	Activity		
09:00-10:45	Session 3: Opportunities for space emerging countries and industries to join efforts on space science and technology		
	Chair: Valanathan Munsami		Rapporteur: Claire Nelson
09:00-09:05	Setting the scene (session 3)	Valanathan Musami	South African National Space Agency (South Africa)
09:05-09:15	Practical strategies in using space to support the realization of the UN Sustainable Development Goals in the developing countries	Ganiyu Ishola Agbaje	African Regional Centre for Space Science and Technology Education (Nigeria)
09:15-09:25	How Alcantara's launch center can be used to promote regional development in Brazil	Michele Cristina Silva Melo	Brazilian Space Agency (Brazil)
09:25-09:35	Space-based projects to improve STEM/STEAM education from an emerging economy perspective: The case of Paraguay	Alejandro Jose Roman Molinas	Paraguayan Space Agency (Paraguay)
09:35-09:40	Q&A		
09:40-09:50	Space programmes supporting socio-economic development: How to help all to benefit	Isabelle Duvaux-Bechon	European Space Agency (ESA)
09:50-10:00	The space applications needed by Sri Lanka	Dulani Chamika Withanage	Arthur C. Clarke Institute of Technology for Modern Technologies (Sri Lanka)
10:00-10:10	Value creation from space technology through data, industry and people: The Philippines' Space Technology & Applications Mastery, Innovation and Advancement (STAMINA4Space) programme	Joel Joseph Marciano	Advanced Science and Technology Institute (Philippines)
10:10-10:20	Economic, social and environmental development through new space industry emergence	Kenneth John Davidian	SpaceBase (New Zealand)
10:20-10:35	Q&A and discussion with the audience		
10:35-11:00	Coffee break		
11:00-11:30	High level keynote speech	Pascale Ehrenfreund	German Aerospace Centre (DLR) (Germany)
11:30-13:00	Session 4: Space exploration for everyone		
	Chair: Isabelle Duvaux-Bechon		Rapporteur: Ayami Kojima
11:30-11:35	Setting the scene (session 4)	Isabelle Duvaux-Bechon	European Space Agency (ESA)
11:35-11:45	Lessons learned from 20 space capacity building programmes	Roman Alexander da Silva Curiel	Surrey Satellite Technology Ltd (United Kingdom)
11:45-11:55	Space science and technology: The future of girls and women in Africa	Chidinma Joy Iroka	National Space Research and Development Agency (Nigeria)
11:55-12:05	Effective space taxation policy today can increase investment in space settlements	Robert Aillon	Leviathan Space Industries LLC (Ecuador)
12:05-12:10	Q&A		
12:10-12:20	Collaborative educational life sciences experimentations in space	Pascale Lefebure	Kayser Italia (Italy)
12:20-12:30	DropTES Programme: International collaboration towards educational microgravity research - The StELIUM case	Alvaro Romero Calvo	Politecnico di Milano (Italy)
12:30-12:40	The International Space Station: A dynamic platform advancing the Sustainable Development Goals through collaboration	Adrienne Joy Provenzano	Butler University (USA)
12:40-12:50	Understanding gamification to design human Mars missions	Ozan Kara	DeltaV Space Technologies Inc (Turkey)
12:50-13:00	Q&A and discussion with the audience		
13:00-14:00	Lunch break		

