



International Astronautical Federation **News**

Connecting Space People

1/2014 (March 2014)



President's Welcome

"Dear colleagues,

Welcome to the March 2014 IAF newsletter. This edition focuses on the busy calendar of IAF events taking place over the next 3 months, starting this week with the Spring Meetings. I hope to see many of you in Paris for a productive week organising the IAC, and benefitting from exciting events like the Global Networking Forum on Commercial Spaceflight.

The call for abstracts for IAC 2014 in Toronto has now closed, and it is another record-breaking year. We received 3537 abstracts from 74 countries, the highest number

ever, making this officially the most international IAC to date. We are also delighted at the strong interest shown in hosting IAC 2017, and we have received 5 letters of intent.

The main event before IAC 2014 will be the IAF's Global Space Applications Conference (GLAC), taking place from 2 – 4 June in Paris. The conference is jointly organised with UNESCO and features plenaries with heads of space agencies, industry, and 15 different technical sessions. Read more about GLAC in the pages ahead!

To end our newsletter we have an interview with the Executive Secretary of the International Oceanographic Commission, Dr Wendy Watson-Wright. Dr Watson-Wright kindly gave us her thoughts on climate change issues that will be on the agenda at GLAC.

The next IAF newsletter will be published in June and will bring our members' news as usual, and important updates on IAC preparations.

Best wishes for the spring."

Kiyoshi Higuchi
President

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INTERVIEW

with **Wendy Watson-Wright**, *Executive Secretary of the International Oceanographic Commission (IOC)*

IN MEMORIAM: Dr Vladimir Kopal

LATEST IAF PUBLICATIONS:

- [Updated IAC 2014 Call for Papers](#)
- [IAC 2014 Brochure](#)
- [GLAC and IAC Sponsorship Kits](#)

IMPORTANT DEADLINES:

- Deadline for submission of proposals to host IAC 2017 – **25 April**
- Deadline for nomination of IAF Officers – **beginning September 2014 - exact date tbc**
- Deadline for call for applications for the Chair of Distinguished award subcommittee – **19 May**
- Deadline for GLAC registration – **1 June**
- Deadline for submission of nominations for the 2014 IAF Hall of Fame – **TBC**



<http://www.iafastro.org/index.php/membership>

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International Astronautical Federation

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Spring Meetings

The annual IAF Spring Meetings are taking place this week at the CAP-15 Conference Centre in Paris. The Spring Meetings allow the IAF's network of scientific and technical experts to get together once a year and organise key aspects of the upcoming IAC. Administrative and Technical Committees meet, and the International Programme Committee selects the abstracts to be presented during the year's IAC.

Additionally the bureau meets, and there are side events. This year the Global Networking Forum (GNF) will hold an event on Commercial Spaceflight, with 2 panel sessions featuring industry leaders and space agency representatives. The programme is [on the IAF's website](#), and a full list of all the sessions at the Spring Meetings is [available here](#).



There will also be the Awards Ceremony of Women in Aerospace Europe (WIA-E) at 13:00 on 18 March – This will be broadcast by Google hangout for those of you unable to join us. Lastly there will be the signing of new agreements between HESpace, the SGAC and the IAF, which you will be able to read about on the IAF's website and social media.

GLAC 2014



A highlight of 2014 for the IAF community is the Global Space Applications Conference (GLAC) from 2 – 4 June. This event is being organised with UNESCO, at their headquarters in Paris. The conference will feature 15 different technical sessions related to different aspects of space applications and space-based services, including integrated satellite applications, remote sensing, mobile telecommunications and positioning, and satellites for disaster response.

There are also 4 high-level plenaries featuring speakers from industry and space agencies. This includes a session on space systems for understanding and monitoring climate change, one with industry leaders on challenges for the space-based services market, and another on the role of governmental agencies in developing space-based services. There are also a host of networking opportunities at the social events, cocktails and side-events planned.

Registration is highly competitively priced, and students can attend for only 70 euros for the full 3 days. To register go to <http://www.glac2014.org>

Emerging Space Leaders (ESL) Grant Programme

The 2014 Emerging Space Leaders Grant Programme promises to be very successful this year. Up to 14 students and young professionals will receive a grant to attend the next IAC in Toronto, Canada. We inaugurated a new online application and selection platform. 109 complete applications were received by 5 February 2014. The selection is currently being made and will be announced on 30 April.

IAF Awards

The Honours and Awards Committee, in Beijing, has reviewed and endorsed the terms of reference for the IAF Hall of Fame subcommittee; and, out of the three nominations received for the Chair, unanimously recommended Dr. Pierre Bescond to be the first Chair of this subcommittee.

Calls for nominations for the different awards were opened, and until 12 February we received:

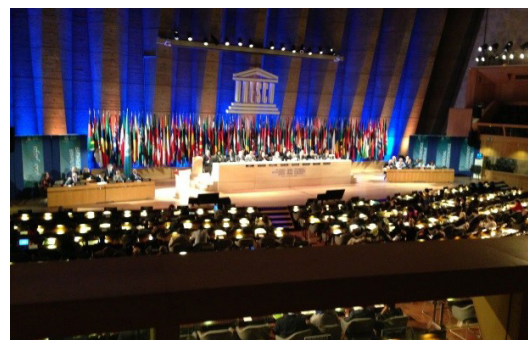
- 3 nominations for the World Space Award
- 5 nominations for the Allan D. Emil Memorial Award
- 8 nominations for the Frank J. Malina Astronautics Medal
- 16 nominations for the Young Space Leaders Recognition Programme

The selection of 2014 awardees will be made during the Spring Meetings and announced in April.

Recent Activities

At the end of October 2013 the IAF Executive Director and Project Manager Giulia Maria Berardi travelled to Washington DC where the Boston Consulting Group (BCG) presented the results of their detailed **IAF Membership Development Study**. This visit to Washington DC was also used to hold meetings with Boeing and other prominent IAF member organisations in the framework of the Industry Relations Committee, including Lockheed Martin who generously financed the BCG study.

In **November 2013** the IAF Executive Director represented the IAF at the **UNESCO General Meeting** at UNESCO Headquarters in Paris. On 9 November 2013 he gave a statement informing UNESCO delegations of the activities of the Federation, and specifically the upcoming Global Space Applications Conference (GLAC) jointly organized with UNESCO.



