

November 2008



# SGAC

## Newsletter

An update from the Space Generation Advisory Council in support of the UN Programme on Space Applications for its global space advocates



In October this year, World Space Week was celebrated all around the world -of course also by SGAC members on a global scale.

World Space Week Celebration in Venezuela .

(Image: SGAC NPOC Venezuela)

## HEADLINES

**\* SGAC Updates: World Space Week Celebration Venezuela\* Perspective: An Afternoon with Malaysian Astronaut \* Panorama: A Global Imperative\* Regional Updates \* Upcoming Events**

Dear Space Generation,

SGAC is made up of representatives from each of the 6 UN regions, and has a larger body of representatives from nation states.

At this point we are looking for NPOCs in countries where we currently do not have representation.

For the list of current NPOCs click here: <http://www.spacegeneration.org/council#NPOC>

All the information about how to become a NPOC can be accessed here: <http://www.spacegeneration.org/node/289>

We are looking forward to your applications!

SGAC Executive Team

SGAC Executive Council

### Notes from the Team

The Launch of a new Series- From the month of October 2008, a new SGAC Publication series will be launched under the general title "Changing World". The specific theme will vary every quarter (every three months counting from the first month of the calendar year). The first theme of this, fourth quarter of 2008, is "Space and the Economy". It is concerned with the issues raised by the subprime financial and credit crisis in relation to the space community. Questions that will be addressed will include: how have the near- and medium-term plans of space companies been affected by the consequences on the financial and the real economy sectors; what is the role of space science in supporting and stabilizing an economy in periods of instability; how can this be achieved, and many others! Submission of articles is open to anybody from the international community with an interest in the subject, without prejudice. The joint two winning submissions each month will be published under a new column in the SGAC Newsletter entitled "Themed Discussion". Many of the other submissions will be cited in a quarterly issue that will be published in the form of a report on the subject each quarter. Priority will be given to original and well researched articles. Any queries and applications should be submitted to [communications@spacegeneration.org](mailto:communications@spacegeneration.org) with the title "Theme: Space and the Economy" in the Subject field. Let us deliver to you the best and most up-to-date news from around the world by being part of it!

### SAE Aero Design Annual Contest held in Brazil

The Experimental Aeronautics Association - SAE Aero design USB team - and its 5th aircraft prototype named "Turpial 5" participated this year at the SAE Aero Design Competition that was held in Sao Jose Dos Campos from October 15<sup>th</sup> to 19<sup>th</sup>. The

# IN THE SKIES

The next meteor shower is the Leonids on November 17, 2008. There will be a full Moon just a couple of days beforehand so only the brightest Leonids will be visible in the early hours of the morning.

contest consisted on building, designing and making



a small aircraft capable of flying with specific amount of weight. The one that had a perfect performance from the launching to the landing was going to get the first place < <http://students.sae.org/competitions/aerodesign/> >

This year, SAE Aero design USB – the team that was representing the Simon Bolivar University and Venezuela – used different materials like fiberglass, aluminum, wood and some others to make their ambitious project a reality, later named Turpial 5 Carbono. The team didn't get the first place in the competition this year but it got an award for the fantastic design of the Turpial 5. Now, back in Venezuela these space enthusiasts are getting the strength back to make a new and better one for 2009. For more information, photos and videos visit (soon it will be available): <http://www.aae.grupos.usb.ve/>

(Ana Alexandra Perez, NPoC Venezuela)

## Honorable Mentions

It is with great pleasure that SGAC welcomes, Ghanim Al-otaibi as the 2<sup>nd</sup> National Point of Contact (NPoC) for Kuwait. In addition, the SGAC Executive Board welcomes Muhammad Shafiq, the NPoC of Pakistan, as the newly elected Regional Coordinator (RC) for the Asia-Pacific Region who will be working alongside the other RC for the region, Bee Thakore. Shafiq was elected by a considerable majority of 80% out of a high 83% total voting turnout from regional NPoCs. SGAC looks forward to working with and for its current and future dedicated members

## Call for Submissions

\*\*\*SGC 2009 Feature Competition - SGAC calls for submission of pictures and success stories from around its membership community. The top three submissions will be printed in the bulletin for the Space Generation Congress 2009. The winner's submission will be featured on the SGC 2009 Official Brochure. Submissions can be made in a wide and versatile variety of text, graphics, pictures, video or audio files. For more information and applications please e-mail [communications@spacegeneration.org](mailto:communications@spacegeneration.org) with the title "SGC2009 Brochure Competition" in the subject field. Deadline for submissions is 15<sup>th</sup> December 2008.

\*\*\*The deadline for the submission of abstracts to the Joint Symposium of ICA Working Group on Cartography in Early Warning and Crises Management (CEWaCM) and JBGIS Geoinformation for Disaster Management (Gi4DM) has been extended to 15 November 2008. It is entitled "Cartography and Geoinformatics for Early Warning and Emergency Management: Towards Better Solutions" to be held from 19-22 January 2009 in Prague, Czech Republic. For more information: <http://c4c.geogr.muni.cz/index.html>

\*\*\*COSPAR Capacity-Building Workshop on Lunar & Planetary Surface Science, Harbin, China, 6-19 September 2009 For details and application form, see <http://astro.hit.edu.cn/cospar2009workshop/>

\*\*\*\*Call for Submission GNSS and Youth Stories YGNSS is currently looking for "GNSS and Youth Stories" from around the world. GNSS has been invited to make a presentation on its activity at the 3rd ICG meeting taking place in December at Pasadena, California. For more info, visit: [www.geolinks.org/icg3/index.html](http://www.geolinks.org/icg3/index.html) Deadline: Submission deadline is Friday, November 21, 2008.

(DanielaPetrova-Communications and PR Leader)

## Call all applicants: SGAC Vienna

### Office seeks Intern:

SGAC is currently looking for a full time intern (40h/week) for its main office in Vienna.

The internship can have a duration of 3-6 months. The intern will work under the supervision of Executive officer.

Necessary Qualifications:

- Professional Fluency in English
- Ability to communicate clearly and concisely, both orally and in writing; good drafting skills
- Knowledge of computer applications including word processing, spread sheets, databases, graphs and charts, e-mail and internet
- Experience in outer space affairs highly desirable

The Intern will receive 500 Euros per month, for the SGAC Annual Report 2008 as a deliverable. Other benefits might include may include working with space enthusiastic people in the biggest youth space network in the world as well as attendance at conferences, SGAC events and UN COPUOS meetings, working with space policy experts, access to relevant space policy books, documents, magazines, etc

To apply please send your resume as well as the letter of intent to the Executive Officer Agnieszka Lukaszczyk a. [lukaszczyk@spacegeneration.org](mailto:lukaszczyk@spacegeneration.org) by Friday Nov 21st.

## World Space Week in Venezuela

World Space Week Celebration 2008, Venezuela



Last week, the Astronomical Research Group of the Simon Bolivar University < [www.usb.ve](http://www.usb.ve) >

coordinated an activity to celebrate World Space Week 2008. The event began with a short presentation about this celebration and how space technologies have done an incredible impact in our day lives and how they have been increasing for the last years.

After that, the members - space enthusiasts, used their Meade LX-200 telescope and started the astronomical observation as commonly they do.

