# **Dorothy Sue Grimmer**

(757)532-0342 | dorothysue@tamu.edu | www.linkedin.com/in/dorothysue | she/her/hers

#### **EDUCATION:**

## PhD, Oceanography

## **Texas A&M University (TAMU)**

- Advisor: Dr. Daniel Thornton
- Concentration: Biological Oceanography
- Relevant Coursework: Communicating Ocean Sciences, Chemical Oceanography, Physical Oceanography
- Recipient of the Louis & Elizabeth Scherck Scholarship

#### Bachelor of Science (BS), Marine Biology

#### University of North Carolina Wilmington (UNCW)

- Cumulative GPA: 3.96
- Relevant Coursework: Marine Biology, Marine Botany, Antarctic Ecology, Genetics, Organic Chemistry

### **Progress towards BS, Marine Fish Conservation**

#### Virginia Polytechnic Institute and State University (VT)

- Worked towards a degree in Marine Fish Conservation before transferring to UNCW
- Relevant Coursework: Oceanography, Biological Statistics, Population Dynamics and Estimation, Principles of GIS, Ecology, Earth Science, Leading Global Sustainability

#### **RESEARCH SKILLS:**

Programming Languages: Python, R, MatLab

Software: ArcGIS Pro, Sea, earth and atmosphere Data Analysis System (SeaDAS), Microsoft Office Suite

Open Source Science: Cloud computing with JupyterHub, GitHub, National Aeronautics and Space Administration (NASA) Transform to Open Science (TOPS) Certification

Lab and In-Situ Skills: Coriolis µ, phytoplankton cultures, microscopy, LISST & CTD deployments, handheld spectroscopy

### **RESEARCH EXPERIENCE:**

### **Graduate Research**

### **Texas A&M University (TAMU)**

**Ongoing Project: Viable Bioaerosols** 

- Using the Coriolis micro high-volume air sampler (Bertin Technologies, France) to sample bioaerosols
- Determining the potential for viable marine phytoplankton transported through air
- Ongoing Project: Marine Biogenic INP
  - Understanding the role of marine bioaerosols in cloud properties through Ice-Nucleating Particle (INP) activity
  - Determining biological conditions that create effective INP 0
  - National Science Foundation Graduate Research Fellowship (NSF GRFP) Proposal submitted to study the impact of nutrient limitation stress on INP effectiveness
- Ongoing Project: Remote Sensing
  - Using satellite products to draw a correlation between marine phytoplankton ecology and downwind cloud properties
  - Applying novel hyperspectral data from NASA's Plankton Aerosol Cloud ocean Ecosystem satellite (PACE) to characterize phytoplankton communities
  - NASA Future Investigators in Earth and Space Science and Technology (FINESST) Proposal in prep 0

#### **PACE Hackweek**

**NASA Goddard** 

- Week-long training program learning code for using and applying PACE data
- Worked with lead PACE team members and scientists
- Group research project and presentation Optical Characterization and Evaluation of Anomalous Notable Observations of Marine and Aquatic Light Environments from Satellite (OCEANOMALIES) using PACE to characterize optically complex phenomena including pigments and microplastics
- Applied a remote sensing reflectance (rrs) inversion model to determine phytoplankton pigment concentrations

## College Station, TX Fall 2024 - Expected May 2029

Baltimore, MD

August 2024

Fall 2022 - May 2024

Wilmington, NC

College Station, TX

Fall 2024 - Expected May 2029

Blacksburg, VA

Fall 2020 - May 2022

#### Deep Sea Bioluminescence Research UNCW

- Mentored by Dr. Lorian Schweikert in a group research project
- Explored the relationship between bioluminescent flash size and type
- Used unpublished data collected from the National Oceanic and Atmospheric Administration (NOAA) Ocean Exploration Research Program (OER) 'splat screen' deployment
- Discovered a statistically significant relationship novel to the field

## **Senior Capstone Research**

## UNCW

 Individual research project on the effect of El Niño Southern Oscillation (ENSO) events on phytoplankton biomass and community size composition

## NASA Student Airborne Research Program (SARP)

## NASA Langley

- Collected Earth systems science data from NASA and Dynamic Aviation aircraft using remote sensing instruments and in situ air samplers
- Individual research project evaluating the relationship between phytoplankton concentrations and atmospheric concentrations of VOC byproducts
- Group research proposal to study the connection between anthropogenic aerosol emissions and enhanced precipitation downwind
- Mentored by Dr. Susanne Craig and Dr. Robert Swap, as well as other NASA Langley, NASA Goddard, and Virginia Commonwealth University researchers

## **Ocean Color Satellite Research**

## UNCW

- Individual research project comparing satellite images of Seahawk-1's, Aqua, and Sentinel 3 satellites using SeaDAS
- Examined the effectiveness of the Hawkeye instrument (aboard the Seahawk-1 satellite) on local scales
- Determined why Hawkeye demonstrated inconsistencies

## Virginia Earth Systems Science Scholars (VESSS)

## Virginia Space Grant Consortium (VSGC) and NASA

- Participated in a dual-enrollment NASA and VSGC course and research experience that set the basis for future research interests
- Research project and panel presentation on simulated, proposed satellite mission Phytoplankton Habitat Affected by Stratospheric Ozone (PHASO) to be outfitted with ocean color and aerosol instrumentation
- Participated as the contamination and risk analyst, focusing on the potential risks of satellite missions and requirements for successful passive remote sensing

