

## ABIGALE M. WYATT

[C]Worthy | 831.241.2781 | abigale@cworthy.org

### RESEARCH INTERESTS

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Biogeochemical ocean modeling. Upper ocean ecosystem dynamics; nutrient and carbon cycling. Marine carbon dioxide removal.

### EDUCATION

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| <b>Ph.D.</b> | <u>Princeton University, Princeton, NJ</u><br>Department of Geosciences<br>Advisor: Laure Resplandy<br>Thesis Title: Observation and model-based analyses of ocean biological carbon fluxes and ecosystem dynamics | <b>2024</b> |
| <b>B.A.</b>  | <u>Columbia University in the City of New York, NY</u><br>Department of Mathematics<br>Magna Cum Laude; NROTC  | <b>2014</b> |
| <b>A.A.</b>  | <u>Defense Language Institute, Monterey, CA</u><br>Arabic Language<br>Degree with honors   | <b>2010</b> |

### AWARDS/DISTINCTIONS

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| Princeton Energy & Climate Fellow                               | <b>2021 - 2024</b> |
| National Science Foundation Graduate Research Fellow (NSF-GRFP) | <b>2019 - 2024</b> |
| American Geophysical Union Voices for Science Policy Fellow     | <b>2019 - 2020</b> |

### PUBLICATIONS

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#### PEER REVIEWED:

#### IN REVIEW

1. Nora Loose, Tom Nicholas, Scott Eilerman, Christopher McBride, Sam Maticka, Dafydd Stephenson, Scott Bachman, Pierre Damien, Ulla Heede, Alicia Karspeck, Matthew C. Long, M. Jeroen Molemaker, **Abigale Wyatt**: ROMS-Tools: A Python Package for Preparing and Analyzing ROMS Simulations. *Journal of Open Source Software (JOSS)*. 2026

#### IN PREPARATION

2. **Abigale Wyatt**, Samantha J Clevenger, Claudia R. Benitez-Nelson, Ken O. Buesseler, Laure Resplandy: Decoupling of the carbon export proxy, thorium-234, from carbon fluxes in the vicinity of dynamic physical structures in an idealized model. (*In prep*).

## PUBLISHED WORK

3. Samantha J Clevenger, Claudia R. Benitez-Nelson, Montserrat Roca-Martí, Wokil Bam, Margaret Estapa, Jennifer A Kenyon, Steve Pike, Laure Resplandy, **Abigale Wyatt**, Ken O. Buesseler: Carbon and silica fluxes during a declining North Atlantic spring bloom as part of the EXPORTS program. Marine Chemistry. <https://doi.org/10.1016/j.marchem.2023.104346>, 2024
4. **Abigale M Wyatt**, Laure Resplandy, Adrian Marchetti: Ecosystem impacts of marine heat waves in the northeast Pacific, Biogeosciences, 19, 5689–5705, <https://doi.org/10.5194/bg-19-5689-2022>, 2022
5. Roca-Martí M, Benitez-Nelson CR, Umhau BP, **Abigale M Wyatt**, Samantha J Clevenger, Steven Pike, Tristan J Horner, Margaret L Estapa, Resplandy Laure, Ken O Buesseler: Concentrations, ratios, and sinking fluxes of major bioelements at Ocean Station Papa. Elementa: Science of the Anthropocene 9:00166. <https://doi.org/10.1525/elementa.2020.00166>, 2021
6. Ken O Buesseler, Claudia R Benitez-Nelson, Montserrat Roca-Martí, **Abigale M Wyatt**, Laure Resplandy, Samantha J Clevenger, Jessica A Drysdale, Margaret L Estapa, Steven Pike, Blaire P Umhau: High-resolution spatial and temporal measurements of particulate organic carbon flux using thorium-234 in the northeast Pacific Ocean during the EXport Processes in the Ocean from RemoTe Sensing field campaign. Elementa: Science of the Anthropocene: <https://doi.org/10.1525/elementa.030>, 2020

NON-REFEREED:

1. Several [C]Worthy blog posts: “Quantifying the Efficacy of mCDR with C-Star”, “Regional Modeling as a Tool to Support Community Dialogue”. **2025 - 2026**  
<https://www.cworthy.org/blog>
2. “En-ROADS climate action simulation with Princeton Energy and Climate Scholars”, Princeton Highwire Article.  
<https://highwire.princeton.edu/2024/01/21/cooperation-and-carbon-taxes-confronting-the-challenges-of-climate-policy-with-the-en-roads-climate-solutions-simulator-and-princetons-energy-and-climate-scholars/> **2024**
3. “Field Report: Saturdays at Seaport Museum’s ‘Fisharium’ in Philadelphia, PA”, DIYdynamics Blog Post.  
<https://diy-dynamics.github.io/blog/philly-museum-2019.html> **2019**
4. “Seeing Stars at Sea” NASA Earth Expeditions blog post **2018**  
<https://blogs.nasa.gov/earthexpeditions/2018/08/27/seeing-stars-at-sea-the-start-of-a-new-career-in-ocean-science/>

## PROFESSIONAL ACTIVITIES

SERVICE

1. Review panel for ONE-Argo program, 2025-2030. NOAA, Washington, DC **2024**

OCEANOGRAPHIC CRUISES

- NASA EXPORTS 2018 to the Northeast Pacific near Ocean Station Papa. **2018**

INVITED TALKS

1. “Assessing the Efficiency of Marine Carbon Dioxide Removal in Nested Simulations of the Salish Sea”. Presented at: University of Maryland Center for Environmental Sciences -- Horn Point Laboratory

(2025); Woods Hole Oceanographic Institute (2025); NOAA mCDR task force (2026); NOAA Fisheries mCDR Work Group (2026).

2. "Evaluation of 1D thorium export models around dynamic physical structures like eddies and fronts." European Research Council (ERC), the WHIRLS Assembly Meeting, Gothenburg, Sweden **2025**
3. "Understanding ecosystem impacts of marine heatwaves using BGC-Argo floats in the Northeast Pacific." SOCCOM Argo meeting. **2024**

#### CONFERENCE PRESENTATIONS

1. "Assessing the Efficiency and Biogeochemical Impacts of Marine Carbon Dioxide Removal in High-Resolution Simulations of the Salish Sea". Poster presentation. Ocean Sciences Meeting, Glasgow, Scotland.  
+ 4 additional coauthored presentations at Ocean Sciences Meeting **2026**
2. "Assessing the Efficiency and Biogeochemical Impacts of Marine Carbon Dioxide Removal in High-Resolution Simulations of the Salish Sea". Poster presentation. PICES Meeting, Yokohama, Japan. **2025**
3. "Observation and model-based analyses of ocean biological carbon fluxes and ecosystem dynamics". Oral presentation. Dissertations Symposium in Chemical Oceanography (DISCO). Kauai, Hawaii **2024**
4. "Impact of wind variability on CO2 uptake efficiency during simulated OAE experiments near San Francisco Bay" Poster presentation. American Geophysical Union Meeting, Washington, D.C. **2024**
5. "Ecosystem Impacts of Marine Heatwaves in the Northeast Pacific." Oral presentation. Ocean Sciences Meeting, New Orleans, LA **2024**
6. "Ecosystem Impacts of Marine heatwaves in the Northeast Pacific." Oral presentation. PICES Meeting, Busan, South Korea. **2022**
7. "Ecosystem shifts in response to warming events in Northeast Pacific." Poster presentation. Ocean Carbon and Biogeochemistry Meeting, Woods Hole, MA. **2021**
8. "Particle Export and Plankton Spatio-Temporal Variability." Poster presentation. Ocean Carbon and Biogeochemistry Meeting, Woods Hole, MA. **2019**

#### AFFILIATIONS

- COMPASS mCDR communication leaders **2025 – 2027**
- [C]Worthy, non-profit research organization **2024 – Present**
- American Geophysical Union (AGU) -- member **2018 – Present**
- Mentoring Physical Oceanography Women+ to Increase Retention (MPOWIR) -- member **2023 – Present**
- En-Roads Climate Ambassador **2022 – 2024**
- Climatedata Academy -- volunteer **2022 – 2024**

#### TEACHING EXPERIENCE

Princeton University, Princeton, NJ

1. Assistant Instructor (ENV 367) **2022-2023**  
Assisted in development of syllabus and course curriculum. Designed original activities to teach basic Python coding, plotting, figure analysis, hands-on observational measurements, and understanding of future climate and mitigation strategies via the Intergovernmental Panel on Climate Change (IPCC) report.
2. Teacher Prep Instructor (QUEST) **2022-2025**

Designed original activities for local area teachers to learn about climate change and modeling. Activities included several data interpretation and graphing activities, a modeling simulation game, and a tour of the Princeton high performance research computing facility.