For more information and photos visit:

<http://real-spatium.blogspot.com/2008/11/semana-mundial-del-espacio-2008.html>

(Ana Alexandra Perez, NPoC Venezuela)

## Report on the 10th annual ILEWG conference

SGAC's Amelie Sinclair reports back from the 10th annual ILEWG conference. The 10th annual ILEWG joint meeting brought forward the remarkable scientific progressions into the upcoming lunar explorations, and it also demonstrated outreach for a significant topic that is perhaps a more mundane, yet more immediate one. The lunar venture has quietly and without fuss become focused for a highly Internationalized effort. The ILEWG Cape Canaveral Declaration makes the commitment apparent. <http://www.lpi.usra.edu/meetings/leagilewg2008/declaration.shtml> The statement seeks advancement into an internationalized dialog for; "Society, law, policy, and commerce, public outreach, education, and the multicultural aspects". I was kindly given the opportunity to address the working group on space policy, I did bring forward suggestions for an integrated and treaty level perspective, and I wonder if perhaps an innovative and holistic space policy dimension now lies within easy reach. Today is Election Day in the US, the count of each voter will be tabulated by machine as is so much else of our everyday life. Still we might ask ourselves what does the formative capacity of information technology propose for the outcome of a well-integrated global society. Space development might be viewed as information development, genuine substance that is easily found within our modern and interconnected world. Lunar development might even be viewed as offering us rapid planetary development, if we choose endowed, integrated and information-based pathways as providing the unfolding collaborative basis and the mutual objectives. The moon can serve as the powerful and uniting symbol that brings us together in order to face the problems of our time, because space policy

can also become a basis for an enabled information policy. In this way providing governments and peoples everywhere an opportunity for the best possible co-operative levels of information enabled analysis into many advanced problem solving and AI perspectives. The lunar settlement will be a highly sustainable one, each pound of cargo will be an effective and optimal one, dedicated to providing facilities, habitats and further realization of the lunar potentials. Yet the view from a newer world where the obtaining of water becomes a leading factor and the growth of a plant will indicate a success beyond measure, reflects back to us our prolific and imaginative status as residents of the fertile blue home planet. The space age proposes so much, not only indicating our tentative outreach into the beyond, but also providing a view back at our human history and a focus for an original and creative way forward. We must ensure that lunar development is undertaken as an inspiring and a collective international achievement, and in doing so we must search for the important and parallel potentials of the near earth space capacities to be brought into play. Near space development offers us the collective vehicle for a planetary development that will formally reflect the upcoming and historical lunar development perspective. The space age has always been and will continue to become the practical and utilitarian information age, and the information age is now made possible by the space age. As working partners within a progressive International Space Policy, the peoples of the world and even the moon can certainly evolve together, shedding the reflected and unique light from the lunar landscape into the essential needs of a planet in transition. The view from the moon should not become a nationally isolated or a privatized one. It can easily become as a collaborative and a highly perceptive one, one that sees space development as providing the platform for a newer age, for this planet, and even for the settlement of the planets beyond. Within the medium of a progressive International Space Policy, the finite instruments that closely circle our earth can give us all a far greater ability to relate, to come together, to discover and resolve our problems, to learn how to live in a sustainable way and to care for our beautiful world. The view from the moon can encompass all that we seek together and that we aspire to, and it can mark the turning point in the emergence of man and the long and mutual journey towards the stars.

(A Sinclair, Santa Cruz California)

## The Uniqueness of Chandrayaan-1 CH-1

Chandrayaan's terrain mapping camera is in itself a state of art technology having resolution of 5m at 100km altitude from the Moon's surface. In comparison, earlier missions of NASA such as Clementine, Lunar Prospector and even Chinese Change-1 have mapped the moon with resolutions around 40, 50 and 160m from altitudes of 300, 400 & 200 Km respectively.

The NASA has put two equipments onboard, namely the Moon Mineralogical mapper and The Synthetic Aperture Radar. Many other countries have also benefited, including Bulgaria, which has launched its own experiment onboard. The Hyspectral imager (HYSI) for mineralogical mapping will also provide additional and complementary data. Other instruments in the form of lunar laser ranging instrument will be used to make a 3D atlas of Moon. Although there is a wealth of data available for the Moon, most of this data will be new to us so big focus lies on the instruments like mini -SAR, M3 and the Moon Impact Probe because they will do something different, something that has never done before on any mission. The Moon impact probe will not be the first object to hit the moon surface, but it could be the first manmade object to hit the Moon's polar caps which are on the focus of every space fairing country especially U.S for water-ice presence. Regarding the Esa's contribution, SMART-1 legacy instruments have been invested in Chandrayaan-1 but the whole suite of experiments comprises the Moon's mapping in UV, infra-red and near infra red and also X-rays and that would be something unique for a single mission. This mission is a unique collaboration in Moon exploration.

Inform, inspire, innovate.

(Abishek Sharma and Daniela Petrova)

## Malaysian Astronaut, Dr, Sheikh Muszaphar meets SGAC in Vienna

On Monday, October 27th, SGAC Executive Officer, Agnieszka Lukaszczyk, had the pleasure to meet with the Malaysian Astronaut, Dr. Sheikh Muszaphar, and introduce him to the activities of the SGAC. In addition, Dr. Muszaphar agreed to be interviewed by the members of SGAC. Dr. Sheikh Muszaphar was visiting Vienna on Monday to present the UN badge he took to space with him to the Deputy Director General of the United Nations Office in Vienna (UNOV), Mr. Franz Baumann. SGAC's Agnieszka Lukaszczyk was invited by the Director of UN Office of Outer Space Affairs (OOSA) Dr. Mazlan Othman to

attend the ceremony as well as to have a one on one meeting with the astronaut. Dr. Muszaphar has been very eager to learn about SGAC and agreed to be interviewed by its members. Please submit your questions to Agnieszka Lukaszczyk [a.lukaszczyk@spacegeneration.org](mailto:a.lukaszczyk@spacegeneration.org) by Monday, November 24th. Dr. Sheikh Muszaphar Shukor (born Sheikh Muszaphar Shukor Al Masrie bin Sheikh Mustapha on July 27, 1972) is a Malaysian orthopaedic surgeon and is the first Malaysian to go into space. He was launched to the International Space Station aboard Soyuz TMA-11 with the Expedition 16 crew on October 10, 2007. Sheikh Muszaphar flew under an agreement with Russia through the Angkasawan program, and returned to Earth on October 21, 2007, aboard Soyuz TMA-10 with the Expedition 15 crew members, Fyodor Yurchikhin and Oleg Kotov, after nine days aboard the station. Sheikh Muszaphar was born in Kuala Lumpur and attended high school at Maktab Rendah Sains MARA in Muar. He then earned a Bachelor of Medicine and Surgery degree from Kasturba Medical College, Manipal, India. He was pursuing his Masters of Surgery in Orthopaedic Surgery at University Kebangsaan Malaysia when he joined the 'Angkasawan' program. CAREER:

Sheikh Muszaphar is an orthopedic surgeon, and a university medical officer in medicine at the Universiti Kebangsaan Malaysia. In 1998, Sheikh Muszaphar worked at Hospital Seremban, followed by a move to Kuala Lumpur General Hospital in 1999, and was on staff at Hospital Selayang from 2000 through 2001. Sheikh Muszaphar is also a part-time model. ANGKASAWAN PROGRAM: Sheikh Muszaphar and three other finalists were selected at the beginning of 2006 for the Malaysian Angkasawan spaceflight program. The program arose after Russia agreed to transport one Malaysian to the ISS as part of a multi-billion purchase of 18 Russian Sukhoi Su-30MKM fighter jets by Malaysia. After completing initial training at Star City in Russia, Sheikh Muszaphar and Faiz Khaleed were selected to undergo an 18-month training program in Russia, at the end of which Sheikh Muszaphar was chosen as the prime crew member, while Faiz Khaleed served as back-up. Following the final medical tests and training examinations, on September 17, it was announced that Sheikh Muszaphar would be flying on Soyuz. During a NASA news conference with the Expedition 16 crew on July 23, 2007, and news conferences following his selection, Sheikh Muszaphar said he hoped to be able to take various live cell cultures to study during his flight. SPACE EXPERIMENTS: Sheikh



Muszaphar performed experiments on board the International Space Station relating to the characteristics and growth of liver cancer and leukemia cells, the crystallisation of various proteins and microbes in space.[23] The experiments relating to liver cancer, leukemia



cells and microbes will benefit general science and medical research, while the experiments relating to the crystallisation of proteins, lipases in this case, will directly benefit local industries. Lipase are a type of protein enzymes used in the manufacturing of a diverse range of products from textiles to cosmetics, and the opportunity to grow these in space will mean a possibility for Malaysian scientists to take a crack at an industry worth some USD2.2bil (MYR7.7bil) worldwide by producing these locally.

