

**United Nations / Austria / European Space Agency
Symposium on
Small Satellite Programmes for Sustainable Development**

Programme

(as of September 3, 2009)

**Austrian Academy of Sciences, Institute for Space Research
Schmiedlstraße 6, Graz, Austria**

Hosted by the Austrian Federal Ministry for European and International Affairs,
Federal Ministry for Transport, Innovation and Technology,
State of Styria and City of Graz
and co-sponsored by the European Space Agency

8- 11 September 2009

Honorary Committee (in alphabetical order):

H. Böck	Federal Ministry for European and International Affairs, Austria
C. De Cooker	European Space Agency, France
K. Edlinger-Ploder	Member of the Government, State of Styria, Austria
S. Nagl	Mayor, City of Graz, Austria
M. Othman	Director, Office for Outer Space Affairs, United Nations
I. Schädler	Deputy Director General, Federal Ministry for Transport, Innovation and Technology, Austria
F. Voves	Governor, State of Styria, Austria
M. Wegscheider	Member of the Government, State of Styria, Austria

Programme Committee (in alphabetical order):

H. Böck	Federal Ministry for European and International Affairs, Austria (Chairman of the Programme Committee)
L. Canturk	Office for Outer Space Affairs, United Nations
S. Chernikov	Office for Outer Space Affairs, United Nations
J.M. Contant	IAA, France
A. Kleinsasser	Federal Ministry for Transport, Innovation and Technology, Austria
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J. Ortner	EURISY, Austria
W. Riedler	Austrian Academy of Sciences, Austria
C. Reinprecht	Federal Ministry for European and International Affairs, Austria
R. Sandau	DLR, Germany
M-E. De Vel	European Space Agency, France

Local Organizing Committee (in alphabetical order):

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A. Fuchs-Fehringner	Graz Tourism
G. Haubenhofner	City of Graz
O. Koudelka	Joanneum Research
W. Riedler	Austrian Academy of Sciences (Chairman)
A. Rupprecht	State of Styria
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Tuesday, 8 September 2009

Morning

09:00

Opening session

Master of Ceremony: Willibald Riedler, Austrian Academy of Sciences

09:10

Opening Ceremony

Welcome / Opening Remarks

- *Wolfgang Baumjohann, Austrian Academy of Sciences*
- *Harald Posch, Federal Ministry for Transport, Innovation and Technology*
- *Amnon Ginati, European Space Agency*
- *Peter Piffel-Percevic, City of Graz*
- *Helmut Böck, Federal Ministry for European and International Affairs*
- *Mazlan Othman, United Nations Office for Outer Space Affairs*

10:00

Keynote Addresses

Chairperson: Dr. Rainer Sandau, German Aero Space Center (DLR), Germany

10:00

Using Small Satellites for Low Cost Space Education & Science Missions

Prof. Bob Twiggs, Space Science Center, Morehead State University, USA

10:30

ESA New Integrated Applications Programme Stimulating User Driven Small Satellites Missions

Prof. Amnon Ginati, Integrated Applications Programme, European Space Agency (ESA)

11:00

Coffee/Tea Break

11:00-12:30 **Press Conference**

(by invitation)

11:30

Objectives of the 2009 Symposium

UNOOSA

12:00

Lunch

Afternoon

13:30

Utility of small satellites for capacity building

Chairperson: Prof. Johannes Ortner, EURISY, Austria

Rapporteur: Mr. Ronnie Nader, Ecuadorian Civilian Space Agency (EXA), Ecuador

13:30

Introductory Lecture:
Small Satellites – A Driver for Capacity Building

Dr. Rainer Sandau, German Aero Space Center (DLR), Germany

13:50

SmallSats: Programmatic and Political Challenges – an Agency Point of View

Mr. Harald Posch, Head, Austrian Aeronautics and Space Agency, Austria

14:10

STAR Program – Cooperative Satellite Development Project in Asia-Pacific

Mr. Masanobu Tsuji, STAR Programme, JAXA, Japan

14:30

Potential Role of Small Satellite Technology for Enhancing the Implementation of Sustainable Development Programs in Amazonian Countries: Analysis of the Venezuelan and Regional Context

Ms. Romina Acevedo Galindo, Bolivarian Agency for Space Activities (ABAE), Venezuela