From **3 – 6 December 2013**, the IAF Executive Director attended the **20th Session of the Asia-Pacific Regional Space Agency Forum (APRSF-20) in Hanoi, Vietnam**. The Asia-Pacific Regional Space Agency Forum (APRSF) was established in 1993 to enhance space activities in the Asia-Pacific region. Space agencies, governmental bodies, and international organisations, as well as companies, universities and research institutes from over 30 regional participants take part in APRSAF. A presentation was given by the IAF Executive Director on the work and growth of the Federation, with a particular focus on the regional group and new members in Asia-Pacific.



On **9th - 10th January 2014** the IAF was represented by the Executive Director at the **IAA Exploration Conference and Heads of Agencies Summit** in **Washington DC**. This opportunity was used to meet with IAF member organization representatives, and to promote participation in the IAC-2014 in Toronto and in the Global Space Applications Conference GLAC in Paris.



On **15th January 2014**, the IAF officially gained the status of **Participating Organisation of the Group on Earth Observations (GEO)**, which was officially accepted at the Group's 10th Plenary Session in Geneva. IAF President Kiyoshi Higuchi addressed the Plenary, saying that "the IAF and the GEO share a common mission: To foster dialogue between scientists and policy-makers and to support global cooperation". The IAF also organised a side-event entitled "Opportunities in Global Space Applications: The IAF and GEOSS". This included panellists from NASA, the Canadian and European Space Agencies, SANSA and UNCOUOS. The IAF delegation also met with top management of NOAA, WMO, EUMETSAT and ESA.

Check for more news on our Social Media





This was followed by the **IAC 2014 Site Visit to Toronto in January**, where the IAF team clarified important requirements for the IAC, and agreed milestones for the run-up to IAC 2014.



Following an invitation by the Israel Space Agency, the IAF Executive Director represented the Federation at the **9th Annual International Ilan Ramon Space Conference, in Tel Aviv, Israel from 29th – 30th January**. Meetings with representatives of the IAC-2015 LOC, IAF member organisations and potential members were held. The opportunity was also used to promote participation in GLAC-2014 in Paris.

On **10th – 11th February 2014** the IAF attended the **51st Scientific and Technical Subcommittee of the United Nations Committee**

on the Peaceful Uses of Outer Space (UNCOPUOS), held in Vienna. Present were the Vice-President for Outreach and Societies, Andrea Boese, who also gave the IAF statement on behalf of the IAF President, the Vice-President for Financial Matters, Jan Kolar, and the Executive Director. At that occasion a UN/IAF Workshop preparatory meeting was also held.



On **13th February**, the IAF President met with **UNESCO Director-General Irina Bokova**, and discussed the upcoming jointly organized Global Space applications Conference (GLAC) as well as aspects of cooperation between the two organisations.

The Federation was also represented at the **Robert H. Goddard Memorial Symposium** in Maryland from **4th – 6th March**. IAF Vice President for Youth and Workforce Development Activities, Lyn Wigbels, and former IAF President Jim Zimmerman were symposium organisers.



Prospective Activities March – September 2014

From 18th – 21st March the IAF will hold its traditional **Spring Meetings** in Paris. The main purpose of the meeting is the selection of abstracts for IAC-2014, committee meetings including 2 sessions of the IAF Bureau, a Global Networking Forum event on “Commercial Spaceflight” and the traditional IAF cocktail.

The IAF will be again be present at the **30th National Space Symposium** that will be held from 19th – 22nd May 2014 in Colorado Springs. A potential IAF event promoting both the IAC and membership development is currently under discussion.

The Federation will also actively participate in the **ILA Berlin Air Show 2014 - International Aerospace Exhibition and Conferences**, held from 20th – 25th May 2014.

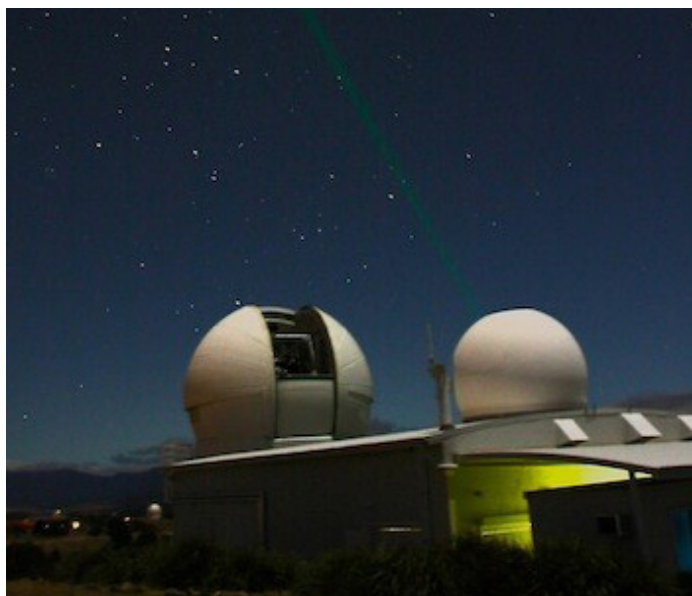
From 2nd – 4th June, the **Global Space Applications Conference (GLAC)** will take place at UNESCO Headquarters in Paris. In addition to a rich technical programme the conference will feature 4 high-level plenaries; an opening plenary, one on “Space-Based Services: a Challenging Market”, another on “Space systems for understanding and monitoring climate change”, and finally “The role of governmental agencies in developing space-based services.”

Following GLAC, the Federation will also be represented at the **57th session of the UN Committee on the Peaceful Uses of Outer Space (UNCOPUOS)** which will take place from 11th – 20th June 2014 in Vienna.

From 29th September to 3rd October 2014 the **IAC-2014** will take place in Toronto.

The TU Delft are planning to host the International Workshop on Constellations and Formation Flying (IWSCFF), a workshop organized by the IAF Astrodynamics committee (C1), 2015 in Delft, The Netherlands.

The Australian National University and RMIT Help Clean Up Space Junk



Australian IAF members, The Australian National University (ANU) and RMIT University, will play a lead role in cleaning up space junk, as part of a new Cooperative Research Centre (CRC) for Space Environment Management.

An Australian Commonwealth grant of \$20 million over five years will supplement \$40 million of private investment from the CRC participants, to improve predictions of space debris orbits, and to predict and monitor potential collisions in space. This information will initially be applied to reduce collisions, and ultimately to reduce the debris population.

