

January 28, 2007

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Professor of Electrical and Computer Engineering
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University of Colorado at Boulder

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756 6th St.
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Date of Birth:

08/09/59

NOAA Address:

NOAA Earth System Research Laboratory
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EDUCATIONAL BACKGROUND

<u>Degree</u>	<u>Year</u>	<u>University</u>	<u>Field</u>
Ph.D.	1988	Massachusetts Institute of Technology	Electrical Engineering
M.S.	1983	Case Western Reserve University	Electrical Engineering
B.S.	1983	Case Western Reserve University	Electrical Engineering
B.S.	1983	Case Western Reserve University	Mathematics

EMPLOYMENT HISTORY

<u>Title</u>	<u>Organization</u>	<u>Years</u>
Professor	Department of Electrical and Computer Engineering, University of Colorado at Boulder	1/06-present
Chief	NOAA Environmental Technology Laboratory, Division of Microwave Systems Development, Boulder, CO	10/01-1/06
OAR Program Coordinator	NOAA Office of Oceanic and Atmospheric Research, Washington, DC	2/01-6/01
Senior Physicist	NOAA Environmental Technology Laboratory, Boulder, CO	1/00-9/01
Microwave Radiometry	NOAA Environmental Technology	8/98-9/01

Group Leader	Laboratory, Boulder, CO	
Adjoint Professor	Department of Electrical and Computer Engineering University of Colorado, Boulder, CO	7/98-12/05
Electronics Engineer	NOAA Environmental Technology Laboratory, Boulder, CO	7/97-12/99
Associate Adjoint Professor	School of Electrical and Computer Engineering, Georgia Institute of Technology	7/97-present
Associate Professor/Tenure	School of Electrical and Computer Engineering, Georgia Institute of Technology	7/95-6/97
Assistant Professor	School of Electrical and Computer Engineering, Georgia Institute of Technology	1/89-6/95
Adjunct Associate Professor	School of Earth and Atmospheric Sciences Georgia Institute of Technology	6/96-6/97
Graduate Research Assistant	Research Laboratory of Electronics Massachusetts Institute of Technology	2/84-12/88
Graduate Teaching Assistant	Department of Electrical Engineering and Computer Science Massachusetts Institute of Technology	9/86-5/87 9/83-1/84
Graduate Research Assistant	Department of Electrical Engineering Case Western Reserve University	9/81-8/83
Senior Laboratory Technician	Comsat Laboratories Clarksburg, MD	5/80-8/80 5/81-8/81

CURRENT RESPONSIBILITIES

Professor of Electrical and Computer Engineering within the University of Colorado at Boulder. Responsibilities include undergraduate and graduate instruction and advisement in the general areas of electromagnetics, wave propagation and remote sensing, instrumentation, and Earth and environmental science.

Director, NOAA-CU Center for Environmental Technology (CET). Responsibilities include management of a professional scientific and engineering staff of eight CIRES, CU/ECE, and NOAA Federal employees, advisement of graduate and undergraduate research assistants, development of CET laboratory and sensor infrastructure, and support of NOAA and non-NOAA sponsors on a range of microwave sensor and observation system development projects.

Previously, Chief of the Microwave Systems Development Division of the NOAA Environmental Technology Laboratory. Responsibilities included supervision of and technical guidance for approximately twenty five federal and non-federal research scientists engaged in the development of microwave radiometry, radar, and infrasound systems and related theoretical propagation and remote sensing research.

Past-President (2004-2005) of the Geoscience and Remote Sensing Society (GRS-S) of the Institute of Electrical and Electronic Engineers (IEEE), and member of the Executive Committee of the IEEE

Committee on Earth Observations (ICEO). The GRS-S has over 2800 members worldwide, and publishes the IEEE Transactions of Geoscience and Remote Sensing and IEEE Geoscience and Remote Sensing Letters.

CURRENT FIELDS OF INTEREST

Passive and active remote sensing of atmospheric and oceanographic processes, radiative transfer theory, signal detection, estimation, and assimilation, RF, microwave, and submillimeter-wave instrumentation, calibration and metrology, meteorology and climatology, and airborne and spaceborne systems for remote sensing applications. Previous interests have included continuum electrodynamics and statistical and quantum physics.

