



Short Curriculum Vitae et Studiorum of Frank S. Marzano

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CETEMPS Centre of Excellence on Remote Sensing and Hydro-meteorology - University of L'Aquila
Via Vetoio, 67010, L'Aquila, Italy
- Position:** *Professor*, Sapienza University of Rome, Italy (habilitated in 2013 to *Full Professorship*)
Fellow, IEEE (USA) and Royal Meteorological Society (UK)
Vice-President, IEEE Geoscience and Remote Sensing Central Italy Chapter (GRSS-29)
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- Education:** 1988 Laurea degree *cum laude* in Electronic Engineering, Sapienza University of Rome, Italy
1993 Doctorate in Applied Electromagnetics, Sapienza University of Rome, Italy
- Research:** Satellite remote sensing of the environment (rain, temperature, water vapor, humidity, cloud liquid, ash)
Remote sensing sensors (weather radar, wind profiler radar, microwave radiometer, infrared radiometer)
Radar remote sensing of the atmosphere (rain, wind velocity, ash, spatial-temporal fields, polarimetry)
Electromagnetic wave propagation (turbulence, clouds and precipitation, microwave, millimeter-wave)
Inverse problems in remote sensing (statistical techniques, neural-network methods, physical methods)
Radio-propagation for satellite telecommunications (rain fading, scintillation, prediction model, noise)
Optical propagation in free space (turbulence, fog, aerosol, precipitation, channel modeling)
- Teaching:**
- | | |
|--|---|
| Antennas | Fac. of Engineering, Sapienza University of Rome, Italy |
| Radiopropagation and radar meteorology | Fac. of Engineering, Sapienza University of Rome, Italy |
| > <i>Past assignments (1997-2013)</i> | |
| Radiopropagation | Fac. of Engineering, Sapienza University of Rome, Italy |
| Electromagnetic propagation | Fac. of Engineering, Sapienza University of Rome, Italy |
| Antennas II and radar meteorology | Fac. of Engineering, Sapienza University of Rome, Italy |
| Antennas II | Fac. of Engineering, Sapienza University of Rome, Italy |
| Antennas I | Fac. of Engineering, Sapienza University of Rome, Italy |
| Remote sensing of the atmosphere | Fac. of Science MFN, Univ. of L'Aquila, Italy |
| Antennas and microwaves | Fac. of Engineering, Univ. of L'Aquila, Italy |
| Electromagnetic fields | Fac. of Engineering, Univ. of L'Aquila, Italy |
- Bibliometry:**
- | | Score | Full Prof. Median (ING-INF/02) |
|--|-------|--------------------------------|
| Based on SCOPUS (update on Sept. 2014) | | |
| - n. of normalized papers (2003-2013): | 80 | 30 |
| - n. of total citations, normalized to the academic age: | 57.74 | 21.14 |
| - H-index contemporary: | 14 | 8 |
| - n. of journal papers (2003-2013): | 103 | |
| - n. of total citations: | 1328 | |
| - H-index: | 19 | |
- Habilitations:** Full professorship (PO) in *Electromagnetic Fields* (09/F1 ING-INF/02, ANVUR, 2013)
Full professorship (PO) in *Physics for the Earth System* (02/C1 FIS/06, ANVUR, 2013)

Biography. He received the Laurea degree (*cum laude*) in Electrical Engineering (1988) and the Ph.D. degree (1993) in Applied Electromagnetics both from the Sapienza University of Rome, Italy. In 1992 he was a visiting scientist at Florida State





University, Tallahassee, FL. During 1993 he collaborated with the Institute of Atmospheric Physics, National Council of Research (CNR), Rome, Italy. From 1994 till 1996, he was with the Italian Space Agency, Rome, Italy, as a post-doctorate researcher. After being a lecturer at the University of Perugia, Italy, in 1997 he joined the Department of Electrical Engineering, University of L'Aquila, Italy teaching courses on electromagnetic fields as Assistant Professor. In 1999 he was at Naval Research Laboratory, Monterey, CA, as a visiting scientist.