Jefferson University, Philadelphia, PA

3. Adjunct Instructor- Precalculus Math **2017**

Working from prepared syllabus, provided instruction for 3 sections (60+ students)

4. Camp EdVenture

A voluntary one-day intensive on course design, active learning and assessment ideas for the classroom.

Riverbend Environmental Education Center, Gladwyne, PA

5. Assistant Manager of Educational Programs and Summer Camp **2017-2018**

Managed 20-30 lead and assistant educators, including scheduling, hiring, and evaluations. Created and implemented age appropriate one and two-week curricula for ages 3-17. Acted as lead instructor as needed.

#### MENTORSHIP

- MPOWIR-- Member of 6-person mentorship group **2023 – Present**
- Informal mentorship of five junior Resplandy-lab members, and two junior grad students in neighboring departments including one military veteran. **2019 – 2024**
- Princeton Women in Geosciences (PWIGs) mentor to one junior grad student or undergraduate student in the Geoscience department every year for four years. **2019 – 2024**
- Geoscience Education & Mentorship Support (GEMS) mentor to two undergraduate students at University of Nevada. **2022 – 2024**

#### PUBLIC ENGAGEMENT

1. Plan Sea Podcast Season 3 Ep. 9: Scientific Communication with COMPASS mCDR Communication Leaders at OSM 2026. Guest speaker. **2026**
2. Research workshop on marine carbon dioxide removal. In-person workshops. Port Angeles; WA, Victoria, BC; Vancouver, BC **2026**
3. Weather and Climate Livestream. 30 minute presentation on ocean modeling during 24/7 science streaming Youtube event **2025**
4. Community-oriented deliberations on marine carbon dioxide removal: Ocean alkalinity enhancement and direct ocean removal. Virtual workshops for Vancouver and Seattle residents. **2025**
5. “Skype a Scientist” spoke with US grade school classrooms about current research and life as a scientist **2020- 2021**
6. Weather in a tank experiments as River Docent Volunteer and organizer, Independence Seaport Museum, “River Alive” exhibit. Philadelphia. PA **2019 - 2020**
7. Great Plankton Race, volunteer at Young Women’s Conference in STEM, Princeton University, Princeton, NJ **2019**
8. AGU Congressional visit day, Voices for Science workshop, Washington, DC. **2019**
9. “Voice of the Sea”, Season 6, episode 4, “EXPORTS: On Board The Sally Ride” photo/video content contributor. **2019**
10. <http://seagrant.soest.hawaii.edu/exports-sally-ride/> **2019**
10. “Life in the Universe” 3-part lecture series on the science of discovering, exploring and understanding life. Waverly Heights, Gladwyne, PA. **2018**

## UNDERGRADUATE RESEARCH

1. "Primitive solutions of Fermat's Last Theorem. Proof for  $n=4$ ." – Columbia University, Undergraduate Mathematics Colloquium, NY, NY. **2014**
2. "A Survey of Giant Clams *tridacna maxima*, *tridacna squamosa* in the Gulf of Aqaba." – Columbia University, SEE-U Jordan, Amman, Jordan. **2013**

## OTHER PROFESSIONAL EXPERIENCE

1. Riverbend Environmental Education Center, Gladwyne, PA  
**Camps/Educational Programs Manager** **2017**
2. US Naval Flight School, Various Locations, USA  
**Student Naval Aviator** **2014 – 2017**
3. US Navy/National Security Agency, Augusta, GA  
**Intelligence Analyst/Arabic Linguist** **2010 – 2012**

## OTHER PROFICIENCIES

English- Native language

Arabic- Modern Standard, Iraqi and Levantine dialects. Conversational fluency  
in reading, writing and speaking

Technical Proficiencies: Python, LaTeX, MATLAB, Fortran