Saturday, 19 October 2019, Afternoon session

Time	Activity		
14:00-15:30	Interactive session		
15:30-16:00	<i>Coffee break and poster session 2</i>		
16:00-17:30	Session 5: Developing collaborations for space applications and education		
	Chair: Soyoungh Chung	Rapporteur: Dulani Chamika Withanage	
16:00-16:05	Setting the scene	Soyoungh Chung	Korea Aerospace Research Institute (KARI) (South Korea)
16:05-16:10	The Integral Regional System of Satellite Information (SIRIS) to foster the use of space applications for the climate change: An example of regional cooperation in Latin America towards the achievements of the SDGs	Jesus Roberto Romero Ruiz	Mexican Space Agency (Mexico)
16:10-16:20	Encouraging the take up of satellite applications through joined up government: The cases of the adoption of telemedicine and AML in Europe	Alessandra Vernile	Eurisy (France)
16:20-16:30	Opportunities for space education at graduate level in INPE-Brazil for international students	Antonio Fernando Bertachini de Almeida Prado	National Institute for Space Research (Brazil)
16:30-16:35	Q&A		
16:35-16:45	SEEDS: An intercultural and interdisciplinary joint initiative by European Universities to promote space education internationally	Shrrirup Nambiar	Politecnico di Torino (Italy)
16:45-16:55	Space4Youth	Ayami Kojima	UN Office for Outer Space Affairs (UNOOSA)
16:55-17:05	Raising Awareness and Inspiring Action: Bringing the SDGs to the SpaceGen	Matteo Cappella	Space Generation Advisory Council
17:05-17:15	Leveraging Earth observation for monitoring and evaluation of environmental interventions	Anupam Anand	The Global Environment Facility
17:15-17:30	Q&A and discussion with the audience		
17:30	Closure		
18:00-21:00	<i>Reception</i>		

Sunday, 20 October 2019, Morning session

Time	Activity		
09:00-09:20	Keynote speech		
	Space for sustainable development: A practitioner's perspective	Chris Lee	UK Space Agency (United Kingdom)
09:20-10:30	High level panel: Efforts of the space community to ensure no one is left behind		
	Chair: Jean-Francois Clervoy	Rapporteur: Irianna Vlachopoulou	
	High level panel discussion	Simonetta Di Pippo	UN Office for Outer Space Affairs (UNOOSA)
	High level panel discussion	Marius-Ioan Piso	Romanian Space Agency (ROSA) (Romania)
	High level panel discussion	Pascale Ehrenfreund	German Aerospace Centre (DLR) (Germany)
	High level panel discussion	Anond Snidvongs	Geo-Informatics and Space Technology Development Agency (GISTDA) (Thailand)
	High level panel discussion	Yoshikazu Shoji	Japan Aerospace Exploration Agency (JAXA) (Japan)
10:30-11:00	Coffee break		
11:00-11:20	Keynote speech		
	Collaborative research of JAXA and TUS on space colony	Tai Nakamura	Japan Aerospace Exploration Agency (JAXA) (Japan)
11:20-11:45	Closing ceremony		
	Chair: Irianna Vlachopoulou		
11:25-11:30	Closing remarks	Simonetta Di Pippo	UN Office for Outer Space Affairs (UNOOSA)
11:30-11:45	Closure and photo opportunity		

