Mehmet Kurum, PhD

CONTACT INFORMATION

Associate Professor
Director of InforMation PRocessing and SenSing Lab
School of Electrical and Computer Engineering
The University of Georgia
Boyd Graduate Center, Room #105
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EDUCATION

The George Washington University, Washington, DC

Ph.D., Electrical Engineering, ... **(08/2009)**

M.S., Electrical Engineering, ... **(05/2005)**

Bogazici University, Istanbul, Turkey

B.S., Electrical and Electronics Engineering, ... **(07/2003)**

RESEARCH INTERESTS

- Applied electromagnetics, signal processing, and wireless systems,
- Spectrum coexistence, sensing, and recycling,
- Radar, microwave radiometry, and signals of opportunity,
- Software-defined radio and ubiquitous RF sensing,
- Sensor fusion/ machine learning for inverse remote sensing problems,
- Off-road and aerial robotics, and self-sustainable systems

TEACHING EXPERIENCE

The University of Georgia, Athens, GA
School of Electrical and Computer Engineering,

Associate Professor,

- ELEE 4020 Electromagnetics (X students), ... **(Fall 2024)**
- ENGR 8990 Microwave Remote Sensing (X students), ... **(Spring 2024)**

Mississippi State University, Mississippi State, MS
Department of Electrical and Computer Engineering

Associate Professor,

- ECE 8990 Microwave Remote Sensing (15 students), ... **(Fall 2022)**

Assistant Professor,

- ECE 3323 Electromagnetics II (31 students), ... **(Spring 2022)**
- ECE 3323 Electromagnetics II (22 students), ... **(Fall 2021)**
- ECE 8990 Microwave Remote Sensing (9 students), ... **(Spring 2021)**
- ECE 3323 Electromagnetics II (30 students), ... **(Fall 2020)**
- ECE 3313 Electromagnetics I (40 students), ... **(Spring 2020)**
- ECE 6313/4313 Antennas (16 students), ... **(Fall 2019)**
- ECE 3323 Electromagnetics II (40 students), ... **(Spring 2019)**
- ECE 6990/4990 Microwave Remote Sensing (24 students), ... **(Fall 2018)**
- ECE 3323 Electromagnetics II (34 students), ... **(Spring 2018)**
- ECE 6333/4333 RF and Microwave Engineering (13 students), ... **(Fall 2017)**
- ECE 3313 Electromagnetics I (31 students), ... **(Spring 2017)**
- ECE 3323 Electromagnetics II (22 students), ... **(Fall 2016)**

The George Washington University, Washington, DC
Department of Electrical and Computer Engineering

Adjunct Professor,

- ECE 3315 Fields and Waves I (11 students), ... **(Fall 2015)**
- ECE 4320 Fields and Waves II (7 students), ... **(Fall 2010)**

Teaching Assistant,

- Introduction to Digital Signal Processing, ... **(Fall 2003)**

RESEARCH EXPERIENCE

The University of Georgia, Athens, GA
School of Electrical and Computer Engineering,
IMPRESS Lab: InforMation PRocessing and SenSing Laboratory,

Associate Professor . . . . . **(08/2023–present)**

Mississippi State University, Mississippi State, MS
Department of Electrical and Computer Engineering,
IMPRESS Lab: InforMation PRocessing and SenSing Laboratory,

Adjunct Professor . . . . . **(08/2023–present)**

Associate Professor and Paul B. Jacob Endowed Chair . . . . . **(08/2022–08/2023)**

Assistant Professor . . . . . **(08/2016–08/2022)**

The George Washington University, Washington, DC
Department of Electrical and Computer Engineering

Research Scientist . . . . . **(06/2015–07/2016)**

Research Assistant . . . . . **(01/2004–06/2009)**

Scientific and Technological Research Council of Turkey (TUBITAK),
Informatics and Information Security Research Center (BILGEM), Gebze, Kocaeli Turkey

Chief Researcher . . . . . **(12/2012–02/2015)**

NASA Goddard Space Flight Center
Hydrological Sciences Laboratory, Code 617, Greenbelt, MD

Visiting Scholar . . . . . **(07/2014–08/2014)**

Laboratory Manager . . . . . **(12/2011–12/2012)**

Research Associate . . . . . **(06/2011–12/2012)**

NASA Postdoctoral Program Fellow . . . . . **(06/2009–06/2011)**

GRANTS

Total =$12.63M (my share = $6.62M)
Department of Defense (DOD) =$5,940,789 (my share = $4,202,425)
National Science Foundation (NSF)=$1,750,000 (my share = $900,000)
National Aeronautics and Space Administration (NASA) =$1,270,170 (my share = $877,506)
United States Department of Agriculture (USDA)=$3,452,369 (my share = $345,237)

Pending

[4] **Role:** *PI*, **Investigators:** Mehmet Kurum (UGA), Ali Gurbuz(MSU) **Title:** "Enhancing SMAP Radiometer Performance: Calibration and RFI Detection via Deep Learning ", **Sponsor:** NASA Research Announcement,A.22 Soil Moisture Active-Passive Mission Science Team, Solicitation: NNH23ZDA001N-SMAP, **Amount:** $480,258 (My share is $242,025), **Duration:** Jan. 1, 2024–Dec. 31, 2026.

[3] **Role:** *Co-I*, **Investigators:** Mehmet Kurum (UGA), Dylan Boyd(NASA GSFC), and Ines Fenni (NASA Caltech/JPL, PI) **Title:** "Improved SMAP-Based Vegetation Water Content Retrieval Using a Numerically Efficient Full-Wave EM Solver", **Sponsor:** NASA Research Announcement,A.22 Soil Moisture Active-Passive Mission Science Team, Solicitation: NNH23ZDA001N-SMAP, **Amount:** $491,235 (My share is $166,114), **Duration:** Jan. 1, 2024–Dec. 31, 2026.

[2] **Role:** *PI*, **Investigators:** Mehmet Kurum (UGA), Alicia Peduzzi (UGA) and Ines Fenni (NASA Caltech/JPL) **Title:** "Sensing Temporal and Spatial Dynamics of Forest Water Content using Global Navigation Satellite System (GNSS) Transmissometry (GNSS-T) Approach: Fundamentals, Testbed, and Data", **Sponsor:** NASA Research Announcement, Global Navigation Satellite System Research, Solicitation: NNH23ZDA001N-GNSS, **Amount:** $552,073 (My share is $201,788), **Duration:** Jan. 1, 2024–Dec. 31, 2026.

[1] **Role:** *Co-I*, **Investigators:** Mehmet Kurum (UGA), Ana Barros (UIUC, PI), Michael Durand (Ohio State), Joel Johnson (Ohio State), Michael Goldstein (Babson), Carrie Vuyovich (NASA GSFC) , Hans-Peter Marshall (Boise State), Rahul Ramachandran (NASA GSFC), Batuhan Osmanoglu (NASA GSFC), James Garrison (Purdue), Paul Houser (GMU), Sujay Kumar (NASA GSFC), Paul Siqueira (UMASS), Dorothy Hall (UMD), MARTIN Perrine (NASA GSFC), Brian Freitag (NASA GSFC), Mark Raleigh (Oregon State), Edward Kim (NASA GSFC), Leung Tsang (U/Michigan), **Title:** "SnowGlobe: A Constellation to Measure Snow Water from Space", **Sponsor:** NASA Research Announcement, Earth System Explorers (ESE) Announcement of Opportunity (AO), Solicitation:NNH23ZDA016O,
Total Amount: $310M (My share is $500,000), **Duration:** Apr. 2, 2024–Nov. 3, 2032.

Current (listed by sponsor)

[5] **Role:** *PI*, **Investigators:** Mehmet Kurum **Title:** "Recycling the Radio Spectrum for Science: A New Paradigm for UAS-based Precision Agriculture", **Sponsor:** NSF, Faculty Early Career Development Program (CAREER), **Amount:** $500,000, **Duration:** May. 1, 2022–Apr. 30, 2027.

