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RÜCKBLICK EINBLICK AUSBLICK REVIEW INSIGHT PROSPECT RÜCKBLICK EINBLICK AUSBLICK

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50 Years Women in Space 3

Moot Court 17

ECSL Summer Course 23

EDITORIAL

Irmgard Marboe

The launch of the two satellites, TUGSAT 1 and UNIBrite, the so-called BRITE Austria-Constellation, on 25 February 2013, was certainly the most important event for the space community in Austria in the past months. In the present Newsletter, we report about the well-attended launch events at the University of Vienna and the Technical University of Graz and about the first months of the satellites' operation. This achievement signifies no less than that Austria has turned into a space faring nation, even if this "giant leap for Austria" was called "a small step for humankind" by an Austrian journalist (see the last Newsletter, No. 12/2012). However, the project is an innovation insofar as it represents the first constellation of nano-satellites. Other projects and constellations will follow, most importantly in the framework of the "QB50-project" of the European Union, under its Seventh Framework Programme (FP7). Austrian satellites will probably also be part of this ambitious endeavour which will include up to 50 small satellites and is supposed to materialise in the forthcoming one or two years. The credit for the smooth launch and the perfect operation of the two Austrian pioneer satellites goes to the two "fathers" of the satellites, Prof. Otto Koudelka, from the Technical University of Graz, and Prof. Gerhard Weiss, from the University of Vienna. Not only the technical side of this pioneer project is remarkable, also the managerial and legal aspects were conducted in an exemplary manner. As regards frequency management, representatives of the ITU called the Austrian approach as a "model" for future nano-satellite missions. In terms of the legal aspects, it was in particular this initiative which triggered the development and bringing into existence the "Austrian Outer Space Act" (in force since 28 December 2011, see Newsletter No. 12/2012). While other States are still hesitant to include the regulation of nano-satellites in the scope of application of national space law, Austria is a pioneer in this regard. As laudable and valuable those low-cost space activities are, they should not endanger the highly developed and enormously expensive space technology currently present in outer space which is vitally needed for the well-being and safety of people all over the world. The NPOC Space Law Austria facilitated a discussion on the potentials and risks of small satellite projects at a conference entitled „Small is Beautiful?" at the Vienna Faculty of Law (see page 10). The issue of space debris, in particular, was the focus of this year's ECSL Summer Course on Space Law and Policy which was hosted by the NPOC Space Law Austria in Klosterneuburg (see page 23). Another highlight of this year represented the celebration of 50 years of women in outer space which was impressively commemorated by the United Nations in Vienna (see page 3). It is therefore with great pleasure to present our readers the latest issue of the Space Law Austria Newsletter No. 13/2013 with its review over past events, interesting insights and exciting prospects.

Yours,

Official Coordinates
a.o. Univ. Prof. Dr. Irmgard Marboe
E: irmgard.marboe@spacelaw.at
P: + 43 (0) 1 4277 353 11
F: + 43 (0) 1 4277 353 9
University of Vienna - Faculty of Law
Departement of European Law, International Law
and Comparative Law
Section for International Law and International Relations
Project "NPOC Space Law Austria"
Schottenbastei 10-16
1010 Wien

RÜCKBLICK *review*

Celebrating 50 Years of Women in Space

Karin Traunmüller

"A bird cannot fly with one wing only. Human space flight cannot develop any further without the active participation of women" (Valentina Tereshkova).

In commemoration of the first woman's spaceflight, a number of events were held during the 56th session of the United Nations Committee on the Peaceful Uses of Outer Space in June 2013. 50 years ago, on 16 June 1963, Valentina Tereshkova was on board of the Vostok-6 spacecraft as the first woman launched into outer space. Her flight took 70 hours, during which she orbited the Earth 48 times. Since this historic day, nearly 60 women from Canada, China, France, Japan, the Republic of Korea, the United Kingdom and the United States have followed her path and have travelled into space.

On 12 June 2013, at the opening session of the Committee on the Peaceful Uses of Outer Space, the United Nations celebrated this landmark in human spaceflight. A panel was organised, comprising the following prominent women in space activities and representing the fields of space exploration, science, technology, applications, business, policy and law: Valentina V. Tereshkova (Russian Federation), Abimbola H. Alale (Nigeria), Roberta Bondar (Canada), Amalia Ercoli Finzi (Italy), Chiaki Mukai (Japan), Julie A. Sattler (USA), Maureen Williams (Argentina) and Liu Yang (China). Karen Nyberg, US astronaut on-board of the ISS, welcomed all the participants in a video message directly from outer space.

The Director-General of the United Nations Office at Vienna, Yuri Fedotov, opened the conference and recognised the value of women space explorers for future generations. Mazlan Othman, Director of the UN Office for Outer Space Affairs underlined the significance of Tereshkova's flight as a milestone

which "heralded the beginning of the contribution by women to human space flight". She also mentioned the significance of other women – Sally Ride, who was the first US woman in space, in 1983, Svetlana Savitskaya, who made the first spacewalk, conducted by a woman, in 1984, as well as Peggy Whitson, the first female commander on the ISS.

Without doubt, the honorary guest of the day was Valentina Tereshkova herself, who gave a speech on her life before becoming a cosmonaut, on her space mission as well as her impressions she got while in outer space

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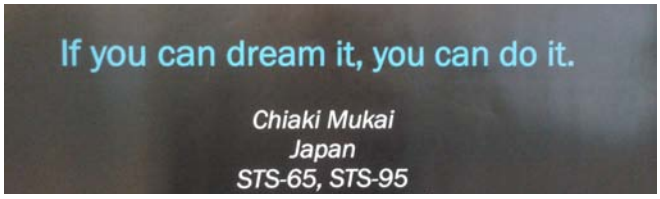
at the age of 26. Ms. Tereshkova, who had previously been referred to as the "Greta Garbor of space" by the BBC, reflected on the times when she was a young parachutist in the USSR, where the human spaceflight era began. She recalled all the young women who were inspired by Yuri Gagarin's flight and wanted themselves to fly into outer space. When Valentina Tereshkova applied to become a cosmonaut, the competition among young women was enormous. Only five were finally selected to start their training under the mentorship of Gagarin himself. Despite the hard and tough training they had to get through, all of them were eager to prove that women, equally to men, also could fly to and work in outer space. Ms. Tereshkova also expressed her regret that there still were not enough women-cosmonauts in today's Russian Federation and encouraged young girls to follow her path and take part in space programmes, stating: "I am convinced that women will take active participation in future human space flights.

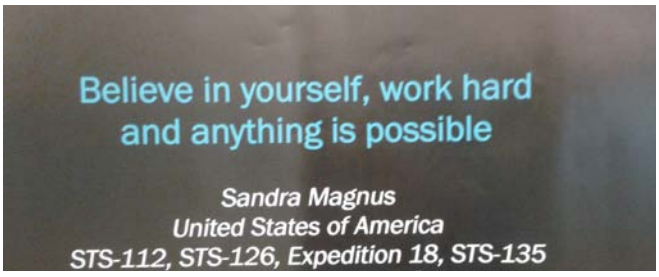


As it is impossible for a bird to fly with only one wing, so human space flights cannot progress without women's active involvement. We are facing a return to the Moon, exploration of the asteroids, we are facing Mars. And I believe Mars will not forgive men if they don't include women in the expedition."

In addition to Valentina Tereshkova, other women engaged in space related fields participated in the panel, among them three women-astronauts who were the first of their States in outer space: Roberta Bondar, the first Canadian female astronaut, Chiaki Mukai, the first Japanese female astronaut and Liu Yang, the first Chinese female taikonaut.

