Global Networking Forum

Meet.
Share.
Connect.

Programme - IAC 2015

12 – 16 October 2015

Jerusalem

IAF Global Networking Forum
66th IAC

Small Dulzin Room
ICC Congress Centre

ASTRONAUTICA AD PACEM HOMINUMQUE PROGRESSUM

2015 GNF Official Sponsors

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Monday, 12 October

15:00 - 15:15 GNF Opening

Message from the President of the International Astronautical Federation (IAF)

The motto 'Connecting Space People' is guiding the development of strategic activities of the IAF with the goal of fostering collaboration between space agencies, industry and research.
In line with the IAF's mission of promoting partnerships in the space community, of advancing international development, sharing knowledge and preparing the workforce of tomorrow, the Federation decided to create a global, comprehensive and appealing platform, targeting students, young professionals, experts, decision & policy makers and all actors that could contribute to the networking spirit of such a platform.
Hence, the Federation developed the concept of the IAF Global Networking Forum (GNF) and was proud to introduce it during the IAC 2012 in Naples. Given the IAF's diverse stakeholder portfolio, outreach activities of the Federation are tailored according to the respective needs. Not only at the IAC but also at the Spring Meetings, the GNF format is successfully used for involving stakeholders, weaving together requirements of different target groups and services offered by the IAF.

A special "thank you" has to be addressed to our late colleague and friend, Andrea Boese, without whom the creation and implementation of the GNF would have not been possible. She was heavily involved in the programme coordination and has always supported the initiative of our members to organize diverse and interesting discussions.

We are looking forward to welcoming you in Jerusalem among the active participants – either on the stage or in the audience. It is the interaction, the critical-constructive dialogue we want to foster through the IAF Global Networking Forum: ***Meet. Share. Connect.***

Kiyoshi Higuchi
IAF President
International Astronautical Federation

15:15 - 15:45 Heads of Agency Press Conference

The Heads of Agencies Press conference will give the audience (mainly press representatives) the opportunity to directly address the Heads of Agencies asking relevant and challenging questions.

Isaac Ben-Israel
Chairperson,
Israel Space Agency (ISA)
Israel

Charles Bolden
Administrator,
National Aeronautics and Space Administration (NASA),
United States

Xu Dazhe
Administrator,
China National Space Administration (CNSA)
China

Igor Komarov
Head,
Federal Space Agency (ROSCOSMOS)
Russian Federation

A.S. Kiran Kumar (Invited)
Chairman,
Indian Space Research Organisation (ISRO),India

Naoki Okumura
President,
Japan Aerospace Exploration Agency (JAXA), Japan

Johann-Dietrich Woerner
Director General,
European Space Agency, (ESA)

MODERATOR
Uli Bobinger
UV Media Production
Germany

16:30 – 17:15 NanoSat's Success: Innovative lessons for the entire Space Community

Over the past 15 years, nano-satellites have gone from a University curiosity, to highly capable systems with revolutionary potential. Standardization of launch interfaces and growing launch capacity has spurred development of affordable components and sub-systems leveraging rapid advances in the commercial electronics industry. Due to high volume, high yield production, these commercial parts have a proven record in low earth orbit of functioning reliably with smart system-level design principals. For years, the nano-satellite community has borrowed and tailored processes from the traditional aerospace industry. However, recent demonstrations of nano-satellite missions, and the approaches used to develop those spacecraft, have shown dramatic reductions in costs and schedules. This achievement is the result of comprehensive questioning of the traditional approaches relating to parts selection, sub-system and system designs, management approach, risk posture and risk reduction, mission assurance, environmental testing, and satellite operations. The affordability of nano-satellites is allowing for organizations to experiment with different approaches to these challenges in a way this historically risk averse industry never could. The industry as a whole stands to benefit from this experimentation, where large programs may adopt technology and processes originally vetted and proven out by the nano-satellite community.

Organized by:
Tyvak

Panelists:

Mengu Cho
Professor,
Department of Applied Science for Integrated System Engineering
Director,
Laboratory of Spacecraft Environment Interaction Engineering
Kyushu Institute of Technology,
Japan

Mengu Cho received the B.S. and M.S. degrees from the Department of Aeronautics, University of Tokyo, Tokyo, Japan, in 1985 and 1987, respectively, and the P.hD. degree from the Department of Aero/Astro, Massachusetts Institute of Technology, USA, in 1992. From 1992 to 1995, he was a research associate with Kobe University, Kobe, Japan. From 1995 to 1996, he was a Teaching Associates with International Space University, France. Since 1996, he had been with Kyushu Institute of Technology (KIT), Japan, where he was an Assistant Professor in 1996 and Associate Professor in 1997. Since 2004, He has been a Professor and also the Director of the Laboratory of Spacecraft Environment Interaction Engineering (LaSEINE) of KIT. He has been with the Department of Applied Science for Integrated system engineering since 2010. His research interest includes spacecraft environmental interaction, especially spacecraft charging and nano-satellite reliability. He has authored or co-authored more than 120 papers in peer reviewed journals.

David Korsmeyer,
Director of Engineering,
NASA Ames
United States

Dr. David Korsmeyer is the Director of Engineering at NASA Ames Research Center. He has over 50 technical publications and is active in the several professional organizations. Dr. Korsmeyer was the lead of the NEO (Near-earth Object) mission concepts study for NASA in 2006, directly supported President Obama's 2009 Human Space Flight Review, and he is an advocate for Small Spacecraft and Nanosats to support NASA missions. Dr. Korsmeyer received his B.S. in Aerospace Engineering from Penn State, his M.S. and Ph.D. from the University of Texas at Austin, and is a Sloan Fellow with a Master's in Business Management from the Stanford Graduate School of Business.