The CRC research team is made up of leaders from the space industry, academia and international agencies, including:

- The Australian National University [Australia]
- RMIT [Australia]
- EOS Space Systems [Australia]
- Optus [Australia]
- Lockheed Martin [USA]
- NASA Ames Research Center [USA]
- The National Institute of Information and Communications Technology [Japan]

The CRC research will be largely focussed at Mount Stromlo Observatory in Australia, where a series of Australian government-university-industry programs have led to major breakthroughs in space debris tracking over the past decade.

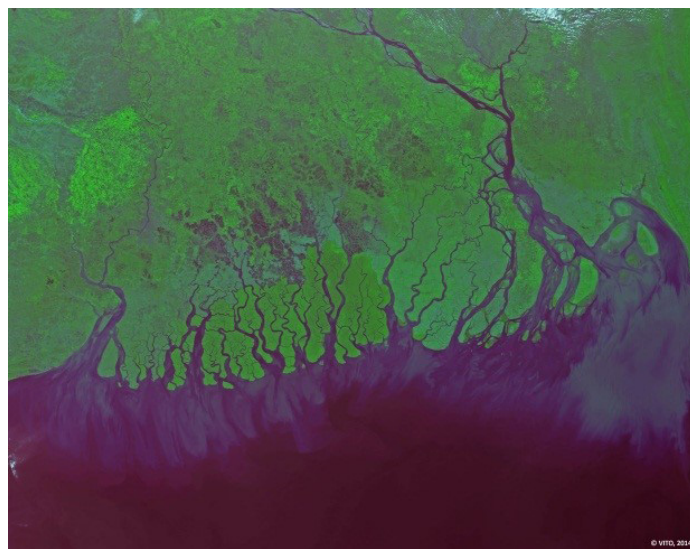
VITO NV

Micro-satellite PROBA-V on cruising speed to 100 m resolution products?

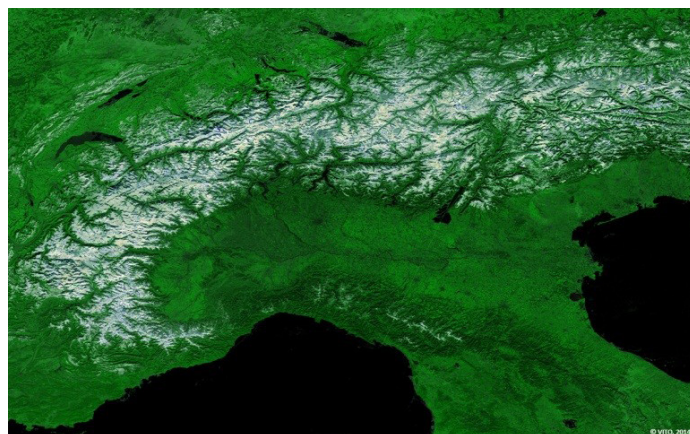
More than 5000 images, 75 daily global syntheses and almost a dozen 10-daily global syntheses: This is the harvest so far of the PROBA-V mission. Just 2 months in operations and already numerous science teams spread all over the globe are using the PROBA-V products.

The success can be explained by the improved spatial resolution offered by PROBA-V. The micro-satellite offers a daily global coverage at 333 m. The good shape of PROBA-V and impressive 333 m images lead to ambition towards global products with 100 m resolution. This is possible thanks to the central camera that has an even higher spatial resolution.

Our ambition is to add these 100 m products to the PROBA-V operational product chain. Before realizing this we do need to make some analyses first. **We hereby invite interested research teams that would like to join us to please contact VITO as soon as possible.**



PROBA-V - Mouth of Ganges- 100 m resolution



PROBA-V - Alps - 333m resolution

VNREDSat-1b

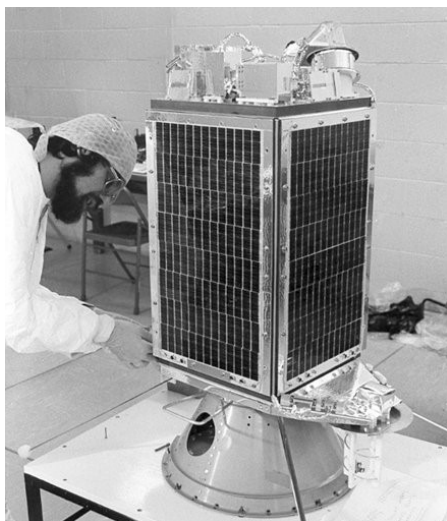
The success of the PROBA platform already lead to a new mission, the Vietnamese hyperspectral VNREDSat-1b, that will be coordinated by the Vietnam Academy of Science and Technology and the Belgian company Spacebel. Next to Spacebel, the consortium consists of PROBA-V's prime contractor QinetiQ Space, opto-mechanical manufacturer Amos, the Centre Spatial de Liège, and VITO as developer of the processing chain.

Surrey Satellite Technology Ltd

UoSAT-2 clocks up an outstanding 30 years of in-orbit

Surrey Satellite Technology Ltd and the Surrey Space Centre are celebrating a remarkable thirty years of in-orbit operations from one of its earliest satellites, UoSAT-2, which was launched on a Delta rocket on 1st March 1984 from the Vandenberg Air Force Base in the USA.

UoSAT-2, the second satellite in a long history of 41 missions launched by SSTL to date, has always held a special significance and has remained a constant in the company's evolution from University spin-off to world-leading small satellite manufacturer.



Today, UoSAT-2 still transmits its VHF telemetry on a regular 11-day cycle and the on-board real-time clock still tells the time although running somewhat late! The satellite's batteries are exhausted after some 160,000 charge cycles, and transmissions are now detectable only when it is sunlight, but the telemetry continues to be tracked by amateur radio satellite enthusiasts (AMSAT) worldwide – using the predictable transmissions to help calibrate their equipment. Following the successful first microsatellite launch of UoSAT-1 from the Surrey team in 1981, NASA again offered a second launch opportunity – but with only 6 months warning! Rising to the challenge and literally working day-and-night, the Surrey team comprising about a dozen researchers and AMSAT members designed and built the 70 kg UoSAT-2 microsatellite just in time for the launch as 'piggyback'

passenger with NASA's LANDSAT-5. Incorporating many of the lessons learned from the first satellite, UoSAT-2 carries some novel experiments – a "Digitalker" speech synthesizer, specifically designed magnetometers, an early CCD camera, a Geiger tube and a sensitive microphone to detect micro-meteoroid impacts.

