

## **COMMISSION F (Chair: Simonetta Paloscia, IFAC-CNR)**

During the triennium 2015-2017 Commission F has been involved with the organization of some meetings: the newly established triennial URSI Atlantic Radio Science Conference (AT-RASC) in Gran Canaria (Spain), 18-25 May, 2015, and the URSI Asia-Pacific Radio Science Conference (AP-RASC) in Seoul, South Korea, from August 21 to 25, 2016. Another meeting held in this triennium was the 14th Specialist Meeting on Microwave Radiometry and Remote Sensing of the Environment (MicroRad 2016), which took place in Espoo, Finland in April 11-14, 2016. These symposiums initiated many of the session topics for the URSI Commission F General Assembly and Scientific Symposium (GASS) scheduled in Montreal (Canada) in August 19-26, 2017. There V. Chandrasekar (now Vice-Chair of Commission F) of the Colorado University in Boulder (US) will become the next URSI Commission F chair.

### **In Memoriam**

In 2015 Anatolij M. Shutko (1939-2015) passed away. Anatolij was born near Moscow, USSR, on February 25, 1939 and joined the Institute of Radioengineering and Electronics (IRE) of the Academy of Science of the USSR (later Russia) in 1964. Upon joining IRE Anatolij had the opportunity to work with outstanding leaders in the field of radio physics such as Professor A. Basharinov. This experience led to his pioneering exploration of its applications in radio wave



propagation and microwave radiometry of land and sea surfaces. Over his years at IRE he conducted basic and applied research, which later evolved into practical applications. He received many awards over the course of his outstanding career. One of the most significant was the IEEE GRSS Golden Florin Award in 2008 (In the picture Anatolij Shutko (right) during the Golden Florin ceremony at MicroRad 2008 in Florence,

with Tom Schmugge and Paolo Pampaloni from the left).

## Commission F Symposiums

- **AT-RASC in Gran Canaria (Spain), 18-25 May, 2015**

The 1st URSI Atlantic Radio Science Conference (URSI AT-RASC) was held from 18 to 25 May 2015 at the ExpoMeloneras Convention Centre, in the magnificent scenario of Gran Canaria. The newly established triennial URSI Atlantic Radio Science Conference (URSI AT-RASC) was the 3rd URSI flagship conference besides the triennial URSI General Assembly and Scientific Symposium and the triennial AP-RASC conference (AsiaPacific Radio Science Conference).

The General Chair was Prof. Piergiorgio L. E. Uslenghi (University of Illinois at Chicago, USA) and the General Co-Chair & AP-RASC Representative Prof. Kazuya Kobayashi (Chuo University, Japan).

Five General lectures have been organized:

GL1.1: What Did Maxwell Do and How Did He Do It: An Overview Of Maxwell's Treatise, by *A. D. Yaghjian, Research Consultant, Concord, MA, United States*

GL2.1: Energy-Efficient Textile Antenna Systems For Body-Centric Communication And Sensing, by *H. Rogier, Dept. of Information Technology, Ghent University, Ghent, Belgium*

GL3.1: Bioelectromagnetics as Applied to Implantable Devices and Neurostimulation: From An Artificial Retina to Restore Vision To The Blind, To Cortical and Peripheral Neurostimulators, by *G. Lazzi, University of Utah, Salt Lake City, Utah, United States*

GL4.1: Remote Sensing of Ocean Salinity, by *D. M. Le Vine, Goddard Space Flight Center, Greenbelt, MD, United States*

GL5.1: Time-Reversal Physics and Innovation, by *M. Fink, Langevin Institute, ESPCI ParisTech, CNRS, Paris, France*

Commission F was present with the following sessions:

- Atmospheric Remote Sensing
- Remote Sensing of Earth and Oceans
- Propagation Measurement and models
- Remote Sensing in Disaster Management

The URSI Working Group F.1 (Education and Training in Remote Sensing and related aspects of Propagation) organized one-day radar-training workshop on Polarization and Waveform Diversity Radar Methods and their Application in Disaster Management on May 17, 2015.

The event was jointly organised under cooperation between the Technical University of Chemnitz, Institut Mines-Telecom-Telecom ParisTech, Fraunhofer-Institut für Hochfrequenzphysik und

Radartechnik FHR, and German Aerospace Centre (DLR). The Coordinators of the course were Prof. Madhu Chandra and Prof. Tullio Tanzi.

- **AP-RASC in Seoul, South Korea, August 21-25, 2016**

The 2016 URSI Asia-Pacific Radio Science Conference was held in Seoul, South Korea, at the modern convention center of the Grand Hilton Seoul, with its from August 21 to 25, 2016. The General Chair of URSI AP-RASC 2016 was Prof. Sangwook Nam of Seoul National University, Korea, supported by the co-chairs Prof. Kazuya Kobayashi, of Chuo University, Japan, and Prof. Piergiorgio L. E. Uslenghi, of the University of Illinois at Chicago, USA. Five short courses in “Advanced Electromagnetics and its Application” were held on Sunday afternoon of August 21, 2015.



*The Grand Hilton Seoul*



*Professor Uslenghi*

The Organizing Committee organized four general lectures. These 60-minute lectures, highlighting cutting edge research were presented by speakers recognized for their exceptional achievements in our field:

- Yahya Rahmat-Samii (Distinguished Professor Department of Electrical Engineering University of California, Los Angeles, USA): “Nature Inspired Optimization Techniques in Modern Engineering: Let Darwin and the Bees Help Improve your Designs”
- Lou-Chuang Lee, Institute of Earth Sciences, Academia Sinica, Taiwan: “Electrodynamic Coupling Processes in the Solar-Terrestrial Environment”
- Kyungwhoon Cheun, Executive Vice President Next Generation Communications Business Team IT and Mobile Communications Division Samsung Electronics Co., Ltd: “5G, Moving Steps Closer to Commercialization”
- Hyeon K. Park, National Fusion Research Institute & Ulsan National Institute of Science and Technology: “Role of Electromagnetic Waves in Magnetic Fusion Plasma Research”

V. Chandrasekar of the Colorado State University, USA, at present Vice-Chair of commission F, organized some sessions on Remote Sensing of the Atmosphere together with Sanghun Lim (Korea Institute of Civil Engineering and Building Technology), Tomoo Ushio (Osaka University), and Animesh Maitra (University of Calcutta).