(Agnieszka Lukaszczyk, Executive Officer)

### "Humans in Outer Space - Interdisciplinary Odysseys"

European Space Policy Institute (ESPI) and the European Science Foundation (ESF) on October 28th presented the book "Humans in Outer Space – Interdisciplinary Odysseys" published by SpringerWienNewYork during a meeting at the International Council for Science in Paris. This book is the first in the newly established series "Studies in Space Policy", which is edited by ESPI and published by SpringerWienNewYork. It is based on a conference ESPI jointly organized with the European Science Foundation with the support of ESA and the Austrian government in October 2007 in Vienna. SGAC's Agnieszka Lukaszczyk co-ordinated and managed this particular conference. It was the first comprehensive trans-disciplinary dialogue on humans in outer space. This dialogue, now contained in the book, goes further than regarding humans as better-than-robot tools for space exploration. It investigates the human quest for odysseys beyond Earth's atmosphere and reflects also on the implications of finding extraterrestrial life. The book is co-edited by Luca Codignola, Head of the Institute of History of Mediterranean Europe of the National Research Council, Genoa, and Kai-Uwe Schrogl, Director of ESPI in

## GET INVOLVED

Send in your contributions and suggestions to make this a better newsletter for you!

([communications@spacegenerations.org](mailto:communications@spacegenerations.org)) Don't forget to share this with all space advocates you know!

[www.spacegeneration.org](http://www.spacegeneration.org)

# PERSPECTIVE

## An afternoon with Korea's first Astronaut, Dr. So Yeon Yi - a proud ambassador of SGAC

by Bee Thakore



During the International Astronautical Congress, SGAC's Regional Coordinator for Asia Pacific, Bee Thakore, had the privilege of talking with Korea's premiere astronaut So Yeon Yi. Bee relays the conversation here for the benefit of all at SGAC members who So Yeon Yi would like to share her experience with. During the International Astronautical Congress, SGAC's Bee Thakore had the privilege of talking with Korea's premiere astronaut So Yeon Yi. Bee relays the conversation here for the benefit of all at SGAC members who So Yeon Yi would like to share her experience with us...

Bee: What inspired you to be an astronaut? Did you always want to be one?

So Yeon Yi: Space inspires all students especially those who are interested in Technical engineering – they dream about space. When I was young, I saw cartoons, movies and dreamt about the visionary things one sees in these. I thought space would be a reality in our lifetime and that we will go to space via trains in large numbers. As I concentrated in later years in school, I forgot my dream. I studied Science hard at middle school, but there was no space program in Korea in those days. One day I read in the newspapers that Korea will be starting a space program and that it is working on its own rocket and later plan for human spaceflight. So, I thought maybe one day I will be a part of it...

I studied really hard to research and my interests lay in finishing my phd. I was very dedicated to my experiments and sometimes even forgot lunch. Once the possibility became real seeing a call for astronauts, I thought maybe I can conduct experiments in space!

Bee: Several of our SGAC members have applied to the current calls for astronauts from their space agencies and are making great progress. Could you describe how it was for you during the selection and training process?

So Yeon Yi: The first call had 36000 applicants- all had great qualities and were superb individuals. I did not think I would make it. I was honoured to compete with them during the rigorous selection process. The training and selection strengthened us as a group and I value all their support even now.

Bee: Were you very excited at the time of lift off? The whole country and world had its eyes fixated on the event!

So Yeon Yi: We had gone through so much training that it was almost well rehearsed in terms of what we had to do. I tried to think that 'this is real' during training all the time, so I was not nervous at all during launch. But even at that time I couldn't believe that I was about to fly!

Bee: So any advice for our aspiring astronauts?

So Yeon Yi: Enjoy what you do. Compete in the selection process and enjoy it. It helped me immensely to make it all the way. There is a proverb in Chinese that goes "Person who does his/her best cannot like it and the Person who does not like it cannot do his/her best".

Delegates from SGC 2008 present So Yeon Yi with the International Humans in Space Flag designed by the Case for Humans SGC team

Bee: Can you share some of your experience of working with the Russian Space Program and your time at the International Space Station?

So Yeon Yi: I learnt Russian before I went to Star City for the training. I concentrated on the exercises and kept focused on the procedures as it is a very rare chance to get to fly. Just after arriving at the ISS, I experienced some motion sickness, but recovered soon after. It took me 2-3 days to get acclimatized and adjusted. The ISS is close to the Earth, but it is in a very, very different environment. On Earth, because of the atmosphere all the stars in the sky almost appear as very similar shades of colour. But when one looks out of the ISS, due to the lack of the atmosphere, the stars look blue, some look green or white – depending on their temperatures!

Bee: Fascinating! Did you see any other unusual phenomenon?

So Yeon Yi: The most stunning was lightning. On Earth, Lightning is seen to be discharged from clouds towards the land. The same takes place in the outward direction to space too! It was actually very spectacular but also frightening. I witness lightning several times.

Bee: As a researcher, you must be very eager to find out the outcomes of your experiments in space. Can you tell us about the research?

So Yeon Yi: I conducted several experiments but as a lab researcher. There are several specialists for whom I conducted experiments – for e.g. I studied change in genome of fruit flies during my flight. I am not a PI (Principal Investigator), but I reported thoroughly on what happened, what problems I had and how they were solved. So a lot of the results will depend on the conditions and what all happened during the flight.

Bee: Would you like to travel to Moon or Mars?

So Yeon Yi: Definitely! I pray that they pick me for Moon. I would love to see both Moon and Mars.

So Yeon Yi with SGAC Members and supporters at the SGAC Exhibit Area during the International Astronautical Congress 2008 in Glasgow

Bee: What do you plan to do now that you have attained your dream of being an astronaut?

So Yeon Yi: Before becoming an astronaut I was not as aware of the strides that we need to bring in our educational systems and how important it really is to provide the young people –students in schools and colleges with the right tools and above all, inspiration. I am considering furthering research and being very active in inspiring the young generation.

Bee: You have all our support for that noble ambition! If you would like to leave the general public with one last message, what would it be?

So Yeon Yi: I would like everyone to remember that 'Earth is also a planet' and is surrounded by space. Space is the origin of birth, life and all that we are, have and treasure. We need and should keep that in mind.

