

Curriculum Vitae

CHRISTOPHER S. RUF

Frederick Bartman Collegiate Professor of Climate and Space Science

University of Michigan

2455 Hayward St., Ann Arbor, MI 48109-2143 USA

(tel) +1-734-764-6561 (email) cruf@umich.edu ORCID 0000-0002-5937-4483

<http://clasp.engin.umich.edu/people/cruf/faculty>

EDUCATION

Ph.D. 1987 Electrical and Computer Engineering, Univ. of Massachusetts at Amherst
B.A. 1982 Physics, Reed College, Portland, OR

PROFESSIONAL EXPERIENCE

Jul 2000 - present *Professor*, Climate and Space Dept., Electrical Engineering Dept.
University of Michigan, Ann Arbor, MI
Sep 2023 – present *Director*, Space Institute
University of Michigan, Ann Arbor, MI
May 2006 – Jun 2015 *Director*, Space Physics Research Laboratory
University of Michigan, Ann Arbor, MI
Sep 2000 – Dec 2000 *Guest Professor*, Department of Electromagnetic Systems
Technical University of Denmark, Lyngby, DK
Jan 1992 - Jun 2000 *Associate Professor*, Department of Electrical Engineering
Pennsylvania State University, University Park, PA
Jul 1988 - Dec 1991 *Member of Technical Staff*, Microwave Observational Systems
NASA Jet Propulsion Laboratory, Pasadena, CA
Jun 1987 - Jun 1988 *Visiting Professor and Research Engineer*,
Dept. Electrical and Comp. Eng., Univ. Massachusetts, Amherst, MA
Sep 1983 - May 1987 *Graduate Research Assistant*, Microwave Remote Sensing Lab
Dept. Electrical and Comp. Eng., Univ. Massachusetts, Amherst, MA

CURRENT RESEARCH ACTIVITIES

- Principal Investigator of NASA Cyclone Global Navigation Satellite System (CYGNSS)
Mission: Constellation of eight small satellites with bistatic GPS radar receivers to measure ocean surface winds in tropical cyclones and soil moisture and flood inundation over land.
- Science and applications of remote sensing: Ocean, atmosphere and land geophysical parameter estimation methods using airborne and spaceborne microwave observations. On-orbit calibration and validation methods for microwave remote sensors. Detection and mitigation of radio frequency interference. Measurement of non-thermal planetary emission.
- Instrumentation and technology development: Design, development, fabrication, testing and field deployment of next generation microwave sensors and subsystems, including: GNSS-R radar receivers; interferometric Fourier synthesis imagers; spaceborne application specific integrated circuits (ASICs); high speed digital spectrometer and polarimetric detectors; radio frequency interference detection and mitigation processors.

TEACHING EXPERIENCE

Graduate level:	Inversion and Estimation Methods in Remote Sensing Mathematical Methods in Electromagnetics Theoretical Foundations of Microwave Remote Sensing Atmospheric Radiative Transfer
Undergraduate level:	Introduction to Rocket Science Electromagnetic Theory and Applications Methods and Applications of Remote Sensing Radiowave Propagation and Communication Earth Science Data Analysis and Matlab Applications Circuit Design & Linear Systems Theory and Applications

GRADUATE STUDENTS SUPERVISED

Bala Subramanya, M.S. 1993	Savyasachee Mathur, M.S. 1994
Justin Bobak, M.S. 1994, Ph.D. 1998	Shawn Beus, M.S. 1996
Sean Daisley, MS. 1997	Rajiv Dewan, M.S. 1998
Sandra Cruz-Pol, Ph.D. 1998	Jude Giampaolo, M.S. 1999
Hans Rosenberger, M.S. 1999	Haiping Zhang, M.S. 1999
Gozde Fidan, M.S. 2000	Jikang Li, M.S. 2002
Sandra Lindström, M.S. 2002	Chris Schwartz, M.S. 2004
Ying Hu, M.S. 2005	Shannon Brown, Ph.D. 2005
Hirofumi Kawakubo, M.S. 2007	Jinzheng Peng, Ph.D. 2008
Boon Lim, Ph.D. 2008	John Puckett, M.S. 2009
David Fenigstein, M.S. 2010	Sidharth Misra, Ph.D. 2011
Amanda Mims, M.S. 2012	Deepak Singh, M.S. 2013
Rachael Kroodsma, Ph.D. 2013	David Austerberry, M.S. 2015
John Xun Yang, Ph.D. 2015	David Chen, Ph.D. 2016
Mary Morris, Ph.D. 2016	Rachel Norris, M.S. 2017
Rajeswari Balasubramaniam, Ph.D. 2020	David Mayers, Ph.D. 2021
Tianlin Wang, Ph.D. 2021	Mahnaz Vahdat M.S. 2021
Charles Powell, Ph.D. 2024	Gopal Sundaram, Ph.D. <i>in progress</i>
Dinan Bai, Ph.D. <i>in progress</i>	

UNIVERSITY SERVICE

CLaSP Dept. Alumni & Friends Committee Chair (Jan 2023 - present)
 CoE SPRL Advisory Council Member (2021 - present)
 CLaSP Dept. Associate Chair for Research (2020-2024)
 CLaSP Dept. Executive Committee Member (2020-2024)
 CLaSP Dept. Faculty Search Committee Chair (2020-2021)
 CLaSP Dept. Education Quality Committee Chair (2018-2020)
 College of Engineering Chaired Professorship Selection Committee (2018-2020)
 CLaSP Dept. Executive Committee Member (2006-2018, 2020-2024)
 Director, Space Physics Research Laboratory, College of Engineering (2006-2015)

CLaSP Dept. Ph.D. Qualifying Exam Committee Chair/Co-chair (2008 – 2009)
 AOSS Dept. Program Director and Academic Adviser, AOSS Masters of Engineering in Space Engineering (2004-2006)
 College of Engineering Faculty Advisor, U-M Amateur Radio Club (2003 –2006)
 Member, Oversight Committee for Graduate Certificate Program in Spatial Analysis, School of Natural Resources and Environment (2001-2007)
 Departmental Representative, EECS/AOSS/CEE Doctoral Program in Geoscience and Remote Sensing (2000-2009)
 AOSS Dept. Program Director and Academic Adviser, Masters of Engineering in Applied Remote Sensing and GeoInformation Systems (2000-2004)

PROFESSIONAL SERVICE

Member, American Meteorological Society Scientific and Technological Activities Commission Committee on Satellite Meteorology, Oceanography, and Climatology (2021-present)
 Vice Chair, United States National Committee for the International Union of Radio Science (USNC-URSI), Commission F (2024-present)
 Member, Task Force on Remote Sensing of Marine Litter and Debris, UNESCO/International Ocean-Color Coordinating Committee (2021-2023)
 Member, National Academies Intelligence Community Studies Board Committee on the Assessment of Partnership Options for a Small Satellite System for Collecting Scientific Quality Oceanic and Coastal Data (2021-2022)
 Member, National Academies Space Studies Board Committee on Earth Science and Applications from Space (2017-2022)
 Member, Climate Panel for the National Academies Earth Science Decadal Survey (2016-2017)
 Member, Weather Panel for the National Academies Earth Science Decadal Survey (2005-2006)
 Member, National Academies Board of Physics and Astronomy Committee on the Scientific Uses of the Radio Spectrum, (2007-2009)
 Member, National Academies Committee on Radio Frequency (2000-2003)
 Editor in Chief, *IEEE Transactions on Geoscience and Remote Sensing* (2009-2012)
 Editorial Board Member, *Scientific Reports* – Nature Research open access (2019-2020)
 Associate Editor, *IEEE Transactions on Geoscience and Remote Sensing* (2001-present)
 Associate Editor, *AMS Journal of Atmospheric and Oceanic Technology* (2006-2008)
 Associate Editor, *AGU Radio Science*, American Geophysical Union (1992-1997)
 Guest Editor, CYGNSS Special Issue of *IEEE J. Spec. Topics Remote Sens.* (2018-2019)
 Guest Editor, WindSat Special Issue of *IEEE Trans. Geosci. Remote Sens.* (2005-2006)
 Guest Editor, MicroRad Special Issue of *Radio Science* (1997-1998)
 Editor, *IEEE Geoscience and Remote Sensing Society Newsletter* (1997-2000)
 Microwave Sub-committee Co-chair, NASA Capabilities Roadmap Committee on Science Instruments and Sensors (2004-2005)
 Member, NASA Earth Science Technology Office Radar/Radiometry Working Group (2003-2004)
 Chair, GRSS Tech. Committee on Frequency Allocations in Remote Sensing, 2001-2003.
 Member, IEEE GRSS Instrumentation and Future Technologies Committee (1996-present)
 Member, GRSS Tech. Comm. on Frequency Allocation in Remote Sensing (2002-present)
 Member, Judith A. Resnik Technical Field Award Committee (2000 – 2003)

Member of Scientific Program Committee for AMS 25th Satellite Meteorology, Oceanography, and Climatology Conference (AMS Annual 2022)
Chair and Organizer, Session on CYGNSS: Applications to Tropical Meteorology and Hydrology, AMS 3rd Conference on Earth Observing SmallSats (AMS Annual 2020)
Chair and Organizer, Session on CYGNSS: Observations and Applications, AMS 23rd Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Ocean and Land Surfaces (IOAS-AOLS) (AMS Annual 2019)
Organizer and Moderator, Town Hall on CYGNSS and TROPICS, AMS 33rd Conference on Hurricanes and Tropical Meteorology (2018)
Chair and Organizer, Session on Early On-Orbit Results of the CYGNSS Mission, 22nd Conference on Satellite Meteorology, Oceanography, and Climatology (AMS Annual 2018)
Organizer and Moderator, Town Hall on The CYGNSS Satellite Constellation Tropical Cyclone Mission, AMS 32nd Conference on Hurricanes and Tropical Meteorology (2016)
Session Chairman for International Geoscience and Remote Sensing Symposium, 2024,2023,2021,2020,2019,2018,2017,2015,2014,2012,2011,2010,2009,2008,2007, 2006,2005,2004,2003,2002,2001,2000,1999
Member of Technical Program Committee, International Geoscience and Remote Sensing Symposium, 2024,2023,2021,2019-2017,2015,2014,2012,2007,2004-1999
Member of Technical Program Committee, GNSS+R Specialist Meeting, 2023, 2019, 2017 (General Chair), 2015
Technical Program Committee Member for SPIE 3rd International Asia-Pacific Environmental Remote Sensing Symposium on Remote Sensing of the Atmosphere, Ocean, Environment and Space, Hangzhou, China, October 2002.
Technical Program Committee Member – 2002 Second Microwave Radiometer Calibration Workshop, Barcelona, SPAIN, October 2002
Scientific Steering Committee Member, 5th Specialist Meeting on Microwave Radiometry and remote Sensing of the Environment, Boston, MA, November 1996

PROFESSIONAL MEMBERSHIP

Life Fellow, Institute of Electrical and Electronics Engineers (IEEE)
Fellow, American Meteorological Society (AMS)
Vice Chair, International Union of Radio Science (URSI), Commission F
Member, American Geophysical Union (AGU)

PATENTS and PRIVATE SECTOR TECHNOLOGY TRANSFER

Magic Bus autonomous vehicle tracking system developed for UM Parking and Transportation with students in independent study courses during 2004-2009. Intellectual property licensed to Sidecar and Uber in 2009. Sidecar acquired by General Motors in 2015.
Next generation global navigation satellite system reflectometry receiver developed for NASA with UM Space Physics Research Laboratory during 2016-2021. Intellectual property licensed to Muon Space in 2022. Patent provisional application no. 63/326,460.

EXTERNALLY SPONSORED RESEARCH AWARDS Total \$147,018,256

Primary Sponsors: NASA, NOAA, DOE, NRL, NSF, NRAO, US Navy, private industry

AWARDS and RECOGNITION

- 1990: NASA Certificate of Recognition for *Sparse Aperture Interferometric Radiometer – Refining Two Dimensional Antenna Configuration*
- 1992 NASA Certificates of Recognition (2) for *Synthetic Aperture Interferometric Radiometer Image Reconstruction Error Analysis* and *Piezoelectric Reflecting Array for Reflector Surface Distortion Compensation*
- 1993 NASA Group Achievement Awards (2) for *TOPEX Microwave Radiometer* and *TOPEX Precision Orbit Determination*
- 1994 NASA Group Achievement Award for *TOPEX Joint Verification Team*
- 1997 IEEE Transactions on Geoscience and Remote Sensing Prize Paper Award for “*Retrieval of tropospheric water vapor scale height from horizontal turbulence structure,*” by Ruf and Beus, TGARS, **35**(2), 203-211, 1997.
- 1999 IEEE Judith A. Resnik Technical Field Award “*For contributions to the absolute calibration of spaceborne microwave radiometers*”
- 2001 IEEE Fellow, “*For contributions in the development, calibration and remote sensing applications of microwave radiometers*”
- 2004 NASA Group Achievement Award for *Lightweight Rainfall Radiometer*
- 2006 International Geoscience and Remote Sensing Symposium Prize Paper Award for “*Detection of RFI by its Amplitude Probability Distribution,*” by Ruf, Misra, Gross and De Roo, Denver, CO, 31 Jul - 4 Aug 2006.
- 2010 NASA Group Achievement Award for *Genesis and Rapid Intensification Processes (GRIP) Airborne Earth Science Mission*
- 2011 NASA Certificate of Recognition for *180 GHz Interferometric Imager*
- 2012 NASA Group Achievement Award for *Aquarius Launch, Early Orbit Operations, and Commissioning*
- 2012 NASA Group Achievement Award for *Juno Proposal Team*
- 2014 IEEE Geoscience and Remote Sensing Society Outstanding Service Award
- 2015 NASA Group Achievement Award for *Hurricane and Severe Storm Sentinel Team*
- 2015 Best Reviewer, IEEE Geoscience and Remote Sensing Letters
- 2015 University of Michigan Ted Kennedy Family Faculty Team Excellence Award to the CYGNSS Team
- 2017 SmallSat Mission of the Year Award at 31st Annual American Institute of Aeronautics and Astronautics (AIAA) SmallSat Conference to the CYGNSS Team
- 2018 Collegiate Professorship, Appointment as Frederick Bartman Collegiate Professor of Climate and Space Science
- 2020 University of Michigan Distinguished Faculty Achievement Award
- 2022 Blue Marine Foundation 2022 Ocean Award in Science (with Madeline Evans)
- 2024 Elected Fellow of the American Meteorological Society

STUDENT AWARDS

- 2007 Amanda Mims, Second Place, Student Poster Competition, Great Midwestern Regional Space Grant Meeting, W. Lafayette, IN, Sep. 6-7, 2007.
- 2008 Amanda Mims, National Weather Assoc. Meteorological Satellite App. Award

- 2009 Sidharth Misra, IEEE Mikio Takagi Award (best student paper), International Geoscience and Remote Sensing Symposium, Cape Town, S.A., 13-17 July 2009.
- 2010 Amanda Mims, Third Place, Student Paper Competition, International Geoscience and Remote Sensing Symposium, Honolulu, HI, 26-30 July 2010.
- 2018 Tianlin Wang, IEEE Mikio Takagi Award (best student paper), International Geoscience and Remote Sensing Symposium, Valencia, SPAIN, 23-27 July 2018.
- 2018 Tianlin Wang, Outstanding Student Presentation Award, American Geophysical Union Meeting, Washington, DC, Dec 2019.
- 2020 Tianlin Wang, Distinguished Leadership Award, University of Michigan College of Engineering
- 2022 Madeline Evans, Blue Marine Foundation 2022 Ocean Award in Science
- 2024 Charles Powell, Richard F. and Eleanor A. Towner Prize for Distinguished Academic Achievement, University of Michigan College of Engineering

JOURNAL PUBLICATIONS (student advisees underlined, *post-doctoral fellows in italics*)

132. Wang, T., C. Ruf, A. O'Brien, S. Gleason, D. McKague, B. Block, A. Russel, "Measurement of GPS Antenna Gain Patterns for CYGNSS using a Spaceborne Antenna Range," IEEE Trans. Aerospace Electronic Sys., doi: 10.1109/TAES.2024.3414961, 2024.
131. Warnock, A., C. Ruf, A. Knoll, "Characterization of River Width Measurement Capability by Space Borne GNSS-Reflectometry," Remote Sens., 16, 1446, doi: 10.3390/rs16081446, 2024.
130. Warnock, A. M., C. S. Ruf, A. Russel, M. Al-Khaldi, *R. Balasubramaniam*, "CYGNSS Level 3 Merged Wind Speed Data Product for Storm Force and Surrounding Environmental Winds," IEEE J. Selected Topics Appl. Earth Obs., 17, 6189-6200, doi: 10.1109/JSTARS.2024.3379934, 2024.
129. Powell, C.E., C. S. Ruf, D. S. McKague, T. Wang, A. Russel, "An instrument error correlation model for GNSS reflectometry," Remote Sensing, 16, 742, doi: 10.3390/rs16050742, 2024.
128. Powell, C.E., C. S. Ruf, S. Gleason, S. C. R. Rafkin, "Sampled Together: Assessing the Value of Simultaneous Co-located Measurements for Optimal Satellite Configurations," Bull. Amer. Meteor. Soc., doi: 10.1175/BAMS-D-23-0198.1, Dec. 2023.
127. Abdalati, W., N. Baker, S. Boland, M. Bonadonna, C. A. Clayson, B. Demoz, K. Foster, C. Frankenberg, M. Hakub, T. Jorgensen, R. Kramer, D. Limonadi, A. Michalak, A. Nasel, P. Patterson, P. Pilewskie, S. Platnick, C. Powell, J. Privette, C. Ruf, T. Schneider, J. Schulz, P. Selmants, R. Shah, Q. Song, G. Stephens, T. Stryker, W. Su, M. Van Den Heever, A. Veldman, D. Waliser, E. Weatherhead, "Towards a U.S. Framework for Continuity of Satellite Observations of Earth's Climate and for Supporting Societal Resilience," AGU Earth's Future, doi: 10.1029/2023EF003757, 2023.
126. *Balasubramaniam, R.*, C. S. Ruf, "Development and Application of a GNSS-R Error Model for Hurricane Winds," IEEE J. Selected Topics Appl. Earth Obs., Vol. 17, pp 2336-2346, doi: 10.1109/JSTARS.2023.3344371, 2023.
125. Carreno-Luengo, H., C. Ruf, S. Gleason, A. Russel, "Detection of inland water bodies under dense biomass by CYGNSS," Remote Sensing Environ., doi: 10.1016/j.rse.2023.113896, 2023.
124. Carreno-Luengo, H., C. Ruf, S. Gleason, A. Russel, "A New Multi-Resolution CYGNSS Data Product for Fully and Partially Coherent Scattering," IEEE Trans. Geosci. Remote Sens., doi: 10.1109/TGRS.2023.3318639, 2023.

123. Al-Khaldi, M.M., S. Gleason, J.T. Johnson, R. Balasubramaniam, C. Ruf, D.S. McKague, B. Annane, T. Wang, A. Russel, D. Twigg, “Using Synthetic Cyclone Models for High Wind GNSS-R Calibration, Validation and Algorithm Development: A CYGNSS Case Study,” *IEEE Trans. Geosci. Remote Sens.*, doi: 10.1109/TGRS.2023.3294870, 2023.
122. Sun, Y., T. Bakker, C. Ruf, Y. Pan, “Effects of microplastics and surfactants on surface roughness of water waves,” *Scientific Reports*, doi: 10.1038/s41598-023-29088-9, 2023.
121. Mayers, D. R., C. S. Ruf, A. M. Warnock, “CYGNSS Storm-Centric Tropical Cyclone Gridded Wind Speed Product,” *J. Appl. Meteor. Climatol.*, doi: 10.1175/JAMC-D-22-0054.1, 2023.
120. Winkelried, J., C. Ruf, S. Gleason, “Spatial and Temporal Sampling Properties of a Large GNSS-R Satellite Constellation,” *Remote Sens.*, 15, 333, doi: 10.3390/rs15020333, 2023.
119. Carreno Luengo, H., C. S. Ruf, “Mapping Freezing and Thawing Surface State Periods with the CYGNSS Based F/T Seasonal Threshold Algorithm,” *IEEE J. Selected Topics Appl. Earth Obs. Remote Sens.*, doi: 10.1109/JSTARS.2022.3216463, 2022.
118. Campbell, J., R. Akbar, A. Bringer, D. Comite, L. Dente, S. Gleason, L. Guerriero, E. Hodges, J. Johnson, S. Kim, A. Melebari, N. Pierdicca, C. S. Ruf, L. Tsang, T. Wang, H. Xu, J. Zhu, M. Moghaddam, “Intercomparison of Electromagnetic Scattering Models for Delay-Doppler Maps along a CYGNSS Land Track with Topography,” *IEEE Trans. Geosci. Remote Sens.*, doi: 10.1109/TGRS.2022.3210160, 2022.
117. Asharaf, S., D. Posselt, F. Said, C. Ruf, “Updates on CYGNSS Ocean Surface Wind Validation in the Tropics,” *J. Oceanic Atmos. Tech.*, doi: 10.1175/JTECH-D-21-0168.1, 2022.
116. Pu, Z., Y. Wang, X. Li, C. Ruf, L. Bi, A. Mehra, “Impacts of Assimilating CYGNSS Satellite Ocean Surface Wind on Prediction of Landfalling Hurricanes with the HWRF Model,” *Remote Sensing*, 14, 2118, doi: 10.3390/rs14092118, 2022.
115. Powell, C. E., C. S. Ruf, A. Russel, “An Improved Blackbody Calibration Cadence for CYGNSS,” *IEEE Trans. Geosci. Remote Sens.*, doi: 10.1109/TGRS.2022.3165001, 2022.
114. Asgarimehr, M., C. Arnold, T. Weigel, C. Ruf, J. Wickert, “GNSS Reflectometry Global Ocean Wind Speed using Deep Learning: Development and Assessment of CyGNSSnet,” *Remote Sensing of Environment*, doi: 10.1016/j.rse.2021.112801, 2022.
113. Gerlein-Safdi, C., A. A. Bloom, G. Plant, E. Kort, C. S. Ruf, “Improving representation of tropical wetland methane emissions with CYGNSS inundation maps,” *Global Biogeochemical Cycles*, doi: 10.1029/2020GB006890, 2021.
112. Pascual, D., M. P. Clarizia, C. S. Ruf, “Improved CYGNSS Wind Speed Retrieval Using Significant Wave Height Correction,” *Remote Sensing*, doi: 10.3390/rs13214313, 2021.
111. Carreno Luengo, H., C. S. Ruf, “Retrieving Freeze/Thaw Surface State from CYGNSS Measurements,” *IEEE Trans. Geosci. Remote Sens.*, doi: 10.1109/TGRS.2021.3120932, 2021.
110. Gleason, S., M. M. Al-Khaldi, C. Ruf, D. S. McKague, T. Wang, A. Russel, “Characterizing and Mitigating Digital Sampling Effects on the CYGNSS Level 1 Calibration,” *IEEE Trans. Geosci. Remote Sens.*, doi: 10.1109/TGRS.2021.3120026, 2021.
109. Carreno Luengo, H., *et al.*, “The IEEE-SA Working Group on Spaceborne GNSS-R: Scene Study,” *IEEE Access*, doi: 10.1109/ACCESS.2021.3089762, 2021.
108. Evans, M. C., C. S. Ruf, “Towards the Detection and Imaging of Ocean Microplastics with a Spaceborne Radar,” *IEEE Trans. Geosci. Remote Sens.*, doi: 10.1109/TGRS.2021.3081691, 2021.

