

ANNUAL REPORT



SPACE GENERATION
ADVISORY COUNCIL

IN SUPPORT OF THE UNITED NATIONS
PROGRAMME ON SPACE APPLICATIONS

SGAC 2012

2012 | SPACE GENERATION ADVISORY COUNCIL



SPACE GENERATION ADVISORY COUNCIL

In Support of the United Nations Programme on Space Applications

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Acronyms

Acronym	Definition
AAJ	Astronomical Association of Jamaica
ABS	Asia Broadcast Satellite
ACAE	Asociación Centroamericana de Aeronáutica y el Espacio (Central American Association for Aeronautics and Space)
ACMI	Australian Centre for the Moving Image
ACODEA	Asociacion Costarricense de Astronomia (Costa Rican Astronomy Association)
ACRS	Asian Conference on Remote Sensing
ACSER	Australian Centre for Space Engineering Research
ADR	Active Debris Removal
AEB	Agência Espacial Brasileira (Brazilian Space Agency)
AEM	Agencia Espacial Mexicana (Mexican Space Agency)
AFB	Air Force Base
AGI	Analytical Graphics Inc.
AIAA	American Institute of Aeronautics and Astronautics
ALE	Asociación Latinoamericana del Espacio (Latin American Space Association)
AMEC	Australian Mars Exploration Conference
APAN	Asia Pacific Advanced Network
APRSAF	Asia-Pacific Regional Space Agency Forum
APSCO	Asia Pacific Space Cooperation Organisation
ARABSAT	Arab Satellite Communications Organisation
ARCSSTE-E	African Regional Centre for Space Science and Technology Education - in English Language
ASE	Association of Space Explorers
ASI	Agenzia Spaziale Italiana (Italian Space Agency)
ASTA	Australian Science Teachers Association
AT14	Action Team 14 (on Near Earth Objects)
ATV	Automated Transfer Vehicle
AWB	Astronomers Without Borders
AYAA	Australian Youth Aerospace Association
AYAF	Australian Youth Aerospace Forum
BANEX	Balloon Navigation Experiment
BBC	British Broadcasting Cooperation
BEXUS	Balloon Experiments for University Students
BIS	British Interplanetary Society
BSc	Bachelor of Science
CaSE	Campaign for Science and Engineering
CCD	Charged Coupled Device
CCE	Comisión Colombiana del Espacio (Colombian Space Commission)

Acronym	Definition
CEO	Chief Executive Officer
CEOS	Committee of Earth Observation Satellites
CERN	Centre Européenne pour la Recherche Nucléaire (European Centre for Nuclear Research)
CERTH	Centre for Research and Technology - Hellas (Florida Tech)
CIDA-E	Centro de Investigación y Difusión Aeronáutico-Espacial (Aeronautic Space Centre of Investigation and Outreach)
CLA	Centro de Lançamento de Alcântara (Alcantara Launch Centre)
CNES	Centre National d'Etudes Spatiales (National Centre for Space Studies)
COCOA	Colombian Congress of Astronomy and Astrophysics
COE	Centre of Excellence
Comms	Communications
CONAE	Comisión Nacional de Actividades Espaciales (National Space Activities Commission)
CONASTA	Conference of the Australian Science Teachers Association
CONIDA	Comisión Nacional de Investigación y Desarrollo Aeroespacial (National Commission for Aerospace Research and Development)
COSPAR	Committee on Space Research
CRISIS	Centre for Responsive Information for Safety and Security
CSA	Canadian Space Agency
CST	Commercial Space Transportation
CTU	Czech Technical University
CYUSIW	Council of Young Ukrainian Space Industry Workers
DCTA	Departamento de Ciência e Tecnologia Aeroespacial (Department of Aerospace Science and Technology)
DLR	Deutsches Zentrum für Luft- und Raumfahrt (German Aerospace Center)
DRR	Disaster Risk Reduction
DSTO	Defence Science and Technology Organisation
EADS	European Aeronautic Defence and Space
ECI	Encuentro Científico Internacional
ECS	European Cooperating State
ECSL	European Centre for Space Law
EESC	Escola de Engenharia de São Carlos (Engineering College of São Carlos)
EISC	European Interparliamentary Space Conference
ESA	European Space Agency
ESERO	European Space Education Research Organisation
ESPI	European Space Policy Institute
ESRIN	European Space Research Institute
ESTEC	European Space Research and Technology Centre
EU	European Union
EUMETSAT	European Organisation for the Exploitation of Meteorological Satellites
EUROAVIA	European Association for Aerospace Students
EXA	Agencia Espacial Civil Ecuatoriana (Ecuadorian Civil Space Agency)
FAA	Federal Aviation Administration
FAC	Fuerza Aérea Colombiana (Colombian Air Force)
FACSAT-1	Fuerza Aérea Colombiana Satellite 1 (Colombian Air Force Satellite 1)
FEG	Faculdade de Engenharia Guaratinguetá (Engineering College of Guaratinguetá)

Acronym	Definition
FIA	Farnborough International Airshow
FIDAE	Feria Internacional del Aire y del Espacio
FIT	Florida Institute for Technology
GEO	Geostationary Orbit
GEOSS	Global Earth Observation System of Systems
GHOU	Global Hands on Universe
GISTDA	Geo-Informatics and Space Technology Development Agency
GLEX	Global Exploration Conference
GLxP	Google Lunar X-PRIZE
GMES	Global Monitoring for Environment and Security
GRULAC	Grupo Regional de la Federación Internacional de Astronáutica para América Latina y el Caribe (Regional Group for Latin America and the Caribbean)
GTTP	Galileo Teacher Training Programme
HAS	Hungarian Astronautical Society
HQ	Headquarters
IAA	International Academy of Astronautics
IAC	International Astronautical Congress
IAE	Institute of Aeronautics and Space
IAF	International Astronautical Federation
IAG	Astronomy, Geophysics and Atmospheric Sciences Institute
IASC	International Astronomical Search Collaboration
ICAC	International Conference on Astrophysics and Cosmology
ICG	International Committee on GNSS
ICHEP	International Conference on High Energy Physics
ICIMOD	International Centre for Integrated Mountain Development
IDSC	International Space Development Conference
IEP	Innovative Engineering Projects
IES	Institute for Eastern Studies
IGAC	Instituto Geográfico Agustín Codazzi (Geographic Institute Agustín Codazzi)
IGCE	Geosciences and Exact Sciences Institute
IIASL	International Institute of Air and Space Law
IISL	International Institute of Space Law
INPE	National Institute for Space Research
ION	Institute of Navigation
IoP	Institute of Physics
IRF	Institutet för rymdfysik (Swedish Institute of Space Physics)
ISEB	International Space Education Board
ISECG	International Space Exploration Coordination Group
ISERV	ISS SERVIR Environmental Research and Visualisation System
ISS	International Space Station
ISSF	International Space Safety Foundation
IST	Institute of Space Technologies
ISU	International Space University
ITA	Technological Institute of Aeronautics

Acronym	Definition
ITB	Institut Teknologi Bandung (Bandung Institute of Technology)
ITCR	Instituto Tecnológico de Costa Rica (Costa Rican Institute of Technology)
ITU	International Telecommunication Union
İÜFFAAK	İstanbul Üniversitesi Fen Fakültesi Amatör Astronomlar (Amateur Astronomers Society of Istanbul University Faculty of Science)
IYA	International Year of Astronomy
JAXA	Japan Aerospace Exploration Agency
JCYCN	Jagriti Child and Youth Concern Nepal
JWST	James Webb Space Telescope
KARI	Korea Aerospace Research Institute
KTH	Kungliga Tekniska högskolan (Royal Institute of Technology)
KTU	Kaunas University of Technology
KUACC	Kenyatta University Amateur Astronomy Club
LADA	Latin America Discovery Adventure
LAG	Lebanese Astronomy Group
LAPAN	Indonesian National Institute of Aeronautics and Space
LEO	Low Earth Orbit
LOX	Liquid Oxygen
LTU	Luleå tekniska universitet (Luleå University of Technology)
MAS	Mathematical & Astronomical Society
MAV	Museo Archeologico Virtuale (Virtual Archeological Museum)
MDA	MacDonald Dettwiler and Associates
MoU	Memorandum of Understanding
MP	Member of Parliament
MSc	Master of Science
MVP	Most Valuable Participant
MWA	Murchison Widefield Array
NAECY	The National Aerospace Educational Center of Youth
NASA	National Aeronautics and Space Administration
NASO	Nepal Astronomical Society
NAST	Nepal Academy of Science & Technology
NCAC	North America, Central America and the Caribbean
NEO	Near Earth Object
NESARC	Nepal Scientific Activities and Research Centre
NGC	Next Generation Canadaarm
NGO	Non-Governmental Organisation
NIFRO	Norwegian Industrial Forum for Space Activities
NPoC	National Point of Contact
NSO	Netherlands Space Office
NSS	National Space Symposium
NTNU	Norges teknisk-naturvitenskapelige universitet (Norwegian University of Science and Technology)
NUTS	Norwegian University Test Satellite
NVR	Nederlandse Vereniging voor Ruimtevaart (Netherlands Space Society)

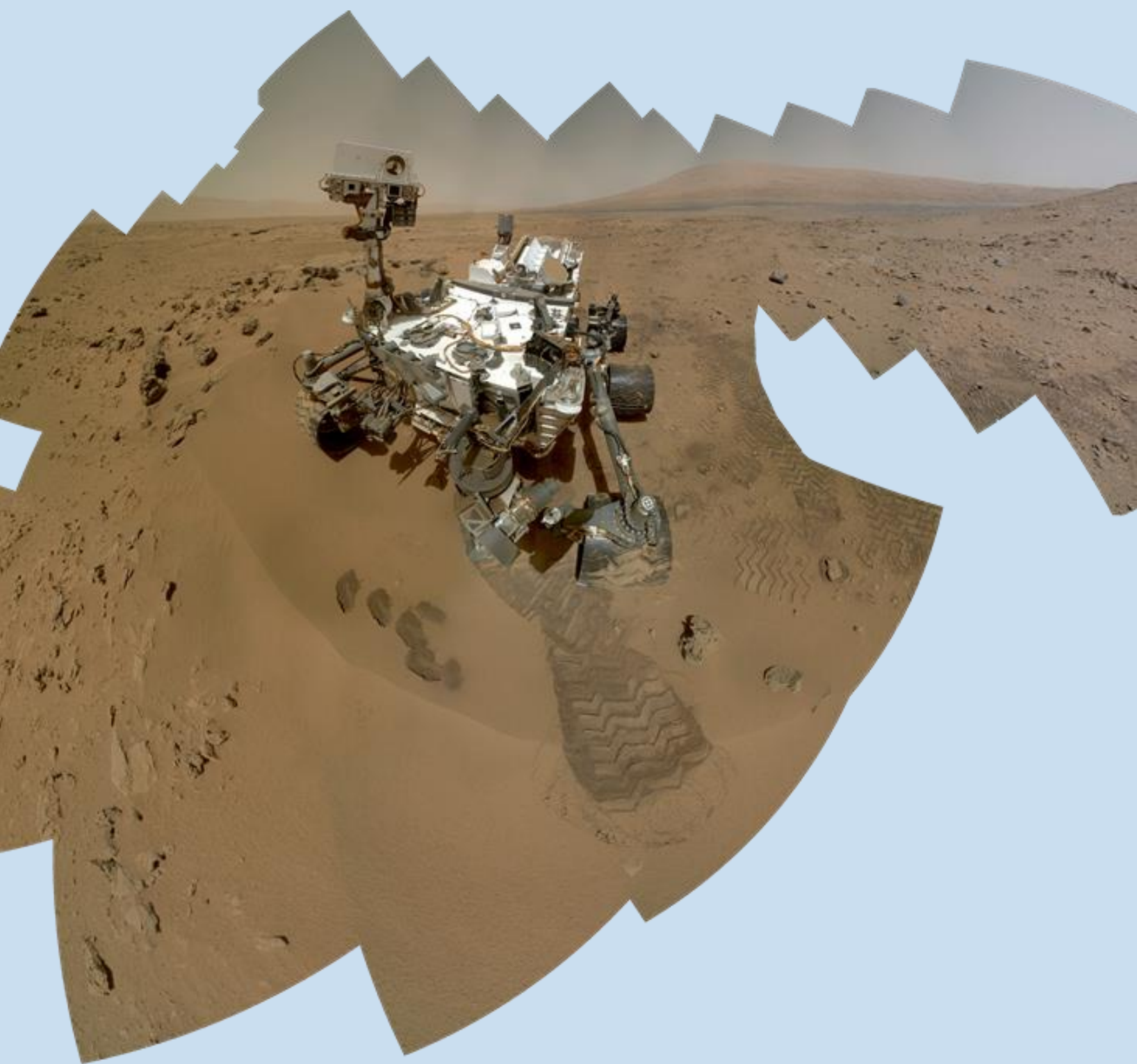
Acronym	Definition
OAU	Uruguayan Astronomy Olympiads
ÖAW	Österreichische Akademie der Wissenschaften (Austrian Academy of Sciences)
ÖWF	Österreichisches Weltraum Forum (Austrian Space Forum)
PAIIZ	Polska Agencja Informacji i Inwestycji Zagranicznych (Polish Agency for Information and Foreign Investment)
PECS	Plan for European Cooperating States
PENS	Electronic Engineering Polytechnic Institute
PhD	Philosophiae Doctor (Doctor of Philosophy)
PNAE	National Programme of Space Activities
PR	Public Relations
PSEI	(Polish Space Industry Association)
R3	Regional Readiness Review
RAC	Red de Astronomía de Colombia
RAeS	Royal Aeronautical Society
RAS	Royal Astronomical Society
RASC-AL	Revolutionary Aerospace Systems Concepts - Academic Linkage
RBSP	Radiation Belt Storm Probe
RC	Regional Coordinator
RCSC	Russian Centre of Science & Culture
ROSA	Romanian Space Agency
S&T	Scientific and Technical
SAA	Sociedad Antioqueña de Astronomia
SAC-D	Satelite de Aplicaciones Cientificas-D (Satellite for Scientific Applications-D)
SAOCOM	Satélite Argentino de Observación Con Microondas (Argentine Microwaves Observation Satellite)
SAR	Synthetic Aperture Radar
SATS	Space Association fo Turkish States
SCaN	Space Communications and Navigation (NASA)
SDF	Space Development Forum
SEMWO	Space Economy in the Multipolar World
SGAC	Space Generation Advisory Council
SGC	Space Generation Congress
SGFF	Space Generation Fusion Forum
SH-SSP	Southern Hemisphere Summer Space Programme
SKP	Space Krenovation Park
SL	Space Law
SLPG	Space Law Project Group
SME	Small and Medium Enterprises
SOCRATES	Satellite Orbital Conjunction Reports Assessing Threatening Encounters in Space
SPU	Space Policy Unit
SSA	Space Situational Awareness
SSC	Swedish Space Corporation (SSC).
SSP	Small Satellite Platform
SSP	Space Studies Programme (International Space University)

Acronym	Definition
SSPG	Small Satellite Project Group
SSPI	Society of Satellite Professionals International
SSS	Space Safety and Sustainability
STDM	Space Technology for Disaster Management
STEM	Science, Technology, Engineering and Maths
STEMnet	Science, Technology, Engineering and Maths Network
STK	Satellite Tool Kit
SUPARCO	Space and Upper Atmosphere Research Commission (Pakistan)
SWF	Secure World Foundation
SXC	Space Expedition Corporation
TAI	Turkish Aerospace Industries
TBC	To be confirmed
TBD	To be decided
TICAL	Tecnología de Información y Comunicación para América Latina (Technology of Information and Communication for Latin America)
ToV	Transit of Venus
TRAC	Telsiz ve Radyo Amatörleri Cemiyeti (Turkish Radio Amateurs Society)
UAE	United Arab Emirates
UC	University of Canterbury
UCC	Universidad Católica de Córdoba (Catholic University of Córdoba)
UCR	Universidad de Costa Rica (University of Costa Rica)
Udelar	Universidad de la República (University of the Republic)
UFABC	Universidade Federal do ABC (Federal University of ABC)
UiO	Universitetet i Oslo (University of Oslo)
UK	United Kingdom
UKSEDS	UK Students for Exploration & Development of Space
ULA	United Launch Alliance
UN	United Nations
UN COPUOS	United Nations Committee on the Peaceful Uses of Outer Space
UN ECOSOC	United Nations Economic and Social Council
UN OOSA	United Nations Office for Outer Space Affairs
UN SPIDER	United Nations Platform for Space-based Information for Disaster Management and Emergency Response
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNESP	Universidade Estadual Paulista (Paulista State University)
UNGA	United Nations General Assembly
UNI	Universidad Nacional de Ingeniería (National University of Engineering)
UNIDROIT	Institut International Pour L'Unification du Droit Prive (International Institute for the Unification of Private Law)
UNIFESP	Universidade Federal de São Paulo (Federal University of São Paulo)
UniSA	University of South Australia
UNISEC	University Space Engineering Consortium
UNISPACE III	Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space
UNLP	Universidad Nacional de La Plata (National University of La Plata)

Acronym	Definition
UNOSAT	United Nations Operational Satellite Applications Programme
USA	United States of America
USP	Universidade de São Paulo (University of São Paulo)
UTP	Universidad Tecnológica del Perú (Technological University of Peru)
UWI	University of the West Indies
VAST	Vietnam Academy of Science and Technology
VEGA	Vettore Europeo di Generazione Avanzata (Advanced Generation European Carrier Rocket)
VLM	Viscous Liquid Monopropellant
VLS	Veículo Lançador de Satélites (Satellite Launch Vehicle)
VNSC	Vietnam National Space Centre
VSSEC	Victorian Space Science Education Centre
WDTC	Women Development Training Centre
WHO	World Health Organisation
WLSJ	White Label Space Japan
WSBR	Washington Space Business Roundtable
YGNSS	Youth for Global Navigation Satellite Systems
YJC	Young Journalists Club

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About the SGAC

The Space Generation Advisory Council (SGAC) in support of the United Nations (UN) Programme on Space Applications is a non-governmental organisation that aims to represent university students and young space professionals to the United Nations, Nation States, space agencies, industry, academia and other organisations in the space community.

SGAC has permanent observer status in the United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS). SGAC has a long history and was conceived at the Third United Nations Conference on the Exploration and Peaceful Uses of Space (UNISPACE-III) in Vienna in 1999. The SGAC Executive Council is made up of representatives from each of the six UN regions, and has a larger body of representatives from nation states. Our focus is on pragmatic space policy advice to policy makers based on the interests of the global community of university students and young professionals, broadly in the age range 18-35, interested in space. SGAC's network currently has 4000 university students and young professionals in roughly 90 countries.



SPACE GENERATION
ADVISORY COUNCIL

Message from the Co-Chairs

Dear members, friends and supporters,

The Space Generation Advisory Council has made remarkable achievements in 2012 and has focused on her one true goal: to propel the voices of students and young professionals in the space arena. We take great pride in our members' accomplishments and will continue to support them in any way we can to ensure they are inspired as they continue their journey to the peak of their careers and establish themselves as icons in the space community.

SGAC had robust strategy and detailed work plan for 2012, which has been fulfilled through the hard work of our dedicated volunteers and ever-generous supporters. The ultimate proof has been the inaugural Space Generation Fusion Forum, that gathered 50 high-profile young adults to discuss key space topics, in the USA, and that has become our second annual event. Our members come from a wide range of backgrounds but will seize every opportunity to come together in order to deliberate on critical topics and package high quality outputs. This is also evident from the Space Generation Congress 2012 held in Italy and attended by 134 delegates from 44 different countries.

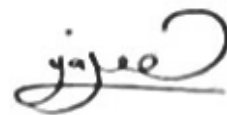
We would like to express our gratitude to all who have contributed in one way or another to SGAC. To our gracious members who will always contribute their time despite their busy schedules and kind sponsors who provide the financial support necessary to run our activities, we say thank you. Special thanks go to Andrea Jaime Albalat, Ariane Cornell and the Executive office for running SGAC's daily operations and leading such a great volunteer youth organisation to outstanding achievements. We appreciate our Advisory Board for all their time, continued support and guidance throughout the year.

SGAC is growing stronger; the network is expanding rapidly and the organisation is better placed to harness future opportunities. We are dedicated to ensuring that SGAC remains a great organisation, which everyone would like to be part of. As we look ahead to what 2013 brings, please work with us in transforming the enthusiasm and passion for space into a formidable force in the space community.

We commend this report to you.



Catherine Doldirina
SGAC Chair



Chijioke(CJ) Nwosa
SGAC Co-Chair

Message from the Executive Director

Dear all,

2012 was a year of positive changes, which reinforced the trend of continued development and growth for SGAC. During the last few years the organisation has built a solid foundation and is steadily building on it; 2012 was at the peak of the trend with new important rises, as well as steady momentum. Three key metrics that SGAC uses to measure its growth – number of delegates attending SGAC events, donation revenue, and value of SGAC scholarships – are all showing fantastic growth.

Since 2009, the number of SGAC members attending our events has increased 30% annually and this year, thanks to the new annual event the Space Generation Fusion Forum, member participation has expanded by 40%. The space community has maintained its financial support for SGAC, which has allowed the value of scholarships awarded by SGAC to double since last year and increased it by a factor of 10 since 2008.

As we look back on the success of the past few years with 2012 as the best of them yet, it is important to recognise the hard work of volunteer young adults that have made this happen.

SGAC's Executive Office and Executive Council would like to thank our volunteers and we look forward to more growth in 2013!

All the best,



Andrea Jaime

SGAC Executive Director



Executive Summary

ORGANISATIONAL DEVELOPMENT

Team changes:

- Catherine Doldirina (Georgia) succeeded Michael Brett (Australia) as the new Chair of SGAC
- SGAC welcomed a new Co-Chair, Chijioke CJ Nwosa (Nigeria)
- SGAC Deputy Executive Director, Andrea Jaime Albalat (Spain) succeeded Ariane Cornell (France/USA) as the new Executive Director of SGAC at the SGAC Office in Vienna
- SGAC welcomed an intern, Cynthia Chen (Australia)
- Remy Chalex (France/Brazil) and Julio Aprea (Argentina/Spain) were selected as Competition Co-coordinators
- Michael Kretzenbacher (Australia) and Cynthia Chen (Australia) were selected as PR & Comms Co-leads

SGAC added new members to its Advisory Board and Honorary Board, comprised of influential members of the international space community, to provide strategic guidance.

New members to the Advisory Board include:

- Yasushi Horikawa, Chairperson of UN COPUOS
- Norbert Frischauf, Future Studies Systems Engineer at SpaceTec
- Michael Brett, former SGAC Chair
- Peter Martinez, Chairman of the South African Council for Space Affairs

SGAC added a new member to its Honorary Board. SGAC's Honorary Board members are those who have been strong and steady supporters of SGAC and its goals.

- JR Edwards, Manager, Human Space Flight Programs, Lockheed Martin, Washington Operations

SPACE GENERATION FUSION FORUM

- A total of 49 delegates from 17 countries attended the inaugural Space Generation Fusion Forum (SGFF)
- SGAC supported 13 scholarships to delegates from 13 countries to attend SGFF 2012 in Colorado, USA.

SPACE GENERATION CONGRESS

- SGAC organised its fifth Move an Asteroid Competition with the support of A.C. Charania. The winner – Sung Wook Paek (Korea) – submitted a paper entitled “A Multi-functional Paintball Cloud for Asteroid Deflection”. He was invited to present his paper at the Space Generation Congress 2012 and was also featured in the LA Times.
- SGAC attracted more than 300 applicants for the Space Generation Congress (SGC) 2012. The SGC 2012 reached its maximum capacity of 134 delegates travelling from 44 different countries around the globe.
- SGAC supported a record-breaking 28 scholarships to delegates from 15 countries to attend SGC 2012 in Naples.

- SGAC continued to record and publish presentations conducted during SGC. This offers members who were unable to attend the Congress the opportunity to review and recognise the ideas discussed during the event.
- SGAC achieved remarkable participation at the IAC 2012 (Naples, Italy). SGAC members presented 33 technical papers covering vast and varying areas of interest, participated in panel discussions and organised highly successful outreach events, such as the Young Professional Panel, the Space Women in Emerging Countries, the SGAC Football Match, and the SGAC Booth Reception.

PROJECT GROUPS

- The Project Group on Space Technologies for Disaster Management (STDM) was created and released a paper discussing satellite-based aperture radar (SAR) applications to the 2011 Japan Tohoku earthquake and tsunami.
- The Project Group on Small Satellites was created and had their first abstract accepted to present a poster at the 9th IAA Symposium on Small Satellites for Earth Observation in Berlin, Germany.
- The Project Group on Space Law was created and presented some of their work at the IAC 2012.
- SGAC expanded its social media activities by creating regional and project group Facebook pages, and renewing its old Facebook sites for the SGC and Space Generation Advisory Council Page. SGAC also started using its Twitter accounts on a more regular basis.
- SGAC announced the first NASA-SGAC video team. The team worked to produce a number of short films to support NASA in communicating the benefits of space exploration.

UNITED NATIONS WORK

SGAC was represented at the following United Nations events:

- 49th Session of the Scientific and Technical Subcommittee of UN COPUOS, Vienna, Austria
- 51st Session of the Legal Subcommittee of UN COPUOS, Vienna, Austria
- United Nations Economic and Social Council (UN ECOSOC), New York, USA
- UN General Assembly 67th Session, New York, USA
- 55th Annual Meeting of the UN COPUOS, Vienna
- UN-SPIDER Technical Advisory Mission to Cape Verde
- 22nd UN/IAF Workshop on Space Technologies Applied to the Needs of Humanity: Experience from Cases in the Mediterranean Area
- Seventh Meeting of the International Committee on Global Navigation Satellite Systems (ICG), organised by the Government of China, Beijing, China

SGAC OUTPUT AT A GLANCE

Throughout the year, SGAC supported a number of scholarships, conferences and papers listed below.

SCHOLARSHIPS AND AWARDS (47)

- Australian Futures Award (3)
- DLR Standout Student Scholarship (3)
- La Sapienza-SGC Scholarship (2)
- Move an Asteroid Technical Paper Competition
- OHB-SGC Space Sustainability Scholarship
- Peter Diamandis Scholarship
- \$pace is Business Paper Competition
- Space Generation Advisory Council Global Grants Programme (11)

- Space Generation Advisory Council (SGAC) Young Leader Awards (9)
- Space Solar Power Design Competition
- SSPI Satellite Futures Scholarship (3)
- United Nations / International Astronautical Federation (UN/IAF) Workshop Scholarship
- Washington Space Business Roundtable Scholarship (3)
- MVP AIAA Scholarship
- NASA SCaN Scholarship
- IES Scholarship (2)
- AYAA Australian Futures Award (3)

➤ CONFERENCES AND WORKSHOPS SUPPORTED (3)

- Space Generation Fusion Forum (SGFF), USA
- Space Generation Congress (SGC), Italy
- S.P.A.C.E. workshop, by Dragos Bratanu, in cooperation with the International Astronautical Federation's (IAF) Workforce Development/Young Professional (WD/YP) and the Space Education and Outreach (SEOC) Committees

➤ PAPERS AND PUBLICATIONS (14+)

- SGAC Annual Report
- SGAC Executive Summary of the Annual Report
- Space Safety & Sustainability Project Group
- 2012 SSS Educational Series:
 - Space Situational Awareness
 - Space Weather Effects on Space Missions
- 16th ISU Annual Symposium "Sustainability of Space Activities: International Issues and Solutions" – February 2012
- Maier, P., Rathnasabapathy M., Lu, Z., "Active Debris Removal: A Multinational Policy Option", 63rd International Astronautical Congress Conference Proceedings, Naples, Italy, 2012
- Maier, P., Rathnasabapathy M., Lu, Z., "Novel Approaches to International Cooperation and Data Sharing for SSA", 63rd International Astronautical Congress Conference Proceedings, Naples, Italy, 2012
- SpaceUp Stuttgart – October 2012
- Emanuelli, M., Raval, S., Nasser, S.A., Turconi, A., Nwosa, C., "Design and Evaluation of an Active Space Debris Removal Mission with Chemical and Electrodynamics Tether Propulsion Systems", 2012 Beijing Space Sustainability Conference, Conference Proceedings, Beijing, China, 2012
- Space Technologies for Disaster Management Project Group
 - Laygo, K. Satellite-Based Synthetic Aperture Radar (SAR) Applications to the 2011 Japan Tohoku Earthquake and Tsunami, May 2012
- Youth for GNSS
 - Tale Sundlisater. "GNSS and SBAS System of Systems: Considerations for Applications in the Arctic". Paper presented in a poster session at IAC 2012.
- Final 2012 Space Generation Fusion Forum Report
- Space Generation Congress 2012 Executive Summary
- Space Generation Congress 2012 Final Report
 - Including five Working Group individual reports
- In addition, 33 presentations including posters, papers and panels, were given by SGAC members at this year's IAC

➤ CONFERENCES WITH OFFICIAL SGAC REPRESENTATION (29)

- 49th Session of the Scientific and Technical Subcommittee of UN COPUOS, Vienna, Austria

- United Nations Economic and Social Council (UN ECOSOC), New York, USA
- ISU Southern Hemisphere Summer Space Programme, Australia
- ISU 16th Space Symposium, “Sustainability of Space Activities: International Issues and Potential Solutions”, Strasbourg, France
- IAF Spring Meetings, Paris, France
- 51st Session of the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space (UNCOPUOS), Vienna, Austria
- International Space Station and Mars Conference – Europe, International Space University, Strasbourg, France
- 28th Annual National Space Symposium in Colorado Springs, Colorado, USA
- Latin American Space Conference, Mexico City, Mexico - Youth in the Development of Space Policy
- ISECG Stakeholders Assessment Workshop, ESPI, Vienna, Austria
- SpaceUp Stuttgart, Germany
- “Introducing the Space Generation Advisory Council” at the Technical University of Delft, The Netherlands
- Small Satellite Platform Spacecraft Data Processing and Control Course, Institute of Space Technologies (IST), Islamabad, Pakistan
- Global Exploration Conference (GLEX), Washington DC, USA
- National Space Society’s International Space Development Conference (ISDC), Washington DC, USA.
- 55th Annual Meeting of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS), Vienna
- Aerospace Futures 2012 - Australian Youth Aerospace Association (AYAA), Sydney, Australia
- Farnborough International Airshow 2012, United Kingdom
- Space Studies Programme 2012, International Space University, Florida, USA
- UN-SPIDER Technical Advisory Mission to Cape Verde
- AIAA SPACE 2012 Conference & Exposition, Pasadena, California, USA
- 22nd Economic Forum by the Institute for Eastern Studies (IES), Krynica-Zdroj, Poland
- 1st UK Space Education Office (ESERO-UK) Conference, York, United Kingdom
- Annual ESPI Autumn Conference; Vienna, Austria
- World Space Week in Iran
- 63rd International Astronautical Congress (IAC), Naples, Italy
- 22nd UN/IAF Workshop on Space Technologies Applied to the Needs of Humanity: Experience from Cases in the Mediterranean Area
- SATCON: The Satellite Communications Conference & Expo, New York, USA
- Seventh Meeting of the International Committee on Global Navigation Satellite Systems (ICG), organised by the Government of China, Beijing, China

Although they are not listed here, SGAC members have also attended and helped to organise numerous events in their home countries.

➤ *FORMALISED PARTNERSHIPS (5)*

- Austrian Space Forum (ÖWF)
- International Astronautical Federation, Space Power Committee
- Washington Space Business Roundtable
- Institute for Eastern Studies
- African Regional Centre for Space Science and Technology Education in English

Sponsors and Partners

SGAC is very grateful for the continued generous support of our sponsors and partners. This year our sponsors and partners expanded both their financial and intellectual contributions. This has played an important role in the improved quantity and quality of SGAC's output in 2012.

SGAC would like to thank all sponsors and partners once again for their contribution to one of the most successful years in SGAC history.

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SpaceRef



Yuri's Night

SGC 2012 Endorsements from



Comune di Ercolano



Italian Space Agency (ASI)

SGAC BACKGROUND

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History of the SGAC

In December 1997, the UN Office of Outer Space Affairs (UN OOSA) Secretariat invited the International Space University (ISU) to organise a forum for young adults as part of the UN Committee on the Peaceful Uses of Outer Space (COPUOS). The ISU solicited alumni volunteers to plan, organise and conduct the Space Generation Forum, in parallel with other UNISPACE III activities. The Space Generation Forum was attended by 160 participants from 60 States. Their expertise covered all fields of space, including science, engineering, technology, law, ethics, art, literature, anthropology and architecture, and many other relevant fields. During the event, these participants developed ten recommendations, which were combined into the "Space Generation Forum: Visions and Perspectives of Youth".

Of these ten recommendations, five were integrated into the Vienna Declaration. One of the recommendations was "To create a council to support the United Nations Committee on the Peaceful Uses of Outer Space, through raising awareness and exchange of fresh ideas by youth. The vision is to employ the creativity and vigour of youth in advancing humanity through the peaceful uses space".

From this directive, the Space Generation Advisory Council was established. Since then, SGAC has developed into an organisation with thousands of members in over 90 countries. Organisationally, SGAC has grown by establishing Permanent Observer status in UN COPUOS in 2001, earning consultative status with the United Nations Economic and Social Council in 2003, opening its headquarters in the European Space Policy Institute in 2005, and hiring its first paid employee in 2006.

Many of our founding principles are encapsulated in our current logo:



This logo takes elements from the previous SGAC logo, such as 1) the laurels, most commonly associated with the United Nations, representing peace and unity, 2) an abstract rendition of three people in space, now part of Earth, and 3) three stars to represent space itself. Keywords of "diversity, international, professional, youth, space exploration and passion" were kept in mind when designing this logo.

Since its inception, SGAC has steadily attracted young dedicated space professionals who are passionate about forwarding their generation into space. Strong, yet expression-filled lines make up the three figures of the mark. Their intertwining lines incorporate a sense of teamwork and cohesion, which references professionalism and shared interest. Colour is used to distinguish the shapes, while symmetry brings together their likenesses. Uniformly, the mark is balanced yet dynamic, like the varying minds and backgrounds within members of SGAC. The original elements are simplified but dynamic to show the seriousness and energy of the organisation.

To be given a United Nations permanent observer status is a privilege, the laurels are there to represent its proud heritage and to communicate the organisation's peaceful pursuits. With a global community, SGAC is composed of people, interconnected, helping each other, providing a different perspective and expertise to the overall equation. Teamwork is crucial to interstellar travel, especially for a world-class organisation. The darker, more saturated colours of blue and violet represent diversity, while maintaining a level of seriousness and sophistication. The punchier, light blue highlights in the logo idea of passion and vigour. When shown on a darker background, the mark can mimic colours often found in the night sky.



Previous logo 1999 - 2011

For more information about UNISPACE III please visit:

<http://www.un.org/events/unispace3/>

For more information about the International Space University please visit:

<http://www.isunet.edu/>

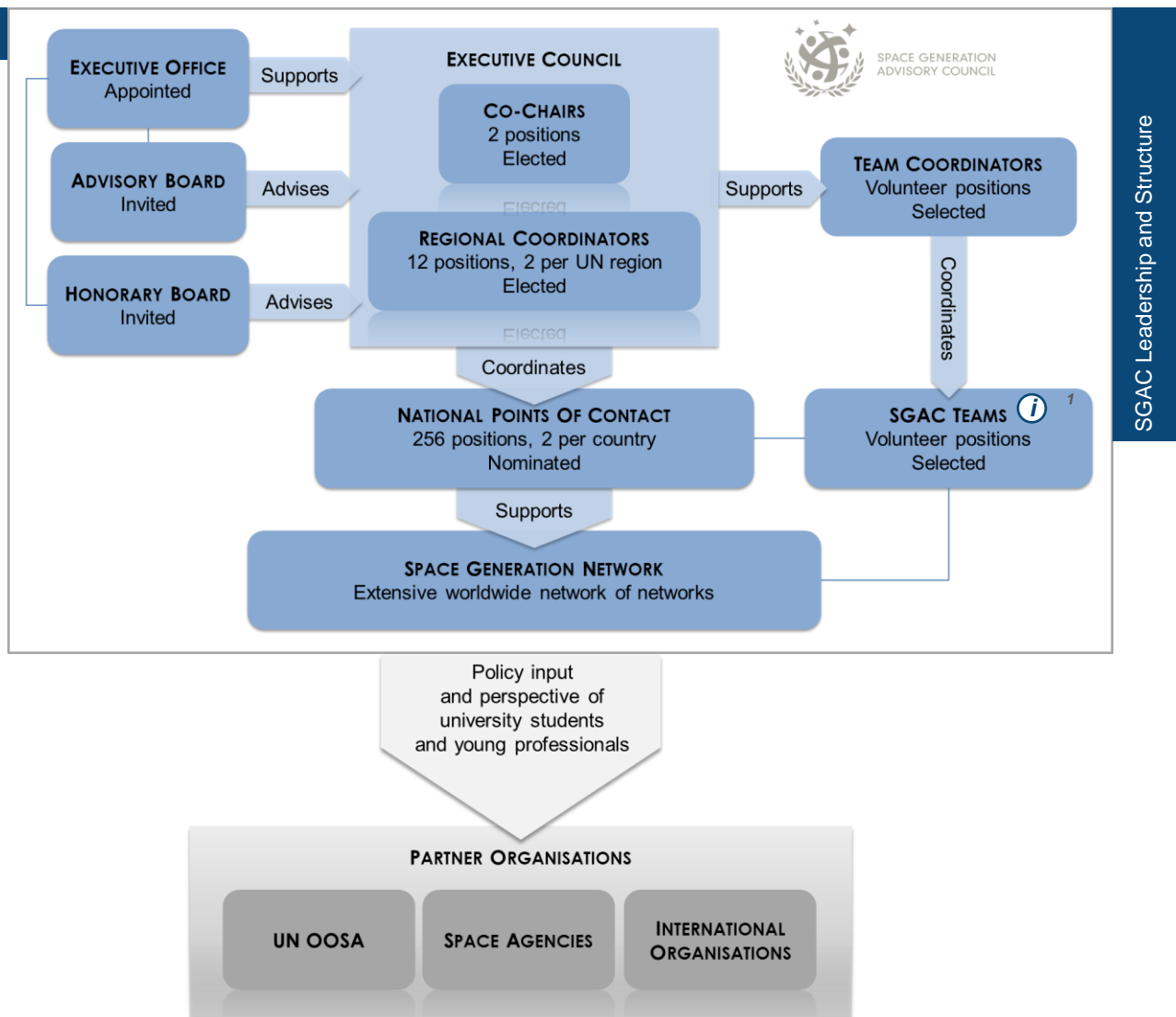
For more information about the Vienna Declaration on Space & Human Development please visit:

<http://www.unoosa.org/pdf/reports/unispace/viennadeclE.pdf>

Leadership and Structure

SGAC has a clear and solid structure that has been consolidated through the past years.

Fig. 1.



'SGAC Teams

Communications and Public Relations
Competitions
Editing
Project Groups
Website

Programme

SPACE POLICY

Past SGAC achievements include contributions to the Vienna Declaration (1999), the creation of the Latin American Space Association (ALE) (2000) and the Space Association of Turkish States (SATS) (2001), the Space Policy Summit (SPS) (2002), the EU Green Paper Submission (2003) and “The Youth Space Vision for the Next Decade” (2009).

In 2012, SGAC continued to hold an observer presence and provided input to the 49th session of the Scientific and Technical Subcommittee, the 51st session of the Legal Subcommittee, and the 55th session of UN COPUOS. SGAC also was represented at the UN General Assembly’s 67th session and UN ECOSOC in New York, USA; UN-SPIDER Technical Advisory Mission to Cape Verde; the 7th Meeting of ICG, Beijing, China; and the Action Team 14 (AT14) group meeting, the United Nations group that works on Near-Earth Objects.

SPACE EDUCATION & OUTREACH

Space outreach was once again a primary SGAC activity uniting members worldwide. Many SGAC members participated in and/or organised space education and outreach events in their respective countries, and as in former years, SGAC was able to obtain funding for several students from developing countries to attend international conferences and workshops. Such activities included organising SGC 2012 in Naples, Italy and SGFF 2012 in Colorado Springs, USA. At SGC, SGAC supported a record-breaking 28 scholarships to delegates from 15 countries. At SGFF, SGAC also supported 13 scholarships to delegates from 13 countries.

SGAC also conducts education and outreach in its various project groups including: Space Technologies for Disaster Management, Space Safety and Sustainability, Near Earth Objects, Small Satellites, Youth for GNSS Project Group and Space Law.

INTERNATIONAL COOPERATION

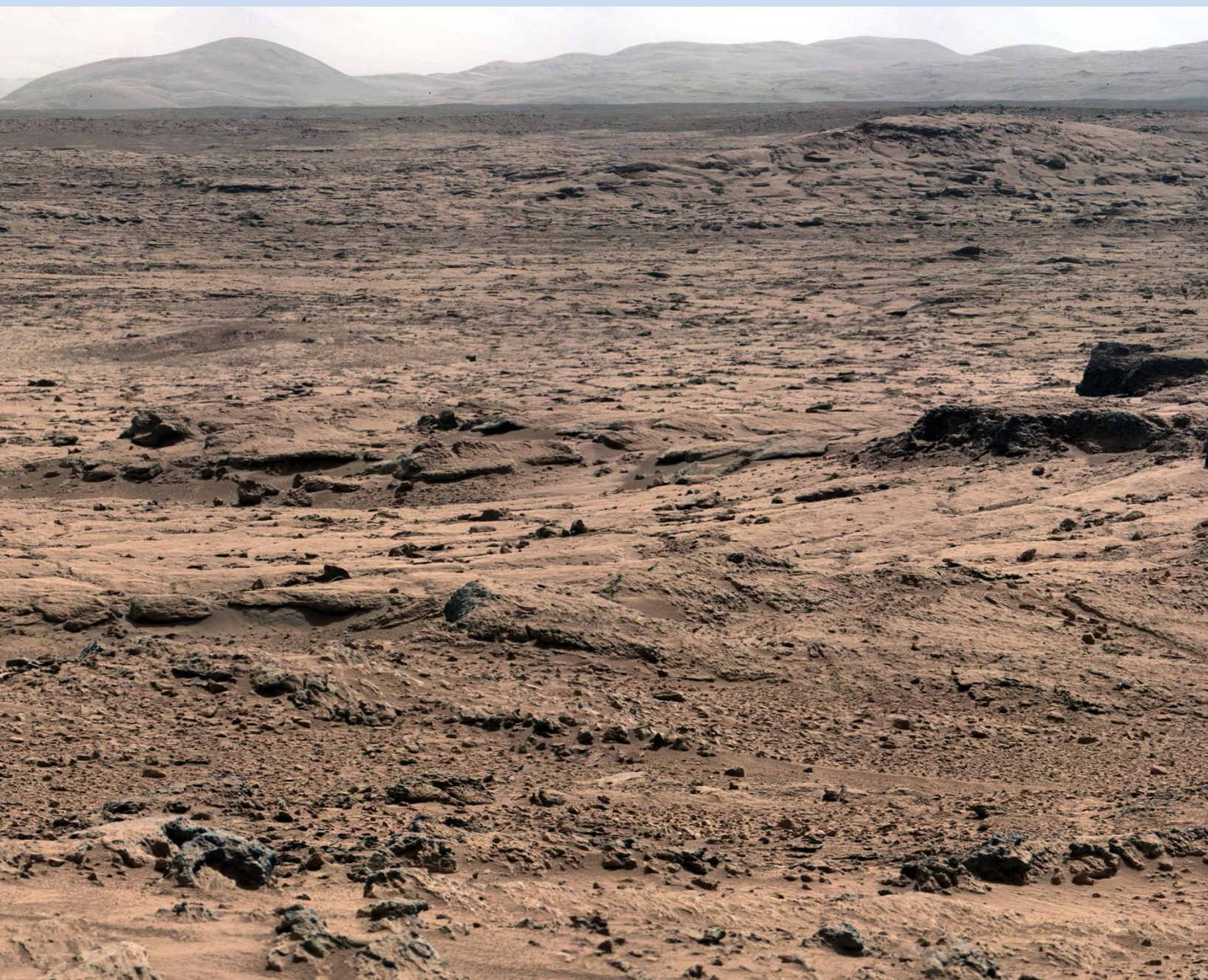
SGAC strives to promote international cooperation in all of its activities. SGAC members have worked together on projects more efficiently to save time and money. The global network enabled many proven concepts to be brought from one country to another and enhanced international collaboration.

SPACE GENERATION NETWORK

SGAC continued to expand with the addition of many new National Points of Contact (NPoCs). At the end of 2012, 61 of our 90 countries are represented by members of the SGAC.

THE ORGANISATION IN 2012

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Goal Achievement Assessment

Overview

The SGAC Strategic Plan 2012, published in January, set out nine goals for the year ahead. This section of the Annual Report is the Executive Office's self-assessment of how SGAC performed against these goals. This assessment is intended to provide an additional view on the context of SGAC's activities throughout the year and inform readers about the development of the Strategic Plan for 2013.

Strategic Goal Review

1. *Continuation of efforts towards financial stabilisation*

Output: Multi-year contracts or Memoranda of Understanding with sponsors

SGAC operated a strong financial base throughout the year to return a surplus, as planned. The organisation grew both its revenue and surplus, continuing a positive trend over recent years. All accounts were paid on time and the Executive Office has been confident of its ability to operate throughout the year. The organisation successfully managed the transition between the Executive Director and the Deputy Executive Director, a process that took about 10 months.

The major goal of securing multi-year contracts with main sponsors was not accomplished. Unfortunately, many of our sponsors are constrained in their ability to enter into such contracts and are only able to support the organisation on a year-by-year basis. Financial stability will be achieved by maintaining a close and trusted relationship with our major sponsors, which so far has been more successful than ever before.

Another aspect of this objective is to save sufficient funds to maintain a balance in excess of SGAC's immediate operational needs – this objective is yet to be realised. Thankfully, there are sufficient funds to support the paid position of the Executive Director and afford two interns per year to assist the daily work.

2. *Smooth, seamless leadership transition*

Output: Complete handover of Executive Director tasks, organisational relationships, and signatory responsibilities from Ariane Cornell to Andrea Jaime.

This goal was fully accomplished in June 2012, when the new Executive Director, Andrea Jaime Albalat, took the lead of the organisation. During the second half of the year, she has proved to be a capable leader and a hard worker. The transition period of 9 months was necessary to ensure a smooth transition between the two generations, in which Ariane Cornell did a great job. The organisation of Space Generation Congress 2012 by Andrea Jaime was a vivid proof of her professional capabilities and "sealed" the success of the transition.

3. *Execution of a New SGAC-wide Event in North America*

Output: Engage the SGAC's members and stakeholders into the preparation of the Space Generation Fusion Forum, and to seek their input for this new young professional space event that shall be held in the USA from 2012 onwards, with the aim to aid SGAC's development and growth.

SGAC's Executive Office, with the help of Space Foundation and the involvement of dedicated volunteers, accomplished this ambitious goal and held the first ever Space Generation Fusion Forum in Colorado Springs (USA) in April 2012. The event was a success and gathered 49 participants from 17 countries around the world, with 11 of them receiving scholarships procured by SGAC. The event had a different format from the Space Generation Congress, and was comprised of panel discussions in which panellists were students and young professionals. The results of the Space Generation Fusion Forum were presented in a separate session of the National Space Symposium, and a comprehensive Report was produced after the event.

The success of the Space Generation Fusion Forum resulted in the decision of the Executive Council to continue its organisation also in 2013, as well as the gracious offer by Space Foundation to support and host it again prior to the National Space Symposium in 2013. The preparations for the next year's event have already started.

➤ **4. Successful execution of the 2012 Space Generation Congress**

Output: Report on a successful event, measured in terms of delegate numbers, diversity and contribution.

The SGC 2011 in Cape Town (South Africa) was an overwhelming success, and repeating this was a challenge for SGC 2012. The challenge was met, and the standard attained at SGC 2012 sets the bar for 2013 even higher. The call for applications did not need to be extended based on the high volume of applications received. SGAC managed to gather over 130 delegates from 44 countries around the world, who produced outstanding output during the working sessions. A new panel, the "SGC Fireside Chat", organised with leaders from five space agencies (Canada, Germany, Italy, Japan, Mexico) attracted a lot of attention, and allowed these leaders to outline their views on the professional future of the new space generation.

SGC's sponsors contributed greatly to the success of the event, as well as to the ability to give out 28 scholarships to attend the SGC. Representatives of SGAC sponsors attended parts of the SGC and expressed their satisfaction with it.

➤ **5. Focused development of SGAC's year-round projects**

Output: Formalised approach to the work of the SGAC projects that would provide guidelines for: the conditions for the registration of a project, as well as of its maintenance; the rewards for successful implementation; and the criteria for closing/completing a project.

Alongside the hard work of the participants of SGAC project groups, the Project Co-coordinators were successful in reshaping and re-focusing existing project groups and establishing new ones. During the SGC 2012 two groups – the Small Satellites Project Group and the Space Law Project Group – were officially inaugurated. Both project groups were created following the new guidelines and under the guidance of the Project Co-coordinators. Further development on the leadership of the project groups is being undertaken. Some of the crucial changes were introduced as amendments to SGAC Bylaws and were voted on during the General Assembly 2012.

Some of the project groups have received increasing attention from certain SGAC sponsors, in particular the Space Safety and Sustainability, and Move an Asteroid project groups. Members of these project groups have received scholarships and awards to present the results of the work done within those groups or competitions organised by them. Due to this success, SGAC sponsors expressed their willingness and interest in continuing sponsorship of various SGAC projects and competitions.

➤ 6. *Deepening of relationships with partner organisations*

Output: Formalise the relationship with existing and new partner organisations through Memoranda of Understanding, which outline the long-term benefits of collaboration.

SGAC continued concluding various agreements with partner organisations. In 2012 the Memoranda of Understanding and other cooperation agreements signed included:

1. MoU with the Society of Satellite Professionals International
2. MoU with the Washington Space Business Roundtable
3. MoU with the International Astronautical Federation's Space Power Committee
4. MoU with the African Regional Centre for Space Science and Technology Education in English
5. Institutional partner contract with the Institute for Eastern Studies (Poland)

In addition, SGAC is working with several organisations on involvement of SGAC members into their projects, as for instance participation in the working groups of IAA, or possibility to benefit from special discounts for International Space University's programmes.

➤ 7. *Development of a database improving alumni relations*

Output: Consolidation of the database of former members and reactivation of relationships with them, particularly in the context of SGAC events and on-going projects.

Work is underway on setting up a mailing list for SGAC alumni in order to re-establish contact with them, and to extend SGAC's presence and information about its activities to our former members. The server has been cleaned up, and the organisation has prepared a request for proposal document which will aid the successful implementation of a systematic membership (current and former) database consolidation process.

➤ 8. *Recognition for SGAC through an award*

Output: A report to SGAC's Executive Council on eligibility and competitiveness for available awards

Further investigation of awards continued during 2012, although it did not bring many feasible options to consider. SGAC Advisory Board was requested to provide help and guidance on this matter, and its members expressed their willingness to alert SGAC if they receive information about an award for which the organisation would be eligible.

Activity Highlights

GENERAL HIGHLIGHTS

- Catherine Doldirina (Georgia) succeeded Michael Brett (Australia) as the new Chair of SGAC
- SGAC welcomed a new Co-Chair, Chijioke CJ Nwosa (Nigeria)
- SGAC Deputy Executive Director, Andrea Jaime Albalat (Spain) succeeded Ariane Cornell (France/USA) as the new Executive Director of SGAC at the SGAC Office in Vienna
- SGAC welcomed an intern, Cynthia Chen (Australia)
- SGAC included new members to its Advisory Board, comprised of influential members of the international space community, to provide strategic guidance.
New members include:
 - Yasushi Horikawa, Chairperson of UNCOPUOS
 - Norbert Frischauf, Future Studies Systems Engineer at SpaceTec
 - Michael Brett, outgoing SGAC Chair
 - Peter Martinez, Chairman of the South African Council for Space Affairs
- SGAC included a new member to its Honorary Board. SGAC's Honorary Board members are those who have been strong and steady supporters of SGAC and its goals:
 - JR Edwards, Manager, Human Space Flight Programs Lockheed Martin Washington Operations
- SGAC organised its fifth Move an Asteroid Competition with the support of A.C. Charania. The winner – Sung Wook Paek (Korea) – submitted a paper entitled “A Multi-functional Paintball Cloud for Asteroid Deflection”. He was invited to present his paper at the Space Generation Congress 2012 and was also featured in the LA Times.
- A total of 49 delegates from 17 countries attended the inaugural Space Generation Fusion Forum (SGFF),
- SGAC supported 13 scholarships to delegates from 13 countries to attend SGFF 2012 in Colorado, USA.
- SGAC attracted more than 300 applicants for the Space Generation Congress (SGC) 2012. The SGC 2012 reached its maximum capacity of 134 delegates travelling from 44 different countries around the globe.
- SGAC supported a record-breaking 28 scholarships to delegates from 15 countries to attend SGC 2012 in Naples.
- SGAC continued to record and publish presentations conducted during SGC. This offers members who were unable to attend the Congress the opportunity to review and recognise the ideas discussed during the event.
- SGAC announced the first NASA-SGAC video team. The team worked to produce a number of short films to support NASA in communicating the benefits of space exploration.
- The Project Group on Space Technologies for Disaster Management (STDM) was created and released a paper discussing satellite-based aperture radar (SAR) applications to the 2011 Japan Tohoku earthquake and tsunami.
- The Project Group on Small Satellites was created and had their first abstract accepted to present a poster at the 9th IAA Symposium on Small Satellites for Earth Observation Berlin, Germany.
- The Project Group on Space Law was created and presented some of their work at the IAC 2012.