We thank So Yeon Yi for taking the time to engage with the Space Generation and welcome her as the Official Astronaut of the Space Generation Advisory Council! We hope that we can help her in any way possible to inspire the next generation of space leaders. We also look forward to the Space Generation Congress and International Astronautical Congress in Daejeon in the Republic of Korea in 2009!

collaboration with Agnieszka Lukaszczyk, Executive Officer of the Space Generation Advisory Council (which is hosted by ESPI) and ESPI research Fellow Nicolas Peter. Both, Agnieszka Lukaszczyk and Nicolas Peter also authored one chapter each in the book. From ESF's side Monique van Donzel and Jean-Claude Worms, the respective Heads of the Humanities and the Space Science Units were the guiding participants in this project.

#### About this book:

The space-faring nations are heading for the human exploration of the Moon, Mars and Near-Earth Objects. They might be soon prepared with regard to technology development. But they also need to benefit from the humanities (history, philosophy, anthropology), the arts as well as the social sciences (political science, economics, law) to implement their plans. The European Science Foundation (ESF), the European Space Agency (ESA), and the European Space Policy Institute (ESPI), supported by the Austrian Ministry for Transport, Innovation and Technology, have organized the first comprehensive trans-disciplinary dialogue on humans in outer space.

This dialogue goes further than regarding humans as better-than-robot tools for exploration. It investigates the human quest for odysseys beyond Earth's atmosphere and reflects also on the implications of finding extraterrestrial life.

#### Downloads and links:

- Order form "Humans in Outer Space – Interdisciplinary Odysseys"



## The SGAC News team is recruiting!

We currently looking for volunteers that can

- ★ Help populate interesting news stories
- ★ Interview people with questions relevant to our SGAC community
- ★ Contribute astronomy facts for our 'in the skies' section
- ★ Finding a key issue/article we want to discuss with the members in our community
- ★ Help liaison with the SGAC Communication team in order to streamline the newsletter to requirements

This will allow volunteers to meet dynamic people & experts and interact with them on topical subjects of importance as young professionals and active space advocates.

Join us at

[communications@spacegeneration.org](mailto:communications@spacegeneration.org)

## How can I play a part in making space happen?

SGAC is run by young people for young people. If you share our enthusiasm for space and a strong willingness to change what we do in space in the coming years, we would like to hear from you. If you would like to work with fellow space advocates from all over the world or would like to use some of your spare time, here's how you can help:

- ★ Become a National Point of Contact  
Check out [www.spacegeneration.org/regions](http://www.spacegeneration.org/regions). If your country does not have a NPoC, please email [officer@spacegeneration.org](mailto:officer@spacegeneration.org)
- ★ My country already has an NPoC...
  - ★ Check out volunteer position listings at [www.spacegeneration.org/volunteer](http://www.spacegeneration.org/volunteer)
  - ★ Find out what you can get involved in [www.spacegeneration.org/activities](http://www.spacegeneration.org/activities)
- ★ Studying marketing or good at strategic communications? Help us devise better communication tools  
[www.spacegeneration.org/node/34](http://www.spacegeneration.org/node/34)
- ★ Check our website for regular updates!

[www.spacegeneration.org](http://www.spacegeneration.org)

- Amazon: [http://www.amazon.com/s/ref=nb\\_ss\\_gw?url=search-alias%3Daps&field-keywor...](http://www.amazon.com/s/ref=nb_ss_gw?url=search-alias%3Daps&field-keywor...)

- Conference site "Humans in Outer Space – Interdisciplinary Odysseys", 11-12 October 2007, Vienna: [http://www.espi.or.at/index.php?option=com\\_content&task=view&id=171&Item...](http://www.espi.or.at/index.php?option=com_content&task=view&id=171&Item...)

- Springer: <http://www.springer.com/springerwiennewyork/engineering/book/978-3-211-8...>

(Agnieszka Lukaczzyk, Executive Officer)

## ToAP - Training of Astronomy Promoters

SGAC and Uludag University Project Office in Turkey collaborates to organize "ToAP - Training of Astronomy Promoters.

We are looking forward to welcome you on this project and to work together with you on different aspects and cooperation elements in organizing international YOUTH projects for IYA 2009. We hope that you are as excited as we are with this Project which is specially designed for young people who want to popularize Astronomy in public. Training courses will be held in Bursa-Turkey between 18th-24th May 2009. ToAP is not only based on a 'one way information-flow' but requires an active participation from participants. We want you to send your partnership forms and motivation letters by 31st of October if you are interested in joining. We will apply to the EU Youth in Action program on 1st of November deadline.

Target Group: Training courses are for voluntary and professional youth workers, working directly with youngsters. Active members from Astronomy Clubs, Astronomical Societies and Science related NGOs are invited to be a part.

Participants should be between 18 - 35 years old and should have a good level of English

Group size: max. 40 participants (1 or 2 representatives per partner up to the geographical distribution) Please take in to consideration that We want to invite as many country as possible to keep diversity. Only applications from YiA Programme Countries (European Countries + EFTA ) will be taken into consideration.

Aims and Objectives: To reflect on the content of a youth exchange (how to develop a thematic as a tool for intercultural learning; how to promote the active participation of young people before, during and after the exchange; how to include evaluation and follow-up in a youth exchange),

\*Defining quality elements of a good cooperation.

\*Brain storm on IYA2009 activities.

\*To deepen knowledge, skills and attitude in order to better organize astronomy related youth projects.

\*Importance of an effective partnership to ensure Visibility and Valorisation in Youth Projects.

Youth Partner Network can also provide: Training on the major priorities of the YOUTH program (risk prevention & crisis management, inclusion, ICL, evaluation and follow-up...),

An opportunity to meet possible partner groups and to prepare projects onsite with the help of the sessions.

Schedule:

\*Amateur Telescope Making Workshop: Participants will be able to make their own telescopes (in a group) during the project. All materials related to ATM workshop will be provided by organizing committee. Local experts will be available to help on details. Participants will be able to take ready telescopes at the end of the training course.

\*Youth Sessions: Detailed information on European Union Youth and Education program will be given by international trainers. Different cooperation elements will be discussed before starting to work on their own cooperative youth projects. We want to use these sessions as contact making activities for future youth projects.

\*Astronomy Sessions: As a part of pro-active character of the training course, We are expecting at least intermediate amateur astronomy enthusiasts. This floor will be an interactive platform to listen participants' presentations on different astronomy topics and to comment on how to improve presentation technics to inspire public.

\*Communication Sessions: How to teach astronomy in public? Different methods for different age

groups? How to communicate? will be highlighted. \*Intercultural Sessions: We are inviting you to share your culture and explore other cultures in special sessions.

\*Partnership Building Sessions: During the ToAP, each one will get the opportunity to present its own organisation in a visual way. Please be aware that there will be no time within the organised frame of the TC to present your organisation in front of the whole group. We however encourage you to bring as much -relevant- materials as possible. In case you wish to bring Powerpoint Presentations or CD Rom with pictures, there will be an opportunity to show these during the informal moments and the coffeekbreaks.

Practical Information: Project will be in Bursa-TURKEY between 18th-24th May 2009. %70 of your travel costs and %100 of your visa costs will be reimbursed. You will be only eligible to receive funding on receipt declaration. Accommodation, meals and coffee breaks will be provided by the organisation committee. Next Step: If you want to be a partner to "Training of Astronomy Promoters" please e-mail Halit at halit@uzaybilim.com. You may define your participants later on, We just need organizational partnership forms at the moment. Please send expected travel costs (economy class) by E-mail to halit@uzaybilim.com. Please send signed and stamped PartIII form by fax to : +90224 2940078 ( attention Dr. Deniz Bagdas )

Deadline: 31st of Oct Please send original PartIII form to the following adress Deadline 15th of Nov

Dr. Deniz Bagdas; Uludag Universitesi Rektörlüğü; Rektörlük Danışmanlar Kati Proje Yönetim Merkezi

Görükle Kampusu 16059 Bursa-TURKEY. Best regards and clear skies..