In the days before GPS, UoSAT-2 provided a novel communication system for the 1988 Canadian-Society Ski-trek Arctic expedition, a group of intrepid explorers from Canada and the USSR who crossed the Arctic Ocean from Siberia to Ward Hunt Island, just off Canada, via the North Pole between March and June 1988.

The position of the skiers' emergency beacon was calculated daily by US and Soviet COSPAS-SARSAT ground stations, relayed to the Surrey Mission Control group station by telex, and uploaded to the UoSAT-2 Digitalker which then 'spoke' the latitude and longitude of the ski party via its VHF beacon. In a sun-synchronous, 650km low Earth orbit, UoSAT-2 flew over the pole every 98 minutes at which point the group could receive the broadcast from the satellite using this small handheld VHF radio that was designed to work at very low temperatures. There's more about the Ski-trek expedition, and a recording of the Digitalker, on the expedition home page at <http://meetman.fsnet.co.uk/NorthPole/textpan.html>

UoSAT-2 was one of the first satellites to prove that commercial grade microprocessors and memory chips, which had only just become readily available, mass produced and cheaper in the early 80s as part of the microcomputer revolution, could be used to build small, cost-effective yet capable satellites. SSTL proved the concept was viable and has gone on to build a highly successful business with over £500m of export orders currently going through its technical facility in the UK – including the 22 satellite navigation payloads for Europe's Galileo system.

Today, UoSAT-2 is the longest-serving of 13 satellites that SSTL and Surrey Space Centre track from groundstations in Guilford, UK.

IAF and HE Space Children's Foundation join forces





The HE Space Children's Foundation (HESCF), founded in 2009, has the goal "to raise up an astronaut". CEO of HE Space, Claudia Kessler, explains: "Education is as important as food, for each and every person in society. As an employer of 152 highly educated engineers and technicians from the European high-technology space business we are convinced that every lost chance for education in the world has a negative impact for future society."

With this in mind IAF and HESCF signed an agreement that HESCF will provide funding to send two extra students to the IAC. This will offer an opportunity to students from developing countries in the frame of the Emerging Space Leaders Grant Programme to participate in the annual International Astronautical Congress (IAC). At the IAC they will hear about space developments all over the world and be able to start their network. Successful applicants will be expected to present at least one paper (orally or in interactive/poster format), and/or to participate as panellist or backup panellist in the Youth Next Generation Plenary.



HE Space
children's foundation
"...to raise up an astronaut"

Space Generation Advisory Council (SGAC)

SGAC has been very active since the beginning of the year. Among the many news shared in our website these months, the release of the Executive Summary of the Annual Report is one of our main highlights. We invite all IAF members to read all the achievements of the SGAC in 2013, and how all young professionals and students from all around the world benefitted from them, and contributed to the space sector, freely to download [here](#).

Another big milestone already achieved in 2014 was the participation at the 51st Scientific and Technical Subcommittee of the United Nations Committee On Peaceful Uses of Outer Space (COPUOS), where SGAC represented the young professionals and students by participating in meetings, reading the statement, as well as presenting the outcomes of the last Space Generation Congress 2014. You are welcomed to read and see more about our participation, [here](#).



From left to right: Chris Vasko (SGAC Co.Chair), Luisa Carbone (Italy), Chris Johnson (USA), Yasushi Horikawa (UNCOPUOS Chairman), Andrea Jaime (SGAC Executive Director) and Vojna Ngjeqari (Albania) at the UNCOPUOS in Vienna, Austria.

And finally SGAC published a great historic collection of the past 12 Space Generation Congresses, held all of them in conjunction with the IAC. A great piece of history that includes many current space leaders that were one day young professionals or students at SGAC. Read it all, [here](#).

SGAC also announced:

Upcoming Events

Space Generation Fusion Forum 2014
– 18 & 19 May, Colorado Springs, USA. Registrations are opened, with a unique discount to attend the 30th Space Symposium. More information, [here](#).



More Opportunities for Young Professionals and Students Study a master in Beihang University (Beijing, China) with a full academic scholarship! More information, [here](#).

Vacancies opened to lead some of the SGAC Project Groups! More information, [here](#).

The Space Foundation



Widely known as the most important worldwide space industry conference, the Space Foundation's Space Symposium (formerly the National Space Symposium) annually attracts more than 9,000 participants. With more international participation than ever, this year's 30th Space Symposium will be held May 19-22 at the five-star, five-diamond Broadmoor Hotel in Colorado Springs, Colo., USA.

The more than 100 speakers and panelists represent top space decision makers from civil, military, commercial and academic organizations from around the globe. To honor its global guests, representing more than 20 countries, the Space Foundation will host a by-invitation international reception on Wednesday, May 21, providing an additional opportunity for networking.

The Space Symposium's dynamic Boeing Exhibit Center will feature more than 160 displays of the world's latest space technology, products and services, including international exhibitors from Austria, Canada, Denmark, France, Germany, Japan, Luxemburg, Scotland, Sweden, Switzerland and the United Kingdom.

Founded in 1983, the Space Foundation is the foremost advocate for all sectors of space, and is a global, nonprofit leader in space awareness activities, educational programs and major industry events.

Visit www.SpaceSymposium.org.

University of North Dakota



The Department of Space Studies, John D. Odegard School of Aerospace Sciences, University of North Dakota (UND), received the prestigious **"UND Foundation/Thomas J. Clifford Award for Departmental Excellence in Teaching"** at the yearly Founders Day 2014 Banquet on the UND campus on February 27th.

The Department of Space Studies offers a premier online and campus-based graduate program in the field of space

studies. The Space Studies MSc degree offered since 1987 is a leading inter-disciplinary program in the world, combining space physical science, space life science, space engineering, space policy and law, space business and economics, and space history. The popular online program is ideally suited for early and mid-level space professionals who wish to enhance their career opportunities in the space arena. The program features internationally and nationally recognized faculty with degrees in science, engineering, commerce, history, policy, law, and medicine. Dr. Mike Gaffey has the rare honor of being awarded both the Leonard Medal and the G. K. Gilbert award in 2008, for his outstanding contributions to the fields of planetary geology and the science of meteoritics.

