DAVID LOWELL COTTEN
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Education

Ph.D. (Physics), The University of Georgia (UGA), Athens, Georgia 2011

Dissertation Diffuse Molecular Gas in Cloud Envelopes and the Galaxy

Honors
- Outstanding Graduate Student and Teaching Assistant 2011
- Head Laboratory Instructor 2010
- Outstanding Teaching Assistant 2008

B. S. (Physics), Louisiana State University, Baton Rouge, Louisiana 2005

Positions

Graduate Faculty, Department of Geography, University of Georgia, Athens GA, 30602, **2019 – Pres.**

Assistant Research Scientist, Center for Geospatial Research (CGR),
Department of Geography, University of Georgia, Athens GA, 30602, **2015 – Pres.**

- *Lead in the design, integration, and testing of two CubeSat missions in the Small Satellite Research Laboratory (SSRL), an undergraduate student lab consisting of more than fifty team members.*
- *Prepare scientific articles on using the eddy covariance technique with remote sensing to map carbon storage along the GA and Gulf Coasts; Investigate previously unknown effects tides have on carbon sequestration in coastal marshes*
- *Mentor students and staff in CGR and the Small Satellite Research Lab (SSRL)*
- *Maintain/coordinate Savannah Harbor Expansion Project (SHEP) web portal and develop data visualizations of environmental monitoring.*

Postdoctoral Researcher under Dr. M. Madden, Center for Geospatial Research (CGR),
Department of Geography, University of Georgia, Athens GA, 30602, **2013 – 2015**

- *Investigate previously unknown effects tides have on carbon sequestration in coastal marshes; use Structure from Motion (SfM) techniques to build 3D models of topography from images*
- *Prepare scientific articles on using the eddy covariance technique with remote sensing to map carbon storage along the GA and Gulf Coasts; using SfM from Unmanned Aerial Vehicles (UAVs) and satellites to measure and quantify historical photographs, wetlands, and cultural resources*
- *Mentor students and staff in CGR and the Small Satellite Research Lab (SSRL)*
- *Maintain/coordinate Savannah Harbor Expansion Project (SHEP) web portal and develop data visualizations of environmental monitoring.*
- *Science advisor for NASA DEVELOP*
- *Prepare technical proposals and reports; manage lab computers and servers*

Postdoctoral Researcher under Dr. M. Y. Leclerc, College of Agriculture and Environmental Sciences, University of Georgia Griffin Campus, Griffin, GA, 30223 **2012 – 2013**

- *Investigated carbon dynamics in forests, agriculture, and wetland environments*
- *Prepared scientific articles on micrometeorology of turfgrass fields*
- *Managed Savannah River National Lab (SRNL) carbon and water flux datasets and submitted them to the national AmeriFlux database*

- *Maintained field equipment used for micrometeorology, microbarograph, and below ground flux measurements*
- *Mentored Young Scholar high school students*

Teaching Assistant/Research Assistant under Dr. L. Magnani, Physics and Astronomy Department, University of Georgia, Athens, GA, **2007 – 2011**

- *Investigated the role of diffuse gas on the overall mass of our Galaxy*
- *Prepared scientific articles on measuring CO and OH in the Galaxy*
- *Led teaching assistants*
- *Created Astronomy course for study abroad*

Publications (Peer Reviewed)

Cotten, D., (submitted) "Design and Characterization of an Adjustable Multispectral Imager, SPOC," SmallSat Conference, 2019

Adams, C., **Cotten, D.**, Spain, A., Parker, J., Hevert, M., and Roach, J. (2019) "Towards an Integrated GPU Accelerated SoC as a Flight Computer for Small Satellites," IEEE Aerospace Conference

Tao, J., **Cotten D.,** Mishra D., and J. O'Connell. (2018) "A Comparison between the MODIS Product (MOD17A2) and a Tide-Robust Empirical GPP Model Evaluated in a Georgia Wetland" *Remote Sensing, 10, 1831; doi:10.3390/rs10111831*

O'Connell, J.**,** Mishra D., **Cotten D.,** Wang, L., and Alber, M. (2017) "The Tidal Marsh Inundation Index (TMII): An inundation filter to flag flooded pixels and improve MODIS tidal marsh Vegetation time-series analysis," *Remote Sensing of Environment.* 201 34-46. *Doi 10.1016/j.rse.2017.08.008*

Cotten, D., G. Zhang, M. Leclerc, and P. Raymer, (2016) "Carbon Dioxide Fluxes from Tifway Bermuda," *Journal of Biometeorology.*61:103-11. *doi 10.1007/s00484-016-1194-z*

Cotten, D., L. Magnani (2013). "A High-resolution Study of the CO-H_2 Conversion Factor in the Diffuse Cloud MBM 40," *MNRAS* **436(2)** 1152-1160. *doi:* 10.1093/mnras/stt1646

Cotten, D., L. Magnani, E.A. Wennerstrom, K.A. Douglas, and J.S. Onello (2012). "Hydroxyl as a Tracer of H_2 in the Envelope of MBM40," *Astron. J.*, **144**:163.