- SGAC achieved remarkable participation at the IAC 2012 (Naples, Italy). SGAC members presented 33 technical papers covering vast and varying areas of interest, participated in panel discussions and organised incredibly successful outreach events, such as the Young Professional Panel, the Space Women in Emerging Countries, the SGAC Football Match, and the SGAC Booth Reception.
- SGAC expanded its social media activities by creating regional and working group Facebook pages, and renewing its old Facebook sites for the SGC and Space Generation Advisory Council Page. SGAC also started using its Twitter accounts on a more regular basis.

EXECUTIVE OFFICE HIGHLIGHTS

- SGAC Chair Michael Brett (Australia) presented SGAC's general statement, covering SGAC's developments since the last meeting of the UN COPUOS S&T Subcommittee in February 2011.
- SGAC Executive Director Andrea Jaime (Spain), presented SGAC's general statement at the 55th Session of the UN COPUOS in Vienna, in June, which explained the activities that SGAC has been engaged in during the past year.
- SGAC delivered two technical presentations at the UN COPUOS.
- SGAC Executive Director, Andrea Jaime (Spain) was on a panel on young professionals organised by the ISEB at the International Student Zone of the IAF.
- SGAC organised the panel on Space Women in Emerging Countries during the IAC, having the Executive Director Andrea Jaime as Moderator and SGAC Chair Catherine Doldirina as one of the panellists.
- SGAC Chair Catherine Doldirina (Georgia) was Master Moderator of the Day at the 28th National Space Symposium.
- SGAC former Executive Director Ariane Cornell (USA) was the moderator of the Space Generation Fusion Forum Panel at the 28th National Space Symposium.
- SGAC Executive Director, Andrea Jaime, participated in a round table on Benefits of Exploration, organised by ESPI, in Vienna.
- SGAC Executive Director, Andrea Jaime, gave a presentation on the perspectives of the young generation of the space sector in times of the financial crisis at the ESPI Autumn Conference, in Vienna.

AFRICA REGION HIGHLIGHTS

- CJ Nwosa (Nigeria) succeeded Michael Brett (Australia) as the new Co-Chair of the SGAC.
- Minoo Rathnasabapathy (South Africa) and James Chibueze (Nigeria) were elected as the new SGAC Regional Coordinators for the African region.
- Four new NPOCs: Benyam Abebe (Ethiopia), Kinyili Antony and Naftali Kagiri Kimani (Kenya) and Patsa Abram Khosto (Lesotho) were appointed, increasing SGAC representation in African countries.
- Minoo Rathnasabapathy (South Africa) and Bekele Tujuba (Ethiopia) were recipients of the Space Generation Fusion Forum Global Grants.
- Michael Afful (Ghana) and Olubunmi Emmanuel Akinwumi (Nigeria) won the 2012 OHB-SGAC Scholarship Award and Annual SGAC Satellite Futures Scholarship respectively, allowing them to participate in the SGC in Naples.
- SGAC members from the African region participated in numerous international space conferences throughout 2012 including Space Generation Fusion Forum, AIAA Space 2012, 22nd United Nations/International Astronautical Federation Workshop, 63rd International Astronautical Congress 2012 and the 2nd Annual South African Space Association Congress.
- A series of educational and outreach workshops for students were organised in many countries in the region, including presentations given at the 2nd Annual South African Space Association Congress and Kenyatta University Amateur Astronomy Club (KUAAC) launch.
- The introduction of the SGAC African Regional Facebook page was a success, connecting members across the African continent and providing a platform for discussions.



➤ ASIA PACIFIC REGION HIGHLIGHTS



- We were proud to welcome nine new National Points of Contact - Afghanistan, Pakistan, Sri Lanka, Australia (2), China (2), New Zealand, Indonesia and Philippines.
- SGAC Asia-Pacific members have attended the Space Generation Congress 2012 at Naples, Italy with unbridled enthusiasm. Out of the 133 delegates, there was an astounding 15% representation from Australia.
- Scott Fisher (Australia), SGAC's Web Editor, and Junzi Sun (NPoC, China) won the SGAC Young Leader Awards.
- Ryoko Nakamura (Japan) was the winner of the first Space Solar Power Competition.
- Elizabeth Roy (Australia) was one of the winners of the Second Annual Satellite Futures Scholarship Competition.
- Sung Wook Paek (Korea) was chosen as the winner of 2012 Move an Asteroid Competition.
- Aafaque Khan (India), SGAC's Co-Executive Secretary was selected for the prestigious Emerging Space Leaders' Grant by the International Astronautical Federation to attend the 11th Space Generation Congress, UN/IAF Workshop and the 63rd International Astronautical Congress in Naples, Italy.
- Out of the twelve winners of the SGAC Fusion Forum Global Grants Programme, there were five recipients from the Asia-Pacific region - Ahmad S. Hakimyar (former NPoC, Afghanistan), Heejin Jeong (NPoC, South Korea), Bustanul Arifin (NPoC, Indonesia), Rahul Goel (India) and Julia Leeson (Australia).
- The tireless contributions of four members were recognised by the SGAC community through the Members of the Month initiative: Aafaque Khan (India), SGAC Co-Executive Secretary - Sept 2012; Scott Fisher (Australia), SGAC Web Editor - Jun 2012; Michael Brett (former Chair, Australia) - Apr 2012; Suresh Bhattarai (NPoC, Nepal), SGAC Co-Executive Secretary - Feb 2012.
- Cynthia Chen (Australia) was selected to work as an intern for three months for SGAC in Vienna, Austria.

➤ EUROPEAN REGION HIGHLIGHTS



- SGC and the IAC took place in Naples, Italy in 2012 which was significant for the European SGAC Members and for the European space industry as a whole.
- SGAC in Europe celebrated Yuri's Night and World Space Week as part of global outreach
- Three SGAC delegates (Guzel Kamaletdinova, Stephanie Wan and Damian M. Bielicki) participated as speakers during the Economic Forum in Poland, sponsored by the Eastern Institute.
- Damian M. Bielicki (Poland) was re-elected for the second term as the Regional Coordinator for Europe. Nunzia Paradiso (Italy) has finished her last term. Guzel Kamaletdinova (Russia) was elected as the new RC for Europe.
- New NPoCs were appointed in Albania, Belgium, Ireland, Lithuania, Norway, Poland, Slovenia, Spain, Ukraine and the United Kingdom.
- To strengthen internal and external communication, the European teleconferences were launched to be held once every four months. SGAC Europe also has its own Facebook page, which was launched in Summer 2012 and remains very active.

➤ MIDDLE EAST REGIONAL HIGHLIGHTS



- Neta Palkovitz (Israel) was appointed as the NPoC of Israel.
- Ghanim-al Otaibi (Kuwait), after serving three and a half years as NPoC of Kuwait, left his duty because of increasing work commitments. Ghanim helped grow the Middle East region significantly and strengthened the connections in Kuwait for SGAC.
- S. Ali Nasseri (Iran) received the SGAC 2012 Young Leader Award.

- The Middle East region had the most attendance ever to SGC, with 9 delegates coming from Turkey, Iran, Saudi Arabia and UAE.
- To celebrate World Space Week and to introduce the Space Generation Advisory Council, the SGAC NPoCs from Iran organised and held an SGAC booth with cooperation of Night Sky Magazine in Tehran, Iran.

➤ NORTH, CENTRAL AMERICA AND THE CARIBBEAN REGIONAL HIGHLIGHTS



- Carmen Felix (Mexico), NPoC for Mexico, presented several Space Generation projects to Dr Javier Mendieta, the Director of the Mexican Space Agency.
- The first SpaceUp conference was held in Toronto on April 14, 2012 at the Centre for Social Innovations. Over 35 people attended from multi-disciplinary backgrounds, including engineers, scientists, artists, web developers, among others.
- SGAC hosted, together with the Space Foundation, the inaugural Space Generation Fusion Forum (SGFF) at the 28th National Space Symposium (NSS) in Colorado Springs, CO.
- The Astronomical Association of Jamaica, Jamaica's premier astronomy group and local SGAC liaison for space and science education and outreach, has continued to expand its network, most recently opening a chapter in the island's second city, Montego Bay.
- In collaboration with the Central American Association for Aeronautics and Space, Andres Mora (NPoC for Costa Rica) initiated two exciting projects: a national rover competition and the launch of an experiment to the ISS.

➤ SOUTH AMERICAN REGION HIGHLIGHTS



- Julio Aprea and Sergio Taleisnik (Argentina) were appointed as NPoCs for Argentina.
- Diego Jimenez (Colombia) was appointed as new NPoC for Colombia
- Bruno Sarli (Brazil) became the new NPoC for Brazil
- Miguel Gillen (Peru) started representing Peru as NPoC
- For the first time Bolivia has appointed an SGAC NPoC to represent it, Benjamin Pinaya (Bolivia)
- Pedro Molina (Ecuador), is the first NPoC to represent Ecuador.
- Former NPoC of Venezuela, Ana Alexandra (Venezuela) was selected as a scholarship winner for the Space Generation Fusion Forum, and Regional Coordinator Victoria Alonsoperez (Uruguay) received a scholarship to represent the region at the Space Generation Congress.
- SGAC representatives attended the Regional Meeting at IAC in Naples, Italy
- Chile has a new NPoC, Alejandro Lopez (Chile).

Space Generation Fusion Forum Report

Fig. 2.



The inaugural Space Generation Fusion Forum was held 15-16 April 2012 at the Broadmoor Hotel, Colorado Springs, USA. The event was hosted by the Space Foundation and had participatory support from the AIAA, the FAA COE CST and NASA. The Fusion Forum aimed to bring together top students and young professionals from all over the world to focus on key space topics.



During the first day, senior space industry professionals presented their views on space policy issues and gave relevant advice to the delegates. This first day concluded with a networking reception attended by both the participants and the speakers. The audience could exchange their thoughts in a relaxed atmosphere and discuss the various topics raised by the speakers throughout the day.

On the second day, three panels were conducted on the following topics:

1. International Collaboration - From Space Situational Awareness to Exploration
2. Developing Regions and Space Applications
3. The New Role of Commercial in Spaceflight

Panellists were chosen for their relevant experience and knowledge on the different topics covered. Each panellist had to prepare answers to a list of questions relevant to their panel topic. During the ninety minute discussions, the audience voiced their opinions and asked questions for the panel and other delegates.

The Fusion Forum concluded with a vote for the Most Valuable Participant (MVP). The winner, Minoo Rathnasabapathy (South Africa), presented the Fusion Forum's report and findings at the AIAA's Space 2012 Conference held in California in September 2012. The delegates also took part in the Opening Ceremony and the Opening Reception of the National Space Symposium on April 16th.

The Fusion Forum was hosted by the Space Foundation in conjunction with the National Space Symposium. Nearly half of the Fusion Forum participants attended the Symposium, with more than 9000 international space professionals. The Fusion Forum participants were invited to the New Generation event held during the week.

fusion forum speakers and moderators

Malissia Clinton	Senior Vice President, General Counsel & Secretary, The Aerospace Corporation
Chummer Farina	Vice-President, Canadian Space Agency
Lori Garver	Deputy Administrator, National Aeronautics and Space Administration
Yasushi Horikawa	Technical Counsellor, Japan Aerospace Exploration Agency
Clayton Mowry	President, Arianespace Inc.
Enrique Pacheco	Deputy Director for Space Science and Technology Affairs, Mexican Space Agency (AEM)
William Parker	Special Advisor for International Affairs, Space Foundation
Elliot Pulham	Chief Executive Officer, Space Foundation
Michael Simpson	Executive Director, Secure World Foundation
Mark Sirangelo	Corporate Vice President, Sierra Nevada Corporation & Head, Sierra Nevada Space Systems

Please see <http://www.youtube.com/user/spacegeneration> for selected presentations.

PANEL 1 – INTERNATIONAL COLLABORATION: FROM SPACE SITUATIONAL AWARENESS TO EXPLORATION

Fig. 3.



Panellists discussed international collaboration, in the context of both technical and policy issues. As the number of space-faring nations increases, international collaboration was seen as essential in many areas of the space industry. Essential collaborations between established and emerging space nations should lead to mutual benefits based on equality, shared interests and technology transfer.

The panel also discussed the growing need for the regulation of space. Ideas put forward for an International Code of Conduct would require an inclusive forum taking into consideration the geopolitical and cultural interests of all nations involved. To gain international diplomacy, the panel determined that it would be important to understand the niche capabilities of each nation, taking into account issues such as cultural diversity, significant differences in agency practises, intellectual property and export control. In order to achieve a truly international perspective, importance should not be placed only on collaboration in general, but on collaboration between nations that ensures the long-term sustainability, stability and security of the space environment.

PANEL 2 – DEVELOPING REGIONS AND SPACE APPLICATIONS

Fig. 4.



Panellists achieved very interesting conclusions, that are summarised as follows. Space applications were deemed very useful for a developing nation. Such applications provide ways to connect populations, help educate groups with little to no access to educational resources, support efforts in the prevention of disasters and mitigation of their effects, support the production of food and other goods and provide access to health facilities and expertise to those in need.

The motivations of developing nations to maintain a space programme can differ from those of developed nations. Developing nations seek mainly to provide solutions for the basic needs of a population, while developed nations typically desire to maintain and improve space infrastructure in order to their economy. Some developing nations that may have interests more aligned with those of developed nations include China and India, as they have evolved from focusing on basic needs to the establishment of science and exploration initiatives.

Developing nations need to enhance their space capabilities in order to create and operate successfully large space projects. Having a group of nations that can accomplish common objectives via international collaboration, through the implementation of regional space agencies, could help achieve this by distributing the costs among the interested countries.

A discussion arose on how developing countries should enable their know-how in space, whether this could be obtained from developed nations, or whether they should build it up by themselves. The former was deemed very effective, but potentially difficult, given export control and intellectual property issues; the latter philosophy may be slower, but would allow for greater independence from foreign goods and geopolitics.

PANEL 3 – THE NEW ROLE OF COMMERCIAL IN SPACEFLIGHT

Fig. 5.



The main conclusions of this panels are stated here below:

A successful commercial human spaceflight industry that incorporates both human and government assets would require many facets to be successful. Firstly, the commercial industry would require a stable market, initially involving strong government support. Commercial initiatives also require smaller platforms with shorter design and manufacturing cycles and a well-educated public that appreciates the advantages of a human spaceflight programme.

Challenges for the commercial spaceflight industry include being able to maintain a profitable and sustainable industry, with opportunities for expansion and growth, without jeopardising the safety of their investments. The government could place itself as an anchor tenant by procuring flights to the ISS, which would initially support the development of commercial efforts. Other novel ideas, such as a “space lottery” system, could help with initial developments.

Furthermore, an ideal commercial launch site requires various components, such as a geographically strategic location, existing available infrastructure and commercial factors.

Safety is a large concern, specifically with regards to the additional stresses and medical standards required for suborbital and orbital flight. There is a need to balance profitability with the marginal returns of added safety features for commercial spaceflight participants.

fusion forum statistics

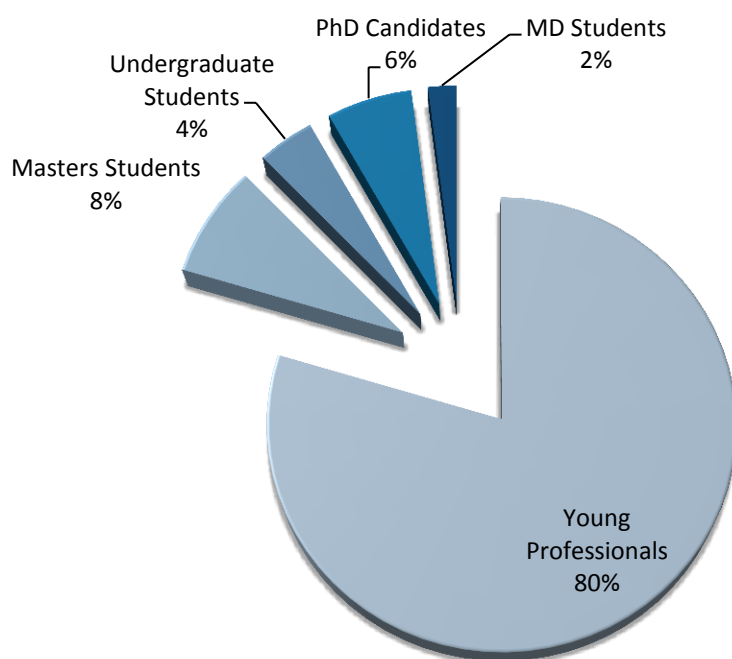
Forty-nine delegates participated in the Fusion Forum. Of these 49 delegates, 12 were part of the organising team. Speakers, moderators and industry professionals joined the discussion based on their availability.

Within the delegates, 13 participants from 13 countries were given scholarships for attendance. This helped to broaden the international network of the SGAC and allowed the delegates to interact with people from many countries and backgrounds. The age range of selected delegates was from 21 to 37. Of this, 47% were female and 53% male.

The majority (80%) of attendees were young professionals, with the remaining 20% currently studying at universities across the world. Of the student participants, 20% were undergraduates and 80% were postgraduates (Masters or PhDs). The young professional attendees came from a variety of space related fields such as aerospace medicine, space law, space policy, engineering, and science. Delegates represented commercial and non-profit organisations, space agencies, and universities.

Fig. 6.

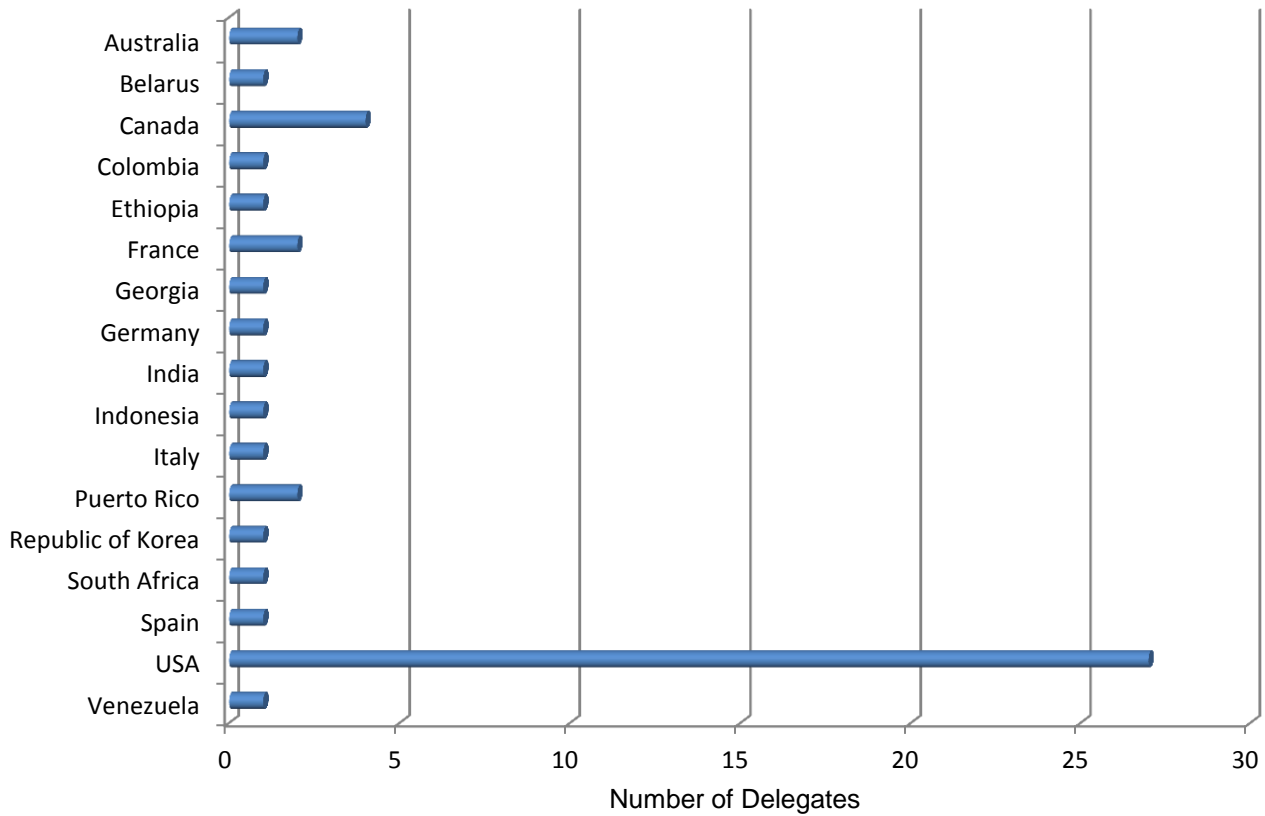
Professional Status of Fusion Forum Delegates



Representatives of 17 countries participated in the Fusion Forum. The highest percentage of delegates came from the USA, followed by Canada, and 74% of participants were from developed space nations.

Fig. 7.

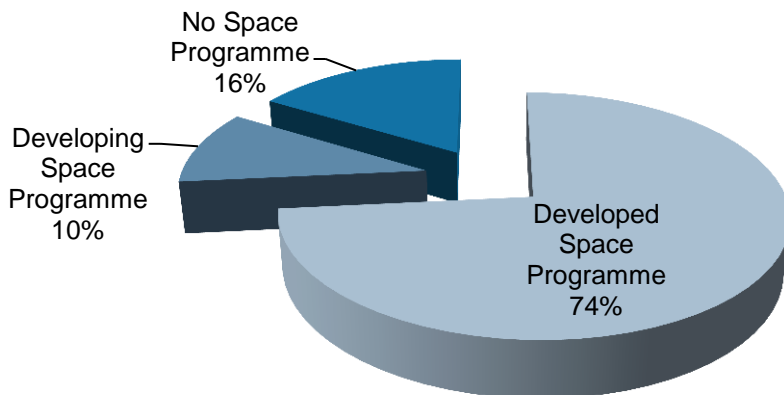
Fusion Forum Delegate Citizenship



Of the delegates, 16% were from developing countries. In addition, 10% of the delegates were from countries with a developing space programme and 16% were from countries with no space programme.

Fig.8.

Percentage of Delegates and their Countries of Citizenship's Space Programme Status^{*III}



*Hauser, M & John, M 2009, 'Solution from Space: Space Applications for International Development', Space Foundation, viewed 30 May 2012, <http://www.spacefoundation.org/docs/Space_Apps_for_Intl_Development.pdf>

Space Generation Congress Report

Fig. 9.



Delegates at the 11th Annual Space Generation Congress in Naples, Italy

The Space Generation Congress (SGC) is the annual meeting of the SGAC in Support of the United Nations Programme on Space Applications. Participants are top university students and young professionals with a passion for space. Within this Congress, SGAC aims to hone and promote the voice of the next generation of space sector leaders on the topic of international space development.



The three days of SGC 2012 brought together students and young professionals in the space sector from 44 countries for inspiring and resourceful engagement with their peers. The event, in its 11th year, was hosted in Naples, Italy from 27 to 29 September, just prior to the 63rd International Astronautical Congress (IAC). The Congress had 134 delegates. Registration attracted applicants from over 58 countries, demonstrating SGAC's ever-growing network of international members, as well as the high calibre of the organisation and its events.

Attendees heard perspectives on space issues from the world's leading space organisations, including the International Astronautical Federation (IAF), National Aeronautics and Space Administration (NASA) and the United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS).

Similarly, leaders from these space organisations had the opportunity to gain insight into the innovative and bold perspectives of the upcoming space generation on the five main themes of SGC 2012: Industry, Agency, Society, Exploration and Earth Observation. SGC 2012 was supported by several sponsors and organised by a committee of volunteers from across the globe. The 2012 Space Generation Congress would not have been possible without either so SGAC would like to express its gratitude and appreciation.

sgc speakers

Lorenzo Campo	Research Fellow at the Department of Civil and Environmental Engineering, University of Florence
Marco Ferrazzani	Legal Counsel, Head of the Legal Department, ESA
Berndt P. Feuerbacher	President of the International Astronautical Federation (IAF)
William H. Gerstenmaier	Associate Administrator, Human Exploration and Operations Directorate, NASA
Jacques Gigou	Technical Coherence Manager, ESA
David Kendall	Director General Space Science and Technology, Canadian Space Agency (CSA)
Kiyoshi Higuchi	Vice President, JAXA
Yasushi Horikawa	Chairperson of UN COPUOS and Technical Counselor at JAXA
Francisco Javier	General Director, Mexican Space Agency (AEM)
Mendieta-Jiménez	
Cosimo La Rocca	Advisor to the President, Italian Space Agency (ASI)
Asra Najam	Economics Student at the University of Michigan, 2012 SGAC \$pace is Business! Competition Winner
Ryoko Nakamura	Young Professional at JAXA, 2012 International Space Solar Power Competition Winner
Matthew A. Noyes	Mechanical Engineering Student at the University of Rochester, 2012 OHB-SGAC Competition Winner
Sung Wook Paek	PhD Candidate in the Strategic Engineering Research Group at MIT, 2012 SGAC Move an Asteroid Competition Winner
Michael K. Simpson	Executive Director, Secure World Foundation
Johann Wörner	Chairperson of the Executive Board, German Aerospace Centre (DLR)
Badri Younes	Deputy Associate Administrator, Space Communications and Navigation (SCaN) Programme Office, NASA
Confirmed but unable to attend:	
Mario Cosmo	Technical Director, Italian Space Agency (ASI)
Antonio Fabrizi	Director of Launchers, ESA

Please see <http://www.youtube.com/user/spacegeneration> for selected presentations.

At the core of SGC 2012 were the working groups, where delegates discussed their views on the development of space and prepared a set of recommendations to be published internationally by SGAC. Each working group produced a report on their discussions and recommendations, which will be shared with the United Nations as well as SGAC sponsors, members and alumni from around the world. SGAC would like to thank the key session supporters, NASA SCan, Lockheed Martin, Secure World Foundation and SGAC's anonymous donor, for making these SGC working groups possible.

Industry – Space Transportation

Supporter: N/A

Subject Matter Expert: Emmanuelle David (France)

Moderator: Remy Chalex (France/Brazil)

The Industry working group focused on space transportation and the role of the new European launch capability in the international sector. They linked it to the Congress' host nation, as the Italian industry is the main partner of the new European launcher, VEGA, whose first flight in February 2012 was a success.

The group listed countries with launch capabilities and explored how to increase the number of countries with this unique ability, what each country could offer, the differences between these countries, potential challenges and the sensitive issue of competition versus collaboration. Particular emphasis was placed on the European launch capacity and where it stands in the international context, especially in light of the recent success of the VEGA launch, the Soyuz's new launch platform at the European Spaceport and potential collaborative efforts with other regions around the world.

They devised the following recommendations and conclusions:

- Encourage established space-faring nations to strengthen their relationships with emerging space-faring nations to foster global growth and collaboration on launch efforts
- Advocate for the development of launch capacities in new space nations to encourage global competition within the launch industry
- Enable the emerging private sector to access and create markets to foster competition, innovation and efficient operation capacity
- Support international efforts to promote national policies requiring launch vehicle operators to deorbit upper stages
- Support the creation of international mechanisms to introduce more safety and sustainability into launch vehicle operations and site practices such as sharing best practices for safety at ground facilities and international research on environmentally responsible fuels and vehicles
- Explore opportunities to foster international trade and cooperation in spite of relatively stable national and international controls on space exports and technology transfers, such as using agency prerogatives and exemptions available within the existing US export control regime and creating an international expert group to study "buffer" or "interface" technologies that address transfer concerns



Launch of Vega. Credit: ESA

Fig. 10.



Delegates working during the Working Group Sessions

Agency – The International Space Station

Supporter: Lockheed Martin

Subject Matter Expert: Dr Michael Hawes (USA)

Moderator: Kat Coderre (USA)

The Agency working group discussed the potentials for future maintenance of the International Space Station (ISS). In 2010, the main partners of the ISS agreed to extend their contributions for at least another decade. Major partners such as Japan, Russia, USA and Europe have committed to extend the life of the ISS up to 2020, or possibly even 2028. However, in light of the economic crises affecting some of these partners, several cuts have been implemented in their respective budgets for space activities. The retirement of the Shuttle and the current void in its place are making it increasingly difficult to access the Low Earth Orbit station.



International Space Station. Credit: NASA

The group examined the implications and benefits of this extension at an international level, the utilisation of the ISS as an analogue platform for human exploration, as well as outreach projects to promote the ISS, such as mobile applications, websites and human spaceflight programmes.

They reached the following recommendations and conclusions:

- Transform the ISS into a commercial facility

- Use the ISS as an analogue for a Mars mission
- The ISS as the main outreach tool to promote space agencies space activities
 - Smartphone apps
 - Shuttle Carrier Aircraft Museum

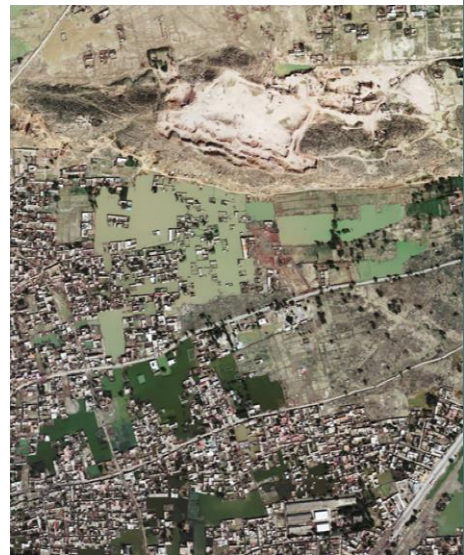
Society – Space for Humanitarian Relief

Supporter: Secure World Foundation

Subject Matter Expert: Tiffany Chow (USA)

Moderator: Ross Findlay (UK)

The Society working group established how space data could help support humanitarian tasks focused on people who need assistance. Humanitarian relief during natural or man-made disasters requires rapid decision making with accurate, real-time data that only satellites can provide. They can, for example, be used to find good locations for refugee camps, support logistics and planning, and for monitoring reconstructive activities. Damage estimates and planning data are crucial for reconstruction activities. NGOs are known for using space-derived data to influence the behaviour of governments and to provide public awareness and verification of war crimes.



Pakistan Floods. Credit: GeoEye

The group recognised how space is used in humanitarian efforts in conflicted areas and how NGOs such as the World Health Organisation (WHO), Red Cross and Doctors Without Borders are currently implementing space tools.

They presented the following recommendations and conclusions:

- Create a new Centre for Responsive Information for Safety and Security (CRISIS) either alongside or within the United Nations Operational Satellite Applications Programme (UNOSAT) to act as an impartial, international coordinating body for providing space-based information in support of humanitarian relief.
- Develop an interface between users, data providers and the public by setting up technical, legal and cost standards; initiating field data requests, exchanges, processing and delivery; increasing public awareness, visibility and participation; and tailoring of the processing approach based on priority.

Fig. 11.



Members of the Society Working Group
with the Subject Expert Matter, Tiffany
Chow (Secure World Foundation)

Exploration – Communications for Exploration

Supporter: NASA SCA^N

Subject Matter Expert: Stephanie Wan (USA)

Moderator: Victoria Alonsoperez (Uruguay)

The Exploration working group considered the difficulties of overcoming communications in space exploration. As space agencies focus their exploration programmes to destinations beyond the ISS and to the Moon, Near Earth Objects and Mars, space exploration is becoming an increasingly popular discussion.

The group discussed the importance of communications in exploration programmes, tele-medicine, crew support, communications challenges such as time-delay, as well as the importance of a crew's self-reliance during non-real-time communications with mission control.

They raised the following recommendations and conclusions:

- Special consideration should be given to Mars, with international cooperation identified as a key parameter. Major concerns include distance, time delays, accessibility, insufficient data rates and coverage, non-optimal utilisation of space resources, barriers concerning data sharing and the standardisation of related methodologies.
- Increased standardisation and globalisation of technologies are key, including technology transfer and development, as well as the development of an internationally integrated network of multiple small satellites.
- Standardisation and globalisation could be achieved through implementing backwards compatibility to help ease the transition into new technologies, and by incorporating communication protocols and a framework for private companies.
- To ensure the sustainability of Martian orbits, development could be made towards an internationally integrated network of multiple small satellites with standardised interfaces. This network could provide dedicated communication relays or the inclusion of relays on other spacecraft, such as fuel depots, where dedicated relays are able to use higher orbits.



Parikes Radio Telescope. Credit: NASA

Furthermore, to keep up with new technologies and needs, it is possible to use more satellites with shorter lifespans by implementing the concept of ‘mass production’.

Fig. 12.



Members of the Exploration Working Group during the Working Group Sessions

Earth Observation – Space Resources for Water Management

Supporter: SGAC's Anonymous Supporter

Subject Matter Expert: Noemie Bernede (France)

Moderator: Mariel Borowitz (USA)

The Earth Observation working group explored the ways in which space technology could contribute to the improvement of Earth's water management through various methods. Desertification, access to drinking water, and the management of water-related emergencies are some examples of problems faced by countries across the globe, particularly those in developing regions.

The group discussed previous water-related natural disasters that have occurred around the world and the national emergency strategies that followed. They discussed current space technologies that are available for the purpose of water management such as Earth Observation satellites and remote sensing. Finally, they discussed how aware developing and developed countries are of the capacity for space technology to improve water management.

They expressed the following recommendations and conclusions:

- Promoting data sharing, collection and research to ensure continuity of data collection; encouraging standardisation of data formats; increasing the availability of data by ensuring low



Earth from GEO. Credit: NOAA

costs, reduced restrictions and streamlined access to data by users; and encouraging incentives for data use by awarding scholarships, providing grants for data use and initiating competitions

- Supporting applications by continuing programmes – such as the ISS SERVIR Environmental Research and Visualization System (ISERV) – to make use of data; building on established regional initiatives, for example, ESA TIGER or Global Earth Observation System of Systems (GEOSS); prioritising local capacity-building through cooperative or exchange projects and site demonstrations
- Engaging stakeholders by raising public awareness of the benefits of Earth Observation through the utilisation of social media such as YouTube and television, as well as integrating programmes into Science, Technology, Engineering and Mathematics (STEM) education; raising awareness with decision makers at the governmental or national level by quantifying the return on investment in terms of money, knowledge acquisition and prestige, as well as presenting specific regional applications that may be of benefit to society

Fig. 13.



Members of the Agency Working Group with Subject Matter Expert, Dr. Michael Hawes (Lockheed Martin)

SGAC closed registrations for the Space Generation Congress on 24 July, with more than 250 applications from 58 different countries.

After a diligent selection process, a total of 134 delegates participated in SGC 2012. Of those 134, 28 participants from 15 countries received scholarships with assistance from SGAC and its partners to attend SGC 2012 in Naples. There was a relatively even distribution of genders amongst final delegates, with 40% women and 60% men, an achievement that is uncommon for events in the space sector. Delegates came from a vast array of backgrounds, with 29% undergraduate students, 15% masters students, 11% PhD students, 41% young professionals and the remaining 5% dedicated to other areas of industry. SGAC believes that these statistics truly demonstrate SGAC's international influence, and its continuing ability to grow. This development gives SGAC the momentum to establish a distinct and highly representative network of young space professionals and university students.

SGAC is also pleased to have welcomed a diverse representation of delegates from an array of countries and regions. SGC 2012 attendees came from more than 44 countries across six continents, setting another Space Generation Congress record. This internationalism is a major contributor to the development of a truly international voice of the space generation that SGAC strives to epitomise.

Fig. 14.

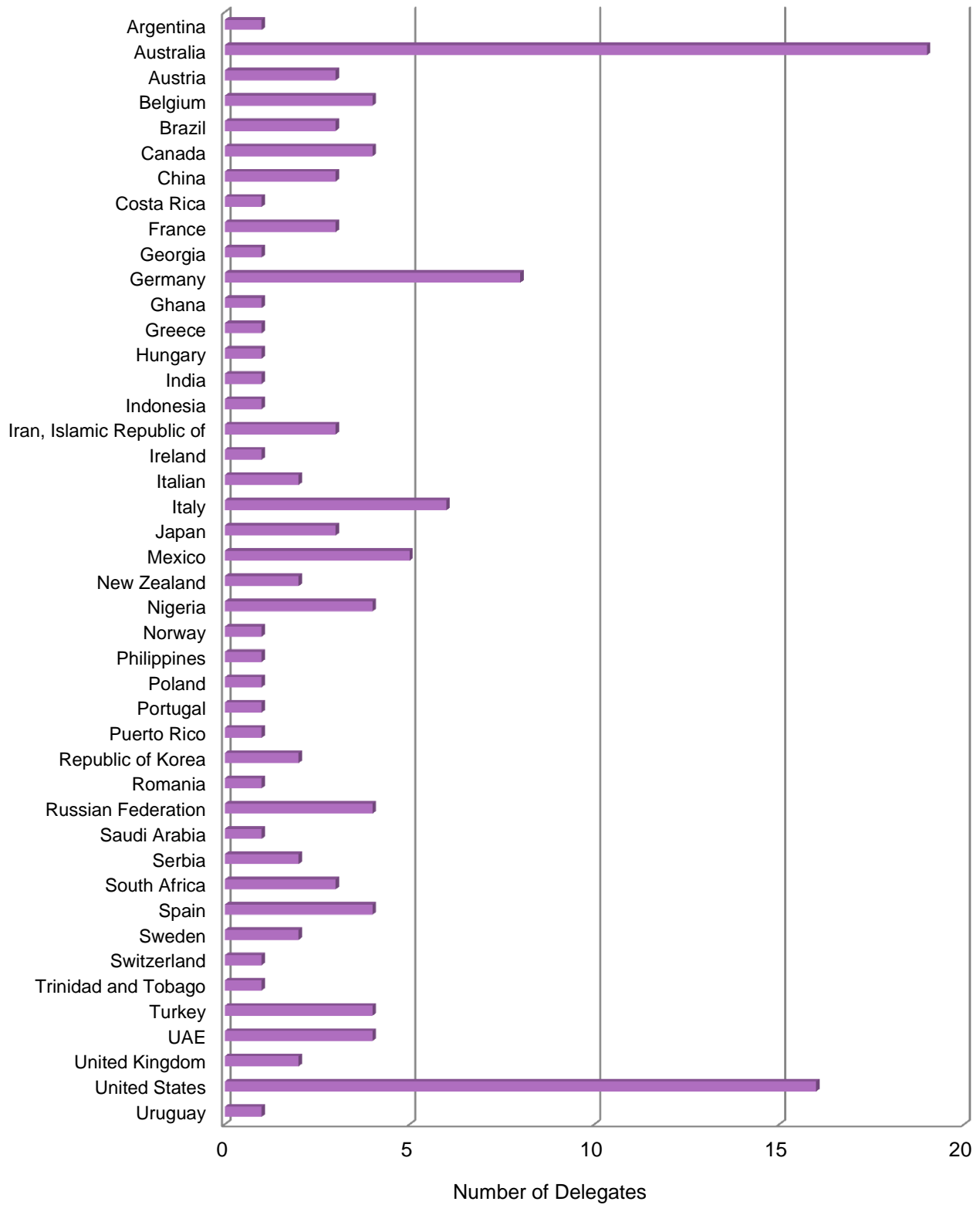


Networking opportunities during the coffee breaks

Representatives from 44 countries participated in SGC 2012. The highest percentage of delegates came from Australia, followed by the United States, Germany and Italy.

Fig. 15.

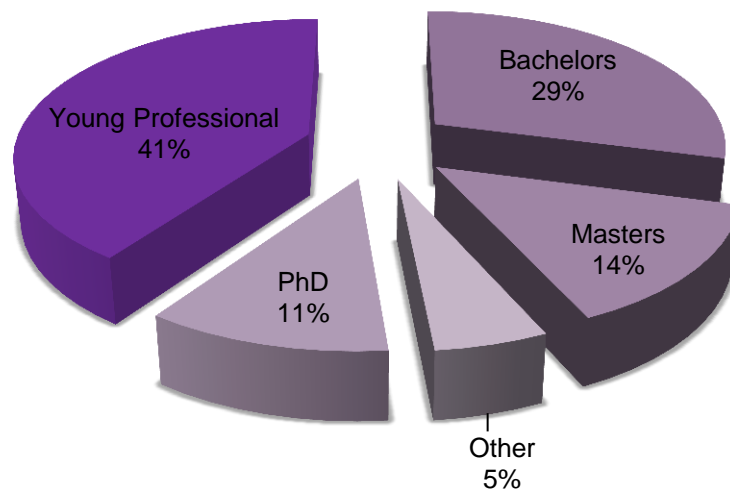
SGC Delegate Citizenship



Whilst the majority of SGC delegates were students (undergraduate, Masters and PhD), close to 45% were young professionals working within industry, in a postdoctoral position or working in space agencies.

Fig. 16.

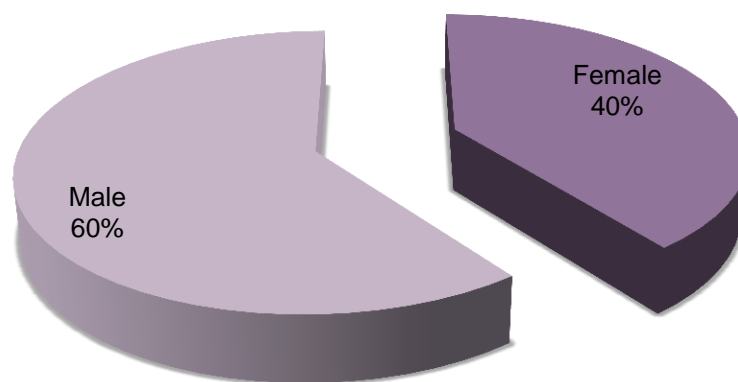
Professional Status of SGC 2012 Delegates



SGAC is proud to have had a relatively even gender distribution amongst the pool of delegates at SGC 2012, with a 40% female representation. This is a phenomenon that deviates from the norm in events in the space sector and SGAC is pleased to see such gender balance at the event.

Fig. 17.

Gender of SGC 2012 Delegates



United Nations Report

UN COPUOS AND SUBCOMMITTEES

The United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS) was established by the General Assembly in 1959 to review the scope of international cooperation in the peaceful uses of outer space, to devise programmes in this field to be undertaken under United Nations auspices, to encourage continued research and the dissemination of information on outer space matters and to study legal problems arising from the exploration of outer space. COPUOS and its two subcommittees, the Scientific and Technical Subcommittee (S&T Subcommittee) and the Legal Subcommittee, each meet annually to consider questions put before them by the General Assembly, reports submitted to them and issues raised by the Member States. The Committee and the Subcommittees, working on the basis of consensus, make recommendations to the General Assembly.

The 55th Session of the UN COPUOS was held 6-15 June in Vienna, Austria. SGAC, which has been a Permanent Observer in UN COPUOS since 2001, contributed a general statement and presented the results from the Space Generation Fusion Forum 2012. Additionally, SGAC held an Advisory Board meeting on 13 June, and participated in the International Committee on GNSS (ICG) meeting on 5 June. Deputy Executive Director Andrea Jaime gave the official statement for SGAC on 7 June, which explained the activities of SGAC during the past year since the last meeting of UN COPUOS. Underlined in this speech were the number of scholarships that SGAC has provided for its members to attend conferences; the NEO, STDM, SSS, and YGNSS projects' work that SGAC members have achieved; SGAC major events SGC and the Fusion Forum; and the gratitude SGAC has for its committed sponsors and partners.

On 13 June, SGAC held an Advisory Board meeting at the United Nations. In this meeting, board members were given a summary of SGAC's status and strategy. The lively discussion that followed was full of valuable suggestions and inputs. Executive Director Ariane Cornell addressed UN COPUOS on the morning of June 14th with a technical presentation on the results of the inaugural Space Generation Fusion Forum. On the margins of the UNCOPUOS, SGAC also signed a Memorandum of Agreement with ARCSSTE-E (Nigeria), as well as actively participated as a member of the Action Team 14 group, the United Nations group that works on Near-Earth Objects.

Fig. 18.



Left: Ariane Cornell, former Executive Director giving the technical presentation on Space Generation Fusion Forum 2012 Results. Right: SGAC and ARCSSTE-E signing the agreement

We would also like to highlight the large delegation that SGAC had this year, and thank to all of them for their attendance. Nouf Al Jalaud (NPoC Saudi Arabia), Etim Offiong (NPoC Nigeria), Klaus Kornfeld (NPoC Austria), JR Edwards (Honorary Board Member) and Angelo Vermeulen (SGAC member) formed the SGAC delegation, bringing diversity and young spirit to the United Nations. SGAC is very pleased with its activities during the 55th Session of UN COPUOS and looks forward to the next UN COPUOS gathering at the Scientific and Technical Subcommittee meeting in February 2013.

Fig. 19.



Andrea Jaime (Executive Director), Klaus Kornfeld (NPoC Austria), Agnieszka Lukaszczuk (Advisory Board member), Ariane Cornell (former Executive Director) and Etim Offiong (NPoC Nigeria) in the SGAC Headquarters Office, Vienna

SCIENTIFIC AND TECHNICAL SUBCOMMITTEE

As a permanent observer of the S&T Subcommittee of UN COPUOS, SGAC participated at the 49th session held from 6-17 February 2012 at the United Nations in Vienna, Austria. On Monday February 6, SGAC Chair Michael Brett presented [SGAC's general statement](#) in which he covered SGAC's developments since the last session in February 2011. The statement highlighted SGAC's achievements in 2011, namely:

- Producing intellectually-rigorous contributions to the space community from the perspective of young people through our standing project groups
- Making key developments to strengthen the organisation for sustainability
- Enabling more young professionals and university students to participate in space conferences internationally
- Continuing positive, growing SGAC trends throughout the year and beyond

On the same day SGAC Deputy Executive Director Andrea Jaime [presented the results](#) and recommendations of the 2011 SGC held September 29 to October 1 2011 in Cape Town, South Africa. In her presentation to the S&T Subcommittee, Andrea provided delegates with an overview of the Congress, noted some of the many prominent SGC speakers and presented the topics and specific recommendations from the five project groups (Industry, Agency, Society, Exploration and Outreach).

Additionally during the two-week meeting, SGAC members represented YGNSS, NEO and SSS project groups in relevant UN level meetings held on the margins of S&T. SGAC's delegation also held many productive meetings with SGAC's partner organisations in attendance, including the IAF, Secure World Foundation and the Space Foundation. SGAC is proud of its delegation consisting of Executive Director, Ariane Cornell (France/USA); Deputy Executive Director, Andrea Jaime (Spain) and Chair, Michael Brett (Australia) and looks forward to another year of representing the voice of the youth in space policy, and the S&T Subcommittee was an excellent start.

Fig. 20.



Left: Michael Brett. Right: Andrea Jaime

LEGAL SUBCOMMITTEE

The Legal Subcommittee of UN COPUOS held its 51st session in Vienna from the 28 March to 8 April, 2011. SGAC did not make a statement during this session of the subcommittee but then SGAC Executive Director Ariane Cornell and then Deputy Executive Director Andrea Jaime were present.

UN ECONOMIC AND SOCIAL COUNCIL

ECOSOC was established under the United Nations Charter as the principal organ to coordinate economic, social, and related work of the 14 UN specialised agencies, functional commissions and five regional commissions. The Council also receives reports from 11 UN funds and programmes. The ECOSOC serves as the central forum for discussing international economic and social issues and for formulating policy recommendations addressed to Member States and the United Nations system. It is responsible for:

- Promoting higher standards of living, full employment, and economic and social progress,
- Identifying solutions to international economic, social and health problems,
- Facilitating international cultural and educational cooperation, and
- Encouraging universal respect for human rights and fundamental freedoms.

It has the power to make or initiate studies and reports on these issues. It also has the power to assist the preparations and organisation of major international conferences in the economic and social and related fields and to facilitate a coordinated follow-up to these conferences. With its broad mandate, the Council's purview extends to over 70 per cent of the human and financial resources of the entire UN system.

Since 2003, SGAC has had Consultative Status at UN ECOSOC. As such, SGAC representatives can participate in meetings of the UN ECOSOC, the UN COPUOS and also of the UN General Assembly and its Committees, and propose inputs when relevant. SGAC UN ECOSOC Representatives, Artiom Anisimov and Frédéric Bastide, participated during the week of the 15th-19th of October as observers in the UN General Assembly in New York. In particular, they took part in the meetings of the 1st and 4th Committees of the UNGA, since both had agenda items dealing with space matters and therefore relevant to SGAC's activities.

REPORT FROM THE UN GENERAL ASSEMBLY 67TH SESSION, NEW YORK, USA

Fig. 21.



UN General Assembly 67th Session, New York, USA

The 1st Committee¹ deals with disarmament, global challenges and threats to peace that affect the international community and seeks out solutions to the challenges in the international security regime. It is worth noting that this committee works in close cooperation with the United Nations Disarmament Commission and the Geneva-based Conference on Disarmament. Of interest to SGAC, this committee addresses the prevention of an arms race in outer space, including nuclear weapons. The general view from the Member States is that outer space should be maintained for peaceful uses and that its sustainability must be ensured.

The 4th Committee², known as 'the Special Political and Decolonisation Committee' deals with a variety of subjects including those related to decolonisation, Palestinian refugees and human rights, peacekeeping, mine action, outer space, public information, atomic radiation and University for Peace. In particular, this committee has an agenda item covering international cooperation in the peaceful uses of outer space. Under this agenda item, the UN COPUOS chair Dr Horikawa from JAXA reported on the 55th session of COPUOS³. In particular, he reported ways to maintain outer space for peaceful purposes in the 49th session of the S&T Subcommittee. He also detailed implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, the 51st session of the Legal Subcommittee, space and society, space and water, space and climate change, and the use of space technology in the United Nations system. Moreover, Japan put forward a resolution⁴ to the UNGA proposing to adopt the UN COPUOS report and support the continuation of the work of COPUOS to promote further international cooperation in space. Finally, a resolution of the UNGA was proposed to increase the membership of UN COPUOS⁵. With this proposed resolution, UNGA would appoint Armenia, Costa Rica and Jordan as new members of UN COPUOS.

¹ The 1st Committee documents for the UNGA 67th sessions can be found there: www.un.org/en/ga/first/67/documentation.shtml

² The 4th Committee documents for the UNGA 67th sessions can be found there: www.un.org/en/ga/fourth/67/documentation.shtml

³ http://www.oosa.unvienna.org/pdf/gadocs/A_67_20E.pdf

⁴ <http://daccess-dds-ny.un.org/doc/UNDOC/LTD/N12/556/44/PDF/N1255644.pdf?OpenElement>

⁵ <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N12/549/04/PDF/N1254904.pdf?OpenElement>

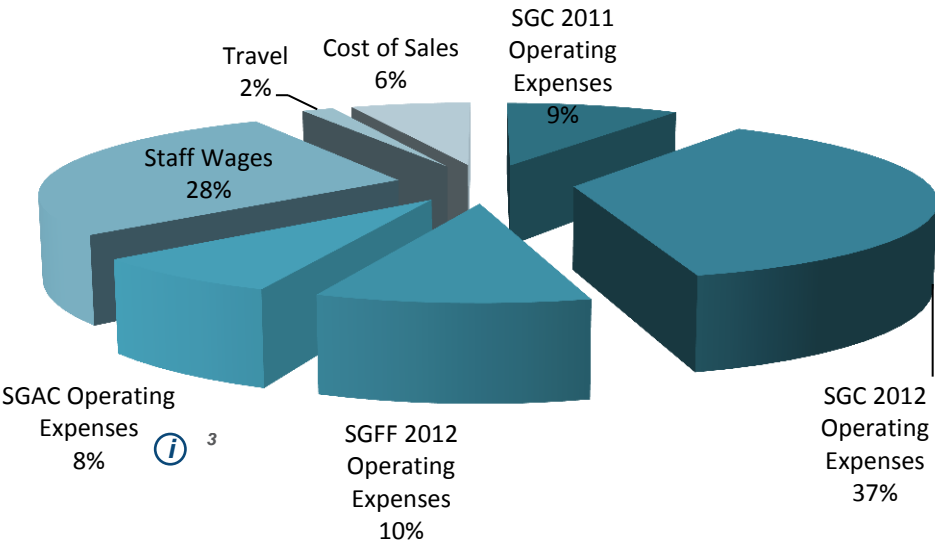
Financial Report

profit and loss statement

	2011	2012
Revenue		
General Sponsorship	11,005.30	43,977.07
Interest Income	50.60	38.33
Refunds on payments	800.82	248.42
SGC Delegate Fees	6,391.72	9,415.00
SGC Sponsorship	115,128.62	47,543.10
SGFF Delegate Fees	-	1,311.42
SGFF General Sponsorship	15,287.95	47,012.71
Yuri's Night Sponsorship	4,988.34	-
Total Revenue €	153,653.35	149,546.05
Less Cost of Sales		
Operating Expenses	9,094.71	11,053.19
Total Cost of Sales €	9,094.71	11,053.19
Gross Profit €	144,558.64	138,492.86
Less Expenses		
Accounting and Book-keeping	2,480.82	-38.99
Association membership fees	735.00	746.32
Bank Fees	3,070.11	2,468.38
Creative Design	3,302.88	1,707.61
Foreign Currency Gains and Losses	-859.45	1,874.02
IAC participation - registration, booth, etc	8,249.40	6,385.35
previous SGC hosting expenses	-	542.88
previous SGC Scholarships	8,436.48	15,474.44
Entertainment	167.65	-
SGC hosting expenses	14,206.99	40,688.01
SGC Scholarships	14,055.64	22,082.17
SGFF Congress hosting expenses	-	5,248.52
SGFF Scholarships	-	12,343.60
Yuri's Night	4,891.96	
Travel and Accommodation Expenses	1,338.65	2,928.84
Wages - Deputy Executive Director	5,394.90	12,331.56
Wages - Executive Director	30,120.00	34,463.81
Wages - Interns	3,000.00	1,500.00
Website	2,237.03	33.94
Total Expenses €	100,828.06	160,780.46
Net Profit €	43,730.58	-22,287.60

Fig.22.