Roberta Bondar, who was not only the first Canadian astronaut but also the first neurologist in space, concentrated on space science. She admitted that Valentina Tereshkova was her childhood hero when she, being a little girl, looked up to the sky and dreamt of going to outer space herself. She underlined the importance of cooperation in space matters and the knowledge space applications bring to people about our planet.

Chiaki Mukai, who prior to her astronaut career was an assistant professor in the Department of Cardiovascular Surgery in Keio University, currently is the Director of the JAXA Center for Applied Space Medicine and Human Reserach (J-CASMHR). Mrs. Mukai explained how the space environment affects the human body. The impacts on the health of those going to outer space were illustrated on two examples: the decrease of bone density of astronauts is 10 times higher than that of a menopausal woman, and the muscle atrophy is 2 times higher than that of a bedridden elder person on Earth. The main objective of space medicine is the protection of the astronaut's health. But Mrs. Mukai also explained how the knowledge about the different phenomena going on in the human body in space is also crucial for people living on Earth. When an astronaut, who had a number of medical check-ups before his mission, is sent into outer space and develops different kinds of health phenomena in short time simply due to the specific environment



in outer space, it also helps to understand mechanisms going on within the human organism in general. This is also true for the psychological aspects, as the staying in outer space does not remain without effects on the astronaut's mind.

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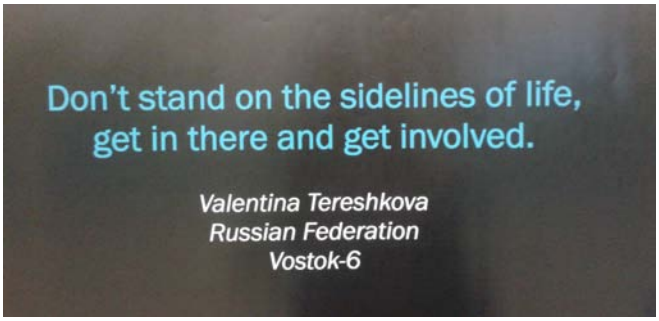
The youngest of the panelists was Liu Yang, who completed her 13-days mission Shenzhou- 9 in June 2012. She gave an insight into very personal impressions and feelings, described the beauty of the universe and the Earth. She admitted that she could not help exclaiming that the Earth was really round when she first saw it from outer space.

What was most impressing of all the astronaut ladies' presentations was their description of the feeling they had when seeing the Earth from outer space. They had felt more close to the Earth while on mission and understood how vulnerable and beautiful the planet was and how important cooperation was in order to preserve it for future generations.

The other panelists also gave interesting insights in their experience of working in space-related fields. Julie Sattler (USA) focused on business aspects in the space industry and the role of women working there. She stressed the significant impact of space industry and technology on the economy, education and scientific knowledge and international relations. Despite budgetary constraints the space industry is facing in view of the economic situation throughout the world, she called upon the actors not to lose the vision of exploring outer space. Abimbola H. Alale (Nigeria) described the development of her interest for outer space and stressed the importance of space applications for the African continent, emphasising, in particular, their role for sustainable development and disaster management. Maureen Williams (Argentina) gave an overview on the landmarks achieved by the UN in the space law field. Besides the current head of UNOOSA, Mazlan Othman, she also mentioned two other women, namely, Eilene Galloway and Isabelle Diederiks-Verschoor and their contribution to space law.

In addition to the panel dedicated to women spaceflight during the opening of the 56th session of UNCOPUOS, other activities took place. A multinational exhibition on „Women in Space" was organised in the Vienna International Centre Rotunda. And on 13 June 2013, a public event took place in the "Naturhistorisches Museum Wien" with the participation of Mazlan Othman (UNOOSA), Roberta Bondar (CAN), Janet L. Kavandi (USA), Chiaki Mukai (Japan) and Liu Yang (China). The discussion was moderated by Dumitru-Dorin Prunariu (Romania), himself a former cosmonaut and currently the President of the Executive Board, Association of Space Explorers. Visitors had the possibility to ask questions and could get the astronauts' autograph in the end.



Hopefully the events organised with the participation of these admirable women who took the courage to be the first ones to go to outer space will inspire future generations of girls and women to engage in space matters and follow one more quotation of Valentina Tereshkova: "Don't stand on the sidelines of life, get in there and get involved".

Islamic Countries' Perspectives: National Space Conference of Pakistan, 17 - 19 September 2012

Irmgard Marboe

From 17 to 19 September 2012, the first National Space Conference of Pakistan took place in the city of Islamabad. The Pakistan Space and Upper Atmosphere Research Commission SUPARCO, the National Space Agency of Pakistan, invited a number of national and international experts for this interdisciplinary conference to discuss current issues and future perspectives of Pakistan's outer space activities. The conference took place in the premises of COMSTECH, the Ministerial Standing Committee on Scientific and Technological Cooperation of the Organisation of Islamic Cooperation (OIC).

The conference showed the clear commitment of the country to engage more actively in the space sector and to find ways and means of international cooperation to this end. The first partners to look at were certainly the member countries of APSCO, the Asia-Pacific Space Cooperation Organisation, and the members of ISNET, the Inter Islamic Network on Space Sciences and Technology, established in 1987 as an inter-governmental agency functioning as an independent self-governing institution under the umbrella of COMSTECH. However, also speakers from Canada and Europe were invited to broaden the horizon even further.

The notable feature of the conference was its interdisciplinarity. Space scientists and practitioners met with experts in medicine, education, politics and law. This provided the opportunity to get first hand insights in the manifold fields of space application, cooperation and research. Fascinating highlights were the sessions on tele-health applications and telemedicine. Najeeb Al-Shorbaij, representing the WHO, outlined the international perspective of promoting space technology for health, followed by Pakistani experts showing practical examples of telemedicine initiatives in Pakistan.

Discussing the importance of space technology for socio-economic development, in particular for developing countries, was another focus of the conference. In this regard, the concept and implementation of Public Private Partnership projects were explained by Alireza Shoamanesh from a Canadian satellite company. The role of remote sensing technology was shown in the context of disaster monitoring and of monitoring the mountainous regions in Pakistan.

Space law was another aspect discussed at the conference. Tare Brisibe (Nigeria), the current chairman of the Legal Subcommittee of the UN Committee for the Peaceful Uses of Outer Space (UNCOPUOS), explained the international legal framework created by the UN space treaties. He pointed out that Pakistan, remarkably, has ratified all of the five UN space trea-

ties, including the Moon Treaty of 1979 with its only 15 contracting parties. This commitment to respect the international rule of law in the area of space activities means, however, that the contracting parties have to comply with a number of obligations created and to implement them at the national level. This aspect was emphasized in a presentation of the present author on the need for the "Development of National Space Legislation". The purpose of these two presentations was to explain to the participants, consisting of more than 100 predominantly Pakistani experts, the reasons for and the desirable contents of national space legislation. Pakistan has not yet enacted a national space law but has already started a consultation process in this regard. It was therefore timely to show the current initiatives of UNCOPUOS on recommendations on national legislation on the peaceful uses of outer space and to draw the attention of the responsible representatives of SUPARCO, most importantly Arshad Siraj and Muhammad Riaz Suddle, to these developments.