Chastain, R.J., **D. Cotten**, and L. Magnani (2010). "High-Resolution CH Observations of Two Translucent Molecular Clouds," *Astron. J.*, **139**, 267- 278.

Publications (Book Chapters and Non-peer Reviewed Articles)

Madden, M., T. Jordan, S. Bernardes, C. Goetcheus, K. Olson and **D. L. Cotten**, 2019. Small Unmanned Aerial Systems (sUAS) and Structure from Motion (SfM) for Identifying, Documenting and Monitoring Cultural and Natural Resources, Invited Chapter, In, J.B. Sharma (Ed), Applications of Small Unmanned Aircraft Systems: Best Practices and Case Studies, CRC Press Taylor & Francis Group, Boca Raton, Florida, in press.

O'Hare, N.K., S.D. Healy, **D.L. Cotten**, B.P. Adams, S. Bernardes, T.R. Jordan, and M. Madden, (2018). Vegetation mapping at Timucuan Ecological and Historic Preserve: Photointerpretation key and vegetation map. Natural Resource Report NPS/SECN/NRR—2016/XXX. National Park Service, Fort Collins, Colorado, in press.

Cotten, D.L., B.P. Adams, N.K. O'Hare, S. Bernardes, T.R. Jordan, and M. Madden, (2018). Vegetation mapping at Canaveral National Seashore: Photointerpretation key and vegetation map. Natural Resource Report NPS/SECN/NRR—2016/XXX. National Park Service, Fort Collins, Colorado, in press.

Healy, S.D., **D.L. Cotten**, B.P. Adams, N.K. O'Hare, S. Bernardes, T.R. Jordan, and M. Madden, (2018). Vegetation mapping at Fort Matanzas National Monument: Photointerpretation key and vegetation map. Natural Resource Report NPS/SECN/NRR—2016/XXX. National Park Service, Fort Collins, Colorado, in press.

Cotten, D.L., S.D. Healy, B.P. Adams, N.K. O'Hare, S. Bernardes, T.R. Jordan, and M. Madden, (2018). Vegetation mapping at Castillo de San Marcos: Photointerpretation key and vegetation map. Natural Resource Report NPS/SECN/NRR—2016/XXX. National Park Service, Fort Collins, Colorado, in press.

Cotten, D.L., S.D. Healy, B.P. Adams, N.K. O'Hare, S. Bernardes, T.R. Jordan, and M. Madden, (2018). Vegetation mapping at Fort Caroline National Memorial: Photointerpretation key and vegetation map. Natural Resource Report NPS/SECN/NRR—2014/XXX. National Park Service, Fort Collins, Colorado, in press.

Cotten, D.L., B.P. Adams, N.K. O'Hare, S. Bernardes, T.R. Jordan, and M. Madden. (2018). Vegetation mapping at Horseshoe Bend National Military Park: Photointerpretation key and vegetation map. Natural Resource Report NPS/SECN/NRR—2014/XXX. National Park Service, Fort Collins, Colorado. (Task Agreement P13AC01319), in press.

Cotten, D.L., B.P. Adams, N.K. O'Hare, S. Bernardes, T.R. Jordan, and Madden (2018). Vegetation mapping at Ocmulgee National Monument: Photointerpretation key and vegetation map. Natural Resource Report NPS/SECN/NRR—2014/XXX. National Park Service, Fort Collins, Colorado, in press.

Cotten, D., T. Jordan, M. Madden, and S. Bernardes. (Submitted) "Structure from Motion and 3D Reconstruction," *ASPRS Manual of Remote Sensing, 4th Edition*

Remillard, C., **D. Cotten,** W. Xu. (Submitted) "Data Synergy using Remote Sensing," *ASPRS Manual of Remote Sensing, 4th Edition*

Madden, M., T. Jordan, S. Bernardes, **D. Cotten**, N. O'Hare, and A. Pasqua (2015). "Unmanned Aerial Systems and Structure from Motion Revolutionize Wetlands Mapping." R.W. Tiner, V. V. Klemas, and M. W. Lang (Eds.), *"Remote sensing of Wetlands: Applications and Advances"*

Zhang, G., M. Y. Leclerc, **D. Cotten**, and P. Raymer (2015). "Carbon Sequestration of Turfgrass." *Turf News*, Jan/Feb issue, p. 58-59

Funded Grants

2018 – AFRL-UNP-Phase B: Multi view Onboard Computational Imager, **PI Cotten**, **$750,650**

2017 – UGA: Center for Teaching and Learning – The Design and Construction of Equipment for Ground to Space Communications; **PI D. Cotten, $23,586**

2017 – UGA: Parents Leadership Council – Providing Undergraduate Students Equipment for Ground to Space Communications; **PI D. Cotten, $5,000**

2016 – NASA: A Tidal and Species Based MODIS GPP Product for Estimating Marsh Blue Carbon across the Southeastern United States; PI Mishra, **Co-PI Cotten**, **$994,963**

2016 – NASA: SPOC mission for the CubeSat Launch Initiative; PI Mishra, **Co-PI Cotten**