107. Carreno-Luengo, H., J. Crespo, R. Akbar, A. Bringer, A. Warnock, M. Morris, C. Ruf, "The CYGNSS Mission: On-Going Science Team Investigations," *Remote Sensing*, 13(9), 1814, doi: 10.3390/rs13091814, 2021.
106. Wang, T., C. S. Ruf, S. Gleason, A. J. O'Brien, D. S. McKague, B. P. Block, A. Russel, "Dynamic Calibration of GPS Effective Isotropic Radiated Power for GNSS-Reflectometry Earth Remote Sensing," *IEEE Trans. Geosci. Remote Sens.*, doi: 10.1109/TGRS.2021.3070238, 2021.
105. Pascual, D., M. P. Clarizia, C. S. Ruf, "Spaceborne Demonstration of GNSS-R Scattering Cross-Section Sensitivity to Wind Direction," *Geosci. Remote. Sens. Ltrs.*, doi: 10.1109/LGRS.2021.3049526, 2021.
104. Asharaf, S., D. Waliser, D. Posselt, C. Ruf, C. Zhang, A. Putra, "CYGNSS Ocean Surface Wind Validation in the Tropics," *J. Oceanic Atmos. Tech.*, 38, 711-724, doi: 10.1175/JTECH-D-20-0079.1, 2020.
103. Mayers, D., C. S. Ruf, "MTrack: Improved Center Fix of Tropical Cyclones from SMAP Wind Observations," *Bull. Amer. Meteor. Soc.*, 102, 3, doi: 10.1175/BAMS-D-20-0068.1, 2020.
102. Balasubramaniam, R., C. Ruf, "Neural Network Based Quality Control of CYGNSS Wind Retrieval," *Remote Sensing: Oceans*, 12, 2859, doi:10.3390/rs12172859, 2020.
101. Balasubramaniam, R., C. Ruf, "Azimuthal dependence of GNSS-R scattering cross-section in hurricanes," *J. Geophys. Res.: Oceans*, doi: 10.1029/2020JC016167, 2020.
100. Hoseini, M, M. Asgarimehr, V. Zavorotny, H. Nahavandchi, C. Ruf, J. Wickert, "First Evidence of Mesoscale Ocean Eddies Signature in GNSS Reflectometry Measurements," *Remote Sensing*, doi: 10.3390/rs12030542, 12(3), 542, 2020.
99. Clarizia, M.P., C.S. Ruf, "Statistical Derivation of Wind Speeds from CYGNSS Data," *IEEE Trans. Geosci. Remote Sens.*, doi: 10.1109/TGRS.2019.2959715, 2020.
98. Balasubramaniam, R., C. Ruf, "Characterization of Rain Impact on L-Band GNSS-R Ocean Surface Measurements," *Remote Sensing of Environment*, 239(15), doi: 10.1016/j.rse.2019.111607, 2020.
97. Mayers, D., C. S. Ruf, "Estimating the True Maximum Sustained Wind Speed of a Tropical Cyclone from Spatially Averaged Observations," *J. Appl. Meteor. Climatol.*, doi: 10.1175/JAMC-D-19-0177.1, 2020.
96. Cardellach, E, W. Li, A. Rius, M. Semmling, J. Wickert, C. Ruf, C. Buontempo, "First Precise Spaceborne Sea Surface Altimetry With GNSS Reflected Signals," *IEEE J. Sel. Topics Appl. Earth Obs. Remote Sens.*, doi: 10.1109/JSTARS.2019.2952694, 2019.
95. Gerlein-Safdi, C., C. S. Ruf, "A CYGNSS-Based Algorithm for the Detection of Inland Waterbodies," *Geophys. Res. Ltrs.*, doi: 10.1029/2019GL085134, 2019.
94. Warnock, A., C. Ruf, "Response to Variations in River Flowrate by a Spaceborne GNSS-R River Width Estimator," *Remote Sens.*, 11(20), 2450, doi: 10.3390/rs11202450, 2019.
93. Gleason, S., J. Johnson, C. Ruf, C. Bussy-Virat, "Characterizing Background Signals and Noise in Spaceborne GNSS Reflection Ocean Observations," *IEEE Geosci. Remote Sens. Ltrs.*, doi: 10.1109/LGRS.2019.2926695, 2019.
92. Ruf, C. S., S. Asharaf, R. Balasubramaniam, S. Gleason, T. Lang, D. McKague, D. Twigg, D. Waliser, "In-Orbit Performance of the Constellation of CYGNSS Hurricane Satellites," *Bull. Amer. Meteor. Soc.*, 2009-2023, doi: 10.1175/BAMS-D-18-0337.1, Oct. 2019.
91. Mayers, D., C. S. Ruf, "Tropical Cyclone Center Fix using CYGNSS Winds," *J. Appl. Meteor. Climatol.*, doi: 10.1175/JAMC-D-19-0054.1, 2019.

90. Cui, Z., Z. Pu, V. Tallapragada, R. Atlas, C. S. Ruf, “A Preliminary Impact Study of CYGNSS Ocean Surface Wind Speeds on Numerical Simulations of Hurricanes,” *Geophys. Res. Ltrs.*, doi: 10.1029/2019GL082236, 2019.
89. Krien, Y., G. Arnaud, R. Cécé, C. Ruf, A. Belmadani, J. Khan, D. Bernard, A.K.M.S. Islam, F. Durand, L. Testut, P. Palany, N. Zahibo, “Can we improve parametric cyclonic wind fields using recent satellite remote sensing data?,” *Remote Sensing*, 10, 1963, doi:10.3390/rs10121963, 2018.
88. Ruf, C.S., C. Chew, T. Lang, M.G. Morris, K. Nave, A. Ridley, R. Balasubramaniam, “A New Paradigm in Earth Environmental Monitoring with the CYGNSS Small Satellite Constellation,” *Scientific Reports*, doi: 10.1038/s41598-018-27127-4, 2018.
87. Ruf, C., R. Balasubramaniam, “Development of the CYGNSS Geophysical Model Function for Wind Speed,” *IEEE J. Sel. Topics Appl. Earth Obs. Remote Sens.*, doi: 10.1109/JSTARS.2018.2833075, 2018.
86. Ruf, C., S. Gleason, D. S. McKague, “Assessment of CYGNSS Wind Speed Retrieval Uncertainty,” *IEEE J. Sel. Topics Appl. Earth Obs. Remote Sens.*, doi: 10.1109/JSTARS.2018.2825948, 2018.
85. Wang, T., C. S. Ruf, B. Block, D. S. McKague, S. Gleason, “Design and Performance of a GPS Constellation Power Monitor System for Improved CYGNSS L1B Calibration,” *IEEE J. Sel. Topics Appl. Earth Obs. Remote Sens.*, doi: 10.1109/JSTARS.2018.2867773, 2018.
84. Gleason, S., C. S. Ruf, A. O’Brien, D. S. McKague, “The CYGNSS Level 1 Calibration Algorithm and Error Analysis Based On On-Orbit Measurements,” *IEEE J. Sel. Topics Appl. Earth Obs. Remote Sens.*, doi: 10.1109/JSTARS.2018.2832981, 2018.
83. *Bussy-Virat, C. D.*, C. S. Ruf, A. J. Ridley, “Relationship between temporal and spatial resolution for a constellation of GNSS-R satellites,” *IEEE J. Sel. Topics Appl. Earth Obs. Remote Sens.*, doi: 10.1109/JSTARS.2018.2833426, 2018.
82. Morris, M., and C. S. Ruf, “Determining Tropical Cyclone Surface Wind Speed Structure and Intensity with the CYGNSS Satellite Constellation,” *J. Appl. Meteor. Climatol.*, **56**(7), 1847–1865, doi: 10.1175/JAMC-D-16-0375.1, 2017.
81. *Clarizia, M.*, C. Ruf, “Bayesian Wind Speed Estimation Conditioned on Significant Wave Height for GNSS-R Ocean Observations,” *J. Atmos. Oceanic Techn.*, doi:10.1175/JTECH-D-16-0196.1, **34**(6), 1193-1202, 2017.
80. Morris, M., C. S. Ruf, “Estimating Tropical Cyclone Integrated Kinetic Energy with the CYGNSS Satellite Constellation,” *J. Appl. Meteor. Climatol.*, 56, 235–245, doi: 10.1175/JAMC-D-16-0176.1, 2017.
79. Kroodsma, R.A., D.S. McKague, C. S. Ruf, “Vicarious Cold Calibration for Conical Scanning Microwave Imagers,” *IEEE Trans. Geosci. Remote Sens.*, doi:10.1109/TGRS.2016.2615552, **55**(2), 816-827, 2017.
78. Chen-Zhang, D. D., C. S. Ruf, F. Ardhuin, J. Park, “GNSS-R nonlocal sea state dependencies: Model and empirical verification,” *J. Geophys. Res. Oceans*, 121, doi: 10.1002/2016JC012308, 2016.
77. Yang, J. X., D. S. McKague, C. S. Ruf, “Uncertainties in Radiometer Intercalibration associated with Variability in Geophysical Parameters,” *J. Geophys. Res. Atmos.*, doi: 10.1002/2016JD024937, 2016.
76. *Clarizia, M. P.*, C. S. Ruf, “On the Spatial Resolution of GNSS-Reflectometry,” *IEEE Geosci. Remote Sens. Ltrs.*, doi:10.1109/LGRS.2016.2565380, 2016.

75. Chen, D. D., C. S. Ruf and S. T. Gleason, "Response time of mean square slope to wind forcing: An empirical investigation," *J. Geophys. Res. Oceans*, doi:10.1002/2016JC011661, 2016.
74. Clarizia, M. P., and C. S. Ruf, "Wind Speed Retrieval Algorithm for the Cyclone Global Navigation Satellite System (CYGNSS) Mission," *IEEE Trans Geosci. Remote Sens.*, **54**(8), doi:10.1109/TGRS.2016.2541343, Aug. 2016.
73. Ruf, C. S., R. Atlas, P. S. Chang, M. P. Clarizia, J. L. Garrison, S. Gleason, S. J. Katzberg, Z. Jelenak, J. T. Johnson, S. J. Majumdar, A. O'Brien, D. J. Posselt, A. J. Ridley, R. J. Rose, V. U. Zavorotny, "New Ocean Winds Satellite Mission to Probe Hurricanes and Tropical Convection," *Bull. Amer. Meteor. Soc.*, doi:10.1175/BAMS-D-14-00218.1, pp385-395, Mar 2016.
72. Gleason, S., C. Ruf, M. P. Clarizia, A. O'Brien, "Calibration and Unwrapping of the Normalized Scattering Cross Section for the Cyclone Global Navigation Satellite System (CYGNSS)," *IEEE Trans. Geosci. Remote Sens.*, **54**(5), 2495-2509, doi:10.1109/TGRS.2015.2502245, 2016.
71. Clarizia, M.P., C. Ruf, P. Cipollini and C. Zuffada, "First Spaceborne Observation of Sea Surface Height Using GPS Reflectometry," *Geophys. Res. Lett.*, **43**, doi:10.1002/2015GL066624, 2016.
70. Yang, J. X., D. S. McKague and C. S. Ruf, "Boreal, Temperate, and Tropical Forests as Vicarious Calibration Sites for Spaceborne Microwave Radiometry," *IEEE Trans. Geosci. Remote Sens.*, doi:10.1109/TGRS.2015.2472532, **54**(2), 1035-1051, 2016.
69. Morris, M., and C. S. Ruf, "A Coupled-Pixel Model (CPM) Atmospheric Retrieval Algorithm for High Resolution Imagers," *J. Atmos. Oceanic Technol.*, **32**(10), 1866-1879, doi:10.1175/JTECH-D-15-0016.1, 2015.
68. Chen, D. D., and C. S. Ruf, "Adaptive Control of Undetected Radio Frequency Interference with a Spaceborne Microwave Radiometer," *IEEE Trans. Geosci. Remote Sens.*, **53**(9), 4972-4984, doi:10.1109/TGRS.2015.2414395, Sep. 2015.
67. Clarizia, M. P., Ruf, C., Jales, P. and Gommenginger, C., "Spaceborne GNSS-R Minimum Variance Wind Speed Estimator," *IEEE Trans Geosci. Remote Sens.*, **52**(11), 6829-6843, doi:10.1109/TGRS.2014.2303831, Nov. 2014.
66. Yang, J. X., D. S. McKague and C. S. Ruf, "Land contamination correction for passive microwave radiometer data: Demonstration of wind retrieval in the Great Lakes using SSM/I," *J. Atmos. Oceanic. Tech.*, **31**, doi:10.1175/JTECH-D-13-00254.1, Oct. 2014.
65. Le Vine, D.M., P. de Mattheis, C. Ruf and D. Chen, "Aquarius RFI Detection and Mitigation: Assessment and Examples," *IEEE Trans. Geosci. Remote Sens.*, **52**(8), 4574-4584, doi:10.1109/TGRS.2013.2282595, Aug. 2014.
64. Piepmeier, J. R., J. T. Johnson, P. N. Mohammed, D. Bradley, C. Ruf, M. Aksoy, R. Garcia, D. Hudson, L. Miles and M. Wong, "Radio-Frequency Interference Mitigation for the Soil Moisture Active Passive Microwave Radiometer," *IEEE Trans. Geosci. Remote Sens.*, **52**(1), 761-775, doi:10.1109/TGRS.2013.2281266, Jan. 2014.
63. Kroodsma, R., D. McKague and C. S. Ruf, "Extension of Vicarious Cold Calibration to 85-92 GHz for Spaceborne Microwave Radiometers," *IEEE Trans. Geosci. Remote Sens.*, **51**(9), 4743-4751, doi:10.1109/TGRS.2013.2267152, Sep. 2013.
62. Meadows, L.A., C. Whelan, D. Barrick, R. Kroodsma, C. Ruf, C.C. Teague, G.A. Meadows and S. Wang, "High Frequency Radar and its Application to Fresh Water," *J. Great Lakes Research*, doi:10.1016/j.jglr.2013.01.002, Mar 2013.

61. Renno, N. O., and C.S. Ruf, "Comments on the Search for Electrostatic Discharges on Mars," *The Astrophysical Journal*, 761:88, doi:10.1088/0004-637X/761/2/88, Dec 2012.
60. Misra, S., R.D. De Roo and C.S. Ruf, "An Improved Radio Frequency Interference Model: Reevaluation of the Kurtosis Detection Algorithm Performance under Central-Limit Conditions," *IEEE Trans. Geosci. Remote Sens.*, **50**(11), 4565-4574, doi:10.1109/TGRS.2012.2191972, 2012.
59. Misra, S., and C.S. Ruf, "Analysis of Radio Frequency Interference Detection Algorithms in the Angular Domain for SMOS," *IEEE Trans. Geosci. Remote Sens.*, **50**(5), 1448-1457, doi:10.1109/TGRS.2011.2176949, 2012.
58. Kroodsma, R.A., D.S. McKague, C.S. Ruf, "Inter-Calibration of Microwave Radiometers using the Vicarious Cold Calibration Double Difference Method," *J. Selected Topics Remote Sensing*, **5**(3), 1006-1013, doi:10.1109/JSTARS.2012.2195773, 2012.
57. Amarin, R. A., W. L. Jones, S. F. El-Nimri, J. W. Johnson, C. S. Ruf, T. L. Miller, and E. Uhlhorn, "Hurricane Wind Speed Measurements in Rainy Conditions Using the Airborne Hurricane Imaging Radiometer (HIRAD)," *IEEE Trans. Geosci. Remote Sens.*, **50**(1), 180-192, doi:10.1109/TGRS.2011.2161637, 2012.
56. Park, J., J. T. Johnson, N. Majurec, N. Niamsuwan, J. Piepmeier, P. Mohammed, C. Ruf, S. Misra, S. Yueh and S. Dinardo, "Airborne L-band Radio Frequency Interference Observations from the SMAPVEX08 Campaign and Associated Flights," *IEEE Trans. Geosci. Remote Sens.*, **49**(9), 3359-3370, doi:10.1109/TGRS.2011.2107560, 2011.
55. McKague, D.S., C.S. Ruf and J.J. Puckett, "Beam Spoiling Correction for Spaceborne Microwave Radiometers using the Two-Point Vicarious Calibration Method," *IEEE Trans. Geosci. Remote Sens.*, **49**(1), 21-27, doi:10.1109/TGRS.2010.2068052, 2011.
54. Bailey, M.C., R. Amarin, J. Johnson, P. Nelson, M. James, D. Simmons, C. Ruf, L. Jones and X. Gong, "Multi-Frequency Synthetic Thinned Array Antenna for the Hurricane Imaging Radiometer," *Trans. Antennas Propagat.*, **58**(8), doi:10.1109/TAP.2010.2050453, 2010.
53. Peng, J., and C. S. Ruf, "Effects of clock frequency stability on digital microwave radiometer performance," *Radio Sci.*, **45**, RS4005, doi:10.1029/2009RS004272, 2010.
52. Amarin, R., C. Ruf and L. Jones, "Impact of Spatial Resolution on Wind Field Derived Estimates of Air Pressure Depression in the Hurricane Eye," *Remote Sens.*, **2**(3), 665-672, doi:10.3390/rs2030665, 2010.
51. Peng, J., and C. S. Ruf, "Covariance Statistics of Fully Polarimetric Brightness Temperature Measurements," *Geosci. Rem. Sens. Ltrs.*, **7**(3), doi: 10.1109/LGRS.2009.2039115, 2010.
50. El-Nimri, S. F., W. L. Jones, E. Uhlhorn, C. Ruf, J. Johnson and P. Black, "An Improved C-band Ocean Surface Emissivity Model at Hurricane-force Wind Speeds over a Wide Range of Earth Incidence Angles," *Geosci. Remote Sens. Ltrs*, **7**(4), doi: 10.1109/LGRS.2010.2043814, 2010.
49. Misra, S., P. N. Mohammed, B. Guner, C. S. Ruf, J. R. Piepmeier and J. T. Johnson, "Microwave Radiometer Radio Frequency Interference Detection Algorithms: A Comparative Study," *Trans. Geosci. Remote Sens.*, **47**(11), 3742-3754, doi: 10.1109/TGRS.2009.2031104, 2009.
48. Lim, B. H., and C. S. Ruf, "A High Resolution Full Earth Disk Model for Evaluating Synthetic Aperture Passive Microwave Observations from GEO," *Trans. Geosci. Remote Sens.*, **47**(11), 3731-3741, doi: 10.1109/TGRS.2009.2031172, 2009.