Giorgio Saccoccia
Head of Propulsion and Aerothermodynamics Division,
European Space Agency

Working experience:

1. May 1988 ÷ November 1990: Worked for two Italian companies in the field of Aircraft Engineering and Spacecraft Propulsion
2. December 1990 ÷ March 1997: Propulsion engineer at the European Space

Agency (ESA)

3. March 1997 ÷ January 2003: Head of Electric and Advanced Propulsion Section of ESA
4. February 2003 to date: Head of Propulsion and Aerothermodynamics Division of ESA

Other current significant tasks: ESA Technical Directorate representative in Exploration Coordination Committee Initiator and coordinator of European Exploration Technology Roadmaps

Noam Segal (Invited)
CEO,
ImageSat International
Israel

Marco Villa
President and COO,
Tyvak Nan-Satellite Systems Inc.
United States

Dr. Marco Villa grew up in Italy and developed an early passion for airplanes and spacecraft. After obtaining his private pilot license and serving in the Italian Parachutists Corp, Dr. Villa received his Bachelor's Degree in Aerospace Engineering in 1999 from Politecnico di Milano, Italy.
Throughout his career Dr. Villa has worked on some of the most advanced and cutting-edge programs in the industry, from technology demonstration satellites to leading commercial efforts, and he has developed a unique expertise that combines management, finance and technical knowledge. Following a brief stint as a structural analysis at Carlo Gavazzi Space in Milano, Italy, he moved to the United States and earned his Doctoral Degree in Aerospace Engineering in 2005 while also leading a small satellite development projects. Dr. Villa also earned his Master's Degree in Engineering Management while working as system engineer and project manager for Swales Aerospace and as a contractor for NASA and the Air Force. This period provided Dr. Villa with a broad understanding of spacecraft systems as he performed leading roles for many innovative small satellite and launch vehicle systems, including the Air Force sponsored TacSat 3 spacecraft and the Autonomous Flight Safety System.

In 2007, Dr. Villa joined Space Exploration Technologies (SpaceX), where he served as Director of Mission Operations, with direct responsibility over the definition and execution of the Dragon spacecraft's mission to the International Space Station. Dr. Villa was integral in the effort to secure and execute $2.5B in contracts for ISS cargo resupply and crewed Dragon development programs while also supporting the sales and business development department. Before leaving SpaceX in 2013, Dr. Villa played an important role in the on-going effort to develop the crewed version of the Dragon capsule, with responsibilities ranging from the definition of the overall concept of operations, to the establishment of the crew training methodology.

In 2010 Dr. Villa and Max Vozoff founded mv2space LLC, a Business Development, Strategy formulation and support services consultancy. Its clients include both start-ups and established companies in the government and commercial space domains, energy, automotive and digital media sectors. With mv2space, Mr. Villa brings deep experience in strategy formulation and implementation, program management and systems engineering, and has developed advanced financial modeling and analysis tools that, when customized for each client, form the basis for their business plans, strategies and priorities.

Dr. Villa currently serves as the President and COO of Tyvak Nan-Satellite Systems Inc. His responsibilities span from day-to-day management of the company, to direct the company strategic efforts, to acquisition and execution of all nanosatellite opportunities for government, commercial and university customers both nationally and internationally.

17:30 – 18:15 China Manned Space Program

The report briefly introduces the background of China Manned Space Program since 1992, and the achievements of 11 spaceflight missions, including 6 unmanned missions and 5 manned missions. It also gives a roadmap of building and operating China space station (CSS), the functions, utilizations and assembly schedule of station is also introduced. At last, the report will emphasize the international cooperation based on CSS, with the aim of bring benefits of the CSS to humanity.

Speaker:

Zhou Jianping
Chief Designer of China Manned Space Program,
China Manned Space Agency (CMSA)
China

Dr. Zhou Jianping, born in HuNan Province of China, in June 1957, got his mechanics bachelor degree from National University of Defense and Technology, in 1982; after obtaining mechanics master degree from Dalian University of Technology in 1984, he completed his studies in NUDT by 1989 and got mechanics PhD, meanwhile being assigned as associate professor of NUDT. From 1993 to 1995, as an associated professor, Dr. Zhou participated in the academic visitor program of University of Southern California, USA and finished his studies. In 1999, Dr. Zhou was assigned to be director of System division of China Manned Space Agency, and nominated as Chief designer of China Jiuquan Satellite Launch Center in 2002. In 2004, Dr. Zhou was promoted as Chief Designer of China Manned Space Program till now.

Organizer:
China Manned Space Agency

中国载人航天

中国载人航天工程办公室
CHINA MANNED SPACE AGENCY

Moderator:

Franco Bonacina
Director General's Spokesperson and Head of the Protocol Office Director General's Cabinet
European Space Agency (ESA)

Tuesday, 13 October

09:30 – 10:45 Climate and Earth Observation – Challenges and Possibilities of Satellite Missions

The World Climate Research Programme focuses on the following grand challenges:

- Regional Sea-level Change & Coastal Impacts
- Melting Ice & Global Consequences
- Changes in Water Availability
- Clouds, Circulation and Climate Sensitivity
- Understanding and Predicting Weather and Climate Extremes

Following the Global Climate Observing System initiative 50 essential climate variables have been identified which are technically and economically feasible for systematic observation. Earth observation by satellite borne remote sensing instruments represents the most important source of data and a variety of climate missions are worldwide serving this goal already. However, making maximum use of all these systems for climate research still results in further challenges: validation is one key requirement, optimized sampling in space and time another one. The IAC-panel will focus on corresponding questions: What are the still existing major deficiencies and what are present plans for future climate relevant missions.
Keynote presentations by worldwide acknowledged experts will path the way into a panel discussion on this challenging topic.

Organized by:
German Aerospace Center (DLR)

Panelists:

Hartmut Grassl
Former Director,
Max Planck Institute for Meteorology
Germany

Chu Ishida
Senior Chief Officer for Satellite Applications,
JAXA
Japan

Volker Liebig
Director Earth Observation,
European Space Agency (ESA)
Italy

Alberto Moreira
Director Microwaves and Radar Institute,
German Aerospace Center (DLR)
Germany

Piers J. Sellers
Deputy Director Science and Exploration Directorate,
Goddard Space Flight Cente, NASA
United States

Chair:

Hans-Joerg Dittus
Member of the Executive Board,
German Aerospace Center (DLR)
Germany

10:45 – 12:00 New Space Economy – the dawn of a new era or the next economic bubble?

New Space economy is the trend slogan of 2015. Recent developments in the international space community give the impression of drastic changes in the space world today: New players in commercial space activities, new concepts for utilization of space technologies, new private investments in space assets. Last not least the number of countries investing in space keeps increasing year after year. The question is whether there is really something called "new commercial space," or are we re-labeling and tweaking slightly the way we are doing what we have always done. If the answer is yes – and there are hints to follow that impression – then the role of space agencies might has to change as well, especially when governmental space budgets stagnate.

In this panel we will discuss with experts from four continents new approaches and new business models in space industry, opportunities for governmental and private newcomers in space as well as necessary answers by established space agencies around the globe.