(Halit MIRAHEMETOGLU - Middle-East Regional Coordinator)

## **SGAC Regional Coordinator for Asia Pacific joins Planetary Society's Board of Directors as youngest Member**

Bijal "Bee" Thakore has joined The Planetary Society's Board of Directors as its youngest member.

Bee is the Regional Coordinator for Asia Pacific region for the Space Generation Advisory Council. She serves as a liaison with local leaders and helps run regional projects with which youth groups and young students and professionals can work in an international environment and build their leadership skills. Bee leads the 50 Years Visions Project at SGAC. Bee also works as a technical consultant for a number of global clients, including working with LEGO System A/S as a Global Client Development Officer for LEGO Play for Business. Representing the activities of young people internationally as a liaison for the 2009 International Year of Astronomy, Bee is also a member of the Special Advisory Committee to the International Astronautical Federation on Space and Society. Thakore's goal is to help make humanity a multi-planet species. Past positions include serving as a Teaching Associate for the International Space University in Strasbourg, France, where she furthered her interdisciplinary research in Robotics and In-Situ Resource Utilization for space exploration. She also worked for the X PRIZE Foundation, where she devised prize concepts to bring radical breakthroughs in attempts to solve some of the world's biggest challenges such as eradicating poverty and providing clean drinking

water to all. Bee began her career at Airbus UK in the Composites Research Unit and worked for Rolls-Royce Defense Aerospace Ltd as part of the experimental flight test team for the Adour Mk 951 Jet Engine. She received her Masters in Aerospace Engineering with honours from University of Bath in the UK and is an alumna of the International Space University Masters in Space Management and Space Studies Program. The Planetary Society, founded in 1980 by Carl Sagan, Bruce Murray, and Louis Friedman, inspires and involves the world's public in space exploration through advocacy, projects, and education. Today, The Planetary Society is the largest and most influential public space organization group on Earth. Dedicated to exploring the solar system and seeking life beyond Earth, The Planetary Society is non-governmental and nonprofit and is funded by the support of its members. Leaders in Space Exploration The Planetary Society leads by example: through private ventures, such as the solar sail; through public-private partnerships, such as the Mars Microphone; through promoting grand and ambitious adventures, such as human missions to Mars. We continue to find more ways for members of the public to participate directly in humanity's evolution into a multi-planet species — as we inspire the people of Earth to explore other worlds and seek other life.

To find out more about the Planetary Society visit their website [www.planetary.org](http://www.planetary.org) - SGAC has been partnering with the Planetary Society on various projects including the 50 Year Vision Project. SGC Manager, Kevin Stube, has been serving on the Planetary Society's Advisory Council since 2007. SGAC is very excited to have Bee on the Planetary Society's Board of Directors and wishes her best of luck in this new endeavor. Bee would like to share a message with the SGAC members:

Dear Space Friends around the world, Greetings to all from London!

Do you know of The Planetary Society? The Planetary Society has inspired millions of people to explore our worlds and search for the answers to the questions most pertinent to our place in the cosmos - is there life out there? how does the Earth work and sustain us all? how is it to live on Mars? what new technologies will allow us to ensure our a secure future for all of humanity? and the list goes on...Established by Carl Sagan, Louis Friedman and Bruce Murray, The Planetary Society is the world's largest non-governmental planetary and space interest group.

With great joy I would like to share an update with you: I have recently been invited on to the Board of Directors of The Planetary Society! In my role as a Board Member, I shall provide input w.r.t the international focus as well as youth mandate via the significance of our work at Space Generation Advisory Council. I would like to represent all your collective voice and not just a personal one in my activities with TPS as I feel that this unique opportunity is an invitation for the youth to stop being a 'consumer' of our space programs. It is for us to become serious, reliable and equal partners in framing today's space policies and programs that will affect our future and make sure that they are strengthened by strong international collaborations. SGAC and TPS have valued each others' activities and I would also like to mention that we also have the good fortune of having Kevin Stube, our ex-Executive Secretary and SGC 2007-08 Manager as a member of the

advisory council to The Planetary Society.

So, I extend this invitation to you to help us become these 'serious partners' that we talk of. My question to you IS: How can youth be more proactive in helping shape our space programs? These can be space programs for mapping Earth processes and understanding them better, for improving disaster management, for exploring new 'earth's', to learn how to back up our biosphere, to become multi planet species and to bring about all the cutting-edge technologies that are needed to get there, etc. I invite your comments and suggestions on how we can finally go boldly where no one has been before! Is it via more outreach? Is it via using our social networks and Web 2.0 tools? How would YOU do it?

I look forward to all your interesting thoughts!

Ad Astra!

(Bijal Thakore)

## **African Regional Coordinator fully funded to attend 18th UN/IAF workshop**

Fully funded SGAC Regional Coordinator for Africa, Castory Ntullu, attends the 18th UN/IAF workshop in Glasgow, UK: The United Nations Office for Outer Space Affairs (UN-OOSA) and the International Astronautical Federation (IAF) jointly organized a Workshop on the theme "Integrated Space Technology Applications - Support to Managing Potentially Hazardous Events", from 26 to 27 September 2008. The Workshop was held in conjunction with the 59th International Astronautical Congress (IAC). This Workshop was the eighteenth meeting jointly organized by the Office for Outer Space Affairs, under the United Nations Program on Space Applications, and by the International Astronautical Federation. It builds upon the recommendations and experience gained from previous workshops. The Workshop addressed a range of space-related technologies, services and information resources available for support to hazard management from short-term emergency activation of resources to help for long-term planning of mitigation activities. Full details are available below by clicking the session days - Friday Session: <http://www.iafastro.org/index.php?id=678>

Saturday Session: <http://www.iafastro.org/index.php?id=677>

SGAC has had a strong presence in these UN/IAF workshops. This year SGAC was represented by the Regional Coordinator for Africa, Castory Ntullu. In 2007 the workshop took place in Hyderabad India and SGAC was represented by the Executive Officer, Agnieszka Lukaszczyk. In 2006 the National Point of Contact for India (now the Regional Coordinator for Asia Pacific), Bee Thakore, presented on behalf of SGAC in Valencia, Spain. Report of Castory's Participation at the UN/IAF Workshop in Glasgow, Scotland UK.

As the Space Generation Advisory Council (SGAC) Regional Coordinator for Africa, I had an opportunity to participate at the United Nations/International Astronautical Federation Workshop on Integrated Space Technology Applications-Support to Managing Potentially Hazardous Events, which was held in Glasgow from 26th - 27th September 2008. We had an opportunity to share experiences and

ideas on the Integrated Space Technology Applications, whereby different UN experts and other representatives from various space agencies and organizations got an opportunity to address the Workshop delegates on various issues concerning the management of hazardous events by the application of space technology and this is because researches have shown that Space Technology is the prime solution to the World's problems. I can say that there is a need of promoting space technology especially in the countries which are vulnerable to natural disasters such as Earthquakes, volcanic eruption, floods etc. The presentations were grouped into two main sessions, namely Technical Sessions 1 and 2. Technical Session 1, contained two topics:

International and Regional Initiatives and Cooperation

Capacity Building in the area of hazards management and space technology. Technical Session 2 was about the integrated application of space technologies to address potentially hazardous events management. Most of the presentations here were focused on the practical experiences, results and challenges by various countries and regions, in addition to that also the presentations focused on space related technologies and information resources available for addressing hazards management, whereby case studies were presented in this session by the participants on the use of space technologies in sustainable development programs supporting hazards management in developing countries.