TEACHING

<u>Quarter</u>	<u>Course Title and Number</u>	<u>Number of Students</u>
<u>Georgia Institute of Technology:</u>		
Winter 1989	EE 3320 Electromagnetics III	68
Spring 1989	EE 3320 Electromagnetics III	49
Summer 1989	EE 3320 Electromagnetics III	33
Fall 1989	EE 8341 Theory of Electromagnetic Remote Sensing*	16
Winter 1990	EE 3310 Electromagnetics II	34
Spring 1990	EE 3300 Electromagnetics I	43
Summer 1990	EE 3300 Electromagnetics I	37
Fall 1990	EE 3300 Electromagnetics I	39
Winter 1991	EE 8341 Electromagnetic Absorption, Scattering, and Propagation*	5
Spring 1991	EE 3320 Electromagnetics III	35
Summer 1991	EE 3320 Electromagnetics III	33
Fall 1991	EE 8342 Remote Sensing Signals and Systems*	7
Spring 1992	EE 3300 Electromagnetics I	37
Summer 1992	EE 3320 Electromagnetics III	40
Fall 1992	EE 3320 Electromagnetics III	33
Winter 1993	EE 8342 Remote Sensing Signals and Systems*	6
Spring 1993	EE 8343 Electromagnetic Absorption, Scattering, and Propagation*	7
Spring 1993	EE 8346 Instrumentation for Test and Evaluation*†	16
Fall 1993	EE 3300 Electromagnetics I	21
Winter 1994	EE 6250 Microwave Design Laboratory	11
Spring 1994	EE 8346 Instrumentation for Test and Evaluation*†	12
Fall 1994	EE 3300 Electromagnetics I	59
Spring 1995	EE 7255 Electromagnetic Absorption, Scattering, and Propagation	6
Summer 1995	EE8341 Remote Sensing Signals and Systems*	9
Fall 1995	EE4130 Electromagnetics III	19
	EE8346 Instrumentation for Test and Evaluation*†	15

Winter 1996	EE4130 Electromagnetics III	16
Spring 1996	EE4130 Electromagnetics III	16
Fall 1996	EE4130 Electromagnetics III	21
Spring 1997	EE4038 Radar Principles	14
<u>University of Colorado at Boulder</u>		
Spring 2006	ECEN 5234 Remote Sensing Signals and Systems	15
Fall 2006	ECEN 5134 Electromagnetic Radiation and Antennas†	19
Spring 2007	ECEN 5264 Electromagnetic Absorption, Scattering, and Propagation	10
	ECEN 5134 Electromagnetic Radiation and Antennas*	1 (video only)

* Indicates special topics course

** Offered both in class and on video

ADVISEMENT, GUIDANCE, AND PROFESSIONAL MANAGEMENT

Postdoctoral Students and Visiting Faculty Supervised: 6

Ph.D. Students Supervised: 7

M.S. Thesis Students Supervised: 9

Ph.D. or M.S. Defense Committees: 28

M.S. and Ph.D. Special Studies Students Projects: 12

Undergraduate UROP, Special Studies and Senior Project Students Supervised: 28

Professional Scientist/Engineer/Technician Supervision: 33

PROFESSIONAL HONORS, AWARDS, SERVICE, AND MEMBERSHIPS

Honors and Awards:

Outstanding Service Award of the IEEE Geoscience and Remote Sensing Society, 2006.

Selected by the NOAA Ocean and Atmospheric Research Office as one of 14 members of the first class of the NOAA Leadership Competency Development Program, Federal Executive Institute, Charlottesville, VA, 2000-2001.

Selected by the National Academy of Engineering as one of 100 participants in the 1999 NAE Frontiers in Engineering Symposium, University of California, Irvine, CA, October 14-16, 1999.

Certificate of Recognition for Outstanding Performance for Contributions to Microwave Radiometry during the NASA Convection and Moisture EXperiment (CAMEX), U.S. Department of Commerce NOAA Environmental Technology Laboratory, Boulder, CO, February, 1999.

Special Act Group Award, Millimeter Wave Imaging Radiometer Development Team National Aeronautics and Space Administration, NASA/GSFC, Greenbelt MD, October 1993.

UROP Outstanding Research Awards, Georgia Institute of Technology School of Electrical and Computer Engineering, academic years 1991 and 1994.

URSI Young Scientist for the XXIV URSI General Assembly, August 25-September 2, 1993, Kyoto, Japan.

