

United Nations/Austria/European Space Agency Symposium
on
Space Applications for Sustainable Development
To Support the Plan of Implementation of the
World Summit on Sustainable Development
“Water for the World: Space Solutions for Water Management”

13-16 September 2004
Austrian Academy of Sciences, Institute for Space Research
Schmiedlstraße 6, Graz, Austria

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

FINAL PROGRAMME

Honorary Committee for the Symposium (in alphabetical order):

- S. Camacho (Director, Office for Outer Space Affairs, United Nations (UN/OOSA))
- K. Edlinger-Ploder (Member of the Provincial Government, State of Styria, Austria)
- R. González A. (Ambassador, Permanent Representative of Chile to the United Nations (Vienna, Chile))
- K. Hodgkins, (Deputy Director, Office of Space and Advanced Technology, Department of State, United States of America)
- W. Klasnic (Governor, State of Styria, Austria)
- W. Lichem (Ambassador, Federal Ministry for Foreign Affairs (BMAA), Austria)
- S. Nagl (Mayor, City of Graz, Austria)
- G. Schöpfer (Landesrat, State of Styria, Austria)
- I. Schädler (Deputy Director General, Federal Ministry for Transport, Innovation and Technology (BMVIT), Austria)
- L. Schoeggel (Vice-Governor, State of Styria, Austria)

Programme Committee (in alphabetical order):

- A. A. Abiodun, (Chairman of the United Nations Committee on the Peaceful Uses of Outer Space)
- J. Aschbacher (Programme Coordinator, Directorate of Earth Observation Programmes, European Space Agency (ESA))
- T. Chiku (Chief, Committee Services and Research Section, UN/OOSA)
- D. El-Hadani (Director, Centre Royal de Télédétection Spatiale (CRTS), Morocco)
- G. Graf (BMAA, Austria)
- R. Missotten (Senior Programme Specialist, Division of Earth Sciences and Focal Point for Outer Space Activities, United Nations Educational, Scientific and Cultural Organization (UNESCO))
- E. Mondre (Austrian Space Agency (ASA))
- J. Ortner (International Space University (ISU))
- C. Pattillo (Director, CRP & SIG, Chile)
- W. Riedler (Chairman, Austrian Academy of Sciences (AAS))
- E. Williams (International Programs Specialist, Office of External Relations, National Aeronautics and Space Administration (NASA))

Local Organizing Committee (in alphabetical order):

- A. Fuchs-Fehring (Graz Tourismus)
- G. Haubelhofer (City of Graz)
- O. Koudelka (Joanneum Research)
- P. Piffl-Percevic (State of Styria)
- W. Riedler (Chairperson, AAS)
- G. Tuscher (InnoMedia, Consultant for Joanneum Research)

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| <p><u>Focal Point:</u></p> <p>Takemi Chiku Chief, Committee Services and Research Section, Office for Outer Space Affairs United Nations Office at Vienna, P.O. Box 500, A-1400 Vienna, Austria Phone: (+43-1) 26060-4943 Fax: (+43-1) 26060-5830 Email: takemi.chiku@unvienna.org</p> | <p><u>Local Organizer:</u></p> <p>Univ.-Prof. DI. Dr. Otto Koudelka JOANNEUM RESEARCH Forschungsgesellschaft mbH Institute of Applied Systems Inffeldgasse 12, A-8010 Graz, Austria</p> <p>Gerlinde Tuscher InnoMedia, Consultant for Joanneum Research Franz-Pichler-Straße 30, A-8160 Weiz Phone: (+43 1) 0664-2808818 Fax: (+43 1) 03172-603-3799 Email: gerlinde.tuscher@campus02.at info@innomedia.at</p> |
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Monday, 13 September 2004

Morning

09:00 **Opening session**

Chairperson: W. Riedler (Austrian Academy of Sciences)

Opening ceremony

*“Presto from ‘alla Rustica’ “
(A. Vivaldi, 1678 – 1741)*

*Quartetto Grazioso, University of Music and
Dramatic Arts, Graz, Austria*

Welcome / Opening Remarks

*W. Baumjohann, Space Research Institute
S. Briggs, Directorate of Earth Observation
Programmes, European Space Agency
A. Kleinsasser, Federal Ministry for Transport,
Innovation and Technology
P. Piffel-Percevic, State of Styria, City of Graz
W. Lichem, Federal Ministry for Foreign Affairs
S. Camacho, United Nations Office for Outer
Space Affairs (UN/OOSA)*

*“Bourree and Hornpipe / Water Music”
(G. F. Händel, 1685-1759)*

*Quartetto Grazioso, University of Music and
Dramatic Arts, Graz, Austria*

9:30 Objectives of the Symposium

*W. Lichem, Federal Ministry for Foreign Affairs
(Austria)*

*“Ragtime”
(Scott Joplin, 1868 – 1917)*

*Quartetto Grazioso, University of Music and
Dramatic Arts, Graz, Austria*

Keynote address

9:45 Global Water Cycle

*J. Aschbacher, Directorate of Earth Observation
Programmes, European Space Agency (ESA)*