[4] **Role:** *PI*, **Investigators:** Mehmet Kurum (UGA), Vuk Marojevic (MSU), Ali Gurbuz (MSU), **Title:** "SWIFT-SAT: INtegrated Testbed Ensuring Resilient Active/Passive CoexisTence (INTERACT): End-to-End Learning-Based Interference Mitigation for Radiometers," **Sponsor:** NSF Spectrum and Wireless Innovation enabled by Future Technologies - Satellite-Terrestrial Coexistence (SWIFT-SAT) , **Amount:** $750,000 (My share is $250,00), **Duration:** Jan. 1, 2024–Dec. 31, 2026.

[3] **Role:** *Co-PI*, **Investigators:** Mehmet Kurum (MSU), Vuk Marojevic (PI - MSU), Ali Gurbuz (MSU), Nick Mastronarde (U. Buffalo), Fatemeh Afghah (Northern Arizona U.) **Title:** "SWIFT: LARGE: AI-Enabled Spectrum Coexistence between Aerial Communications and Passive Radio Services: Fundamentals, Testbed and Data," **Sponsor:** NSF Spectrum and Wireless Innovation enabled by Future Technologies (SWIFT) , **Amount:** $516,000 (My share is 30%), **Duration:** Oct. 1, 2020–Sep. 30, 2024.

[2] **Role:** *PI*, **Investigators:** Mehmet Kurum, **Title:** "Realistic and Computationally Efficient 3D Full-Wave Model for Multistatic Scattering from Vegetated Terrains at P/L

Band", **Sponsor:** NASA California Institute of Technology Jet Propulsion Laboratory, **Amount:** $108,500, **Duration:** Oct 1, 2022–Sep. 24, 2024.

[1] **Role:** *PI*, **Investigators:** Mehmet Kurum, Md. Mehedi Farhad (Graduate student) **Title:** "Recycling the Radio Spectrum: Enhancing NASA's Earth Observing Systems Products over Forested Terrain by Direct Measurement of Vegetation Optical Depth ", **Sponsor:** NASA, Future Investigators in NASA Earth and Space Science and Technology, Solicitation: NNH22ZDA001N-FINESST , **Amount:** $149,902 (My share is 25%), **Duration:** Sep. 1, 2023–Aug. 31, 2026.

Completed (listed by sponsor)

[18] **Role:** *PI*, **Investigators:** Mehmet Kurum, Dylan Boyd (Graduate student) **Title:** "Recycling the radio spectrum: Can anthropogenic signals in LEO be repurposed for science? Advancing soil moisture remote sensing with NASA Signals of Opportunity datasets, forward modeling, and physics-guided machine learning ", **Sponsor:** NASA, Future Investigators in NASA Earth and Space Science and Technology, Solicitation: NNH21ZDA001N-FINESST , **Amount:** $134,731 (My share is 25%), **Duration:** Sep. 1, 2021–Aug. 31, 2024.

[17] **Role:** *PI*, **Investigators:** Mehmet Kurum, **Title:** "GNSS Transmissometry (GNSS-T) of Forest Canopies in support of NASA's SMAP Validation Experiment (SMAPVEX) 2022", **Sponsor:** NASA California Institute of Technology Jet Propulsion Laboratory, **Amount:** $25,138, **Duration:** July 1, 2022–Dec. 31, 2022.

[16] **Role:** *Co-I*, **Investigators:** Mehmet Kurum (MSU), James Garrison (PI - Purdue Univ.), Jeffry Piepmier (NASA GSFC), Manuel Vega (NASA GSFC), Rajat Bilindish (NASA GSFC), Cynthia Firman (NASA GSFC), Matthew Fritts (NASA GSFC), Michael Cosh (USDA), Cornelis Du Toit (AS and D, LLC.), Kameron Larsen (JPL), Rashmi Shah (JPL), David Spencer (Purdue Univ.), **Title:** "SNOOPI: SigNals-Of-Opportunity P-band Investigation", **Sponsor:** NASA Research Announcement, In-space Validation of Earth Science Technologies, Solicitation:NNH17ZDA001N-INVEST, **Total Amount:** $6,138,125 (My share is $115,104), **Duration:** Oct. 1, 2018–Apr. 30, 2023.

[15] **Role:** *Co-PI*, **Investigators:** James Garrison (Purdue Univ.), Mehmet Kurum (MSU), Rajat Bilindish (NASA GSFC), and Jeffry Piepmier (NASA GSFC), **Title:** "Root-Zone and Surface Soil Moisture Retrieval from I, P and S-band Signals of Opportunity (SoOp) Reflectometry", **Sponsor:** NASA Research Announcement, Terrestrial Hydrology, Solicitation: NNH17ZDA001N-THP, **Amount:** $414,000 (My share is $136,245), **Duration:** Jan. 1, 2018–Dec. 31, 2020.

[14] **Role:** *PI*, **Investigators:** Mehmet Kurum, **Title:** "Developing Radar Scattering Models for UAVSAR", **Sponsor:** NASA California Institute of Technology Jet Propulsion Laboratory, **Amount:** $30,450 , **Duration:** May 1, 2019–Dec. 31, 2019.

[13] **Role:** *PI*, **Investigators:** Mehmet Kurum (MSU), Orhan Eroglu (Grad Student, MSU), **Title:** "Unveiling CYGNSS Land Signatures for High Spatiotemporal Soil Moisture Estimation", **Sponsor:** NASA Earth and Space Science Fellowship (NESSF) Program, **Amount:** $134,620 (My share is 25%), **Duration:** Sep. 1, 2018–Dec. 31, 2019.

[12] **Role:***Co-PI*, **Investigators:** Roger Lang (GWU), Peggy O'Neill (NASA GSFC), Mehmet Kurum (GWU), **Title:** "Multi-frequency Soil Moisture Measurements and Analysis: SMAP L2-SM-P Retrieval Improvements", **Sponsor:** NASA Goddard Space Flight Center, Grant Number NNX16AD94G, **Amount:** $58,992, **Duration:** Apr. 1, 2016–Mar. 30, 2017.

[11] **Role:** *Science PI*, **Investigators:**, Peggy O'Neill (NASA GSFC), Mehmet Kurum (NASA GSFC) **Title:** "Modified Tau-Omega Model for Moderately to Densely Vegetated Landscapes", **Sponsor:** NASA Research Opportunities in Space and Earth Sciences (ROSES) NNH09ZDA001N-RST, Remote Sensing Theory, **Amount:** $375,802, **Duration:** Oct. 1, 2010–Sep. 30, 2013.

[10] **Role:** *Co-PI*, **Investigators:** Mehmet Kurum (MSU), Robert Moorhead (PI, MSU), Joby Czarnecki (MSU), Sathishkumar Samiappan(MSU), **Title:** "Advancement of UAS/UAV Application Systems," **Sponsor:** USDA Agricultural Research Service(USDA-ARS), Award # NACA 58-6064-9-007 **Amount:** $3,452,369 (My share is 10%) **Duration:** Sep. 01, 2018–Sep. 30, 2023.

[9] **Role:** *Co-PI*, **Investigators:** Mehmet Kurum (MSU), Ali Gurbuz (MSU), **Title:** "Detecting Biological and Chemical Threats in Complex Subterranean Environments," **Sponsor:** DOD, U.S. Army Engineering Research & Development Center (ERDC), **Amount:** $1,525,734 (My share is 50%) **Duration:** Oct. 1, 2021–Sep. 30, 2024. [change of PI due to departure from MSU]

[8] **Role:** *PI*, **Investigators:** Mehmet Kurum (MSU), John Ball (MSU), Ali Gurbuz (MSU), **Title:** "Sensor Fusion Based Remote Sensing for National Disaster Damage Assessment," **Sponsor:** DOD, U.S. Army Engineering Research & Development Center (ERDC), Award # W912HZ21C0022 **Amount:** $238,105 (My share is 40%) **Duration:** May. 26, 2021–May. 25, 2023.

[7] **Role:** *Co-PI*, **Investigators:** Mehmet Kurum (MSU), John Ball (PI, MSU), Ali Gurbuz (MSU), Lalitha Dabbiru (MSU), **Title:** "Multi-Sensor Analytics and Sensor Fusion for Cross Country Mobility Assessment," **Sponsor:** DOD, U.S. Army Engineering Research & Development Center (ERDC), Award # W912HZ21C0022 **Amount:** $360,041 (My share is 20%) **Duration:** May. 26, 2021–May. 25, 2023.

