

Commission F

Prof. Martti Hallikainen, Commission F Chair 2002-2005, prepared this triennium report.

Introduction

The officers of Commission F during the triennium 2002-2005 have been Prof. Martti Hallikainen (Finland), Chair, and Prof. Piotr Sobieski (Belgium), Vice Chair. Immediate Past Chair has been Dr. Yoji Furuhashi (Japan). Commission F has been active during the triennium through its Working Groups, by sponsoring meetings and symposia, and by preparing the scientific program for the General Assembly 2005.

Terms of Reference

The following Terms of Reference of Commission F were accepted at the General Assembly 2002: “Commission F – Wave Propagation and Remote Sensing (planetary atmospheres, surfaces and subsurfaces)

The Commission encourages:

(a) The study at all frequencies in a non-ionised environment:

(i) wave propagation through planetary neutral atmospheres and surfaces,

(ii) wave interaction with planetary surfaces and subsurfaces including land, ocean and ice,

(iii) characterization of the environment as it affects wave phenomena;

(b) The application of the results of these studies, particularly in the areas of remote sensing and communications;

(c) The appropriate co-operation with other URSI Commissions and other relevant organizations.”

Reports from Working Groups and Representatives to Other Organisations

FG Ionosphere and Atmosphere Remote Sensing Using Satellite Navigation Systems

Co-Chair for Commission F: B. Arbesser-Rastburg (The Netherlands)

Co-Chair for Commission G: C. Mitchell (UK)

The joint Working Group organized a special symposium “Atmospheric Remote Sensing Using Satellite Navigation Systems”, held from 13-15 October 2003 in Matera, Italy (see Commission F sponsored Mode B meetings).

GF Middle Atmosphere

Co-Chair for Commission G: J. Röttger (Germany)

Co-Chair for Commission F: C.H. Liu (China SRS)

HCDFG Solar Power Satellite (SPS)

Co-Chair for Commission F: S. Reising (USA)

The URSI Inter-commission Working Group (ICWG) on Solar Power Satellites (SPS) is in the process of composing an URSI White Paper on Solar Power Satellites (SPS). This white paper is based on inputs from representatives of all URSI Commissions. Commission F input is on the subject of Solar Power Satellites, particularly with respect to concerns of radio frequency interference to remote sensing systems.

SCOR (Scientific Committee on Oceanic Research)

Commission F representative: P. Sobieski (Belgium)

IUCAF (Inter-Union Committee on Frequency Allocations for Radioastronomy and Space Research)

Commission F representative: A. Gasiewski (USA)

SCT (Scientific Committee on Telecommunications)

Commission F representative: J. Isnard (France)

In order to be informed about ITU-R events J. Isnard participated in all SG7 (Study Group 7) sessions (Scientific Services) of ITU-R with the financial support of the French National Committee of URSI. After each session a report was sent to members of SCT Network on current issues discussed and on technical subjects that could be of interest to URSI members. This activity mainly covers the "remote sensing" aspect of F Commission. Moreover, J. Isnard kept in touch with URSI members who participate regularly in SG3 "Propagation" of ITU-R as members of the French ANFR (Frequency Radio Agency) delegation to this ITU-R Study Group.

Commission F Editor for The Radio Science Bulletin

Commission F Editor for RSB.: P. Sobieski (Belgium)

The following two review articles were collected by M. Hallikainen and published in the Radio Science Bulletin:

- P. Pampaloni and K. Sarabandi: Microwave Remote Sensing of Land (RSB, March 2004, pp. 30-48)

- E. Westwater, S. Crewell, and Ch. Mätzler: A Review of Surface-based Microwave and Millimeterwave Radiometric Remote Sensing of the Troposphere (RSB, September 2004, pp. 59-80).

Commission F Sponsored Meetings

Commission F sponsored 26 Mode A meetings (no financial support requested) and 6 Mode B meetings (financial support requested). All sponsored meetings are listed below. If the web site is still accessible its address is given.

Mode A Sponsorship:

MMET 2002

International Conference on Mathematical Methods in Electromagnetic Theory, Kiev, Ukraine, 10-13 September 2002.

The 34th COSPAR Scientific Assembly

Held in Houston, Texas, USA, 10-19 October 2002

(http://134.76.248.97/COSPAR/COSPAR_houston.html).

Getting the Most out of the Radio Spectrum

Held in London, United Kingdom, 24-25 October 2002.

APMC 2002

2002 Asia-Pacific Microwave Conference, Kyoto, Japan, 19-22 November 2002.

ISAR-3

Third International School on Atmosphere Radar, ICTP Trieste, Italy, 25 November – 13 December 2002.

ISAP-i02

Intermediate International Symposium on Antennas and Propagation, Yokohama, Japan, 26-28 November 2002.

MST-10

Tenth International Workshop on Technical and Scientific Aspects of MST Radar, Piura, Peru, 20-27 May 2003.

IEEE EMC 2003

2003 IEEE International Symposium on Electromagnetic Compatibility (EMC), Istanbul, Turkey, 11-16 May 2003 (<http://www.ortra.com/emc2003>).

IGARSS'03

2003 IEEE International Symposium on Geoscience and Remote Sensing, Toulouse, France, 21-25 July 2003.

ISMOT 2003

Ninth International Symposium on Microwave and Optical Technology, Ostrava, Czech Republic, 11-15 August 2003.

11th MICROCOLL

Held in Budapest, Hungary, 10-11 September 2003.

Telecom 2003 & JFMMA

Held in Marrakech Morocco, 15-17 September 2003.

APMC 2003

2003 Asia-Pacific Microwave Conference, Seoul, Korea, 4-7 November 2003 (<http://www.apmc2003.org>).

WARC04

Workshop on Applications of Radio Science, Hobart, Tasmania, Australia, 18-20 February 2004.