Organized by:
German Aerospace Center (DLR)

Panelists:

John M. Horack
Vice President for Space Systems,
Teledyne Brown Engineering
United States

Sias Mostert
CEO,
Space Commercial Services
South Africa

Yuya Nakamura
President and CEO,
Axelspace Corporation
Japan

Tom Segert
Director of Business Development,
Berlin Space Technologies
Germany

Pete Worden
Chairman,
Breakthrough Prize Foundation
United States

Chair:

Gerd Gruppe
Member of the Executive Board,
German Aerospace Center (DLR)
Germany

12:15 – 13:00 ESA Director General Jan Woerner meets the Press

As of 1 July 2015 ESA has a new Director General: Jan Woerner. He took up duty at ESA Headquarters in Paris, France.

Prof. Woerner called for the continuation of ESA's ongoing programmes, projects and missions in cooperation with Member States, as well as preparing for ESA's future, among the many important tasks he has to fulfil.

Referring to this future as 'Space 4.0', Prof. Woerner considers that ESA has already started to enter this new phase, in which space has become a day-to-day business and in which interaction with society, the commercialisation of space, resulting new roles for industry and a fostered, cooperative relation with the European Commission all play important roles.

The ESA Council unanimously appointed Prof. Woerner on 18 December 2014 for a period of four years. Previously, he was Chairman of the Executive Board of the German Aerospace Center (DLR), from March 2007 to June 2015.

Organized by:
European Space Agency (ESA)

Speaker:

Johann-Dietrich Woerner
Director General,
European Space Agency
(ESA)

Johann-Dietrich 'Jan' Woerner became the ESA Director General on 1 July 2015.

Born in Kassel, Germany, in 1954, he studied civil engineering at the Technical University (TU) Berlin and TU Darmstadt, from where he graduated in 1985.
Until 1990, he worked for consulting civil engineers Koenig und Heunisch.

Back to TU Darmstadt in 1990 he was appointed as a professor of Civil Engineering and took over as Head of the Test and Research Institute.
He held the position of Dean of the newly established Civil Engineering Faculty and was elected as President of TU Darmstadt in 1995.
While at the helm of TU Darmstadt from 1995 to 2007, he succeeded in making it the first autonomous university of the Federal Republic of Germany.

Jan Woerner has been awarded numerous prizes and positions and received honorary doctorates from New York State University at Buffalo (USA), technical universities of Bucharest (Romania) and Mongolia, the Saint Petersburg University for Economics and Finance (Russia) and École Centrale de Lyon (France). He has also been awarded the honours of Knight of the French Légion d'Honneur.

Before joining ESA as Director General, Jan Woerner was Chairman of the Executive Board of the German Aerospace Center (DLR) and head of the German delegation to ESA from 2007 to 2015 and served as Chairman of the ESA Council from 2012 to 2014.

Moderator:

Franco Bonacina
Director General's Spokesperson and Head of the Protocol Office
Director General's Cabinet,
European Space Agency (ESA)

14:45 – 17:45 Vega Small Launcher: the best workhorse answer to your LEO needs

The workshop aims at describing the current success and the future potential of the VEGA small launcher. VEGA has been developed within the ESA programmatic frame in which Italy has played a leading role being the main financial contributor covering approximately 60% of the overall programme value.
In order to improve the Italian leadership in the programme and enhance the national technical competence at system level, the Italian Space Agency established with AVIO the company ELV (European Launch Vehicle) for the role of the launcher system Prime Contractor. The VEGA lightweight launcher was designed for launching small satellites into low earth orbit (LEO) mainly for scientific and Earth Observation applications. The maiden flight occurred in February 2012 putting into orbit the Italian Space Agency LARES scientific satellite; since then, other four launches have been successfully carried out for Europe. The second VEGA launch occurred in May 2013 using for the first time the flight programme GNC software (named FPS-A) developed by ELV with the support of other Italian & European companies; this flight carried into LEO orbit the ESA technological satellite named Proba-V which is conducting a global census of Earth's vegetation, the Vietnamese satellite VNREDSAT and a small Estonian research satellite based on CUBEsat concept. The third launch occurred in April 2014: with this flight the "commercial" Earth Observation satellite, named KazEOSat-1 (also known as DZZ-HR), built by Airbus Defence and Space for the Government of the Republic of Kazakistan, was successfully placed into LEO orbit. The fourth launch occurred in February 2015; it was the first quasi equatorial VEGA flight and it carried the ESA IXV Intermediate eXperimental Vehicle in a sub-orbital flight (at approx. 330 Km height at separation); IXV mission has been conceived by ESA to test technologies (i.e. aerothermodynamics, attitude and control, etc.) and materials for the atmospheric re-entry phase from LEO orbit. The fifth launch occurred in June 2015 bringing into orbit the satellite Sentinel-2A, a European Commission satellite developed for Earth Observation and environmental monitoring purpose in the framework of the Copernicus programme (previously GMES). The sixth VEGA flight is scheduled in November (third flight in 2015): this flight has the goal to place into a slightly elliptical parking orbit the ESA scientific satellite named LISA Pathfinder, the first space observatory for gravitational waves detection that will operate at Lagrange point L1. LISA Pathfinder is part of ESA's "Cosmic Vision" Scientific Program.
VEGA future developments and its evolution – VEGA-C & new SRM P120-C – will also be addressed during the Workshop.

This workshop will be opened by Prof. Battiston, ASI President, with the participation of high representatives of the world space community (Agencies,Research Centers, Industries, Commercial Operators) as potential customers.

Organized by:
Italian Space Agency (ASI)

Panelists:

Roberto Battiston
President,
Italian Space Agency (ASI)

Paolo Bellomi
Vice President Product Development & New Project
AVIO

Stefano Bianchi
Head of ESA Launchers Development Department,
European Space Agency (ESA)

Mario Cosmo
General Director,
Italian Aerospace Research Centre (CIRA)

Augusto Cramarossa
Head of Strategy Perspectives and European Affairs Unit,
Italian Space Agency (ASI)

Emanuela D'Aversa
Launchers and Space Transportation Office,
Italian Space Agency(ASI)

Arturo de Lillis
Head of Launchers and Space Transportation Office,
Italian Space Agency(ASI)

Louis Laurent
Senior Vice President,
Arianespace

Pierluigi Pirrelli
CEO,
European Launch Vehicle (ELV)

Wednesday, 14 October

09:30 – 11:45 Hybrid-and full Electric Propulsion – what is changing orbital propulsion?