[6] **Role:** *PI*, **Investigators:** Mehmet Kurum (MSU), John Ball (MSU), Pat Donohoe (MSU), Jenny Du (MSU), Ali Gurbuz (MSU), **Title:** "SimBRS II TO002- Advanced Modeling and Simulation of Multi-Physics Material Response in Geoenvironments -Topic 6: Remote Sensing and Sensor Fusion", **Sponsor:** DOD, Combat Capabilities Development Command (CCDC), Award # W56HZV-17-C-0095 **Amount:** (My share is $2,914,626) **Duration:** Sep. 22, 2017–May. 30, 2022.

[5] **Role:** *Co-PI*, **Investigators:** Mehmet Kurum (MSU), Ali Gurbuz (PI, MSU), John Ball (MSU), and Pat Donohoe (MSU), **Title:** "UAS-based site characterization", **Sponsor:** DOD, U.S. Army Engineer Research & Development Center (ERDC), **Amount:** $399,502 (My share is 20%), **Duration:** Oct. 1, 2018–Sep. 30, 2019.

[4] **Role:** *Co-PI*, **Investigators:** Mehmet Kurum (MSU), Ali Gurbuz (PI, MSU), John Ball (MSU), George Mason(MSU), **Title:** "Ground Vehicle Mobility Research: Multi-Sensor Analytics and Sensor Fusion for Cross-Country Mobility Assessment", **Sponsor:** DOD, Engineering Research Development Center (ERDC), Award # W912HZ19C0036, **Amount:** $298,128 (My share is 25%) **Duration:** Jan. 1, 2019–Feb. 1, 2021.

[3] **Role:** *PI*, **Investigators:** Mehmet Kurum (MSU), Pat Donohoe (MSU), **Title:** "CRES-GV: HPC-Based Antenna and Multi-Sensor Ground Vehicle Placement", **Sponsor:** DOD, U.S. Army Engineer Research & Development Center (ERDC). **Amount:** (My share is $202,781), **Duration:** Jan. 01, 2018–Sep. 30, 2018.

[2] **Role:** *PI*, **Investigators:** Mehmet Kurum (MSU), **Title:** "Evaluation and Development of Soil Moisture Retrievals Using CYGNSS Observations over Mississippi", **Sponsor:** MSU, ORED Undergraduate Research Program **Amount:** $2,000 , **Duration:** Oct. 1, 2017–Sep. 30, 2018.

[1] **Role:** *PI*, **Investigators:** Mehmet Kurum (MSU), **Title:** "MS NASA EPSCoR RID Travel Grants", **Sponsor:** MS NASA EPSCoR, [Feb. 1–Mar. 31, 2019, $1750; Apr. 1–Apr. 30, 2019, $900; Jan. 1–Jan. 31, 2020, $1750; Dec. 6–Dec. 8, 2021, $800; Jun. 27–Jun. 29, 2022, $1750],

AWARDS

- 2022 Paul B. Jacob Endowed Chair in Electrical and Computer Engineering
- 2021 NSF CAREER Award
- 2020 Certificate of Excellence in recognition of contributions to research in Electrical and Computer Engineering at MSU
- 2014 URSI (International Radio Science Union) Young Scientist Award
- 2014 IEEE Geosciences and Remote Sensing Society (GRSS) Chapter Excellence Award for excellence as a GRSS Chapter demonstrated by examplary activities during 2014
- 2013 Leopold B. Felsen Award for Excellence in Electromagnetics
- NASA Postdoctoral Program Fellowship, NASA Goddard Space Flight Center, Hydrological Sciences Branch, Code 617, June 2009–June 2011
- Graduate Research & Teaching Assistantship, The George Washington University, Electrical and Computer Engineering Sep 2003–May 2009
- Eight Conference Travel awards from several international/national symposiums during my graduate study at George Washington University, 2004–2009

THESIS SUPERVISION & GRADUATE ADVISING

Advisees are listed in **reverse chronology**.

Current Ph.D. (Major Professor)

- *Kaiers Al Mahmud*, (Starting in Spring 2024)
- *Sriman Bidhan Baray*, (Starting in Spring 2024)
- *Tanvir Anjun*, (Starting in Spring 2024)
- *Ehsanul Hoque*, (Spring 2023–present)
- *Abesh Gosh*, (Fall 2022–present)
- *Md Mehedi Farhad*, (Spring 2019–present)

Postdoctoral Researcher Advising

- *Dr. Suraj Amarbahadur Yadav*, Geosystems Research Institute (December 2022 to August 2023)
- *Dr. Fangni Lei*, Geosystems Research Institute (Summer 2019 to Fall 2021)

Graduated Ph.D. (Major Professor)

- *Dylan R Boyd*, (Summer 2023): Dissertation: Exploring bistatic scattering modeling for land surface applications using radio spectrum recycling in the Signal of Opportunity Coherent Bistatic Simulator. **First Job:** NASA Goddard Space Flight Center, Greenbelt, MD.
- *Himangi Srivastava*, (Summer 2021): Dissertation: Methods for Inference and Analysis of Gene Networks from RNA Sequencing Data. **First Job:** The University of Colorado Anschutz Medical Campus, Denver, CO.
- *Orhan Eroglu*, (Fall 2019): Dissertation: Information Retrieval from Spaceborne GNSS Reflectometry Observations using Physics- and Learning-based Techniques. **First Job:**, Computational Information Systems Lab, University Corporation for Atmospheric Research (UCAR), Boulder, CO.

Graduated Master (Major Professor)

- *Zachary Warren*, (Spring 2022): Non-thesis. **First Job:** Raytheon Intelligence and Space, Forest MS
- *Austin Flynt*, (Fall 2021): Thesis: Unmanned Ground Vehicle System to Collect Soil Moisture Data. **First Job:** Johns Hopkins University Applied Physics Laboratory
- *Mia Scheider*, (Spring 2021): Thesis: Automating Precision Drone Landing and Battery Exchange. **First Job:** Johns Hopkins University Applied Physics Laboratory
- *Preston Peranich* , (Spring 2021): Thesis: Implementation of UAS-based P-band signals of opportunity receiver for root-zone soil moisture retrieval, Co-advised with Dr. John Ball. **First Job:** Johns Hopkins University Applied Physics Laboratory

Graduated Ph.D. (Committee Member)

- *Mojtaba Rostaghi Chalaki*, PhD (Fall 2020): Dissertation: Non-conventional sensors for measuring partial discharge under DC electrical stress.
- *Robiulhossain Mdrafi*, PhD (Spring 2022): Dissertation: Data-Driven Sparse Computational Imaging with Deep Learning.
- *Farhina Haque*, PhD (Summer 2022): Dissertation: Modeling Supercritical Fluids and Fabricating Electret Films to Address Dielectric Challenges in High-Power-Density Systems.
- *James Earnest*, PhD (Spring 2023): Dissertation: Eddy current defect response analysis using sum of Gaussian methods.
- *John Rogers*, PhD (Fall 2023): Neural Networks for Improved Signal Source Enumeration and Localization with Unsteered Antenna Arrays.

Graduated Masters (Committee Member)

- *Ajaya Dahal*, (Fall 2023): Thesis: Software Defined Radio (SDR) based sensing.
- *Matt Duck*, (Spring 2022): Thesis: Analysis and implementation of low fidelity radar-based remote sensing for unmanned aircraft systems.
- *Samantha Tidrick*, (Fall 2021): Thesis: Evaluation of Hyperspectral Band Selection Techniques for Real-Time Applications.
- *Jan Rainer Jamora*, (Summer 2021): Thesis: Angular-Dependent Three-Dimensional Imaging Techniques in Multi-Pass Synthetic Aperture Radar.
- *Spencer Barnes*, (Spring 2021), Non-Thesis, Software Engineering.
- *Cary McCraine*, (Spring 2020), Non-Thesis.
- *Dylan Sewell*, (Spring 2019): Thesis: Waveform selection to maximize detecting and tracking insects using harmonic oscillators.

CAPSTONE & UNDERGRADUATE ADVISING

Advisees are listed in **reverse chronology**.