SGAC 2012 Expenses: Total Expenses: 171,883.65 € ^{i 2}



^{i 2}Cost of Sales included in total expenses: COS (11,053.19) + Total Expenses (160,780.46)

³SGAC Operating Expenses cover all further expenses as listed in Profit & Loss Statement

balance sheet

	2009	2010	2011	2012
Assets				
Bank Austria	182.44	8,929.19	13,198.47	15,743.10
PayPal	3,574.48	-	3,792.822	1,423.311
Bank of America		14,022.47	61,526.732	22,783.421
Accounts Receivable	-	18,745.27	25,114.112	30,979.871
SGAC USA Loan	25,434.69	-	-	
Total Assets €	28,407.61	32,510.94	103,632.13	70,929.70
Liabilities				
Accounts Payable	-	-	4,790.85	2,194.35
Member Reimbursements owing	784.28	9,185.99	13,165.83	6,491.66
Total Liabilities €	784.28	9,185.99	17,956.68	8,686.01
Net Assets				
Net Assets €	28,407.61	32,510.94	85,675.45	62,243.69
Members' Funds				
Opening Members' Funds	22,139.06	28,407.33	32,510.94	84,531.29
Net Profit / (Loss)	6,268.27	4,103.61	53,164.51	-22,287.60
Total Member's Funds €	28,407.33	32,510.94	85,675.45	62,243.69

⁴Figures converted into Euro using the following rate: 1 € = 1.31962 \$. Rate provided by XE.com on 31 Dec 2012.

⁵Figures converted into Euro using the following rate: 1 € = 1.29590 \$. Rate provided by XE.com on 31 Dec 2011.

1. Statement of Accounting Policy

The financial statements were prepared in accordance with required accounting principles and applicable legal requirements. They present a true and fair view of the organisation's net assets, financial position and the results of the organisation.

2. New Financial report style (Profit & Loss)

In 2012, SGAC fully adopted software for use in professional accounting that had been used partially in previous years. The new functionality improves transparency, reporting and communication within the Executive Office. For these reasons, the style of the Profit & Loss statement has been adopted. The point "Cost of Sales" has been included to reflect minimal operational costs involved with running the organisation.

3. Management Committee and Staff Members

The names of the management committee members who have held office during the year are:

Co-Chairpersons	Catherine Doldirina
	Cj Nwosa
Co-Secretaries	Suresh Battharai
	Aafaque Kahn
Treasurer	Christopher Vasko

The members of the management committee did not receive remuneration throughout the year.

Contracted support staff members engaged throughout 2012:

Executive Director	Ariane Cornell (Jan -June)
	Andrea Jaime Albalat (July – Dec)
Deputy Executive Director	Andrea Jaime Albalat (Jan – Jun)
Intern	Cynthia Chen

committee's declaration

Statement by the Executive Committee

The members of the Executive Committee of the Space Generation Advisory Council are of the opinion that:

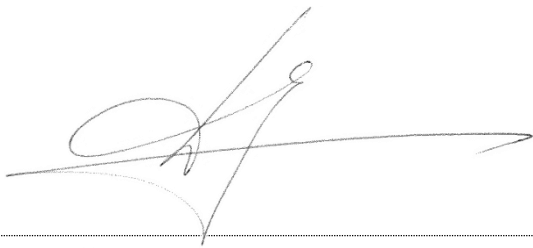
The accompanying Profit and Loss Statement is drawn up so as to give a true and fair view of the operations of the Organisation for the period ended December 31, 2012

The accompanying Balance Sheet is drawn up so as to give a true and fair view of the state of affairs of the Organisation at December 31, 2012

At the date of this statement, there are reasonable grounds to believe that the Organisation will be able to pay its debts as and when they fall due.

On behalf of the Management Committee:

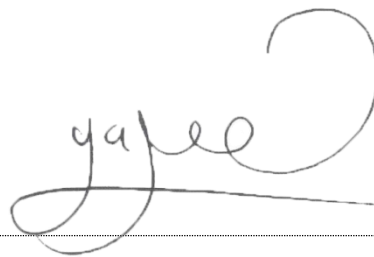
Original signed



Catherina Doldirina – Co-Chairperson

Milan, Italy, January, 2013

Original signed



Cj Nwosa – Co-Chairperson

Johannesburg, South Africa, January, 2013

Communications and Public Relations Report

Throughout 2012, the Communications and Public Relations (Comms & PR) team continued to distribute news about SGAC's achievements and events. Highlights of the SGAC Comms & PR work are detailed below.

SGAC MONTHLY NEWSLETTER AND WEB NEWS

The SGAC uses monthly newsletters as an avenue to inform members of the organisation's latest news. Members are welcome to share news, events, and articles regarding the space sector in this newsletter. In addition, the Comms & PR team continually posts updates on the SGAC website (spacegeneration.org). These include everything from personnel changes and member participation in international events to new position openings and SGAC's Member of the Month. Scholarships opportunities for SGAC events were also announced here.

NASA EXPLORATION VIDEO WORK

In 2012, SGAC and NASA initiated a united effort to create a series of short videos as part of the NASA-SGAC Exploration Video team project. The team is comprised of eleven SGAC members from seven countries, and has been tasked with the development and production of several short films to support NASA. Each film will be tailored to grab the attention of the general public and communicate the benefits of space exploration. Key messages that will be conveyed in these short films are the international nature of space exploration and its spin-off benefits in everyday life. Emphasis will also be placed on the unique and substantial contributions of space exploration that serve to enhance economic prosperity, human health care, environmental management, safety, security, provide inspiration and education.

SPACE FUSION FORUM PROMOTION

SGAC's newest international event, the Space Generation Fusion Forum (SGFF), is held in conjunction with the National Space Symposium in Colorado Springs, USA. The Comms & PR team promoted the event through articles, web new releases, and social media. With assistance from the SGFF Comms and PR, the team also provided live updates during the event.

SPACE GENERATION CONGRESS PROMOTION

SGC 2012 in Naples, Italy was promoted and announced via social media such as Facebook and Twitter, as well as the SGAC website. Social media, newsletter articles, and web news announcements were also used to promote paper competitions and scholarship opportunities. In the lead up to SGC, a short video was created by the Comms and PR team and uploaded to the SGAC YouTube Channel (available at <http://www.youtube.com/watch?v=PyVodvNORro>). Daily updates from working groups and events during SGC were shared as web news and also released via social media.

YOUTUBE CHANNEL

The SGAC YouTube Channel (<http://www.youtube.com/user/spacegeneration>) was utilised throughout the year to broadcast promotional videos and speaker presentations during SGAC events such as the Space Generation Fusion Forum and the annual SGC.

EXTERNAL SGAC PROMOTION

Throughout the year, the network of SGAC members was put to good use to promote SGAC through external publications. These include the newly established International Space University (ISU) publication, the 3 Eyes Observer, which published an article on SGAC in its September 2012 Issue (page 16, at <http://www.iafastro.org/docs/2012/Newsletter-September2012.pdf>)

SGAC PROMOTIONAL POSTERS

The Comms and PR team created several posters for Yuri's Night and for the general promotion of SGAC.

SOCIAL MEDIA

In response to the existence of various fragmented, unofficial, and casually organised Facebook pages for regional SGAC groups, the Comms & PR team made efforts to streamline SGAC social media presence. The team closed unofficial and isolated SGAC Facebook groups or pages, and replaced them with a new, closely linked, and well-monitored Facebook network. The existing official SGAC Facebook page was updated to reflect the new look and logo of the SGAC. Additionally, the team created strict SGAC Facebook presence guidelines to allow RCs to create regional pages and facilitate local discussion, events, and gatherings. RCs were given control of the new pages, and are responsible for ensuring that SGAC maintains its highly professional image online by monitoring posts and submissions.

As of the end of 2012, SGAC's main Facebook page has 1351 "likes". On Twitter @SGAC now has 1491 followers. SGAC also maintains a professional LinkedIn page, which has 536 followers.

A Space Generation Congress "Meet and Greet" page was setup, which by the end of 2012 had 146 members. This provided delegates of the conference with an opportunity to introduce themselves before the event. Likewise we setup a page for the Space Generation Fusion Forum, which is attracting interested individuals.

A number of project groups have setup pages, which are providing a good means of networking. By the end of 2012, SSPG had 96 likes on its Facebook page, 14 followers on Twitter and 28 members on LinkedIn. The NEO project group has 96 likes on its Facebook page while STDM and Commercial Space have 101 and 86 likes on pages, respectively.

FUTURE AMBITIONS

After an exciting first year working together as a group, the current SGAC PR & Comms team is looking forward to promoting the great achievements of SGAC, and aims to place greater emphasis on social media and the promotion of SGAC's events.

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Project Outcomes and Highlights

SGAC's mission and mandate guide the activities of its project groups. Each team focuses on a topic of special interest to the organisation's members, and the groups implement a wide range of projects that reflect and support SGAC's strategic vision. These groups vary in size and scope of activities, but they are all led by highly committed Project Leads/Coordinators. At the end of 2011, SGAC's Project Coordinators consolidated initiatives from previous years, guided development of long-term strategies and established new project groups. There are currently four active project groups: the Space Safety and Sustainability (SSS) Group, Near Earth Object (NEO) Group, Space Technology for Disaster Management (STDM) Group and Youth for Global Navigation Satellite Systems (YGNSS) Group. Two additional groups were formed this past year: the Small Satellite (SS) Group and Space Law (SL) Group.

This past year, the groups have researched, written and presented five original papers at conferences. Each project group increased its membership and activities, which have grown to include more than 50 active SGAC members in total. Groups have also established new partnerships with industry and implemented new activities of genuinely global reach involving student and young professionals from every continent.

In the case of each group, project leads have developed strategies for activities for the next two years, including work plans targeting milestones and other specific targets, described later in this report. Moreover, in order to support and streamline the creation of new groups, the project coordinators implemented an updated and improved project proposal process, which have already guided the establishment of two promising new groups. In 2013, the coordinating team will take on new projects and tackle new challenges. In July, the project coordinators will reach the end of their term and will prepare for this transition by creating a handover guidebook. With the help of the Executive Director, the current coordinators will choose their successors. New coordinators will be nominated three months prior to the start of their term to allow sufficient time to prepare for their role. Outgoing coordinators will also provide guidance for three more months after the conclusion of their term. This six-month transition process will ensure a smooth transfer of knowledge, practices and responsibilities.

In parallel, the project groups will each pursue their long-term strategies and work to meet their milestones and common goals. By the end of 2013, the groups aim to increase their total number of active members by 50% and double their number of total paper submissions. Each project group will aim to create at least one partnership with an industry actor, space agency, or NGO. Project groups will also raise financial support enabling students and young professionals to present at conferences, increasing the visibility of the organisation in the space community.

The project groups are an important pillar of SGAC as a whole. They provide a platform upon which SGAC members create and maintain relationships throughout the year between annual congresses. The groups provide an opportunity for our members to develop expertise and acquire experiences that will support their professional development. Finally, the groups provide a podium from which youth voices on space issues can be heard throughout the international community. The project coordinators and project leads will continue to work diligently toward creating these opportunities. In the process, we will continue to foster and channel the growing enthusiasm for project work among our members, while ensuring that new activities are feasible, sustainable and supportive of the organisation's mission.

Near Earth Object Project Group

The NEO Project Group is dedicated to helping the worldwide planetary defence community to meet one of nature's greatest challenges. The group provides a youth perspective to planetary defence through annual reports, competitions, conference attendance and public outreach projects related to NEOs.

Goals

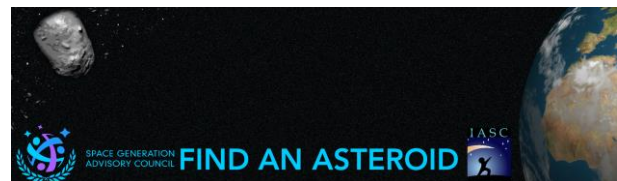
1. **Enable** - To ensure that the opinion of the youth is heard by the worldwide community on matters relating to NEOs,
2. **Engage** - To promote the work of students and young professionals in the planetary defence community
3. **Outreach** - To present honest and balanced facts on the dangers posed by NEOs to the general public in a non-technical form.



Activities in 2012

Find an Asteroid Search Campaign

SGAC's Find An Asteroid Search Campaign concluded successfully on September 18 after a five-week campaign in collaboration with the International Astronautical Search Collaboration (IASC). SGAC selected 15 teams from all over the world to participate in this competition to increase knowledge of our cosmic neighbourhood.



- Main Belt Asteroid Discoveries (provisional): 3
- Main Belt Asteroid Discoveries (preliminary): 27
- NEO Confirmations: 15
- NEO Observations: 78

A team makes an original observation of a Main Belt Asteroid located between the orbits of Mars and Jupiter, resulting in a preliminary discovery. A second observation within 7-10 days confirms its existence and refines its orbital calculations, and the asteroid is promoted to provisional and entered into the Minor Planet Center database. If confirmation is not made, the preliminary discovery is considered lost. Provisional discoveries are monitored for several years (3-6) through further NEO observations, which allow further refinements to their orbit calculations. After the orbit is fully determined, the provisional discovered is numbered and placed into the world's official minor bodies catalogue by the IAU. At the point it is numbered, the discoverers can propose an official name to the IAU.

From SGAC discoveries in 2012 are:

- 2012QN44, Bright Matter Team, Romania
- 2012QX36, Team Hayabusa, Australia
- 2012Q050, Eyes of 51 Degrees, Iran

Move an Asteroid 2012 Technical Paper Competition

The NEO group continued its successful Move an Asteroid technical paper competition series, held annually since 2008. This outreach project is intended to encourage technically minded individuals to apply their skills at addressing one of the greatest challenges that humanity may one day have to face. Students and young professionals were asked to present original ideas that address the challenges involved with either the safe deflection of an Earth-bound NEO, the detection of NEOs, or a global asteroid impact-warning system. The winner of this year's competition was Sung Wook Paek, a PhD candidate at the Massachusetts Institute of Technology with his paper entitled 'A Multi-Functional Paintball Cloud For Asteroid Deflection.' In his paper, Sung Wook expanded on last year's winning paper with Alison Gibbings' idea of a smart cloud approach and proposes use of each particle as a container for paint powders to paint the surface of an asteroid. This would deflect an asteroid by adding a low-thrust, long-duration solar radiation pressure to the kinetic impacts of nano-sized cloud particles. His prize was a scholarship to present his work at the 2012 SGC and IAC which took place in October in Naples, Italy.

UN-COPUOS AT14

As a permanent observer in UN-COPUOS, SGAC is a member of Action Team 14 (AT14) on Near Earth Objects. The NEO project group actively takes part in the meetings of AT14 and supports the recommendations put forward for an international response to the near-Earth object impact threat. The group further reports its activities to the Chairman of AT14 to be included in its annual report to the Science and Technology Subcommittee Meeting of UN-COPUOS.

New Members

The project group remained open for new members to join and was able to further expand the number of active members.

Looking Ahead: Plans for 2013

- Revamp the Move an Asteroid Technical Paper Competition for 2013 by expanding the topic for submissions, building upon media coverage and media relations of years past, stepping up the communications effort, bringing on a new team leader and fundraising.
- Build on the success of the inaugural Find an Asteroid Search Campaign by launching a second campaign with the hope of developing an annual event.
- Expand membership and assign greater responsibilities and tasks to key members.
- Establish partnerships with major scholarly and professional associations concerned with NEO research and related topics.

Small Satellite Project Group

Small satellite programmes are becoming a disruptive technology in space mission design and operation since they are relatively affordable. It is likely that more developing countries, academic groups and even small teams of space enthusiasts develop their own small satellite space missions in the future. The Small Satellite Project Group was built on on years of interest not only from within SGAC but the space community at large. The group was officially announced at SGC 2012 and consists of 27 members are involved, eight of whom are active. Since its inception, members have initiated four papers, submitted a conference abstract and prepared a Mission Idea Contest.



Goals

The objectives of the SSPG are threefold:

1. **Provide** career and project assistance for young professionals and students already active in the small satellite community
2. **Offer** the small satellite community up-to-date information on relevant topics, as well as recommendations regarding the directions to be taken for future research and development and/or policy and legal issues
3. **Attract** young professionals and students to the world of small satellites and generally to the world of space exploration.

Activities in 2012

During the summer 2012, the SSPG completed project proposal stage and its creation was officially announced during SGC. The SSPG was further promoted (discussion and distribution of flyers) at the session dedicated to the project groups during the SGC and at the IAC. SSPG now proudly counts 27 members and its size is still increasing. Up to now, 8 of them are actively involved: 2 co-leads, 4 paper writers, 1 contest organiser and 1 logo designer.

Looking Ahead: Activities for 2013

The activities of the SSPG are split in three segments:

Papers and reports

The group has developed an internal control process to select subjects and write papers, including internal peer review. Four papers are currently being written and an abstract has already been submitted to a conference. We are aiming to produce five publications by the next SGC.

Mission Idea contest

A person responsible for the mission idea contest has been appointed and is in contact with SGAC contests organisation. The team is eagerly awaiting the outcome of their discussions.

Feasibility study

The team has received expressions of interests from volunteers regarding an in house small satellite at SGAC. A person responsible a feasibility study will therefore be elected in the next few months.

Space Law Project Group

The Space Law Project Group was created in the spring of 2012 and has six members with four actively participating. The Group intends to serve as a forum for young professionals and university students interested in space law and looking to work cooperatively and creatively to have their voices heard in the global conversation on the intersection between space activities and their legal regulation. Tomorrow's space professionals, both legal practitioners and academics, will have much to discuss as space activities continue to evolve. Our current organising project is on national space legislation and in 2013 we intend to recruit new members, expand our research and presence, and partner with other organisations.



Goals

1. Develop working papers, white papers, reports and statements expressing the views of the next generation of legal professionals on various space law issues
2. Bring the views of tomorrow's space leaders to important international fora, including academic and industrial conferences and meetings
3. Develop relationships with other professional/civil society organisations and academia, including the International Institute of Space Law.
4. Encouraging SGAC and Project Group attendance at regular high-level meetings, such as the annual UN-COPUOS, its Legal Subcommittee, NASA's Advisory Council meetings. Members would act as observers, as well as to raise the profile of SGAC and to ensure that SGAC is well-informed of ongoing space law developments

Activities in 2012

Since its creation, the SLPG held regular teleconferences between its co-founders Joyeeta Chatterjee and Christopher Johnson, joined by Aleksandra Puscinska of King's College, London - who will serve as the Project Group's social media lead coordinator. The group authored and presented a paper on national space legislation at the Young Scholars Session of the International Institute of Space Law's annual Colloquium on the Law of Outer Space, held during IAC.

Looking Ahead: Activities for 2013

The SLPG is set to grow, especially once it is officially announced with a live Space Generation website and corresponding Facebook presence.

Papers and reports

Our project on national space legislation resulted in our first delivered paper, which was revised and expanded for publication in the IISL proceedings. The project will continue and we will seek advice and guidance from noted legal experts on national space legislation, already having received interest in partnering with the University of Cologne.

Space Safety and Sustainability Project Group

This year has been very successful for SSS project group, which saw a rapid growth in membership and publication of SGAC's first educational series. The group has constantly explored avenues to improve the relevance of the project group in space safety and/or sustainability related endeavors. SSS project group was well represented at SGC and received numerous membership requests from delegates, which among other things, serves as a driving force for the project group to develop more initiatives/projects.



Goals

1. To encourage active participation among students and young professionals in space safety and sustainability related debates and activities.
2. To create an international space forum to showcase the perspectives of the next generation of space leaders on the safety and long-term sustainability of outer space activities.
3. To afford current industry stakeholders access to a pool of young space enthusiasts interested in space safety and sustainability related issues.

Accomplishments in 2012

New Members

In its second year, the SSS project group has seen an increase in the number of active SSS members, nearly double that of 2011.

Public Relations

Early 2012 saw the appointment of SSS PR Coordinator, Mahsa Taheran (Iran), who will oversee all media releases of the project group, as well as notify the members of the project group with latest news and developments regarding issues of space safety and sustainability, upcoming conferences, relevant publications etc.

SSS Educational Series

In March 2012, the SSS project group released two publications under the SSS Educational Series. The Educational Series provides a comprehensive review of SSS thematic areas, namely Space Weather and Space Situational Awareness. The reference document aids in SSS's outreach efforts providing a detailed overview of each topic for people who are interested in expanding their knowledge in the relevant fields.

Media Presence

In May 2012, the SSS project group was featured in an article in the Space Safety Magazine, "Space Safety and Sustainability – Perspectives from the Next Generation" (<http://www.spacesafetymagazine.com/2012/05/17/space-safety-sustainability-perspectives-space-generation/>)

SSS-OHB AG Space Debris Essay Competition

The SSS project group partnered with OHB AG in an essay competition for the opportunity to attend and present at the 11th annual SGC in Naples, Italy. The essay addressed the increasing amount of space debris that poses a major threat for spacecraft and humans in space. The applicants were required to present innovative ideas to prevent loss of space assets due to space debris through increasing protection, reducing vulnerability, avoiding collisions, active debris removal, or other means. First and second prize winners Matthew Noyes (USA) and Olubunmi Emmenuel Akinwumi (Nigeria), respectively, were invited to attend and present their research at SGC.

Conference Papers and Presentations

- 16th ISU Annual Symposium “Sustainability of Space Activities: International Issues and Solutions” – February 2012
- 63rd IAC – October 2012

Maier P, Rathnasabapathy M, Lu Z, Active Debris Removal: A Multinational Policy Option. International Astronautical Congress, Naples, Italy, October 2012.

Maier P, Rathnasabapathy M, Lu Z, Novel Approaches to International Cooperation and Data Sharing for SSA. International Astronautical Congress, Naples, Italy, October 2012.

- SpaceUp Stuttgart – October 2012
- 2012 Beijing Space Sustainability Conference – November 2012

Emanuelli M, Raval S, Nasseri SA, Turconi A, Nwosa C, Design and Evaluation of an Active Space Debris Removal Mission with Chemical and Electrodynamics Tether Propulsion Systems Beijing Space Sustainability Conference, Beijing, China, November 2012.

Fig. 23.



Looking Ahead: Plans for 2013

Technical Projects

- **2012 Priority Targets for Active Debris Removal Missions:** This project seeks to identify high-risk space debris, defined as debris with the highest risk of collision as predicted by the Centre for Space Standards and Innovation's SOCRATES. We would further refine the identified objects using cross sectional area and other relevant criteria. The end product would be a list of high-risk debris for 2012 as well as their relative positions which will be represented graphically with 2D and 3D plots.

- **Hosted Payloads for Space Situational Awareness:** This project will explore the feasibility of flying in-orbit sensors to improve SSA capabilities. These in-orbit sensors would be mounted on spacecraft and would share their power supply and transponders, but would operate independently of the spacecraft's main mission. The elements of SSA that this project targets include debris monitoring and collision avoidance.
- **Modelling an Active Debris Removal Mission:** In this project, we will design a complete debris removal mission using AGI's Systems Tool Kit. Different phases of the mission will be manned by different teams who will explore the best option for the respective phase. The final approach for this project is still in planning, but the output would be a complete model for an ADR mission stating the chosen removal systems and parameters of the mission.

Policy Projects

Previously developed frameworks for policy-based projects will be implemented in 2013. These include:

- SSA data sharing policies
- Emerging space nations – development and implementation of space debris and space safety guidelines

Publications

Release of further Educational Series documents – investigating the SSS project group's other thematic areas including Space Debris and Space Safety

Competition

The SSS project group will work towards continuing the technical paper competition with a focus on one of the key areas of space safety and/or sustainability. This will aid members of the project group to attend and present their research at conferences.

Space Technologies for Disaster Management

Project Group

Despite the importance of space technologies in disaster management, it is still a relatively unknown field. Academia, industry, government and the general public can benefit from increased knowledge of how space is used in preparing for, responding to and recovering from disaster events. This project seeks to promote awareness of how space technologies contribute throughout the disaster management process. The group will use an interdisciplinary approach in contributing to research efforts and raising awareness on space technologies used in disaster management by providing papers on policy, law, medicine, and engineering.

Goals

The aims of this project group are to coordinate discussions within the international space society from a young professional viewpoint. The specific aims of this group are as follows:

1. To develop the STDM Library of literature valuable in disaster management to be collected by members and disseminated through the group's website.
2. To develop a discussion forum for topics on space disaster management and their impact on society.
3. To promote interdisciplinary education and outreach on the use of space technologies for disaster management.

Accomplishments in 2012

Paper Publication

Katrina Laygo (USA). Satellite-Based Synthetic Aperture Radar (SAR) Applications to the 2011 Japan Tohoku Earthquake and Tsunami. STDM Library 2012.

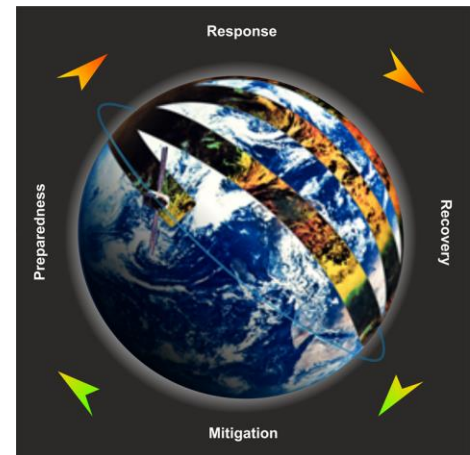
Participation at SGC & IAC 2012 at Naples, Italy

New members of our team participated on the SGC by presenting the group and sharing their ideas.

Participation of Katrina Laygo (member) on the IAC Virtual forum presenting her paper above mentioned.

Online Forum & Social Media Manager

The project group appointed Noemi Bernerde (France) as social media platforms manager with support from Katerina Czech (Russia). Their roles includes providing the latest news and group activities on Facebook and Twitter as well as to inform the group about recent uses of space technologies for disaster events, upcoming conferences and publication of papers.



Looking ahead: plans for 2013

Social Media Launching

Noemi Bernerde and Katerina Czech will be updating new Facebook and Twitter accounts dedicated to the STDM group's news and interests.

Video Creation

Members will create a short video presentation explaining the mission and goals to enhance the group's awareness.

Contribution to the SG Newsletter

Members will contribute more actively with a column on the SGAC newsletter to raise awareness of the mission's group.

STDM Library Progress

Noemi Bernerde and Katerina Czech aim to add a paper to the STDM Library by the end of December 2012.

Youth for GNSS Project Group

During this past year, the Youth for Global Navigation Satellite Systems (YGNSS) team recruited new team members and developed new projects. The team updated and translated the YGNSS brochure, entitled "Global Navigation Satellite Systems (GNSS) and the youth" and produced a paper for the IAC 2012.



Goals

Educate youth about the use and application of GNSS and promote cooperation among youth all over the world.

Activities in 2012

Presentations at IAC 2012

Tale Sundlisater put together a YGNSS paper on "GNSS and SBAS System of Systems: Considerations for Applications in the Arctic". This was presented in a poster session and discusses the drivers of change in the Arctic based on the impact of GNSS as tools for scientific applications and for strengthening and promoting interoperability of navigation, positioning and timing systems.

Activities at SGC 2012

YGNSS Project co-lead Stephanie Wan was the subject matter expert for the Exploration project group on the use of Space Communications for Mars Exploration during SGC 2012. NASA Space Communications and Navigation (SCaN) Deputy Associate Administrator, Badri Younes, presented to the delegates on the importance of space communications and navigation technologies in space exploration.

YGNSS Brochure

Since the YGNSS brochure was successfully published in English in 2010, the YGNSS team is working on updating and translating the brochure to other UN languages. It aims to have at least 2 translations completed in 2013.

Participation at ICG-7 in Beijing, China

YGNSS continued to be represented in an expert capacity at the International Committee on GNSS (ICG), especially in Working Group C: Information Dissemination and Capacity Building. YGNSS will continue to participate in ICG preparatory and project group meetings throughout the year.

Looking Ahead: Plans for 2013

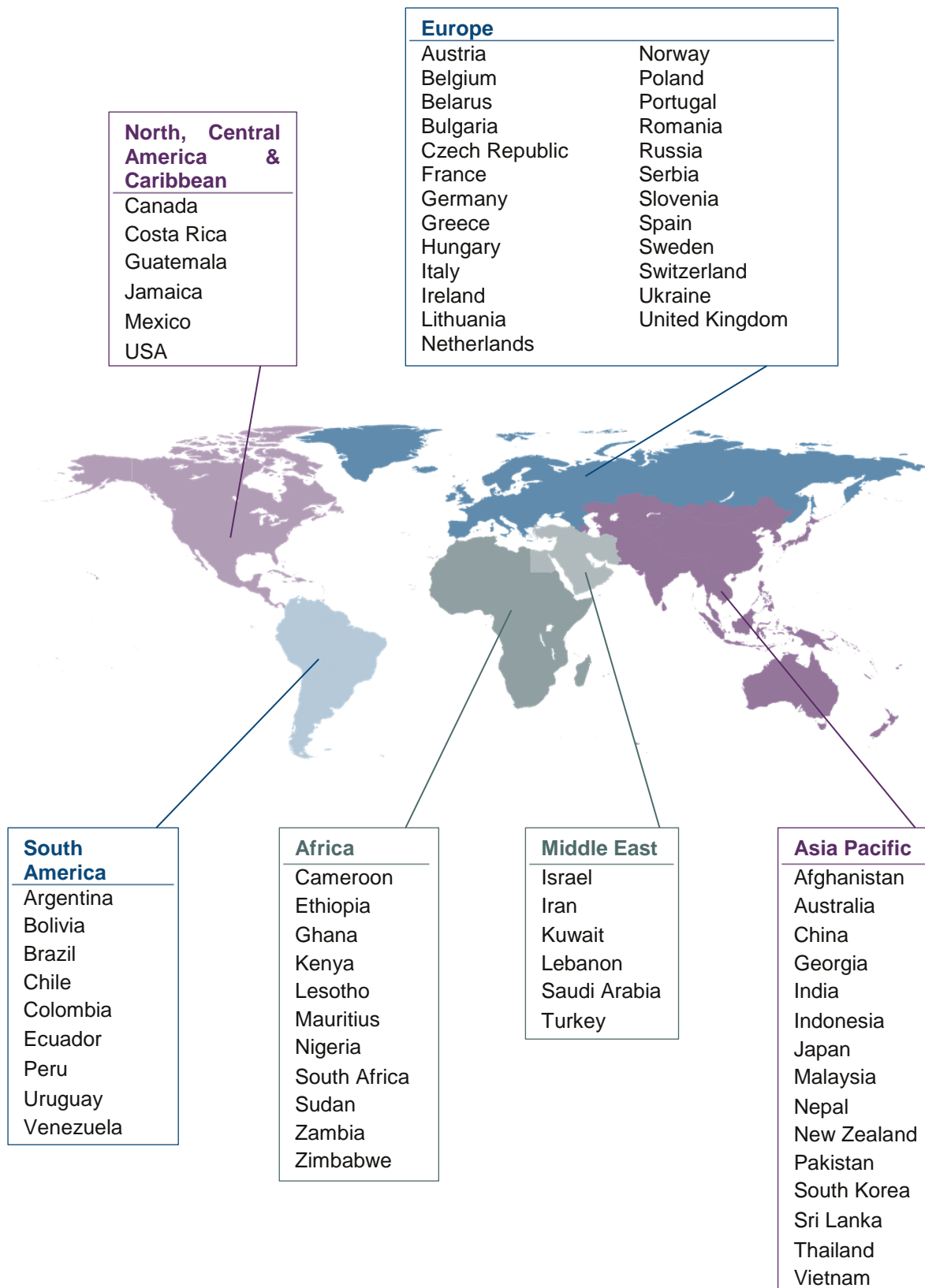
- Increase partnerships and cooperation with various youth and international organisations and recruit more members within SGAC
- Collaborate with other SGAC project groups to develop a workshop
- Continue to share youth perspectives on GNSS at conferences
- Develop an international contest that will consist of developing an interactive model that visualises the compatibility and interoperability of GNSS systems

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SGAC Regions and Represented Countries



Regional and National Reports

africa

REGIONAL REPORT

Space Developments in Africa

It has been an exciting year for SGAC African region, with many changes in leadership roles. Efforts to expand the SGAC African network have been successful, with a large number of appointments of new NPOCs. This expansion not only aids current NPOCs, but also allows countries not previously represented at SGAC with an opportunity to develop their space sector. The RCs have continued monthly teleconferences with NPOCs from all SGAC Africa countries, where participants share updates and ideas, and discuss relevant space issues across the continent. Significant participation of SGAC African delegates at numerous SGAC-related conferences in 2012 facilitated further interactions.

Membership Changes to SGAC Africa

CJ Nwosa (Nigeria) was appointed as SGAC co-chair in early 2012, marking the first time this position has been held by an African representative. SGAC Africa Hubert Foy (Cameroon) and Prosperity Simpemba (Zambia) each ended their two-year terms as RCs. Minoo Rathnasabapathy of South Africa (former South African NPOC) and James Chibueze from Nigeria (former Nigerian NPOC), both of whom are formerly NPOCs, have taken over the RC duties and continue to serve SGAC. Finally, there have been many additions to SGAC African nations, with new members being appointed to NPOCs. These included Benyam Getaneh Abebe (Ethiopia), Naftali Kimani (Kenya), Kinyili Antony (Kenya), and Patso Khotso from Lesotho, the first time this country has been represented within the organisation.

2012 Regional Highlights

Media

The SGAC African Regional Facebook page was introduced in mid-2012 and has proven to be an effective means of communication, as well as acting as an idea exchange forum for SGAC members from African countries. In addition to these social networking promotions, Michael Afful (NPOC Ghana) was interviewed by the BBC and featured in an article on Africa's journey to space from Nigerian and Ghanaian perspectives.

Scholarships

Space Generation Fusion Forum Global Grants Recipients

Minoo Rathnasabapathy	South Africa, RC Africa
Bekele Tujuba	Ethiopia, former NPOC Ethiopia

2012 OHB-SGAC Scholarship Award

Olubunmi Emmenuel Akinwumi	Nigeria
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Annual SGAC Satellite Futures Scholarship and UN/IAF Scholarship

Michael Afful	Ghana
---------------	-------

African Representation at Conferences 2012

Space Generation Fusion Forum:

Minoo Rathnasabapathy (South Africa) and Bekele Tujuba (Ethiopia) were invited to be panellists at the inaugural SGAC Space Generation Fusion Forum and participated in panels discussing the International Outer Space Code of Conduct and the potential impact of emerging space agencies on future collaborations, respectively (see the SGFF report for more information and images). The event was held in conjunction with the 28th National Space Symposium in Colorado Springs, USA.

AIAA Space 2012:

Minoo Rathnasabapathy (South Africa) represented SGAC at the American Institute of Aeronautics and Astronautics Space 2012 conference in Pasadena, USA. After being voted the Most Valuable Player at the 1st Annual Space Generation Fusion Forum, Minoo was invited to present a summary of the discussions and outcomes of the Fusion Forum interactive discussion panels held earlier in the year.

22nd United Nations/International Astronautical Federation Workshop:

Michael Afful (Ghana) was a recipient of the UN/IAF scholarship to attend the 22nd UN/IAF Workshop on “Space Technologies applied to the Needs of Humanity: Experience from Cases in the Mediterranean Area ” in Naples, Italy.

Space Generation Congress 2012:

SGAC African members from Nigeria, South Africa and Ghana were part of the SGC in Naples, Italy. Though a small delegation, it was fantastic to have the African continent represented at this year’s event.

Fig. 24.



Three members of the South African delegation at the Space Generation Congress 2012 Closing Dinner

63rd International Astronautical Congress 2012

Minoo Rathnasabapathy (South Africa) was invited to be a panellist at the Global Networking Forum at the 63rd IAC where SGAC hosted a panel entitled “Space Women in Emerging Countries.”

Fig. 25.



Minoo Rathnasabapathy (South Africa) participating in the panel entitled “Space Women in Emerging Countries”

2nd Annual South African Space Association Congress:

Pierre van Heerden (South Africa) attended the 2nd Annual South African Space Association Congress and gave a presentation about the SGAC focusing on its goals, activities and events.

Looking Ahead – Plans for SGAC Africa in 2013

- Expand SGAC Africa network of contacts and increase awareness of SGAC in the region.
- Recruit members from African countries that are not currently represented at SGAC
- Encourage higher rate of representation in SGAC group projects, competitions, and conferences to provide more African perspective in SGAC
- Increase support of space outreach events through partnerships with industry, university space science and astronomy departments.

NATIONAL REPORTS

ETHIOPIA NATIONAL REPORT

Introduction

SGAC has been active in Ethiopia since 2007 and has been carrying out activities in collaboration with space science clubs, universities and professionals, as well as young space enthusiasts in the country. SGAC Ethiopia celebrated World Space Week, Yuri's Night and other several other international space related activities. Organisations such as the Ethiopian Space Science Society (ESSS) and various universities are now aware of these events and activities. This has led to wider annual participation. Some SGAC related activities that took place in 2012 are discussed below.

ESSS Held National Annual General Assembly

The Ethiopian Space Science Society (ESSS) held its Annual General Assembly on 3rd March 2012 at Addis Ababa University, Faculty of Technology. Participants discussed the annual report and the audit reports presented by the society's board members. The society also elected its new board members. SGAC's Ethiopian NPoC, Beza Tesfaye along with Ethiopian SGAC member Bekele Tujuba Erko participated in the assembly as well. In addition to the reports and discussions about the future of the

society, scientists also presented papers from Addis Ababa University, Jimma University and Adama University of Technology. They also discussed modifications made to the bylaw of the society. At the end of the assembly, participants visited the Entoto Astronomical Observatory, which is currently under construction.

Ethiopian SGAC Member Participates in First Ever SGAC Space Fusion Forum

Ethiopian SGAC member, Bekele T. Erko participated as a panelist on the first ever Space Generation Fusion Forum (SGFF) 2012 in Colorado Springs, USA. SGFF focused on three major topics: International Collaboration, Developing Regions & Space Applications and the New Role of Commercial in Space Flight. The main objectives of the forum were to create networking opportunities for young space professionals around the world with top space agency leaders and encourage youth to submit their input about the development of space through discussions made at the forum. The outcomes of the discussions at the forum were presented at the National Space Symposium.

ESSS's Entoto Astronomical Observatory Centre Established

The foundation of the Entoto Astronomical Observatory Centre has been approved by ESSS members and stakeholders through a meeting held on 3rd November 2012. The main purpose of the meeting was to seek support from members and supporters of the society for the construction of the site and to enable the foundation to be a centre for astronomy and astrophysics research. After various discussions, the participants agreed to approve and support the establishment of the foundation. When completed, the observatory will be the first of its kind in Ethiopia, which will create a lot of opportunities for young space professionals in Ethiopia who are eager to contribute to the advancement of space science and technology research. Ethiopia is already making a lot of progress in space science. Ethiopia is applying to become a centre of IAU in East Africa and a proposal for the first Ethiopian satellite is at a promising stage.

UNOOSA/IAU/ESSS Capacity Building Workshop on Astronomy and Space Science

This workshop was organised by UNOOSA, IAU and the Ethiopian Space Science Society with an objective of incorporating space science courses into the nation's education curriculum. Participants came from various universities, high schools, as well as the Ministry of Education and Ministry of Science and Technology. This workshop was held in conjunction with World Space Week events. In addition to teacher development, the workshop also aimed at building capacity of teaching and research centres in Sub-Saharan Africa. Participants recommended that governments support exchange programmes and introduce scholarship opportunities for students of science and technology to travel to Europe and South Africa for further study.

First Human Space Flight Commemorated

To remember the first space flight of Yuri Gagarin, the Russian Centre for Science and Culture, along with ESSS and SGAC, organised an event on 12th April 2012. Mr Vyacheslav Konnik, Director of the Russian Centre for Science and Culture, said he was very excited to be celebrating 51 years of human spaceflight with invited guests and space enthusiasts taking part in Yuri Gagarin's Night. There is a lot to learn from Russian space exploration adventures. The hope is that Ethiopia can one day make an impact and inspire everyone in the country to realise the importance and awesomeness of space exploration. ESSS and SGAC members also contributed to the event.



GHANA NATIONAL REPORT

Developments in the Ghanaian Space Sector

The growing space sector in Ghana came into the limelight with the launch and establishment of the Ghana Space Science and Technology Center (GSSTC; <http://www.gsstc.gov.gh>). As the local communities prepare for exciting opportunities paved by the newly established institution, SGAC Ghana hopes to foster collaboration with GSSTC to embark on its outreach programmes. With the

announcement of the Square Kilometre Array (SKA) bid, of which Ghana is a partner country, SGAC Ghana hopes to liaise with GSSTC to promote science and space education in its outreach activities.

Accomplishments in 2012

Michael Afful and Abdul-mumin Yussif represented Ghana as NPoCs. The focus of their activities in 2012 was to forge collaborations with universities and other research institutions, such as the newly established GSSTC, as well as to promote outreach activities in Ghana.

Highlights in 2012

Scholarships

Michael Afful was awarded the Society of Satellite Professionals International (SSPI) scholarship to attend the 11th SGC in Naples, Italy where he was also able to participate in UN/IAF workshops.

Fig. 26.



Michael Afful (far left) and other SSPI scholarship winners with SSPI President, Clayton Mowry (centre left)

Projects (Outreach Activities)

Abdul-mumin Yussif helped to celebrate World Information Society (WIS) Day through a radio talk show that discussed the usage and benefits of space technology. Over 500 students from fifty different schools in Ghana attended the one-day programme organised as part of capacity building and outreach. The forum gave insight on basic skills and technologies such as satellite navigation and communication services, which supports inter-alia education, health, and disaster management. SGAC was also introduced to the students in attendance. The forum evoked some thoughts and challenges faced in our African Societies and other parts of the world.

Fig. 27.



Abdul-mumin Yussif on radio talk show

The Space Information Advocacy Network (SIAN), in collaboration with SGAC Ghana, championed astronomy outreach in five different districts in Northern Ghana. Abdul-mumin Yussif was on the ground and introduced SGAC to the visitors, after which he delivered a talk to the public on the use of information technology services.

Fig. 28.



Ghana astronomy outreach

The African Space Science and Policy Institute (ASSPI) introduced a connecting classrooms programme, in which the SGAC Ghana team is heavily involved. An online class between groups of students from the US and Ghana was conducted, and included writing and research projects.

Interviews

BBC interviewed the SGAC Ghana team, led by Michael Afful, on the recent activities and the way forward for the newly established GSSTC and how Ghana can tap into the resources of the developed and developing space nations.

The HINDU news agency also had an interview with SGAC Ghana on this topic, including space programmes in Africa and especially the proposed Pan African Space programme.

SGAC Ghana and GSSTC

SGAC Ghana is looking to foster collaborations with the GSSTC in the near future to assist and support in its programmes. Since the inception of GSSTC, the SGAC Ghana team has worked alongside to propose and prepare a curriculum for colleges and universities, which could form part of the syllabus for teaching in these higher institutions. SGAC Ghana also participated in GSSTC outreach programmes for students and the general public. As part of the collaborative efforts, SGAC Ghana is hoping to seek support from GSSTC for sponsoring Ghanaian students and young professionals to attend conferences and workshops in the future. To further encourage participation, SGAC Ghana hopes to organise essay competitions for students and young professionals.

Looking Ahead – the Plan for the Future of SGAC Ghana

We intend to grow the SGAC network in Ghana by advertising to existing and emerging science clubs, focusing on university clubs and societies. The GSSTC is busy creating and embarking on outreach activities across the country and through the collaborative efforts, we hope to also spread the good news about SGAC to students and young professionals. The year 2013 offers many opportunities to raise awareness of space activities in Ghana and the Africa region, as well as careers and study opportunities in the space sector. SGAC Ghana is also hoping to take advantage of the excitement surrounding the SKA bid, of which Ghana is a partner, to foster active participation in space activities. Activities in which SGAC Ghana aims to participate include the African Leadership Conference to be held in Ghana in August 2013 and Yuri's Night. Finally, SGAC Ghana will continue to organise outreach programmes, including workshops on space and astronomy at the University of Ghana and Cape Coast University.



KENYA NATIONAL REPORT

Current State of Space Affairs in Kenya

Space science is an area that has been dormant in Kenya for many decades. However, growth has been tremendous over the last couple of years. Such growth has been prompted by dry climate and the high altitude of Kenyan, which makes it ideal for both radio and optical astronomy. This has prompted Kenya to become a partner of the Square Kilometer Array (SKA). Kenya was awarded the opportunity to host one of the SKA nodes. Lasting space science activities in Kenya have always been student initiated programmes or organisations, and it has therefore been the main agenda of SGAC Kenya to merge with existing science clubs to better establish a long-term presence in Kenya. The most promising club is the Kenyatta University Amateur Astronomy Club (KUAAC), the majority of whom are SGAC members and who will form the critical mass for outreach activities. There are various on-going awareness campaigns including the East Africa Astronomical Society (EAAS), which has been very active and has funding to hold regional conferences every year. SGAC is the most active group in the country, especially among the young generation. Other awareness groups include Astronomy without Borders, Hands on Universe, and the Galileo Teacher Training programme.

Accomplishments in the Year 2012

Kenyatta University Amateur Astronomy Club

Kenyan SGAC members officially launched the KUAAC on 12th October 2012. KUAAC has about 200 registered members, the majority of whom have shown interest in registering with SGAC. The alignment of KUAAC's goals with SGAC's objectives has resulted in a timely partnership to benefit both parties.

Fig. 29.



Official launch of the Kenya University Amateur Astronomy Club

Outreach Activities to Institutions of Higher Learning

Members of SGAC gave presentations on space sciences to various primary and secondary schools in the country. During the sessions, students participated actively through asking questions and providing comments. Schools visited include Kiambu Township Primary School, Riabai Secondary School, and Chief Wandie Primary schools, which are all located in Central Province, Kenya.

Fig. 30.



SGAC members Antony Kinyili (left) and Naftali Kimani (right) give presentations to students at Kiambu Township Primary School, Central Province, Kenya.

Looking Ahead: Tentative Plans for the Future of SGAC in Kenya

- Encourage SGAC Kenya members to participate in SGAC 2013 competitions
- Connect with more organisations both local and international, to enable SGAC members to attend conferences and network with qualified professionals in space science
- Reach out to more educational institutions (primary, secondary, and tertiary) and introduce them to space science in collaboration with EAAS and KUAAC
- Hold the first Annual General Meeting for SGAC Kenya, along with other conferences at various universities and colleges within the country. The main aim is to expand knowledge of space science among individuals across the country at all levels of learning. We intent to invite space science professionals from other countries to give talks on space science and related topics

➤ **LESOTHO NATIONAL REPORT**

Work Done So Far

Lesotho was first represented at SGAC in July 2012 with the appointment of Patsa Khotso as an NPoC. Khotso has identified and approached other societies in related activities with whom SGAC could collaborate with in the future. Khotso also attempted to organise an event for space week, but this did not proceed due to lack of sponsorship. The goal of SGAC Lesotho is to get the public

interested in science, and provide some answers to space questions. The Lesotho Space Science Youth Association and Stellar Zenith Astronomical association Facebook pages have about 40 members each and are currently the main communication platforms for Lesotho. SGAC Lesotho has posted interesting news about space science and always tries their best to answer incoming questions. Khotso recently started posting interesting stories on interplanetary missions and outlined how the mission started and what spacecrafts were involved and their findings.

Future Plans

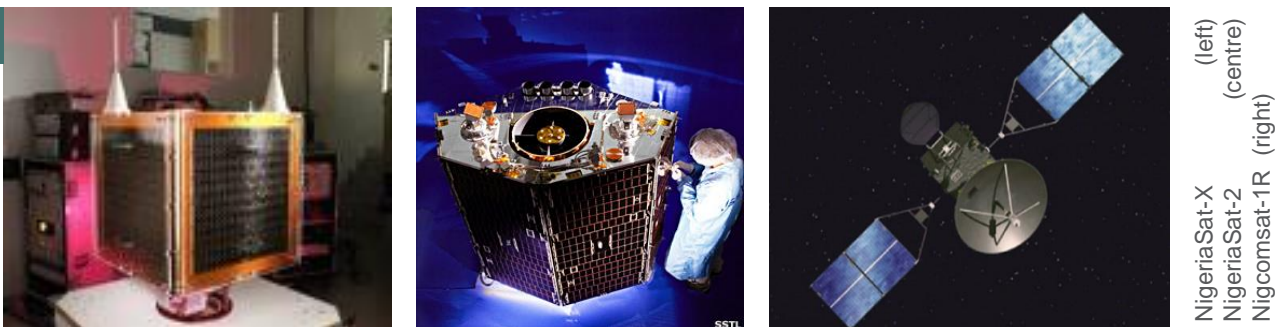
- Appoint a second NPoC to help represent Lesotho at SGAC
- Reach out to young professionals and university students with presentations of space science so that by October 2013 there is enough awareness to celebrate World Space Week for the first time in Lesotho
- Approach the Science and Technology Society to join ideas and work together in making science and technology better recognised in the country
- Identify government departments to approach and plan more projects with them
- Demonstrate to the general population how space science relates to daily life by providing information about Earth observation projects

➤ NIGERIA NATIONAL REPORT

Current State of the Space Industry

The space industry in Nigeria is building on its past successful adventures. Spearheaded by the National Space Research and Development Agency (NASRDA), Nigeria has successfully launched NigeriaSat-2 (an improved remote sensing satellite to replace the successful NigeriaSat-1), the Nigeria-Sat-X (an experimental satellite built by Nigerian engineers), and the Nigcomsat-1R (a communication satellite to replace the faulty Nigcomsat-1).

Fig. 31.



NigeriaSat-2 (hereafter as Sat-2) was built by Surrey Satellite Technology Limited (SSTL), UK and was launched alongside NigeriaSat-X. It was successfully tested and handed over to Nigeria on July 10th, 2012. Sat-2 is used by NASRDA for natural resource management and urban planning amongst other applications. The satellite has significantly advanced Nigeria's earth observation capabilities. Sat-2, the first of SSTL's 300Kg class satellites, is also an asset to the Disaster Monitoring Constellation (DMC), to which it belongs. Its high resolution means that it can 'zoom in' on areas of interest and make out individual buildings and roads. It is noteworthy that Sat-2 won the Sir Arthur C. Clarke award for the "best space activity project" on the 26th of October. It's been helpful in the management of the recent flooding in Nigeria.

Fig. 32.



Official handover of NigeriaSat-2 and NigeriaSat-X (held on the 10th of July, 2012)

Accomplishments in Nigeria in 2012

ARCSSTE-E/SGAC Memorandum of Understanding (MoU)

We were happy to have successfully established a mutually beneficial relationship between SGAC and the African Regional Centre for Space Science and Technology Education in English (ARCSSTE-E), an activity centre of the NARSDA. The MoU will facilitate cooperation between the two organisations in the future, enabling both to work together in organising outreach and awareness programmes, workshops and conferences. We happily look forward to more collaborative activities as a result of the established MoU.

Space/Astronomy Outreach

We had a well-attended space/astronomy programme at the University of Nigeria, Nsukka in June, 2012. Benefits of being part of SGAC were presented by James Chibueze, who joined the outreach programme through a Skype video discussion. More students are taking up courses in space science, physics and astronomy. Some are at least doing their final year project work in related areas such as rockets and launch systems.

2013 SGAC Nigeria Plans

- Leverage recent successes to increase the number of SGAC members from Nigeria by encouraging more young people to join
- Organise more outreach activities, workshops and seminars
- Collaborate with NARSDA in organising a seminar on the use of NigeriaSat-2 data

➤ SOUTH AFRICA NATIONAL REPORT

Current State of Space Affairs in South Africa

It was a busy year for the emerging space industry in South Africa. One of the most notable events was the static test of the Marcom Aerospace MAS-10k research and development launch vehicle engine. The successful test marked an important milestone in their plan to complete the first Cheetah-1 launch vehicle in 5 years. As part of the French South African Institute of Technology, The Cape Peninsula University of Technology has completed their first 1U cubesat and intends to launch in early 2013. There is planned continuing development of a 3U cubesat. Denel Dynamics is also in the process of completing their 1U cubesat, which they started developing in early 2012 as an engineering exercise. They too intend to launch in 2013, pending the completion of several administrative procedures.

Heliocentric Technologies, which now has a South African branch, has successfully negotiated an opportunity to perform preliminary tests at the iThemba Laboratory for Accelerator Based Sciences (iThemba LABS). iThemba LABS' facilities are unique on the continent in that they are able to simulate several aspects of orbital environments more accurately than any other facility on the continent. This is the first attempt in recent years to simulate orbital environments at iThemba LABS.

The South African Department of Science and Technology and the German Federal Ministry of Education and Research held discussions earlier this year regarding the potential for starting collaborations between these two countries in the coming year. Collaboration in research and development in space-related projects were featured repeatedly during the discussions. 2013 was dubbed the German-South African Year of Science.

One of South Africa's first aerospace companies, SunSpace, is currently negotiating with the South African National Space Agency to form part of their new Space Engineering Division along with the nearby satellite integration and test facility. It is envisioned that SunSpace's research and development capacity will be enhanced by aligning with the national space agency.

Accomplishments in South Africa in 2012

AIAA SPACE 2012

Minoo Rathnasabapathy represented SGAC in September at the AIAA SPACE 2012 Conference and Exposition in Pasadena, California. In line with the theme of AIAA SPACE 2012, 'Creating a Sustainable Vision for Space', the conference addressed many critical issues including plans for future human space exploration, space launch systems, national security with space strategic perspectives, emerging commercial enterprises and educating the next generation of space technologists. After being voted the Most Valuable Player at the 1st Annual Space Generation Fusion Forum, Minoo was invited to present a summary of the discussions and outcomes of the Fusion Forum interactive discussion panels held in conjunction with the 28th Annual National Space Symposium (NSS) in Colorado Springs in April. The Fusion Forum offered a platform for the next generation of space leaders from government, industry and academia to discuss critical topics in the space industry.

