

URSI Austria Commission Member Meeting

URSI Commission F Wave Propagation & Remote Sensing

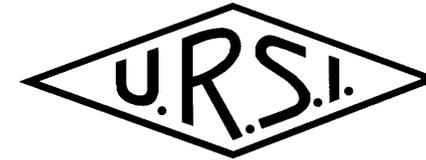
December 12, 2011

Institut für Weltraumforschung der ÖAW, Schmiedlstraße 6, 8042 Graz

Dipl.-Ing. Dr. Michael Schönhuber

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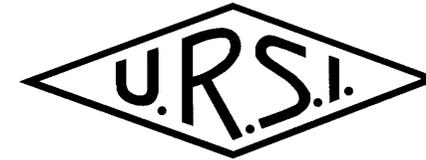
URSI Commission F

The Commission encourages:

- **The study of all frequencies in a non-ionised environment:**
 - **wave propagation through planetary, neutral atmospheres and surfaces;**
 - **wave interaction with the planetary surfaces (including land, ocean and ice), and subsurfaces;**
 - **characterisation of the environment as it affects wave phenomena;**
- **The application of the results of these studies, particularly in the areas of remote sensing and communications;**
- **The appropriate co-operation with other URSI Commissions and other relevant organisations.**

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Activities in 2011

Project Manager for the following activities ordered by the ESA (European Space Organisation):

- No. 4000103480 „Multimedia and Navigation Test-bed Vehicle”**
- No. 22707/09/NL/IA . . “Characterisation of Interference in S- and C-Band”**
- No. 22354/09/NL/LvH . “KA/Q Band Ground Propagation Terminals for the Alphasat TDP5 Scientific Experiment”**
- No. 21992/08/NL/US . . “Feasibility Assessment of Optical Technologies & Techniques for Reliable High Capacity Feeder Links”**
- No. 20985/07/NL/DS . . ”Assessment of the C-Band Satellite-to-Indoor Propagation and Shadowing by Vegetation”**
- No. 20871/07/NL/GLC “Propagation Effects for Mobile Multimedia Services”**

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Project Manager for manufacture and delivery of 2D-Video-Distrometer units , an imaging precipitation gauge, with e.g. units for the Atmospheric Radiation Mission (ARM – US).

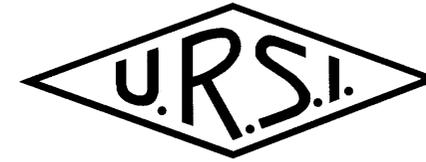
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**SAMPLE: ESTEC Contract No. 20871/07/NL/GLC
“Propagation Effects for Mobile Multimedia Services”**

Aircraft (PS-CS and CW TX equipment) and 2 mobile vans (PS-CS and CW RX equipment; HellaSat CW RX)