The commercial satellite trend in signal throughput, extended coverage, and number of on board channels, is doubling every decade: 3kW in 1990, 7kW in 2000, 14kW in 2010, and in 2015 satellites are at 18-20 kW. Already new platforms with 30 kW are being considered. A main reason for this trend is that satellite total mass and launcher capability is closely linked. The 6 tonne launch mass was the standard in the years of 2000, driven by the Proton and Ariane 5 dual launch capabilities. At the beginning of 2000, satellites based on NiH2 and Silicon cells for the power system were relatively heavy, and therefore started to use Electric Propulsion (EP) for station keeping. Subsequently, the general use of GaAs cells and Li Ion, drastically reduced the satellite launch mass and electric propulsion was little used. However, by the end of 2010 the demand for higher payload power saw the return of EP. Such propulsion systems need significantly less propellant than classical chemical propulsion.

The EP systems have evolved from thermal EP of the 1980's and plasma / ion grid systems of the 1990's. These applications were limited to in-orbit station keeping maneuvers yielding savings of up to a third of the customary chemical propellants. Now, the prospect of 30kW payload power is feasible and EP is being considered by most satellite manufacturers for orbit raising and station keeping. When considering EP, typical trades include thrust, Isp, available solar array power for orbital transfer as well as the business model parameters and especially time-to-orbit and the "transponder to orbit cost". Many science and deep space missions are today only possible with EP (Bepi Colombo, Deep Space 1, Hayabusa, etc). Technologies under development at agencies for deep space missions and large systems with up to 200 kW further expands the physical principles and possibilities of EP. The main "propellant" used for EP is Xenon gas, which is very expensive. Therefore and in the case that some of the large all electric satellites will need more than 1 tonne of Xenon propellant on board justifies the need to investigate alternative propellant candidates.

Furthermore, private investment is available for satellite constellations equipped with EP and the current planning is to launch the first set of satellites by the end of the decade.

The experts on stage will discuss the different electric propulsion applications for the next decade relating to market prospective, platform design driving parameters and technologies to be developed.

Organized by:
Airbus Defence and Space

Panelists:

Cosmo Casaregola
Procurement of Propulsion Systems,
EUTELSAT
France

Dr. Cosmo Casaregola obtained his Ph.D. in Aerospace Engineering at the University of Pisa in 2008. Main field of research was focused on Electric Propulsion Systems and Mission Analysis and Design. At present he is working at Eutelsat in the Engineering Department where he is responsible for the procurement of Propulsion Systems for telecom platforms. In particular, in the last few years, he has been extensively working on the procurement of full-electric platforms for commercial use.

Hervé Gilibert
Head of Engineering Space Systems, Airbus Defence & Space,
Chief Technical Officer, Airbus Safran Launchers
France

Hervé GILIBERT has started his professional career in 1989, as design engineer on Flight Control Systems of ballistic missiles, for Aerospatiale in Les Mureaux (France).
He moved to Advanced Studies on Defense Systems and took the lead of the Advanced Projects team of Aerospatiale Espace & Défense in 1995. Appointed in 1998 as programme manager of the Industrial Architect team in place for the upgrades of the French Air Force Command and Control System, he conducted this programme within EADS Defense Systems, up to restructuring the industrial organisation into a unique Prime Contractor that merged EADS and Thales in a joint company.In 2002, he joined back the Space sector, by taking the lead of the Industrial Architect team for Ariane 5 programme, within Astrium Space Transportation. Appointed as Head of Ariane 5 Development Programmes in 2003 after the failure of Ariane 5 ECA maiden flight, he has conducted the team that managed the Return to Flight programme until 2006, and then the complementary developments performed on various versions of Ariane 5, to adapt it to specific missions (e.g. ATV) or to increase its payload capacity by 1 ton. At the beginning of 2011, he has been appointed Chief Technical Officer and Chief Quality Officer (CTO & CQO) for Astrium Space Transportation. In 2014, he took in addition the role of Head of Operations for Space Transportation, before being nominated as Head of Engineering for the newly created Space Systems Business Line in Airbus Defence & Space. At the end of 2014, at the time of the creation of the Joint Venture between Airbus Group and Safran Group for launchers business, he has been appointed Chief Technical Officer of that company, named Airbus Safran Launchers.

Vincent Jacod
Head of Electric Propulsion Department,
Airbus Defence and Space
France

Vincent Jacod started mid 90st in Electric Propulsion in Matra Marconi Space first in Toulouse then in Portsmouth. He to the Teledesic/Skybridge propulsion trade-offs and was then propulsion architect on the first E3000 platforms with Electric Propulsion on-board (Intelsat 10.02, Inmarsat 4F1&2&3…). After 6 years in Electric Propulsion field, he left Astrium to perform consulting in reengineering and reorganization during 5 years mostly in Airbus Group, Safran Group, and Automobile industry. Mr. Jacod came back to Astrium in 2007 and was ADCS (Attitude Determination and Command Subsystem) architect in charge of the in-orbit E3000 fleet behavior. He took then in 2012 the head of Electric Propulsion department in the Telecom business unit leading the all-electric transfer programs won in 2014&2015.

Tsvika Kopelman
Director, Head of Communication Satellite Directorate,
MBT Space Division, Israel Aerospace Industries (IAI)
Israel

Education: B.Sc., Electrical Engineering, Technion, the Israel Institute of Technology (1971); M.Sc, Mathematics and Computer Science, the Weizmann Institute of Science (1981).
Past Positions: Head of Flight Control Systems Engineering Department, MBT Division, IAI (83 -92); AMOS 1 Communication Satellite AOCS Manager, MBT Division, IAI (92-96); Program Manager, EROS A Observation Satellite, MBT Division (99-00); AMOS Programs Department Manager MBT Division, IAI (00-02).

Kristian Pauly
Project Manager of the Galileo 2nd Generation activities,
OHB
Germany

Kristian Pauly holds a PhD in Aerospace Engineering from the Technische Universität München. He carried out his dissertation “In Situ Consumable Production for Mars Missions” as a fellow of the German National Merit Foundation at NASA Johnson Space Center in Houston from 1999 to 2001. After working as a PostDoc and coordinator of a European academia research network, he joined OHB in 2005. At OHB, he worked in different positions, among others as the lead satellite systems engineer in the SAR-Lupe project. SAR-Lupe is a high-resolution radar reconnaissance constellation consisting of five satellites, designed, produced and launched by OHB for the German Department of Defence. He then became lead satellite systems engineer and deputy program manager for the

Galileo FOC satellites at OHB. The Galileo FOC contract was kicked off in 2010 and through it OHB is tasked with the design and production of all 22 satellites, 6 of which have been launched so far. Since March 2015, he is the project manager of the Galileo 2nd Generation activities at OHB.Dr. Pauly is member of the committee on Space Communication and Navigation (SCAN) and serves as Co-Chair in the session on Space-Based Navigation Systems and Services.