Undergraduate Researchers Funded and Supervised

- *Luis Sanchez*, EE, (Summer 2022–Spring 2023)
- *Adesola Raji*, CPE, (Spring 2021–Spring 2023)
- *Daegan Appel*, EE, (Spring 2021–Spring 2023)
- *Myles Spillers*, CSE, (Spring 2021–Spring 2023)
- *Caleb Bates*, EE, (Spring 2021–Spring 2022)
- *Nathan Goyette*, BS-AE (Spring 2019–Summer 2021)
- *Lily Shows*, BS-CSE (Summer 2019–Summer 2020)
- *Lauren Orsini*, BS-CSE (Fall 2018–Summer 2020)
- *Claudia Nelson*, BS-CSE (Fall 2018–Spring 2020)
- *Luke Redwine*, BS-EE (Fall 2018–Fall 2019)
- *Austin Flynt*, BS-EE (Summer 2018–Fall 2019)
- *Mia Scheider*, BS-EE (Summer 2018–Fall 2019)
- *James Ballard*, BS-EE (Summer 2018–Spring 2019)

- *Abdelmoula Elyazizi*, BS-EE, (Fall 2017–Spring 2018)
- *Cassandra Myers*, BS-EE, (Fall 2016–Spring 2018)
- *Grant Parker*, BS-EE,(Fall 2016–Spring 2018)
- *Conor Ferguson*, BS-EE,(Fall 2016–Fall 2017)
- *Dylan Neil*, BS-EE,(Fall 2017–Spring 2018)
- *Dylan Boyd*, BS-EE,(Fall 2016–Fall 2017)

Senior Design (Capstone) Project Advising

- *Braden Patridge, Logan Tharp, Lane Belk, Klayton Greer, Duncan Ziller*, I.C.U. (Intelligent Collision Utility) Truckers, **2022** (1st place, Fall 2022 Design Awards)
- *Lindsey Byron, April Turner, Caleb Bates,Caleb Hendricks, Grant O'Neal*, Robo Retriever, **2021** (3rd place, Spring 2022 Design Awards)
- *Taylor Brent, Parker Butler, Khalil Markham, Chirantan Sen, Jeremy Grace*, Smart Cornhole, **2021** (3rd place, Fall 2021 Design Awards)
- *Drew Mohundro, Alex Bigej, Preston May, Carol Pollard, Garrett Smith*, The Quicket System (RFID ticket scanner), **2021** (1st place, Spring 2021 Design Awards)
- *Mack Smith, Drew Gann, Hayden Guin, Noah McLaurin*, Spring Fatigue Tester, **2020**
- *Luke Redwine, Devin Logue, Dennis Clark, Austin Flynt*, AuBEx (an automatic Drone battery changing station), **2019** (sponsored by Raytheon, ≈$2,000)
- *Preston Peranich, Jonah Stevens, Noah Ihediwa, Haley Knable*, MFJ ContinuousCarrierTM Intellitune, **2018**
- *Stephen Thomas, Hunter Fowler, Zach Armstrong, Daniel Giles, Trey Hubbard*, Autonomous Drone Charging Station, **2018** (sponsored by Raytheon, ≈$2,000)
- *Abdelmoula El Yazizi, Zach Cook, Chung Sunny Vu, Ian Robinson*, Smartphone GNSS antenna characterization, **2018** (sponsored by Raytheon, ≈$2,000)
- *Andrew Jones, Taylor Varnado, Damian Agee, Teddi Brown, Austin Byrd*, Infant monitor, **2018**
- *Bruce Bowlin, Eric Farmer, Joseph Hastings, Van Kingma, and Curtis Prehn*, Zotikon: Athlete Analysis System, **2017**
- *Joseph Aulds, Travis Barfield, Billy Baker, Joseph Cooley, Shivani Pacharne*, Holiday Light Show, **2017**
- *Aaron Shepard, Austin Ratcliffe, Conor Ferguson, Dylan Boyd, Dylan Neal*, Unmanned Aerial Vehicle Assisted Antenna Reception Testing (UAV-RT), **2017**
  (Led to a multi-million dollars start-up company)
- *Louie King, Derek Reeves, Nikhil Lokhande, Zach DiGennaro*, integrated Law Enforcement Automated Documentation (iLEAD), **2016**

STUDENT SUPERVISEE FELLOWSHIPS & AWARDS

- *Mehedi Farhad was awarded a NASA Future Investigators in NASA Earth and Space Science and Technology (FINESST) Grant in **2023**.*
- *Dylan Boyd was awarded a NASA Future Investigators in NASA Earth and Space Science and Technology (FINESST) Grant in **2021**.*
- *Dylan Boyd was a **2020-2021** Bagley College of Engineering and Office of Research and Development (ORED) Graduate Student award winner as well as **2020-2021** Best ECE Graduate Researcher winner.*
- *Preston Peranich was awarded Mississippi Space Grant Consortium (MSSGC) Graduate Fellowship, **2019** and **2020**.*
- *Orhan Eroglu was awarded a NASA Earth and Space Science Fellowship in **2018**.*
- *Abdelmoula Elyazizi was awarded a Office of Research and Economic Development (ORED) Undergraduate Research grant with $2,000 in **2018**.*
- *Cassie Myers and Grant Parker were awarded a CSpire and Nokia Bell Labs fellowship in **2017**.*

PROFESSIONAL ACTIVITIES

Editorial Service (reverse chronology)

- Associate Editor for IEEE Transaction on Geosciences and Remote Sensing, (2021–

present)
- Associate Editor for IEEE Journal of Selected Topics in Applied Earth Observation and Remote Sensing, (2021–present)
- Associate Editor for URSI (International Radio Science Union) Radio Science Bulletin, (2014–2017)
- Editorial Champion, IEEE GRSS Remote Sensing Code Library (RSCL), (2016–2018)

Panel Service (reverse chronology)

2023 USDA Panelist for the Small Business Innovation Research (SBIR), (November)
2023 NSF Panelist for Graduate Research Fellowship Program (GRFP), (January)
2022 NASA Peer Review Panelist for Earth Surface and Interior Program, (October)
2020 NASA Peer Review Panelist for Soil Moisture Active-Passive Mission Science Team Program, (June)
2019 NASA Postdoctoral Program Panelist, (December)
2018 NSF Panelist for Electrical, Communications and Cyber Systems (ECCS) Spectrum Efficiency, Energy Efficiency, and Security (SpecEES) Program, (April)

Membership (reverse chronology)

- Member, USNC-URSI Commission F, (Jan. 2017–present)
- Member, IEEE GRSS Technical committee on Modelling in Remote Sensing (MIRS), (2015–present)
- Senior Member, The Institute of Electrical and Electronics Engineers (IEEE), (Sep. 2014–present)
- Member, IEEE Geoscience and Remote Sensing Society, (2008–present)
- Member, IEEE Antenna and Propagation Society, (2008, 2016–present)
- Member, The Institute of Navigation, (Apr. 2018–Oct. 2019)
- Member, IEEE Microwave Theory and Techniques Society, (2017–2018)
- Chapter Treasurer & Founding Member, IEEE Geoscience and Remote Sensing Society TURKEY Chapter, (2013–2015).

Committee Service

- Early Career Representative, URSI Commission F (Wave Propagation and Remote Sensing), (2014–2021)
- University Committees (reverse chronology)
  - A member of Graduate Students Committee, UGA, (2023–present)
  - Chair of Communications and Electromagnetics Committee, MSU, (2019–2023)
  - A member of Graduate Students Committee, MSU, (2019–2021)
  - Co-chair of Faculty Search Committee, MSU, (2020–2021)
  - A member of Ad Hoc Ph.D. Qualifier modification committee, MSU, (2020)
  - A member of Faculty Search Committee for the coast program, MSU, (2020)
  - A member of Department head Search Committee, MSU, (2019–2020)
  - Advisor to MSU Turkish Student Association, MSU, (2018–2019)
  - A member of Signal Processing and Communications Undergraduate Committee, MSU, (2016–2018)
  - A member of Undergraduate Students Committee, MSU, (2016–2018)

Referee Service

- Reviewer for Journals (listed alphabetically)
  - *International Journal of Remote Sensing*, 2017
  - *Journal of Applied Remote Sensing*, 2011-2014, 2016-2018, 2020
  - *IEEE Geosciences and Remote Sensing Letters*, 2010, 2011, 2013, 2016-2020
  - *IEEE Geoscience and Remote Sensing Magazine*, 2018
  - *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 2012, 2014, 2020, 2021
  - *IEEE Transactions on Geosciences Remote Sensing*, 2011, 2014, 2016, 2017, 2019, 2020