Fig. 33.



Left: Marcom Aerospace's envisioned Cheetah-2 launch vehicle. Right: Minoo Rathnasabapathy (South Africa) presenting at AIAA Space 2012 on behalf of SGAC

Global Networking Forum of IAC - Space Women in Emerging Countries

Minoo Rathnasabapathy was invited to be a panellist at the Global Networking Forum at the 63rd IAC, in Naples Italy in October where SGAC hosted a panel entitled "Space Women in Emerging Countries". Representing South Africa, Minoo joined other SGAC leaders originating from developing space nations such as China, Uruguay and Australia. These women, who are currently working or studying in the space sector, shared and exchanged their views on the challenges of being a woman in the space sector in their respective countries.

2nd Annual South African Space Association Congress

Pierre van Heerden represented the SGAC at this year's SASA Congress, held on October 11th and 12th, 2012. Pierre gave a presentation about the SGAC and its goals, activities and events. The presentation was well-received and prompted positive feedback from the younger members of the audience. Additional exposure to SGAC was organised in the form of an informal social for students and young professionals in the evening after the gala dinner at a local bar, during which key space topics in the South African space arena were discussed. During the congress it was proposed that for the next congress, participation by delegates from other African countries and increased participation by students and young professionals should be encouraged.

WIA Africa / SAAO Women in Aerospace

Women in Aerospace Africa in collaboration with the South African Astronomical Observatory hosted an outreach event at the SAAO. Selected girls from a local school were invited to attend a presentation by Dr. Peter Martinez (SAAO) on careers in aerospace sectors and related fields, with an emphasis on those fields with a low female participation ratio. The presentation was followed by a tour of the facility where the girls were encouraged to ask their guides about careers in aerospace. Pierre van Heerden assisted with general organisation, logistics and execution of the event.

SAAO / Ysterplaat Airforce Base / WIA Africa Rocket Building

The South African Astronomical Observatory, Ysterplaat Airforce Base and Women in Aerospace Africa collaboratively organised a rocket-building exercise at the Ysterplaat Airforce Base for approximately 25 high-school students from a variety of local schools. During the event, the students built and launched their own miniature, low-altitude rockets. Pierre van Heerden assisted with the

organisation and execution of the event. The event was a huge success and it is hoped that it will be repeated annually.

Fig. 34.



Rocket building exercise for students at Ysterplaat Airforce Base

Looking Ahead - plans in South Africa in 2013

Many opportunities that will build on projects that were initiated in 2012 will be created for students and young professionals in 2013. In particular, many of the new players in the South African space arena are looking for excellent students locally and abroad. With its vast international network, SGAC may provide the perfect platform by which these organisations may access the students and professionals they seek. The South African NPoC will encourage such organisations to make use of the SGAC network. Since the annual South African Space Association Congress is the premier event for South African space professionals and students, NPoCs will encourage participation to those across the SGAC Africa network.

The new year will also hold many opportunities for reaching out to individuals interested in space affairs. Furthermore, there are several institutions in South Africa that are very active in outreach (for example meerKAT/SKA and the South African National Space Agency) that may be interested in collaborating in future outreach activities.



ZAMBIA NATIONAL REPORT

2012 Overview

SGAC of Zambia is determined to reach out to basic schools, secondary schools, colleges, universities and the general community to increase its recognition. With the establishment of projects and programmes for 2012, SGAC Zambia has continued to record success. To increase its membership and awareness, SGAC Zambia has continued to promote its activities through outreach projects. The activities included launching Space Generation Clubs in schools, delivering space presentations, encouraging school debates among pupils, donating Galileo Telescopes, and promoting quizzes during Junior Engineers and Technicians Scientist Club (JETS)

Detailed Report:

February and March: Sensitisation programme in schools

In February and March the NPoC Misheck Mutuzana visited Chimwemwe High School and Helen Kaunda Girls High School in Kitwe to encourage students to take part in science related projects. Emphasis was given to computer studies students preparing for their final national exams. Misheck

presented topics in expert systems, information systems and wide area networks. He also demonstrated the benefits of space science applications such as satellites, GIS, GPS and the Internet.

April 2012 - Yuri's Night (13th April)

Pupils from different schools participated in Yuri's Night. At Mano Basic School in Mufulira participants used the Internet to read about Yuri Gagarin. Four laptops and two desktop computers were put in the main hall and connected to the Internet using dongles. A celestial software presentation was given on how to navigate the globe. During the night, some students watched the sky to observe its beauty. Mina Chisha (pictured on right, below), a grade 12 pupil at Mufulira High School, gazing into the night during Yuri's Night on April, stated he would love to study a space science course if a scholarship is found.

Fig. 35.



Left: Assembling the Galileo telescope in preparation for Yuri's Night. Right: Mina Chisha observing through a Galileoscope.

July and August: Outreach projects in schools.

Outreach activities took place at Mitanto High School, Butondo High School and Ipusukilo High School. This included the formulation of SGAC Clubs, the donation of the Galileo telescopes, lessons on environmental sciences, computer science and astronomy during the holiday months of July and August.

Fig. 36.



SGAC Zambia donated a Galileo telescopes to Butondo High School, Pamodzi Girls High School and Mitanto High School.

Fig. 37.



With few science apparatuses at Kalanga Basic School, a teacher is trying to build confidence and interest in the pupils so that they can become future researchers and scientists.

August: Outreach projects in schools.

SGAC Club Launch in High Schools

On the 23rd of August, SGAC Zambia officially launched the Space Generation Clubs for Ipusukilo High School and Butondo High School. In order to make the launch more attractive and colourful, it only took place at a single location. Students from Ipusukilo High School traveled to Butondo High School to attend the event. During this launch, each school was given a Galileo telescope.

Fig. 38.



Pupils from Butondo High school receiving certificates of appreciation for academic hard work in sciences and for taking part in JETS Projects during the SGAC Zambia outreach programme.

The launch was well attended by students and science teachers alike. During the official launch of the clubs, NPoC Misheck Mutuzana encouraged pupils to take serious participation in sciences and join clubs such as Space Generation Club and Junior Engineers and Technicians Scientist (JETS) clubs.

September and October - 2012

SGAC Zambia recorded three major activities in the months of September and October, including outreach programmes at Riverain Basic School (13th Sept) and Chibote Girls High School (21st Sept) in Kitwe. The activities included presentations about SGAC and encouraged students to take part in physics and mathematics competitions. Mr. Simpande, a mathematics and physics teacher at Mpelembe Secondary School, made a presentation on acceleration and Newton's Laws of Motion to encourage female students to take interest in science. Finally, Mrs. P. Libati, the Kitwe District JETS coordinator, also made a presentation on how pupils should make science projects. This is in preparation of the JETS Annual Symposium that will be held in Kasama Province this December.

Astronomy and Space Science Series of Seminars in Zambia

Astronomy Without Borders in Zambia (AWB)

AWB Zambia National Coordinator: Prosperity C. Simpemba

"I am dedicated to AWB because I find it fulfilling being in a company of hard working people willing to share knowledge and uniting every one through the universal appeal of astronomy."

Fig. 39.



AWB Zambia National Coordinator: Prosperity C. Simpemba

World Space Week Commemoration

Another successful event was World Space Week. We had two events this year. One was held at The Copperbelt University (4th October to 7th October) in Kitwe with Mr. Prosperity Simpemba, who spearheaded the activities there. The other event was held at Mufulira College of Education in Mufulira spearheaded by Misheck Mutuzana.(5th October-7th October)

Fig. 40.



Acting Dean Dr. Indra I. Singh (School of Mathematics and Natural Sciences – Copperbelt University) introduces the guest of honour at the 2012 World Space Week seminar at the Copperbelt University in Zambia

Fig. 41.



Seminar delegates listen to the first talk – Space for Human Safety and Security, 4th October, 2012, Copperbelt University

Looking Ahead: The Plan for the Future of SGAC-Zambia

- Seminars and workshops for science teachers in physics and astronomy to be conducted by Mr. Prosperity Simpemba
- Expand SGAC Zambia through outreach programmes
- Participate in Cassini Scientist for a Day Essay Competition
- Organising Galileo Teacher Training Programme / Workshops
- Host several science competitions for students

Proposed programme for 2013:

- Global Astronomy Month- April 2013
- Yuri's Night- 12th April 2013
- World Space Week 4-10 October 2013
- Space Science quizzes
- Seminars and Workshops on Space Science
- Country Symposium-SGAC Zambia (depending with availability of funds and sponsorship)
- Country newsletter

REGIONAL REPORT

The Asia-Pacific region has experienced a fantastic year filled with many exciting activities and opportunities. It has been a very active and busy period for space enthusiasts and advocates across the region, representing SGAC at a plethora of national and international events.

It was a very proud moment for the region when Dr Catherine Doldirina (former NPoC Georgia) succeeded Michael Brett (Australia) as the new SGAC Chair. Also selected to the Executive Committee was Aafaque Khan (India) as SGAC's Co-Executive Secretary. Elizabeth Roy (Australia), Rupendra Panday (Nepal), Scott Fisher (Australia) and Jaya Jung Mahat (Nepal) were selected to the Web Team to coordinate the fluidity of the SGAC website, monitor updates of new articles and respond to requests from the SGAC team. Apoorva Sridhar (India) was selected to the Public Relations and Communications Team as a Reporter.

Changes To SGAC Asia Pacific

Welcomed to SGAC

During 2012, Mohsen Zindagi (Afghanistan), Crystal Forrester (Australia), Kristian Grayson (Australia), Li He (China), Junzi Sun (China), Ryusuke Konishi (Japan), Bustanul Arifin (Indonesia), Jack Yeh (New Zealand), Ali Butt (Pakistan), Eranga Jayashantha (Sri Lanka) and Prasanna Deshapriya (Sri Lanka) were welcomed to the Asia Pacific team as National Points of Contact.

Farewell

In 2012 we bade farewell to Hiroshi Yamashita (NPoC Japan), Heejin Jeong (NPoC Republic of Korea), Yeongju Kim (NPoC Republic of Korea), Athiye Jawad (NPoC India) and Charitarth Vyas (NPoC India). We thank them all for their dedicated service to SGAC.

2012 Regional Highlights

SGAC Representation:

1st Space Generation Fusion Forum at the 28th Annual National Space Symposium, Colorado Springs, USA

Ahmad S. Hakimyar (Former NPoC Afghanistan), Bustanul Arifin (NPoC Indonesia), Heejin Jeong (Former NPoC Republic of Korea), Julia Leeson (Australia) and Rahul Goel (India) were awarded Global Grants to participate at the SGFF.

11th Space Generation Congress, Naples, Italy

- The 2012 Space Generation Congress welcomed the largest Asia Pacific delegation in the event's history, with more than 30 delegates hailing from the region.
- The winner of the inaugural International Space Solar Power Competition, Ryoko Nakamura (Japan), discussed her concepts for the transmission of power harvested in space from the Sun, and how it could be brought down to Earth.
- The 2012 SGAC Move an Asteroid winner, Sung Wook Paek (Republic of Korea), outlined his inventive technical solution for deflecting Near Earth Objects (NEOs) using paintballs.
- Scott Fisher (Web Editor, Australia) and Junzi Sun (NPoC China) were awarded 2012 Young Leadership Scholarships.
- Elizabeth Roy (Web Editor, Australia) was awarded a SSPI Satellite Futures Scholarship.
- Somalwar Utpreksha, Jack Yeh (NPoC New Zealand) and Kumar Abhijeet were awarded AYAA Australian Futures Scholarships.
- Zhuoyan Lu (China) was awarded the Peter Diamandis Scholarship.
- Ryoko Nakamura (Japan) was awarded the Space Solar Power Scholarship.

- Nine of the 28 SGC 2012 scholarship winners were from countries in the Asia Pacific region.

22nd UN/IAF Workshop on 'Space Technologies Applied to the Needs of Humanity: Experience from Cases in the Mediterranean Area' in Naples, Italy

- Thu Trong Vu (NPoC Vietnam) presented on 'Global Ships Traffic Monitoring Using Nano-Satellites Equipped with Space-Borne AIS Receivers'.
- Rogel M. Sese (NPoC elect Philippines) presented on 'Capacity Building for Space Technology in the Philippines: Applications in Maritime Transportation, Geo-hazard Monitoring and Disaster Management'.
- Aafaque Khan (Co-Executive Secretary, India) presented on 'How Students Can Contribute in Mapping and Monitoring of Wetlands by Using Remote Sensing Data and GIS Tools'.
- Suresh Bhattarai (Co-Executive Secretary, Nepal) presented on 'Space Science Education, Outreach Activities and Their Impact in Nepal'.

Other Scholarships

- Scott Fisher (Web Editor, Australia) was awarded a full scholarship by the International Space University to attend the 2013 ISU Southern Hemisphere Summer Space Programme at the University of South Australia, Adelaide.
- Aafaque Khan (Co-Executive Secretary, India), Balbir Singh (India), Rogel Mari Sese (NPoC elect Philippines) and Elizabeth Blaber (Australia) were awarded 2012 IAF Emerging Space Leaders Grants to attend the 11th Space Generation Congress, 22nd UN/IAF Workshop and the 63rd International Astronautical Congress in Naples, Italy.
- Suresh Bhattarai (Co-Executive Secretary, Nepal), was awarded a scholarship to attend the 22nd UN/IAF Workshop on 'Space Technologies Applied to the Needs of Humanity: Experience from Cases in the Mediterranean Area' in Naples, Italy.

Member of the Month

The Asia Pacific region was delighted to see Suresh Bhattarai (Co-Executive Secretary, Nepal), Michael Brett (Chair, Australia), Scott Fisher (Web Editor, Australia) and Aafaque Khan (Co-Executive Secretary, India) recognised as the SGAC Member of the Month for February, April, June and September respectively for their tireless efforts.

Yuri's Night World Space Party and World Space Week

SGAC members and NPoC enthusiastically organised and participated in many events to celebrate Yuri's Night World Space Party on 12th April 2012 and World Space Week from 4th -10th October 2012.

Looking Ahead: Plans for the Future of SGAC Asia Pacific

With over 60% of the world's population living in the Asia Pacific region, SGAC Asia Pacific looks forward to 2013 with the following goals:

- Increasing awareness of SGAC in the region
- Increasing membership and involvement in SGAC projects
- Expanding the NPoC network to include more countries

NATIONAL REPORTS

AFGHANISTAN NATIONAL REPORT

SGAC in Afghanistan paves the way for future space and astronomy activities among young people, as well as pooling Afghan talents and building international collaborations. The goal of our efforts is to encourage people to join the space sector, know the importance of astronomy and space education, and understand that astronomy and space applications are key factors of current and future

technological advancements. SGAC in Afghanistan seeks to encourage students, young professionals and the government to help initialise astronomical societies throughout the country and include astronomy in school curriculums. One day we aim see another Afghan astronaut in space to follow the footsteps of Abdul Ahad Momand, the first Afghan astronaut in space who spent nine days aboard the MIR Space Station in 1988.

Although space is never a priority in war-torn countries like Afghanistan, the SGAC NPoC, has been trying to initialise space-related activities and projects throughout the country. So far, as stated in earlier reports, the space-related activities in Afghanistan are done through individuals and no professional space societies currently exist in the country.

Looking Ahead – Plans for SGAC Afghanistan

Mohsen Zendagi, the new NPoC, has close contact with the previous NPoC, Ahmad S Hakimyar, who served two terms in this position. Zendagi would like to continue promoting space through SGAC in Afghanistan. We have planned to arrange a space event at the earliest possible time, probably at the beginning of 2013. Our guests will include people from academia and government. The former NPoC will give an introduction about the activities of SGAC. His experiences from international space-related conferences where Afghanistan was represented will also be shared with the audience. The exact time and location will be announced later on our Facebook page.

AUSTRALIA NATIONAL REPORT

Current State of Space Affairs

2012 once again saw new record attendance of Australians at the SGC and IAC in Naples, with 19 SGC delegates representing Australia - the highest percentage of SGC delegates from any one country. Australian representatives were also among the recipients of the IAF Emerging Space Leaders Grant, SGAC Young Leadership Award, SSPI Satellite Futures Scholarship and the AYAA Australian Futures Award in 2012. Three Australians were also involved in the organising committee for SGC 2012. This year has been another busy one for Australia in the space sector, highlighted by the visit from NASA Administrator Charles Bolden to the Questacon Science Museum in Canberra. The University of South Australia/International Space University Southern Hemisphere Summer Space Program continued with another successful programme this year, as well as the Mission Discovery programme held in Adelaide – one of several programmes across Australia targeted at school students with an interest in space. Many fascinated observers watched the landing of the Curiosity rover across Australia, including at an event organised by Engineers Australia at the Victorian Space Science Education Centre in Melbourne. Work by the Space Policy Unit (SPU) also continues as part of the Australian Government's Department of Industry, Innovation, Science, Research and Tertiary Education. Further details of Australia's activities in the space sector can be found at the centralised website <http://www.space.gov.au>.

Policy Advances:

Australia – United States Space Cooperation

Two agreements between the Government of Australia and the United States of America were amended and extended. The first was the Agreement concerning Space Vehicle Tracking and

Communication Facilities, initiated in 1960, and the second was the Agreement concerning the Conduct of Scientific Balloon Flights for Civil Research Purposes, initiated in 1992. Prime Minister Julia Gillard and President Barak Obama renewed these in Canberra, Australia in November 2011.

<http://space.gov.au/INTERNATIONAL/Pages/TreatiesandAgreements.aspx>

<http://space.gov.au/SpacePolicyUnit/NationalSpacePolicy/Pages/AustralianUnitedStatesSpaceCooperation.aspx>

Accomplishments:

ACSER 6U CubeSat Low Cost Space Missions Workshop

A free CubeSat workshop was held by the Australian Centre for Space Engineering Research (ACSER) on the 17th and 18th of July at Mt Stromlo Observatory in Canberra. This event included a series of presentations focusing on the design and applications for 6U CubeSats.

<http://www.acser.unsw.edu.au/events/cubesat.html>

Aerospace Futures Conference

Held in Sydney from the 10th-12th of July for undergraduate and postgraduate students interested in a career in the aerospace industry. This was an opportunity for over 180 student delegates to hear from a wide range of aviation and aerospace speakers, learn of career opportunities both in Australia and overseas, and network with industry professionals and like-minded peers.

<http://www.ayaa.com.au/AeroFutures>

AIAA Region VII-AU Student Conference

A conference programme was held this year at the University of Adelaide from the 26th to 27th of November for undergraduate university students to present on aerospace-related engineering topics. Presentations were judged and prizes given to the top three paper presentations. The winner of this competition was given funding by the American Institute of Aeronautics and Astronautics (AIAA) to attend the 51st AIAA Aerospace Sciences Meeting in Texas, USA in January 2013.

<http://www.region7au.aiaastudentconference.org>

Asia-Pacific Regional Space Agency Forum (APRSAF)

The 18th Asia-Pacific Regional Space Agency Forum (APRSAF) was held in Singapore from the 3rd-4th of December and attended by a representative from the Australian SPU. As part of the programme, a water rocket competition was run to stimulate the interest of students (aged 12-16 years) in space, science and engineering. In 2011 Australia was proudly represented by a team from St. John's Anglican College in Queensland. The 19th APRSAF will be held in Kuala Lumpur, Malaysia in December 2012.

<http://www.aprsaf.org/>

Australian Youth Aerospace Forum (AYAF)

This interactive programme for high school students interested in aerospace career pathways was held in both Brisbane and Melbourne for the first time this year. The Melbourne event was a single day programme while the Brisbane programme was a five-day camp for students held at a university college. Activities during the event included hands-on projects for students, site visits and presentations from universities on study options and aerospace organisations with career opportunities.

<http://www.ayaa.com.au/AYAF-Bris>
<http://www.ayaa.com.au/AYAF-Melb>

Australian Centre for the Moving Image (ACMI)

In late 2011 and early 2012 ACMI (Melbourne) presented two space related exhibitions. The first 'Star Voyager: Exploring Space on Screen' was the world premiere of a major exhibition charting the history and future of space exploration as experienced through the moving image, also including an extensive public programme. The second was 'Blast Off!' a free outdoor exhibition which showed video footage from various NASA missions and launches.

<http://www.acmi.net.au>

Australian Mars Exploration Conference (AMEC)

Australian Mars Exploration Conference (AMEC), Canberra took place on 14th-16th September. All students, industry professionals and interested persons from the general public were invited to attend the conference, which consisted of lectures and industry presentations with aim 'to expand the breadth and depth of scientific, technological and cultural development in support of the human exploration of Mars'.

<http://marssociety.org.au/event/amec-2012/details>

Australian Space Science Conference

The 12th Australian Space Science Conference was held at RMIT University, Melbourne from the 24th to the 27th of September 2012. This event was run in conjunction with the Engineers Australia National Space Engineering Symposium and included presentations covering a broad range of space science and engineering topics.

<http://www.nssa.com.au/ocs/index.php?cf=14>

Climate R3 Workshop

The APRSAF Climate Regional Readiness Review (R3) Workshop was held in Perth on 22nd to the 25th of May 2012. This meeting involved investigating the regional benefits from climate-related satellite capabilities and brought together suppliers and users of this satellite data. Presentations were made by many attending organisations including the Australian Space Policy Unit, CSIRO, Geosciences Australia, the Japanese space agency JAXA and the Indian Space Research Organisation, ISRO.

<http://www.space.gov.au/ClimateR3/Pages/ClimateR3Workshop2012.aspx>

Conference of the Australian Science Teachers Association (CONASTA)

CONASTA is the annual Conference of the Australian Science Teachers Association (ASTA) and was held in Canberra on the 8-11 July this year.

<http://www.conasta.edu.au/>

Institute of Navigation Fellows – Australian honoured

Early this year the Institute of Navigation (ION) announced the 2012 ION Fellows, including the Australian satellite navigation expert Professor Chris Rizos. Professor Rizos is an internationally recognised GNSS technology expert who teaches at the University of New South Wales. He is the current president of the International association of Geodesy and has contributed to over 500 journal and conference papers.

<http://www.ion.org/awards/fellows2012.cfm>

International Conference on High Energy Physics (ICHEP)

The 36th International Conference on High Energy Physics was held in Melbourne on the 4-11 July 2012, acknowledging Australia's world-class research in this field. The Conference was attended by over 700 delegates from around the world including the directors of the major particle accelerators in Europe, America and Asia and coincided with CERN's presentation on the latest findings in the Search for the Higgs Boson.

International Congress of Aviation and Space Medicine

The 60th International Congress of Aviation and Space Medicine was held in Melbourne on the 16th to the 20th of September 2012.

<http://www.icebergevents.com/icasm2012/>

International Space Apps Challenge

On the 21st & 22nd of April, Australians participated in the NASA International Space Apps Challenge with Australia's main event hosted in Melbourne and satellite events in Sydney, Canberra and Adelaide connected via video conference, Skype and other conferencing tools. Along with the main challenge, a series of education and citizen science solutions were run. Worldwide, over 100 solutions were developed in the 24 hours and 5 of the 37 finalists selected for international judging were Australian.

ISU & UniSA SHS-SP

ISU SHS-SP, Adelaide (5 January-4 February): Once again, the Southern Hemisphere Summer Space Program (SHS-SP) was run in Adelaide in January by the University of South Australia (UniSA) and the International Space University (ISU). The SHS-SP is an intensive, five week, live-in experience that runs during the southern hemisphere summer, and involves the international, intercultural and interdisciplinary educational philosophy for which ISU is renowned. The programme's second year saw an increase in participation from international students and lecturers with 34 students attending from 12 countries. In addition to the students programme, alumni events were organised where alumni from all ISU programmes were invited to various networking, cultural and social events so they could collaborate with the current SHS-SP participants, and Australian business and government representatives. Public lectures were also held on the future of space in Australia and there was a popular astronaut panel involving four astronauts from NASA, CNES and KARI. Students were also given the option to undertake an individual research project after the conclusion of the SHS-SP, which would provide them with a Graduate Certificate in Space Studies from the UniSA and three students

undertook this in 2012. The second year of the programme was very successful and preparations for the third SHS-SP in January 2013 are well underway.

<http://www.unisa.edu.au/itee/spaceprogram/>

JAXA Try Zero-G prize

The Try Zero Gravity (Try Zero-G) is an educational programme where Japanese Aerospace Exploration Agency (JAXA) Astronauts on the ISS perform experiments suggested/designed by the public to demonstrate microgravity utilisation. This year an experiment “Weight Station” designed by a sixth grade student, Lily Thornton, from rural Victoria, Australia was selected and her experiment will be performed on the ISS on the 7th of November 2012.

<http://space.gov.au/Pages/Australian-student-wins-JAXA-Try-Zero-G-prize.aspx>

Mars Rover Landing Party

All around Australia on August 6th there were events and viewing parties to watch and celebrate Curiosity’s landing on Mars and Australia’s role in the mission through the NASA Deep Space Tracking Station at Tidbinbilla. Two of the main events were held at the visitor’s centre at the Tidbinbilla tracking station and the Victorian Space Science and Technology Centre where live streams, 3D movies and public lectures were held throughout the day. At VSSEC participants were also given the opportunity to dress up in ‘space suits’ and walk on the simulated Mars surface alongside the centre’s own rover.

Mission Discovery Adelaide

There was a space-learning programme for school students held at the University of Adelaide from the 16th to the 20th of January 2012. This event was run by a number of NASA astronauts and prominent NASA employees, and involved developing an experiment that could be launched to the International Space Station.

http://www.isset.org/mission_discovery_adelaide.html

NASA Administrator, Charles Bolden, Live from Questacon

During a visit to Australia in April 2012, NASA Administrator Mr Charles Bolden Jr presented a talk on NASA’s future directions and the role that today’s students will play. The presentation was made to students live at Questacon (The National Science and Technology Centre) in Canberra and via video conference to students around Australia. The talk was also available online.

<http://www.questacon.edu.au/live/vlog.html>

National Space Camp

The National Space Camp was held in Melbourne at the VSSEC in April 2012. Activities included a ‘Mission to Mars’ on VSSEC’s simulated Martian surface, science based learning and space related investigations.

<http://www.spaceschool.com/nscw/nscw.htm>

Space Generation Fusion Forum

The 2012 Space Generation Fusion Forum, in Colorado USA, was attended by 2 Australian delegates. One of these delegates was Julia Leeson, a graduate of the University of New South Wales, who was one of 12 to receive a SGAC grant to attend the event.

South Australian Space School

This programme was a three-day residential programme for tenth grade students interested in science and space. The event included visits to the Edinburgh RAAF base, the Defence Science and Technology Organisation (DSTO) and the Adelaide planetarium, as well as presentations including a scientist from the NASA Ames Research Center and an ESA astronaut candidate finalist.

<http://www.spaceschool.com/>

TEDxISU

The TEDxISU is a collaboration between TED and the International Space University (ISU) where space leaders gave presentations to the ISU SSP12 students and the general public on how the power of ideas in technology, entertainment and design influences and inspires their work in space. This year Dr. Sarah Jane Pell, an Australian artist, diver, ISU Alumni and TED Fellow was honoured to present alongside other distinguished presenters from around the world. The event was also webcast live.

<http://www.ted.com/tedx/events/2918>

VSSEC-NASA Australian Space Prize

VSSEC-NASA Australian Space Prize (now also encompassing the EA Undergraduate Thesis Prize in Space Engineering), Ames Research Centre: Offering an Australian university student the opportunity to participate in a ten-week NASA Academy programme, and work with a lead scientist or engineer on a current NASA project related to the student's thesis project. The VSSEC-NASA Australian Space

Prize was open to all Australian undergraduate students completing their final or honours year at an Australian University in 2012. The 2011 winner was Lyle Roberts from the Australian National University, giving him the opportunity to work on the NASA project "Understanding warning signs of major Earthquakes" under the supervision of principal investigator, Friedemann T. Freund, San Jose State University Physics Dept. and Carl Sagan Center at the SETI Institute.

<http://www.vssec.vic.edu.au/tertiary/vssec-nasa-australian-space-prize/>

World Space Week

Numerous space-related activities nationwide were organised to coincide with World Space Week 2012 including activities, demonstrations, presentations and observatory viewings at venues such as the Powerhouse Museum in Sydney, the Perth Observatory and the VSSEC.

<http://www.worldspaceweek.org>

Yuri's Night

Events were held nationwide on the 12th of April. Notably these included events held at Sydney's Powerhouse Museum, a 'Vostok' Space Beer tasting event at 4 Pines Brewery and an AIAA Student Branch event hosted in Adelaide.

<http://www.yurisnight.net/>

► CHINA NATIONAL REPORT

Review of 2012

China Space Programme in 2012

In the year 2012, China launched 28 spacecraft into space with 19 launchers. Here are a few major space events that happened in China:

1. Shenzhou 9 was a manned spacecraft flight of China's Shenzhou programme and was launched on 16 June 2012. Shenzhou 9 was the second spacecraft and first manned spacecraft to dock with the Tiangong 1 space station, which took place on June 18th. The Shenzhou 9 spacecraft landed on June 29th in the Inner Mongolia Autonomous Region. The mission's crew included the first Chinese female astronaut, Liu Yang.

2. Four satellites of the Baidou Navigation Satellite System were launched in 2012. They currently provide services to the Asia-Pacific region.

The system will eventually be a constellation of 35 satellites, which will include five geostationary orbit satellites for backward compatibility with BeiDou-1 and 30 non-geostationary satellites (27 in medium earth orbit and 3 in inclined geosynchronous orbit). It will offer complete coverage of the globe when finished. There will be two levels of service provided;

The free service will have 10-meter location-tracking accuracy, will synchronise clocks with an accuracy of 10 ns and measure speeds within 0.2 m/s.

The licensed service will be more accurate than the free service. It can be used for communication and will supply information about the system status to users.

3. China has begun designing and manufacturing the flight model entity of its third lunar probe, Chang'e-3. The probe will carry a lunar rover and other instruments for land surveys, living condition assessments, and space observations. It is scheduled to launch in 2013.

4. Five remote sensing satellites of the Yagan series were launched.

5. Meteorological satellite Fengyun-II 07 was put into orbit. It is capable of providing continuous meteorological monitoring and sending maritime and water resource data. The satellite is expected to play an important role in weather forecasting and disaster reduction.

6. The ChinaSat 2A Communication satellite will be used to meet the demands of China's radio and TV broadcasting and broadband multimedia transmissions.

7. The first data relay satellite network system is complete with the launch of the Tianlian I-03 satellite. The satellite will join its two predecessors to realise global network operations after in-orbit validation and system coordination procedures are carried out.

8. China successfully conducted tests on its new 120-tonne-thrust, next generation, liquid oxygen (LOX) and kerosene rocket engine. It is being designed for China's planned Long March 5 rocket. The new engine endured rotational tests of almost 20,000 revolutions per minute, and was exposed to temperatures of up to 3,000 degrees Celsius for 200 seconds.

Chinese Members in SGAC

1. Two NPOCs joined SGAC, Li He and Junzi Sun.
2. Three Chinese delegates participated in the SGC during 2012.

SGC 2013: Beijing

A local organising committee is being setup to prepare SGC, which will be held in Beijing in September of 2013. Chinese members of SGAC are working together with the local contacts and getting prepared for this coming event.

▶ INDIA NATIONAL REPORT

In 2012, India ramped up its space capabilities in an effort to be seen as a major global space power. It is moving beyond its traditional missions of developing communications and remote sensing satellites to focus on new areas, like navigation.

Bengaluru Space Expo

India's IT Hub Bangalore was a host to several important events that grew the presence of India in the current space race. Bangalore hosted the Bengaluru Space Expo that is held once every two years and is Asia's only focused exhibition on Space Technologies, Products and Innovations. The expo showcased the latest technological advancements, related products and technical services while providing a platform for space agencies, specialists, entrepreneurs and space industry heavyweights to display their visions.

Indian Space Research Organisation (ISRO)

Indian Space Research Organisation (ISRO) also conducted and participated in events below:

- [26th CEOS Plenary at Bangalore, India](#) (Oct 24 - 27, 2012)
- [Bengaluru Space Expo 2012](#) (Sep 12 - 15, 2012)
- [39th COSPAR Scientific Assembly at Infosys Training Centre Mysore, India](#) (Jul.14 - 22, 2012)
- [17th National Space Science Symposium \(NSSS\), at Sri Venkateswara University, Tirupati AP](#) (Feb. 14 - 17, 2012) The symposium provided a scientific forum for the presentation of new results and to discuss recent developments in space science, planetary exploration and space- and ground-based astronomy programmes/projects being pursued at various research institutions and universities in India.

Fig. 42.



17th National Space Science Symposium (NSSS)

2012 also saw the 100th space mission of ISRO. On September 9, 2012, the four stage workhorse PSLV (Polar Satellite Launch Vehicle) orbited the 720-kg French remote sensing satellite Spot-6 along with the 15-kg Japanese “Proiters” probe as a piggy back payload on commercial terms, and in the process helped ISRO complete the saga of a “space century”.

Other country specific space events held in 2012 included:

- [UN/India Training Course on Satellite-Aided Search and Rescue](#) (August): The Training Course brought together Satellite Aided Search and Rescue (SASR) managers, rescue coordination centre directors and designated representatives from countries and territories within the footprint of the International Satellite System for Search and Rescue (COSPAS-SARSAT) satellite receiving station in Bangalore to discuss how an understanding of the COSPAS-SARSAT system could improve SASR response in that region. In particular, the aim was to improve the operational interface among agencies in distress situations.
- [Pro-Am Meeting in Astronomy](#) (4-5 March): This was second in the series of Pro-Am meetings supported by the Astronomical Society of India - meetings which aim to create a space for fruitful interactions between professional and amateur astronomers in India, leading towards possible collaborative activities.
- [Great Indian Star Count and Globe at Night](#) (14-23 January)

Fig. 43.



Great Indian Star Count

SGAC Activities

India's participation in SGAC and IAF events was also marked with the presence of Rahul Goel as a panelist and an IAF Emerging Space Leaders Grant.. “A space programme does not change the value of bread today, but it does change the course of civilisation tomorrow.” The panellists for this session were Katrina Laygo of the USA, Bustanul Arifin of Indonesia, Bekele Erko of Ethiopia, Rahul Goel of India, Ana Alexandra Perez of Venezuela and Diego Urbina of Colombia/Italy. He participated in the Space Generation Congress to interact with young and dynamic students and professionals from all over the world. “I am grateful for the support and encouragement that I have received from IAF, SGAC and Maulana Azad National Institute of Technology (MANIT) in Bhopal. It would not have been possible for me to be a part of IAC 2012 without their patronage. “

Another SGAC member Aafaque Khan, who is currently in his final year of B. Tech. Mechanical Engineering was awarded a scholarship by the Government of India, and was selected for the International Space University's Southern Hemisphere Summer Space Programme (ISU-SSP) 2012. He has presented several papers and is currently involved in three projects. “Space science has been a childhood dream, intrinsic to my nature. It is the only job in the world that I would do for free and enjoy thoroughly. I am an enthusiast and want to work in the space sector as a professional”.

India was also selected as one of the 15 Teams for the SGAC NEO Project Group's "Find an Asteroid" Search Campaign.

Nishant Arora and Sourabh Kaushal, SGAC Members from India are final-year undergraduate engineering students from the state of Haryana. They found space debris to be a very interesting topic and decided to learn about its history and recent growth. That is how they came across the 2010 International Space Elevator Consortium (ISEC) Jerome Pearson Prize, which called for papers that suggested novel space debris mitigation methods. Nishant and Sourabh took initiative and began research on space debris, proposed new methods of mitigation and finally submitted an abstract for their paper "Space Debris and its Mitigation", which was successfully accepted.

There are many such dreams and possibilities that are offered by SGAC for people from all around the world. Members from SGAC India have always enjoyed these endless possibilities of growing their network and allowing the progress of the country.

► INDONESIA NATIONAL REPORT

Indonesian space activities throughout 2012 have been dominated by rocket competitions and international conferences. These have both strengthened the Indonesian capacity for space and widened Indonesian's network internationally.

Events in 2012

Rocket Competitions

There were several rocket competitions that took place in Indonesia throughout 2012, such as the Payload Rocket Competition 2012 (KOMURINDO in Bahasa) and Water Rocket Competition, which are always held by the Indonesian government or an Indonesian university. These competitions were intended for students in high school and university.

The Indonesian National Institute of Aeronautics and Space (LAPAN) in Jogjakarta ran the 5th KOMURINDO on June 8-10, 2012. The rocket competition theme this year was Attitude Monitoring and Surveillance Payloads. EEPISky G-03 team of Electronic Engineering Polytechnic Institute of Surabaya (PENS) came in first, followed by Rise of Ganesha (ITB) and Eagle Two of Bandung Polytechnic.

Fig. 44.



The Rise of Ganesha Team in KOMURINDO 2012

Meanwhile, the Water Rocket Competition 2012 encompassed regional to national level teams. This included competitors from various universities, such as the Physics Department from the University of

Indonesia (Pesta Rakyat Fisika 2012) as well as several junior high schools. The 2012 National Water Rocket Competition was run in Bandung on October 6-7. The participants were 13-16 years of age. Some champions of this competition will represent Indonesia at the international level in 2013.

Fig. 45.



The participants of the Water Rocket Competition "Physics folk festival in University of Indonesia"

International Conferences

There were some international conferences attended by Indonesian young professionals and students in 2012. The most notable events were the International Astronautical Congress (IAC), the Space Generation Congress (SGC), the Asia Pacific Space Cooperation Organisation (APSCO), and the Asia-Pacific Regional Space Agency Forum (APRSAF).

Indonesia sent four delegates to attend the 63rd IAC in Naples, Italy, from October 1st through the 5th. The delegates consisted of one student and three young professionals, one of whom is the NPoC for Indonesia. The NPoC for Indonesia also participated in the SGC 2012. At IAC 2012, Bandung Institute of Technology (ITB) student, Hagarly Mohamad Hutasuht, was awarded the Gold Medal Hermann Oberth Award for Undergraduate Student category, with the paper "HIL Simulation of Spin Stabilised Spacecraft Dynamics by Two Degrees of Freedom Gyroscope Simulator".

Fig. 46.



Hagarly Mohamad Hutasuht was awarded the Gold Medal Hermann Oberth Award for the Undergraduate Student category

APSCO and APRSAF were other international conferences and seminar which were attended by Indonesian students and young professionals. As the host of the 4th APSCO International Symposium on Communication Satellite Technology & Applications in Jogjakarta, Indonesian delegates dominated the event. Meanwhile at APRSAF 2012 in Malaysia, several delegates represented LAPAN.

Fig. 47.



Indonesian participants at APSCO 2012

➤ JAPAN NATIONAL REPORT

This year, SGAC Japan continuously focused on communicating with each member, the participants of the past SGC, and the space enthusiasts of the present and next generation. We try to keep handing down the great experiences in SGAC to the next generation and create something new together.

Accomplishments in 2012

SGAC Japan New Year's Party, February

At Ueno, Tokyo

February 5, 2012

A New Year's party was held in Tokyo by SGAC Japanese members. These members have been trying to reunite participants of past SGCs and make new relationships with people who have an interest in space. We each had an amazing experience with SGC in the past and talked over future activities for SGAC Japan.

Fig. 48.



SGAC Japanese members at New Year's party

This year, Ryusuke Konishi took the post of NPoC for Japan, replacing Hiroshi Yamashita. We congratulated Hiroshi on his magnificent job for the past few years and Ryusuke is motivated for future SGAC activities.

Party with Student Space Groups, April

At Shibuya, Tokyo

April 1, 2012

A party with several other student space groups was held in Tokyo. Japan has many students groups that are enthusiastic about space activities. In the past, relationships between these groups has not been so close. SGAC Japan invited these groups together and held a networking party in order to understand the individual activities of each group and improve the relationships between them. This opportunity is now helping us start something new in the space sector in Japan.



Participating groups are as follows: Space Development Forum (SDF), Live in Space Project (LiS), Space Job Hunting (UchooShukatsu, in Japanese), and SGAC Japan.

Yuri's Night Japan 2012, April

At Shibuya Cultural Center Owada, Shibuya, Japan

April 14, 2012

Yuri's Night Japan 2012 was held at the Shibuya Cultural Center in Owada, Tokyo. Every year, SGAC Japan members play an important role in hosting this event. We worked this year's event, as always, and made it a great success. During this event, White Label Space Japan (WLSJ), a participant in the "Google Lunar X Prize", cooperated



with us and made Yuri's Night an extra special night. WLSJ introduced participants to the actual lunar rover they made and the participants enjoyed operating the rover with their own hands. We believe it was a great space education opportunity for children to have.

Fig. 49.



Yuri's Night Japan

ARLISS 2012, September

At Black Rock Desert, Nevada, US

September 9-14, 2012

Fig. 50.



Arliss 2012, Nevada

The University Space Engineering Consortium (UNISEC) holds an international Cansat competition every year. This was the 14th year for the contest. Cansat is a type of miniaturised satellite that is often utilised for educating space engineers. We have two main competitions: Comeback Competition and Mission Competition. Comeback Competition is a race to reach a distance goal. Any type of Cansat is allowed. Such structures include two wheeled, winged, or parafoil architectures. Mission Competition is a contest of mission proposals .

In this year's event, 25 teams participated from all over the world. Teams came from Japan, Korea, and the United States, among others. Some SGAC members also joined this event.

Fig. 51.



Cansats

Space Development Forum 2012, September

At University of Tokyo

September 15-16, 2012

The SDF is an event that promotes space development that prompts its participants to think about international relations, business, and law. Some SGAC Japanese members participated in this event. The goal of this event was to help participants acquire knowledge that is not directly related to their own special backgrounds. The event also had a social party and SGAC Japan members communicated with other enthusiasts.

SGC 2012 and IAC 2012, Naples, September - October

At Naples, Italy

September 27- October 5, 2012

Several space enthusiasts from SGAC Japan participated in the SGC2012 & IAC2012 held in Naples, Italy. The SGAC network is comprised of members from all over the world so we were glad to meet again in Naples. Some members also joined the International Space Education Board (ISEB) Programme.

Fig. 52.



SGC 2012 delegates

Looking Ahead – the Plan for the Future of SGAC Japan

The SGAC Japan team thinks that the following future activities will greatly improve the group:

- Regularly hold meetings and events for SGAC Japan. To make it easier for members to participate in events, we plan to hold the meetings more regularly, such as monthly.
- Utilise the mailing list of SGAC Japan more efficiently. We have a mailing list of all SGAC members, but it may be difficult or boring to read these emails for people who are not good at English. We are planning to distribute domestic information that is related to space activities through a domestic newsletter because the current Japanese mailing list is not used actively.
- Activate international public relations. In addition to a domestic newsletter, we are planning to utilise the monthly SGAC international newsletter. It may be beneficial to make a draft for the newsletter.

MALAYSIA NATIONAL REPORT

Events In 2012

Yuri's Night (April 14, 2012)

The 2012's theme of Yuri's Night was "Make an Impact". In Malaysia the National Space Agency ANGKASA, which is dedicated to increasing space awareness among the public, held the Yuri's Night celebration on April 14th at the Planetarium Negara in Kula Lumpur. Aimed at giving the public an opportunity to embrace space in an informal and relaxed environment, Planetarium Negara opened its door from 9 am until 10 pm and provided various activities.

Visitors were given the golden opportunity to continuously watch movies about space exploration. This rescheduling, which was called the Space Movie Marathon, also offered free movie passes to those who bought two tickets simultaneously. Visitors were also invited to write down their creative feelings and opinions and place these responses into a paper cup, which will eventually be artistically shaped into a sphere. This space-inspired art is called 'Make a Sphere, Make an Impact'. Finally visitors were given a talk about the universe that was aided by the Full Dome Digital Simulation System in the Space Theatre. There were over 800 visitors on this occasion.

Fig. 53.



Malaysians celebrating Yuri's Night 2012

Microgravity Experiment Flown (April 16, 2012)

The parabolic team from the University of Kuala Lumpur conducted parabolic flights over the airspace of Nagoya, Japan from March 23rd through the 28th. The flights were performed using a modified jet from JAXA. During the flights, the team endured hyper and microgravity conditions due to extreme flight manoeuvres of the jet and the team performed several experiments to collect data regarding the rate of transfer of moisture from bath towel to human skin.

Fig. 54.



University of Kuala Lumpur parabolic flight team

The team was led by Dr Mohd Harridon of the University of Kuala Lumpur and the team consisted of two students: Zaim Ismail and Zaim M. Nor. Helmy Hashim, an expert in material science and a veteran of microgravity experiments from ANGKASA acted as a consultant to the team.

World Space Week (October 4-10, 2012)

World Space Week was held at the National Planetarium in Kuala Lumpur in accordance with the international World Space Week community, Ministry of Science, Technology and Innovation (MOSTI) and ANGKASA. It successfully attracted the public and upheld the motto of WSW 2012: Space for Human Safety and Security. There were exhibitions throughout the week and many interesting space events for students and the public to indulge in. Visitors had a chance to observe the surface of the sun, take part in a special WSW food decoration event and primary and secondary school students had the chance to take part in the WSW Magic Board Creative and WSW Treasure Hunt. A prize ceremony was held later that day. In the spirit of giving, ANGKASA gave away 100 tickets to those who were born between October 4-10.

Fig. 55.



Celebrating World Space Week in Kuala Lumpur

Rocketry Workshop (October 24, 2012)

The 4th Rocketry Workshop in Asia Pacific Smart School was held on October 24, 2012. The one-day workshop had the objective of injecting aerospace science into school children by making it "fun and easy". It was sponsored by 1Malaysia Development Berhad as part of their Dana Belia 1Malaysia CSR Initiative. The workshop was the fourth in a series of nine workshops that will span across Malaysia in

the hopes of bring rocketry science to students from urban to rural schools. The target age group of this campaign is 9-14. Each student had to figure out how to mix the correct chemicals and follow instructions to build the fuselage before designing software to measure the thrust vector of their home-grown rockets. A talk on the Angkasawan Programme was also given to the kids to educate them on what it takes to become Malaysia's next space explorer. In the end, the task of igniting their rockets was the highlight of the workshop. The launch of two miniature rockets in the school's field was an added bonus for everyone.

Fig. 56.

4th Rocketry Workshop in Asia Pacific Smart School

APRSAF-19 (December 11-14, 2012)

The Asia-Pacific Regional Space Agency Forum (APRSAF-19) was organised jointly by the Malaysian Ministry of Science, Technology and Innovation (MOSTI), ANGKASA, the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) and JAXA. It took place in Kuala Lumpur on December 11-14.

Fig. 57.



APRSAF-19 delegates

A reception was organised on Wednesday evening. It was jointly hosted by MOSTI, ANGKASA and MEXT to welcome the participants of the APRSAF-19. The forum attracted crowds of space agency representatives from all over the globe. Everyone flocked to Berjaya Times Square Hotel, National Planetarium and all around Putrajaya. Other events included a water rocket event, a colloquium on astronomy from ISS Kibo, a SAFE workshop prior to APRSAF-19, a poster contest, Kibo-ABC (Asian Beneficial Collaboration through Kibo Utilization) workshop and exhibitions throughout the forum.

► NEPAL NATIONAL REPORT

2012 was another fruitful year for SGAC Nepal, with more programmes in which space applications were discussed and implemented. SGAC Nepal showed an active role by participating in and advocating on space applications with regard to resource management, disaster risk reduction and sustainable development. Next year will be a transition year for SGAC Nepal because the current NPoCs will retire from their roles with the completion of their second tenures.

Events in 2012

Here is a brief summary of some of the space science and astronomy programmes that happened around in Nepal in 2012.

Southern Hemisphere Summer School Programme (SHS SP) 2012, Australia

Sudeep Neupane attended this five-week intensive program and had a fantastic ISU experience. He learned about space applications, space policy and space services, during his interdisciplinary and holistic introduction to space science, space systems engineering, space business management, space law and space medicine.

Asia Pacific Regional Space Agency Forum (APRSAF) Space Education Seminar in Nepal, 2012

APRSAF Space Education Seminar took place in Kathmandu, Nepal on 10-12 March 2012. APRSAF Space Education Seminar in Nepal, 2012 was jointly organised by the Nepal Scientific Activities and Research Center (NESARC) in Kathmandu Nepal, the Space Education Center, JAXA, the Geo-Informatics and Space Technology Development Agency (GISTDA) and the Lumbini Academic Foundation, Nepal. For more detail visit: <http://www.nesarc.org.np/space-science-tech.html>.

International Conference on Astrophysics and Cosmology (ICAC), 19-21 March, 2012

The first International Conference on Astrophysics and Cosmology (ICAC) was organised at CEDA hall, Tribhuvan University, Nepal on March 19-21. ICAC 2012 was a wonderful occasion to communicate with the experts, researchers and students in the field of Astrophysics and Cosmology. The total number of participants was roughly 125, which included 42 international (non-Nepalese) participants. There were 3 invited talks, 10 special talks and 46 contributory talks. In addition, 27 posters were on display during the conference. A full list of participants, titles and abstracts of presentations can be found on the webpage: <http://icacnepal.webs.com>

Galileo Teacher Training Programme (GTTP) Nepal 2012

The GTTP2012 Kathmandu was organised by the Global Hands on Universe (GHOU)-Nepal, the Nepal Astronomical Society (NASO) and the Espro Foundation at Eureka High School, Kathmandu, Nepal on the 31st of March, 2012. Thirty-three science teachers and communicators from different parts of Nepal participated in GTTP2012. There were two workshops, one plenary session, one invited lecturer and one special talk organised for the program. An observation programme was also organised in the evening. For more details:

http://astronomy-nepal.blogspot.com/2012_04_01_archive.html

Follow-up Consultative Meeting on Pyramid Workshop 2012, 16 May 2012

A one-day programme was organised at the Women Development Training Center (WDTC) in Jawalakhel, Lalitpur, Nepal. It was set up to facilitate the strategic framework for implementing the Pyramid-2012 Workshop that took place at CNAS, Kirtipur on April 8th, 2012. The programme was jointly organised by the Hoste Haise Department of Rural Development of the Tri-Chandra Multiple Campus, the Jagriti Child and Youth Concern Nepal (JCYCN), the Volunteer Aid Nepal and SGAC-Nepal.

For detail: <http://www.jcycnepal.org.np/follow-up-consultative-meeting-on-pyramid-workshop-2012>

National Workshop on Disaster Risk Reduction, 30 May, 2012

The National Workshop on Disaster Risk Reduction entitled "Educating Youth for the Reduction of Disaster Risk" was held on the 30th of May at Kathmandu, Nepal. The United Nations Youth and Students Association - Nepal organised the event where 50 selected participants from different areas

were trained on Disaster Risk Reduction (DRR) by the experts from ICIMOD, CALTECH and the national institution working for DRR in Nepal. Suresh Bhattarai, NPoC for Nepal and Executive Secretary for SGAC Executive Office, was one of the selected participants who put emphasis on space applications for DRR in Nepal.

AstroFest on ToV2012- Nepal, July 4-6, 2012

The Nepal Astronomical Society in association with the Nepal Academy of Science & Technology (NAST), the Russian Center of Science & Culture (RCSC), the Astrophysics and Cosmology Research Group Nepal -Tribhuvan University and the ESPRO Foundation organised a three-day astronomy festival on June 4-6 to celebrate the last transit of Venus that will occur in the twenty-first century. During the festival, participants enjoyed GTTP sessions, public talks, a special screening of the documentary Acquainted with the Nights and observation opportunities. For more detail, please follow: <http://astronomy-nepal.blogspot.com/2012/07/astrofest-on-tov2012-nepal-july-4-6-2012.html>

Nepal Participated in the IAU General Assembly, Beijing, 19-31 Aug 2012

Founding Vice President of the Nepal Astronomical Society (NASO) Sudeep Neupane participated in the International Astronomical Union General Assembly that was held from Aug 19 to Aug 31, 2012. He represented NASO as well as the Nepalese Astronomy Community and gave a presentation to the Office of Astronomy for Development.

Find An Asteroid Search Campaign & SGAC Move An Asteroid 2012 Competitions

Nepal participated in the September 2012 Find an Asteroid Competition hosted by the SGAC NEO Working Group. A Nepalese team comprised of five post-graduate and graduate students from the Physics Department from Tribhuvan University took part in the Asteroid Search Campaign.

Participation in 22nd UN/IAF Workshop & 63rd IAC in Naples, Italy, 2012

The 22nd United Nations/International Astronautical Federation Workshop on "Space Technologies Applied to the Needs of Humanity: Experience from Cases in the Mediterranean Area" took place on September 28-30, 2012. Meanwhile, the 63rd International Astronautical Congress (IAC) remained a good platform to share space activities that are occurring in Nepal. This experience was only possible because Suresh Bhattarai participated and presented his paper in these events.

➤ NEW ZEALAND NATIONAL REPORT

Overview

New Zealand has a small but passionate group of space aficionados. Despite lack of a governing space body, our country has traditionally excelled in radio astronomy and 2012 was no exception. Highlighted by our involvement in the Square Kilometre Array, 2012 was a major step for our burgeoning space scene.

Although the dual-site solution adopted by the SKA Organisation means that the SKA infrastructure will not be built in New Zealand as originally proposed, our science and industry organisations still play significant roles including infrastructure development in the Murchison Widefield Array (MWA) SKA

Precursor consortium and research conducted by students at the Victoria University of Wellington and Auckland University of Technology.

In industry, Rocketlab continues its meteoric growth with developments in its latest Viscous Liquid Monopropellant (VLM) motor and Instant Eyes UAV platforms garnering international attention. The success of such companies in defying the odds and establishing the foundations of a proliferating space industry in New Zealand is a true embodiment of the pioneering, “kiwi ingenuity” spirit.

Highlights 2012

New Zealand Rocketry Challenge, Auckland (25 November)

The New Zealand Rocketry Challenge challenged 18 teams of year 7 and 8 students from around the country to design, build and test model rockets to carry an egg to an altitude of 150 metres without damaging the payload.