Brief summary of some presentations as they were presented in all the Technical Sessions:

- United Nations Program on Space Applications: Activities related to hazardous events management, which was presented by Ms. A. LEE who is in charge of the UN Program on Space Applications working with the UN OOSA.
- An overview of the UN-SPIDER Program which was presented by Ms. Mazlan OTHMAN who is the Director of the UN OOSA; she gave us an insight on how UN SPIDER helps on the field of Natural disasters management.
- Capacity Building Initiatives in Space Technology and Research in Philippines, this topic has been presented by Ms. C. CELEBRE who is working with the Atmospheric, Geophysical and Astronomical Services Administration.
- Earth Observation Applications Support to Hazards, Disasters and Security, this was presented by Mr. G. AUBE who is working with the Canadian Space Agency, he was very kind as to share with us his experience on how natural disasters can be clearly managed by the use of space technology.
- Pilot Project on Comprehensive Determination of Earthquake Precursors on the Basis of Helio-Geographical Remote Sensing Data, this was presented by Mr. A. ROMANOV, from Russia who is working with the Institute of Space Device Engineering.
- Using Fractional Ownership Communication Satellites to Provide Regional Emergency Communication Infrastructure, this interesting topic was presented by Mr. A. DA SILVA CURIEL who is working with Surrey Satellite Technology Ltd., UK

- Recent Progress in Earthquake Short Warning Space Technology Development by the Example of Sichuan M 7.8 Earthquake on 12.05.08, the topic was presented by Mr. S. PULINETS, who is from Russia working with Scientific Centre AEROCOSMOS.

- Integrated Space Technology Applications for Monitoring and Managing Hazardous Events in Bangladesh, whereby the participants got the opportunity to hear from Mr. S. AHMED who is working with the Bangladesh Space Research and Remote Sensing Organization (SPARRSO) on how they use an integrated approach on the management of hazardous events.

- The Potential for the Use of RS/GIS/GPS Tools in Enhancing the EFFECTIVENESS of the Existing and New Mechanisms for Disaster Management in Sri Lanka, the topic was presented by Mr. Sanath PANAWENNAGE, who is working with the Arthur C. Clarke Institute for Modern Technologies in Sri Lanka. The above are some of the topics presented during the UN/IAF Workshop, but in reality we had around 28 topics presented to us. Another interesting part was a Round Table Discussion which was organized with participation of top-level representatives of Space Agencies, Civil Protection agencies and other relevant national, regional and international institutions and organizations from both space faring and non-space faring countries in order to establish a direct dialogue with the Workshop participants on how space technologies and policies can contribute to hazard management programs in developing countries. The round table was moderated by the Chairman of UN COPUOS, Ambassador Ciro Arevalo Yepes and the panelists were from Argentina, Mexico, Nigeria, Sri Lanka, Thailand, ESA etc. The round table aimed at drawing conclusions and formulating recommendations that would serve as an input to the IAC Plenary Event on this topic which took place on Wednesday, 1ST October 2008.

My own Presentation:

[http://www.spacegeneration.org/files/downloads/UN\\_Workshops/Castory\\_UNIA...](http://www.spacegeneration.org/files/downloads/UN_Workshops/Castory_UNIA...)My presentation was on the "The significance of

information dissemination among members of the community on the effective applications of space technology for hazards management"

I tried to explain the importance of information sharing and dissemination. The members of society need to be informed in all the matters related to their well being. Human beings are facing a lot of problems and often enough are not in a position to evaluate the solutions to their problems. Natural Hazards such as earthquakes, floods and hurricanes. It is the right time - now people should be informed about all of this and about the fact that the management of hazards events is possible. It is possible thanks to the investment on space technology and its efficient use in finding solution to some of our problems on Earth. I would kindly like to give my special thanks to the SGAC Executive Officer, Agnieszka Lukaszczyk, who has been so helpful for the improvement of my presentation and who was also present during the workshop.

(Castory Ntullu - Regional Coordinator Africa)

## EarthKAM Workshop Makes the Next Step

It was an overwhelming experience for SPACE as we conducted a workshop on ISS EarthKAM on Thursday 30th October - at our Janak Puri office in New Delhi. Selected Space Club students and their teacher coordinators from some of our member schools in Delhi were invited to be a part of this workshop to participate in the ISS EarthKAM Fall mission. ISS EarthKAM (Earth Knowledge Acquired by Middle School Students) is an international educational program of NASA through which school students with the help of world wide web can take stunning and high quality images of Earth from a digital camera mounted at a nadir pointing window in the destiny lab of the international space station. The program enables students and teachers to learn about Earth from the unique perspective of space. During the 4 hour long workshop conducted by SPACE, the students learnt about the ISS and did activities to understand orbital mechanics of space flight. Students also learnt about the basics of taking Images from the ISS through the EarthKAM program. Finally students were given time to plan and research their imaging targets and send request to ISS through the EarthKAM website. It was a great experience to see students come up with fantastic imaging ideas. There were so many varied ideas that we had to divided the imaging targets into various categories such as: Landforms, Cities, Man Made Structures, Weather and Climate and Special Imaging Opportunities such as Natural Disasters like floods and earthquakes. Some of the images ordered by students are: Mountains: Andes , Himalayas; Rivers: Ganga, Nile; Islands: Andaman and Nicobar, Lakshadweep, Sumatra; Man Made Structures: Pyramids, Suez Canal, Great Wall of China and LOTS MORE. In total 77 pictures were requested :) We also took the opportunity to take some symbolic images of Indians border with neighboring countries and see if there really is a border. This was done to promote Sunita Williams message -"We Really Live in a Borderless World" - she gave to SPACE for students students in India when she visited India last year and to promote humanism and peace amongst students. The students felt themselves as a part of a real space mission during the workshop. The workshop was also successful in giving them appreciation of space as a platform to understand our world better as it can not only be used to understand geographical features of earth but also understand weather and climate and also it can be used to better study the areas affected by natural disasters such as floods, earthquakes, fires etc and perhaps help in better planning the relief activities.

Some of the Feedbacks from Participating Students:

Pallavi Jain, 8th Std, Maharaja Agrasen Model School, Pitam Pura, New Delhi:

Fantastic! It was great fun and it will be the first time that I will have pics earth from space. It is very exciting and now I am curious to get my pics. Anasuiya Gupta, 11th Std, Maharaja Agrasen Model School, Pitam Pura, New Delhi:

It was an awesome experience attending the workshop along with which it gave us vast knowledge about how ISS works.

