

Curriculum Vitae

CHRISTOPHER S. RUF

Frederick Bartman Collegiate Professor of Climate and Space Science

University of Michigan

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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	<i>Professor</i> , Climate and Space Dept., Electrical Engineering Dept. University of Michigan, Ann Arbor, MI
Sep 2023 – present	<i>Director</i> , Space Institute University of Michigan, Ann Arbor, MI
May 2006 – Jun 2015	<i>Director</i> , Space Physics Research Laboratory University of Michigan, Ann Arbor, MI
Sep 2000 – Dec 2000	<i>Guest Professor</i> , Department of Electromagnetic Systems Technical University of Denmark, Lyngby, DK
Jan 1992 - Jun 2000	<i>Associate Professor</i> , Department of Electrical Engineering Pennsylvania State University, University Park, PA
Jul 1988 - Dec 1991	<i>Member of Technical Staff</i> , Microwave Observational Systems NASA Jet Propulsion Laboratory, Pasadena, CA
Jun 1987 - Jun 1988	<i>Visiting Professor and Research Engineer</i> , Dept. Electrical and Comp. Eng., Univ. Massachusetts, Amherst, MA
Sep 1983 - May 1987	<i>Graduate Research Assistant</i> , 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, 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)
 CLaSP Dept. Awards Committee Chair (Sep 2024 - 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

Ambassador, European Union Space Networks Galileo/EGNOS Program
 Vice Chair, United States National Committee for the International Union of Radio Science (USNC-URSI), Commission F (2024-present)
 Member, American Meteorological Society Scientific and Technological Activities Commission Committee on Satellite Meteorology, Oceanography, and Climatology (2021-2024)
 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)

Chair and Organizer, Session on Cyclone Global Navigation Satellite System (CYGNSS) Observations and Applications, AMS Annual Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface, Houston, TX (Jan 2026)

Chair and Organizer, Session on Innovative Observing Technologies to Advance Tropical Cyclone Operations and Research, AMS Conference on Hurricanes and Tropical Meteorology, Long Beach, CA (May 2024)

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, 2026,2024,2023,2021,2020,2019,2018,2017,2015,2014,2012,2011,2010,2009,2008,2007,2006, 2005,2004,2003,2002,2001,2000,1999

Member of Technical Program Committee, International Geoscience and Remote Sensing Symposium, 2026,2025,2024,2023,2021,2019-2017,2015,2014,2012,2007,2004-1999

Member of Technical Program Committee, GNSS+R Specialist Meeting, 2025, 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

Member, National Academy of Engineering

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. U.S. Pat. App. No. 18/129,226-Conf. #7096, 2023.

EXTERNALLY SPONSORED RESEARCH AWARDS Total \$158,386,920

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

AWARDS and RECOGNITION

- 2026 Elected member of the U.S. National Academy of Engineering “for development of remote sensing technology to observe Earth's environment using small satellite constellations”
- 2024 Elected Fellow of the American Meteorological Society
- 2022 Blue Marine Foundation 2022 Ocean Award in Science (with Madeline Evans)
- 2020 University of Michigan Distinguished Faculty Achievement Award
- 2018 Collegiate Professorship, Appointment as Frederick Bartman Collegiate Professor of Climate and Space Science
- 2017 SmallSat Mission of the Year Award at 31st Annual American Institute of Aeronautics and Astronautics (AIAA) SmallSat Conference to the CYGNSS Team
- 2015 University of Michigan Ted Kennedy Family Faculty Team Excellence Award to the CYGNSS Team
- 2015 Best Reviewer, IEEE Geoscience and Remote Sensing Letters
- 2015 NASA Group Achievement Award for *Hurricane and Severe Storm Sentinel Team*
- 2014 IEEE Geoscience and Remote Sensing Society Outstanding Service Award
- 2012 NASA Group Achievement Award for *Juno Proposal Team*
- 2012 NASA Group Achievement Award for *Aquarius Launch, Early Orbit Operations, and Commissioning*
- 2011 NASA Certificate of Recognition for *180 GHz Interferometric Imager*
- 2010 NASA Group Achievement Award for *Genesis and Rapid Intensification Processes (GRIP) Airborne Earth Science Mission*
- 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.
- 2004 NASA Group Achievement Award for *Lightweight Rainfall Radiometer*
- 2001 IEEE Fellow, “*For contributions in the development, calibration and remote sensing applications of microwave radiometers*”
- 1999 IEEE Judith A. Resnik Technical Field Award “*For contributions to the absolute calibration of spaceborne microwave radiometers*”
- 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.
- 1994 NASA Group Achievement Award for *TOPEX Joint Verification Team*

- 1993 NASA Group Achievement Awards (2) for *TOPEX Microwave Radiometer* and *TOPEX Precision Orbit Determination*
- 1990: NASA Certificate of Recognition for *Sparse Aperture Interferometric Radiometer – Refining Two Dimensional Antenna Configuration*