2015 – Army Corp of Engineers: Savannah Harbor Expansion Project, Extension, PI Madden, **Co-PI Cotten**, **$122,229**

2016 – UGA: Office of Service Learning – Women in Technology Workshop; **PI Cotten, $1,750**

2015 – AFRL-UNP: Mapping and Ocean Color Small Satellite, PI Mishra, Co-PI **Cotten**, **$159,860**

2015 – NASA: Digital Orbital Analysis of Water Resources for Georgia; PI Mishra, **Co-PI Cotten**, **$467,814**

2015 – Army Corp of Engineers: Savannah Harbor Expansion Project, Extension, PI Madden, **Co-PI Cotten**, **$128,315**

2014 – Army Corp of Engineers: Savannah Harbor Expansion Project, Extension, PI Madden, **Cotten (Senior Personnel)**, **$119,282**

2013 – National Peanut Foundation: Genomic control of physiological traits related to drought tolerance in peanut; PI Leclerc, **$20,000**

2012 – Turf Producers international: Turfgrass Carbon Sequestration Proposal; PI Leclerc, **Co-PI Cotten**, **$22,000**

2010 – NRAO/GBT: Student Observing Support Grant for "OH as a Tracer of "Dark" Molecular Gas." PI Magnani, **Co-PI Cotten**, **$14,897**

2009 – NRAO: 100-m telescope, 48 hours for "OH as a Tracer of "Dark" Molecular Gas" PI Magnani, **Co-PI Cotten**

2008 – ARO: 12-m telescope, 39 hours for "A Search for CO Emission in Regions with E(B-V) ~ 0.1 Magnitudes" PI Magnani, **Co-PI Cotten**

Submitted Grants

2019 – Sea Grant – (Submitted) Improving Coastal Resiliency in the Age of Big Data: Use of Emerging Technologies and Data Science to Train and Educate Coastal Communities, **PI Cotten, $144,360**

2019 – DOD SBIR – (Submitted) Innovative Thermal Management Solutions for High-Power SmallSats, **Senior/key personnel Cotten, $35,000**

2019 – APS – (Submitted) A 3-Stage Mission for Launching STEM interests: Science Shows, lectures and workshops for local K-12 schools, **CoPI Cotten, $9,250**

2018 – NSF – CubeSat: Multi-latitude, Multispectral, Multi-angle, and Data fusion of Aerosols Instrument, **PI Cotten**, **$1,199,931**

2018 – NASA SBIR - High Performance Computing for EO, PI Space Micro, **Senior/key personnel Cotten, $32,997**

2018 – DOE - Ecosystem Carbon Dynamics and Processes across Atlantic Coastal Wetlands: Reconciling Mechanisms To Improve Earth System Models, PI Mishra, PI: K. Schafer, **Co- PI Cotten, $997,500**

2017 – DOD - A High Resolution Sea Surface Temperature Sensor for CubeSats, **PI Cotten**, **$299,120**

2017 **–** Air Force SBIR - Distributed Small Satellite Clusters for Hyperspectral Cloud Observations, PI Space Systems, **Senior/key personnel Cotten, $35,000**

2017 – US ARMY SBIR - A CubeSat Solution on Monitoring Seaports and Littoral Zones, PI Blink Astro, **Senior/key personnel Cotten, $20,596**

2017 – NASA STP - Transitioning from Sensors to Capabilities: Developing On Orbit High Performance Computation Units for Parallel Processing, Computer Vision, and Machine Learning, **PI Cotten, $399,137**

2017 – Preliminary Proposal NSF INCLUDES: Browsing the Geospatial Landscape: Integrating modern and traditional technologies to engage underrepresented youth in environmental research, Senior/key personnel

2016 – NASA STTR - Developing and Integrating a Moderate Resolution Hyperspectral Imager National Aeronautics and Space Administration, **PI Cotten, $96,000**

2016 – United Launch Alliance - CHIP sat, Communication Handling between Independent Payloads satellite, **PI Cotten**

2016 – NSF NRT-IGE: Wicked Problems, Resilient Solutions for Coastal Impacts of Climate Change PI

Current Projects

UGA- Multiview Onboard Computational Imager satellite (MOCI-sat) – Designing and building a small satellite that will use photogrammetric Structure from Motion to construct 3D models of the Earth's surface. ***Role:*** *PI*

UGA-SPectroscopic Analysis of Coastal Environments satellite (SPOC-sat) – Designing and building a small satellite that will carry a multispectral imager to observe and analyze coastal regions of Georgia. ***Role:*** *researcher, lead undergraduate team, co-wrote proposal*

NASA Blue Carbon Project – Measuring carbon sequestration potential of Gulf Coast salt marshes using MODIS and eddy covariance techniques. ***Role:*** *researcher, lead field teams*

National Park Service Vegetation Inventory Program – Using aerial photos and GIS techniques to map forest composition of six National Parks. ***Role:*** *lead field teams, researcher, co-report writer*

Savannah Harbor Expansion Project – Collect and build visualizations of data gathered by the Army Corps on the environmental monitoring of the harbor expansion. ***Role:*** *website maintenance, data analyst and visualizations*