In 2002 he got the qualification to Associate Professorship and has co-founded Centre of Excellence on Remote Sensing and Hydrometeorology (CETEMPS) of the University of L'Aquila, becoming the head of the Satellite and Radar Remote Sensing Laboratory (which he still coordinates). In 2005 he finally joined the Dept. of Electronic Engineering, now Dept. of Information Engineering, Electronics and Telecommunications (DIET), Sapienza University of Rome, Italy where he presently teaches courses on antennas, propagation and remote sensing. In 2006 he was nominated President of the *HIMET* company, L'Aquila and Rome, Italy. Since 2007 he has been acting as vice-director of the CETEMPS Centre of Excellence of the University of L'Aquila, a research center with more than 40 affiliated persons, and nominated Director of CETEMPS on March 2013. In 2013 he got the Full Professor national habilitation (ASN) in the field of Electromagnetic field (ING-INF/02) and Atmospheric Physics (FIS/06). Since June 2013 he has been acting as *President* of the Didactic Area of Electronic Engineering at Sapienza University of Rome including both undergraduate and graduate programs. In 2013 he got the national habilitation (ASN) to *Full Professorship* in both electromagnetic fields (ING-INF/02) and atmospheric physics (FIS/06) disciplines.

Research. His current research concerns passive and active remote sensing of the atmosphere from ground-based, airborne, and space-borne platforms, with a particular focus on clouds and precipitation using microwave, millimeter-wave and visible-infrared data, development of inversion methods, radiative transfer modeling of absorbing and scattering media, radar meteorology for rain, wind and ash retrieval and synthetic aperture radar data processing for atmospheric and land-use applications. He is also deeply involved in electromagnetic propagation studies, including e.m. field scintillation and rain fading modeling, data analysis along satellite microwave and millimeter-wave links and free space optical links.

He is a member of the Executive Board of the Centre of Excellence in Remote Sensing and Hydro-Meteorology (CETEMPS) in L'Aquila (Italy), the CIMA Research Foundation in Savona (Italy), the Centre of Research on Hydro-geological Risk (CERI) in Colleferro (Rome, Italy) and the Centre of Research in Aerospace Sapienza (CRAS).

Within 2001-2005 he was the Italian national delegate for the European COST actions n. 720 and n. 280; since 2008 he is the national delegate for the 5-year European COST Action project ES702 "EGCliMet" and COST Action project IC0802 "PropTNEO". Since 2010 he is a member of the European Volcanic Ash Cloud Expert Group (EVACEG) and since 2011 he is the national vice-delegate for the 5-year European COST Action project IC1101 "OpticWISE" and co-chairman of its physical modeling working group. In 2009 he became a member of the Science team of the Global Precipitation Mission (GPM) and in 2012 he has been nominated member of EuMetSat Precipitation Science Advisory Group (P-SAG) and PostEPS MWI-ICI Science Advisory Group (MWI-ICI SAG). In 2015 he has been appointed Commission F co-chair of the URSI GF Working Group on Middle Atmosphere (Stratosphere and Mesosphere). Since Oct. 2015 he has been included into the Earth Observation Expert Committee of the Italian Space Agency (ASI).

Publications. Dr. Marzano has published more than 130 papers on refereed international Journals, edited 6 journal special issues, 15 contributions to international Book Chapters, more than 260 Extended Abstracts on international Conference Proceedings and more than 150 Short Abstracts in national and international conferences. He is the Editor, together with G. Visconti, of the book "*Remote sensing of atmosphere and ocean from space: models, instruments and techniques*", Kluwer Acad. Pub., Dordrecht (NL), 2002 and together with D. Cimini and G. Visconti of the book "*Integrated Ground-Based Observing Systems Applications: for Climate, Meteorology, and Civil Protection*", Springer-Verlag (Berlin, D). In 2010-13 he has been Section Editor of the Springer's "*Encyclopedia of Remote Sensing*", published in 2014. He co-published a university textbook on "*Antennas foundation and electromagnetic radiation*", Carocci 2011 (IT) in Italian.

He is a reviewer for the major international journals in remote sensing and radiopropagation (e.g., IEEE Trans. Geosci. Rem. Sens., IEEE Ant. Propagat., IEE Ant. Propagat., AGU Radio Sci., AMS J. Appl. Meteor., AMS J. Atm. Science, AMS J. Ocean. Atm. Tech). In 2005 and 2007 he has been Guest Co-Editor of the MicroRad04 and MicroRad06 Special Issues for IEEE *Trans. Geosci. Rem. Sensing*. In 2012-13 he has acted as a Guest Editor of the special issue on tropospheric profiling for EGU *Atmospheric Measurement Techniques* (AMT).

