



International Astronautical Federation

News



Connecting @ll Space People

2/2019 (June 2019)

President's Welcome

Dear Colleagues,

I am very pleased to welcoming you to your June 2019 IAF Newsletter.

This issue will focus on the successful IAF Global Conference on Space for Emerging Countries which took place in Marrakech, Morocco on 24-26 April 2019. We are particularly pleased with the success of this gathering which attracted huge interest from throughout the world space community.

Another main focus of this issue is of course, the 70th International Astronautical Congress to take place in Washington D.C. on 21-25 October 2019. As the congress is getting closer, the IAF Secretariat and Community are actively engaged in making this particular IAC as memorable as it promises to be. An intense programme is being put together featuring very special guests.

We are also delighted to have received 4 full proposals for hosting IAC 2022 coming from, Baku, Azerbaijan, from Azercosmos, Delhi, India, from the Indian Space Research Organization (ISRO), Rio de Janeiro, Brazil, from Agência Espacial Brasileira (AEB), and Singapore, from Singapore Space and Technology Association (SSTA).

I would like to express my special appreciation to our IAF Members for their presence and contribution to this newsletter. Many thanks to all for your contributions and I hope you enjoy reading it.

With my best personal regards.

Dr. Jean-Yves Le Gall
IAF President



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MEMBERS' CORNER

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Dr. Sandra H. Magnus, Co-Chair, Local Organizing Committee

and Vincent C. Boles, Co-Chair, Local Organizing Committee

IMPORTANT DATES:

- Closing of GNF Session Proposals – June 2019
- ISF 2019: 5 September 2019
- IAC 2019: 21 – 25 October 2019
- IAC 2020: 12 - 16 October 2020



Platinum



Gold



Silver



Bronze



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International Astronautical Federation

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IAF 2019 SPRING MEETINGS

As each year, the IAF Community gathered during its Spring Meetings in Paris, France for three days, from 26 – 28 March 2019.



IAF Award Recipients for the IAC 2019!

Dear IAF Community,

We are very pleased to present the 2019 IAF Award recipients who will be awarded at the IAC 2019 to take place from 21 - 25 October 2019 in Washington D.C.

To attend the award ceremonies, register for the #IAC2019 [here!](#)

IAF World Space Award



Apollo 11 crew

Commander **Neil A. Armstrong**, Command Module Pilot **Michael Collins** and Lunar Module Pilot **Edwin E. (Buzz) Aldrin, Jr**

The **IAF World Space Award** is presented for an outstanding contribution or contributions in space science, space technology, space medicine, space law or space management of **exceptional** impact to the **world's progress** in astronautics.

Allan D. Emil Memorial Award



Dr. Joan Vernikos

Former Director of Life Sciences at NASA Headquarters

The **Allan D. Emil Memorial Award** is presented annually for an outstanding contribution to space science, space technology, space medicine or space law.

IAF Hall of Fame



Prof. Roberto Battiston

Former President of the Italian Space Agency (ASI)

Prof. Faren Qi

Chief Scientist of China Academy of Space Technology (CAST)



The **IAF Hall of Fame** is intended to create a standing forum of personalities that have contributed substantially to the progress of space science, technology, and space benefits to mankind.

IAF Excellence in "3G" Diversity Award



UAE Space Agency

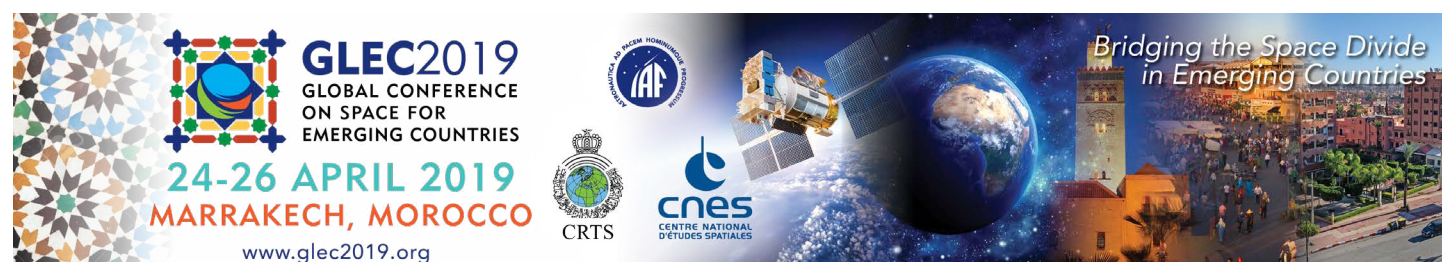
The **IAF Excellence in "3G" Diversity Award** is intended to recognize IAF member organisations (industry, government, academia) worldwide for outstanding contributions to the fostering of "3G" (Geography, Generation, Gender) Diversity within the space sector.

IAF Excellence in Industry Award



Blue Origin

The **IAF Excellence in Industry Award** is intended to distinguish an industry organization, member or non-member of the IAF, worldwide for introducing innovative space technologies to the global marketplace and is recognized throughout space industry for successfully executing a landmark space mission.



GLEC 2019

The Global Conference on Space for Emerging Countries – GLEC 2019, co-organized by the International Astronautical Federation – IAF and the Royal Center for Remote Sensing – CRTS with the support of the French Space Agency – CNES kicked-off on Wednesday 24 April 2019 in Marrakech, with the Opening Ceremony which set the tone for the three-day conference.

The almost 400 delegates, from more than 20 countries, were welcomed by the Moroccan Minister of Industry, Investment, Trade and Digital Economy, **Moulay Hafid Elalamy**, and the Moroccan Ministry Delegate to the Head of Government in charge of the National Defence Administration, **Abdellatif Loudiyi**. Both leaders talked about the importance the government of Morocco accords to space. Minister Loudiyi spoke proudly of the last two successful launches of Mohammed 6 A and B, a "testimony

of the Moroccan King Mohammed VI's eagerness to produce tools for space as an asset for socio-economic development". Continuing on that note, **Jean-Yves Le Gall**, IAF President, stated that "at a time when space activities are undergoing profound changes [...], involving emerging nations has never been more crucial". The Federation reconfirmed their commitment to emerging space nations when **Pascale Ehrenfreund**, IAF Vice President for Global Conferences and Incoming President, shared her "firm intention [...] to guarantee the further development of this topical conference in future years".

Driss El Hadani, Director of the Royal Center for Remote Sensing – CRTS declared that emerging space nations "must create their own business model to take into account their specificities and create their space programmes".

GLEC2019 first session touched upon

the Benefits of Space Technology and Applications to Socio-Economic Development. The morning panel focused on the space agencies' perspective featuring Heads of Agencies including **Mohammed Al Ahababi**, UAE Space Agency (UAESA), **Rashad Nabiyeu**, Azercosmos and **Valanathan Munsami**, South African National Space Agency (SANSA). The afternoon session focused on the Industry perspective with leaders from key global space industries such as **Bruce Chesley**, The Boeing Company, **Jean-Loïc Galle**, Thales Alenia Space and **Oliver Juckenhoefel**, Airbus Defence and Space. Both session highlighted the importance of synergies between emerging and traditional space countries, in domains such as agriculture, land planning, fisheries, navigation, health and natural resources management. Emerging countries can create an attractive environment for foreign investment funds by having the government's

strong support and as stated by **Charles F. Bolden**, Former NASA Administrator, "whatever country happens to be yours, you should look for ways to engage your government".