14:50	Super-Small Spacecrafts as Effective Means for Development of Advanced Space Technologies	<i>Mr. Alexey Romanov & Mr. Valery Vishnyakov, Russian Institute of Space Device Engineering, Russia</i>
15:10	HUMSAT Project: A Picosatellite Constellation for humanitarian initiatives, climate monitoring and sustainable development	<i>Prof. Fernando Aguado-Agelet, University of Vigo, Spain</i>
15 :30	<i>Coffee/Tea Break</i>	
16:00	ESA's Small Satellites Education Activities	<i>Mr. Piero Galoene, Education Office, European Space Agency (ESA)</i>
16:20	The Micro-Satellite for Sustainable Development Program in the Aerospace Electronics Technology Center, National Institute of Aeronautics and Space (LAPAN)	<i>Mr. Robertus Triharjanto and Mr. Chusnul Tri Judianto, National Institute of Aeronautics and Space Indonesia (LAPAN), Indonesia</i>
16:40	New Challenges and Opportunities for Africa: Home-made Small Satellite in Cameroon for Sustainable Development and Disaster Risk Management	<i>Mr. Shibkwu Jatong Frederick and Mr. Chia Tomukum Global Centre for Compliance, Hazards & Disaster Management, Cameroon</i>
17:00	The Development Algorithm – How to Apply Space Technology for Large Scale Development in Africa	<i>Mr. Sias Mostert, Space Commercial Services Ltd., South Africa</i>
17:20	Capabilities of Small Satellites of ISRO for Serving Remote Sensing Missions	<i>Mr. Dantu Venkaja Anantha Raghava Murthy, Small Satellite Projects, Indian Space Research Organization (ISRO), India</i>
17:40	Satellite-Based Built-Up Area Monitoring for Efficient Earthquake Response: A Case Study of Grande-Terre Island, Guadeloupe	<i>Mr. Nikolay Khabarov, International Institute for Applied Systems Analysis (IIASA), Austria</i>
18:10	<i>Transfer to the hotel</i>	
19:00	<i>Transfer from the hotel to the City of Graz</i>	
19:30	<i>Reception by the Governor of the State of Styria in “Orangerie”</i>	

Wednesday, 9 September 2009

Morning

09:00	<u>Establishing a small satellite programme: policy, planning and implementation</u> <i>Chairperson: Prof. Bob Twiggs, Space Science Center, Morehead State University, USA</i> <i>Rapporteur: Mr. Valery Vishnyakov, Russian Institute of Space Device Engineering, Russia</i>	
09:00	RazakSAT Project	<i>Mr. Ahmad Sabirin Arshad, Astronautic Technology (M) Sdn Bhd, Malaysia</i>
09:20	SATEDU - University Didactic Satellite for Hands-on Training and Easy Access to Low Cost Small Satellite Missions	<i>Mr. Esau Vicente Vivas, Universidad Nacional Autónoma de México (UNAM), Mexico</i>
09:40	The Role of Education in Small Satellite Programmes: A Nigerian Perspective	<i>Mr. Olaleye Salu, African Regional Center for Space Science and Technology Education, Nigeria</i>
10:00	DMC - the Benefits to Developing Nations	<i>Mr. Simon J. Crouch, Surrey Satellite Technology Ltd, UK</i>
10:20	<i>Coffee/Tea Break</i>	

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| 10:40 | Linking Space Technology to National Policy Process | <i>Mr. Byron Anangwe , Regional Centre for Mapping of Resources for Development, Kenya</i> |
| 11:00 | Project HERMES: The first Internet-to-Orbit Automated Gateway | <i>Mr. Ronnie Nader, Ecuadorian Civilian Space Agency (EXA), Ecuador</i> |
| 11:20 | Turkish Satellite Technology Applications for Sustainable Development and Capacity Building | <i>Ms. Burcu Dikmen , TUBITAK, Turkey</i> |
| 11:40 | The Launch of the Brazilian INPE/UFMS's Cubesat, the NANASATC-BR Space Weather Mission | <i>Mr. Eduardo Escobar Burger, Federal University of Santa Maria/INPE, Brazil</i> |
| 12:00 | The Need for an Integrated Small Satellite Space Programme: Perspective from the SumbandilaSat Missions Operations | <i>Mr. Pieter Paul Adriaan Kotze, CSIR Satellite Applications Centre, South Africa</i> |

12:20 *Lunch*

Afternoon

13:30 Launch opportunities for small satellites and regulatory issues

Chairperson: Mr. Piero Galoene, Education Office, European Space Agency (ESA)