Rijul Saini, 9th Std. Francis De Sales School, Janak Puri, New Delhi:

Extremely fascinating, it captured our imagination and took it to a whole new level. The four hours spent here were the fastest and most

productive hours of my life. Vaibhav Mulchandaney, Xth std, Tagore International School, East of Kailash, New Delhi: This workshop was an opportunity to look at our planet from a different angle. It also allowed us to take photographs which would have been otherwise impossible. I liked it a lot. Vidya Varidh, 8th Std, Apeejay School, Sheikh Sarai, New Delhi:

The workshop was fantastic. I haven't had even seen or thought that I would get a chance to click photos which I generally see on google image searches. I also feel proud that I am one of the selected students of Delhi. I thank SPACE and NASA. I would eagerly wait for the results of the photographs I have taken. Thank You. SPACE would like to thank the NASA and ISS EarthKAM team for the fantastic and effective educational program which involves students in space. We would also like to thank some of our educators - Gurmeet, Shiv, Bijeeesh, Shyam and Atish who were informed on a short notice about preparing for the workshop and who did a great work assisting the students at our office in spite of 30th being an important festival day, when they wanted to be with their families :)

Some Statistics:

- No. of Students and Teacher coordinators Participated: 20
- Schools Represented: 9
- Images Requested from ISS: 77
- Camera Focal Length used for images: 180 mm
- Camera foot print on the ground: 35 KM X 55 KM (approximate and variable, depends on the height of ISS)
- Height of ISS orbit from the ground: 350 KM (approximate)
- Fall Mission Duration: October 28th to 31st

The image results have just started flowing as I write this report. Another workshop is planned by SPACE in november, where the students will get to see their work, do investigations on them and prepare a report to be sent to the NASA EarthKAM team. We have also planned some prizes for the top 3 photos taken by Students.

(Vikrant Narang - ISS EarthKAM Project Head)

# PANORAMA

## A Global Imperative -

*Why we spend so much money on space exploration when there are plenty of social difficulties to address here on Earth?*

### By the SGC workshop participants on human-based space exploration - A Global Imperative

This question is one which has in the past left many struggling for an answer. It now holds particular significance, given the present economic climate in which we find ourselves. From the price of gasoline to the price of food, many individuals and families are struggling, with those living in the third-world being the most affected. Yet even in this time of hardship, humanity is preparing for a return to the moon and, one day, voyaging beyond. Indeed, since President Bush's announcement of a long-term exploration vision in January 2004, NASA has been shifting funding for the spacecraft, dedicated to ours. China, a recent space faring nation, has human-rated space program celestial neighbor. The are also investing heavily Astonishingly, despite this agency activity, the for a human presence in pursuing advanced robotic opinion of delegates to the (SGC), been poorly presented to the people, the consequence of which has been limited public support.



development of human-rated exploring worlds beyond addition to the "league" of established a fast-moving with its eyes set on our other major space agencies in lunar exploration. increase in worldwide space-fundamental justifications space, (in addition to exploration) have, in the Space Generation Congress<sup>1</sup>

SGC delegates have recognized that documents exploring the value of space exploration, and human-based space exploration in particular, do exist, but such studies are either not global in scope, or only address the philosophy behind humanity's innate desire to explore ("The mountains are calling and I must go" -John Muir). While important, these are insufficient to fundamentally justify the cost and rationale of human-based space exploration. A group of

international SGC delegates tasked themselves with providing a document to address this gap, one written with a truly international perspective. Their result, an 11 page paper (IAC paper IAC-08.B3.1.10) and a summarizing video<sup>2</sup>, were recently presented at SGC 2008 and at a technical session of the International Astronautical Congress. The conclusion of this work is that humanity's presence in space is of fundamental importance to our society. Human exploration (of space, among other locations), is more important than a footprint, a lunar base, or national pride. It is a natural expression of our culture's vision, energy, optimism and aspiration. It brings out the best in people, and has historically been shown to bring people together. Leaving the time-scale of a human being temporarily, we see humans in space as a natural continuation of the evolution of our species.

As important as when marine life first emerged to inhabit a new environment: land, humans are now ready to move beyond their cradle and inhabit their new environment: space. But there is more to the argument. In a world that is torn apart by conflict, any program that promotes international understanding deserves support. Human space exploration will further enable substantial international collaboration. Indeed, in space, humanity is united. Space explorers are ambassadors of Earth, and can inspire the world to be more internationally aware, and work together without regards of nationality, religion, or race. The SGC delegates propose that current space explorers take an active leadership role by symbolizing their role as ambassadors of Earth in space. To accomplish this, they can wear a symbol that anyone, anywhere in the world can relate to, sending a true message to the world that space exploration is done for the benefit of everyone, of all nations. The SGC delegates propose that the appropriate symbol is the "Blue Marble": the first complete picture taken of Earth from space by humans in 1972 (see inset). To promote space exploration is to promote a technological planet.

Undeniably, human-based space exploration requires pushing the barriers of engineering and scientific knowledge. Technology spinoffs can be, and in the past have been, applied in a multitude of beneficial applications right here on Earth. The SGC delegates feel that additionally, opening the space frontier will help create a new age of economic growth and scientific discovery, benefiting all people in all countries. We must keep in mind that money spent on space exploration is spent right here on Earth! The cost of space-exploration is rather modest. To put NASA's budget (for example) in perspective, if the U.S. established a 1% reduction in governmental social expenditures, the money saved could double NASA's budget. On a smaller scale, the cost of operating the International Space Station (~\$800 million annually) is approximately the cost of 4 Boeing 747-400 jumbo jets. Qantas, the Australian national airline, operates 34 such aircrafts (at time of writing)<sup>3</sup>. Human-based space exploration provides many forms of benefits to people of the world. It brings together the best in people, even in periods of tension. No other human activity has ever been able to encourage such synergy. The returns to society, driven by the increased yields in scientific, technological, humanitarian and artistic output, will bring improved lifestyles for generations of people on Earth.

We Must Go!

\* Sanjoy Som (sanjoy @ spacegeneration.org), Laura Garcia Oviedo, Rishi Sharda, Oliver Troll, Simon Yee, Nicole Jordan, Martin Canales, with thanks to Joe Palaia

<sup>1</sup>The Space Generation Congress (SGC) is an international youth space congress, officially held in conjunction with the International Astronautical Congress, endorsed by the United Nations Office of Outer Space Affairs, and organized by the Space Generation Advisory Council, a non-profit organization supporting the United Nations Program on Space Applications.

<sup>2</sup> <http://tinyurl.com/case4space>

<sup>3</sup> <http://tinyurl.com/quantas-facts> to enter text

## Conquering a new Frontier

### NewSpace Approaches:

While it may sound like something out of a science fiction novel, both NASA and private space companies are currently discussing long term habitation in space as seriously as ever. Under the current Vision for Space Exploration, NASA plans to return astronauts to the moon and then move on to the next great challenge – Mars. 4Frontiers, Corporation is a new, private company preparing for this challenge, developing strategies and technologies to be used in creating a permanent human presence on the red planet. While humans may not conquer Mars for at least another decade, informative entertainment, Earth-based technology development, and consultancy are the three business strategies that this company can master today. Efforts in these areas will lay the foundation needed to pursue their ultimate objective. In July of 2005, a new commerce company, 4Frontiers Corporation, was founded at the Massachusetts Institute of Technology with the intention of extending man's reach to a new frontier: to establish the first human settlement on Mars. Since that time, the company's business, entertainment, and consultancy teams have made strides in more than just the technical realm. Although primarily focused on the settlement of Mars, the company is named for and recognizes the economic potential of the other near-term space frontiers – Earth orbit, the moon, and asteroids. Since its inception, 4Frontiers Corporation's managerial, technical, consultant, advisor, and even intern teams have managed to take many strides to make this project work. 4Frontiers' primary concern is the development of technologies and systems critical for Mars settlement while generating revenue through Earth-based enterprise to support that goal. Soon, Martian settlement may not be the stuff of science fiction anymore, if this NewSpace corporation can help it. "NewSpace" is the term for emerging industries consisting of entrepreneurial private companies investing in the activities, resources, and economic potential of outer space. Now, these organizations are able to actively participate in efforts to expand human activities in space. Such activities include the development of cost efficient launch vehicles, lunar landing technologies, space tourism flights and hotels, and a variety of other space-related technologies. These efforts are quite different from other NewSpace organizations, which do not employ public outreach and consultancy techniques to create revenue. Other private companies focus on very different techniques to

accomplish NewsSpace goals. For instance, some companies focus strictly on the research and design of spacecraft parts (i.e., AeroAstro, XCOR Aerospace, and Copenhagen Suborbitals), some rent out spacecraft testing facilities (Mojave air and space port), some sell sub-orbital vacation flights (Space Adventures), and some even sell space art, clothing, and jewelry to "get you in the mood to explore the galaxy" (Alien Landscapes).