One entire session was dedicated to space education and awareness building. The young generation plays an important role in shaping Pakistan's future in the area of space. This is why the country expresses its commitment to strengthen endeavours in the area of education and research space science, space technology and applications. The final session was dedicated to international cooperation of developing countries in the area of space. Ahmed Talebzadeh, the Director General of the Department of External Relations and Legal Affairs of APSCO (headquartered in Beijing, China), and Abdhulla Jamil

Khan, the Administrator of ISNET, explained the future prospects of regional cooperation and capacity building in space sciences, space technology and applications.

In its concluding remarks, Arshad Siray, in his capacity as the host of the conference, highlighted the importance of international cooperation from the perspective of Pakistan and outlined his vision of a future in which space technology will be used more efficiently and effectively for human and social development in Pakistan. He expressed his hope that space technology will increasingly help to address the country's economic problems, in particular in view of the numerous natural disasters which it suffered in the past years. As they cannot be avoided, space technology may help at least to a better management, be it by early warning, rapid reaction or in the course of mitigation their effects.

Workshop on the Future Regulatory Framework for Suborbital Flights in Europe, Brussels, October 2012

Karin Traunmüller

On 11 October 2012, the International Institute of Air and Space Law (IIASL), Leiden University, and Orbspace Austria organised a workshop on "The Future Regulatory Framework for Suborbital Flights in Europe" in Brussels. It was hosted by the European Commission's Directorate-General for Research and Innovation (DG Research and Innovation).

The workshop was part of the FAST20XX project, a project of 17 European partners with the objective to advance technologies and know-how of suborbital flight, funded by the 7th Framework Programme of the European Commission and managed by the European Space Agency (ESA). A description of the project was already given at the IAC Congress in Naples in October 2012 by Ms Tanja Masson-Zwaan in her presentation "The Future Regulation of Suborbital Flight in Europe".

Suborbital flights are flights entering outer space for a short time without executing a full orbit around the Earth. As yet it is unclear whether they shall be regulated by air law or space law. A number of companies have already announced that they intend to operate suborbital vehicles that would carry passengers to the threshold of outer space in the future. So far, the majority of these ventures are planned to take place in the United States, but some companies have also expressed their intention to fly from Europe. The prospects of suborbital private spaceflight have raised a number of questions, in particular concerning responsibility, liability, safety, insurance and certification. In Europe, regulation in this context does not yet exist. National space laws adopted by EU Member States do not explicitly address human suborbital flights. In 2008, the European Aviation Safety Agency (EASA) undertook first steps in preparation of a certification for "unusual design". However, this initiative was stopped in September 2011, when the European Commission asked EASA whether an optional light regime, similar to the US approach, could be set up. In the US, a temporary licensing regime for suborbital flights was adopted in order to grant certain flexibility to the industry. The regime is based on two pillars: first, a launch-like licensing approach

for suborbital flights, with the Federal Aviation Administration (FAA) / Office of Commercial Space Transportation (AST) being in charge of granting the license, and second, the "informed consent" regime, which releases the operators from liability once the passengers have been informed of the risks of the flight and provided their consent in writing to fly under the given conditions. EASA concluded that a similar regime was possible for Europe but would need modifications of EASA internal regulations as well as implementation by the Member States.

The objective of the workshop on "The Future Regulatory Framework for Suborbital Flights in Europe" was to exchange views and experiences and to learn about concrete plans regarding suborbital flights in Europe. It also aimed at envisaging which regulatory framework(s) for suborbital flights would suit Europe best. Relevant stakeholders participated in the workshop, including industry, insurance, operators and academics as well as national and European regulators from different EU Member States and Switzerland. A representative of the US Federal Aviation Administration (FAA) also took part. Three sessions as well as a discussion round were held and gave an insight in the crucial issues relevant in the context of suborbital flights.

First, the organisers of the workshop gave introductory presentations about the topic of suborbital flights and the survey conducted in the framework of the FAST20XX Project.

Tanja Masson-Zwaan (IIASL) commented on the FAST 20XX questionnaire on the desirable future regulatory framework for suborbital flights in Europe, which had been circulated in February 2012. The questionnaire included 12 statements aimed at evaluating the opinions on a single legal regime for suborbital activities, on "light-touch" regulations or a "step-by-step approach", on national regulations of suborbital flights, on the establishment of an office for suborbital flights in Europe as well as on the "informed consent" regime. Common trends appeared with regard to some of the questions. 83 % of the interviewees preferred having a single legal regime for suborbital activities, rather than a regime distinguishing by vehicle type; 87 % held that, in view of the small market, the regulations should be "light-touch" to avoid constraining progress and innovation; 83 % favored a step-by-step regulatory approach, which should be reviewed after some years. On other questions opinions were more divided.

During the second session, participants from various industry sectors, such as vehicle builders, operators and spaceports addressed the state of the art and gave presentations on their plans in the field of suborbital flight. Among the participants were representatives of BOOSTER Space Industries (Belgium), Orbspace (Austria), Dassault Aviation (France), Space Expedition Corporation (The Netherlands) as well as Spaceport Sweden (Sweden). The presentations given by these actors made clear that a number of initiatives are going on to develop vehicles or to operate spaceports in Europe for suborbital passenger flights.

In the third session, regulatory concepts chosen in some countries as well as the issue of insurance were addressed. In addition to the situation in the US, which was already mentioned, the UK regime was illustrated. In the UK, both orbital as well as suborbital spaceplanes are under development, and the actors there are keen to work with the EU regulatory authorities on the opportunities for space plane operations. The opinion was expressed that the EU should develop a permissive regulatory framework, which must become a key part of the EU industrial strategy for space. The discussion revealed that there was no clear preference neither to the restricted type certification approach, which requires a complex and difficult procedure for the issuance of a general certificate for certain vehicle types, nor the licensing approach, where a license is issued for concrete activities. Rather, both paths are currently followed. Whereas some of the actors preferred the restricted type certification approach and moved along that line in their discussions with EASA or the civil aviation authorities (CAA's), others favored a licensing approach, preferably with an EU /EASA involvement. The certification approach was preferred by some of the vehicle builders.

Furthermore, the need to clarify the liability implications of certification became obvious. Issues such as third-party and second-party liability as well as the status of crew and passengers were in need of clarification. In particular the "informed consent" should not be seen as absolute by courts in the case the passenger did not get enough information. As regards the question to what extent certification would provide a guarantee for safety, disagreement was expressed by the participants. Furthermore, a certain fear of instability as a consequence of the step-by-step regulatory approach became obvious.

However, all participants agreed that concerted action was necessary to provide incentives to the industry and to establish a clear and predictable regulatory framework. They concurred with Tanja Masson-Zwaan that if European institutions, national aviation authorities, space agencies as well as the industry and insurance actors do not work together, the potential benefits of the suborbital flight industry might be realised outside of Europe. Furthermore, a EU-wide approach would help to avoid future conflicts and double licensing or certification. Yet, first of all a political decision should be made to clarify who would be competent for EU-wide regulations. At the moment, most of the EU stakeholders see EASA as the suitable regulatory authority. It was also admitted, however, that in view of the current economic crisis, a public debate about space tourism might turn out to be difficult.

To summarise, all stakeholders in the emerging suborbital industry should continue to exchange views and agree on concerted actions. As a concrete next step, it was recommended to set-up a steering group involving stakeholders and EU / Member State authorities in the field of transport, research, enterprise and competition.