From January 2004 till June 2014 he has been acting as an *Associated Editor* of IEEE Geoscience Remote Sensing Letters (GRSL) and since mid of 2014 he is *Associated Editor* of IEEE Transactions on Geoscience and Remote Sensing (TGRS). Since 2011 he is also Associate Editor of EGU *Atmospheric Measurement Techniques* (AMT) journal.

Organization. In 2000 Dr. Marzano was the director of the first edition of the International Summer School on Atmospheric and Oceanic Sciences (ISSAOS), held in L'Aquila and now at its 13th edition. In 2004 he has been appointed Co-Director of the Fourth Hydro-meteorological Radar School held during the 6th EGS Plinius Conference. He has been the Co-chairman of the Workshop on "Integrated Ground-Based Remote Sensing Stations for Atmospheric Profiling" held in L'Aquila on 19-21 June 2002, the Co-chairman of the Congress "Specialist Meeting on Microwave Radiometry and Remote Sensing Applications (MicroRad'04)", held in Roma on 24-27 Feb. 2004 and the Co-chairman of the 8th Management Committee of the project



meeting COST-280 on fade impairment techniques, held in Roma on 4-5 Nov. 2004. He is the Co-Chairman of the 9th International Symposium of Tropospheric Profiling (ISTP9), to be held in L'Aquila (Italy) on 7-9 Sept. 2012. In 2013 he was the director of 13th ISSOAS-2013 international summer school on "Weather forecasting: from science to public", held in L'Aquila (Italy) on 9-13 Sept. 2013. In 2015 he organized and co-chaired the first Radar Meteorology Italian Conference held in Rome, 6-7 July.

Dr. Marzano is a current member of the Technical Program Committees of the Microwave Radiometry and Remote Sensing Applications (MicroRad), the International Geoscience And Remote Sensing Symposium (IGARSS) and the European Radar Conference (ERAD).

Teaching. Dr. Marzano has been teaching at University of L'Aquila, at University of Perugia and at Sapienza University of Rome courses on Electromagnetic Fields, Antennas, Propagation and Remote sensing of the Atmosphere. He has been tutor of more than 120 undergraduate students, more than 50 graduate students and 19 Ph.D. students. He co-published a textbook on Antennas and radiopropagation in 2011.

He has been a member of the Doctorate (PhD) in Electrical and Information Engineering of the University of L'Aquila, the Doctorate in Environmental Monitoring of the University of Basilicata and is currently member of the Doctorate in ICT Radar and Remote Sensing of the Sapienza University of Rome. Dr. Marzano has been a lecturer on remote sensing techniques and wave propagation in several National and International Conferences and Schools.

Since June 2013 he has been acting as *President* of the Didactic Area of Electronic Engineering for at Sapienza University of Rome with more than 800 undergraduate and graduate enrolled students and 70 professors.

Projects. Since 1991 Dr. Marzano has been participating to several international research projects (e.g., GPCP-AIP-2 , GPCP-AIP3, NASA-PIP2, NASA-PIP3, EU-COST-712, EU-COST-255, and recently EU-COST-ES0702 in 2008, EU-COST-IC802 in 2008), European-Union funded projects (e.g., STORM within 3th EU-FP in 1990, MEFPE within 3th EU-FP 1993, EuroTRMM within 4th EU-FP in 1996, EuRAINSAT within 5th EU-FP in 1999, RiskAWARE within INTERREG III-B CADSES in 2004, HydroRad within the 7th EU-FP in 2009), and ESA-funded research studies related to meteorological satellite missions (e.g., DMSP, TRMM, ENVISAT, MSG, and recently SAR-Metawave and Wband-Deep-Space in 2008). He was involved within the ENVISAT calibration team in 2001 and Co-PI within Italian Space Agency (ASI), Italian National Research Council (CNR), Department of Civil Protection (DPC) and EUMETSAT research projects (e.g., SatPrecip with ASI in 1999, Scatterometry within ASI in 2000, MeditRain within ASI in 2000, RAM within GNDCI-CNR in 2003, Eurainsat-MSG within EUMETSAT in 2005, Proscenio within DPC in 2006). He has been principal investigator of the IDRA project within DPC since 2007-2012, FLORAD satellite mission with ASI in 2008, HYDRORAD project within EC FP7 calls in 2009-2011, HYDREX within EC FP/ MarieCurie call since 2010-2012, ADRIARadNet within IPA-Adriatic call). He is also a consultant of national engineering companies, international agencies and Italian ministries, involved in design and evaluation of information engineering and remote sensing systems.

