

# SARAH MARGARET BRANNUM

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## EDUCATION

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### Louisiana State University

*PhD Student in Coastal Sciences and Oceanography*

*Dissertation: Quantifying the impact of vegetation presence, density, and seasonal changes on sedimentation and water transport in a river delta*

*January 2023 - Expected December 2027*

*Overall GPA: 4.03 / 4.0*

### The University of North Carolina at Chapel Hill

*BS in Geological Sciences*

*Graduated with Honors and Distinction*

*Study Abroad at the University of Melbourne*

*Undergraduate Thesis: Characterizing Multi-Decadal Trends in Streamflow and Design Floods in the South-eastern United States*

*May 2021*

*Overall GPA: 3.7 / 4.0*

## RESEARCH INTERESTS

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Incorporating vegetation into nature-based solutions to mitigate coastal land loss

Field data collection, analysis, and design

Improving models by integrating field data

Hydrodynamic and morphological modeling

## TECHNICAL SKILLS

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### Computer Languages

MATLAB, R, Python, UNIX

### Certifications

FAA Remote Pilot in Command, PADI Advanced Open Water Diver, Nitrox, 2016 Microsoft Powerpoint, Word, Excel, Access

### Modelling Software & Tools

Delft3D, ArcGIS, SWAN, Multispectral imagery

### Field & Laboratory Skills

ADCP Hydrographic Surveys, sUAS Flight, Geologic Mapping, Thin-section making

## PROFESSIONAL EXPERIENCE

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### Coastal Hydrology, Hydrodynamics, and Oceanography Lab, LSU

Jan 2023 - Present

*Graduate Research Assistant; Advised by Dr. Matthew Hiatt*

- Studying the effects of Roseau Cane die-off on hydrodynamics and morphodynamics in the Bird's Foot Delta of the Mississippi River through remote sensing and hydrodynamic modelling
- Developing an algorithm to classify small unmanned aerial system (sUAS) multispectral imagery of dye propagation through vegetation patches water tracers
- Use a Delft3D hydrodynamic simulation to explore optimal crevasse splay formation and management of the lower Mississippi River Delta

### Watershed Hydrology and Flood Hazards Lab, UNC

January 2020 - August 2021

*Undergraduate Research Assistant; Advised by Dr. Antonia Sebastian*

- Performed statistical analyses on historical river discharge data to determine trends in the magnitude of the design flood for the Southeastern U.S.
- Wrote and presented a Senior Honors Thesis studying trends in streamflow in the Southeastern U.S

### U.S. Geological Survey

Summer 2020

*Student Contractor; Advised by Dr. John Jones*

- Worked with a team to assess the accuracy of DSWE, a USGS product that classifies either water or land in LANDSAT images
- Built water inundation images using bathymetric and tidal data for marsh environments where the classification is more difficult

## **Sedimentology and Earth's Surface Evolution Lab, University of Melbourne**

*Research Technician; Advised by Dr. Ashleigh Hood*

*July 2019 - December 2019*

- Made thin sections of samples from Neoproterozoic reef complexes
- Identified stromatolites and ooids in thin sections, and studied iron concentration

## **HONORS AND AWARDS**

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Op White Award for Undergraduate Achievement in Geological Sciences (2021)

Pignatiello Fellowship

Received funding to perform ADCP surveys of coastal North Carolina rivers

Dean's List (2017-19, discontinued during COVID)

Sigma Gamma Epsilon Honors Geology Fraternity (2018-2021)

## **RELEVANT COURSES**

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Ecomorphodynamic Modelling

Advanced Coastal Environmental Change

Geological Oceanography

Physical Oceanography

Field Camp at University of Arizona for

Wetland Hydrology

Coastal Sediment Transport

Ocean Data Analysis

Modelling the Marine Atmosphere

## **ORAL AND CONFERENCE PRESENTATIONS**

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**Brannum, S.**, Konsoer, K., Matthew, H (2024). "Leveraging small unmanned aerial system (sUAS) multispectral imagery and hydrographic surveys to assess multi-scale impacts of *Phragmites australis* in the Mississippi River delta". Deltas 2024, Baton Rouge, LA. August 2024.

**Brannum, S.** (2024). "Impact of Vegetation Coastal Resiliency on Aeolian Dunes and Coastal River Deltas". CSDMS ESPIIn Webinar, University of Colorado Boulder. Invited Speaker. September 2024.

**Brannum, S.**, Konsoer, K., Matthew, H (2023). "Using a small unoccupied aerial system (sUAS) in dye tracing experiments and hydrographic surveys to assess hydrodynamic changes resulting from vegetation die-off in the Mississippi River Delta". American Geological Union (AGU) Conference 2023, San Francisco, California, USA. December 2023.

**Brannum, S.**, Sebastian, A (2021). "Characterizing Multi-Decadal Trends in Streamflow and Design Floods in the Southeastern United States". Undergraduate Thesis Presentation, University of North Carolina at Chapel Hill, North Carolina, USA. May 2021.

**Brannum, S.**, Sebastian, A (2021). "Characterizing Trends in Design Floods along Major Rivers in the Southeastern USA". American Geological Union (AGU) Conference 2020, San Francisco, California, USA. December 2020.

## **TRAINING AND WORKSHOPS**

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CSDMS ESPIIn Training 2024, University of Colorado

August 2024

Delft3D Hydrodynamic and Morphodynamic Modelling Course, Deltares

July 2024

IRES Summer School, Deltares

July 2024

## **OUTREACH**

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- Mentor for Environmentors, LSU August 2024 - Present  
*Mentoring a local high school student in a year-long science project*
- Louisiana Sea Grant Sci Comm Summit, LSU August 2024 - Present  
*Chairing a session at a conference focused on science communication skills to educate graduate students on creating effective slides*
- Professional Development Chair, CEGO at LSU August 2023 - August 2024  
*Work with CEGO committee to plan weekly seminars, social events for students, and events to connect students with faculty*
- Renewable Energy Special Projects Coalition (RESPEC), UNC August 2017 - May 2021  
*Managed \$200,000 budget allocated for renewable energy projects, including buying an electric bus and the Efficient Freezer Rebate Program (EFRP)*