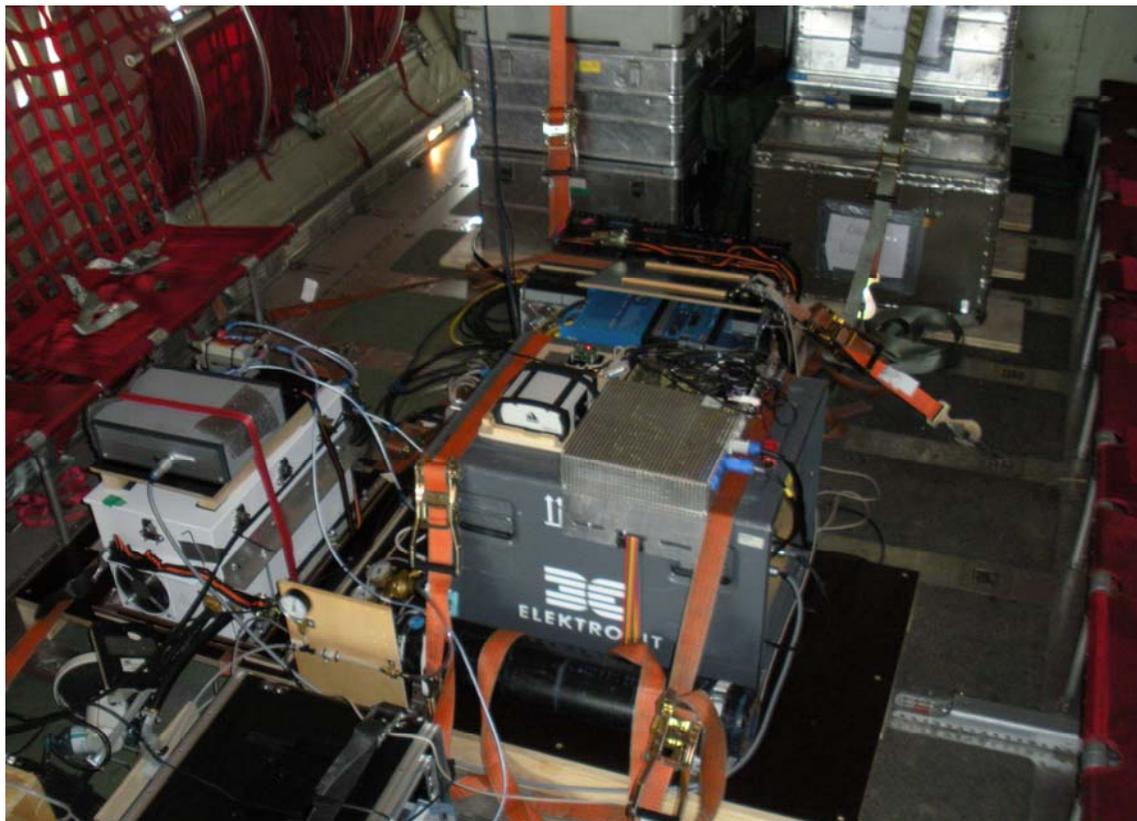
Flight operations and equipment installation into Hercules C130 aircraft by Austrian Forces





PS-CS and CW TX equipment on aircraft

PS-CS and conversion to 17.6 GHz
by CWC / University of Oulu and Elektrobitt



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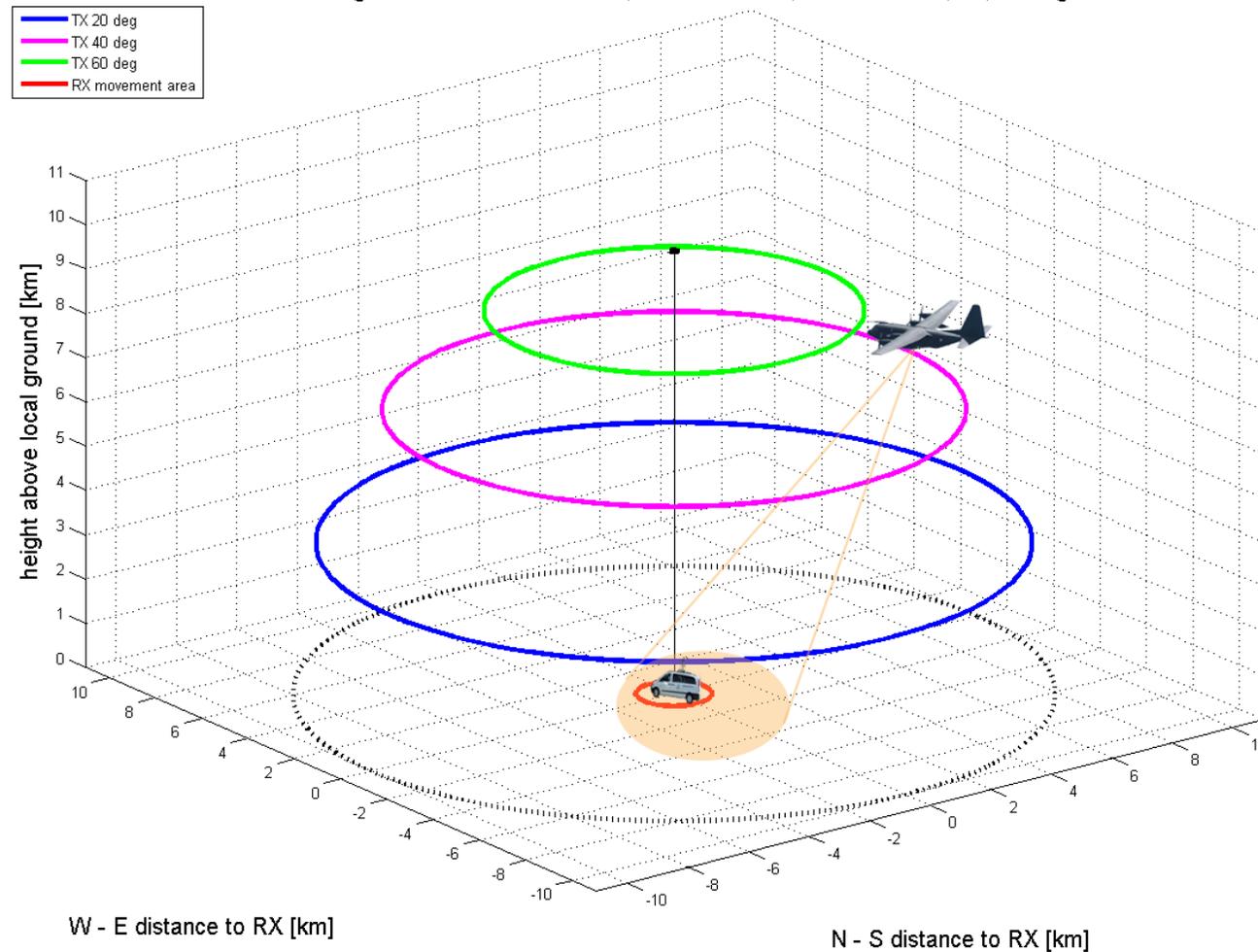
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.....
a Tradition of Innovation