In particular, in 2002 he contributed to the planning and design of the new national radar network within a project of the Italian Dept. of Civil Protection and since then he is a member of the Italian Technical Committee on the National Radar Network. Since 2006 he the principal investigator (PI) of the 3+3 year IDRA project about hydro-meteorological modeling and radar meteo-volcanology, sponsored by the National Department of civil Protection (DPC), Rome, Italy and renewed on 2009 till 2012. Since 2006 he is president of the HIMET spin-off company, L'Aquila (Italy) focused on high innovation in meteorology and environmental technology. Since 2006 he is also PI for CETEMPS of the 9-year Region Abruzzo project (L'Aquila, Italy) about regional civil protection support to hydro-geological risk decision. In 2008 he coordinated as Principal Investigator the Phase-A feasibility study of the satellite constellation small-mission FLORAD project about the exploitation of Flower elliptical-orbit constellations for tropospheric profiling at regional scale, funded by the Italian Space Agency (ASI) and involving the major information-technology Italian industries. Since 2009 he is PI of the 2-year RainXSAR project, sponsored by the Italian Space Agency (ASI) and AtmoXSAR, sponsored by German Aerospace Agency (DLR, Germany) on atmospheric effects upon X-SAR measurements. In 2009 he has become member of Science Team of the NASA-JAXA Global Precipitation Measuring (GPM) mission with a proposal on "MicroRainSAR: Precipitation retrieval from X-band synthetic aperture radar (SAR) constellation over land at micro-alpha scale". In 2009 he coordinated the 2-year European project HYDRORAD with 3 small-medium enterprises and 4 European partners from Italy, Greece and Cyprus about the exploitation of low-cost X-band polarimetric mini-radar networks. In 2010 he was coordinator of the biannual European Marie Curie project HYDREX about X-band radar hydro-meteorology. In 2012-15 he was the coordinator of the 2.5-year European project ADRIARadNet, involving 7 European partners from Italy, Croatia and Albania, about the development of hydrometeorological data decision support systems in the Adriatic basin.

Honours. Dr. Marzano was the recipient of a fellowship award from Elettronica S.p.A. (Rome, Italy) for researches on microwave radiometry in 1990. In 1993 he received the Young Scientist Award of XXIV General Assembly of the International Union of Radio Science (URSI). In 1998 he was the recipient of the Alan Berman Publication Award (ARPAD) from the Naval Research Laboratory (Washington, DC, USA). Since 2003 he has been a Senior Member of the Institute of Electrical and Electronic Engineers (IEEE) and of the IEEE Geoscience and Remote Sensing Society, elected then IEEE Fellow in 2015, whereas since 2000 he has been a member of the Italian Society of Electromagnetism (SIEm) and since 2010 a



member of the European Association on Antennas and Propagation (EurAAP). Since 2005 he has been the Secretary and then vice-Chair of the IEEE GRS29 Chapter (North-Central Italy). In 2012 he has been nominated Fellow of the Royal Meteorological Society (RMetS). In 2015 he received the Global Precipitation Measurement (GPM) Group Achievement Award from NASA (Washington, DC, USA).

In 2008 he received the Best Paper Award from the EGU-Plinius2008 Conference (Nicosia, Cyprus), whereas in 2009 he received the Best Paper Awards from the European Conference on Antennas and Propagation (EuCAP2009), held in Berlin (Germany). In 2011 he received the Best Presentation Award from the EGU-Plinius2011 Conference (Savona, Italy). He is also member of Amnesty International (Rome, Italy), World Wild Fund (Rome, Italy), "Medici Senza Frontiere" (Rome, Italy) and "Save The Children" Association (Rome, Italy).