The presentations of the workshop can be found under www.orbspace.com/download/EC2012_suborbital_regulation.zip

„Small is Beautiful?“ - Potentials and Risks for Small Satellite Projects, Symposium in Vienna, November 2012

Anita Rinner

Chair:
CHRISTIAN BRÜNNER
University of Graz

Speakers:
OTTO KOUDELKA
TU Graz, TUGSAT-1/ BRITE Austria Mission

WERNER BALOGH
United Nations Office for Outer Space Affairs

NORBERT FRISCHAUF
Austrian Space Forum

NETA PALKOVITZ
Innovative Solutions in Space BV, NL

ANITA RINNER
University of Graz

IRMGARD MARBOE
University of Vienna

On 27 November 2012 the NPOC Space Law Austria organised a symposium dedicated to the smallest among all spacecraft: small satellites. The public event was carefully organised by Professor Irmgard Marboe and her team. The symposium dealt with one very current topic, namely the launch of very small spacecraft.

Because of budget cuts and advancement in technology, the total number of small satellite launches has been increasing over the last decades. In particular Micro-, Nano-, and Pico satellites have been "conquering" outer space. Small satellites can be produced at low cost as well as in shorter production time. Furthermore, in view of the possibility to launch small satellites as a secondary payload, they enable in particular

universities and other non-governmental entities to engage in space activities. Often small satellites are the key instrument to the very first access to space.

However, small satellites also face challenges with respect to technical, managerial, legal and political factors. The symposium highlighted the benefits as well as the risks of small satellite projects. Numerous experts of diverse fields such as engineers, scientists, researchers, project managers and lawyers provided their expertise in the field of small satellite activities. The experts initiated a very animated discussion among the audience which facilitated fruitful exchange of information.

The symposium was chaired by Professor Brünner, former head of the NPOC Space Law Austria. Presentations were given by Otto Koudelka (TU Graz, TUGSAT-1 / BRITE Austria mission), Werner Balogh (United Nations Office for Outer Space Affairs), Norbert Frischauf (Austrian Space Forum),




Neta Palkovitz (Innovative Solutions in Space BV, The Netherlands), Anita Rinner (University of Graz) and Irmgard Marboe (University of Vienna).

Professor Otto Koudelka presented the first Austrian small satellite project, which was completed by the launch of the two satellites TUGSAT and UniBRITE on 25 February 2013 from the Satish Dhawan Space Centre in India.

Dr. Werner Balogh gave an overview about small satellite projects in general, focussing on capacity building and institutional aspects. He highlighted the benefits of small satellite programmes and provided an introduction to the legal aspects arising in this context.

DI Norbert Frischauf concentrated on "dual use" space activities. His focus was put on Earth observation systems and technologies for civilian and military purposes, demonstrating the high resolution capabilities of Earth observation satellites and describing Public-Private-Partnership projects in space military service programmes.

The topic of **Neta Palkovitz's** presentation was the QB50 program, a small satellite project involving more than 80 institutions worldwide and including 50 Cube-satellites. This project is funded by the European Union and will carry out in-situ measurement in the lower thermosphere.

Anita Rinner focussed on legal aspects of small satellite projects, highlighting legal issues ranging from frequency coordination to the International Traffic in Arms Regulations (ITAR) and to space contracts.

Professor Irmgard Marboe presented details on national space legislation, emphasising relevant provisions of the new Austrian Outer Space Act. In particular, important aspects such as space insurances and space debris mitigation were stimulatingly explained.

The audience was composed of representatives from governmental and private institutions, non-governmental entities and universities, as well as students, and other interested people. Finally the audience had the chance to actively participate in the session. Qualitative and multi-disciplinary discussions were stimulated. In conclusion, all experts unanimously answered the questions: "Small is beautiful?" with "Yes, it is". Even the audience in the well-attended symposium could agree.

The presentations can be downloaded from:
http://www.spacelaw.at


Launch Event der beiden österreichischen Nanosatelliten: die BRITE-Austria Konstellation, 25. Februar 2013

Michaela Hinterholzer

Am 25. Februar 2013 war es endlich soweit: Die beiden Satelliten UniBRITE und TUG-SAT-1 wurden um 18.22 Uhr Ortszeit (13.22 Uhr, Wien) von Indien aus gestartet. Bei dem Dachprojekt BRITE-Austria handelt es sich um 2 Nanosatelliten, die in Kollaboration des Instituts für Kommunikationsnetze und Satellitenkommunikation der TU Graz, dem Institut für Astronomie der Universität Wien und dem „Space Flight Lab" der Universität von Toronto (UTIAS) gemeinsam entwickelt wurden. Das musste natürlich gefeiert werden, und so lud die Universität Wien zum Launch Event in den Campus des alten AKH.

Das Programm begann bereits zwei Stunden vor dem eigentlichen Start; Thilo Hofmann (Dekan der Fakultät für Geowissenschaften, Geographie und Astronomie), Joao Alves (Leiter des Instituts für Astrophysik der Universität Wien), Werner W. Weiss (Institut für Astrophysik der Universität Wien) und André Peter (Österreichische Forschungsförderungsgesellschaft) stellten das Projekt BRITE-Austria vor.

Gleichzeitig fand auch in Graz eine, per Livestream verbundene, Startveranstaltung statt, die von Prof. Otto Koudelka geleitet wurde. Hochrangige Vertreter, wie u.a. Harald Posch (Leiter der Agentur für Luft- und Raumfahrt in der FFG), Pavan Badhe (Vertreter der indischen Botschaft) und Harald Kainz (Rektor der TU Graz) ließen sich diese einmalige Gelegenheit auch nicht entgehen.

Bei den beiden Satelliten handelt es sich um 20x20x20 cm würfelförmige und 8 kg schwere Nanosatelliten. Sie sind das erste Paar von insgesamt sechs, fast baugleichen Nanosatelliten, die ihre Reise in die Erdumlaufbahn antreten werden.

UniBRITE und TUG-SAT-1 sollen Helligkeitsschwankungen massereicher Sterne untersuchen. Dazu wurden Sternenkameras mit speziellen Filtern eingebaut, die die Sterne im roten und blauen Farbbereich erforschen können, um geometrische und thermische Effekte in der Analyse der beobachteten Phänomene trennbar zu machen, was wiederum Aufschlüsse über den inneren Aufbau der Sterne und die Entstehungsgeschichte des Weltalls geben soll.

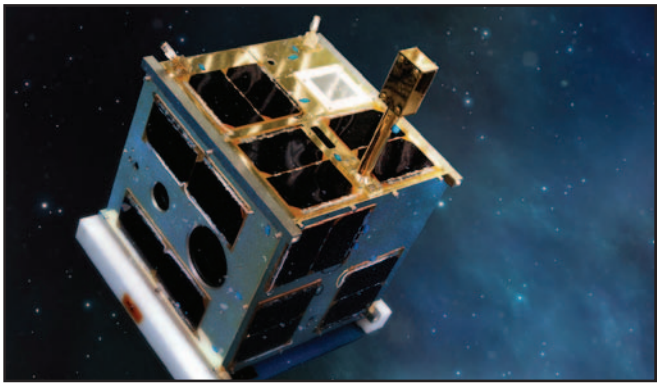
Karlheinz Töchterle (Bundesminister für Wissenschaft und Forschung) und Heinz W. Engl (Rektor der Universität Wien) gaben der Veranstaltung die Ehre und lobten dieses herausragende Projekt, als einen bedeutsamen Schritt für die Zukunft

der österreichischen Forschung auf Universitätsebene. Zehn helle und 100 schwächere Sterne sollen photometriert werden, wobei dessen gewonnene Daten eine noch nie dagewesene Präzision aufweisen werden.