- **MicroRad Symposium 2014, Espoo, Finland, April 11-14, 2016**

In April 2016, the 14th Specialist Meeting on Microwave Radiometry and Remote Sensing of the Environment (MicroRad 2016) took place in Espoo, Finland, hosted and sponsored by the Aalto University, which is the biggest technical university in Finland. The General Chair of the meeting was Martti Hallikainen who organized a wonderful event in the charming location of Otaniemi. The conference venue was the historical main building of Helsinki University of Technology, now the center of Aalto University technology campus in Otaniemi, which is a beautiful example of architecture by famous Finnish architect, Alvar Aalto.

**MicroRad**, represents a unique gathering where the microwave radiometry community has an opportunity to present new missions, research results, technological advances and innovations in the field of passive microwave remote sensing. It is jointly sponsored by the Center for Microwave Remote Sensing (Ce.Te.M.) and the IEEE Geoscience and Remote Sensing Society (GRSS), and co-sponsored by the URSI Commission F.

The symposium, which always attracts scientists and engineers from all over the world, was first organized in Italy in the late 80s, and planned alternatively in Italy and US, every second year until 2014. This was the first time the meeting was held outside this alternation, in agreement with a decision of the **Microrad** Permanent Steering Committee.

**MicroRad 2016** lasted four days (April 11-14) and 125 persons registered and attended it, presenting both oral talks and posters. Scientists came from many nations worldwide (Europe, US, Australia, and Asia). Several sessions were organized on microwave radiometry spanning different topics: from future missions to applications of satellite data to atmosphere, land and oceans. Interesting poster sessions were organized in the hall in front of the session room where coffee-breaks took place in order to facilitate the attending of posters.

The first three days were opened by an invited lecture, the first one was given on Monday by Simon Yueh (JPL) and the title was “SMAP Mission and Science Recovery Status”, the second one on Tuesday by Ville Kangas (ESA) “Current and Future Microwave Radiometers at ESA”, and the last one on Wednesday by Jianchen Shi (RADI-CAS) “Monitoring Vegetation with Microwave Radiometers”.

During the Banquet, Paolo Pampaloni, the chairman of the Golden Florin (Fiorino Oro) Award Committee, awarded Tom Jackson, who unfortunately was not able to attend the meeting and was represented by Rajat Bindlish (Fig. 3). The Golden Florin is an award presented every two years

to individuals who have made outstanding contributions to research in Passive Microwave Remote Sensing throughout their careers and are members of IEEE GRSS. The award is sponsored by the Center for Microwave Remote Sensing (Ce.Te.M.) jointly with IEEE GRSS.

The local organizing committee was composed by Martti Hallikainen (General Chair), Jaan Praks (Technical Chair), Jaakko Seppänen, Jari J. Hänninen, Sari Haapiainen-Laine, Kati Gustafsson from Aalto University, and Juha Kainulainen, from Harp Technologies Ltd. The Steering Committee is instead composed by the historical members of past MicroRad meetings.



*Meeting participants*

**URSI General Assembly and Scientific Symposium  
Montreal, Canada 2017, August 19-26 2017**

The XXXII General Assembly and Scientific Symposium (GASS) of the International Union of Radio Science (Union Radio Scientifique Internationale: URSI) will be in Montréal. The XXXII GASS will have a scientific program organized around the ten Commissions of URSI, including oral sessions, poster sessions, plenary and public lectures, and tutorials, with both invited and contributed papers. In addition, there will be workshops, short courses, special programs for young scientists, a student paper competition, programs for accompanying persons, and industrial exhibits. More than 1,500 scientists from more than 50 countries are expected to participate. A limited number of awards are available to assist young scientists from both developed and developing countries to attend the GASS.

Commission F has 153 accepted oral and poster papers. The tutorial will be given on August 24 2017 by Dr. Luca Baldini of the Institute of Atmosphere and Climate of National Research Council of Bologna (Italy): “Modeling Rain Medium for Weather Radar and Propagation”. Commission F has 12 sessions and 4 joint sessions. These sessions represent a good balance between Remote Sensing and Wave Propagation. The session titles are:

1. Microwave Remote Sensing of the Cryosphere
  2. Microwave Remote Sensing of Vegetation and Terrestrial Snow
  3. Millimeter-Wave Propagation and Remote Sensing
  4. Remote Sensing Measurements of Precipitation
  5. Microwave Sensing of Soil Moisture
  6. Microwave Remote Sensing of Vegetation
  7. Propagation Modeling for Aerospace Applications
  8. Remote Sensing from Nanosatellites
  9. Remote Sensing in Complex and Random Media
  10. Radio-frequency Interferences (RFI) in Passive Microwave Remote Sensing
  11. Outdoor Propagation and Channel Modeling in Built-Up Areas,
  12. Remote Sensing of Sea Surface Salinity
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1. Radio Wave Propagation Aspects in Body Area Networks (FK)
  2. Electromagnetic Problems Involving Volume Scattering (FB)
  3. EM Modeling and Applications of Underground Imaging (FB)
  4. Multi-Parameter Radars and Wave Propagation for Remote Sensing and Disaster Management (FC)