LIST OF PEER-REVIEWED PUBLICATIONS

A) Publications on International journals (with revision and ISSN codes):

- [A.1] d'Auria G., F.S. Marzano, and U. Merlo, "Model for estimating the refractivity structure constant in intermittent clear air", *Appl. Opt.*, ISSN: 0003-6935, vol. 32, pp. 2674-2680, **1993**.
- [A.2] Basili P., P. Ciotti, G. d'Auria, F.S. Marzano, N. Pierdicca, and P. Quarto, "Assessment of polarimetric features to discriminate land cover from Maestro-1 Experiment", *Int. J. Remote Sens.*, ISSN: 0143-1161, vol. 15, pp. 2887-2899, **1994**.
- [A.3] Turk J., J. Vivekanandan, F.S. Marzano, R. Spencer, and R.E. Hood, "Active and passive remote sensing of precipitating storms during CaPE. Part I: Advanced Microwave Precipitation Radiometer and polarimetric radar measurements and models", *Meteor. Atmospheric Physics*, ISSN: 0177-7971, vol. 54, pp. 3-27, 1994.
- [A.4] Marzano F.S., A. Mugnai, E.A. Smith, X. Xiang, J. Turk, and J. Vivekanandan, "Active and passive remote sensing of precipitating storms during CaPE. Part II: Intercomparison of precipitation retrievals from AMPR radiometer and CP-2 radar", *Meteor. Atmospheric Physics*, ISSN: 0177-7971, vol. 54, pp. 29-51, 1994.
- [A.5] Basili P., P. Ciotti, G. d'Auria, F.S. Marzano, and N. Pierdicca, "Use of spaceborne multispectral microwave radiometry for precipitation remote sensing", *Alta Freq.*, ISSN: 1120-1908, vol. 6, pp. 109-111, 1994.
- [A.6] Marzano F.S. and G. d'Auria, "Estimation of intermittent scintillation on microwave links from meteorological data", *Alta Freq.*, ISSN: 1120-1908, vol. 6, pp. 94-96, 1994.
- [A.7] Ciotti P., P. Basili, G. d'Auria, F.S. Marzano, and N. Pierdicca, "Microwave radiometry of the atmosphere: an experiment from a sea-based platform during ERS-1 altimeter calibration", *Int. J. Remote Sens.*, ISSN: 0143-1161, vol. 16, pp. 2341-2356, **1995**.
- [A.8] Pierdicca P. and F.S. Marzano, "Observing storm clouds by space-borne multifrequency microwave radiometers", *Earth Observ. Quart.*, ISSN: 0256-596X, vol. 49, pp. 7-12, 1995.
- [A.9] Levizzani V., F. Porcù, F.S. Marzano, A. Mugnai, E.A. Smith, and F. Prodi, "Investigating a SSM/I microwave algorithm to calibrate METEOSAT infrared instantaneous rainrate estimates", *Meteor. Applications*, ISSN: 1350-4827, vol. 3, pp. 5-17, **1996**.
- [A.10] Pierdicca N., F.S. Marzano, G. d'Auria, P. Basili, P. Ciotti, and A. Mugnai, "Precipitation retrieval from spaceborne microwave radiometers using maximum a posteriori probability estimation", *IEEE Trans. Geosci. Remote Sens.*, ISSN: 0196-2892, vol. 34, pp. 831-846, 1996.
- [A.11] Boni G., M. Conti, S. Dietrich, L. Lanza, F.S. Marzano, A. Mugnai, G. Panegrossi, and F. Siccardi, "Multisensor observations during the event of November 4-6, 1994 over Northern Italy", *Rem. Sens. Review*, ISSN: 0275-7257, DOI:10.1080/02757259609532314, vol. 14, pp. 91-117, 1996.
- [A.12] Peeters G., F.S. Marzano, G. d'Auria, C. Riva, and D. Vanhoenacker-Janvier, "Evaluation of statistical models for clear-air scintillation using Olympus satellite measurements", *Int. J. Satell. Commun.*, ISSN: 0737-2884, vol. 15, pp. 73-88, **1997**.
- [A.13] Panegrossi G., S. Dietrich, F.S. Marzano, A. Mugnai, E.A. Smith, X. Xiang, G.J. Tripoli, P.K. Wang, and J.P.V. Poiars Baptista, "Use of cloud model microphysics for passive microwave-based precipitation retrieval: significance of consistency between model and measurement manifolds", *J. Atmos. Sci.*, ISSN: 0022-4928, vol. 55, pp. 1644-1673, **1998**.
- [A.14] Turk J., F.S. Marzano, and A. Mugnai, "Effects of degraded sensor resolution upon passive microwave precipitation retrievals of tropical rainfall", *J. Atmos. Sci.*, ISSN: 0022-4928, vol. 55, pp. 1689-1705, 1998.
- [A.15] Smith E.A., J. Lamm, R. Adler, J. Alihouse, K. Aonashi, E. Barrett, P. Bauer, W. Berg, A. Chang, R. Ferraro, J. Ferriday, S. Goodman, N. Grody, C. Kidd, C. Kummerow, G. Liu, F.S. Marzano, A. Mugnai, W. Olson, G. Petty, A. Shibata, R. Spencer, F. Wentz, T.T. Wilhelm, and E. Zipser, "Results of WetNet PIP-2 project", *J. Atmos. Sci.*, ISSN: 0022-4928, vol. 55, pp. 1483-1536, 1998.
- [A.16] d'Auria G., F.S. Marzano, N. Pierdicca, R. Pinna Nossai, P. Basili, and P. Ciotti, "Remotely sensing cloud properties from microwave radiometric observations by using a modeled cloud database", *Radio Sci.*, ISSN: 0048-6604, vol. 33, pp. 369-392, 1998.
- [A.17] Marzano F.S. and G. d'Auria, "Model-based prediction of amplitude scintillation variance due to clear-air tropospheric turbulence on earth-satellite microwave links", *IEEE Trans. Antennas Propagat.*, ISSN: 0018-926X, vol. 46, pp. 1506-1518, 1998.