A PhD program in Aerospace Sciences is also available. Visit space.edu for more information about these degrees.

QinetiQ Space nv

QinetiQ Space nv

Belgian consortium signs contract to build Vietnamese earth observation satellite

In January QinetiQ announced that, as part of a Belgian consortium, it has agreed to build a satellite for the Vietnamese Government, following the signing of a contract agreement with the Vietnam Academy of Science and Technology (VAST). The contract comprises a total package for building and supplying a complete satellite infrastructure in Vietnam.

QinetiQ will be responsible for the design and construction of the satellite, while consortium partners will deliver ground station and test facilities, the training of Vietnamese partners and the operation of the satellite for one year. The Vietnamese satellite has been given the name VNREDSat-1B (Vietnam Resource, Environment & Disaster Monitoring Satellite). The earth observation satellite will be similar to the Proba-V satellite built by QinetiQ for the European Space Agency that was launched in 2013 and is currently mapping worldwide vegetation.

The Vietnamese government wants to deploy the satellite for extensive monitoring of its agriculture.

Vietnam's economy relies heavily on its natural resources, so proceeds from crop cultivation and water management are particularly important factors for shaping the country's agricultural policy. The satellite will enable the country to make independent forecasts based on observations of its territory and surrounding environments from space. Sanjay Razdan, Managing Director of New Technologies at QinetiQ added. "We are excited to deliver a QinetiQ earth observation satellite to Vietnam. This marks the first step towards growing our international satellite business."

SpaceLand

Our universe and our life exist thanks to gravity, from aggregation of matter to star and galaxies formation. Microgravity flights generate a new laboratory tool to best analyze most natural phenomena by increasing, dimming or switching on or off the effects of gravitational forces: this gives critical inspiration to untold numbers of entrepreneurs, inventors, ordinary citizens and entire new industries and research communities, contributing to that drastic advancement of science, biomedicine, technology and "space awareness" that only the weightless environment can support.



As demonstrated with its world's youngest (11-year-old) and world's oldest (93-year-old, see photo) men and the first 100% disabled woman flying for microgravity research activities (some commissioned by Nobel-Prize-winner's research group), the SpaceLand program has dropped the cost of microgravity educational and research flights to a very affordable cost.

The European Science Foundation, Italy's Astrophysics Institute and Torino's Astronomic Observatory have invited Doct. Carlo Viberti to hold a key-lecture as final event of the Gaia Congress in Torino's University to present the SpaceLand upcoming weightless and Mars-gravity flight campaigns open to the public and to science researchers and technology innovators, with training on May 24 and 25 at the SpaceLand Camp in Belgium. IAF members and affiliates are very welcome: **March 26, at 15.30 hrs, at the University of Torino in via Po.**

Info on: www.SpaceLand.it

Johns Hopkins Applied Physics Laboratory (APL)

Dr. Michael Ryschkewitsch, former chief engineer at NASA, has been named head of the Space Sector at the Johns Hopkins Applied Physics Laboratory (APL) in Laurel, Md. A highly regarded expert within the space science and engineering community, Ryschkewitsch was responsible for the technical readiness of all NASA programs. He previously served as the deputy director for NASA's Goddard Space Flight Center and director of Goddard's Applied Engineering and Technology Directorate.

APL has built and launched nearly 70 spacecraft for NASA and other U.S. agencies. Currently, the Lab is building the Solar Probe Plus mission for NASA, and continues to operate MESSENGER at Mercury and guide New Horizons on course to encounter Pluto in July 2015. The Lab is also constructing several instruments for ESA's JUICE mission.

"We are pleased to welcome Mike to APL and the Johns Hopkins community," said Ralph Semmel, APL director. "He brings to our organization a unique blend of dynamic leadership, deep technical expertise, and significant experience managing large, complex space programs."

Dr. John Sommerer stepped down as head of Space in December 2013.

EUMETSAT



We are pleased to announce the Symposium "**Climate Research and Earth Observation from Space**", to be held on 13-17 October 2014, in Darmstadt, Germany. The Climate Symposium 2014 is organised by WCRP, together with EUMETSAT and with the support of the EC, ESA and other partners.

Satellite observations are a key element in an integrated and sustained climate observing system and have been critically important for monitoring and understanding the Earth's climate system during the past several decades. The expected completion of the IPCC Fifth Assessment (AR5) in 2013-2014 makes it timely to discuss these achievements, to assess future opportunities and challenges with satellite derived climate information, and to provide guidance on future priorities.

The symposium will be an important step towards defining requirements, and the further development of an efficient and sustained international space-based Earth observing system. This symposium is intended to bring together the international experts in climate observations, research, analysis and modelling to present and discuss results from their studies, with a particular emphasis on the role of space-based Earth observations in improving our knowledge of the current climate at global and regional scales, and in the assessment of models used for climate projections.

For more information please visit our website: www.theclimatesymposium2014.com

Czech Space Alliance (CSA)

Czech Space Alliance (CSA), the association of 14 companies, is deepening its expertise through the last ESA open call for tenders restricted to the Czech Republic. At the end of 2014, the 2009-2014 Czech ESA industry incentive scheme will end, and the industry will have few options but to face ESA wide competition. We are proud to say that our members have already scored 35 wins in international tenders, some with partners from other ESA states.

Following the fulfillment of the goals set out in the National Space Plan, adopted by the government in 2011, the alliance is again participating in drafting the new National Space Plan. The process runs under the leadership of the Ministry of Transport, and in cooperation with ESA and all government and other entities with space interests. The Coordination council of the Minister of Transport for Space Activities is our de facto space agency. The creation of an independent space agency is a major goal of the coordination council. We trust that the recently installed government will appreciate the high value of participation in international space projects and will approve the proposal for the creation of the agency to be submitted by the Ministry of Transport.

Turkish Aerospace Industries, Inc. (TAI)

GÖKTÜRK 3: TURKEY'S FIRST SAR SATELLITE DEVELOPMENT PROGRAMME STARTS

Turkish Aerospace Industries, Inc. (TAI) gained critical acquisitions on space specific engineering capabilities through GÖKTÜRK-1, GÖKTÜRK-2, subsystem development projects and AIT Center infrastructure. TAI keeps activities on assessment of this accumulation for developing further Electro-Optic, Synthetic Aperture Radar (SAR) and Communication Satellites with support of national institutes and industries.