Geometry for flight pattern (TX) and mobile van (RX)

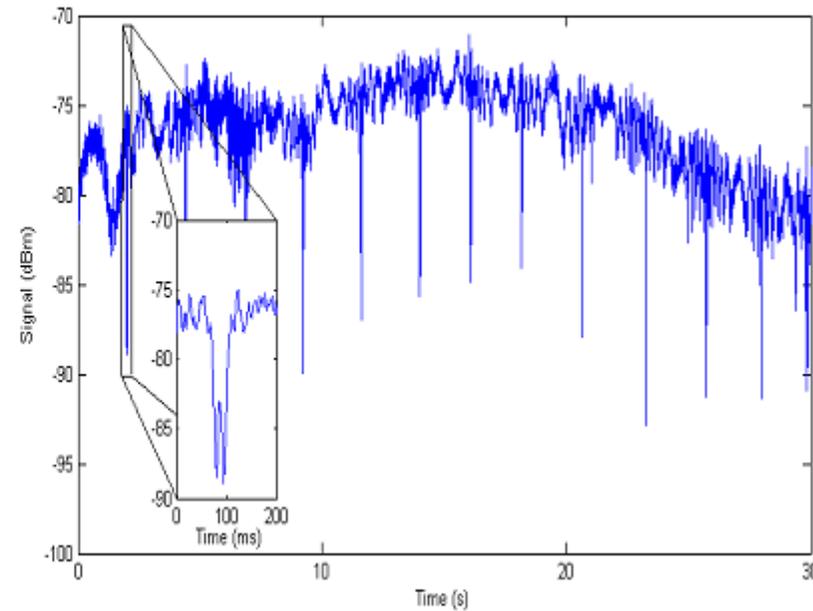
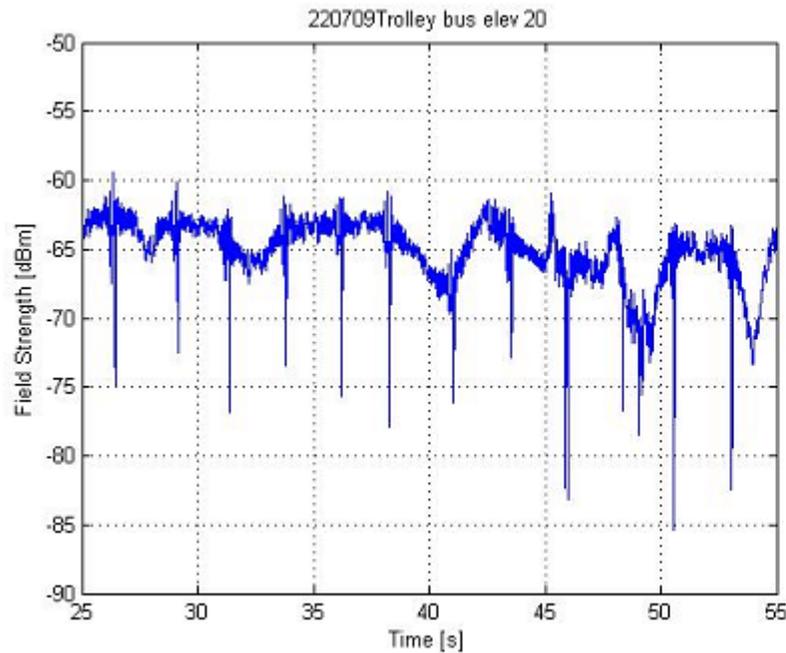
TX being flown in circles above RX, radius = 10 km, elevation = 20, 40, 60 deg