- [A.18] Marzano F.S., A. Mugnai, G. Panegrossi, N. Pierdicca, E.A. Smith, and J. Turk, "Bayesian estimation of precipitating cloud parameters from combined measurements of spaceborne microwave radiometer and radar", *IEEE Trans. Geosci. Remote Sens.*, ISSN: 0196-2892, vol. 37, pp. 596-613, **1999**.
- [A.19] Marzano F.S., C. Riva, A. Banich, and F. Clivio, "Assessment of model-based scintillation variance prediction on long-term basis using Italsat satellite measurements", *Int. J. Satell. Commun.*, ISSN: 0737-2884, vol. 17, pp. 17-36, 1999.
- [A.20] Marzano F.S., E. Fionda, and P. Ciotti, "Simulation of radiometric and attenuation measurements along earth-satellite links in the 10- to 50- GHz band through horizontally-finite convective raincells", *Radio Sci.*, ISSN: 0048-6604, vol. 34, pp. 841-858, 1999.
- [A.21] Marzano F.S. and C. Riva, "Evidence of long-term correlation between clear-air scintillation and attenuation in microwave and millimeter-wave satellite links", *IEEE Trans. Antennas Propagat.*, ISSN: 0018-926X, vol. 47, pp. 1749-1757, 1999.
- [A.22] Bauer P., A. Khain, I. Sednev, R. Meneghini, C. Kummerow, and F.S. Marzano, "Combined cloud-microwave radiative transfer modeling of stratiform rainfall", *J. Atmos. Sci.*, ISSN: 0022-4928, vol. 57, pp. 1082-1104, **2000**.
- [A.23] Pierdicca N., F.S. Marzano, L. Guerriero, and P. Pampaloni, "On the effect of atmospheric emission upon passive microwave polarimetric response of azimuthally anisotropic sea surface", *J. Electromag. Waves Appl. - PIER*, ISSN: 1559-8985, vol. 14, pp. 355-358, 2000.
- [A.24] Marzano F.S., L. Roberti, and A. Mugnai, "Impact of incoherent backscattering upon radar echoes above 10 GHz", *Phys. and Chem. of the Earth – Part B*, ISSN: 1474-7065, vol. 25, n. 10-12, pp. 943-948, 2000.
- [A.25] Marzano F.S. and P. Bauer, "Sensitivity analysis of airborne microwave retrieval of stratiform precipitation to the melting layer parameterization", *IEEE Trans. Geosci. Remote Sensing*, ISSN: 0196-2892, vol. 39, pp. 75-91, **2001**.
- [A.26] Marzano F.S., J. Turk, P. Ciotti, S. Di Michele, and N. Pierdicca, "Potential of combined spaceborne microwave and infrared radiometry for near real-time rainfall attenuation monitoring along earth-satellite links", *Int. J. Satell. Commun.*, ISSN: 0737-2884, vol. 19, n. 4, pp. 385-412, 2001.
- [A.27] Pierdicca N., P. Castracane, P. Basili, P. Ciotti, and F.S. Marzano, "Discrimination of land cover from a multiparameter SAR data set", *Il Nuovo Cimento C*, ISSN: 2037-4909, vol. 24, pp. 25-40, 2001.