The second session of the day, moderated by **Kirsten Armstrong**, Petra Strategy, focused on financial models and resourcing. **Steve Bochinger**, Euroconsult, reminded the delegates that "there is no funding model that fits all; it always depends on the specific national context, type of programme and objectives pursued". **Talal Al Kaissi**, UAE Space Agency (UAESA), explained why the UAE invests in space: both to diversify the economy and to inspire the youth.

Looking at the future of Global Conferences, the IAF and its member, State Space Corporation Roscosmos, represented by **Sergey Saveliev**, announced and signed the MoA for the upcoming Global Space Exploration Conference – GLEX 2020 to take place in June 2020 in St. Petersburg, Russia.

Technology and skills development was the first topic of Thursday 25 April, second day of GLEC 2019. The session was moderated by **Rania Toukebri** from the Space Generation Advisory Council and the youngest moderator of the Conference. Keynote speaker **Juan de Dalmau**, President of the International Space University, emphasized that space industries should provide knowledge and actively support governments in developing their space plans. Panellist **Tidiane Ouattara**, African Union Commission, who during his keynote

on the first day stated that "Africa is the new Eldorado for Space", also reminded the audience that for space developing countries, "the real challenge is not capacity building but capacity realization". **Jörg Feustel-Büechl**, Space Consultant, identified two ways in which space-faring nations can support developing nations: first of all by "enhancing cooperation and not only by selling products"; and secondly by sharing the invaluable know-how and successful models of well-established Business Incubation Centers, such as the European Space Agency BIC.

The second session, a panel on base infrastructure requirements, moderated by **Krystal Wilson**, Secure World Foundation, welcomed distinguished speakers. **Agnieszka Lukaszczyk**, Planet, encouraged emerging nations to thoroughly look at their specific needs and to "procure data, services and applications that will truly benefit the region" before adding: "don't do space for the sake of space but for the sake of your citizens and country". In the same spirit, **Adnan Alrais**, Mohammed Bin Rashid Space Center, underlined the value of the human factor declaring that "the focus is not only on the physical infrastructure but also on the people building it and using it".

To conclude the morning, the IDEA "3G" Diversity Lunch featured a special keynote by **Widad Elkachradi**, an 18 year-old Moroccan student of the National School of Applied Sciences of Agadir. She passionately shared her excitement for aeronautics and her inspiring experience as one of twelve Moroccan who was

selected to participate in the NASA Space Camp in Huntsville.

The afternoon kicked-off with an exclusive keynote by **Klaus-Peter Willsch**, Chairman of the Parliamentary Group on Aeronautics and Space of the German Bundestag. He focused his presentation on the role of parliaments in support of space activities and declared that "Parliamentarians have to be encouraged to invest more in space in the interest of the young people and emerging countries".

In the afternoon, the next generation of space leaders gathered for a seminar, co-organized with the Space Generation Advisory Council – SGAC. Various stimulating keynotes preceded intense and energetic discussions both in the working groups and on the final panel. **Anita Antwiwaa**, Head of Operations for ANU SSTL, spoke about the importance of education to involve the younger generation in space activities and boldly reminded the older generation "that they should care".

The last day of GLEC2019, Friday 26 April, found a unanimous consensus over the significance of the conference's topic and served as a strong encouragement for emerging countries. **Kammy Brun**, China HEAD Aerospace Group, moderator of the first panel, confirmed that 2018 was a record year for global satellite contracts and "this is the right time for emerging countries to enter the space market".

During the first keynote, **Pascale Ehrenfreund**, Chair of DLR Executive





Board, stressed the importance of international cooperation to allow emerging nations to draw political attention and interest to space, leading to more funding opportunities, improved facilities and relevant data. Concentrating on the human capital skills, **Kasia Clatworthy**, Surrey Satellite Technology Ltd (SSTL) asserted that *“to keep your engineers in your country, fulfilled and satisfied, you have to build a long-term vision and have a propellant national space programme”*. **Lon Levin**, GEOshare, realistically re-minded the audience that *“space is hard and expensive”* before adding that *“when deciding which foreign country one should partner with, the primary aspect to look at is financial”*. On his side, **Ben Baseley-Walker**, Andart Global, emphasized that when it comes to emerging countries, *“space should not necessarily be inspiring and aiming at going to the Moon or Mars, but rather face Earth issues that would facilitate the lives of the citizens”*.

Legal and Policy was the focus of the second and last panel of the conference. Moderator **David Kendall**, former Chair of the United Nations Committee on the Peaceful uses of Outer Space (UNCOPUOS), pointed out *“the need to deliver the right policy as a fundamental underpinning of space activities”*. In her keynote speech, **Irmgard Marboe**, University of Vienna, gave an overview on the framework of global and policy issues referring to United Nations regulations including liability of launching states and authorization and continuing supervision. **Marta Gaggero**, Centro de Investigacion y Difusion Aeronautico Espacial (CIDA-E) observed that *“space treaties adopted by the United Nations are meant to reduce existing disparities”*. Similarly, Tanja Masson-Zwann, International Institute of Air and Space Law (IIASL), underlined that *“emerging countries must take part in the debate in the United Nations and ratify the treaties”* to develop and prosper in the space sector.

During his keynote, **Mohammed Al Ahbabi**, IAF Vice President for Global Membership Development and Director General of the UAE Space Agency, invited all companies from emerging countries to become members of the IAF as a propeller to enter the global space community.

GLEC2019 concluded with a wrap-up session which took stock of the various sessions held throughout the week. While different points of views on what emerging countries should focus on – downstream applications, socio-economic development or space exploration – a main outcome emerged: international cooperation is key. **Jean-Yves Le Gall**, IAF President, officially closed the conference with a call to action: *“let us open the gate to emerging countries and allow them, as they fully deserve, to be part of the space arena”*.



IAF Presence at 2019 Space Tech Expo USA

On Tuesday 21 May, Dr. Christian Feichtinger, IAF Executive Director gave a presentation at the Space Tech Expo USA in Pasadena on the success story of the Federation. Since 1951, in its mission of connecting all space people, the IAF continuously seeks to deepen international cooperation worldwide by encouraging the advancement of knowledge about space and fostering dialogue between scientists and engineers for the benefit of humanity.

During his Keynote, Dr. Feichtinger highlighted the numerous activities undertaken by the Federation as well as the members, the Bureau and the upcoming events.



IAF Delegation at the 62nd session of the UN COPUOS

On June 13, 2019, the IAF Delegation was present at the 62nd Session of the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) in Vienna, Austria.

Dr. Sergey Krikalev, IAF VP for International Relations and Outreach, reported on the Federation’s upcoming events and activities such as the Global Conference on Space Exploration – GLEX 2020 take place in June 2020 in Saint Petersburg, Russia, the 4th edition of the International Space Forum (ISF) at Ministerial Level to take place in Reggio Calabria, Italy, on 5 September 2019, or the 70th International Astronautical Congress – IAC 2019, to take place in Washington D.C. United States, from 21 – 25 October 2019.





ISF 2019

The IAF, the Italian Space Agency (ASI) and the Università degli Studi Mediterranea are pleased to announce the organization of the 4th International Space Forum at Ministerial Level – The Mediterranean Chapter, in Reggio Calabria, Italy on 5th September 2019, on the theme of “Space Technology and Applications meet Mediterranean Needs”.

The International Space Forum is an annual gathering at Ministerial Level aiming to encourage a global and local discussion and debate on the necessity of promoting a greater involvement of Universities and national Academies into space activities.

