Elyssa Collins, Ph.D. Student

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Education

Ph.D. Geospatial Analytics (**Fall 2019 - Present)**

North Carolina State University, Raleigh, NC

Research Area: Spatiotemporal forecasting of urbanization patterns under various sea level rise scenarios with evaluation of adaptation strategies that promote coastal resilience

Advisor: Ross Meentemeyer, Director of the Center for Geospatial Analytics, NCSU

B.S. Geological Sciences **(Fall 2015 – Spring 2019)**

University of North Carolina at Chapel Hill, Chapel Hill, NC

Academic Honors and Awards

- Graduate Fellowship, North Carolina State University
- First place award for poster presentation at Anadarko Student Research Symposium, University of North Carolina at Chapel Hill

Publications In Preparation and Presentations

Publication in Preparation

- Working title: Mapping Land Degradation and Rehabilitation at Micro and Meso Scales: NDVI-RFE Residual Analyses in Burkina Faso
- Prospective journal: *Remote Sensing of Environment*
- NSF Number: BCS-1759064
- Investigators: Colin West, Aaron Moody

Poster Presentations

- Anadarko Student Research Symposium, University of North Carolina at Chapel Hill (April 2018)
- SUP Research Symposium, University of North Carolina at Chapel Hill (August 2017)

Research Experience

Vegetation Trend Mapping of Burkina Faso **(January – August 2019)**
UNC Chapel Hill Geography and Anthropology Departments

- Mentor: Dr. Aaron Moody, UNC Chapel Hill
- Used R to collect and analyze NDVI and rainfall satellite data of Burkina Faso, West Africa in order to determine locations of vegetation greening and browning
- Manuscript in preparation

Air Pollution Modeling Lab **(February 2018 – May 2019)**
UNC Chapel Hill School of Public Health, Environmental Sciences and Engineering

- Mentor: Dr. Jason West, Founder of CHAQ (Climate Health and Air Quality) Lab at UNC Chapel Hill
- Collection and analysis of observational and computer model outputs of ground level ozone data in order to use the Bayesian Maximum Entropy (BME) method of spatial analysis to krige global ozone concentrations
- Map generated from analysis was delivered to the Global Burden of Disease (GBD) to implement a health impact assessment

IDEA 2.0 Summer Research Program UNC Chapel Hill **(May - August 2017)**
Geological Sciences Department

- Mentor: Dr. Joel Hudley**,** Title: Examination of *Glycymeris americana* to Determine Short-Term Climate Variability During the Late Neogene
- Participated in a 10-week research experience, professional development workshops, and weekly seminars
- Measured shell morphology, created acetate peels for aging of individuals using the counting of light and dark rings, and micro-milled shells for oxygen and carbon isotopic analysis to determine temperature variability
- The objective of this study was to show that shell morphometrics, age, and chemical variations in this species can be affected by certain environmental conditions, such as sea-surface temperatures
- Presented project at the SUP Research Symposium at UNC Chapel Hill (August 2017)
- Presented project at Anadarko Student Research Symposium at UNC Chapel Hill and received a first place award (April 2018)

Other Employment

Peer Scholars
North Carolina State University, University Libraries **(January 2020)**

- Led a workshop titled “Introduction to Data Mining in R”
- Workshop taught interested students how to obtain data in R from various APIs for further analysis, as well as an introduction to the data.table package

Science Assessment Item Writer **(May - August 2019)**

Measurement Incorporated, Durham, NC

- Developed high school level science assessment items aligned to the Next Generation Science Standards

Sclerochronologist Lab Technician **(May - June 2018)**

UNC Chapel Hill, Geological Sciences Department

- Measured shell morphology, created acetate peels for aging of individuals using the counting of light and dark rings, and micro-milled shells for oxygen and carbon isotopic analysis to determine temperature variability

Isotope Geochemist Lab Technician **(June 2016 - June 2017)**

UNC Chapel Hill, Geological Sciences Department

- Used strontium columns for separation of strontium from archaeological samples
- Polished, cleaned, and welded filaments for mass spectrometer analysis
- Performed general lab equipment care

Research Assistant **(Fall 2015)**

UNC Chapel Hill School of Public Health, Biostatistics Department

- Created research questionnaires for the Biostatistics department in the School of Public Health

Skills

- R
- Python
- Google Earth Engine
- Linux
- Java
- Beginner C++
- Beginner Matlab
- Spatial Analysis
- ENVI
- ArcGIS Desktop
- ArcGIS Pro
- Beginner JavaScript/HTML/CSS

Relevant Coursework

- Introduction to Programming (Java)
- Foundations of Programming (Java)
- Introduction to Geographic Information Science (ArcGIS)
- Modeling of Environmental Systems (Matlab)
- Temporal GIS and Geostatistics
- Introduction to Remote Sensing of the Environment
- Data Analysis for the Earth Sciences (R)
- Programming for GIS (Python)
- Information Analytics
- Geospatial Data Mining (R)

- Geospatial Data Management (Spring 2020)
- Geospatial Simulation (Spring 2020)
- Geovisualization (Spring 2020)

Community Service/Leadership Experience

UNC Chapel Hill Community Garden **(May 2017 - May 2018)**

- Helped with various garden tasks so that produce could be given to the second shift housekeepers at UNC Chapel Hill

UNC Chapel Hill Competitive Ski Team **(August 2015 - May 2018)**

- Secretary (August 2017-May 2018)
- Captain (August 2016-May 2017)

Volunteer at TABLE **(2014 - 2016)**

- Organization in Chapel Hill that packs food bags for local children who have free or reduced cost lunch

Hurricane Island Outward Bound **(Summer 2013)**

- 3-week course that focused on development of sailing skills, performing 24 hours of community service in Maine, and refining skills developed in first Outward Bound course

North Carolina Outward Bound **(Summer 2012)**

- 3-week course that focused on development of leadership skills, team building, conflict resolution, and wilderness survival techniques while backpacking, rock climbing, and white water canoeing