- *Remote Sensing of Environment*, 2010, 2014, 2016-2018, 2021, 2022
- *MDPI Remote Sensing*, 2016-2020, 2022
- *MDPI Sensors*, 2018
- *URSI Radio Science Letters*, 2020

- Reviewer for Conferences (reverse chronology)
  - *IEEE International Geoscience and Remote Sensing Symposium*, 2016-2023
  - *The International Society for Photogrammetry and Remote Sensing, XXIV ISPRS Congress*, 2020
  - *XXXIV URSI General Assembly and Scientific Symposium (GASS)*, 2020
  - *IEEE 16th edition of the Specialist Meeting on Microwave Radiometry and Remote Sensing of the Environment (MicroRAD'18)*, 2018
- Reviewer for Grants (reverse chronology)
  - *University Consortium Research Opportunity Program by Universities Space Research Association (USRA), in conjunction with the Air Force Research Laboratory (AFRL) and the U.S. Space Force (USSF)*, 2022
  - *DoD's Science, Mathematics, and Research for Transformation (SMART) Scholarship-for-Service Program*, 2022
  - *Mississippi NASA Space Grant Consortium Graduate Fellowship Program*, 2020
  - *NASA Postdoctoral Program*, 2016, 2019

Conference Service (reverse chronology)

2023 **Session Co-Chair** for four technical sessions (entitled "Coexistence of Communication and Passive Sensing Technologies", "Active and/or Passive Microwave Remote Sensing for Soil Moisture", "Passive Microwave Radiometer Missions and Analysis", and "Advanced Microwave and Millimeter-Wave Radiometers and Calibration") at International Geosciences and Remote Sensing Symposium, Pasadena (CA), Jul. 16–21.

2023 **Session Co-Chair** for one technical session (entitled "Physical Modeling and Applications in GNSS+R with Application towards Sustainable Development Goal") at PhotonIcs and Electromagnetics Research Symposium, Prague (Czech Republic), Jul. 3–6.

2023 **Lecturer** for one session (entitled "Signals of Opportunity") at IEEE-GRSS Soil Moisture School, Indian Institute of Technology, Bombay (India), March. 15–17.

2022 **Panelist** for one technical session (entitled "Active-Passive Spectrum Coexistence") at 4th Buffalo Day for 5G and Wireless Internet of Things, Buffalo (NY), November 18.

2022 **Lecturer** for one session (entitled "Signals of Opportunity") at IEEE-GRSS Soil Moisture School, University of Massachusetts, Amherst (USA), July. 5–7.

2022 **Session Co-Chair** for one technical session (entitled "Physical Modeling and Applications in GNSS Reflectometry and other SoOp Observables") at PhotonIcs and Electromagnetics Research Symposium, Hangzhou (China), April. 25–29.

2021 **Session Co-Chair** for two technical sessions (entitled "Machine Learning and AI Methods for Soil Moisture Retrieval" and "Novel Mapping Schemes of Forests") at International Geosciences and Remote Sensing Symposium, Brussels (Belgium), Jul. 12–26.

2020 **Session Co-Chair** for two technical sessions (entitled "Remote Sensing for Crop Parameters I" and "Recent Advances in GNSS-Reflectometry: Cryospheric Applications and Novel Techniques") at International Geosciences and Remote Sensing Symposium, Waikoloa, Hawaii (USA), Jul. 19–24.

2019 **Session Co-Chair** for one technical session (entitled "GNSS-R and GNSS-RO for Environmental Monitoring") at The Institute of Navigation Pacific Positioning, Navigation and Timing (PNT), Honolulu, Hawaii (USA), Apr. 8–11.

2018 **General Lectures Committee Member**, URSI Atlantic Radio Science Conference (URSI AT-RASC), the Canary Islands (Spain) in May 28–Jun. 1, **2018**.

2017 **Session Co-Chair** for two technical sessions (entitled "Ocean Surface Remote Sensing" and "Microwave Models for Land") at International Geosciences and Remote

Sensing Symposium, Forth Worth, TX (USA), Jul. 23–28.

2017 **Session Co-Chair** for one technical session (entitled "Microwave Remote Sensing of Vegetation") at XXXIth URSI General Assembly and Scientific Symposium, Montreal (Canada), Aug. 19–26.

2015 **Session Co-Chair** for two technical sessions (entitled "Remote Sensing in Disaster Management 1&2") and one general lecture (entitled "Remote Sensing of Ocean Salinity") at URSI AT-RASC, the Canary Islands (Spain) in May 18–22.

2015 **General Lectures Committee Member**, URSI Atlantic Radio Science Conference (URSI AT-RASC), the Canary Islands (Spain) in May 28–22.

2014 **Session Co-Chair** for one technical session (entitled "Passive Remote Sensing") at XXXIth URSI General Assembly and Scientific Symposium, Beijing (China), Aug. 14–23.

2014 **Organization Committee Chair**, UYGU 2014 - The First Earth Observation Applications Summer School Gebze (Turkey), Jun. 23–27.

2012 **Session Co-Chair** for one technical session (entitled "Soil Moisture: Radar I") at International Geosciences and Remote Sensing Symposium, Munich (Germany), Jul. 22–27.

2010 **Session Co-Chair** for two technical sessions (entitled "Vegetation Mapping III" and "LAI, Reflectance, and Fluorescence") at International Geosciences and Remote Sensing Symposium, Honolulu, Hawaii (USA), Jul. 25–30.

2010 **Local Organizing Committee Member** for 11th IEEE Specialist Meeting on Microwave Radiometry and Remote Sensing of the Environment (MicroRAD), Washington, DC (USA), Mar. 1–4.

INTELLECTUAL PROPERTY

[1] Inventors: M. Kurum (75%) and A. Gurbuz (25%), Title of Invention: A methodology to map topsoil moisture from small, unmanned aircraft systems, Invention Disclosure Form submitted to OTM, September 30, 2020, **License Option Agreement** Signed, October **2020**.

BOOK CHAPTERS

[1] J. Rogers., L. Cagle, J. E. Ball, **M. Kurum**, and S. Z Gurbuz, "Application of deep learning to radar remote sensings," *in Deep Neural Network Design for Radar Applications*, Ed: Sevgi Z. Gurbuz, IET, Chapter 11, **2020**.

REFEREED JOURNAL PUBLICATIONS

Works with advisees (undergraduate and graduate students, postdocs) are indicated with their names being underlined.

[37] S. Yadav, D. R. Boyd, E. Hoque, A. Gosh, and **M. Kurum**, "SCoBi SubCanopy: A GNSS-T model," *IEEE Transaction on Geosciences and Remote Sensing*, in preparation, **2023**.

[36] S. Yadav, **M. Kurum**, S. Singh, and R. Prasad "First-Order Radiative Transfer Model Calibration via X- and L-Band Bistatic Radar Measurements: Advancing Soil and Vegetation Parameter Retrieval," *IEEE Geoscience and Remote Sensing Letters*, in review, **2023**.

[35] A. Gosh, Md. M. Farhad, D. R. Boyd, and **M. Kurum**, "A UGV-based Forest Vegetation Optical Depth Mapping Using GNSS Signals," *IEEE Journal of Selected Topics in Applied Earth Observation and Remote Sensing*, in review, **2023**.

[34] Md. M. Farhad, S. Biswas, A. M. Alam, A. Gurbuz, and **M. Kurum**, "SDR-Based Dual Polarized L-Band Microwave Radiometer Operating from Small UAS Platforms," *IEEE Journal of Selected Topics in Applied Earth Observation and Remote Sensing*, in review, **2023**.

[33] D. R. Boyd, and **M. Kurum**, "A Nested Facet Method of the Kirchhoff Approximation for Large-Scale Land Scattering," *IEEE Transaction on Geosciences and Remote Sensing*, in review, **2023**.