After the successful deployment of GÖKTÜRK-2 Satellite in 2012, Turkey's second step on indigenous development of high resolution remote sensing satellites is being taken by GÖKTÜRK-3 SAR Satellite Programme. The main intention with GÖKTÜRK-3 Satellite is to fulfil the Turkish Air Forces reconnaissance requirements on synthetic aperture radar imagery and serve for radar remote sensing civil applications.

GÖKTÜRK-3 Satellite System Preliminary Design Phase Contract has been signed between TAI and SSM at the ceremony in Istanbul IDEF-2013 Exhibition on 08 May 2013. TAI has been declared as Prime Contractor for GÖKTÜRK-3 Satellite System Preliminary Design Phase (28 months). After the Preliminary Design phase, with the consecutive development activities the satellite is planned to be launched in 2019.

Mitsubishi Electric Successfully Launches TURKSAT-4A Satellite



©International Launch Services

Launch of TURKSAT-4A

Mitsubishi Electric Corporation announced today it has successfully launched the TURKSAT-4A satellite under a turnkey

contract awarded by Turksat Satellite Communication, Cable TV and Operation Inc. Co. (Turksat A.S.) in March 2011. TURKSAT-4A was launched from the Baikonur Cosmodrome in Kazakhstan at 06:09 on February 15 (Japan time) and the satellite separated from the launch vehicle at 15:22.



TURKSAT-4A

TURKSAT-4A will use its own power for positioning in geostationary orbit about 36,000 kilometers above the equator. Mitsubishi Electric will continue conducting in-orbit testing until the middle of March before its final handover to Turksat A.S. In addition to TURKSAT-4A, Mitsubishi Electric will further its contribution to Turkey's communications and broadcasting infrastructure with the additional launch of TURKSAT-4B this year, as well as other satellite programs planned in the future.

SiriusXM Announces Sirius FM-6 Satellite Has Been Successfully Placed in Orbit and Declared Ready for Service

SiriusXM announced in December that Sirius FM-6, the newest addition to its satellite fleet, had been successfully placed in orbit and was declared ready for service. The new satellite, which was manufactured by Space Systems/Loral, is intended to help ensure SiriusXM's array of audio entertainment and data services are received by vehicles, receivers for home and business, as well as mobile devices. It will play an important role in bolstering the continuity of SiriusXM's service for years to come. Sirius FM-6 was launched October 25 from the Baikonur Cosmodrome in Kazakhstan aboard an International Launch Services (ILS) Proton. All orbit raising, deployments, and in-orbit tests are now successfully completed. The satellite will be situated at 116.15 degrees west longitude, over the western United States, and is designed to operate over North America.

"Sirius FM-6 will help ensure continuous and reliable delivery of service and will benefit current and future SiriusXM subscribers across North America," said Robert Briskman, Co-Founder and Technical Executive, SiriusXM. "The new satellite will bolster the reliability and longevity of our satellite fleet for many years to come. We congratulate our engineering team, Space Systems/Loral and International Launch Services on a successful launch and implementation."

About SiriusXM

Sirius XM Holdings Inc. is the world's largest radio broadcaster measured by revenue and has 25.6 million subscribers. SiriusXM programming is available through the SiriusXM Internet Radio App for smartphones and other connected devices as well as online at siriusxm.com. SiriusXM also provides premium traffic, weather, data and information services for subscribers in cars, trucks, RVs, boats and aircraft

Romanian Space Agency (ROSA)



The Ninth ESA-EUSC-JRC Image Information Mining Conference: The Sentinels Era, Bucharest, Romania

Between 5-7 March 2014, the Romanian Space Agency (ROSA) together with the University Politehnica Bucharest (UPB) hosted the Ninth ESA-EUSC-JRC Image Information Mining Conference: The Sentinels Era.

The 2014 edition of the conference took place in a context strongly influenced by the imminent arrival of the Copernicus Sentinel satellite data. The Sentinel era will start in April 2014 with the launch of the first Sentinel satellite, a system that will provide Synthetic Aperture Radar data for the next decade. The Sentinels missions will not only be a driver for economic growth, encouraging small and medium-sized enterprises to develop user-driven services, but they will also foster research and development activities on how to augment the usability of images and Earth Observation products for an increasing number of end user applications.

The main topics addressed at the conference were: image information mining and indexing models, multi-sensor and multi-temporal information extraction, automatic semantic annotation, ontologies and semantic web, database management

systems and visualisation tools, learning paradigms for very large data sets, spatio-temporal search engines, human-machine communication, knowledge discovery in databases.

To find out more about the event please visit:

<http://www.rosa.ro/index.php/en/communication/991-conferina-esa-eusc-jrc-2014-explorarea-i-extragerea-informaiei-din-imagini-satelitare-era-misiunilor-sentinels-bucureti-romania-5-7-martie-2014.html>

The conference is an annual event jointly organised by the European Space Agency, the European Union Satellite Centre and the Joint Research Centre.

The S. Korolev Space Museum presents the Association of Space Museums of Ukraine.

The non-governmental organization Association of Space Museums of Ukraine, a civil organization established on a voluntary basis, was founded on the 2 September 2013 following an initiative of the S. Korolev Space Museum and on its basis. There are nearly 30 aerospace museums and exhibitions in Ukraine, among them being school museums, museums at aerospace enterprises, aerospace exhibitions in local history museums or in museums of regional studies in several Ukrainian cities. As of today, some of them have already supported the initiative and applied for membership. The first General Meeting of Members will be held in 2014.

Further updates from the museum include:

On the 23rd January 2014 a new art exhibition opened in the museum. It goes under the name The Universe Nearby. The exhibition organized by the astronomy club ASTROPOLIS provides an exciting opportunity to see not only pictures of deep space objects, solar systems, astrolandscapes but once again to plunge into the infinity of space, feel the bond between humans and the Universe.



November was marked by events dedicated to 25 years of ambitious Energia Buran Program which though suspended was a remarkable achievement in the history of native science and technology. Zhitomir where the S. Korolev Space Museum is situated is the birthplace of the founder of practical cosmonautics, a genius that paved the way for all mankind into space - Sergei Korolev. Therefore, we will always remember and honor our history of space achievements.