1st place prize (\$1,000), 1989 URSI Student Paper Prize Competition, 1989 URSI National Radio Science Meeting, University of Colorado, Boulder, CO, January 4-6, 1989.

Frederick C. Henie III Departmental Teaching Award, Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, 1986-1987 academic year.

IEEE Service:

Institute of Electrical and Electronic Engineers (IEEE), Student member (1981), Member (1988), Senior Member (1995), Fellow (2002), with membership in the following Societies: Antennas and Propagation, Geoscience and Remote Sensing, Microwave Theory and Techniques. IEEE Fellow citation: “*For contributions to passive microwave sounding within clouds and precipitation, and passive polarimetric microwave imaging.*”

Member, IEEE Geoscience and Remote Sensing Society (GRSS) AdCom, January 1993-present. GRSS Vice President for Meetings and Symposia, January 1996-December 1997.

Chair, GRS-S Membership and Publicity Committee, 1998-1999. GRSS Vice President for Technical Activities, 2000-2002. GRSS Executive Vice President, 2002-2003. GRSS President and Member of IEEE Technical Activities Board, 2004-2005. GRSS Past-President, 2006-present.

Member, Executive Committee of the IEEE GRS-S/OES/AESS/SC Committee on Earth Observation (CEO), 2005-present. Representative of the IEEE to the EOS-II Summit, May 2004.

Secretary, Atlanta Section of the IEEE, 1996.

Chair, Atlanta Chapter of the IEEE AP and MTT Societies, 1992-1993. Organizer of the Atlanta Chapter of GRSS, 1993.

URSI Service:

Member, International Union of Radio Science (URSI), U.S. National Commission (USNC), Commission F (Remote Sensing and Wave Propagation), 1991-present. USNC Commission F Membership Committee Chair, January 1994-July 1997. USNC Commission F Member-at-Large, January 1996-December 1998. Secretary, USNC URSI Commission F, August 1999-July 2002 triennium. Vice Chair, URSI Commission F, August 2002-July 2007 triennia.

Organizer, USNC URSI student paper prize competitions, USNC URSI National Radio Science Meetings, January 1999, 2000, 2001, 2002, and June 2003.

Memberships:

Member, American Meteorological Society 1995-present.

Member, American Geophysical Union (Section D, Atmospheres), 1986-present.

Member, American Association for the Advancement of Science, 1987-present.

Member, American Society for Engineering Education, 1989-2000.

Elected to full membership in Sigma Xi, 1990.

Elected to membership in Tau Beta Pi, 1981.

Member of Eta Kappa Nu and Theta Tau since 1981.

Other Service:

General Co-chair, IEEE GRSS 2006 International Geoscience and Remote Sensing Symposium (IGARSS 2006), Denver, CO, July 31-August 4, 2006.

Representative of the Committee on Space Research (COSPAR) to the Inter-Union Commission on Frequency Allocations (IUCAF), International Council of Scientific Unions (ICSU), December 1993-December 2001.

Guest Co-editor, Special Issue of the IEEE Transactions on Geoscience and Remote Sensing, IGARSS 2000 issue.

Technical Program Committee (TPC) chair of the IEEE GRSS 2000 International Geoscience and

Remote Sensing Symposium (IGARSS 2000), Honolulu, Hawaii, July 24-28, 2000.
Associate Editor, *Radio Science*, July 1993 through October 1996.
Member, National Research Council, Committee on Radio Frequencies, 1989-1995.
General chair, IEEE GRSS/LEOS/MTTS Combined Optical and Microwave Earth and
Atmosphere Sensing Symposium (CO-MEAS 1995), Atlanta, GA, April 3-6, 1995.

ENGINEERING CONSULTING

TRW Space & Technology Group, Redondo Beach, CA
Quadrant Engineering, Inc., Amherst, MA
Electromagnetic Sciences, Norcross, GA
Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridge, MA
Department of Orthopedic Engineering, Case Western Reserve University, Cleveland, OH
Transat International Corp., Shaker Heights, OH
Boulder Environmental Sciences and Technology, LLC, Boulder, CO

PUBLICATIONS (Refereed)

Chapters in books:

Gasiewski, A.J., "Microwave Radiative Transfer in Hydrometeors," Chapter 3 in *Atmospheric Remote Sensing by Microwave Radiometry*, (M.A. Janssen, ed.), New York: John Wiley and Sons (1993).