47. Keihm, S., S. Brown, J. Teixeira, S. Desai, W. Lu, E. Fetzer, C. Ruf, X. Huang and Y. Yung, "Ocean Water Vapor and Cloud Liquid Water Trends from 1992-2005 TOPEX Microwave Radiometer Data," *J. Geophys. Res.*, **114**(D18101), doi: 10.1029/2009JD012145, 2009.
46. Ruf, C., N. O. Renno, J. F. Kok, E. Bandelier, M. J. Sander, S. Gross, L. Skjerve, and B. Cantor, "Emission of Non-thermal Microwave Radiation by a Martian Dust Storm," *Geophys. Res. Lett.*, **36**(13), L13202, doi: 10.1029/2009GL038715, 2009.
45. Peng, J., and C. S. Ruf, "Covariance Statistics of Polarimetric Brightness Temperature Measurements," *Trans. Geosci. Remote Sens.*, **46**(10), 3238-3251, doi: 10.1109/TGRS.2008.921413, 2008.
44. Misra, S., and C. S. Ruf, "Detection of Radio Frequency Interference for the Aquarius Radiometer," *Trans. Geosci. Remote Sens.*, **46**(10), 3123-3128, doi: 10.1109/TGRS.2008.920371, 2008.
43. Peng, J., and C. S. Ruf, "Calibration Method for Fully Polarimetric Microwave Radiometers Using the Correlated Noise Calibration Standard," *Trans. Geosci. Remote Sens.*, **46**(10), 3087-3097, doi: 10.1109/TGRS.2008.2000740, 2008.
42. Lagerloef, G., F. R. Colomb, D. Le Vine, F. Wentz, S. Yueh, C. Ruf, J. Lilly, J. Gunn, Y. Chao, A. deCharon, G. Feldman and C. Swift, "The Aquarius/SAC-D mission –Designed to Meet the Salinity Remote Sensing Challenge," *Oceanography – Special Issues on Salinity*, **21**(1), 68-81, doi: 10.5670/oceanog.2008.68, Mar 2008.
41. Tanner, A.B., W.J. Wilson, B.H. Lambrigsten, S.J. Dinardo, S.T. Brown, P.P. Kangaslahti, T.C. Gaier, C.S. Ruf, S.M. Gross, B.H. Lim, S. Musko, S. Rogacki, J.R. Piepmeier, "Initial Results of the Geostationary Synthetic Thinned Array Radiometer (GeoSTAR) Demonstrator Instrument," *Trans. Geosci. Remote Sens.*, **45**(7), 1947-1957, doi: 10.1109/TGRS.2007.894060, 2007.
40. De Roo, R., S. Misra and C. Ruf, "Sensitivity of the Kurtosis Statistic as a Detector of Pulsed Sinusoidal RFI," *Trans. Geosci. Remote Sens.*, **45**(7), 1938-1946, doi: 10.1109/TGRS.2006.888101, 2007.
39. Brown, S.T., and C.S. Ruf, "Validation and Development of Melting Layer Models Using Constraints by Active/Passive Microwave Observations of Rain and the Wind Roughened Ocean Surface," *AMS J. Oceanic Atmos. Tech.*, **24**(4), 543-563, doi: 10.1175/JTECH1993.1, 2007.
38. Ruf, C.S., and A.M. Warnock, "GEOSAT Follow On Water Vapor Radiometer: Performance with a Shared Active/Passive Antenna," *Trans. Geosci. Remote Sens.*, **45**(4), 970-977, doi: 10.1109/TGRS.2006.890415, 2007.
37. Ruf, C.S., S. M. Gross and S. Misra, "RFI Detection and Mitigation for Microwave Radiometry with an Agile Digital Detector," *Trans. Geosci. Remote Sens.*, **44**(3), 694-706, doi: 10.1109/TGRS.2005.861411, 2006.
36. Brown, S.T., C.S. Ruf and D.R. Lyzenga, "An Emissivity Based Wind Vector Retrieval Algorithm for the WindSat Polarimetric Radiometer," *Trans. Geosci. Remote Sens.*, **44**(3), 611-621, doi: 10.1109/TGRS.2005.859351 2006.
35. Ruf, C.S., Y. Hu and S.T. Brown, "Calibration of WindSat Polarimetric Channels with a Vicarious Cold Reference," *Trans. Geosci. Remote Sens.*, **44**(3), 470-475, doi: 10.1109/TGRS.2005.855996, 2006.
34. Brown, S.T., and C.S. Ruf, "Determination of a Hot Blackbody Reference Target over the Amazon Rainforest for the On-orbit Calibration of Microwave Radiometers," *AMS J. Oceanic Atmos. Tech.*, **22**(9), 1340-1352, doi: 10.1175/JTECH1769.1, 2005.
33. Brown, S., C. Ruf, S. Keihm and A. Kitiyakara, "Jason Microwave Radiometer performance and on-orbit calibration," *Marine Geodesy*, **27**(1-2), 199-220, doi: 10.1080/01490410490465643, 2004.

32. Ruf, C.S. and J. Li, “A Correlated Noise Calibration Standard for Interferometric, Polarimetric and Autocorrelation Microwave Radiometers,” *Trans. Geosci. Remote Sens.*, **41**(10), 2187-2196, doi: 10.1109/TGRS.2003.815971, 2003.
31. Ruf, C.S., “Vicarious Calibration of an Ocean Salinity Radiometer from Low Earth Orbit,” *AMS J. Atmos. Oceanic Tech.*, **20**(11), 1656-1670, doi: 10.1175/1520-0426(2003)020<1656:VCOAOS>2.0.CO;2, 2003.
30. Fischman, M.A., A.W. England and C.S. Ruf, “How digital correlation affects the fringe washing function in L-Band aperture synthesis radiometry”, *Trans. Geosci. Remote Sens.*, **40**(3), 671-679, doi: 10.1109/TGRS.2002.1000326, 2002.
29. Ruf, C.S., “Characterization and Correction of a Drift in Calibration of the TOPEX Microwave Radiometer”, *Trans. Geosci. Remote Sens.*, **40**(2), 509-511, doi: 10.1109/36.992824, 2002.
28. Tran, N., D. Vandemark, C. Ruf and B. Chapron, “The dependence of nadir ocean surface emissivity on wind vector as measured with TMR”, *Trans. Geosci. Remote Sens.*, **40**(2), 515-523, doi: 10.1109/36.992827, 2002.
27. Giampaolo, J.C. and C.S. Ruf, “The Effect of Atmospheric Stability on Microwave Excess Emissivity due to Wind,” *Trans. Geosci. Remote Sens.*, **39**(10), 2311-2314, doi: 10.1109/36.957295, 2001.
26. Ruf, C.S. and H. Zhang, “Performance Evaluation of Single and Multichannel Microwave Radiometers for Soil Moisture Retrieval,” *Remote Sens. of Envir.*, **75**(1), 86-99, doi: 10.1016/S0034-4257(00)00158-9, 2001.
25. Gerrard, A.J., T.J. Kane, J.P. Thayer, C.S. Ruf and R.L. Collins, “Consideration of non-Poisson distributions for lidar applications” *Appl. Optics*, **40**(9), 1488-1492, doi: 10.1364/AO.40.001488, 2001.
24. Keihm, S.J., V. Zlotnicki and C.S. Ruf, “TOPEX Microwave Radiometer Performance Evaluation, 1992-1998,” *Trans. Geosci. Remote Sens.*, **38**(3), 1379-1386, doi: 10.1109/36.843032, 2000.
23. Cruz-Pol, S.L. and C.S. Ruf, “A modified model for specular sea surface emissivity at microwave frequencies,” *Trans. Geosci. Remote Sens.*, **38**(2), 858-869, doi: 10.1109/36.842014, 2000.
22. Ruf, C.S. “Detection of calibration drifts in spaceborne microwave radiometers using a vicarious cold reference,” *Trans. Geosci. Remote Sens.*, **38**(1), 44-52, doi: 10.1109/36.823900, 2000.
21. Bobak, J.P. and C.S. Ruf, “Improvements and complications involved with adding an 85 GHz channel to cloud liquid water radiometers,” *Trans. Geosci. Remote Sens.*, **38**(1), 214-225, doi: 10.1109/36.823914, 2000.
20. Bobak, J.P. and C.S. Ruf, “A new model for the structure function of integrated water vapor in turbulence,” *Radio Science*, **34**(6), 1461-1474, doi: 10.1029/1999RS900097, 1999.
19. Ruf, C.S. “Constraints on the polarization purity of a Stokes microwave radiometer,” *Radio Science*, **33**(6), 1617-1639, doi: 10.1029/98RS02773, 1998.
18. Cruz-Pol, S.L., C.S. Ruf, and S.J. Keihm, “Improved 20-32 GHz Atmospheric Absorption Model,” *Radio Science*, **33**(5), 1319-1334, doi: 10.1029/98RS01941, 1998.
17. Bas, C.F., T.J. Kane, and C.S. Ruf, “Enhanced-resolution lidar,” *J. Opt. Soc. Am. A*, **14**(5), 1044-1050, doi: 10.1364/JOSAA.14.001044, 1997.
16. Ruf, C.S. and S.E. Beus, “Retrieval of tropospheric water vapor scale height from horizontal turbulence structure,” *Trans. Geosci. Remote Sens.*, **35**(2), 203-211, doi: 10.1109/36.563258, 1997.

15. Ruf, C.S., R.P. Dewan, and B. Subramanya, "Combined microwave radiometer and altimeter retrieval of wet path delay for the GEOSAT Follow On," Trans. Geosci. Remote Sens., **34**(4), 991-999, doi: 10.1109/TGRS.1996.508416, 1996.
14. Ruf, C.S., K. Aydin, S. Mathur, and J.P. Bobak, "35 GHz dual polarization propagation link for rain rate estimation," J. Atmos. and Oceanic Techn., **13**(2), 419-425, doi: 10.1175/1520-0426(1996)013<0419:GDPPLF>2.0.CO;2, 1996.
13. Ruf, C.S., "Digital correlators for synthetic aperture interferometric radiometry," Trans. Geosci. Remote Sens., **33**(5), 1222-1229, doi: 10.1109/36.469486, 1995.
12. Keihm, S.J. and C.S. Ruf, "The role of water vapor radiometers for in-flight calibration of the TOPEX Microwave Radiometer," Marine Geodesy, **18**, 139-156, doi: 10.1080/15210609509379749, 1995.
11. Ruf, C.S., M.A. Janssen, and S.J. Keihm, "TOPEX/POSEIDON Microwave Radiometer (TMR): I. Instrument description and antenna temperature calibration," Trans. Geosci. Remote Sens., **33**(1), 125-137, doi: 10.1109/36.368215, 1995.
10. Janssen, M.A., C.S. Ruf, and S.J. Keihm, "TOPEX/POSEIDON Microwave Radiometer (TMR): II. Antenna Pattern Correction and Brightness Temperature Algorithm," Trans. Geosci. Remote Sens., **33**(1), 138-146, doi: 10.1109/36.368214, 1995.
9. Keihm, S.J., M.A. Janssen, and C.S. Ruf, "TOPEX/POSEIDON Microwave Radiometer (TMR): III. Wet tropospheric range correction and pre-launch error budget," Trans. Geosci. Remote Sens., **33**(1), 147-161, , doi: 10.1109/36.368213 1995.
8. Ruf, C.S., S.J. Keihm, B. Subramanya, and M.A. Janssen, "TOPEX/POSEIDON Microwave Radiometer Performance and In-flight Calibration," J. of Geophys. Res., **99**(C12), 24915-24926, doi: 10.1029/94JC00717, 1994.
7. Ruf, C.S., "Numerical annealing of low redundancy linear arrays," Trans. Antennas and Propag., **41**(1), 85-90, doi: 10.1109/8.210119, 1993.
6. Ruf, C.S., "Error analysis of image reconstruction by a synthetic aperture interferometric radiometer," Radio Science, **26**(6), 1419-1434, doi: 10.1029/91RS02355, 1991.
5. Swift, C.T., D.M. Le Vine, and C.S. Ruf, "Aperture synthesis concepts in microwave remote sensing of the earth," Trans. on Microwave Theory and Techniques, **39**(12), 1931-1935, doi: 10.1109/22.106530, 1991.
4. Alishouse, J.C., J.B. Snider, E.R. Westwater, C.T. Swift, C.S. Ruf, S.A. Snyder, J. Vongsathorn and R.R. Ferraro, "Determination of cloud liquid water content using the SSM/I," Trans. Geosci. Remote Sens., **28**(5), 817-822, doi: 10.1109/36.58968, 1990.
3. Ruf, C.S., C.T. Swift, A.B. Tanner and D.M. Le Vine, "Interferometric synthetic aperture microwave radiometry for the remote sensing of the earth," Trans. Geosci. Remote Sens., **26**(5), 597-611, doi: 10.1109/36.7685, 1988.
2. Ruf, C.S. and C.T. Swift, "Atmospheric profiling of water vapor density with a 20.5-23.5 GHz autocorrelation radiometer," J. Atmos. and Oceanic Techn., **5**(4), 539-546, doi: 10.1175/1520-0426(1988)005<0539:APOWVD>2.0.CO;2, 1988.
1. Walters, J.M., C.S. Ruf and C.T. Swift, "A microwave radiometer weather-correcting sea ice algorithm," J. Geophys. Res., **92**(C6), 6521-6534, doi: 10.1029/JC092iC06p06521, 1987.

PROCEEDINGS PUBLICATIONS (student advisees underlined, *post-doctoral fellows in italics*)

195. Bai, D., C. Ruf, A. O'Brien, D. Moller, "Calibration of the Airborne Polarimetric GNSS-R Sensor for the Rongowai Project," Proc. 2024 International Geoscience and Remote Sensing Symposium, Athens, GREECE, doi: 10.1109/IGARSS53475.2024.10640409, 2024.
194. Gleason S., H. Carreno-Luengo, C. Ruf, A. Russel, "Comparison of GNSs-R Delay Sopppler Map Processing Algorithms," Proc. 2024 International Geoscience and Remote Sensing Symposium, Athens, GREECE, doi: 10.1109/IGARSS53475.2024.10641548, 2024.
193. Sundaram, G. B., C. S. Ruf, "A Zero Current Equivalent Wind Correction for Remotely Sensed Winds," Proc. 2024 International Geoscience and Remote Sensing Symposium, Athens, GREECE, doi: 10.1109/IGARSS53475.2024.10640526, 2024.
192. Sundaram, G. B., C. S. Ruf, "The Detection and Tracking of Ocean Surface Roughness Supression by Ocean Pollutans Via Surfactants," Proc. 2024 International Geoscience and Remote Sensing Symposium, Athens, GREECE, doi: 10.1109/IGARSS53475.2024.10642822, 2024.
191. Wilson, M., R. Datta, S. Savarimuthu, D. Moller, C. Ruf, "Prediction of Soil Moisture From Near-Global Cygnss Gns-Reflectometry Using a Random Forest Machine Learning Model," Proc. 2024 International Geoscience and Remote Sensing Symposium, Athens, GREECE, doi: 10.1109/IGARSS53475.2024.10642723, 2024.
190. Carreno-Luengo, H., C. .S. Ruf, S. Gleason, A. Russel, A. Roy, H. Salmabadi, "Novel GNSS-R Methods for Freeze/Thaw Surface State Retrieval," Proc. 2024 International Geoscience and Remote Sensing Symposium, Athens, GREECE, doi: 10.1109/IGARSS53475.2024.10641037, 2024.
189. Pascual, D., C. Ruf, *R. Balasubramaniam*, "Azimuthal Dependence of CYGNSS Winds in Tropical Cyclones," Proc. 2024 International Geoscience and Remote Sensing Symposium, Athens, GREECE, doi: 10.1109/IGARSS53475.2024.10640920, 2024.
188. Carreno-Luengo, H., C. S. Ruf, S. Gleason, A. Russel, "Latest Progress on Rongowai Polarimetric GNSS-R Airborne Mission," Proc. 2024 International Geoscience and Remote Sensing Symposium, Athens, GREECE, doi: 10.1109/IGARSS53475.2024.10642216, 2024.
187. Ruf, C., S. Asharaf, *R. Balasubramaniam*, D. McKague, D. Pascual, B. Roberts, A. Russel, D. Twigg, A. Warnock, "Performance and Characterization of CYGNSS Wind Speed Products," Proc. 2024 International Geoscience and Remote Sensing Symposium, Athens, GREECE, doi: 10.1109/IGARSS53475.2024.10641429, 2024.
186. Melebari, A., A. R. Silva, R. Akbar, E. Hodges, Y. Zhao, P. Nergis, D. S. McKague, C. Ruf, M. Moghaddam, "CYGNSS SoilSCAPE Sites: Sensor Calibration and Data Analysis," Proc. 2023 International Geoscience and Remote Sensing Symposium, Pasadena, CA, USA, pp. 4628-4630, doi: 10.1109/IGARSS52108.2023.10282411, 2023.
185. Carreno-Luengo, H., C. S. Ruf, S. Gleason, A. Russel, "An Improved Inland Water Detector Using Standard L1 Data: Application to CYGNSS," Proc. 2023 International Geoscience and Remote Sensing Symposium, Pasadena, CA, USA, pp. 4322-4323, doi: 10.1109/IGARSS52108.2023.10282022, 2023.
184. Carreno-Luengo, H., C. Ruf, S. Gleason, A. Russel, I.M. Russo, M. Di Bisceglie, C. Galdi, "In-Orbit Real Time Inland Water Detection by A Future Spaceborne GNSS-R Receiver," Proc. 2023 International Geoscience and Remote Sensing Symposium, Pasadena, CA, USA, pp. 3724-3725, doi: 10.1109/IGARSS52108.2023.10282539, 2023.
183. Carreno-Luengo, H., C. Ruf, A. Warnock, "The CYGNSS Coherent End-To-End Simulator: Development and Results," Proc. 2022 International Geoscience and Remote Sensing Symposium, Kuala Lumpur, Malaysia, doi: 10.1109/IGARSS46834.2022.9884499, July 2022.

182. Moller, D., M. Wilson, R. Datta, A. O'Brien, R. Linnabary, C. Ruf, "Rongowai: A Pathfinder NASA/NZ GNSS-R Initiative Supporting SDG-15 - Life on Land," Proc. 2022 International Geoscience and Remote Sensing Symposium, Kuala Lumpur, Malaysia, doi: 10.1109/IGARSS46834.2022.9884397, July 2022.
181. Ruf, C., C. Chew, M. Moghaddam, D. Posselt, Z. Pu, "Science Impacts of the NASA CYGNSS Mission," Proc. 2022 International Geoscience and Remote Sensing Symposium, Kuala Lumpur, Malaysia, doi: 10.1109/IGARSS46834.2022.9884129, July 2022.
180. Carreno-Luengo, H., C. Ruf, "Triggering Freeze/Thaw Surface State Monitoring from High Inclination Orbit GNSS-R Missions: A CYGNSS-Based Study," Proc. 2022 International Geoscience and Remote Sensing Symposium, Kuala Lumpur, Malaysia, doi: 10.1109/IGARSS46834.2022.9883093, July 2022.
179. Lin, X., D. Moller, A. O'Brien, R. Linnabary, C. Ruf, "Computing Specular Points over Complex Land Surfaces for Airborne GNSS-R Applications," Proc. 2022 International Geoscience and Remote Sensing Symposium, Kuala Lumpur, Malaysia, doi: 10.1109/IGARSS46834.2022.9884398, July 2022.
178. Ruf, C., C. Chew, C. Gerlein-Safdi, A. Warnock, "Resolving Inland Waterways with CYGNSS," Proc. 2021 International Geoscience and Remote Sensing Symposium, virtual, doi: 10.1109/IGARSS47720.2021.9554192, July 2021.
177. Campbell, J., R. Akbar, A. Azemati, A. Bringer, D. Comite, L. Dente, S. Gleason, L. Guerriero, E. Hodges, J. Johnson, S. Kim, A. Melebari, N. Pierdicca, B. Ren, C. Ruf, L. Tsang, H. Xu, J. Zhu, M. Moghaddam, "Intercomparison of Models for CYGNSS Delay-Doppler Maps at a Validation Site in the San Luis Valley of Colorado," Proc. 2021 International Geoscience and Remote Sensing Symposium, virtual, doi: 10.1109/IGARSS47720.2021.9553296, July 2021.
176. Wang, T., C. Ruf, A. O'Brien, S. Gleason, D. McKague, A. Russel, "The Important Role of Antenna Pattern Characterization in the Absolute Calibration of GNSS-R Measurements," Proc. 2021 International Geoscience and Remote Sensing Symposium, virtual, doi: 10.1109/IGARSS47720.2021.9554506, July 2021.
175. *Balasubramaniam, R., M. Vahdat, C. Ruf*, "Observing Freeze-Thaw Transitions Over Land Using CYGNSS Measurements," Proc. 2021 International Geoscience and Remote Sensing Symposium, virtual, doi: 10.1109/IGARSS47720.2021.9554980, July 2021.
174. Carreno-Luengo, H., C. Ruf, "Freeze/Thaw Retrieval over High Altitude Areas with CYGNSS," Proc. 2021 International Geoscience and Remote Sensing Symposium, virtual, doi: 10.1109/IGARSS47720.2021.9553238, July 2021.
173. Carreno-Luengo, H., C. Ruf, S. Gleason, A. Russel, T. Butler, "Generation of a New High Resolution DDM Data Product from CYGNSS Raw IF Measurements," Proc. 2021 International Geoscience and Remote Sensing Symposium, virtual, doi: 10.1109/IGARSS47720.2021.9554828, July 2021.
172. Bringer, A., J. Johnson, C. Toth, C. Ruf, M. Moghaddam, "Studies of Terrain Surface Roughness and Its Effect in GNSS-R Systems Using Airborne Lidar Measurements," Proc. 2021 International Geoscience and Remote Sensing Symposium, virtual, doi: 10.1109/IGARSS47720.2021.9554919, July 2021.
171. Moller, D., C. Ruf, R. Linnabary, A. O'Brien, S. Musko, "Operational Airborne GNSS-R Aboard Air New Zealand Domestic Aircraft," Proc. 2021 International Geoscience and Remote Sensing Symposium, virtual, doi: 10.1109/IGARSS47720.2021.9553159, July 2021.