Whereas Space Offices and Agencies are not present in all countries, Universities and Academies are distributed all over the world; their attitude to cooperation gives the opportunity to

establish a worldwide network of knowledge supporting the conception, preparation and exploitation of space activities regardless the geographical location. A coherent, inclusive and balanced action among different countries could create a worldwide network of space knowledge and human capital through the sharing of intellectual resources and opportunity to actively contribute to the development and exploitation of the scientific space programmes, including education and training areas.

The yearly ISF sees the participation of Ministers of University and Research and Space, as well as delegation from Space Agencies and International Organisations. Prominent Keynote Speakers are invited to deliver presentations on topics chosen specifically for each edition of the Forum.



IAC 2019

Register Now for the 70th International Astronautical Congress - IAC 2019!

Early Bird Pricing ends June 30!

If you haven't registered for IAC 2019, register today or before 30 June 2019 at www.iac2019.org if you wish to benefit from the Early Registration Price.

With a record-breaking number of 4,336 abstracts submitted for review, the 2019 IAC Abstract Selection during the IAF Spring Meetings in Paris has been very challenging. The IAF deeply appreciates the effort and contributions of the International Programme Committee Members, who worked with remarkable dedication to put together an outstanding Technical Programme. Members of the IPC have accepted more than 2,440 abstracts in 5 categories. The 2019 Technical Programme will consist of more than 2,070 oral presentations in 181 diverse Technical Sessions (including 5 Global Technical Sessions) and 360 interactive presentations highlighting recent progress in all major areas of space. The IAF received 80 submissions for the Special Sessions. Due to a limited number of slots only 19 SpS proposals could be accepted for IAC 2019.

Regarding the **Plenary Programme**, the IAF is pleased to announce that a new record of 45 submission proposals was reached for the IAC2019. The selected Plenary Events are:

- Plenary 1 – Heads of Agencies Plenary
- Plenary 2 – Host Plenary: Evolving Apollo: The Next 50 Years in Human Spaceflight
- Plenary 3 – The Long-Term Sustainability of Outer Space: Advancing the Space Economy and Sustaining Space Industry Through Solutions to Space Security Issue
- Plenary 4 – Inspiring by Leading: Building and Sustaining the Global Space Workforce for the Future
- Plenary 5 – Heads of Emerging Agencies
- Plenary 6 – Clipper Exploring Europa: Making a Mission Understand Our Place in the Universe #NASAClipper
- Plenary 7 – “10th Anniversary Next Generation Plenary “Harnessing Citizen Science for the Future of Earth Observations”

The selected **Highlight Lectures** are:

- Highlight Lecture 1 – MARSIS: the successful search for liquid water on Mars
- Highlight Lecture 2 – The Challenge of Exploring our Sun – the 60-year Odyssey to Parker Solar Probe
- Highlight Lecture 3 – Monitoring Coastal Waters from Space – Highlighting the Chesapeake Bay Region – Dramatic Advances Enable Better Understanding and Protection of these vital Ecosystems, and their Immense Coastal Populations and Infrastructure



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IAC 2019 Industry Day

As in previous years, in the frame of the upcoming 70th International Astronautical Congress (IAC) taking place in Washington D.C., at the Walter E. Washington Convention Center, the International Astronautical Federation (IAF) jointly with its Industry Relations Committee (IRC) is organizing the annual Industry Day that will be held on Tuesday 22 October 2019.

This year, the IAC will commemorate the 50th anniversary of the first humans landing on the Moon and will celebrate the international accomplishments and partnerships that have become the hallmarks of space exploration. In particular, the 2019 Industry Day will offer a rich programme of Plenaries with high level officials and experts who will address the Congress participants on specific topics of direct relevance to the future of space programmes worldwide, such as “The Long-Term Sustainability of Outer Space” and “The Global Space Workforce of the future”.

During this Industry Day, the Global Networking Forum (GNF) will host multiple sessions on various topics, such as Robotic and Human spaceflight missions, Lunar Exploration, Space Economy and new emerging space companies. These GNF sessions will give participants the opportunity to learn about all recent achievements and developments in the space sector. The day will end with a High-Level Lecture on “MARSIS: the successful search for liquid water on Mars”.

In addition to the opportunity to participate in discussion panels, and given the great success at the IAC 2018, the IAF opened once again, the call for the IAF Startup Pitch Session. This exclusive pitching session will give start-ups specialized in the space sector the chance to pitch in front of a jury of experts and to benefit from major exposure in front of space industry leaders.

The 2019 Industry Day will also host the award ceremony for the newly created IAF Excellence in Industry Award. The IAF will award a worldwide industry organization recognized across global space community for outstanding and sustainable advancements in commercial and civil space. At the IAC 2019, Blue Origin will be awarded the first ever IAF Excellence in Industry Award for introducing innovative space technologies to the global marketplace and for successfully executing a landmark space mission.

With more than 4 000 people expected, this year’s IAC will provide participants a unique opportunity to highlight and expand their capabilities and their network of contacts, by exchanging with leading personalities and experts, such as Heads of Agencies, astronauts, legal experts and policymakers. Don’t miss the chance to be part of it

Looking forward to seeing you in Washington D.C.!



INTERNATIONAL
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GK LAUNCH
SERVICES

Win a Launch of 1U CubeSat on the First Commercial Mission of GK Launch Services!

The International Astronautical Federation - IAF in cooperation with GK Launch Services are pleased to announce an exclusive competition for a **Free Launch of 1U CubeSat on the First Commercial Mission of GK Launch Services.**

We cordially invite all IAF member organizations to participate in the competition and profit from this unique opportunity to win a launch operated by GK Launch Services, planned for the second quarter of 2020.

Please note that this competition aims with priority at reaching out to **Space University teams from emerging countries.**

The launcher will be Soyuz-2.1a/Fregat. The new generation of Soyuz launchers features high reliability, multi-functionality, and eco-friendliness – a rocket of great world renown – launched from Baikonur and known for its long successful flight heritage and orbit injection accuracy. **“We are happy to provide a launch opportunity to a 1U CubeSat on our first commercial mission. It is important to GK to support scientific projects, especially those made by students.”** said GK Launch Services CEO, Alexander Serkin.



You may find [here](#) for your information, the mechanical loads that secondary payloads (small SC) experience during Soyuz-2/Fregat ground operations and launch.

Applications must be submitted to award@iafastro.org by **8 August 2019** and shall include:

- Description of bidding organisation and background experience with respect to CubeSats (if available)
- Description of proposed CubeSat mission
- Description of available facilities (e.g. integration and test facilities, ground station)
- Funding and readiness status

A joint **IAF – GK Launch Services Selection Board** will review the applications and select the winner, who will be announced at the **IAC 2019** in Washington D.C. taking place from 21 – 25 October 2019.

Founded in April 2017, GK Launch Services – joint venture of GLAVKOSMOS JSC, and subsidiary of ROSCOSMOS State Space and International Space Company KOSMOTRAS, LLC. - is the operator of Soyuz-2 commercial launches from the Russian space ports.

More information on GK Launch Services can be found [here](#).

The IAF Space Education and Outreach Committee (SEOC)

The IAF Space Education and Outreach Committee (SEOC) promotes the development and delivery of quality learning and outreach opportunities for students, educators and members of the IAF so that space, science and technology become better known and are more accessible to the global community. SEOC will support the IAC 2019, as the global community come together in a mighty way.