Leadership

- Small Satellite Research Laboratory Co-Founder and Lead Mentor, UGA, 2015 – Pres.
  - Lead a team of undergraduates in building two small satellites: MOCI and SPOC
  - Mentor Young Dawgs and Work Based Learners
  - Create and run outreach activities for the local community
  - Developed a course called CubeSats for Remote Sensing applications
- ASTR1020 Co-Creator and Instructor, UGA – Costa Rica, 2011
  - Co-created an Astronomy program at the UGA Costa Rica campus. Designed guidelines for teaching an astronomy course and laboratory to students and provided a supervisory role as we traveled around Costa Rica for two weeks.
- GRSC 7770 Instructor, UGA, 2010
  - Instructed graduate students in the different methods of teaching and handling situations that may arise when guiding undergraduate students.
- Head Laboratory Instructor, UGA, 2010
  - Trained laboratory instructors on how to lead each lab, including teaching techniques and safety information pertaining to the lab equipment.
- Physics Laboratory Instructor, UGA, 2006 – 2011
  - Taught physics concepts to undergraduates and provided instruction on how to set up experiments in a way that accurately tests the concepts.

Advising

Major Advisor

Masters Students:

Jackson Parker – *Enhancing Inter Satellite Communication for Swarms* – Fall 2020

Committee Member

Masters Students:

Nicholas Neel – *Inter comparison of Current and Future Multispectral Sensors* – Fall 2019

Shannon Healy – *Advanced Geospatial Technologies for Monitoring of Plot-level Crop Growth in Small Farms and Community Gardens* – Fall 2019

Caleb Adams – *Feature Detection Using Neuromorphic Computers in Space* – Fall 2020

Ph.D. Students:

Peter Hawman – *Controls on Carbon and Light Absorption of Coastal Marsh Ecosystems through Micrometeorological and Field-Based Measurements to Improve Satellite Derived Productivity Modeling* – Spring 2021

Lishen Mao – *Using PAM Fluorometry to Study the Spatiotemporal Acclimation of Photosystem II* – Fall 2021

Caroline Narron – *Remote Sensing Of Carbon Use Efficiency and Belowground Net Primary Production to Understand Spatiotemporal Variation in Tidal Wetland Carbon Storage and Resiliency* – Fall 2021

Undergraduates

Ongoing in 2019 (38):

Arogeti, Megan; Barton, Joshua; Bellamy, Grayson; Busbey, Clay; Clark, Mary; Conley, Jacob; Deal, Kaelyn; Ely, Michael; Endler, Niklas; Gandhi, Rutu; Gonzalez, Gabriel; Hanson, Tyler; Heimerl, Justin; Hendrix, Godfrey; Hoffman, Anna; Huynh, Derek; Kinkade, Austin; Leicher, Bjorn; Lin, Alex; Lohner, Nicolas; McDaniels, Jack; McFerren, W. Conor; Miller, Eric; Miller, Trey; Moon, Injoo; Nix, Kolbe; Norris, Sabrina; O'Hara, Ryan; Oni, Mosopefoluwa; Patel, Nir; Pfeiffer, Alexa; Red, Richard; Saki, Mateen; Spain, Allen; Venenga, Claire; Watson-Jones, Aleander; Whitcomb, Stephen; Zenere, Anthony

Graduated in 2019 (11):

Akintonwa, Michael; Bjorklund, Paul; Heavner, Nicholas; Hevert, Matthew; Martinez, Aaron; Murray, Tyler; Roach, James; Summey, Kaitlyn; Veazey, Clark; Wells, Luke; Whilden, Sydney

Graduated in 2018 (19):

King, Adam**;** Buzzy, Michael; Ilango, Nirav; Ngo, Khoa; Sheppard, Preston; Barnes, Ethan; Copenhaver, Paige; Courtney, John; Davis, Natalie; Gavinales, Erick; Hamilton, Kyle; Huynh, Ashley; Hwang, Paul; Lieu, Cindy; Versteeg, Casper; Williams, Byron; Grable, Graham; Pham, Thoai; Van De Velde, Meredith

Graduated in 2017 (17):

Chau, Benson; Ensing, Parker; Gilbert, Kayla; Mailloux, Alex; Millar, Kyle
Ray, Rick; Banerjee, AJ; Emmenegger, Todd; Hsieh, Tiffany; Keith, Paul; Mizelle, Dustin; O'Shields, Josh; Serog, Esa; Winkles, Alexander; Skidmore, Logan; Le Corre, Megan; Yang, Christine

Graduated in 2016 (10):

Babaie, Ryan; Bales, Helena; Brady, Chrissie; Cochran, Kenny; Eshpeter, Warren; Szakal, Nick; Adolphe, Juweek; Gravina, Nicholas; Stewart, Jaicob; Bugbee, Tyler

High School Students (11)

2019 – Stephen Cofer, Annie Lin
2018 – Max Pickney, Yuki Ito
2017 – Dylan Gavon, Marco Newman, Bowen OSteen, Suvitha Viswanathan
2016 – Yamin Himani, Marco Newman
2015 – Jacob Spaulding
2014 – Grace Devine

