

BRANDI DOWNS

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EDUCATION

Aug 2023	PhD, Electrical & Computer Engineering <i>The Ohio State University</i>
May 2023	BS in Electrical & Computer Engineering <i>The Ohio State University</i>
Dec 2018	BS in Electrical & Computer Engineering <i>The Ohio State University</i>

EMPLOYMENT

Aug 2023 – Current	Remote Sensing Technologist , <i>Water and Ecosystems Group</i> NASA Jet Propulsion Laboratory, <i>California Institute of Technology</i>
Aug 2021 – Aug 2023	Graduate Research Associate Electrical and Computer Engineering, <i>The Ohio State University</i>
Aug 2022 – Dec 2022	Graduate Intern Radar Science & Engineering, <i>NASA Jet Propulsion Laboratory</i>
Aug 2019 – Aug 2021	Graduate Fellow Electrical and Computer Engineering, <i>The Ohio State University</i>
Jan 2019 – Aug 2019	Graduate Research Associate Electrical and Computer Engineering, <i>The Ohio State University</i>
May 2018 – Dec 2018	Undergraduate Research Associate Electrical and Computer Engineering, <i>The Ohio State University</i>
Jan 2016 – May 2016	Electrical Engineer Intern Medical Devices Group, <i>Battelle Memorial Institute</i>

HONORS, AWARDS, AND ACTIVITIES

IEEE GRSS MIRS MAMI WATA Workshop Planning Committee, 2022 – present
IEEE Member, 2018 – present
AGU Frontiers in Hydrology Student Travel Grant, 2022
AGU Fall Meeting Outstanding Student Presentation Award, 2020
AGU Michael H. Freilich Student Visualization Competition Grand Prize Winner, 2020
Clare Boothe Luce Fellowship, 2019-2021
Kelm Family Scholarship, 2018
Duhamel Scholarship, 2018
Geaman Family Scholarship, 2018
Schmahl Scholarship, 2017-18
Wolfe Critical Difference for Women Scholarship, 2017-18
Mortar Board Alumni Scholarship, 2017-18
Mortar Board Adult Woman Scholarship, 2017-18

Caldwell Memorial Fund Scholarship, 2017-18
Weierman Critical Difference for Women Fund Scholarship, 2016-17
Hendrix Engineering Scholarship, 2016-17
Battelle Memorial Institute Outstanding Performance Award, 2016
United States Coast Guard Letter of Commendation, 2010
United States Coast Guard Achievement Medal, 2009
David Dobbins Search and Rescue Award, 2008

SELECTED PUBLICATIONS

B. Downs, B. Chapman, C. Patnaik, and A. Das, "Evaluating the Sensitivity of Sentinel-1 to Flooding and Saturated Soil in Little Rann of Kutch," *In Preparation. To be submitted to Remote Sensing*.

B. Downs, "Mapping Inland Surface Water with Spaceborne GNSS Reflectivity and SAR," Ph.D. dissertation, Dept. of Elec. and Comp. Eng., The Ohio State University, August 2023.

E. Loria, I.M. Russo, Y. Wang, G. Giangregorio, C. Galdi, M. di Bisceglie, **B. Wilson-Downs**, M. Lavallo, A.J. O'Brien, Y.J. Morton, C. Zuffada, "Comparison of GNSS-R Coherent Reflection Detection Algorithms Using Simulated and Measured CYGNSS Data," in *IEEE Transactions on Geoscience and Remote Sensing*, vol. 61, pp. 1-16, 2023, Art no. 5105216, doi: 10.1109/TGRS.2023.3277411.

B. Downs, A.J. Kettner, B.D. Chapman, G.R. Brakenridge, A.J. O'Brien, C. Zuffada, "Assessing the Relative Performance of GNSS-R Flood Extent Observations: Case Study in South Sudan," in *IEEE Transactions on Geoscience and Remote Sensing*, vol. 61, pp. 1-13, 2023, Art no. 4201213, doi: 10.1109/TGRS.2023.3237461.

B. Wilson-Downs, A.J. Kettner, G.R. Brakenridge, A. O'Brien, C. Zuffada, "CYGNSS Flood Applications to Support the United Nations Sustainable Development Goals," IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2022), Kuala Lumpur, Malaysia, Jul. 17-22, 2022.

B. Wilson-Downs, A. O'Brien, C. Zuffada, "Retrieval of Dynamic Changes of Surface Water Extent from Sparse GNSS-R Measurements Using a Model-Driven Approach," IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2022), Kuala Lumpur, Malaysia, Jul. 17-22, 2022.

B. Downs, A. O'Brien, C. Zuffada, "Detection of Sub-Weekly Inundation Changes in Bangladesh Refugee Camps via Remote Sensing," *AGU Frontiers in Hydrology Meeting (FIHM 2022)*, San Juan, Puerto Rico, Jun. 19-24, 2022.