<http://www.rocketcontest.org.nz/launch-day-info>

KiwiMars 2012 (22 April – 6 May)

Six crewmembers from New Zealand were sent on a two-week mission in the Utah desert to conduct research and emulate working and living conditions of a manned Mars base at the Mars Desert Research Station. The Carter Observatory Wellington was designated as the headquarters of the mission, which achieved its primary objective in delivering an engaging science learning experience for both educators and students as part of the KiwiMars Outreach campaign.

<http://www.worldspaceweek.org.nz/display/MDRS/KiwiMars+2012>

National Rocket Day, Taupiri (5 February)

National Rocket Day was yet another spectacular event with a great public turnout including a local sports car club and visitors from all corners of the country. The day was accentuated by a number of launches including Jack Davies, who launched his homemade “Spektrum” up to 550 metres, and Craig Packard with his five motor Big Red, which reached an astonishing four kilometres.

<http://www.nzrocketry.org.nz/index.php?page=rocket-day>

MOA: Microlensing Observation in Astrophysics, University of Canterbury (UC)

This is a collaboration with researchers in Japan to make observations on dark matter, extra-solar planets and stellar atmospheres using gravitational microlensing techniques at the Mt. John Observatory in New Zealand.

<http://www.phys.canterbury.ac.nz/moa/>

Aurora Astronomy School, Christchurch (6-9 April)

This is an astronomy outreach programme targeted at year 13 students, created by the Department of Physics at the University of Canterbury.

http://www.kiwispace.org.nz/download/attachments/13500516/Aurora%20Astro%20School_11.pdf?version=1&modificationDate=1307671748000

Looking Ahead – 2013

- In 2013, our focus is on increasing exposure of the SGAC and its activities, especially to the youth of New Zealand. There are plans to cooperate closely with local space and astronomy organisations and institutions.
- Fostering a close relationship with local industry will also be key for students, young professionals and industry players alike in establishing a growing network and creating avenues and opportunities to promote further, sustained growth and outreach.
- Develop a closer relationship with the Australian space industry and promote involvement and interest in youth-targeted conferences such as the annual Aerospace Futures Conference, with the eventual goal of establishing such an event in New Zealand.
- Advance national space projects such as the 2U atmospheric satellite in the QB50 project to achieve national prestige and promote New Zealand's role on the international scene.

<http://www.kiwispace.org.nz/display/~mark.mackay/2012/11/10/QB50+-+A+New+Zealand+Nanosat+Opportunity>

► PAKISTAN NATIONAL REPORT

For Pakistan, 2012 saw several conferences and events that emphasised the need for space technology in modern societies. These events consolidated the national vision for space, just approved last year. The shortage of human capital specialised in space technologies was also emphasised. Special scholarships and MoUs were signed and geared towards seeing Pakistan as a self-reliant nation with regards to space technologies. The need for remote sensing from space to access climate change was addressed. This is important not just because melting glaciers in north risk lives, but because they also cause unexpected floods on the agricultural plains of Pakistan.

Apart from Pakistan's national space agency, several local astronomy societies in Pakistan held gatherings and events to promote space awareness. Seminars, symposia, workshops, and courses by these societies had a notable impact.

Insight – 2012

World Space Week

Fig. 58.



World Space Week in Pakistan

The theme for this year's WSW was Space for 'Human Safety and Security'. This year's event was the largest one that has ever been held in Pakistan. Collectively it was organised in 10 major cities. Formal inauguration ceremonies were held in each city to mark the beginning of the celebrations.

Competitions (quiz, declamation, model making, water rocket), seminars (lectures, workshops), and various other activities (space fair & exhibition, sky observation, space philately) were held throughout the week. A specially designed education bus, which was equipped with multimedia, visited interior Sindh. The bus visited schools in small towns and villages throughout Sindh to create awareness through lectures, multimedia presentations and documentary videos. The event was held in collaboration with several educational institutes and societies including the Institute of Space Technology, the University of Engineering & Technology, Balochistan University of Information Technology Engineering & Management Sciences, the University of Agriculture-Faisalabad, Islamia University-Bahawalpur, the Mehran University of Engineering & Technology, the Khwarizmi Science Society, and the Karachi Astronomers Society, which also participated in other events. The WSW has always been a significant event for creating space awareness in Pakistan and 2012 was no different.

Events and Conferences

Local universities, in collaboration with the national space agency, SUPARCO, held several conferences, trainings and workshops. National Space Conference, being the first of its kind, was the most significant of the lot.

National Space Conference (17-19 September '12)

The event was aimed at creating awareness about the importance of space technology and applications for national development. It also highlighted Pakistan's space programme and the recently approved Space Vision 2040. An exhibition at the venue showcased SUPARCO's activities for national development. A few universities offering space technology education also had booths displaying their students' projects. In addition, the International Centre for Integrated Mountain Development (ICIMOD) displayed posters related to their developmental activities in the Hindukush-Himalayan region. The conference helped to educate stakeholders in Pakistan (government functionaries, bureaucrats, general public, media and academia) on the role and potential of space technology for the socio-economic development of a country. It also helped explore international perspectives on the importance and need of a regulatory framework and national legislation pertaining to outer space related activities.

Other Events

Significant astronomy related meetings were also held by local societies:

- Lahore Astronomy Night on 14th May 2012
- Karachi Astronomy Society – Grand Meetup on 21st October 2012

Various small (awareness) events also happened throughout the year:

- Astronomy event at Lahore College for Women University
- Star Party – 'Al-Biruni' Badhra (February and March) – Karachi Astronomy Society.
- Astronomy Observation Event – Iqra University Hyderabad
- Falakyati Mela (Astrofest) organised by SUPARCO and Khwarizmi Science Society; Mapping Rural Pakistan, Impact of Climate Change on Human Health and Welfare
- Buraq Space Camp, held in Islamabad
- GIS day (December) – This event is held globally and was held for the first time in Pakistan by the Institute of Geographical Information Systems of NUST Islamabad campus

Fig. 59.



Star Party – ‘Al-Biruni’ Badhra

► SOUTH KOREA NATIONAL REPORT

State of the Space Programme

International Cooperation in Space Programme

On March 28th the Korea Aerospace Research Institute (KARI) made an agreement to reinforce cooperation with the Netherlands Space Office (NSO) in regards to space technology. Both KARI and NSO will collaborate in research, share human resources and information, and host a symposium together. Also, the Korea Astronomy and Space Science Institute hosted a ceremony to celebrate the opening of a receiving station. The Radiation Belt Storm Probe (RBSP) satellite is a collaborative space environment research project being conducted with NASA. The station will receive data from the satellite and be used to protect national satellites by monitoring the space environment.

Technological Programme

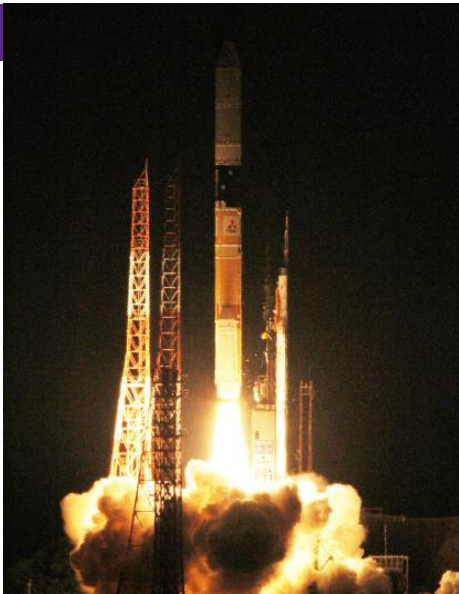
The satellite, ‘Arirang 3’, was successfully launched on May 18th at the Tanegashima launch site in Japan (see Figure 1). ‘Arirang 3’ began its mission after executing initial operations for three months in its orbit. It has an electronic optics camera with high resolution and it will continue to collect imagery information for public safety, resource management, and disaster monitoring purposes. Also, the ‘Korea Multi-purpose Satellite 3A (KOMPSAT-3A)’ completed machine assembly on September 28th and tests began for electrical performance on October 1st. The KSLV-1, which is South Korea’s first carrier rocket, was scheduled to launch this year. However, after two postponements, the launch was delayed yet a third time due to a problem with the Thrust Vector Control System. The third launch cancellation came just 17 minutes before the planned time. KSLV-1 is now scheduled to be launched in January or February of 2013. On December 6 the Ministry of Education, Science and Technology in Korea announced that KARI succeeded in developing core technologies and ground performance testing of a new lunar probe (Figure 2).

Space Events

KASI opened the “International Announcement to Heaven Symposium 2012” with the Sonam Institute for Korea History of Astronomy and Korea Institute for Advanced Study on May 17th and 18th. The symposium was held to present records of historical astronomy and related research from Korea, China and Japan. Discussion among researchers from those countries also took place. The 59th AIAA Working Group on Space Simulation was successfully held at the KARI International Meeting Room on

September 17th through the 20th. In the 59th AIAA WGSS, forty members from sixteen institutes in eight countries attended. The members could see KARI's space test equipment during the technology tour. They also presented results of test equipment being made for the James Webb Space Telescope (JWST). Moreover, they had a heated discussion about technologies for space environment testing.

Fig. 60.



Left: H-2A rocket launching. Right: Ariang 3 Ground testing model of the lunar probe in Naro Space Centre, Korea

Accomplishments in 2012

One of the NPoC of South Korea, Heejin Jeong, won the Global Grants scholarship and attended the Space Generation Fusion Forum 2012 as a panelist. She sat on the, 'International Collaboration-From Space Situational Awareness to Exploration' panel (see the Panel 1 section of the SGFF report for more information and images).

► SRI LANKA NATIONAL REPORT

2012 was a promising year for Sri Lanka in regards to astronomy and space science activities. Sri Lanka is a country that has seen a large expansion of its outreach and awareness programmes during recent years, and is now on the verge of embarking upon an exciting set of new ventures. This report consists of some endeavours focused on astronomy and space science on the island.

2012 Activities

Commemoration ceremony of S P Korolev – January 2012

As per a request made by the Russian Centre in Colombo, a project was organised by the Royal College Astronomical Society to commemorate the birth anniversary of the father of practical astronautics – S P Korolev. The event took place on the 18th of January at the Russian Centre Auditorium in Colombo. Notable guests of this event included Prof Tissa Vitharana and the Russian ambassador. Around 100 participants from eight schools were present at the ceremony. The Russian Centre covered all of the budgetary requirements for the project.

Fig. 61.



S P Korolev commemoration

Venus Transit – 06th June 2012

On the morning of June 26th, 2012, Sri Lanka witnessed a rare event - the transit of planet Venus over the solar disk. The Mathematical & Astronomical Society (MAS) of University of Colombo made arrangements for the coverage of the last Venus transit of the century. The next Venus transit will not take place until 2117. MAS had two teams deployed to two locations on the island for the observation of this rare astronomical phenomenon. There was a team located on the university premises in Colombo while another team was on an expedition to Trincomalee in the eastern coast of the island. Professor Chandana Jayarathne accompanied this party.

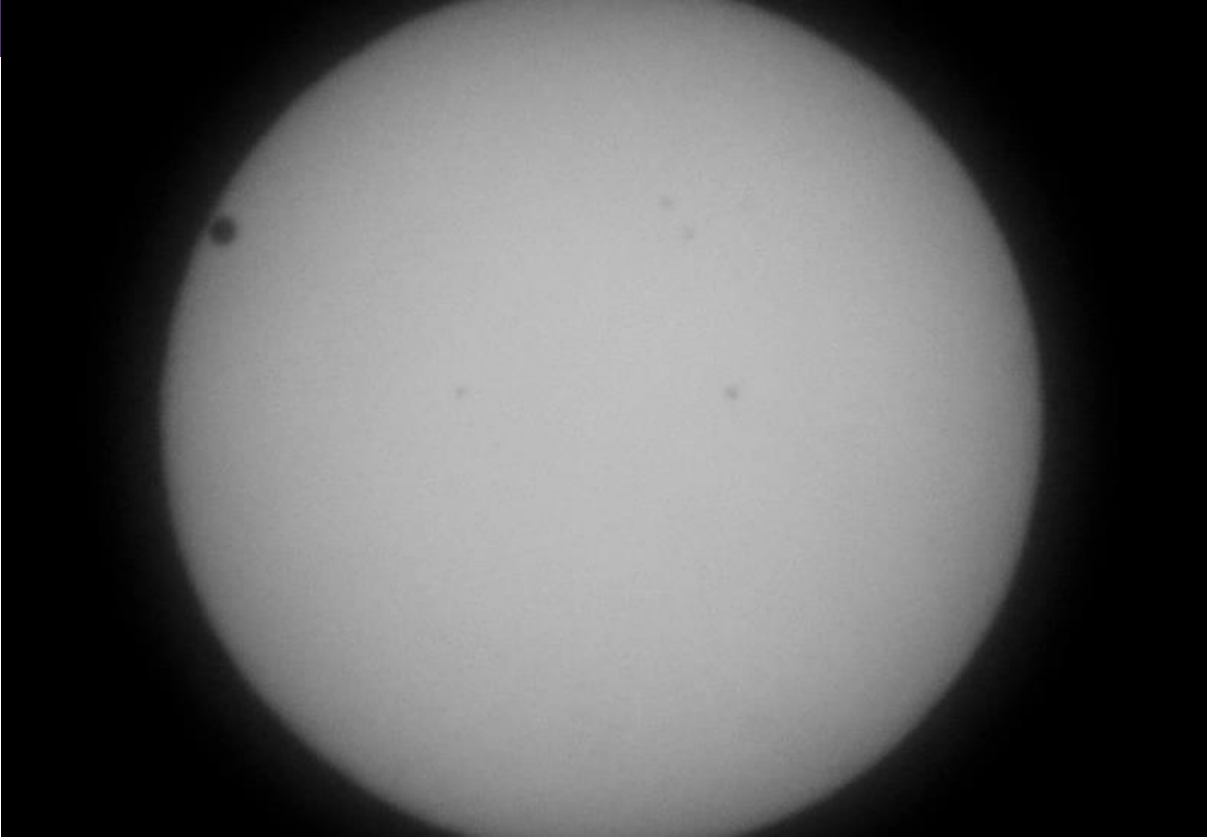
Fig. 62.



Viewing the Venus transit

MAS also offered a live broadcast through the Internet during the transit. Live feeds from telescopes mounted in Trincomalee and Colombo were shown along with an educational discussion as Venus was traversing through the solar disk. Despite the clouds and other technical difficulties, MAS members managed to make quality images of the Venus transit.

Fig. 63.



Venus transits across the Sun's disc. Credit: Mathematics and Astronomical Society, University of Colombo

Star Quest 2012 – 23rd June 2012

Star Quest is an annual interschool astronomy quiz competition organised by MAS. This year Star Quest was held on June 23rd at both University & Thurstan College. More than 150 students from 30+ schools from different parts of the island participated. Ananda College Colombo won the contract and Nalanda College emerged as a close runner-up. It was also an occasion where all the participants were given the privilege of looking through the Molesworth Telescope, which MAS inherited.

Fig. 64.



Star Quest 2012

Furthermore, MAS launched the 33rd volume of its annual journal SIGMA, which showcases astronomy and space science related articles authored by its members and academicians of the university.

Solar Observation Camp and Water Rocket Activity

This project was held on July 26th at the main grounds of the Royal College. This session was organised for secondary-level students by the Royal College Astronomical Society. The objective of the project was to develop more interest in astronomy among the students of the college. Around 70 participants were present at the camp.

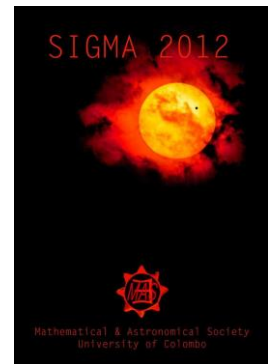


Fig. 65.



Left: Solar Observation. Right: Water Rocketry

SupremeSAT – First Sri Lankan Satellite Operator

SupremeSAT emerged as the first Sri Lankan satellite operator as its first satellite SupremeSAT-I launched on the 22nd of November from the Xichang Satellite Launch Centre in China. This was a ground-breaking initiative for Sri Lankan space technology.

SupremeSAT has joined hands with China Great Wall Industry Corporation in realising this goal. There are plans to launch SupremeSAT-II next year and the construction of a satellite station in Palkelele-Kandy has begun. Later this facility will be converted into a state of the art "Space Academy", which will take the Sri Lankan space industry to greater heights.



There were other observational camps and astronomy quiz events organised by school-based astronomical societies such as the Anandian Astronomical Association, Astronomical Society of Nalanda College, Isipathana College, Mahamaya Girls' College and many more.

Thus, Sri Lanka has had a variety of astronomy and space related activities and events in 2012. Space has touched a wide range of crowds. A lot of enthusiasm for the continuance of such events has been felt. Many people are already looking forward to new prospects in 2013.

► THAILAND NATIONAL REPORT

Activities in 2012

Several interesting space activities took place during the year. Here is a short summary of what happened in 2012:

GISTDA Youth Ambassador

The Geo-Informatics and Space Technology Development Agency (GISTDA) had planned to introduce the Youth Ambassador programme, which is based on space-related scientific competitions. However, due to changes in strategy, the Youth Ambassador programme is now delayed until 2013. Students participating in the programme will have the opportunity to visit a satellite ground station and two selected ambassadors will be awarded with fully-funded International educational trips.

GISTDA Youth Space Camps

The Youth Space Camp is an educational project initiated by GISTDA. During the Youth Space Camp, scientist and engineers from GISTDA visit and stay at a school for 3 to 5 days while educating students about space related subjects in a fun and informative way. Fieldwork includes using a GPS receiver, studying maps, star watching and learning about satellite remote sensing technologies. These are all part of a normal day's work. This year, the camp made stops at Nakorn Si Thammarat in Southern Thailand, Phrae in Northern Thailand and Prachinburi in Central Thailand.

Space technology Course by GISTDA

GISTDA also conducted classes on space technology to Thai citizens who were interested in learning about space science, space dynamics and space applications.

Asian Conference on Remote Sensing (ACRS)

In November 2012, the ACRS conference made its fifth visit to Thailand. The ACRS had special sessions for the many Asian Pacific region students that attended. Moreover, there was a special session for space agencies to discuss space-based remote sensing projects.

APAN Workshop

The APAN workshop included an Earth monitoring workshop, with special attention given to satellite-based Earth monitoring systems. It was held in Chiang Mai in February 2012. The conference saw lots of students paying special interest to 2011's satellite images of flood stricken central Thailand and discussion on how space instruments can better serve during natural disasters.

Space Krenovation Park Opening Ceremony

The ground station of the THEOS Satellite also hosted a brand new space-themed science park called Space Krenovation Park (SKP). The grand opening of the SKP was on 28th November and had more than 350 delegates from all over the world as well as a live telecast of the events. The 2-day function included a public day, a partnership signing ceremony and an educational outreach programme for school children. The day was full of activities aimed at schoolchildren and teachers. Moreover, the SKP opened a space and GIS museum to provide information and educational opportunities to learn about space technology in Thailand.

Space Technology Training by National Space Organisation (Taiwan)

NSPO, Taiwan conducted a space technology training course that was open to everyone. This training was attended by professionals and students alike.

APSCO Satellite Programme

Six top universities in Thailand are now in discussion to cooperate with each other to participate and build a micro satellite of 100 kg class, the first in Thailand.

SGAC Thailand Chapter's Conference and Workshop Participation

An all-Thai team presented a satellite mission idea with the support of GISTDA and SGAC Thailand at the UN/Japan Nano-satellite workshop in October 2012. The Thai team manages to reach the semi-final and presented the poster to the judging committee. Thailand also set up a booth at the International Astronautical Congress (IAC) in Naples and bid to host the IAC and SGC in 2015.

Looking ahead to 2013

There are several reasons to look ahead to 2013 for Thailand. With the development of the Space Krenovation Park in Thailand, there are several activities planned for 2013.

- ASEAN Regional Center of Excellence in space technology – Thai youth will have the opportunity to interact with the brightest minds of the ASEAN region in space science.
- Thai universities led by Thai's space agency, GISTDA, are cooperating to build the first CubeSat in Thailand. GISTDA is also setting an adequate lab to test and develop other space related testing and integration facilities.
- Thailand will be hosting COSPAR 2013 – the biggest global conference on space science. This will provide opportunities to Thai youth to be part of a global conference, visit the exhibitions by leading space agencies and build interest. A special pavilion will be for outreach and special youth sessions shall also be conducted.

Several other programmes should be cropping up in the next year as time draws nearer. Thailand is just taking its first strides in space development and the next few years will be the most adventurous for all the young space enthusiasts in Thailand.

▶ VIETNAM NATIONAL REPORT

Vietnam's Space Development in 2012

Vietnam's second telecommunication satellite Vinasat-2 was launched into geostationary orbit in May. It joined Vinasat-1, which was launched in early 2008 and operates from 132 degrees east in geostationary orbit.

A ground breaking ceremony of the Vietnam National Space Centre (VNSC) at Hoa Lac Hightech Park (30 km west of Hanoi) was organised on September 19, 2012. The project was backed by ODA funding from the Japanese government at an estimated cost of more than 600 million USD.

Besides infrastructure for the space centre, the project also includes 02 radar satellites for all weather monitoring of Vietnamese natural resources. The first phase of the project is expected to be completed in 2017 and the final phase in 2020.

Fig. 66.



Left: Vinsat-2 being prepared for launch. Right: Vietnam National Space Centre Groundbreaking

The Vietnam – Japan Cooperation in Space Technology Workshop was held on September 20, 2012 by the VNSC at the Vietnam Academy of Science and Technology (VAST). Many senior Vietnamese and Japanese government officials and professors attended the workshop.

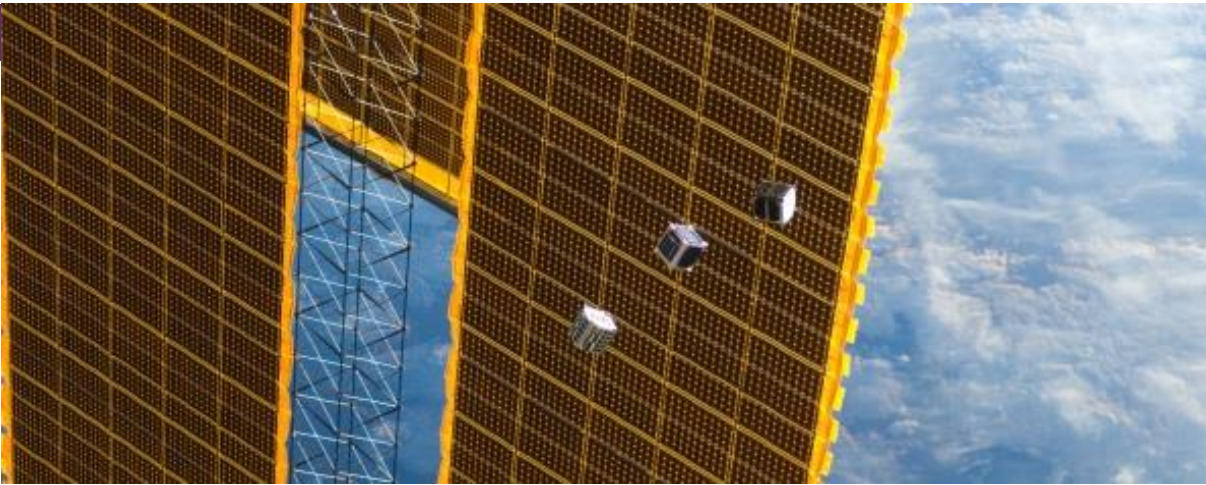
Fig. 67.



Vietnam – Japan Cooperation in Space Technology Workshop

F-1 CubeSat, the first satellite made in Vietnam, was launched to the International Space Station onboard the Japanese HTV-3 transfer vehicle (HII-B rocket). It was subsequently deployed into orbit via the robotic arm on the Kibo module on October 4th.

Fig. 68.



F-1 CubeSat

SGAC Activities in 2012

Participation in EADS Pilot Technology Solution Contest

On February 14, 2012, a team from the FSpace Laboratory at the FPT University in Hanoi, Viet Nam was announced the winner of a competition organised by the EADS Innovation Works - Singapore and the Vietnamese Academy of Sciences' Space Technology Institute. The team was led by SGAC NPoC of Viet Nam, Thu Vu Trong. His team won by writing a proposal for a typhoon warning systems for fishermen.

This pilot technology solution contest was first proposed by EADS in Viet Nam and attracted teams from local universities and institutions. The winning proposal from the FSpace team calls for instalment of advanced digital communication techniques and backup communication channels via a constellation of nano-satellites in LEO. It will provide an early typhoon warning to fishing boats. Another unique point in this solution is the utilisation of existing equipment on fishing boats, thus lowering overall costs. End-user terminal equipment is capable of automatically collecting weather forecasts, predicting typhoon movements and sending SOS messages to shore and nearby boats during emergencies.

The winning team was invited to attend the Singapore Airshow 2012 to meet and present the idea to Dr Jean Botti CTO of EADS, who awarded them a prize of 4,000 USD. The team intends to use the money to continue researching and perfecting the proposal. They hope to one day achieve their goal: save all fishermen from typhoons.

Fig. 69.



SGAC NPoC (second from right) leads winning team in EADS Pilot Technology Solution Competition

Yuri's Night Event

SGAC Viet Nam and the Hanoi Amateur Astronomy Society organised a wonderful Yuri's Night in Hanoi with more than 80 attendants, almost twice the number of year before. The event was a success, with presentations about Yuri's life and his flight, the important of space research and applications and practical astronomy experiments for school children. During the party, a small space exhibition room was opened to the public and displayed space related items such as model rockets, an F-1 CubeSat prototype, space-themed stamp collections, meteorites collections and astronaut photo collections.

Fig. 70.



Yuri's Night event in Hanoi, April 12st 2012

F-1 CubeSat Project

Going into the fourth year, development of F-1 CubeSat Flight Model was completed and the little satellite was delivered to the NanoRacks's facility in Houston, Texas for final checks and flight safety review. The satellite was subsequently transported to the Tsukuba Space Centre and then to Tanegashima Space Centre for integration with the Japanese HTV-3 transfer vehicle. It was launched to the International Space Station onboard the HII-B launch vehicle on July 21st. It was later deployed into orbit via the robotic arm on the Kibo module on October 4th, thus commemorating the 55th anniversary of Sputnik 1.

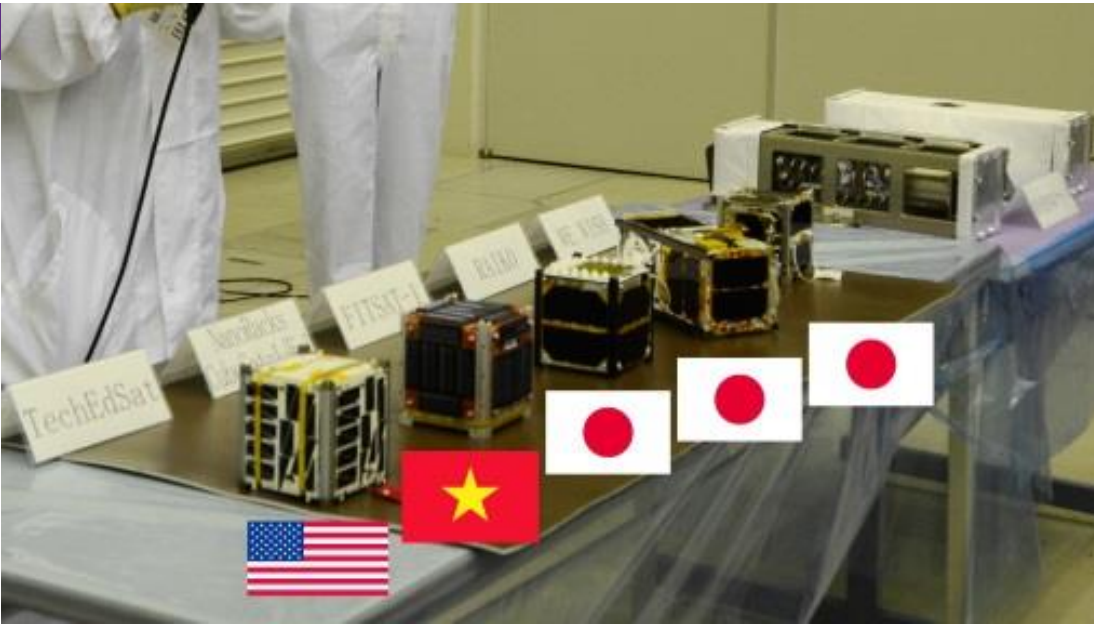
The goal of the project is to train students and young engineers about aerospace engineering. CubeSats typically measure about 10cmx10cmx10cm and weigh approximately 1kg. The F-1 carries a small camera to take photos of the Earth as well as magnetic and temperature sensors to study the environment of space.

Fig. 71.



Final assembly of F-1 CubeSat at FSpace laboratory

Fig. 72.



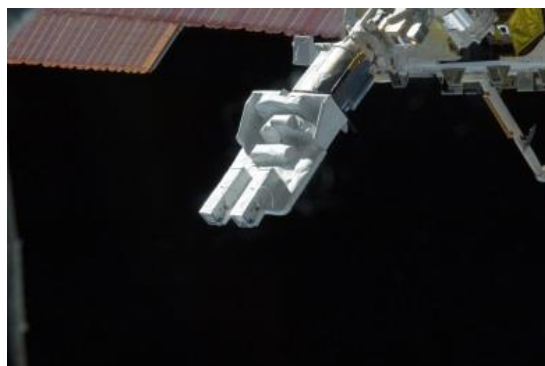
F-1 and companion CubeSats at Tsukuba Space Centre, Japan before integration with the launch vehicle

Fig. 73.



Launch to orbit onboard HTV-3/HII-B launch vehicle and docking with the ISS

Fig. 74.



Left: Installation to the airlock inside Kibo module. Right: Preparation for deployment from the ISS

Fig. 75.



Deployment of TechEdSat, F-1 and FITSAT-1 to orbit, captured by ISS astronauts

SGAC Vietnam Attending Conferences and Exhibitions

Fig. 76.



Left: Attending TechMart exhibition 2012 in Hanoi, Vietnam. Right: Attending 4th Nano-satellite symposium in Nagoya, Japan

Fig. 77.



Left: F-1 CubeSat project awarded with "Technology medal" from Dr. Truong Gia Binh, Chairman and CEO of FPT Corporation. Right: Attending Small Satellite Missions training course organised by CSSTEAP and ISRO in India

Fig. 78.



Attending ASEAN Youth Day Meeting in Bangkok, Thailand

Other Youth-Oriented Space Activities in Vietnam in 2012

Fig. 79.



Water rocket contest, May 28, 2012

Fig. 80.



Venus transit observation event, June 6, 2012

Fig. 81.

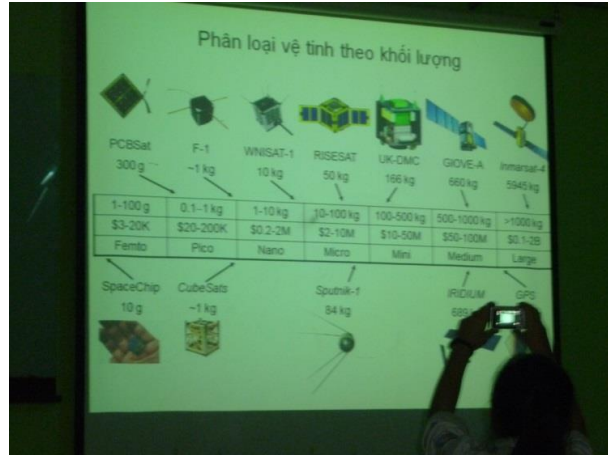


2nd space camp in Hanoi, August 11-12, 2012

World Space Week

World Space Week 2012 – “Space for Human Safety and Security” was organised by FSpace Laboratory and HAS in Hanoi and in several cities around Vietnam in October 2011. Activities included presentations, talks about space topics and “treasure hunting” competitions using GPS-enabled devices.

Fig. 82.



Dinh Quoc Tri presenting about satellites and applications of space



The participants and a small collection of space books

Plans for 2013

On the long journey to the stars, SGAC Vietnam aims to expand our network and continue our tradition by organising Yuri's Night and World Space Week events in big cities including Hanoi, Danang and Hochiminh with the goal of always attracting more attendants.

We would also like to reach out to the growing community of young space professionals in the country by participating in exhibitions and organising talks at local schools and universities on space topics. Closer cooperation and integration with international organisations to promote space activities is also one of our key strategies. 2012 was the fourth successful year for SGAC Vietnam and we look forward to growing on this success in 2013.

REGIONAL REPORT

European Region Highlights 2012

- The 2012 SGC and IAC took place in Italy, which was a proud moment for European SGAC members and the European space industry as a whole.
- SGAC in Europe celebrated the Yuri's Night and World Space Week to inspire the public
- SGAC delegates Guzel Kamaletdinova, Stephanie Wan and Damian Bielicki spoke during the Economic Forum in Poland, sponsored by the Eastern Institute.
- Damian Bielicki was re-elected for the second term as the RC for Europe. Nunzia Paradiso finished her last term this year.
- New NPoCs were appointed in Albania, Belgium, Ireland, Lithuania, Norway, Poland, Slovenia, Spain, Ukraine, and the United Kingdom.
- To strengthen internal and external communication, European teleconferences were held once every four months. Europe now also has its Facebook page, launched in Summer 2012 and remains very active.

Accomplishments in 2012

Damian Bielicki was re-elected as the RC for a second term in Europe, while Guzel Kamaletdinova was elected as the new RC. Nunzia Paradiso also finished her last term at the end of this year. Both coordinators recruited many new members as the NPoCs and thanks to their efforts, there are currently 37 official representatives from 23 countries.

SGC and IAC took place in Italy, where many delegates from outside Europe – especially young students and professionals – were able to meet the European market better. SGAC Members Guzel Kamaletdinova, Stephanie Wan, and Damian Bielicki attended the Economic Forum in Poland, sponsored by the Eastern Institute, to participate as speakers. Every year, the Economic Forum brings together more than 2000 high-level participants from over 60 countries to create a dialogue and develop cooperation among the countries. Representatives included presidents, prime ministers, Nobel Prize winners, CEOs of major international organisations, and astronauts. The topic of the 2012 Forum was “New Visions for Hard Times. Europe and the World Confronting the Crisis”. SGAC representatives contributed to one of 90 sessions specifically dedicated to space activities.

Plans for 2013

SGAC Europe aims to have each European country represented with an NPoC, especially in places that have never had an NPoC before. The coordinating team will encourage more involvement in SGAC projects to strengthen the internal structure and communication. The regional strategy is also to strengthen relationships with other space outreach organisations across Europe, including Yuri's Night, World Space Week Association, and other national and international conferences and fora. Finally, the region will also focus on fundraising to allow people from the region attend the 2013 SGC and IAC in Beijing, China.

NATIONAL REPORTS

ALBANIA NATIONAL REPORT

SGAC in Albania

SGAC recently welcomed Vojna Ngjekar as NPoC of Albania.

Goals for 2013

- Create a web portal to encourage awareness on diverse space topics including astronomy, atmosphere sciences, environmental science, the Earth, geological phenomena, disasters, satellites, and launchers in the Albanian language.
- Create a booklet as part of an outreach and space education project, and distribute copies in to schools in Tirana.
- Present SGAC to private and public universities in Albania including the University of Tirana, Polytechnic University, and Skanderberg Military University.
- Collaborate with other NGOs.
- Appoint a second NPoC in Tirana, Albania and create an SGAC Facebook page for Albanian students
- Encourage Albanian students to participate in SGAC projects and events through the updates in Facebook page, SGAC homepage, and the booklet.

AUSTRIA NATIONAL REPORT

Awareness of SGAC Austria increased this year thanks to an increased cooperation with local space groups, especially with the Austrian Space Forum (ÖWF). Austrian NPoC Christopher Vasko has been working with the Forum for several years, and his appointment as a second NPoC has helped to strengthen the relationship with SGAC leading to a Memorandum of Understanding between ÖWF and SGAC. This year, the Austrian Academy of Sciences (ÖAW) again sought help of the Austrian NPoCs for organising Yuri's Night 2012 and the "Cassini Scientist for a Day" contest. SGAC was again well-received by event organisers in its role as co-organiser and consultant for public outreach.

Highlights for SGAC Austria:

Yuri's Night

The Director General of Vienna's Museum of Natural History, Christian Köberl, kindly offered SGAC Austria a well-equipped room for the festivities during Yuri's Night. The list of sponsors for this event was also longer than ever. Because of high demand for free places, many people were not able to attend and so SGAC Austria will consider a bigger event in the next years. This event is of great importance for SGAC, and shows that the Austrian public is eager to participate and understand what is going on in the space sector.

Participation in SGC 2012

Austrian NPoCs Klaus Kornfeld and Christopher Vasko participated with SGAC PR & Communications Team Member Reinhard Tustlos in the SGC 2012 in Naples, Italy. All three had a leading role in organisation of this event as multimedia technicians and event photographers. The Austrian delegation took part in the Exploration and Communication Working Group.

TUGSAT-1

This year marks a special one for the Universities in Austria who have their first (small) satellite in space as of 12th December, with the help of the Austrian Science Fund. This is a purely scientific project, with a mission goal of investigating the brightness oscillations of massive luminous stars by

differential photometry. The scientific instrument is an optical camera with a high-resolution CCD to take images from distant stars with magnitude of 3.5. Various organizations held information events during the end of November to give the general public a final update before the mission starts. This project reflects the plans and suggestions of the new SGAC project group on small satellites.

For more information please visit <http://www.tugsat.tugraz.at/news-1>

Memorandum of Understanding with Austrian Space Forum

SGAC is proud to announce an official partnership with the Austrian Space Forum (ÖWF), signed on 2nd Nov 2012. These organisations have been partners since SGAC was formed at UNISPACE III in 1999, but an official agreement makes it easier to join forces in Austria and worldwide. This partnership is a promising addition to SGAC's portfolio of partners, and strengthens the bridge to national space related organisations that have traditionally cooperated actively with the ÖWF. Aside from national activities, the Austrian Space Forum has recently become known internationally for its efforts developing Aouda space suits.

For more information on the Austrian Space Forum please visit: <http://www.oewf.org/cms/english.phtml>

Fig. 83.



Figure 1: SGAC Executive Director, Andrea Jaime and ÖWF chairman Gernot Grömer (© SGAC (Klaus Kornfeld))

55th UN COPUOS session

Since SGAC's headquarters are based in Vienna, SGAC was well represented by the former Executive Director Ariane Cornell, the former Deputy Executive Director (now the Executive Director), Andrea Jaime, the Austrian NPoC Klaus Kornfeld, the Advisory Board member Agnieszka Lukaszczyk, and the Nigerian NPoC Etim Offiong, all of whom attended the annual COPUOS session at the UN Office in Vienna. Details about this session can be found at the SGAC homepage and the UN Office Vienna portal.

Looking Ahead

With the official partnership with the Austrian Space Forum, SGAC will be able to benefit from the great infrastructure that ÖWF has established over the years. The goal of SGAC Austria is to continue

finding national and international partners to increase awareness for SGAC, its events, projects, and competitions. SGAC Austria also aims to strengthen its relationship with the Austrian space industry. Other Austrian youth organisations are also interested in collaborating with us, and we hope that some day it will result in an official partnership.

➤ BELGIUM NATIONAL REPORT

Belgium is a very fortunate country when it comes to space-related activities. The country already has two astronauts: Dirk Frimout and Frank De Winne embarked on missions with the Space Shuttle in 1992 and on the ISS in 2002 respectively. De Winne followed his mission with a 6-month stay on board the ISS in 2009, where he became the first European station commander. As a result, there is a lot of interest and awareness from the public, and the government has an active space education policy. Belgium has many space enthusiast organisations along with SGAC Belgium and because there are many high quality public and private initiatives, it is difficult for the NPoCs to host even more events. Instead, SGAC Belgium understands that its main task is to aid existing organisations and to provide help promoting events, allowing them to reach more people.

Brief State of the Space Programme and non-SGAC Activities in Belgium

- Euro Space Society: founded by Belgium's first astronaut Dirk Frimout and tries to bring space closer to all youth. A specific event is the ODISSEA-Prize, which is every year awarded to final-year University students for their outstanding space-related thesis.

<http://www.eurospace.be/default.aspx>

- Space Centre: Belgium has its own Space Centre, a permanent exhibition, and indoor theme park for families to visit and learn about all aspects of space. It also organises astronaut, rocket and space camps, stargazing events and much more.

<http://www.eurospacecenter.be/hoofd.html>

- EUROAVIA This European Aerospace student group has a department in Belgium in Leuven/Brussel. It organises lectures and offers visits to aerospace companies in and outside Belgium. Each year they have a very active programme.

<http://leuven.euroavia.eu/>

- Planetaria and observatories: Belgium is very fortunate to be home to an enormous amount of observatories. They offer activities almost every week, especially on National Stargazing Days each year in February/March and during the annual Perseid Meteor Shower in August. Most stargazing opportunities are announced in media several days in advance, which creates a lot of awareness in all layers of society. This year in particular there were a number of lunar eclipses, which caught the interest of the general public.

SGAC Developments and Activities in Belgium in 2012

2012 has been a bit quieter compared to an action-packed 2011. The second quarter of 2012 was the end of Pieter Byttebier's final term as NPoC of Belgium, and Maarten Adriaensen was appointed as a second NPoC for Belgium beginning in August. NPoC Sarah Moens went to the IAC12 in Naples, where she gave a presentation.

Tentative Plans for SGAC Activities in 2013

Of course, NPoCs will continue aiding all space-related activities and organisations in Belgium to continue bringing space closer to the public. The NPoCs will also continue to elaborate as representatives of the premier networking space organisation for youth, and to represent Belgium in the SGAC community.

NPoC have been in contact with SGAC enthusiasts in Belgium, mostly via social media, and are hoping for closer cooperation between these members. The goal for the upcoming year is to create events in Belgium to expand the network of SGAC in the country. A new event will take place in spring of 2013 in cooperation with the Master of Space Studies Leuven.

► BULGARIA NATIONAL REPORT

Activities in Bulgaria in 2012 – Third Edition of the Space Challenges Programme

NPoCs Raycho Raychev and Rada Popova currently represent Bulgaria at SGAC.



After successfully developing education outreach initiative Space Challenges in 2010 and 2011, the programme was re-launched and upgraded for a highly successful third edition that took place from April to August 2012 (<http://www.spaceedu.net>). This is the biggest educational programme in the field of space science and advanced technologies in Bulgaria. The main idea is to create stable and adequate space education at national level and foster innovative business solutions, led by young people. Its goal is to develop creative solutions that would enable strong connection between the education and the local business community. The main efforts focus on helping young people acquire knowledge and skills to create innovative companies and organisations.

Following the tradition from the first editions of the programme, live lectures, workshops, and video-conferences. Representatives from the global communities attended, including those from NASA, ESA, Caltech, MIT, Stuttgart University, French National Space Programme, Stanford University, and University of Oxford.

The curriculum of Space Challenges 2012 included core-lectures separated in thematic modules: biotechnology, artificial intelligence, robotics, medicine, neuroscience, aerospace engineering, space systems technologies and applications, nanotechnology, planetary sciences, astrophysics, policy and space law, business development and entrepreneurship studies. Each module included workshops and each student team was given a final assignment that required a demonstration of multidisciplinary understanding of the high-tech sector and its applications.

An online educational library was prepared, along with streaming content and lecture courses from leading universities. The main idea is to give each student maximum amount of useful information regarding all of the modules. All the content of those courses is preselected as part of the Space Challenges e-library.

Several non-formal activities were organized for the participants in order to establish a permanent and growing network of capable young people with interests towards science and exponential technology. Students in the programme also visited the Astronomical observatory in Rozhen.

Fig. 84.



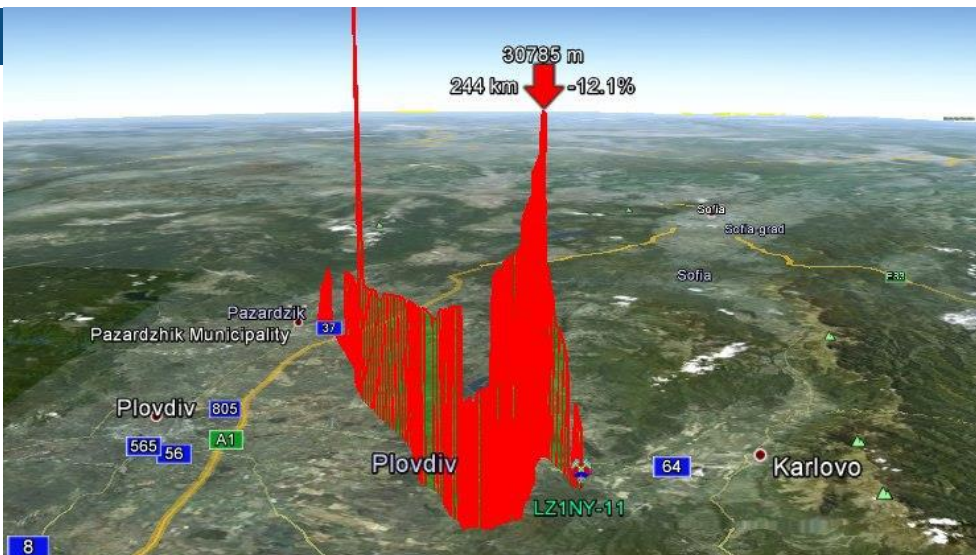
Astronomical observatory in Rozhen

Other Initiatives – Photographing Bulgaria from 30 km

In 2012, the core team of Space Challenges helped a talented young Bulgarian computer science student – Bogdana Rakova from Sofia University “St. Kliment Ohridski” apply and win a scholarship for the Graduate Studies Programme at Singularity University.

At the end of Space Challenges, the students of the programme were assigned to three teams that had to develop their own plans for launching helium balloons with a payload capable of photographing the Earth’s surface from a height of 30 000 – 35 000 metres and successfully retrieving the camera. The secondary mission included measurements of atmospheric parameters during the flight process.

Fig. 85.



Altitude analysis of one of the team mission satellites PhoenixSat 1's flight on August 24th 2012.

To achieve the task, team participants had to thoroughly research and construct a near-space craft to accommodate the needed equipment and protect it from harmful environment. To achieve the mission goal, the students distributed the tasks on researching, constructing and monitoring according to the specialties of all members coming from different technical and engineering backgrounds. They had to figure out the design and payload architecture while thinking about how would the various components interact and functionally change during the flight.

Fig. 86.



Pictures taken by PhoenixSat 1

Media Support

Space initiatives in Bulgaria in 2012 were broadly covered in the Bulgarian media. Some of the leading science magazines including BBC Knowledge, the Bulgarian National Radio and other leading news media published information about the Space Challenges programme and in this way popularized the aims and results from our efforts to raise awareness about the importance of space activities and space technologies in the modern world. The successful PhoenixSat mission was also broadly covered by newspapers, radio and television.

➤ CZECH REPUBLIC NATIONAL REPORT

Space-Related Wiki

The space-related Wiki initiated last year was expanded with articles on the SGAC and NPoCs in Czech Republic. The articles explain major goals of the organisation and provide contact information for local members. SGAC Czech Republic will continue to update the Wiki with links to space-related technology, science, or societal problems. The Wiki is located at <http://rtime.felk.cvut.cz/wiki/index.php/Space>.

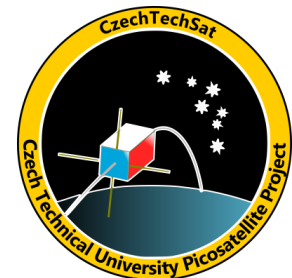
BEXUS BANEX Project

A team from the Czech Technical University received a response from the ESTEC committee about their proposed BEXUS BANEX (Balloon borne EXperiments for University Students, Balloon Navigation Experiment). The experiment was not ultimately accepted, but the team is working to reuse the devices for a different project.



CzechTechSat

Shortly after the result of the BANEX submission, a team of space-enthusiasts started a CubeSat project, which aims to take part in the QB50 project <https://www.qb50.eu/project.php>. Its goals are to serve as a technology demonstration for university partners, and to perform radiation measurements and testing. The CzechTechSat project is not funded by the university, but has been very successful in winning the student grant competition, receiving a fair amount of money for project's kick-off. Now the team is aiming for new opportunities for launch and is working on technology demonstration development.



Yuri's Night in Prague

The Kosmoklub organised Yuri's Night in Prague, attended by over 30 participants. The evening included movie screenings from the Gagarin era and shows by local artists. This successful event was very enjoyable and brought together professionals and the general public.

Tele-Lecture

In cooperation with Kosmoklub, SGAC members held a tele-lecture with German counterpart Jürgen Schlutz. The tele-lecture took place during a regular Kosmoklub meeting and was focused on future exploration of Mars. There was a good a discussion amongst the audience, where the people were able to talk about the topics they wanted and hear information from a DLR employee.

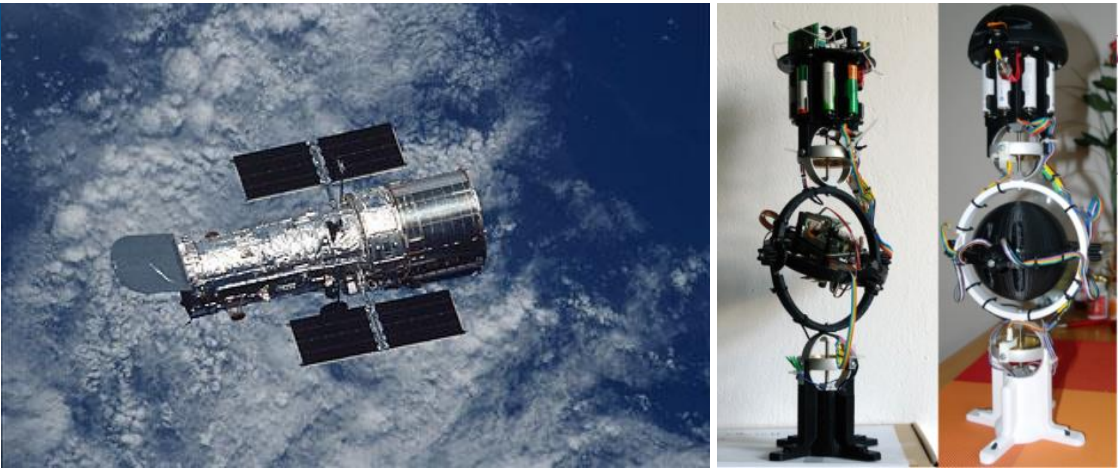
Local SGAC Brochure

In cooperation with colleagues from SGAC PR team, the Czech SGAC team provided a Czech brochure about SGAC. The team aims to provide the pamphlet to students during space-related activities at university to broaden awareness in the space community.

Spacecraft Data Processing and Control Course Organized in Pakistan and Italy

Pavel Paces conducted a two-week course at the Institute of Space Technologies in Pakistan and one-day presentation about the same topics at University of Calabria, Italy. The course was followed by hands-on experiments using Small Satellite Platform (SSP), which was developed at CTU in Prague.

Fig. 87.



Left: The SSP operates using the same principles that are used onboard of Hubble Space Telescope (pictured – Image credit NASA). Right: Arrangement of the SSP platform

Fig. 88.



Left: Course participants calibrating magnetometers of the SSP Platform. Right: First group of course attendees with their certificates issued by Institute of Space Technologies

► FRANCE NATIONAL REPORT

Accomplishments during 2012

Regarding Policy and Law:

- On March the 22nd, 2012, the previous Minister for Higher Education and Research, Mr. Laurent Wauquiez, presented the French space strategy. The report describes the guidelines of French space policy for France to continue its leading role in Europe. These guidelines are intended to maintain technological independence, continue autonomous access to space, accelerate development of applications and services with high added value, and conduct an ambitious industrial policy. ("Chronique de droit spatial" under the direction of Ms. Laurence Ravillon in Revue Française de Droit Aérien et Spatial N° 1, vol. 261, Pedone 2012, pp.15-16)
- In March 2012, the UNIDROIT Protocol to the Convention on International Interests in Mobile Equipment on Matters specific to Space Assets was adopted and opened for signature. It is the first international treaty governing private law of space activities. It is intended to develop access to commercial financing of space. ("Chronique de droit spatial" under the direction of Ms. Laurence Ravillon in Revue Française de Droit Aérien et Spatial N° 1, vol. 261, Pedone 2012, pp.15-16)
- Ordinance N° 2011-839 of July the 15th, 2011, relative to insurances regarding transportation, and which deals notably with the liability/third party insurance relative to a space operation, came into force on July the 1st, 2012 ("Chronique de droit spatial" under the direction of Ms. Laurence Ravillon in Revue Française de Droit Aérien et Spatial N° 2, vol. 262, Pedone 2012, p. 131, and <http://www.axa-corporatesolutions.com/1er-juillet-2012-entree-en-vigueur.html>). Thus, space activities are well integrated into the Insurance Code. ("Chronique de droit spatial" under the direction of Ms. Laurence Ravillon in Revue Française de Droit Aérien et Spatial N° 1, 2012, pp.15-16)
- On October the 9th, 2012, France, through the CNES, took the presidency of the International Charter "Space and Major Disasters". This mandate of 6 months will see the opening of this space assistance to all countries victims of a major disaster and not only to the members of the Charter. Access to the Charter will be universal.

Regarding Specific Launches:

- The Guiana Space Centre opened to the Soyuz rocket, making its first launch since Kourou. The Vega rocket also made an inaugural flight on February the 13th, 2012.

Fig. 89.



Left: Vega rocket - Credit: ESA - S. Corvaja, 2012. Right: Vega rocket -Credit: ESA

- Edoardo Amaldi, the third mission of the Automated Transfer Vehicle (ATV), flew on March the 23rd, 2012, thanks to the launcher Ariane 5 from the Guiana Space Centre in Kourou

Fig. 90.