The SEOC and the International Space Education Board (ISEB) are working together to plan and execute an excellent Educator Professional Development (EPD) Workshop and Student Program for IAC 2019. Applications will be sought in August for international and domestic educators to participate in the EPD Workshop. Approximately 70 - 75 students will be sponsored by the ISEB Partners to join the 2019 Cohort. ISEB Partners include: National Aeronautics and Space Administration (NASA); Canadian Space Agency (CSA); European Space Agency (ESA); Japan Aerospace Exploration Agency (JAXA); Korea Aerospace Research Institute (KARI); Victorian Space Science

Education Centre (VSSEC); Mexican Space Agency (AEM); South African National Space Agency (SANSA); French National Centre for Space Studies (CNES); and United Arab Emirates (UAE). The 2019 activities will provide an array of opportunities for professional development; cultural awareness; and networking between peers and space professionals on site. There will also be several opportunities for virtual participation, which will expand the reach of the Congress, through social media and/or televised live events. There will be exciting activities during "STEM Engagement Days" on October 23 and 24, where selected organizations from government, industry, and academia will conduct science, technology, engineering, and mathematics (STEM) stations to engage with local middle school students. On Friday, October 25, "Public Day" will be held to engage with the local community, where they can tour the exhibits, participate in "hands-on" activities, and attend plenary events.

Representatives of Space Generation Advisory Council (SGAC) are active



members of SEOC. SGAC will organize the 18th Space Generation Congress (SGC) in Washington, D.C. during October 17-19 prior to IAC 2019. As the only event of its kind, the Space Generation Congress offers the next generation of space leaders the opportunity to network and to examine critical questions that are facing the space and international community at large. This year, the topics of a post-ISS universe, lunar surface missions, and more will be explored. There are 340 students and young professionals that have applied for the event - a record amount. SGAC is proud to partner with the IAF and other partners on this endeavor. If you are interested in learning more about the event, or becoming a partner, please reach out to sgcinfo@spacegeneration.org. There is a massive variety of events planned at iconic locations within Washington D.C. that will immerse delegates in the past, present and future of the space industry.



NEWS!



Welcome to the Moon Jubilee, announcing SpaceLand City in Mauritius

Mauritius, 20th of July 2019: the new "SpaceLand City" will be announced at the Jubilee organized by the Aeronautical Society of Mauritius for the 50th anniversary of Apollo 11.

Together with videos from SpaceLand Moon-gravity research flights carried out from the NASA Space Shuttle L.F., such a unique development will be shown over its 20.000 m2 of terrain near tropical beaches and beautiful sea lagoons.

Featuring one of the world's largest Moon & Mars surface analogs, framed by new high-tech Near-Zero-Energy-Building offices and business incubators, designed by the Italian Architect Celeste Petraroli (former design supervisor of the international media buildings for the 2006 Winter Olympics), SpaceLand will enable users at any age to access ground-breaking systems, mock-ups and facilities of the first "low-gravity & weightless knowledge hub".

Supporting all-year-round international business development, research, education and leisure in particular for microgravity STEAMM (Science, Technology, Engineering, Arts, Math and Medicine), SpaceLand City will have a new Space Economy thrive in Mauritius, with pioneering technology and engineering, merged with life & material sciences and robotics R&D environments and tools.

Its green-powered office towers with vertical green facades and a causy inner plaza, with space-themed commercial shops, boutiques, cafès and business start-up services, will face a Mars-hill-looking SpaceLand Center hosting research labs, emulators and habitats, with ground and underwater facilities for unprecedented, space-immersive experiences; research areas will be facilitated also regarding psycho-motorial analogies between humans in microgravity and everyday's needs of elderly, disabled and kids affected by similar daily difficulties as astronauts face in Space, with a special focus on anti-aging and life-extension therapies R&D.

Moreover, the first "Mars-green house" served with self-replicant robots will be developed, utilizing plants by the same robots cultivated, entailing a relevant series of spin-off applications for remote or desertic territories on our planet.

Also dealing with orbital debris management, satellite technologies, planetary exploration systems and aerospace tourism, SpaceLand City welcomes international users interested to jump-start a new quality of life and work, including marketing and P.R. outposts also for commercial opportunities in the upcoming tropical spaceport conceived for the flight segment of the program.



As recently shown at United Nations and IAF events (see video inside Doct. Viberti's bio here <http://www.iafastro.org/events/global-series-conferences/glec-2019/programme/session-3-technology-and-skills-development/>), SpaceLand City is the first "holistic space business & life destination" set in a real tropical paradise, benefitting from top-level financial services in the low taxation, white-listed Republic of Mauritius, strategically set among South Africa, UAE, India, Singapore, Hong-Kong and China.

Welcome to SpaceLand City, in beautiful Mauritius!



Great Scientific Achievement from Azercosmos

A Geospatial Analysis Consultant of Azercosmos Dr. Emil Bayramov was awarded by the Denny Medal for the most worthy paper of 2018 in the Journal of Operational Oceanography from IMarEST in UK. His scientific publication presented the importance of Spatiotemporal Radar and Optical Remote Sensing Monitoring of oil slicks in the Caspian Sea and also Statistical Modeling of Contamination Risks.

Emil Bayramov spent many years working for Azercosmos to promote the Sustainable Development of Space Technologies in Azerbaijan and continues progressing his career within our organization. He holds PhD in Natural Sciences (Specialization:

Geospatial and Remote Sensing Technologies) from TU Dresden in Germany, MSc in GIS from Lund University in Sweden, second MSc and BSc in Geography. He is the Chartered Geographer from RGS in UK and the Certified Remote Sensing Professional from CIG in Canada. He was the Humphrey Fellow at MIT and also Fulbright Visiting Postdoctoral Scholar in Geospatial and Remote Sensing Technologies at American University, Washington DC. He currently pursues his Habilitation in Geospatial and Remote Sensing Technologies at TU Berlin in Germany.



<https://www.imarest.org/policy-news/institute-news/item/4786-winners-of-the-imarest-awards-2018-19>

Creativity Event Dedicated to the 50th Anniversary of the First Human Walking on the Moon was held in the National Aviation Academy in Azerbaijan

At the initiative of the Scientific-Technical Creativity Center Impuls of the National Aviation Academy (NAA) the Creativity Event dedicated to the 50th anniversary of the first human walking on the moon was held on May 14, 2019.

The wide-scale event was opened with the exhibition of paintings of astronaut-artists such as A.A. Leonov, A. Janibeyov, Alan Bin, Michael Collins and speech of the Former Director of the Space Research Institute of the USSR Academy of Sciences, Co-Chairman of the Council for Space Affairs, and Scientific consultant of the NAA Professor R.Z. Sagdeev who chaired the event. The documentary film on Apollo's mission to Moon was shown to students and guests of the event which was followed by the roundtable on the Future Studies of the Moon.

The representatives of Shamakhy Astrophysical Observatory headed by its Director, corresponding member of Azerbaijan National Academy of Sciences Namik Jalilov, fantasy writer and scriptwriter Alexander Hakimov, representative of TRIZ Developers Summit in Azerbaijan, the Director of NG Creators

Club Natig Aliyev, the Deputy Chairman of Azercosmos Rovshan Rustamov, and other representatives of space community and creative minds participated in the event.

At the end of the event, the art director of the NG Creators Club Rustam Huseynov made a presentation on Space in Visual Arts.



The Canadian Space Society (CSS) and Satellite Canada Innovation Network (SatCan) are hosting the Canada Pavilion at the 70th International Astronautical Congress. The Pavilion present the best of Canada's space companies and capabilities. We look forward to meeting international friends at Washington DC!