POSTER SESSIONS

Poster session 1

Title	Author	Organisation
Aerospace business opportunities in Central America: Research and Development activities	Russell Torres Castro	FUNDECISE Fundación para el Desarrollo de las Ciencias la Sociedad y el Estado (Costa Rica)
Socio-economic impact assessment of watercourse rehabilitation programs in Sindh, Pakistan	Arjumand Zehra Zaidi; Sumaira Zafar; Muhammad Arslan	Mehran University of Engineering and Technology (Pakistan)
Rainwater harvesting to achieve environment, equity, and economy goals in the rainfed area of Punjab, Pakistan, using geospatial techniques	Vengus Panhwar; Arjumand Zehra Zaidi; Asmat Ullah	Mehran University of Engineering and Technology (Pakistan)
Crop water stress detection by remote sensing: A case study of the Lower Arkansas River Valley, Colorado	Nabeel Alikhan; Arjuman Zehra Zaidi; Asmat Ullah	Mehran University of Engineering and Technology (Pakistan)
Launching the satellites within: Accelerating space and peace affairs through design thinking	Arthur Nielsen Demain	Madaris Volunteer Program (Philippines)
SpaceClime: The innovative concept	Milica Milosev	Team 54 Project International
Potential synergies between space exploration and sustainable development on Earth, in light of SDG 15 - Life on Land	Georgios Profitiliotis	National Technical University of Athens (Greece)
The way forward: An implementation agreement for the Moon Treaty	Dennis Charles O'Brien	The Space Treaty Project (USA)
Global solutions for a global problem: How any country can contribute towards addressing the threat of asteroid impacts	Alexander Karl	IAF Technical Committee on NEOs
Building resilience using open source technology	Abheejit Khandagale	Vruksh Ecosystem Foundation (India)
Exploratory study for sustainability of space science education: A case study in Australia	Andoh Michael Afful	RMIT University (Australia)
The role of space technology in addressing the climate crisis: Using SpaceClime to build climate resilience	Daniel Chidubem Gbujie	Team 54 Project International
Use of Earth observation in crop insurance and yield estimation	Benard Sabwa Akenga	Davacc Tech (Kenya)
The role of developing countries in development of International law on space arms control	Syed Muhammad Miqdad Mehdi	Xian Jiaotong University (China)
Developing a space research center in Guatemala	Victor Hugo Ayerdi Bardales	Universidad del Valle de Guatemala (Guatemala)
A proposal to make an emerging space country 'space attractive' for its own citizens	Rigoberto Reyes Morales	Kyushu Institute of Technology (Japan)

Poster session 2

Title	Author	Organisation
Democratizing access to space: Lessons from New Zealand	Richard Sandor Bodo	SpaceBase (New Zealand)
Space 5.0: Building a collective intelligence machine to empower the general public and create new jobs in 4IR	Mina Takla	CosmoX (Russia)
Remote Sensing assessment of agriculture and associated factors in South Asian countries: Climate change monitoring for food security	Imran Ahmed Khan	University of Karachi (Pakistan)
Use of remote sensing in agriculture	Marie Brigitte Makuate	African Regional Institute for Geospatial Information Science and Technology (Nigeria)
Provision of access to space environment testing facilities for capacity-building and socio-economic development in emerging space economies: An African case study	Benjamin Bonsu	Kyushu Institute of Technology (Japan)
Project Praheya: The use of virtual ground station to support middle and high science education in India	Anirudh N Sharma	Digantara Research and Technologies Private Limited (India)
Inclusive development of rural India through space technology applications	Madhava Rao Vasala	Giet University (India)
Space technology in developing countries for agriculture	Poornima Peiris	Harvard University (USA)
Loss, acceleration and transport of relativistic electrons during geomagnetic disturbances	Binod Adhikari	St. Xavier's College (Nepal)
Role of insurance in tackling changes in NewSpace	Helen Tung	NewSpace2060 (UAE)
Development and applications of remote sensors in Low Earth Orbit (LEO) to improve the decision making about climate and environmental resiliency in the Caribbean and the Hispaniola island – phase 1	Edwin Antonio Sanchez Camilo	Instituto Tecnológico de Santo Domingo (Dominican Republic)
Integrating satellite Remote Sensing with water storage balance for water management	Ramsha Muzaffer	US Pakistan Center of Advance Studies in Water-Mehran University of Engineering and Technology (Pakistan)
Peaceable futures in lunar ville 2036: Reflections on the establishment of the space heritage site on the Moon and the first space goodwill games	Claire Alicia Nelson	The Futures Forum; Institute of Caribbean Studies (USA/Jamaica)
A plastic scintillator system coupled to a silicon photomultiplier read-out for cosmic ray charge measurement in space environment	Francesco Giordano	University of Bari (Italy)
Implementing inclusiveness through enhancing of participation of youth in space activities	Gulnara Omarova	Astrophysical Institute (Kazakhstan)
Habitat Marte research station as a tool to promote space education based on sustainability	Davi Alves Feitosa de Souza	Federal University of Rio Grande do Norte (Brazil)