Edoardo Amaldi – Credit: ESA - S. Corvaja, 2012

Conferences, Symposia, and Exhibitions :

- Space Tuesdays: every third Tuesday of the month in 2012, Café du Pont Neuf, Paris, France, 7.30 PM-9.30 PM
- Space Perspectives 2012 ("Perspectives Spatiales 2012"): December the 6th, 2012, Maison de la Chimie, Paris, France
- R&T Day of the CNES: January the 26th, 2012, Centre de Congrès Pierre Baudis, Toulouse, France
- 16th ISU Annual International Symposium: Sustainability of Space Activities: International Issues and Potential Solutions, 21-23 February, 2012, International Space University, Strasbourg, France
- ECSL Practitioners' Forum: March the 16th, 2012, Insurance of satellite activities from the cradle to the grave – legal aspects, ESA Headquarters, Paris, France
- From atoms to pebbles, Herschel's view of star and planet formation: 20-23 March, 2012, Institut de Planétologie et d'Astrophysique de Grenoble, France
- Ecsite Annual Conference 2012: Space and Time, Unlimited from May the 31st until June the 2nd, 2012, Cité de l'Espace, Toulouse, France
- Astrophysics Week ("Semaine de l'Astrophysique"): 5-8 June 2012, Campus Saint-Jean d'Angély, Nice, France
- Toulouse Space Show 2012: International Week on Space Applications, 25-28 June 2012, Centre de Congrès Pierre Baudis, Toulouse, France
- 5th Suborbital Day" ("5^{ème} Journée Suborbitale"): June the 28th, 2012, Musée de l'Air et de l'Espace, Le Bourget, France
- Student Aerospace Challenge ("Défi Aérospatial Etudiant"): June 28th, 2012, Musée de l'Air et de l'Espace, Le Bourget, France. This event puts in competition students of higher education on the theme of Manned Suborbital Vehicle.
- C'Space 2012: the students' space meeting, from August the 25th to September the 1st, 2012, Biscarrosse, France
- Euroconsult's World Satellite Business Week: 10-14 September 2012, The Westin, Paris, France
- Space of metamorphoses ("L'Espace des métamorphoses"): from July 7th until November 12th, 2012, Observatoire de l'Espace du CNES, Chapelle de la Miséricorde, Vallauris, France

Plans For the Future of SGAC France:

- Space Perspectives ("Perspectives Spatiales 2013"): date and place to be announced
- ECSL Practitioners' Forum 2013: theme, date and place to be announced
- 50th Paris Le Bourget International Aerospace Show, Paris Le Bourget, 17- 23 June 2013
- Explore Mars ("Explorez Mars"): Cité de l'Espace, Toulouse, France, until July the 3rd, 2013
- 17th ISU Annual International Symposium: Space Technology and Tele-reach: benefiting humanity on Earth and beyond, 5-7 March 2013, ISU Central Campus, Strasbourg, France
- Euroconsult's World Satellite Business Week: 9-13 September 2013, Paris, France

GERMANY NATIONAL REPORT

Germany reaffirmed its role as a European space leader at ESA's ministerial council 2012 in Italy, where the German ministry committed the largest contribution to the ESA for the upcoming years. The German commitments secure utilisation and exploitation of the International Space Station, and enable a critical role for Europe with the contribution of the service module to the US Orion crew capsule on its first exploration mission in 2017. Beyond the ESA programmes, DLR continues its contribution the Japanese Hayabusa-2 asteroid sample return mission and a heat flow package was selected to fly on NASA's InSight Mars mission in 2016. These are just a few examples that confirm the value of Germany's space sector and research community in the international space arena.

SGAC Activities in 2012

Oliver Troll and Juergen Hill currently represent Germany to SGAC as NPoCs. Particularly through Juergen Hill, SGAC continues to develop a strong partnership with the German Aerospace Center DLR for the benefit of both sides.

Yuri's Night 2012 – World Space Party

Coordinated by Juergen, multiple events were held throughout Germany to celebrate Yuri Gagarin's first spaceflight. These informed the interested public about space activities in Germany and worldwide. Yuri's Night events were held in Bonn, Bremen, Munich, Rostock and Stuttgart. Juergen also organised the first space film night at the DLR Space Administration in Bonn, where he supported a large team of volunteers from the University of Stuttgart in the organisation of a full day outreach activity at the Planetarium Stuttgart. This event featured an information exhibition, 3D-film screening, space presentations, rocket building, a space raffle, and more. The efforts were rewarded by attendance of several hundred visitors ranging from young children to interested seniors. One highlight of the day was the presence of a large group from the 501st legion with original Star Wars costumes. All German events were announced, coordinated, and supported by the German website (<http://www.yurisnight.de>) which is run and maintained by Juergen.

Fig. 91.



Left: German Yuri's Night events in 2012.
Right: organizers and members of the 501st legion at Yuri's Night Stuttgart 2012

NASA's International Space Apps Challenge in Stuttgart

SGAC member Andreas Hornig organized the participation of German programming enthusiasts in NASA's International Space Apps Challenge in April 2012. Approximately 15 students and resident hackers from Stuttgart's hackerspace "shackspace" worked on applications for space-related problems.

DLR partners with SGAC at the Space Generation Congress and IAC 2012 in Naples

Through the MoU between SGAC and DLR, the German Aerospace Center once again sponsored three German delegates to participate to SGC and IAC in Naples, Italy. The full-paid scholarships were awarded to Paul Nizenkov (University of Stuttgart), Jean-Pierre Baumann (University of Stuttgart), and Michael Deiml (Technical University of Munich). The students had the great opportunity to meet and to discuss with DLR chairman Prof. Jan Woerner at the SGC roundtable and the closing dinner.

In addition to the scholarships, DLR initiated a partnership with SGAC for public outreach throughout the IAC. Italian members of SGAC supported DLR in various activities with Italian school classes and teachers and provided language support to the German experts. DLR is hoping to further extend the partnership with SGAC in the upcoming year.

German SGAC members organise SpaceUp Stuttgart

Led by SGAC members Andreas Hornig and Anja Frey, a team of volunteers organised Stuttgart's first space "unconference" on 27 October 2012: SpaceUp Stuttgart. More than 70 participants assembled at the Space Center Baden-Württemberg and filled an intense programme of presentations, discussions, and video contributions in a live session grid. The conference introduced a short video message format called "60 seconds to land" that found great resonance and promises to reappear in future "unconferences" worldwide. More impressions from the great event at: <http://spaceup.org/2012/11/germanys-first-space-unconference-spaceup-stuttgart-a-report/>

Fig. 92.



Participants at Stuttgart's SpaceUp Unconference in October 2012

► GREECE NATIONAL REPORT

Brief Description of the Current Space Programme and Activities in Greece

Greece is currently struggling to maintain its status as a member state of ESA. A further €10 million cut in the roughly €80 million annual budget for Greek research centres has been ordered by the "Troika" of the European Union, the European Central Bank, and the International Monetary Fund as part of the broader reduction in government spending. This situation is forcing the General Secretary for Research and Technology to weigh the unpleasant choice between lowering the Greek global science presence or squeezing the country's 11 national research centres. Greece spent only 0.6% of its gross domestic product on research and development in 2007, compared to 1.85% across the 27 countries of the European Union in that year. In 2009, Prime Minister, George Papandreou, promised to boost that figure to 2% by 2013 but within 2 years, the government cut the budgets of the research centres by about 30%. In an effort to avoid further reduction of the institutional funding for public research organisations, which would have been fatal for their sustainability, Greek government decided to reduce its annual contribution to the European Space Agency (ESA) and is considering similar cuts to CERN particle physics laboratory near Geneva as part of its austerity drive.

Greece has already requested ESA to temporarily reduce its annual contribution from €14m to €8m for 2012 and it is under negotiations with CERN for a similar reduction. According to Konstantinos Kokkinoplitis, "Our intention is not to leave ESA and CERN, but to achieve some sort of settlement for the next two years". Any deviation from the plan to trim €10 million from the research centres, however, needs to be approved by the Troika. The new General Secretary for Research and Technology of Greece Prof Vassilis Maglaris is also re-evaluating Greek participation in a number of other European agencies. In last week's ESA ministerial conference Greece managed to be at least

subscribed in the EPS-SG Preparatory programme of EUMETSAT. However Greece might need to subscribe to some optional telecommunication programmes after the ESA ministerial.

Accomplishments and Future Project Work Plan

Needless to say, Greece needs to maintain its links with ESA for many reasons. One of the most important reasons is Greek participation to ESA's various educational programs. The main aim for this year is to help sustain the Greek participation in space related activities in various forums and raise awareness on the issue through SGAC, ISU and maybe COPUOS. Moreover, SGAC Greece is collaborating with ESA's Integrated Applications Promotion programme. This division develops systems that use space assets for applications on earth and they are currently interested in Satellite Applications in Greece for a number of areas. However, with the dwindling monetary resources in Greece, it becomes important to make sure the money is spent on solutions that actually have measurable benefits or at least benefits that can add to measurable results. Financial resources are especially focused on maintaining sustainable growth in major industries (shipping, fishing, agriculture, etc.) and also high growth industries such as aquaculture and waste management. However, quantifying socio-economic benefits from space related applications is a difficult endeavour, and will always involve at least a modicum of subjectivity. The best way to develop applications is therefore to start out by looking at exactly what the user needs are in Greece, especially during an unpleasant time of austerity measures and go from there. SGAC Greece is currently helping this endeavour by providing inputs and connecting interested parties. We need to allow Greece to spend money on projects that are inside of its budget constraints. For example, The Hellenic border control has been active in satellite programmes with ESA to monitor maritime intrusion, and they have undertaken some projects on forest fires as well. They have had to reduce some of these commitments, as these are large-scale projects not affordable for Greece. Specific niches of opportunity could therefore be quite interesting.

Last but not least, SGAC Greece is actively involved in an international consortium trying to create the first Analogue Mars Station in Europe and in particular in Italy. Just a week ago, we submitted a proposal for the FP7-SPACE-2013-1 CALL. Our consortium includes NASA AMES, UCL, FLORIDA TECH, Centre for Research and Technology-Hellas (CERTH), the Italian Mars Society and many European companies. See <http://www.erasproject.org> for staying up to date on the project developments.

Fig. 93.



NPoC meeting Peter Diamandis, in Athens.

➤ HUNGARY NATIONAL REPORT

Hungary used to be an active member of SGAC, but unfortunately contact with the organization has been lost in the last few years. In 2012, Hungary returned to the SGAC with a newly appointed NPoC. The focus was on rebuilding the connections with the organisation and presenting SGAC to as many Hungarian students and young professionals as possible.

Achievements 2012

The SGAC Hungary activities were carried out with collaboration and active help of the Hungarian Astronautical Society (MANT in Hungarian abbreviations). This is the oldest Hungarian non-profit space association founded in 1956. This society gathers Hungarian space researchers, users of space technology, and anyone who is interested in the interdisciplinary and state-of-the-art uses and research of outer space. HAS has been a voting member of the IAF since 1959. Members of this society participated in the UNISPACE III conference when SGAC was established.

Space Forum for Young Professionals and Students

This event was organised by the Hungarian Space Office at the National Ministry of Development and the Hungarian Astronautical Society on 13 April in Budapest. It was a half-day networking event for young professionals and students, which has been organised for many years in Budapest. The NPoC Hungary had the possibility to present the activities of SGAC on this event. This was the first official introduction of the newly established SGAC Hungary.

Hungarian Space Camp for students

Since 1994, a one-week-long space camp is organised every year for Hungarian students interested in space technology. In 2012, the camp was held between 1-8 July in the Hungarian city of Kecskemet. During the programme of the camp, the activities of SGAC were presented for the participants.

Promoting SGAC inside and outside of the Hungarian Astronautical Society

The communication tools of the Hungarian Astronautical Society, e.g. newsletter and forums were used to promote the SGAC among Hungarian students and young professionals. SGAC Hungary was looking for contact with the Hungarian Space Office at the Ministry of National Development as well.

Connection with a Hungarian Newsportal

'Space World' ('Urvilág' in Hungarian) is a non-profit Hungarian space news portal which was established in 2002, with the main goal of bringing news, events and developments closer to the general public in Hungarian. The portal had an inside look into Hungarian SGAC activities and related news appeared during the year.

Representing Hungary in SGAC

The Hungarian NPoC participated in the spring European tele-conference and was the only Hungarian at SGAC.

Looking Ahead – The Plan for the Future of SGAC Hungary

After many years of development, the first Hungarian CubeSat, Masat-1, was launched in 2012. Hungarian students and young professionals participated successfully in the ESA's REXUS/BEXUS programme. Hopefully, these active young Hungarians will be involved in SGAC Hungary in the future.

The number of Hungarian SGAC members is anticipated to increase in 2012. The list of planned events is an event for Yuri's night in April, a possible virtual collaboration between students from different countries during the Hungarian space camp 2013 in July, and a SGAC presentation in a Hungarian public space forum.

► IRELAND NATIONAL REPORT

Ireland NPoCs worked together throughout the year to promote space and SGAC throughout the country. 2012 included many highlights for Ireland such as Dublin being awarded the "City of Science", SGC in Naples, Irish Earth observation conference, space studies summer programmes and much more. The Saint Patrick's Day parade in Dublin consisted of science-themed floats to reignite people's interests in science. As usual, Irish universities were heavily involved in various space related research projects and competitions. This year, the University College Dublin was involved with 'Fly your thesis competition' run by ESA.

Fig. 95.



Ireland NPoC presenting at SGC. Credit: SGAC

Ireland's NPoC Patrick Crowley was the first Irish participant to attend the SGC, which was held in Italy in October. He worked with the Earth Observation group and performed research for 3 days. The research was titled 'Space Resources for Water Management' and at the end of the three days Patrick along with two other members from the group presented the group's findings and recommendations to all the participants along with space leaders from JAXA and the United Nations. Patrick said "The SGC was an amazing experience for both meeting different people from a variety of backgrounds and also exchanging knowledge with other NPoCs."

Activities:

ISU's Space Studies Programme (4th June- 3rd August)

A couple of Irish participants attended the International Space University's [Space Studies Programme](#), which was held at the Florida Institute of Technology and NASA's Kennedy Space Center. In its two-month programme, ISU offers students a unique core curriculum covering all disciplines related to space programmes and enterprises including space science, space engineering, space systems engineering, space policy and law, space business and management, and space and society. The programme also involves an intense Team Project, which provides international graduate students and young space professionals the opportunity to solve complex problems by working together in an intercultural environment. For a summary of an eventful SSP 2012 check out the link above.

Alpbach summer school 2012 (July 24th –August 2nd)

A number of Irish participants attended the [Alpbach summer school](#) in Austria. It is a ten-day intensive series of lectures, workshops, and projects that provides in-depth teaching on space science and space technology subjects. This year's theme was "Exploration of the Giant Planets and their Systems". Enterprise Ireland currently funds Irish students to attend this annual event.

[‘Future Power Day’ \(August 2012\)](#)

Ireland's NPoC continued space and SGAC outreach in Ireland with presentations at Engineers Ireland headquarters in Dublin. It was part of ESB International's Future Power Day programme. ESB International runs this annual one-day educational event together with Engineers Ireland's STEPS to Engineering programme. It encourages the children of ESB International staff to explore the world of science and engineering and consider engineering as a possible career choice. To find out more about this programme, visit <http://www.steps.ie/>. The aim of the presentation was to promote space and Ireland's SGAC homepage to the students and enlighten them that space related subjects can relate to almost any subject. The SGAC, space education, and upcoming space events were all discussed in an entertaining presentation, which included a video of the Curiosity landing on Mars.

European CanSat Competition

In 2012, Ireland was represented by the winners of the pilot Irish CanSat competition, held only amongst Limerick secondary schools. This followed the success of Laurel Hill Limerick team, who won the Silver Award in the first European CanSat competition in 2010.

<http://www.enterprise-ireland.com/ereader/sector/esa/files/assets/seo/page48.html>

Dublin: City of Science

Dublin was awarded as "the City of Science" for numerous events happening throughout the year. One of the highlights was a visit from Italian astronaut Paolo Nespoli who spoke at the Little Museum of Dublin about his experiences on the International Space Station.

<http://www.scienceweek.ie/features/web-comics/black-holes.html>

Sixth Irish Earth Observation Symposium

The three-day event took place Dublin Institute of Technology, Bolton Street on November 2012 and was attended by Ireland's NPoC Patrick Crowley. There were a good variety of researchers and companies presenting on how people utilise Earth observation satellites data in Ireland and across Europe.

Goals for 2013

- Increase the number of active Irish members within the SGAC to enhance the awareness of space and the organisation.
- Highlight upcoming events, courses, and competitions.
- Continue to collaborate with space-associated parties in Ireland to build the SGAC Ireland homepage as a focal point for space information and networking in Ireland.
- Continue to promote space and the SGAC to students via websites, presentations, and other opportunities.

Fig. 97.



Presentation. Credit: Engineers Ireland

➤ ITALY NATIONAL REPORT

2012 was a very significant year for the space in Italy. SGC, held in Herculaneum in September, was a great success and gathered 130 students and young professional from all over the world. The SGC 2012 was endorsed by ASI, the Italian Space Agency and “La Sapienza” University of Rome offered two scholarships. The IAC in Naples also helped to show Italian achievements in the space sector. While the main goals remained to achieve new agreements with significant Italian space institutions, SGC and IAC helped to increase SGAC awareness among students, not only in Naples but throughout the peninsula.

Accomplishments in 2012

The SGAC delegation took part in space-related conferences and meetings in Italy, representing SGAC and receiving good feedback. In addition to SGC, the team contributed with organisation of the IAC and presented SGAC at Astronauticon 6 in Lecco in April. Astronauticon 6 is a convention organised by ISAA, the Italian Space and Astronautical Association. Following this event, the SGAC delegation was also interviewed on the main Italian space podcast, AstronautiCAST: <http://www.astronauticast.com/archives/1342> (in Italian)

Fig. 98.



NPoC presenting SGAC at AstronautiCON 6

As a part of the SGAC delegation, the Italian channel on science, space, and aeronautics, Space TV, interviewed Matteo Emanuelli. NPoCs also strengthened its relationship with student organisations in Politecnico di and University of Padua Milano to spread SGAC awareness

Skyward Experimental Rocketry

Italian members of SGAC took part in Skyward experimental rocketry. Its main goal is to have students build and launch rockets. The association has been built with a company-like organisation, meaning that young engineers have the opportunity to understand the logic behind their future jobs; department division, deadlines, and weekly reports on project activity are well rooted inside the group. One big asset of Skyward is the knowledge and know-how, developed by students themselves, in the rocketry field. This is rather unusual in Italy since university are more theory-oriented than in other countries.

The exciting goal of Skywardfirst programme, Rocksanne, is to beat the European amateurish rocket height record. In Europe, the number of teams that can build rockets is very low and in Italy this student association is the first to develop and assemble all components. NPoCs and Skyward organised a rocket workshop in Herculaneum on the Sunday after the SGC2012 closing day, doing outreach activities with the young population of the town.

Fig. 99.



SGAC Executive Director Andrea Jaime; Italian NPoC, Matteo Emanuelli and Skyward team in Herculaneum at the rocket workshop

<http://www.skywarder.eu/blog/>

<https://www.facebook.com/skywardEU>

Looking Ahead – the Plan for the Future of SGAC Italy

In 2013, the SGAC Italy team wants to keep up the SGAC awareness in Italy, expanding the network of Italian SGAC members. The goal is to organise or take active part in outreach events where the Italian SGAC members can meet and establish relationships. Conferences to present SGAC are already scheduled in the year to come.

► LITHUANIA NATIONAL REPORT

Accomplishments

During the end of 2012, Lithuania NPoC Laurynas Maciulis co-founded the non-profit organisation “Innovative Engineering Projects” (IEP). One of the goals of IEP is to raise interest in space sciences and technology among students and young professionals in Lithuania. Laurynas is working as a project manager in this organisation and promotes SGAC vision and goals in Lithuania.

Working closely together with Kaunas University of Technology (KTU), IEP initiated the first Lithuanian nano-satellite project. The main goal of the project is to provide university students and young engineers knowledge and hands-on experience in satellite engineering. The technical aim is to build and launch Lithuania’s first satellite based on a CubeSat standard.

IEP launched a public outreach campaign in Lithuania early this year to raise funds and to increase interest in space among general public, especially youth. Two public presentations were made during the conference “TEDxKTU” and the seminar “The First Smallsats of Lithuania”. More than seven articles about the project (one of them in English: <http://www.15min.lt/en/article/in-lithuania/lithuanian-engineers-are-building-country-s-first-space-satellite-525-236141>) were issued in the news media. Also, a dedicated Facebook page about this project was created (<http://www.facebook.com/pages/Lietuvi%C5%A1kas-palydovas-Kosmis/260541620725301>).

The nano-satellite concept was proposed to the QB50 competition organised by von Karman Institute for Fluid Dynamics on 30th of April 2012 and received official acceptance letter on 18th July 2012.

Starting early July, NPoC Laurynas Maciulis together with director of IEP and master student of KTU, Vytenis Buzas spent 3 months in the NASA AMES Research Center working as an intern at the Mission Design Center. The internship not only provided a valuable engineering experience but also a chance to meet and talk with many talented people from all over the world, including students from the International Space University and Singularity University.

National Space Based Events

- Researcher Night 2012 (<http://www.tyrejunaktis.lt/>). This exciting nationwide event took place on 28th of September. Various public events in major cities were held where students and professional scientists came out to the streets, demonstrated breath-taking scientific experiments, and explained how science influences everyone’s life.
- 3rd International Conference "Space Economy in the Multipolar World, 2012 (SEMWO 2012)": <http://www.space-lt.eu/?lid=4>
- Lithuanian pizza restaurant chain Čili celebrated its 15-year anniversary by launching a 20 cm diameter Hawaiian pizza into space along with cameras, power supply and a parachute for safe landing. Lifted by a helium-filled meteorological balloon, the pizza reached 33 km in height over two hours, dealing with temperatures of -60°C (-76 Fahrenheit). After the balloon burst, the frozen pizza dropped back to Lithuania to be found with GPS tracking.

Fig. 100.



NPoC Laurynas Maciulis at NASA AMES Research Center

Goals for 2013

- Raise sufficient funds to build and launch the first Lithuanian nano-satellite;
- Create a dedicated website for the nano-satellite project;
- Organise a presentation at major Lithuanian universities and SEMWO 2013.



NETHERLANDS NATIONAL REPORT

2012 was a successful year for the SGAC in the Netherlands.

Accomplishments in 2012

The Netherlands is currently represented by NPoC, Lex Meijer. He is a board member of the Netherlands Space Society (NVR) and an employee of Dutch Space in Leiden. The Netherlands Space Society aims at bringing together (young) space professionals and students and to increase knowledge and interest in space in its broadest sense.

After two years this will be his last year as NPoC. This means that from January 2013, both positions of NPoC the Netherlands are vacant.

The key events of 2012 are listed below:

Yuri's Night 2012, Leiden

On April 13th the fifty-first celebration of the first human space flight blasted off. In LVC Leiden the event drew a crowd of over 200 people, who danced to the best space music out there, and posed with a special guest: the one and only (cardboard cut-out of) André Kuipers.

All together, the proceeds raised for the (HE Space) Children's Foundation totaled €1600!

Fig. 101.



Yuri's Night 13th of April 2012 at LVC Leiden

Introducing the SGAC to the Netherlands, Faculty of Aerospace Engineering, Delft

On Friday, May 11th the Netherlands Space Society (NVR), together with the Dutch NPoC for SGAC and the Space Department of Aerospace Students Leonardo da Vinci (VSV) organised the event "Introducing the Space Generation Advisory Council." The event was attended by the (now) SGAC Executive Director, a number of Advisory Board members, various NPoCs and over sixty students and young professionals who live and work in the Netherlands.

The programme was kicked off by the NPoC for the Netherlands, with the general SGAC presentation. Andrea Jaime Albalat, back then Deputy Executive Director of SGAC, complemented the presentation with further details on the past Space Generation Fusion Forum and the then upcoming Space Generation Congress. Together they explained what the organisation could do for students and young professionals in their current and future careers in the aerospace sector.

Fig. 102.



On the photo several past and current SGAC members (from left to right): Tanja Masson-Zwaan (NVR board member and SGAC Advisory Board member), Lex Meijer (NVR board member and SGAC National Point of Contact for the Netherlands), Andrea Jaime (Exec. Director SGAC), NPoC Chile: Alejandro Lopez, Agnieszka Lukaszczuk (SGAC advisory board member), NPoC Italy: Matteo Emanueli and Frédéric Bastide (SGAC YGNSS project advisor)

Two international speakers concluded the evening by sharing their extensive experience with the SGAC: Agnieszka Lukaszczuk and Frédéric Bastide. There was good interaction between the speakers and the audience and after the event the participants were invited to enjoy a networking drink.

Active Debris Removal, Dutch Space, Leiden

On June 21st, the Netherlands Space Society (NVR) organised a symposium on active space debris removal (ADR) at Dutch Space in Leiden. Several international speakers addressed the general, legal, political and technical challenges that are associated with active space debris removal amongst which are Mr Brian Weeden (Secure World Foundation) and Mrs. Tanja Masson-Zwaan (IIASL).

Movie Nights, IIASL, Leiden

In 2012, the films 'For all mankind' and 'Man on a Mission' were screened and organised by the Netherlands Space Society and the IIASL.

National Reception of André Kuipers

At the end of August the National Reception of André Kuipers took place in Noordwijk with more than ten thousand visitors. Folders about the SGAC were spread and contacts were made with several people interested in the SGAC at a stand on the boulevard.

Meeting with André Kuipers, Artis, Amsterdam

On the 8th of October, André Kuipers shared his experiences of his recent six month stay in the International Space Station, exclusively for members of the Netherlands Space Society. André Kuipers also announced the winners of an essay competition around the theme 'Space in the year 2071' organised by the NVR. More than 200 people attended this event.

Outlook for 2013

For 2013, a major objective for SGAC in the Netherlands is to find a new NPoC for the coming two years. Intensifying the contact with other NPoCs, foreign students and employers that live in the Netherlands is envisaged to create more involvement and outreach (via e.g. social media). More collaboration with parties like the aerospace student organisation in Delft or the Netherlands Space Society is also useful to boost the networking opportunities for those involved in the (international) space sector in the Netherlands.

Successful events like the SGAC introductory event held in May, reaching a broad audience of space enthusiasts and students from different space related universities, are really necessary to further brand SGAC in the Netherlands and to occasionally act as a hub for future European SGAC meet-ups and other social events.

Lex Meijer would like to thank Andrea Jaime for her inspiring support during the SGAC introductory event and Damian Bielicki for his encouraging organisational efforts for the SGAC in Europe. He wishes them and all SGAC members all the best and a great journey ahead!

NORWAY NATIONAL REPORT

Thoughts and Retrospective on SGAC Norway 2012

Norway's NPoC helped to found the ISU Nordic Alumni Network this year, which was regarded as an important achievement that could spur growth and positive effects of an SGAC presence in Norway. At present, the network consists of 37 members, 18 of which are Norwegians. This network has given an important foundation for the future of SGAC in Norway. The newly established Nordic network has led to establishment of many new connections, both in Norway and in Scandinavia. Many ISU alumni are active in SGAC, or are potential new SGAC active members. ISU alumni are also present in Norwegian and European industry, and could represent entrance into this industry as future partners for SGAC. One specific goal with respect to this is to bring Norwegian industry partners to the annual SGC.

During 2012, Norway's NPoC has actively made connections with space individuals, which are considered highly resourceful. NPoC Norway was also present at the IAC in Naples, where the first ISU Nordic Alumni Network meeting was held. With respect to this conference, Norway's NPoC also took the initiative and responsibility for authoring a paper with the SGAC YGNSS group, presenting it as a poster.

Furthermore, as an effect of establishing the Nordic network and the IAC, SGAC Norway has been introduced to the Danish rocket group, Copenhagen Suborbitals. A positive effect from the introduction was a visit to Copenhagen. This has helped to create awareness around Nordic space activities. Norway's NPoC was also responsible for publishing an article in a Norwegian technical magazine on Copenhagen Suborbitals activities. The web-based number of readers is approximately 100,000 individuals, and the paper edition has approximately 315,000 readers. Though the Copenhagen Suborbitals are Danish, Norwegian experts were involved during this type of activity and has knowingly created inspiration for Norwegian readers, based on positive response from readers. The Norwegian NPoC believes that it is important to create a tighter and more active network in Norway and that SGAC Norway should not overlook the importance of cheering our fellow Scandinavians along.

Thoughts and Strategy for Further Progress throughout 2013

A particular subject of importance to Norway are the synergistic effects that can arise from offshore and space activities. Norway's NPoC has established contact with one of the founders and the chair of the Space and Energy network. Synergies between offshore and space activities and technology are considered a growing and innovative field throughout the world. As Norway is a considerably large offshore nation with a great focus on and resources for research and development of offshore technology, the relation between the space industry and the offshore industry is seen by SGAC Norway to be of great importance and interest to Norway.

Some of the specific plans ahead are to arrange a meeting in Oslo before the year 2013 is over, based on the ISU Nordic Alumni network. At this meeting, SGAC will be discussed and ideas will be exchanged. The plan is further to arrange Yuri's night in Oslo in April 2013, which will be expected to be both easier and be more supported now that a relevant network has been established. In addition, SGAC should inform relevant students at Universities about SGAC opportunities. And as previously mentioned, a goal is to bring at least one industry partner to the annual Space Generation Congress, so that Norway will be more present in the SGAC network and activities.

Upcoming Events, Projects and Activities

- IAC 2013: The Norwegian Space Centre is funding Norwegian students to participate to the 64th IAC scheduled to take place in Beijing, China, in October 2013. Dates TBD.
- International Space University (ISU): Funding for Norwegians is available through the ISU Funding Committee and the Norwegian Space Centre.
- [Alpbach Summer School](#): the Norwegian Space Centre gives out 1-2 scholarships a year.
- [NTNU Test Satellite \(NUTS\)](#): The NUTS program at the Norwegian University of Science and Technology is an innovative programme to advance space education in Norway, inspire students to pursue science and engineering careers, and prepare tomorrow's leaders with the interdisciplinary teamwork skills. The primary objective of the challenge is for a team of university students (undergraduate and graduate) to design and build an operational small-satellite.
- [CubeSTAR](#): This project is a student satellite project at University of Oslo (UiO) in Norway. Students manage the technical groups, where work is mainly performed through a master thesis. The satellite will be launched in 2013 into a polar orbit, where it will perform measurements over the Arctic regions.
- Students for the Exploration and Development of Space (SEDS) Norway is currently looking for students interested in taking initiative on space projects.

Industry Activities

- [The Norwegian Industrial Forum for Space Activities \(NIFRO\)](#) is the accepted associate of The Storting (Parliament) and administration in space matters.
- [Think Outside the Planet](#): A technology exchange program that focuses on Norway's innovative offshore and space industry and the possibility of combining this with knowledge from the mining industry. Think Outside the Planet aims at taking Space and Energy to the next level.

Country-Specific Events in 2013

- [Arctic Earth Observation and Surveillance Technologies](#) (2010 – 2013) is a programme for development of new technologies, in particular Unmanned Aircraft Systems, to collect data on environmental conditions in the High North. The project HQ is located in Tromsø, Norway.
- This year's national CanSat competition arranged by Narom (<http://www.narom.no/aktuelt.php?aid=7&bid=10&oid=1083>) takes place at Andøya Rocket Range (8 – 11 April): High School students can compete for a place in the European CanSat competition which will take place in the Netherlands in 2014. Sign-up for the Norwegian competition by 10. December 2012.:
- NTNU Space Technology II, Andøya Rocket Range (18 – 22 June): Field gathering by the Norwegian University of Science and Technology, held at Andøya Rocket Range. Dates TBD.
- European Space Camp, Andøya Rocket Range (24 June – 30 June): Students 17 – 19 years old can attend. Sign-up by 1 April 2013.
- Nordic Teachers' Space Camp, Andøya Rocket Range (11 – 16 August): Sign-up by 1 May 2013.

➤ POLAND NATIONAL REPORT

2012 was one of the most important years in the history of space in Poland with the government signing accession agreement so where Poland became 20th Member State of ESA. A consolidation of NGOs and space industry has begun and, the first Polish satellite was launched.

General

Poland now 20th Member of the European Space Agency.

After years of being the Cooperation State, Poland officially became 20th member of ESA on 13 November 2012. Many events in the country accompanied the process of accession. A rapid growth in Polish space sector and NGOs activity is expected in the months to come. They are connected with governmental funds and the formation of the National Space Programme.

EISC 2012 in Poland.

14th European Interparliamentary Space Conference (EISC) took place in Warsaw, Poland in 2012. EISC has for years been the place to unify and exchange opinions on the space policies of particular European countries. Many high level officials were present, including the Head of the European Space Agency. Exhibition of Polish space industry and NGOs accompanied the event this year.

Fig. 103.



EISC 2012 delegates examine space hardware

Poland Partner Country for ILA Air Show 2012.

Under the aegis of the Polish Ministry of Economics and the Polish Agency for Information and Foreign Investment (PAIIZ) Poland was represented at the Berlin Air Show with its biggest display to date, including companies and research institutes of the space sector.

Presentations at IAC 2012.

A record number of five presentations from Polish participants took place during the 63rd IAC in Naples, Italy.

2012 Economic Forum in Krynica-Zdroj

Poland hosted the 2012 Economic Forum in Krynica-Zdroj. Every year the Economic Forum brings together more than 2000 high-level participants from over 60 countries with the aim to create a dialogue and develop cooperation among the countries. Among the representatives were presidents and prime ministers, Nobel Prize winners, CEOs of major international organisations and corporations, astronauts and many more. The 2012 Forum topic was: “New Visions for Hard Times: Europe and the World Confronting the Crisis”. For the very first time the panels covered the topic of space. SGAC established cooperation with the Economic Forum and the Eastern Institute so the SGAC Members could participate and were financially supported by the Partners to participate in the Forum. Three SGAC Members were invited as speakers to the Forum: Damian M. Bielicki (Poland/UK), Guzel Kamaletdinova (Russia) and Stephanie Wan (USA). They had the honour to discuss the topic from the aerospace point of view together with such distinguish participants as General Miroslaw Hermaszewski, the first Polish astronaut; Dr Włodzimierz Lewandowski from the International Bureau of Weights and Measures in France; and Jean-François Clervoy, the Novaspace's President and the French/ESA astronaut.

Fig. 104.



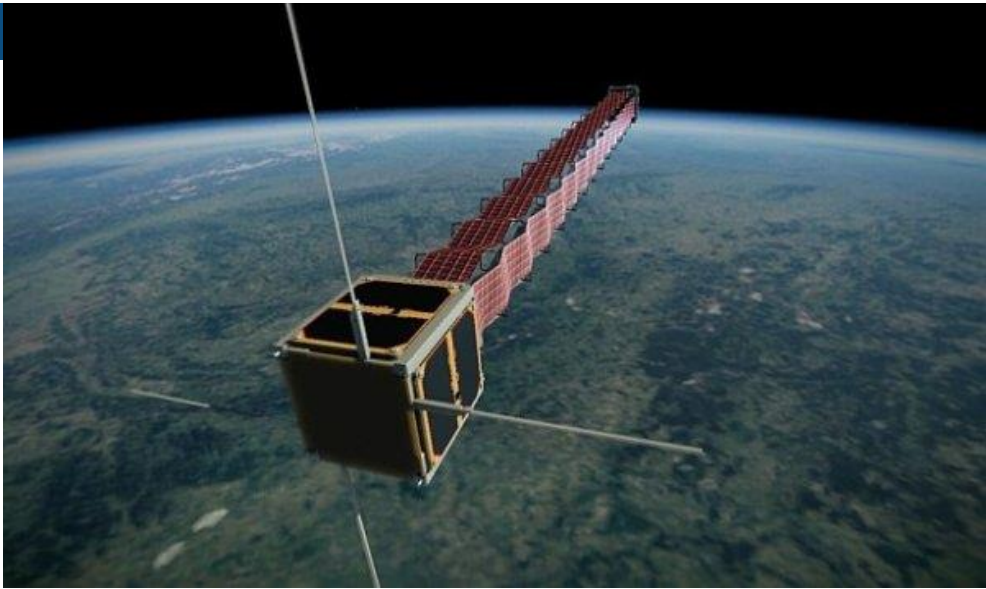
2012 Economic Forum in Krynica-Zdroj

Space Industry:

First Polish Satellite Launched.

On the 13th February 2012, the first polish satellite PW-Sat was launched on-board Vega maiden flight from the Guiana Space Center. PW-Sat has been developed for seven years, built by students from Warsaw University of Technology with close support of experts from Space Research Center Polish Academy of Science. Main objective of PW-Sat mission is a technology demonstration of passive de-orbiting system.

Fig. 105.



PW-Sat, Poland's first satellite

Polish Instrument on NASA MSL Curiosity Mission

Infrared detectors from Polish company VIGO are part of Sample Analysis Instrument on NASA MSL Curiosity, which landed in the Gale Crater on Mars, August 6, 2012.

Polish Space Industry Association (PSEI) Founded.

On 31st October, nineteen companies and research institutes founded the Polish Space Industry Association. The main goal of the organization is to strengthen the position of the PSEI members in market, promote collaboration with public administration representatives and NGOs to develop Polish space sector.

Non Government Organisations and Students Activities:

First Large Meeting of Space-Related NGOs

On the 3rd Interactive Scientific Picnic, most active NGOs and Space Research Center PAS met to discuss the idea of closer cooperation and communication and future common projects.

NGOs Public Support Action to Join European Space Agency.

Main space-related NGOs and student organisations organised outreach action to increase public opinion support to join ESA and to increase awareness of space sector importance. During two months high number of articles, TV and radio interviews were published and had noticeable effect on the accompanying events of the process of accession.

SpaceUps and Space Tweetups

For the first time, space enthusiasts from Poland took part in several European social media events related to space. The result of the this meetings were new perspectives, contacts and organisation of third SpaceUp in Europe – SpaceUp Poland, which took place 24-25 November 2012 in Warsaw.



Lunar Robot for the NASA Lunabotics Mining Competition 2013

Students from Warsaw University of Technology set up a robot for the International Lunabotics Mining Competition 2013, organised by NASA at Kennedy Space Center. The aim of the project is to build an autonomous platform capable of mining, in a given time, as much of the Moon's regolith as possible.

Space Generation Advisory Council

Jaroslav Jaworski became new NPoC for Poland.

Goals for 2013:

- Initiate ESA's European Space Education Resource Office in Poland.
- Increase cooperation between NGOs, student associations, research institutes, and entrepreneurs.
- Organise first space-related Tweetup in Poland
- Increase the awareness of space importance on public opinion and public administration

▶ PORTUGAL NATIONAL REPORT

Status of the Space Sector in Portugal

The space industry in Portugal has grown considerably and although its size is still not comparable to the big European space players, the number of companies has increased 7 times over the past ten years. The number of contracts with ESA has grown from 4 in 2000, to 58 in 2009, representing a value of more than 17 million Euros. There are now more people employed in the space sector and the area of intervention is also wider, including software, consulting, services, and hardware. During the last year, new players enter the space market in Portugal showing that, despite the current financial

situation, the space industry continues to be a challenging and appealing sector for national and international companies.

This trend reflects itself in academia as well. The research and development institutes have increased the number of projects. Universities are opening more vacancies for space related subjects and even creating space-dedicated branches in their degrees.

SGAC Events and Activities

There were no public SGAC events or activities organised in Portugal, but NPoC Vera kept on working on the strategic plan to get SGAC into Portuguese space industry and academia.

SGAC Activities Planned for 2013

Since last year, one NPoCs left the position and the other was working permanently in Germany. There are therefore many remaining steps to follow from last year's strategy. SGAC Portugal will focus on setting up a structured and detail strategy for the team. The main pillars of our strategy are described as follows.

- **Create the infrastructure.** Social media platforms like Facebook and Twitter are ready to be launched, awaiting approval of SGAC.
- **Present SGAC to the community.** Select a few relevant space sectors and propose partnerships to bring science events for children.
- **Expand the network.** Get students, enthusiasts, professors, and companies together to create regular discussion topics on Facebook.
- **Monitor the space sector.** Attend events, interact with companies and students, and be aware of the evolution of the space sector in Portugal and report this to SGAC.

▶ ROMANIA NATIONAL REPORT

Introduction

The Romanian Space Agency (ROSA) is the national co-ordinating body of the space activities. The missions of ROSA are to coordinate development and national efforts in the field, and, as a government representative, to promote international cooperation. In particular, ROSA is authorised to establish research and development centres oriented on specific objectives of the Romanian Space Programme. ROSA is developing its own research and development projects. On behalf of the government, ROSA is the national representative in the cooperative agreements with international organisations, such as ESA and COSPAR, as well as bilateral governmental agreements. Together with the Ministry of Foreign Affairs, ROSA is representing Romania in the sessions of the UN-COPUOS and its subcommittees.

Accomplishments of the Romanian Space Policies in 2012

February 2012:

Inaugural launch of ESA's VEGA from French Guiana. One of the passengers was the first Romanian nano-satellite GOLIAT, developed by a research team under at ROSA

May 2012:

ROSA, together with the ESA and the European Commission (EC) have organized the "GMES: New Opportunities for Eastern Europe" conference on the 3 - 4 of May 2012.

July 2012:

ROSA, as coordinating organisation for Space Technology and Advanced Research - Programme for Research, Development and Innovation, launched the Tender for Research, Development and Innovation Projects and the Tender for Strategic Projects. (source and more info on the project: rosa.ro)

Romania – selected as participant in the Cosmic Vision program of the ESA, to be finalised in 2019. ROSA and the Romanian Institute for Space Science will assist the build-up of the Euclid space shuttle, aimed at researching the accelerated expansion of the Universe.

September 2012:

In the framework of the International Academy of Astronautics (IAA) Heads of Space Agencies Summit follow-on activities an international cooperation project open to an unprecedented number of countries is being investigated. An IAA Cosmic Study is being undertaken on space systems and critical infrastructures. This project is supported by ROSA and open to a large number of space fairing and space emerging countries (capacity building), and would be a valuable space situational awareness response.

The conference is organised by the IAA and the Romanian Space Agency (ROSA), co-sponsored by the International Institute of Space Law (IISL) (source and more info on the project: rosa.ro)

October 2012:

ROSA holds the auspices of the conference: PLEIADES; a new dimension in satellite imagery (<http://www.rosa.ro/index.php/en/communication/566-pleiades-o-noua-dimensiune-a-imageriei-satelitare.html>)

One asteroid is being given the name ROMANIA.

<http://www.rosa.ro/index.php/en/communication/542-un-asteroid-din-sistemul-solar-a-fost-recent-denumit-romania.html>

Activities Done*World Space Week (WSW)*

Mr. Virgiliu Pop, WSW representative and former NPoC for Romania, has coordinated all the events WSW based in Romania. The year 2012 has seen more than 100 WSW events in Romania, making the country a hot-spots. WSW representatives in Romania have developed a blog with photos and 3D movies from different events: wswromania.blogspot.com

Participation in SGAC Activities by Romanian Representatives

SGC & IAC 2011, SGAC NEO Event organised in Bucharest in May

Astroclub Bucharest and Related Events.

Astroclub Bucharest is the meeting point of a great astronomy passionate community from the country, comprising of students and young professionals. Oana Sandu, former SGAC PR & Communications lead, is part of this organisation. The project, developed within Astroclub, contains debate forums, discussions, astronomy contests, astronomy summer camps within the country, space events, an online astronomy library, astronomy blogs, and guides on astronomical instruments. The most important task of this organisation is its liaison and networking feature, because of its affiliations and connections with other similar organisms within the continent.

Looking Ahead

SGAC Romanian aims to be more actively involved in SGAC tasks, to provide Romanian members with more effective sponsoring process to give as many people as possible the opportunity to attend the SGAC events. Finally, the team will put in place a more comprehensive strategy to increase the SGAC visibility.

RUSSIA NATIONAL REPORT

Introduction

Interest in the space industry rose in 2012, and the sector became stronger with many scientific events including conferences, forums, and space meetings were organised in Russia. Young professionals and students were involved in many projects at schools and universities. They had exciting opportunities to challenge themselves by participating in different space related contests. Space science also received a new life in festivals.

Accomplishments in 2012

Overview

As usual, several satellite conferences and schools programmes were conducted during the year [1]. A project called “Space Lessons,” a special series of lectures given from the ISS for children was launched. In autumn, Moscow opened a Science Festival with lectures about exhibitions on modern technologies and exciting scientific problems [2].



A young, but promising organisation RacketFest (Rocket Fest) created for people passionate about model rockets had their own event [3]. Magnitogorsk held a festival-contest for kids “Space Symphony” [4]. Later, Moscow held a forum “Youth for the future of aviation and space industry along with other activities for young generation” [5,6]. Famous Mars-500 project concluded with “Mars500 symposium”. As a part of SGAC activities and Yuri’s Night cooperation, SGAC Russia had two large promotional events. Kosmofest, a celebration on the 12 April brought a parade dedicated to Yuri Gagarin, followed by a concert. The second part of Kosmofest – Open Kosmofest – took place in summer and consisted of an open-air music festival, lectures about space, and a telescope workshop [7].

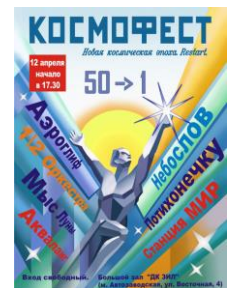


Fig. 106.



Open-Kosmofest promotional image

SGAC Activity

SGAC Russia is proud to congratulate Dmitry Arakcheev, who became a participant of the 2012 Emerging Space Leaders Grant Programme. The team is working to spread information about such programmes in the country and are looking forward to seeing more achievements from our colleagues. NPoC for Russia and supporters are updating a SGAC page on the largest Russian speaking social network (vkontakte.ru, livejournal.com). This page translates main SGAC news in Russian, broadcasting information about coming events in space world. During the summer, NPoC for Russia Guzel Kamaletdinova attended ISU's 25th Space Studies Programme, hosted by Florida Institute of Technology and Kennedy Space Center in Florida, USA. In early autumn, Guzel along with Damian Bielicki and Stephanie Wan attended Economic Forum in Poland representing SGAC and youth vision to problems in Space Industry. NPoCs for Russia Ekaterina and Guzel attended SGC, participating in the congress' working groups and helping with organisation of International Night. Guzel was also in the Delegates Team this year.

Fig. 107.

Страница

Консультативный Совет Космического Поколения

Некоммерческая организация

О компании:

Что такое Космическое Поколение?

Консультативный Совет Космического Поколения (SGAC) - это некоммерческая...

показать полностью..

Вебсайт:

<http://spacegeneration.org/>

Дата основания:

1999 год

Как сделать страницу эффективнее?

Управление страницей

Изменить фотографию ▼

Рекламировать страницу

Статистика страницы

Новости 8 сообщений

Что у Вас нового?

Username

Password

Log in

f

t

▼

Remember Me

Forgot your password?

Create an Account

You are viewing the community spacegen

Recent Entries

Friends

Archive

User Info

RSS

Космическое поколение - Россия

SGAC Russia webpages

Fig. 108.



SSP12 participants

Looking Ahead: Plans for the future of SGAC Russia

SGAC Russia will continue dialogue with Roscosmos and other space organisations in Russia, and keep working to establish relationships with student communities. The team is looking forward to expanding SGAC presentations, after the positive feedback from Youth Forum where SGAC was represented during round table discussions. The team strongly recommends designing templates for posters and brochures so it is possible to use them in many languages.

References

- [1] http://www.mai.ru/events/announce/detail.php?bitrix_include_areas=Y&login=yes&ELEMENT_ID=30717#.UJDnV28xqWg
- [2] <http://www.msk.festivalnauki.ru/>
- [3] http://users.livejournal.com/_lin_/229852.html
- [4] <http://www.children-art.org/ru/art-life/konkursy-partnjorov/200-mezhdunarodny-festival-konkurs-kosmicheskaya-simfoniya-magnitogorsk-rossiya>
- [5] <http://april12.org/>
- [6] http://uni-space.ru/index/obedinennye_kosmosom/0-13
- [7] <http://kosmofest.ru/>

► SLOVENIA NATIONAL REPORT

Current State of Space Affairs

Slovenia as a PECS Country

After signing the European Cooperating State (ECS) Agreement with ESA in 2010, Slovenia currently has 10 running projects under the Plan for European Cooperating States (PECS). The participation breakdown of the budget (\approx € 1 million) is as follows: space science (17%), earth observation (7.2%), microgravity and exploration (5.5%), telecommunication (13.8%), industrial policy (27.5%), advance concept study (11%), and education (11%). The remaining budget is allocated to cover the administrative costs.

The 4S Symposium

In June 2012, Slovenia hosted the Small Satellites Systems and Services Symposium (The 4S Symposium), which celebrated its 20th anniversary. The event was marked by close cooperation with two other prominent small satellite conferences, the Symposium on Small Satellites for Earth Observation (IAA and DLR) and the Small Satellites Conference (AIAA and USU). The programme addressed mission and system analysis, earth observation applications, telecommunication and navigation, as well as new technologies at system, sub-system and component level. A special session was dedicated to discuss issues related to access to space of small satellites such as launchers, platform cross-compatibility, and debris mitigation policies.

Looking Ahead

Despite austerity measures that affect space activities, SGAC Slovenia will further support space awareness in Slovenia, support Slovenian students interested in space related areas, and motivate them to become new SGAC members.

▶ SPAIN NATIONAL REPORT

Abigail Calzada and Jorge Diaz hold the position of NPoC for Spain. During these months, main goals were to promote organisation among students and young professionals in Spain. A second goal was to increase awareness related with space sector in high schools and universities.

Accomplishments in 2012

During this year, Spain has experienced an increase of membership in SGAC with a total of 24 members, four more than last year. To continue this growth, the team has translated the SGAC presentation into Spanish to help promote the organisation in schools, high schools, and universities across the country. SGAC Spain continued communication with Juan Ureña, NPoC for the 7th Framework Programme Space. SGAC members also receive weekly news regarding with Space Sector in Europe in their emails including available projects, works, and other information of interest. Furthermore, SGAC was present at the ESRI Conference Spain. One NPoC had contact with professionals from the geospatial technologies sector. Information about different Masters degrees available in Spain is now available to SGAC members, and was uploaded to the Spanish section webpage.

Looking Ahead: Plans for the Future of SGAC Spain

It becomes mandatory to focus SGAC efforts in strong outreach plans for high schools and universities to show young students about the career opportunities in this field. In February 2013, Abigail Calzada's NPoC will end, and during the start of the year, Spanish members will be informed about the opening of the position.

▶ SWEDEN NATIONAL REPORT

The launch of the small rocket Plutnik in 1961 marked the beginning of the Swedish space age. Since then, Sweden has been an important part of the space industry with satellites such as Viking, Freja, Astrid 1 and 2, Odin and the recently launched Prisma.

The Swedish Institute of Space Physics (IRF) is a governmental research institute that conducts research and postgraduate education in atmospheric physics, space physics, and space technology. It has provided instruments on the Swedish satellites Viking, Freja, Astrid 1, Astrid 2, Munin and Prisma, as well as on many international satellite missions.

Another good example of Swedish space activities is Esrange Space Center, founded in 1966, that offers an exclusive opportunity for atmospheric sciences and micro gravitational research. It is one of

the busiest civilian satellite ground stations and over 500 rockets have been launched since the founding. Esrange Space Center is a part of the Swedish Space Corporation (SSC).

Sweden has also been a member of ESA since it was founded in 1972. Sweden even has its own astronaut, Christer Fuglesang, who has spent 26 days in space. He has flown two missions to the International Space Station and with 32 hours of spacewalk, he is the most experienced astronaut of ESA.

Current State of Space Affairs

REXUS/BEXUS Programme

Each year, two REXUS rockets and two BEXUS balloons are launched from Esrange Space Centre in Kiruna, Sweden. Payloads are student experiments from ESA membership countries. This year, a team from the Royal Institute of Technology (KTH) launched their experiment on REXUS 11, and next year two teams from Sweden (one from KTH and one from Luleå University of Technology) will launch their experiments on REXUS 13/14. For more information about the REXUS/BEXUS programme, please visit: <http://www.rexusbexus.net/>

SpaceOps

SpaceOps is a unique international conference to meet experts, scientists, and technologists from all over the world, with a mutual interest in space operations and related activities. Stockholm, 11 -15 June. For more information, please visit: <http://www.spaceops2012.org/>

International Science Festival in Gothenburg

With hundreds of activities and over 100,000 visitors, the International Science Festival in Gothenburg is one of Europe's leading popular science events and the only one of its kind in Sweden. Gothenburg, 25 – 29 April. For more information, please visit: <http://vetenskapsfestivalen.se/english/>

39th European Physical Society Conference on Plasma Physics jointly with 16th International Congress on Plasma Physics

Space and Plasma Physics, KTH, will act as the local organisers for the 39th European Physical Society Conference on Plasma Physics held jointly 16th International Congress on Plasma Physics. The venue is Stockholm Waterfront Congress Centre, 2 – 6 July. For more information, please visit: <http://epsicpp2012.spp.ee.kth.se/>

Accomplishments in 2012

- NPOCs have informed all students of the Space Engineering Programme at LTU and the International Erasmus Mundus Space Master Students about SGAC through several e-mails and pamphlets spread around Space Campus in Kiruna.
- NPOCs Liselott Strand and Christian Semne Olsson gave a short presentation about SGAC to the new Space Engineering Master's students at LTU. Approximately 60 new students enthusiastic about space exploration, many of whom had never heard about SGAC, sat in the audience.
- Efforts has been made to motivate other Swedish students to apply for the position as NPOCs in Sweden, since these positions will be free as from December this year.