Remote Sensing and *In-situ* Terrestrial Water Cycle
Observation Capabilities

*Yu Tao, Institute of Remote Sensing Applications,
Chinese Academy of Sciences (China), on behalf
of the Committee on Earth Observation Satellites
(CEOS)*

Coffee/Tea break

Press Conference

(by invitation)

Providing Critical Information in a Timely Manner to Decision-Makers

*Chairperson: J. Ortner (International Space
University)*

10:45 Satellite Communication in Support of Water Resource Management

*O. Koudelka, Institute of Applied Systems,
Joanneum Research*

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| | Global Monitoring for Environment and Security (GMES): European Initiative to Support Decision-Makers in Environmental Protection, Risk Management and Natural Resources Management | <i>S. Briggs, Directorate of Earth Observation Programmes, European Space Agency (ESA)</i> |
| | Remote Sensing of Critical Hydrological Parameters: Soil Moisture, Topography and Vegetation | <i>K. Scipal, Institute of Photogrammetry and Remote Sensing, Technical University of Vienna (Austria)</i> |
| | Determining Soil Moisture and Land Cover to Assist in Flood Prediction and Early Warning | <i>Cao Chunxiang, Institute of Remote Sensing Applications, Chinese Academy of Sciences (China)</i> |
| | Surface and Ground Water Resources Monitoring and Management | <i>S. Hughes, Water Research Division, Council for Scientific and Industrial Research (CSIR) (South Africa)</i> |
| | <i>Lunch</i> | |
| <i>Afternoon</i> | Transboundary Water Management – Remote Sensing in Diplomacy | |
| | <i>Chairperson: M. S. Adamu, Lake Chad Basin Commission</i> | |
| 14:00 | Promoting Sustainable Use of Transboundary River Basins and Seas: Bridging Science and Society | <i>D. Daler, Scientific Director, Global International Waters Assessment (GIWA), United Nations Environment Programme (UNEP)</i> |
| | Use of Space Technologies in Management of the River Danube | <i>F. Serban, Romanian Space Agency (Romania)</i> |
| | Assessment of Dynamics of Lake Water Resources on Flat Territories in Central Asia Using Digital Satellite Information | <i>L. Frank, Department of Control on Water Resources Use and Protection, State Committee for Nature Protection (Uzbekistan)</i> |
| | Jordan's Water Sector Challenges | <i>M. Al-Zu'bi, Water and Environment Section, Ministry of Planning and International Cooperation (Jordan)</i> |
| | <i>Coffee/Tea break</i> | |
| | Discussion | <i>All participants</i> |
| 18:00 | <i>Reception hosted by the Governor of State of Styria and the Mayor of City of Graz</i> | <i>"Weißer Saal", Graz Castle</i> |
| | <i>Dinner</i> | <i>Landhaus Jöbstl, Rudolfstraße</i> |

Tuesday, 14 September 2004

Morning

Water Resources Management in Africa

Chairperson: W. Lichem (Austria)

- 9:00 ESA TIGER Initiative on Water Resources Management *J. Williams, European Space Agency (ESA)*
- Contributions of Integrating Microwave and Optical Remote Sensing Data to Watershed Characterization, Water Swelling Forecast and Flood Monitoring: the Experience of the UN/ESA Course Follow-up Programme in Africa in the TIGER context *M. Fea, EO Science and Applications Department, Directorate of Earth Observation Programmes (ESA)*
- Use of Remote Sensing for Wetlands Characterization, Flood Forecasting and Water Resources Monitoring in Nakambe Basin in Burkina Faso *A. Nonguierma, Centre Régional AGRHYMET (Niger)*
- Coffee/Tea break*
- Water management in the Lake Chad Basin *M. S. Adamu, Lake Chad Basin Commission*
- Problems of Space-Based Equipment on Integrated Water Resources Management of River Niger Basin *I. A. Olomoda, Water Resources Development Engineer, The Niger Basin Authority*
- Space Information for Water and Drought Risks Management for North Africa *A. Er-Raji, Royal Centre for Remote Sensing (CRTS) (Morocco)*
- Discussion *All participants*

Lunch

Afternoon

Protecting and Optimizing Water Resources

Chairperson: P. Saccon (Austria)

- 14:00 Application of Remote Sensing Techniques for a Water Management Concept of the Compartment Karst Aquifer of Colombi-Fervida (Paraná, Brazil) *P. Saccon, Institute of Water Resources Management, Joanneum Research, Austria*
- Watershed Management Work in Karnataka *P. G. Diwakar, Regional Remote Sensing Service Centre, Indian Space Research Organisation (ISRO), (India)*
- Mapping Priority Areas for Forest Cover Restoration to Support Public Policies for Water Resources Protection *C. A. Vettorazzi, University of São Paulo (Brazil)*
- Coffee/Tea break*
- The North-Western Sahara Aquifer System: Joint Management of a Transborder Basin *D. Latrech, Sahara and Sahel Observatory (OSS)*

Applying a Hydrological Balance Model to Manage the Use of Surface and Ground Water Resources in Chile

C. Pattillo, CRP&SIG (Chile)

Surface and Groundwater Resources Monitoring and Management in Nigeria

C. M. Maduabuchi, Department of Hydrology and Hydrogeology, Federal Ministry of Water Resources (Nigeria)

Discussion

All participants

14:00 – **Working Group Session: development of a pilot project to strengthen capacity in water resources management with the use of space technologies***

* To be held in parallel to the plenary of the Symposium; participation by invitation only.