170. Wang, T., C. Ruf, "Measuring GPS EIRP in Real-Time with a Spaceborne GNSS-Reflectometry Remote Sensing System," 2021 US National Committee of URSI National Radio Science Meeting, doi: 10.23919/USNC-URSINRSM51531.2021.9336441.
169. Ruf, C, H. Carreno Luengo, C. Chew, M. Moghaddam, A. Warnock, "Remote Sensing of the Terrestrial Water Cycle with the Cyclone Global Navigation Satellite System (CYGNSS)," AGU 2020, doi: 10.1002/essoar.10504786.1.
168. Wang, T., V. Zavorotny, J. Johnson, Y. Yi, C. Ruf, S. Gleason, D. McKague, P. Hwang, E. Rogers, S. Chen, Y. Pan, T. Bakker, "Improvement of CYGNSS Level 1 Calibration Using Modeling and Measurements of Ocean Surface Mean Square Slope," Proc. 2020 International Geoscience and Remote Sensing Symposium, virtual, doi: 10.1109/IGARSS39084.2020.9323262, Oct 2020.
167. Ruf, C., R. Backhus, T. Butler, C. Chen, S. Gleason, E. Loria, D. McKague, R. Miller, A. O'Brien, L. van Nieuwstadt, "Next Generation GNSS-R Instrument," Proc. 2020 International Geoscience and Remote Sensing Symposium, virtual, doi: 10.1109/IGARSS39084.2020.9324588, Oct 2020.
166. Carreno-Luengo, H., C. Ruf, A. Warnock, K. Brunner, "Investigating the Impact of Coherent and Incoherent Scattering Terms in GNSS-R Delay Doppler Maps," Proc. 2020 International Geoscience and Remote Sensing Symposium, virtual, doi: 10.1109/IGARSS39084.2020.9324404, Oct 2020.
165. Linnabary, R., A. O'Brien, C. Ruf, S. Musko, D. Moller, "Analysis of Gns-R Coverage by a Regional Aircraft Fleet," Proc. 2020 International Geoscience and Remote Sensing Symposium, virtual, doi: 10.1109/IGARSS39084.2020.9323175, Oct 2020.
164. Carreno-Luengo, H., et al., "The GRSS Standard for GNSS-Reflectometry," Proc. 2020 International Geoscience and Remote Sensing Symposium, virtual, doi: 10.1109/IGARSS39084.2020.9323222, Oct 2020.
163. Wang, T., C. Ruf, S. Gleason, D. McKague, A. O'Brien, B. Block, "Monitoring GPS EIRP for CYGNSS Level 1 Calibration," Proc. 2020 International Geoscience and Remote Sensing Symposium, virtual, doi: 10.1109/IGARSS39084.2020.9324491, Oct 2020.
162. Balasubramaniam, R., C. Ruf, "Performance Assessment of CYGNSS High Wind Retrieval for the Improved EIRP Calibration," Proc. 2020 International Geoscience and Remote Sensing Symposium, virtual, doi: 10.1109/IGARSS39084.2020.9323743, Oct 2020.
161. Akbar, R. J. Campbell, A. Silva, R. Chen, E. Hodges, D. Entekhabi, C. Ruf, M. Moghaddam, "Soilscape Wireless In Situ Networks in Support of Cygnss Land Applications," Proc. 2020 International Geoscience and Remote Sensing Symposium, virtual, doi: 10.1109/IGARSS39084.2020.9324648, Oct 2020.
160. Ruf, C., C. Chew, D. McKague, S. Asharaf, M. Moghaddam "The NASA CYGNSS microsat constellation", Proc. SPIE 11505, CubeSats and SmallSats for Remote Sensing IV, 1150503, doi: 10.1117/12.2570153, 2020.
159. Ruf, C., M. Evans, "Detection and Dynamic Imaging of Ocean Microplastics from Space," EGU General Assembly 2020, Online, 4–8 May 2020, EGU2020-3120, doi: 10.5194/egusphere-egu2020-3120, 2020.
158. Ruf, C., C. Chew, Z. Pu, A. Warnock, "CYGNSS Constellation of GNSS-R SmallSats," European Space Agency 6th Wkshp on Advanced RF Sensors and Remote Sens. Instr. (ARSI'19), Noordwijk, The Netherlands, Nov 2019.
157. Ruf, C., "Assimilation of TC Inner Core Surface Winds by CYGNSS into Forecast Models," Proc. Asia Oceania Geosciences Society 16th Annual Meeting, Singapore, July 2019.

156. Wang, T., C. Ruf, S. Gleason, B. Block, D. McKague, A. O'Brien, "A Real-Time EIRP Level 1 Calibration Algorithm for the CYGNSS Mission Using the Zenith Measurements," Proc. 2019 International Geoscience and Remote Sensing Symposium, Yokohama, JAPAN, doi: 10.1109/IGARSS.2019.8900456, July 2019.
155. McKague, D., C. Ruf, "On-Orbit Trending of CYGNSS Data," Proc. 2019 International Geoscience and Remote Sensing Symposium, Yokohama, JAPAN, doi: 10.1109/IGARSS.2019.8898395, July 2019.
154. Wang, T., V. Zavorotny, J. Johnson, Y. Yi, C. Ruf, , "Integration of CYGNSS Wind and Wave Observations with the Wavewatch III Numerical Model," Proc. 2019 International Geoscience and Remote Sensing Symposium, Yokohama, JAPAN, doi: 10.1109/IGARSS.2019.8900481, July 2019.
153. Mayers, D., C. Ruf, "Determining Tropical Cyclone Center Location with CYGNSS Wind Speed Measurements," Proc. 2019 International Geoscience and Remote Sensing Symposium, Yokohama, JAPAN, doi: 10.1109/IGARSS.2019.8900346, July 2019.
152. Balasubramaniam, R., C. Ruf, "The Impact Of Rain On L1 GNSS-R Radar Scattering Cross-Section," Proc. 2019 International Geoscience and Remote Sensing Symposium, Yokohama, JAPAN, doi: 10.1109/IGARSS.2019.8900302, July 2019.
151. Ruf, C., D. McKague, M. Morris, D. Posselt, M. Moghaddam, "The GNSS-R CYGNSS Mission: An Update," Proc. 2019 International Geoscience and Remote Sensing Symposium, Yokohama, JAPAN, doi: 10.1109/IGARSS.2019.8900604, July 2019.
150. Ruf, C., D. McKague, S. Gleason, "CYGNSS SmallSat Mission Design, Engineering Performance and Science Results," Proc. 2019 International Geoscience and Remote Sensing Symposium, Yokohama, JAPAN, doi: 10.1109/IGARSS.2019.8900271, July 2019.
149. Ruf, C., *C. Bussy-Virat*, D. McKague, A. Ridley, M. Morris, "Enabling Sampling Properties of the CYGNSS Satellite Constellation," Proc. 2018 International Geoscience and Remote Sensing Symposium, Valencia, SPAIN, doi: 10.1109/IGARSS.2018.8518454, pp. 277-280, July 2018.
148. T. Wang, C. Ruf, B. Block, D. McKague, "Characterization of the Transmit Power and Antenna Pattern of the GPS Constellation for the CYGNSS Mission," Proc. 2018 International Geoscience and Remote Sensing Symposium, Valencia, SPAIN, doi: 10.1109/IGARSS.2018.8518531, pp. 4011-4014, July 2018.
147. T. Wang, V. U. Zavorotny, J. Johnson, C. Ruf, Y. Yi, "Modeling of Sea State Conditions for Improvement of CYGNSS L2 Wind Speed Retrievals," Proc. 2018 International Geoscience and Remote Sensing Symposium, Valencia, SPAIN, doi: 10.1109/IGARSS.2018.8518686, pp. 8288-8291, July 2018.
146. D. Mayers, C. S. Ruf, "Measuring Ice Thickness with CYGNSS Altimetry," Proc. 2018 International Geoscience and Remote Sensing Symposium, Valencia, SPAIN, doi: 10.1109/IGARSS.2018.8519310, pp. 8535-8538, July 2018.
145. Balasubramaniam, R., C. S. Ruf, "Improved Calibration of CYGNSS Measurements for Downbursts in the Intertropical Convergence Zone," Proc. 2018 International Geoscience and Remote Sensing Symposium, Valencia, SPAIN, doi: 10.1109/IGARSS.2018.8517571, pp. 3987-3990, July 2018.
144. Norris, R., C. Ruf, E. Loria, A. O'Brien, "Comparison of Wide Bandwidth Conventional and Interferometric GNSS-R Techniques for Possible CYGNSS Follow-On Mission," Proc. 2018 International Geoscience and Remote Sensing Symposium, Valencia, SPAIN, doi: 10.1109/IGARSS.2018.8517480, pp. 4277-4280, July 2018.

143. Killough, R., J. Scherrer, R. Rose, A. Brody, J. Redfern, K. Smith, C. S. Ruf, T. Yee, "CYGNSS Launch and Early Ops: Parenting Octuplets," Proc. 31st Annual AIAA/USU Conference on Small Satellites, Year in Review, SSC17-X-01, <http://digitalcommons.usu.edu/smallsat/2017/all2017/136/>.
142. Balasubramaniam, R., C. S. Ruf, D. McKague, M. P. Clarizia, S. Gleason, "Calibration and Validation Processing for the CYGNSS Wind Speed Retrieval Algorithm," Proc. 2017 International Geoscience and Remote Sensing Symposium, Houston, TX, doi: 10.1109/IGARSS.2017.8127906, pp. 4117 - 4120, July 2017.
141. *Clarizia, M. P.*, C. S. Ruf, S. Gleason, R. Balasubramaniam and D. McKague, "Generation of CYGNSS Level 2 Wind Speed Data Products," Proc. 2017 International Geoscience and Remote Sensing Symposium, Houston, TX, doi: 10.1109/IGARSS.2017.8127539, pp. 2647 - 2649, July 2017.
140. Gleason, S., C. Ruf, *M. P. Clarizia*, J. Johnson, A. O'Brien, P. Chang, Z. Jelenek, F. Said, S. Soisuvarn, "Calibration and Validation of the CYGNSS Level 1 Data Products," Proc. 2017 International Geoscience and Remote Sensing Symposium, Houston, TX, doi: 10.1109/IGARSS.2017.8127538, pp. 2644 - 2646, July 2017.
139. McKague, D. S., and C. S. Ruf, "CYGNSS Constellation Intercalibration," Proc. 2017 International Geoscience and Remote Sensing Symposium, Houston, TX, doi: 10.1109/IGARSS.2017.8127541, pp. 2654 - 2656, July 2017.
138. Wang, T., C. Ruf, S. Gleason, B. Block, D. McKague, D. Provost, "Development of GPS Constellation Power Monitor System for High Accuracy Calibration/Validation of the CYGNSS L1B Data," Proc. 2017 International Geoscience and Remote Sensing Symposium, Houston, TX, doi: 10.1109/IGARSS.2017.8127125, pp. 1008 - 1011, July 2017.
137. Ruf, C. S., S. Gleason, A. Ridley, R. Rose, J. Scherrer, "The NASA CYGNSS Mission: Overview and Status Update," Proc. 2017 International Geoscience and Remote Sensing Symposium, Houston, TX, doi: 10.1109/IGARSS.2017.8127537, pp. 2641 - 2643, July 2017.
136. Warnock, A. M., C. S. Ruf and *M. Morris*, "Storm Surge Predictions with CYGNSS Winds," Proc. 2017 International Geoscience and Remote Sensing Symposium, Houston, TX, doi: 10.1109/IGARSS.2017.8127624, pp. 2975 - 2978, July 2017.
135. Yang, J. X., D. S. McKague, C. S. Ruf, H. Yang and F. Weng, "Examining GMI intercalibration dependence on the full dynamic range of brightness temperature using cold and warm end tie points," Proc. 2016 International Geoscience and Remote Sensing Symposium, Beijing, CHINA, doi: 10.1109/IGARSS.2016.7729219, pp. 864 - 867, July 2016.
134. Morris, M., D. D. Chen and C. S. Ruf, "Earth antenna temperature variability for CYGNSS," Proc. 2016 International Geoscience and Remote Sensing Symposium, Beijing, CHINA, doi: 10.1109/IGARSS.2016.7729214, pp. 846 - 849, July 2016.
133. Lambrigtsen, B., T. Gaier, P. Kangaslahti, B. Lim, A. Tanner and C. Ruf, "Enabling the NASA decadal-survey "PATH" mission," Proc. 2016 International Geoscience and Remote Sensing Symposium, Beijing, CHINA, doi: 10.1109/IGARSS.2016.7730026, pp. 3949 - 3951, July 2016.
132. Gaier, T., P. Kangaslahti, B. Lambrigtsen, I. Ramos-Perez, A. Tanner; D. McKague, C. Ruf, M. Flynn, Z. Zhang, R. Backhus and D. Austerberry, "A 180 GHz prototype for a geostationary microwave imager/sounder-GeoSTAR-III," Proc. 2016 International Geoscience and Remote Sensing Symposium, Beijing, CHINA, doi: 10.1109/IGARSS.2016.7729521, pp. 2021 - 2023, July 2016.

131. Clarizia, M.-P., C.S. Ruf, P. Braca, P. Willet, "Target Detection Using GPS Signals of Opportunity," 18th Intl. Conf. Information on Fusion, Washington DC, 6-9 July 2015.
130. Austerberry, D., T. Gaier, P. Kangaslahti, B. Lambriigtsen, D. McKague, I. Ramos, C. Ruf, Alan Tanner, "Test Methodology for the GEOSTAR Correlator," Proc. 2015 International Geoscience and Remote Sensing Symposium, Milan, ITALY, 27-31 July 2015.
129. Yang, J. X., D. S. McKague and C. S. Ruf, "Identifying and Resolving a Calibration Issue with GMI," Proc. 2015 International Geoscience and Remote Sensing Symposium, Milan, ITALY, 27-31 July 2015.
128. Gleason, S., C. Ruf, "Overview of the Delay Doppler Mapping Instrument (DDMI) for the Cyclone Global Navigation Satellite Systems Mission (CYGNSS)," Proc. 2015 International Microwave Symposium, Phoenix, AZ, 17-22 May 2015.
127. Reising, S., T. Gaier, C. Kummerow, V. Chandrasekar, S. Brown, S. Padmanabhan, B. Lim, S. van den Heever, T. L'Ecuyer, C. Ruf, Z. Haddad, Z. Luo, S. Munchak, G. Berg, T. Koch, S. Boukabara, "Overview of Temporal Experiment for Storms and Tropical Systems (TEMPEST) CubeSat Constellation Mission," Proc. 2015 International Microwave Symposium, Phoenix, AZ, 17-22 May 2015.
126. Rose, R., C. Ruf, J. Scherrer, J. Wells, "The CYGNSS Flight Segment; Mainstream Science on a Micro-Budget," Proc. 2015 IEEE Aerospace Conf., Big Sky, MT, 7-14 Mar 2015.
125. Fritz, M., J. Shoer, L. Singh, T. Henderson, J. McGee, R. Rose, C. Ruf, "Attitude Determination and Control System Design for the CYGNSS MicroSatellite," Proc. 2015 IEEE Aerospace Conf., Big Sky, MT, 7-14 Mar 2015.
124. Ruf, C., P. Chang, M. P. Clarizia, Z. Jelenak, A. Ridley, R. Rose, "CYGNSS: NASA Earth Venture Tropical Cyclone Mission", Proc. SPIE, Bellingham, WA, Vol. 9241, 924109, 2014.
123. Rose, R., S. Gleason, C. Ruf, "The NASA CYGNSS mission: a pathfinder for GNSS scatterometry remote sensing applications", Proc. SPIE, Bellingham, WA, Vol. 9240, 924005, doi:10.1117/12.2068378, 2014.
122. Chen, D. D., and C. Ruf, "A Novel Method to Estimate the RFI Environment," Proc. 2014 International Geoscience and Remote Sensing Symposium, Québec City, CANADA, doi: 10.1109/IGARSS.2014.6946395, 14-18 July 2014.
121. Miller, S.A., R.L. Killough, S.W. Cook, and C. Ruf., "Onboard Science Processing on a Microsatellite with Limited Resources," Proc. 2014 IEEE Aerospace Conf., Big Sky, MT, Mar 2014.
120. Clarizia, M. P., C. Gommenginger, P. Jales, M. Unwin, C. Robertson, Z. Jelenak and C. Ruf, "Delay-Doppler Processing and Analysis of the UK-DMC GPS-Reflectometry Dataset: Results from the Wavesentry Project," Proc. ESA Living Planet Symp., Edinburgh, UK, Sep. 2013.
119. Le Vine, D., P. de Matthaëis, Y. Kerr, P. Richaume and C. Ruf, "RFI at L - Band: Aquarius and SMOS," Proc. ESA Living Planet Symp., Edinburgh, UK, Sep. 2013.
118. Finley, T., D. Rose, K. Nave, W. Wells, J. Redfern, R. Rose and C. Ruf, "Techniques for LEO Constellation Deployment and Phasing Utilizing Differential Aerodynamic Drag," Proc. AAS/AIAA Astrodynamics Specialist Conf., v150, pp1397-1411, ISBN: 978-087703605-0, Hilton Head, SC, Aug 2013.
117. Ruf, C., D. D. Chen and de Matthaëis, P, "The Aquarius RFI Detection Algorithm Parameter Tuning Problem," Proc. 2013 International Geoscience and Remote Sensing Symposium, Melbourne, AUSTRALIA, doi: , 22-26 July 2013.

116. Kroodsmma, R., D. McKague and C. S. Ruf, “Effect of Microwave Radiometer Inter-Calibration,” Proc. 2013 International Geoscience and Remote Sensing Symposium, Melbourne, AUSTRALIA, 22-26 July 2013.
115. Le Vine, D., P. de Matthaeis, C. S. Ruf, D. D. Chen, and E. Dinnat, “Aquarius RFI Detection and Mitigation,” Proc. 2013 International Geoscience and Remote Sensing Symposium, Melbourne, AUSTRALIA, doi: , 22-26 July 2013.
114. Miller, T., M. James, J. Roberts, S. Biswas, D. Cecil, W. L. Jones, J. Johnson, S. Farrar, S. Sahawneh, C. S. Ruf, M. Morris, E. Uhlhorn and P. Black, “The Hurricane Imaging Radiometer: Present and Future,” Proc. 2013 International Geoscience and Remote Sensing Symposium, Melbourne, AUSTRALIA, 22-26 July 2013.
113. Ruf, C. S., S. Gleason, Z. Jelenak, S. Katzberg, A. Ridley, R. Rose, J. Scherrer and V. Zavorotny, “The NASA EV-2 Cyclone Global Navigation Satellite System (CYGNSS) Mission,” Proc. 2013 IEEE Aerospace Conf., Big Sky, MT, doi: 10.1109/AERO.2013.6497202, 2-9 Mar 2013.
112. Rose, R., C. Ruf, D. Rose, M. Brummitt and A., Ridley, “The CYGNSS Flight Segment; A Major NASA Science Mission Enabled by Micro-Satellite Technology,” Proc. 2013 IEEE Aerospace Conf., Big Sky, MT, 2-9 Mar 2013.
111. Rose, D., R. Rose and C. Ruf, “The CYGNSS Ground Segment; Innovative Mission Operations Concepts to Support a Micro-Satellite Constellation,” Proc. 2013 IEEE Aerospace Conf., Big Sky, MT, doi: 10.1109/AERO.2013.6497320, 2-9 Mar 2013.
110. Dickinson, J. R., J. L. Alvarez, R. J. Rose, C. S. Ruf, B. J. Walls, “Avionics of the Cyclone Global Navigation Satellite System (CYGNSS) Microsat Constellation,” Proc. 2013 IEEE Aerospace Conf., Big Sky, MT, 2-9 Mar 2013.
109. Unwin, M., P. Jales, P. Blunt, S. Duncan, M. Brummitt, C. Ruf, “The SGR-ReSI and its Application for GNSS Reflectometry on the NASA EV-2 CYGNSS Mission,” Proc. 2013 IEEE Aerospace Conf., Big Sky, MT, doi: 10.1109/AERO.2013.6497151, 2-9 Mar 2013.
108. Chen, C.-H., P. Knag, C. Ruf, and Z. Zhang, “Characterization of Single-Event Effects in Deeply Scaled CMOS Digital Circuits,” Proc. 2012 IEEE Custom Integrated Circuits Conference, San Jose, CA, 9-12 Sep 2012.
107. Ruf, C., J. B. Roberts, S. Biswas, M. James and T. Miller, “Calibration and Image Reconstruction for the Hurricane Imaging Radiometer (Hirad),” Proc. 2012 International Geoscience and Remote Sensing Symposium, Munich, GERMANY, doi: 10.1109/IGARSS.2012.6350431, pp. 4641-4643, 23-27 July 2012.
106. Chen, D. D., S. Gleason, C. Ruf and M. Adjrak, “Spectral Dependence of the Response Time of Sea State to Local Wind Forcing,” Proc. 2012 International Geoscience and Remote Sensing Symposium, Munich, GERMANY, pp. 3776-3779, 23-27 July 2012.
105. Ruf, C., D. Chen, D. Le Vine, P. de Matthaeis and J Piepmeier, “Aquarius Radiometer RFI Detection, Mitigation and Impact Assessment,” Proc. 2012 International Geoscience and Remote Sensing Symposium, Munich, GERMANY, pp. 3312-3315, 23-27 July 2012.
104. Kroodsmma, R., D. McKague and C. Ruf, “Satellite Attitude Analysis Using the Vicarious Cold Calibration Method for Microwave Radiometers,” Proc. 2012 International Geoscience and Remote Sensing Symposium, Munich, GERMANY, pp. 2964-2967, doi: 10.1109/IGARSS.2012.6350804, 23-27 July 2012.
103. Mims, A., and C. Ruf, “Aquarius Engineering Phase On-Orbit T_A Calibration,” Proc. 2012 International Geoscience and Remote Sensing Symposium, Munich, GERMANY, doi: 10.1109/IGARSS.2012.6350704, pp. 2960-2963, 23-27 July 2012.