- [A.28] Basili P., S. Bonafoni, P. Ciotti, F.S. Marzano, G. d'Auria, and N. Pierdicca, "Retrieving atmospheric temperature profiles from microwave radiometers using *a priori* information on spatial-temporal correlation", *IEEE Trans. Trans. Geosci. Remote Sens.*, ISSN: 0196-2892, vol. 39, pp. 1896-1905, 2001.
- [A.29] Smith E.A., P. Bauer, F.S. Marzano, C.D. Kummerow, D. McKague, A. Mugnai and G. Panegrossi, "Intercomparison of microwave radiative transfer models for precipitating clouds", *IEEE Trans. Geosci. Remote Sens.*, ISSN: 0196-2892, vol. 40, pp. 541-549, **2002**.
- [A.30] Marzano F.S., E. Fionda, P. Ciotti and A. Martellucci, "Ground-based multi-frequency microwave radiometry for rainfall remote sensing", *IEEE Trans. Geosci. Rem. Sens.*, ISSN: 0196-2892, vol. 40, pp. 742-759, 2002.
- [A.31] Bauer P., J.F. Mahfouf, W.S. Olson, F.S. Marzano, S. Di Michele, A. Tassa, and A. Mugnai, "Error analysis of TMI rainfall estimates over ocean for variational data assimilation", *Quart. J. Roy. Meteor.*, ISSN: 0035-9009, vol. 128, pp. 2129-2144, 2002.
- [A.32] Pulvirenti L., N. Pierdicca, F.S. Marzano, P. Castracane and G. d'Auria, "A Physical-Statistical Approach to Match Satellite Passive Microwave Retrieval to the Mediterranean climatology", *IEEE Trans. Geosci. Rem. Sens.*, ISSN: 0196-2892, vol. 40, n. 4, pp. 2271-2284, 2002.
- [A.33] Marzano F.S. and C. Riva, "Cloud-induced effects on long-term amplitude scintillation along millimeter-wave slant paths", *IEEE Trans. Antennas Propagat.*, ISSN: 0018-926X, vol. 51, n. 4, pp. 880-887, **2003**.
- [A.34] Marzano F.S. and L. Roberti, "Numerical investigation of intense rainfall effects on coherent and incoherent slant-path propagation at K band and above", *IEEE Trans. Antennas Propagat.*, ISSN: 0018-926X, vol. 41, n. 5, pp. 965-977, 2003.
- [A.35] Marzano F.S., L. Roberti, Di Michele S, A. Tassa, and A. Mugnai, "Modeling of apparent radar reflectivity due to convective clouds at attenuating wavelengths", *Radio Sci.*, ISSN: 0048-6604, vol. 38, n. 1, 1002-1002.16, doi:10.1029/2002RS002613, 2003.
- [A.36] Tassa A., S. Di Michele, A. Mugnai, F.S. Marzano, and P. Poiars Baptista, "Cloud-model based Bayesian technique for precipitation profile retrieval from TRMM Microwave Imager", *Radio Sci.*, ISSN: 0048-6604, vol. 38, n.4, pp. 8074-8074.13, doi:10.1029/2002RS002674, 2003.
- [A.37] Di Michele S., F.S. Marzano, A. Tassa, A. Mugnai, and P. Poiars Baptista, "Physically-based statistical integration of TRMM microwave measurements for precipitation profiling", *Radio Sci.*, ISSN: 0048-6604, vol. 38, n. 4, pp. 8072-8072.17, doi:10.1029/2002RS002636, 2003.
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