Stefania Bonafoni Curriculum vitae

PERSONAL INFORMATION

- Born in Fabriano, Italy, 9th March 1971
- E-mail: stefania.bonafoni@unipg.it

POSITION

- Associate Professor in Electromagnetic Fields at the Department of Engineering, University of Perugia, Italy.

ACADEMIC CAREER

- 29th April 1997: Laurea degree (*summa cum laude*) in Electronic Engineering (five years), Engineering Faculty, University of Perugia, with the thesis dissertation "Retrieval of atmospheric temperature profiles from satellite microwave radiometric measurements" (supervisor Prof. P. Basili).
- 1st November 1997 -31st October 2000: PhD in Electronic Engineering (three years), at the Department of Electronics and Information engineering (DIEI), University of Perugia. Supervisor Prof. P. Basili.
  19th January 2001: PhD degree in Electronic Engineering with the PhD thesis dissertation "Microwave remote sensing from satellite and ground-based sensors: statistical retrieval of atmospheric parameters".
- 1st December 2000: Research associate (two years) in the disciplinary area: "Information Engineering and Information Science" working in the research project "Microwave remote sensing of the atmosphere" at the DIEI, University of Perugia.
- 1st December 2002: Research associate (two years) in the disciplinary area: "Information Engineering and Information Science" working in the research project "Microwave remote sensing of the atmosphere" at the DIEI, University of Perugia.
- 3rd January 2005-15th January 2024: Research fellow in Electromagnetic Fields (ING-INF/02) at the Engineering Department, University of Perugia.

TEACHING ACTIVITY

- Academic year 2017/2018-present: teacher of "Remote sensing and EM diagnostics" in the Master Degree Course in Electronic for Internet of Things at the Department of Engineering, University of Perugia.
- Academic year 2010/2011 to 2016/2017: teacher of "Propagation and Remote Sensing" in the Master Degree Course in Electronic and Telecommunication Engineering at the Department of Engineering, University of Perugia.
- From academic year 2007/2008 to 2009/2010 teacher of "Basics of Electromagnetic Propagation" in the Master Degree Course in Information and Telecommunication Engineering and in the Master Degree Course in Electronic Engineering at the Engineering Faculty, University of Perugia.
- From academic year 2005/2006 to 2006/2007 teacher of "Electromagnetic Remote Sensing" in the Degree Course in Information Engineering at the Engineering Faculty, University of Perugia.
- From academic year 2000/2001 to 2005/2006 teacher of "Electromagnetic Fields" in the Degree Course in Information and Telecommunication Engineering at the Engineering Faculty, University of Perugia, Orvieto seat.
- From academic year 2000/2001 to 2006/2007 teacher assistant in "Electromagnetic Fields" in the Degree Course in Information Engineering at the Engineering Faculty, University of Perugia.
- From academic year 1999/2000 teacher assistant in "Remote Sensing and Electromagnetic Diagnostics" in the Degree Course in Electronic Engineering at the Engineering Faculty, University of Perugia.
- 13-14 May 2002: teacher of the subject in Remote Sensing and Sensors in the "1st Master in Systems, Space Services and Applications" at Telespazio, Avezzano, Italy.

- June-July 2002: teacher of the subject in Electromagnetic Field Measurements in the course "Expert in assessment of environmental effect of electromagnetic fields", Consorzio ARCO Perugia, Italy.

RESEARCH ACTIVITY

The research activity has been mainly concerned in the electromagnetic remote sensing of the Earth atmosphere and surface with passive and active techniques. The main topics of the research activity are:

- Simulation of microwave radiometric measurements from satellite and ground-based sensors, to develop and validate statistical retrieval techniques for the estimation of atmospheric parameters and to calibrate microwave radiometers.
- Use of GPS to analyze the propagation delay of microwave signals for radio links and for the estimation of water vapour content. Experimental campaigns employing simultaneously different instruments: GPS receivers, a dual channel microwave radiometer (23.8 and 31.4 GHz), weather stations, radiosoundings.
- Collaboration with the calibration and validation team for the ENVISAT mission: implementation, validation and exploiting of procedures to support the passive calibration of the radar altimeter RA-2 on board the ENVISAT satellite and of the multispectral sensor MERIS.
- Analysis and development of models for the simulation of the microwave radiation emitted from fires in different scenarios. Realization of a microwave radiometer prototype for the early detection of hot spots.
- GPS-LEO radio occultation for the estimation of atmospheric profiles (refractivity, pressure, temperature, water vapour). Validation with independent measurements (radiosoundings, numerical weather prediction model).
- Land surface temperature computation and Urban Heat Island (UHI) characterization using measurements from satellite-based infrared and multispectral sensors. Development of downscaling techniques for satellite thermal images using spaceborne and airborne multispectral images.
- Albedo measurements and analysis of Earth surface: modelling and processing of reflectivities from spaceborne multispectral sensors and *in situ* experimental campaigns using albedometers and drones.
- Processing, analysis, and modelling of spectral indices for Earth Observation with reflectivities from spaceborne multispectral sensors.