The Rocket Research Institute



The Rocket Research Institute Inc., founded in 1943 at a time when space exploration was only a dream, has through its pioneering experiential educational, rocket safety, and research programs, evolved into today's non-profit educational advocacy consulting organization for space research and education. The RRI is staffed avocationally by engineering, space education, and safety professionals who volunteer their free time and services to participate in and guide the Institute's advocacy programs; space education and experiential science motivation projects; rocket safety research and training activities; educator workshops; and public seminars.

Their introductory document has been augmented to emphasize the Institute's continuing advocacy for space research and education. Any readers of the IAF Newsletter may obtain the full three pages by emailing a request to the Institute email: rri@rocketresearchinstitute.org

The IAF/IAA/IISL Advisory Committee on History Activities starts two new studies

During 2013 preparations for two new space historical studies were completed and the proposals accepted by the IAF Bureau for implementation in 2014 - 2015.

A study on "IAF and Its Member Societies - The First International Space Forum" will in detail analyse the impact of growth and interaction between the IAF and its member societies during the first two decades. The IAF membership grew in the period 1951-1970 to 57 members from most continents and a very vigorous contact among the members and with the Federation developed right from the very early years on. The propagation of space activities by promoting a dialogue on national and international space programmes, and the impact of such activities on the future path of national space programmes and international cooperation is to be analysed. The IAF and its members acted as a "space

forum" long before the term was becoming a natural element of doing business. The designated Study Manager is Dr. Hervé Moulin, who wrote the IAF history "IAF- the First 50 Years" in 2001.

The second study on "The History and Experience of the International Cospas-Sarsat Programme for Satellite-Aided Search and Rescue" will be performed under the study management of Dr. Daniel Levesque, former Director of the International Cospas-Sarsat Secretariat. This international programme is a little known but highly successful system that started in 1978 between Canada, France and the US, and extended to the then Soviet Union in 1979, at a time of "deep freeze" in the US-USSR relations. The setting up of this international cooperative effort at this particular time of the history of East-West relations required major efforts to prevent technology transfers and yet to define in sufficient detail the technical and

operational interfaces for the Sarsat (Canada-France-US) and COSPAS (Soviet Union) components to be one hundred per cent interoperable. The study will provide a full accounting of the history and experience of the International Cospas-Sarsat Programme, from its inception in 1979 until year 2009. Support will be given by the Cospas-Sarsat Secretariat.

The format and the reporting of the two studies are envisaged to be similar to that of the very first IAF/IAA/IISL ACHA study on "The International Geophysical Year - initiating international scientific space cooperation" performed by Steve Doyle in 2009-2012 and published by IAF in 2012. The set up of the two study teams and the conduct of the first steps of the approved study plans was discussed during the IPC week in Paris on March 18, 2014.

Space Security Committee

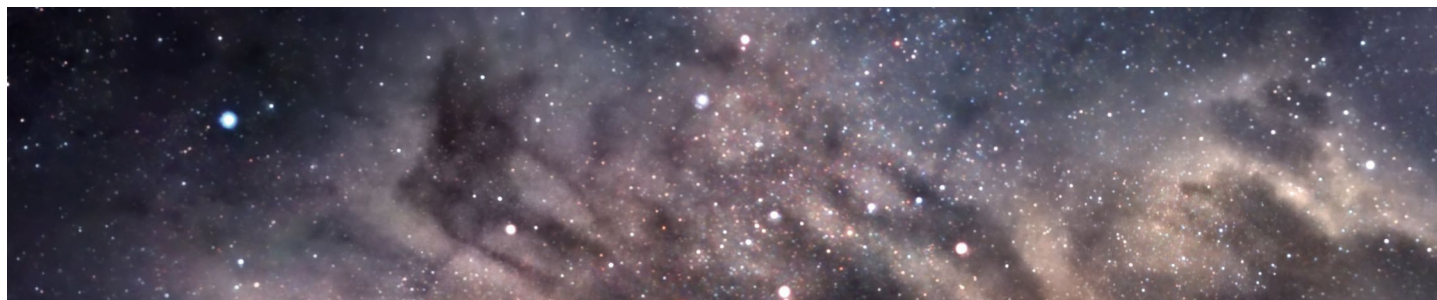
In light of the IPC Spring Meetings, the IAF Technical Committee on Space Security was convening in Paris on 18 March 2014, under the Chairmanship of Ms Charlotte Mathieu. The Committee, comprised of leading international space experts, reviewed its ongoing work regarding issues and challenges to the long term sustainability of space activities. In particular, the Committee discussed developments related to space debris, transparency and confidence building measures and

other initiatives for the promotion of safety and security in outer space. The Committee also discussed the preparation of the upcoming IACs and of the IAC session jointly held with the Space Debris Committee on Policy, Legal, Institutional and Economic Aspects of Space Debris Detection, Mitigation and Removal.

During the meeting, special emphasis was given to three multilateral initiatives, featuring presentations by international

experts: the final report of the UN Group of Governmental Experts (GGE) on TCBMs in Outer Space Activities, the status of the EU initiative for an International Code of Conduct for Outer Space Activities and the issue of broadcast interference.

The meeting was held in the Congress Centre Cap 15. Ms Mathieu was aided by new Committee Vice-Chair, Mr Brett Biddington, and new Secretary, Mr Daniel Porras.



Interview with Wendy Watson-Wright, Executive Secretary of the International Oceanographic Commission (IOC).

1. *“In which ways are space-based services helping us to understand and monitor the changes occurring to our oceans?”*

So much of the ocean is over the horizon, and inaccessible to direct observation. When the Intergovernmental Oceanographic Commission was formed more than fifty years ago, sea going oceanographers were confined to a view of the ocean which stretched barely 7 miles to the horizon. Now, satellite images of a wide variety of ocean properties, like ocean temperature, sea surface color and sea surface height, routinely reveal to scientists and the public an ocean of infinite variety, marked by swirls and colors driven by complex currents and eddies. We can see the warm tongue of water extending along the equator marking the El Nino, monitor upwelling along the coasts of California and Chile through chlorophyll color, or image a harmful algal bloom moving toward the beach. The ocean is no longer simply the uniform blue area on globes between the continents, but is appreciated for its complex role in our world’s climate and biosphere.