102. Ruf, C. S., S. Gleason, Z. Jelenak, S. Katzberg, A. Ridley, R. Rose, J. Scherrer and V. Zavorotny, "The CYGNSS Nanosatellite Constellation Hurricane Mission," Proc. 2012 International Geoscience and Remote Sensing Symposium, Munich, GERMANY, doi: 10.1109/IGARSS.2012.6351600, pp. 214-216, 23-27 July 2012.
101. Renno, N. O., C. Ruf, T. Gaier, T., "A Passive Instrument to Search for Brines in the Shallow Martian Subsurface," Concepts and Approaches for Mars Exploration, 12-14 June 2012, Houston, TX, LPI Contribution No. 1679, id.4121, 2012.
100. Le Vine, D.M., G.S.E. Lagerloef, C. Ruf, F. Wentz, S. Yueh, J. Piepmeier, E. Lindstrom and E. Dinnat, "Aquarius: The instrument and initial results," Microwave Radiometry and Remote Sensing of the Environment (MicroRad) 2012, DOI: 10.1109/MicroRad.2012.6185226, pp. 1-3, 2012.
99. Gaier, T., B. Lambrigtsen, P. Kangaslahti, B. Lim, A. Tanner, D. Harding, H. Owen, M. Soria, I. O'Dwyer, C. Ruf, R. Miller, B. Block, M. Flynn and S. Whitaker, "GeoSTAR-II: A Prototype Water Vapor Imager/Sounder for The Path Mission," Proc. 2011 International Geoscience and Remote Sensing Symposium, Vancouver, BC, CANADA, pp. 3626-3628, 25-29 July 2011.
98. Wilheit, T., W. Berg, L. Jones, R. Kroodsma, D. McKague, C. Ruf and M. Sapiano, "A Consensus Calibration Based on TMI and WindSat," Proc. 2011 International Geoscience and Remote Sensing Symposium, Vancouver, BC, CANADA, doi: 10.1109/IGARSS.2011.6049745, pp. 2641-2644, 25-29 July 2011.
97. Kroodsma, R., D. McKague and C. Ruf, "Robustness of the Vicarious Cold Calibration Algorithm in the Double Difference Method for GPM Inter-Calibration," Proc. 2011 International Geoscience and Remote Sensing Symposium, Vancouver, BC, CANADA, pp. 2233-2236, 25-29 July 2011.
96. Amarin, R., W. L. Jones, J. Johnson, C. Ruf, T. Miller, E. Uhlhorn, "The Hurricane Imaging Radiometer Wide Swath Simulation and Wind Speed Retrievals," Proc. 2010 International Geoscience and Remote Sensing Symposium, Honolulu, HI, USA, pp. 4290-4293, 26-30 July 2010.
95. Curry, S., M. Ahlers, H. Elliot, S. Gross, D. McKague, S. Misra, J. Puckett, C. Ruf, "K-Band Radio Frequency Interference Survey of Southeastern Michigan," Proc. 2010 International Geoscience and Remote Sensing Symposium, Honolulu, HI, USA, pp. 2486-2489, 26-30 July 2010.
94. Fenigstein, D., C. Ruf, M. James, D. Simmons, T. Miller, C. Buckley, "Analysis of Anechoic Chamber Testing of the Hurricane Imaging Radiometer," Proc. 2010 International Geoscience and Remote Sensing Symposium, Honolulu, HI, USA, pp. 550-553, 26-30 July 2010.
93. Kroodsma, R., D. McKague, J. Puckett and C. Ruf, "Stability of the Vicarious Cold Calibration Statistic for the GPM Constellation," Proc. 2010 International Geoscience and Remote Sensing Symposium, Honolulu, HI, USA, pp. 566-569, 26-30 July 2010.
92. McKague, D., J. Puckett and C. Ruf, "Characterization of K-Band Radio Frequency Interference from AMSR-E, WindSat and SSM/I," Proc. 2010 International Geoscience and Remote Sensing Symposium, Honolulu, HI, USA, pp. 2492-2494, 26-30 July 2010.
91. Mims, A., R. Kroodsma, C. Ruf and D. McKague, "Windsat Retrieval of Ocean Surface Wind Speeds in Tropical Cyclones," Proc. 2010 International Geoscience and Remote Sensing Symposium, Honolulu, HI, USA, pp. 1831-1834, 26-30 July 2010.
90. Misra, S., R. De Roo and C. Ruf, "Evaluation of the Kurtosis Algorithm in Detecting Radio Frequency Interference from Multiple Sources," Proc. 2010 International Geoscience and Remote Sensing Symposium, Honolulu, HI, USA, pp. 2019-2022, 26-30 July 2010.

89. Amarin, R.A., L. Jones, J. Johnson, C. Ruf, T. Miller and S. Chen, "Hurricane imaging radiometer wind speed and rain rate retrieval: Part-2. Analysis of retrieval accuracy," Proc. 11th Specialist Meeting on Microwave Radiometry, pp. 200-204, doi: 10.1109/MICRORAD.2010.5559560, 2010.
88. El-Nimri, S.F., L. Jones, E. Uhlhorn, C. Ruf and P. Black, "Hurricane Imaging Radiometer wind speed and rain rate retrieval: Part-1. development of an improved ocean emissivity model," Proc. 11th Specialist Meeting on Microwave Radiometry, pp. 116-120, doi: 10.1109/MICRORAD.2010.5559579, 2010.
87. Ruf, C., and S. Gross, "Digital Radiometers for Earth Science," Proc. 2010 International Microwave Symposium, Anaheim, CA, USA, 22-28 May 2010.
86. Misra, S., and C. Ruf, "Characterization of L-Band Radio Frequency Interference Across the Continental USA Using a Kurtosis Detector," Proc. 2009 International Geoscience and Remote Sensing Symposium, Cape Town, S.A., 13-17 July 2009.
85. Misra, S., and C. Ruf, "Inversion Algorithm for Estimating Radio Frequency Interference Characteristics Based on Kurtosis Measurements," Proc. 2009 International Geoscience and Remote Sensing Symposium, Cape Town, S.A., Vol. II, 162-165, 13-17 July 2009.
84. Yueh, S., S. Dinardo, S. Chan, E. Njoku, T. Jackson, R. Bindlish, J. Johnson, J. Piepmeier and C. Ruf, "PALS-ADD and Airborne Campaigns to Support Soil Moisture and Sea Surface Salinity Missions," Proc. 2009 International Geoscience and Remote Sensing Symposium, Cape Town, S.A., 13-17 July 2009.
83. McKague, D., C. Ruf and J.J. Puckett, "Microwave Radiometer Inter-Calibration Using the Vicarious Calibration Method," Proc. 2009 International Geoscience and Remote Sensing Symposium, Cape Town, S.A., Vol. IV, 117-120, 13-17 July 2009.
82. Hood, R., R. Atlas, M. Bailey, P. Black, M.W. James, J. Johnson, L. Jones, T. Miller, C. Ruf, Uhlhorn, E., "Potential of Future Hurricane Imaging Radiometer (HIRAD) Ocean Surface Wind Observations for Determining Tropical Storm Vortex Intensity and Structure", EOS Trans. AGU, 89(53), Fall Mtg. Suppl., Abstract A21F-0251, 2008.
81. Amarin, R., B. Lim, J. Johnson, W.L. Jones and C. Ruf, "Performance Simulations For A Synthetic Aperture Radiometer Measuring Peak Surface Wind Speed In Hurricanes," Proc. 2008 International Geoscience and Remote Sensing Symposium, Boston, MA, Vol. I, 363-366, 7-11 July 2008.
80. Lim, B., C. Ruf and A. Tanner, "A High Resolution Full Earth Disk Model for Microwave Observations From GEO," Proc. 2008 International Geoscience and Remote Sensing Symposium, Boston, MA, Vol. III, 923-926, 7-11 July 2008.
79. McKague, D., C. Ruf and J. Puckett, "Vicarious Calibration of Global Precipitation Measurement Microwave Radiometers," Proc. 2008 International Geoscience and Remote Sensing Symposium, Boston, MA, Vol. IV, 459-462, 7-11 July 2008.
78. Misra, S., and C. Ruf, "Comparison of Pulsed Sinusoid Radio Frequency Interference Detection Algorithms Using Time and Frequency Sub-Sampling," Proc. 2008 International Geoscience and Remote Sensing Symposium, Boston, MA, Vo. II, 153-156, 7-11 July 2008.
77. Misra, S., C. Ruf and R. Kroodsmä, "Detectability of Radio Frequency Interference due to Spread Spectrum Communication Signals using The Kurtosis Algorithm," Proc. 2008 International Geoscience and Remote Sensing Symposium, Boston, MA, Vol. II, 335-338, 7-11 July 2008.
76. Wilheit, T., K. Imaoka, M. Kachi, A. Shibata, C. Kummerow, W. Berg, E. Stoner, W.L. Jones, K. Gopalan, C. Ruf, D. McKague, J. Puckett, F. Weng, B. Yan, S. Yang, A. Hou and G.

- Skofronick-Jackson, "Cross Calibration of Microwave Radiometers in the GPM Constellation," Proc. 2008 International Geoscience and Remote Sensing Symposium, Boston, MA, 7-11 July 2008.
75. Amarin, R., C. S. Ruf, L. Jones and S. S. Chen, "Improved microwave radiometric imaging of surface wind speed dynamics in the hurricane eye-wall," Proc. 28th Conf. on Hurricanes and Tropical Meteo., Orlando, FL, 28 Apr-2 May 2008.
 74. El-Nimri, S., S. Al-Sweiss, R. Amarin, W. L. Jones and C. S. Ruf, "Improved microwave remote sensing of hurricane wind speed and rain rates using the Hurricane Imaging Radiometer (HIRAD)," Proc. 28th Conf. on Hurricanes and Tropical Meteo., Orlando, FL, 28 Apr-2 May 2008.
 73. Ruf, C. S., A. M. Mims and C. C. Hennon, "The dependence of the microwave emissivity of the ocean on hurricane force wind speed," Proc. 28th Conf. on Hurricanes and Tropical Meteo., Orlando, FL, 28 Apr-2 May 2008.
 72. Amarin, R.A., S.F. El-Nimri, J.W. Johnson, W.L. Jones, B.H. Lim and C.S. Ruf, "Instrument design simulations for synthetic aperture microwave radiometric imaging of wind speed and rain rate in hurricanes," Proc. 2007 International Geoscience and Remote Sensing Symposium, Barcelona, SPAIN, 23-27 July, 2007.
 71. Brown, S., S. Desai, S. Keihm, W. Lu and C. Ruf, "Ocean Water Vapor and Cloud Burden Trends Derived from the TOPEX Microwave Radiometer, Proc. 2007 International Geoscience and Remote Sensing Symposium, Barcelona, SPAIN, 23-27 July, 2007.
 70. De Roo, R.D., C.S. Ruf and K. Sabet, "An L-band Radio Frequency Interference (RFI) Detection and Mitigation Testbed for Microwave Radiometry," Proc. 2007 International Geoscience and Remote Sensing Symposium, Barcelona, SPAIN, 23-27 July, 2007.
 69. De Roo, R.D., S. Misra and C.S. Ruf, "Sensitivity of the Kurtosis Statistic as a Detector of Pulsed Sinusoidal Radio Frequency Interference in a Microwave Radiometer Receiver," Proc. 2007 International Geoscience and Remote Sensing Symposium, Barcelona, SPAIN, 23-27 July, 2007.
 68. Lim, B.H., R. Amarin, S. El-Nimri, J. Johnson, L. Jones and C.S. Ruf, "Restrictions on the Field of View for an Undersampled 1-D Synthetic Thinned Aperture Radiometry," Proc. 2007 International Geoscience and Remote Sensing Symposium, Barcelona, SPAIN, 23-27 July, 2007.
 67. Peng, J., C.S. Ruf, S. Brown and J. Piepmeier, "Characterization of the Aquarius and Juno Radiometers Using a Programmable Digital Noise Source," Proc. 2007 International Geoscience and Remote Sensing Symposium, Barcelona, SPAIN, 23-27 July, 2007.
 66. Ruf, C.S., and S. Misra, "Detection of Radio Frequency Interference with the Aquarius Radiometer" Proc. 2007 International Geoscience and Remote Sensing Symposium, Barcelona, SPAIN, 23-27 July, doi: 10.1109/IGARSS.2007.4423405, 2007.
 65. Ruf, C., R. Amarin, M.C. Bailey, B. Lim, R. Hood, M. James, J. Johnson, L. Jones, V. Rohwedder and K. Stephens, "The Hurricane Imaging Radiometer – An Octave Bandwidth Synthetic Thinned Array Radiometer," Proc. 2007 International Geoscience and Remote Sensing Symposium, Barcelona, SPAIN, 23-27 July, 2007.
 64. Tanner, A.B., S.T. Tanner, T.C. Gaier, B.H. Lambriksen, B.H. Lim and C.S. Ruf, "Field tests of the GeoSTAR demonstrator instrument," Proc. 2007 International Geoscience and Remote Sensing Symposium, Barcelona, SPAIN, 23-27 July, 2007.

63. Ridley, A.J., P. Drake, B. Gilchrist, T. Gombosi, M.W. Liemohn, N. Renno, C. Ruf and T.H. Zurbuchen, "The Space Weather Concentration at the University of Michigan," American Geophysical Union, San Francisco, CA, Abstract ED52B-02, Dec. 2006.
62. Lambrigtsen, B.H., S.T. Brown, S.J. Dinardo, T.C. Gaier, P.P. Kangaslahti, A.B. Tanner, J.R. Piepmeier, C.S. Ruf, S.M. Gross, S. Musko and S. Rogacki, "GeoSTAR: A Microwave Sounder for Geostationary Applications," Proc. SPIE, Vol. 6361, Oct. 2006.
61. Ruf, C., S. Misra, S. Gross and R. De Roo, "Detection of RFI by its Amplitude Probability Distribution," Proc. 2006 International Geoscience and Remote Sensing Symposium, Denver, CO, 31 Jul - 4 Aug 2006.
60. B.H. Lim and C.S. Ruf, "Calibration of a Fully Polarimetric Microwave Radiometer Using a Digital Polarimetric Noise Source," Proc. 2006 International Geoscience and Remote Sensing Symposium, Denver, CO, 31 Jul - 4 Aug 2006.
59. Tanner, A.B., W.J. Wilson, B.H. Lambrigtsen, S.J. Dinardo, S.T. Brown, P. Kangaslahti, T.C. Gaier, C.S. Ruf, S.M. Gross, B.H. Lim, S. Musko and S. Rogacki, "Initial Results of the Geosynchronous Thinned Array Radiometer (GeoSTAR)," Proc. 2006 International Geoscience and Remote Sensing Symposium, Denver, CO, 31 Jul - 4 Aug 2006.
58. Brown, S., S. Desai, S. Keihm and C. Ruf, "JMR Noise Diode Stability After Three Years On-Orbit and Recalibration Methodology," 2006 Specialist Meeting on Microwave Radiometry, San Juan, PR, 28 Feb – 3 Mar 2006.
57. Tanner, A.B., B. H. Lambrigsten, S. T. Brown, W. J. Wilson, J.R. Piepmeier, C.S. Ruf and B. Lim, "A Prototype Geostationary Synthetic Thinned Aperture Radiometer (GeoSTAR) for Atmospheric Temperature Sounding," 2006 Specialist Meeting on Microwave Radiometry, San Juan, PR, 28 Feb – 3 Mar 2006.
56. De Roo, R., C. Ruf, B. Lim, L. van Nieuwstadt, C. Wineland and R. Gandhi, "L-band and K-band Correlated Noise Calibration System (CNCS) Architecture," 2006 Specialist Meeting on Microwave Radiometry, San Juan, PR, 28 Feb – 3 Mar 2006.
55. Misra, S., C.S. Ruf and R. DeRoo, "Agile Digital Detector for RFI Mitigation," 2006 Specialist Meeting on Microwave Radiometry, San Juan, PR, 28 Feb – 3 Mar 2006.
54. Lambrigtsen, B.H., W. Wilson, A. Tanner, P. Kangaslahti, T. Gaier, S. Dinardo, S. Brown, J. Piepmeier, C. Ruf, "GeoSTAR: Developing a Microwave Sounder for Geostationary Weather Satellites," American Geophysical Union, San Francisco, CA, Abstract IN13B-1087, Dec. 2005.
53. Hilliard, L.M., N.L. Phelps, J.T. Riley, T.M. Markus, G.L. Bland, C.S. Ruf, R.W. Lawrence, S.C. Reising and R Pichel, "Prototype Cryospheric Experimental Synthetic Aperture Radiometer (CESAR)," Proc. 2005 International Geoscience and Remote Sensing Symposium, Seoul, KOREA, Vol. VII, 4925-4928, 25-29 July 2005.
52. Ruf, C.S., "Ensemble Scattering and RFI Speckle Caused by Collision Avoidance Radar," Proc. URSI National Radio Science Meeting, Boulder, CO, F/J1-7, 215, 5-8 Jan 2005.
51. Bastian, T.S., R. Fisher, R. Bradley, D. Gary, G. Huford, S. White, A. Kerdraon, C. Ruf, "Low Frequency Solar Physics with the Frequency Agile Solar Radiotelescope," Proc. URSI National Radio Science Meeting, Boulder, CO, J5-6, 446, 5-8 Jan 2005.
50. Renno, N., C. Ruf, L. Thompson, M. Sander and T. Linick, "ENG 450: A Multidisciplinary Design Experience," Proc. AIAA Space 2004 Conference, San Diego, CA, AIAA-2004-5924, 28-30 Sept. 2004.
- 49 Ruf, C.S., S.T. Brown, Y. Hu and H. Kawakubo, "WindSat Calibration and Geophysical Parameter Estimation," Proc. 2004 International Geoscience and Remote Sensing Symposium, Anchorage, AK, Vol. I, 379-382, 20-24 Sept. 2004.

- 48 Brown, S.T. and C.S. Ruf, "Simultaneous Retrieval of Surface Wind Speed and Rain Rate using Radar and Radiometer Measurements," Proc. 2004 International Geoscience and Remote Sensing Symposium, Anchorage, AK, Vol. II, 1252-1255, 20-24 Sept. 2004.
- 47 W.J. Wilson, A.B. Tanner, B.H. Lambriksen, T.A. Doiron, J.R. Piepmeier and C.S. Ruf, "STAR Concept for Passive Microwave Temperature Sounding from Middle Earth Orbit (MeoSTAR)," Proc. 2004 International Geoscience and Remote Sensing Symposium, Anchorage, AK, Vol. II, 789-790, 20-24 Sept. 2004.
- 46 Tanner, A., W.J. Wilson, P.P Kangaslahti, B.H. Lambriksen, S.J. Dinardo, J.R. Piepmeier, C.S. Ruf, S. Rogacki, S.M. Gross and S. Musko, "Prototype development of a Geostationary Synthetic Thinned Aperture Radiometer, GeoSTAR," Proc. 2004 International Geoscience and Remote Sensing Symposium, Anchorage, AK, Vol. II, 1256-1259, 20-24 Sept. 2004.
- 45 Lambriksen, B., W. Wilson, A. Tanner, T. Gaier, C. Ruf and J. Piepmeier, "GeoSTAR – A Microwave Sounder for Geostationary Satellites," Proc. 2004 International Geoscience and Remote Sensing Symposium, Anchorage, AK, Vol. II, 777-780, 20-24 Sept. 2004.
44. Ruf, C. and C. Principe, "X-Band Lightweight Rainfall Radiometer First Light," Proc. of the 2003 International Geoscience and Remote Sensing Symposium, Toulouse, FRANCE, ISBN 0-7803-7930-6, Cat. #03CH37477C, 21-25 July 2003.
43. Brown, S. and C. Ruf, "Using the Amazon Rainforest as a Blackbody Reference for the On-orbit Calibration of Microwave Radiometers," Proc. 2003 International Geoscience and Remote Sensing Symposium, Toulouse, FRANCE, ISBN 0-7803-7930-6, Cat. #03CH37477C, 21-25 July 2003.
42. Brown, S., C. Ruf, S. Keihm and A. Kitiyakara, "Jason Microwave Radiometer On Orbit Calibration, Validation and Performance" Proc. 2003 International Geoscience and Remote Sensing Symposium, Toulouse, FRANCE, ISBN 0-7803-7930-6, Cat. #03CH37477C, 21-25 July 2003.
41. Lindström, S. and C. Ruf, "WindSat SDR and EDR On Orbit Calibration and Validation," Proc. 2003 International Geoscience and Remote Sensing Symposium, Toulouse, FRANCE, ISBN 0-7803-7930-6, Cat. #03CH37477C, 21-25 July 2003.
40. Tran, N. E. Obligis, L. Eymard and C. Ruf, "Comparison of Microwave Radiometer Brightness Temperature over a Hot Reference Area.," Proc. 2003 International Geoscience and Remote Sensing Symposium, Toulouse, FRANCE, ISBN 0-7803-7930-6, Cat. #03CH37477C, 21-25 July 2003, 2003.
39. Principe, C. and C.S. Ruf, "Calibration Methodology for Lightweight Rainfall Radiometer STAR Aircraft Sensor," Proc. Second International Microwave Radiometer Calibration Workshop, Barcelona, Spain, 9-11 Oct 2002.
38. Ruf, C.S. and J. Li, "Evaluation of Correlation Radiometers using Programmable Correlated Noise," Proc. Second International Microwave Radiometer Calibration Workshop, Barcelona, Spain, 9-11 Oct 2002.
37. Ruf, C.S., S.J. Keihm and S.T. Brown, "Early On Orbit Performance of the Jason-1 Microwave Radiometer," Proc. 2002 Progress in Electromagnetics Research Symposium, 1-5 July 2002, Cambridge, MA, ISBN 0-9679674-2-2, 583, 2002.
36. Ruf, C., C. Principe, T. Dod, B. Gosselin, B. Monosmith, S. Musko, S. Rogacki, A. Stewart, Z. Zhang, "Lightweight Rainfall Radiometer STAR Aircraft Sensor," Proc. 2002 International Geoscience and Remote Sensing Symposium, Toronto, CA, 24-28 June 2002, II: 850-852, Cat. #02CH37380, 2002.