Giorgio Sacoccia
Head of Propulsion and Aerothermodynamics Division,
European Space Agency
France

Working experience:

1. May 1988 ÷ November 1990: Worked for two Italian companies in the field of Aircraft Engineering and Spacecraft Propulsion
2. December 1990 ÷ March 1997: Propulsion engineer at the European Space Agency (ESA)
3. March 1997 ÷ January 2003: Head of Electric and Advanced Propulsion Section of ESA
4. February 2003 to date: Head of Propulsion and Aerothermodynamics Division of ESA

Other current significant tasks: ESA Technical Directorate representative in Exploration Coordination Committee Initiator and coordinator of European Exploration Technology Roadmaps.

Mitchell L. R. Walker
Associate Professor of Aerospace Engineering,
Director of the High-Power Electric Propulsion Laboratory,
Georgia Institute of Technology
United States

Dr. Mitchell L. R. Walker is an Associate Professor of Aerospace Engineering at the Georgia Institute of Technology where he directs the High-Power Electric Propulsion Laboratory. He received his B.S.E., M.S.E, and Ph.D. degrees in Aerospace Engineering from the University of Michigan, where he specialized in plasma physics and advanced space propulsion. His primary research interests include both experimental and theoretical studies of advanced plasma propulsion concepts for spacecraft and fundamental plasma physics. His research activities include vacuum facility effects, helicon plasma sources, electron emission from carbon nanotubes, plasma-material interactions, Hall effect thrusters, gridded ion engines, MPD thrusters, and a suite of diagnostics for plasma interrogation and thruster characterization. Professor Walker has authored more than 90 journal articles and conference papers in the fields of electric propulsion and plasma physics. He is the recipient of an Air Force Office of Scientific Research Young Investigator Program Award, the American Institute of Aeronautics and Astronautics (AIAA) Lawrence Sperry Award, and a NASA Faculty Fellow Award. Professor Walker is an Associate Editor for the Journal of Spacecraft and Rockets, serves on the AIAA Electric Propulsion Technical Committee, and is an Associate Fellow of AIAA. He also serves on the National Institute for Rocket Propulsion Systems Technology Solutions Committee.

Moderator:

Claudia Kessler
CEO,
HE Space
Germany

Claudia Kessler has been the CEO of HE Space since 2008 and is one of the few female leaders in the space business. Qualified as an aerospace engineer and with an MBA, Claudia Kessler has worked for more than 20 years in the international space environment.
Since opening the first HE Space office in Germany in Bremen in April 2004, she has built it up to become one of the most significant suppliers of engineering services to the space industry.
Claudia Kessler is the co-founder of Women in Aerospace Europe and she is passionate about supporting female high flyers in their career development. She is a member of the International Aeronautical Academy (IAA) and a Vice President of DGLR.
Previous work: After graduating as an aerospace engineer at the University of Munich, she started her professional career as an Assistant to the CEO at for Kayser-Threde, which today forms part of the OHB Group. From 1994 till 1998 she worked in Leipzig developing innovating Space projects as a Sales Manager.
Afterwards she moved company and worked as a Business Developer for EADS Astrium in Bremen to evolve the commercialization of the ISS. In 2004 she took on the responsibility at HE Space to build up the business in Bremen.

12:00 – 12:30 There are No Borders in Space: International Cooperation Will Drive the New Space Age*

The next space age starts now. We're on the cusp of dramatic change across the industry. With more than 50 nations having current or planned space programs, space has never been a more globally-oriented endeavor. The future will see international partners working together to unlock the power of space to bring connectivity to every corner of the globe, strengthen global security, and push the boundaries of exploration. We must continue to strengthen an already robust set of international partnerships in space, and work collaboratively to realize the full potential of space exploration.

*** This event will exceptionally take place in TEDDY A located in the first level of the ICC.**

Organized by:
Lockheed Martin Corporation

Distinguished Keynoter:

Marillyn A. Hewson
Chairman, President and Chief Executive Officer,
Lockheed Martin Corporation
United States

Marillyn A. Hewson is Chairman, President and Chief Executive Officer of Lockheed Martin Corporation. In her over 30 years with the Corporation, she has held a variety of increasingly responsible leadership positions, including President and Chief Operating Officer and Executive Vice President of Lockheed Martin's Electronic Systems business area. Ms. Hewson serves on the Board of Directors of DuPont and is a member of the President's Export Council. She is Vice Chairman of the Aerospace Industries Association, and is an Associate Fellow of the American Institute of Aeronautics and Astronautics. Ms. Hewson serves on the Board of Directors of the Congressional Medal of Honor Foundation, the Board of Governors of the USO, the Board of the National Geographic Education Foundation, the University of Alabama's Culverhouse College of Commerce and Business Administration Board of Visitors, and the Board of Directors of Catalyst. She is also a Director of the Atlantic Council's International Advisory Board and a member of The Business Roundtable. Ms. Hewson has been selected by Fortune magazine as one of the "50 Most Powerful Women in Business" for the past six years and was named #4 in 2015. She was named #20 on the Forbes "World's 100 Most Powerful Women" list in 2015.
Born in Junction City, Kansas, Ms. Hewson earned her Bachelor of Science degree in business administration and her Master of Arts degree in economics from The University of Alabama.

13:15 - 14:15 Prospects of Human Spaceflight – Russian view

The Presentation of Prof. Solntsev will touch upon the following:

- Human spaceflight programs in Low-Earth Orbit (LEO) – the ISS, new orbiting stations, commercial space missions in LEO;
- Space missions beyond LEO - to the Moon and Mars: new spacecraft and space infrastructure;
- Development of the Asteroids Danger Warning and Prevention System;
- Russian human spaceflight program and international cooperation.