Instruction

Lecture Classes:

2019 – GEOG(ENGR) 4390/6390 CubeSats: Design, Integration, and Testing
2018 – GEOG(ENGR) 4390/6390 CubeSats: Design, Integration, and Testing
2018 – FYOS CubeSats: The New Realm of Space
2016 – GEOG 4350/6350 Remote Sensing of Environment - Instructor
2011 – Head Physics Laboratory (1111L/1211L) Instructor
2011 – ASTR 1020 – Stellar and Galactic Astronomy – Developer and Instructor
2010 – GRSC 7770 – Physics Graduate Seminar - Instructor
2009 – PHYS 1010 – Physics of the Wii – Co-Instructor

Laboratory Classes:

PHYS 1111L/1211L – Principles of Physics for Scientists and Engineers-Mechanics, Waves, Thermodynamics Laboratory – Instructor (2006, 2004, 2008, 2009, 2010, 2011)
ASTR 1010L/1020L – Stellar and Galactic Astronomy Laboratory – Instructor (2007, 2009, 2010)

Research Courses

Spring 2019 – ENGR4960H Undergraduate Research – Power System Analysis
Spring 2018 – ENGR4960H Undergraduate Research – Finite Element Analysis
PHYS 4990H Honors Research – Antenna Theory

Spring 2017 – ENGR4960H Undergraduate Research – Mechanical Design
GEOG 4921 Directed Topics, Independent Research Small Satellites
HONS 4970H Honors Research, Electrical Subsystems
PHYS 4960H Directed Research, Mission Operations for Satellites
Fall 2017 – PHYS 4790H Directed Research, Concept of Operations for Satellites

Guest Lecturer:

Date	Class	Lecture Title
2019/04/29 –	GEOG 2011	Geospatial Science with Small Satellites
2018/03/15 –	GEOG 2011	Data Acquisition using Small Satellites
2017/11/13 –	GEOG 2011	Designing Small Satellites
2017/10/24 –	GEOG 4160/6160	Eddy Covariance: Methods and Processing
2017/04/07 –	GEOG 2011	Small Satellites for Earth Observation
2016/11/13 –	GEOG 2011	Small Satellites for GIS
2015/10/29 –	GEOG 4160/6160	Eddy Covariance Techniques
2015/02/23 –	GEOG 4350/6350	UAV data collection and data processing techniques
2014/09/18 –	GEOG 8530	UAV demonstration and data processing
2014/04/21 –	GEOG 8530	UAV Structure from Motion

Invited Presentations to Conferences and Other Technical Meetings

Cotten, D. L. (2017, November 3rd), "UGA SSRL: Current and Future Missions." AtomicDB Work Week and Workshop 2017, Athens GA

Participation in Conferences and Other Technical Meetings

2019

14. Cotten, D., Neel, N., Mishra, M., Madden, M., Adams, C., Ullrich, S., Burd, A., Adams, M., Summey, K., Versteeg, C., Parker, J., and Beyette, F. 2019. "The Spectral Ocean Color Imager (SPOC) - An Adjustable Multispectral Imager," Proceedings of the AIAA/USU Conference on Small Satellites, Pre-Conference Workshop Session VII: Instruments/Science II, SSC19-WKVII-03.
13. Lishen Mao, Deepak R. Mishra, David L. Cotten, Jessica O'Connell, Caroline R. Narron, Peter A. Hawman, "Analyzing Chlorophyll Fluorescence In Juncus Roemerianus By Pulse Amplitude Modulated (Pam) Fluorometer At Different Plant Height," IGARSS 2019
12. Heavner, N. and Cotten, D. (2019, April 8th), "Analysis and Design of Aluminum-6061 Structures for Use in Satellites," UGA Center for Undergraduate Research Symposium
11. Ely, M. and Cotten, D. (2019, April 8th), "A Study into the Structural and Thermal Integrity of 6U Cube Satellite Subsystems and Components," UGA Center for Undergraduate Research Symposium
10. Roach, J. and Cotten, D. (2019, April 8th), "Implementing Fault Tolerance and Radiation Hardening for an Accelerated Computing Platform in Low Earth Orbit," UGA Center for Undergraduate Research Symposium
9. Lin, A. and Cotten, D. (2019, April 8th), "Modeling the Attitude Determination and Control Subsystem (ADCS) for Pointing," UGA Center for Undergraduate Research Symposium
8. Saki, M. and Cotten, D. (2019, April 8th), "UHF Half-Duplex Telecommand and Telemetry for Successful and Accurate Satellite Communication," UGA Center for Undergraduate Research Symposium
7. Venenga, C. and Cotten, D. (2019, April 8th), "Small Satellite Communications: Functionality and Testing," UGA Center for Undergraduate Research Symposium