We have also recently announced the 19th Canadian Space Summit, themed "From LEO to Lunar," Summit '19 will take place from November 19th to 21st at Brookstreet Hotel in Ottawa.

The Canadian Space Summit is Canada's only annual conference dedicated to the whole of the Canadian space industry. Since 2000, the Summit has reached thousands of Canadian and international stakeholders. Like our 2018 Summit, CSS and SatCan are going to host the Canadian Space Policy Symposium and the SatCom Canada Workshop together with our 2019 Summit.

Registration for the Summit is now open with Early Bird Pricing. Details on sessions, speakers and schedule will follow in the upcoming months. Sponsorship and exhibition packages are also available. For more information, please visit our website at www.css.ca.



Regional cooperation on Space Technology

[Adriatic Aerospace Association](http://www.adriatic-aerospace-association.org) is the organizer of a meeting that is dedicated to regional cooperation in space science and technology. There is a great disparity in the Southeast Europe

in the level of development in these activities but the necessity of using space for local economies is ever increasing. By initiating this gathering is to encourage transfer of knowledge and technology that would strengthen regional cooperation on developing projects of common interest. The plan is to hold these meeting on the annual basis.

The first conference is a one day meeting with plenary lectures by eminent speakers followed by panel discussion "Small Countries in Space Era" on the issues that are important for regional cooperation. The third part of the meeting focuses on reviewing the state-of-the-art of activities and planning future development in space technology by participants from the countries of the region.

More information at <http://acsst.irb.hr/index.html>

Answers to additional information could be obtained from info@a3space.org.



News from ASI

Giorgio Saccoccia is the new President of the Italian Space Agency. After six months of "extraordinary management" by Commissioner Prof. Piero Benvenuti, Giorgio Saccoccia was appointed by the Italian Minister of Education, University and Research on 9 April. Former ESA Head of Propulsion and Aerothermodynamics Division, Saccoccia is an engineer with a long-standing career in space programs, dealing in particular with strategy and support activities. His appointment occurred shortly afterwards the publication of the "Government guidelines on space and aerospace", which represent the first public document of the new Italian government on space and aerospace sectors. The guidelines were elaborated by the Inter-ministerial Committee for Space and Aerospace policies



Members' Corner

(COMINT), composed of representative of twelve Ministries, under the responsibility of the Prime Minister. Among the first commitments of the ASI President there are the preparation of the Italian participation in the ESA Council at Ministerial level 2019; the continuation and expansion of the international cooperation projects with the international partners; the attention to the evolution and change of the international space scenario; the promotion, support and contribution to the space economy. ASI is closely working with IAF in the preparation of the 4th International Space Forum 2019 – The Mediterranean Chapter, scheduled for September 5th, 2019 in Reggio Calabria and will participate in the 70th International Astronautical Congress in Washington, on October 21-25, 2019 through scientific papers, GNF events and the sponsorship of many other events as IAF Alliance partner.



Space and Singapore – Endless Possibilities

Asia's role in the development of space technologies is increasingly significant and Singapore is quickly leading the region in becoming the space hub in Asia.

Singapore, being at the crossroads of the world provides more than just the ecosystem for the spacetechnology industry. With long-standing connections with both the Asia-Pacific region and the West, Singapore leads the region in attracting investment, hosts about 50% of Southeast Asia's data center capacity and is 2nd in connectivity in APAC after Japan. Her reputation as a top Asia-Pacific destination for business events will attract strong interest and active participation from the region, and open doors to fast-growing markets such as China, India and Southeast Asia. It is presently home to over 40 spacetechnology companies and hires over 1,000 people in the industry. These companies offer a variety of services across the value chain, ranging from space launchers to spacetechnology innovations.

As the shift to small satellites has been gaining momentum globally, Singapore is building its niche in small satellites and space applications. In fact, Singapore has built and launched 12 satellites in the last 8 years, since 2011. The first Singapore-made satellite, X-SAT (eXperimental SATellite), involved DSO National Laboratories, Nanyang Technological University and the National University of Singapore. It was completed in 2009 and launched on Apr 20, 2011. It allows us to perform remote sensing to monitor environmental change and detect forest fires, among other things. The programme's other important

objective was to build local capabilities in satellite engineering.



Brilliant minds and research competencies are assets that Singapore focuses on developing. Programmes have been designed to engage our youths, arouse their awareness to advanced space technologies and concepts, and inspire their innovative and creative minds to make solutions. The Singapore Space Challenge provides tertiary students a chance to mingle with industry leaders as their mentors, receive professional training to understand satellite data and its applications. This challenge, created by the Singapore Space and Technology Association (SSTA) since 2007 with the aim of nurturing young minds and building strong foundations in STEM, especially in space. In recent years, SSTA has also worked with Airbus to design a competition for youths to understand disaster management and using satellite data, create a solution that will aid in humanitarian assistance and disaster relief.

In 2018 and 2011, SSTA hosted the Asia-Pacific Regional Space Agency Forum, APRSAF-25 and APRSAF-18 in Singapore. Attended by regional space agencies, government bodies, universities and more, the event provided opportunities to discuss international cooperation for space activities. As a neutral platform, Singapore is in the ideal position to host discussions on the latest and pressing topics. For the past decade, an Asia premier space event, the Global Space and Technology Convention (GSTC), established and organised by SSTA has been rapidly growing to be the biggest space convention in Singapore. A convention that has been garnering support from ministers, c-suites and government officials for the past decade, the GSTC has been steadily growing in attendance. Almost 700 delegates from close to 300 companies globally attended this year. Providing platforms for businesses to connect, conversations to take place, partnerships to form is how SSTA wants to help the space ecosystem grow.

This bustling city-state in the heart of Southeast Asia is a candidate-city for the International Astronautical Congress (IAC) 2022. Singapore is a city with endless possibilities, not only are we creating new international collaborations, it is a place of infinite opportunities for bigger and more exciting space conversations. Named best convention city in Asia for 16 consecutive years, ranked top in the world for order and security



Members' Corner

and is the top global innovation city in Asia Pacific, there is no better place for IAC 2022. SSTA looks forward to hosting you here in Singapore in 2022 where the limitless possibilities of space creates progress for all.



Clockwise from top left:

- Ms Low Yen Ling (3rd from right), Senior Parliamentary Secretary, Ministry of Education & Ministry of Manpower
- Ms Indraneel Thurai Rajah, Minister, Prime Minister's Office, Second Minister for Finance and Second Minister for Education
- Mr Chan Chun Sing (2nd from right), Minister for Trade and Industry
- Mr S Iswaran, Minister for Communications and Information



Firefly News

Firefly has achieved a major milestone toward flight qualification of the Firefly Alpha launch vehicle second stage, supporting Firefly's goal of Alpha first launch in 2019. A 300 second hotfire test of the complete upper stage was accomplished on the company's vertical stage test stand. The length of the test successfully demonstrates the capability of the integrated system (flight avionics, structures, and propulsion systems) to operate for the duration of a flight mission (i.e., a mission duty cycle). The stage was heavily instrumented to provide valuable data for mechanical vibration environments which will be experienced by components (e.g., avionics, fluid system components) during flight. All systems performed well, and all test objectives were successfully achieved.