Um 13:20 stand der große Augenblick dann unmittelbar bevor. Das Publikum durfte mittels Livestream zum Dhawan Space Centre in Südindien den Start hautnah miterleben. Wegen einer kurzen technischen Störung konnten die Besucher den Countdown leider nicht mitzählen, aber rechtzeitig zum Abheben konnten alle wieder mitfiebern und live erleben, wie die Rakete, eine indische PSLV (Polar Satellite Vehicle) ihre Triebwerke zündete und in Richtung Weltall startete. In ungefähr achthundert Kilometern Höhe wurden die Satelliten in den vorbestimmten Orbit ausgesetzt, von wo aus sie die Erde in einhundert und einer Minute umkreisen.

Abgerundet wurde das Programm noch mit, vom Fernsehsender OKTO vorbereiteten, Videobeiträgen, die das BRITE-Austria Projekt hinsichtlich technischer, organisatorischer und rechtlicher Gesichtspunkte beleuchteten. Bereits drei Stunden nach dem Start konnte mit TUG-SAT-1 Kontakt aufgenommen werden, als dessen Laufbahn zum ersten Mal Graz überquerte. In Zukunft werden das Koordinationszentrum der TU Graz, sowie zwei weitere Bodenstationen der Universitätswarte und der Technischen Universität Wien Kontakt zu den Satelliten halten.

Bereits wenige Wochen nach dem Start musste der Nanosatellit UniBRITE bereits seine erste Bewährungsprobe bestehen und entging nur knapp einer Kollision mit dem Amateurfunksatellit UOSAT-OSCAR 15. Solche Gefahren können leider auch in Zukunft nicht ganz ausgeschlossen werden. Dennoch haben die beiden Satelliten ihre Arbeit erfolgreich aufgenommen. Im Anschluss an den offiziellen Teil des Launch Event wurde der Beginn der österreichischen Weltraumära dann noch gebührend gefeiert.



ESPI Event: "The Relevance of General International Law for Debris Questions", 11 April 2013

Michaela Hinterholzer

During the Legal Subcommittee in April 2013, the European Space Policy Institute (ESPI) organised an evening event entitled "The Relevance of General International Law for Debris Questions." It was a good opportunity to discuss the highly relevant issue of space debris with three honourable professors in the field of International Law and Space Law.

At the beginning **Peter Hulsroj**, director of ESPI welcomed the guests and gave a short overview of the upcoming topics, which dealt with the necessity of hard law norms in the field of space debris mitigation and new ideas on active debris removal.

Professor Steven Freeland University of Western Sydney Law School, Australia) opened the evening with his presentation "General International Law and the Regulation of Outer Space (Debris) - Consider the Possibilities…" He was followed by **Professor Barry Kellman** (DePaul University College of Law, United States) who shared with the audience insights on "Space Nuisance - An International Tort". **Professor David Koplow** (Georgetown University Law Center, United States) concluded the round of presentations with his talk on "National Technical Means and Anti-Satellite Weapons: A Small Corner of Arms Control Law".

All three speakers tried to "open the topic of space debris from the outside" by asking how general international law applies in outer space and whether it is efficient enough. This issue is of utmost importance, especially since the law is always trying to catch up with the possibilities of space technology. In this regard Professor Barry Kellman argued that the law necessarily follows, wherever humans can go to and identified a right of common responsible use in international law, which originates from the Corfu Channel case and is resonated in Article IX of the Outer Space Treaty. According to Prof. Kellman's theory, once a gap in treaty law exists, such as in the case of space debris, then this gap should be addressed through negotiation. However, in the meantime the recognised principles of common responsible use apply, as activities are to be carried out in accordance with general principles of international law.

Professor David Koplow went one step further by arguing that even without the creation of any new laws it is already prohibited to create space debris under the arms control treaties. According to treaties such as the START III, States have the right to monitor treaty compliance with the use of national technical means of verification. It follows that it is prohibited to create so much debris that it jeopardises the operation of national technical means of verification satellites.

The presentations were followed by an interesting discussion with the audience raising issues concerning hard and soft law, nuisance as an international law concept and its relation to the general law on State responsibility, as well as the necessity to deal with the growing problem of space debris and to act now. In the end the guests had the chance to discuss this burning issue further over a glass of wine during the reception.

European Navigation Conference 2013, Austrian Institute of Navigation, Vienna, 23 - 25 April 2013

Karin Traunmüller

Between 23 and 25 April 2013, the Austrian Institute of Navigation (OVN) hosted the European Navigation Conference. The 17th conference in the GNSS series was held under the auspices of the European Group of Institutes of Navigation (EUGIN) in Vienna. Stephan Mayer, the President of OVN, stressed the importance of the conference as "a showcase for the state of the art and (…) for the innovations in the field of terrestrial and satellite navigation and its applications".

During the 3-day-conference, a dozen of sessions gave significant insights into the fascinating world of navigation and highlighted new developments.

The conference focused on the present status as well as on future prospects of navigation systems, with a particular emphasis on Galileo, the EU/ESA programme on global navigation. From a legal perspective, the panels on "Waterway Navigation", "GNSS –Certification, Standardisation, Simulation" as well as "Business and Economic Aspects of GNSS" were of particular interest for the NPOC Space Law Austria.

During the session on **"Waterway Navigation"**, the panelists addressed issues of precision navigation systems, presented the maritime volumetric navigation system (ARIADNA), and further discussed the impact of radio frequency interference on maritime DGNSS, design and performance evaluation of real time maritime traffic safety system as well as the need of common maritime data structure for e-navigation.

During the session on **"GNSS-Certification, Standardisation, Simulation"**, the speakers gave presentations on certification of traffic information systems, GNSS monitoring solutions and simulating GNSS position accuracy. >>

Monika Hentschinski (NavCert GmbH) stressed the need of realistic information on the traffic situation together with optimised routing, and Tamás Horváth (Alberding GmbH) presented the company's solutions to support precise positioning, which will become more and more important in view of the wide range of user applications relying on high accuracy GNSS positioning services around the world.

One of the sessions focused on **"Business and Economic Aspects of GNSS"**. On the panel, Andrea Kleinsasser (Austrian Federal Ministry for Transport, Innovation and Technology) and Johanna Egger-Berndorfer (Brimatech Services GmbH) gave an overview of Austrian space activities which date back to 1969, when scientific instruments developed by Austrian researchers were used in outer space for the first time.

In 2012 the "Strategy for space activities in Austria" was issued by the Austrian Ministry for Transport, Innovation and Technology. The Strategy highlights four objectives for future space activities, namely "Being an accepted and visible partner at European and international levels", "Aiming for a competitive Austrian space sector", "Focusing on the potential and use of space technology applications and satellite-based data" and "Providing the foundations for Austrian space activities". In addition, she showed that currently a total of 934 individuals are active in the Austrian space industry and research community, and that 114 organisations are involved in the space sector for 21 % of which this represents their core business. Competencies in Austria are focused in the field of spacecraft and carrier systems, instruments and payloads as well as satellite-based applications. In the same session, Rainer Horn and Thomas Tanghe (SpaceTec Capital Partners) presented the

Mobicap initiative, an ecosystem for access to finance in GNSS applications. The presentation given provided a comprehensive overview of the current state of the activities and discussed the existing financing opportunities, the market needs and the geographical and technological hotspots.

The conference attracted researchers, manufacturers, users, service providers and decision-makers from around the world. A number of side events were organised, inter alia a workshop on ARIADNA, which gave interesting insights on the design and implementation of the system.