6. Deal, K. and Cotten, D. (2019, April 8th), "Undergraduates Modeling Small Satellites with Thermal Desktop," UGA Center for Undergraduate Research Symposium
5. Whitcomb, S. and Cotten, D. (2019, April 8th), "Design and Implementation for Power Verification Engine for Small Satellite," UGA Center for Undergraduate Research Symposium
4. Patel, N. and Cotten, D. (2019, April 8th), "Steady State Thermal Analysis of the 3U SPOC Satellite in Ansys Workbench," UGA Center for Undergraduate Research Symposium
3. Huynh, D. and Cotten, D. (2019, April 8th), "Front End Design/Development for Lab Systems," UGA Center for Undergraduate Research Symposium
2. Watson-Jones, A. and Cotten, D. (2019, April 8th), "Structural-thermal Optical Performance Analysis of Small Satellite Paylaods," UGA Center for Undergraduate Research Symposium "Building a Better Box: Design and Analysis of 3U to 6U CubeSat Frames,"
1. Madden, M., T. Jordan, **D. Cotten**, S. Bernardes, N. O'Hare, B. Adams and S. Healy, Maintaining National Park Service Vegetation Databases using Emerging Geospatial Techniques, American Society for Photogrammetry and Remote Sensing (ASPRS) Conference, Denver, Colorado, 28-30 January, 2019.

2018

31. Neel, N., **D. Cotten**, D. Mishra, S. Ullrich, M. Adams, A. Burd, M. Madden, and T. Mote, "The Spectral Ocean Color (SPOC) Small Satellite Mission: Developing an Adjustable Multispectral Imager", poster presentation at American Geophysical Union (AGU) meeting, Washington, D.C., December 2018.
30. Mao, L., D. Mishra, **D. Cotten**, J. O'Connell, C. Narron, and P. Hawman, "Analyzing Chlorophyll Fluorescence in a Juncus Roemerianus Dominated Marsh at Different Heights using a Pulse Amplitude Modulated (PAM) Fluorometer", poster presentation at American Geophysical Union (AGU) meeting, Washington, D.C., December 2018.
29. Narron, C., J. O'Connell, D. Mishra, and **D. Cotten**, "Reparameterization of the Tidal Marsh Inundation Index (TMII) to Improve Landsat Vegetation Time-Series in Georgia and Gulf Coast Tidal Marshes", poster presentation at American Geophysical Union (AGU) meeting, Washington, D.C., December 2018.
28. Hawman, P., D. Mishra, **D. Cotten**, J. O'Connell, C. Narron, and L. Mao, "Effects of Cloud Cover on Light Use Efficiency in Salt Marsh Species", poster presentation at American Geophysical Union (AGU) meeting, Washington, D.C., December 2018.
27. Adams, C., Parker, J., and **Cotten, D. L.** (2018, November 14th), Software Demonstration -"Multi view Tech Demonstration," *Symposium on Space Innovation*, Atlanta, GA
26. Whilden, S., Neel, N., **Cotten, D. L.,** and Mishra, D. (2018, November 13th), "Implementing a Software-Defined Radio Scheme for a CubeSat Ground Station," *Symposium on Space Innovation*, Atlanta, GA
25. Summey, K., **Cotten, D. L.,** and Mishra, D. (2018, November 13th), "Post-Launch Optical Aberration Detection for Small Satellites," *Symposium on Space Innovation*, Atlanta, GA
24. Red, R., Saki, M., **Cotten, D. L.,** and Mishra, D. (2018, November 13th), "Software Architecture of the UGA COSMO Ground Station," *Symposium on Space Innovation*, Atlanta, GA
23. Lin., A., Roach, J., and **Cotten, D. L.** (2018, November 13th), "Implementing Fault Tolerance and Radiation Hardening on a Commercial Off the Shelf Accelerated Computing Processor in Space," *Symposium on Space Innovation*, Atlanta, GA
22. King, A. and **Cotten, D. L.** (2018, November 13th), "Design and Implementation of a Novel Software Interface for an Adjustable Multispectral Payload," *Symposium on Space Innovation*, Atlanta, GA
21. Heavner, N., Ely, M., **Cotten, D. L.,** and Mishra, D. (2018, November 13th), "Feasibility of CubeSat Frames for Heat Dissipation Multi-view Onboard Computational Imager (MOCI)," *Symposium on Space Innovation*, Atlanta, GA