35. Jones, W.L., J.-D. Park, J. Zec, C.S. Ruf, M.C. Bailey and J.W. Johnson, "A Feasibility Study for a Wide-Swath, Airborne, Hurricane Imaging Microwave Radiometer for Operational Hurricane Measurements," Proc. 2002 International Geoscience and Remote Sensing Symposium, Toronto, CA, 24-28 June 2002, Cat. #02CH37380, 2002.
34. Gasiewski, A.J., C.S. Ruf, M. Younis and W. Wiesbeck, "Impacts of Mobile Radar and Telecommunications on Earth Remote Sensing in the 22-27 GHz Range," Proc. 2002 International Geoscience and Remote Sensing Symposium, Toronto, CA, 24-28 June 2002, III: 1679-1681, Cat. #02CH37380, 2002.
33. Jones, W.L., J. Zec, J.W. Johnson, C. S. Ruf and M.C. Bailey, "A Feasibility Study for a Wide-Swath, High Resolution, Airborne Microwave Radiometer for Operational Hurricane Measurements," Proc. 56th Interdepartmental Hurricane Conference, 11-15 March 2002, New Orleans, LA, 2002.
32. Ruf, C.S. and Li, J., "Environmental Testing of Correlation Radiometer Pairs with a Digital Noise Source," Proc. 7th Specialist Meeting on Microwave Remote Sensing, 5-9 November 2001, Boulder, CO, 9, 2001.
31. De Roo, R., A. England, C. Ruf, L. Van Nieuwstadt, P. Hansen, T. Rashid, J. Harvey, R. Miller and D. Boprie, "STAR-Light: An Airborne L-Band Synthetic Thinned Aperture Direct Sampling Digital Radiometer for Soil Moisture Monitoring in the Arctic," Proc. 7th Specialist Meeting on Microwave Remote Sensing, 5-9 November 2001, Boulder, CO, 28, 2001.
30. Vandemark, D., N. Tran, C. Ruf and B. Chapron, "Active/Passive Study of Wind-dependent Signatures in Nadir-viewing Ocean Microwave Sensors," Proc. 7th Specialist Meeting on Microwave Remote Sensing, 5-9 November 2001, Boulder, CO, 123, 2001.
29. Li, J. and C.S. Ruf, "Correlated Noise Calibration System for a Multichannel Interferometric Radiometer," Proc. First International Microwave Radiometer Calibration Workshop, Adelphi, MD, 30-31 Oct 2000.
28. Ruf, C.S., C.M. Principe and S.P. Neeck, "Enabling Technologies to Map Precipitation with Near-Global Coverage and Hour-Scale Revisit Times," Proc. 2000 International Geoscience and Remote Sensing Symposium, Honolulu, HI, Cat. #00CH37120, Vol. VII, 2988-2990, 2000.
27. Ruf, C.S., "Statistical Analysis of a Lower Bound on Microwave Radiometer Brightness Temperature from Space," Proc. 2000 International Geoscience and Remote Sensing Symposium, Honolulu, HI, Cat. #00CH37120, Vol. VII, 2825-2826, 2000.
26. Ruf, C.S., "Implications of an improved atmospheric absorption model on water vapor retrievals," Proc. 6th Specialist Meeting on Microwave Radiometry and Remote Sensing of the Environment, 15-18 March 1999, ITALY, VSP BV, The Netherlands, 137-144, 2000.
25. Giampaolo J. and C.S. Ruf, "A Temperature Dependent Correction to the Model for Microwave Excess Emissivity of the Ocean due to Surface Winds," Proc. 1999 International Geoscience and Remote Sensing Symposium, Hamburg, GERMANY, Cat. #99CH36293, Vol. IV, 2312-2314, 1999.
24. Cruz Pol, S.L. and C.S. Ruf, "Calibration of the model for ocean surface emissivity at microwave frequencies," Proc. 1999 International Geoscience and Remote Sensing Symposium, Hamburg, GERMANY, Cat. #99CH36293, Vol. IV, 2318-2320, 1999.
23. Ruf, C.S. and J.C. Giampaolo, "Littoral antenna deconvolution for a microwave radiometer," Proc. 1998 International Geoscience and Remote Sensing Symposium, Seattle, WA, Cat. #98CH36174, 378-380, July 1998.

22. Ruf, C.S., "Polarimetric radiometry - Coherent vs. incoherent detection," Proc. 1998 International Geoscience and Remote Sensing Symposium, Seattle, WA, Cat. #98CH36174, 2181-2183, July 1998..
21. Albrecht, B.A., G.G. Mace, W.J. Syrett, D. Thomas, C. Ruf, and J. Bobak, "Continental stratus characteristics from surface-based remote sensing systems," Proc. 12th Intl. Conf. on Clouds and Precip., 9-23 August 1996.
20. Bobak, J.P. and C.S. Ruf, "Prediction of water vapor scale height from integrated water vapor measurements," Proc. 1996 International Geoscience and Remote Sensing Symposium, Lincoln, NE, Cat. #96CH35875, 1692-1694, July 1996.
19. Cruz-Pol, S.L., C.S. Ruf, and S.J. Keihm "Atmospheric microwave absorption parameter estimation near 22 GHz," Proc. 1996 International Geoscience and Remote Sensing Symposium, Lincoln, NE, Cat. #96CH35875, 1435-1437, July 1996.
18. Ruf, C. S. and S.E. Beus, "Estimation of the ocean/atmosphere boundary layer height of water vapor from space," Proc. 1996 International Geoscience and Remote Sensing Symposium, Lincoln, NE, Cat. #96CH35875, 1263-1265, July 1996.
17. Bobak, J.P. and C.S. Ruf, "An algorithm for improving the retrieval of cloud liquid water and water vapor using effective radiating temperature of clouds," Proc. Second Topical Symposium on Combined Optical-Microwave Earth and Atmosphere Sensing, Atlanta, GA, Cat. #95TH8015, 115-117, April 1995.
16. Ruf, C.S., K. Aydin, and S. Mathur, "Rain rate estimation from attenuation measurements using a 35 GHz dual polarization propagation link," Proc. 1994 International Geoscience and Remote Sensing Symposium, Pasadena, CA, #94-CH3378-7, Vol. IV, 1777-1779, August 1994.
15. Ruf, C.S., W.J. Wilson, K.M. Chandra, and A.B. Tanner, "Digital correlator performance analysis for a synthetic aperture imaging radiometer," Proc. 1994 International Geoscience and Remote Sensing Symposium, Pasadena, CA, #94-CH3378-7, Vol. III, 1317-1319, August 1994.
14. Ruf, C.S., S.J. Keihm, and B. Subramanya, "TOPEX Microwave Radiometer in-flight performance evaluation," Proc. 1993 International Geoscience and Remote Sensing Symposium, Tokyo, JAPAN, #93CH3294-6, Vol. IV, 1759-1761, August 1993.
13. Ruf, C.S., "Improved array configurations for synthetic aperture interferometric radiometers," Proc. 1993 International Geoscience and Remote Sensing Symposium, Tokyo, JAPAN, #93CH3294-6, Vol. III, 1435-1437, August 1993.
12. Keihm, S.J., C.S. Ruf, and M.A. Janssen, "The TOPEX Microwave Radiometer: Verification Phase Evaluation," Proc. AGU 1992 Fall Meeting, San Francisco, CA, 299, Dec. 1992.
11. Janssen, M.A., S.J. Keihm, and C.S. Ruf, "The TOPEX microwave radiometer," Proc. Specialist Meeting on Microwave Radiometry and Remote Sensing, Boulder, Colorado, 1992.
10. Ruf, C.S., "Error analysis of image reconstruction by a synthetic aperture interferometric radiometer," Proc. International Union of Radio Science (URSI) at IGARSS '92, Houston, TX, 96-97, May 1992.
9. Le Vine, D.M., L.M. Hilliard, C.T. Swift, C.S. Ruf and L.B. Garrett, "A synthetic aperture microwave radiometer to measure soil moisture and ocean salinity from space," Proc. 1991 International Geoscience and Remote Sensing Symposium, Espoo, Finland, 975-978, June 1991.
8. Wilson, W.J., C.S. Ruf, C.M. Satter and Y. Rahmat-Samii, "Design of a geostationary microwave precipitation radiometer," Proc. MTT-S International Microwave Symposium, Boston, MA, 1153-1156, June 1991.

7. Ruf, C.S., "Antenna performance for a synthetic aperture microwave radiometer in geosynchronous earth orbit," Proc. 1990 International Geoscience and Remote Sensing Symposium, College Park, MD, #90CH2825-8, Vol. II, 1589-1592, May 1990.
6. Ruf, C.S. and S.J. Keihm, "TOPEX/POSEIDON microwave radiometer - post-launch ground based calibration/validation," Proc. 1990 International Geoscience and Remote Sensing Symposium, College Park, MD, #90CH2825-8, Vol. I, 203-206, May 1990.
5. Ruf, C.S., "Sparse aperture interferometric radiometry (SAIR) for the remote sensing of the earth," Proc. 1989 International Symposium on Antennas and Propagation, Tokyo, JAPAN, ISBN4-88552-079-7, Vol. I, 89-92, August 1989.
4. Ruf, C.S., M.A. Janssen and S.J. Keihm, "TOPEX microwave radiometer system calibration; refining the SMMR heritage," Proc. 1989 International Geoscience and Remote Sensing Symposium, Vancouver, B.C., CANADA, #89CH2768-0, Vol. I, 271-272, July 1989.
3. Ruf, C.S. and C.T. Swift, "Atmospheric profiling of water vapour with a 20.5-23.5 GHz autocorrelation radiometer," Proc. 1988 International Geoscience and Remote Sensing Symposium, Edinburgh, UK, #88CH2497-6, Vol. II, 957-960, August 1988.
2. Swift, C.T., C. Ruf, A. Tanner and D. Le Vine, "The electronically steered thinned array radiometer (ESTAR)," Proc. 1986 International Geoscience and Remote Sensing Symposium, Zurich, SWITZ., 591-593, October 1986.
1. Ruf, C.S. and C.T. Swift, "Electronically steered thinned array radiometer, system design, performance and calibration," Proc. 1985 International Geoscience and Remote Sensing Symposium, Amherst, MA, 635-640, October 1985.

OTHER PUBLICATIONS

33. Moller, D., C. Qualtrough, S. Gleason, S. Hensley, M. Moghaddam, A. O'Brien, B. Pollard, W. Rack, C. Ruf, "The Instrumentation and Future Technology Technical Committee's Second Summer-School: Auckland New Zealand," IEEE Geoscience and Remote Sensing Magazine, DOI: 10.1109/MGRS.2023.3316129, 2023.
32. Ruf, C., D. McKague, D. Posselt, S. Gleason, M.P. Clarizia, V. Zavorotny, T. Butler, J. Redfern, W. Wells, M. Morris, J. Crespo, C. Chew, E. Small, D. Pasqual, T. Wang, A. Warnock, D. Mayers, M. Al-Khaldi, A. O'Brien. CYGNSS Handbook (2nd ed.), Michigan Publishing Services, Ann Arbor, MI, ISBN 978-1-60785-549-1, <https://doi.org/10.3998/mpub.12741920>, 227 pp, 2022.
31. National Academies of Sciences, Engineering, and Medicine (*co-author*), "Leveraging Commercial Space for Earth and Ocean Remote Sensing," Washington, DC: The National Academies Press. ISBN 978-0-309-28693-0, doi: 10.17226/26380, 98 pp, 2022.
31. Ruf, C., E. Cardellach, M. P. Clarizia, C. Galdi, S. Gleason, S. Paloscia, "Cyclone Global Navigation Satellite System (CYGNSS) Early On Orbit Performance," IEEE J. Sel. Topics Appl. Earth Obs. Remote Sens., doi: 10.1109/JSTARS.2018.2885391, Jan. 2019.
30. Posselt, D., C. Ruf, "Summary of the Eighth CYGNSS Science Team Meeting," The Earth Observer, NASA, **30**(2), 20-22, Mar-Apr 2018.
29. Marsik, F., C. Ruf, A. Lyons, P. Chang, Z. Jelenak, H. Hanson, "Eight Microsatellites, One Mission: CYGNSS," The Earth Observer, NASA, **28**(6), 4-13, Nov-Dec 2016.
28. Ruf, C., P. Chang, M.P. Clarizia, S. Gleason, Z. Jelenak, J. Murray, M. Morris, S. Musko, D. Posselt, D. Provost, D. Starckenburg, V. Zavorotny. CYGNSS Handbook, Ann Arbor, MI, Michigan Pub., ISBN 978-1-60785-380-0, 154 pp, 1 Apr 2016.

27. Murray, J. J., Ruf, C., Baker, N., Lang, T., Uhlhorn, E., Masters, D., Halliwell, G., Carey, K., Helms, D., Escobar, V., McCarty, W., Green D. S., Stough, T., and Molthan, A.. Report on the NASA CYGNSS Mission Applications Workshop, NASA-CP-2015-218993, NASA Publ., 56 pp., 2016.
26. Ruf, C. (contributing author), “Microwave Radar and Radiometric Remote Sensing,” F.T. Ulaby and D. Long, Univ. of Michigan Press, ISBN 978-0-472-11935-6, 1016 pp, 2014.
25. Ruf, C. (contributing author), “Encyclopedia of Remote Sensing,” E. G. Njoku (ed.), Springer Reference, ISBN 978-0-387-36698-2, 939 pp, 2014.
24. Ruf, C., M. Unwin, J. Dickinson, R. Rose, D. Rose, M. Vincent and A. Lyons, “CYGNSS: Enabling the Future of Hurricane Prediction,” IEEE Geosci. Remote Sens. Mag., **1**(2), 52-67, doi: 10.1109/MGRS.2013.2260911, 2013.
23. Ruf, C., A. Lyons and A. Ward, “NASA Intensifies Hurricane Studies with CYGNSS,” The Earth Observer, NASA, **25**(3), 12-21, May-June 2013.
22. Ruf, C. S., “Editorial,” IEEE Trans. Geosci. Remote Sens., **51**(1), 5, doi: 10.1109/TGRS.2012.2233234, 2013.
21. Ruf, C. S., “Editorial,” IEEE Trans. Geosci. Remote Sens., **47**(1), 3, doi: 10.1109/TGRS.2008.2010122, 2009.
20. Randa, J., J. Lahtinen, A. Camps, A. J. Gasiewski, M. Hallikainen, D. M. Le Vine, M. Martin-Neira, J. Piepmeier, P. W. Rosenkranz, C. S. Ruf, J. Shiue and N. Skou, “Recommended Terminology for Microwave Radiometry,” National Institute of Standards and Technology Technical Note 1551, 40 pp., August 2008.
19. Ruf, C., S. Rogacki, C. Cooper, S. Misra, S. Gross, J. Johnson and J. Piepmeier, “Development of an Agile Digital Detector for RFI Detection and Mitigation on Spaceborne Radiometers,” Proc. of NASA Earth Science Technology Conference, College Pk., MD, 24 June 2008.
18. Ruf, C., A. Warnock and D. Boprie, Cover Figure, Geoscience and Remote Sensing Newsletter, **145**, ISSN 0274-6338, Dec. 2007.
17. Ruf, C.S., R. De Roo, S. Gross and S. Misra, “Radiometer Development of an Agile Digital Detector for RFI Detection and Mitigation on Spaceborne Radiometers,” Proc. of NASA Earth Science Technology Conference, College Pk., MD, 19 June 2007.
16. Smith, E.A., A. Mehta, S. Yang, E. Im and C. Ruf, “Current and Future Space Technologies for Measurement of Precipitation at Regional and Global Scales,” Workshop on Monsoon Climate Variability and Change - Impacts on Water, Food, and Health in Western India, Ahmedabad, INDIA, 5-7 Feb 2007.
15. Ruf, C.S., S. Misra and R. De Roo, “Development of an Agile Digital Detector for RFI Detection and Mitigation on Spaceborne Radiometers,” Proc. of NASA Earth Science Technology Conference, College Pk., MD, 27-29 June 2006.
14. Lambrigtsen, B.H., S.T. Brown, S.J. Dinardo, T.C. Gaier, P.P. Kanagaslahti, A.B. Tanner, J.R. Piepmeier, C.S. Ruf, S.M. Gross, S. Musko and S. Rogacki, “GeoSTAR – A Breakthrough in Remote Sensing Technology,” Proc. of NASA Earth Science Technology Conference, College Pk., MD, 27-29 June 2006.
13. Ruf, C.S., Review of “Introduction to Microwave Remote Sensing” by I.H. Woodhouse, The London Times Higher Education Supplement Textbook Guide, **24**(XII), 26 May 2006.
12. Gaiser, P.W., and C.S. Ruf, “Foreward to the Special Issue on the WindSat Spaceborne Polarimetric Radiometer – Calibration/Validation and Wind Vector Retrieval,” Trans. Geosci. Remote Sens., **44**(3), 467-468, 2006.

11. Tanner, A.B., W.J. Wilson, P.P. Kangaslahti, B.H. Lambrigsten, S.J. Dinardo, J.R. Piepmeier, C.S. Ruf, S. Rogacki, S.M. Gross and S. Musko, "Prototype development of a Geostationary Synthetic Thinned Aperture Radiometer, GeoSTAR," Proc. of NASA Earth Science Technology Conference, Palo Alto, CA, 22-24 June 2004.
10. Principe, C., J. Piepmeier and C. Ruf, "Low Power Digital Microwave Technologies," Proc. of NASA Earth Science Technology Conference, College Park, MD, 24-26 June 2003.
9. Ruf, C.S., C. Principe, T. Dod, B. Monosmith, S. Musko, S. Rogacki, D. Steinfeld, E. Smith, A. Stewart and Z. Zhang, "Synthetic Thinned Aperture Radiometer Technology Developments Enabling a GPM Lightweight Rainfall Radiometer," Proc. of NASA Earth Science Technology Conference, Pasadena, CA, 11-13 June 2002.
8. Ruf, C.S., C.D. Kummerow and C.M. Principe, "Enabling Technologies for the Global Precipitation Measurement Mission," Proc. of NASA Earth Science Technology Conference, College Park, MD, 28-30 August 2001.
7. Ruf, C.S., "Preface to Special Section: Microwave Radiometry and Remote Sensing of the Environment, Part 2" Radio Science, **33**(3), 637, 1998.
6. Ruf, C.S., "Preface to Special Section: Microwave Radiometry and Remote Sensing of the Environment, Part 1" Radio Science, doi:10.1029/98RS00586, **33**(2), 257-258, 1998.
5. Ruf, C.S. and T.K. Wu, "Piezoelectric Reflecting Array for Reflector Surface Distortion Compensation," NASA Tech Briefs, NPO-18538, Dec. 1992.
4. Ruf, C.S., "Synthetic Aperture Interferometric Radiometry Image Reconstruction Error Analysis," NASA Tech Briefs, NPO-18561, Dec. 1992.
3. Barron, E.J., J.D. Mathews, W.L. Meyers, G.W. Petersen, C.S. Ruf and D.W. Thomson, "Remote Sensing at The Pennsylvania State University," Geoscience and Remote Sensing Newsletter, **84**, ISSN 016, 17-21, Sep. 1992.
2. Ruf, C.S., "Improving Sparse-Aperture Interferometric Radiometry," NASA Tech Briefs, **15**(3), Item 29, 26-28, Mar. 1991.
1. Ruf, C.S., "Synthetic Aperture Interferometric Radiometer (SAIR)," Proceedings of the Earth Science Geostationary Platform Technology Workshop, NASA Langley Research Center, Hampton, VA, NASA Conf. Publ. 3040, 179-190, Sep. 1988.

