

# Activities of the GRSS University of Michigan Student Chapter

The IEEE Geoscience and Remote Sensing Society (GRSS) University of Michigan Student Chapter was established on 5 September 2018. It serves as a focal point for graduate and undergraduate students with an interest in geoscience and remote sensing at the University of Michigan, Ann Arbor. The Chapter seeks to foster interdepartmental and interdisciplinary activities within the university community and facilitate engagement with the broader GRSS community.

The chapter officers are as follows:

- ▶ chair: Tianlin Wang
- ▶ vice chair: David Mayers
- ▶ secretary: Rajeswari Balasubramaniam
- ▶ treasurers: Huanting Huang and Navid Barani Lonbani
- ▶ Young Professionals (YP) representative: Rachel Norris
- ▶ webmaster: Maryam Salim
- ▶ advisors: Dr. Leland Pierce and Dr. Laura Balzano.

The Chapter has organized and hosted a series of technical activities to bring together researchers, students, and professionals. Our objective is to provide more opportunities and support to students and young professionals for their career development.

## IEEE GRSS WORKSHOP ON MICROWAVE REMOTE SENSING

The Chapter hosted a workshop on microwave remote sensing on Saturday, 23 November 2019. In addition to a panel discussion, 10 distinguished lecturers from research labs and academia volunteered to share presentations on their work as follows:

- ▶ Prof. Leung Tsang: "Electromagnetic Wave Modeling"
- ▶ Prof. Kamal Sarabandi: "Polarimetric Radar Calibration"



FIGURE 1. Some of the GRSS Chapter workshop participants.

- ▶ Prof. James Garrison: "Remote Sensing With Signals of Opportunity"
- ▶ Prof. Chris Ruf: "Cyclone Global Navigation Satellite System (CYGNSS)"
- ▶ Dr. Andrew O'Brien: "Global Navigation Satellite System Reflectometry (GNSS-R)"
- ▶ Prof. Joel Johnson: "Ultrawideband Microwave Radiometry"
- ▶ Dr. Roger De Roo: "Wideband Autocorrelation Radiometry (WiBAR)"
- ▶ Prof. Steven Reising: "Temporal Experiment for Storms and Tropical Systems—Demonstration (TEMPEST-D) CubeSat Mission"
- ▶ Dr. Darren McKague: "Global Precipitation Measurement (GPM)"
- ▶ Dr. Ruzbeh Akbar: "In Situ Sensor Networks for Satellite Soil Moisture Calibration and Validation"
- ▶ Panel discussion: "Future of Microwave Remote Sensing."

More than 50 people participated in this workshop on site, and around 30 others attended remotely (Figure 1). The slides and videos of this workshop were uploaded to the GRSS website for future viewing: <http://www.grss-ieee.org/microwave-remote-sensing-workshop-2019/>.



**FIGURE 2.** Student Chapter members with Dr. Blackwell (third from left).

### DISTINGUISHED LECTURERS

GRSS Distinguished Lecturers were invited to the University of Michigan to give research seminars. Students were also provided the opportunity to meet with the speakers to discuss technology advancement, career development, and academia experience. The lectures usually attract around 35 attendees.

- ▶ Dr. William Blackwell from the MIT Lincoln Laboratory delivered his lecture, “Overview of the NASA TROPICS CubeSat Constellation Mission,” on 3 December 2018 (Figure 2).
- ▶ Dr. Toshio Iguchi from the NASA Goddard Space Flight Center presented his lecture, “Radar Measurement of Precipitation from Space,” on 3 December 2019 (Figure 3).

### YOUNG PROFESSIONALS TECHNICAL ACTIVITIES

The Chapter provides many opportunities for students and YPs to share their research with the local community and practice their talks before attending conferences.