### FIELD EXPERIENCE: NASA SARP

- NASA SR-22 Flight
  - Collected hyperspectral data of the land surface using the Environmental Protection Agency's (EPA) Terra Instrument
- NASA B-200 Flight
  - Collected data on soil moisture and aquatic salinity using NASA's Scanning L-band Active Passive instrument (SLAP)
- Dynamic Aviation B-200 Flight
  - o Collected data on greenhouse gases, aerosols, and formaldehyde
  - Managed the Compact Airborne Formaldehyde Experiment (CAFE) and Picarro instruments
  - Did spirals from 10,000 to 1,000 feet altitude to evaluate vertical profiles of atmospheric compounds
- Cruise
  - o Collected ground data to complement airborne and satellite data, creating an integrated observing system
  - $\circ$  ~ Used handheld hyperspectral polarimeters to obtain ocean color measurements
  - o Deployed a Laster In-Situ Scattering and Transmissometry (LISST) to obtain aquatic optical properties

### UNCW

- *R/V Cape Fear* Deep Sea Biology Cruise
  - o Night cruise using plankton trawlers to collect bioluminescent plankton
  - o Used microscopy to visualize bioluminescence

Newport News, VA

Wilmington, NC

Spring 2023

Summer 2019

Newport News, VA

Wilmington, NC

Fall 2023

Summer 2023

- Other UNCW course cruises
  - o Marine Biology and Ichthyology: Trawled to capture marine fish and invertebrates, evaluated diversity
  - Marine Botany: Completed transects to evaluate the zonal diversity of marsh species on small remote islands off the North Carolina coast

#### Coastal Marine Education and Research Academy (CMERA)

- Participated in a shark biology and ecology research project
- Daily trips in the Gulf of Mexico to tag sharks and rays, and to measure growth parameters

SCIENCE EDUCATION, TEACHING & ENGAGEMENT:	
Oceanography Lab Teaching Assistant	College Station, TX
TAMU	Spring 2025
Will lead three sections of undergraduate oceanography lab	
Will give lectures about oceanography and hold in-class experiments	
Aquarium Volunteer	Fort Fisher, NC
North Carolina Aquarium at Fort Fisher	Fall 2023 – Spring 2024
Communicated science on the local marine biology and ecology to Aquarium guests	
Managed the touch tank and baby sea turtle exhibits	
Planet Shark Intern	Richmond, VA
Science Museum of Virginia	Summer 2022
Communicated science regarding shark biology and conservation to museum guests	
Created interactive activities about issues facing sharks and the ocean environment	
• Led informational shows on Earth science and astronomy using the 'Science on a Sphere'	by NOAA
Successful Starts in Science Teaching Assistant	Blacksburg, VA
VT Orion Living-Learning Program	Fall 2021 – Spring 2022
Taught skills for success in STEM undergraduate degree programs	
Advised students on how to gain experience as an early career scientist	
Blacksburg Scientistas Volunteerism Coordinator	Blacksburg, VA
VT	Fall 2021 – Spring 2022
Participated in the Blacksburg Scientistas organization which is dedicated to forming com	munity for women in STEM
<ul> <li>Managed the volunteerism committee and held a science education event with Kid's Tech</li> </ul>	University

#### Cookie Sheet Curriculum (ongoing)

During my internship at the Science Museum of Virginia, I created activities for ocean science education, which I coined 'cookie sheet curriculum' because the entire activity is on a cookie sheet. Since my internship, I've continued to create cookie sheet curriculum activities. The activity topics currently include mercury bioaccumulation, ocean acidification, and diel vertical migration. I have donated these and am pursuing educational grants to distribute them freely and openly. **WIS Rizz** (ongoing)

I have coined the term 'WIS Rizz', where WIS stands for Women In STEM and Rizz is a colloquial term for game or charm - charisma. My friends and I started using this term to encourage our fellow women in STEM to have confidence in their place and knowledge of STEM. Seeing how much of an impact this silly phrase made, I decided to create an initiative to spread the word that not only do women belong in STEM, but they should be confident in STEM The website wisrizz.com, launching soon, will feature a newsletter, a 'WIS Rizz Hall of Fame,' and a shop to buy merchandise.

#### **PRESENTATIONS:**

- **Grimmer, D.,** Craig, S., "From the Oceans to the Skies: Investigating the Role of Phytoplankton VOC Emissions in Atmospheric Chemistry" American Geophysical Union (AGU) Fall Meeting, December 2023.
- Cheatham, S., Dillen, P., Ferreira, A., Fidai, Y.A., **Grimmer, D.,** Kehlri, M. & Lange, P., "OCEANOMALIES: Optical Characterization and Evaluation of Anomalous Notable Observations in Marine and Aquatic Light Environments from Satellite" PACE Hackweek, August 2024. https://github.com/yfipml/oceanomalies.

#### **ORGANIZATIONS:**

- AGU
- American Association for Aerosol Research (AAAR), TAMU chapter member

- NASA Early Career Research Program
- The Oceanography Society
- PACE Community of Practice