For more information about the conference see http://www.enc2013.org/

EINBLICK *insight*

First Austrian Team at Manfred Lachs Space Law Moot Court

Sarah Germann, Laura Kiparski, Anja Nakarada Pecujlic

Since 1992, the Manfred Lachs Moot Court competition takes place around the world and is one of the most prestigious international moot courts. It is a great privilege for every student to get the chance to be part of it. For us, it was an even greater privilege as we were selected to represent the first Austrian Manfred Lachs Moot Court team. But how did it all begin?

At the Law Faculty of the University of Vienna, students have the possibility to study different branches of law, as there is a great variety of elective courses. One of them is space law. Already the name as such sounds intriguing and even mysterious for students who want to get to know new and innovative areas of law. We decided to sign up for the seminar on space law. When we attended the introductory class, we were informed that we can either write a seminar paper on space law or participate in the Manfred Lachs Moot Court competition. The Moot Court is structured in two parts: a written phase in which the teams have to write memorials as applicant and respondent, and the oral phase intended to prepare the students for the pleadings in front of judges.

Since only three persons could participate from each university, everybody who wanted to become a team member had to go through a selection process. First, we had to get familiar with this year's Moot Court case in order to understand all the facts. We had to make a short presentation explaining the details and legal issues arising in front of the "Court", consisting of Professor Marboe and her three assistants. After this phase, we were invited to an interview, where we had to demonstrate our knowledge in space law and, more importantly, in general international law. If you were Sarah Germann, Laura Kiparski or Anja Nakarada Pečujlić, you would have received a life changing phone call afterwards which transformed you from mere law students into team members of the first Austrian Manfred Lachs Space Law Moot Court team.

After having been selected for the team, we all agree that – apart from being proud and curious – there followed a big question mark: what now? We all knew that the first task was to write two memorials, one for the applicant, and one for the respondent, based on the case we had already been studying. But what sounds so easy in theory can be rather overwhelming in practice. None of us had previously participated in a moot court, and as writing a memorial is different from writing a "normal" seminar paper, we had to – and thankfully could – rely on our coaches Markus Beham, Michaela Hinterholzer and Karin Traunmüller to show us the next steps to take. We started researching on a variety of issues, from customary international law to specific provisions concerning the Moon, environmental law and even intellectual property law. This jump into cold waters, although it certainly was a bit scary at the beginning, proved to be the best (and perhaps only) approach: from week to week, it became easier to fulfill our tasks and work on the memorials. Without noticing, we delved more and more into the fascinating subject of space law and general international law.

Besides spending hours and hours in the library and discussing the case with our coaches, we also participated in the

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elective course of Professor Marboe on General Legal Issues of Space Law as well as the lectures of Professor Steven Freeland on Special Legal Issues of Space Law. As Professor Freeland has a lot of experience judging moot courts, we were lucky and grateful to be able to participate in his course.

At the beginning, it all seemed a lot, but every time we discussed our memorials and worked on a new task, we realised the improvements and became more advanced in research, citation, text formatting and legal argumentation. At first sight, the case seemed rather abstract and more like a science fiction adaptation, but once we discovered how many details actually were based on real situations, it became more interesting. The case concerned a lunar station that belonged to the space faring nation of Lydios which had permitted other States to use it. Endymion made use of this right and started occupying parts of the facility to advance its tourist programme. After a change of government in Lydios, the country decided to terminate its whole lunar program, shut down the facility and demanded other States to vacate the lunar station. It passed a pertinent national law, the "Moon Protection Act", but Endymion still continued to use the lunar facility. A third State, the isolated Kingdom of Kandetta, known for its unsuccessful launch attempts, nevertheless launched its own spacecraft Bennu for scientific reasons. Because of technical problems in orbit it wanted to dock at the lunar facilities in order to refuel and to retrieve the scientific mission. However, Lydios denied permission to dock at its lunar station. Kandetta finally docked on the part occupied by Endymion. However, due to a malfunction, the docking failed, requiring Bennu to go back to Earth.

The case certainly bears a lot of resemblances to real life events, such as the lunar protection issue, where NASA guidelines and a Federal Russian Law exist in order to ensure the environmental protection of the Moon. It was of utmost interest to discover how many facts represent burning legal issues in space law and general international law.

In February, we were split up as a group and each of us received specific points within our overall argumentation to work on which would then later on also be our issues for the pleading. Our coaches helped us in completing and finalising our memorials, so that after an intensive couple of weeks we were able to submit our memorials to the European Center of Space Law in the beginning of March.

Following a short Easter-break, the oral phase began. Together with the Telders Moot Court Team of our University, we had the opportunity to spend an afternoon with a very helpful and also quite entertaining rhetorical training by an expert in psychology. Then, our intensive oral coaching with up to four sessions a week started: every one of us knew the case, yet presenting it well before a jury was still a challenging task. Each of us had her own little problems, like speaking too fast, repeating some words too often, or not being used to answering to different questions spontaneously. However, thanks to many hours invested not only by our coaches but also by other people with moot court experience (special thanks to Jane Hofbauer and to the previous participants of the Telders Moot Court), we gradually started to become better and more experienced at pleading our case. A special challenge with these oral pleading is, besides the necessity to present a long and complex case in only about 10 minutes per claim, that

you never know what "kind" of judges to expect: there may be a silent bench, or there may be a judge interrupting you every two minutes with questions and remarks. All in all, we were trained to be able to answer almost every question and even give a response when we were unsure what to say.

A personal highlight between the intense preparations was the possibility to visit the United Nations Headquarter in Vienna, where the 52nd session of the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space was held in April. In order to avoid losing a pleading session, we even practiced in the corridor of the Vienna International Centre during the lunch break.

In May, all the preparations came to an end and, accompanied by Karin Traunmüller and Michaela Hinterholzer, we travelled to Rome to demonstrate how much we had learned and achieved. The European Rounds of the Manfred Lachs Moot Court were held in the prestigious University La Sapienza from 8 to 10 May 2013, hosted by the European Centre for Space Law (ECSL) with Professor Marchisio as the chairman. On arrival, all teams were welcomed at a reception in the University. The next day was already our big day, the day of the pleadings where we could present our case.

The applicants of our team were the very first to plead before the honorable court, consisting of eminent space law and public international law professors from all over Europe. Our applicants, representing the Republic of Lydios, contested against the team from the People's Friendship University in Moscow. In the afternoon, our respondents contested against a team from the University of Belgrade. In the end, the semi-finalists – the teams from the National & Kapodistrian University

of Athens, the University of Cologne, the University of Luxembrug and Leiden University – were announced. The University of Leiden finally won over the University of Luxemburg and continued its preparation for the world finals of the Manfred Lachs Moot Court in Bejing in Autumn 2013.

All in all, it was a very intense but also extremely exciting experience to plead against students from other universities all over Europe and to learn how they argued and solved the given case. Although there could have been some rivalry due to the competitive background of the Moot Court, acquaintances and friendships were made very quickly. Furthermore, we had time to talk to the professors whose publications we studied for half a year and also had the possibility to get feedback concerning our performance after the competition. Eventually, there was also time to explore the antique and beautiful city of Rome as a big multinational group. The ECSL organised a tour through the Musei Capitolini, followed by a great dinner in a local Enoteca where there was time to get to know each other even better.

The moot court experience might be a tough one in the beginning, but in the end it is definitely worth every hour of hard work put into it. We, the Austrian Moot Court Team, acquired a lot of knowledge in the subjects of space law and international law, had a very good and prosperous working climate with an amazing teaching staff/student-ratio, an unforgettable trip to Rome and got acquaintances within the international space law community.

