

# MAX K. APPELBAUM

M.S. Graduate Research Assistant | University of Georgia, Department of Geography

Disruptive Geospatial Technologies Laboratory (DiGTL), University of Georgia

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## EDUCATION

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**Master of Science in Geography (Climate Science)** (*in progress*) August 2022 – May 2024 (*expected*)

**Graduate Certificate in Geographic Information Science (GIS)**

*University of Georgia, Department of Geography*

*Major Advisor: Dr. Marshall Shepherd*

*Committee Members: Dr. Andrew Grundstein, Dr. Sergio Bernardes*

**Bachelor of Science in Atmospheric Sciences with Geography Minor** 2022

*University of Georgia, Department of Geography*

## AWARDS AND NOMINATIONS

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*Best in Show – Savannah River National Laboratory BSRA Poster Session #1* 2023

*UGA Geography NCGE/AAG Outstanding Senior Award Nominee* 2022

*UGA Geography Engagement and Community Outreach Award Nominee* 2022

## RESEARCH INTERESTS

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My research interests lie in characterizing, visualizing, and understanding surface and boundary layer atmospheric processes via satellite remote sensing and in-situ drone-based and surface-based sensing methods. I am also interested in developing specialized, low-cost sensor systems to be used for in-situ sensing with a focus on drone applications.

My M.S. thesis focus is to conduct urban heat investigations of Augusta, Georgia, in partnership with the Savannah River National Laboratory and funded by the Department of Energy. As of October 2023, I have successfully completed a summer field campaign of in-situ temperature, pressure, relative humidity, and dew point data collection in Augusta via driven traverses with vehicle-mounted Arduino-based sensors, as well as rotary UAS vertical data collection with the same Arduino-based system. As part of this project, I am also exploring socioeconomic factors that affect the micro- and mesoscale anatomy of urban heat island intensity.

## PROFESSIONAL MEMBERSHIP

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*American Meteorological Society (AMS)* 2020 – present

*National Speleological Society (NSS)* 2022 – present

## LEADERSHIP POSITIONS HELD

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**Undergraduate and Graduate (currently) Student Ambassador** 2020 – present  
*Office of Emergency Preparedness, University of Georgia*

**Club Historian** 2021 – 2022  
*American Meteorological Society, University of Georgia Student Chapter*

## PUBLICATIONS

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### *Journal Articles (Peer-Reviewed)*

Wermter, J., V. Turner, **M. Appelbaum**, J.M. Shepherd, J. Lott, 2023: Stream Temperature Responses to Summer Urban Rain Events at the Central Savannah River. *Submitted to Geophysical Research Letters, under review.*

Meleod, J., J.M. Shepherd, **M. Appelbaum**, 2023: Evidence of cloud and rainfall modification in a mid-sized urban area. *Submitted to City and Environment Interactions, under review.*

## CONFERENCE PRESENTATIONS

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***Remote Sensing of the Surface Urban Heat Island to Inform In-Situ Atmospheric Observations*** Poster  
*Award: Best in Show*

2023 Savannah River National Laboratory BSRA Poster Session

***Investigations of the Augusta, Georgia Surface Urban Heat Island*** Oral Presentation  
2023 Southern Appalachian Weather and Climate Workshop

***Investigations of the Augusta, GA-SC Surface Urban Heat Island*** Oral Presentation and Panelist  
2023 Georgia Climate Conference

## INVITED TALKS

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***Drones, Remote Sensing, & Immersive Environment Demonstration*** September 2023  
Guest speaker on the application of drones for atmospheric research

***Citizen Science & Low-Cost Innovation in Urban Climate Research*** October 2023  
Guest lecture for undergraduate course “Teaching and Learning with Technology” (EDIT 2000) at the University of Georgia

## PROJECT EXPERIENCE

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**SitS (Signals in the Soil): AWeSOMSense (A Wetland Soil Organic Matter Sensor)** University of Georgia  
*Undergraduate Research Assistant* June 2021 – May 2022

Principal Investigators: - Dr. Deepak Mishra (*UGA Dept. of Geography*)  
- Dr. Sonny Kim (*UGA College of Engineering*)  
- Dr. Lakshmish Ramaswamy (*UGA Dept. of Computer Science*)  
- Dr. In Kee Kim (*UGA Dept. of Computer Science*)  
- Dr. Lori Sutter (*UNC Wilmington Biology and Marine Biology*)