[32] A. M. Alam, **M. Kurum**, M. Ogut, and A. Gurbuz, "Microwave Radiometer Calibration Using Deep Learning with Reduced Reference Information and Two-Dimensional Spectral Features," *IEEE Journal of Selected Topics in Applied Earth Observation and Remote Sensing*, in press, **2023**. doi:10.1109/JSTARS.2023.3333268

[31] J. L. Garrison, M. A. Vega, R. Shah, J. Mansell, B. Nold, J. Raymond, R. Banting, R. Bindlish, K. Larsen, S. Kim, W. Li, **M. Kurum**, J. Piepmeier, H. Khalifi, F. Tanner, K. Horgan, C. Kielbasa, S. R. Babu, "SNOOPI: Demonstrating Earth remote sensing using P-band signals of opportunity (SoOp) on a CubeSat," *Advances in Space Research*, in press, **2023**. doi:10.1016/j.asr.2023.10.050

[30] Md. M. Farhad, **M. Kurum**, and A. Gurbuz, "A Ubiquitous GNSS-R approach using spinning smartphone onboard a small UAS," *IEEE Journal of Selected Topics in Applied Earth Observation and Remote Sensing*, vol. 16, pp. 6568 - 6578, **2023**.
doi:10.1109/JSTARS.2023.3294833

[29] S. Kim, J. Garrison, and **M. Kurum**, "Retrieval of Subsurface Soil Moisture and Vegetation Water Content: Sensitivity to SoOp-Reflectometry Parameters," *IEEE Transaction on Geosciences and Remote Sensing*, vol. 61, pp. 4502818, **2023**. doi:10.1109/TGRS.2023.3284800

[28] M. M. Nabi, V. Senyurek, F. Lei, A. Gurbuz, and **M. Kurum**, "Global Assessment of Deep Learning-based CYGNSS Soil Moisture Retrieval Against SMAP Observation," *IEEE Journal of Selected Topics in Applied Earth Observation and Remote Sensing*, vol. 16, pp. 5629 - 5644, **2023**. doi:10.1109/JSTARS.2023.3287591

[27] A. M. Alam, A. Gurbuz, and **M. Kurum**, "Radio Frequency Interference Detection for SMAP Radiometer Using Convolutional Neural Networks," *IEEE Journal of Selected Topics in Applied Earth Observation and Remote Sensing*, vol. 15, pp. 10099 - 10112, **2022**. doi:10.1109/JSTARS.2022.3223198

[26] V. Senyurek, Md. M. Farhad, A. Gurbuz, **M. Kurum**, and A. Ardeshir, "Fusion of Reflected GPS Signals with Multispectral Imagery to Estimate Soil Moisture at Sub-field Scale from Small UAS platforms," *IEEE Journal of Selected Topics in Applied Earth Observation and Remote Sensing*, vol. 15, pp. 6843 - 6855, **2022**. doi:10.1109/JSTARS.2022.3197794

[25] M. M. Nabi, V. Senyurek, A. Gurbuz, and **M. Kurum**, "Deep Learning-based Soil Moisture Retrieval in CONUS using CYGNSS Delay Doppler Maps," *IEEE Journal of Selected Topics in Applied Earth Observation and Remote Sensing*, vol. 15, pp. 6867 - 6881, **2022**. doi:10.1109/JSTARS.2022.3196658

[24] F. Lei, V. Senyurek, **M. Kurum**, A. Gurbuz, D. R. Boyd, and R. Moorhead, "A Quasi-Global Machine Learning-based Soil Moisture at High Spatio-Temporal Scales using CYGNSS and SMAP Observations," *Remote Sensing of Environment*, vol. 276, pp. 113041, **2022**. doi:10.1016/j.rse.2022.113041

[23] V. Senyurek, A. Gurbuz, and **M. Kurum**, "Assessment of Interpolation Errors of CYGNSSSoil Moisture Estimations," *IEEE Journal of Selected Topics in Applied Earth Observation and Remote Sensing*, vol. 14, pp. 9815 - 9825, **2021**. doi:10.1109/JSTARS.2021.3113565

[22] **M. Kurum**, S. Kim, R. Akbar, M. Cosh, "Surface Soil Moisture Retrievals Under Forest Canopy For L-band SAR Observations Across A Wide Range of Incidence Angles By Inverting A Physical Scattering Model," *IEEE Journal of Selected Topics in Applied Earth Observation and Remote Sensing*, vol. 14, pp. 1741 – 1753, **2021**. doi:10.1109/JSTARS.2020.3047883

[21] **M. Kurum**, Md. M. Farhad, and A. C. Gurbuz, "Integration of Smartphones into Small Unmanned Aircraft Systems to Sense Water in Soil by Using Reflected GPS Signals," *IEEE Journal of Selected Topics in Applied Earth Observation and Remote Sensing*, vol. 14, pp. 1048–1059, **2021**. doi:10.1109/JSTARS.2020.3041162

[20] M. Rostaghi-Chalaki, K. Yousefpour, J. P. Donohoe,, **M. Kurum**, J. Klus, and C. Park, "Classification and Comparison of AC and DC Partial Discharges by Pulse Waveform Analysis," *International Journal of Electrical Power and Energy Systems* , Vol. 125, February, 106518, **2021**. doi:10.1016/j.ijepes.2020.106518

[19] M. Rostaghi-Chalaki, K. Yousefpour, J. P. Donohoe,, **M. Kurum**, J. Klus, and C. Park, "Design of Transmission Line and Electromagnetic Field Sensors for DC Partial Discharge Analysis," *The IEEE Transactions on Dielectrics and Electrical Insulation (TDEI)*, vol. 27, no. 6, pp. 2138, **2020**. doi:10.1109/TDEI.2020.009003

[18] V. Senyurek, F. Lei, D. Boyd, **M. Kurum**, A. Gurbuz, and R. Moorhead, "Evaluations of Machine Learning-based CYGNSS Soil Moisture Estimates against SMAP Observations," *MDPI Remote Sensing*, vol. 12, no. 12, pp. 3503, **2020**. doi:10.3390/rs12213503

[17] D. Boyd, **M. Kurum**, O. Eroglu, A. C. Gurbuz, J. Garrison, B. Nold, R. Bindish, J. Piepmeier, M. Vega, "SCoBi Multilayer: A Signals of Opportunity Reflectometry Model for Multilayer Dielectric Reflections," *MDPI Remote Sensing*, vol. 12, no. 11, pp. 3480, **2020**. doi:10.3390/rs12213480

[16] D. Boyd, A. C. Gurbuz, **M. Kurum**, J. Garrison, B. Nold, R. Bindish, J. Piepmeier, M. Vega, "Cramer-Rao Lower Bound for SoOp-R-Based Root-Zone Soil Moisture Remote Sensing," *IEEE Journal of Selected Topics in Applied Earth Observation and Remote Sensing*, vol. 13, pp.6101–6114, **2020**. doi:10.1109/JSTARS.2020.3029158

[15] A. Y. Zhou, A. Sharma, **M. Kurum**, R. H. Lang, P. E. O'Neill, and M. H. Cosh, "The backscattering contributions of soybean pods at L-band," *Remote Sensing of Environment*, vol. 248, pp. 111977, Oct. **2020**. doi:10.1016/j.rse.2020.111977

[14] V. Senyurek, F. Lei, D. Boyd, **M. Kurum**, A. Gurbuz, and R. Moorhead, "Machine Learning-based CYGNSS Soil Moisture Estimates over ISMN sites in CONUS," *MDPI Remote Sensing*, vol. 12, no. 7, pp.1-24 **2020**. doi:10.3390/rs12071168

[13] A. Sharma, R. H. Lang, **M. Kurum**, P. E. O'Neill, and M. H. Cosh, "L-Band radar modeling of a corn canopy over a full growing season," *IEEE Transaction on Geosciences and Remote Sensing*, vol. 58, no. 8, pp.5821 - 5835 **2020**. doi:10.1109/TGRS.2020.2971539

[12] O. Eroglu, D. Boyd, and **M. Kurum**, "SCoBi: A Free, Open-Source, SoOp Coherent Bistatic Scattering Simulator Framework," *IEEE Geoscience and Remote Sensing Magazine*, in press **2019**. doi:10.1109/MGRS.2019.2916071

[11] O. Eroglu, **M. Kurum** , D. Boyd, and A. Gurbuz, "High Spatio-Temporal Resolution CYGNSS Soil Moisture Estimates Using Artificial Neural Networks," *MDPI Remote Sensing*, vol. 11, no. 19, pp.1-32 **2019**. doi:10.3390/rs11192272