We are very thankful to Professor Irmgard Marboe, Karin Traunmüller, Michaela Hinterholzer and Markus Beham and wish good luck to the next team!

Excursion to UNCOPUOS and the United Nations Office in Vienna, 12 June 2013

Thomas Kruspel

On 12 June 2013 our group ,consisting of 26 students and assistants of the Vienna University of Economics and Business (WU) and led by Prof. Erich Vranes and Dr. Nicole Ehlotzky (both Institute for European and International Law, WU), met in front of the Vienna International Centre (VIC) early in the morning. After having passed the security check, a day entirely devoted to the topic of space law began. We attended the opening of the 56th session of the United Nations (UN) Committee on the Peaceful Uses of Outer Space (COPUOS), during which a lot of diplomatic courtesy was exchanged. We were also able to listen to some interesting statements, such as the Austrian and the European Union's opening statements.

After we had spent about one and a half hour at the opening session, we had an appointment for a guided tour around the VIC, which is better known as the "UNO-City" in Austria. Throughout the tour, we heard many interesting facts on how Vienna became one of the four cities hosting the United Nations, on the construction of the building during the 1970s and the various UN- or UN-related organisations located in Vienna, such as the International Atomic Energy Agency (IAEA), the Industrial Development Organization (UNIDO), the Office on Drugs and Crime (UNODC) and the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO). Our tour also led us to the visitor's gallery of the largest convention room, where we learned about the usual course of a conference and the importance of the work done by interpreters.

After lunch in the VIC-restaurant, we met in a room to gain some background legal knowledge on what we had heard earlier during the opening session. Since most of us were quite unfamiliar with space law and the basic legal framework in this field, we were given some firsthand information by experts.

We listened to a report by Ms. Zhuoyan Lu from China who writes her PhD on space law in Cologne and completed an internship at the UN Office for Outer Space Affairs. She told us about the work of that organization, her daily routine and her impressions as an intern.

Subsequently, Ms. Anita Rinner gave us an introduction into the field of space law. She is a member of the team of Prof. Christian Brünner (University of Graz), an expert in space law

who originally was supposed to come by himself but, unfortunately, could not do so on short notice. Anita Rinner provided us with an interactive lecture and an overview of the history of the exploration of space. She talked about the most important international treaties, such as the Outer Space Treaty, the Rescue Agreement, the Liability Convention, the Registration Convention and the Moon Treaty, which are relevant for all activities in space. She also dealt with the most important acts of the European Union, national laws and organisations operating in the field of outer space. Anita Rinner also presented some small case studies, for example on the consequences of a satellite crash or a collision in space. Of course, she also discussed the important future challenges of the ongoing process of space exploration, like the exploitation of resources in outer space, which is already within reach, a possible manned mission to Mars and the problem of space debris. All in all, it was a brief overview of the most important basics of space law. Although time was limited, the lecture helped to provide an insight and to build up interest and awareness for this interesting field of law.

In the afternoon we joined the COPUOS session again which was marked by the first women spaceflight by Valentina Tereshkova 50 years ago. We were lucky to attend the conference "Space: Building the Future Today, Celebrating 50 years of Women in Space" and the panel discussion with a number of inspiring ladies, 4 of whom had actually been to outer space.

Finally, we spent the evening at a reception hosted for us by the Austrian Foreign Ministry. We were welcomed with drinks and a buffet and we had the chance to meet the Deputy Head of Mission of the Permanent Mission of Austria to the UN in Vienna, Dr. Wolfgang Thill. After a brief introduction on the way he and his team represent Austria's interests at the UN, we were able to ask some questions and spent a little more time together discussing today's impressions and experiences.

Seminar on Space Law and Space Policy including Field Trip to Vienna, University of Graz

Hannes Mayer

The seminar on Space Law and Space Policy held at the University of Graz by Prof. Christian Brünner and Mag. Alexander Soucek has been a part of the summer term curriculum for several years now. With the assistance of Anita Rinner and Hannes Mayer the range of topics encompassed the reasons for space law, sources of space law and the role of the European Union.

In the first unit of this year's course Anita Rinner introduced students to the field of space law and further confronted them with case studies to provide an overview on the broad range of topics concerning space law and to give the students a first chance to elaborate on the matter. This introduction was supplemented by a presentation on space law with special regards to developing countries, held by Dr. Yvonne Karimi-Schmidt. Then Hannes Mayer provided a detailed outline of the development of space law and the sources of space law as well as the role of the European Union and its relationship with the European Space Agency. Additional focus was put on national space legislation.

The second part of the seminar was led by Mag. Alexander Soucek. His focus was on the scientific-technical side of space activities. In addition, he mentioned areas where similar legal regimes apply, namely the law of the High Sea and the Antarctic, comparing them to outer space. The Seminar culminated in a UN-Simulation, where students had to deliberate on the advancement of UN space law regulations.

Following the last year's success, the students had again the opportunity to take part in a field trip to Vienna to visit several space law institutions. They first met on Sunday evening to get a guided tour in the Kuffner Observatory. On Monday, they attended the opening session of the UNCOPUOS Legal Subcommittee, followed by the traditional symposium, held jointly by IISL and ECSL on the Berlin Protocol on Space Assets to the Cape Town Convention on Mobile Equipment. As usual, the students were also invited to the reception after the symposium, where they had the chance to get to know delegates and UN-staff.

Tuesday's programme encompassed a visit to the European Space Policy Institute where the resident staff briefed the students from Graz and Vienna on the history of ESPI, its tasks and day to day work as well as on European space policy in general. The students then had the opportunity to engage in discussions with the ESPI staff. Several participants of the field trip returned to the Vienna International Centre to follow the afternoon's proceedings on suborbital spaceflight.

22nd ECSL Summer Course on Space Law and Policy 2 - 13 September 2013, Klosterneuburg, Austria

Ivana Jozic

The 22nd edition of the ECSL Summer Course on Space Law and Policy took place from 2 to 13 September 2013 in Klosterneuburg – a city which is 11 kilometers north-west from Vienna. It was organised by the European Centre for Space Law (ECSL) with the support of the Faculty of Law of the University of Vienna and the NPOC Space Law Austria. 38 students – among them 6 Austrians – and 4 tutors participated in this course to get a better and intensive knowledge in space law and space policy.

During the two weeks, 29 lectures were given by more than 20 lecturers. Although a number of various topics were covered, the emphasis of this year's course was space debris and questions related to it. Also the student's project dealt with the mitigation of space debris. The participants were divided into 8 groups consisting of 4 to 6 students. Each group was assigned one of the 4 tutors, the duty of whom it was to support the teams in their projects and help them with any question in this context. After the project had been presented by Professor Achilleas on the first day of classes, students started to collect ideas, to brainstorm, to look for solutions and to study the space law treaties. The teams had only 9 days to finish their written project paper before starting with the preparation of the oral presentation. Not only the students but also the tutors inserted several night shifts to finish the projects. Despite the hard work, the team work allowed the students to get to know each other better, exchange opinions and become good friends, not only within their own group, but also with other participants of the summer course.

The lectures were of great help in deepening the students' knowledge for the project. Of particular interest were Professor Kerrest de Rozavel's lecture on responsibility and liability and Professsor Marboe's lecture on national space legislation.