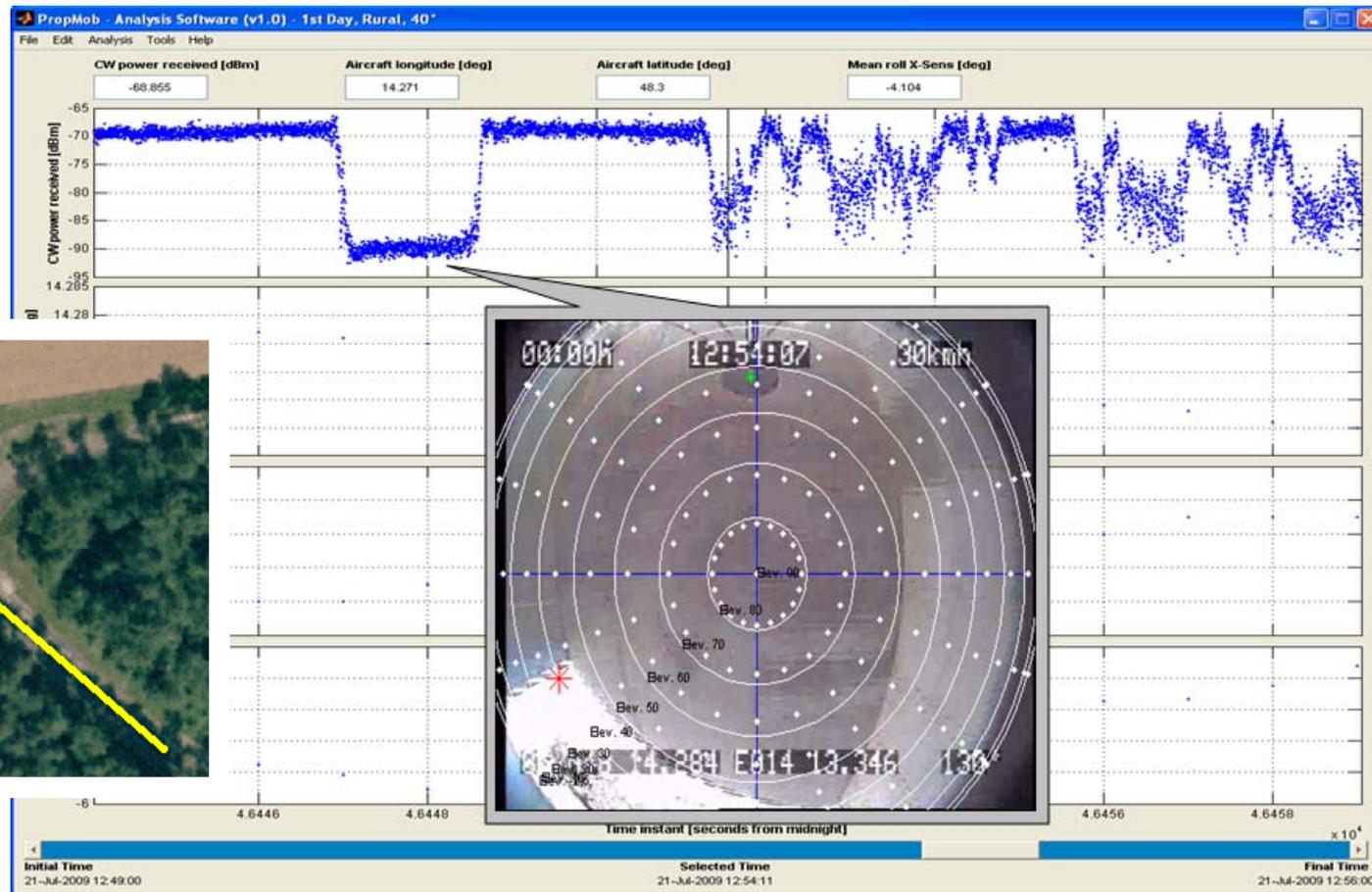
trolley bus scenario (railroad equiv.) during measurement run