[10] O. Eroglu, **M. Kurum** , and J. Ball, "Reponse of GNSS-R on Dynamic Vegetated Terrain Conditions," *IEEE Journal of Selected Topics in Applied Earth Observation and Remote Sensing*, vol. 12, no. 5, pp.1599 - 1611, **2019**. doi:10.1109/JSTARS.2019.2910565

[9] **M. Kurum**, M. Deshpande, A. Joseph, P. E. O'Neill, R. H. Lang, and O. Eroglu,"SCoBi-Veg: A Generalized Bistatic Scattering Model of Reflectometry from Vegetation for Signals of Opportunity Applications," *IEEE Transaction on Geosciences and Remote Sensing*, vol. 57, no. 2, pp. 1049–1068, **2019**. doi:10.1109/TGRS.2018.2864631

[8] JP Wigneron , T. J. Jackson , P. O'Neill, G. De Lannoy, de Rosnay, J. Walker, P. Ferrazzoli, V Mironov, N. Das, **M. Kurum**, M. Schwank, C. Albergel, Joaquin Munoz, A. Royer, A. Al-Yaari, A. Al Bitar, S. Bircher, R. Fernandez-Moran, J. Grant, H. Lawrence, A. Mialon, M. Parrens, P. Richaume, S. Delwart, Y. Kerr , "Modelling the passive microwave signature from land surfaces: a review of recent results and application to the SMOS/SMAP soil moisture retrieval algorithms," *Remote Sensing of Environment*, vol. 192, pp. 238–262, Apr. **2017**. doi:10.1016/j.rse.2017.01.024

[7] **M. Kurum**, "C-Band SAR Backscatter Evaluation of 2008 Gallipoli Forest Fire," *IEEE Geoscience and Remote Sensing Letters*, vol. 12, No. 5, pp. 1091–1095, May. **2015**. doi:10.1109/LGRS.2014.2382716

[6] P. K. Srivastava, P. E. O'Neill, M. H. Cosh, **M. Kurum**, R. H. Lang, A. T. Joseph, "Evaluation of dielectric mixing models for microwave soil moisture retrieval using data from the combined Radar/Radiometer (ComRAD) ground based SMAP simulator," *IEEE Journal of Selected Topics in Applied Earth Observation and Remote Sensing*, vol. 8, No. 9, pp. 4345–4354, Dec. **2014**. doi:10.1109/JSTARS.2014.2372031

[5] **M. Kurum**, "Quantifying Scattering Albedo in Microwave Emission of Vegetated Terrain," *Remote Sensing of Environment*, vol. 129, pp. 66–74, Feb. **2013**. doi:10.1016/j.rse.2012.10.021

[4] **M. Kurum**, P. E. O'Neill, R. H. Lang, A. T. Joseph, M. H. Cosh, and T. J. Jackson, "Effective tree scattering and opacity at L-band," *Remote Sensing of Environment*, vol. 118, pp. 1–9, Mar. **2012**. doi:10.1016/j.rse.2011.10.024

[3] **M. Kurum**, P. E. O'Neill, R. H. Lang, M. H. Cosh, A. T. Joseph, and T. J. Jackson, "Impact of forest litter on forest emission at L-band: modeling the forest floor," *IEEE Transaction on Geosciences and Remote Sensing*, vol. 50, no. 4, pp. 1071–1084, Apr. **2012**. doi:10.1109/TGRS.2011.2166272

[2] **M. Kurum**, R. H. Lang, P. E. O'Neill, A. T. Joseph, T. J. Jackson and M. H. Cosh, "A First-order radiative transfer model for microwave radiometry of forest canopies at L-band," *IEEE Transaction on Geosciences and Remote Sensing*, vol. 49, no. 9, pp. 3167–3179, Sep. **2011** . doi:10.1109/TGRS.2010.2091139 **[Cover Article]**

[1] **M. Kurum**, R. H. Lang, P. E. O'Neill, A. T. Joseph, T. J. Jackson and M. H. Cosh, "L-Band radar estimation of forest attenuation for active/passive soil moisture inversion," *IEEE Transaction on Geosciences and Remote Sensing*, vol. 47, no. 9, pp. 3026–3040, Sep. **2009**. doi:10.1109/TGRS.2009.2026641

CONFERENCE PRESENTATIONS & PUBLICATIONS

Works with advisees (undergraduate and graduate students, postdocs) are indicated with their names being underlined.

[122] A. Colliander, J. Jeong, L. Tsang, M. H. Cosh, S. Kraatz, L. Bourgeau-Chavez, V. Kelly, P. Siqueira, K. McDonald, N. Steiner, **M. Kurum**, A. Roy, A. Berg, D. Entekhabi, S. H. Yueh, "Retrieving Forest Soil Moisture and Vegetation Optical Depth using Fast Hybrid Method and Bulk Parameter Model: Validation with SMAPVEX19-22 Data," Submitted To: *The IEEE 17th Specialist Meeting on Microwave Radiometry Remote Sensing of the Environment*, Alexandria, VA (USA), Apr. 8–11, **2024**. [Abstract]

[121] B. Nold, J. Garrison, J. Mansell, R. Shah, M. Vega, S. Kim, J. Raymond, R. Bindlish, **M. Kurum**, J. Piepmeier, R. Banting, "SNOOPI - A P-Band Signals of Opportunity Reflectometer Spaceborne Demonstration," Submitted To: *The IEEE 17th Specialist Meeting on Microwave Radiometry Remote Sensing of the Environment*, Alexandria, VA (USA), Apr. 8–11, **2024**. [Abstract]

[120] A. P. Barros, P. Siqueira, M. Durand, C. Vuyovich, B. Osmanoglu, L. Tsang, E. Kim, P. Houser, D. Hall, H-P. Marshall, **M. Kurum**, S. Kumar, J. T. Johnson, M. Perrine, M. Raleigh, J. Garrison, M. Goldstein, and K. Larson, "Global Snow Water Equivalent Observations from Space," Accepted to : *The 104th AMS Annual Meeting*, Baltimore, MD (USA), Jan. 28–Feb. 1, **2024**. [Abstract]

[119] J. L. Garrison, A. Choudhari, E, Smith, R. Bindlish, B. Nold, S. Kim, **M. Kurum**, "Development and validation of a physics-based root-zone soil moisture retrieval algorithm for multi-frequency dual-polarization (MFDP) signals of opportunity (SoOp) observations," Accepted to : *The 104th AMS Annual Meeting*, Baltimore, MD (USA), Jan. 28–Feb. 1, **2024**. [Abstract]

[118] A. P. Barros, P. Siqueira, M. Durand, C. Vuyovich, B. Osmanoglu, L. Tsang, E. Kim, P. Houser, D. Hall, H-P. Marshall, **M. Kurum**, S. Kumar, J. T. Johnson, M. Perrine, M. Raleigh, J. Garrison, M. Goldstein, and K. Larson, "Global Snow Water Equivalent Observations from Space," Accepted to : *The 104th AMS Annual Meeting*, Baltimore, MD (USA), Jan. 28–Feb. 1, **2024**. [Abstract]

[117] A. Alam, Md. M. Farhad, **M. Kurum**, A. Gurbuz, "An Advanced Testbed for Passive/Active Coexistence Research: A Comprehensive Framework for RFI Detection, Mitigation, and Calibration," Accepted To: *The USNC/URSI Radio Science Meeting*, Boulder, CO (USA), Jan. 9–13, **2024**. [Abstract]

[116] L. Redwine, Md. M. Farhad, **M. Kurum**, A. Gurbuz, "GNSS-R Wetland Monitoring," Accepted To : *The USNC/URSI Radio Science Meeting*, Boulder, CO (USA), Jan. 9–13, **2024**. [Abstract]

[115] E. Hodges, C. Chew, E. Small, M. Al-Khaldi, J. D. Ouellette, J. T. Johnson, F. Lei, **M. Kurum**, A. Gurbuz, V. Senyurek, X. Xu, R. Shah, S. Yueh, A. Hayashi, P. T. Setti Jr., S. Tabibi, E. Santi, S. Pettinato, T. M. Roberts, I. Colwell, S. Lowe, C. S. Ruf and M. Moghaddam, "A Blended CYGNSS Soil Moisture Product Partitioned with Ancillary Data," Accepted To : *The USNC/URSI Radio Science Meeting*, Boulder, CO (USA), Jan. 9–13, **2024**. [Abstract]