ORAL PRESENTATIONS

Conference Paper, "Performance and Characterization of CYGNSS Wind Speed Products," International Geoscience and Remote Sensing Symposium, Athens, Greece, July 2024.

NASA Hyperwall Presentation, "The NASA CYGNSS Mission," International Geoscience and Remote Sensing Symposium, Athens, Greece, July 2024.

Conference Paper, "First Results from the Muon Space MuSat2 Polarimetric GNSS-R Mission," International Geoscience and Remote Sensing Symposium, Athens, Greece, July 2024.

Conference Paper, "A Zero Current Equivalent Wind Correction for Remotely Sensed Winds," International Geoscience and Remote Sensing Symposium, Athens, Greece, July 2024.

Conference Paper, "The Detection and Tracking of Ocean Pollutants via Surfactants," International Geoscience and Remote Sensing Symposium, Athens, Greece, July 2024.

Invited Speaker, "NASA Earth System Explorer," NASA PI Masters Forum, virtual, 18 June 2024.

Conference Paper, "NASA CYGNSS Mission Science & Applications Highlights," AMS Annual Meeting, Baltimore, 29 January 2024.

- Conference Paper*, “New GNSS-R Measurement Capabilities and their Applications using CYGNSS,” AGU Fall Meeting, San Francisco, 11 December 2023.
- Invited Paper*, “The NASA CYGNSS Mission,” Taiwan International Assembly of Space Science, Technology and Industry (TASTI 2023), Taipei, Taiwan, 30 October 2023.
- Conference Paper*, “Marine Litter Detection and Imaging by Spaceborne Radar Observations and Laboratory Wavetank Experiments,” ESA/ESTEC Remote Sensing of Marine Litter and Debris Workshop, Noordwijk, Netherlands, 17 October 2023.
- Conference Paper*, “The NASA CYGNSS SmallSat Constellation,” SmallSat 2023, Logan, UT, 6 August 2023.
- Conference Paper*, “The NASA CYGNSS Mission,” International Geoscience and Remote Sensing Symposium, Pasadena, CA, July 2023.
- Conference Paper*, “CYGNSS hurricane wind speed products – Latest developments and performance assessments,” International Geoscience and Remote Sensing Symposium, Pasadena, CA, July 2023.
- Invited Seminar*, “Introduction to GNSS Reflectometry (GNSS-R),” UCAR GNSS Remote Sensing Colloquium, Boulder, CO, 9 June 2023.
- Invited Seminar*, “GNSS-R Technology, Science and Applications,” NASA JPL Section 335 Seminar, Pasadena, CA, 6 April 2023.
- Invited Seminar*, “The NASA CYGNSS Mission: A New SmallSat Paradigm for Earth Observations,” USC Center for Sustainability Solutions, Viterbi School of Engineering, Price School of Public Policy, Los Angeles, CA, 23 March 2023.
- Invited Seminar*, “NASA Cyclone Global Navigation Satellite System (CYGNSS) Earth Venture Mission,” Distinguished Climate Lecture, NASA JPL Center for Climate Sciences, Pasadena, CA, 17 March 2023.
- Invited Seminar*, “The NASA CYGNSS Mission, A New SmallSat Paradigm for Earth Observations,” Science Seminar Series, Southwest Research Institute, San Antonio, TX, 10 March 2023.
- Invited Paper*, “Spaceborne Radar Observations and Laboratory Wavetank Experiments for Tracking Ocean Microplastics,” EuCAP 2023 (17th European Conference on Antennas and Propagation), Florence, ITALY, 27 Mar 2023.
- Invited Lecture*, “Flowdown of science objectives to instrument engineering requirements,” New Zealand 2023 IEEE GRSS Summer School, Auckland, NZ, 2 February 2023.
- Conference Seminar*, “NASA CYGNSS Mission Update and Latest Data Products,” AMS Annual Meeting, Denver, January 2023.
- Invited Paper*, “Remote Sensing by CYGNSS for Terrestrial Hydrology and Ecosystems,” 2022 AGU Meeting, Chicago, December 2022.
- Invited Seminar*, “Cyclone Global Navigation Satellite System (CYGNSS)” Goddard Disasters Group, NASA Goddard Space Flight Center, November 28, 2022.
- Invited Seminar*, “A New SmallSat Paradigm for Earth Observations,” ECE Dept. Seminar, University of Massachusetts Amherst, September 30, 2022.
- Invited Panelist*, “Imaging Ocean Microplastic Dynamics with Spaceborne Radar,” Plastic Free July – From Deep Space to Deep Sea, CSIRO, Australia, July 28, 2022.
- Invited Paper*, “Science Impacts of the NASA CYGNSS Mission,” Proc. 2022 International Geoscience and Remote Sensing Symposium, virtual, July 21, 2021.
- Invited Seminar*, “Imaging Ocean Microplastic Dynamics from Space” NASA Science Activation Program – Learning Ecosystems Northeast, Maine high school science classes, April 29, 2022.

- Invited Seminar*, “Imaging Ocean Microplastic Dynamics with Spaceborne Radar” IEEE Ocean Engineering Society Seminar, Italy Chapter, January 19, 2022.
- Invited Paper*, “Detection and Imaging of Microplastics from Space,” Session on Riverine Microplastics Pollution in ASEAN Countries, ISAP 2021, Japan, December 2, 2021.
- Invited Seminar*, “NASA Cyclone Global Navigation Satellite System (CYGNSS) Earth Venture Mission” IEEE GRSS-APS Seminar in Applied Electromagnetics, University of Southern California, November 9, 2021.
- Invited Speaker*, “Monitoring Microplastics from Space,” Fourth Asia Pacific Day for the Ocean - Plastic Pollution Monitoring, United Nations Conference Centre, Bangkok, Thailand, October 27, 2021.
- Invited Paper*, “Resolving Inland Waterways with CYGNSS,” 2021 International Geoscience and Remote Sensing Symposium, Virtual, September 2021.
- Invited Panelist*, “Advancing GNSS-R Science with an Extended Airborne Campaign,” Science Payload Operations Centre: Showcase Event, University of Auckland, New Zealand, August 11, 2021.
- Invited Speaker*, “CYGNSS Mission Overview,” Taiwan Space Union PRISM Seminar, Taiwan, May 27, 2021.
- Invited Panelist*, “Mission Documentation,” 2021 NASA Small Spacecraft Forum, NASA HQ Small Spacecraft Coordination Group, April 8, 2021.
- Invited Seminar*, “A New Paradigm in Earth Observations: Micro Satellite Constellations,” Arthur H. Waynick Memorial Lecture, The Pennsylvania State University (virtual), April 7, 2021.
- Invited Speaker*, “Detecting and Imaging Ocean Microplastics with a Spaceborne Radar,” IOCCG Task Force on the Remote Sensing of Marine Litter and Debris from Space, April 1, 2021.
- Invited Seminar*, “The NASA Cyclone Global Navigation Satellite System (CYGNSS) Earth Venture Mission,” IEEE Gujarat Section GRSS Chapter Distinguished Lecturer Seminar, March 18, 2021.
- Conference Paper*, “Remote Sensing of the Terrestrial Water Cycle with the Cyclone Global Navigation Satellite System (CYGNSS),” 2020 AGU Meeting (virtual), Dec 2020.
- Invited Seminar*, “The NASA CYGNSS Earth Venture Mission,” IEEE GRSS ISPRS Brazil Chapter Young Professionals Seminar, Sao Paulo University, November 13, 2020.
- Invited Panelist*, “The Cyclone Global Navigation Satellite System (CYGNSS) Earth Venture Mission,” NASA Earth System Science Pathfinder Program Forum, NASA ESSP Program Office, October 21, 2020.
- Invited Seminar*, “The NASA CYGNSS MicroSat Constellation,” Electrical Engineering Department Colloquium, Penn State University, October 16, 2020.
- Invited Panelist*, “Partnering to fly the Next-generation of Global Navigation Satellite System Receivers for Advancing Earth Observation,” IEEE GRSS IFT Webinar, October 13, 2020.
- Invited Paper*, “Next Generation GNSS-R Instrument,” 2020 International Geoscience and Remote Sensing Symposium, Virtual, October 2020.
- Conference Paper*, “Cyclone Global Navigation Satellite System (CYGNSS): Mission and Science Data Product Status,” 2020 AMS Annual Meeting, Boston, MA, 16 Jan 2020.
- Conference Paper*, “The NASA CYGNSS Small Satellite Constellation,” 2019 AGU Meeting, San Francisco, CA, Dec 2019.
- Conference Paper*, “CYGNSS Constellation of GNSS-R SmallSats,” 2019 ESA ESTEC ARSI Workshop, Noordwijk, NL, Nov 2019.

- Conference Paper*, “Cyclone Global Navigation Satellite System (CYGNSS): Mission Status and Science Applications,” 2019 AMS Joint Satellite Conference, Boston, MA, Oct 2019.
- Invited Panelist*, “Assimilation of TC Inner Core Surface Winds by CYGNSS into Forecast Models,” Asia Oceania Geosciences Society 16th Annual Meeting, Singapore, July 2019.
- Invited Paper*, “The GNSS-R CYGNSS Mission: An Update,” 2019 International Geoscience and Remote Sensing Symposium, Yokohama, JAPAN, July 2019.
- Conference Paper*, “CYGNSS SmallSat Mission Design, Engineering Performance and Science Results,” 2019 International Geoscience and Remote Sensing Symposium, Yokohama, JAPAN, July 2019.
- Invited Panelist*, “Mission Operations Planning, Execution and Anomaly Recovery,” NASA SmallSat/CubeSat Mission Technical Interchange Meeting, Mountain View, CA, 25 June 2019.
- Invited Paper*, “Looking Back: Mission Flight Results CYGNSS,” NASA SmallSat/CubeSat Mission Technical Interchange Meeting, Mountain View, CA, 25 June 2019.
- Invited Panelist*, “Integrating Software and Hardware for New Observing Strategies,” 2019 Earth Science Technology Forum, Mountain View, CA, 11-13 June 2019.
- Conference Paper*, “Next Generation GNSS Bistatic Radar Receiver,” 2019 Earth Science Technology Forum, Mountain View, CA, 11-13 June 2019.
- Conference Paper*, “NASA CYGNSS Science Data Characterization and Applications,” GNSS+R 2019 Meeting, Benevento, ITALY, CA, 20-22 May 2019.
- Conference Paper*, “Resolving Tropical Cyclone Inner Core Dynamics with the CYGNSS Satellite Constellation,” 2019 Living Planet Symposium, Milan, ITALY, CA, 13-17 May 2019.
- Conference Paper*, “The NASA CYGNSS Small Satellite Constellation,” 2019 Living Planet Symposium, Milan, ITALY, CA, 13-17 May 2019.
- Conference Paper*, “CYGNSS – Status of Mission and Science Data Products,” 2019 AMS Annual Meeting, Phoenix, AZ, 7-10 Jan 2019.
- Conference Paper*, “Next Generation Bi-Static Radar Receiver for Possible CYGNSS Follow-On Mission,” 2019 AMS Annual Meeting, Phoenix, AZ, 7-10 Jan 2019.
- Invited Paper*, “Applications of CYGNSS Remote Sensing Data Products for Hydrometeorology,” 2018 AGU Meeting, Washington, DC, 12 Dec 2018.
- Conference Paper*, “The NASA CYGNSS SmallSat Constellation,” 2018 AGU Meeting, Washington, DC, 11 Dec 2018.
- Invited Seminar*, “NASA Cyclone Global Navigation Satellite System,” National Space Science Technology Center, NASA Marshall Space Flight Center, Huntsville, AL, 16 November 2018.
- Invited Paper*, “Cyclone Global Navigation Satellite System (CYGNSS) and Soil Moisture Product Prospects,” SMAP CalVal Workshop, George Mason University, Fairfax, VA, 23 October 2018.
- Invited Seminar*, “Cyclone Global Navigation Satellite System,” Earth System Science Interdisciplinary Center Seminar, University of Maryland, College Park, MD, 10 October 2018.
- Conference Paper*, “Enabling Sampling Properties of the CYGNSS Satellite Constellation,” 2018 International Geoscience and Remote Sensing Symposium, Valencia, SPAIN, 23-28 July 2018.
- Conference Paper*, “Next Generation GNSS-R Radar Receiver,” Earth Science Technology Forum, Silver Springs, MD, 12-14 June 2018.
- Invited Seminar*, “NASA Cyclone Global Navigation Satellite System,” NCAR Seminar Series, NCAR, Boulder, CO, 7 June 2018.
- Invited Paper*, “CYGNSS Cyclone Global Navigation Satellite System,” Japan Geoscience Union, Chiba, JAPAN, 21 May 2018.

Invited Panel Member, CYGNSS Lessons Learned Outbrief, NASA Langley Research Center, Hampton, VA, 10 May 2018.

Invited Paper, “Cyclone Global Navigation Satellite System,” ESSP Forum, NASA Langley Research Center, Hampton, VA, 8-9 May 2018.

Invited Seminar, “Cyclone Global Navigation Satellite System,” MRS/DTU Space Seminar Series, Technical University of Denmark, Lyngby, DK, 25 Apr 2018.

Town Hall Meeting, “CYGNSS Mission Science Overview,” TROPICS/CYGNSS Town Hall Meeting at AMS Hurricane and Tropical Meteorology Conference, Ponte Vedra, FL, 17 Apr 2018.

Conference Paper, “The NASA Cyclone Global Navigation Satellite System (CYGNSS),” Workshop on Remote Sensing for Studying the Ocean-Atmosphere Interface – ESA/NASA/SOLAS, Potomac, MD, 13 Mar 2018.

Conference Paper, “NASA CYGNSS Mission Overview,” 2018 AMS Annual Meeting, Austin TX, 11 Jan 2018.

Conference Paper, “NASA CYGNSS Small Satellite Constellation,” 2017 AGU Meeting, New Orleans, LA, 13 Dec 2017.

Invited Seminar, “Early On-Orbit Results for the NASA Cyclone Global Navigation Satellite System,” ECE Distinguished Colloquium Series, University of Illinois Champaign-Urbana, 26 Oct 2017.

Invited Seminar, “CYGNSS Cyclone Global Navigation Satellite System,” IEEE Geoscience and Remote Sensing Society, High Plains/Denver Chapter, University of Colorado, Boulder, CO, 24 Oct 2017.

Invited Seminar, “CYGNSS Cyclone Global Navigation Satellite System,” IEEE Geoscience and Remote Sensing Society, Southeast Michigan Chapter, University of Michigan, Ann Arbor, MI, 20 Oct 2017.

Invited Paper, “CYGNSS Cyclone Global Navigation Satellite System,” NASA SmallSat Reliability Workshop, NASA Headquarters, Washington DC, 11 Oct 2017.

Conference Paper, “NASA CYGNSS Tropical Cyclone Mission,” Advanced RF Sensors and Remote Sensing Instruments 2017, ESA-ESTEC, Noordwijk, NL, 12-14 Sep 2017.

Invited Seminar, “CYGNSS Cyclone Global Navigation Satellite System,” Goddard Earth Sciences Technology and Research (GESTAR) Program, Goddard Space Flight Center, Greenbelt, MD, 17 Aug 2017.

Conference Paper, “Storm Surge Prediction with CYGNSS Winds,” 2017 International Geoscience and Remote Sensing Symposium, Houston, TX, 23-28 July 2017.

Invited Paper, “The NASA CYGNSS Mission: Overview and Status Update,” 2017 International Geoscience and Remote Sensing Symposium, Houston, TX, 23-28 July 2017.

Poster Presentation, “CYGNSS Cyclone Global Navigation Satellite System,” Coalition for Aerospace and Science Day on the Hill & Exhibition, Rayburn House Office Building, Capitol Hill, Washington DC, 14 Jun 2017.

Conference Paper, “Storm Surge Modeling with CYGNSS Winds,” GNSS+R 2017 Workshop, Ann Arbor, MI, 23-25 May 2017.

Conference Paper, “NASA CYGNSS Mission,” GNSS+R 2017 Workshop, Ann Arbor, MI, 23-25 May 2017.

Conference Paper, “NASA CYGNSS Tropical Cyclone Mission,” 2017 European Geophysical Union, Vienna, Austria, 25 Apr 2017.

- Conference Paper*, “The NASA CYGNSS Satellite Constellation for Tropical Cyclone Observations,” 2017 Tropical Cyclone Operations and Research Forum (TCORF) and 71st Interdepartmental Hurricane Conference (IHC), Miami, FL, 14-16 Mar 2017.
- Invited Presentation*, “Cyclone Global Navigation Satellite System,” NASA Hyperwall at 2017 AMS Annual Meeting, Seattle, WA, 22-26 Jan 2017.
- Conference Paper*, “The NASA CYGNSS Satellite Constellation for Tropical Cyclone Observations,” 2017 AMS Annual Meeting, Seattle, WA, 22-26 Jan 2017.
- Conference Paper*, “CYGNSS Mission Update,” European GNSS-R Environment Monitoring (E-GEM) Workshop, Lisbon, PORTUGAL, 14 Nov 2016.
- Invited Seminar*, “Cyclone Global Navigation Satellite System (CYGNSS) for Frequent Measurement of Hurricane Wind Speed and Structure,” NOAA National Hurricane Center, Miami, FL, 14 Jun 2016.
- Conference Paper*, “The CYGNSS Constellation Satellite Mission,” 2016 European Space Agency Living Planet Symposium, Prague, CZ, 9-13 May Apr 2016.
- Conference Paper*, “The NASA CYGNSS Satellite Constellation Tropical Cyclone Mission,” 2016 AMS Hurricanes and Tropical Meteorology Conference, San Juan, Puerto Rico, 17-21 Apr 2016.
- Conference Paper*, “Tropical Cyclone Forecast Skill Impact Simulations with the NASA CYGNSS Constellation,” 2016 AMS Annual Meeting, New Orleans, LA, 11-14 Jan 2016.
- Conference Paper*, “The NASA Cyclone Global Navigation Satellite System (CYGNSS): Mission Status,” Fall 2015 American Geophysical Union Meeting, San Francisco, CA, 14-18 Dec 2015.
- Keynote Speaker*, “NASA Earth Venture Mission Cyclone Global Navigation Satellite System (CYGNSS),” MEXT Summer Seminar, Fukuoka, JAPAN, 11 Sep 2015.
- Panel Member*, Achieving Science Goals with CubeSats Workshop, National Academy of Sciences Space Studies Board, Irvine, CA, 2-3 Sep 2015.
- Invited Paper*, “Forward Model and Retrieval of TC Wind Speed with CYGNSS,” 2015 International Geoscience and Remote Sensing Symposium, Milan, ITALY, 27-31 July 2015.
- Invited Paper*, “The NASA CYGNSS Tropical Cyclone Mission,” 2015 International Geoscience and Remote Sensing Symposium, Milan, ITALY, 27-31 July 2015.
- Panel Member*, “Using Commercial Space and Small Satellites Assets” GEOINT Forward 2015 Small Sat Panel, GEOINT Conference, Washington DC, 22 June 2015.
- Keynote Speaker*, “Overview of CYGNSS Mission,” NASA CYGNSS Applications Workshop, NOAA, Silver Spring, MD, 27-29 May 2015.
- Conference Paper*, “CYGNSS Mission Update,” 2015 International Ocean Vector Wind Science Team Meeting, Portland, OR, 19-21 May 2015.
- Conference Paper*, “NASA CYGNSS Mission – Status and Future Plans,” GNSS+R 2015 Workshop, Potsdam, GERMANY, 11-13 May 2015.
- Invited Seminar*, “NASA Cyclone Global Navigation Satellite System (CYGNSS) Earth Venture Mission,” Information, Science & Technology Colloquium, NASA Goddard Space Flight Center, Greenbelt, MD, 6 May 2015.
- Conference Paper*, “The NASA CYGNSS Satellite Constellation: Probing the Inner Core of Hurricanes,” 2015 Tropical Cyclone Research Forum/69th Interdepartmental Hurricane Conference, Jacksonville, FL, 2-5 March 2015.
- Invited Seminar*, “The NASA Cyclone Global Navigation Satellite System,” University of Texas Brownsville Physics & Astronomy Colloquium, Brownsville, TX, 14 November 2014.

Conference Paper, “The NASA Cyclone Global Navigation Satellite System (CYGNSS): A Constellation of Bi-static Ocean Scatterometer Microsatellites to Probe the Inner Core of Hurricanes,” Fall 2014 American Geophysical Union Meeting, San Francisco, CA, 15-19 Dec 2014.

Conference Paper, “The NASA Cyclone Global Navigation Satellite System (CYGNSS) Mission,” Advanced RF Sensors and Remote Sensing Instruments 2014, ESA-ESTEC, Noordwijk, NETHERLANDS, 4-7 November 2014.

Conference Paper, “CYGNSS: NASA Earth Venture Tropical Cyclone Mission,” SPIE 2014 Remote Sensing Conference, Amsterdam, NETHERLANDS, 22-25 September 2014.

Workshop Paper, “Time and Space Sampling Coordination between PMM and CYGNSS Ocean Surface Winds,” NASA PMM Science Team Meeting, Baltimore, MD, 4-8 August 2014.

Invited Paper, “The NASA CYGNSS Mission: Design and Predicted Performance,” 2014 International Geoscience and Remote Sensing Symposium, Québec City, CANADA, 14-18 July 2014.