MSMW'04

Fifth International Kharkov Symposium on Physics and Engineering of Microwaves, Millimeter and Submillimeter Waves, Kharkov, Ukraine, 21-26 June 2004.

The 35th COSPAR Scientific Assembly

Held in Paris, France, 18-25 July 2004 (http://134.76.248.97/COSPAR/COSPAR_paris.html).

ICT 2004

ICT 2004 African Regional Workshop, Nairobi, 16-20 August 2004.

ISAP'04

2004 International Symposium on Antennas and Propagation, Sendai, Japan, 17-21 August 2004.

IGARSS'04

2004 IEEE International Symposium on Geoscience and Remote Sensing, Anchorage, Alaska, USA, 20-24 September 2004.

Radar 2004

Held in Toulouse, France, 19-21 October 2004.

ETTC 2005

European Test & Telemetry Conference 2005, Toulouse, France, 7-9 June 2005
(<http://www.ettc2005.org>).

IGARSS'05

2005 IEEE International Symposium on Geoscience and Remote Sensing, Seoul, Korea, 25-29 July 2005.

ISAP'05

2005 International Symposium on Antennas and Propagation, Seoul, Korea, 3-5 August 2005
(<http://www.isap05.org>).

ISMOT-2005

10th International Symposium on Microwave and Optical Technology, Fukuoka, Japan, 22-25 August 2005 (<http://ismot2005.fit.ac.jp>).

MRRS 2005

Microwaves, Radar and Remote Sensing 2005, Kiev, Ukraine, 19-21 September 2005
(<http://congress.org.ua/mrrs>).

ClimmDiff'05

Held in Cleveland, Ohio, USA, 26-27 September 2005 (<http://spectrum.nasa.gov/climdiff>).

Mode B Sponsorship:

URSI Joint Working Group FG Workshop

Commission F Symposium on Microwave Remote Sensing Atmospheric Remote Sensing Using Satellite Navigation Systems, URSI Joint Working Group FG, Matera, Italy 13-15 October 2003 (Conference report: RSB, December 2003, pp. 64-65). The four themes were atmospheric/ionospheric measurements using ground-based GNSS receivers, GNSS radio occultation and novel radio occultation techniques, scintillation – ionospheric and tropospheric effect, and imaging and data assimilation techniques. The young scientist session covered each of the four themes.

ClimmDiff'03

Fortaleza, Brazil, 17-19 November 2003 (Conference report: RSB, March 2004, pp. 59-62). The meeting extended the Climpara meetings linking URSI with ITU-R and addressed the use of climatic parameters in the prediction of radiowave propagation characteristics and diffraction modelling and its applications. The meeting preceded parallel meetings of ITU-R Working Parties 3J, 3K, 3L, and 3M. 60 participants attended the meeting and 35 contributed papers were presented.

MICRORAD 2004

8th Specialist Meeting on Microwave Radiometry and Remote Sensing Applications, Rome, Italy, 24-27 February 2004. Topics included satellite missions and experimental campaigns, sensor calibration, advanced techniques, retrieval methodologies, and several applications (ocean, atmosphere, snow, soil and vegetation). 152 participants attended the meeting. 85 oral and 42 interactive presentations were given.

Commission F Triennial Open Symposium

Cairns, Great Barrier Reef, Australia, 1-4 June 2004 (<http://www.ursi-f2004.com>). Topics covered both radiowave propagation and remote sensing. 40 participants attended the meeting. 4 invited and 26 contributed papers were presented.

AP-RASC'04

2004 Asia-Pacific Radio Science Conference, Qingdao, China, 25-27 August 2004. The meeting covered all scientific fields of URSI. A total of 17 keynote speeches, 6 invited presentations and over 200 contributed presentations were given.

Commission F Triennial Symposium on Microwave Remote Sensing

Commission F Symposium on Microwave Remote Sensing of the Earth, Oceans, Ice, and Atmosphere, Barza d'Ispra, Italy, 20-21 April 2005 (<http://ursi-f-2005.jrc.it>) (Conference report: to appear in RSB, September 2005). Topics included SAR, SAR interferometry, early warning of earthquakes and tsunamis, ground-based systems, ESA SMOS mission, monitoring of snow cover, and radar polarimetry. 62 participants attended the meeting. 40 oral and 8 interactive presentations were given.

Preparation of Scientific Programme for General Assembly 2005

Setting up a scientific program for a triennium is the prime activity of an URSI Commission in order to achieve an exchange of ideas and research results among individual scientists throughout the world. This is carried out at General Assemblies and other meetings.

Traditionally, Commission F oral sessions at GA have been organised based on invitation only. It was agreed at GA 2002 to open the oral sessions for contributed papers in order to have opportunities especially for Young Scientist Programme awardees to present their results. All Commission F sessions at GA 2005 consist of invited and contributed presentations and, additionally, related poster presentations. The following sessions are planned:

- F01 - Satellite and terrestrial propagation
- F02 - Propagation and scattering in vegetation
- F03 - Mobile and personal access radio propagation
- F04 - Mobile and indoor propagation
- F05 - Scattering and diffraction effects in remote sensing
- F06 - Global remote sensing
- F07 - Urban remote sensing
- F08 - Novel sensors and data fusion
- F09 - Microwave remote sensing of the cryosphere
- F10 - Remote sensing of atmosphere and ocean
- FG - Transionospheric signal degradation
- BCF - Propagation models and Maxwellian approach to smart antennas
- GF1a, b - Atmosphere-ionosphere sounding by using global navigation satellite systems

The Commission F Tutorial is entitled "Spaceborne radar mapping of boreal forests".

Communications

The Commission F web site has been established in connection of the URSI web site (<http://www.ursi.org>) for efficient dissemination of information.