[114] J. L. Garrison, M. A. Vega, R. Shah, J. Mansell, R, Bindlish, **M. Kurum**, A. Choudhari, S. Kim, E. Smith, K. Shi and R. Banting, "Toward Spaceborne P-band Remote Sensing of the Water Cycle using Signals of Opportunity," Submitted To: *The American Geophysical Union Chapman conference on Remote Sensing of the Water Cycle* , Honolulu, HI (USA), Feb. 13–16, **2024**. [Abstract]

[113] A. Colliander, J. Chaubell, X. Xu, M. H. Cosh, L. Bourgeau-Chavez, A. Berg, V. Kelly, P. Siqueira, S. Kraatz, A. Roy, L. Tsang, K. McDonald, N. Steiner, **M. Kurum**, D. Entekhabi, S. H. Yueh, "Toward Validated Soil Moisture Retrievals in Forested Areas from Soil Moisture Active Passive (SMAP) Mission," Submitted To: *The American Geophysical Union Chapman conference on Remote Sensing of the Water Cycle* , Honolulu, HI (USA), Feb. 13–16, **2024**. [Abstract]

[112] I. Fenni, H. Roussel, **M. Kurum**, D. Boyd, G. Gupta, M.S. Haynes, and Z.S. Haddad, "Computationally Efficient MoM/CBFM-based Full-Wave Model for Multistatic Scattering from Forest at P Band," Submitted To: *The American Geophysical Union Fall meeting*, San Francisco, CA (USA), Dec. 11–15, **2023**. [Abstract]

[111] A. Colliander, M. H. Cosh, S. Kraatz, L. Bourgeau-Chavez, V. Kelly, P. Siqueira, K. McDonald, N. Steiner, **M. Kurum**, A. Roy, A. Berg, L. Tsang, D. Entekhabi, S. H. Yueh, "Temperate Forest Biomass and Water Content Observed with L-band Radiometry: Experimental Results from SMAPVEX19-22," Submitted To: *The American Geophysical Union Fall meeting*, San Francisco, CA (USA), Dec. 11–15, **2023**. [Abstract]

[110] A. P. Barros, P. Siqueira, M. Durand, C. Vuyovich, B. Osmanoglu, L. Tsang, E. Kim, P. Houser, D. Hall, M. Sturm, H-P. Marshall, **M. Kurum**, S. Kumar, J. T. Johnson, M. Perrine, M. Raleigh, J. Garrison, M. Goldstein, and K. Larson, "Global Snow Water Equivalent Observations from Space," In: *Proceedings of IEEE International Geosciences and Remote Sensing Symposium (IGARSS'23)*, Pasadena, CA (USA), Jul. 16– 21, **2023**. [Abstract]

[109] J. L. Garrison, M. A. Vega, R. Shah, J. Mansell, B. Nold, J. Raymond, R. Banting, R. Bindlish, S. Kim, W. Li, **M. Kurum**, J. Piepmeier, H. Khalifi, S. R. Babu, "Signals of Opportunity P-Band Investigation (SNOOPI): Preparation for Launch and First Data," In: *Proceedings of IEEE International Geosciences and Remote Sensing Symposium (IGARSS'23)*, Pasadena, CA (USA), Jul. 16– 21, **2023**. [Abstract]

[108] A. Colliander, M. H. Cosh, A. Berg, S. Misra, J. Thomas, L. Bourgeau-Chavez, V. Kelly, S. Kraatz, P. Siqueira, K. McDonald, N. Steiner, S. Kim, A. Roy, V. Walker, W. Helgason, R. Magagi, T. Lakhankar, **M. Kurum**, M. Ogut, J. Chaubell, S. Dunbar, J. Famiglietti, A. Konings, D. Entekhabi, S. H. Yueh , "Estimation of SMAP Sensitivity to Forest Soil Moisture and Vegetation Water Content using the SMAP Validation Experiment 2019-2022 (SMAPVEX19-22)," In: *Proceedings of IEEE International Geosciences and Remote Sensing Symposium (IGARSS'23)*, Pasadena, CA (USA), Jul. 16– 21, **2023**. [Abstract]

[107] S. Kim, T-h. Liao, **M. Kurum**, "Pre-launch Test of a Soil Moisture Algorithm on Challenging Terrains for NI-SAR," In: *Proceedings of IEEE International Geosciences and Remote Sensing Symposium (IGARSS'23)*, Pasadena, CA (USA), Jul. 16– 21, **2023**. [Abstract]

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2023 **M. Kurum**, "Reflectometry Session: Recycling the Radio Spectrum for Science," IEEE GRSS Soil Moisture Summer School, IIT Bombay, India, Mar. 15-17.

2022 **M. Kurum**, "Reflectometry Session: Recycling the Radio Spectrum for Science," IEEE GRSS Soil Moisture Summer School, UMASS, Amherst, MA, Jul. 5-7.

2020 **M. Kurum**, "Microwave Remote Sensing," Smart Farming - Data Enable Ag class, MSU, Oct. 12.

2020 **M. Kurum**, "Can the GPS Chip on Your Phone Help Beat the Climate Change?," ECE Seminars, Webex, Sep. 18.

2020 **M. Kurum**, "A quasi-global machine learning-based CYGNSS soil moisture product at high spatio-temporal resolution ," NASA CYGNSS Science Team Meeting, WebEx, June 10.

2020 **M. Kurum**, "GPS-based Canopy Transmissivity Measurement," NASA SMAPVEX 19/20, Webex, Jan. 30.

2020 **M. Kurum**, "Recent progress on ML-based High Spatio-Temporal Resolution CYGNSS SM Retrievals," NASA CYGNSS Science Team Meeting, Pasadena, CA, Jan. 22.

2019 **M. Kurum**, "Microwave vegetation Scattering/Emission modeling," L-band Soil Moisture Continuity Workshop, NASA JPL, Pasadena, CA, March 6.

2019 **M. Kurum**, "Low-cost Reutilization of Existing Anthropogenic Signals for Remote Sensing," Distinguished Lecture Series, NASA JPL, Pasadena, CA, March 7.

2019 **M. Kurum**, "Low-cost Reutilization of Existing Anthropogenic Signals for Remote Sensing," Terrestrial Hydrology Seminar, NASA GSFC, Greenbelt, MD April 3.

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2019 **M. Kurum** and O. Eroglu, "High Spatio-Temporal Resolution CYGNSS Soil Moisture Estimates Using Artificial Neural Networks," NASA CYGNSS Science Team Meeting, University of Michigan, Ann Arbor, MI, June 5.

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2017 **M. Kurum**, "Microwave Remote Sensing of Environment via Signals of Opportunity," Big Data Committee Meeting, MSU, Mississippi State, MS, Nov. 27.

2017 **M. Kurum**, "Microwave Remote Sensing of Environment," ECE Advisory Board Meeting, MSU, Mississippi State, MS, Mar. 30.

2016 **M. Kurum**, "Microwave Remote Sensing of Environment and Opportunities for Students," IEEE Student Branch Meeting, MSU, Mississippi State, MS, Oct. 5.

2016 **M. Kurum**, "Microwave Active/Passive Remote Sensing of Earth's Hydrological Features," University of Manitoba, Winnipeg, Canada, Jan. 15.

2015 **M. Kurum**, "Applied Electromagnetics: Remote Sensing Group," George Washington University, Washington, DC, Nov. 15.

2015 **M. Kurum**, "Microwave remote sensing of soil moisture under vegetation at L-band," Bilgi University, Istanbul (Turkey), Apr. 8.

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2012 **M. Kurum**, "Microwave remote sensing of soil moisture through vegetation," TUBITAK UEKAE, Gebze, Kocaeli(Turkey), Jul. 27.

2012 **M. Kurum**, "Rederiving the tau-omega model for vegetated terrain at L-band," Terrestrial Water Cycle Seminar, NASA/GSFC, B33, Room A128, Greenbelt, MD (USA), Apr. 11.

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