20. Deal, K., Patel, N., and **Cotten, D. L.** (2018, November 13th), "Steady State Thermal Analysis of the Avionics Stack for the 3U Cube Satellite SPOC," *Symposium on Space Innovation*, Atlanta, GA
19. Adams, C., Spain, A., Parker, J., and **Cotten, D. L.** (2018, November 13th), "GPU accelerated SoCs as Flight Computers for Small Satellites," *Symposium on Space Innovation*, Atlanta, GA
18. **Cotten, D. L.** (2018, November 14th), "How UGA is Helping Develop the Next Generation of Systems Engineers for the State of Georgia" *Symposium on Space Innovation*, Atlanta, GA
17. Neel, H. and **Cotten, D. L.** (2018, November 13th), "The Spectral Ocean Color Satellite: A Pre-Integration, Post Critical Design Review Overview," *Symposium on Space Innovation*, Atlanta, GA
16. Adams, C. and **Cotten, D. L.** (2018, August 14th), "A Near Real Time Space Based Computer Vision System for Accurate Terrain Mapping," *Small Satellite Conference*, Logan Utah
15. Versteeg, C. and **Cotten, D. L.** (2018, August 14th), "Thermal Management and Design of High Heat Small Satellite Payloads," *Small Satellite Conference*, Logan Utah
14. Versteeg, C. and **Cotten, D. L.** (2018, April 5th), "Preliminary Thermal Analysis of Small Satellites," *AIAA Region II Student Conference,* Mobile, AL
13. Heavner, N. and **Cotten, D. L.** (2018, April 9th), "The Multi-view Onboard Computational Imager (MOCI) Mission: A 3U sized Supercomputer Floating in Space," *2018 NASA Laboratory for Astrophysics Workshop*
12. Arogeti, M. and **Cotten, D. L.** (2018, April 9th), "Pseudo Invariant and Coastal Target Feasibility," *UGA Center for Undergraduate Research Symposium*
11. Barnes, E. and **Cotten, D. L.** (2018, April 9th), "Compression and Encryption Methods for Small Satellites," *UGA Center for Undergraduate Research Symposium*
10. Buzzy, M. and **Cotten, D. L.** (2018, April 9th), "Joule Heating Analysis of Spacecraft PCBs," *UGA Center for Undergraduate Research Symposium*
9. Copenhaver, P. and **Cotten, D. L.** (2018, April 9th), "Antenna Theory and the University of Georgia's First Ground station," *UGA Center for Undergraduate Research Symposium*
8. Endler, N. and **Cotten, D. L.** (2018, April 9th), "UGA's Leap to Space: Small Satellite Research Lab Testing," *UGA Center for Undergraduate Research Symposium*
7. Ensing, P. and **Cotten, D. L.** (2018, April 9th), "Structural Analysis of Small Satellites Spectral Ocean Color," *UGA Center for Undergraduate Research Symposium*
6. Grable, G. and **Cotten, D. L.** (2018, April 9th), "Enhancement of Space bore Sensors through Adaptive Temperature Control and Thermoelectric Modules," *UGA Center for Undergraduate Research Symposium*
5. Hendrix, S. and **Cotten, D. L.** (2018, April 9th), "Cost Effective Thermal Vacuum Testing System," *UGA Center for Undergraduate Research Symposium*
4. Leicher, B. and **Cotten, D. L.** (2018, April 9th), "Concept of Operations in Small Satellite Functionality," *UGA Center for Undergraduate Research Symposium*
3. Versteeg, C. and **Cotten, D. L.** (2018, April 9th), "Structural-thermal Optical Performance Analysis of Small Satellite Paylaods," *UGA Center for Undergraduate Research Symposium*
2. Versteeg, C., Lin, A., and **Cotten, D. L.** (2018, April 9th), "Modeling the Attitude Determination and Control Subsystem (ADCS) on 3U CubeSat," *UGA Center for Undergraduate Research Symposium*
1. Whilden, S., and **Cotten, D. L.** (2018, April 9th), "How Beta Angle Determines CubeSat Mission Development," *UGA Center for Undergraduate Research Symposium*