Peer-Reviewed Journal Articles:

Walter, B., D.J. Cavalieri, K.L. Thornhill, and A.J. Gasiewski, "Aircraft Measurements of Heat Fluxes Over Wind-Driven Coastal Polynyas in the Bering Sea," *IEEE Trans. Geosci. Remote Sensing*, vol. 44, no. 11, pp. 3118-3134, November 2006.

Stroeve, J.C., T. Markus, J.A. Maslanik, J.A., D.J. Cavalieri, A.J. Gasiewski, J.F. Heinrichs, J. Holmgren, D.K. Perovich, and M. Sturm, "Impact of Surface Roughness on AMSR-E Sea Ice Products," *IEEE Trans. Geosci. Remote Sensing*, vol. 44, no. 11, pp. 3103-3117, November 2006.

Markus, T., D.J. Cavalieri, A.J. Gasiewski, M. Klein, J.A. Maslanik, D.C. Powell, B.B. Stankov, J.C. Stroeve, and M. Sturm, "Microwave Signatures of Snow on Sea Ice: Observations," *IEEE Trans. Geosci. Remote Sensing*, vol. 44, no. 11, pp. 3081-3090, November 2006.

Powell, D.C., T. Markus, D.J. Cavalieri, A.J. Gasiewski, M. Klein, J.A. Maslanik, J.C. Stroeve, and M. Sturm, "Microwave Signatures of Snow on Sea Ice: Modeling," *IEEE Trans. Geosci. Remote Sensing*, vol. 44, no. 11, pp. 3091-3102, November 2006.

Cavalieri, D.J., T. Markus, D.K. Hall, A. Gasiewski, M. Klein, and A. Ivanoff, "Assessment of EOS Aqua AMSR-E Arctic Sea Ice Concentrations Using Landsat 7 and Airborne Microwave Imagery," *IEEE Trans. Geosci. Remote Sensing*, vol. 44, no. 11, pp. 3057-3069, November 2006.

Maslanik, J.A., M. Sturm, M. Belmonte Rivas, A.J. Gasiewski, J.F. Heinrichs, U.C. Herzfeld, J. Holmgren, M. Klein, T. Markus, D.K. Perovich, J.G. Sonntag, J.C. Stroeve, and K. Tape, "Spatial Variability of Barrow-Area Shore-Fast Sea Ice and Its Relationships to Passive Microwave

Emissivity," *IEEE Trans. Geosci. Remote Sensing*, vol. 44, no. 11, pp. 3021-3031, November 2006.

Bindlish, R., T.J. Jackson, A.J. Gasiewski, M. Klein, and E.G. Njoku, "Soil Moisture Mapping and AMSR-E Validation Using the PSR in SMEX02," *Rem. Sensing Env.* vol. 103, no. 2, pp. 127-139, July 30, 2006.

Johnson, J.T., A.J. Gasiewski, B. Guner, G.A. Hampson, S.W. Ellingson, R. Krishnamachari, N. Niamsuwan, E. McIntyre, M. Klein, and V. Leuski, "Airborne Radio Frequency Interference Studies at C-band using a Digital Receiver," *IEEE Trans. Geosci. Remote Sensing*, vol 44, no. 7, pp. 1974-1985, July 2006.

Fahey, D.W., J.H. Churnside, J.W. Elkins, A.J. Gasiewski, K.H. Rosenlof, S. Summers, M. Aslaksen, T. A. Jacobs, J. D. Sellars, C. D. Jennison, L. C. Freudinger, and M. Cooper, "Altair Unmanned Aircraft Mission Achieves Demonstration Goals," *EOS Trans. AGU* vol.87, no. 20, pp 197 and 201, May 16, 2006.

Jackson, T.J., R. Bindlish, A.J. Gasiewski, B. Stankov, M. Klein, E.G. Njoku, D. Bosch, T. Coleman, C. Laymon, and P. Starks, "Polarimetric Scanning Radiometer C and X Band Microwave Observations During SMEX03," *IEEE Trans. Geosci. Remote Sensing*, vol. 43, no. 11, pp. 2418-2430, November, 2005.

Tedesco, M., E.J. Kim, A.J. Gasiewski, M. Klein, and B. Stankov, "Analysis of Multi-Scale Radiometric Data Collected During the Cold Land Processes Experiment-1 (CLPX-1)," *Geophys. Res. Letters.*, vol. 32, no. 18, L18501 (10.1029/2005GL023006), September, 2005.