Organized by:
S.P. Korolev Rocket and Space Corporation Energia

Panelist:

Vladimir L. Solntsev
President,
S.P. Korolev Rocket and Space Corporation Energia
Russia

From 1995 Solntsev worked in the Mezhkombank Group as President of Investment Company Mezhinvest, Director of the Bank Investment Programs Department then headed the Department for Military-Technical Cooperation SUE Aviation Military-Industrial Complex Sykhoy, Moscow. In the early 2000 Vladimir Lvovich moved to Vneshtorgbank (VTB) where until 2010 he worked first as a Vice-President and then as Senior Vice President.
At an extraordinary meeting of shareholders of OAO NPO Energomash after V.P. Glushko, which was held on October 4, 2010, OAO RSC Energia was empowered as the sole executive body - the Management Company, and V.L. Solntsev was appointed an Executive Director. Within a short period Vladimir Lvovich took Russian OAO NPO Energomash after Academician V.P. Glushko - a leading company in the world for development of powerful liquid rocket engines - out of pre-bankruptcy. All engines supplied to Russian and foreign customers performed their functions intended to deliver spacecraft to target orbits without comments. There is a plan for the company development until 2020, which envisages an increase in revenues and the increased economic stability. According to the decision of the Board of Directors of OAO RSC Energia Vladimir Lvovich Solntsev on August 1, 2014 was appointed an acting single-member executive body (President) of the Corporation. On September 20, 2014 by the resolution adopted at OAO RSC Energia Extraordinary General Shareholders' Meeting, he was elected single-member executive body (President) of S.P. Korolev Rocket-Space Public Corporation Energia.

14:30 – 15:30 How to launch a career in space?

The panel will offer advice for young professionals looking to enter or advance within the space industry, drawing from the personal experiences of senior leaders in the field. The discussion will focus on creative ways to gain insight and experience, while learning how to identify opportunities for advancement.

Specific questions will be posed to each panellist relevant to their background in the space sector. Questions posed to the panellists include:

- In your experience what are the benefits of pursing an entry-level job at a space company vs. a more specialized role in an unrelated field to gain experience that I can later transfer into the space sector?
- Apart from skills related to the job, what characteristics do you think prospective employers look for in candidates?
- How do I find and keep a mentor/mentee relationship and when is it okay to "mentor up"?

Organized by:
Space Generation Advisory Council (SGAC)
Airbus Defence and Space

Panelists:

Pascale Ehrenfreund *Chair of Executive Board,* DLR

Bernard Foing *Chair,* ESTEC Staff Association Committee

Elizabeth Seward *Head of Marketing, Earth Observation, Navigation & Science,* Airbus Defence and Space

Kevin Stube *Advisory Board,* The Planetary Society

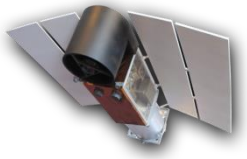
Giampiero Tonoli Space Generation Advisory Council; *MSc Thesis Fellow,* Airbus Defense & Space

MODERATOR
Jillianne Pierce Space Generation Advisory Council; *Government Affairs Associate*, Space Foundation

15:45 - 17:45 Rafael's Microsatellites Enhanced Capabilities Utilizing Electric Propulsion Systems

Rafael's space activities are focused on Small satellite constellations, Micro-satellites and Nano-satellites, Space Propulsion Solutions, Advanced light Weigh Composite Space Structures, and MEMS Technologies.
Rafael's activities in small satellite systems development are focused on dual use operational applications, based on constellations of nano-satellites or micro-satellites – depending upon the specific application.
The above doing is based on Rafael's proven extensive operational experience in: Intelligence Systems, and Communication Systems, Rafael heritage in space includes Propulsion modules and components that are onboard over 66 satellites including partnership with major Space Agencies that formed the French-Israeli VENUS Multispectral Earth-Observation satellite utilizing electrical Propulsion system, ESA – The European Space Agency and others.

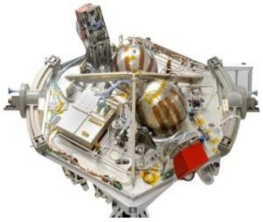
Two main micro-satellites and nano-satellites applications are being developed at the current stage:
a. Electro-Optic Earth-Observation missions
b. Communication Relay missions



Rafael's Space Propulsion Solutions are utilizing a vast range of propulsion systems and components including monopropellant based on Hydrazine propellant, Cold Gas and Electrical Propulsion systems.
Due to its vast expertise in system integration, Rafael provides a tailor-made turnkey Propulsion Solution for the specific needs of the customer.
RAFAEL designs, develops and manufactures Electrical Propulsion Systems (EPS). It provides EP system to Venus satellite and is developing low power systems to accommodate microsatellites. Rafael's EPS are the major building block in the current and future propulsion solution for LEO Satellites and large satellites consolations utilizing Rafael unique technology in the Low Electrical Hall Effect Thrusters - HET and Power Processing Units – PPU's.

Those propulsion technologies are suitable for satellite constellations requiring launcher-to-orbit propulsion, orbit maintenance and de-orbiting using the "All-In-One" concept. This approach can dramatically shorten the Satellite design phases and can be used as cost saving driver for the propulsion and AOCS systems. "All in One Solution" concept means to use the expertise of a propulsion system provider in the early stages of design.

Rafael's VENUS Electrical Propulsion System



Venus EPS 250÷600 W HET

Rafael's MEPS - Micro Electrical Propulsion System

MEPS EPS 100÷250 W HET

Organized by:
Rafael

Panelists:

Zvika Zuckerman
Marketing & Business Development Director,
Rafael Space Systems
Israel

Zvika Zuckerman (Zucki) is the Marketing & Business Development Director of Rafael's Space Systems. In his current position Zucki is the group leader responsible to form the joint activities with partners worldwide and to define new solution required in space propulsion towards fulfilling the growing needs in the upcoming years.

Among his former positions Zucki was involved in different airborne projects at Rafael as a Program Manager and Chief System Engineer of Airborne System.
Zucki has an MBA, and holds a B.Sc and M.Sc. In Aerospace Engineering, all degrees from the Technion in Haifa Israel.

Yaaqov Sharony
Small-satellites System Programs Manager,
Rafael Space Systems
Israel

Yaaqov Sharony is the Small-satellites System Programs Manager of Rafael's Satellite Systems activity. The activity includes: a. Development of various applications for Small-satellite constellations, currently: Electro-Optic Earth-Observation missions based on a constellation of Micro-satellites and Communication Relay missions based on a constellation of Nano-satellites and b. Marketing & Business Development intended to establish joint activities with partners worldwide and to define new applications in the area of Small-satellite constellations.
Main former positions were : Manager of Intelligence & UAV Directorate, Project Manager and System Engineer of various Land and Airborne Intelligence Systems.
Yaaqov Sharony graduated from Technion, Israel Institute of Technology, with a B.Sc and M.Sc degrees in Electrical Engineering and from Virginia Polytechnic & State University, Virginia/USA with Ph.D degree in Electrical Engineering – Dissertation topic: Control of a Flexible Spacecraft during Minimum-Time Manoeuvre.