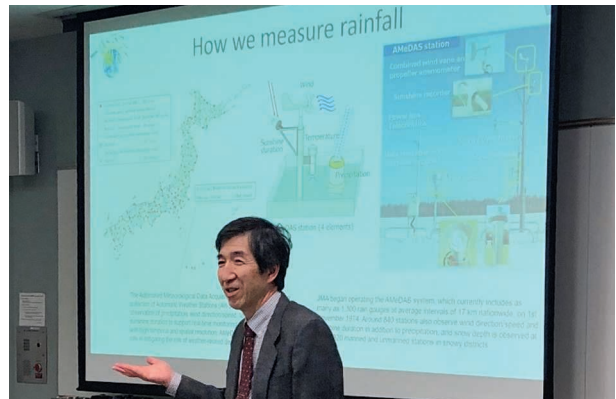
#### GRSS YOUNG PROFESSIONALS SEMINAR

Dr. Jordan Budhu, postdoctoral research fellow at the Radiation Laboratory, University of Michigan, gave a seminar “Numerical Synthesis Algorithms and Antenna Designs for Next Generation Spaceborne Wind Scatterometer and CubeSat Antennas” on 18 March 2019 (Figure 4). There were 25 attendees for this YP seminar.

#### TRAINING FOR BETTER PRESENTATIONS

The Chapter co-organizes the Training for Better Presentations graduate speaker series in conjunction with five other student organizations at the University of Michigan. It allows students to practice their presentations and receive constructive feedback from faculty before attending a conference. More than 10 sessions have been held over the past year, averaging about 20–25 attendees.

Two were held for the GRSS Student Chapter members: A session was held 2 July for the 2019 IEEE International Symposium on Antennas and Propagation and the U.S.



**FIGURE 3.** Dr. Iguchi presenting his Distinguished Lecture.



**FIGURE 4.** Dr. Jordan Budhu delivering his seminar.



**FIGURE 5.** David Mayers presenting his research.

National Committee for the International Union of Radio Science (USNC-URSI):

- ▶ Xiuzhang Cai: “A Machine-Learning-Based 77-GHz Radar Target Classification for Autonomous Vehicles”
- ▶ Tianlin Wang: “Measuring GPS Transmit Antenna Pattern Using On-Orbit Receivers.”

A second session was held 17 July for the 2019 IEEE International Geoscience and Remote Sensing Symposium:

- ▶ David Mayers: “Tropical Cyclone Center Fix using CYG-NSS Winds” (Figure 5)



**FIGURE 6.** Rajeswari Balasubramaniam presenting her research.



**FIGURE 7.** Student conversations during IEEE Coffee Hour.

- ▶ Rajeswari Balasubramaniam: “The Impact of Rain on L1 GNSS-R Radar Scattering Cross-Section” (Figure 6).

### YP-3: EARTH AND CLIMATE SEMINAR

The Chapter co-organizes the Earth and Climate Seminar with the Department of Climate and Space Science and Engineering at the University of Michigan. We have organized 24 seminars over the past 18 months, averaging about 15 attendees each.

Four Chapter members gave seminars:

- ▶ Raji Balasubramaniam: “High Wind Measurements in Hurricanes Using CYGNSS”
- ▶ Huaning Huang: “Physical Modeling of Vegetation and Forest Effects for Remote Sensing of Soil Moisture”
- ▶ Tianlin Wang: “Investigation of Ocean Surface Wind and Wave Coupling Using CYGNSS Observations”
- ▶ Mohammad Mousavi: “Lake Icepack and Dry Snowpack Thickness Measurement Using Coherent Multipath Interference of Wideband Planck Radiation.”

### SOCIAL ACTIVITIES

IEEE Coffee Hour brings together IEEE participants at all levels (Fellow, Senior Member, Member, and Student Member) and representing many different Societies, including the GRSS, IEEE Antennas and Propagation Society, IEEE Microwave Theory and Techniques Society, IEEE Signal Processing Society, IEEE Industrial Electronics Society, and others. The Coffee Hour provides an opportunity for people to network, collaborate, and converse in a casual environment (Figure 7). Events were held on 31 May and 28 June 2019, with an average turnout of more than 40 people.

An IEEE bowling night was held on 16 August 2019. Eight student YPs were in attendance.

### FUTURE PLANS

The GRSS University of Michigan Student Chapter will continue to organize technical activities to support and serve students and YPs of the local geoscience and remote sensing community. In addition, the Chapter will continue collaborating with the Distinguished Lecturer and Industry Distinguished Lecturer programs and organize more career development workshops and events with other GRSS Chapters across the globe.

### AUTHOR INFORMATION

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