Smith, D.F., A.J. Gasiewski, D.L. Jackson, and G.A. Wick, "Spatial Scales of Tropical Precipitation Inferred from TRMM Microwave Imager Data," *IEEE Trans. Geosci. Remote Sensing*, vol. 43, no. 7, pp. 1542-1551, July 2005.

Racette, P.E., E.R. Westwater, Y. Han, A.J. Gasiewski, M. Klein, D. Cimini, D.C. Jones, W. Manning, E.J. Kim, J.R. Wang, V. Leuski, and P. Kiedron, "Measurements of Low Amounts of Precipitable Water Vapor Using Ground-Based Millimeterwave Radiometry," *J. Atmos. Ocean. Tech.*, Vol. 22, No. 4, pp. 317 –337, April 2005.

Jackson, T.J., R. Bindlish, A.J. Gasiewski, B. Stankov, M. Klein, E.G. Njoku, D. Bosch, T. Coleman, C. Laymon, and P. Starks, "Polarimetric Scanning Radiometer C and X Band Microwave Observations During SMEX03," accepted for publication in *IEEE Trans. Geosci. Remote Sensing*, February, 2005.

Voronovich, A.G., A.J. Gasiewski, and B.L. Weber, "A Fast Multistream Scattering-Based Jacobian for Microwave Radiance Assimilation," *IEEE Trans. Geosci. Remote Sensing*, vol. 42, no. 8, pp. 1749-1761, August 2004.

Younis, M., J. Maurer, J. Fortuny-Guasch, R. Schneider, W. Wiesbeck, and A.J. Gasiewski,

"Interference from 24-GHz Automotive Radars to Passive Microwave Earth Remote Sensing Satellites," *IEEE Trans. Geosci. Remote Sensing*, vol. 42, no. 7, pp. 1387-1398, July 2004.

Lahtinen, J., A.J. Gasiewski, M. Klein, and I. Corbella, "A Calibration Method for Fully Polarimetric Radiometers," *IEEE Trans. Geosci. Remote Sensing*, vol. 41, no. 3, pp. 588-602, March 2003.

Jackson, T.J., A.J. Gasiewski, A. Oldak, M. Klein, E.G. Njoku, A. Yevgrafov, S. Christiani, and R. Bindlish, "Soil Moisture Retrieval using the C-band Polarimetric Scanning Radiometer During the Southern Great Plains 1999 Experiment," *IEEE Trans. Geosci. Remote Sensing*, vol. 40, no. 10, pp. 2151-2161, October 2002.

Corbella, I., A.J. Gasiewski, M. Klein, V. Leuski, A.J. Francavilla, and J.R. Piepmeier, "On-board Accurate Calibration of Dual-Channel Radiometers Using Internal and External References," *IEEE Trans. Microwave Theory Tech.*, vol 50, No. 7, pp.1816-1820, July 2002.

Skofronik-Jackson, G.M., A.J. Gasiewski, and J.R. Wang, "The Influence of Microphysical Parameterizations on Microwave Brightness Temperatures," *IEEE Trans. Geosci. Remote Sensing*, vol. 40, No. 1, pp. 187-196, February 2002.

Piepmeier, J.R., and A.J. Gasiewski, "Digital Correlation Microwave Polarimetry: Analysis and Demonstration", *IEEE Trans. Geosci. Remote Sensing*, vol. 39, No. 11, pp. 2392-2410, November 2001.

Piepmeier, J.R., and A.J. Gasiewski, "High-Resolution Passive Microwave Polarimetric Mapping of Ocean Surface Wind Vector Fields," *IEEE Trans. Geosci. Remote Sensing*, vol. 39, No. 3, pp. 606-622, March 2001.

Corbella, I., A.J. Gasiewski, M. Klein, and J.R. Piepmeier, "Compensation of Elevation Angle Variations in Polarimetric Brightness Temperature Measurements from Airborne Microwave Radiometers," *IEEE Trans. Geosci. Remote Sensing*, vol. 39, No. 1, pp. 193-195, January 2001.

Klein, M., and A.J. Gasiewski, "The Sensitivity of Millimeter and Sub-millimeter Frequencies to Atmospheric Temperature and Water Vapor Variations," *J. Geophys. Res. - Atmospheres*, vol. 13, pp. 17481-17511, July 16, 2000.