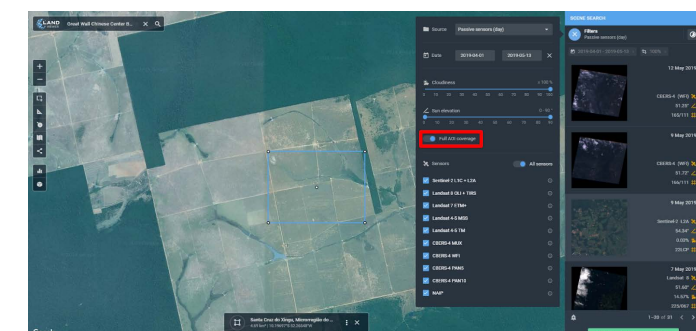


LandViewer launches new features to address the user's most popular needs

EOS further strengthens its Earth observation imagery portfolio with the addition of new high-resolution sensors and advanced analytical tools.

Full AOI Coverage

To find the images covering your area of interest (AOI) to 100% has become quick and easy! Just set the "Full AOI Coverage" filter and wait until LandViewer delivers the most suitable scenes.



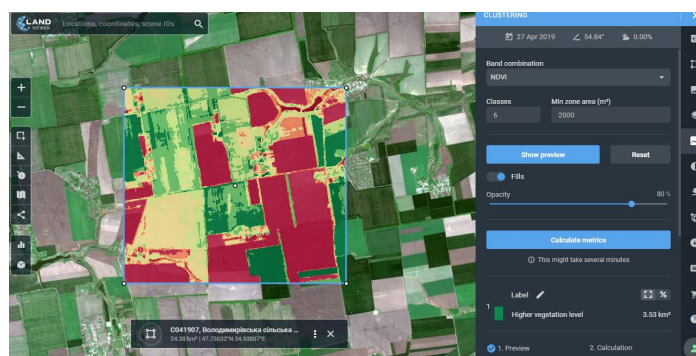
Stay up to date with the Index change notifier in LandViewer
Introducing the feature that scans new satellite images of your

AOI, detects changes in the index values, and sends urgent e-mail notifications to the end user.



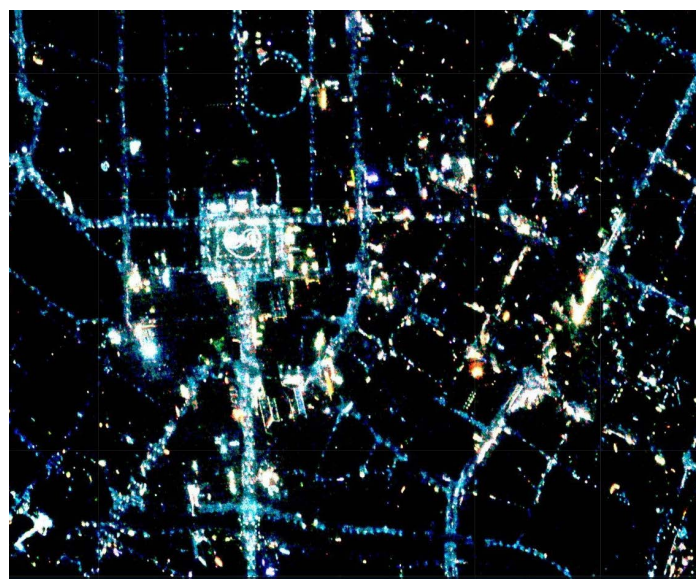
Zone management with LandViewer

Another progressive functionality is designed to specify certain, averaged in definite index ranges, zones within the AOI, with clear boundaries, displaying the results of zone parameters' calculation and the ability to export them to other software.



LandViewer has added a new provider

Introducing our new partner! Chang Guang Satellite delivers not only hyper-spectral satellite imagery (0.92 m/pxl), but also a unique product for GIS market – nighttime optical imagery with a resolution of 0.92 m/pxl along with a space video.



USC Liquid Propulsion Lab's Successful Hot Fire of their 3D-Printed Engine

On November 17, 2018, the University of Southern California's student-run Liquid Propulsion Lab (LPL) performed a three-second hot-fire test of their 3D-printed rocket engine. It was the third hot fire of one of their 3D-printed engines, and the first in which the nozzle survived without any cracking. The engine achieved a chamber pressure of 725 psi (49 atm) and a thrust of 650 lbf (28.9 kN).

In addition to testing the redesigned nozzle and retention system, the test evaluated the injector face film cooling. They will need more hot fires to confirm it did in fact work, but the effects of film cooling can be seen in the flower pattern on the injector that was present after firing. The clear areas show where the film cooling fuel is injected onto the face.



The students also validated their updated cold flow testing campaign and proved that LPL designed cooling methods of the engine are adequate, opening a way for more and better qualification testing is possible. This was a major step forward towards more frequent hot fires and dual firing of USC LPL's 3D-printed engines.



Orbita News

Zhuhai Orbita Aerospace Science & Technology Co., Ltd. (hereinafter called "Orbita") is expecting to launch in August 2019 another five microsattellites including four hyperspectral satellites and one video satellite. This will allow "Zhuhai No. 1" Earth Observation Satellite Constellation to extend its capability of remote sensing from existing 7 satellites into 12 satellites, i.e., 4 video satellites and 8 hyperspectral satellites.

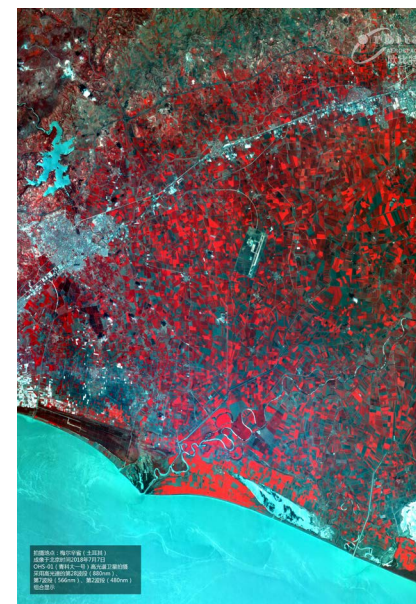
Orbita is a public listed company on the Shenzhen Stock Exchange since Feb 11, 2010 (stock code: 300053). With its head office in Zhuhai, Orbita has been recognized to be a pioneer for constructing Earth Observation Satellite Constellation which provides the end-users with low cost and more efficient satellite data and services from the well configured remote sensing microsattellite constellation. Today its hyperspectral data collected from its 10 meter resolution hyperspectral satellites plays an important role in monitoring of environment and natural resources such as water, ocean, agriculture and forest. Actively participating in many remote sensing programs, Orbita provides products, services and support in many domains, including aerospace, aviation, AI, RS big data, intelligent communications, smart surveying & mapping, environment protection and agriculture. (<https://www.myorbita.net/>, <https://www.obtdata.com/en/>)

Hyperspectral image 1

Location: Melcin, Turkey.

Image time: July 7, 2018 (Beijing Time).

Hyperspectral band: 480nm, 566nm, 880nm.



Hyperspectral Image 2

Location: Australia.

Image time: January 17, 2019 (Beijing Time).

Hyperspectral band: 566nm, 670nm, 880nm.