Jacob Herscovitz
Chief Systems Engineer for the Space Systems Directorate,
Rafael Space Systems
Israel

Jacob Herscovitz graduated from Technion, Israel Institute of Technology, with a Master's degree in Systems Engineering in 2000. Jacob works at RAFAEL, Israel for more than 30 years in various positions. Currently he serves as the Chief Systems Engineer for the Space Systems Directorate. He is also the manager of Venus project in RAFAEL and also manages the R&D activities for the Space Directorate.
In addition, Jacob serves as a mentor to graduate and undergraduate student groups in the Aerospace department at the Technion.

Thursday, 15 October

10:00 - 11:00 NASA Ames and Future of Space Exploration, Science, and Aeronautics

Pushing the frontiers of aeronautics and space exploration presents multiple challenges. NASA Ames Research Center is at the forefront of tackling these issues, conducting cutting edge research in the fields of air traffic management, entry systems, advanced information technology, intelligent human and robotic systems, astrobiology, aeronautics, space, earth and life sciences and small satellites. Knowledge gained from this research helps ensure the success of NASA's missions, leading us closer to a world that was only imagined as science fiction just decades ago.

Organized by:
IAF Young Professional Programme

Panelist:

Jacob Cohen, Ph.D.,
Chief Scientist,
NASA Ames Research Center

Dr. Jacob Cohen is currently the Chief Scientist at NASA Ames Research Center. In this capacity, Dr. Cohen provides advice and oversight for research programs and serves as the principal Center official in the administration of long term, high risk, and creative/ inventive research programs. Dr. Cohen evaluates proposals for new programs, keeps abreast of ongoing work, and establishes priorities to assure that Center research programs contribute effectively to national aerospace and scientific objectives. Dr. Cohen serves as the chief advisor to the Center Director on all areas affecting the science at the Center. As part of his interest in the utilization of space and aeronautics for scientific and technology advancements, Dr. Cohen facilitates and develops international, inter agency, academic and commercial collaborations to sustain new research initiatives. Dr. Cohen serves as the Center representative to the Agency Chief Scientist and the NASA Research Council and is the conduit for the Agency Office of the Chief Scientist at the Center. Dr. Cohen received his Doctorate from New York University in the area of molecular evolution. He then completed a postdoctoral fellowship at Cedars-Sinai Medical Center's Ophthalmology Research Laboratories in the area of viral host relationships. Mentoring, teaching and inspiring the next generation of scientists and managers are continuous roles Dr. Cohen pursues.

11:30 - 13:30 Visual Impairment and Intracranial Pressure (VIIP) – an emerging health issue in Space

Altered vision in the majority of astronauts has recently been discovered after 6-month missions on board the International Space Station. Structural eye changes in combination with widened optic nerve sheaths and posterior globe flattening, suggesting that the condition is associated with increased intracranial pressure. Clinical experience indicates that the VIIP syndrome manifestations may not be reversible, and the possibility of irreversible damage to the brain has not been fully explored. Therefore this emerging condition is considered a novel, substantial obstacle in the deployment of long-term human space missions.

The present session will provide an overview of possible mechanisms that may cause the condition, and demonstrate the research strategy that is currently used to address the VIIP issue. In an integrative manner, evidence will be linked from in-flight data, parabolic flight experiments, and ground-based analog research. Moreover, international partners have united in order to jointly provide evidence and identify suitable countermeasure strategies. This effort is reflected by the speaker list of the event, which involves an international and multi-disciplinary consortium.

Organized by:
German Aerospace Center (DLR)
National Space Biomedical Research Institute (NSBRI)

Panelists:

Eric Bershad
M.D,
Baylor College of Medicine

Dorit Donoviel
PhD,
Baylor College of Medicine, Center for Space Medicine

Hanspeter Esriel Killer
M.D., Director of the Department of Ophthalmology, Head of Neuroophthalmology,
Kantonsspital Aarau

Benjamin Levine
M.D., F.A.C.C., F.A.H.A., F.A.C.S.M, Director,
Institute for Exercise and Environmental Medicine S. Finley Ewing Jr. *Chair for Wellness* at Texas Health Presbyterian Dallas Harry S. Moss Heart *Chair for Cardiovascular Research Professor of Medicine and Cardiology*

Karina Marshall Bowman
MSc, PhD student, Division Space Physiology Institute of Aerospace Medicine
German Aerospace Center (DLR)

Jörn Rittweger
M.D., Head of Division Space Physiology,
Institute of Aerospace Medicine,
German Aerospace Center (DLR)

15:00 – 15:30 Andrea Boese Memorial Event

"What we have once enjoyed, we can never lose. All that we love deeply becomes part of us."
Helen Keller

This GNF event is being held to remember Andrea Boese, an important member of the IAF community who sadly passed away 29 August 2015. Some of her friends/colleagues will say a few words to remember her.
After graduating in Nutrition Sciences in 2000, Andrea Boese worked at the German Aerospace Center (DLR) Institute for Aerospace Medicine. In 2007 she joined the Main Department for Strategy and International Relations at DLR, focusing on space policy, exploration and strategic networks. During her secondment to NASA, she worked at Headquarters in Washington, D.C. and Johnson Space Center (JSC), Houston and received the NASA JSC Director's Innovation Team Award in 2011.
Later she became Head of Diversity and Equal Opportunities and Chief Diversity Officer at DLR before moving to the European Space Agency as Special Advisor to the Director General.
Andrea helped establishing the network Women in Aerospace-Europe (WIA-E) and served as WIA–Europe Director of International Relations. She was an elected member of the International Academy of Astronautics (IAA). Since 2012 Andrea served as IAF Vice-President covering the portfolios Outreach and Space Societies as well as Workforce Development and Global Conferences.
She was an enthusiastic member of the IAF Community bringing new life to all IAF activities, specifically with the younger generation. She was a true visionary and inspired many.

She will be dearly missed.