Rapporteur: Mr. Masanobu Tsuji, STAR Programme, JAXA, Japan

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| 13:30 | ITU Radio Regulations Related to N-GSO Small Satellites | <i>Mr. Attila Matas, International Telecommunication Union (ITU)</i> |
| 13:50 | Launch opportunities for small satellites with SpaceX | <i>Mr. Aaron Dinardi, Space Exploration Technologies (SpaceX), USA</i> |
| 14:10 | Netherlands Antilles Satellite Orbit Development | <i>Mr. Leonardo D. Ladeira, Bureau of Telecommunication and Post, Netherlands Antilles</i> |
| 14:30 | Dnepr Cluster Launches: Large-scale Opportunities for Small Satellites | <i>Mr. Alexander Serkin, Kosmotras, Russia</i> |
| 14:50 | <i>Coffee/Tea Break</i> | |
| 15:15 | <i>Technical visit to ground station and satellite test facilities</i> | |
| 17:00 | <i>Transfer to the City of Graz</i> | |
| 17:30 | <i>Guided tour through the City</i> | |
| 19:00 | <i>Reception by the Mayor of Graz</i> | |

Thursday, 10 September 2009

Morning

09:00 Mission Design/Hands on Activity (Facilitated by Experts)

Presentations and Instructions supplemented by demonstration of related software tools (simulations) or by practical exercises

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| 9:00 | Spacecraft Design Consideration as Compared to Terrestrial Devices: Satellite Orbits, Space Environment, Power Systems and Communications Design | <i>Prof. Bob Twiggs, Space Science Center, Morehead State University, USA</i> |
| 10:00 | Attitude Control | <i>Mr. Norhizam Hamzah, Astronautic Technology (M) Sdn Bhd, Malaysia</i> |
| 11:00 | <i>Coffee/Tea Break</i> | |

11:30 Communication Design: *Prof. Otto Koudelka, Joanneum Research, Austria & Dr. Valery Vishnyakov, Russian Institute of Space Device Engineering, Russia*
 - onboard command&telemetry links;
 - onboard real-time high-speed downlinks for scientific and remote sensing data;
 - intersatellite data links in constellations;
 - receiving ground terminals.

12:30 *Lunch*

Afternoon

13:30 Mission Design/Hands on Activity (Facilitated by Experts) cont.

13:30 Demonstration of Satellite Tool Kit (STK) *Mr. Jürgen Kallup, Tukom, Germany*

15:00 *Coffee/Tea Break*

15:30 Demonstration of Hermes System / Operator Training *Mr. Ronnie Nader, Ecuadorian Civilian Space Agency, Ecuador*

17:30 *Transfer to the City of Graz*

18:00 *Dinner at "Landhauskeller" in the City*

Friday, 11 September 2009

Morning

9:00 Mission Design/Hands on Activity (Facilitated by Experts) cont.

Working groups to develop project plans with assistance of available experts

12:00 *Lunch*

Afternoon

13:30 Wrap Up Session

Chairperson: Prof. Otto Koudelka, Joanneum Research, Austria

13:30 Putting knowledge to work - presentation by participants on concept of a national small satellite programme
 Followed by discussion: *All participants*

15:00 *Coffee/Tea Break*

15:30 Closing Ceremony

Master of Ceremony: Willibald Riedler, Austrian Academy of Sciences

Distribution of Certificates and Closing Remarks

- *Willibald Riedler, Austrian Academy of Sciences*
- *United Nations Office for Outer Space Affairs*

16.30 *Transfer to the Hotel and end of Symposium*

Poster sessions

#	Title	Author
1	1-Remote Sensing activities in Bangladesh 2-Suitability of multi-mission satellite in Bangladesh	Mohd. Golam RAHMAN, Bangladesh Space Research and Remote Sensing and Remote Sensing Organization (SPARRSO), Bangladesh
2	Technology & Applications of remote sensing satellite and strategy towards the development of national remote sensing satellites for Pakistan	Faisal Yousuf KHAN, Satellite Research & Development Center, Pakistan Space and Upper Atmosphere Research Commission (SUPARCO), Pakistan
3	The ICT Sector survey in Burkina Faso	Lamoussa OUALBEOGO, Ministry of Post and ICT, Burkina Faso
4	Research about the rapid data fusion of Beijing-1 microsatellite images	Xiaorong XUE, Beijing University of Technology, China
5	The use of GIS and remote sensing technologies in variety of applications for sustainable management of Mekong River Basin	Suthy HENG, Cambodia National Mekong Committee (CNMC), Cambodia
6	Monitoring atmospheric chemical compositions and land surface and vegetation changes from satellites: A way forward for scientific advancement in Africa	Leonard Kofi AMEKUDZI, University of Science and Technology (KNUST), Kumasi, Ghana
7	Application of Satellite estimates over Uganda	Ms. Jamiat NANTEZA, Makerere University, Uganda
8	Capacity Building in Remote Sensing and GIS in Sudan	Prof. Mohammed Galal Mohammed AHMRD, Director General, National Center for Research, Khartoum, Sudan