The most iconic image of Climate Change today is probably the time series of Arctic Ice Coverage built by satellites since 1978 and continued today with Cryosat-2. These images have shaped our understanding of the remarkable changes occurring in the Arctic Ocean and have spurred the public and government to support new initiatives for Polar Research.

In a less visually obvious way, satellite communications have transformed our ability to monitor the ocean. In just over one decade, the Argo array of over 3000 drifting profilers has returned more than a million Salinity and Temperature profiles, each one made possible by the ability to transmit data from the most remote parts of the ocean via satellite.

2. *“How does this improve on the accuracy and reliability of previous terrestrial methods?”*

There are many examples, but let me mention one of concern to IOC. As you know Sea level rise is one of the major indicators of climate change. The IOC for decades has coordinated the Global Sea Level Observing System of coastal monitoring stations, most of which now deliver data in real time, often by satellite connections. But coastal sea level measurements are notoriously difficult to interpret as measurements can be dominated by local geophysical changes. Satellite imagery and altimetry, when combined with coastal ground truthing has been used to map sea level change across whole ocean basins. With millimeter accurate altimetry data, effects of changes in local wind forcing can be accounted for and global sea level rise is accurately determined. Without satellites, coastal measurements would not be able to deliver this key index of climate change.

3. *“How can this understanding be used to slow damage to oceans and our environment more widely?”*

The slow damage to our ocean and environment will not be solved easily. Probably our most potent weapons in the struggle are information, knowledge and public awareness. Too often, solving problems which are over the horizon are postponed to another day. It is essential that the problems of the ocean be understood to be the problems of all humanity. The understanding that satellite imagery brings to the public discourse has been essential in raising the visibility of the ocean. Ocean problems are beginning to be addressed in the UN process for the UNFCCC and UN Conference on Sustainable Development. Satellite data and imagery were essential in making the case that the ocean is being impacted and will impact society. We hope the attention will now translate into action.

4. *“How can we help emerging economies who would benefit from such technology and data, access it more readily?”*

Emerging economies, including Small Island Developing States (SIDS), have an urgent need to monitor and manage their coastal waters and EEZ’s. Pollution, fisheries exploitation, sea level change and coastal hazards such as tsunamis and storm flooding have outsized impacts on these nations. Many have limited abilities to make direct observations and find great value in their ability to access satellite products which cover their territorial seas. The IOC has programmes which seek to develop the ability of SIDS to work with the advanced technologies and opportunities available from satellite services. Training and consistent maintenance of basic communication facilities are high priorities for these countries.

5. *“What are the socio-economic benefits of space-based services in relation to ocean research?”*

Going to sea in ships is still an extremely expensive way to do science. And a ship can only observe what is immediately below it. Satellite information has, from the beginnings of space imaging, filled in the areas between ship tracks, allowing extrapolations of on-board measurements to be made to wider areas of the ocean. On the other hand we recognize that in-situ measurements made

by those ships are essential to calibrating and ground truthing satellite data. Ocean research has grown with satellite technology but satellite products will always require those data that can be obtained only with a water bottle and ocean going laboratories.

6. “What is being done to enhance collaboration between observation, research and user communities?”

International collaboration is what the IOC is all about, in fact being articulated in our statutes where it says, “The purpose of the Commission is to promote international cooperation and to coordinate programmes in research, services and capacity-building...” The variety of sciences which come together to form oceanography have always required a high level of collaboration between researchers and observations. Today, society requires more from the oceanographic sciences. User communities are learning of the valuable products now available to help nations manage their marine resources. Satellite products are an important aspect of marine services and must be integrated into any Marine Spatial Planning programme or Ecosystem Based Management plan. The IOC, through its programmes such as the Global Ocean Observation System (GOOS) and the International Oceanographic Data and Information Exchange (IODE), responds to user community needs by assuring that marine observation and data systems are coordinated at a global scale and that gaps in our monitoring systems and understanding of the ocean are eliminated. Planning also involves the space based component of these systems. These IOC programmes help identify national and international needs and campaign for continuity in the mission of key satellite observation components.

Dr Wendy Watson-Wright
Executive Secretary, IOC
Assistant Director General, UNESCO



In memoriam – Dr Vladimir Kopal

It is with great sadness that the IAF and wider space community reflects on our colleague Dr Vladimir Kopal's passing.

Dr Kopal died on January 27th; his passing is a great loss both to the IAF and to the wider space community that will be felt keenly by all. He was deeply valued as the General Counsel of the IAF, Vice-President of the International Institute of Space Law (IISL) to whose formation and growth he was instrumental, and as a Member and Legal Counsel of the International Academy of Astronautics (IAA). His illustrious and lengthy career, and role as a pioneer of space law benefitted the worlds of academia, diplomacy, and all those interested in space law.

Dr Kopal was a member of numerous other foreign and international societies dealing with space matters and international law, and lectured on general international law, the law of international organizations, space law and the law of the sea at many international conferences and institutions. He is author of more than 250 monographs, articles and other papers.

Latterly Professor of International Law at the West Bohemian University in the Czech Republic, Dr Kopal served a long and successful term as delegate and twice as chairman of the Legal Subcommittee of the UN Committee on the Peaceful Uses of Outer Space (UNCOPUOS). He was Chairman of the COPUOS Legal Subcommittee from 1999 through 2003, and in 2008 was re-elected as Chairman of the Subcommittee for another biennium 2008-2009. He served as Principal Officer of the United Nations in New York and Secretary to the COPUOS Scientific and Technical Subcommittee, and from 1983 through 1988 as Chief of the UN Outer Space Affairs Divisions.

The awards received by Dr Kopal throughout his career were numerous. In 1988 the IAF presented him with its prestigious Allan D. Emil Award, for his dedication to the development of international cooperation in space activities for peaceful purposes. Dr Kopal also received a certificate of the IISL as distinguished author and participant in the development of international space law; a golden medal of the Czechoslovak Academy of Sciences for his contributions to the progressive development of international law; and a golden medal of the Hermann Oberth Society for the development of international cooperation in space activities.

Dr Kopal was a great asset to the space community; his extensive educational work leaves a rich legacy for future generations in space. More than anything we will remember him as a dynamic and talented friend, who was so well-liked by all fortunate enough to work with him.