Suggested programme of work

- Identify areas where the use of space technologies would best enhance water resources management in a most cost-effective manner and identify the space applications required;
- Review training requirements: discuss what training would be required for which target audience;
- Review infrastructure requirements;
- Review financial needs and opportunities.

Working Group members:

Chairperson

- Amb. W. Lichem (Austria)

Representatives of the River Basin Authorities

- *G. H. Sambo, Lake Chad Basin Commission;*
- *A. Ndiaye, Senegal River Basin Authority (OMVS);*
- *I. A. Olomoda, Niger Basin Authority;*
- *T. Waako, Nile Basin Initiative Secretariat;*
- *G. G. Arias, Comision Administradora del Rio de la Plata*

Representatives of development banks and funding agencies

- *D. Boukhalfa, UNDP Algeria*
- *J. Cárcamo, UNDP Honduras*

Representatives of space agencies

- *M. Fea / G. Duchossois, ESA*
- *E. T. Engman, NASA (United States)*
- *F. Serban, ROSA (Romania)*
- *P.G. Diwakar, ISRO (India)*

Secretariat

- S. Camacho/T. Chiku, UN/OOSA

19:00 *Dinner*

Glöckl Bräu, Glockenspielplatz

Wednesday, 15 September 2004

Morning Special presentation

9:30 Remote Sensing Applications to Regional Water Management

L. Beckel, Geospace GmbH (Austria)

Water, Sanitation and Health

Chairperson: R. R. Shrestha (Nepal)

Satellite Remote Sensing of Water Resources: Applications for Predicting and Monitoring Diseases

E. T. Engman, Goddard Space Flight Center, National Aeronautics and Space Administration (NASA) (United States of America)

Water, Sanitation and Health: Needs of Developing Countries

J. S. Hannes Buckle, Rand Water (South Africa)

Coffee/Tea break

Discussion:

All participants

Morning

Working Group Session: development of a pilot project to strengthen capacity in water resources management with the use of space technologies*

Working Group members:

9:30 –

* To be held in parallel to the plenary of the Symposium; participation by invitation only.

Suggested programme of work

- Develop a pilot project to provide training in space applications for water resources management
 - Identify the target groups for training: consider frequency and process;
 - Identify the entities to provide training;
 - Consider infrastructure requirements: identify the hardware and software required for training;
 - Consider needs for technical support: identify the potential entities to support the provision of training by cash or in-kind contributions;
 - Provide rough cost estimates;
 - Develop an indicative timetable.

12:00

Lunch

Afternoon

12:45 –

Technical visit to Grazer Stadtwerker AG:
Visit to the artificial ground water recharge plants (sand filter basins, grass basins and of the roughing infiltrations) and the horizontal filter wells.

13:00 –

Working Group Session: development of a pilot project to strengthen capacity in water resources management with the use of space technologies

Working Group members

Suggested programme of work

- Finalize a proposal for the pilot project to provide training in space applications for water resources management

14:45

Coffee/Tea break

15:30 – **Pilot project on capacity-building in the use of space technologies for water resources management** *All participants*

Chairperson: M. Fea (European Space Agency)

- Presentation of the project proposal of the Working Group by its Chairperson
- Discussion on the project proposal

18:00 *Visit to the Brewery Puntigam*

Dinner

Restaurant of the Brewery

Thursday, 16 September 2004

Morning **Conclusions and recommendations of the Symposium**

Chairperson: T. Chiku (UN/OOSA)

9:20 Organization of work *UN/OOSA*

9:30 – Informal consultations of the chairpersons
- Preparations of the reports by the chairpersons of the sessions *Chairpersons in cooperation with interested participants*

9:30 – Informal consultations by the Working Group
- Refinement of the project proposal, as necessary, taking into account the results of the discussions in the plenary of the Symposium on Wednesday afternoon, 15 September. *Working Group members*

Coffee/Tea break

Informal consultations of the chairpersons
- Preparations of the reports by the chairpersons of the sessions *Chairpersons in cooperation with interested participants*

Informal consultations by the Working Group
- Refinement of the project proposal, as necessary, taking into account the results of the discussions in the plenary of the Symposium on Wednesday afternoon, 15 September. *Working Group members*

Lunch

14:00

Conclusions and recommendations

Chairperson: S. Camacho (UN/OOSA)

Reports by the chairpersons

All participants

Conclusions and recommendations

Coffee/Tea break

Closing ceremony

Master of ceremony: W. Riedler (AAS)

Closing remarks

A. Kleinsasser, BMVIT, Austria

M. Fea, European Space Agency

*S. Camacho, United Nations Office for Outer
Space Affairs*