STUDENT AWARDS

- 2024 Charles Powell, Richard F. and Eleanor A. Towner Prize for Distinguished Academic Achievement, University of Michigan College of Engineering
- 2022 Madeline Evans, Blue Marine Foundation 2022 Ocean Award in Science
- 2020 Tianlin Wang, Distinguished Leadership Award, University of Michigan College of Engineering
- 2018 Tianlin Wang, Outstanding Student Presentation Award, American Geophysical Union Meeting, Washington, DC, Dec 2019.
- 2018 Tianlin Wang, IEEE Mikio Takagi Award (best student paper), International Geoscience and Remote Sensing Symposium, Valencia, SPAIN, 23-27 July 2018.
- 2010 Amanda Mims, Third Place, Student Paper Competition, International Geoscience and Remote Sensing Symposium, Honolulu, HI, 26-30 July 2010.
- 2009 Sidharth Misra, IEEE Mikio Takagi Award (best student paper), International Geoscience and Remote Sensing Symposium, Cape Town, S.A., 13-17 July 2009.
- 2008 Amanda Mims, National Weather Assoc. Meteorological Satellite App. Award
- 2007 Amanda Mims, Second Place, Student Poster Competition, Great Midwestern Regional Space Grant Meeting, W. Lafayette, IN, Sep. 6-7, 2007.

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

149. Sundaram, G. B., C. S. Ruf, “Monitoring Coastal Ocean Pollutant Dynamics with NASA SWOT Remote Sensing Observations,” Remote Sensing, doi: 10.3390/rs18152464, 2026.
148. Al-Khaldi, M., S. Gleason, C. Ruf, J. Johnson, D. McKague, A. Russel, W. Wells, T. Wang, D. Twigg, P. McEnaney, J.Synowiec, “Utilizing In-Orbit CYGNSS Roll Maneuvers For Improved Level-1 Calibration - Part III: Assessments of Nadir Observables,” IEEE Trans. Geosci. Remote Sens., doi: 10.1109/TGRS.2026.3718351, 2026.
147. Bai, D., A. Russel, C. Ruf, “Comprehensive Evaluation of the CYGNSS V3.2 Soil Moisture Product,” IEEE J. Sel. Topics Appl. Earth Obs. Remote Sens., doi: 10.1109/JSTARS.2026.3715093, 2026.
146. Al-Khaldi, M., S. Gleason, C. Ruf, J. Johnson, D. McKague, A. Russel, W. Wells, T. Wang, D. Twigg, P. McEnaney, J.Synowiec, “Utilizing In-Orbit CYGNSS Roll Maneuvers For Improved Level-1 Calibration - Part II: Application To Reflected Signal Channels,” IEEE Trans. Geosci. Remote Sens., doi: 10.1109/TGRS.2026.3695341, 2026.
145. Al-Khaldi, M., S. Gleason, C. Ruf, J. Johnson, D. McKague, A. Russel, W. Wells, T. Wang, D. Twigg, P. McEnaney, J.Synowiec, “Utilizing In-Orbit CYGNSS Roll Maneuvers for Improved Level-1 Calibration - Part I: Application to Direct Signal Channels,” IEEE Trans. Geosci. Remote Sens., doi: 10.1109/TGRS.2026.3688948, 2026.
144. *Balasubramaniam, R.*, C. S. Ruf, “The Impact on Triple/N-way Collocation-Based Validation of Remote Sensing Products due to Non-Ideal Error Statistics,” Remote Sensing, 17, 3751, doi: 10.3390/rs17223751, 2025.