### The First Frontier

4Frontiers recognizes that the pursuit of interesting technology alone is insufficient to permit the company to accomplish its goals. What is essential is the development of profitable business endeavors relating to the end goal. Peter Collins, a 4Frontiers environmental chemistry intern, stated this well: "It is not just technical skills that will get us to Mars, but business skills also; projects need to be managed, funding obtained, and profits made along the way." One major aspect of 4Frontiers' business strategy is to engage the public through informative entertainment, sharing its vision and its latest innovations while translating public interest into revenue-based support of the company's research and business operations. Along these lines, the company has been developing a number of unique ventures. 4Frontiers knows that educating and exciting today's youth will help to inspire tomorrow's pioneers. Fictional stories about the first family on Mars have been included in an interactive children's website, [www.crazy4mars.com](http://www.crazy4mars.com). Education curriculum packages have been developed for 5-7th grade classrooms, presenting space and science through the theme of Mars exploration. The use of new media and other innovative technologies, such as Twitter and Facebook, are being employed by the company to engage the public in 4Frontiers' efforts, too. 4Frontiers is even planning a television reality show where groups of individuals contend to establish a self-sustaining colony, as if they were early Mars settlers. Educational tour packages have also been created for groups interested in space and U.S. culture, providing the opportunity to go on exclusive trips to space and science centers throughout out the United States. The tours that 4Frontiers offers are customizable for international and domestic groups, complete with all travel and lodging arrangements, and even a pre-paid cell phone. The travel packages allow groups to visit destinations where American spaceflight began, as well as where the new space revolution is booming. They include

destinations such as the Smithsonian Air & Space Museum, various NASA centers, and soon, even international space centers. Soon, 4Frontiers may be able to send tour groups to its own science center, which is currently under development. This Informative Entertainment Center will be focused on showcasing technologies for the settlement of outer space and in sharing the advances of the new commercial space industry with the public. According to the Executive Summary, NewSpace Center™ will even include a "first of its kind, immersive, full-scale Mars settlement replica, where visitors will learn first-hand what life will be like on the early Mars frontier." There, visitors will be able to participate hands-on in activities, such as trying on the latest spacesuit models, eating high protein algae samples grown in special farms, and touring a mock Martian greenhouse.

### The Second Frontier

While public education and support are crucial to 4Frontiers' mission, the technical research aspect is a frontier that has not been neglected. 4Frontiers was recently awarded a \$25,000 research grant to help pursue its technology roadmap for Mars settlement technologies. The grant is from the Florida Space Grant Consortium (FSGC), part of the Florida Space Research & Education Grant Program. The goal of the project is to study the performance of various transparent materials that have been selected as potential candidates for use in future Mars greenhouses. The research involves the construction of small chambers to which these materials will be affixed, simulating a Mars greenhouse. These chambers will then be placed within a larger chamber that will simulate the environmental conditions found on the Martian surface. The project will investigate the heat transfer and stress performance of these materials under the unique conditions specific to the red planet. "If we think that we are going to go to Mars sometime in the future, we must start being realistic about the actual ways people might live there," said Dr. Ray Bucklin, agricultural engineering professor at the University of Florida and co-Principal Investigator. "There are different factors on the surface of Mars, the effects of which we need to understand; UV radiation, lower gravity and the atmospheric gases on Mars are very different [than on Earth]," said Alexander Stimpson, a 2008 NASA Exploration Systems Mission Directorate intern at 4Frontiers who assisted with this research. Stimpson and another intern, John Truett, both agricultural engineering graduates from the University of Florida, modeled a

supporting steel framework connecting an array of transparent windows made of polycarbonate or coated glass. They used the software package MATLAB to create computer simulations, allowing them to find an optimal balance between various parameters, including window size and thickness, the mass of glass and steel, and the seal length and opacity.

### The Third Frontier

As for the third business segment that the corporation operates, consultancy, "the company is developing a solid client base for its space technology engineering consulting. Real value can be added in this area through cross-pollination between different technical disciplines," said Joseph Palaia, Vice President and co-founder of 4Frontiers. The company has provided consulting services for various organizations, including one researching advanced energy conversion technology in Florida and another manufacturing semiconductor equipment in Massachusetts. The company has helped other customers such as Galactic Suite Limited, a company aiming to get an orbiting space vacation resort open in 2012.

Whether you are planning to live on Mars soon, tour a replica colony at the Informative Entertainment Center or another tour destination, or if you are looking for a consultancy partner, 4Frontiers may just be your boarding pass.

(By Svetlana Shkolyar)

technology (CICTA) was held from 16th to 18th, October. In Buenos Aires, Argentina, the engineer Pablo de León presented his book "History of space activity in Argentina", on November 6th. Three Latin American SGAC members participated in a podcast broadcasted by a Mexican web radio, called "RadioKosmos". In the podcast, they told the audience their experience at the Space Generation Congress and the International Astronautical Congress, held in Glasgow. More information about it at: <http://www.spacegeneration.org/node/2156>

(Laura García Oviedo NPoC Argentina)

## Upcoming Events

### The Fair and Responsible Use of SPace: The International Perspective

**From: Thursday 20 November 2008, 09:00 GMT**

The European Space Policy Institute (ESPI) will host a conference on "The Fair and Responsible Use of Space: An International Perspective" on 20-21 November 2008 at Vienna in joint venture with the International Academy of Astronautics (IAA) and the Secure World Foundation (SWF).

\*\*\*\*

### UN/ESA/Kenya workshop on Climate Change in Nairobi, Kenya, December 1st to 5th, 2008

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### Astrium Spaceplane, at the cross road of aeronautics and space - From: Thursday 20 November 2008, 18:00 GMT

An innovative project, addressing suborbital flights market for Space

Tourism or for Scientific Missions, and merging the best of Aeronautical

and Space technologies will be held by the Bristol Branch of the Royal Aeronautical Society.

6.30pm Thursday 20th November 2008

CONCORDE Room, BAWA Centre, Southmead Rd, Filton

Refreshments will be available from 6.00pm

For enquiries contact Alessandra Badino

( 0 1 1 7 9 3 6 3 4 3 2 ) ,

[alessandra.badino@airbus.com](mailto:alessandra.badino@airbus.com)

# REGIONAL

## South America

Satellites, NASA, podcast and more! One of the space news in the region is that Venezuela launched its very first satellite, called VENESAT-1 "Simón Bolívar", on October 29th from China. And Argentina, also in the end of October, evaluated successfully the plans of the SAOCOM satellites, which are going to be built in that country soon. But there is more news! Gregorio Drayer, SGAC member and professor at Universidad Simón Bolívar of Venezuela, will visit NASA Ames Center in the first days of November. "I'll give a talk about my research on recirculating aquaculture and the development of bioregenerative of life support systems", he pointed out. In Cali, Colombia, the second international congress on science and