Conference Paper, “The NASA EV-2 Cyclone Global Navigation Satellite System (CYGNSS) Mission,” 2014 International Geoscience and Remote Sensing Symposium, Québec City, CANADA, 14-18 July 2014.

Keynote Speaker, “Measuring Hurricanes with the Cyclone Global Navigation Satellite System (CYGNSS),” Ford Motor Company/University of Michigan Innovation Alliance, Executive Committee Meeting, Dearborn, MI, 20 June 2014.

Invited Seminar, “The Theory, History and Future of Global Navigation Satellite System Reflectometry (GNSS-R),” with S. Gleason, JAMSTEC/JMA, Yokohama, JAPAN, 30 April 2014.

Invited Seminar, “The Theory, History and Future of Global Navigation Satellite System Reflectometry (GNSS-R),” with S. Gleason, University of Tokyo, Tokyo, JAPAN, 28 April 2014.

Invited Seminar, “The Theory, History and Future of Global Navigation Satellite System Reflectometry (GNSS-R),” with S. Gleason, Kobe University, Kobe, JAPAN, 25 April 2014.

Invited Seminar, “The Theory, History and Future of Global Navigation Satellite System Reflectometry (GNSS-R),” with S. Gleason, Kyushu University, Fukuoka, JAPAN, 24 April 2014.

Invited Seminar, “CYGNSS: A New NASA Hurricane Satellite,” Local Chapter of the American Meteorology Society, University of Michigan, Ann Arbor, MI, 15 April 2014.

Conference Paper, “Enhanced Spatial & Temporal Sampling of Air/Sea Interaction in Tropical Cyclones by the NASA CYGNSS Mission,” 31st Conference on Hurricanes and Tropical Meteorology, San Diego, CA, 1 April 2014.

Invited Seminar, “CYGNSS: A New NASA Hurricane Satellite,” IEEE-GRSS Southeastern Michigan Chapter, University of Michigan, Ann Arbor, MI, 20 March 2014.

Invited Seminar, “CYGNSS: A New NASA Hurricane Satellite,” Aerospace Lecture, Student Activities Board, University of Michigan, Dearborn, MI, 18 March 2014.

Conference Paper, “The NASA Cyclone Global Navigation Satellite System (CYGNSS) Mission,” 18th Conf. Integrated Observing and Assimilation Systems for Atmosphere, Oceans, and Land Surface, 2014 AMS Annual Conf., Atlanta, GA, 3 Feb. 2014.

Invited Paper, “The CYGNSS Constellation Mission,” International Earth Observation Convoy and Constellation Concepts Workshop, ESA-ESTEC, Noordwijk, NETHERLANDS, 11 Oct 2013.

- Invited Seminar*, “Hurricane Remote Sensing,” Natural Disasters Class, Livonia High School, Livonia, MI, 25 Sep 2013.
- Invited Paper*, “CYGNSS Wind Retrieval Performance,” 2013 International Ocean Vector Wind Science Team Meeting, Kailua-Kona, HI, 7 May 2013.
- Invited Paper*, “The NASA EV-2 Cyclone Global Navigation Satellite System (CYGNSS) Mission,” 2013 International Ocean Vector Wind Science Team Meeting, Kailua-Kona, HI, 7 May 2013.
- Invited Seminar*, “The NASA EV-2 Cyclone Global Navigation Satellite System (CYGNSS) Mission,” Univ. of New Hampshire, 3 May 2013.
- Conference Paper*, “The NASA EV-2 Cyclone Global Navigation Satellite System (CYGNSS) Mission,” 2013 European Geophysical Union, Vienna, AUSTRIA, 12 April 2013.
- Invited Seminar*, “The NASA EV-2 Cyclone Global Navigation Satellite System (CYGNSS) Mission,” Microsatellite Mission Applications Study Panel, Air Force Scientific Advisory Board, 11 Apr 2013.
- Invited Seminar*, “The NASA EV-2 Cyclone Global Navigation Satellite System (CYGNSS) Mission,” Duke University, 12 Feb 2013.
- Invited paper*, “The NASA EV-2 Cyclone Global Navigation Satellite System (CYGNSS) Mission,” 2013 Annual AMS Meeting, Austin, TX, 9 Jan 2013.
- Conference paper*, “HIRAD TB Calibration and Multi-frequency Hurricane Imaging,” 12th Specialist Meeting on Microwave Radiometry and Remote Sensing of the Environment, Frascati, ITALY, 5-9 Mar 2012.
- Conference paper*, “Aquarius Radiometer Radio Frequency Interference (RFI) Detection, Characterization and Mitigation,” 12th Specialist Meeting on Microwave Radiometry and Remote Sensing of the Environment, Frascati, ITALY, 5-9 Mar 2012.
- Invited paper*, “Citations for Data in Refereed Journals,” Fall 2011 American Geophysical Union, San Francisco, CA, 9 Dec 2011.
- Invited paper*, “First Tropical Cyclone Overflights by the Hurricane Imaging Radiometer,” 2011 International Geoscience and Remote Sensing Symposium, Vancouver, BC, CANADA, 25-29 July 2011.
- Invited paper*, “K-Band Radio Frequency Interference Survey of Southeastern Michigan,” 2010 International Geoscience and Remote Sensing Symposium, Honolulu, HI, USA, pp. 2486-2489, 26-30 July 2010.
- Invited paper*, “From a Real Pencil to a Synthetic Broom: The Past, Present and Future of HIRAD,” 2010 International Geoscience and Remote Sensing Symposium, Honolulu, HI, USA, 26-30 Jul 2010.
- Invited paper*, “Digital Radiometers for Earth Science,” 2010 International Microwave Symposium, Anaheim, CA, 26 May 2010.
- Invited paper*, “Spectral Mapping of Radio Frequency Interference at K-Band Using a Kurtosis Spectrometer,” 11th Specialist Meeting on Microwave Radiometry and Remote Sensing of the Environment, Washington DC, 1-4 Mar 2010.
- Invited paper*, “Digital Microwave Radiometers: Instrument Capability v. Digital Technology,” 11th Specialist Meeting on Microwave Radiometry and Remote Sensing of the Environment, Washington DC, 1-4 Mar 2010.
- Invited paper*, “Detection of Lightning on Mars with a Digital Kurtosis Detector,” URSI National Radio Science Meeting, Boulder, CO, J2-1, 6-9 Jan 2010.

- Invited Seminar*, “Hallway Conversations and the Discovery of Lightning on Mars,” Atmos. Sci. Dept. Seminar, Texas A&M Univ., 22 Sep. 2009..
- Invited paper*, “Digital Microwave Radiometers: Digital Signal Processing Device Capabilities vs. Radiometer Sensor Performance,” 2009 International Geoscience and Remote Sensing Symposium, Cape Town, S.A., 13-17 July 2009.
- Invited paper*, “The Hurricane Imaging Radiometer (Hirad): Instrument Status and Performance Predictions,” 2009 International Geoscience and Remote Sensing Symposium, Cape Town, S.A., 13-17 July 2009.
- Guest Panelist*, “International Remote Sensing Publication Forum,” 30th Canadian Symposium on Remote Sensing, Lethbridge, Alberta CANADA, 24 June 2009.
- Invited paper*, “Discussions/Perspectives on International Collaboration on Radiometer Calibration,” 8th Global Precipitation Measurement Planning Workshop, Paris, FRANCE, 16-19 June 2009.
- Invited paper*, “Digital Correlators for Spaceborne Earth Remote Sensing - Current Status and Near Term Technology Development,” Keck Institute for Space Studies MMIC Array Receivers and Spectrographs Workshop, Pasadena, CA, 21-25 Aug. 2008.
- Invited paper*, “Design and Performance Considerations for a Spaceborne Digital Radiometer,” 2008 International Geoscience and Remote Sensing Symposium, Boston, MA, 7-11 July, 2008.
- Conference paper*, “Comparison of Pulsed Sinusoid Radio Frequency Interference Detection Algorithms Using Time and Frequency Sub-Sampling,” 2008 International Geoscience and Remote Sensing Symposium, Boston, MA, 7-11 July, 2008.
- Conference paper*, “Cross Calibration of Microwave Radiometers in the GPM Constellation,” 2008 International Geoscience and Remote Sensing Symposium, Boston, MA, 7-11 July, 2008.
- Conference paper*, “Vicarious Calibration of Global Precipitation Measurement Microwave Radiometers,” 2008 International Geoscience and Remote Sensing Symposium, Boston, MA, 7-11 July, 2008.
- Invited paper*, “Design and Development of the Hurricane Imaging Radiometer (HIRAD),” 2008 International Geoscience and Remote Sensing Symposium, Boston, MA, 7-11 July, 2008.
- Conference paper*, “Detectability of Radio Frequency Interference due to Spread Spectrum Communication Signals using The Kurtosis Algorithm,” 2008 International Geoscience and Remote Sensing Symposium, Boston, MA, 7-11 July, 2008.
- Conference paper*, “Characterization of the Aquarius and Juno Radiometers Using a Programmable Digital Noise Source,” 2007 International Geoscience and Remote Sensing Symposium, Barcelona, SPAIN, 23-27 July, 2007.
- Conference paper*, , “Detection of Radio Frequency Interference with the Aquarius Radiometer” 2007 International Geoscience and Remote Sensing Symposium, Barcelona, SPAIN, 23-27 July, 2007.
- Conference paper*, “The Hurricane Imaging Radiometer – An Octave Bandwidth Synthetic Thinned Array Radiometer,” 2007 International Geoscience and Remote Sensing Symposium, Barcelona, SPAIN, 23-27 July, 2007.
- Conference paper*, “Detection of RFI by its Amplitude Probability Distribution,” 2006 International Geoscience and Remote Sensing Symposium, Denver, CO, 31 Jul - 4 Aug 2006.
- Conference paper*, “Agile Digital Detector for RFI Mitigation,” 2006 Specialist Meeting on Microwave Radiometry, San Juan, PR, 28 Feb – 3 Mar 2006.

- Conference paper*, “Wind Vector Retrieval with WindSat – Impact on Performance of Missing Channels,” 2005 International Geoscience and Remote Sensing Symposium, Seoul, KOREA, 25-29 July 2005.
- Conference paper*, “Calibrating a Polarimetric Radiometer with the Correlated Noise Calibration Standard,” 2005 International Geoscience and Remote Sensing Symposium, Seoul, KOREA, 25-29 July 2005.
- Conference paper*, “Ensemble Scattering and RFI Speckle Caused by Collision Avoidance Radar,” Proc. URSI National Radio Science Meeting, Boulder, CO, F/J1-7, 215, 5-8 Jan 2005.
- Conference paper*, “WindSat Calibration and Geophysical Parameter Estimation,” International Geoscience and Remote Sensing Symposium, Anchorage, AK, 20-24 Sept. 2004.
- Conference paper*, “Simultaneous Retrieval of Surface Wind Speed and Rain Rate using Radar and Radiometer Measurements,” International Geoscience and Remote Sensing Symposium, Anchorage, AK, 20-24 Sept. 2004.
- Conference paper*, “X-Band Lightweight Rainfall Radiometer First Light,” 2003 International Geoscience and Remote Sensing Symposium, Toulouse, FRANCE, July 2003
- Conference paper*, “WindSat SDR and EDR On Orbit Calibration and Validation,” 2003 International Geoscience and Remote Sensing Symposium, Toulouse, FRANCE, July 2003.
- Conference paper*, “Jason Microwave Radiometer On Orbit Calibration, Validation and Performance,” AGU Fall Meeting, San Francisco, CA, December 2002.
- Conference paper*, “Jason Microwave Radiometer On Orbit Calibration, Validation and Performance,” Jason-1/TOPEX/Poseidon Science Working Team Meeting New Orleans, LA, 21-23 Oct 2002.
- Conference paper*, “Evaluation of Correlation Radiometers using Programmable Correlated Noise,” Second International Microwave Radiometer Calibration Workshop, Barcelona, Spain, Oct 2002.
- Conference paper*, “Early On Orbit Performance of the Jason-1 Microwave Radiometer,” 2002 Progress in Electromagnetics Research Symposium, Cambridge, MA, July 2002.
- Invited panel member*, NPOESS Cal/Val Panel Discussion, IGARSS2002, Toronto, Canada, June 2002
- Conference paper*, “Lightweight Rainfall Radiometer STAR Aircraft Sensor,” International Geoscience and Remote Sensing Symposium, Toronto, CA, June 2002.
- Keynote speaker*, “Cal/Val Activities and Issues for SMOS,” 3rd ESA Soil Moisture and Ocean Salinity Workshop, Oberpfaffenhofen, Germany, 11 Dec 2001.
- Conference paper*, “Environmental Testing of Correlation Radiometer Pairs with a Digital Noise Source,” 7th Specialist Meeting on Microwave Remote Sensing, Boulder, CO, November 2001.
- Invited speaker*, “Design Features of a Boresighted Radiometer,” NASA Workshop on GPM Core Satellite Radiometer Improvements, NASA Goddard Space Flight Center, Greenbelt, MD, 31 August 2001.
- Invited speaker*, “Enabling Technologies for the Global Precipitation Measurement Mission,” NASA Earth Science Technology Conference, University of MD, College Park, MD, 29 August 2001.
- Conference paper*, “MMIC Receiver Modules for Digital Correlation Radiometry,” 2001 International Geoscience and Remote Sensing Symposium, Sydney, Australia, July 2001.
- Conference paper*, “The GPM Constellation Microwave Radiometer Testbed,” 2001 International Geoscience and Remote Sensing Symposium, Sydney, Australia, July 2001.

- Invited speaker*, “Rainfall Measurement Technology - Passive Systems,” Global Precipitation Mission Workshop, NASA Goddard Space Flight Center, 20 February 2001.
- Invited speaker*, “Large, Lightweight Deployable Antenna Session – Large Radiometer Arrays in Space: Science and Technology Issues,” Technology Planning Workshop, NASA Earth Science Enterprise New Millennium Program, Arlington, VA, 23-24 January 2001
- Invited speaker*, “Outstanding Issues - Calibration,” 2nd ESA Soil Moisture and Ocean Salinity Science Workshop, Toulouse CESBIO, FRANCE, 28-30 November 2000
- Plenary speaker*, “Using Vicarious Calibration to Diagnose a Drift in the TOPEX Microwave Radiometer” First International Microwave Radiometer Calibration Workshop, Adelphi, MD, 30 Oct 2000.
- Invited seminar*, “Diagnosis of the Evidence for and Cause of a Drift in the TOPEX Microwave Radiometer,” CETP/IPSL/CNRS, Université St Quentin-Versailles, FRANCE, 16 October 2000
- Conference paper*, “Enabling Technologies to Map Precipitation with Near-Global Coverage and Hour-Scale Revisit Times,” 2000 International Geoscience and Remote Sensing Symposium, Honolulu, HI, July 2000.
- Conference paper*, “Statistical Analysis of a Lower Bound on Microwave Radiometer Brightness Temperature from Space,” 2000 International Geoscience and Remote Sensing Symposium, Honolulu, HI, July 2000.
- Conference paper*, “Implications of an improved atmospheric absorption model on water vapor retrievals,” 6th Specialist Meeting on Microwave Radiometry and Remote Sensing of the Environment, Florence, Italy, March 2000.
- Conference paper*, “A Temperature Dependent Correction to the Model for Microwave Excess Emissivity of the Ocean due to Surface Winds,” 1999 International Geoscience and Remote Sensing Symposium, Hamburg, GERMANY, July 1999.
- Conference paper*, “Calibration of the model for ocean surface emissivity at microwave frequencies,” 1999 International Geoscience and Remote Sensing Symposium, Hamburg, GERMANY, July 1999.
- Invited speaker*, “Polarization purity requirements for a polarimetric radiometer,” Workshop on Problems to be Addressed by Microwave Radiometers in the 21st Century, Rolighed, Denmark, September 1998
- Conference paper*, “Littoral antenna deconvolution for a microwave radiometer,” 1998 International Geoscience and Remote Sensing Symposium, Seattle, WA, July 1998.
- Conference paper*, “Polarimetric radiometry - Coherent vs. incoherent detection,” 1998 International Geoscience and Remote Sensing Symposium, Seattle, WA, July 1998..
- Conference paper*, “Prediction of water vapor scale height from integrated water vapor measurements,” 1996 International Geoscience and Remote Sensing Symposium, Lincoln, NE, July 1996.
- Conference paper*, “Estimation of the ocean/atmosphere boundary layer height of water vapor from space,” International Geoscience and Remote Sensing Symposium, Lincoln, NE, July 1996.
- Conference paper*, “An algorithm for improving the retrieval of cloud liquid water and water vapor using effective radiating temperature of clouds,” Second Topical Symposium on Combined Optical-Microwave Earth and Atmosphere Sensing, Atlanta, GA, April 1995.
- Conference paper*, “Rain rate estimation from attenuation measurements using a 35 GHz dual polarization propagation link,” 1994 International Geoscience and Remote Sensing Symposium, Pasadena, CA, August 1994.

- Conference paper*, “Digital correlator performance analysis for a synthetic aperture imaging radiometer,” 1994 International Geoscience and Remote Sensing Symposium, Pasadena, CA, August 1994.
- Conference paper*, “TOPEX Microwave Radiometer in-flight performance evaluation,” 1993 International Geoscience and Remote Sensing Symposium, Tokyo, JAPAN, August 1993.
- Conference paper*, “Improved array configurations for synthetic aperture interferometric radiometers,” 1993 International Geoscience and Remote Sensing Symposium, Tokyo, JAPAN, August 1993.
- Conference paper*, “The TOPEX Microwave Radiometer: Verification Phase Evaluation,” AGU 1992 Fall Meeting, San Francisco, CA, Dec. 1992.
- Conference paper*, “The TOPEX microwave radiometer,” Specialist Meeting on Microwave Radiometry and Remote Sensing, Boulder, Colorado, 1992.
- Conference paper*, “Error analysis of image reconstruction by a synthetic aperture interferometric radiometer,” 1992 International Geoscience and Remote Sensing Symposium, , Houston, TX, May 1992.
- Conference paper*, “Antenna performance for a synthetic aperture microwave radiometer in geosynchronous earth orbit,” 1990 International Geoscience and Remote Sensing Symposium, College Park, MD, May 1990.
- Conference paper*, “TOPEX/POSEIDON microwave radiometer - post-launch ground based calibration/validation,” 1990 International Geoscience and Remote Sensing Symposium, College Park, MD, May 1990.
- Conference paper*, “Sparse aperture interferometric radiometry (SAIR) for the remote sensing of the earth,” 1989 International Symposium on Antennas and Propagation, Tokyo, JAPAN, August 1989.
- Conference paper*, “TOPEX microwave radiometer system calibration; refining the SMMR heritage,” 1989 International Geoscience and Remote Sensing Symposium, Vancouver, B.C., CANADA, July 1989.
- Conference paper*, “Atmospheric profiling of water vapour with a 20.5-23.5 GHz autocorrelation radiometer,” 1988 International Geoscience and Remote Sensing Symposium, Edinburgh, UK, August 1988.
- Conference paper*, “The electronically steered thinned array radiometer (ESTAR),” 1986 International Geoscience and Remote Sensing Symposium, Zurich, SWITZ., October 1986.
- Conference paper*, “Electronically steered thinned array radiometer, system design, performance and calibration,” 1985 International Geoscience and Remote Sensing Symposium, Amherst, MA, October 1985.

MEDIA

Scientific American (May 2023 issue)

<https://www.scientificamerican.com/article/new-technique-can-map-ocean-plastics-from-space/>

New Zealand 1-News Television Network (14 September 2022)

<https://www.1news.co.nz/2022/09/14/nasa-air-nz-collaboration-takes-off/>

Forbes, 9 July 2021

<https://www.forbes.com/sites/jeffkart/2021/07/09/university-develops-new-way-to-track-microplastics-from-space>

Washington Post, 2 July 2021

https://www.washingtonpost.com/science/microplastic-pollution-satellite-detection/2021/07/02/10e45874-d9cc-11eb-8fb8-aea56b785b00_story.html

Phys.org, 10 Jun 2021

<https://phys.org/news/2021-06-ocean-microplastics-global-view-seasonal.html>

American Association for the Advancement of Science (24 February 2020)

<https://www.eurekalert.org/news-releases/760542>

Phys.org, 8 Oct 2019

<https://phys.org/news/2019-10-nasa-small-satellites-aid-hurricane.html>

Reuters, 15 July 2018

<https://www.reuters.com/article/us-usa-weather-hurricanes-forecasting/scientists-peer-into-heart-of-hurricanes-to-improve-intensity-forecast-idUSKBN1K50D7>

NPR/Here & Now, 25 Jun 2018

<http://www.wbur.org/hereandnow/2018/06/25/nasa-hurricanes-space>

Fox News, 2 June 2017: <http://video.foxnews.com/v/5457868242001>

WFLA-TV Tampa, FL, 27 May 2017

<https://www.youtube.com/watch?v=fQy7Bc5qVoU&feature=youtu.be>

Discovery Channel Canada, March 2017

<https://youtu.be/NrQzfl5pADU>

KSTX, Texas Public Radio in San Antonio, 21 Nov 2016

<https://player.fm/series/kstx-fm-assorted-stories-from-kstx-fm/noaa-launch-clears-way-for-southwest-research-institutes-first-satellite-offering>