B. Wilson-Downs, C. Zuffada, I.M. Russo, E. Loria, B. Chapman, A. O'Brien, "From Research to Application: Assessing the Potential of GNSS-R Flood Products for Operational Use," ESA Living Planet Symposium (LPS 2022), Bonn, Germany, May 23-27, 2022.

B.D. Chapman, I.M. Russo, C. Galdi, M. Morris, M. di Bisceglie, C. Zuffada, **B. Downs**, M. Lavallo, A.J. O'Brien, "Comparison of SAR and CYGNSS Surface Water Extent Metrics," *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 15, pp. 3235-3245, 2022.

B. Downs, F. Aristizabal, M. Lavallo, B. Chapman, I.M. Russo, M. di Bisceglie, C. Galdi, A. O'Brien, C. Zuffada, "Observing Dynamic Flooding on Short Timescales by Combining GNSS-R and Height Above Nearest Drainage," *AGU Fall Meeting 2021*, Dec. 13-17, 2021.

C. Lowry, **B. Downs**, B. Chapman, C. Zuffada, "Community Engagement in Measuring Extreme Flow Events," *AGU Fall Meeting 2021*, Dec. 13-17, 2021.

B. Downs, B. Chapman, I.M. Russo, M. Lavallo, M. di Bisceglie, C. Galdi, A. O'Brien, C. Zuffada, "Leveraging NISAR Activities to Support CYGNSS Wetlands Calibration & Validation," 2021 IEEE Specialist Meeting on Reflectometry using GNSS and other Signals of Opportunity (GNSS+R), 2021, pp. 101-104.

B. Downs, A. O'Brien, M. Morris, C. Zuffada, "Water Depth Retrieval in the Everglades Using CYGNSS," IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2021), Brussels, Belgium, Jul. 12-16, 2021.

C. Zuffada, **B. Downs**, M. Russo, E. Loria, A. O'Brien, L. Galdi, M. di Bisceglie, V. Zavorotny, M. Lavallo, M. Morris, "State of the Art in GNSS-R Capabilities Over Inland Waters," IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2021), Brussels, Belgium, Jul. 12-16, 2021.

M. Morris, **B. Downs**, A. O'Brien, C. Zuffada, "Monitoring the Everglades from Space with NASA's CYGNSS Constellation," *Greater Everglades Ecosystem Restoration Conference (GEER 2021)*, Virtual Event, Apr. 12-16, 2021.

B. Downs, C. Zuffada, E. Loria, M. Russo, V. Zavorotny, A. O'Brien, M. Morris, M. Lavallo, M. di Bisceglie, L. Galdi, "Monitoring Dynamic Changes in Terrestrial Surface Water Using the NASA CYGNSS Satellite Constellation," *43rd COSPAR Scientific Assembly 2020*, Virtual Event, Jan. 28 – Feb. 4, 2021.

E. Loria, V.U. Zavorotny, **B. Downs**, M. Russo, A. O'Brien, C. Zuffada, "Modeling and Analysis of GNSS-R Measurements in Wetland Areas," *AGU Fall Meeting 2020*, Virtual Event, Dec. 1-17, 2020.

B. Downs, A. O'Brien, M. Morris, V. U. Zavorotny, and C. Zuffada, "Using GNSS Reflectometry Measurements Over the Everglades to Identify Variations in Wetland Inundation Extent Beneath Vegetation," *AGU Fall Meeting 2020*, Virtual Event, Dec. 1-17, 2020.

E. Loria, A. O'Brien, V. Zavorotny, **B. Downs**, C. Zuffada, "Analysis of scattering characteristics from inland bodies of water observed by CYGNSS," *Remote Sens.*, 2020, 245, 111825.

B. Downs, E. Loria, A. O'Brien, V. Zavorotny, and C. Zuffada, "Simulation Study of CYGNSS Observability of Dynamic Inundation Events," *IGARSS 2020 - 2020 IEEE International Geoscience and Remote Sensing Symposium*, Waikoloa, HI, USA, 2020, pp. 5913-5916.

V. Zavorotny, E. Loria, A. O'Brien, **B. Downs**, and C. Zuffada, "Investigation of Coherent and Incoherent Scattering from Lakes Using CYGNSS DDM Observations," *IGARSS 2020 - 2020 IEEE International Geoscience and Remote Sensing Symposium*, Waikoloa, HI, USA, 2020.

C. Zuffada, **B. Downs**, E. Loria, A. O'Brien, and V. Zavorotny, "An Assessment of the Capabilities of GNSS Reflectometry for Dynamic Monitoring of Wetlands and Inundations," *AGU Fall Meeting 2019*, San Francisco, CA, Dec. 9-13, 2019.

B. Downs, A. O'Brien, and J. T. Johnson, "Observing the Cryosphere with Next Generation GNSS-Reflectometry," *ISAES 2019*, Incheon, Republic of Korea, Jul. 22-26, 2019.