International Research collaborations:

- Center for Environmental Technology-Department of Electrical and Computer Engineering-University of Colorado, Boulder, CO, USA (Dr. E. R. Westwater)
- Department for Life Sciences, Institute for Multidisciplinary Research, Belgrado, Serbia (Prof. A. Kalauzi)
- ESA-ESRIN, Frascati, Italy (Dr. O. Arinò) and ESA-ESTEC, Noordwijk, The Netherlands (Dr. A. Martellucci)
- University of Duisburg-Essen, Faculty of Engineering, Duisburg, Germany (Prof. Klaus Solbach)
- Department of Earth Sciences and Dept of Civil Engineering, Indian Institute of Technology Roorkee, Uttarakhand, India (Prof. A. Goswami and Prof. Kamal Jain)
- Microwave Systems Laboratory, Colorado State University, Fort Collins, Colorado, USA (Prof. S. Reising)
- Joint International Research Laboratory of Climate and Environment Change (ILCEC)/Jiangsu Key Laboratory of Agricultural Meteorology, Nanjing University of Information Science and Technology, China (Prof. D.Zhou)
- Department of Computer Science, Khon Kaen University, Khon Kaen, 40002 Thailand, Thailand (Dr. C. Keeratikasikorn)
- School of Geoscience, University of South Florida, Tampa, USA (Prof. Ruiliang Pu)
- Department of Geomatics Engineering, Cukurova University/Igdir University, Turkey (Prof. Aliihsan Sekertekin)

- University Corporation for Atmospheric Research (UCAR), USA (Prof. Richard A. Anthes, President Emeritus)

EDITORIAL ACTIVITY

- September 2023: Associate Editor of the new GRSS-IEEE Section of IEEE Access
- Associate Editor from 2019-2023 of "IEEE Access" (ISSN 2169-3536)
- Editorial Board Member from 2019-present of "Remote Sensing" (ISSN 2072-4292)
- Academic Editor from 2015-2023 of "International Journal of Antennas and Propagation" (ISSN 1687-5869)
- Academic Editor from 2014-present of "Advances in Meteorology" (ISSN 1687-9309)
- Guest Editor of the Special Issue "New Generation Sensors Enabling and Fostering IoT" for the journal "Sensors" (ISSN 1424-8220)
- Guest Editor of the Special Issue "Radar and Radiometric Sensors and Sensing" for the journal "Sensors" (ISSN 1424-8220)

FURTHER ACTIVITIES

- Member of the "Scientific Committee" for the *IEEE GOLD Remote Sensing Conference 2012*
- Member of the "Reviewer Committee" for the *International Conference on Unmanned Arial Systems in Geomatics (UASG-2021)*
- Member of the "Scientific Committee" for the International Conference *GIS Ostrava 2022 – Earth Observation for Smart City and Smart Region*
- Member from 2017 of the Modeling in Remote Sensing Technical Committee (MIRS TC) in the IEEE Geoscience and Remote Sensing (GRSS) society
- Principal investigator of the proposal "Development and validation of algorithms for the retrieval of profiles of atmospheric parameters from ROSA measurements on SAC-D Aquarius Mission", 31 august 2009, selected in the framework of the "Joint Process to Select an International Science Investigating Team for the Aquarius/SAC-D Observatory" organized by CONAE (National Commission on Space Activities of Buenos Aires) and NASA (National Aeronautics and Space Administartion). CONAE n. 107/09. No fund activity

AWARDS

- Best Reviewer Award 2019 for the Journal Remote Sensing: awarded as "Top 5 reviewers" out of 6600 reviewers served the journal in 2019 (500 CHF award).
- Best Reviewer Award 2018 for the Journal Remote Sensing: awarded as "Top 5 reviewers" out of 4300 reviewers served the journal in 2018 (500 CHF award).
- Top Peer Reviewer Award (Top 1% of reviewers, www.webofscience.com/wos/author/record/1344837) in the fields:
  - "Geoscience" 2017-2018
  - "Geoscience" 2018-2019
  - "Environment and Ecology" 2018-2019
  - "Cross-Field" 2018-2019.
- S. Bonafoni, A. Sekertekin "Determination of new conversion coefficients for Sentinel-2-based albedo retrieval and accuracy analysis" best presented paper at the VIII Uzal CBS 2022 Symposium, Ankara, 2022.

Partecipation to FUNDED RESEARCH PROJECTS:

- "Microwave Radiometers for the Early Detection of Forest Fires "Project Code: 2005.0088.020 Scientific and Technological Research, financed by Fondazione Cassa di Risparmio di Perugia (June 2005 - June 2006)
- "Microwave Radiometers for the Early Detection of Forest Fires: technological and experimental developements" Project Code: 2006.020.03110 Scientific Research, financed by Fondazione Cassa di Risparmio di Perugia (June 2006 – December 2007)
- "The use of Radio Occultation data for the estimation of atmospheric parameter profiles" financed by ASI/Thales Alenia Space (2006-2009)

- "METAWAVE: Mitigation of Electromagnetic Transmission errors induced by Atmospheric Water Vapor Effects" Contract N. 21207/07/NL/HE, financed by European Space Agency ESA-ESTEC (January 2008-January 2011)
- "Agile RF Transceivers and Front-Ends for Future Smart Multi- Standard COmmunications ApplicationS", ENIAC-MIUR, CALL 3 - 2010, ARTEMOS (1 April 2011- 31 March 2014)
- "Study, identification and assessment of microwave sensor solutions in the framework of the project Multifunctional Portal in safety (PMF)" financed by Rete Ferroviaria Italiana (September 2012-August 2013)
- "Remote Sensing for hydrological applications" financed by the National Research Council (CNR-IRPI) (21 April 2022 – 20 April 2025)