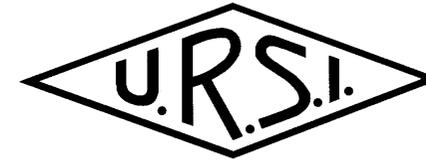


Blockages by trolley bus installations



CW signal level at open field, underpass, and forest





Publications 2011

F. Perez-Fontan, V. Hovinen, M. Schönhuber, R. Prieto-Cerdeira, F. Teschl, J. Kyrolainen and P. Valtr
„A wideband, directional model for the satellite-to-indoor propagation channel at S-band“
Int. J. Satell. Commun. Network. 2011; 29:23–45

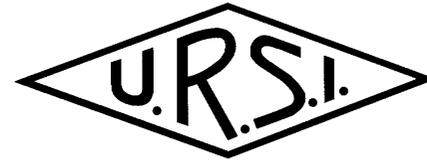
Teschl, F.; Schönhuber, M.; Pérez Fontán, F.; Hovinen, V.; Prieto Cerdeira, R.:
Slant Path Attenuation in Vegetation at Ku- and C-Band. - in: European Conference on Antennas and
Propagation ; 2011 (2011), S. 1 – 5

Pérez Fontán, F.; Jeannin, N.; Castanet, L.; Mametsa, H. J.; Lacoste, F.; Hovinen, V.; Schönhuber, M.;
Teschl, F.; Prieto Cerdeira, R.:
Statistical and physical-statistical modeling of the land mobile satellite, LMS, channel at Ku- and Ka-
Band. - in: European Conference on Antennas and Propagation ; 2011 (2011), S. 1 – 5

Norbert Witternigg, M. Schönhuber, E. Leitgeb, Th. Plank
„Feasibility Assessment of Optical Technologies for Reliable High Capacity Feeder Links“
The 62nd International Astronautical Congress was held in Cape Town, South Africa between 3 -7
October 2011

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Meetings 2011

EuCAP 2011: the 5th European Conference on Antennas and Propagation,
held at EUR Congressi in Rome, Italy, on 11-15 April 2011

COST IC0802 „Propagation tools and data for integrated Telecom, Navigation and Earth Observation
systems”
MCM#6 – PRAGUE, September 28-30, 2011

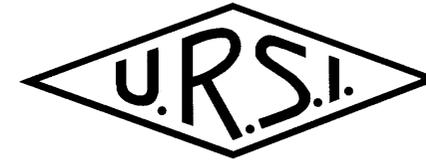
ConTEL 2011
10th International Conference on Telecommunications
Graz, Austria, June 15-17, 2011

COST Action IC0802
Propagation tools and data for integrated Telecom,
Navigation and Earth Observation systems
International Workshop
15th - 17th of June 2011

ITU SG3, Meetings of Working Parties 3J, 3K, 3L and 3M , Geneva, Switzerland, Oct. 20 – 26, 2011

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Professional Situation in 2011

- since 1988 scientific employee with JOANNEUM RESEARCH, Graz / Austria.
project team 6,5 employees plus up to 6 students / contractors

Other Commitments 2011

- Austrian technical expert (nominated by BMVIT) to European Commission GNSS CSI Working Group
- Austrian invitee (troposphere) to ESA's Network of Experts for EM Wave Propagation
- Head of Austrian delegation to ITU-R Study Group 3
- Member of the Austrian National Committee for URSI (Commission F)
- One of Austrian members to Management Committee COST Action IC 0802
- Reviewer for various scientific journals, Austrian National Research Programme applications, ...

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