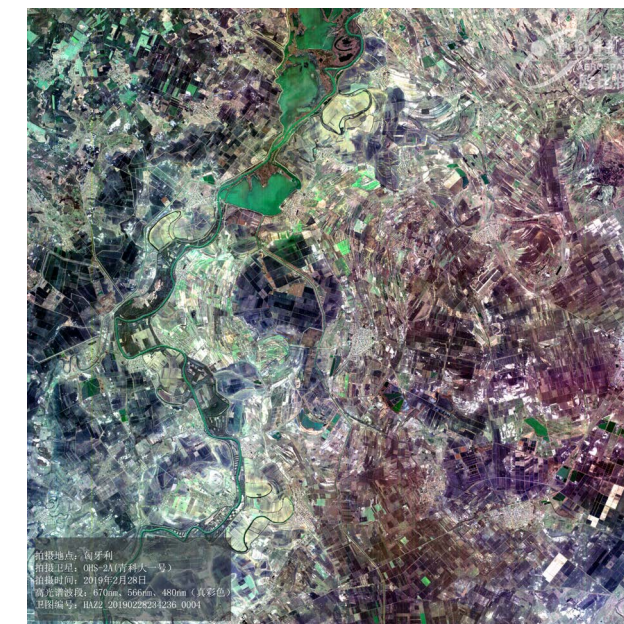


Hyperspectral Image 3

Location: Hungary.

Image time: February 28, 2019 (Beijing Time).

Hyperspectral band: 480nm, 566nm, 670nm.

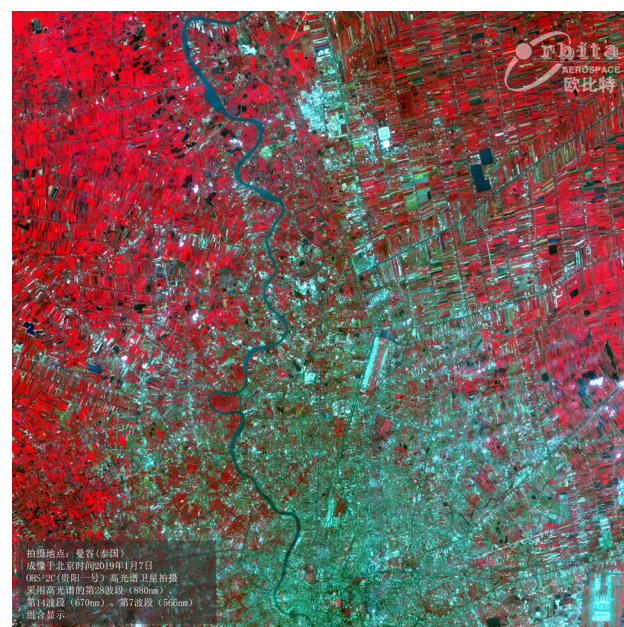


Hyperspectral Image 4

Location: Bangkok, Thailand.

Image time: January 17, 2019 (Beijing Time).

Hyperspectral band: 566nm, 670nm, 880nm.



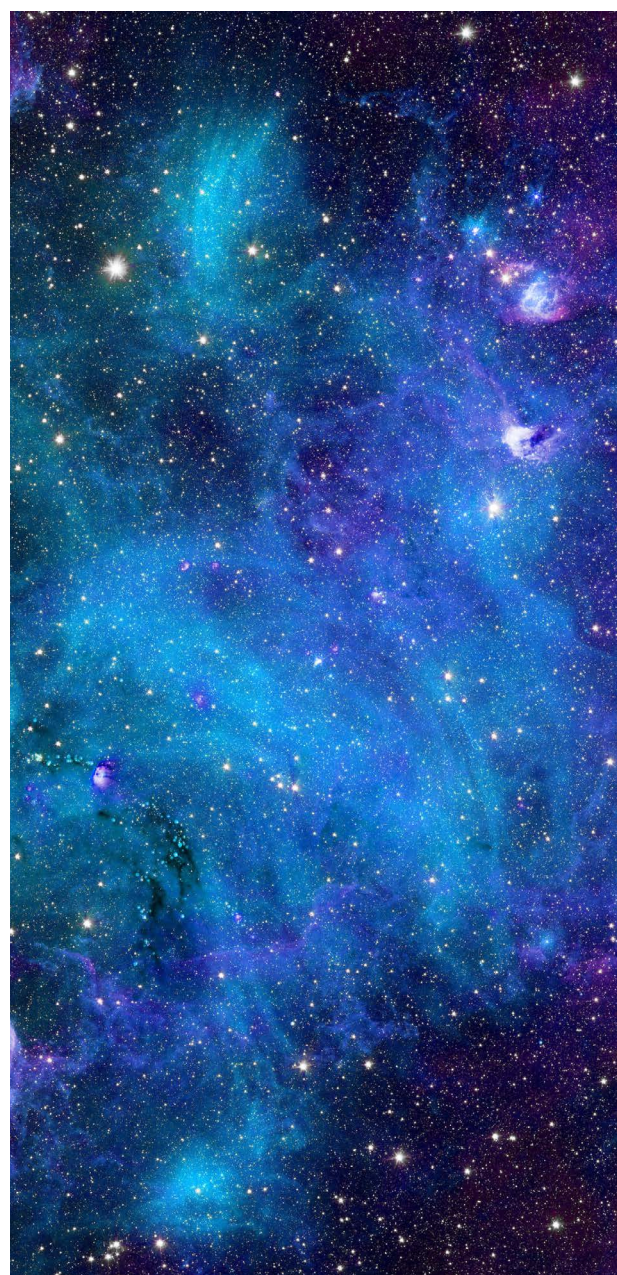
MANT celebrates 60 years within the IAF



The Hungarian Astronautical Society (MANT) joined IAF 60 years ago, in 1959. Since then, IAF has played an important role in the international connections of our Society. As Prof. Ivan Almar, honorary president of MANT recalls:

"1959 was a very important milestone in the history of our society. Our predecessor, the Hungarian Astronautical Committee has been founded in 1956 within the Hungarian Society for the Dissemination of Scientific Knowledge, mostly for the popularization of new achievements in space. On the recommendation of the Hungarian Academy of Science in

1959 it has been affiliated with the Federation of Technical and Scientific Societies as an interdisciplinary central section. Since in international connections it was entitled to use the name "Hungarian Astronautical Society", our new Board has asked Mr. Ernő Nagy, secretary for international affairs, to ask the IAF for membership. After a positive answer from the IAF in 1959, already in 1962, when the IAF congress happened to be rather near (Varna, Bulgaria), a strong Hungarian delegation participated. The next big milestone was in 1983, when our society has organized the 34th IAF congress in Budapest. (See the photo with Hermann Oberth and his daughter, IAF president R. Chevalier, IAA president G. Mueller and representatives of the Hungarian Astronautical Society jointly laying wreaths on the statue of Theodore von Karman.)"



Interview with Dr. Sandra H. Magnus, Co-Chair, Local Organizing Committee and Vincent C. Boles, Co-Chair, Local Organizing Committee, IAC 2019



1 What is the significance for Washington D.C. to host the IAC this year?

Fifty years ago the Apollo 11 crew set foot on the moon and ignited the world. That feat would not have been possible without a steady and focused commitment from the U.S. government. It is fitting, as the world community discusses the advancements that have been made in space exploration since that landmark moment, that the celebration take place in the city that was instrumental to the success of the program. Space has become and will continue to be an increasingly global enterprise and AIAA is delighted to host the space community in Washington, D.C., to showcase to the U.S. government the breadth and depth of the global ecosystem that has grown out of that "one small step for mankind."