143. Sundaram, G. B., C. S. Ruf, “Identifying and Correcting for Residual Biases in the ASCAT and ERA5 Wind Speed Products,” IEEE J. Sel. Topics Appl. Earth Obs. Remote Sens., doi: 10.1109/JSTARS.2025.3631136, 2025.
142. Tseng, Z.-E., Y. Wu, D. Menemenlis, G. Wang, C. Ruf, Y. Pan, “Distribution of plastics of various sizes and densities in the global ocean from a 3D Eulerian model,” J. Geophys. Res. – Oceans, doi: 10.1029/2025JC023272, 2025.
141. Powell, C.E., C. S. Ruf, “A Method for Estimating and Partitioning the Covariance of Wind Speed Observation Error from GNSS Reflectometry,” AMS J. Ocean. Atmos. Tech., doi: 10.1175/JTECH-D-24-0031.1, 2025.
140. Hodges, E., C. Chew, E. E. Small, D. Bai, M. Al-Khaldi, J. D. Ouellette, J. T. Johnson, F. Lei, M. Kurum, A. Cafer Gurbuz, V. Senyurek, M. M. Nabi, X. Xu, R. Shah, S. H. Yueh, A. Hayashi, P. T. Setti Jr., S. Tabibi, E. Santi, S. Pettinato, C. S. Ruf, M. Moghaddam, “A Merged CYGNSS Soil Moisture Product Using a Minimum Variance Estimator,” IEEE Trans. Geosci. Remote Sens., doi: 10.1109/TGRS.2025.3597532, 2025.
139. Ruf, C., S. Gleason, “Spaceborne GNSS-R Bistatic Radar Remote Sensing, CYGNSS, and Future Missions,” Proc. of the IEEE, doi 10.1109/JPROC.2025.3583997, 2025.
138. Carreno-Luengo, H., C. S. Ruf, S. Gleason, A. Russel, “Capturing Soil Surface Freeze Dynamics over the Arctic-Boreal Zone with GNSS-Reflectometry,” IEEE Trans. Geosci. Remote Sens., doi: 10.1109/TGRS.2025.3570213, 2025.
137. Bai, D., C. Ruf, D. Moller, “Calibration of the Polarimetric GNSS-R Sensor in the Rongowai Mission,” IEEE Trans. Geosci. Remote Sens., doi: 10.1109/TGRS.2025.3558131, 2025.
136. Cushen, A., A. Bueno, S. Carrico, C. Wettstein, J. I. Adalja, M. Shi, N. Garcia, Y. Garcia, M. Gamba, C. Ruf, “ARC-LIGHT: Algorithm for Robust Characterization of Lunar Surface Imaging for Ground Hazards and Trajectory,” Aerospace, 12, 177, doi: 10.3390/aerospace12030177, 2025.
135. Al-Khaldi, M. M., S. Gleason, C. Ruf, D. S. McKague, T. Wang, A. Russel, D. Twigg, “Quantifying and Correcting Thermally Driven Oscillations in CYGNSS Real-Time GPS Effective Isotropic Radiated Power,” IEEE Trans. Geosci. Remote Sens., doi: 10.1109/TGRS.2025.3538681, 2025.
134. Wang, Y., Y. J. Morton, J. T. Minear, A. Putnam, A. Conrad, P. Axelrad, R. S. Nerem, A. Warnock, C. Ruf, D. Medeiros Moreira, M. Talpe, “Measuring River Slope Using Spaceborne GNSS Reflectometry: Methodology and First Performance Assessment,” Remote Sensing of Environment, Vol 318, doi: 10.1016/j.rse.2025.114597, 2025.
133. Ruf, C., M. Al-Khaldi, S. Asharaf, R. Balasubramaniam, D. McKague, D. Pascual, A. Russel, D. Twigg, A. Warnock, “Characterization of CYGNSS Ocean Surface Wind Speed Products,” Remote Sensing, 16, 4341, doi: 10.3390/rs16224341, 2024.
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., 60(5), 6883-6893, 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.
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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.
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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.

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35. 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.
34. 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.
33. 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.
32. Ruf, C., "The ocean is full of tiny plastic particles – we found a way to track them with satellites," The Conversation, doi: 10.64628/AAI.chss4fdjv, 9 July 2021.
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.
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4. Ruf, C.S., "Synthetic Aperture Interferometric Radiometry Image Reconstruction Error Analysis," NASA Tech Briefs, NPO-18561, Dec. 1992.
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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, "NASA CYGNSS Mission Overview," AMS Annual Meeting, Houston, TX, Jan 2026.

Invited Speaker, "The NASA CYGNSS Mission and GNSS-R Applications," Multidisciplinary Outreach Seminar, The National Polytechnic Institute of Mexico, *virtual*, 27 Oct 2025.

Invited Speaker, "The NASA CYGNSS Mission and GNSS-R Applications," Applied Physics Departmental Seminar, University of Michigan, Ann Arbor, MI, 27 Oct 2025.

Invited Speaker, "The NASA CYGNSS Mission," NASA Libera Science Team Meeting, University of Michigan, Ann Arbor, MI, 28 May 2025.

Conference Paper, "The Sensitivity of GNSS-R Ocean Surface Wind Speed to Wind Transience," GNSS+R Conference, Leiden, The Netherlands, 23 Apr 2025.

Invited Speaker, "GNSS-R Science and Applications and the NASA CYGNSS Mission," Electrical Engineering Departmental Seminar, Ohio State University, Columbus, OH, 15 Apr 2025.

Conference Paper, "The Sensitivity of GNSS Reflectometry-Derived Ocean Winds to Wind Speed Transience," AMS Annual Meeting, New Orleans, LA, 15 Jan 2025.

Conference Paper, "The Maturation of GNSS Reflectometry to Provide Measurements of Essential Climate and Weather Variables," AMS Annual Meeting, New Orleans, LA, 13 Jan 2025.

Poster Presentation, "GNSS Surface Reflection Science Data Products by the NASA CYGNSS Mission – Overview, Validation and Characterization," AGU Fall Meeting, Washington DC, 9 Dec 2024.

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, "CYGNSS Tropical Cyclone Wind Speed Performance Update," AMS Conference of Hurricanes and Tropical Meteorology, Long Beach, CA, 9 May 2024.

- Conference Paper*, “NASA CYGNSS Mission Science & Applications Highlights,” AMS Annual Meeting, Baltimore, MD, 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

WTVG Toledo, OH ABC Affiliate (29 Oct 2025)

<https://www.13abc.com/2025/10/29/moment-science-new-satellite-constellation-aims-help-track-wildfires/>

AGU EOS Magazine (Sep 2025)

<https://eos.org/features/how-researchers-have-studied-the-where-when-and-eye-of-hurricanes-since-katrina>

Scientific American (May 2023)

<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>