

# Elyssa Collins, Ph.D. Student

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## Education

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### Ph.D. Geospatial Analytics

(Fall 2019 - Present)

North Carolina State University, Raleigh, NC

*Research Area:* Forecasting flood risk and community displacement due to sea level rise and increased storm frequencies

*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

## Publications

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Yoshizumi, A., Coffey, M. M.\*, **Collins, E. L.\***, Gaines, M. D.\*, Gao, X. \*, Jones, K. \*, McGregor, I. R. \*, McQuillan, K. A. \*, Perin, V. \*, Worm, T. \*, Tomkins, L., Tateosian, L. G. (In Press). A Review of Geospatial Content in IEEE Visualization Publications. *IEEE VIS Short Paper Proceedings*.

\* authors share second authorship

DeLang, M., Becker, J. , Chang, K., Serre, M., Cooper, O., Schultz, M., Schröder, S.; Lu, X., Zhang, L., Deushi, M.; Josse, B., Keller, C., Lamarque, J., Lin, M., Liu, J., Marecal, V., Strode, S., Sudo, K., Tilmes, S., Zhang, L., Cleland, S., **Collins, E.**, Brauer, M., West, J. J. (2020). *Mapping yearly fine resolution global surface ozone through the Bayesian Maximum Entropy data fusion of observations and model output for 1990–2017*. Manuscript submitted for publication.

## Presentations

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**Collins, E. L.**, Sanchez, G. M., Terando, A. J., Vukomanovic, J., Meentemeyer, R. K. (2020, May). Dynamic spatiotemporal modeling of population changes in vulnerable communities. [poster] International Association for Landscape Ecology – North America. (Affected by COVID-19)

**Collins, E. L.** & Hudley, J. (2018, April). Examination of *Glycymeris americana* to Determine Short-Term Climate Variability in the Late Neogene. Poster presented at the Anadarko Student Research Symposium, University of North Carolina at Chapel Hill.

**Collins, E. L. & Hudley, J.** (2017, April). Examination of *Glycymeris americana* to Determine Short-Term Climate Variability in the Late Neogene. Poster presented at the SUP Research Symposium, University of North Carolina at Chapel Hill.

## Academic Honors and Awards

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Near-Term Ecological Forecasting Initiative. Accepted to attend the Near-Term Ecological Forecasting Initiative Summer Course. 2020.

North Carolina State University. Graduate Student Workshop/Short Course Support Grant. 2020.

Anadarko Student Research Symposium, University of North Carolina at Chapel Hill. First place award. 2018.

## Research Experience

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**Vegetation Trends in Burkina Faso** (January – August 2019)  
*UNC Chapel Hill Geography and Anthropology Departments*

- Mentor: Dr. Aaron Moody, UNC Chapel Hill
- Collected and analyzed MODIS satellite data to identify the spatial distribution and driving factors (e.g., climate) of vegetation greening and browning in Burkina Faso, West Africa

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

- Mentor: Dr. Jason West, Climate Health and Air Quality (CHAQ) Lab at UNC Chapel Hill
- Collected observational and global atmospheric model outputs of surface ozone data to use the Bayesian Maximum Entropy (BME) data fusion method to map yearly, high-resolution global surface ozone for 1990 - 2017
- Maps generated from analysis were 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
- Research focused on how shell morphometrics, age, and chemical variations in this species can be affected by certain environmental conditions, such as sea-surface temperatures

## Professional Experience

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### 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

### 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

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|-----------------------|--------------------------------|
| • R                   | • ArcGIS Desktop/Pro           |
| • Python              | • Beginner JavaScript/HTML/CSS |
| • Google Earth Engine | • GRASS GIS                    |
| • Java                | • PostgreSQL/PostGIS           |
| • Beginner C++        | • High Performance Computing   |
| • Beginner Matlab     | • QGIS                         |
| • GDAL                |                                |
| • ENVI                |                                |

## Relevant Coursework

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|---|---|
| • Introduction to Geographic Information Science (ArcGIS) | • Temporal GIS and Geostatistics                    |
| • Modeling of Environmental Systems (Matlab)              | • 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 (PostgreSQL, PostGIS)
- Geospatial Simulation
- Geovisualization
- Introduction to Programming (Java)
- Foundations of Programming (Java)
- Environmental Earth Observation and Remote Sensing (Fall 2020)

## **Volunteer Work**

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### **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

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

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