2 What do you expect delegates to get from their experience at the IAC 2019?

The IAC will be a very internationally-rich experience of space participants, exhibits, and information exchange. People from government, industry, and academia from across the globe, who are engaged in exciting activities in space, will be presenting their work. Sessions ranging from the purely technical to those focused on policy and international collaboration will provide delegates with a broad view of the global space ecosystem. Attendees will be able to learn about the latest developments and network with their international colleagues and will leave feeling energized,

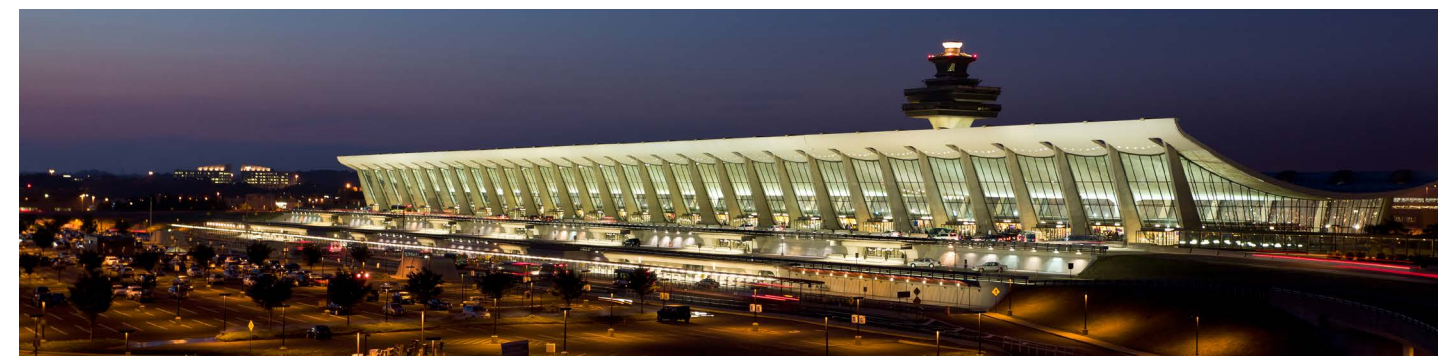
educated, and motivated to continue advancing the state of the art in space.

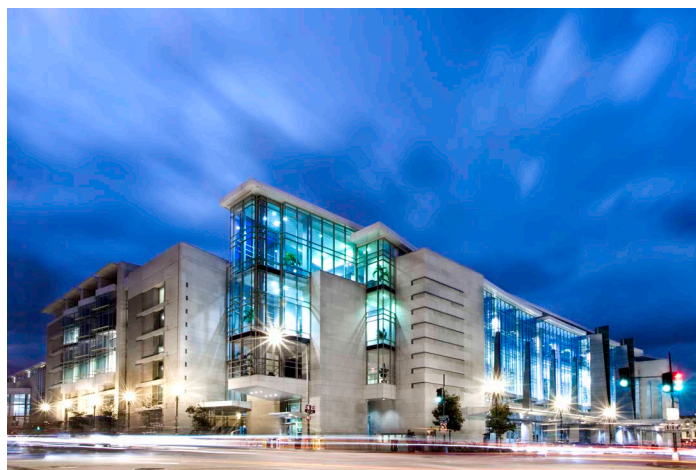
3 Why is this year's theme, "Space: the power of the past, the promise of the future" relevant?

2019 marks the 50th anniversary of humans putting foot on the moon. The Congress theme reflects the importance of that milestone for inspiring and motivating global engagement in space and the advances emerging from that engagement. It also projects that momentum and continuing growth into the future, highlighting the excitement of expanding beyond low Earth orbit to the moon and beyond. This global engagement is reaching an increasingly larger community—from small start-ups to traditional industry, new countries engaging in space activities for the first time to high school students. Our trajectory for the next 50 years will create innovations and social benefits that are beyond imagination.

4 What will be the highlights of this IAC?

IAC 2019 will celebrate our global accomplishments in space while looking to the future and the challenges and opportunities we face. Of course, the plenary program will feature the traditional "heads of agencies" opening panel that will set the theme for the week as the different countries discuss their goals. The other plenaries will highlight the broad range of activities occurring in space globally:





- Evolving Apollo: The Next 50 Years in Human Spaceflight.
- The Long-Term Sustainability of Outer Space: Advancing the Space Economy and Sustaining the Space Industry Through Solutions to the Space Security Issue
- Inspiring by Leading: Building and Sustaining the Global Space Workforce for the Future
- Heads of Emerging Agencies
- Clipper Exploring Europa: Making a Mission to Understand Our Place in the Universe (#EuropaClipper)

Space exploration reveals new knowledge about our planet, our solar system and the universe. The IAC 2019 highlight lectures provide attendees with opportunities to engage in more depth on selected topics in space exploration.

- MARSIS: The Successful Search for Liquid Water on Mars
- The Challenge of Exploring our Sun—The 60-year Odyssey to Parker Solar Probe
- Monitoring Coastal Waters from Space—Highlighting the Chesapeake Bay Region—Dramatic Advances Enable Better Understanding and Protection of These Vital Ecosystems and Their Immense Coastal Populations and Infrastructure

Of course, at the core of the IAC is the substantial technical program with 20 concurrent sessions covering every aspect of international space activities, from human to robotic exploration to design, development and operations. Reflecting the incredible energy and excitement present today in the global space industry, the number of abstracts submitted was overwhelming (4,327 abstract submissions from 86 countries). For those interested in engaging in ways other than the technical presentation format, the Congress there are approximately two dozen special sessions. Finally the Global Network Forum (GNF) program is also taking place. Clearly there will be something for everyone at the IAC!

The Congress encompasses more than just talks and lectures, however. The LOC has also been busy working on STEM programming, creating a comprehensive public day experience, vetting potential tours for attendees, and other details related to an extraordinary attendee experience. Of particular priority to the LOC is engaging with our U.S. government leaders—both in the administration and on Capitol Hill—to encourage

them to attend IAC 2019 and experience what the domestic and international space communities have to offer. The LOC, working with many of our sister space societies, has established a summer outreach program to build excitement and educate members of Congress and their staffs about current events in space, providing a preview of what they can expect to see at the IAC in October. We are looking forward to hosting many of them at a reception in the Exhibit Hall and on personal VIP tours of the hall where they can experience our industry first hand.

5 The Host Plenary will focus on the next 50 years in human spaceflight. As IAC 2019 Host, could you tell us more about this particular plenary?

Using a 50-year perspective of how far human engagement in space has progressed, the host plenary will focus on and discuss what the next 50 years will bring. The number of countries, companies and universities conducting activities in space is at an all-time high and only increasing. As more and more people globally engage in space we will have many challenges to address and new opportunities to pursue, limited only by our imagination. The panel will explore both the challenges and opportunities as we embark on realizing the “promise of the future.”

6 What legacy do you wish to see IAC 2019 leave in the space sector?

The first steps of humans on the moon inspired the whole world and the global space community has made incredible progress since that moment 50 years ago. What started as a fierce competition between two countries has evolved into an international collaborative effort. Today the space sector is continuing its evolution as new entrants engage in space activities. At IAC 2019 we hope that the community can take a moment to step back and acknowledge how far we have come as a species and then, collectively, look at where we are heading for the next 50 years. At no time in history has the breadth and depth of engagement in space been so comprehensive. By showcasing the many activities ongoing in research, design, development, and operations that space human and robotic exploration we want to excite the global community about what is possible. We hope that all attendees leave with a sense of motivation, imagination, and energy to realize the “promise of the future” the event is highlighting.



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Connecting @ll Space People

The next newsletter will be issued in September 2019