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19. Adams, C., Neel, N., **Cotten, D. L.** (2017, October 19th), "Batch Analytical Comparisons of on Orbit Multi-View Stereo, Surface Reconstructions, Rasterization, and Digital Surface Models." *Symposium on Space Innovation*, Atlanta, GA.
18. Whilden, S., **Cotten, D. L.,** Mishra, D. (2017, October 18th), "CubeSats and Radiation Damage." *Symposium on Space Innovation*, Atlanta, GA.
17. Conley, J. **Cotten, D. L.** (2017, October 18th), "Self-Improving Structure-from-Motion in Orbit." *Symposium on Space Innovation*, Atlanta, GA.
16. Neel, N., Adams, C., **Cotten, D. L.** (2017, October 18th), "Feature Matching from orbiting Vehicles." *Symposium on Space Innovation*, Atlanta, GA.
15. Grable, G., **Cotten, D. L.** (2017, October 18th), "Design of a Solid-State Thermoelectric System to Cool Satellite Sensors." *Symposium on Space Innovation*, Atlanta, GA.
14. Versteeg, C., **Cotten, D. L.,** Mishra, D. (2017, October 18th), "Thermal and Structural Simulations of Small Satellite Systems." *Symposium on Space Innovation*, Atlanta, GA.
13. Leicher, B., Copenhaver, P., Adams, C., Roach, J., **Cotten, D. L.,** and Mishra. D. (2017, October 18th), "Concept of Operations in Small Satellite Functionality." *Symposium on Space Innovation*, Atlanta, GA
12. **Cotten, D. L**., Adams, C., Neel, N., and Mishra, D., (2017, August), "The Feasibility of Structure from Motion over Planetary Bodies with Small Satellite Systems." *Small Satellite Conference*, Logan Utah
11. Grable, G., and **Cotten, D. L.**, (2017, August), "Final Results of a Solid-State Cooling Mechanism for Cubesat Imaging Sensors." *Small Satellite Conference*, Logan Utah
10. **Cotten, D. L**., Adams, C., Mishra, D., and Neel, N., (2017, July), "Structure from Motion from a Constrained Orbiting Platform." *International Space Station R&D Conference*, Washington, D.C
9. **Cotten, D. L**., Adams, C., Mishra, D., Neel, N., Grable, G., and Ngo, K, (2017, April 26th), "SPectral Ocean Color Satellite." *CubeSat Developers Workshop*, San Luis Obispo, CA
8. Adams, C. and **Cotten, D. L.** (2017, April 3th), "The Feasibility of Structure from Motion over Planetary Bodies with Small Satellite Systems," *UGA Center for Undergraduate Research Symposium*
7. Grable, G., LeCorre, M., and **Cotten, D. L.** (2017, April 3th), "Structural Design and Optimization of SPOC Satellite," *UGA Center for Undergraduate Research Symposium*
6. Ilango, N., **Cotten, D. L.,** Adams, C., Neel, N., Madden, M., and Mishra, D. (2017, April 4th), "Accuracy of Dense Point Clouds Given Varying Image Quality," *UGA Center for Undergraduate Research Symposium*
5. Ngo, K. and **Cotten, D. L**. (2017, April 4th), "Simulation of Small Satellite Photovoltaic Power Generation Systems," *UGA Center for Undergraduate Research Symposium*
4. **Cotten, D. L.**, Adams, C, Mishra, D., Madden, M., and Bernardes, S. (2017, March 14th), "STEM Opportunities for Undergraduates Building Nanosatellites: the NASA CubeSat Program Georgia." *IGTF/ASPRS* Baltimore, MD.
3. **Cotten, D. L.**, Adams, C, Mishra, D., Madden, M., Bernardes, S., Ngo, K., Neel, N., Ilango, N., Le Corre, M., Grable, G., and King, A. (2017, March 14th) "Building a Small Satellite Research Program at the University of Georgia: UGA Payload Development for CubeSats" *IGTF/ASPRS* Baltimore, MD.
2. Bernardes, S., Madden, M., **Cotten, D. L.**, and Jordan, T. (2017, March 14th) "Advanced Geospatial Technologies for Education and Outreach: 3D Immersion and Geovisualization System (3DIG)." *IGTF/ASPRS* Baltimore, MD.

1. Adams, C., **Cotten, D. L**., Neel H., Ilango, N, Grable, G., and Mishra, D. (2017 February 25th) "Feasibility of Structure from Motion over Planetary Bodies using Small Satellites." *Georgia Scientific Computing Symposium* 2017, Athens, GA

2016

4. **Cotten, D.L**., Bernardes, S., Mishra, D., Adams, C., Neel, H., Ngo, K., Copenhaver, P., Illango, N., King, Adam, Grable, G., and Hwang, P. (2016, December) "ED23B-0828: Enhancing STEM Education through Cubesats: Using Satellite Integration as a Teaching Tool at a Non-Tech School." *American Geophysical Union Fall Meeting*, San Francisco, CA, USA
3. **Cotten, D.L**., Bernardes, S., Mishra, D., Adams, C., Neel, H., Ngo, K., Copenhaver, P., Illango, N., King, Adam, Grable, G., and Hwang, P. (2016, December) "A41H-0161: The SPectral Ocean Color (SPOC) Small Satellite Mission: From Payload to Ground Station Development and Everything in Between." *American Geophysical Union Fall Meeting*, San Francisco, CA, USA
2. Mote, T., Tedesco, M., Astuti, U., **Cotten, D.,** Jordan, T., Rennermalm, A. (2015, December) "Helicopter based Photography for use in SfM over the West Greenland Ablation Zone" *American Geophysical Union Fall Meeting*, San Francisco, CA, USA
1. Madden, M., Jordan, T., **Cotten, D. L.**, O'Hare, N., Pasqua, A. and Bernardes, S. (2015, September) "The future of unmanned aerial systems (UAS) for monitoring natural and cultural resources". *55th Photogrammetric Week*. Stuttgart, Germany.

Outreach Events

Date	Event	Number	Age
3/27/2019	Experience UGA (Clarke Middle School)	312	6th grade
3/26/2019	Experience UGA (Clarke Middle School)	273	6th grade
10/30/2018	Cedar Shoals High School	24	9th-10th grade
10/1/2018	Oglethorpe Country Middle School	8	6th-8th grade
5/6/2018	Cheatham Hill Elementary school	30	5th grade
3/1/2018	Cedar Shoals High School	200	9th grade
1/31/2018	Athens Montessori	14	7th grade
11/7/2017	Cedar Shoals High School	28	9th-10th grade
6/7/2017	Georgia Young Hackers Summer Camp	18	6th grade
5/25/2017	Madison County Middle School	16	8th grade
2/17/2017	Morgan County High School	45	11th-12th grade
10/8/2016	NSF LISELL-B	100	kids to adults
9/23/2016	Cedar Shoals High School	27	9th-12th grade
8/1/2016	UGA Young Dawgs	1	9th-12th grade
6/26/2016-6/29/2016	NSF LISELL-B	90	5th-12th grade
5/22/2016	Malcolm Bridge Elementary School	25	4th grade