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

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

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

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

American Meteorological Society (AMS) 2020 – present

National Speleological Society (NSS) 2022 – present

LEADERSHIP POSITIONS HELD

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

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.*

Mcleod, 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

Remote Sensing of the Surface Urban Heat Island to Inform In-Siu 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

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

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'l *(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**

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.

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

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

Programming Languages & IDE's:
- Python: Spyder, JupyterHub, Jupyer 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