Looking Ahead – the Plan for the Future of SGAC Sweden

- Inform the public about SGAC at university and industry.
- Inspire the younger generation toward a career in space business.
- Cooperate with Swedish Space Forum.

- Organise space related competition or activity for young people with the objective of creating enthusiasm for space exploration.

► UKRAINE NATIONAL REPORT

Accomplishments in 2012

The year was quite productive with events and actions in Ukraine. Youth scientific and practical conferences, seminars, scientific exhibitions, forums, sport competitions, and other events were held. The [National Centre of Aerospace Education of Youth](#) made a great contribution to the promotion of space science and space technology among pupils, students and young scientists. This organisation during 2012 has conducted the following events:

- [XIV International Youth Scientific and Practical Conference "Human and Space"](#) was held under the slogan "To new orbits and stellar success" on April 11-13, 2012. The conference reaffirmed highly intellectual, technological, and industrial potential of Ukraine and unquenchable interest of youth to space science, space investigation, rocket design, and adjacent areas of work related to space.

Fig. 109.



Human and Space XIV

- [X All-Ukrainian Research-Educational Conference of Pupils "Star Way"](#) (April 19-20, 2012). During the conference, young scientists presented their original research works in various areas of astronomy, physics, natural phenomena, space ecology, technical creativity, rocket-space modelling, and computer technologies.
- [Scientific Readings "Dneprovskaya Orbits"](#) (September 13-15, 2012). The conference was devoted to the 75th Anniversary of General Designer of rocket and space technology, Academician of National Academy of Sciences of Ukraine, head of the State Design Office "Yuzhnoye" in 1991-2011 Stanislav Nikolayevich Konyukhov. Reports on various issues related to the humanitarian aspects of a missile and space technology such as history, education, environment, and impact of space activities on the human society development worldview were presented during the event.
- Every year during in summer, top pupils of aerospace classes, winners of the conferences, and contests enjoy the opportunity to take part in aerospace sessions and festivals "Suzirya-Artek" and "Suzirya-Laspi". In the most beautiful places of Crimea, children strengthen their health, have a rest, and go on journeys on foot. Within the framework of aerospace sessions, Centre and Ukrainian Youth Aerospace Association "Suzirya" teachers organize rocket-and-space modelling hobby groups, study the history of cosmonautics and fundamentals of space sciences, hold events, contests, and competitions together with children. Aerospace festival is a great holiday.

Fig. 110.



Aerospace Festival

- [The Council of Young Ukrainian Space Industry Workers](#) (CYUSIW) is especially active in organising events for the youth of space enterprises. Over the past year, the organisation has done a great work to support, activate and stimulate youth professional activities and also to attract young people to space enterprises in Ukraine.

Fig. 111.



The Council of Young Ukrainian Space Industry Workers

CYUSIW projects:

- The competition "Best young worker of Ukrainian space industry" is held for promotion and professional growth of the best enterprises workers. The event aims make a special contribution to a production process, science development, and social life of the enterprise and the Ukrainian space industry.
- VII Sports Contest of Ukrainian Space Industry Enterprises Youth was held on the base of National Space Facilities Control and Test Centre on September 9-15, 2012.

Fig. 112.



Sports Contest of Ukrainian Industry Enterprises Youth Space

- Conduct polls among young people in the Ukrainian space enterprises to determine the level of youth satisfaction with their profession and the most motivating factors for working at space enterprises.
- Hold a contest of energy efficient technologies for Ukrainian space enterprises.
- Hold a second photo contest among of space industry enterprises workers devoted to the launch of the first artificial Earth satellite.

Other Events:

- The 3rd Ukrainian Conference GEO-UA “Earth Observations for Sustainable Development and Security.” The 4th International Specialised Symposium “Space and Global Security of the Humanity” and the 12th Ukrainian Conference on Space Research were held within the Space Forum, in Evpatoria (Crimea, Ukraine) on September 3-7, 2012.
- The 8th International Aerospace Salon “Aviasvit-XXI” was held during September 27 – October 1, 2012 in Gostomel near Kyiv at the “Kyiv-Antonov” airfield. The exposition included demonstration of the mock launchers “Cyclone-4” and “Mayak”; Ukrainian remote sensing satellite “Sich-2”; “VG-143” engine for the new European launcher “Vega”; titanium chassis for AN-140 and AN-148 aircraft; a command system devices for “BINS” strap-down system; star-orientation devices; remote sensing optronic devices etc.

Fig. 113.



8th International Aerospace Salon “Aviasvit-XXI”

- Yuri’s Nights were held in Ukrainian cities: Kiev, Kharkiv, Zaporizhie.

SGAC Activity

- A new NPoC for Ukraine, Mykola Grishin, joined the SGAC team this year.
- Reports about SGAC projects and possibilities for Ukrainian youth to participate were presented at the Council of Young Ukrainian Space Industry Workers.
- A project of Ukrainian youth participation in SGC 2012 was presented to authorised representatives of State Space Agency of Ukraine.
- Share information about SGAC events by social networking.
- Cooperation with student's council of one of the leading space educational institutions in Ukraine such as Physics and Technology department of Dnipropetrovsk national university named after Oles Honchar was established.

Looking Ahead –Plans for the Future of SGAC Ukraine

- SGAC Ukraine seeks to establish contacts with student councils of Ukrainian space departments within universities.
- Ukrainian NPoCs will seek financial support to encourage the participation of Ukrainian space youth at SGC 2013.
- SGAC Ukraine plans to conduct scientific seminars, forums, sports contest, and culture events in a frame of CYUSIW.
- Ukrainian NPoCs plan to help organise NAECY events.
- SGAC Ukraine will present reports about SGAC and its events to youth conferences in Ukraine.

UNITED KINGDOM NATIONAL REPORT

In April 2012, two new NPoCs were appointed for the UK: Jane MacArthur from London and Ryan Laird from Lincolnshire. Their goals were:

- To raise the profile of SGAC in the UK and increase member numbers by targeting the younger population through social media, blogging and writing articles
- To encourage STEM and outreach work, particular among students
- To forge links and communications with the diverse stakeholders, from the UK Space Agency, ESA and ESERO and companies such as Astrium and Surrey Satellites Ltd, to the Royal Astronomical Society (RAS), British Interplanetary Society (BIS), Royal Aeronautical Society (RAeS), Institute of Physics (IoP), and other institutions and universities
- To advertise space events around the country to get better audiences and increase awareness

Accomplishments in 2012

Building Connections

United Kingdom SGAC finds it imperative to build connections and relationships with as many stakeholders in the UK Space Industry as possible to stay well informed and be up-to-date on developments. The SGAC team attended the conference celebrating 50 years of the UK in space and the Farnborough International Airshow. The team also attended the ESERO Space Education conference, where participants met with key members of the UK Space Agency as well as many other organisations.

The team has attended many events at the BIS, RAS and RAeS, where regular space events take place as well as the summer science exhibition at the Royal Society, where Helen Sharman gave a talk.

As Secretary of UKSEDS (UK Students for Exploration & Development of Space), NPoC Ryan is well-positioned to connect with the 18 to 25 age group. NPoC Jane volunteered on a UKSEDS committee

and production of their e-newsletter ‘Ecliptic.’ Both NPoCs have been involved with BIS Events, Media, and Outreach sub-committees.

Internationally, Jane attended the ATV-Tweetup, ISS Symposium, SpaceFest, the Alpbach Summer School, SpaceUp EU, and the European Planetary Science Congress in Madrid, meeting a wide range of space enthusiasts from many different countries including the UK.

Space Policy in the UK

Jane attended the Parliamentary Space Committee Summer Reception at the House of Commons. They are a cross-party group of MPs and Peers who aim to raise awareness and understanding of the great benefits of Britain’s important role in space, while promoting dialogue between politicians and the space community. She also went to the ESERO space education conference where she learned about education policy and introduced SGAC to a wide audience in a three-minute soapbox session.

At the Farnborough Space Conference, David Willetts, UK Minister for Universities and Science, talked about the 300 million Euro contract placed by ESA with the UK space industry to build a solar orbiter and the 12 new companies already established at the ESA facility in Harwell. He also talked about the first instrument for the James Webb Space Telescope (JWST) that was delivered by the UK earlier this year.

Ryan attended SGC in Naples, Italy, which was a good chance to meet with fellow members of SGAC and engage with SGAC’s work in focusing on the key space topics of the Congress. Ryan also recently attended the IoP’s “Doing Outreach” workshop which indicated a number of ways to help influence physics policy through their Physics Advocacy Programme.

We are investigating opportunities to learn more about UK science organisations such as Newton’s Apple and the Campaign for Science and Engineering (CaSE), which aim to form bridges between scientists and policy makers.

Outreach and Education

We are working with the BIS Education and Outreach group to help promote events such as World Space Week, for which Jane recently submitted a detailed funding proposal. UKSEDS is expanding its outreach portfolio with events such as the Big Bang Fair and Cheltenham Science Festival. We plan to incorporate a space policy element into such events alongside UKSEDS and BIS and promote the goals of SGAC within their memberships.

Ryan has become a STEM ambassador, joining the wide UK-network to better connect with young people and explore what resources are available. We aim to work with STEMnet and ESERO to bring space knowledge into the classroom, which seems to be lacking in the national curriculum, to make young people aware of key resources and show them how to access information about space.

Media and Communication

As enthusiastic writers, both NPoCs have blogs and are very active on social media – one of the best ways to connect with young people in the UK. Over the year, Jane has built up 475 followers largely from live-tweeting from various space conferences and events, including the Farnborough Space Conference where she was invited by ESA. We have written articles for the SGAC newsletter about Farnborough and ESERO, and Jane has been published in the BIS ‘Spaceflight’ magazine and the Society for Popular Astronomy ‘Popular Astronomy’ magazine, as well as being included on the official UK50 blog and UK Space Agency blog.

Other Notable Events

The UK boasts a rich space heritage, which has led to a large number of high profile space visitors during the year. This has included the head of ESA and Roscosmos as well as UK Ministers,

astronauts Paolo Nespoli, Roberto Vittori and Tim Peake (at the Farnborough International Airshow Space Conference), and other such as Autographica in Birmingham with four Apollo astronauts, Charlie Duke (Apollo 16) visiting Pontefract in Yorkshire, Richard Gordon (Apollo 12) in Glasgow, Elon Musk (SpaceX) in Oxford and London, and the BIS hosting a summer picnic at Sir Patrick Moore's residence in Selsey. NASA's Mission X initiative to get 9-12 year olds to 'train like an astronaut', is popular in the UK and their flagship event included another visit by Paolo Nespoli, a four-time shuttle astronaut. The Sir Arthur Clarke awards were held at the House of Lords in October, and recognised achievements across a range of UK space activities.

Looking Ahead – Plans for the Future of SGAC UK

SGAC UK plans to attend the European Space Solutions conference, a major three-day conference that will include the Minister of State for Universities and Science, Rt. Hon. David Willetts and Richard Branson. The intent of the conference is to explore space-based solutions in Europe. Complementing this is the European Space Expo, which will showcase the many benefits of EU space programmes. Also the 8th Appleton Space Conference in December includes Jean-Jacques Dordain, Director General of ESA; Prof. Dame Jocelyn Bell Burnell and Doug McCuistion, the NASA Mars Programme Director who will speak about the Curiosity Mission, alongside again, Rt. Hon. David Willetts. We look forward to building on the relationships we have established with other space organisations. In 2013 we hope to continue to engage young people in the UK while raising the profile of SGAC in the community.

REGIONAL OVERVIEW

During 2012, Middle East countries have proven that they have an important place in the space sector and are growing to be one of the biggest aerospace players in the world. One of the major events in the area, which also can be described as a big shift in Turkey's space applications, was the launch of the Göktürk-2 satellite. It is possible that this exciting event had a direct effect on the increase in attendance at SGC and IAC. SGC 2012 in Naples had its highest attendance of Middle Eastern countries in SGAC history, with a total of ten delegates from Iran, Saudi Arabia, Turkey, and the United Arab Emirates.

NATIONAL REPORTS

ISLAMIC REPUBLIC OF IRAN NATIONAL REPORT

World Space Week in Iran

Night Sky Magazine celebrated this year's World Space Week. It was sponsored by the Iranian Space Agency and held at the Science and Astronomy Centre of Tehran. Officials from space and astronomy organisations of Iran were present for events, including an exhibition with ten booths. Three of these were for children while the remaining seven booths were for Iranian space organisations. Iranian NPoCs organised an SGAC booth in cooperation with Night Sky Magazine. This booth attracted many visitors and the SGAC members showed the video message that the SGAC Chair Catherine Doldirina and the Executive Director Andrea Jaime prepared for this event. Visitors of all ages from schools and universities were attracted to the activities and goals of the organisation. The News Channel and Young Journalists club (YJC) covered the presentation.

Fig. 114.



Top row: SGAC Booth at World Space Week Iran. Bottom row: World Space Week Iran

Meetings

In 2012, Iran NPoCs Behnoosh Meskoob and Safoura Tanbakouei had three meetings with Middle East RC Mahsa Taهران. In these meeting, participants talked about motivating Iran in SGAC and organising SGAC projects in Iran. Furthermore, NPoCs Leila Qaemzade and Ali Alizade had a meeting with Night Sky Magazine on November 2nd, 2012 to organise several Space Club programmes in Iran.

Fig. 115.



Organising SGAC projects and Space Clubs

The First Session of Iran Space Club

During World Space Week, the Space Club was launched. It intends to be a monthly gathering for all interested people and professionals in space sciences. The meeting serves as a forum to discuss world space news and new space exploration, as well as general information about space science and other outreach activities. It is organised in Tehran and Isfahan City.

Fig. 116.



First Meeting of Iran Space Club

Astronomy Day

Astronomy Day was celebrated by the Iranian Astronomy Society, the Iranian Space Agency, and several universities and astronomy groups. Students, teachers, and the general public were attracted to this event where they received information about astronomy and science.

Fig. 117.



Iran Astronomy Day

CanSat Competition

Iran Aerospace Research Institute organised an annual student design-build-launch competition for space-related topics. The International CanSat competition was held on the 9-11th of November 2012. This competition was open to teams from universities and colleges. Teams designed and built a space-type system following the approved competition guidelines. They then competed against each other at the end of two semesters to determine the winners.

Fig. 118.



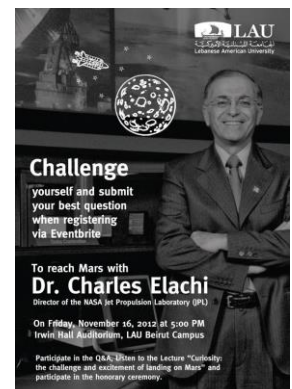
Student Design-Build-Launch competition-

LEBANON NATIONAL REPORT

Space Related Events in Lebanon:

On Saturday August 11th 2012, the LAG (Lebanese Astronomy Group) organised an observation event aimed at looking at the Perseids Meteor Shower.

On Friday November 16th 2012, Dr. Charles Elachi, head of NASA's Jet Propulsion Laboratory, gave a public lecture at the Lebanese American University on the Beirut campus.



Space Activities of the LAG (courtesy of Sarah Massalkhi)

These are some of the events held by the Lebanese astronomy group this year.

- Science Days (Hippodrome de Beirut – October 2012) The Lebanese Astronomy Group hosted this public event. Various activities including a water rocket construction and launching event, discussions on the exploration of the solar and talks about the landing sites of the moon took place.
- "Sun" Day (Ein El Mreyse - April 17 2012) was another public event that celebrated the Sun. It was informative and recreational.

Fig. 119.



Left: LAG Science Day. Right: "Sun" Day

- The Venus Transit Viewing (Ouyoon El Siman June 6 2012) was a members-only event.

Fig. 120.



2012 Transit of Venus

- Astronomy Event in Sebiil (August 2012) The LAG held an Astronomy night for Sebil village. A talk about the universe and the possibility of extraterrestrial life was given. An observation session also took place. Attendees got the chance to launch hand-made water rockets.
- Discover the Summer Sky (July 29 2012) was a members-only event used to promote the discovery of the sky of the four seasons.

Fig. 121.



Left: Serbil village Astronomy Night.
Right: Discover the Summer Sky

➤ SAUDI ARABIA NATIONAL REPORT

According to Prince Sultan, who flew as a Payload Specialist on STS-51G Discovery, "The Arab world is at a turning point. We have gone through the phases of oil, money and early technological development. The new generation is looking forward to joining the rest of the world by obtaining the most important things in that turnaround: opportunity and education. Together they are the keys that open the door for our future. My space flight is just a crack in that door." He represented the Arab Satellite Communications Organisation (ARABSAT) by deploying ARABSAT-1B.

Activities and Accomplishments in 2012

Saudi Aramco Cultural Summer Programme 2012 (iSpark)

Saudi Aramco organised interactive workshops designed to motivate thousands of students, male and female, to love knowledge and science. One of the workshops titled "Light: Stars Message", revolved around astronomy and space.

Space Generation Congress 2012

The NPoC for Saudi Arabia was selected to attend the Space Generation Congress 2012 in Napoli, Italy.

63rd International Astronautical Congress

The NPoC for Saudi Arabia participated at the 63rd IAC by presenting about starting up a community space club in Saudi Arabia. Also, she volunteered at the World Space Week Association booth at the exhibition.

The 2nd International Saudi Aeronautical Conference 2012 & ASE XVII Planetary Congress

The largest gathering of its kind in history of Saudi Arabia, 100 astronauts and cosmonauts from 18 countries convened in Riyadh for the 25th Planetary Congress of the Association of Space Explorers (ASE). The theme of event was "Space Technology for a Knowledge Based Society". It was hosted by HRH Prince Sultan bin Salman al-Saud. Astronauts at the congress took part at the Saudi International Space and Aeronautics Conference, held in association with the ASE event. Renowned astronauts and experts in the space and aeronautics sector from all around the world attended the conference.

Fig. 122.



The 2nd International Saudi Aeronautical Conference 2012 & ASE XVII Planetary Congress

Looking Ahead: Plans for the future of SGAC Saudi Arabia

The goals for SGAC Saudi Arabia in 2013 are the following:

- Encourage more members from Saudi Arabia to participate in SGC 2013
- Hold more space related events like Yuri's Night, World Space Week, and SpaceUp conferences
- Connect Saudi Arabia space-related universities, institutes, and associations with SGAC
- Start an official organisation for space enthusiastic youth in Saudi Arabia

TURKEY NATIONAL REPORT

Every day in Turkey the SGAC family is growing. We had our newest member of SGAC, Ece Gülfem Dağdeviren, appointed as the Web Editor for SGAC in October 2012.

Space Generation Congress 2012 and International Astronautical Congress 2012

This year four people from Turkey applied for SGC and all of them are selected as delegates. This included Ece Gülfem Dağdeviren (Web Editor of SGAC), H Aziz Kayıhan (RC of Middle East), Özgün Yılmaz (Researcher in TÜBİTAK SPACE) and Burak Yağlıoğlu (Researcher in TÜBİTAK SPACE). IAC 2012 also had the highest ever attendance from Turkey with over 30 participants including H. Tuğça Şener-Şatır, who represented SGAC Turkey.

21st Traditional May Festival on Astronomy

İÜFFAAK (Amateur Astronomers Society of Istanbul University Faculty of Science) organised the 21st Traditional May Festival on 11-13 of May in Istanbul University. The event had two main sections: Space & Astronomy Education for Kids and Lectures on General Astronomy & Space Activities.

Members gave lectures on space activities conducted around the world. There were also planetarium sessions and model spaceships gifted to children. İÜFFAAK also organised Einstein and Newton Night on the 28th of March 2012. The event was about gaining a different view of astrophysics from the eyes of the two important scientists.

Fig. 123.



21st Traditional May Festival on Astronomy

19th National Astronomy and Space Sciences Congress

The National Astronomy Congress is held every two years. This year, the congress organised on the 27th of August through the 1st of September in İnönü University, in Malatya. It took five days and included a scientific symposium. The congress was a great success and participants are looking forward to the next national astronomy congress.

TÜBİTAK 15th National Observation Nights

Every year TÜBİTAK organises observation nights in Tug, Antalya. This year the event took place between August 24th and 26th. Every year students from different universities came to observe the skies and try to discuss the mysteries of the universe.

Science with Telescopes (Turkish Symposium)

In recent years, the TUBITAK National Observatory (TUG) and other university observatories have been utilising new telescopes (e.g. 100 cm and 60 cm diameter scopes in TUG, 60 cm scope in İÜ and 122 cm scope in ÇOMU). These telescopes are important for Turkey's technological infrastructure with regards to astronomy, space sciences, space technologies and physics departments. This symposium, which took place in İstanbul University on 14-15 May 2012, dealt with issues of telescope limits, capacity assessments, project partnerships and efficient use of telescope times. This was the first time Turkey has held such a symposium.

World Space Week in Turkey

World Space Week was held all over the world and included several Turkish schools. İzmir SEV Elementary School students had the chance to speak with real astronauts in space. This event, which

was run by the Radio Amateurs Society (TRAC) Izmir branch jointly with the ARISS, allowed students the opportunity to ask astronauts questions about life in space.

The Erenköy FMV Isik Planetarium is now open to Turkish schools. People who visit the planetarium are informed about star clusters, the solar system, planets, and the other objects in the solar system.

Space Applications in Turkey

RASAT

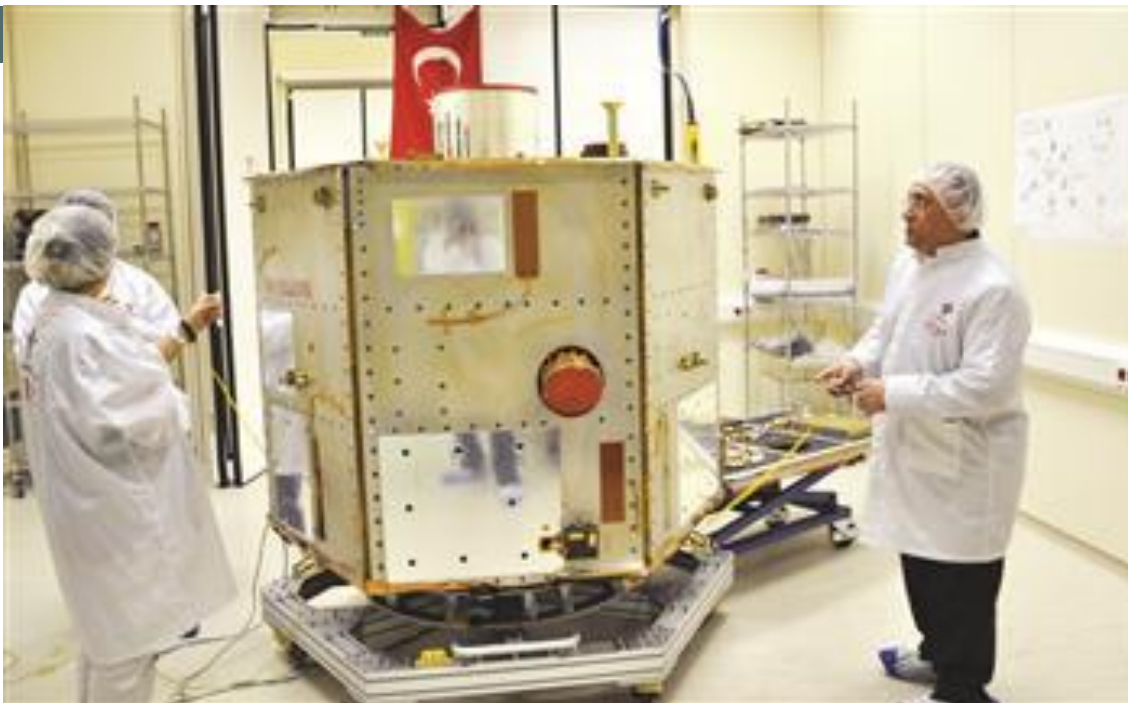
Construction of Turkey's first domestic earth observation satellite launched into space on the 17th of August 2011. It successfully completed its first year of tasks in space. The satellite was designed and manufactured using local resources from Tubitak Space. It currently takes pictures at 7.5-metre resolution and transmits the images to the institute's METU campus relay station. This will generate a two-dimensional map of Turkey. 12,000 satellite images will be used to complete the map by the end of this year. After the two-dimensional map imaging is complete, RASAT will open the images of Turkey's 3-D terrain model to public use. With the use of satellite images taken by Rasat, one can achieve a Google Earth style view.

GÖKTÜRK-2

Turkey's second national earth observation satellite, Göktürk-2, will launch into space from a base in [China](#) between Dec. 15 and 25. Göktürk-2 was engineered by the Scientific and Technological Research Council of [Turkey](#) (TÜBİTAK) and Turkish Aerospace Industries (TAI). The satellite will be sent to China's Jiuquan Space Station within the first week of November. All software and hardware used in operating the satellite were manufactured in Turkey.

GÖKTÜRK-2 is projected to meet the needs and capabilities of several national facilities, improve satellite system know-how, increase infrastructure development, improve monitoring capabilities and allow research opportunities to public institutions and organisations.

Fig. 124.



Engineers and Scientists examine GÖKTÜRK-2 in a cleanroom

Technical Specifications of GÖKTÜRK -2 Satellite

Orbit	Sun synchronous Orbit
Orbital Height	~ 700 km
Lap Times Around the World	~ 98 min
Ground station contact time per day	~ 40 min (day+night)
Satellite Mass	< 409 kilograms
Image Storage Capacity	> 15 Gbit
Resolution	2.5 m

VIP SPACE Travel

VIP Tourism, which is one of the Turkey's leading tourism company, is working in partnership with the Space Expedition Corporation (SXC) to send Turkish people into space. Participants have to go through a mandatory mission tactics course, conduct g-force centrifuge training, fly in the L-39 Albatross jet, experience an altitude chamber, participate on a Zero-G flight and learn to use the Desdemona Simulator (the first simulator which is both full motion and is capable of generating all possible G-forces up to 3.3G). So far, two individuals have negotiated trips to space.

Space Exhibits in Turkey

NASA: A Human Adventure

NASA's human space exhibition "NASA: A Human Adventure" open at the Expo Centre in Marmara Forum, Istanbul. So far, 1.5 million people have visited the exhibition. NASA has donated a collection of more than 100 objects that have gone into space. The Marmara Forum Expo Centre, which exists on an area approximately 2,500 m², includes original tools, engines, astronaut suits, accessories, custom models of critical parts and other space-related props. Special film screenings are also included. This exhibit will continue till 14 April 2013.

REGIONAL REPORT

The North, Central America and the Caribbean (NCAC) region has always been a major player in the space sector. In this past year, the first man-made object left the solar system, NASA landed a car-sized rover on Mars, and the first commercial spacecraft rendezvoused with the ISS. A next generation Canadarm was also unveiled. Furthermore, the involvement of several new countries in the space sector has been achieved through the creation of new local space organizations and the use of social media to increase communication.

Accomplishments in 2012:

There have been increased activities in the NCAC region within SGAC, these include the following.

Fusion Forum 2012

SGAC and the Space Foundation hosted the inaugural Space Generation Fusion Forum (SGFF) at the 28th National Space Symposium (NSS) in Colorado Springs, CO (USA) on April 15-16, 2012. SGFF gathered together a select group of fifty young adults from fifteen nations. Seven panellists were from the NCAC region.

SpaceUp 2012

SpaceUp unconferences became popular across the globe. The first SpaceUp Canada was held in Toronto this year, as was the first SpaceUp in Austin, TX and Pittsburgh, PA. Additional events were held in San Diego, Houston, Kansas, Los Angeles, Atlanta, Washington DC, and Boston.

Regional Facebook Page:

A dedicated Facebook page was introduced to increase communication within the region. This mechanism is hoped to complement the SGAC website in order to reach a broader audience interested in space across the NCAC region.

Integration and Interaction in 2012:

Cooperation between SGAC and many other space organizations has continued to increase its visibility this year. Jamaica has formed a strong connection with the Astronomical Association of Jamaica. Through that connection, SGAC has been working to increase links with other regional groups in the Caribbean. SGAC has also been working with ACAE, based in Costa Rica, which is helping to develop the aerospace industry in Costa Rica and the NCAC region through increased education. Members from the region are also active participants in the International Space University, and regional and national conferences.

Looking Ahead – the Plan for the Future of SGAC NCAC

The goals for the upcoming year for SGAC in the North, Central America and Caribbean region are the following:

- Continue to increase SGAC regional activity in the NCAC region
- Continue to strengthen relationships with other space outreach organizations within the region
- Increase awareness of the SGAC and its goals across the region
- Increase participation and attendance of SGAC members at national and international space conferences
- Encourage participation in and planning of space related competitions and events
- Encourage space outreach and foster space education

NATIONAL REPORTS

CANADA NATIONAL REPORT

Since the 1962 launch of Alouette I, Canada's first satellite, and the establishment of the Canadian Space Agency (CSA) in 1989, Canada has continued to be an important player in the international space industry.

Canadian Space Agency in the News

A Canadian astronaut, Dr Chris Hadfield, will launch aboard a Soyuz spacecraft to reach the ISS in November 2012, where he will be the first Canadian commander on Expedition 34/35 for six months. This marks a milestone for Canadian space exploration. On October 12th and 13th, 2012, CSA's recently recruited astronaut Jeremy Hansen was in Vancouver, British Columbia to speak to young Canadians. He here encouraged over three hundred students to participate in CSA's Canadian Science Challenge, which aims to send student experiments to space. This event also constituted the largest practical science session in history, thus setting a Guinness World Record. In September 2012, another milestone in Canadian space history was reached when MacDonald Dettwiler and Associates (MDA) unveiled the Next Generation Canadaarm (NGC) to mark Canada's 50th anniversary as a space-faring nation. Finally, Canada was present on the NASA Curiosity rover via a Canadian geology instrument that will enable Curiosity to determine if Mars ever had an environment that once supported life.

Accomplishments in 2012

Canada's representation at the International Space University 2012 Space Studies Programme in Florida

Nineteen Canadians took part in the International Space University's Space Studies Programme (SSP), held in summer of 2012 at the Florida Institute for Technology (FIT). Seven scholarships were awarded through the Canadian Federation of the ISU. The programme was a huge success with many graduates presenting their team projects at the 2012 International Astronautical Congress in Naples, Italy.

Canada's Representation at the 2012 International Astronautical Congress (IAC)

The CSA once again supported nineteen Canadian students and young professionals through the International Student Educational Board (ISEB) to attend the 2012 International Astronautical Congress (IAC) in Naples, Italy.

2012 Space Generation Congress in Naples, Italy

The SGC 2012 was well supported by Canada with five delegates. David Kendall, Senior Executive Advisor to the CSA President, spoke to students and young professionals about the future of the space industry.

2012 Space Generation Fusion Forum and National Space Symposium

Two Canadians were chosen as Global Grant winners to attend the SGFF 2012. These Global Grant winners had the opportunity to participate on panels regarding international collaboration, developing regions and space applications, and the new role of commercial spaceflight. All Global Grant winners then participated in the 2012 National Space Symposium in Colorado Springs.

2012 SpaceUp Event

The SpaceUp event was a space conference where the participants decided topics, the schedule, and the general structure of the event. The first conference was held in Toronto on 14th April 2012, at the

Centre for Social Innovations. Over 35 people attended from multi-disciplinary backgrounds, including engineers, scientists, artists, web developers, among others.

Looking Ahead – Canada’s Plan

- IAC 2013: The IAC will be held in September 2013 in Beijing, China. It shall be preceded by the SGC 2013.
- Let’s Talk Science: Many universities across Canada have participated with Let’s Talk Science to adopt an extensive outreach community initiative in elementary schools, high schools and post-secondary institutions. The aim is to inspire students to enter the STEM disciplines. A new component will be geared towards space education with a focus on Commander Chris Hadfield’s upcoming mission.

Interesting Web Links for the Young Generation in Canada

Groups, People, Institutions

Canadian Lunar Research Network: <http://clrn.uwo.ca/about.htm>
 Canadian Space Agency: <http://www.asc-csa.gc.ca>
 CSA Capacity Building Programme: http://www.asc-csa.gc.ca/eng/ao/2011_cluster.asp
 Canadian Aeronautics and Space Institute: <http://www.casi.ca>
 Canadian Space Commerce Association: <http://spacecommerce.ca/>
 Canadian Space Society: <http://www.css.ca>
 Canadian Alumni of the International Space University: <http://www.caisu.org>
 Geological Association of Canada - Planetary Division: <http://uwo.ca/earth/GACPSD/membership.html>
 NSERC CREATE Canadian Astrobiology Training Programme (CATP): <http://create-astrobiology.mcgill.ca/>
 NSERC CREATE Technologies and Techniques for Earth and Space Exploration: <http://cpsx.uwo.ca/research/nserc-create-2>
 Royal Astronomical Association of Canada: <http://rasc.ca/centres>
 Southern Ontario Science Fiction festival and Southern Ontario Space technology and research festival in Waterloo Ontario: <http://www.so-scifi.com/>
 Student for the Exploration and development of Space Canada: <http://canada.seds.org>
 University of Toronto Astronomy and Space Exploration Society: <http://asx.sa.utoronto.ca/>

Studies

2012 Impact Cratering Short Course: <http://cpsx.uwo.ca/study/2012-impact-cratering-short-course>
 Aerospace engineering University of Carleton: <http://www.mae.carleton.ca>
 Aerospace Engineering École Polytechnique Montréal (French): <http://www.polymtl.ca>
 Aerospace Engineering University of Alberta: <http://www.engineering.ualberta.ca>
 Aerospace Medicine University of Toronto: <http://www.utoronto.ca>
 Centre for Planetary Science, University of Western Ontario: <http://cpsx.uwo.ca/>
 Institute of Space Science, Exploration and Technology, University of Alberta: <http://www.isset.ualberta.ca/>
 McMaster University: <http://mscehealth.mcmaster.ca>
 Origins, McMaster University: <http://origins.mcmaster.ca/>
 Planetary and Space Science Centre, University of New Brunswick: <http://www.unb.ca/fredericton/science/research/passc/>
 Planetary Science Short Course: <http://cpsx.uwo.ca/study/2012-short-course>
 Scholarship for the International Space University: <http://www.cfisu.ca>

Many other universities offer programmes in aerospace engineering or other departments that includes research projects related to space.

► COSTA RICA NATIONAL REPORT

During 2012, Costa Rica's projects have progressed well. Many events were organised by the Central American Association for Aeronautics and Space (ACAE), and by the two Costa Rican NPoCs.

Accomplishments in 2012

ACAE

Based in Costa Rica, ACAE leads the development of the aerospace industry in Costa Rica and in the region via education. Since its foundation, ACAE has directed multiple projects and continues to support many more. ACAE is currently focused on two main projects: the first is the creation of the "Central American Aerospace Cluster", with the objective of bringing larger investments from international corporations into the region; the second is intended for academic purposes, namely the development and launch of the first Costa Rican satellite. This satellite will be a PicoSat envisaged for environmental monitoring and remote sensing. In addition, ACAE carried out projects to reach out to and inspire young students, such as DAEDALUS. This project aims to bring young students from engineering and physics backgrounds together to build a platform that enables the study of atmospheric phenomena. It will also require the development of technologies necessary to perform such remote sensing. The first step towards the deployment of the DAEDALUS platform was the development and testing of an atmospheric balloon as part of the Aether project, under the sponsorship of Ad Astra Co. This mission allowed participating students to understand design and launching concepts, and recovery techniques for space probes.

NPoC's Work

The NPoCs established strong foundations for the coming years.

In collaboration with ACAE, NPoC Andres Mora initiated two projects: a national rover competition, and the launch of an experiment to the International Space Station (ISS). The rover competition will select challenge participants to build a rover capable of navigating autonomously to a pre-selected target on the ground after being launched at an altitude of 12,000ft above ground level. The participants will be teams of university students, with the winning team being promoted to participate at the ARLISS competition in Nevada, USA.

The second project will involve organisations both within in Costa Rica (such as InBio, the National Biodiversity Institute) and internationally (such as the private company NanoRacks). It aims to send a payload to the ISS, with initial design results expected by the mid-2013.

NPoC Magaly Sandoval is currently a board member of ACAE and has participated in the representation of Costa Rica in international forums, such as being elected as an Emerging Space Leader in 2012 and in attending the IAF 2012, the UN-IAF Workshop 2012 and the SGC 2012. She has also been collaborating through ACAE in outreach and education in the Costa Rican Institute of Technology.

ACODEA and AstroTEC

In addition to these initiatives, there are several astronomical organisations in Costa Rica. Among the most active is the Costa Rican Astronomy Association (Asociacion Costarricense de Astronomia, ACODEA). ACODEA is an NGO dedicated to educating the general public about telescopes, their characteristics, and how to find and picture celestial bodies in the sky. ACODEA also hosts events such as "Telescopios en la Acera" (Telescopes on the Sidewalk) to engage young people in the general public. Another important institution is the Universidad de Costa Rica's (UCR) Planetarium, which was created in 2004 to educate children and adults on topics related to the cosmos. Another organisation founded in the Costa Rican Institute of Technology (ITCR) is AstroTEC. It was created to motivate young students at ITCR to get involved with space topics. The AstroTEC group holds weekly

meetings in which everyone is invited to learn about the universe. They also hold free astronomical observations inside the university and around the country.

The future of SGAC in Costa Rica

The NPoCs have worked in the development of several outreach and academic projects in the country. NPoC Andrés Mora has developed a collaboration with ACAE, and now works with ACAE's vice-president on the projects previously mentioned. NPoC Magaly Sandoval will be attending ISU'S SHS-SP, to be held in Australia in 2013. Also, work will continue on the development of a picoSAT and in defining more missions for the Aether project. The NPoCs will co-organise the Central American Students Congress (CONESCAPAN) with IEEE, to focus on two main topics: renewable energies and aerospace development. The Minister of Science and Technology (MICIT) will also hold Space Camps in July 2013.

JAMAICA NATIONAL REPORT

From stellar successes at the London 2012 Olympics to celebrating its 50th year of independence, 2012 has been a notable year in Jamaican history. It has also been a year of growth for astronomy and space outreach initiatives in Jamaica, spearheaded by the local efforts of the Astronomical Association of Jamaica (AAJ). The AAJ, Jamaica's premier astronomy group is the local SGAC liaison for space and science education and outreach.

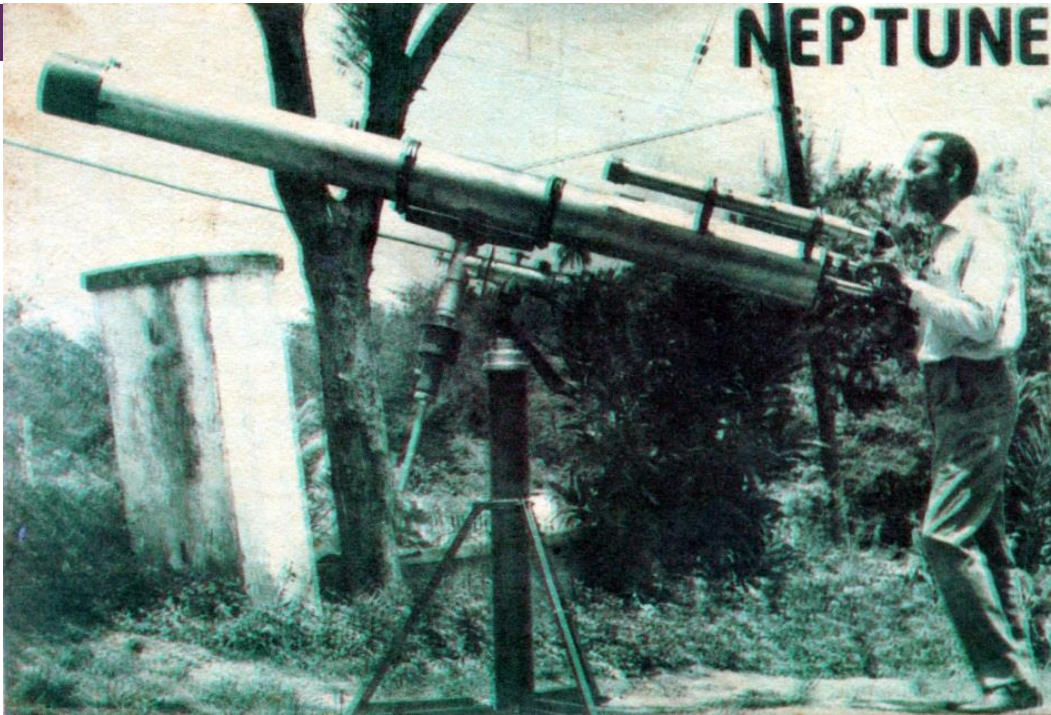
Activities in 2012

Local, Caribbean and International Cooperation

The AAJ has been working with Jamaica's Ministry of Education and the local arm of the University of the West Indies (UWI) to drive the growth of science education in Jamaican schools, through its Galileoscope project. The Galileoscope project started after the International Year of Astronomy (IYA 2009) when the AAJ received 400 Galileoscopes in an effort to drive space and science development in schools. These are distributed to schools in conjunction with the founding of school Astro Clubs. The AAJ is also lobbying UWI to revive courses in astronomy and cosmology, which it offered in the past and is liaising with the SGAC NPoC to find potential lecturers.

The AAJ has been working with individuals who have the potential to make a positive impact on the development of space, science and astronomy in Jamaica. These include Mr Hedley Jones, a veteran of Jamaican astronomy who built his own telescopes and used them to observe many famous sky events of the last few decades. Mr Jones has been liaising with the AAJ on several initiatives and the SGAC NPoC, most recently to build the content of the AAJ website and to provide details of the early years of the organisation.

Fig. 125.



Hedley Jones with one of his home-built telescopes

There is increased interaction between different astronomy groups within the Caribbean, and the AAJ is playing a prominent role. In 2012 the AAJ coordinated with different groups – including the Caribbean Institute of Astronomy based in Trinidad & Tobago and a coalition in Cayman – in a pan-Caribbean viewing event of the Transit of Venus (ToV). This is part of a larger active effort to forge greater links between the Caribbean regional groups.

Internationally the AAJ is coordinating with groups such as Astronomers Without Borders (AWB) and it continues to expand its Galileoscope programme, facilitated by the International Astronomical Union's IYA 2009 initiative. Additionally the AAJ has coordinated with individuals such as Bill Kramer, of the Eclipse Chasers' group, who hosts astronomy teaching and viewing sessions for cruise ship holiday makers across the region.

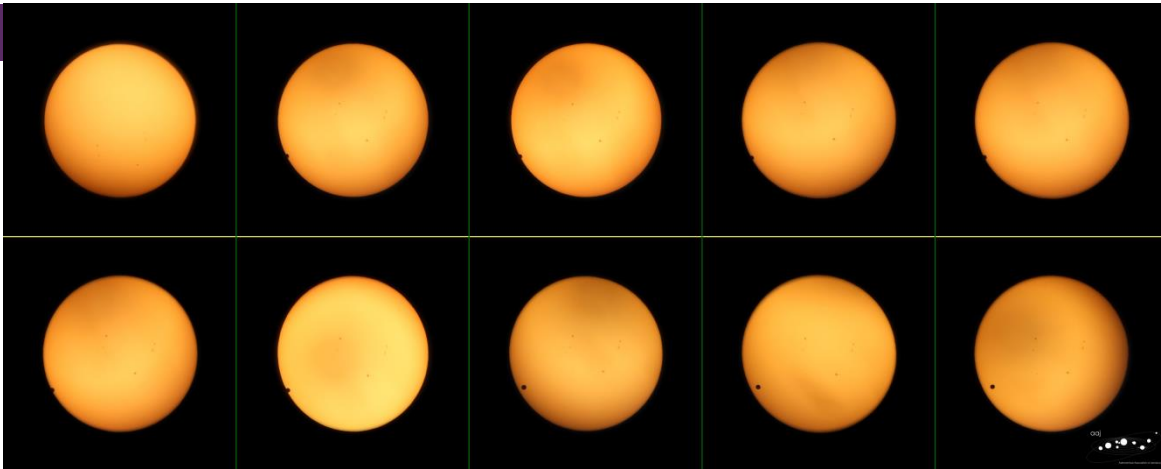
Expansion and Outreach

The AAJ has continued to expand its network, most recently opening a chapter in the island's second city, Montego Bay. This provides greater access to the island's population because Kingston, the AAJ's previous main base, and Montego Bay are at opposite ends of the island. There has already been an effort in coordination with the Sam Sharpe Teacher's College to start an astronomy library with several books donated by Mr Hedley Jones about amateur astronomy and telescope building.

The AAJ continues to expand its Galileoscope programme, both with the opening of its new chapter in Montego Bay, and even across the Caribbean in the Cayman Islands. The AAJ donated three Galileoscopes to a group of Cayman Islanders to bolster their efforts in promoting astronomy and science on the island. These were used in the pan-Caribbean viewing event of the ToV, one of the most important astronomical events of the 21st century. The AAJ continues to host viewing events for the public including a Yuri's Night event and events related to Global Astronomy Month along with its ToV event.

The ToV event involved 30 participants at Ocho Rios on Jamaica's North Coast. Participants included the general public, military personnel, teachers and tourists, as well as AAJ members. A 10" Newtonian reflector telescope with a solar filter was jury-rigged with a custom mount for a digital camera. The mount allowed anyone with a digital camera to take photos of the ToV, which many did and shared with family and friends in their social networks. The AAJ's ToV observations were shared with the Venus Project, an initiative based in Germany to coordinate observations and collect the data.

Fig. 126.



AAJ observations of the Transit of Venus

Acknowledgements and Outlook for 2013

The NPoC for Jamaica would like to acknowledge the valued partnership forged with the AAJ through which the goals of space outreach and education are being achieved in Jamaica. 2012 promised growth in education and outreach initiatives and that was indeed the case. The opening of an AAJ chapter in Montego Bay supports the Galileoscope and Astro Club initiative for accelerated expansion. This will serve to recruit more of the best minds in Jamaica to the cause of space, science, and astronomy development. Great things are promised for 2013 and beyond.

➤ MEXICO NATIONAL REPORT

The year 2012 was a successful year for SGAC Mexico. Much effort was invested in the promotion of several international events and in increasing the involvement of the young people. The main link of communication was social networks such as facebook and twitter, specialized magazines and student groups. The goal was to increase the representation of Mexico at the SGC 2012 and IAC 2012. In this context, the efforts were deemed a huge success.

2012 Space Generation Congress

For SGC 2012, the Mexican NPoC, Carmen Felix, helped in the preparation of the congress as Project Co-Lead, assisting with the organisation of the working groups and by leading the main topics that were going to be discussed during the congress. This involved working with other SGAC members to successfully have the participation of outstanding experts and project leads for each of the working groups. At the same time, Carmen got in contact with a group of students from Saltillo, Mexico, who are currently part of the NASA Develop National Program, and encouraged them to attend the SGC by inviting them to present their project at the congress. This resulted in the group receiving funding from the Mexican government for their experience abroad.

Fig. 127.



Mexican group with SGAC Mexico National Point of Contact.
Credit: Carmen Felix

The new Mexican Space Agency Director, Dr. Javier Mendieta, attended SGC and participated in the round table of Space Agencies Leaders. Carmen Felix had the opportunity to present to him several projects that will be SGAC will be involved in in Mexico, such as the idea of hosting a Space Studies Program in Mexico in the 2015/2016 timeframe.

63rd International Astronautical Congress

After the SGC, a high degree of Mexican representation continued during the 63rd IAC. A group of Mexican high school students, who build a nano-satellite and launched it in a stratospheric balloon last summer, presented their project during the Mexican dinner event.

Fig. 128.



Altata's high school students present in IAC Naples 2012

2012 Space Studies Programme Presentation

During the summer, Carmen Felix, together with a group of SGAC members from Uruguay, France, Ireland, Russia, Spain, Argentina, Greece and USA, gave a presentation about SGAC during the 2012 Space Studies Programme hosted by the Florida Institute of Technology and NASA Kennedy Space Center.

Facebook Pages

During the year, the group promoted SGAC through their personal facebook pages, to encourage more Mexicans to register with a National Facebook page ([Jóvenes por el Espacio Grupo México](#)) and by promoting the Regional SGAC Facebook page.

Mexican National Youth Prize

The group also promoted the contest of the Mexican National Youth Prize in the section of Science and Technology, the registration of Mexicans in the #marstweetup at the Austrian Space Forum in April and a contest to drive a Mars rover as part of the White Label Space X-prize team, a contest that was won by Hernan Mendez.

Space Safety Magazine Competition

Finally, the group is currently promoting a Mexican contest to win a trip to French Guiana to watch the launch of a Mexican satellite. In addition, the group maintains regular representation through the Space Safety magazine and by trying to encourage greater work between IAASS and SGAC.

► UNITED STATES NATIONAL REPORT

The United States has played a major role in the international space arena since the dawn of the Space Age. The US continued to lead in 2012 with several significant innovations and accomplishments.

In March of 2012, Boeing announced the commercial sale of four all-electric propulsion satellites to ABS and Satmex. The satellites greatly reduce the amount of mass dedicated to propulsion, in this case cutting launch costs for the operators.

On 22nd May, 2012, the commercial space company SpaceX launched its Dragon spacecraft into orbit. Several days later, it became the first private spacecraft to successfully rendezvous and berth with the International Space Station, marking a watershed moment for commercial spaceflight.

On 16th June 2012, the US Air Force robotic space plane, the X-37B, returned to Earth after 15 months in orbit.

On 6th August 2012, NASA successfully landed its Curiosity rover on the surface of Mars, after what it coined the “Seven Minutes of Terror” during entry, descent and landing. The rover, which has garnered substantial international attention, will gather data on and analyse Mars’ atmosphere and soil for information on climate, geology, and suitability to past life.

On 14th October 2012, the US hosted a ground-breaking high altitude, supersonic “space dive” from 39km. The effort was sponsored by Red Bull and executed by Austrian Felix Baumgartner. Launched from the New Mexico desert, the dive broke records for the highest altitude, maximum speed, and total free fall distance.

In October of 2012, preliminary data indicated that NASA’s Voyager 1 spacecraft became the first man-made object to leave the solar system. The probe, launched in 1977 to study Jupiter and Saturn, has travelled over 18.2 billion kilometres.

SGAC Accomplishments in the United States in 2012

2012 saw some significant and positive US developments for SGAC. SGAC member Ashley Chandler became the Regional Coordinator for the North, Central America and Caribbean region and joined fellow American Alan Steinberg in this role. The US is currently represented by two NPOCs, Tiffany Chow and Paul Guthrie. Tiffany is currently Project Manager in the Washington, D.C., office of Secure World Foundation (SWF). She works on space policy issues related to international security, governance initiatives and space for sustainable development. Paul is a Senior Economist at Washington, DC-area consulting firm The Tauri Group, and is a well-published expert in both emerging commercial space markets, and space technology investment management.

Combustion Chamber Mentorship Programme

The US NPOCs have been in discussions over the course of 2012 with partners to form a mentorship program for young space professionals in the Washington, D.C. area. The Combustion Chamber will bring together SGAC members, other young space professionals, and mentors in a dynamic programme aimed at fostering relationships between the current and next generation of space leaders. The pilot event, scheduled for early 2013, will feature a panel discussion from high-level space professionals, a speed mentoring round, and a networking reception.

Space Generation Fusion Forum at the 28th National Space Symposium, Colorado Springs, CO

For the first time ever, SGAC hosted, together with Space Foundation, the inaugural Space Generation Fusion Forum (SGFF) at the 28th National Space Symposium (NSS) in Colorado Springs, CO on April 15-16, 2012. SGFF gathered together a select group of 50 young adults from 15 nations and from various space sectors to participate in an intense, interactive forum for discussion in conjunction with the largest annual space event, the NSS. The Fusion Forum provided this group of students and young professionals, 17 of whom were from the United States, the opportunity to connect with space sector leaders and present their ideas on salient topics such as the proposed draft International Code of Conduct for Outer Space Activities and Commercial Spaceflight.

The two day programme was filled with speeches from influential leaders such as NASA Deputy Administrator Lori Garver and current Chair of the United Nations Committee on the Peaceful Uses of Outer Space, Dr. Yasushi Horikawa. There were also dynamic panel discussions moderated by space executives and featuring standout SGAC members and networking opportunities. SGFF delegates nominated Minoo Rathnasabapathy as the winner of the AIAA MVP Award. As MVP, Minoo received a full scholarship to attend AIAA's 2012 SPACE Conference in Long Beach, CA, and present a report of the viewpoints expressed during the panel discussions at the Fusion Forum.

SGFF was organized and coordinated by the then-Executive staff of SGAC, Ariane Cornell and Andrea Jaime, and a small team of US SGAC members including Brad Cheetham, Tiffany Chow, Kat Coderre, Paul Guthrie, Philip Harris, Nicole Jordan, Steve Ringler, Alan Steinberg, and Stephanie Wan. In addition to being co-hosted by NSS organizers Space Foundation, the Fusion Forum was generously supported by several other partners such as the American Institute of Aeronautics and Astronautics (AIAA), The Federal Aviation Administration (FAA) Center of Excellence for Commercial Space Transportation (COE CST) and NASA.

After the Fusion Forum's official programming concluded, delegates were invited to attend the 28th National Space Symposium and participate in its New Generation activities. Over half of the 50 SGFF participants remained in Colorado Springs to participate in the NSS. The last day of the Symposium highlighted SGAC and its first-ever Fusion Forum. SGAC Chair Catherine Doldirina acted as Master Moderator for the entire day's programming. The SGFF was then spotlighted with a video prepared with the help of Space Foundation's professional media design team. Following the video, Ariane Cornell, the then-Executive Director of SGAC, moderated a panel of three SGAC members presenting the work of the SGFF. Finally, Andrea Jaime, the then-Deputy Executive Director of SGAC, welcomed

onstage the winners of the SGFF Global Grants. The inaugural Space Generation Fusion Forum was a great success and will take place again in 2013, alongside the 29th National Space Symposium.