Primary Roles:

1. Led the prototype design and construction of a durable and stable proximal-sensing platform to be deployed long-term in coastal salt marshes to collect soil organic matter data, following completion of rigorous testing.
2. Participated in Georgia coastal marsh field research to collect 1-meter soil cores and in-situ hyperspectral data.
3. Created detailed field site maps in ArcGIS to plan and prepare for field trips.
4. Assisted in the initial processing of in-situ soil cores and collect through-depth hyperspectral scans.
5. Assisted in the primary processing of hyperspectral that is to be used to train a machine-learning model to predict soil organic matter content of the marsh soil.

**Investigating potential ecological lift of a hydrologically altered tidal creekshed in a Georgia, USA saltmarsh: A case study**

University of Georgia

*Field Data Collection Assistant (volunteer)*

July 2021

Principal Investigators: - Dr. Susan Wilde (*UGA Warnell School of Forestry*)  
- Dr. Lori Sutter (*UNC Wilmington Biology and Marine Biology*)  
- Katie Lamp'1 (*UGA Warnell School of Forestry M.S. Student, grad. 2021*)

Primary Roles:

1. Assisted with tidal creek discharge measurements, taken every 15 minutes for one complete tide cycle.
2. Collected water samples every 30 minutes throughout 1 complete tide cycle to be lab-analyzed for various water quality constituents.
3. Assisted in field equipment inspection, set-up, and tear-down.

**ATSC (Atmospheric Sciences) 4170: Mesoscale and Radar Meteorology and Climatology**

*Mock Weather Forecasting Team Member*

University of Georgia

*Instructor: Dr. Marshall Shepherd*

January 2021 – May 2021

Primary Roles:

1. Collaborated with a small team to create an NWS-style mesoscale weather briefing to be presented to the class.
2. Coordinated team members around COVID-19 restrictions to schedule virtual team meetings.

*Project Grade: A*

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**ACADEMIC VOLUNTEER**

**August 2023:** In-situ atmospheric data collection to observe the urban heat island of Athens, Georgia during a heatwave event. These data were gathered with the intention of distribution to students in “Applied Climatology in the Urban Environment” (GEOG 4160/6160) taught by Dr. Marshall Shepherd at the University of Georgia.

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**NON-ACADEMIC VOLUNTEER**

**Meteorology Merit Badge Instructor, Boy Scouts of America, Northwest Georgia Council**

**Conservation Volunteer, Sandy Creek Nature Center, Athens, Georgia**

**Defensive Driving Instructor, TireRack Teen Street Survival Driving School, Chattanooga, Tennessee**

## **WORK EXPERIENCE**

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### **UGA Center for Teaching and Learning**

Athens, Georgia

*Student Assistant*

January 2020 – May 2022

Primary Roles:

1. Worked two locations with different service responsibilities.
2. Assist instructors with minor audio/visual issues in the classroom and submit work orders for major audio/visual issues.
3. Perform opening and closing duties, as well as provide welcome desk assistance to building guests.

### **O'Reilly Auto Parts**

Athens, Georgia

*Shift Manager*

May 2019 – November 2019

Primary Roles:

1. Completed daily/closing reports on paper and online to be evaluated by upper management.
2. Managed up to 4 other employees and ensured company policies were followed at all times.

### **Kauffman (now Mavis) Discount Tire**

Athens, Georgia

*Alignment Technician*

September 2018 – December 2018

Primary Roles:

1. Performed thorough 18-point vehicle inspections and recommended maintenance.
2. Performed auto alignments, oil changes, tire changes, brake jobs, and suspension maintenance.

## **TECHNICAL PROGRAMS**

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### ***Programming Languages & IDE's:***

- Python: Spyder, JupyterHub, Jupyter Notebook, VS Code
- R: RStudio
- MATLAB
- Arduino IDE
- Linux Command Line

### ***GIS & Image Analysis:***

- ArcGIS Pro & ArcMap Desktop
- ERDAS Imagine
- ENVI

### ***Modeling & 3D Design:***

- Autodesk Fusion
- Autodesk Inventor
- AutoCAD 3D
- Solidworks