Speakers:

Kiyoshi Higuchi
IAF President,
International Astronautical Federation

Johann-Dietrich Woerner
Director General,
European Space Agency (ESA)

Claudia Kessler
CEO,
HE Space

Pascale Ehrenfreund
Chair of Executive Board,
German Aerospace Center (DLR)

16:45 – 17:45 Bloostar, the shortcut to orbit – Press Conference

More microsatellites are being built every day, and many companies are basing their business around constellations of nanosatellites. Flying technical, scientific and commercial payloads using high-altitude balloons to over 30km altitude is our current operational activity. The natural next step is to aim higher. We are now ready to transform the launch industry for small payloads.
The objective of bloostar by zero2infinity is to design and develop a high-altitude balloon assisted launcher (or rockoon – a rocket fired from a balloon). The rockoon concept presents tremendous advantages. The fact that the rocket does not need to travel through the denser parts of the atmosphere saves an important part of the required deltaV. The rocket ignites in close-to-vacuum conditions with tremendous benefits in terms of lower drag, smaller gravity losses and adapted nozzles. The simplicity of the system ensures the lowest cost for a dedicated microsatellite launch. Bloostar is our light, efficient and sustainable launcher.
The benefits of having a high-altitude balloon as a first stage have already been demonstrated. Bloostar presents a novel architecture offering a new value proposition built around proven technologies. Increased balloon payload capabilities together with advanced lightweight materials for the launcher and powerful mission analysis tools make it feasible to step into orbital launches from high-altitude balloons.
During the press conference you will learn more about our concept, timeline and strategy. The new website will be unveiled, together with a video presenting the launcher, its flight cycle and its innovative capabilities in terms of volume of payloads. The key people behind the idea and the company will be present to answer questions.

Organized by:
zero2infinity

Speakers:

José Mariano López Urdiales
Founder and CEO,
zero2infinity

In 2009 he founded Zero2Infinity in Barcelona, Spain. He was exposed since a very early age to the many Space missions in which his father, Astronomer, Jose Juan Lopez-Moreno, was involved. He graduated in 2000, ranking #1 in Aeronautical Engineering from Universidad Politécnica de Madrid and was selected by the European Space Agency to work at ESA's main technology center, ESTEC. He also earned an MBA from the College des Ingenieurs, and worked part time on Europe's largest rocket manufacturing center, Les Mureaux. After a fellowship at the MIT Aeronautics and Astronautics Department, he worked for the Boston Consulting Group and Boeing's advanced research and development unit Phantom Works. Since then, he served as Executive Director of the Barcelona Aeronautics and Space Association from 2006 to 2009 and lectured in Space Vehicles and Space Propulsion at the Universitat Politecnica de Catalunya. Lopez-Urdiales has been active on the topic of private spaceflight since 2000.

Dimitris Bountolos
COO,
zero2infinity

Former VP of Customer Experience at Iberia and Madrid Barajas Airport Director, Dimitris has over 14 years of experience in the transport sector. He is founder, board member and advisor of various start-ups and associations with technological and service oriented components. Dimitris invested in the company and also joined zero2infinity as COO. He said: "The Space industry is evolving and opening up to private investment and management. I intend to put my extensive experience in the airline industry to the service of the future of bloostar".

Michael López-Alegria
Senior Advisor, and former NASA Astronaut,
NASA

He is a Spanish-American astronaut; a veteran of three Space Shuttle missions and one International Space Station mission. He is known for having performed ten spacewalks in his career, presently holding the second longest all-time EVA duration record and having the longest spaceflight of any American at the length of 215 days; this time was spent on board the ISS from September 18, 2006 to April 21, 2007.
Interestingly he is also an Aquanaut and participated in the first underwater mission of the NASA NEEMO facility in 2001. After retiring from NASA in 2012 he became the President of the Commercial Spaceflight Federation in Washington. He is senior advisor of zero2infinity since May 2015.

Guillaume Girard,
Advisor and Partner,
zero2infinity

Space Flight Controller for the International Space Station and Business Development Manager at INSYEN, Guillaume was recently awarded the Young Space Leader awarded by the IAF. Since investing in zero2infinity he has been acting as a very active partner in the development of bloostar: "As ISS Space Flight Controller, I can witness every day the scientific and human progresses achieved in Space. Space is a unique environment to accomplish the most amazing experiments that serves healthcare an telecommunication for all of us. But since its access is limited to a few conventional and expensive rockets, I see in bloostar the most sustainable and responsive way to provide a new path to space orbit for all. The vehicle that all scientists and telecommunication companies had been waiting for to release their full potential".

Friday, 16 October

09:30- 11:30 Astronauts Event

Astronauts from all over the world will be sharing their experiences in space and answering questions from the audience. This event will be open to the general public.

Panelists:

Buzz Aldrin (Invited)
Apollo 11 Moonwalker
United States

Reihnold Ewald
German MIR'97 Research Cosmonaut
Germany

Alexei Leonov (Invited)
First Spacewalker
Russia

Sunita Williams
Most Spacewalking by a Female
United States

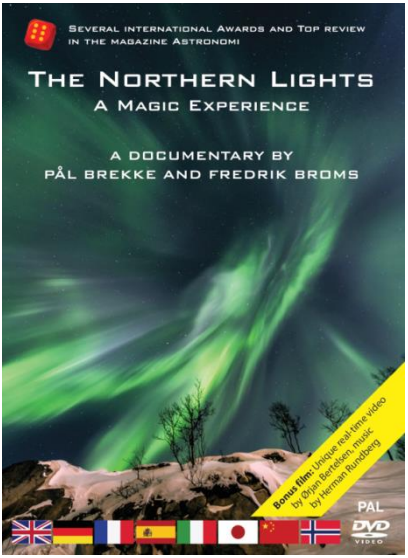
Moderator:

Franco Bonacina
Director General's Spokesperson and Head of the Protocol Office
Director General's Cabinet,
European Space Agency (ESA)

12:00 – 12:45 The Northern Lights - a Magic Experience

"The Northern Lights - a Magic Experience" is an award-winning documentary about the Northern lights - nature's most spectacular light phenomena.

The 25 minute documentary takes you on a breathtaking journey through space. By using pedagogic top-quality animations and spectacular solar imagery from NASA satellites it tells the full story of the northern lights from myth to science. The film is packed with interesting historical anecdotes and includes tips about how to take your own stunning aurora photos. This is the most complete story of the Northern lights and includes the some of the world best images and videos of the Northern Lights.



Organized by:
Norwegian Space Center

Speaker:

Geir Hovmork
Deputy Director,
Norwegian Space Center
Norway

Notes

Notes

GNF

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