Fig. 129.



Guests and delegates at the inaugural Space Generation Fusion Forum, April 15-16, 2012.

Other Youth-Oriented Space Activities in 2012

Space Generation Congress 2012, Naples, Italy

SGC 2012 was again well supported by a strong contingent of over 15 members from all over the United States. Many of the US representatives also assumed various leadership and staff roles in this year's SGC: Working Group Co-Coordinator Kate Becker acted as Project Lead Coordinator; Mariel Borowitz acted as Moderator for the Earth Observation Working Group; Kat Coderre acted as Moderator for the Agency Working Group; Tiffany Chow acted as Subject Matter Expert for the Society Working Group; and Stephanie Wan acted as Subject Matter Expert for the Exploration Working Group. Additionally, at this year's SGC, several award recipients hailed from the United States: Mariel Borowitz, winner of the Washington Space Business Roundtable Scholarship; Hannah Kohler, winner of the SGAC-SCaN Summer Intern Programme Scholarship, Katrina Laygo, winner of the SGAC Young Leadership Award; Asra Najam, first ever winner of the \$pace is Business! Competition; and Matthew A. Noyes, winner of the OHB Scholarship.

Fig. 130.



From left to right: Alanna Krollkowski, Kate Becker, Stephanie Wan, Nikki Herrmann, Marel John Borowitz, Katrina Laygo

International Astronautical Congress 2012, Naples, Italy

Several US SGAC members presented papers at IAC 2012 in a wide range of technical sessions, as well as participating in SGAC Working Group projects presented at IAC and co-authored with SGAC members from other countries of the world.

Looking Ahead – the Plan for the Future of SGAC in the United States

In line with last year's goals, SGAC has continued to expand its impact and activities in the United States in 2012. Membership in the United States has grown, but could still expand further. Similarly, SGAC could expand its activities specifically targeting the student and young professional space community in the United States.

Some specific goals include:

- Launch Combustion Chamber Mentorship Program in the Washington, D.C., area in early 2013
- Expand SGAC collaboration and partnership with existing space sector networks and activities in the United States
- Increase SGAC membership in the United States
- Encourage more members from the United States to assume staff and leadership roles in SGC 2013

Introduction

The year 2012 has been a positive year for the region. With 8 new NPoCs, the region is now almost completely covered. The new NPoCs have proven to be enthusiastic and willing to spread the passion for space through SGAC. Furthermore, plans have already started to hold the first SGAC South American Conference at INPE Brazil in 2013.

Regional SGAC Activities and Highlights

The region gained 8 new NPoCs:

- Argentina: Julio Aprea and Sergio Taleisnik
- Bolivia: Benjamin Pinaya
- Brazil: Bruno Sarli
- Chile: Alejandro Lopez Telgie
- Colombia: Diego Jimenez
- Ecuador: Pedro Molina
- Peru: Miguel Guillen

The region also launched a new Regional Facebook page.

Activities in Argentina

- Two new NPoCs: Julio Aprea and Sergio Taleisnik
- SAC-D/Aquarius Satellite successfully passed its first operational test
- CONAE performed technical review meeting for upcoming SAOCOM Satellite
- OOSA presented a space law seminar in Argentina
- CONAE built ESA Deep Space Antenna 3 on Argentinean Soil

Activities in Bolivia

- For the first time Bolivia has an SGAC NPoC: Benjamin Pinaya
- The first Yuri's Night was celebrated in Bolivia
- Presentations were made by SGAC volunteers at WSW
- The first Bolivian satellite, Tupak Katari, is being constructed and will be launched in 2014

Activities in Brazil

- There is a new NPoC: Bruno Sarli
- Seminars about SGAC and its activities were given at several academic institutions
- Three SGAC members could participate in the SGC 2013 and in the IAC 2013
- Olavo de Oliveira Neto, won the Diederiks-Verschoor Award which is granted annually by the IISL Board of Directors
- Brazil participated in the Rio +20 (United Nations Conference on Sustainable Development) on the role of outer space in sustainable development
- During the 63rd meeting of the Higher Council of the Brazilian Space Agency (AEB) the proposal for the new National Programme of Space Activities (PNAE) was reviewed

Activities in Chile

- For the first time Chile has an SGAC NPoC: Alejandro Lopez Telgie
- The third Chilean satellite SSOT/FASat-Charlie was launched on board a Soyuz rocket from French Guiana
- FIDAE, the most important bi-annual aerospace and defence conference/fair in Chile, took place this year
- Discussions took place regarding the structure of a new Chilean space agency, together with a space policy and law for the country
- The Chilean team Angelicvm, one of the two South American representatives in the Google Lunar X Prize, had major exposure in regional and national media

Activities in Colombia

- Colombia has a new SGAC NPoC: Diego Jimenez
- During the last week of September, Explora Park, the Astrobiology Group from Colombia and the SAA (Sociedad Antioqueña de Astronomía) hosted the II International Astrobiology Congress in the country
- NASA Ames Research Centre and the University of Antioquia discussed an agreement to be signed with other local universities to start working together
- During the last week of October, the city of Bucaramanga hosted the annual meeting of RAC and the COCOA congress, where one of the main topics discussed was the inclusion of Colombia as part of the International Astronomical Union (IAU) through the creation of an Andean Regional Node hosted in the country. The countries that would be working together in the regional node are Colombia, Venezuela, Peru, Ecuador, Bolivia and possibly Panama.

Activities in Ecuador

- For the first time Ecuador has an SGAC NPoC: Pedro Molina
- Ecuador's NPoC participated in the 2011 CanSat games and informed two universities and three technical high-schools in Cuenca about the opportunity to compete in the competition
- EXA signed an agreement with the Russian launch-provider KOSMOTRAS to launch a cubesat: NEESAT-01 PEGASO, the first satellite manufactured in Ecuador to be launched into orbit.

Activities in Peru

- Peru has a new NPoC: Miguel Gillen
- The Alas Peruanas University has created a pico-satellite called UAP-SAT. The launching of the UAP-SAT is scheduled for March 2013
- Yuri's Night was celebrated across the country
- The Regional Conference on Information and Communication Technology for Latin America TICAL 2012 took place in Peru
- The Annual Peruvian Aerospace Congress

Activities in Uruguay

- There has been a lot of progress on the establishment of the Uruguayan Space Agency
- Uruguay's NPoC, Victoria Alonsoperez, won the Space Generation Young Leadership Award to attend SGC. She also won the ITU Young Innovators Competition
- SGAC Uruguay had several appearances in the media, in national newspapers, TV shows and radio
- Progress was made on the construction of the first Uruguayan satellite, scheduled to launch in 2013

- An interdisciplinary team of students from different universities were finalists at the RASC-AL forum, which was organized by NASA
- High school students from all over the country participated in the Astronomy Olympiads
- During the WSW there were several activities in the country

Looking Ahead for 2013

- To continue progress on the organisation of the first SGAC South American Conference. If permitted the conference would take place in August 2013 at INPE, Brazil. The conference would be held before the IAF Latin America and the Caribbean Regional Group (GRULAC) meeting
- To create more content on the Facebook regional page to comply with the SGAC requirements as well as satisfy the current members in the region
- To recruit new member as well as qualified NPOCs
- To promote Yuri's Night events and World Space Week celebrations
- To connect South American space universities and associations with SGAC to receive more funding to bring Latin American members to the SGC 2013

NATIONAL REPORTS

ARGENTINA NATIONAL REPORT

Notable Space-Related Activities

SAC-D/Aquarius Satellite Successfully Passes First Operational test

The newest Argentinean spacecraft proved to be in good health in its first official operational test. The spacecraft, launched last year from Vandenberg Air Force Base by NASA's Delta II rocket, consists of more than five Argentinean-built instruments to support more than 40 climate investigation projects.

CONAE performs technical review meeting for upcoming SAOCOM Satellite

The Comisión Nacional de Actividades Espaciales (CONAE) celebrated its first meeting to evaluate and review the design of its upcoming satellite, SAOCOM. The meeting was carried out by members of CONAE and ASI as main stockholders in the project who were joined by a group of specialists acting as consultants from ESA, JAXA, and CSA. SAOCOM consist of two satellites designed to perform SAR earth observation. The review showed a good design status, and paved the way for two future reviews. Launch of the SAOCOM satellites is scheduled for 2015 and 2016.

OOSA performs Space law seminar in Argentina

The Office for Outer Space Affairs of the United Nations and the Argentinean Space Agency CONAE presented a seminar on space law in November. International experts from all over the world participated, as well as IAA and IAF representatives. Attendees included participants from both the private space industry as well the government; professionals from bordering countries were also present.

CONAE builds ESA Deep Space Antenna 3 on Argentinean Soil

In 2009, ESA and CONAE signed an agreement to build one of the three ESA deep space antennas. The city of Malargüe, on the Argentinean province of Mendoza, was chosen from over 20 other locations on the region to house DSA3. The antenna was finished in November, and official inauguration is planned for December.

As part of the agreement between ESA and the Argentinean government, Argentina will be allowed to use the antenna for 10% of the year. CONAE, as the coordinating organization, will dedicate between 50 to 80% of this time to the Argentinean scientific community.

Argentina Chapter

Sergio Taleisnik and Julio Aprea represent SGAC in Argentina. Sergio joined SGAC in January 2012 as part of the PR team and assumed the role of National Point of Contact in July 2012. He has worked as a space journalist for the last four years, and earned his degree in systems engineering at the Catholic University of Córdoba (UCC) this year. Currently he is working as an ERP consultant for a multinational company.

Julio is SGAC Argentina's NPoC as well as Competitions Coordinator for SGAC. He is an industrial engineer from Argentina. He attended the National University of La Plata (UNLP) where he earned his industrial engineering degree. After working as software project manager for some years, he attended the International Space University and earned a masters in space studies. Since then he has been working for the European Space Agency participating in different Earth Observation satellite development projects as well as on the Ariane 5 Launcher Programme. Julio is currently working in the Future Programmes Preparation and Technology Office for the launchers directorate at ESA, preparing the next evolution of the VEGA launcher.

Future Plans

The Argentinian chapter is planning to increase outreach by contacting high schools and universities to promote SGAC and to create awareness regarding the future of the space sector in Argentina and the rest of the world. They are also planning to attend SGC 2013 in China.

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Groups, Institutions

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 Pier Auger Observatory: <http://www.auger.org/>
 Theoretical and Experimental Astronomy Institute: <http://iate.oac.uncor.edu/drupal/>
 Space Physics and Astronomy Institute: <http://www.iafe.uba.ar/>
 INVAP: <http://www.invap.com.ar/>
 National Institute for Industrial Technology, Space and Aeronautics Centre: <http://www.inti.gov.ar>
 National Library of Aeronautics: <http://www.binae.org.ar/>
 Argentina Astronomy Association: <http://www.astronomiaargentina.org.ar/>
 AMateur SATellite Corporation : <http://www.amsat.org.ar/>
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Studies

National University of La Plata Astronomy: <http://www.fcaglp.unlp.edu.ar/>
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 National University of Comahue Space Group:
<http://investigadores.uncoma.edu.ar/AplicacionesEspaciales/index.htm>
 National Technological University of Haedo Aerospace Technology Group:
http://www.frhutn.org/cms/index.php?seccion_generica_id=433
 National Aeronautics Institute: <http://www.iua.edu.ar/>

► BOLIVIA NATIONAL REPORT

Bolivian SGAC:

2012 welcomed the first Bolivian NPoC, Benjamin Pinaya Gutierrez, to SGAC. In this time, work has continued on the first Bolivian satellite, Tupak Katari. The satellite is scheduled for launch in 2014, and is considered a great opportunity to increase Bolivian participation in the space sector.

As part of the development of Tupak Katari, several scholarships were awarded to the best engineers in Bolivia to allow them to learn how to operate the satellite from the ground. The NPoC attended the scholarship announcement ceremony where the vice president of Bolivia introduced the opportunity; the candidates have now been selected and are being trained in China.

Fig. 131.



Tupak Katari scholarship award ceremony

SGAC Activities in 2012:

There were many activities this year in the Bolivian SGAC, such as the organization of the inaugural Yuri's Night celebration. The group also participated in the SGAC Find an Asteroid Programme; while there were no significant discoveries this year, the group looks forward to participating again in 2013 with greater resources.

Finally, International Space Week was considered a large success, with volunteers giving presentations at one of the biggest schools in Bolivia about the importance of space exploration and SGAC activities. Many students were interested and the group hopes to recruit many new members as a result.

Future of SGAC Bolivia 2013:

The group hopes to add to its membership with new recruits across more scientific and engineering disciplines. Furthermore, the group hopes to work closely with the engineers selected for the Tupak Katari training scholarship, and to strengthen ties with the local government. In this regard, some meetings have already been held, but new meetings will be necessary due to a recent change in cabinet members.

In addition, SGAC Bolivia has created an alliance with Ave Maria School, one of the biggest schools in Bolivia with over 5000 students, and hopes to receive greater support for activities in the next year.

Links of Interest:

Agencia Boliviana Espacial (Bolivian Space Agency)

<http://www.abe.bo/convocatoria/index.html>

Noticias de Bolivia (News from Bolivia)

<http://www.eabolivia.com/component/tag/sat%C3%A9lite-t%C3%B3pico-katari.html>

► BRAZIL NATIONAL REPORT

Space activities in Brazil are coordinated by the Brazilian Space Agency and executed by the National Institute for Space Research (INPE) and the Institute of Aeronautics and Space (IAE), with the participation of Brazilian universities. The space sector in Brazil is growing with new openings in the private and public sector and new aerospace courses at universities. The Brazilian SGAC was created this year and a great effort has been dedicated to promoting the organization in the country.

Highlights of the Brazilian Space Programme in 2012

Rio +20: Space and Sustainable Development

Brazil participated in the Rio +20 (United Nations Conference on Sustainable Development) on the role of outer space in sustainable development. The event examined the contribution of space information technologies to support the implementation of the results and actions of the Rio +20. The space event of the Rio +20 was led by the President of the United Nations Committee on the Peaceful Uses of Outer Space, Y. Horikawa (Japan), and moderated by a representative of Nigeria, Ade Abioudun. The five panels covered the following topics: Geospatial Data, led by representatives of international organizations and Group on Earth Observations and Committee on Earth Observation Satellites; Natural Disasters, led by Brazil; Water and Oceans, led by Walther Lichem, Head of the Department of International Organizations Ministry of Foreign Affairs of Austria; Health, led by an Argentinian representative; and Food, led by a member of the World Food Programme.

Brazil and China Reaffirm Space Partnership

During a meeting between President Rousseff and Chinese Prime Minister Wen Jiabao on 21st June 2012 at Rio +20, the governments of Brazil and China raised the level of their partnership to "global strategy". The authorities also confirmed the decision to expand joint efforts aimed at launching two Sino-Brazilian satellites, CBERS-3 in 2012 and CBERS-4 in 2014, and agreed to the worldwide data distribution of those satellites.

Satellite Launch Vehicle (VLS) Comes to Alcantara for Tests in New Tower

The Alcantara Launch Centre (CLA) received the structures of the Satellite Launch Vehicle (VLS-1) beginning 20th June 2012 as part of Operation Salina. Operation Salina, conducted by the Department of Aerospace Science and Technology (DCTA) at the Institute of Aeronautics and Space (IAE), aims to carry out the preparation and integration of a mechanical mock-up of the VLS-1 in the new Mobile Integration Tower (TMI).

AEB Board Meets to Review New Guidelines of Brazilian Space Programme

The 63rd meeting of the Higher Council of the Brazilian Space Agency (AEB) occurred on 1st July 2012 at AEB headquarters. The meeting aimed to review the proposal for the new National Programme of Space Activities (PNAE). The PNAE aims to provide qualified and competent governance to integrate the space programme into the general public policy. The PNAE seeks to use the purchasing power of the state and encourages the creation of integration companies capable of providing complete space systems.

SGAC Activities in 2012

Many activities were held this year by the SGAC Brazil. Seminars about SGAC and its activities were given at the Technological Institute of Aeronautics (ITA), University of Cruzeiro do Sul and Engineering College of Guaratinguetá (FEG) of the Paulista State University (UNESP) introducing the council members to students, researchers and teachers and gathering support from members of these institutions. This strategy will be continued in the next months; seminars have been planned at further institutions with an interest in space research. Examples include INPE, the Federal University of ABC (UFABC), the Science and Technology Institute of the Federal University of São Paulo (UNIFESP), the

Astronomy Geophysics and Atmospheric Sciences Institute (IAG) and the Engineering College of São Carlos (EESC) of the University of São Paulo (USP), and the Geosciences and Exact Sciences Institute (IGCE) of UNESP.

Fig. 132.



Seminars about SGAC being given at the Technological Institute of Aeronautics (ITA)

Apart from the seminars, a great effort was put into the planning of the first Latin American SGAC conference, a project being organised by SGAC South America, with a view to organising a conference in the model of the SGC next year in Brazil. SGAC members from South America made a draft logistics plan outlining in the proposal to host it in São José dos Campos, Brazil, soon after the SSP 2013. The organization is now seeking sponsorship, support and speakers.

The SGAC Brazil will welcome another NPoC this year, Maria Lívia, thus giving Brazil greater representation with two NPoCs.

Brazilian Participation in SGC and IAC 2012, Naples

Brazil contributed three representatives to the SGC 2012, who participated in the Industry, Society and Agency working groups. Delegates had the opportunity to speak about the Brazilian space sector, gain a deeper understanding of space activities in other nations and interact with delegates from different nationalities and professionals of the private space sector (i.e. Lockheed Martin) and national space agencies.

The IAC 2012 also brought great opportunities for growth and dissemination of the SGAC in Brazil and in Latin America. One of the highlights of the event for Brazil was the Prof. Dr I.H.Ph Diederiks-Verschoor award won by Olavo De Oliveira Neto for his paper The Elusive Frontier: Revisiting the Delimitation of Outer Space. The Prof. Dr I.H.Ph Diederiks-Verschoor Award is granted annually by the IISL Board of Directors to the best paper accepted for presentation at the IISL colloquium, by an author not older than 40 years and who has not published more than five papers in the Proceedings of IISL Colloquia.

Fig. 133.



Olavo De Oliveira Neto awarded the Prof. Dr I.H.Ph Diederiks-Verschoor award at IAC 2012

Looking Ahead – the Plan for the Future of SGAC 2013

As reported above, a proposal for a Latin American space conference similar to the SGC, focusing on the Latin American region, was presented during the meeting of the IAF Latin American committee this year by the regional coordinator of SGAC South America, Victoria Alonsoperez, and the Brazilian NPoC, Bruno Sarli. The initial idea for this conference aroused significant interest from the IAF Latin American members and the AEB. The initiative takes advantage of the SSP, to be held in next year in Brazil, to attract international students, professors and researchers for participation in the congress. Organised every year by the ISU, the SSP 2013 will be based at INPE, located in São José dos Campos, the main Brazilian space research centre.

► CHILE NATIONAL REPORT

2012 in Retrospect

In December 2011, the third Chilean satellite SSOT/FASat-Charlie was launch on board a Soyuz rocket from French Guiana. This launch, which marked the return of Chile to the space community, was followed by the highest authorities in the country and widely covered by the media. SSOT/ FASat-Charlie is the country's first operational satellite, as previous efforts where technology demonstrations. By the end of the commissioning phase in March 2012, FASat-Charlie became fully operational and now provides Chile with the highest resolution imagery in South America. A replica of the SSOT has been touring schools in the country, and several presentations related to the project have been conducted at different universities.

FIDAE, the most important bi-annual aerospace and defence conference in Chile recognised Chile's growing space capabilities with two space-related sessions:

- Benefits of the use of space technology for the development of countries
- Development of aerospace technologies

In addition to this, a replica of the new European launcher Vega, was on display for visitors.

After the 2011 dissolution of the Chilean Space Agency, much discussion has taken place regarding how to structure a new space agency, together with developing a space policy and law for the country. Further developments are expected in 2013.

Finally, the Chilean Google Lunar X Prize (GLxP) team Angelicvm, one of only two South American representatives, generated much public interest in 2012. The team is led by the investor firm Angelicvm and works closely with a team of young engineering students at several universities in Chile. They have had major exposure in both regional and national media and some international attention. They have attended GLxP meetings in the US, and were recognised as the “most surprising presentation” at the GLxP 2012 summit. In October, they signed a contract with Earthrise Space Inc. for piggyback transportation on the Dandelion Rover to the lunar surface.

Youth-Related Activities

A delegation from the Aerospace Society attended FIDAE and the Wings of Change Conference.

The Aerospace Society of the University of Concepción, a student society founded in 2010 by aerospace engineering students, attended both events with a delegation of around 30 students, engineers and professors.

SGAC Activities in 2012

Alejandro I. López Telgie was formally appointed as NPoC of Chile in April. There were no SGAC organised activities during the year, however meetings were held with different parties to progress this for 2013.

Plan for 2013

- To recruit more SGAC members in Chile.
- To organise a Yuri's Night event in cooperation with aerospace engineering students at the University of Concepción.
- To continue to work on shaping the idea of an SGC/SGFF-like event in South America.
- To contact organisations related to or interested in space, and to organise more official SGAC activities with them.

Interesting Links

GLxP Team Anglicvm: <http://www.teamangelicvm.cl/>

University of Concepción Propulsion Interest Group: <https://www.facebook.com/pages/COHETERIA-UDEC/66090243038>

Actualidad Especial, aerospace and astronomy news: <http://www.actualidadespacial.cl/>

► COLOMBIA NATIONAL REPORT

The Government of Colombia created the Colombian Space Commission (CCE) under the Law 2442 in July 2006. The CCE is led by the Vice President of the country. The presidency of the CCE is currently held by the Instituto Geográfico Agustín Codazzi (IGAC), which focuses on producing the cartography and topographic description of Colombia. The CCE acts as a space agency and is in charge of coordinating aerospace activities in Colombia.

The CCE is preparing the acquisition of the first satellite exclusively devoted to cartography and topography in Colombia. Proposals have been received from the USA, Europe and Russia. The CCE has four major task forces: Telecommunications, Satellite Navigation, Earth Observation and Astronomy, and Aerospace Medicine.

Additionally, there is a Colombian Network of Astronomy (Red de Astronomía de Colombia, RAC), which gathers amateurs and professionals from Colombia and hosts an annual meeting at a different

city during the second weekend of November. There is also the Colombian Congress of Astronomy and Astrophysics (COCOA), established in 2008 and which puts researchers from the country together with local and foreign speakers around a specific field of work in astronomy or astrophysics. The 1st version of COCOA was held in Medellín in 2008, the 2nd version in Bogotá in 2010 and the 3rd version in Bucaramanga in 2012.

Space Related Activities in Colombia during 2012

There are multiple initiatives both from amateur astronomy groups and the growing professional community to carry out events during the year. The National Astronomical Observatory held a School of Relativity in 2011 and the International School in Solar Astrophysics during the summer of 2012. The University of Antioquia, with its undergraduate programme in Astronomy, is a leader in observation activities with its Star parties and regular outreach events such as a series of talks about the solar system held at Explora Park between 2011 and the beginning of 2012. There is also a traditional Star party at the Tatacoa Desert in the state of Huila every summer, and at the town of Villa de Leyva at the beginning of every year.

During the last week of September, Explora Park, the Astrobiology Group from Colombia and the SAA (Sociedad Antioqueña de Astronomía) hosted the II International Astrobiology Congress in the country. Among the foreign speakers invited was the NASA Ames Research Center committee formed by the director of the Center, Dr. Simon Worden, and the graduate student Matt Daniels.

As part of Dr. Worden's agenda, he attended meetings with the presidents of the biggest and more active universities in research from the city of Medellín, as well as meeting the Governor of the State, Sergio Fajardo, and the Secretary of the Mayor. As a result, there is a joint effort between NASA Ames and the University of Antioquia to sign an agreement with other local universities and to start working together. He also had the chance to be invited by Air Force representatives to visit the Air Force Base in Rionegro (Antioquia), where several generals presented to Dr. Worden the efforts that they are conducting in space activities, such as the construction of their FACSAT 1 satellite, and there was also a verbal agreement to continue working together. The spinoff Sequoia Space, derived from the first Colombian Cubesat launched by the University Sergio Arboleda, presented its business plan to the NASA representatives and the INNPULSA Colombian Entrepreneurship Agency. As the end product of this meeting, INNPULSA accepted to support with logistics strategies and possibly financial aid so that this local start-up continues to expand and fulfills its projects.

During the last week of October, the city of Bucaramanga hosted the annual meeting of RAC and the COCOA congress, where one of the main topics discussed was the inclusion of Colombia as part of the International Astronomical Union (IAU) through the creation of an Andean Regional Node hosted in the country. The countries that would be working together in the regional node are Colombia, Venezuela, Peru, Ecuador, Bolivia and possibly Panama. Dr. Cecilia Scorza was assigned by the Office of Astronomy for Development from the IAU as the advisor to strengthen the proposal and to establish the Task Force Groups responsible for contacting representatives in the other countries involved. The conclusion of the initial meetings was that Colombia has a strong potential for leading the regional node, but there is still a lot of work to be done in terms of forming national committees to analyse the existent strengths and weaknesses in research, education and public outreach in astronomy.

Plans for 2013 and Beyond

The General Secretary of the Colombian Space Commission will go from the IGAC to the Colombian Air Force (FAC). The FAC is planning to build several Cubesats to perform remote sensing, as well as consolidating Aerospace Clusters in the Valle, Cundinamarca and Antioquia departments. These clusters will gather the companies that develop technologies for the spatial development of the country.

The IAU has assigned the groups in Colombia that will lead the three Task Forces (according to their 2010-2020 work plan). These are focused in determining the capabilities in research, education and astronomy outreach in Colombia and the surrounding countries to eventually form the Andean Regional Node for the OAD. Since Colombia presented a proposal to host the Regional Node in 2012, this ongoing project will continue over the next years.

NASA's Mission X event will be held in Bogotá again and will start in Medellín in 2013.

In February of 2013 there will be a Small Satellite Workshop with Biotechnology and Astrobiology Applications conducted by Taksha University in the city of Medellín. Several speakers from the USA and other countries, including Colombia, will be part of the expert panel.

Moreover, the construction of a new professional observatory is being evaluated and discussed with the scientific community. This observatory would be built in the Tatacoa Desert in the Huila Department, with a size ranging from 1.6 to 2 meters, which would make it the biggest in the country. This would be one of several efforts to have better astronomical observation installations for the new generation of Colombian Astronomers that will graduate from the University of Antioquia in 2013.

➤ ECUADOR NATIONAL REPORT

2012 in Retrospect

2012 was the first year that Ecuador entered the South American SGAC community. The candidacy of the NPoC was approved in late August, but participation in teleconferences and general emailing with RCs was already well established in summer 2012.

In addition to setting up the content of Ecuador's SGAC web-page, the NPoC's have gathered information about possible technical competitions, conferences, and scholarships available to South American students. It was noted that South American citizens are eligible to apply for both the CanSat and Battle-of-Rockets competitions organised jointly by the AIAA and AAS (<http://www.cansatcompetition.com/Main.html> and <http://www.rocketbattle.org/Main.html>). These international competitions for university and high-school students, respectively, are a great opportunity to involve students in a realistic aerospace project and to expose them to the international space community. Ecuador's NPoC participated in the 2011 CanSat games and will provide advice to any South American team willing to participate in the upcoming competitions. Two universities and three technical high-schools in Cuenca, Ecuador have been directly informed of the opportunity to compete in the above.

Since the current NPoC does not reside in Ecuador, it has been difficult to remotely achieve many of SGAC's goals of communicating space to youth and organizing space-awareness events. This difficulty will hopefully be overcome by adding a second Ecuadorian NPoC that resides in Ecuador. The current NPoC has been in contact with two individuals who expressed interest, yet no decision has yet been made.

Space activities in Ecuador are mainly led by the Ecuadorian Civil Space Agency (EXA). There has been significant effort from various fronts to establish communication from SGAC to EXA. However, these efforts have so far not obtained positive results. Further help from SGAC officials would thus be desired. Nonetheless, EXA keeps a well-updated website (<http://exa.ec/>) that has served as a source of information. In the last year, EXA signed an agreement with the Russian launch-provider KOSMOTRAS to launch a cubesat, NEESAT-01 PEGASO. The launch was due in November 2012, and represents the first satellite manufactured in Ecuador to be launched into orbit. The cubesat will relay radio messages that will be broadcast real-time online. These messages can be decoded by students with an Internet connection and will serve to raise awareness and get kids involved in space activities.

2013 and Beyond

2013 holds very important challenges for Ecuador's SGAC presence. First, it a local NPoC will be installed. The current NPoC will travel to Ecuador in mid-February, which will help this process. Furthermore, space-awareness workshops will be organised in technical high-schools and the University of Cuenca's engineering department, to informing the community of scholarships, competitions and conferences that might be of interest.

Also, the list of scholarships/competitions/conferences will be expanded, updated, and implemented online in the SGAC site. Care will be taken to make these references accessible to the South American community, by translating these documents to the native languages.

PERU NATIONAL REPORT

Peru's National Space Agency (CONIDA) is responsible for all space activities of Peru. CONIDA was founded in 1974 and focuses its research on the field of space science and technology in favour of national development. The research areas of CONIDA include astronomy, propulsion, geometrics, scientific instrumentation and rocketry. CONIDA is seeking to establish an international cooperation agreement with other space agencies, and in this way the small satellite programme being implemented at CONIDA will receive support and assistance from major international space agencies.



Fig. 134.



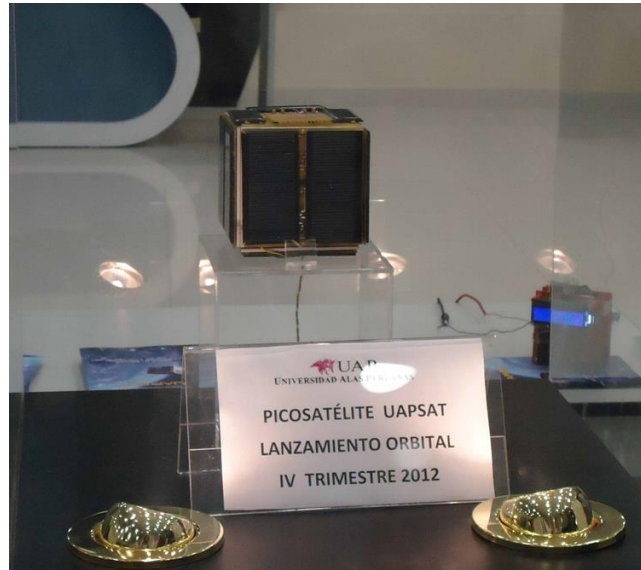
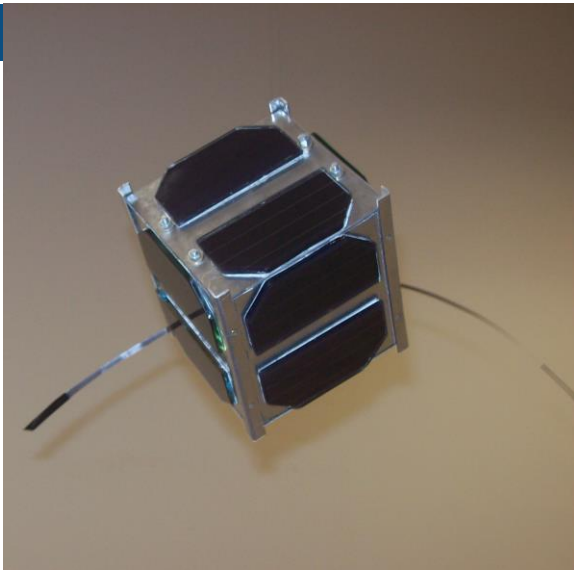
The National Aerospace Research and Development Commission (CONIDA)

Accomplishments in 2012

Peru is represented by its first NPoC, Miguel Guillen. Miguel is a student of the International Space University (ISU) in Strasbourg, France.

This year, the Alas Peruanas University has created a pico-satellite called UAP-SAT, a research and development academic project to secure Peru's first access to space. UAP-SAT is scheduled to launch in March 2013, with a Falcon-9 from Cape Canaveral Spaceport in Brevard County, Florida.

Fig. 135.



The Nano-Satellite Chasqui I and the Pico-Satellite UAP-SAT

2012 Youth Space Activities Overview

There are numbers of groups in Peru where young professionals and students can meet to share ideas and projects related to space.

- Yuri's Night is celebrated across the country
- Regional Conference on Information and Communication Technology for Latin America TICAL 2012
- International Scientific Meeting ECI 2012i <http://www.encuentrocientificointernacional.org/>
- Peruvian Meeting of Astronomy and Astrophysics <http://astronomia.uni.edu.pe>
- Annual Peruvian Aerospace Congress

Interesting Web Links

Peruvian Space Agency: <http://www.conida.gob.pe>

Peruvian Air Force: <http://www.fap.mil.pe>

Geophysical Institute of Peru: <http://www.igp.gob.pe>

Peruvian Association of Astronomy: <http://www.apa.com.pe>

Direction of Aerospace Interests: <http://www.dinaeperu.gob.pe>

Astronomy Group of the National University of Engineering: <http://astronomia.uni.edu.pe>

Nano-Satellite Chasqui I of the National University of Engineering: <http://www.chasqui.uni.edu.pe>

Pico-Satellite UAP-SAT of the Alas Peruanas University: <http://www.uapsat.info>

Studies

The CONIDA Centre for Space Studies is providing advanced training courses for public and private sector professionals in different aspects of remote sensing technology, digital processing of satellite images, geographic information systems (GIS) and global positioning systems (GPS). Under an agreement concluded between the National University of Engineering (UNI) of Peru and CONIDA, a master's degree program is being conducted in aeronautical engineering. The Technological University of Peru (UTP) also has engineering bachelor's degree program in Aeronautical Engineering.

URUGUAY NATIONAL REPORT

Among the highlights of 2012 was the progress on the establishment of the Uruguayan Space Agency, and the development of the construction of the first Uruguayan satellite at the Universidad de la Republica. Several students also took part in international competitions and achieved good results.

SGAC Uruguay has gained considerable media exposure this year. Thanks to appearances in national TV, radio and the written press the word of SGAC has spread and more young people are asking about joining SGAC.

SGAC Activities in 2012

Participation in Congresses and Presentations

Victoria Alonsopérez, NPoC, was able to attend the SGC 2012 thanks to the Space Generation Young Leadership Award. She was the moderator of the Exploration Working Group. She was then also able to stay for the IAC 2012 where she presented two papers as a co-author, and was part of an SGAC panel titled “Women in Emerging Countries”. During the IAC, Victoria also participated in the meeting of the IAF Regional Group for Latin America and the Caribbean (IAF-GRULAC).

Victoria was sponsored by the UN to participate in the UN/Japan Nano-Satellite Symposium held in Nagoya, Japan. She presented a paper that focused on the findings of the SGC 2011 Agency Working Group. The paper described the issues of spectrum allocation and provided recommendations. The presentation was very well received.

This year Victoria was the winner of the International Telecommunication Union (ITU) Young Innovators Competition. This award enabled her to participate in the ITU Telecom World 2012 that was held in Dubai, United Arab Emirates. During the conference she had a meeting with Mr Francois Rancy, Director of the Bureau of Radio-communications, where she discussed the possibility that SGAC could contribute to the ITU-R Study Groups.

Uruguayan Space Agency

Since the end of 2011 there have been several meeting to establish the Uruguayan Space Agency. Victoria Alonsoperez, was invited to take part in those meetings and provide suggestions. There has been a lot of progress and all the paperwork to establish the Space Agency has already been started. This could be a big step for the aerospace field in Uruguay.

SGAC Barcelona Zero-G Aerobatics Challenge

After winning the SGAC Barcelona Zero-G Aerobatics Challenge in 2011, Victoria Alonsoperez together with her two colleagues, Jeffrey Osborne and David Ferrer kept working on the results of the successful experiment. The findings were presented by Victoria at the IAC 2012 in Naples, Italy.

Media

SGAC Uruguay had several appearances in the media. Victoria Alonsoperez was interviewed by the National Newspaper, “El Pais”, and by several radio shows and she also had two national TV appearances after winning the SGAC Barcelona ZeroG Aerobatics Challenge. She used this opportunity to discuss her work with SGAC. Furthermore, she was interviewed by a popular Uruguayan Magazine where they highlighted her participation with SGAC.

Fig. 136.



Uruguayan NPoC, Victoria Alonsopérez in the media

Other Youth Oriented Activities in Uruguay in 2012

First Uruguayan Satellite – LAI Project

The objective of Project LAI is to launch the first Uruguayan Cubesat into orbit. This project is led by Professor Juan Pechiar who considers aerospace activities as a way to involve students with the practise of engineering. The project is in progress at the Institute of Electrical Engineering at the Universidad de la República (UdelaR). The project became funded by the National Telephone Company, Antel at the end of 2011.

Many students worked on this project including Victoria Alonsopérez and two others who worked on the attitude determination system. In 2012 Victoria was involved in the project as a volunteer advisor. The aim is to launch the satellite in 2013 or early 2014.

Uruguayan Astronomy Olympiads (Olimpíadas de Astronomía Uruguayas, OAU)

Students from all over the country participated in the OAU. The five finalist students participated in the Latin American Astronomy Olympiads that took place in Colombia. Three of them returned with gold medals.

Event of the Aeronautic-Space Center of Investigation and Outreach (CIDA-E)

CIDA-E was held in September 2012. The aim of this event was to inform the Uruguayan aeronautic community about the activities that were completed by CIDA-E in the current year. Presentations were given by distinguished speakers, mainly in aeronautical law. This event was a great opportunity for those that are involved in the aeronautical field in Uruguay to come together and discuss current issues that affect the country's aeronautics sector.

Uruguayan students at NASA

This year, as well as last year, a team of Uruguayan students were finalists at the forum organised by NASA and the National Institute of Aerospace, RASC-AL (Revolutionary Aerospace Systems Concepts - Academic Linkage). It was held in June in Cocoa Beach, Florida, USA.

The Uruguayan team developed a project in collaboration with the University of Clarkson from New York. It was a great experience for the Uruguayan students who could interact with people from NASA and from other very important aerospace US companies.

World Space Week

World Space Week took place from October 4th to 10th. Several activities took place that week. One public high school held lectures on space applications. A TV producer, Telecosmos, made several documentaries on current space missions. The shows were broadcast across the country. Furthermore, the Annual Meeting of the Uruguayan Astronomy Society took place during this week, where several research projects carried out by university students were presented.

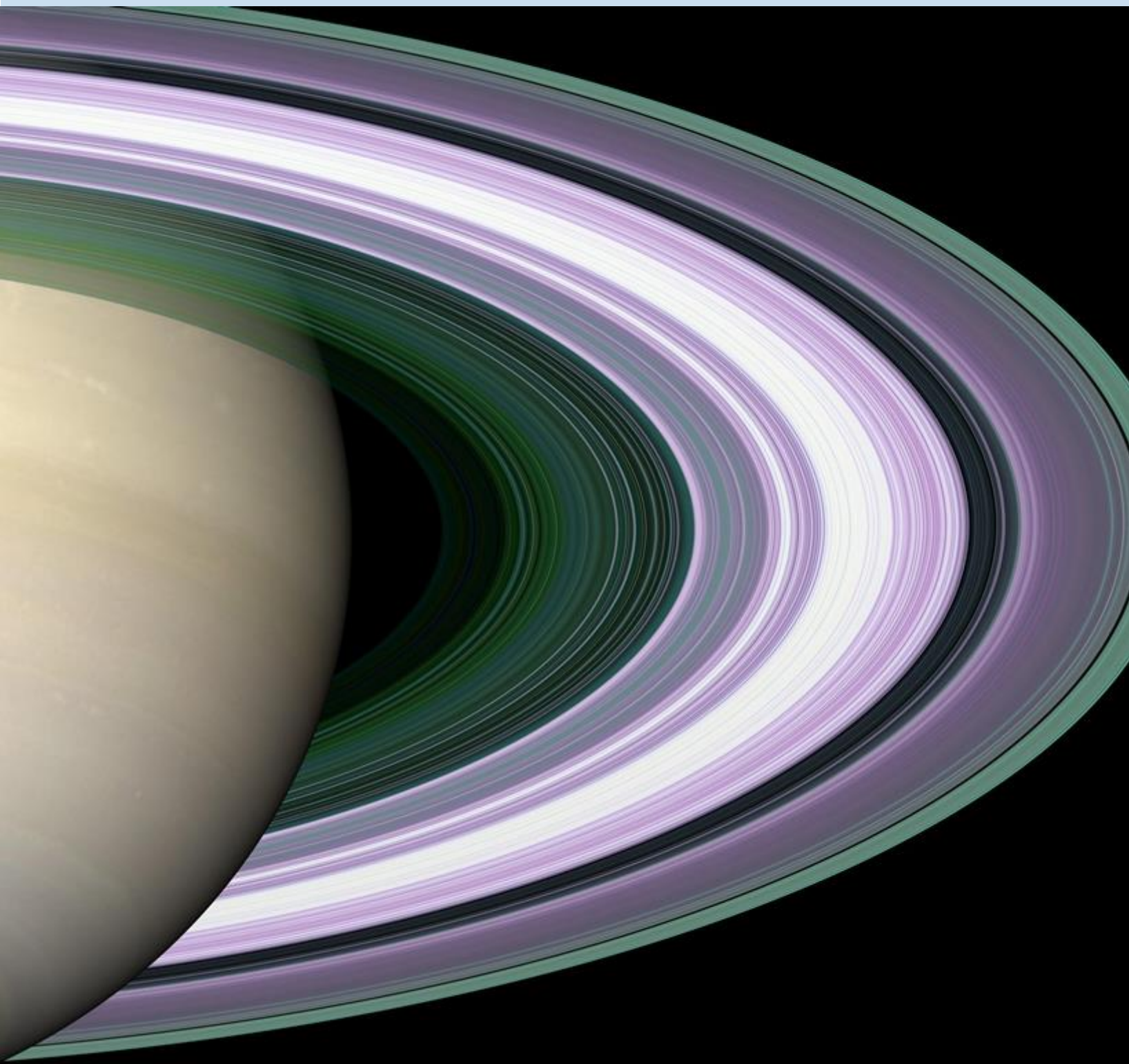
Plans for 2013

SGAC Uruguay will continue to attend youth events promoting the organization. The aim is to keep encouraging young people in aerospace activities and let them know that every field is related to aerospace.

Another priority is to encourage young people to take part of international events and facilitate information on scholarships.

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Appendix A: Websites

SGAC Websites

SGAC Official Website	http://spacegeneration.org/
Facebook	http://www.facebook.com/spacegeneration
Youtube	http://www.youtube.com/profile?user=spacegeneration
Wikipedia	http://en.wikipedia.org/wiki/Space_Generation_Advisory_Council
Twitter	http://twitter.com/#!/SGAC
Linkedin	http://www.linkedin.com/company/space-generation-advisory-council

Conference Websites

SGC	http://www.spacegenerationcongress.org
SGFF	http://www.spacegenerationfusionforum.org

Regional Facebook Pages

Africa	https://www.facebook.com/pages/Space-Generation-Advisory-Council-African-Region
Asia Pacific	https://www.facebook.com/SpaceGenAsiaPacific
Europe	https://www.facebook.com/SpaceGenEurope
Middle East	https://www.facebook.com/pages/Space-Generation-Advisory-Council-Middle-East-Region
NCAC	https://www.facebook.com/pages/Space-Generation-Advisory-Council-NCAC-Region
South America	https://www.facebook.com/pages/Space-Generation-Advisory-Council-South-American-Region/

Project Pages	
<i>NEO Project Group</i>	
Facebook	https://www.facebook.com/pages/SGAC-NEO-Project-Group
<i>Small Satellites Project Group</i>	
Twitter	https://twitter.com/sgacsspg
Facebook	http://www.facebook.com/sswg.sgac
Linkedin	http://tinyurl.com/lisgacsspg
<i>Space Technologies for Disaster Management Project Group</i>	
Facebook	https://www.facebook.com/pages/Space-Technologies-for-Disaster-Management-SGAC-Project-Group/383767891697248?fref=ts
<i>Commercial Space Project Group</i>	
Facebook	https://www.facebook.com/pages/Space-Generation-Advisory-Council-Commercial-space-Project-Group/132689546894465

Appendix B: Executive Team

Co-Chairs (Executive Council)



Chairperson
(May 2012 ►)

[Catherine Doldirina](#)

Georgia



Co-Chairperson

[Chijioke Cj Nwosa](#)

Nigeria



Chairperson
(◄ April 2012)

Michael Brett

Australia

Executive Office



Executive Director
(July 2012 ►)

[Andrea Jaime](#)

Spain



Executive Director
(◄ June 2012)

Ariane Cornell

France/USA



Treasurer

[Christopher Vasko](#)

Austria

Executive Office



Executive Co-Secretary

[Aafaque R. Khan](#)

India



Executive Co-Secretary

[Suresh Bhattarai](#)

Nepal

Communications & Public
Relations Co-Lead[Cynthia Chen](#)

Australia

Communications & Public
Relations Co-Lead[Michael Kretzenbacher](#)

Australia



Membership Manager

[Claudia Raposo Correia](#)

Portugal



Project Co-Coordinator

[Emmanuelle David](#)

France



Project Co-Coordinator

[Alanna Krolkowski](#)

Canada

Executive Office



Competition Co-coordinator [Julio Aprea](#) Argentina



Competition Co-coordinator [Remy Chalex](#) Brazil/France

Regional Coordinators (Executive Council)



Regional Coordinator – Africa [James Chibueze](#) Zambia



Regional Coordinator – Africa [Minoo Rahnasabapathy](#) South Africa



Regional Coordinator – Asia Pacific [Joyeeta Chatterjee](#) India



Regional Coordinator – Asia Pacific [Yohan Ferreira](#) Sri Lanka



Regional Coordinator – Europe [Guzel Kamaletdinova](#) Russia

Regional Coordinators (Executive Council)



Regional Coordinator –
Europe

[Damian Maria Bielicki](#)

Poland



Regional Coordinator –
Middle East

[Mahsa Taهران](#)

Iran



Regional Coordinator –
Middle East

[Hasan Aziz Kayihan](#)

Turkey



Regional Coordinator –
North, Central America
and the Caribbean

[Ashley Chandler](#)

USA



Regional Coordinator –
North, Central America
and the Caribbean

[Alan Steinberg](#)

USA



Regional Coordinator –
South America

[Nicole Jordan](#)

Colombia
















Regional Coordinator –
South America

[Victoria Alonsoperez](#)









Uruguay

Appendix C: National Points of Contact
















Africa

	Ethiopia	Benyam Abebe		Nigeria	James Okwe Chibueze
		Beza Tesfaye			Etim Offiong
	Ghana	Abdul-Mumin Yussif		South Africa	Pierre Van Heerden
		Michael Afful			Hosham Galal
	Kenya	Kinyili Antony		Sudan	Shahd Yousif
		Naftali Kagiri Kimani			Misheck Mutuzana
	Lesotho	Patsa Abram Khosto		Zambia	











Asia Pacific

	Afghanistan	Mohsen Zindagi		China	Junzi Sun
	Australia	Crystal Forrester		India	Athiye Jawad
		Kristian Grayson			Charitarth Vyas
	China	Li He		Indonesia	Bustanul Arifin





















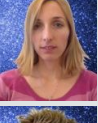







Asia Pacific

	Japan	Daichi Nakamura		South Korea	Heejin Jeong
		Ryusuke Konishi		Sri Lanka	Eranga Jayashantha
	Malaysia	Ahmad Kassim			Prasanna Deshapriya
		Harridon Mohd		Thailand	Pathara Limsira
	Nepal	Rijendra Thapa			Ravit Sachasiri
		Suresh Bhattacharjee		Vietnam	Thu Vu Trong
	New Zealand	Jack Yeh			Tri Dinh Quoc
	Pakistan	Ali Butt			

Europe

	Albania	Vojna Ngjeqari		Bulgaria	Rada Popova
	Austria	Klaus Kornfeld		Czech Republic	Pavel Paces
		Christopher Vasko			Ondrej Bruna
	Belgium	Maarten Adriaensen		France	Lucie Crescenzo
		Sarah Moens			Melanie Vincent








Europe

	Bulgaria	Raycho Raychev		Poland	Aleksandra Partyka
	Germany	Juergen Hill		Portugal	Vera Alves
		Oliver Troll			Luis Ferreira
	Greece	Angeliki Kapoglou		Romania	Maria-Laura Voda
	Hungary	László Bacsárdi		Russia	Ekaterina Rezugina
	Italy	Vanessa Passoni			Guzel Kamaletdinova
		Matteo Emanuelli		Serbia	Milan Mijovic
	Ireland	Patrick Crowley		Slovenia	Ziga Valic
		Norah Patten		Spain	Abigail Calzada
	Lithuania	Laurynas Mačiulis			Jorge Diaz
	Montenegro	Sanja Šćepanović		Sweden	Christian Olsson
	Netherlands	Lex Meijer			Liselott Strand
	Norway	Tale Sundlisæter		United Kingdom	Ryan Laird
	Poland	Jarosław Jaworski			Jane MacArthur









Europe

	Ukraine	Dmytro Faizullin		Ukraine	Mykola Gryshyn
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Middle East

	Israel	Neta Palkovitz		Saudi Arabia	Nouf Al-Jaloud
	Iran	Behnoosh Meskoob		Turkey	Metehan Sezgin
		Safoura Tanbakouei			H. Tuğça Şener Şatır
	Lebanon	Rémi Kahwaji			








North, Central America & Caribbean

	Canada	Laura Drudi		Mexico	Jorge Vega Rodriguez
	Costa Rica	Andres E. Mora Vargas			Carmen Felix
		Magaly Sandoval		USA	Tiffany Chow
	Jamaica	Marc Cornwall			Paul Guthrie

South America










	Argentina	Julio Aprea		Bolivia	Benjamin Pinaya
	Argentina	Sergio Taleis		Brazil	Bruno Sarli

South America





	Chile	Alejandro Lopez		Peru	Miguel Guillen
	Colombia	Diego Jimenez		Uruguay	Victoria Alonsoperez
		Nicole Jordan		Venezuela	Ana A. Perez
	Ecuador	Pedro Molina			

Appendix D: Administrative Teams



Communications and Public Relations Team

	Copy Editors	Diana Arias	USA		Reporters	Apoorva Sridhar	India
		Ross Findlay	UK			Sergio Taleisnik	Argentina
		Justin Park	USA/ Switzerland			Reinhard Tlustos	Austria
		Laura Rose	Canada			Stephanie Hagen	USA
	Graphics Lead	Marc Cornwall	Jamaica				






Web Team

	Web Editors	Iram Meer	USA		Web Editors	Ece Gülfem Dağdeviren	Turkey
		Scott Fisher	Australia			H. Aziz Kayihan	Turkey

ECOSOC Representatives

	Artiom Anisimov	Belarus		Frédéric Bastide	France
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Translation Team

	French Translator	Assad Anathallee	Mauritius		Spanish Translator	Rosie Shaddock	UK
	German Translator	Klaus Kornfeld	Austria		Turkish Translator	H. Tuğça Şener Şatır	Turkey
	Spanish Translator	Ana A. Perez	Venezuela				

Appendix E: Advisory and Honorary Boards

Advisory Board Members

SGAC's Advisory Board is designed to give strategic direction and advice to SGAC in order to help guide the organisation in its fulfilment of its goals and objectives. It provides comment substantively on the work of the organisation and suggests ways in which to improve its functions and its engagement. The board is composed of eight board members, each of whom serves for a two-year term. Our Advisory Board members are influential members of the international space community who have been strong supporters of the goals of SGAC and of the organisation itself.

Members in alphabetical order:

Michael Brett	Former SGAC Chair
Norbert Frischauf	Future Studies Systems Engineer for Spacetec
Yasushi Horikawa	Technical Counselor at the Japanese Aerospace Exploration Agency (JAXA)
Agnieszka Lukaszczyk	Former SGAC Chairperson and Brussels Office Director for the Secure World Foundation
Peter Martinez	Chairman of the South African Council for Space Affairs
Tanja Masson-Zwaan	President of the International Institute of Space Law
Nicolas Peter	Exploration Strategy Officer in the Director General's Cabinet - European Space Agency
Dumitru Prunariu	Chairman of the United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS)

Honorary Board Members

SGAC's Honorary Board is comprised of distinguished individuals who have been of great service to our organisation or who we have wished to recognise for their furtherance of goals similar to those of SGAC. The Honorary Board provides advice as appropriate to the experience of Honorary Board members.

Members in alphabetical order:

<u>Barbara Adde</u>	NASA SCan Policy and Strategic Communication
<u>Ciro Arevalo</u>	Former Chairman of the United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS)
<u>Ben Baseley-Walker</u>	Legal & Policy Advisor for Secure World Foundation & former SGAC Chair
<u>Yolanda Berenguer</u>	Space Education Programme Coordinator for the United Nations Educational, Scientific and Cultural Organization (UNESCO)
<u>James D. Burke</u>	US Naval Aviator and NASA Jet Propulsion Laboratory
<u>Caroline Burke</u>	Teacher and Arts in Space Advocate
<u>Chris De Cooker</u>	Head of International Relations for the European Space Agency
<u>JR Edwards</u>	Manager, Human Space Flight Programs Lockheed Martin Washington Operations
<u>Gernot Grömer</u>	Professor and Researcher of human mars exploration at the University of Innsbruck
<u>Johannes Ortner</u>	Former President of the Austrian Space Agency and of the International Astronautical Federation (IAF)
<u>Kai-Uwe Schrogel</u>	Director of the European Space Policy Institute
<u>Loretta Hidalgo-Whitesides</u>	Flight Director for ZERO-G
<u>Jim Zimmerman</u>	President of International Space Services, Inc. and Former IAF President

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