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Furthermore, the students learned about the connection between the EU and space law and policy, the issue of soft law in outer space as well as insurance perspectives of space debris. Because of the large number of lectures, not all of the lecturers can be mentioned separately, but every lecture was deeply interesting and enhanced the students' knowledge of space law. The lecturers were highly motivated and encouraged discussions. Noteworthy is the lecture on Space Debris Policy given in the European Space Policy Institute (ESPI) in Vienna by Mr. Soucek, who is working at ESA's Legal Department in Paris.

During the weekend, students could decide for themselves what they wanted to do. Most of us visited Vienna and its beautiful buildings, like the Parliament, the townhall or Stephen's Cathedral. In general, during the summer course, we had the possibility to participate in cultural and other activities which Klosterneuburg and Vienna offered. So, we visited the most popular wine cellar of Klosterneuburg and got the oppurtunity to taste different wines. Also the abbey of this city impressed most of us, because it is a building of the 16th century which still exists today in the Gothic style. One evening, we went to see the Operetta "Frau Luna" by Paul Lincke at the Vienna Volksoper. It was a very amusing kind of musical and was performed with subtitles in English.

The last day of the ECSL Summer Course 2013 arrived sooner than expected. The last day's programme included a visit to the United Nations. After a guided tour we were given a lecture by Mr. Niklas Hedman (UNOOSA) and then presented the team work in front of a jury, consisting of some of the professors. The winning teams were announced in the evening, during the farewell dinner organised in one of Klosterneuburg's most famous restaurants, the "Gastmeisterei". The evening was quite sad, because the students, tutors and professors had to say „good-bye".

The International Space University (ISU) Space Studies Program (SSP) 2013 in Strasbourg

Anita Rinner

Austria participated in the ISU SSP 2013 in Strasbourg! Anita Rinner from the NPOC Subpoint Graz had the great chance to participate in the well-known space studies programme this year. Thanks to the generous subsidies coming from the European Space Agency (ESA), EUMETSAT, Heinlein, the Austrian Science and Research Promotion Agency, the STRABAG AG, Professor List from AVL List, LIONS Club Bruck an der Mur and the City of Graz, I was able to participate in this prestigious summer programme where she gained unforgettable experience.

100 participants from 24 countries all around the world were able to successfully complete the programme. The programme was divided into three main sections. First, all students had to attend 64 core lectures within four weeks. Afterwards, two intense weeks of departmental activities took place. Students were advised - according to the ISU´s philosophy (highlighting an interdisciplinary character) - not to choose subjects they are familiar with. Hence, I did something totally different from my academic background in law and chose engineering as my subject. I participated in a rocket building competition and as a flight dynamics engineer I was responsible for the technical design of my team rocket. As this year´s topic of the engineering workshop was Asteroid and Moon mining, my final department presentation was on the technical and legal aspects of Asteroid retrieval missions.

Memorable highlights of the programme were outstanding excursions, for instance to CERN, SES satellites in Luxembourg, ESOC and EUMETSAT in Darmstadt.

Finally, during week seven and nine, the participants had to focus on their team project. I was assigned the project called AMBIEnT which means "Affoardable Micro-satellite based Interned and environmental monitoring". Within this group I chaired the subgroup policy and law. The project aimed to provide affordable internet access and environmental monitoring for the Brazilian Amazon region through a micro-satellite constellation consisting of 14 satellites launched into the Low Earth Orbit.

After nine weeks, the experience can be summarised as follows: participating in the ISU SSP means to be fully open for an intense time with very little sleep and much workload during the entire stay. It also means to be open to get acquainted to

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new people and cultures coming from all around the world. One of the most important aspects was showing an interdisciplinary approach and to be interested in a broad range of topics. Challenging factors were working under a considerable time pressure due to tightly scheduled deadlines.

As a result of the programme, the participants learned to work under stress and to set priorities, use efficient time management and self-reflection. However, the programme also consisted of a wide range of leisure time activities, such as Salsa dance, football games, rope skipping, group excursions and journeys to Paris and Switzerland.

I would like to thank all my sponsors and Professor Brünner (University of Graz) for making everything possible to experience this unforgettable summer!

ESPI at European Forum Alpbach, 12 -18 August 2013

Peter Hulsroj

The ESPI Director, Peter Hulsroj, co-chaired a seminar entitled 'Exploring the Universe, Competition or Cooperation?' with Shuang-Nan Zhang, Professor and Director at the Center for Particle Astrophysics, Institute of High Energy Physics, Chinese Academy of Sciences, Beijing. The seminar took place from 12 to 18 August 2013 and was attended by around forty students.

The seminar 'Exploring the Universe, Competition or Cooperation?' covered 6 morning sessions in which it was discussed whether we need to explore the universe at all, whether we need to do it with astronauts and robotic means or whether remote observation is enough, how exploration is and can be used for geopolitical purposes, how exploration inspires, whether and how exploration could lead to humans populating other planets and whether that would be desirable. Discussions were wide-ranging and many scientific and policy issues were addressed. Whether, indeed, a grand scheme for cooperation can be realized remained an open question, but both such schemes and pure competition and mixed approaches were investigated in detail.

On Friday evening the movie 2001, A Space Odyssey, was shown as an open air event, and, remarkably, while the film was being shown the International Space Station passed above in full view.

AUSBLICK *prospect*

October 2013 – June 2014	"Space, auf in den Weltraum" - Exhibition at the Technical Museum Vienna, Austria
25 November – 1 December 2013	European Robotics Week 2013, various robotics related activities across Europe, organised by the European Robotics Association http://www.eu-robotics.net/
14 November 2013	Deep Space LIVE: MetOp – nicht nur ein Wettersatellit, Ars Electronica Center, Linz, Austria
4 - 6 December 2013	4th International Colloquium Scientific and Fundamental Aspects of the Galileo Programme, Prague, Czech Republic
12 December 2013	Deep Space LIVE: SMOS – die Wasserkreislauf-Mission, Ars Electronica Center, Linz, Austria
9 - 10 January 2014	Heads of Space Agencies Summit on Exploration: Planetary Robotic and Human Spaceflight Exploration, Washington DC, USA
10 - 21 February 2014	Scientific and Technical Subcommittee, UNCOPUOS, VIC, Vienna, Austria
24 March - 4 April 2014	Legal Subcommittee, UNCOPUOS ,VIC, Vienna, Austria
24 March 2014	IISL-ECSL Space Law Symposium 2014, Regulatory needs for very small satellites, VIC, Vienna, Austria
29 March 2014	"Small Satellites: Chances and Challenges", Juridicum, University of Vienna, Austria
11-20 June 2014	Committee on the Peaceful Uses of Outer Space, Main Committee, VIC, Vienna, Austria
29 September – 3 October 2014	International Astronautical Congress, Toronto, Canada

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HERAUSGEBER: NPOC Space Law Austria, Prof. Dr. Irmgard Marboe, Schottenbastei 10-16/5/2, 1010 Wien, irmgard.marboe@spacelaw.at, www.spacelaw.at

KONZEPT, LAYOUT, KOORDINATION: Anna-Maria Kuckerz **AUTOREN**: Irmgard Marboe, Karin Traunmüller, Michaela Hinterholzer, Anita Rinner, Laura Kiparski, Sarah Germann, Anja Nakarada Pecujlic, Hannes Mayer, Thomas Kruspel, Ivana Jozic **FOTOS**: Nicole Ehlotzky, Irmgard Marboe, ESA, **LAUNCH EVENT**: www. isro.org, TU Graz, India location map: Uwe Dedering **FOTOS NAVIGATION CONFERENCE**: Johannes Vallant, **FOTOS COVER**: Crewfoto V.Tereshkova, ESA, Irmgard Marboe

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