Skofronick-Jackson, G.M., and A.J. Gasiewski, "A Nonlinear, Multispectral, Statistical CLEAN-Based Precipitation Parameter Retrieval Algorithm," *IEEE Trans. Geosci. Remote Sensing*, vol. 38, No. 1, pp. 226-237, January 2000.

Spina, M.S., Schwartz, M.J., Staelin, D.H., and Gasiewski, A.J., "Application of Multilayer Feedforward Neural Networks to Precipitation Cell-Top Altitude Estimation," *IEEE Trans. Geosci. Remote Sensing*, vol. 36, No. 1, pp. 154-162, January, 1998.

Kunkee, D.B., and Gasiewski, A.J., "Simulation of Passive Microwave Wind-Direction Signatures

over the Ocean using an Asymmetric Wave Geometrical Optics Model," *Radio Science*, vol. 32, no. 1, pp. 59-78, January-February, 1997.

Racette, P.E., Adler, R.F., Wang, J.R., Gasiewski, A.J., Jackson, D.M., and Zacharias, D.S., "An Airborne Millimeter-Wave Imaging Radiometer for Cloud, Precipitation, and Atmospheric Water Vapor Studies," *J. Atmos. Oceanic Tech.*, vol. 13, no. 3, pp. 610-619, June, 1996.

Skofronick-Jackson, G.M. and Gasiewski, A.J., "Nonlinear Statistical Retrievals of Ice Content and Rain Rate Using Passive Microwave Observations of a Simulated Convective Storm," *IEEE Trans. Geosci. Remote Sensing*, vol. 33, no. 4, pp. 957-970, July, 1995.

Jackson, D.M. and Gasiewski, A.J., "Millimeter-Wave Radiometric Observations of the Troposphere: A Comparison of Measurements and Calculations based on Radiosonde and Raman Lidar," *IEEE Trans. Geosci. Remote Sensing*, vol. 33, no.1, pp. 3-14, January 1995.

Gasiewski, A.J. and Kunkee, D.B., "Polarized Microwave Thermal Emission from Water Waves," *Radio Science*, vol. 29, no. 6, pp. 1449-1466, November-December, 1994.

Gasiewski, A.J. and Kunkee, D.B., "Calibration and Applications of Polarization Correlating Radiometers," *IEEE Trans. Microwave Theory Tech.*, vol. 41, no. 5, pp. 767-773, May 1993.

Gasiewski, A.J. and Johnson, J.T., "Statistical Temperature Retrievals in Clear-air Using Passive 118-GHz O₂ Observations," *IEEE Trans. Geosci. Remote Sensing*, vol. 31, no. 1, pp. 106-115, January 1993.

Gasiewski, A.J. "Numerical Sensitivity Analysis of Passive EHF and SMMW Channels to Tropospheric Water Vapor, Clouds, and Precipitation," *IEEE Trans. Geosci. Remote Sensing*, vol. 30, no. 5, pp. 859-870, September 1992.

Gasiewski, A.J. Barrett, J.W., Bonanni, P.G., and Staelin, D.H., "Aircraft-Based Radiometric Imaging of Tropospheric Temperature Profiles and Precipitation Using the 118.75-GHz Oxygen Resonance," *J. Appl. Meteor.*, vol. 29, no. 7, pp. 620-632, July 1990.

Gasiewski, A.J. and Staelin, D.H., "Numerical Analysis of Passive Microwave O₂ Observations Over Precipitation," *Radio Science*, vol. 25, no. 3, pp. 217-235, May-June 1990.

Gasiewski, A.J. and Staelin, D.H., "Statistical Precipitation Cell Parameter Estimation Using Passive 118-GHz O₂ Observations," *J. Geophys. Res.*, vol. 94, no. D15, pp. 18367-18378, December 20, 1989.

Submitted Journal Articles:

Bindlish, R., T.J. Jackson, A.J. Gasiewski, M. Klein, B. Stankov, M.H. Cosh, I. Mladenova, E. Vivoni, V. Lakshmi, C. Watts, and T. Keefer, "PSR Based Soil Moisture Estimates in High Vegetation and Rough Topography," submitted to *Rem. Sensing Env.*, July 2006.

Cimini, D., E.R. Westwater, A.J. Gasiewski, M. Klein, V. Leuski, and J. Liljegren, "Ground-based Millimeter- and Submillimeter-Wave Observations of Low Vapor and Liquid Water Contents," submitted for publication in *IEEE Trans. Geosci. Remote Sensing*, June 2006.

Cimini, D., E.R. Westwater, A.J. Gasiewski, M. Klein, V. Leusky, and S. Dowlathshahi, "The Ground-based Scanning Radiometer: A Powerful Tool for Study of the Arctic Atmosphere," submitted to *IEEE Trans. Geosci. Remote Sensing*, June 2006.

Bolten, J.D., V. Lakshmi, A.J. Gasiewski, E. Njoku, T. Jackson, "Airborne Passive Microwave Remote Sensing Observations of Soil Moisture at L- and C-band," submitted for publication in *International Journal of Remote Sensing*, June 2006.

Bolten, J., V. Lakshmi, A.J. Gasiewski, E. Njoku, and T. Jackson, "A Comparison of L- and C-Band Aircraft Sensors for Soil Moisture Remote Sensing," submitted for publication in *IEEE Trans. Geosci. Remote Sensing*, October 2003.

OTHER PUBLICATIONS

Research Project Final Reports: 12

Committee Reports: 7

Invited Keynote Presentations and Plenary Addresses: 8

Conference Presentations with Extended Proceedings (refereed, full length papers): 71

Conference Presentations with Proceedings (refereed, abstracts only): 142

Conference and Workshop Presentations without Proceedings: 65

Seminar Presentations: 45

Patents Granted: 2 (1 pending)

SELECTED CONFERENCE PRESENTATIONS WITH EXTENDED PROCEEDINGS (Refereed, full length papers)

Zavorotny, V.U., A.J. Gasiewski, R.J. Zamora, E.M. McIntyre, V.Y. Leuskiy, and V.G. Irisov, "Stationary L-Band Radiometry for Seasonal Measurements of Soil Moisture," *Proceedings of 2006 International Geoscience and Remote Sensing Symposium*, presented in Denver, Colorado, USA, July 31-August 4, 2006.

McIntyre, E.M., A.J. Gasiewski, M. Klein, and B.B. Stankov, "A Spectral Interference Mitigation Technique for Passive Remote Sensing of Soil Moisture," *Proceedings of 2006 International Geoscience and Remote Sensing Symposium*, presented in Denver, Colorado, USA, July 31-August 4, 2006.

Cimini, D., E.R. Westwater, A.J. Gasiewski, M. Klein, V. Leuski, and J.C. Liljegren, "Millimeter- and Submillimeter-Wave Observations of Low Vapor and Liquid Water Amounts in the Arctic Winter," *Proceedings of the 2006 ARM Science Team Meeting*, Albuquerque, NM, March 27-31, 2006.

Fahey, D.W., A.J. Gasiewski, M. Aslaksen, S. Summers, C.D. Jennison, N. Trongale, J.H. Churnside, J.W. Elkins, T. Jacobs, M. Klein, S.J. Oltmans, B.W. Orr, and J.D. Sellars, "The NOAA

Unmanned Aerial Vehicle (UAV) Demonstration Project using the General Atomics Altair UAV," Proceedings of the American Institute of Aeronautics and Astronautics (AIAA) Infotech@Aerospace Conference, presented in Arlington, VA, September 26-29, 2005.

Jackson, T.J., R. Bindlish, M. Cosh, A.J. Gasiewski, M. Klein, B. Stankov, B.L. Weber, and V. Zavorotny, "Soil Moisture Experiments 2004 (SMEX04) Polarimetric Scanning Radiometer, AMSR-E, and Heterogeneous Landscapes," *Proceedings of 2005 International Geoscience and Remote Sensing Symposium*, presented in Seoul, Korea, July 25-29, 2005.

McIntyre, E.M., A.J. Gasiewski, V. Leuski, M. Klein, B.L. Weber, V. Irisov, and B.B. Stankov, "An Interference Mitigation Technique for Passive Remote Sensing of Soil Moisture," *Proceedings of 2005 International Geoscience and Remote Sensing Symposium*, presented in Seoul, Korea, July 25-29, 2005.

Johnson, J.T., A.J. Gasiewski, G.A. Hampson, S.W. Ellingson, R. Krishnamachari, and M. Klein, "Airborne Radio Frequency Interference Studies at C-Band using a Digital Receiver," *Proceedings of 2004 International Geoscience and Remote Sensing Symposium*, presented in Anchorage, Alaska, September 21-25, 2004.

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